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HIKURANGI MOTOR SPORT & OUTDOOR RECREATION PARK  
FEASIBILITY STUDY

ECOLOGY

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For: Whangarei District Council

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## 1.0 INTRODUCTION

This report has been prepared for Whangarei District Council (WDC). The report provides ecological information in relation to a proposed motorsport and outdoor recreation park at Hikurangi ("the proposed park"). The report is a stage one evaluation in the nature of a largely desk top constraints and opportunities analysis and is part of a suite of technical reports on the feasibility of the proposed park at the site.

WDC has identified the need to provide a long term community recreational facility for motorsport and outdoor activities. An approximately 190 ha WDC owned site at Gomez Road near Hikurangi has been identified as a potentially suitable location for the proposed park.

The site could potentially accommodate activities including (but not limited to) motorsports, gun ranges, mountain biking, archery, walking tracks and other passive outdoor recreation.

The site location is shown in Appendix 1.

### 1.1 Brief

Work carried out as part of the approved brief includes the following:

- Review of existing ecological information on the site or its vicinity;
- An overview of the existing habitat, flora and fauna;
- Production of a habitat map highlighting constraints and opportunities;
- Legislative requirements and/or approvals likely to be required to support development of the site;
- Identification of parties to be consulted in relation to the ecological values and potential effects; and
- Identification of further ecological work required to support a plan change.

These matters are discussed below.

## 2.0 ECOLOGICAL VALUES

### 2.1 EXISTING INFORMATION

#### Existing Protected Natural Area Status

The site is not currently identified as a Significant Natural Area (SNA) in the Department of Conservation's published register<sup>1</sup> of significant sites under the Protected Natural Area (PNA) programme.

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<sup>1</sup> A Booth. 'Natural areas of the Whangaruru Ecological District: Reconnaissance Survey Report for the Protected Natural Areas Programme'. Department of Conservation, Northland Conservancy. 2005

The PNA was established in 1982 under the Reserves Act 1977. Broadly speaking it is a register of natural features which aims to ensure the survival of indigenous biota and the preservation of representative examples of all natural ecosystems and landscapes. PNA's are split into Level 1 and Level 2 sites (Level 1 being the higher) according to their significance values which are assessed against a range of ecological criteria (included in [Appendix 2](#)).

#### Gomez Road Bush Habitat Feature

To the north of Gomez Road and only a short distance from the site, there is a large habitat feature known as the *Gomez Road Bush* identified in the PNA report (Habitat No Q06/078). Based on a 1997 survey this is Level 1 site identified as a 294ha unit comprised of 264 ha of forest and 30ha of shrubland. The majority of the site is described as composed of secondary towai forest with kauri, rewarewa, tanekaha, and mamaku with rimu and ti kouka (cabbage tree) occasionally. Closer to Gomez Road and part of the feature are two small pieces of kanuka/manuka shrubland of up to 4m height (i.e. in 1997). Regionally significant flora is identified as Toatoa (*Phyllocladus toatoa*) and North Island Brown Kiwi are also cited as present. The presence of a threatened bird species and a regionally threatened plant species supports the ecological significance status of the feature. The habitat record from the PNA report is attached as [Appendix 3](#).

## 2.2 EXISTING HABITAT, FLORA AND FAUNA

A site inspection was undertaken on the 08 April 2011. This involved accessing vantage points within the site from which views could be gained of representative sections of the habitat present. Beyond the ridgelines access to the valley floors is in most places difficult due to the density of native plant regrowth and gorse and was not attempted for the present preliminary survey. To assess the general type and quality of the stream and riparian environments, the stream below the Gomez dam was traversed for several hundred metres. At this point in time this is taken as representative of the stream sections in both of the bushed subcatchments on the site.

There are two aquatic habitat zones on the site and four generally distinct vegetation habitat zones. These are described below (in that order) and identified in [Figure 1](#).

#### Streams and Immediate Riparian Zones

The stream section immediately below the dam is likely to be somewhat atypical due to the presence of the structure itself. Further downstream the stream takes on a form that is likely to be typical of that in both the northern and western subcatchments and is described as follows.

The streambed substrate is a mixture of cohesive clay and stone. The stream and a generous riparian zone are afforded heavy shading by the native bush. The stream banks are undercut but appeared stable and were not obviously eroding. The stream is typically 1.5 to 2m between the banks and up to 0.75m to 1.0m in the pools. There are small rock sills and larger pools. On the day of the site inspection water clarity was good to the extent that the bed of the stream was clearly visible. Two of the 2<sup>nd</sup> order side tributaries were inspected in their lower sections. Flow was minimal but there were small pools and the habitat in general was low in silt.

The potential diversity of the aquatic life one might expect in these water courses is highly limited for the following reason. This location is at the easternmost end of the Wairua River system which drains ultimately to the Kaipara Harbour via the Wairua River.

At the bottom end of the Wairua River are the Wairua Falls which are a major topographic feature. These falls are a significant influence in terms of the upstream ecology as they effectively truncate the river, such that other than for eels, migratory native fish and migratory invertebrate species, other aquatic life does not occur in the extensive river system above the falls. This has been confirmed in a 1999 study of 22 sites (NIWA 2000)<sup>2</sup> which stated "*Diadromous fish were present below the falls...but, with the exception of eels, were absent from the rest of the catchment...*".

Both short fin and long fin eel are present above the Wairua falls but the habitat within the WDC site is more suited to long fin eel. The potential presence of long fin eel (*Anguilla dieffenbachii*) is significant ecologically. The stream habitat appears of good quality and suitable for this species. Long fin eel are an endemic species of specific conservation interest as they are registered as being in 'Gradual Decline' (Hitchmough et al 2005)<sup>3</sup>. At one point during the site survey some disturbance was seen in the stream. The source was not observed but it is likely to have been an eel.

A quick inspection of the undersurface of some of the stones revealed a variety of invertebrate life including caddis larvae.

#### Lake and Lake Edge

The small lake on the site (known as the Gomez dam) is a former water supply source no longer used by the WDC. It is assumed the lake is of moderate depth and this limits the development of marginal littoral zones beyond the band of *Eleocharis*. The water of the lake appeared strongly 'tannin coloured' which may be due to natural leachates from marginal and submerged vegetation. The quality of the water in the lake is unknown but is assumed at this point to be potentially suitable for aquatic life. Immediately downstream of the dam, red staining of the stream substrate was apparent suggesting iron leachate from the lake and/or groundwater.

It is likely that if long fin eel are present on the stream, they will have also colonised the lake as the concrete overflow structure would be passable by these prodigious climbers.

The lake margin is fringed by a vigorous band of the bamboo spike sedge (*Eleocharis sphacelata*). The lake appears moderately deep which naturally restricts the spread of emergent aquatics. The lake provides a small open water area of value to water associated birdlife including waterfowl and edge species such as pukeko.

#### Valley Floors and Steep Side Slopes

The site inspection indicated the valley floors of the main streams and the lower sections of the 2<sup>nd</sup> order side tributaries to include large (12+m) kanuka (*Kunzea ericoides*), a range of *Coprosma* species, pate (*Schefflera digitata*), rewarewa (*Knightia excelsa*), mapou (*Myrsine australis*), ponga (*Cyathea dealbata*), mahoe (*Melicytus ramiflorus*), *Alseuosmia macrophylla*, hangehange (*Geniostoma rupestre*), turutu (*Dianella nigra*), tanekaha (*Phyllocladus trichomanoides*), kiekie (*Freycinetia banksii*), towai (*Weinmannia silvicola*), supplejack (*Ripogonum scandens*), miro (*Prumnopitys ferruginea*), climbing rata (*Metrosideros perforata*) and kahikatea (*Dacrycarpus dacrydioides*). In several places patches of ricker kauri (*Agathis australis*), kahikatea and rimu (*Dacrydium cupressinum*) were apparent.

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<sup>2</sup> *Ecological Survey of the Wairua River Catchment. October 1999.* Prepared for Northland Regional Council by NIWA. February 2000

<sup>3</sup> R. Hitchmough, L. Bull and P. Cromarty (Compilers). '*NZ Threat Classification System Lists, 2005*'. Science and Technical Publishing, Department of Conservation, Wellington.

### Hill Slope and Plateau Shrubland

The aerial photograph provided by the client is dated between 1999 and 2004 (E Cook, pers comm.) and shows that much of the moderate contour land and ridgetops were relatively recently cleared following pine afforestation. To this extent, much of the vegetation on the site can be identified as young, regenerating and dominated by native tea tree dominated shrubland not more than 12 years old. There is a variety of young native species included within this regenerating cover and tree fern is also common on some of the hill slopes. Throughout this younger vegetation there is a strong presence of exotics including wilding pines, gorse and other adventive weed and pest plant species.

There is some variation in the age structure of the shrubland on the site. The aerial photograph shows that when most of the hilltops and moderate contour land was bare (on removal of the pine crop), the regeneration of shrubland in the western subcatchment, pockets of the northern subcatchment and the lake subcatchment was well established. Thus this shrubland is generally older than occurs in other parts of the site. This probably justifies the older shrubland being afforded a higher botanical value than the balance of the site and particularly that in the western subcatchment which comprises a contiguous complex of mature valley floor bush and hillside shrubland.

### Blackwood Band

There is a more or less discrete area of the Australian hardwood (*Acacia melanoxydon*) in the catchment to the dam. This may have been planted but has also proliferated through natural seed fall. The blackwood is in the midslope section with regenerating shrubland both below and above it.

### Existing Tracks and Cleared Areas

There is a network of existing ridgeline tracks and other small cleared areas. Some of the tracks are heavily overgrown with young tea tree and/ or gorse and weeds.

### Pest Animals and Plants

#### Animals

Possum control appears to have been carried out in the vicinity as evidenced by bait warning tags dated October 2010 observed adjacent to one of the ridgeline tracks. It is unclear the extent of these activities on the site.

As far as we are aware there is no predator control directed at mustelids, rats, or feral cats on the site. The adjacent forest land to the southwest appears to be used for upland game hunting (pheasant and quail) as evidenced by the Northland Fish and Game Council sign at the track gate adjacent to Gomez road at the southern end of the site.

On the day of the site inspection, a rotting animal carcass was observed at the above noted gate. This may have been placed by pig hunters as an encouragement to concentrate pigs in the area. Pig dog presence in the area is a possibility.

Overall it is considered that the likely presence and range of unchecked feral pest animals, and possibly pig and hunting dogs, limit the presence or potential of the site for kiwi in the area. This can be checked with DOC as part of the ongoing consultation.

## Plants

There is a strong presence of gorse, pampas and wild ginger. The pampas and ginger need control and the ginger in particular is a concern. Ginger was noted in the disturbed areas adjacent to tracks and an individual plant was also observed adjacent to the stream in an otherwise exclusively native plant area.

Effort will need to be directed at controlling and preferably eradicating the pampas and ginger from the site and in particular preventing further spread or establishment adjacent to any future cleared areas.

## **3.0 OPPORTUNITIES AND CONSTRAINTS**

Opportunities and constraints have been assessed for the six habitat units. These are briefly discussed below and organised from most sensitive to least sensitive in terms of potential disturbance. Figure 1 provides a plan of these elements which should be regarded as indicative at this stage. The boundaries between the different elements are 'fuzzy' and would require contour information, up to date aerial photography and ground truthing to be more precise.

### Habitat Area A: Streams and Immediate Riparian Margins

The main streams and their 1<sup>st</sup> and 2<sup>nd</sup> order tributaries tend to be in moderate to steep sided valley floors containing relatively good native bush which includes mixed podocarp and large kanuka. The stream area inspected indicated that aquatic habitat structure in the principal streams is coherent and of potential value to aquatic life. Access to these riparian zones should be carefully managed with a strong focus on maintaining the natural physical stream structure and limiting sediment generation and cuts, and maintaining and further encouraging the low light environment that presently exists. Crossings of the watercourses should be via timber boardwalks or alternative low impact options.

There appears to be no existing stream or riparian zone that is botanically compromised such that it might accommodate a crossing for off road 4 wheel drives without a significant effect on the existing vegetation and aquatic environment. Were one or more such crossings to be contemplated then specific design would be required to manage and mitigate the associated effects including native vegetation loss, weed establishment and excessive sediment generation.

### Habitat Area B: Valley Floors and Steep Side Slopes

Delineation of this Habitat area is based mainly on the shrubland that was retained on-site at the time of the pine forest removal. That is these are the older shrubland zones which appear to be in relatively good shape botanically and are mostly stable. If these values are to be retained, to the greatest extent these zones should be left intact and disturbed as little as possible. Because of the steepness of the contour adjacent to the principal watercourses and given the integrity (density, diversity and moderate size) of the vegetation in this zone, they would appear to be best suited to provide for low impact type activities along carefully laid out and designed tracks for walking, orienteering and perhaps mountain biking. Even with such design, if vegetation removal is required increased light could encourage adventive plant species. For the above reasons, removal of vegetation in this zone should be restricted.

#### Habitat Area C: Hill Slope and Plateau Shrubland

The shrubland on the moderate and easy contour parts of the site, and particularly most of that in the northern subcatchment, is floristically young. It is incipient forest but has yet to gain sufficient maturity to attain a high value in any particular locality.

The indicative locations of the 'go kart' track (1.5ha), stock car track (2.5ha) and parking area are at sites presently containing a mixture of young regenerating shrubland, gorse and weeds and open bare clay areas. Individually and collectively the clearance of this shrubland in these discrete areas will not cause a significant adverse ecological effect.

Notwithstanding its immature state, clearance of vegetation within this part of the shrubland should still be limited where possible beyond what is required to support a defined need in terms of a new facility or further activities or access to the balance of the site. Where further shrubland is removed then mitigation offsets could include weed and animal pest control, enhancement plantings and possibly other actions.

Fire would appear to be a significant potential existing risk for the shrubland and to a lesser extent the steep valley areas. The development of facilities and greater intrusion of people into the shrubland will exacerbate this risk and needs to be carefully considered and managed. The dam reservoir provides an important source of fire fighting water in this context.

The existing weed problem and the potential for this also to be increased with new clearings and exposed earth also needs to be managed and subject to a specific surveillance and control regime.

#### Habitat Area D: Lake and Lake Margins

The lake, although small, could be used for passive recreation such as kayaking or by remote model boat enthusiasts. It is not of sufficient size to cater to any motorised sport. A small jetty could be developed at one or two points around the lake edge without other than small impact to shrubland and lakeside emergent plants.

There is an existing track around at least part of the lake which while partly overgrown and of a rough nature, could be rehabilitated as part of the passive recreation track(s).

#### Habitat Area E: Blackwood Band

The blackwood band has no particular ecological value and it is assumed that the trees are not being grown for a commercial endpoint. The blackwoods could be progressively replaced although they are prolific self seeders and may require specific management to convert to native shrubland over time. Alternatively an option is to maintain and restrict the blackwood area as a zone in which more vegetation clearance could be tolerated and this may better service one or other of the proposed uses for the Park (eg part of a mountain bike track).

#### Habitat Area F: Existing Tracks and Cleared Areas

These areas could be cleared and preferentially used for future access within the site. Weed control along these margins will probably be required.



Summary of constraints position (and conversely opportunities ranking) for the Habitat Areas.

Listed in order from most restrictive to least restrictive.

- A Streams and immediate riparian margins
- B Valley floors and steeper side slopes including lower sections of 2<sup>nd</sup> order tributaries in both catchments
- C Hill slope and plateau shrubland
- D Lake and Lake margins including emergent *Eleocharis* zone
- E Blackwood band
- F Existing tracks and cleared areas.

## 4.0 LEGISLATIVE REQUIREMENTS

Legislative requirements to support the development will presumably be subject to specific rules to be detailed in the Plan Change. Other aspects will fall under the Northland Regional Councils Regional Water and Soil Plan. Potential Plan Change rules can be considered against the backdrop of what is provided for under the existing District Plan zoning.

### District Plan

The existing zoning for the land is part Countryside and part Open Space. Under both zonings the same rule applies (Rule 38.3.18 and 46.3.13 respectively) in respect of indigenous vegetation clearance and the native vegetation on the site meets the definition in the Plan for Indigenous Vegetation which includes manuka and kanuka.

Specifically the Plan takes an interest in any site that contains a contiguous area of 5 ha or more of predominantly indigenous vegetation or a site which has an area of 1 ha or more of predominantly indigenous vegetation of more than 6.0 m height. The Gomez Road site meets both these criteria. Following on from this the rule provides for some activities as permitted. Of some relevance is the ability to form and maintain walking tracks less than 1.2 m wide using manual methods that do not require the removal of any indigenous tree over 300mm girth. The removal of larger areas of regenerating shrubland such as would be required for the Go Kart or stock car area, are discretionary activities. Indeed the 'conversion' of what is now regenerating shrubland back to farming or forestry would also appear to require a land use consent, notwithstanding its past use for both these primary industries.

Under the existing zoning, land use consent is likely to be required from WDC to support the removal of vegetation which is likely to be required to develop the park. This is likely also to be the case for a future plan change rule unless a new suite of rules provides for these areas as of right or as controlled activities.

In broad ecological terms a proposed Plan Change required to support the Park represents a down zoning (that is an environmentally more benign zoning) in environmental terms relative to recent historical uses, at least for a large part of the site that was until relatively recently in pine forest.. A Plan change would introduce a specific zoning which provides an opportunity to include provisions to protect significant indigenous vegetation and significant habitats of indigenous fauna on site.

### Regional Water & Soil Plan (RWSP)

The RWSP takes an interest in stormwater and sediment control arising from land clearance and also water quality of the local streams. Land use consent is likely to be required for such activities.

Activities within the riparian margins of the streams such as vegetation clearance and crossings may require consent depending on their specific detail, location and design. Generally however provided such activities are small scale at any particular locality and are managed carefully, they will fall within Permitted Activity rules.

## **5.0 PARTIES TO BE CONSULTED**

The primary party to be consulted in terms of ecological matters is the Department of Conservation. Local iwi should also be identified and kept in the loop in terms of ecological strategies and outcomes.

On the basis that there are real potentials here for improvements in ecological values, either support or a neutral stance is anticipated from DOC. The potential improvements include retention of most of the bush on site rather than using the land for forestry; the potential for predator control to enhance the prospect that the site might in time contribute to kiwi habitat; and the removal of adventive weed species which left unchecked and without intervention could compromise the bush recovery and habitat quality over time. Also to be considered are the amenity/educational values associated with passive recreation options for the site.

## **6.0 FURTHER ECOLOGICAL WORK TO SUPPORT A PLAN CHANGE**

### Botanical Significance Status

The site requires a more formal and detailed botanical survey in relation to the specific ecological criteria used to assess PNA status and its ranking under section Schedule 17A of the District Plan. In relation to the PNA, the last survey of the area appears to have been at least 14 years ago.

Taking account of the fact both that the older bush type on the site is similar to that described for the Gomez Road Habitat Unit (and that is deemed to be a Level 1 PNA site), and also as there has been extensive shrubland regeneration since that time, it may well be that the native vegetation on the site would now achieve a higher level of recognition in terms of its ecological status.

Furthermore, the additional information collected would enable the status of the area to be clarified in relation to the hierarchy of ecological significance rankings contained in Schedule 17A of the District Plan. This is of relevance in that sites having a Moderate Significance ranking or above are considered to meet the test of Section 6(c) of the RMA which requires the following to be recognised and provided for as a matter of national importance: *the protection of areas of significant indigenous vegetation and significant habitats of indigenous fauna.*

In summary, an updated ecological assessment within the context of Section 6(c) considerations, is required to support the plan change and as a precursor to inform the concept plan. The further work will enable the identification of areas of significant indigenous vegetation to be protected and associated controls for those specific areas and potentially less restrictive controls in other areas of the concept plan where development is proposed.

#### Stream Water Quality

The soils on the site are highly leached and acidic. The acidity (pH and buffering capacity) of the lake water and the stream water needs to be measured to verify that it falls within the range able to be tolerated by aquatic life. This information becomes relevant in defining the actual value of the aquatic habitat to aquatic life. It may be that low pH further restricts the range of aquatic life present. This information is of obvious relevance in assessing risks to aquatic biota and the sensitivity of that biota.

#### Other Information

Other information required to support the Plan Change and to more clearly define the target environmental performance for different parts of the site is a clearer picture of potential activities and where these might best be provided on the site.

An up to date aerial photograph of the site overlain with appropriate contour information is required to facilitate more resolution in these activities and targets.

Discussion needs to be held with DOC (and perhaps local landowners) and forestry managers as to the present possum and any other pest control activities. The end point here will be to determine the potential value of and how much effort should be put into animal pest control on the site.

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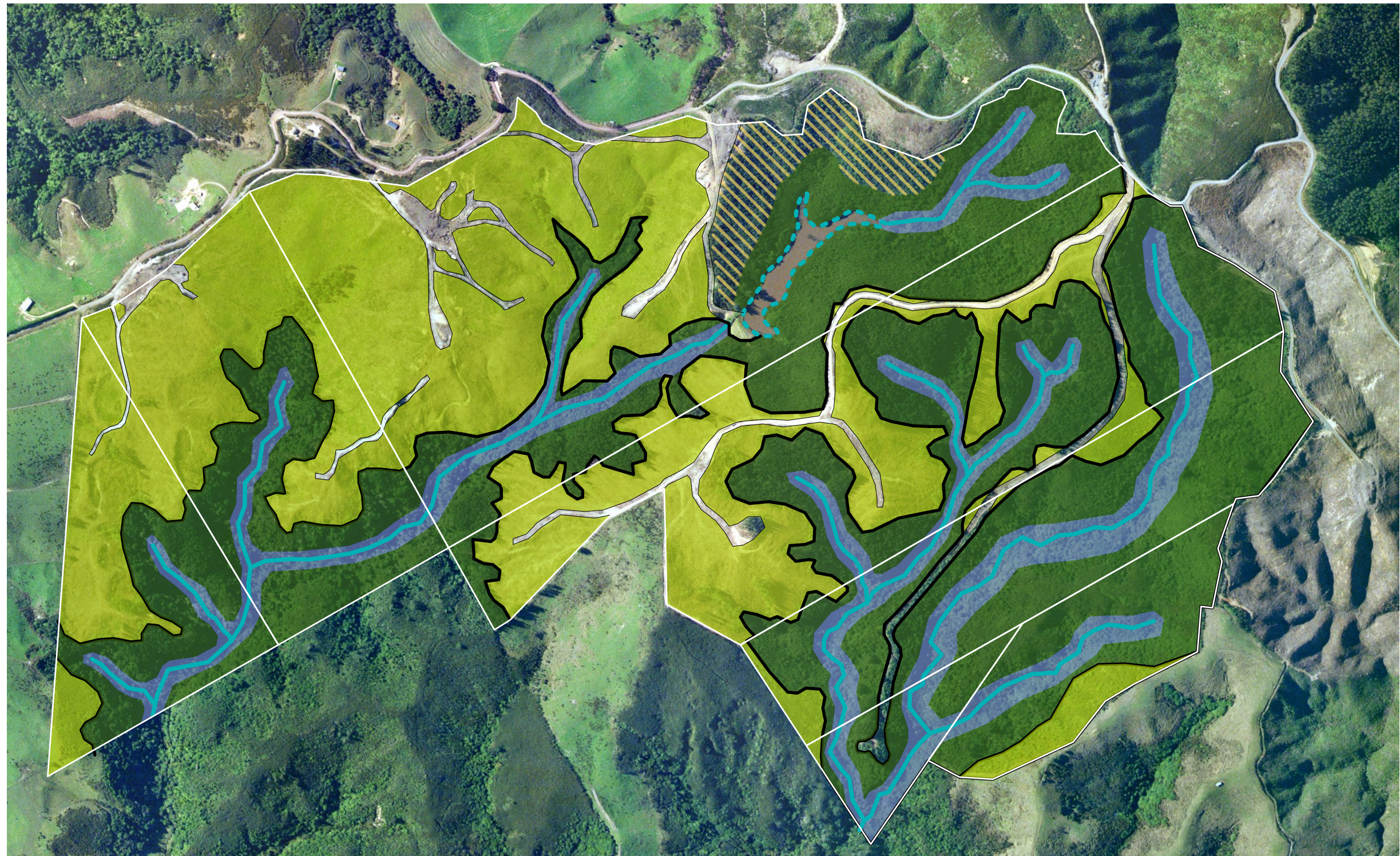


Figure 1 : Site Habitat Units and 'Ecological Constraints'



0 100 200 300 400 500 m

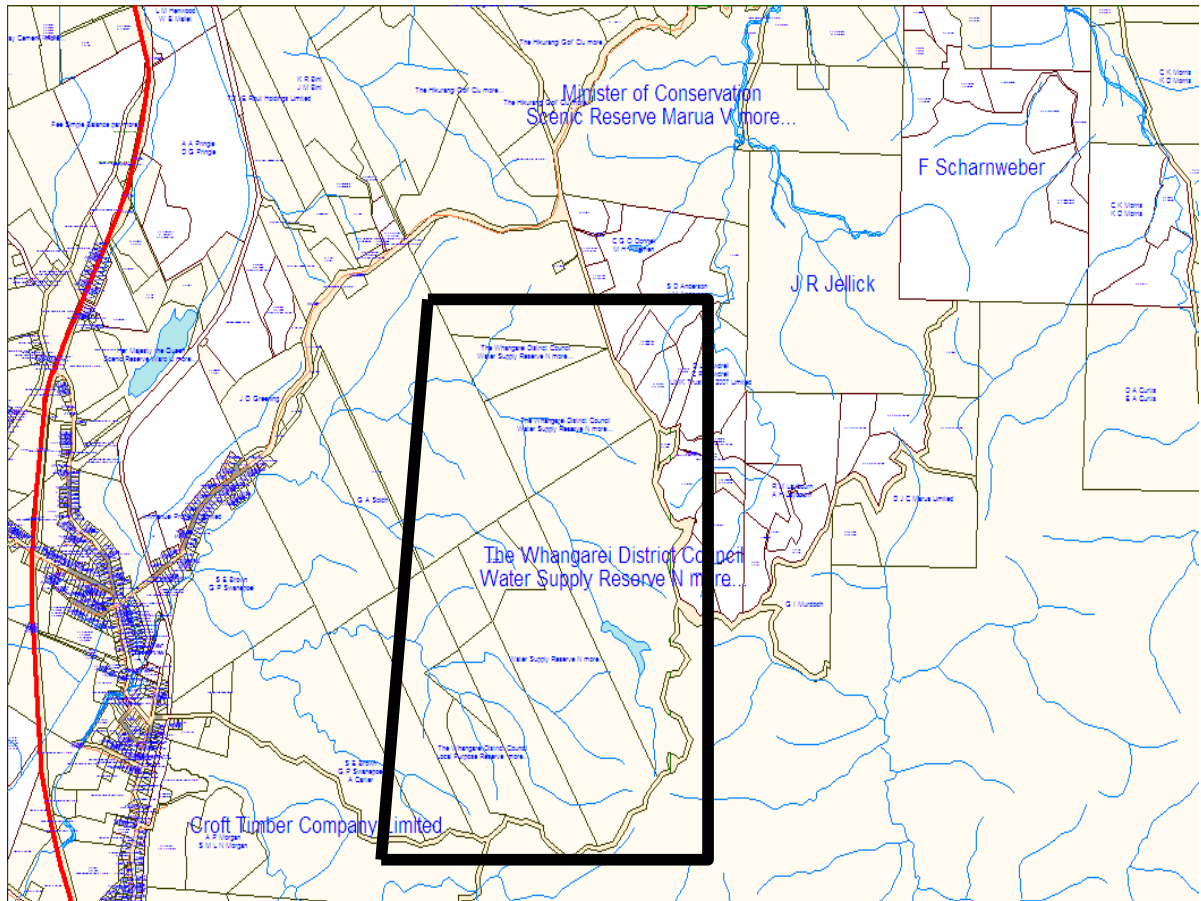


SCALE 1:7500 at A3

KEY	HABITAT AREA / CONSTRAINT ZONE
	A STREAMS / RIPARIAN MARGIN
	B VALLEY FLOOR / STEEP SIDE SLOPES
	C HILL SLOPE / PLATEAU SHRUBLAND
	D LAKE / LAKE MARGIN
	E BLACKWOOD ZONE
	F EXISTING TRACKS AND CLEARED AREAS



Appendix 1: Site Location



Appendix 2: PNA Criteria For Level 1 and Level 2 Sites

Level 1 Criteria: (Level 1 sites have one or more of the following characteristics)

- (1) Contains or is regularly used by critical, endangered, vulnerable or rare taxa, or taxa of indeterminate threatened status*
- (2) Contains or is regularly used by indigenous or endemic taxa that are threatened or rare in Northland*
- (3) Contains the best representative examples in an ecological district of a particular habitat type*
- (4) Has a high diversity of taxa or habitat types for the ecological district*
- (5) Forms ecological buffers, linkages or corridors to other areas of significant vegetation or significant habitats of indigenous fauna*
- (6) Contains habitat types that are rare or threatened in the ecological district or regionally or nationally*
- (7) Supports good populations of taxa which are endemic to the Northland or Northland-Auckland regions*
- (8) Is important for indigenous or endemic migratory taxa*
- (9) Covers a large geographic area relative to other similar habitat types within the Ecological District.*

Level 2 Criteria

- *Contain common indigenous species and are not the best representative examples of their type.*
- *May be small and isolated from other habitats*
- *May contain a high proportion of pest species*
- *May be structurally modified eg forest understory grazed*
- *Have not been surveyed sufficiently to determine whether they meet the criteria for Level 1 sites*

Appendix 3: Gomez Road PNA Habitat Unit Record

The northern side of the site, from east of Kaiatea Road to the eastern end of Hugh Crawford Memorial Scenic Reserve, was not sighted during the survey, and was assumed to consist of secondary forest.

(p) To the west of Kaiatea Road is a large area of kanuka/manuka-totara-towai shrubland, with puriri and tanekaha frequent. Kahikatea, rewarewa, rimu, and kauri all occur occasionally.

(q) The south-west corner of the site consists of kanuka/manuka-towai shrubland, with frequent totara and tanekaha. There are also a few mature *Pinus* sp. within this area. Also in this area, a small patch of type (b) vegetation is repeated, with rewarewa and towai frequent, and rimu, puriri, and kahikatea occurring occasionally.

#### Significant flora

Kawaka (Sparse), *Adelopetalum tuberculatum* (Regionally Significant).

#### Fauna

NI brown kiwi (Serious Decline), kukupa (Gradual Decline) grey warbler, NZ kingfisher, tui, Longfin eel (Gradual Decline), banded kokopu (Regionally Significant), koura, shortfin eel. The snail *Amborhylla dunni* (Gradual Decline).

#### Significance

This is a large forest/shrubland remnant, which contains several threatened and regionally significant species, including relatively high numbers of NI brown kiwi, and a high diversity of ecological units. It is contiguous with the Nguanguru Estuary at the eastern end of the site, and acts as a buffer for this estuarine area. It is also contiguous with the large area of forest to the north-east.

Representative site for type (c) manuka fernland, type (d) kanuka/manuka-tanekaha shrubland, type (h) kanuka/manuka-totara shrubland, type (i) harakeke-kanuka/manuka-raupo association, type (l) taraire-rewarewa forest, type (m) kauri-tanekaha-taraire-totara forest, type (o) rimu-tanekaha-totara-towai forest, and type (q) kanuka/manuka-towai shrubland. Only record of types (i), (l), (m), and (o) in the Ecological District.

160.9 ha at this site are protected; 2.7 ha by a Queen Elizabeth II National Trust covenant, 53.6 ha are administered by the Whangarei District Council and 104.6 ha are a Scenic Reserve administered by the Department of Conservation.

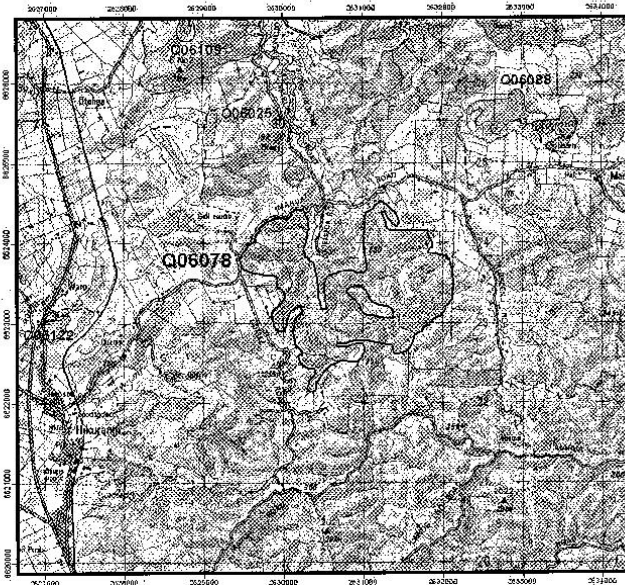
#### GOMEZ ROAD BUSH

Survey no. Q06/078  
Survey date 14 March 1997  
Grid reference Q06 307 233  
Area 294 ha (264 ha forest, 30 ha shrubland)  
Altitude 160-220 m asl

#### Ecological unit

- (a) Towai forest on hillslope (90%)
- (b) Kanuka/manuka shrubland on hillslope (10%)





**Gomez Road Bush Q06078**

Each grid is 1000m x 1000m  
and = 100 ha  
S = shrubland  
F = forest  
W = wetland  
E = estuarine  
D = duneland



**Landform/geology**

Steeply dissected hillcountry in Waipapa Terrane greywacke with c  
undifferentiated Te Kuiti Group sedimentary units along the western n



#### **Vegetation**

(a) The majority of the site is composed of towai secondary forest, with kauri, rewarewa, tanekaha, and mamaku frequent, and rimu, miro, and ti kouka occasional.

(b) Along the western side of the site are two small pieces of kanuka/manuka shrubland of up to 4 m in height.

#### **Significant flora**

Toatoa (Regionally Significant).

#### **Fauna**

NI brown kiwi (Serious Decline) present.

#### **Significance**

Presence of a threatened bird species and a Regionally Significant plant species.

55.5 ha at this site are administered by the Department of Conservation.

#### **TODD ROAD FOREST**

Survey no. Q06/079

Survey date 19 March 1997

Grid reference Q06 385 220

Area 555 ha (515 ha forest, 38 ha shrubland)

Altitude 140–305 m asl

#### **Ecological unit**

(a) Towai-totara forest on hillslope

(b) Kanuka/manuka shrubland on hillslope

(c) Totara shrubland on hillslope

(d) Towai forest on hillslope

(e) Totara forest in gully

(f) Kauri forest on ridge

(g) Taraire forest in gully

#### **Landform/geology**

Steeply dissected hillcountry in Waipapa Terrane greywacke.

#### **Vegetation**

A large forest/shrubland block with some modified enclaves.

(a) In the north-west corner of the site, as seen from Matapouri Road, towai is abundant, with totara common. Frequent species include rimu, puriri, tanekaha, and emergent rewarewa. Rimu and tanekaha are concentrated on the ridges. Kauri, kahikatea, ti kouka and tree fern occur occasionally.

(b) Within this area are two small pieces of shrubland. One is composed of kanuka/maouka, with no associated species.

(c) The other is dominated by regenerating totara, with frequent tree fern and ti kouka.

Type (a) is repeated on the eastern side of the site, alongside the Totaranui Stream.

Appendix 4:      Photographs of Site



Photo1: Western flank of the northern subcatchment at its southern end



Photo 2: Lake showing Eleocharis fringe, shrubland and blackwood band



Photo 3: South western side of lake



Photo 4: Tree fern and valley floor below dam overflow



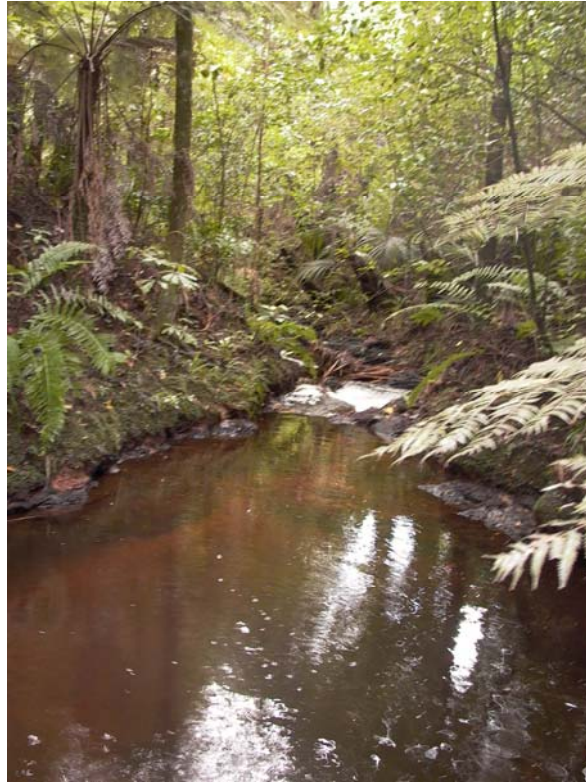


Photo 5: Typical section of main stream through northern subcatchment



Photo 6: Eastern flank of part of side valley to northern subcatchment



Photo 7: Typical section of young shrubland and clearing in northern subcatchment