

TIMARU DISTRICT
SIGNIFICANT NATURAL AREAS
SURVEY

WAIHI STATION



Report prepared for the Timaru District Council by Mike Harding

TIMARU DISTRICT SIGNIFICANT NATURAL AREAS SURVEY

PROPERTY REPORT

PROPERTY DETAILS:

Owner:TR Hardwick-Smith and JLD Wallace
Valuation Reference:24660/140.00
Address:Woodbury, RD 21, Geraldine
Location:.....Between the Waihi River and Te Moana North Branch River,
.....northwest of Woodbury.
Ecological District:Orari and Geraldine ecological districts.
TDC Land Type:.....Mostly Hard Rock Hills and Downs, with a small part in Soft
.....Rock Hills and Downs.
Land Environment:Q2 (southeastern hill country) and N3 (eastern South Island
.....undulating plains and hills).

ECOLOGICAL CONTEXT:

Areas in the foothills surrounding the upper Waihi and Te Moana rivers (above c.300m altitude) lie within the Orari Ecological District. Areas on gentler lower slopes of the foothills and downlands lie within the Geraldine Ecological District. The main landforms are gentle to moderately-steep hills, gentle toe slopes (downlands), and small river terraces and flats. The original vegetation of this area would have been predominantly podocarp-hardwood forest, with areas of mountain beech forest. Denser podocarp-hardwood (matai-totara-kahikatea-lowland ribbonwood) forest would have occupied older terraces and flats, and tall kanuka-kowhai forest would have been present on recently disturbed surfaces. Minor areas of matagouri-*Coprosma-Olearia* shrubland and small wetlands were likely to have been present on valley-floors, probably with associated areas of short tussockland. The indigenous fauna would have been significantly more numerous and diverse, with a greater range of birds, lizards and invertebrates than are presently found in the area.

Indigenous vegetation on the property comprises some of the most diverse forest remaining in the area. Remnant stands of podocarp and podocarp-hardwood forest alongside the Waihi River and associated podocarp-hardwood forest in adjoining gullies are notable. Areas of tall kanuka on recent river terraces, and small stands of podocarp-hardwood forest near the Waihi Station homestead are also notable. The property lies within the existing range of the South Canterbury population of long-tailed bat. It is also adjacent to a remnant population of blue duck in the upper Waihi River. Both these species are regarded as nationally-endangered.

SIGNIFICANT AREAS ON THE PROPERTY:

Waihi Station was surveyed as part of the District-wide survey of Significant Natural Areas during May and June 2005. Nearly all parts of the property were visited and assessed. Seventeen areas, totalling approximately 128 hectares, are regarded as significant when assessed against the District Plan criteria. These areas are predominantly small remnants of indigenous forest or areas of advanced indigenous forest regeneration. Some areas adjoin one another, and many are contiguous with larger areas of indigenous vegetation on adjoining properties (including the Waihi Gorge Scenic Reserve). These areas are listed in the table below.

Area No.	Area Name	Central grid reference	Aprox. size (ha)	Vegetation/habitat type
710	Homestead Bush	J37: 636-861	3	podocarp-hardwood forest
711	Bush Paddock Gully	J37: 633-863	<1	podocarp hardwood forest
608a	Guide Camp	J37: 632-876	1	kanuka-kowhai forest
608b	Water Race Intake	J37: 635-875	<1	podocarp-hardwood forest
608c	Hay Barn	J37: 630-874	<1	podocarp-hardwood forest
609	Lancewoods	J37: 626-873	5	podocarp-hardwood forest
610	Gorge	J37: 625-877	3	kanuka-kowhai-totara forest
611b	Bottom Fergusons	J37: 609-878	2.5	podocarp-hardwood forest
611c	Bottom Fergusons	J37: 604-882	2	podocarp-hardwood forest
611d	Pig Hunters Flat	J37: 600-885	1.5	podocarp-hardwood forest
712a	Long Pull Flats	J37: 590-889	6	podocarp-hardwood forest
712b	Mackintosh Stream	J37: 583-897	4	hardwood forest with podocarps
712c	Sunny Face Block	J37: 584-893	9	hardwood forest with podocarps
713	Bottom Corner	J37: 606-876	2	hardwood forest with podocarps, shrubland and wetland
593a	Bottom Shady Face	J37: 579-871	40	hardwood forest with podocarps, shrubland and wetland
593b	Black Hill	J37: 570-872	35	hardwood forest
77a	Te Moana North Branch	J37: 570-867	12	hardwood forest with podocarps

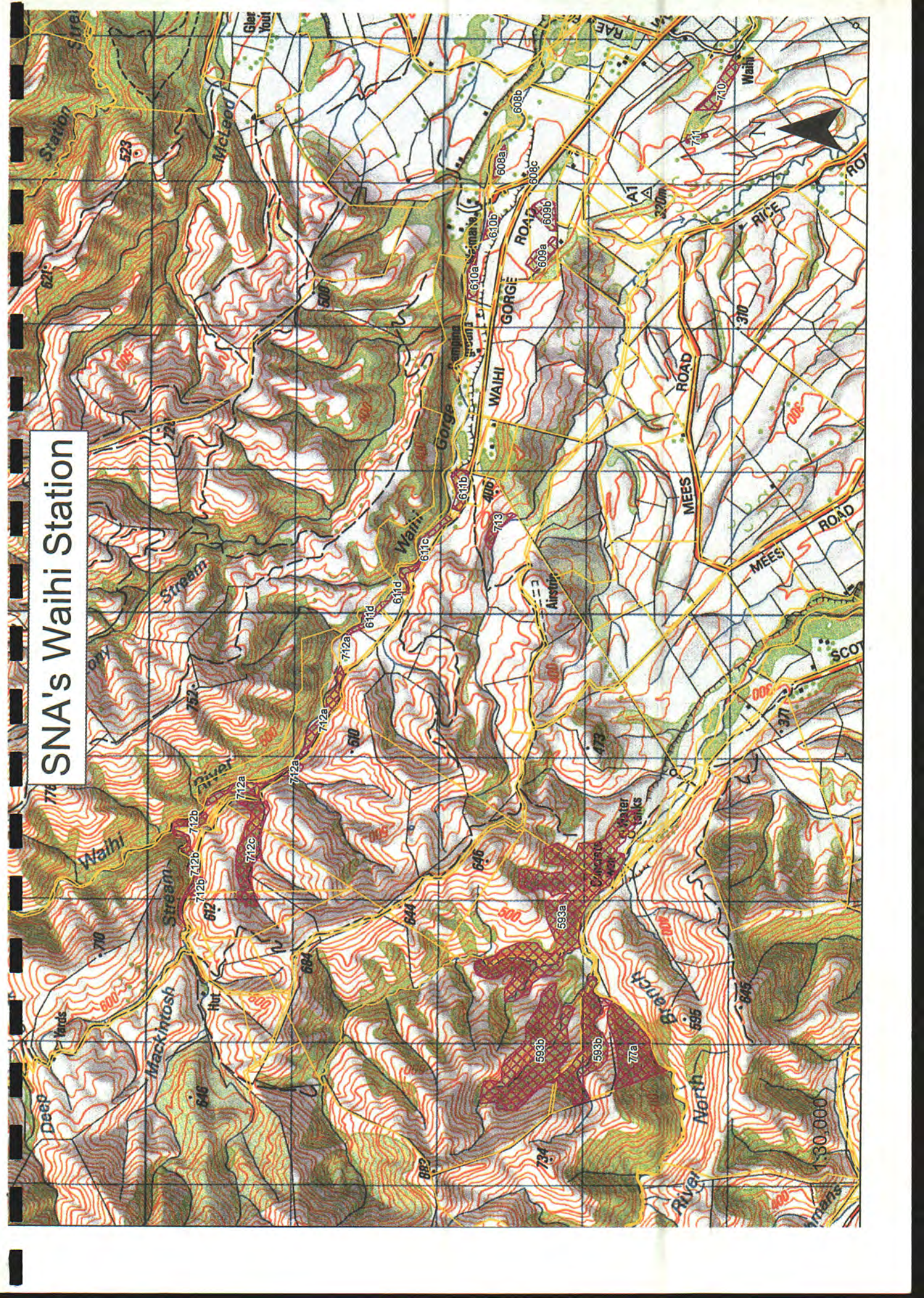
Areas of indigenous vegetation and/or habitat on the property that are identified as Significant Natural Areas (above) are illustrated on the attached maps and described in greater detail on the Area Inspection Forms that form part of this report. These areas meet the ecological criteria in the Timaru District Plan (criteria i-vi, pages B18-B19) and are considered to be sustainable in the long term (criterion vii, page B19). Areas are subject to confirmation by Council after regarding the matters listed under Final Considerations (pages B19-B20).

The implication of an area being listed as a Significant Natural Area (SNA) is that consent is required from Council for clearance by any means (including burning and spraying with herbicides) or over-planting of these areas. To assist with the protection and management of any SNA, landowners are eligible to apply to Council for financial assistance. Any questions regarding the protection, management and use of SNAs should be directed to the District Planner.

OTHER AREAS INSPECTED ON THE PROPERTY:

Other areas of indigenous vegetation and habitat on the property were inspected but are not regarded as significant when assessed against the criteria on pages B18-B20 of the Timaru District Plan. Failure of an area to meet the significance criteria does not necessarily mean that an area is not important for nature conservation or the protection of indigenous biodiversity; it simply means that the area (as assessed at this time) does not meet the criteria in the Timaru District Plan. Some of these areas have considerable potential value and, if left alone, may eventually become significant. Two areas are notable: the extensive areas of young indigenous forest (dominated by tree fuchsia and wineberry) in the gullies adjoining Area 593, which may regenerate into more diverse forest; and, an isolated wetland in the small valley west of Pig Hunters Flat which, although substantially modified, has some remnant values.

SNA's Waihi Station



Scientific names of species cited by common name on Area Inspection Forms

Common Name Scientific name

(* = naturalised species)

ash*	<i>Fraxinus excelsior</i>
bidibid	<i>Acaena</i> sp.
blackberry*	<i>Rubus fruticosus</i>
black nightshade*	<i>Solanum nigrum</i>
bracken	<i>Pteridium esculentum</i>
broadleaf	<i>Griselinia littoralis</i>
broom*	<i>Cytisus scoparius</i>
bush lawyer	<i>Rubus</i> sp. (<i>R. cissoides</i> or <i>R. schmidelioides</i>)
bush lily	<i>Astelia</i> sp.
bush rice grass	<i>Microlaena</i> sp.
cabbage tree/ti rakau	<i>Cordyline australis</i>
Canterbury tree broom	<i>Carmichaelia torulosa</i>
cherry plum*	<i>Prunus cerasifera</i>
chickweed*	<i>Stellaria media</i>
Chilean flame creeper*	<i>Tropaeolum speciosum</i>
cotoneaster*	<i>Cotoneaster</i> sp.
crack willow*	<i>Salix fragilis</i>
Darwin's barberry*	<i>Berberis darwinii</i>
elderberry*	<i>Sambucus nigra</i>
five finger	<i>Pseudopanax arboreus</i>
flowering currant*	<i>Ribes sanguineum</i>
foxglove*	<i>Digitalis purpurea</i>
gorse*	<i>Ulex europaeus</i>
hanging spleenwort	<i>Asplenium flaccidum</i>
hard fern	<i>Paesia scaberula</i>
hawthorn*	<i>Crataegus monogyna</i>
hen and chickens fern	<i>Asplenium bulbiferum</i>
Himalayan honeysuckle*	<i>Leycesteria formosa</i>
holly*	<i>Ilex aquifolium</i>
horopito (pepperwood)	<i>Pseudowintera colorata</i>
hound's tongue fern	<i>Microsorium pustulatum</i>
kahikatea	<i>Dacrycarpus dacrydioides</i>
kaikomako	<i>Pennantia corymbosa</i>
kanuka	<i>Kunzea ericoides</i>
korokio	<i>Corokia cotoneaster</i>
koromiko	<i>Hebe salicifolia</i>
kowhai	<i>Sophora microphylla</i>
lancewood	<i>Pseudopanax crassifolius</i>
leather-leaf fern	<i>Pyrrosia eleagnifolia</i>
lemonwood	<i>Pittosporum eugenioides</i>
lowland ribbonwood	<i>Plagianthus regius</i>
mahoe (whiteywood)	<i>Melicytus ramiflorus</i>
male fern*	<i>Dryopteris filix-mas</i>
manuka	<i>Leptospermum scoparium</i>
mapou	<i>Myrsine australis</i>
marbleleaf (putaputaweta)	<i>Carpodetus serratus</i>
matagouri	<i>Discaria toumatou</i>
matai	<i>Prumnopitys taxifolia</i>
matipo	<i>Pittosporum tenuifolium</i>
mistletoe	<i>Ileostylis micranthus</i>

mountain akeake.....	<i>Olearia avicenniifolia</i>
mountain beech.....	<i>Nothofagus solandri</i> var. <i>cliffortioides</i>
mountain flax.....	<i>Phormium cookianum</i>
mountain kiokio.....	<i>Blechnum montanum</i>
mountain ribbonwood.....	<i>Hoheria lyallii</i>
narrow-leaved lacebark.....	<i>Hoheria angustifolia</i>
narrow-leaved mahoe	<i>Melicytus lanceolatus</i>
native jasmine.....	<i>Parsonsia</i> sp.
necklace fern.....	<i>Asplenium flabellifolium</i>
old man's beard*	<i>Clematis vitalba</i>
pate	<i>Schefflera digitata</i>
pohuehue.....	<i>Muehlenbeckia australis</i>
pokaka.....	<i>Elaeocarpus hookerianus</i>
poporo	<i>Solanum laciniatum</i>
prickly shield fern.....	<i>Polystichum vestitum</i>
scrambling fuchsia.....	<i>Fuchsia perscandens</i>
scrub pohuehue.....	<i>Muehlenbeckia complexa</i>
shrubby mahoe.....	<i>Melicytus micranthus</i>
silver fern.....	<i>Cyathea dealbata</i>
soft tree fern.....	<i>Cyathea smithii</i>
stinking iris*	<i>Iris foetidissima</i>
supplejack	<i>Ripogonum scandens</i>
sycamore*.....	<i>Acer pseudoplatanus</i>
tauhinu	<i>Ozothamnus leptophyllus</i>
totara.....	<i>Podocarpus totara</i>
tree fuchsia.....	<i>Fuchsia excorticata</i>
tutu.....	<i>Coriaria sarmentosa</i>
walnut*	<i>Juglans regia</i>
water fern.....	<i>Hystiopteris incisa</i>
weeping mapou.....	<i>Myrsine divaricata</i>
white climbing rata	<i>Metrosideros diffusa</i>
wineberry	<i>Aristotelia serrata</i>
yellowwood	<i>Coprosma linariifolia</i>

Area Number: 710	Area Name: Waihi Station Homestead Bush	Date: 10 May 2005
Property: Waihi Station	Surveyors: Mike Harding	
Weather Conditions: Fine and calm		Time Spent at Area: 3 hours

Location (central grid reference): J37: 636-861	Nearest Locality: Woodbury	
Ecological District: Geraldine	Approximate size of Area: 3 ha	Altitude: 260 to 290 m

General description of Area:

A strip of forest on a small ridge and in an adjoining shallow gully northwest of Waihi Station homestead, comprising the part of the forested area with an intact indigenous forest canopy.

General description of plant communities and habitats:

Podocarp-hardwood forest comprising a dense hardwood canopy with emergent old podocarps (mostly kahikatea) and healthy podocarp regeneration. Tall planted exotic trees (mostly pines and Eucalypts) on the forest margins and adjacent to the northwest end of the Area.

Detailed vegetation description:

The main forest canopy (excluding the exotic trees at the edges of the Area) is dominated by mahoe, lemonwood, wineberry and tree fuchsia, with emergent kahikatea and occasional totara. Other species present in the canopy and subcanopy are pate, mapou, horopito, five finger, narrow-leaved mahoe, soft tree fern, matai, *Streblus heterophyllus*, *Coprosma rotundifolia*, *Coprosma crassifolia*, *Coprosma areolata*, *Coprosma rhamnoides*, lancewood, broadleaf, *Melicope simplex*, supplejack, native jasmine, bush lawyer and kahikatea and totara saplings.

Less common canopy or understorey species are cabbage tree, kowhai, shrubby mahoe, *Carex* sp. and leather-leaf fern. Important ground-cover species are hen and chickens fern, prickly shield fern, bush lily and *Blechnum fluviatile*. Less common ground-cover species are hound's tongue fern, bush rice grass, water fern and *Asplenium hookerianum*.

Additional species present in the shallow damp gullies within the forest are the ferns *Leptopteris hymenophylloides*, *Leptolepia novae-zelandiae* and *Blechnum chambersii*.

Species commonly present on the forest margins are matipo, kanuka, narrow-leaved lacebark, poroporo, yellowwood, *Coprosma rigida*, *Coprosma propinqua*, pohuehuc and bracken.

White climbing rata and silver fern are present in the southeast part of the Area (near the homestead), though these species were apparently planted (Archie Reid, *pers.comm.*).

Tall exotic trees (mostly pines) are present along the southern boundary of the Area. Two rows of old hazelnut trees are present (now within the native forest canopy) at the northeast corner of the forest. The forest west of the Area is dominated by tall Eucalypt trees with an understorey of scattered indigenous trees and shrubs.

Birds observed:

Birds observed in the forest were fantail (black and pied phases), grey warbler, bellbird, song thrush and blackbird. It is likely that kereru (NZ pigeon) and rifleman also utilise the area. Magpie and paradise shelduck were observed on open country adjacent to the forest.

Notable flora, fauna or habitats:

Large old kahikatea trees are a notable feature of the forest. At least four are present, emergent high above the forest canopy at the eastern end of the forest. These trees are likely to be several hundred years old. The largest has a trunk diameter (at breast height) of 108 cm, though this tree appears to be senescent. The other large kahikatea measured have trunk diameters of 102, 90 and 82 cm.

Several of the canopy trees are also impressively large. One lemonwood tree has a trunk diameter of 59 cm. Old kanuka trees near the northern forest margin have trunk diameters of 49 and 59 cm.

Species present that are regarded as rare in Timaru District are: *Coprosma areolata*, silver fern (*Cyathea dealbata*) though this species was apparently planted at the site, soft tree fern (*Cyathea smithii*) and shrubby mahoe.

General condition of Area:

The Area has been fenced from stock for many years (Archie Reid, *pers. comm.*) and may have never been formally grazed. There is no evidence of logging. The central part of the Area (along the main gully) appears pristine. Large exotic trees dominate the boundaries of the area, especially the southern boundary. Of these trees, only sycamore and ash appear to pose a significant threat to the core area. The Area appears to have been maintained as an area of protected indigenous forest for many years.

Notable plant and animal pests:

Important naturalised species observed were sycamore (seedlings and saplings), stinking iris, Chilean flame creeper, male fern, Darwin's barberry, black nightshade and blackberry. Darwin's barberry, Chilean flame creeper and stinking iris are the most serious weed threats, though are unlikely to invade the core area unless significant gaps are created in the forest canopy. Darwin's barberry appears confined to forest margins, especially the northern boundary; stinking iris

appears confined to the northeast boundary near the homestead; and Chilean flame creeper was observed only on the forest margin at the northwest corner of the block.

Boundaries: (buffering, fencing, adjoining plant communities/habitat etc.):

The Area is isolated from other areas of indigenous vegetation except for a small area (Area 711) adjacent to the southwest corner. It is long and narrow, though relatively well buffered by the large exotic trees on its southern boundary and stock-proof fences. The core area occupies a shallow gully and appears sufficiently damp to mitigate the effects of drought and to support a healthy population of kahikatea.

Present management and management issues:

The area appears to have been well managed for many years. The absence of significant weed infestations suggests that plant and animal pests have been regularly controlled. The main threat facing the Area is the establishment and spread of weeds. The greatest weed threat is probably that posed by sycamore, as this species can successfully colonise and eventually dominate intact indigenous forest. Darwin's barberry, stinking iris and Chilean flame creeper also pose threats. Regular possum control will also be required to maintain the values of the Area.

Property Owner Comment:

Regular possum and weed control has been carried out, fencing maintained and grazing excluded.

ASSESSMENT (against District Plan criteria):

Primary Criteria	Rank	Notes
Representativeness	H	The Area supports podocarp-hardwood forest that is representative of the original vegetation.
Rarity	M/H	The Area supports good populations of several rare species.
Diversity and pattern	M/H	Species diversity is probably similar to that originally present.
Distinctiveness/special features	M/H	The Area supports an intact remnant of the original podocarp-hardwood forest, including several very large kahikatea trees.
Other Criteria		
Size/shape	M/H	The Area is of moderate size and well buffered, though is long and narrow.
Connectivity	M	The Area is not connected to other areas of indigenous vegetation, except for a small area adjacent to the southwest boundary.
Long-term Sustainability	M/H	The Area supports relatively unmodified indigenous forest. Its values can be maintained by regular weed and pest control.
SNA (yes/no):	YES	

Final Consideration (of other matters, Section D, page B-19):

The Area has been protected through the voluntary efforts of the present and previous landowners. Important management costs (notably boundary fencing) have already been incurred and, by implication, the development potential of the Area already sacrificed.

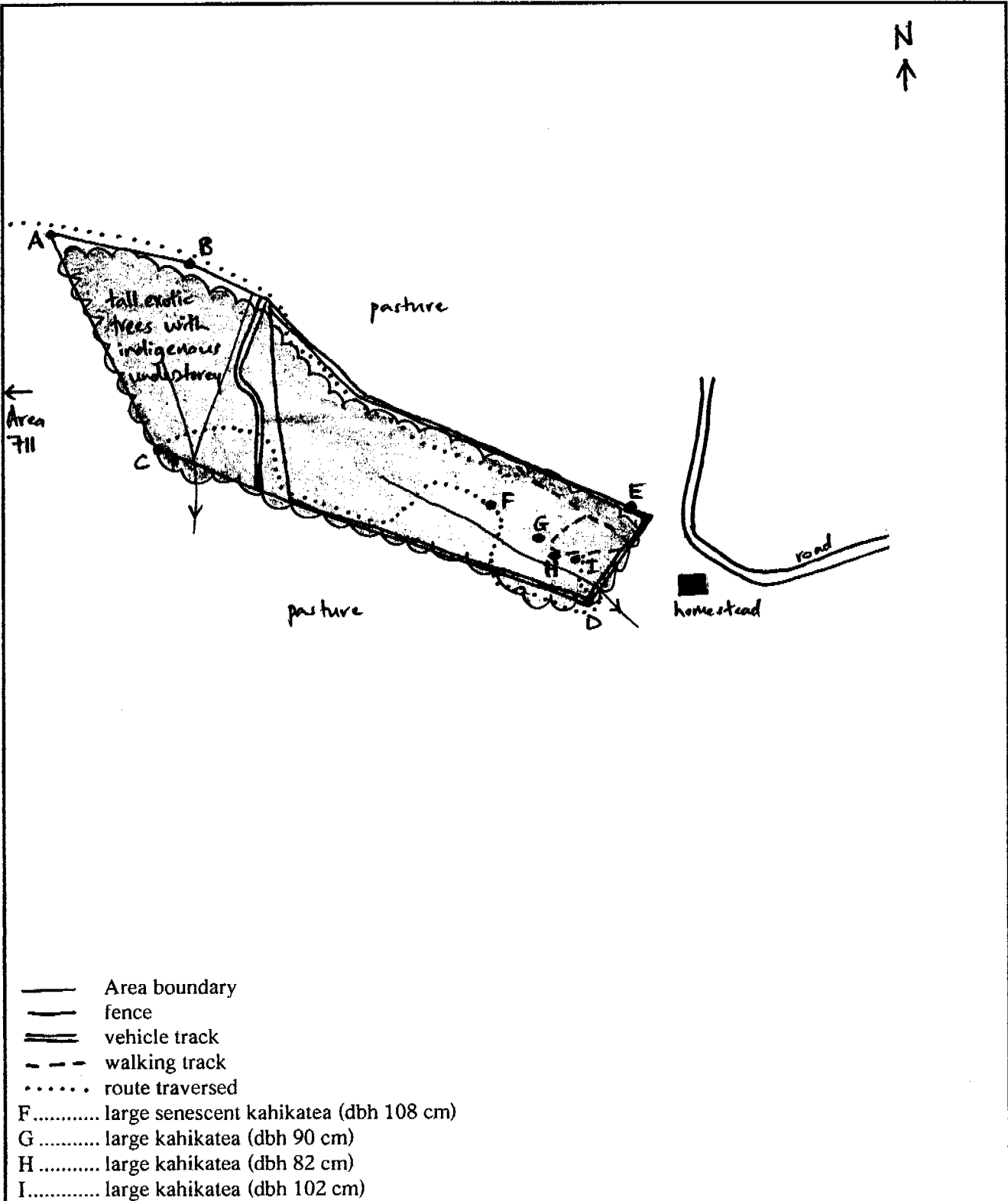
Discussion:

The Area very easily meets the District Plan criteria for a Significant Natural Area. The main attributes of the Area are that the vegetation is representative of that originally present at the site, the presence of a number of rare plant species, the diversity of the plant communities present, the presence of large old podocarp trees and the size of the Area.

SKETCH MAP OF AREA 710

Location of corners and boundaries of Area:

No. on Map	Waypoint No.	Map Coordinates			Location
A	021	E: 2363534	N: 5686389	+/-: 7.9	west corner
B	022	E: 2363335	N: 5686364	+/-: 5.8	northwest corner
C	030	E: 2363403	N: 5686208	+/-: 3.9	southwest corner
D	031	E: 2363814	N: 5685976	+/-: 6.8	southeast corner
E	032	E: 2363853	N: 5686053	+/-: 6.7	northeast corner



TIMARU DISTRICT SNA SURVEY

AREA 711

Area Number: 711	Area Name: Bush Paddock Gully	Date: 10 May 2005
Property: Waihi Station	Surveyors: Mike Harding	
Weather Conditions: Fine and calm		Time Spent at Area: 1 hour

Location (central grid reference): J37: 633-863	Nearest Locality: Woodbury	
Ecological District: Geraldine	Approximate size of Area: <1 ha	Altitude: 290 m

General description of Area:

A small patch of podocarp hardwood forest in a shallow gully just west of Area 710 and northwest of Waihi Station homestead. The Area covers a fenced forest remnant in the gully and scattered indigenous trees on adjoining pasture.

Description of plant communities and habitats:

Canopy and/or emergent species in the gully are kahikatea, totara, wineberry, narrow-leaved mahoe, broadleaf, lemonwood, narrow-leaved lacebark and pohuehue. Other woody species present are cabbage tree, *Coprosma rhamnoides*, *Coprosma rotundifolia*, *Coprosma crassifolia*, lancewood, tree fuchsia, poroporo, pate, five finger, matipo, kanuka, mahoe and the exotic elderberry.

Ground cover within the forest is predominantly prickly shield fern, with some bidibid, *Blechnum fluviatile* and *Hypolepis ambigua*. Ground cover at the margins of the fenced forest remnant is rank pasture.

Indigenous trees in grazed pasture adjacent to the gully are totara, kahikatea, broadleaf, lemonwood, mapou, cabbage tree, lancewood, narrow-leaved lacebark, *Coprosma areolata*, *Coprosma rotundifolia* and *Coprosma crassifolia*.

Notable flora, fauna or habitats:

The presence of podocarp trees (totara and kahikatea), the abundance of narrow-leaved mahoe and the presence of *Coprosma areolata* are the most notable features of the Area. *Coprosma areolata* is regarded as rare in the area.

General condition of Area:

The Area is in good condition. The gully, encompassing the main forest remnant and a buffer of pasture, has been recently fenced. An elderberry tree has been recently removed from the forest, though elderberry saplings are present.

Notable plant and animal pests:

Elderberry and black nightshade are present within the forest remnant. One large deciduous exotic tree (presumably an ash tree) is present just west of the Area, though within the fenced gully.

Boundaries: (buffering, fencing, adjoining plant communities/habitat etc.):

The main forest remnant in the gully and a buffer area dominated by rank pasture are securely fenced. The fenced part of the Area is very close to (within 50 m of) the mixed plantation and indigenous forest that adjoins Area 710.

Present management and management issues:

The main forest remnant in the Area (within the gully) has been protected voluntarily by the erection of a fence and the exclusion of grazing. The property owner has also removed an elderberry tree. The main management issues are the prevention of weed infestations (including the removal of any remaining elderberry saplings or seedlings) and the protection of the indigenous trees that lie outside the fenced gully from any effects of grazing.

Property Owner Comment:

Regular possum and weed control has been carried out, fencing maintained and grazing excluded.

ASSESSMENT (against District Plan criteria):		
Primary Criteria	Rank	Notes
Representativeness	M/H	The Area contains a good example of indigenous vegetation that is typical of that remaining in the ecological district.
Rarity	M	The Area supports a species that is rare in the (<i>Coprosma areolata</i>).
Diversity and pattern	M	Species and habitats within the Area are less diverse than those originally present.
Distinctiveness/special features	M	The Area supports a good population of podocarps (totara and kahikatea).
Other Criteria		
Size/shape	M	The Area is small but most of it is well buffered by its position in a small gully and by a stock-proof fence.
Connectivity	M	The Area is not connected to other areas of indigenous vegetation, but is close to a larger area of indigenous forest (Area 710).
Long-term Sustainability	M	The area is modified but its values are likely to persist and improve with some active management, notably weed prevention and control.
SNA (yes/no):	YES	

Final Consideration (of other matters, Section D, page B-19):

A large part of this Area has been protected through the voluntary efforts of the landowner. Important management costs (notably boundary fencing) have already been incurred and, by implication, the development potential of the Area sacrificed.

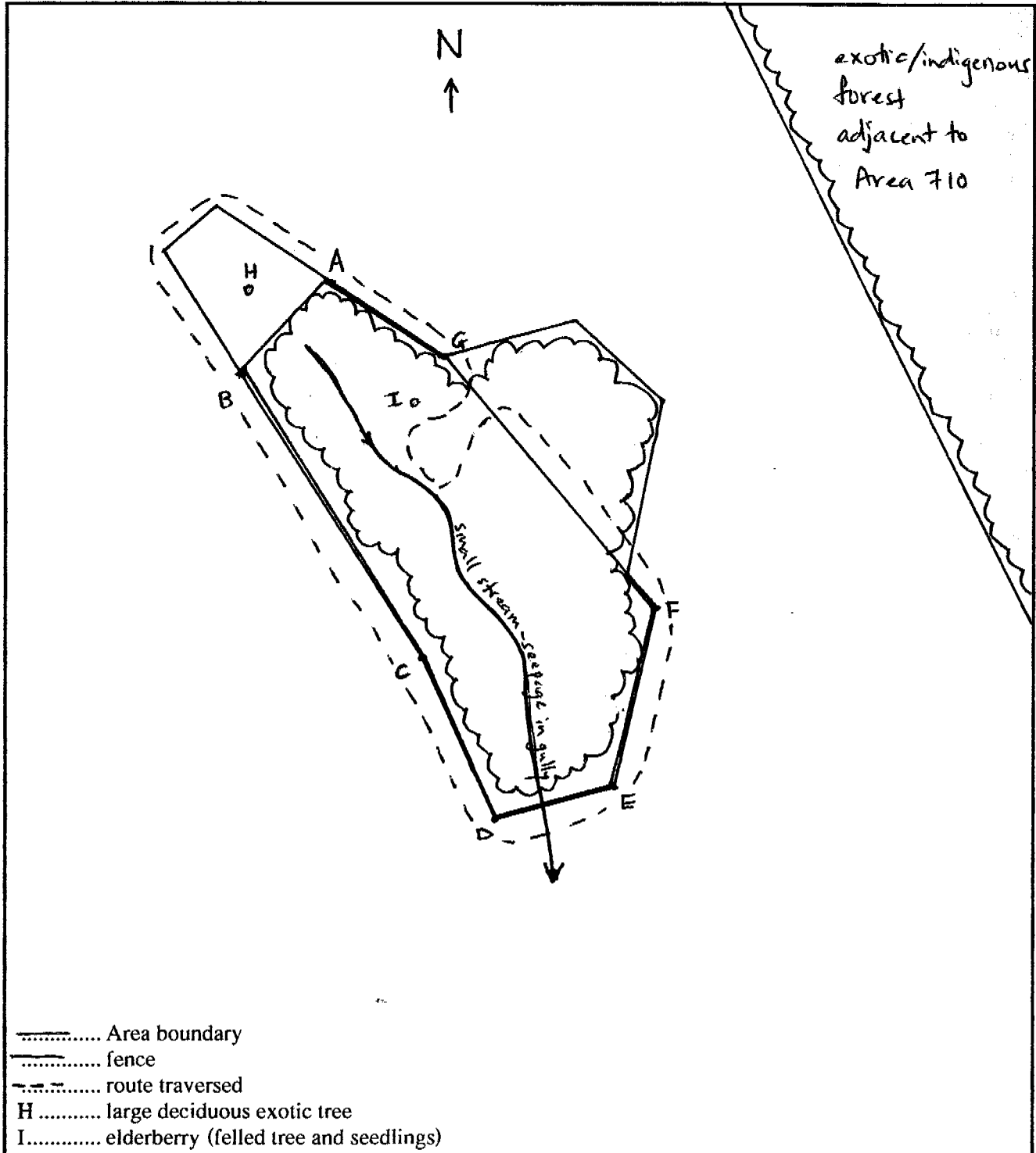
Discussion:

The Area easily meets the District Plan criteria for a Significant Natural Area. The main attributes of the Area are that the vegetation is representative of that originally present at the site and typical of that remaining in the ecological district, the presence of a rare plant species and the presence of podocarps.

MAP OF AREA 711

Location of corners and boundaries of Area:

No. on Map	Waypoint No.	Map Coordinates			Location
A	023	E: 2363300	N: 5686340	+/-: 3.2	northwest corner
B	024	E: 2363282	N: 5686330	+/-: 3.3	southwest corner
C	025	E: 2363309	N: 5686265	+/-: 3.1	southern boundary
D	026	E: 2363327	N: 5686183	+/-: 3.3	southeast corner
E	027	E: 2363346	N: 5686193	+/-: 5.1	eastern corner
F	028	E: 2363339	N: 5686253	+/-: 3.7	northeast corner
G	029	E: 2363312	N: 5686320	+/-: 3.7	northern boundary (of fenced part)



TIMARU DISTRICT SNA SURVEY

AREA 608a

Area Number: 608a	Area Name: Guide Camp	Date: 24 June 2005
Property: Waihi Station	Surveyors: Mike Harding	
Weather Conditions: fine and cool		Time Spent at Area: 1½ hours

Location (central grid reference): J37: 632-876	Nearest Locality: Woodbury	
Ecological District: Orari/Geraldine	Approximate size of Area: 1 ha	Altitude: 300 m

General description of Area:

A low terrace adjacent to the Waihi River just downstream from the road bridge to Waimarie Station.

General description of plant communities and habitats:

Tall kanuka with groups of large old kowhai trees, an open understorey and ground cover dominated by pasture.

Detailed vegetation description:

The forest canopy is dominated by tall old kanuka trees, a number of large old kowhai trees and one large lowland ribbonwood tree. The kanuka trees are mostly multi-trunked with trunk diameters between 10 and 35 cm, and occasionally as large as 50 cm. The kowhai trees are mostly old and occasionally senescent, with trunk diameters between 45 and 70 cm. The lowland ribbonwood tree has a trunk diameter of 57 cm.

Other species present in the canopy are native jasmine and pohuehue. Large individual trees of walnut, crack willow, sycamore, elderberry, totara and cabbage tree are present at the northern edge of the Area adjacent to the river.

The forest understorey is open, with tree fuchsia, hawthorn, *Coprosma rotundifolia*, *C. rigida* and hound's tongue fern occasionally present.

The ground cover is dominated by pasture grasses. Occasionally present are foxglove, prickly shield fern, *Hydrocotyle novae-zeelandiae*, chickweed, *Coprosma rhamnoides*, necklace fern, *Blechnum penna-marina*, *Leptinella perpusilla*, *Wahlenbergia gracilis* and *Australina pusilla*.

Birds Observed:

Birds observed in the Area were bellbird, kereru and magpie.

Notable flora, fauna or habitats:

The size and number of the tall kanuka and old kowhai trees are notable features. The presence of a rare species (*Australina pusilla*) in two small patches in the forest is also notable. The kanuka stand represents a forest type that would have originally been present on recent river terraces and flats in the area.

General condition of Area:

The Area is in moderate condition. The kanuka-kowhai canopy is relatively intact and probably at the height and density typical of such stands. However, the forest understorey and ground cover are largely depleted, with only rare occurrences of the indigenous species that would originally have been present in such stands.

Notable plant and animal pests:

Sycamore, crack willow, elderberry, hawthorn, broom and gorse are present at the northern edge of the forest. Old man's beard and Chilean flame creeper are also present in the vicinity. Of these species, old man's beard and sycamore pose the greatest threat to the forest.

Boundaries: (buffering, fencing, adjoining plant communities/habitat etc.):

The kanuka stand is quite small (just over 1 hectare) but has a relatively good shape. It is buffered by a fenced boundary along the river and could easily be fenced along other boundaries. The adjoining river bed is substantially modified by the presence of broom and gorse. Pasture is present on other boundaries.

Present management and management issues:

Important management issues are the prevention of infestations of aggressive weeds such as old man's beard and the merits (or otherwise) of fencing the Area from stock.

Property Owner Comment:

Would consider a stock-proof fence around the Area, but would also need to undertake weed control. A strong plant of *Clematis foetida* is present on the margin.

ASSESSMENT (against District Plan criteria):		
Primary Criteria	Rank	Notes
Representativeness	M/H	A good example of vegetation typical of such sites, and a relatively good example of the vegetation originally present.
Rarity	M	Supports two small populations of a rare herb, <i>Australina pusilla</i> .
Diversity and pattern	L/M	Plant and habitat diversity is substantially less than originally present, due to the modification of the understorey and ground cover.
Distinctiveness/special features	M	Contains an impressive stand of kanuka, a number of large kowhai trees and provides locally-important fauna habitat.
Other Criteria		
Size/shape	M	The Area is small but has a reasonably good shape and could be easily buffered.
Connectivity	M	The Area is part of a network of fauna habitat.
Long-term Sustainability	L/M	The tall kanuka and kowhai will eventually die and the Area, unless intensively managed, will become dominated by pasture.
SNA (yes/no):	YES	
Final Consideration (of other matters, Section D, page B-19):		
The Area is located on a fertile terrace with development potential. The continued existence of the forest remnant indicates a commitment by the landowner to at least informal protection of the Area.		

Discussion:
This Area meets the District Plan criteria for a Significant Natural Area, because it is typical (and partly representative) of indigenous vegetation at such sites in the ecological district, it supports a rare plant species and it provides locally-important bird habitat.

TIMARU DISTRICT SNA SURVEY

AREA 608b

Area Number: 608b	Area Name: Water Race Intake	Date: 24 June 2005
Property: Waihi Station	Surveyors: Mike Harding	
Weather Conditions: fine and cool		Time Spent at Area: ½ hour

Location (central grid reference): J37: 635-875	Nearest Locality: Woodbury	
Ecological District: Orari/Geraldine	Approximate size of Area: <1 ha	Altitude: 300 m
General description of Area: A small river flat of the Waihi River just downstream from the Waihi Water Race intake.		

General description of plant communities and habitats: A small remnant of riparian podocarp-hardwood forest surrounded by pasture.

Detailed vegetation description: The forest canopy is dominated by kowhai, totara, matai and kaikomako. Trunk diameters of the totara trees are 72 cm and 89 cm, matai 22 cm and 53 cm, and kowhai between 38 cm and 50 cm (c. 10 trees). The forest understorey is dominated by <i>Melicope simplex</i> trees. Other species present are narrow-leaved lacebark, mapou, <i>Coprosma rotundifolia</i> , <i>C. rigida</i> , <i>C. crassifolia</i> , <i>C. propinqua</i> , tree fuchsia, mistletoe and pohuehue. The ground cover is dominated by pasture grasses.

Birds observed: Birds observed in the Area were bellbird, silvereeye, kereru and magpie.

Notable flora, fauna or habitats: The size and number of <i>Melicope simplex</i> trees, the diversity of species present and the presence of kaikomako are notable features.

General condition of Area: The Area is in moderate condition. The canopy is relatively intact and probably typical of riparian forest. However, the forest remnant is very small and its ground cover largely depleted.

Notable plant and animal pests: No significant plant pests were observed, though sycamore, ash, old man's beard and Chilean flame creeper are present in the vicinity and pose a threat to the forest.

Boundaries: (buffering, fencing, adjoining plant communities/habitat etc.): The forest remnant is very small (probably only c. 1000m ²) but has a relatively good shape. It is partly buffered by its position on an inside bend of the river. It could easily be fenced. Pasture is present on other boundaries.

Present management and management issues: Important management issues are the prevention of infestations of aggressive weeds such as old man's beard and fencing the Area from stock.

Property Owner Comment: Fencing of the Area could be considered with help.

ASSESSMENT (against District Plan criteria):		
Primary Criteria	Rank	Notes
Representativeness	M	An example of vegetation typical of such sites.
Rarity	L/M	Provides habitat for kereru.
Diversity and pattern	M	Plant and habitat diversity is less than originally present.
Distinctiveness/special features	M	The presence of kaikomako, podocarps and the dominance of <i>Melicope simplex</i> .
Other Criteria		
Size/shape	M	The Area is very small and not well buffered, but could easily be fenced.
Connectivity	M	The Area is part of a network of fauna habitat.
Long-term Sustainability	L/M	Active management would be required to maintain ecological values.
SNA (yes/no):	YES	

Final Consideration (of other matters, Section D, page B-19): The Area is located on a fertile river flat with some development potential. The continued existence of the forest remnant indicates a commitment by the landowner to at least informal protection of the Area.

Discussion:

This Area only just meets the District Plan criteria for a Significant Natural Area. The forest remnant is typical (and partly representative) of indigenous vegetation at such sites in the ecological district, is relatively diverse and provides bird habitat. However, it is very small and has a modified understorey and ground cover.

TIMARU DISTRICT SNA SURVEY

AREA 608c

Area Number: 608c	Area Name: Hay Barn	Date: 24 June 2005
Property: Waihi Station	Surveyors: Mike Harding	
Weather Conditions: fine and cool		Time Spent at Area: ½ hour

Location (central grid reference): J37: 630-874	Nearest Locality: Woodbury	
Ecological District: Orari/Geraldine	Approximate size of Area: <1 ha	Altitude: 300 m

General description of Area:

A terrace scarp near the Waihi River between the hay barn and the Guide Camp buildings, at the junction of Woodbury Road and the road to Waimarie Station.

General description of plant communities and habitats:

A small open remnant of podocarp-hardwood forest, including planted species, surrounded by pasture.

Detailed vegetation description:

The forest canopy is open and dominated by narrow-leaved lacebark and totara. Other canopy species are lancewood, mahoe, broadleaf, matai, pokaka (trunk diameter 47 cm), kanuka, pohuehue and native jasmine. One large deciduous exotic tree (presumably an ash) is present.

The forest understorey is open and dominated by *Melicope simplex* and small elderberry trees. Other species present are lemonwood, mapou, hawthorn, cherry plum, *Coprosma crassifolia*, *C. propinqua*, bush lawyer, tree fuchsia and mistletoe. Other indigenous species, which appear to have been planted at the site, are lowland ribbonwood, cabbage tree, *Coprosma robusta*, *Corokia buddleoides*, *Teucrium parvifolium* and *Hebe* spp. The ground cover is dominated by pasture grasses. Other species present are male fern, flowering currant, old man's beard, holly and cotoneaster.

Birds observed:

Birds observed in the Area were bellbird and rifleman.

Notable flora, fauna or habitats:

The abundance of narrow-leaved lacebark, the diversity of species and the presence of pokaka are notable features. The presence of *Teucrium parvifolium* (a threatened species) is also notable, though it appears that this species has been planted at the site.

General condition of Area:

The Area is in moderate condition. The canopy and understorey are sparse, though relatively diverse. The Area is securely fenced and appears to be grazed.

Notable plant and animal pests:

Old man's beard, flowering currant, holly, hawthorn, cherry plum, elderberry, cotoneaster and male fern are present. Of these species, old man's beard, cherry plum, elderberry and flowering currant pose the greatest threats. The main patch of old man's beard was removed (pulled out) during the survey, though additional control is necessary.

Boundaries: (buffering, fencing, adjoining plant communities/habitat etc.):

The forest remnant is small (probably only c. 2000m²) but has a relatively good shape and is securely fenced. Pasture is present on other boundaries.

Present management and management issues:

Important management issues are the control (removal) of infestations of the main weeds listed above, and prevention of further infestations of weeds such as old man's beard and Chilean flame creeper.

Property Owner Comment:

Working on weed control.

ASSESSMENT (against District Plan criteria):

Primary Criteria	Rank	Notes
Representativeness	M	An example of vegetation typical of such sites.
Rarity	M	Provides habitat for kereru. A threatened plant species (<i>Teucrium parvifolium</i>) is present, though appears to have been planted.
Diversity and pattern	M	Plant and habitat diversity is less than originally present.
Distinctiveness/special features	M	The presence of pokaka, podocarps and the dominance of narrow-leaved lacebark.
Other Criteria		
Size/shape	M	The Area is very small but is well buffered by a secure fence.
Connectivity	M	The Area is part of a network of fauna habitat.

Long-term Sustainability	L/M	The main plant species will persist, though active management will be required.
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SNA (yes/no):	YES	
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Final Consideration (of other matters, Section D, page B-19):

The Area is located on a fertile terrace with some development potential. Important management costs (boundary fencing) have already been incurred and, by implication, some of the development potential already sacrificed. It appears that there have been efforts to enhance the Area by planting native species (some of which are not indigenous to the area), including the threatened *Teucrium parvifolium*.

Discussion:

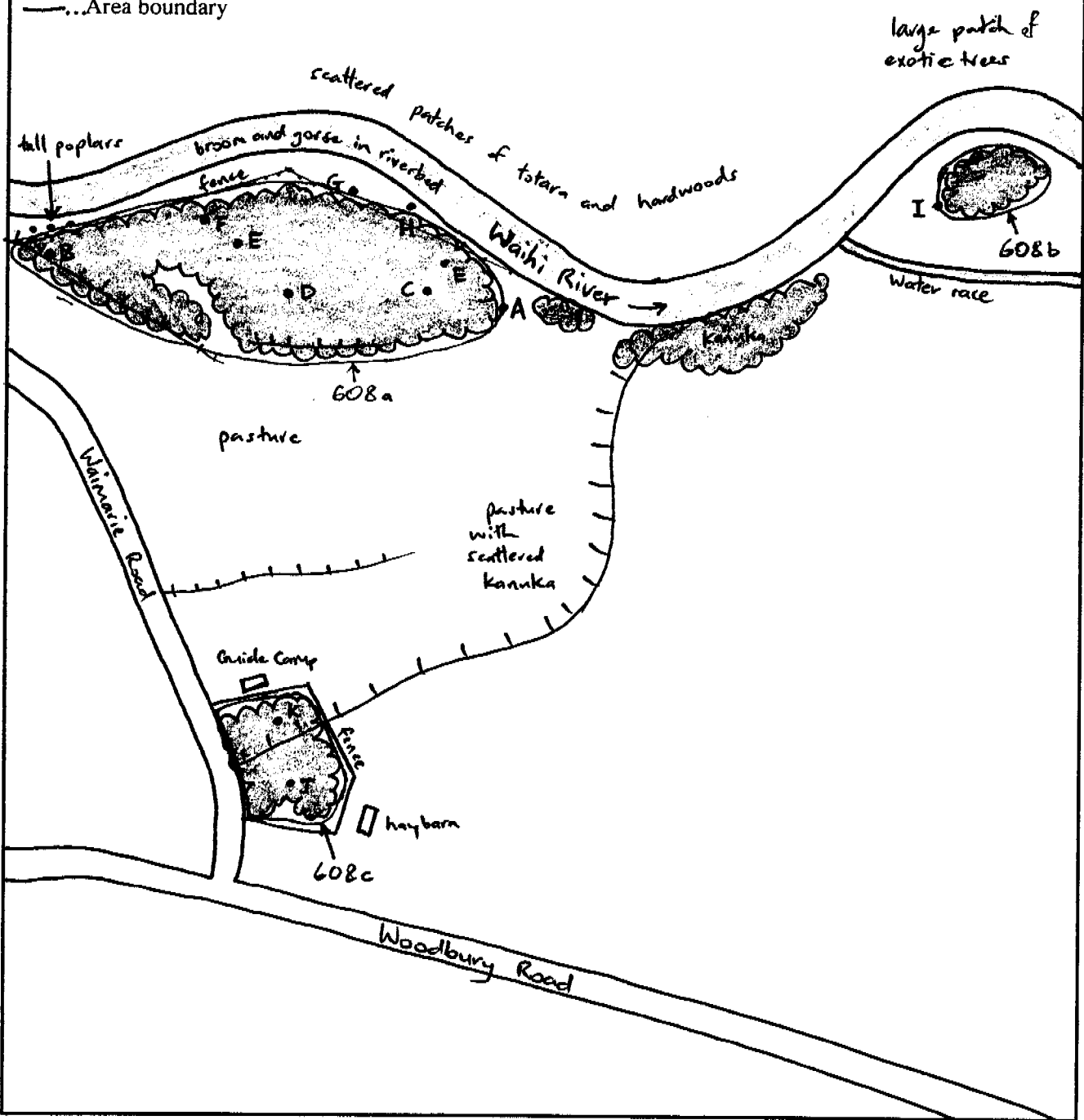
This Area just meets the District Plan criteria for a Significant Natural Area. It is typical (and partly representative) of indigenous vegetation at such sites in the ecological district, is relatively diverse and it provides bird habitat. However, it is small and has an open modified understorey.

MAP OF AREAS 608a, 608b and 608c

Location of corners and boundaries of Area:

No. on Map	Waypoint No.	Map Coordinates			Location
A	073	E: 2363263	N: 5687583	+/-: 6.5	east end of Area 608a
B	074	E: 2363032	N: 5687661	+/-: 4.0	west end of Area 608a
I	075	E: 2363548	N: 5687485	+/-: 3.9	west end of Area 608b

- C..... grove of tall old kowhai
- D large lowland ribbonwood tree and kowhai trees
- E..... small patch of *Australina pusilla*
- F..... small patch of *Leptinella perpusilla*
- G walnut tree
- H totara tree
- J..... exotic (ash?) tree
- K small patch of old man's beard
- ...Area boundary



TIMARU DISTRICT SNA SURVEY

AREA 609a and 609b

Area Number: 609	Area Name: Lancewoods	Date: 13 May 2005
Property: Waihi Station	Surveyors: Mike Harding	
Weather Conditions: fine and cold		Time Spent at Area: 3 hours

Location (central grid reference): J37: 626-873	Nearest Locality: Woodbury	
Ecological District: Orari/Geraldine	Approximate size of Area: 5 ha	Altitude: 300 m

General description of Area:

A high alluvial terrace of the Waihi River, at the point at which the river emerges from the foothills. Area 609a is at the toe of a high terrace riser, and includes a small stream and seepages which flow at the base of that terrace riser. The Area lies on the boundary of the Orari and Geraldine ecological districts.

General description of plant communities and habitats:

Two patches of hardwood forest with emergent podocarps (totara, kahikatea and matai) separated by areas of pasture and adjoining an exotic plantation on the terrace scarp.

Detailed vegetation description:

The canopy of the patch of forest at the west end of the Area (Area 609a) is dominated by narrow-leaved lacebark. Other canopy species are broadleaf, kahikatea, totara, lemonwood, matai, pokaka, cabbage tree, lancewood, kowhai and pohuehue. Species present on the forest margin are matipo, tree fuchsia, mapou, narrow-leaved mahoe, bush lawyer, marbleleaf, mountain ribbonwood, manuka, *Coprosma propinqua*, *C. rigida*, *C. parviflora*, *C. rotundifolia*, mistletoe, native jasmine and Chilean flame creeper. Understorey species are horopito, pokaka, *Raukawa anomalus*, *Lophomyrtus obcordata*, *Melicope simplex*, *Neomyrtus pedunculata*, *Streblus heterophyllus*, mahoe, weeping mapou, pate, shrubby mahoe, *Coprosma crassifolia*, *C. rotundifolia*, *C. rhamnoides* and *C. rigida*. Ground cover species are prickly shield fern, necklace fern, *Blechnum penna-marina*, *B. fluviatile*, *Hydrocotyle* sp. and bidibid. Open patches within the forest support bracken and blackberry. The forest supports a number of large pokaka trees (trunk diameters up to 70 cm) and a large lemonwood tree (69 cm). The forest is fenced from stock and has a relatively dense understorey. A small stream flows through part of this forest patch, fed by seepages from the base of the adjoining terrace riser. Kahikatea and *Streblus heterophyllus* are particularly common beside this stream.

The eastern patch of forest (Area 609b) is dominated by narrow-leaved lacebark, totara, lancewood and mapou. Other canopy species are broadleaf, cabbage tree, matipo, matai, lemonwood, kanuka, marbleleaf, five finger, kowhai, kaikomako and pohuehue. Species in the understorey and/or on the forest margin are *Melicope simplex*, bush lawyer, yellowwood, tree fuchsia, shrubby mahoe, horopito, hawthorn, *Coprosma rigida*, *C. crassifolia*, *C. rotundifolia*, *C. propinqua*, mistletoe, prickly shield fern and *Calystegia tuguriorum*. One large deciduous exotic tree (ash?) is present near the forest edge, and one large old plum tree is present near the derelict cottage at the east end of this patch of forest. This forest patch is fenced with a two-wire fence and has a more open understorey than Area 609a.

Birds observed:

Birds observed in the Area were bellbird, kereru, silvereye, fantail, rifleman, grey warbler, song thrush and blackbird.

Notable flora, fauna or habitats:

The abundance and size of pokaka in Area 609a, the abundance of podocarps (especially kahikatea) and the presence of a large number of species that are relatively uncommon in the district (kaikomako, pokaka, *Lophomyrtus obcordata*, *Neomyrtus pedunculata*, *Raukawa anomalus*, shrubby mahoe and *Streblus heterophyllus*) are notable features of the Area.

General condition of Area:

Area 609a is in good condition with a relatively dense understorey, presumably due to the absence of stock and perhaps to the presence of the small stream and associated seepages. This patch is securely fenced and is of sufficient size for the central part of the forest to be well buffered. Area 609b is in moderate condition. The two-wire fence does not exclude all stock, and the understorey of the forest is more open and less diverse. The main canopy trees in both patches are in good condition, though are affected by the smothering native pohuehue.

Notable plant and animal pests:

One large deciduous tree (ash?), a large plum tree and several hawthorn trees are present in Area 609b. One hawthorn tree and one patch of Chilean flame creeper were observed in Area 609a.

Boundaries: (buffering, fencing, adjoining plant communities/habitat etc.):

Both forest patches are relatively small, though have a good shape. They are separated by approximately 50 m of open pasture. Both patches adjoin plantations of exotic trees: the eastern patch adjoins a stand of tall pine and Douglas fir trees, and the western patch adjoins tall exotic trees with a range of indigenous understorey species on a steep terrace

riser. Both patches are fenced, though the fence around the eastern patch does not exclude sheep. The forest patches are less than half a kilometre from other areas of indigenous vegetation (Area 608 and Area 610) and only a short distance further from Waihi Gorge Scenic Reserve.

Present management and management issues:

The main management issues are weed control, especially Chilean flame creeper, hawthorn and ash (?), and maintenance of boundary fences to exclude stock.

Property Owner Comment:

Will continue with weed and pest control. Could consider stock-proof fencing Area 609b.

ASSESSMENT (against District Plan criteria):

Primary Criteria	Rank	Notes
Representativeness	M/H	The Area contains a very good example of the indigenous vegetation that is typical of the ecological district, and largely representative of the vegetation originally present at the site
Rarity	M/H	The Area supports good populations of several plant species that are now uncommon in the district.
Diversity and pattern	M/H	Species diversity in the Area is probably similar to that originally present.
Distinctiveness/special features	M/H	The Area supports ecologically intact plant communities representative of free-draining and damp sites and containing a diverse range of species.
Other Criteria		
Size/shape	M	The Area is small, though the forest patches have a good shape and are buffered by fences.
Connectivity	M	The Area is isolated from other areas of indigenous vegetation but is an important part of a network of forest bird habitat in the area.
Long-term Sustainability	M	The Area is modified but its ecological values are likely to persist with minimal management.
SNA (yes/no):	YES	

Final Consideration (of other matters, Section D, page B-19):

The two forest patches in the Area have been protected through the voluntary efforts of the landowner. This commendable act has helped ensure that the forest (especially Area 609a) continues to support a very diverse number of plant species, including several understorey species that are relatively uncommon in the district.

Discussion:

This Area easily meets the District Plan criteria for a Significant Natural Area. The presence and abundance of podocarps, the diversity of the indigenous plant species present, the presence of good populations of a number of uncommon species and the contribution the Area makes to the network of forest habitat in the area are its most valuable features.

MAP OF AREA 609

Location of corners and boundaries of Area:

No. on Map	Waypoint No.	Map Coordinates			Location
A	033	E: 2362623	N: 5687227	+/-: 4.4	
B	034	E: 2362627	N: 5687253	+/-: 5.0	
C	035	E: 2362573	N: 5687293	+/-: 5.9	
D	036	E: 2362524	N: 5687378	+/-: 5.3	
E	037	E: 2362457	N: 5687424	+/-: 8.2	
F	038	E: 2362433	N: 5687431	+/-: 4.9	
G	039	E: 2362375	N: 5687358	+/-: 5.5	
H	040	E: 2362549	N: 5687229	+/-: 9.0	
J	041	E: 2362669	N: 5687234	+/-: 5.8	
K	042	E: 2362672	N: 5687266	+/-: 5.8	
L	043	E: 2362772	N: 5687365	+/-: 4.0	
M	044	E: 2362820	N: 5687402	+/-: 5.8	
N	045	E: 2362851	N: 5687384	+/-: 5.7	
O	046	E: 2362891	N: 5687311	+/-: 5.7	
P	047	E: 2362865	N: 5687246	+/-: 7.5	

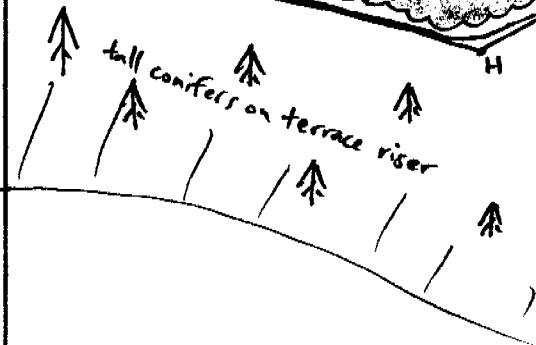
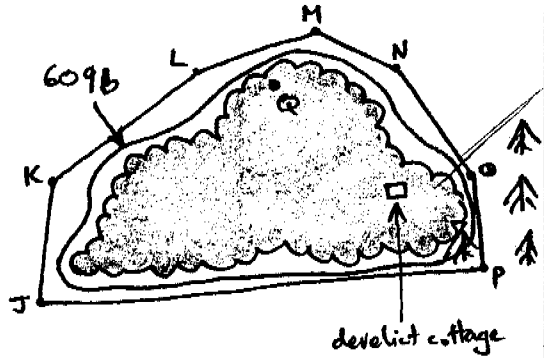
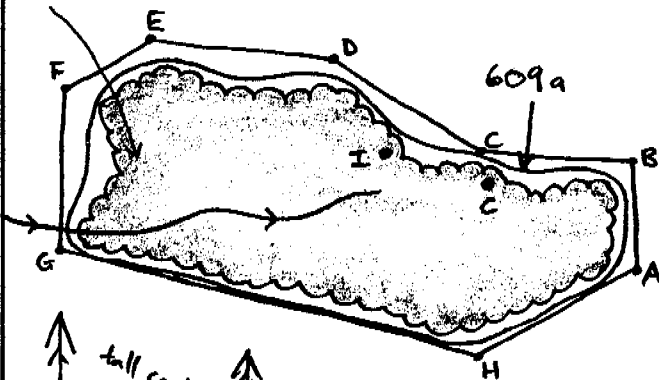
- C.....patch of Chilean flame creeper
- I.....large lemonwood tree
- Q.....large exotic tree (ash?)
- Area boundary



Waihi Gorge Road

pasture with scattered patches of matagouri,
Capreola propinqua and scattered silver-tusk

large patch
of pokaka



TIMARU DISTRICT SNA SURVEY

AREA 610a and Area 610b

Area Number: 610	Area Name: Gorge	Date: 13 May 2005
Property: Waihi Station	Surveyors: Mike Harding	
Weather Conditions: fine and mild		Time Spent at Area: 2 hours

Location (central grid reference): J37: 625-877	Nearest Locality: Woodbury	
Ecological District: Orari/Geraldine	Approximate size of Area: 3 ha	Altitude: 290 to 300 m
General description of Area:		
A narrow terrace and adjoining slopes beside the Waihi River, between the DOC Camp Ground and Waimarie Road. The Area is located on the boundary of the Orari and Geraldine ecological districts.		

General description of plant communities and habitats:
Tall kanuka forest with totara and kowhai trees and areas of scrub and shrubland, separated by areas of open pasture.

Detailed vegetation description:
The main patch of forest at the west end of the Area adjacent to the campground (Area 610a) is dominated by large kanuka trees (with trunk diameters between 17 and 31 cm), with emergent totara trees and large kowhai trees. Other canopy species are matai, lowland ribbonwood, narrow-leaved lacebark, lancewood, mapou, matipo, broadleaf, native jasmine and pohuehue. Important understorey species are tree fuchsia, bush lawyer, <i>Coprosma rigida</i> , <i>C. crassifolia</i> , <i>C. rotundifolia</i> , <i>C. rhamnoides</i> , mahoe and <i>Melicope simplex</i> . Ground cover under the kanuka is largely pasture grasses with prickly shield fern, necklace fern and <i>Asplenium hookerianum</i> . Additional species on the terrace riser are korokio, mountain akeake, lemonwood, five finger and cabbage tree. One hawthorn tree is present near the river and elderberry seedlings are present within the forest.
Shrubland and scrub adjoining the kanuka forest comprises matagouri, kanuka, weeping mapou, <i>Coprosma propinqua</i> , <i>C. rugosa</i> , native jasmine, <i>Calystegia tuguriorum</i> and pohuehue. One large ash tree is present in the shrubland.
The main patch of forest at the east end (Area 610b) is dominated by tall kanuka and kowhai trees. Other species present are totara, mapou, broadleaf, matipo, elderberry, <i>Coprosma crassifolia</i> , <i>C. rigida</i> , matagouri, prickly shield fern, native jasmine and pohuehue. The introduced violet, <i>Viola odorata</i> , is present within the forest. Species present in low forest on the steep riverbank adjacent to the forest are broadleaf, five finger, mountain akeake, korokio, mapou, mahoe, tree fuchsia, koromiko, totara, bush lawyer, bush lily, Himalayan honeysuckle, broom, necklace fern, <i>Pellaea rotundifolia</i> and <i>Blechnum vulcanicum</i> .

Birds observed:
Birds observed in the Area were bellbird and fantail. A falcon was observed flying over the terrace adjacent to the Area in June 2005. The section of the Waihi River adjacent to the Area was surveyed for blue duck during April 2005. No blue duck were seen, though birds were recorded in the upper reaches of the river.

Notable flora, fauna or habitats:
The stands of tall kanuka and the presence of totara are notable features of the Area.

General condition of Area:
The Area is in moderate condition. Nearly all parts of the Area are accessible to stock and have open browsed understories. The main kanuka canopy and emergent totara and kowhai are in good condition.

Notable plant and animal pests:
Important weeds present are one large ash tree, one hawthorn tree, broom and elderberry. The ash tree has been ring-barked though appears still alive.

Boundaries: (buffering, fencing, adjoining plant communities/habitat etc.):
The two patches of forest in the Area are relatively small. However, they are buffered on one side by the Waihi River and on the other by a low terrace riser. The Area is not fenced from stock. Area 610a adjoins (across the Waihi River) Waihi Gorge Scenic Reserve.

Present management and management issues:
The main management issues are the removal of woody weeds (ash, hawthorn, elderberry and broom) and protection of the forest understorey. It would be relatively easy to fence the area from stock.

Property Owner Comment:
Will continue with weed and pest control. Fencing is feasible, at a cost.

ASSESSMENT (against District Plan criteria):		
Primary Criteria	Rank	Notes
Representativeness	M/H	The tall kanuka forest is typical of the indigenous vegetation remaining at similar sites in the ecological district, and at least partly representative of the forest originally present on recent river terraces in the area.
Rarity	L/M	No rare species were observed in the Area (though kereru, falcon and black shag are present in the vicinity). The large kowhai trees provide a food resource for kereru.
Diversity and pattern	M	The plant communities are less diverse than those originally present in the area.
Distinctiveness/special features	M	The Area provides locally-important habitat for kereru.
Other Criteria		
Size/shape	M	The forest patches are small and are buffered on one side by the river, and could be fenced relatively easily.
Connectivity	M	The Area adjoins protected indigenous vegetation (Waihi Gorge Scenic Reserve) along part of its boundary and is part of a network of fauna habitat.
Long-term Sustainability	L/M	The Area is modified, but its ecological values could be maintain with conservation management.
SNA (yes/no):	YES	
Final Consideration (of other matters, Section D, page B-19):		
The Area is located on a fertile terrace with development potential. The continued existence of the forest remnant indicates a commitment by the landowner to at least informal protection of the Area.		

Discussion:
This Area meets the District Plan criteria for a Significant Natural Area. The tall kanuka forest is typical and partly representative, and it lies adjacent to Waihi Gorge Scenic Reserve. However, the small size of the forest patches and the absence of threatened or rare species limit its value.



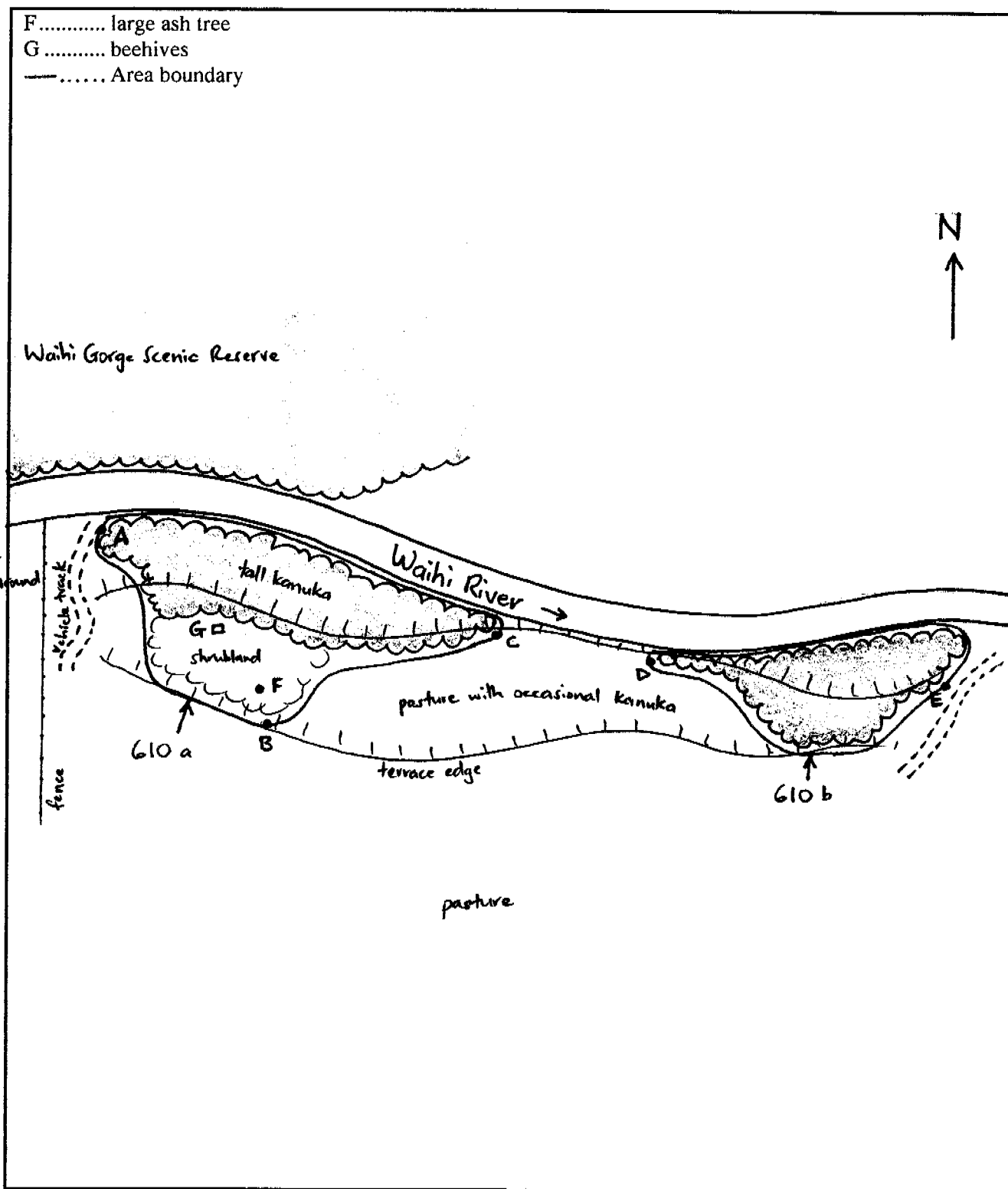
East end of Area 610a viewed from upper terrace near the point marked "B" on the map.

MAP OF AREA 610

Location of corners and boundaries of Area:

No. on Map	Waypoint No.	Map Coordinates			Location
A	048	E: 2362192	N: 5687814	+/-: 4.6	west end of western patch of forest
B	049	E: 2362343	N: 5687739	+/-: 4.1	terrace edge near ash tree
C	050	E: 2362539	N: 5687760	+/-: 4.1	east end of western patch of forest
D	051	E: 2362601	N: 5687733	+/-: 3.7	west end of eastern patch of forest
E	052	E: 2362754	N: 5687607	+/-: 3.5	east end of eastern patch of forest

F..... large ash tree
 G..... beehives
 —..... Area boundary



TIMARU DISTRICT SNA SURVEY

AREA 611b

Area Number: 611b	Area Name: Bottom Fergusons	Date: 9 June 2005
Property: Waihi Station	Surveyors: Mike Harding	
Weather Conditions: cold and clear	Time Spent at Area: 2½ hours	

Location (central grid reference): J37: 609-878	Nearest Locality: Woodbury	
Ecological District: Orari	Approximate size of Area: 2.5 ha	Altitude: 320 to 330 m
General description of Area: Flats and terraces, and intervening areas on steeper banks, between the upper Waihi River and Waihi Gorge Road.		

General description of plant communities and habitats:

Hardwood forest with emergent podocarps, including groves of tall podocarps on the river flats and terraces, patches of kowhai, and tall kanuka and manuka at the margins.

Detailed vegetation description:

The main patch of forest on the river flat at the east end of the Area is dominated by kahikatea, totara, lowland ribbonwood, kowhai and pohuehue. Also present in the canopy are lancewood, lemonwood, marbleleaf and matai. Important understorey and ground-cover species are bush lawyer, tree fuchsia, mahoe, wineberry, mapou, horopito, broadleaf, yellowwood, *Melicope simplex*, *Coprosma rotundifolia*, *Streblus heterophyllus*, prickly shield fern, hound's tongue fern, *Asplenium hookerianum*, *Blechnum penna-marina*, *Blechnum fluviatile*, bidibid and thousand-leaved fern. This main patch of forest has some quite large trees, with diameters (at breast height) of the larger kahikatea at 72 cm and 92 cm, totara 102 cm and 108 cm, lemonwood 52 cm, kowhai 35 cm, 47 cm and 60 cm and matai 72 cm and 80 cm. A smaller patch of tall forest at the west end of the site is dominated by a grove of kahikatea, with matai, totara and kowhai. Understorey species are *Coprosma rotundifolia*, *Melicope simplex*, marbleleaf, poroporo, necklace fern and *Asplenium hookerianum*.

Between these two patches is a strip of hardwood forest dominated by kowhai, lowland ribbonwood and pohuehue, on the slope between the road and river flat. Other species present are totara, kanuka, manuka, lancewood, matipo, mahoe, cabbage tree, lemonwood, five finger, mapou, *Coprosma rigida*, Himalayan honeysuckle, mistletoe, prickly shield fern and Chilean flame creeper.

On the grassy flat between the main channel and a flood channel of the river scattered shrubs and low trees are present, including kowhai, totara, kanuka, tree fuchsia, *Coprosma propinqua*, *Coprosma rugosa* and gorse.

A small patch of low forest occupies stony ground across the road from the main forest. It is dominated by kowhai, totara and pohuehue. Other species present are matagouri, *Coprosma crassifolia*, *C. rigida*, *Melicytus alpinus*, bush lawyer, *Calystegia tuguriorum* and Chilean flame creeper.

Birds observed:

Birds observed in the Area were bcllbird, fantail, rifleman, kereru and silvereye.

The section of the Waihi River adjacent to the Area was surveyed for blue duck during April 2005. No blue ducks were observed, though this section of the Waihi River may provide potential habitat for blue duck.

Notable flora, fauna or habitats:

The groves of tall podocarps (dominated by kahikatea) in this Area are notable. These stands occupy fertile river flats. The eastern grove supports dense patches of kahikatea saplings. Large lowland ribbonwood trees are also present. This lowland species is now uncommon in the district. One tree just outside the property boundary at the east end of the Area (marked "C" on the map) has a trunk diameter of 64 cm.

The forest within the Area contributes to the importance of this section of the Waihi River as potential blue duck habitat, by buffering the river and providing riparian cover.

General condition of Area:

The Area is in moderate condition. The Area is grazed and has a relatively open and depleted understorey. The long narrow shape of the Area means that most parts are poorly buffered from grazing or other edge effects such as smothering by the native pohuehue vine. The main forest canopy and the emergent podocarps are in relatively good condition.

Notable plant and animal pests:

Chilean flame creeper is present on the forest margin by the roadside. Scattered gorse plants are present on the river flat adjoining the Area. Possums are present.

Boundaries: (buffering, fencing, adjoining plant communities/habitat etc.):

The Area is relatively small and narrow. It is buffered on one side by the Waihi River (and extensive forest across the Waihi River) and partly buffered on the other side by Waihi Gorge Road. Pohuehue is having a significant impact on the forest canopy at the margins. The Area is not fenced and is accessible to stock. The Area is contiguous with similar

stands of forest across the river protected as Waihi Gorge Scenic Reserve.

Present management and management issues:

The main management issues affecting the area are control of problem plants (notably pohuehue and Chilean flame creeper) and protection of the forest understorey from stock. It would be relatively easy to fence the Area along or near to the road margin. The area is a popular destination for picnicking, swimming, walking and camping, especially in summer. Increased use would affect parts of the area and such use may need to be managed to ensure that the forest and river margins are protected.

Property Owner Comment:

Weed and pest control continues. Fencing of Area 611b and 611c together with access to picnic areas, at a cost.

ASSESSMENT (against District Plan criteria):

Primary Criteria	Rank	Notes
Representativeness	M/H	The forest is at least partly representative of the original vegetation and is good example of forest that is typical of the ecological district.
Rarity	M	The Area provides seasonal food resources for kereru and other forest birds, may provide habitat (riparian cover) for blue duck, and contains a rare species (<i>Streblus heterophyllus</i>).
Diversity and pattern	M	Species and habitats are less diverse than those originally present.
Distinctiveness/special features	M	The Area provides locally-important habitat for forest birds and probably contributes to regionally-important habitat for species such as black shag and kereru.
Other Criteria		
Size/shape	M	The Area is small, though is well buffered by the river on one side.
Connectivity	M/H	The Area adjoins (across the Waihi River) a formally protected area (Waihi Gorge Scenic Reserve) along >25% of its boundary.
Long-term Sustainability	M	The Area is modified, but its ecological values are likely to persist with some conservation management.
SNA (yes/no):	YES	

Final Consideration (of other matters, Section D, page B-19):

The Area has been protected informally by the landowner and by its location between the road and the river. Fencing of the forest boundary would be relatively easy, if a fence was erected along or near the road edge. The main threats to the area are probably wild animals (notably possums), domestic stock and weed spread (notably pohuehue and Chilean flame creeper).

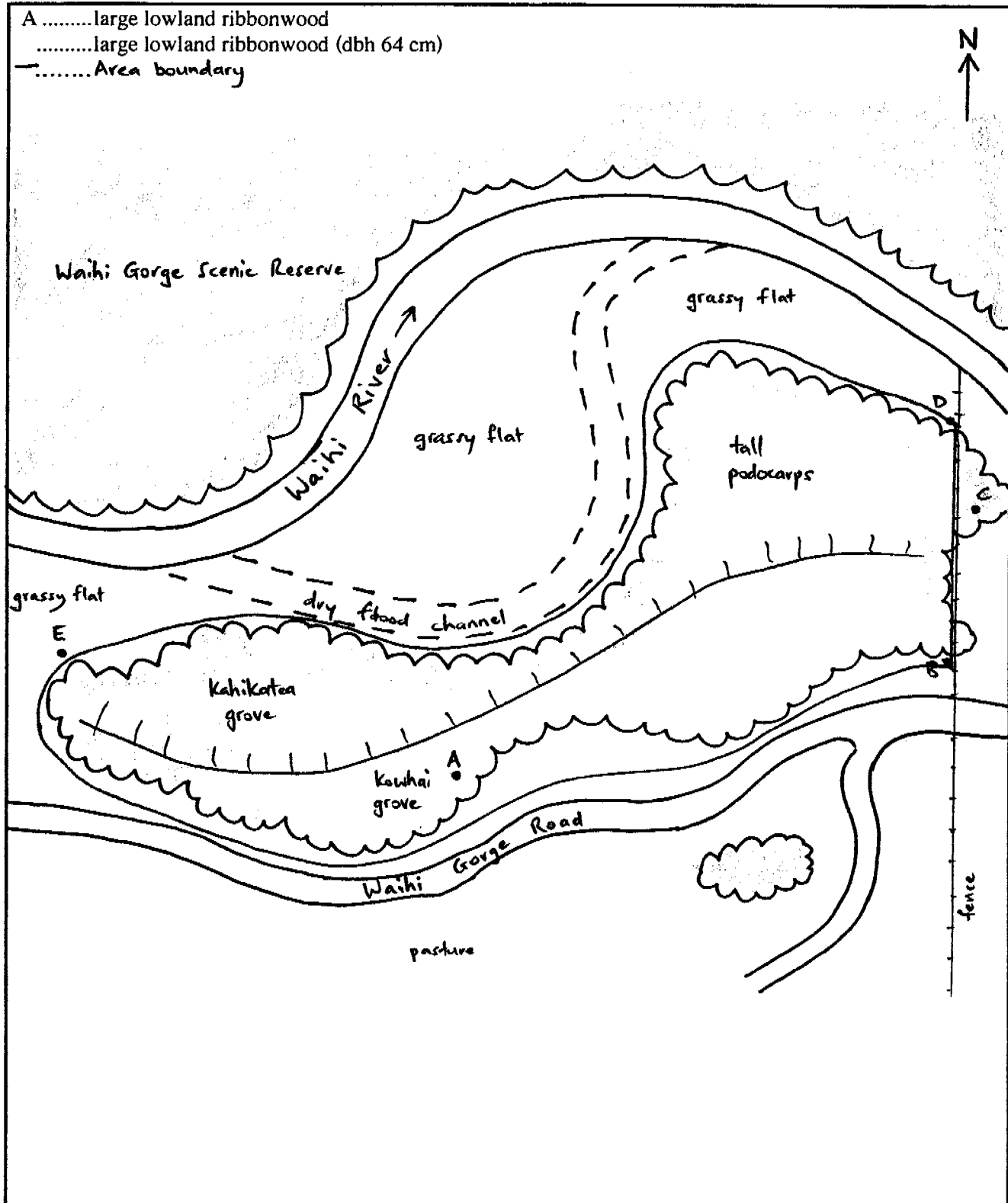
Discussion:

The Area easily meets the District Plan criteria for a Significant Natural Area. The main attributes of the Area are the presence and density of tall podocarps, its ecological functioning as part of a corridor of forest along the Waihi River and its proximity to other larger and regionally-significant areas of indigenous forest.

MAP OF AREA 611b

Location of corners and boundaries of Area:

No. on Map	Waypoint No.	Map Coordinates			Location
B	053	E: 2360989	N: 5687810	+/-: 4.3	southeast corner
D	054	E: 2361014	N: 5687900	+/-: 9.2	northeast corner
E	055	E: 2360728	N: 5687913	+/-: 5.0	west end



TIMARU DISTRICT SNA SURVEY

AREA 611c

Area Number: 611c	Area Name: Bottom Fergusons	Date: 9 June 2005
Property: Waihi Station	Surveyors: Mike Harding	
Weather Conditions: fine and cool	Time Spent at Area: 2 hours	

Location (central grid reference): J37: 604-882	Nearest Locality: Woodbury	
Ecological District: Orari	Approximate size of Area: 2 ha	Altitude: 330 to 340 m
General description of Area: Flats and terraces, and intervening areas on steeper banks, between the upper Waihi River and Waihi Gorge Road.		

General description of plant communities and habitats:

Hardwood forest with emergent podocarps, including groves of tall podocarps on the river flats and terraces, patches of kowhai, and tall kanuka and manuka at the margins.

Detailed vegetation description:

The patch of forest at the east end of the site is dominated by tall kanuka with emergent kahikatea. Other important canopy species are totara, kowhai, broadleaf, lancewood, tree fuchsia, marbleleaf, mahoe, yellowwood, lowland ribbonwood and pohuehue. Common understorey species are horopito, *Coprosma rotundifolia*, *Melicope simplex*, mapou and kahikatea. Ground-cover species are prickly shield fern, *Blechnum penna-marina*, *B. fluviatile*, *B. montanum*, hound's tongue fern, bidibid, *Asplenium appendiculatum*, *Asplenium hookerianum*, *Asplenium richardii*, *Hydrocotyle* sp. and moss. The trunk diameters of larger trees in this patch are totara 77 cm and 85 cm, kahikatea (80 cm and 95 cm), matai (60 cm) and kowhai (51 cm). Additional species on the steep riverbank at the upstream end of this patch of forest are koromiko, five finger, korokio, tutu, *Gaultheria antipoda*, *Coprosma rhamnoides*, *Blechnum vulcanicum* and *B. chambersii*.

The main patch of forest at the west end of the Area (upstream from the grassy flat) is dominated by kahikatea, totara, kowhai and broadleaf. Other important species are narrow-leaved lacebark, five finger, mapou, yellowwood, lancewood, wineberry, tree fuchsia, pohuehue and marbleleaf. One moderate-sized sycamore tree is present within the forest (marked "H" on the map) and two cherry plum trees are present on the forest margin ("F" and "G" on the map). Important understorey species are horopito, *Coprosma rhamnoides*, *C. rotundifolia*, *Melicope simplex* and weeping mapou. Ground cover species are *Blechnum penna-marina*, prickly shield fern, *Asplenium hookerianum* and *Hydrocotyle* sp.

Steeper river banks at the west end of the Area support totara, broadleaf, lemonwood, mapou, five finger, lancewood, kowhai, mahoe, narrow-leaved mahoe, cabbage tree, marbleleaf, tree fuchsia, bush lawyer, Himalayan honeysuckle, mountain akeake and manuka. Understorey and ground-cover species are *Coprosma crassifolia*, *C. rhamnoides*, *Helichrysum lanceolatum*, white climbing rata, hound's tongue fern, necklace fern, *Asplenium hookerianum*, *Asplenium appendiculatum* and *Pellaea rotundifolia*.

Common species on the margins of both forest patches are *Coprosma rigida*, *C. rotundifolia*, *C. crassifolia*, manuka, kanuka and native jasmine. Gorse and Chilean flame creeper are also present.

Birds observed:

Birds observed were bellbird, rifleman and blackbird.

The section of the Waihi River adjacent to the Area was surveyed for blue duck during April 2005. No blue ducks were observed, though this section of the Waihi River may provide potential habitat.

Notable flora, fauna or habitats:

The large podocarps in this Area are notable. These stands occupy fertile river flats and include abundant kahikatea saplings. Lowland ribbonwood trees and white climbing rata are also present; species that are uncommon in the district. The forest within the Area contributes to the importance of this section of the Waihi River as potential blue duck habitat, by buffering the river and providing riparian cover.

General condition of Area:

The Area is in moderate condition. Most parts of the Area are grazed and have a relatively open and depleted understorey. The long narrow shape of the Area means that most parts are poorly buffered from grazing or other edge effects such as smothering by the native pohuehue vine. The main forest canopy and the emergent podocarps are in relatively good condition.

Notable plant and animal pests:

Chilean flame creeper is present on the forest margin. Scattered gorse plants are present on the grassy spur within the Area. Possums are present.

Boundaries: (buffering, fencing, adjoining plant communities/habitat etc.):

The Area is relatively small and narrow. It is buffered on one side by the Waihi River (and extensive forest within

Waihi Gorge Scenic Reserve across the Waihi River) and partly buffered on the other side by Waihi Gorge Road. Pohuehue is having a significant impact on the forest canopy at the margins. The Area is not fenced and is accessible to stock.

Present management and management issues:

The main management issues affecting the area are control of problem plants (notably pohuehue and Chilean flame creeper) and protection of the forest understorey from stock. It would be relatively easy to fence the Area along or near the road margin. The area is a popular destination for picnicking, swimming, walking and camping, especially in summer. Increased use would affect parts of the area and such use may need to be managed to ensure that the forest and river margins are protected.

Property Owner Comment:

Weed and pest control continues. Fencing of Area 611b and 611c together with access to picnic areas, at a cost.

ASSESSMENT (against District Plan criteria):

Primary Criteria	Rank	Notes
Representativeness	M/H	The forest is at least partly representative of the original vegetation and is good example of forest that is typical of the ecological district.
Rarity	M	The Area provides seasonal food resources for kereru and other forest birds, may provide habitat (riparian cover) for blue duck, and supports a rare species (white climbing rata).
Diversity and pattern	M	Species and habitats are less diverse than those originally present.
Distinctiveness/special features	M	The Area provides locally-important habitat for forest birds and probably contributes to regionally-important habitat for species such as black shag and kereru.
Other Criteria		
Size/shape	M	The Area is small, though is well buffered along the river boundary.
Connectivity	M/H	The Area adjoins (across the Waihi River) a formally protected area (Waihi Gorge Scenic Reserve) along >25% of its boundary.
Long-term Sustainability	M	The Area is modified, but its ecological values are likely to persist with some conservation management.
SNA (yes/no):	YES	

Final Consideration (of other matters, Section D, page B-19):

The Area has been protected informally by the landowner and by its location between the road and the river. Fencing of the forest boundary would be relatively easy, if a fence was erected along or near the road edge. The main threats to the area are probably wild animals (notably possums), domestic stock and weed spread (notably sycamore, pohuehue and Chilean flame creeper).

Discussion:

The Area easily meets the District Plan criteria for a Significant Natural Area. The main attributes of the Area are the presence and density of tall podocarps, its ecological functioning as part of a corridor of forest along the Waihi River and its proximity to other larger and regionally-significant areas of indigenous forest.



Area 611c with Waihi Gorge Scenic Reserve (background) and Waihi Gorge Road (foreground)

MAP OF AREA 611c

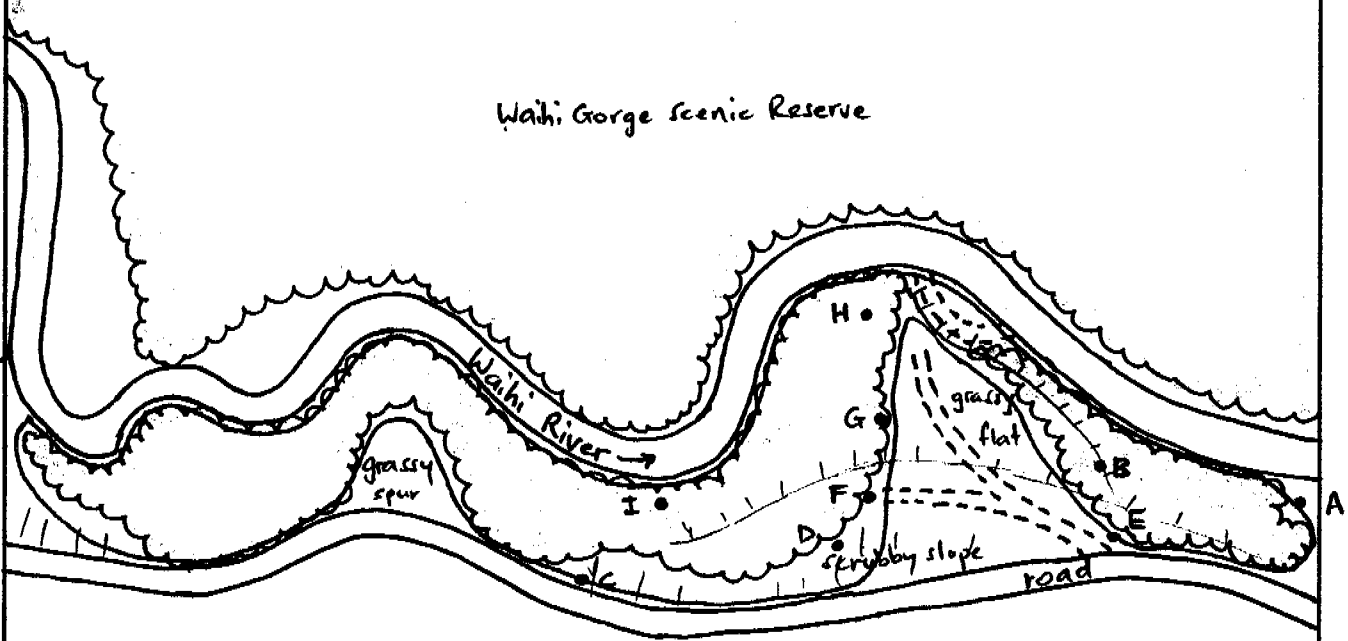
Location of corners and boundaries of Area:

No. on Map	Waypoint No.	Map Coordinates			Location
A	056	E: 2360680	N: 5687949	+/-: 5.2	east end
C	057	E: 2360400	N: 5688111	+/-: 3.8	south end (road boundary)
D	058	E: 2360467	N: 5688089	+/-: 5.3	west edge of grassy flat
E	059	E: 2360568	N: 5688031	+/-: 5.6	east edge of grassy flat

- B..... seepage with large podocarp trees
- F..... small plum tree
- G..... large plum tree
- H..... moderate-sized sycamore tree
- I..... white climbing rata
- Area boundary



Area 611d ←



Area 611c →

grassy slopes above road

TIMARU DISTRICT SNA SURVEY

AREA 611d

Area Number: 611d	Area Name: Pig Hunters Flat	Date: 9 June 2005
Property: Waihi Station	Surveyors: Mike Harding	
Weather Conditions: fine and cool		Time Spent at Area: 2 hours

Location (central grid reference): J37: 600-885	Nearest Locality: Woodbury	
Ecological District: Orari	Approximate size of Area: 1.5 ha	Altitude: 340 to 350 m
General description of Area: Steep bank of the upper Waihi River, adjacent to a large grassy terrace (Pig Hunters Flat).		

General description of plant communities and habitats:

Hardwood forest with totara on steep riverbanks, with patches of tall kanuka and some shrubland at the margins. The Area adjoins a small stand of mountain beech forest protected as part of Waihi Gorge Scenic Reserve.

Detailed vegetation description:

Forest on the riverbanks is dominated by totara, kowhai, broadleaf, mapou, lancewood and five finger. Other important species are bush lawyer, matipo, tree fuchsia, marbleleaf, mahoe, narrow-leaved mahoe, kanuka, matai, kahikatea, yellowwood and pohuehue. Common understorey or open-riverbank species are korokio, manuka, kanuka, horopito, bracken, Himalayan honeysuckle, mountain akcack, bush lily, *Coprosma rhamnoides*, *C. crassifolia*, *Helichrysum lanceolatum*, *Melicope simplex* and weeping mapou. Ground-cover species are prickly shield fern, leather-leaf fern, necklace fern, *Asplenium appendiculatum*, *Asplenium hookerianum*, *Asplenium richardii*, *Blechnum fluviatile* and *B. chambersii*.

Birds observed:

Birds observed in the Area were bellbird and fantail. A black shag was observed just upstream from the Area. The section of the Waihi River adjacent to the Area was surveyed for blue duck during April 2005. No blue ducks were observed, though this section of the Waihi River may provide potential habitat.

Notable flora, fauna or habitats:

The diversity and density of the hardwood forest and the presence of podocarps in this Area are notable. These stands occupy the steep banks alongside the river and are contiguous with a small patch of beech forest. The forest of the Area contributes to the importance of this section of the Waihi River as potential blue duck habitat, by buffering the river and providing riparian cover.

General condition of Area:

The Area is in moderate condition. Parts of the Area that are accessible to stock are grazed and have a relatively open and depleted understorey. The long narrow shape of the Area means that some parts are poorly buffered from grazing or other edge effects such as smothering by the native pohuehue vine. The main forest canopy and the emergent podocarps are in good condition.

Notable plant and animal pests:

No significant weeds were observed, though the area is affected by the native pohuehue and is vulnerable to invasion by Chilean flame creeper. Possums are present.

Boundaries: (buffering, fencing, adjoining plant communities/habitat etc.):

The Area is relatively small and narrow. It is buffered on one side by the Waihi River (and extensive forest within Waihi Gorge Scenic Reserve across the Waihi River) and by its location on steep riverbanks. The Area is not fenced and parts of it are accessible to stock.

Present management and management issues:

The main management issues affecting the area are protection of the forest understorey from stock. It would be relatively easy to fence the Area along or near the terrace edge.

Property Owner Comment:

Weed and pest control continues. Fencing of area together with access to picnic areas, at a cost.

ASSESSMENT (against District Plan criteria):		
Primary Criteria	Rank	Notes
Representativeness	M/H	The forest is at least partly representative of the original vegetation and is good example of forest that is typical of the ecological district.
Rarity	L/M	The Area provides seasonal food resources for kereru and other forest birds, and may provide habitat (riparian cover) for blue duck and black shag.
Diversity and pattern	M	Species and habitats are less diverse than those originally present.
Distinctiveness/special features	M	The Area provides locally-important habitat for forest birds and probably contributes to regionally-important habitat for species such as black shag and kereru.
Other Criteria		
Size/shape	M	The Area is small, though is well buffered on one side by the river.
Connectivity	M/H	The Area adjoins a formally protected area (Waihi Gorge Scenic Reserve) along more than 25% of its boundary.
Long-term Sustainability	M	The Area is modified, but its ecological values are likely to persist with some conservation management.
SNA (yes/no):	YES	
Final Consideration (of other matters, Section D, page B-19):		
<p>The Area has been protected informally by the landowner and by its location on the steep slopes between the terrace edge and the river. Fencing of the forest boundary would be relatively easy, if a fence was erected along or near the terrace edge. The main threats to the area are probably wild animals (notably possums), domestic stock and weed spread (notably pohuehue and Chilcan flame creeper).</p>		

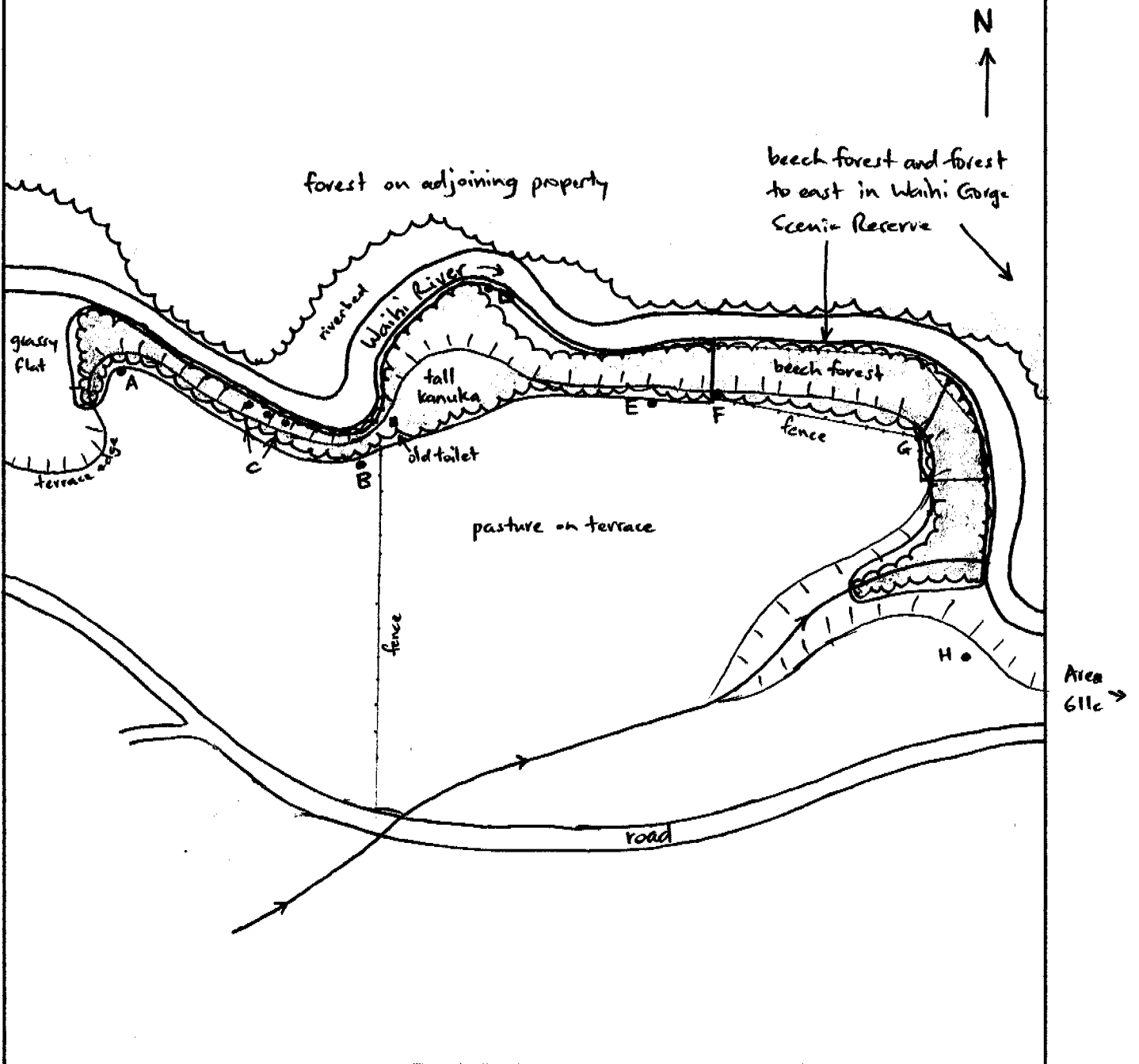
Discussion:
 The Area meets the District Plan criteria for a Significant Natural Area. The main attributes of the Area are the presence of podocarp trees, its ecological functioning as part of a corridor of forest along the Waihi River and its proximity to other larger and regionally-significant areas of indigenous forest.

MAP OF AREA 611d

Location of corners and boundaries of Area:

No. on Map	Waypoint No.	Map Coordinates			Location
A	060	E: 2359857	N: 5688625	+/-: 4.3	west end
B	061	E: 2359901	N: 5688515	+/-: 3.7	terrace edge at fence
D	062	E: 2359999	N: 5688545	+/-: 7.0	bend in river
F	063	E: 2360076	N: 5688388	+/-: 6.6	west extent of beech forest
G	064	E: 2360144	N: 5688327	+/-: 7.7	east extent of beech forest
H	065	E: 2360132	N: 5688242	+/-: 5.0	open area between Area 611c and d

C..... large podocarp trees
 E..... small patch of broom
 —..... Area boundary



TIMARU DISTRICT SNA SURVEY

AREA 712a

Area Number: 712a	Area Name: Long Pull Flats	Date: 14 June 2005
Property: Waihi Station	Surveyors: Mike Harding	
Weather Conditions: cool and clear		Time Spent at Area: 3 hours

Location (central grid reference): J37: 590-889	Nearest Locality: Woodbury	
Ecological District: Orari	Approximate size of Area: 6 ha	Altitude: 350 to 400 m

General description of Area:

Flats and terraces, and intervening areas on steeper banks, between the upper Waihi River and Waihi Gorge Road, between the large grassy terrace (Pig Hunters Flat) and Area 712b just below the confluence of Mackintosh Stream.

General description of plant communities and habitats:

Regenerating hardwood forest with emergent podocarps, including groves of tall podocarps on the river flats and terraces, and areas of low-canopied riparian forest and scrub.

Detailed vegetation description:

Forest on terraces and flats within the Area is dominated by kowhai, broadleaf, narrow-leaved lacebark, marbleleaf, lemonwood, lancewood and pohuehue, with emergent totara, kahikatea, lowland ribbonwood and occasional matai. Forest on riverbanks and slopes is similar, but lacks kahikatea and matai, and includes cabbage tree, kanuka and narrow-leaved mahoe.

Important subcanopy species are tree fuchsia, matipo, weeping mapou, mapou, bush lawyer, mahoe and wineberry. Common understorey species are horopito, *Melicope simplex*, *Coprosma rotundifolia*, *C. crassifolia* and *C. rigida*. Important ground-cover species are prickly shield fern, *Pellaea rotundifolia*, *Blechnum penna-marina*, *B. fluviatile*, hound's tongue fern, necklace fern, *Asplenium hookerianum*, *A. richardii*, *A. appendiculatum*, thousand-leaved fern, *Hypolepis ambigua*, *Hydrocotyle novae-zeelandiae*, *Schizeilema trifoliatum* and moss. The naturalised male fern is present at some locations.

Riverbanks and forest margins support bracken, mountain akeake, *Helichrysum lanceolatum*, *Melicactus alpinus*, *Coprosma propinqua*, *C. rugosa*, tutu, scrambling fuchsia, *Calystegia tuguriorum*, native jasmine and mistletoe (on *Coprosma* shrubs).

A small patch of forest above the road, beside the main vehicle ford, supports broadleaf, lancewood, totara, lemonwood, wineberry, tree fuchsia, mahoe, yellowwood, weeping mapou, kowhai, matipo, koromiko, bush lily, korokio, hound's tongue fern, bush lawyer and mountain akeake.

Mountain ribbonwood, Himalayan honeysuckle and broom are present at the up-valley end of the Area.

Birds observed:

Birds observed in the Area were bellbird, silvereye, tomtit, rifleman, kereru, black shag, magpie and blackbird.

The section of the Waihi River adjacent to the Area was surveyed for blue duck during April 2005. Blue duck sign (droppings) was observed just upstream at the confluence of Mackintosh Stream, though no birds were observed. This section of the Waihi River provides suitable habitat for blue duck.

Notable flora, fauna or habitats:

The grove of tall podocarps (kahikatea, matai and totara) at the southeast end of the Area is notable (marked "B" on the map). This dense stand occupies a fertile river terrace and supports thick patches of kahikatea saplings. Large lowland ribbonwood trees are also present.

The presence of large lowland ribbonwood trees on all river flats and terraces within the Area is also notable. This lowland species is now uncommon in the district. One tree at the southeast end of the Area (marked "A" on the map) has a trunk diameter of 78 cm.

The forest of the Area contributes to the importance of this section of the Waihi River as blue duck habitat, by buffering the river and providing riparian cover.

General condition of Area:

The Area is in moderate condition. Most accessible parts of the Area are grazed and have a relatively open and depleted understorey. The long narrow shape of the Area means that most parts are poorly buffered from grazing or other edge effects such as smothering by the native pohuehue vine. The main forest canopy and the emergent podocarps are in relatively good condition.

Notable plant and animal pests:

Patches of broom (partly controlled) are present at two locations (marked "E" and "F" on the map). One patch of Chilean flame creeper was observed on the main river flat ("C" on map), occasional plants of Himalayan honeysuckle are present at the up-valley end of the Area, and male fern is present in low numbers within the forest.

Possum sign was observed in the forest. The Area may also be affected by feral pigs.

Boundaries: (buffering, fencing, adjoining plant communities/habitat etc.):

The Area is long and narrow. It is buffered on one side by the Waihi River (and extensive forest across the Waihi River) and partly buffered on the other side by Waihi Gorge Road. Nearly all parts of the Area are accessible to stock. Pohuehue is having a significant impact on the forest canopy at the margins. The Area is not fenced. The Area is contiguous with similar stands of forest across the river protected as Waihi Gorge Scenic Reserve.

Present management and management issues:

The main management issues affecting the area are control of plant and animal pests (notably broom, pohuehue and possums) and protection of the forest understorey from stock. It would be relatively easy to fence the Area along or near the road margin. The area is a popular destination for picnicking, swimming, walking and camping, especially in summer. Increased use would affect parts of the area and such use may need to be managed to ensure that the forest and river margins are protected.

Property Owner Comment:

Weed and pest control continues. Fencing would be costly.

ASSESSMENT (against District Plan criteria):

Primary Criteria	Rank	Notes
Representativeness	M/H	The forest is at least partly representative of the original vegetation and is one of the better examples of forest that is now typical of the ecological district.
Rarity	M/H	The Area provides suitable habitat for blue duck (riparian forest cover) and seasonal food resources for kereru and other forest birds.
Diversity and pattern	M	Species and habitats are less diverse than those originally present.
Distinctiveness/special features	M	The Area provides locally-important habitat for forest birds, and contributes to regionally-important habitat for blue duck.
Other Criteria		
Size/shape	M	The Area is small-moderate sized and long and narrow, but well buffered along the river boundary.
Connectivity	M/H	The Area adjoins formally protected indigenous vegetation (Waihi Gorge Scenic Reserve) along >25% of its boundary.
Long-term Sustainability	M	The Area is modified, but its ecological values are likely to persist with some conservation management.
SNA (yes/no):	YES	

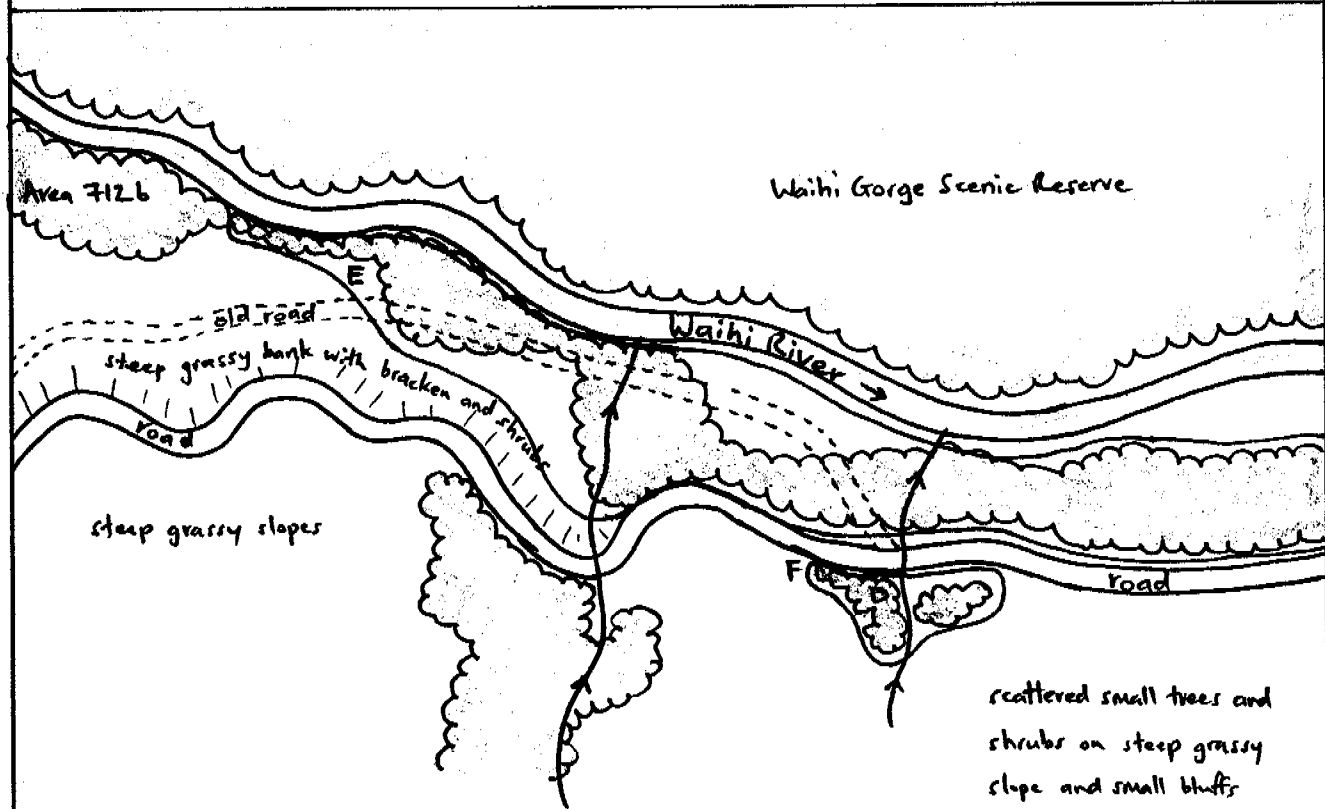
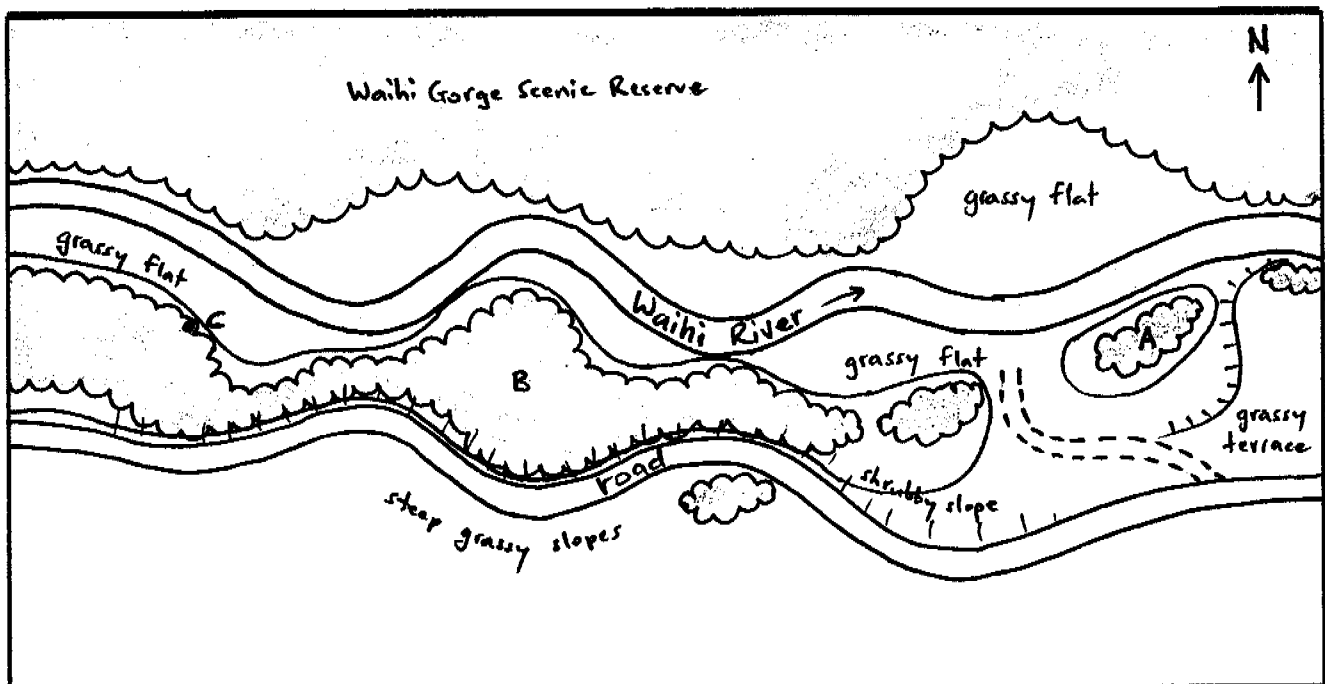
Final Consideration (of other matters, Section D, page B-19):

The Area has been protected informally by the landowner and by its location between the road and the river. Fencing of the forest boundary would be relatively easy, if a fence was erected along or near the road edge. The main threats to the area are probably wild animals (notably possums and pigs), domestic stock and weed spread (notably pohuehue, broom and Chilean flame creeper).

Discussion:

The Area easily meets the District Plan criteria for a Significant Natural Area. The main attributes of the Area are the presence and density of tall podocarps, its role in the provision of habitat for blue duck and its ecological functioning as part of a much larger and regionally-significant area of indigenous forest.

MAP OF AREA 712a



-Area boundary
- A..... large lowland ribbonwood (dbh 78 cm)
- B..... dense stand of tall podocarps
- C..... patch of Chilean flame creeper
- D..... small patch of forest above road
- E..... patch of introduced broom
- F..... small patch of broom

joins
below

Area
611d

joins
above

TIMARU DISTRICT SNA SURVEY

AREA 712b

Area Number: 712b	Area Name: Mackintosh Stream	Date: 14 June 2005
Property: Waihi Station	Surveyors: Mike Harding	
Weather Conditions: cool and sunny		Time Spent at Area: 1½ hours

Location (central grid reference): J37: 583-897	Nearest Locality: Woodbury	
Ecological District: Orari	Approximate size of Area: 4 ha*	Altitude: 400 to 500 m

General description of Area:

On steep slopes on the true right (eastern) side of the lower reaches of Mackintosh Stream in the upper Waihi Valley, and on the true right (southwest) side of the Waihi River just below the confluence of Mackintosh Stream.

* The area of forest on this property is small and narrow but is contiguous with a relatively large area (>100 ha) of intact and regenerating forest in the upper Waihi Valley which covers parts of three separate properties.

General description of plant communities and habitats:

Mackintosh Stream part of the Area: Regenerating podocarp-hardwood forest with some moderate-sized old totara trees, grading to rough pasture and scrub on steep slopes up to the road. An area of broadleaf-dominated low-forest extends above the road on rocky slopes.

Waihi River part of the Area: Dense tall podocarp-hardwood forest on a steep slope above the Waihi River.

Detailed vegetation description:

The forest canopy at the upstream (west) end of the Area is dominated by broadleaf, five finger and matipo. Other species present in the canopy and subcanopy are wineberry, narrow-leaved mahoe, koromiko, mountain akeake, yellowwood, mountain ribbonwood, weeping mapou, bush lawyer, Himalayan honeysuckle and tree fuchsia. Prickly shield fern is a prominent ground-cover. Additional canopy species present downstream are kowhai, totara, lancewood, marbleleaf and horopito. Other species present are mountain flax, *Gaultheria antipoda*, mountain kiokio, bracken, *Coprosma propinqua* and, on rock bluffs, hound's tongue fern and leather-leaf fern.

Matai and Canterbury pink broom are present on the other (true left) side of Mackintosh Stream.

The area of dense podocarp hardwood forest on the slopes above the Waihi River is dominated by kowhai, totara and broadleaf, with marbleleaf, kanuka, cabbage tree, mahoe, matipo, narrow-leaved mahoe and five finger also prominent in the canopy.

Birds observed:

Birds observed in the Area were bellbird, silveryeye and tomtit.

The section of the Waihi River adjacent to the Area was surveyed for blue duck during April 2005. Blue duck sign (droppings) was observed at the confluence of Mackintosh Stream, though no birds were observed. This section of the Waihi River provides suitable habitat for blue duck.

Notable flora, fauna or habitats:

The moderate-sized podocarp (totara) trees are a notable feature of the Area. A small but healthy stand of Canterbury tree broom (*Carmichaelia torulosa*) is present on the boundary of the Area, just across Mackintosh Stream.

The forest of the Area contributes to the importance of this section of the Waihi River as blue duck habitat, by buffering the river and providing riparian cover.

General condition of Area:

The area was viewed from the road and adjoining slopes, as steep terrain prevented easy access to parts close to Mackintosh Stream and the Waihi River. The Area appears in relatively good condition. Wire fences discourage stock access to the upper (west) end of the Area in Mackintosh Stream and steep terrain limits stock access at some other locations.

Notable plant and animal pests:

The only prominent naturalised plant species observed was Himalayan honeysuckle. Possums and feral pigs are likely to be present.

Boundaries: (buffering, fencing, adjoining plant communities/habitat etc.):

The boundary of the Area on the property (to the south and west) is generally defined by steepness of the slope, with the forest occupying the steeper lower slopes near Mackintosh Stream and the Waihi River. The Area comprises two patches of forest, separated by open pasture and shrubland on the gentler spur that rises between the confluence of the stream and river. The northern and eastern boundaries of the Area are Mackintosh Stream and the Waihi River (the property boundary). However, extensive areas of similar forest are present across this boundary on adjoining properties. The area is well buffered by its location on steep inaccessible slopes and by the large areas of forest on adjoining properties.

Present management and management issues:

The Area has been protected informally by its location on steep slopes. Fencing of the forest boundary would be difficult, unless a fence was erected upslope along the road edge. The main threats to the area are probably wild animals (notably possums and pigs) and weed spread (notably broom and Chilean flame creeper, both of which are present in the area). If protected from fire, the Area will probably increase in size through natural regeneration of forest on the adjoining slopes.

Property Owner Comment:

Weed and pest control continues. There has been no burning for vegetation control for over 30 years. A fence was erected at the southwest (upstream) edge of the Area to protect vegetation, including Canterbury pink broom, from grazing.

ASSESSMENT (against District Plan criteria):

Primary Criteria	Rank	Notes
Representativeness	M/H	A good example of indigenous forest typical of the ecological district.
Rarity	M/H	The Area provides suitable habitat for blue duck (riparian forest cover) and seasonal food resources for kereru and other forest birds.
Diversity and pattern	M	Species and habitat diversity is reduced from that originally present.
Distinctiveness/special features	M	The Area provides locally-important habitat for forest birds, and contributes to regionally-important habitat for blue duck.
Other Criteria		
Size/shape	M	The Area on the property is relatively small and narrow but is part of a much larger area of indigenous forest.
Connectivity	M	The Area adjoins unprotected indigenous forest along >25% of its boundary.
Long-term Sustainability	M/H	Ecological values are likely to persist with little active management.
SNA (yes/no):	YES	

Final Consideration (of other matters, Section D, page B-19):

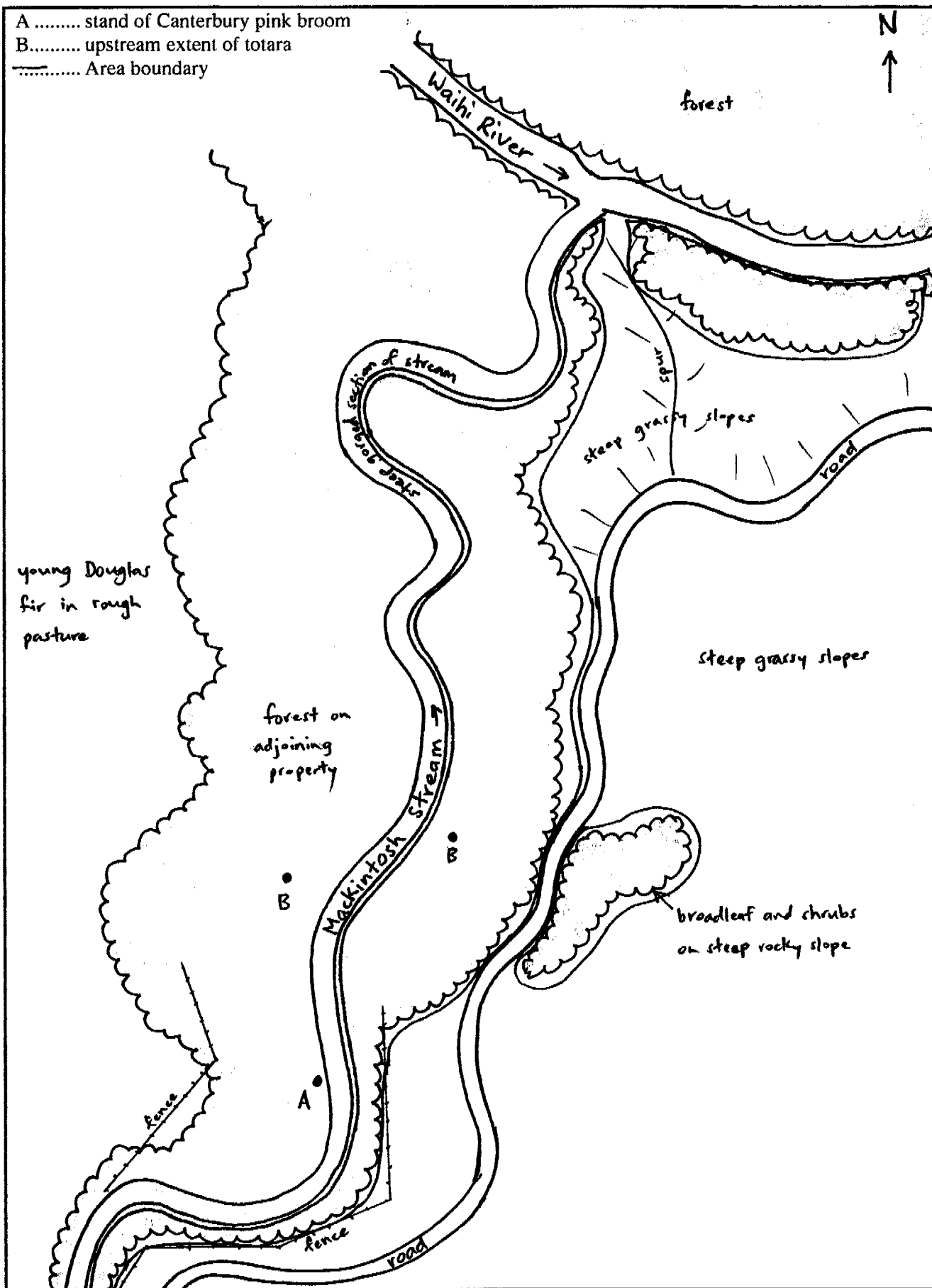
The Area appears to have been protected largely by its location on steep and relatively inaccessible slopes, and informally by an absence of recent farm development pressure (e.g. burning). The Area is an integral part of a much larger area of regenerating (or partly modified) podocarp-hardwood forest on adjoining properties, which together form a regionally-important area of indigenous forest.

Discussion:

The Area easily meets the District Plan criteria for a Significant Natural Area. The main attributes of the Area are the density and diversity of the forest, its role in the provision of habitat for blue duck and its ecological functioning as part of a much larger and regionally-significant area of indigenous forest.

MAP OF AREA 712b

- A stand of Canterbury pink broom
- B upstream extent of totara
- Area boundary



TIMARU DISTRICT SNA SURVEY

AREA 712c

Area Number: 712c	Area Name: Sunny Face Block	Date: 24 June 2005
Property: Waihi Station	Surveyors: Mike Harding	
Weather Conditions: partly cloudy and cool		Time Spent at Area: 2½ hours

Location (central grid reference): J37: 584-893	Nearest Locality: Woodbury	
Ecological District: Orari	Approximate size of Area: 9 ha	Altitude: 420 to 540 m

General description of Area:

South-facing slopes of a small tributary valley of the upper Waihi River, above (west of) the road.

General description of plant communities and habitats:

Hardwood forest with scattered totara on moderate to steep slopes above a small stream.

Detailed vegetation description:

The forest canopy on steep slopes at the east end of the Area is dominated by kowhai, broadleaf, wineberry and mahoe. Other canopy species are totara, five finger, narrow-leaved mahoe, tree fuchsia, mountain ribbonwood, marbleleaf, matipo and mapou. Further west, the forest is generally less diverse with some patches dominated by wineberry and tree fuchsia and others dominated by broadleaf and matipo.

Important understorey species are tree fuchsia, lancewood, weeping mapou, koromiko, mountain akeake, *Coprosma crassifolia*, *C. rhamnoides*, bush lawyer, horopito, mountain flax, *Calystegia tuguriorum* and pohuehue.

Ground cover species are bush lily, prickly shield fern, hound's tongue fern, hen and chickens fern, hanging spleenwort, *Asplenium richardii*, mountain kiokio and *B. procerum*.

The upper forest margin is dominated by prickly shield fern. Other species are cabbage tree, tauhinu, hard fern, *Coprosma rugosa*, *C. propinqua* and Himalayan honeysuckle.

Species present near the stream are lowland ribbonwood, narrow-leaved lacebark, yellowwood, pate, scrambling fuchsia, *Blechnum fluviatile* and a small patch of broom (marked "C" on map).

A small patch of regenerating hardwood forest is present on the south (north-facing) slopes in the lower valley near the road. This patch is dominated by broadleaf. Other species are kowhai, cabbage tree, matipo, lancewood, five finger, mapou, mountain akeake, *Coprosma propinqua*, matagouri, *Meliccytus alpinus*, bush lawyer and scrambling fuchsia. Additional species on dry bluffs are hound's tongue fern, *Pellaea rotundifolia*, koromiko, *Haloragis erecta* and *Gingidia montana*.

Birds observed:

Birds observed in the Area were bellbird, silvereye, rifleman, fantail, tomtit, magpie and blackbird.

Notable flora, fauna or habitats:

The presence of totara and lowland ribbonwood, the diversity of canopy species (especially in the eastern part) and the presence of relatively uncommon species (*Haloragis erecta* and *Gingidia montana*) are notable features.

General condition of Area:

The Area is in relatively good condition, especially in the eastern part where steeper rocky slopes restrict animal access. The understorey is relatively open in other parts of the Area, though the forest canopy is in good condition.

Notable plant and animal pests:

A small patch of broom is present at the edge of the Area (marked "C" on the map).

Boundaries: (buffering, fencing, adjoining plant communities/habitat etc.):

The Area is buffered by its location on steeper south-facing slopes, especially at the eastern end. The Area is mostly unfenced. The road and stream form the lower boundary of the Area.

Present management and management issues:

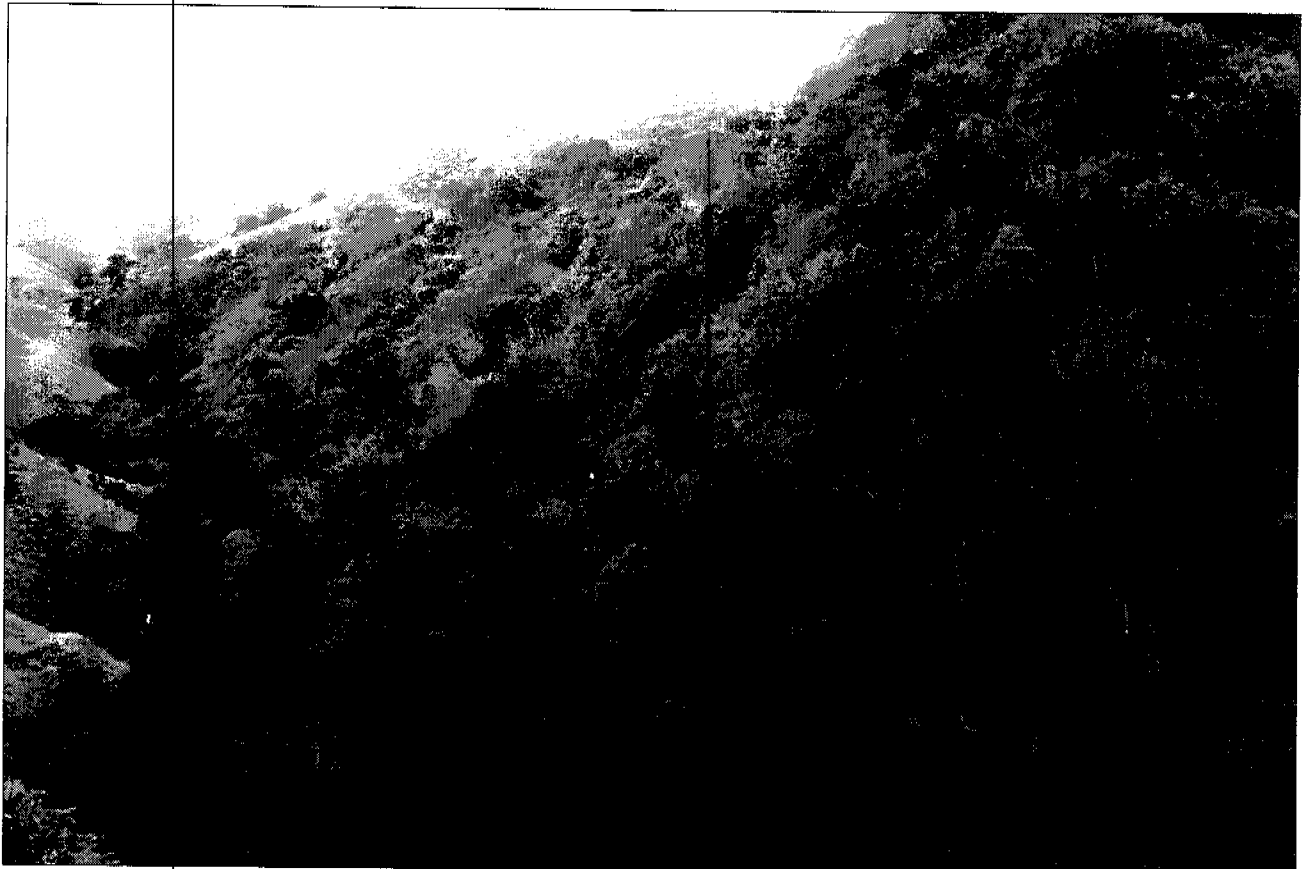
The main management issues are prevention of any infestations of aggressive weeds, such as old man's beard, and protection of the forest understorey from animals. Removal of the small patch of broom on the forest margin is also desirable.

Property Owner Comment:

Weed and pest control continues.

ASSESSMENT (against District Plan criteria):		
Primary Criteria	Rank	Notes
Representativeness	M/H	A good example of forest that is typical of the ecological district, and at least partly representative of the original vegetation.
Rarity	M	Rare species are present (<i>Gingidia montana</i> and <i>Haloragis erecta</i>).
Diversity and pattern	M	A relatively diverse forest, though diversity is probably less than originally present.
Distinctiveness/special features	M	The presence of totara and lowland ribbonwood, and the abundance of kowhai at the eastern end are special features. Probably provides useful habitat for kereru.
Other Criteria		
Size/shape	M/H	A moderate-sized area with a good shape for management.
Connectivity	M	Adjoins other forest at one end and is part of a network of forest bird habitat.
Long-term Sustainability	M	The ecological values are likely to persist with minimal active management.
SNA (yes/no):	YES	
Final Consideration (of other matters, Section D, page B-19):		
The Area has been protected informally by the landowner and by its location on the south-facing slopes. Fencing of the forest boundary would be relatively easy.		

Discussion:
This patch of forest is relatively large and is effectively part of a much larger area of indigenous forest in the upper Waihi Valley. It easily meets the District Plan criteria as an SNA. Its key values are the diversity of species, the presence of podocarps (totara) and low-altitude species (lowland ribbonwood and narrow-leaved mahoe), the presence of rare species and the size and location of the Area.



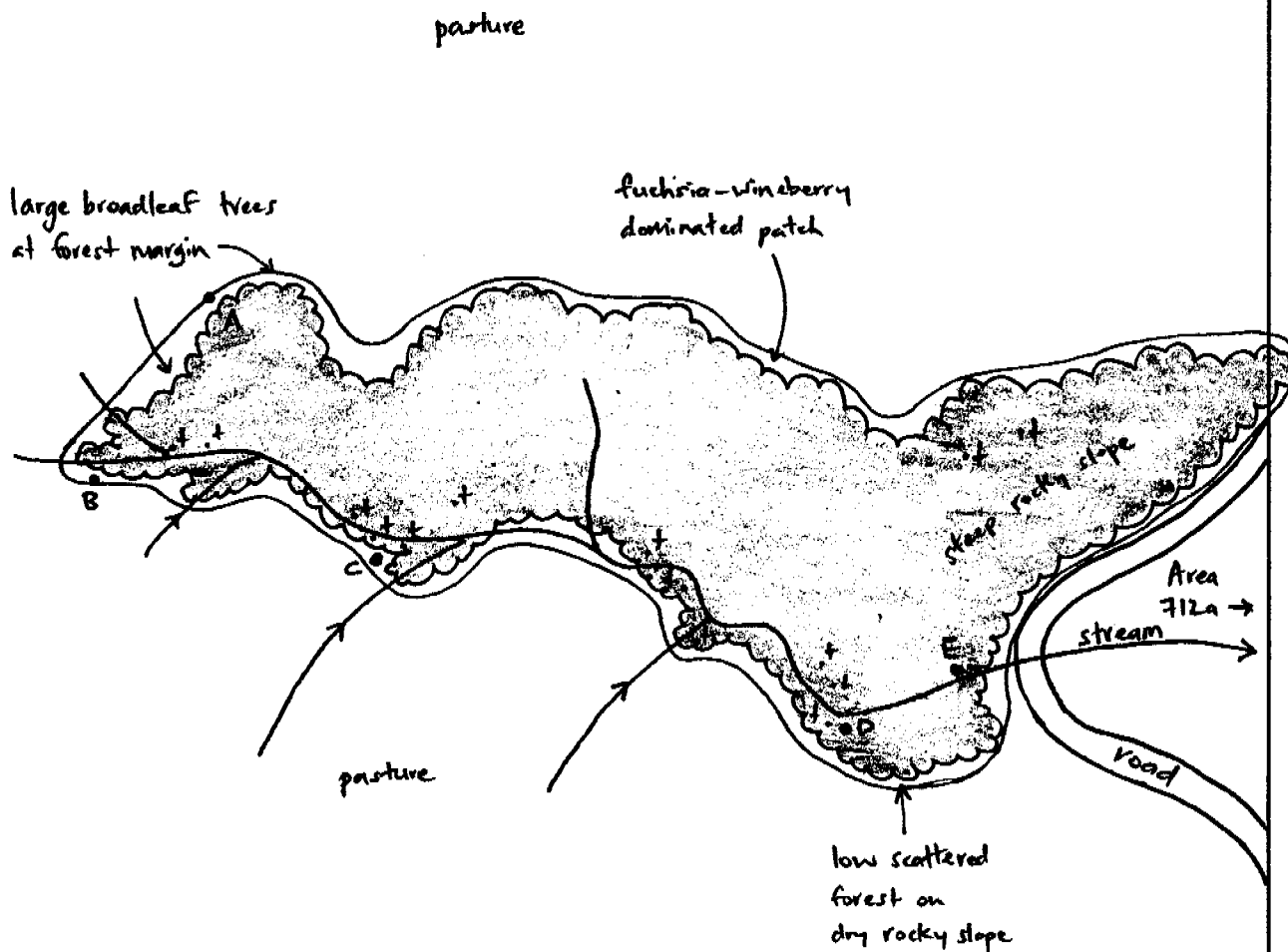
Area 712c, viewed from the open rocky slope at the southeast corner (near the road).

MAP OF AREA 712c

Location of corners and boundaries of Area:

No. on Map	Waypoint No.	Map Coordinates			Location
A	076	E: 2358079	N: 5689372	+/-: 4.8	southwest corner
B	077	E: 2359966	N: 5689316	+/-: 5.0	southeast corner

- C..... small patch of broom (*Cytisus scoparius*)
- D one large lowland ribbonwood
- E..... narrow-leaved lacebark
- +..... approximate location of totara trees
- Area boundary



TIMARU DISTRICT SNA SURVEY

AREA 713

Area Number: 713	Area Name: Bottom Corner	Date: 24 June 2005
Property: Waihi Station	Surveyors: Mike Harding	
Weather Conditions: fine and cool		Time Spent at Area: 1 hour

Location (central grid reference): J37: 606-876	Nearest Locality: Woodbury	
Ecological District: Orari	Approximate size of Area: 2 ha	Altitude: 330 to 380 m
General description of Area: A small south-facing slope in an un-named southern tributary of the Waihi River.		

General description of plant communities and habitats:
Hardwood forest with occasional podocarps and adjoining areas of *Olearia bullata*-dominated shrubland.

Detailed vegetation description:
The main forest canopy is dominated by broadleaf, marbleleaf, wineberry and five finger. Other canopy species are cabbage tree, mahoe, mapou, matipo, lancewood, native jasmine and pohuehue. One totara tree and one young kahikatea tree (trunk diameter 14 cm) are present (marked "A" and "F" on map). Kowhai, narrow-leaved lacebark, manuka, *Olearia bullata* and several large cabbage trees are present near the stream. One old cabbage tree at the eastern end has a trunk diameter of 95 cm.
Understorey species present are tree fuchsia, bush lawyer, horopito, *Coprosma rhamnoides* and Himalayan honeysuckle. One small patch of Chilean flame creeper was observed at the forest margin (marked "E" on the map). Ground cover species are prickly shield fern, thousand-leaved fern, bidibid, hen and chickens fern, *Asplenium richardii*, *Blechnum fluviatile*, *B. procerum* and *B. chambersii*.
A large dense patch of tall *Olearia bullata* is present in a poorly drained area near the stream at the eastern end of the Area. Other species present there are cabbage tree, manuka, *Coprosma propinqua*, *C. parviflora* (sp. t), gorse and rushes (*Juncus* sp.).

Birds observed:
Birds observed in the Area were bellbird, rifleman, fantail and blackbird.

Notable flora, fauna or habitats:
The large patch of *Olearia bullata* is a notable feature. The presence of large cabbage trees and single trees of totara and kahikatea are also notable.

General condition of Area:
The Area is in moderate condition. The forest understorey is open but the forest canopy and the adjoining areas of shrubland are in relatively good condition.

Notable plant and animal pests:
Chilean flame creeper is present at one location. Patches of gorse are present on the open slopes at the eastern end of the Area.

Boundaries: (buffering, fencing, adjoining plant communities/habitat etc.):
The Area is buffered by its location on damper south-facing slopes and by the small stream at the base of the slope. It is small but has a good shape and could be fenced relatively easily.

Present management and management issues:
The main management issues are weed control (gorse and Chilean flame creeper) and protection of the forest understorey and the shrubland from animals.

Property Owner Comment:
Weed and pest control continues. Fencing at the western end could join existing fences with some loss of grazing and increased weed control.

ASSESSMENT (against District Plan criteria):		
Primary Criteria	Rank	Notes
Representativeness	M/H	The forest is a fairly typical example of the forest remaining in the ecological district. The shrubland is a good example of the plant community originally present on poorly-drained valley-floor sites.
Rarity	M	Includes a large healthy population of a relatively uncommon shrub (<i>Olearia bullata</i>).
Diversity and pattern	M	The combination of forest and shrubland make the area relatively diverse, though species diversity is probably less than that originally present.
Distinctiveness/special features	M	The population of <i>Olearia bullata</i> , the presence of podocarps and the presence of large cabbage trees are distinctive features.
Other Criteria		
Size/shape	M	The Area is small but has a good shape and is relatively well buffered.
Connectivity	M	The Area is isolated from, but relatively close to, other areas of forest. It forms part of a network of fauna habitat in the area.
Long-term Sustainability	M	The Area is modified, but its ecological values are likely to persist with minimal management.
SNA (yes/no):	YES	
Final Consideration (of other matters, Section D, page B-19):		
The Area has been protected informally by the landowner and by its location on the south-facing slopes. Fencing of the forest boundary would be relatively easy.		

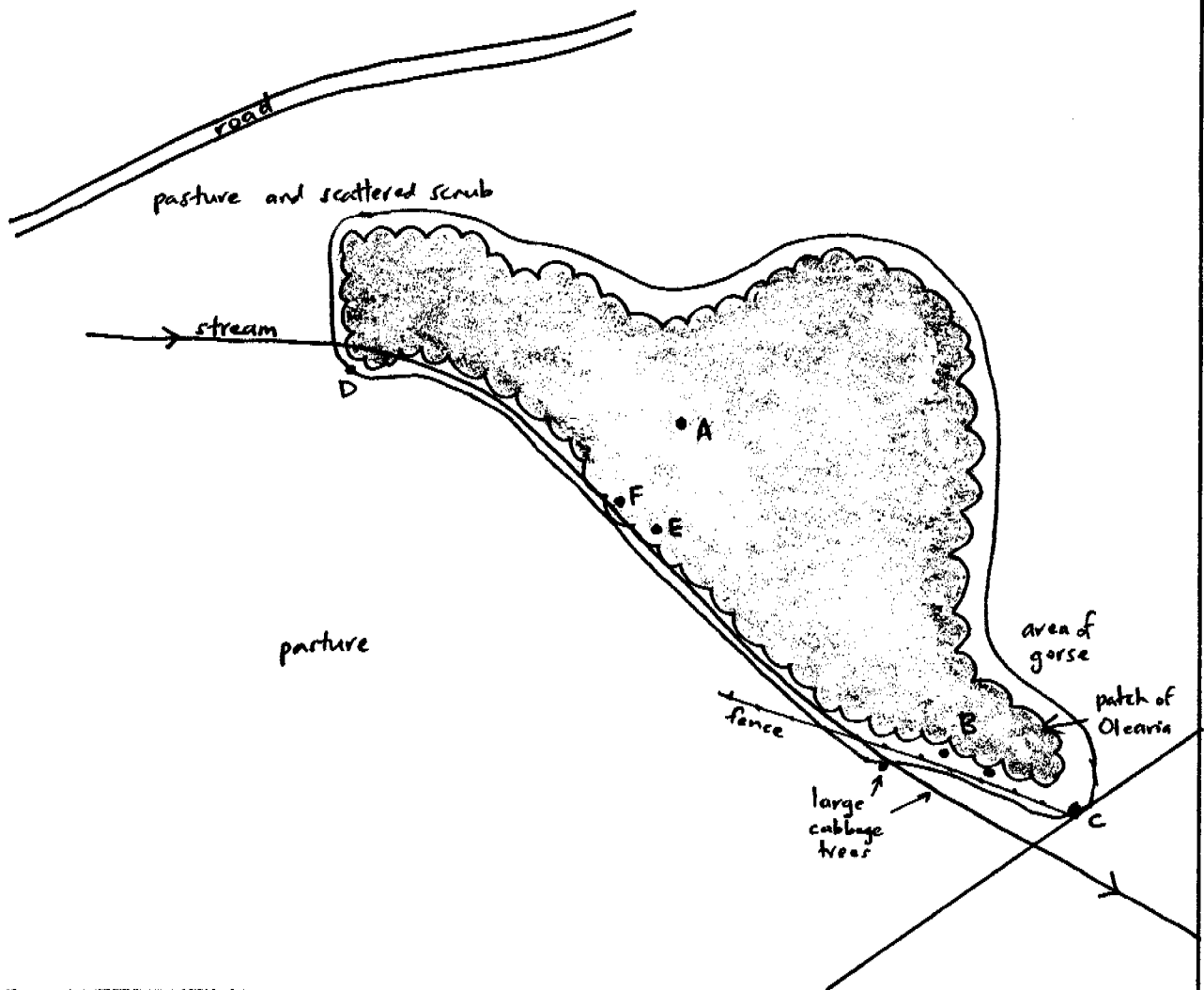
Discussion:
The Area meets the District Plan criteria for a Significant Natural Area because of the diversity of habitats and species present, the presence of a large population of *Olearia bullata*, the presence of podocarps and its location near other areas of forest.

MAP OF AREA 713

Location of corners and boundaries of Area:

No. on Map	Waypoint No.	Map Coordinates			Location
C	078	E: 2360689	N: 5687472	+/-: 5.7	southeast corner
D	079	E: 2360445	N: 5687644	+/-: 4.3	southwest corner

- A one totara tree
- B..... patch of *Olearia bullata*
- E..... small patch of Chilean flamer creeper
- F..... one small kahikatea tree
- Area boundary



TIMARU DISTRICT SNA SURVEY

AREA 593a

Area Number: 593a	Area Name: Bottom Shady Face	Date: 23 June 2005
Property: Waihi Station	Surveyors: Mike Harding	
Weather Conditions: fine and cool		Time Spent at Area: 4 hours

Location (central grid reference): J37: 579-871	Nearest Locality: Four Peaks	
Ecological District: Orari	Approximate size of Area: 40 ha	Altitude: 330 to 500 m

General description of Area:

South-facing slopes and small valleys on the north bank of the Te Moana River North Branch at and just upstream from the Te Moana Scheme water supply intake.

General description of plant communities and habitats:

Hardwood forest with podocarps on lower slopes and terraces, and shrubland and wetland on the main river terrace.

Detailed vegetation description:

The canopy of forest on the moderately-steep hill slopes is dominated by broadleaf, kowhai, five finger, lemonwood, matipo, mahoe, mapou, marbleleaf, tree fuchsia, wineberry and lancewood. Other canopy species commonly present are lowland ribbonwood, mountain ribbonwood, narrow-leaved lacebark, cabbage tree, yellowwood, narrow-leaved mahoe, kanuka, native jasmine and pohuehue. A single ash tree is present in the main western valley (marked "K" on the map), a small patch of young ash on an eastern spur (marked "G" on the map) and several large ash trees on the main terrace near the water intake.

Kahikatea trees are present on the main terrace near the water supply intake and totara trees are present in the main valley in the western part of the Area.

Important understorey species are horopito, bush lawyer, *Coprosma rotundifolia*, *C. crassifolia*, *C. rhamnoides*, *Melicope simplex* and weeping mapou. Himalayan honeysuckle, tauhinu, *Coprosma propinqua*, *C. rugosa* and *C. parviflora* (sp. t) are frequently present at the upper forest margins. Mountain akeake, tutu and a naturalised species of *Stachys* (probably *S. sylvatica*) are present in the western valley.

Ground cover species are prickly shield fern, thousand-leaved fern, *Hypolepis ambigua*, mountain kiokio, *Blechnum fluviatile*, *B. chambersii*, *B. penna-marina*, hound's tongue fern, necklace fern, hen and chickens fern, *Asplenium hookerianum*, *A. richardii*, *A. appendiculatum*, *Pellaea rotundifolia*, *Leptopteris hymenophylloides*, bush lily, *Hydrocotyle novae-zeelandiae* and male fern.

The area of tall forest on the main terrace near the water supply intake is dominated by wineberry, tree fuchsia, kowhai, broadleaf, lowland ribbonwood and large ash trees. Other species present are *Melicope simplex*, narrow-leaved lacebark, marbleleaf, mapou, pohuehue, *Coprosma rigida*, *C. rotundifolia*, prickly shield fern, *Blechnum penna-marina*, *Hydrocotyle* sp., *Schizeilema trifoliatum*, necklace fern and *Ranunculus* sp.

The wetland area on the terrace near the water supply filter and water tanks is dominated by an open shrubland of *Coprosma rigida*, *C. propinqua*, *C. parviflora* (sp. t), *Olearia bullata*, lancewood, bush lawyer, scrub pohuehue, prickly shield fern, *Blechnum penna-marina*, *Carex secta*, rushes (*Juncus* sp.) and pasture grasses.

Birds observed:

Birds observed in the Area were bellbird, kereru, fantail, rifleman, silvereye, grey warbler, tomtit, falcon, harrier, magpie, blackbird and California quail.

Notable flora, fauna or habitats:

The presence of low-altitude species such as lowland ribbonwood, narrow-leaved lacebark and narrow-leaved mahoe, the presence of podocarps (kahikatea and totara), the diversity of the vegetation, the presence of wetland habitat (with shrubland) and the extent of the area are notable features.

General condition of Area:

The Area is in good to moderate condition. In most parts the forest understorey is open, though the forest canopy is generally in good condition. Forest on dry spurs has a very open understorey whereas forest on steeper slopes and in gullies is denser. Forest and wetland on the main terrace near the water supply intake are modified by animals and the presence of ash trees.

Notable plant and animal pests:

Ash trees are the most important introduced plant. They are common on the main terrace and present in the western valley. Gorse is present at several locations on the forest margins. Himalayan honeysuckle and male fern are present but do not pose a significant threat. A species of *Stachys* is present in the main western valley. Possum control was being undertaken at the time of survey.

Boundaries: (buffering, fencing, adjoining plant communities/habitat etc.):

The Area is mostly unfenced, although a track has been excavated for a fence on the eastern side of the western valley. The Area is buffered by its location on steeper shady slopes and in gullies. The Area adjoins areas of younger regenerating indigenous forest in the upper reaches of the western valley. On other boundaries it adjoins pasture.

Present management and management issues:

Possum control is being undertaken over the Area. Important management issues are the prevention of the spread of ash trees and control of other introduced plants that may establish in the area. Ongoing wild animal control and perhaps exclusion of stock will be required to protect regenerating indigenous vegetation.

Property Owner Comment:

Aware of the ash trees and have planned their eradication. Burdock is the main weed concern over the whole property.

ASSESSMENT (against District Plan criteria):

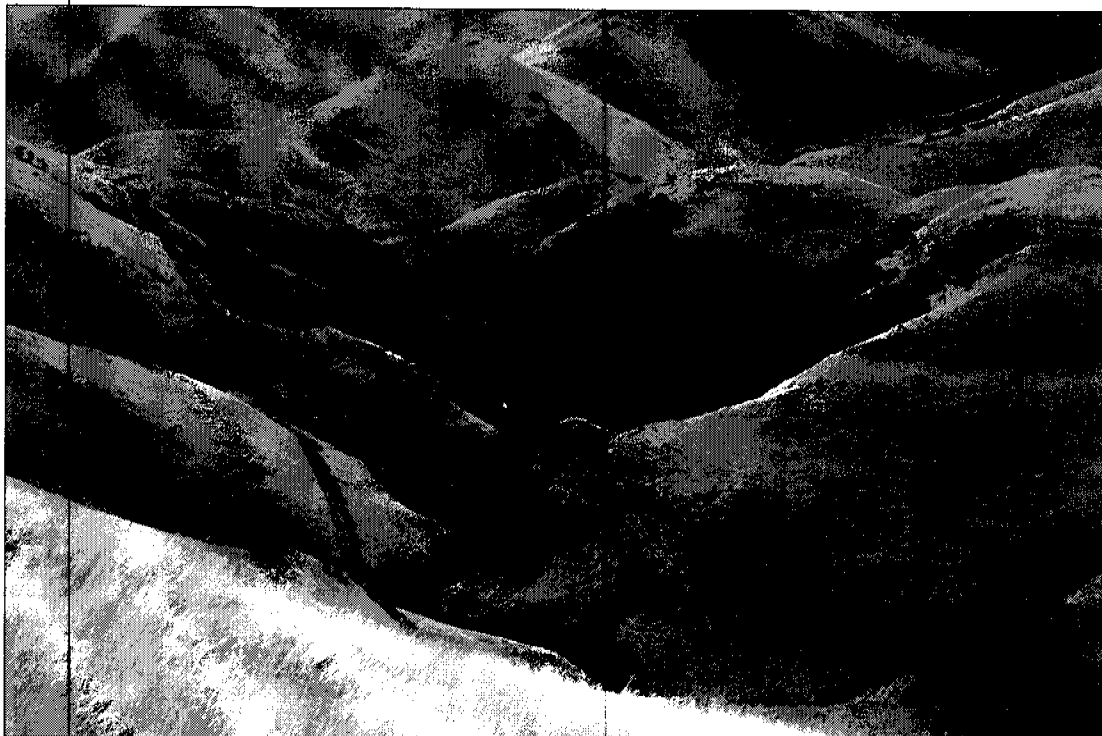
Primary Criteria	Rank	Notes
Representativeness	M/H	A very good example of indigenous vegetation that is typical of the ecological district, and at least partly representative of the original vegetation.
Rarity	M	The area provides good habitat for bird species such as kereru and falcon, and supports a rare plant species (<i>Olearia bullata</i>).
Diversity and pattern	M	A diverse range of habitats is present, forest, shrubland and wetland, though diversity is probably less than that originally present.
Distinctiveness/special features	M/H	The range and extent of habitats present over a relatively wide altitude are distinctive features.
Other Criteria		
Size/shape	M/H	The Area is of moderate size and has a reasonably good shape with some buffering.
Connectivity	M	The Area adjoins unprotected habitat along part of its boundary and is part of a network of habitat in the area.
Long-term Sustainability	M	The Area is partly modified but its values are likely to persist with minimal management.
SNA (yes/no):	YES	

Final Consideration (of other matters, Section D, page B-19):

The Area adjoins, and is partly utilised by, structures associated with the Te Moana Water Scheme. It also forms part of the water supply catchment for the scheme. The Area has been protected informally by the landowner and by its location on the south-facing slopes and gullies.

Discussion:

The Area easily meets the District Plan criteria for an SNA. Its key features are the diversity of the vegetation and habitats present, the size of the Area and its location near other areas of indigenous vegetation.

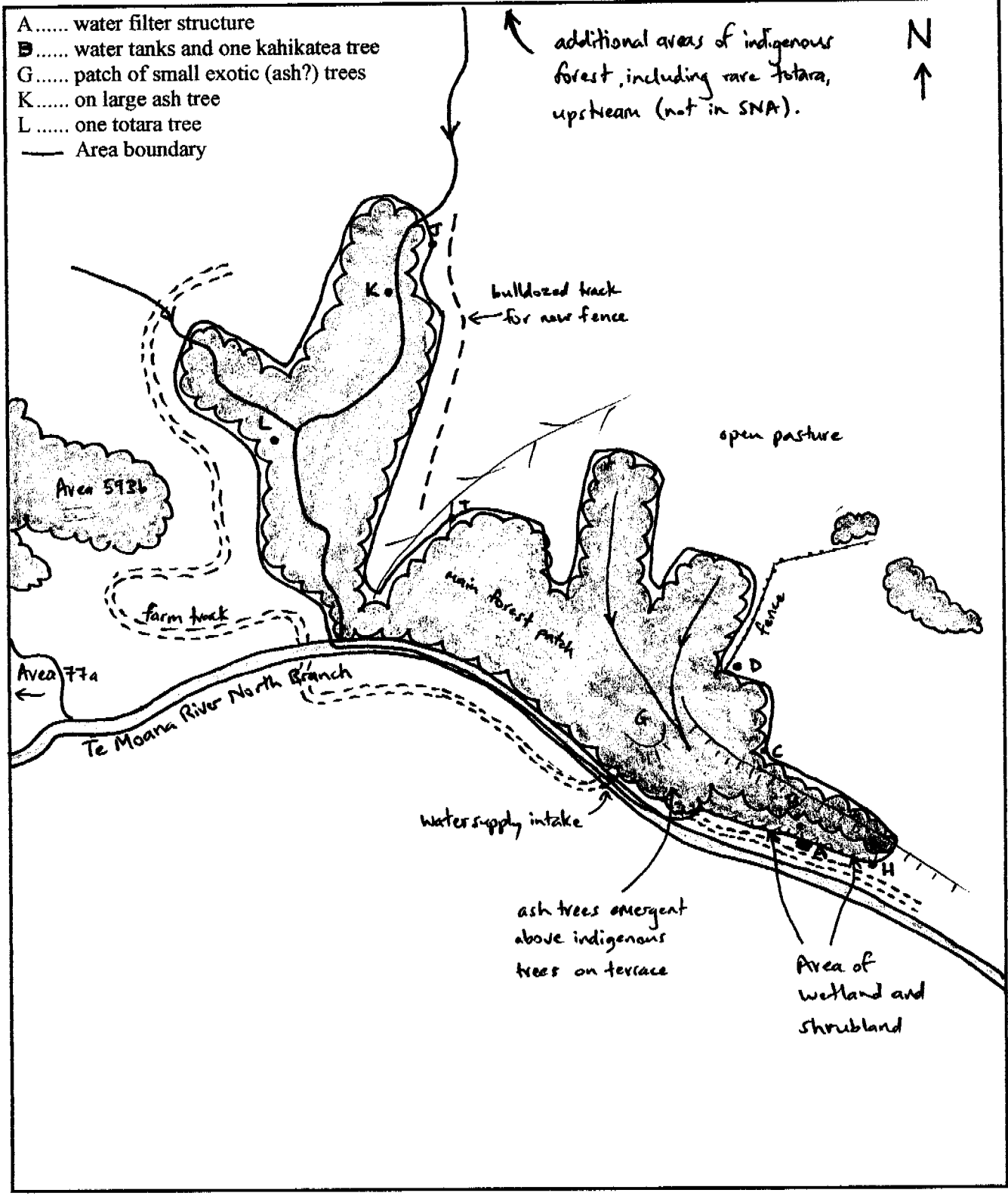


The western part of Area 593a, looking downstream

MAP OF AREA 593a

Location of corners and boundaries of Area:

No. on Map	Waypoint No.	Map Coordinates			Location
C	067	E: 2358426	N: 5686858	+/-: 5.3	
D	068	E: 2358357	N: 5687051	+/-: 4.9	
H	070	E: 2358560	N: 5686623	+/-: 4.8	southeast corner
I	071	E: 2357792	N: 5687230	+/-: 3.9	
J	072	E: 2357635	N: 5687613	+/-: 4.3	



TIMARU DISTRICT SNA SURVEY

AREA 593b

Area Number: 593b	Area Name: Black Hill	Date: 17 June 2005
Property: Waihi Station	Surveyors: Mike Harding	
Weather Conditions: overcast and cool		Time Spent at Area: 2 hours

Location (central grid reference): J37: 570-872	Nearest Locality: Four Peaks	
Ecological District: Orari	Approximate size of Area: 35 ha	Altitude: 360 to 600 m
General description of Area: Two small tributary valleys of the Te Moana River North Branch upstream from the Te Moana Scheme water supply intake.		

General description of plant communities and habitats:

Hardwood forest on slopes and gullies.

Detailed vegetation description:

The forest canopy is dominated by broadleaf, kowhai, five finger, narrow-leaved mahoe, matipo, marbleleaf, tree fuchsia and wineberry. Other canopy species commonly present are mountain ribbonwood, mahoe, mapou, lancewood, lemonwood, cabbage tree and pohuehue.

Important understorey species are horopito, mahoe, bush lawyer, yellowwood, pate, *Coprosma crassifolia*, *C. rhamnoides*, *C. rigida*, *Haloragis erecta*, *Melicope simplex* and weeping mapou. Himalayan honeysuckle, bracken, tutu, *Coprosma propinqua*, *C. rugosa* and *C. parviflora* (sp. 1) are frequently present at the forest margins.

Ground cover species are prickly shield fern, hound's tongue fern, hen and chickens fern, necklace fern, *Asplenium hookerianum*, *A. richardii*, mountain kiokio, *Blechnum fluviatile*, *B. penna-marina*, *B. chambersii*, *Pellaea rotundifolia*, thousand-leaved fern and *Hypolepis ambigua*.

Large kowhai trees are present at lower altitude parts of the Area.

Birds observed:

Birds observed in the Area were bellbird, kereru, fantail, rifleman, grey warbler, tomtit, brown creeper, falcon, magpie, and blackbird.

Notable flora, fauna or habitats:

The presence of low-altitude species such as narrow-leaved mahoe, the presence of large kowhai at lower altitudes, the diversity of the vegetation, the presence of an uncommon plant (*Haloragis erecta*) and the extent of the area are notable features.

General condition of Area:

The Area is in relatively good condition. In most parts the forest understorey is open, though the forest canopy is mostly intact.

Notable plant and animal pests:

No significant plant pests were observed. Pig rooting is present on drier slopes.

Boundaries: (buffering, fencing, adjoining plant communities/habitat etc.):

The Area is mostly unfenced, although is buffered by its location in steeper gullies. The Area adjoins, and provides a link between, other areas of indigenous forest (Area 593a and Area 77a). On other boundaries it adjoins pasture.

Present management and management issues:

Important management issues are the prevention and control of introduced plants that may establish in the area, such as ash trees. Ongoing wild animal control and perhaps exclusion of stock will be required to protect regenerating indigenous vegetation.

Property Owner Comment:

ASSESSMENT (against District Plan criteria):

Primary Criteria	Rank	Notes
Representativeness	M/H	A good example of indigenous vegetation that is typical of the ecological district.
Rarity	M	The area provides good habitat for bird species such as kereru and falcon, and supports a rare plant species (<i>Haloragus erecta</i>).
Diversity and pattern	M	A relatively diverse Area, though diversity is probably less than that originally present.
Distinctiveness/special features	M	The Area supports intact vegetation over a relatively wide altitude.
Other Criteria		
Size/shape	M/H	The Area is of moderate size and has a reasonably good shape with some buffering.
Connectivity	M/H	The Area effectively links two areas of unprotected indigenous vegetation and habitat.
Long-term Sustainability	M	The Area is partly modified but its values are likely to persist with minimal management.
SNA (yes/no):	YES	

Final Consideration (of other matters, Section D, page B-19):

The Area forms part of the water supply catchment of the Te Moana Scheme. The Area has been protected informally by the landowner and by its location in the southeast-facing gullies.

Discussion:

The Area easily meets the District Plan criteria for an SNA. Its key features are the altitudinal extent of the vegetation and habitats present, the size of the Area and its location near other areas of indigenous vegetation.



Looking up into the main eastern gully of Area 593b.

TIMARU DISTRICT SNA SURVEY

AREA 77a

Area Number: 77a	Area Name: Te Moana North Branch	Date: 17 June 2005
Property: Waihi Station	Surveyors: Mike Harding	
Weather Conditions: overcast and cool		Time Spent at Area: 1 hour

Location (central grid reference): J37: 570-867	Nearest Locality: Four Peaks	
Ecological District: Orari	Approximate size of Area: 12 ha	Altitude: 360 to 600 m

General description of Area:

A moderately-steep southeast-facing slope above the Te Moana River North Branch at the lower end of the confined (and gorgy) part of the valley, just above the water intake for the Te Moana Scheme.

General description of plant communities and habitats:

Hardwood forest with scattered podocarps at lower altitudes and regenerating vegetation on forest margins.

Detailed vegetation description:

The main forest canopy is dominated by broadleaf, lancewood, marbleleaf, matipo, mountain ribbonwood, five finger, tree fuchsia and mapou.

Other canopy species are mapou, kowhai, cabbage tree, wineberry, native jasmine and pohuehue. Totara trees are present on lower slopes near the river.

Important understorey species are yellowwood, bush lawyer, *Coprosma crassifolia*, *C. rhamnoides*, mahoe, horopito, weeping mapou and pate.

Ground cover species are prickly shield fern, hound's tongue fern, thousand-leaved fern, *Hypolepis ambigua*, hen and chicken's fern, necklace fern, *Asplenium hookerianum*, *A. richardii*, *Blechnum chambersii*, *B. fluviatile* and *Pellaea rotundifolia*.

Additional species present on the forest margin are mountain flax, tutu, *Himalayan honeysuckle*, *Coprosma propinqua*, *C. rigida* and mountain akeake.

Birds observed:

Birds observed during a brief inspection along the edge of the Area were bellbird, silvereve, rifleman, tomtit and blackbird.

Notable flora, fauna or habitats:

The presence of totara trees on the lower slope, the diversity of the vegetation and the location of the Area adjacent to a much large area of indigenous vegetation are notable features.

General condition of Area:

The Area is in relatively good condition. The forest understorey is in better condition than in most other patches of forest in the area, perhaps because it is not accessible to cattle. The forest canopy is in good condition, especially on the lower slopes.

Notable plant and animal pests:

Pig rooting was observed on the dry spur adjacent to the Area. A small cherry plum tree is present at the edge of the Area.

Boundaries: (buffering, fencing, adjoining plant communities/habitat etc.):

The main northern boundary of the Area is fenced (down the spur) although it is still accessible to sheep. The Area is well buffered along the lower (southern) boundary by the river and its gorge, and along the western boundary by indigenous forest on an adjoining property (the other part of Area 77).

Present management and management issues:

The main management issues are wild animal control and the prevention of weed infestations.

Property Owner Comment:

This Area has been fenced from stock for many years.

ASSESSMENT (against District Plan criteria):		
Primary Criteria	Rank	Notes
Representativeness	M/H	The forest is typical of that remaining in the ecological district and is partly representative of the original vegetation.
Rarity	L/M	No rare species were observed, though the Area provides habitat for kereru and falcon.
Diversity and pattern	M	Diversity is probably less than that originally present.
Distinctiveness/special features	M	The presence of podocarps, the diversity of the vegetation, and the size and location of the Area are special features.
Other Criteria		
Size/shape	H	A moderate-sized area that has a good shape, is very well buffered and is effectively part of a much larger area of indigenous vegetation.
Connectivity	M/H	The area forms an important part of a larger area of forest and links other areas of indigenous vegetation to that area.
Long-term Sustainability	M/H	The ecological values of the Area are likely to persist with little management.
SNA (yes/no):	YES	
Final Consideration (of other matters, Section D, page B-19):		
The Area does not appear to have been deliberately grazed for some time. It is part of a much larger area which covers a substantial part of the catchment of the Te Moana Scheme. The Area has been protected informally by the landowner and by its location on steep slopes above the river.		

Discussion:
 The Area easily meets the District Plan criteria as an SNA. Its important features are its size, the presence of podocarps, and its location as part of a much larger area of indigenous forest.

MAP OF AREA 593b and 77a

