

# FOREST ENTERPRISES LIMITED

## Estate Management Plan

November 2021

This document has been prepared by Forest Enterprises Growth Limited as forest manager for the forestry Managed Investment Schemes (MIS) managed by Forest Enterprises Limited.



**Forest  
Enterprises®**  
Creating wealth. Naturally.

# Contents

Introduction.....	1
Management and Ownership Structure.....	2
Management Objectives.....	3
Stakeholders.....	6
Regulations.....	8
Environmental Policy and Practices.....	11
Estate Description .....	12
Forest Description .....	14
High Conservation Value Areas .....	16
Establishment and Silviculture .....	16
Inventory, Mapping and Forest Records .....	20
Harvesting .....	22
Protection and Maintenance.....	23
Monitoring.....	26
Planning.....	28
Appendices.....	29



# Introduction

Wood has many different uses, from firewood to construction timber, to newspapers and tissue paper, from furniture to clothing. Wood fibre is extremely versatile. It is produced using carbon dioxide and the energy of the sun. Wood from well managed forests is a renewable resource which can meet the economic, social and cultural needs of our society without compromising the environment.

Forest Enterprises' objective is to grow wood for further processing in New Zealand or overseas and obtain an economic return on investment. Forest Enterprises seeks to achieve this through the growing of suitable species with wood characteristics which meet the demand of the market. The trees are established, protected and tended as required to meet those demands.

Forest Enterprises Growth Limited ("the Manager") manages forestry estates on behalf of forest owners such as forestry investors and private forest owners.

## Principles and Criteria

The forest estate included in this Estate Management Plan is yet to achieve Forest Stewardship Council (FSC) Certification.

The Manager and the forest owners are committed to the FSC Principles, Criteria and Standards of Good Forest Management. These standards include ecological, social and economic parameters.

The Manager will be able to market the forest log products as certified wood for input into domestic processor markets and international log markets where some are seeking certified wood inputs for manufacture of certifiable end-use products to international consumer markets.

Maintenance of the Certified status is managed through the Manager's Integrated Management System (IMS) and associated documents, IT-based support tools, and by a process of internal and independent external audit undertaken at least annually.

## About the Estate Management Plan

This Estate Management Plan ("the Plan") is a broad document defining the management structures and vehicles in place to manage an aggregation of individual forests subject to different ownership structures or relationships. Each operational forest, or group of forests, has its own detailed forest management plan which describes basic but specific management details.

This document provides a summary of the Plan for the forests and contains:

- Ownership, management and management planning structure
- Management objectives
- A description of the land and forest resources
- Environmental safeguards
- Identification and protection of rare, threatened and endangered species
- Management regimes and harvest planning
- Forest health
- Management of High Conservation Value Forest (HCVF) areas and reserves
- Maps showing plantation area, legal boundaries and protected areas
- Provisions for monitoring and protection



## Management and Ownership Structure

The forests included in this Estate Management Plan are each an investment entity which is proportionately owned by individual retail investors (the “forest owners”).

The forests are managed by Forest Enterprises Limited (FEL), a licensed manager of forestry Managed Investment Schemes (“forestry investments”) which are registered under New Zealand’s Financial Markets Conduct Act 2013.

The estate is a mixture of freehold land and Forestry Rights.

FEL’s parent company, Forest Enterprises Growth Limited (FEG) has been appointed as Forest Manager (“the Manager”). FEG is a forestry management company which provides comprehensive forest management services, harvest management, log sales and other associated services.

As Forest Manager, FEG will manage day-to-day operational activities and, in general, manage the estate to standards required to maintain FSC certification.

Forest Enterprises will protect any resource and tenure rights of Tangata Whenua.

Forest Enterprises operates out of its head office in Masterton and its regional office in Gisborne city.

The managers responsible for enacting this Plan are:

- Bert Hughes RMNZIF CMIInstD – CEO & Forestry Director
- Malte Coulmann RMNZIF – Southern North Island Regional Manager
- Dan Fraser – Gisborne Regional Manager
- Stu Harvey – GIS Manager
- Nathan Diamond – Harvest Manager
- Hannah Harvey – Environmental & Risk Manager
- Jess Littlejohn – Forester
- Pierre Bellé – Technical Forester
- Georgia Paulson – Harvesting Forester
- Allan Howard – Harvest Planner



# Management Objectives

## Economic and Social

The forests are managed to provide environmental benefits, including:

- Enhanced water quality
- Soil stabilisation and conservation
- A buffer against flooding during storms
- Shading waterways for aquatic life
- Enhance wildlife and plant habitat leading to increased biodiversity
- A reduction in greenhouse gases
- Providing economic and social benefits to the community

The forests are all managed to the Manager's Environmental Standards.

## Management

The Manager is committed to ensuring the management of the forest is sustainable, achieves economic sustainability and provides the best possible returns for the forest owner. The Manager will ensure all forests retain the capacity to do the above while meeting a range of environmental, social and cultural outcomes.

In addition, FEG will be guided by licensed investment manager Forest Enterprises Limited to ensure the forest estate is managed in accordance with the governing documentation for the Managed Investment Schemes per the Financial Markets Conduct Act 2013. This documentation includes Forest Management Plans specific to the investment entity.

The estate will be managed to:

- Ensure the estate is a renewable and sustainable resource
- Grow trees and produce logs for wood products in New Zealand and overseas
- Ensure productivity of the land does not decline
- Ensure environmental and social values are identified and maintained, and undertake operations to minimise impacts on the environment and the community
- Ensure historic sites are identified and protected
- Harvest trees as close as possible to their economic optimum age and achieve the best possible financial returns to the Forest Owners
- Replant following harvesting where land tenure allows
- Meet all statutory requirements – for example, New Zealand's Resource Management Act 1991, the National Environmental Standards for Plantation Forestry 2017, the New Zealand Forest Accord 1991, the Principles for Commercial Plantation Forest Management in New Zealand 1995, and comply with forest industry best practice
- A safe and healthy workplace free of workplace injuries
- Act as a good corporate citizen and neighbour
- Ensure all forest management practices are consistent with the principles of the Forest Stewardship Council
- Identify and protect areas of significant ecological and scientific value within the forests and put in place processes to protect and enhance identified values
- Ensure forest sustainably and minimise adverse effects of forest operations on soil and water values
- Minimise impact of operations on archaeological and cultural sites and ensure compliance with the Heritage New Zealand Pouhere Taonga Act 2014
- Minimise impact of operations on amenity values (visual, noise and air effects) and neighbouring properties



- Use chemicals responsibly and seek to minimise the use of chemicals in operations as far as practical
- Capture and learn from environmental incidents through incident reporting, investigation and sharing of learnings
- Ensure staff and contractors receive appropriate training to comply with the law and the requirements of the company Integrated Management System
- Monitor, research and seek new ways to minimise impacts of forestry operations on the environment, and maximise environmental benefits of forests
- Recognise the recreational value of the forest estate to local communities and the general public, and proactively manage public access taking into account safety of people, environmental considerations and forestry operations
- Identify areas within our estate which meet the FSC definition of High Conservation Value Areas and manage these in accordance with FSC requirements
- Ensure there is no conflict with written leases and right of ways as per the individual agreements

The forestry investment manager (FEL) and the Forest Manager (FEG) are committed to ensuring the management of the forest is sustainable from an environmental, social, cultural and economic perspective. These perspectives underpin the FSC management culture.

### **1. Environmental Perspective**

Includes steps to identify rare, threatened and endangered species where such presence is a possibility, protection of reserve areas, waterways and the control of pests and weeds.

### **2. Social Perspective**

Includes ensuring contractors and their workers adhere to health and safety standards, consultation with neighbours and stakeholders in respect of operations on the forest occur. All staff have the right to be a member of a union if they wish.

### **3. Cultural Perspective**

Includes consultation with the appropriate iwi to ensure culturally significant resources, land, historic and archaeological sites are identified and appropriately managed.

FEL's managed investment estate will be managed to protect any resource and tenure rights of Tangata Whenua. Tangata Whenua are being identified for each area. However, at time of writing no culturally important areas have been identified.

### **4. Economic Perspective**

Refers to the selection of a species and ensuring management and harvesting regimes provide a reasonable return on investment while minimising the risks of investment.

## **External Agreements**

Through its membership of the New Zealand Forest Owners Association, the Manager is bound by the requirements of the New Zealand Forest Accord 1991 and the Principles for Commercial Plantation Forest Management in New Zealand 1995.

The Forest Accord protects remaining indigenous forest remnants within the plantation forest which meet minimum size and quality criteria from clearance and conversion to plantation forest. All New Zealand Forest Accord vegetation within Forest Enterprises Limited Estate is identified in a Geographic Information System (GIS) and is protected.

The Principles for Commercial Plantation Forest Management in New Zealand are complementary to the New Zealand Forest Accord. They cover a range of broader principles to promote environmental excellence in plantation forest management, and the protection, preservation and sustainable management of native forests.

The Manager encourages all staff to join the New Zealand Institute of Forestry which requires an annual agreement to maintain a code of conduct and provides professional development opportunities for members.



## Implementation

The forest management objectives described above are implemented by the Manager. The Manager applies best forest management practice within a quality management framework to plan for and deliver the required forest management objectives.

The Quality Management Framework includes:

- A **forest management system** (Tigermoth and GeoMaster) to ensure the forest management planning is up to date and operations are scheduled and undertaken according to the plan
- **Environmental Standards** to ensure operations follow the Standards, and to ensure high standards of environmental management are integrated into all areas of forest and operational planning and management
- The **Health and Safety Management System** (HSMS) to ensure all operations are managed safely with the goal of zero serious harm
- **FSC Certification** to ensure management principles and practice adhere to internationally recognised and adopted standards for forest management



# Stakeholders

## Investors as the forest owners

Investor relations is a key responsibility of investment manager, Forest Enterprises Limited (FEL).

FEL manages formal and informal channels of communications to keep investors, as the forest owners, fully informed about the status of the forests and of the business of their forestry investment. Formal communications include statutory annual reports and annual meetings, plus monthly and quarterly harvest reports throughout the harvest programme. Informal communications include seasonal investor email updates, plus organised group forest visits and investor meetings every 5 years for each forestry investment.

FEL has a full-time Customer Services Manager on staff who manages investor enquiries and client communications. Forest Enterprises' six owner-managers are also available to investors as/when required. FEL maintains a comprehensive record of investor communications within its client management system.

## Stakeholders in the community

Community relations are an important focus for the Forest Manager who is committed to being ethically and socially responsible, while meeting its business needs. The Manager makes every attempt to operate with the communities which neighbour FEL's managed forest properties.

The Manager strives to actively engage with stakeholders in the many communities in which we operate, and particularly those directly or indirectly affected by our operations. Prior to commencing harvesting in a new area, the Manager engages with representatives of the local community to keep them informed of plans and develop mitigation strategies for identified concerns. Typically, this includes forest neighbours, residents of any rural access roads affected by logging traffic, and Tangata Whenua.

## Social Impact Assessment

The Manager undertakes a social impact assessment annually. This assessment is available to public on request.

The Manager has developed a Social Impact Assessment (SIA) procedure to identify and manage decisions which may have significant impact on the local community. Key staff receive training in SIA techniques.

Key results from the SIA are:

### (A) Regional Development

The Manager will remain alert to any adverse impacts from its operations and deal with them accordingly, either individually or as part of an industry grouping. The major impacts are mostly felt by neighbours. The Manager has a list of neighbours and refreshes the list before the start of the Fire Season each year.

Impacts on neighbours are measured by records of compliments and complaints maintained in the Manager's office, records of cooperation on boundary spraying, summer grazing run-off etc.

### (B) Optimal Use

Good environmental stewardship means the existing indigenous vegetation enclaves have been assessed, ranked and are protected. Additional areas such as riverine gravels and limestone outcrops are also protected for their environmental values.

### (C) Illegal Activities

No illegal logging takes place.

The neighbours referred to in (A) above maintain a good watch over the forests in FEL's managed investment estate, mainly to protect their own stock from poachers who may hunt in the estate without permitted access. The police are also available to assist if required. The Manager's employees have cameras within the forest to monitor illegal use.

### (D) Skills Development

Training plans for staff and contractors will be established each year.

Contractors selected for specific tasks will be selected on the basis of specific criteria including proven skills for the task, training achievements and experience.

The Manager will maintain and be part of industry initiatives to develop a motivated, drug-free and fully skilled workforce for the industry's needs in the near future.



## **(E) Health & Safety**

The Manager has a documented Health & Safety Management System (HSMS).

A formal induction to each forest block and work site is a prerequisite of each operation.

The Manager maintains an Integrated Management System (IMS) incident database and compares itself against the overall industry Loss Time Injury Rate (LTIR) figures. Near misses are reported, as are incidents. Significant near misses will be investigated by the contractor and company supervisor in the spirit of a “no blame” culture. Records are kept and analysed for trends.

Reports on accidents and investigations from other companies are circulated to crew. Ensuring public safety is the rationale behind strict entry controls on Forest Enterprises Limited Estate forests. There are no staff available to patrol on a regular basis and so free public entry is not an option.

## **(F) Worker Rights**

Crew members have the opportunity to belong to a union.

The Manager ensures any principal contractors used on the estate comply with legislation for minimum wage rates, holidays, superannuation and sick leave. The Manager does not discourage staff or contractors from joining unions should they wish to do so.

## **(H) Tangata Whenua**

Forest Enterprises will protect any resource and tenure rights of Tangata Whenua.

## **(I) Neighbours**

All neighbours are rural dwellers and are involved in a range of rural economic activities such as farming, tourism, horticulture, agriculture or other small businesses. Corporate neighbours are usually other forest owners.

Neighbour contact details are maintained through databases. Some or all of these parties will be consulted when operations are proposed in forest areas adjacent to their boundaries.

## **General Access**

Stakeholder access to the forest is by permit only, in accordance with FEG’s Access & Permit Standard Operating Procedure.

FEG rigorously manages access to ensure protection of the land, tree crop and special areas such as HCVF areas, to protect the safety and wellbeing of permit holders, and to minimise disruption to neighbours. Investors as forest owners are prioritised for access. The most common recreational access is for hunting.

Access is not permitted while the forest is operational (such as during harvest), or during periods of vulnerability such as the fire season, unless stakeholders are accompanied by appropriate FEG staff.



## Regulations

In order to minimise the risk to forest owners, managers and contractors, it is important relevant legislation and agreements are identified and appropriate measures put in place to ensure breaches of legislation are avoided.

The Manager is kept current on changes in legislation by receiving communications issued by the New Zealand Law Society, reviewing the regular legal updates provided by its external legal advisors, and those published in the New Zealand Institute of Forestry newsletter, as well as reviewing any relevant updates sent out by the New Zealand Forest Owners Association.

All New Zealand legislation is available at <http://legislation.govt.nz>. Important legislation is available in hardcopy from the Manager's office, and this is reviewed and updated annually as required.

The following legislation and agreements summarise key regulatory and voluntary controls which currently apply to forest operations in the forest.

### National Environmental Standards for Plantation Forestry

The estate is subject to the provisions of the National Environmental Standards for Plantation Forestry (NES-PF). The NES-PF is a resource management system under the RMA that provides a nationally consistent set of standards to manage the environmental effects of plantation forestry activities.

### Resource Management Act

The estate is subject to the provisions of the Resource Management Act 1991 (RMA). The RMA is a resource management system which promotes the sustainable management of natural and physical resources and is now the principal statute for the management of land, water, soil and other resources in New Zealand.

Under the RMA, each council has its own plans and rules which must be adhered to.

District Councils look after land management issues such as land use, landscapes and biodiversity. Regional Councils deal with soil conservation, water quality issues, discharges to the air, water and land and the coastal marine environment.

Regional Council	District Council
Gisborne	Gisborne
Hawke's Bay	Hastings
	Wairoa
Greater Wellington	Masterton
	Carterton

### Heritage New Zealand Act

Under the Heritage New Zealand Pouhere Taonga Act 2014, it is the landowner's responsibility to identify any historic sites on their land prior to undertaking any work which may disturb or destroy such sites. Where such circumstances might exist, an "Authority to Modify or Destroy" will be sought from Historic Places Trust (HPT). Such authorities are similar in function to a resource consent and, if granted, normally come with conditions which must be met.

Records of archaeological and historical places are maintained in the New Zealand Archaeological Association Site Recording Scheme run by the HPT. There is a searchable register maintained online on the HPT website. To search in this register, follow this link:

<http://www.historic.org.nz/en/TheRegister/RegisterSearch.aspx>

Registered historic sites are also often included in schedules of places and sites of significance in District Plans along with sites of cultural significance.

If a site is found or suspected on any block, the protocols specified in the Manager's Environmental Standards, and any others specifically developed in conjunction with HPT and iwi, or other stakeholders must be observed.

### Resource Consents

There are currently 25 Resource Consents held for FEL's managed investment estate.



## **Emissions Trade Scheme**

Forests in New Zealand are governed by rules related to New Zealand's commitments to reduce greenhouse gas emissions.

Any existing forest originally planted prior to 1 January 1990 will be required to cover all their emissions if the forest is deforested. Deforestation occurs if the forest is not replanted, is left to regenerate naturally or, does not achieve the regulated heights and stocking densities as required under the Climate Change Response Act 2002.

The majority of post-1989 forest in FEL's managed investment estate is registered in New Zealand's Emissions Trading Scheme (ETS). The relevant investment entities have leased the carbon in the Post-1989 areas of forest to New Zealand Carbon Leasing (No 1) Limited which is the ETS participant.

## **Other Relevant Legislation**

- Animal Welfare Act 1999
- Biosecurity Act 1993
- Climate Change Response Act 2002
- Conservation Act 1987
- Fencing Act 1978
- Fire and Emergency New Zealand Act 2017
- Forests Act 1949
- Forests Amendment Act 1993
- Forestry Rights Registration Act 1983
- Hazardous Substances and New Organisms Act 1996
- Health & Safety at Work Act 2015
- Injury Prevention, Rehabilitation and Compensation Act 2001
- New Zealand Forest Accord
- Noxious Plants Act 1978
- Pesticides Act 1999
- Reserves Act 1977
- Soil Conservation and River Control Act 1941
- Trespass Act 1980
- Financial Markets Conduct Act 2013 as it relates to Forest Enterprises Limited's role as a licensed MIS manager

Additional relevant legislation is included in the Appendix of this Plan.

## **Environmental Code of Practice**

All operations carried out on the estate must be undertaken to the standards specified in the New Zealand Environmental Code of Practice for Plantation Forestry and the New Zealand Code of Practice for Forest Engineering.



## **Health and Safety**

All operations managed by the Manager are subject to the Manager's Health and Safety Management System (HSMS). This programme includes active accident prevention programmes, training, injury management and drug and alcohol testing.

Health and safety statistics are reported quarterly to FEL's forestry investments with harvest underway.

## **Responsibilities and Authorities**

All staff are responsible for ensuring operations under their immediate control are planned and carried out to meet relevant requirements of any Resource Consent or Permitted Activity Conditions.

Staff are also required to ensure the Manager's crews and/or contractors carrying out these operations are fully aware of these requirements and the steps required to comply.

Any breach of these requirements is deemed an Environmental Incident and shall be dealt with as such.

## **The Environment and Forestry Activities**

Forestry activities encompassing silvicultural and harvesting operations can have both beneficial and adverse impacts on the environment depending on the quality of environmental and operational management.

Well managed forests can:

- Enhance water quality
- Stabilise and conserve soil
- Provide a buffer against flood flows during storms
- Shade waterways keeping water cool for enhanced fish and macroinvertebrate life
- Provide habitat for rare, threatened and endangered native species
- Sequester carbon to combat climate change and
- Provide recreational, economic and social benefits to the community

Conversely, poorly managed forestry activities can have harmful impacts. The Manager aims to identify the potential negative impacts and to implement environmental safeguards to prevent or to minimise the negative impact from its operations.



# Environmental Policy and Practices

Environmental policy and practices are an integral part of every operation which takes place on the forest. The Manager maintains an Environmental Policy Statement which is signed by the Forestry Director and followed by all staff.

Regular monitoring of key environmental parameters will be undertaken where necessary to ensure the impact on the forest environment from events such as windstorms, flooding and fire, or of agents such as pests, diseases, and weeds are minimised.

The management of the forest recognises the importance of the natural and social environment for the future of its business. The people employed in the forest and processing plants, the neighbouring landowners, the appropriate iwi and the community at large are all recognised as stakeholders.

All activities within the estate are subject to the Manager's Environmental Standards.

## Environmental Goals

1. Achieve a greater understanding from all persons working within the forest of their environmental responsibilities.
2. Establish working relationships with all councils.
3. Establish relationships with iwi, neighbours and other stakeholders.
4. Promote and undertake sound environmental stewardship of land and other natural resources on, or adjacent to, this land.

## Environmental Standards

The Manager's Environmental Standards set out the expectations with regard to managing the environment during forest operations. They are designed to communicate expectations for environmentally sound forestry operations.

Standard Operating Procedures (SOPs) guide all operations and are continuously reviewed and updated.

Assessment of environmental risks due to operations are covered within the SOPs along with other specific forms relating to harvest operations, some of which are managed on BraveGen (environmental and health and safety management software).

The Environmental Standards and SOPs cover hazardous substances management and clearly outlines the expectations the Manager has of all staff, contractors and suppliers in relation to hazardous substance management.

Hazardous materials which may be used within FEL's managed investment estate are:

- Herbicides
- Pesticides
- Fuels
- Oil
- Fire retardants
- Surfactants
- Paint

The Manager is committed to reducing the use of hazardous substances. All aspects of chemical use are reported annually.



# Estate Description

## Forest Area

Forest Enterprises Limited's managed investment estate (covered by this Estate Management Plan) comprises 19 forests with a total gross area of 8470.1 hectares. The table below shows the breakdown of the estate by forest and type.

Forest	Gross Area (HA)	Net planted area (ha) All Species	Working Forest Area	FSC RSAA (HA)	RSAA (% of net productive area)
Blairlogie	442.2	358.5	387.57	14.28	4%
Blairlogie North	448	321.52	365.3	34.88	10%
Cleland	342.2	315.93	315.93	8.76	3%
Glenwood	492.1	386.01	386.01	50.99	13%
Goodwood	440.1	354.54	363.01	39.82	11%
Hokoroa	499.1	386.53	397.45	88.35	22%
Hokoroa North	594.1	335.67	384.71	155.98	41%
Homewood	422.4	314.44	348.43	24.05	7%
Longwood	433.3	322.74	362.4	15.88	4%
Majestic Pine	411.7	278.31	309.2	32.44	10%
Millwood	515	411.7	411.7	82.38	20%
Ngahape	648.3	592.88	594.56	33.83	6%
Ormond	464.1	351.81	400.82	34.68	9%
Te Karaka	485.8	388.75	412.13	40.47	10%
Te Karaka North	418.7	330.23	373.51	29.41	8%
Rata Hills	364.9	316.86	316.86	37.49	12%
Ratahuia	304.2	208.12	231.25	17.50	8%
Te Hau	343.3	263.97	289.03	15.42	5%
Te Puhi	400.6	244.16	290.91	63.22	22%
<b>Total</b>	<b>8470.1</b>	<b>6482.67</b>	<b>6940.78</b>	<b>819.83</b>	<b>12%</b>

## Species

FEL's managed investment estate is primarily *Pinus radiata*, with some minor species planted in patches such as for erosion control. All *radiata* crops are managed either on a pruned, framing or untended regime. It is intended to replant all areas after harvest with improved genetics.

*Pinus radiata* is the most extensively used species for plantation forestry in New Zealand due to its fast-growing behaviour, durability and versatility. It was introduced to New Zealand in the 1850s, adapted to our climate quickly, and by the early 1900s *radiata* plantations were throughout the country. During the 1950s, genetic improvement commenced and currently continue to produce higher quality wood.

Demand for quality wood is always increasing both domestic and internationally.



## Age Class

FEL's managed investment estate has an uneven age-class spread with the majority of stand aged 21-25 years. The following table shows the breakdown of the estate by age class.

Tree Age (years)	Area (ha)
Fallow	1099.1
1-5	984.7
6-10	59.0
11-15	0.0
16-20	3.3
21-25	1032
26-30	3838.7
30+	52.9

## Forest Enterprises Limited Estate Map

A map of the forests comprising Forest Enterprises Limited Estate is included on the next page.





# Forest Enterprises Limited Estate (Wairarapa)

1:110,000



Date: 30/04/2021

Cleland

Rata Hills

Bideford

Tauwera

Blairlogie North

Blairlogie

Te Hau

Ngahape

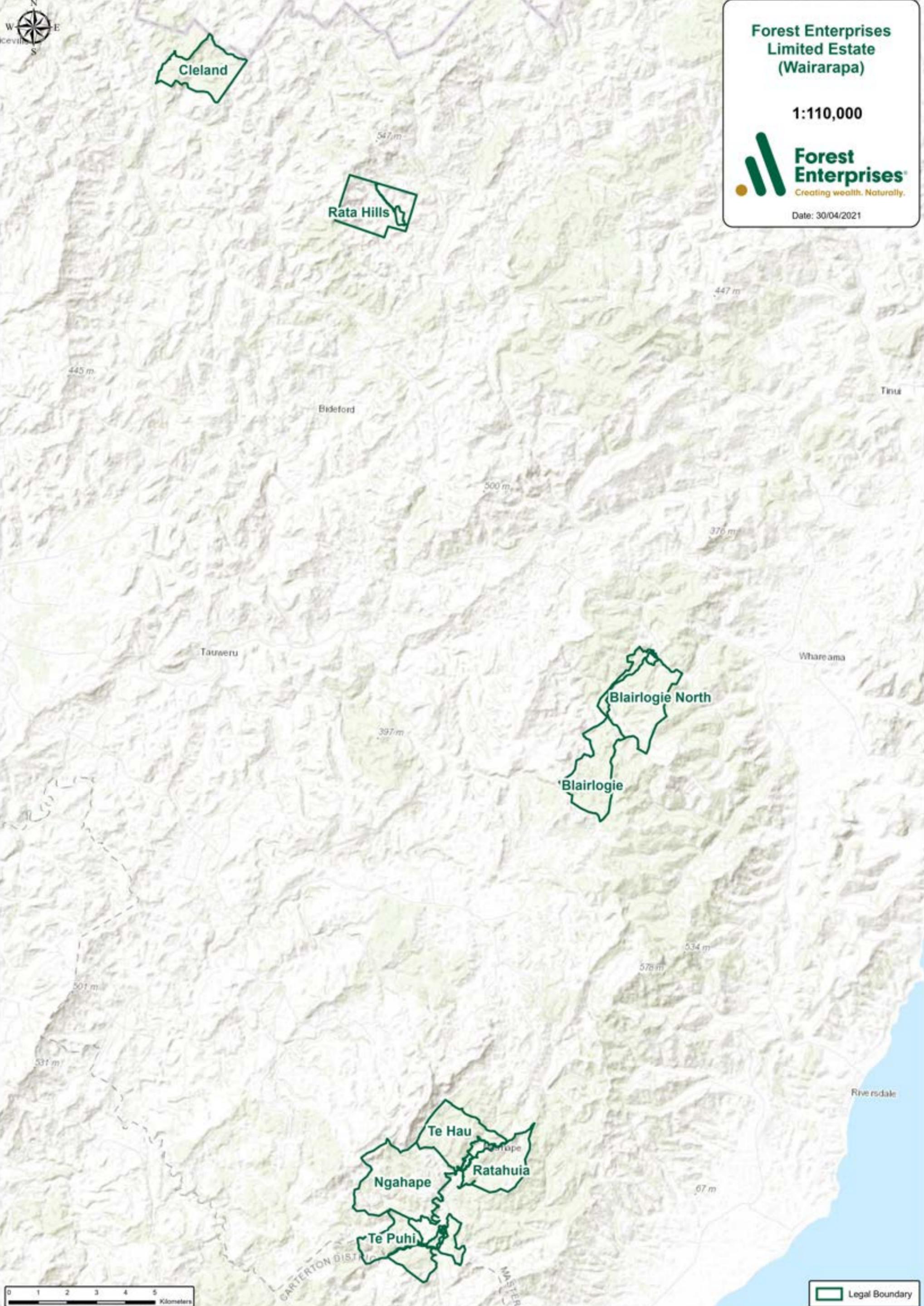
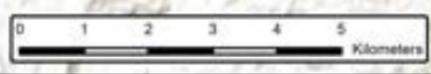
Te Puhi

Ratahuia

Riversdale

Whareama

Tiria

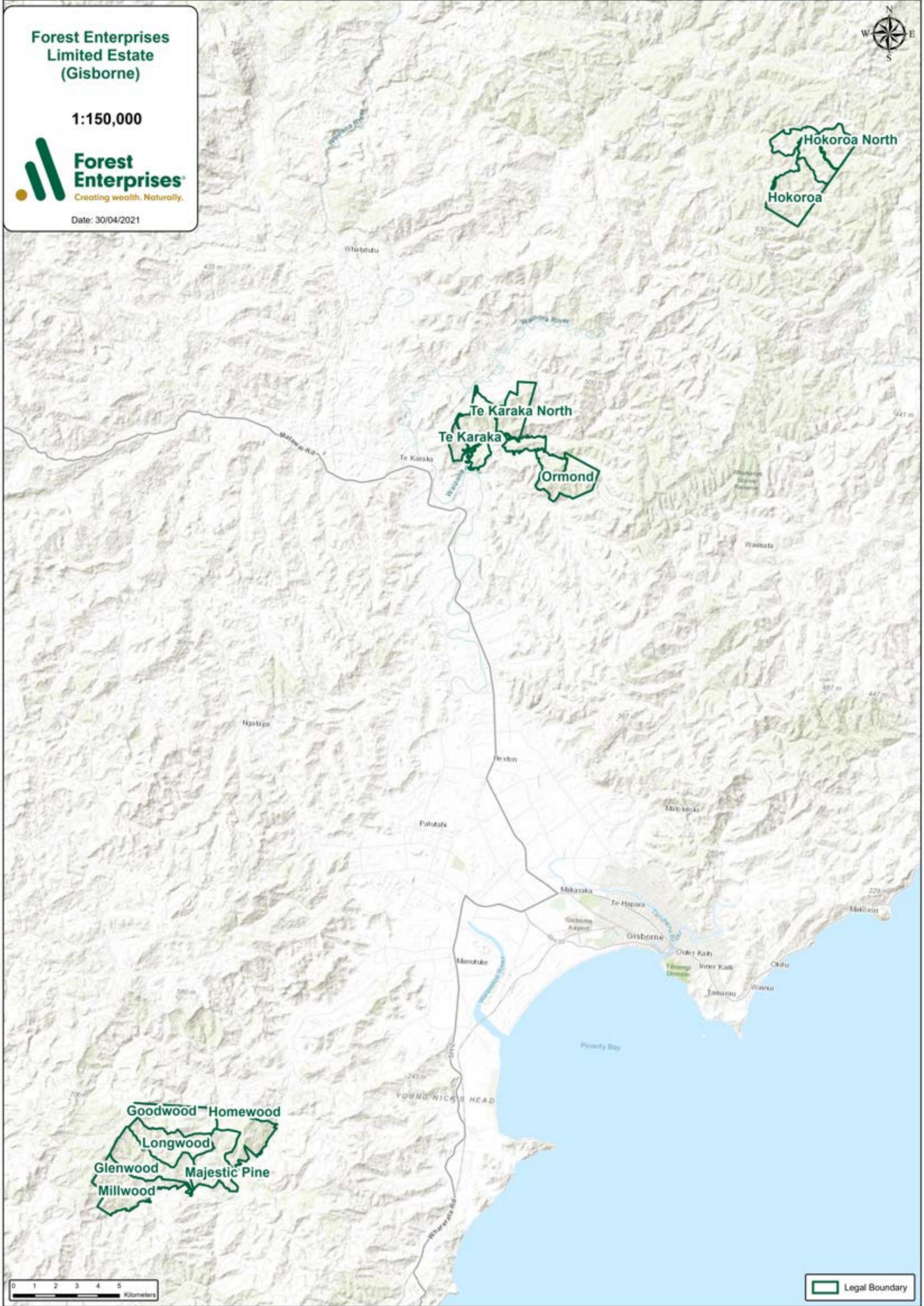


Forest Enterprises  
Limited Estate  
(Gisborne)

1:150,000



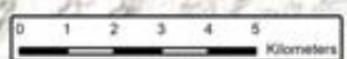
Date: 30/04/2021



Goodwood Homewood  
Longwood  
Glenwood Majestic Pine  
Millwood

Te Karaka North  
Te Karaka  
Ormond

Legal Boundary



# Forest Description

## Location

Forest Enterprises Limited's (FEL) managed investment estate currently extends over two regions and two districts:

Forest Name	Region	District
Glenwood	Gisborne	Gisborne
Goodwood		
Hokoroa North		
Hokoroa		
Homewood		
Longwood		
Majestic Pine		
Ormond		
Te Karaka		
Te Karaka North		
Blairlogie	Wellington	Masterton
Blairlogie North		
Cleland		
Ngahape		
Rata Hills		
Ratahuia		
Te Hau		
Te Puhi		

## Topography

### Gisborne

Gisborne topography is steep hill country with coastal flats. The region is dominated by the Huiarau-Raukumara Ranges which cause thin-soiled erosion-prone hills. This land is often marginal and can only be used extensively which makes forestry an appropriate land use.

### Hawke's Bay

Hawke's Bay is largely made up of hill country and coastal plains. The Huiarau, Kaweka, and Ruahine Ranges uplift the region (earthquake prone) which cause thin-soiled erosion-prone hills. This land is often marginal and can only be used extensively which makes forestry an appropriate land use.

### Wellington

The Wellington Region, like Manawatu-Wanganui, has a variable topography that includes the steep Tararua and Ruahine Ranges that dissipates into rolling hills and plains. The Wairarapa also includes the Aorangi Range which provides regional central uplift.

## Geology and Soils

FEL's managed investment estate, which lies along the East Coast of New Zealand's North Island, is part of a complex geological accretionary system where faulting and folding of rock is significant due to the subduction of the Pacific Oceanic Plate under the Australian Continental Plate. This subduction has created an accretionary wedge regime along the East Coast of the North Island.

The geology of FEL's managed investment estate ranges from Carboniferous (300Mya) (Greywacke Tararuas/Ruahine Ranges) to Quaternary (Recent) in age.



The soils of FEL’s managed investment estate are majority Brown and Pallic soils with some minor Gley, Pumice, Raw, Recent Soils and one area of podzol. Brown Soils are the most extensive soil type for New Zealand, whereas Pallic Soils cover 12% of New Zealand. Brown Soils have relative stable topsoils with well-developed subsoils whereas Pallic Soils have limited permeability and are surface erosion susceptible (ideal for P. Radiata compared to grass species).

For more information on New Zealand Soils - Hewitt, A., & Dymond, J. (2013). Survey of New Zealand soil orders. Ecosystem services in New Zealand: conditions and trends, 1(10), 121-131

## Climate

### Gisborne

Temperature (C°)	Sunshine	Rainfall	Ground Frost
Mean daily maximum: 24 Mean monthly temperature: 22 Mean daily minimum: 15	Average annual bright sunshine hours: 2180	Average monthly rainfall (mm): 87.58 Average monthly wet days (1mm Or More of Rain): 9.16 Mean annual rainfall (mm): 1051	Average days of frost: 33 per annum

### Hawkes Bay

Temperature (C°)	Sunshine	Rainfall	Ground Frost
Mean daily maximum: 19.5 Mean monthly temperature: 14.55 Mean daily minimum: 9.6	Average annual bright sunshine hours: 2238.2	Average monthly rainfall (mm): 74.21 Average monthly wet days (1mm Or More of Rain): 8.15 Mean annual rainfall (mm): 877.35	Average days of frost: 29.65 per annum

### Wellington

Temperature (C°)	Sunshine	Rainfall	Ground Frost
Temperature (C°) Mean daily maximum: 17 Mean monthly temperature: 12.85 Mean daily minimum: 8.7	Average annual bright sunshine hours: 1982.2	Average monthly rainfall (mm): 88.95 Average monthly wet days (1mm Or More of Rain): 10.51 Mean annual rainfall (mm): 1069.15	Average days of frost: 36 per annum



# High Conservation Value (HCV) Areas

High Conservation Value Areas are defined as zones and physical spaces which possess and/or are needed for the existence and maintenance of identified High Conservation Values (HCV). These areas are classified into six value types:

1. Species diversity
2. Landscape-level ecosystems and mosaics
3. Ecosystems and habitats
4. Critical ecosystem services
5. Community needs
6. Cultural values

HCV 1 to 3 are determined by ecosystem values whereas HCV 5 & 6 are cultural value. HCV 4 is a combination of both ecosystem and cultural values as it is an environmental element which has cultural implications.

## HCV 1 to 3

Indigenous biodiversity management within the forests is an essential component of everyday forest management. Although exotic forests can provide a level of biodiversity, High Conservation Value Forest (HCVF) areas are usually the source of most indigenous biodiversity. Rare, Threatened and Endangered species (RTE) can also be found associated with exotic forests and require special attention for management. Policies, plans and maintenance of RTE populations will be updated at least every 5 years in consultation with competent experts.

## HCV 4 to 6

Community needs and cultural values, such as sites and landscapes, need to be protected as they are fundamental resources for local communities. These sites are identified by the forest manager using data collection, mapping and stakeholder engagement.

## **Policy**

All HCV areas and Reserve areas are managed per this Policy. There is one HCVF3 Area in FEL's managed investment estate.

The Manager contracts ecological consultants to identify HCVF 1 to 3 areas and the Managers identify. As forests are acquired into the estate, the new property is to be ecologically surveyed for HCV areas.

FEL's managed investment estate includes 511 hectares of Reserve areas. All Reserve and HCV areas have been mapped and recorded with the Manager's GIS.

### **Category One Reserve Areas**

All these areas have been mapped and identified and recorded on the GIS. The Manager will monitor these areas either annually or at least 5-yearly (criteria depending i.e. scale of protection required, size, etc) and protect these areas.

### **Category Two Reserve Areas**

All these areas have been mapped and identified and recorded on the GIS. The Manager will protect these areas; however, the areas can be crossed for operational purposes if this is the best environmental result. Any crossing of the area will require a decision support system. Category Two reserve areas (criteria depending i.e. scale of protection required, size, etc) will be monitored at least 5 yearly.

### **Category Three, and Four Areas Reserve Areas**

All these areas have been mapped and identified and recorded on the GIS. The Manager will protect these areas; however, the areas can be crossed for operational purposes if this is the best environmental result. Any crossing of the area will require a decision support system.

### **Rare, Threatened and Endangered Species**

All contractors and staff must be trained to identify and given the identification form for (also in Environmental Standards), known rare, threatened and endangered species. If any species are found, the Manager is to be notified immediately and a species sighting form completed.



Protection requirements are assessed at the time of re-establishment where additions to riparian or buffering setbacks are often recommended.

In the case of fauna, records of sighting and locations are stored within GeoMaster and GIS.

Whenever an operation is planned, GeoMaster and GIS must be checked for any record of rare and threatened species within or near the operational area. If there have been observations of any species, all contractors and their staff must be made aware of this, and a management plan for protecting the species will be prepared as part of the Harvesting Prescription. If required, this plan will be prepared in association with local experts.



# Establishment and Silviculture

All forest operations are planned to ensure the crop achieves maximum growth and is of high quality.

Typical establishment and silviculture operations within FEL's managed investment estate include:

- Land preparation
- Planting
- Weed control
- Pest and disease control
- Fire protection
- Pruning
- Thinning

In addition, the Manager follows a maintenance plan which includes road, track, fence and water way maintenance.

All operations must follow the standards set within the Manager's Environmental Standards.

## Establishment

No land under native vegetation will be converted into plantations as per the New Zealand Forest Accord.

The majority of harvested areas will be replanted the winter following the first spring after harvest.

Establishment may include:

- Raking of slash
- Spot mounding
- Aerial desiccation spraying
- Planting of genetically improved seedlings (generally *Pinus radiata* is planted at 1,000-1,250 stems per hectare)
- Animal pest control
- Fertilising
- Aerial or spot releasing of weed competition

Prior to any forest establishment, a review of the area will be conducted to identify whether there are any risks to rare, threatened or endangered species of flora or fauna. At the same time, consideration will be made of riparian buffer sizes and hard to harvest areas.

All establishment sites will be reviewed to ensure reserves and HCVF areas are maintained, that there is a mix of age classes throughout FEL's managed investment estate, and correct genotypes are used.

## Silviculture

Silviculture is the practice of controlling the growth, composition, health and quality of a forest to meet specific objectives.

There are two main tending regimes within FEL's managed investment estate – pruned and framing. Some areas are left untended as a protection crop or for other reasons, however this is not the norm.

Future regimes will depend on FEL's managed investment estate and the Manager's assessment of market opportunities, site factors (including slope) and the tree-stocks available.

## Thinning

Thinning of stands is undertaken, generally between six to nine years of age, to provide the optimum space for selected crop trees within the stand to grow and maximise their economic return. The aim is to thin out the smaller or poorer formed trees leaving the bigger, better formed trees to grow on. Most thinning operations leave the thinned stems on the forest floor to decompose where production thinning is impractical or uneconomic.



## Regimes

### Pruned

Year	Operation	Stems per ha	Details
0	Establish	1000-1250	Improved genetics
5-6	Prune 0-3m	375	Minimum green crown must be 3.0m
7-8	Prune 3-6m	375	Minimum green crown must be 3.5m
7-8	Thin to waste	350-375	Thin all non-pruned stems to waste after final pruning
25-30	Clearfell		

### Framing

Year	Operation	Stems per ha	Details
0	Establish	1000 - 1250	Improved genetics
8-10	Thin to waste	500-600	Thin all non-dominant stems to waste when mean crop height 14m
25-30	Clearfell		

### Forest Health

Forest health surveys will be undertaken during routine forest visits. The Manager will complete its own health assessments.



# Inventory, Mapping and Forest Records

Forest growth and development is monitored through regular forest inventory. Forest inventories providing stand information are required at different times and for different reasons throughout the life of a rotation. The Manager undertakes audits of all inventory to ensure consistency in approach and accuracy.

The following inventory is applied to FEL's managed investment estate:

- Pre-assessment
- Quality Control
- Mid-rotation Inventory
- Pre-harvest Inventory

## Pre-assessment

Pre-assessment is the collection of parameters prior to a tending operation to help calculate contract rates for tending, and to take a final check on the timing of the operation.

Sampling intensity is low with a minimum of five plots per stand, and data is collected from six to ten trees per plot. Data collected is then used to calculate a labour-day target and hence a contract rate per hectare. Contract rates are often set by tender or negotiation, reducing the need to pre-assess every block.

Pre-assessment is completed on the forests prior to tending operations commencing.

## Quality Control

Quality control is carried out during and after a tending operation. The aims of the quality control are to:

- Collect sufficient data to monitor a contractor's performance and correct performance if necessary
- Collect quantitative data to provide reliable estimates of the crop
- Provide data as input for growth modelling

Sampling intensity is a minimum of five plots per stand, or one plot per 2 hectares, with every fourth plot being a full measurement plot. This provides the data for the current crop status and future growth modelling.

Data is summarised by Forest/Compartment/Stand prior to being entered into GeoMaster where it is retained as a permanent record. The records can then be directly accessed for annual reports and valuations and stand growth simulation modelling.

Quality control plots are completed at the stand level at the completion of each tending operation.

## Mid-rotation Inventory

The principal aim for the mid-rotation inventory is to collect stand data for inputs into estate modelling and long-term harvest planning and marketing. The objective is to get accurate stand data summaries which will be used for crop typing, estate modelling and valuation.

This is a low intensity inventory, but with full log type cruising. This will enable summary to stand level and more accurate yield projections for the estate model. Mid-rotation inventory is scheduled for between 12 and 16 years of age.

## Pre-harvest Inventory

The principal aim of pre-harvest inventory is to obtain estimates of recoverable volume by log grade. This information can then be used to develop marketing and harvesting strategies. Inventories will be undertaken when stands reach five years or less from harvesting. Sampling intensity is targeted to achieve 10% confidence limits on Basal Area on a stand-by-stand basis. Smaller stands may be aggregated into crop types to achieve this as in mid-rotation inventory.

## Post-harvest Reconciliation

After harvest, reconciliation of data of the harvest area is undertaken to help improve records and to ensure harvesting has met the standards expected.



## Mapping

Updating forest maps is required periodically as the forest changes. The work involves:

- Updating topographic detail
- Remapping forest stand boundaries from aerial photography
- Updating stand and forest attributes such as roads, landings, protected ecosystems and archaeological sites
- Defining legal boundaries

The data is kept and managed in the Manager's GIS system.

Stands are remapped from new aerial photographs around the age of four, when the trees are visible, to accurately determine boundaries. They are also remapped within 2 years of harvest to assist with harvest planning.

## Forest Records

Forest records are essential to provide an historic perspective on the physical condition of each stand.

Forest records should provide the following information:

- Record of forest operations for each stand including a summary of quality control data
- A forest map showing the location, stand boundaries and net stocked area of each stand
- Crop inventory results
- Yields achieved from each stand at production thinning or clearfell
- Costs incurred for each operation
- Protected ecosystems attributes
- Threatened species records
- Archaeological and Waahi Tapu sites and other potential features
- Chemicals used

The Manager maintains forest records in GeoMaster.



# Harvesting

Currently, harvesting is scheduled by age class. However, as the estate grows, the Manager will attempt to smooth the harvest profile to ensure continuous harvesting with a similar volume harvested per annum.

## Harvest Planning

All harvest planning and operations will follow the Manager's Environmental Standards.

Planning is essential to ensure roading infrastructure is developed in a timely manner and any resource consents and surveys are completed on time.

Harvest planning must consider:

- **Slope** – determining what equipment can be used
- The Resource Management Act 1991, the Heritage NZ Pouhere Taonga Act 2014 and any other relevant **legislation and regulations**
- **Safety** – how to ensure the operation is completed in a safe and legal manner
- **Soil and water** – how to avoid, remedy or mitigate impacts on soil and water
- **Ecosystems** – potential rare or threatened species and how to manage, managing in accordance with the New Zealand Forest Accord (1990) and the Code of Environmental Practice (ECoP)
- Possible sites of **cultural, architectural, historical, ecological economic or religious** significance to Tangata Whenua – Tangata Whenua are to be consulted in regard to all planned harvest sites
- **Financial outcomes** – plan the operation to ensure it meets current market demand and provides a return on investment
- **Offsite impacts** – plan to minimise any adverse impacts on people or the environment outside of the forest

## Harvest Operations

All operations will be undertaken by harvest and transport contractors. The Manager selects contractors for their quality of service and their understanding of the Manager's Environmental Standards, associated SOPs, Health and Safety Management Systems (HSMS), and the SOPs relating to Archaeological & Waahi Tapu Sites and Discovery and Rare, Threatened & Endangered Species.

All operations will be supervised by the Manager, who has the right to stop the operation at any time if they feel the operation is having, or has the potential to have, an adverse impact on safety or the environment.

All operations will be regularly audited as per the Manager's health and safety and environmental systems.

## Harvesting Methods

The Manager uses three basic criteria to ensure the right harvesting methods are employed:

1. **Health & Safety** – the method is the most appropriate for the topography and nature of land so that the potential for injury is minimised
2. **Environment** – the method creates the least impact on the environment
3. **Financial** – the method is the most cost effective for the area taking safety and environmental considerations into account

The Manager is committed to adopting harvesting techniques and technology which minimise the impact on the environment and reduce the risk of accidents and injuries. To meet these objectives, FEL's managed investment estate has been divided into four terrain types and the appropriate machinery configurations are used on each type.

## Chain of Custody

All harvest loads leaving the estate will be accompanied by a docket or dockets stating crew, grade, forest location, weight and transport operator. Branding of logs is systematically being phased out when this process is deemed to pose an unnecessary risk to workers (i.e. fully mechanised logging site)

Subject to attaining FSC certification, the Manager would ensure all dockets have the relevant FSC certification number on them and FSC logo mark.



## Protection and Maintenance

The Manager will maintain roads, tracks, fences and water systems. The Manager will ensure pest and disease control, fire protection and management of protected areas occurs at all times.

Pest management within the estate is subject to statutory obligations under the Regional Pest Management Strategy administered by the Regional Council. The strategy applies to both pest plants and animals, categorising them in terms of management objectives. The categories, objectives and landowner obligations are summarised below for each Regional Pest Management Strategy Plan.

### Weeds

The overall objective in managing weeds is to:

- Meet statutory obligations under the Regional Pest Management Strategy
- Reduce direct impacts on both plantations and indigenous biodiversity values
- Ensure impacts on neighbouring properties are promptly dealt with
- Reduce the abundance and distribution of these species within the forest estate

The major species within FEL's managed investment estate are various grasses, gorse, broom, blackberry and wilding conifers.

Competition from colonising weeds will limit tree growth in their first few years after establishment. Control of these weeds involves chemical application which will occur prior to planting and may occur post planting.

Gorse and broom threaten indigenous biodiversity in open communities where they can smother native species, however they can also act as a nurse crop in some areas for native regeneration. Blackberry can displace native species by outcompeting and smothering them.

A list of pest weeds appears in the appendix of the Manager's Environmental Standards and in the Appendix of this Plan.

All weeds will be controlled within FEL's managed investment estate as follows.

#### (A) Total Control

Any weeds discovered under this category must be reported to the regional council. The council is responsible for controlling these weeds.

#### (B) Regional Surveillance

Weeds under this category should be reported to the council so the council can monitor them.

#### (C) Containment

Weeds under this category should be contained and removed if possible

#### (D) Site-led

These plants will be cleared by the Manager if within 50m of a neighbour.

### Disease

Diseases, which can affect the forest trees and adjacent native vegetation, are monitored throughout the year. Most diseases can cause little damage and do not require control. The exception is *Dothistroma spp.*, a fungus which attacks pine needles and is associated with wet, warm conditions.

Dothistroma is the most commonly occurring fungal disorder within New Zealand's pine plantation. This fungus is controlled using an aerially applied copper-based fungicide spray, but only when the infection reaches a critical level. Dothistroma infection can also be controlled via silviculture by timely thinning and pruning operations, which increases air movement and lowers humidity levels.

There has been no need for Dothistroma control within FEL's managed investment forests.

No control is currently completed on other fungal disorders.

Any unusual mortality or colouring discovered within FEL's managed investment estate will be reported to the Ministry for Primary Industries.



## Chemical Control

All chemical applications are managed in accordance with the Manager's Environmental Standards, the Manager's Pesticide Application SOP and Chemical Use Policy, the New Zealand Standard for Agrichemical Application, Hazardous Substances and New Organisms Act 1996 regulations, and the obligations conferred by FSC to manage and minimise the use of chemicals; including use of alternatives where available.

As part of the FSC commitment:

- All chemical usage is tracked by active ingredient and application area to enable reporting and monitoring of trends
- The Manager has applied to be a participant in the Forest Owners environmental group which is undertaking research into chemical reduction, efficacy and safety issues related FSC regulations.
- The FSC Pesticides Policy (FSC-POL-30-001 V3-0 EN) is to be followed.
- All unwanted chemical can be booked for pick up via the Agrecovery website
- All empty containers will be disposed of at a registered recycling site

## Pest Animals

Forests provide habitat for unwanted pest animals, and in most cases a refuge from which such pests can spread. Animal pests can substantially reduce the productivity of the forest.

The Manager will attempt to identify all pests present and manage them within the relevant regional council pest management strategies. The Manager will work to control or eradicate such species in accordance with these plans, to prevent spread and nuisance to neighbouring properties.

The most cost-effective long-term control is often achieved with the co-operation of neighbours, regional authorities and pest control agencies. The Manager will keep all these stakeholders informed of pest management operations.

## Fire Prevention

The Manager complies with Fire and Emergency New Zealand (FENZ) and its own Fire Plan which is reviewed by the Manager each year before October.

The threat of fire is minimised by:

- Having an effective fire plan which encompasses prevention, detection and control procedures
- Active prevention measures which include restrictions on access, fire prevention signage, publicity when fire danger is high and access to water sources
- Effective detection systems which includes good communication systems, mapping, and fire plan alert procedures
- A close link with the relevant fire authorities, and an understanding of equipment and trained manpower availability
- Good forest management which recognises the influence of terrain, the road network and accessibility on fire prevention and control measures
- Suitable internal access systems of roads and tracks, and maintenance of fire breaks as the need arises

The legal responsibility for fighting forest fires lies with FENZ. In the event of a fire which starts within the forest, FENZ is responsible for attending and providing the resources to extinguish the fire.

The Manager maintains a close liaison with FENZ in terms of developing the "fire plan" and the maintenance of good communication relative to potential risks and fire danger ratings.

All neighbours are contacted prior to the fire season to check the Manager's records of contact numbers and other details are correct.



### **Rare, Threatened and Endangered Species**

The Manager is committed to managing FEL's managed investment estate to maintain a diversity of both indigenous flora and fauna species. Of particular importance are rare, threatened and endangered species living within the estate.

The Manager is undertaking a review to identify all rare, threatened and endangered species either confirmed or suspected to be present in the estate. Management Plans are progressively developed for all species confirmed to be present, focusing initially on those areas where harvesting is imminent.

Any permanent habitat for rare, threatened and endangered species is recorded in the GIS mapping layer as ecological restrictions, and taken into account during planning of operations, to ensure compliance with the Management Plans.



# Monitoring

Every year, the Manager and Forest Enterprises Limited (FEL) will discuss the plan and associated annual plans. A review of measures taken to meet objectives will be undertaken at this time and outcomes recorded.

All monitoring will follow the Manager's monitoring plans and SOPs as per the Environmental Standards. Unless commercially sensitive, all monitoring results will be made available to public on request.

The monitoring program is designed to understand the impact of forest activities on the environment and the impact of the environment on the Manager's ability to grow trees. This leads to the development of strategies to ensure the Manager continues to manage its activities in a sustainable way.

Discussion will be held on the following:

## Health and Safety

All contractors and staff will be audited as per the Manager's Health & Safety Management System (HSMS). All near misses, incidents and property damage will be recorded. The Manager will run a random drug and alcohol sampling program.

## Environmental

The Manager will ensure all monitoring occurs as specified in its Environmental Standards. In particular, the Stream Health Monitoring and Assessment Kit (SHMAK) testing and ecological consultant reporting on reserves.

## Operations

The Manager conducts internal environmental audits to confirm operations have been carried out according to prescriptions, the Manager's Environmental Standards and regulatory requirements. Corrective actions are identified and rectified.

Regional Councils will also conduct resource consent compliance monitoring of operations undertaken under resource consents or permitted activity rules.

## Forest Growth

Forest growth will be monitored through a combination of permanent sample plots and regular inventory.

## Financial

The Manager will monitor budget versus expenditure and report variances to FEL. FEG contributes to the annual reporting process which is a key responsibility of FEL as a licensed manager of forestry Managed Investment Schemes (MIS).

Periodic review meetings will be held when requested.

## Forest Health

The Manager will undertake ongoing health monitoring survey to identify any health issues in the growing stands such as disease, pest damage or nutrient deficiencies.

The most common disease affecting radiata pine is a fungal disease *Dothistroma spp.* which causes needle cast in radiata pine and can severely slow tree growth. *Dothistroma* is controlled using copper-based products (cuprous oxide) similar to those used to control disease in home vegetable gardens.

Routine forest health inspections will identify any significant outbreaks of *Dothistroma* and be used to develop the annual spray programme. Significant amounts of research have been carried out to ensure the lowest possible effective level of fungicide is used to control this disease. Even though risk is low, application is planned to ensure that drift is minimised, and records are kept and audited to ensure that practices can be improved.

## Stakeholders

Monitoring satisfaction is inherent in all stakeholder engagement, formal and informal, as part of Forest Enterprises' service provider ethos. Consultation occurs with stakeholders as per the Manager's Environmental Standards and this Estate Management Plan. This includes actions undertaken to resolve disputes and issues, monitoring of externally generated complaints and client compliments.

Consultation occurs with stakeholders during resource consent applications, periodic meetings, contributions to council processes and interactions with forest recreational users and iwi.



## **Investors as forest owners**

Independent forest audits occur in the MIS forests. Forest auditor Forme Consulting Group Limited undertake an inspection of the forest growth and health, and of the Manager's forestry operations. Forest audits are reported via the MIS statutory annual reports.

Independent annual financial audits are undertaken by Baker Tilley Staples Rodway Audit Limited for each MIS at balance date. They are reported with the financial statements via the annual reports provided to investors as forest owners.

The annual report includes a summary of the forestry activity for the year prior, planned forestry activity for the year ahead, annual expenditure vs budget, budget for the year ahead, and updates to valuations and projected investment returns.

FEL engages with investors prior to harvest around the Manager's harvest plan, including projected timeframes and returns. This includes a forest visit and informal investor meeting. A formal investor vote is required to approve the Manager's harvest management fee prior to harvest, and the sale of the land (usually at the conclusion of harvest).

Monthly and quarterly harvest reports are produced throughout the harvest programme for FEL's investors as forest owners. This includes health and safety and environmental reporting, harvested volume and log quality, and routine financial summaries showing actual vs projections.

The Financial Markets Conduct Act 2013 requires Managed Investment Scheme managers to facilitate annual meetings for investors within 6 months of balance date. Directors of FEL host online annual meetings for investors with no fixed agenda. These are well attended by investors and the discussion is broad. The investments' supervisor often attends, and FEL's chairperson is always present.



# Planning

This Estate Management Plan pertains to the management of Forest Enterprises Limited's managed investment estate. It will be adhered to for the next 5 years.

Any deviation from this Plan will be justified only on the basis the changes do not adversely affect the environment. Any changes, which are contrary to the policies contained in this Plan require a full review of the Plan.

The next review date for this Plan is: **November 2022.**

The review will include review of planned monitoring, reserve areas and their protection, stakeholder engagement and financial performance.

The Estate Management Plan is used for both medium- and long-term planning.

For short-term operational and budgetary control planning, operations plans are prepared on an annual or as necessary basis. These plans are prepared annually and in accordance with this management plan. Operations plans and associated budgets are subject to approval by Forest Enterprises Limited at the beginning of each financial year.



## Appendices

1. **Pest Plants of the Gisborne Region**
2. **Relevant Regulations, Standards and Guidelines**
3. **Maps and Management Plan – High Conservation Value Forest Area**
4. **Maps – Reserve Areas**
5. **Maps – Stream Health Monitoring and Assessment (SHMAK) Sites**
6. **Maps – Erosion Susceptibility Classification (ESC)**



## Appendix 1: Pest Plants of the Gisborne Region

Plants	Scientific Name	Programme
African feather grass	<i>Pennisetum macrourum</i>	Eradication
Agapanthus	<i>Agapanthus praecox</i>	Site Led
Alligator weed	<i>Alternanthera philoxeroides</i>	Exclusion
Apple of Sodom	<i>Solanum linnaeanum</i>	Eradication
Australian sedge	<i>Carex longebraciata</i>	Progressive Containment
Banana passionfruit	<i>Passiflora mollissima</i> , <i>P. mixta</i>	Progressive Containment
Barberry	<i>Berberis glaucocarpa</i>	Sustained control
Bathurst bur	<i>Xanthium spinosum</i>	Sustained control
Blackberry	<i>Rubus</i> spp. barbed cultivars	Sustained control
Bladderwort	<i>Utricularia gibba</i>	Exclusion
Blue morning glory	<i>Ipomoea indica</i>	Site Led
Boneseed	<i>Chrysanthemoides monilifera</i>	Progressive Containment
Boxthorn	<i>Lycium ferocissimum</i>	Progressive Containment
Broom	<i>Cytisus scoparius</i>	
Buddleia	<i>Buddleja davidii</i>	Site Led
Burdock	<i>Arctium minus</i>	Progressive Containment
Californian Stink Weed	<i>Navarretia squarrosa</i>	Eradication
Cape tulip	<i>Moraea flaccida</i> (syn. <i>Homeria collina</i> )	Eradication
Chilean Needle Grass	<i>Nasella neesiana</i>	Exclusion
Chilean rhubarb	<i>Gunnera tinctoria</i> , <i>G. manicata</i> and all varieties and hybrids of these species	Site Led
Chinese Mugwort	<i>Artemisia veriotiorum</i>	Exclusion
Climbing Spindleberry	<i>Celastrus orbiculatus</i>	Eradication
Common ivy	<i>Hedera helix</i>	Site Led
Egeria	<i>Egeria densa</i>	Exclusion
Giant reed	<i>Arundo donax</i>	Site Led
Goats Rue	<i>Galega officinalis</i>	Exclusion
Gorse	<i>Ulex europaeus</i>	Progressive Containment
Hawthorn	<i>Crataegus monogyna</i>	Sustained control
Holly leaved senecio	<i>Senecio glastifolius</i>	Progressive Containment
Hornwort	<i>Ceratophyllum demersum</i>	Progressive Containment
Horse nettle	<i>Solanum carolinense</i>	Eradication
Japanese honeysuckle	<i>Lonicera japonica</i>	Site Led
Lagarosiphon	<i>Lagarosiphon major</i>	Eradication
Madeira vine	<i>Anredera cordifolia</i>	Progressive Containment
Marshwort	<i>Nymphoides geminate</i>	Exclusion
Mexican daisy	<i>Erigeron karvinskianus</i>	Site Led
Mexican Waterlily	<i>Nymphaea Mexicana</i>	Exclusion
Monkey Comb Vine	<i>Pithecoctenium crucigerum</i>	Eradication
Moth plant	<i>Araujia sericifera</i>	Progressive Containment



Nasella tussock	Nasella trichotoma and Nasella tenuissima	Exclusion
Nodding thistle	Carduus nutans	Progressive Containment
Noogoora bur	Xanthium occidentale	Exclusion
Old Man's Beard	Clematis vitibla	Progressive Containment
Pampas grass	Cortaderia jubata, C. selloana	Sustained control
Parrot's feather	Myriophyllum aquaticum	Progressive Containment
Pennisetum/ White Foxtail/Feathertop	Cenchrus longisetus/ Pennisetum villosum and all hybrids	Eradication
Periwinkle	Vinca major	Site Led
Phoenix palm	Phoenix canariensis	Site Led
Privet (tree and Chinese)	Ligustrum sinense, L. lucidum.	Site Led
Purple loosestrife	Lythrum salicaria	Exclusion
Ragwort	Senecio jacobaea	Sustained control
Red cestrum	Cestrum elegans and C. fasciculatum	Eradication
Reed sweetgrass	Glyceria maxima	Progressive Containment
Saffron thistle	Carthamus lanatus	Exclusion
Salvinia	Salvinia molesta	Exclusion
Senegal Tea	Gymnocaronis spilanthisoides	Exclusion
Smilax	Asparagus asparagoides	Site Led
Spartina	Spartina anglica and S. alterniflora	Progressive Containment
Spiny Emex	Emex australis	Eradication
Star thistle	Centaurea calcitrapa	Progressive Containment
Sweet briar	Rosa rubiginosa	Site Led
Thorn Apple	Datura stramonium	Sustained control
Undaria	Undaria pinnatifida	Progressive Containment
Variiegated thistle	Silybum marianum	Progressive Containment
Velvetleaf	Abutilon theophrasti	Eradication
Water hyacinth	Eichhornia crassipes	Eradication
White edged nightshade	Solanum marginatum	Eradication
Wild ginger	Hedychium, gardnerianum, H. flavescens	Sustained control
Wilding Conifers	Various species	Site Led
Woolly nightshade	Solanum mauritianum	Progressive Containment
Yellow flag iris	Iris pseudacorus	Site Led



## Appendix 2: Relevant Regulations, Standards and Guidelines

A.	NATIONAL LEGISLATION
	Accident Compensation Act 2001
	Anti-Money Laundering and Countering Financing of Terrorism Act 2009
	Biosecurity Act 1993
	Climate Change (Forestry Sector) Regulations 2008
	Climate Change Response Act 2002
	Code of Practice for the Management of Agrichemicals 2004 (NZS8409:2004)
	Commerce Act 1986
	Companies Act 1993
	Conservation Act 1987
	Contract and Commercial Law Act 2017
	Cooperative Companies Act 1996
	Crown Forest Assets Act 1989
	Crown Minerals Act 1991
	Ecological Regions and Districts of New Zealand
	Employment Relations Act 2000
	Fair Trading Act 1986
	Fencing Act 1978
	Fire and Emergency New Zealand Act 2017
	Forest Disease Control Regulations 1967
	Forest Produce Import & Export Regulations 1989
	Forestry Encouragement Act 1962
	Forestry Encouragement Loans Regulations 1967
	Forestry Rights Registration Act 1983
	Forests Act 1949
	Forests (Regulation of Log Traders and Forestry Advisers) Amendment Act 2020
	Goods and Services Tax Act 1985
	Hazardous Substances & New Organisms Act 1996
	Health & Safety at Work Act 2015
	Heritage New Zealand Pouhere Taonga Act 2014
	Holidays Act 2003
	Income Tax Act 2007
	Land Act 1948
	Land Transfer Act 1952
	Land Transport Act 1998
	Local Government Act 2002
	Machinery Act 1950
	Maori Reserved Land Act 1955
	Marine and Coastal Area (Takutai Moana) Act 2011
	Minimum Wage Act 1983



	Misuse of Drugs Act 1975
	National Environmental Standards for Plantation Forestry
	Native Plants Protection Act 1934
	New Zealand Environmental Code of Practice for Plantation Forestry 2007
	New Zealand Forest Code of Practice June 1993
	New Zealand Threat Classification System 2005
	Overseas Investment Act 2005
	Personal Property Securities Act 1999
	Principles for Commercial Plantation Forest Management in New Zealand 1995
	Privacy Act 2020
	Property Law Act 2007
	Public Works Act 1981
	Resource Management Act 1991
	Safety and Health in Forestry Operations: Code of Practice and Best Practice Guidelines
	Soil Conservation and Rivers Control Act 1941
	The New Zealand Forest Accord 1991
	Trade Marks Act 2002
	Treaty of Waitangi Act 1975
	Trespass Act 1980
	Wages Protection Act 1983
	Walking Access Act 2008
	Wild Animal Control Act 1977
	Wildlife Act 1953
	Legal Rights to Harvest: <ul style="list-style-type: none"> <li>• Land tenure and management rights</li> <li>• Concession licenses</li> <li>• Management and harvest planning</li> </ul>
	Trade and Transport <ul style="list-style-type: none"> <li>• Classification of species, quantities, qualities</li> <li>• Trade and transport</li> <li>• Offshore trading and transfer pricing</li> </ul>
	Third Party Rights <ul style="list-style-type: none"> <li>• Customary rights</li> <li>• Free prior and informed consent (FPIC)</li> <li>• Rights of indigenous peoples</li> </ul>
	Timber Harvesting Activities <ul style="list-style-type: none"> <li>• Timber harvesting regulations</li> <li>• Protected sites and species</li> <li>• Environmental requirements</li> <li>• Health and safety</li> <li>• Legal employment</li> </ul>
	Taxes and Fees <ul style="list-style-type: none"> <li>• Payment of royalties and harvesting fees</li> <li>• Value added and sales taxes</li> <li>• Income and profit taxes</li> </ul>



	<b>Custom Regulations</b>
	Biosecurity Act 1993
	Customs and Excise Act 2018
	Forests Act 1949
	The New Zealand Forest Accord 1991
	<b>CITES</b>
	Convention on the International Trade in Endangered Species (CITES)
	<b>Other</b>
	Not applicable at this stage. All relevant legislation has been stated
<b>B.</b>	<b>REGULATIONS PERTINENT TO FORESTRY RELATED TO AND EMERGING FROM NATIONAL LEGISLATION AND OTHER LEGISLATIVE INSTITUTIONS:</b>
	Code of Practice for the Management of Agrichemicals 2004 (NZS8409:2004)
	Ecological Regions and Districts of New Zealand
	Fire and Emergency New Zealand Act 2017
	Fire and Emergency New Zealand Regulations
	Forestry Encouragement Loans Regulations 1967
	Forestry Rights Registration Act 1983
	Forests Act 1949
	New Zealand Environmental Code of Practice for Plantation Forestry 2007
	New Zealand Forest Code of Practice June 1993
	New Zealand Threat Classification system 2005
	Principles for Commercial Plantation Forest Management in New Zealand 1995
	Resource Management Act 1991
	The New Zealand Forest Accord 1991



C.	INTERNATIONAL AGREEMENTS PERTINENT TO FORESTRY
	Convention on Biological Diversity
	Convention on the International Trade in Endangered Species (CITES)
	ICOMOS New Zealand Charter 1993
	ITTA
	IUCN Red List of threatened species
	Kyoto Protocol
	<p>International Labour Organisation (ILO) conventions:</p> <ul style="list-style-type: none"> <li>• 29 Forced Labour Convention 1930</li> <li>• 87 Freedom of Association and Protection of the Right to Organise Conventions 1948</li> <li>• 97 Migration for Employment (Revised) Convention 1949</li> <li>• 98 Right to Organise and Collective Bargaining Convention 1949</li> <li>• 100 Equal Remuneration Convention 1951</li> <li>• 105 Abolition of Forced Labour Convention 1957</li> <li>• 111 Discrimination (Occupation and Employment) Convention 1958</li> <li>• 131 Minimum Wage Fixing Convention 1970</li> <li>• 138 Minimum Age Convention 1973</li> <li>• 141 Rural Workers' Organizations Convention 1975</li> <li>• 142 Human Resources Development Convention 1975</li> <li>• 143 Migrant Workers (Supplementary Provisions) Convention 1975</li> <li>• 155 Occupational Safety and Health Convention 1981</li> <li>• 169 Indigenous and Tribal Peoples Convention 1989</li> <li>• 182 Worst Forms of Child Labour Convention 1999</li> <li>• ILO Code of Practice on Safety and Health in Forestry Work (ILO 1998)</li> <li>• Recommendation 135 Minimum Wage Fixing Recommendation 1970</li> <li>• ILO Declaration on Fundamental Principles and Rights at Work 1998 and its follow-up</li> <li>• ILO member states are expected to promote and realize these principles, even if they have not ratified the Conventions</li> <li>• The ILO Code of Practice is not a legal instrument, but it provides authoritative guidance on forest work ILO Code of Practice is not a legal instrument, but it provides authoritative guidance on forest work</li> </ul>
D.	LOCAL STANDARDS AND BEST OPERATING PRACTICES
	Code of Practice for the Management of Agrichemicals 2004 (NZS8409:2004)
	Ecological Regions and Districts of NZ
	National Environmental Standards for Plantation Forestry
	New Zealand Environmental Code of Practice for Plantation Forestry 2007
	New Zealand Forest Code of Practice June 1993
	New Zealand Threat Classification system 2005
	Principles for Commercial Plantation Forest Management in New Zealand 1995
	Safety and Health in Forestry Operations: Code of Practice and Best Practice Guidelines
	The New Zealand Forest Accord 1991



## Appendix 3: HCVF Management Plan and Map

### Gisborne Old Growth Stand (HCVF3)

In May 2021 an assessment by an ecological consultant, identified an HCVF3 area in Millwood/Glenwood Forest. It was described as a small area (1.7ha) of a vegetation type that has undergone widescale loss both within the Ecological District and nationally. The forest remnant contains trees that are likely to be at least 300 years old.

The report states that there are two vegetation types for this area, Mataī/tītoki-tawa forest and Kahikatea/kānuka-mamaku-houhere forest:

#### Mataī/tītoki-tawa forest

Mature mataī (c.30 metres tall) dominate the canopy with occasional tītoki and tawa (c.20 metres tall) in the subcanopy. Kawakawa (*Piper excelsum* subsp. *excelsum*) and tītoki saplings dominate the understorey, with scattered kaikōmako (*Pennantia corymbosa*), māpou (*Myrsine australis*), *Coprosma rotundifolia*, māhoe (*Meliccytus ramiflorus* subsp. *ramiflorus*), and putaputawētā (*Carpodetus serratus*) also present.

Occasional kahikatea and mataī saplings occur throughout.

#### Kahikatea/kānuka-mamaku-houhere forest

Common canopy species include kānuka, houhere (*Hoheria sexstylosa*), mamaku (*Cyathea medullaris*), and occasional tītoki and kōwhai (*Sophora tetraptera*), that are up to 10-15 metres tall. Emergent podocarp species that are up to c.20 metres tall, including kahikatea, tōtara, and mataī, as well as emergent rewarewa (c.15 metres tall), are scattered throughout the areas of forest.

Common understorey species present include kawakawa, hangehange (*Geniostoma ligustrifolium* var. *ligustrifolium*), māhoe, horoeka (lancewood; *Pseudopanax crassifolius*), ponga (silver fern; *Cyathea dealbata*) and occasional putaputawētā and māpou. At higher elevations within the upper catchment of the Kauwaewaka Stream, black beech is present on hillslopes adjacent to the riparian zone.

It will be protected by:

- Adjacent plantation will be directionally felled away from site.
- No roads will be built in the HCV area.
- There will be ongoing pest (animal and plant) control.
- Monitoring will occur annually; a photo point will be set up within the HCVF area to help with monitoring changes in flora and fauna.

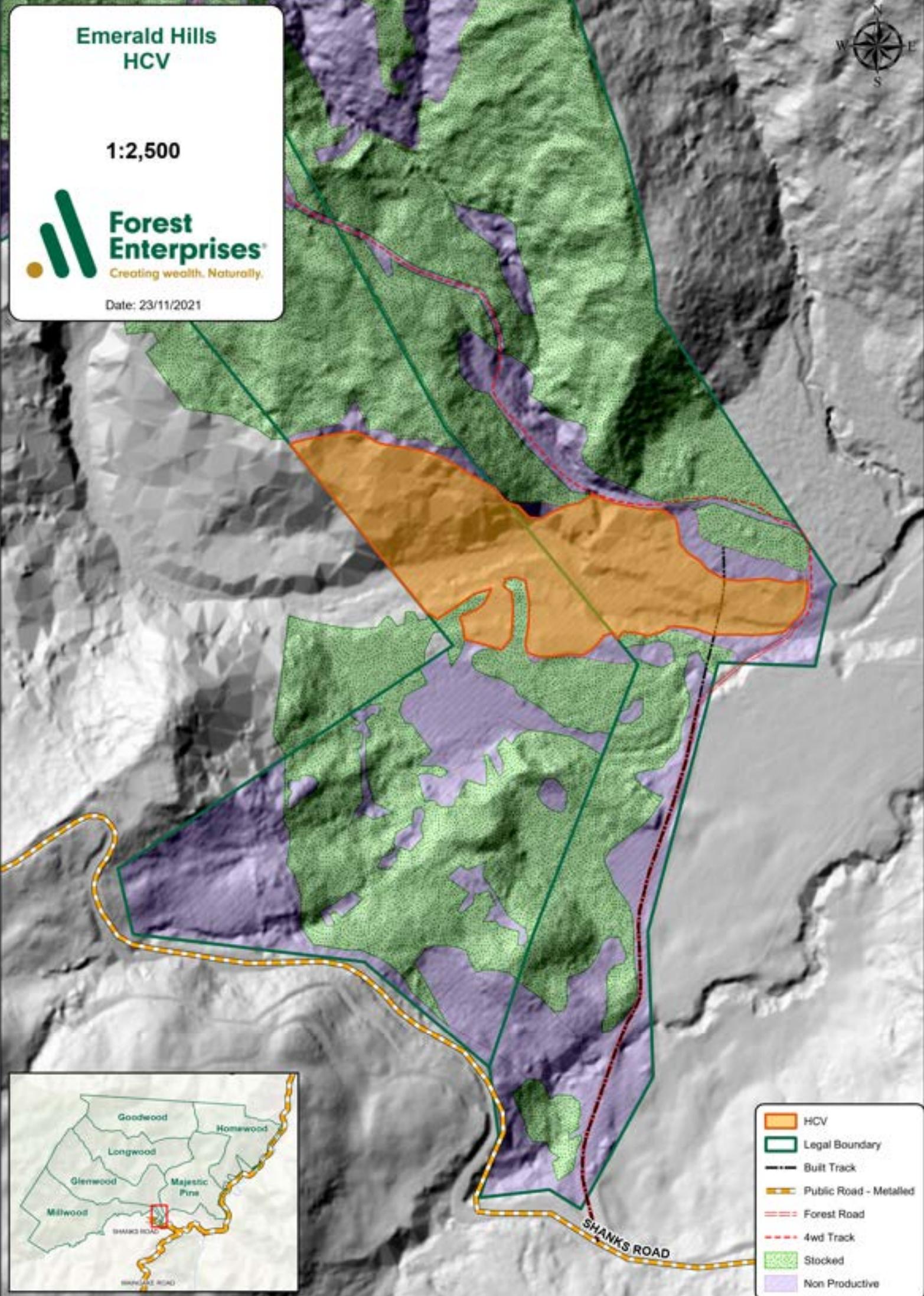


# Emerald Hills HCV

1:2,500



Date: 23/11/2021



- HCV
- Legal Boundary
- Built Track
- Public Road - Metalled
- Forest Road
- 4wd Track
- Stocked
- Non Productive

# Te Puhi Reserve Map

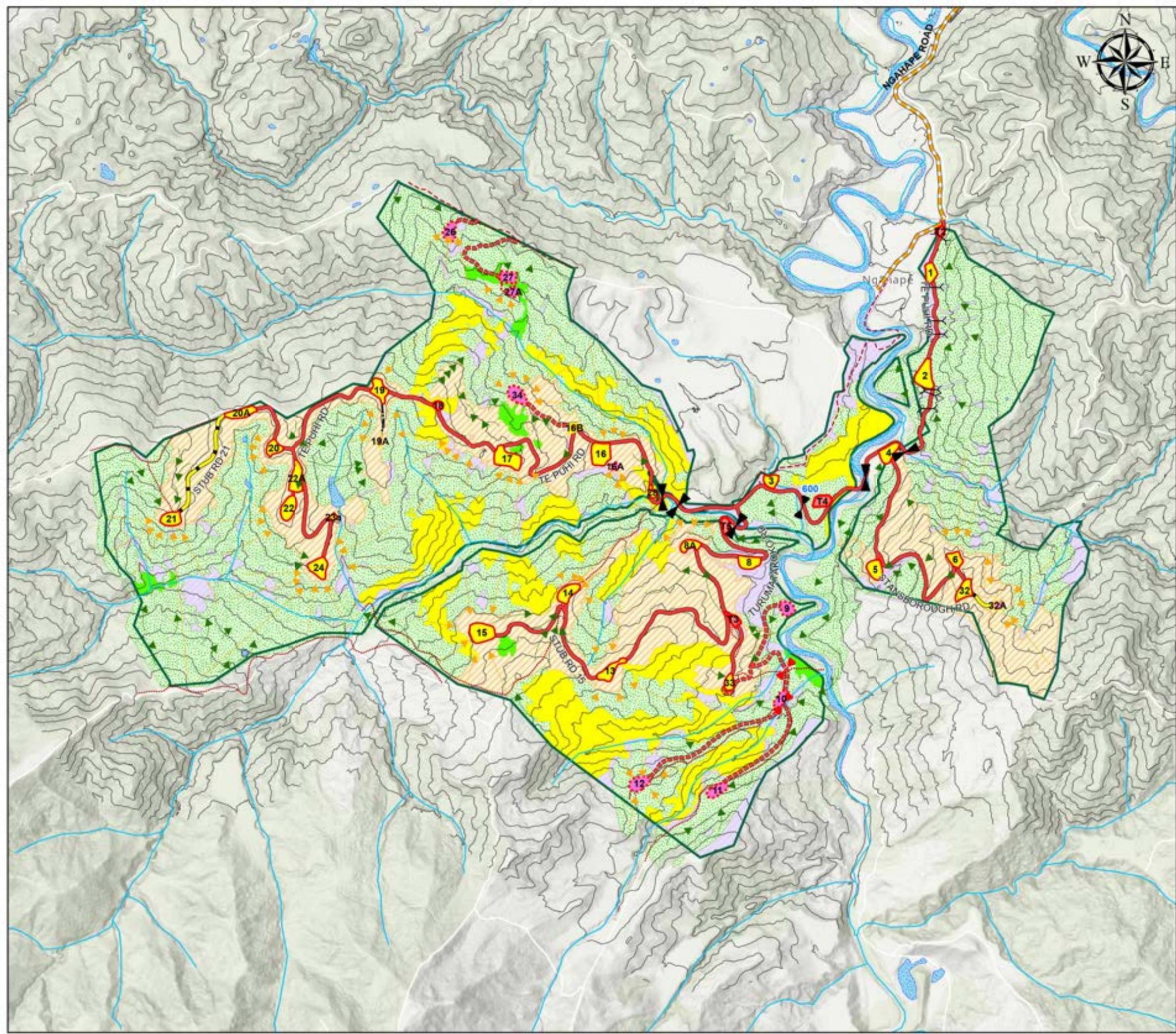
1:13,000



Date: 9/08/2021



- |                            |                          |
|----------------------------|--------------------------|
| Forest Enterprises Estate  | Public Road - Metalled   |
| Ground Based               | Planned Crossing Culvert |
| Hauler                     | Culvert crossing         |
| Pad                        | Culvert                  |
| Built Landing              | Ford                     |
| Temporary Landing          | Waterbody                |
| Under Construction Landing | Streams                  |
| Planned Landing            | Stocked                  |
| Planned Road               | Landbank                 |
| Built Road                 | Non-productive           |
| Planned Track              | <b>Reserve Ranking</b>   |
| Built Track                | 3. Moderate              |
| Under Construction         | 4. Low                   |
| 4wd Track                  | <b>Contour</b>           |
| Quad Track                 | 20m (Index)              |



# Te Hau Reserve Map

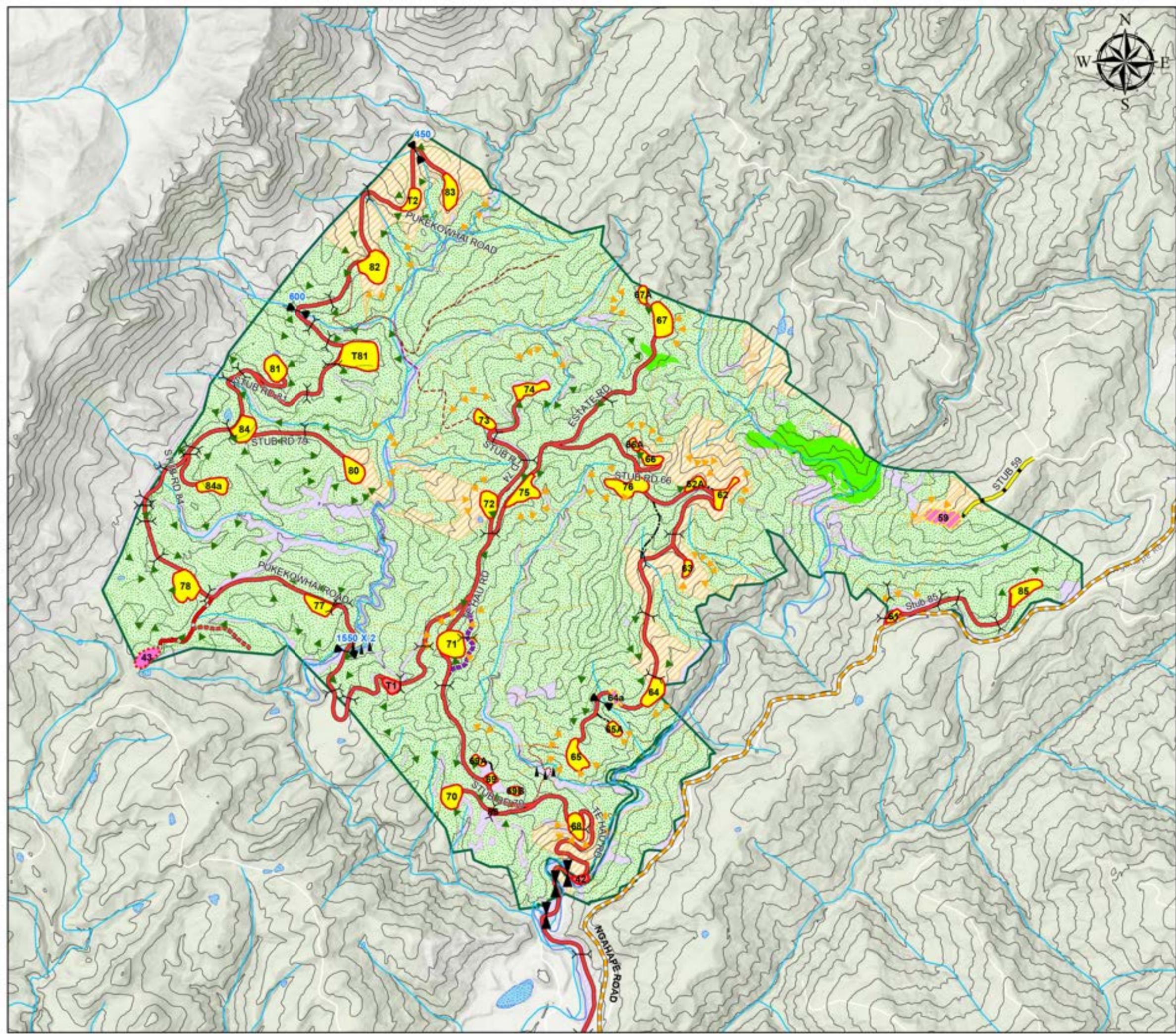
1:11,000



Date: 9/08/2021



- |                            |                        |
|----------------------------|------------------------|
| Forest Enterprises Estate  | Public Road - Metalled |
| Ground Based               | Slash Catcher          |
| Hauler                     | Culvert crossing       |
| Built Landing              | Culvert                |
| Temporary Landing          | Ford                   |
| Under Construction Landing | Waterbody              |
| Planned Landing            | Streams                |
| Planned Road               | Stocked                |
| Upgrade Road               | Landbank               |
| Built Road                 | Non-productive         |
| Built Track                | Reserve Ranking        |
| Under Construction         | 4. Low                 |
| Decommissioned Road        | Contour                |
| 4wd Track                  | 20m (Index)            |
| Quad Track                 |                        |

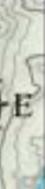


# Ratahuia Reserve Map

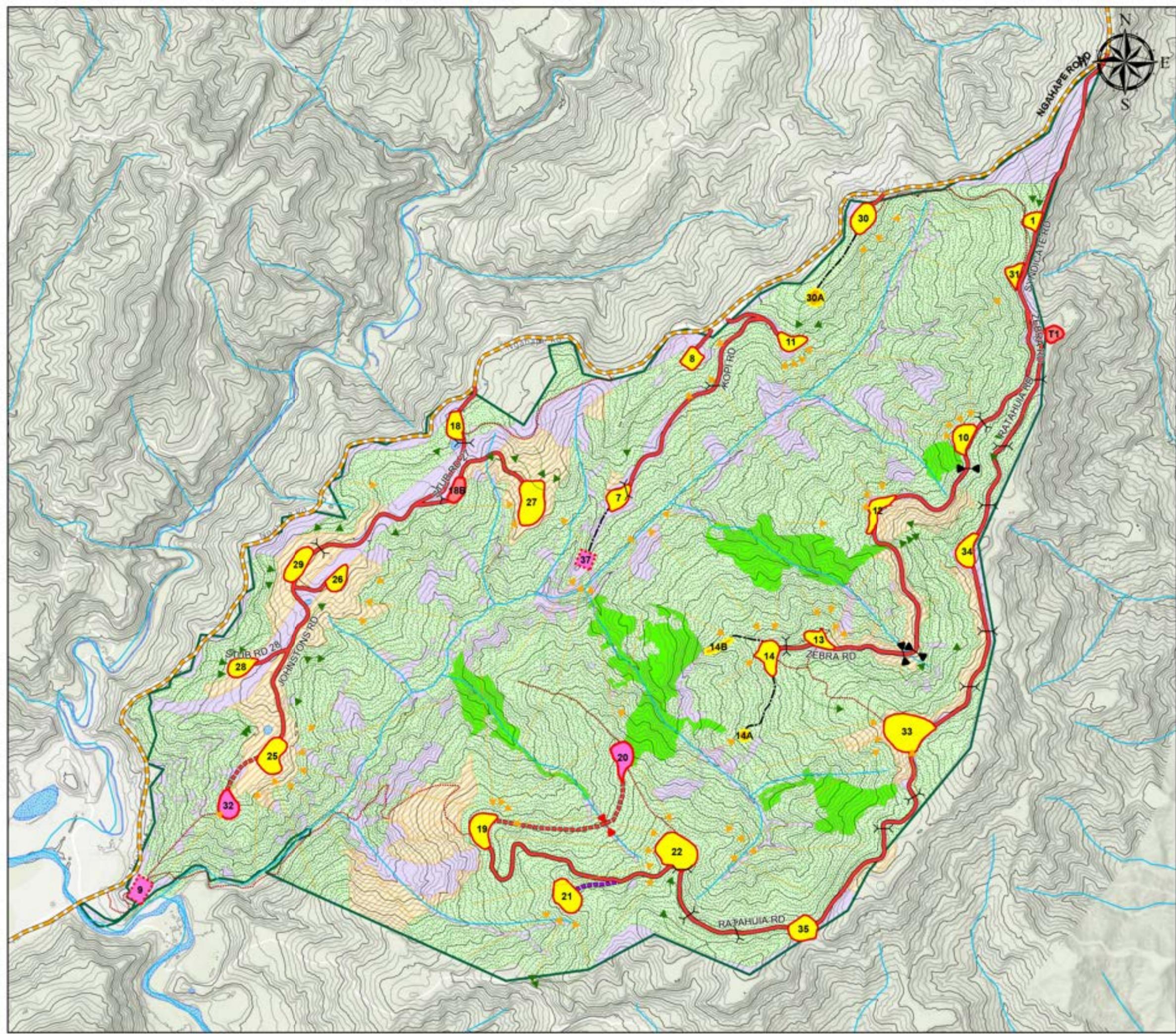
1:9,000



Date: 9/08/2021



- |                           |                          |
|---------------------------|--------------------------|
| Forest Enterprises Estate | Public Road - Metalled   |
| Ground Based              | Planned Crossing Culvert |
| Hauler                    | Culvert crossing         |
| Pad                       | Culvert                  |
| Built Landing             | Waterbody                |
| Temporary Landing         | Streams                  |
| Field Marked Landing      | Stocked                  |
| Planned Landing           | Landbank                 |
| Planned Road              | Non-productive           |
| Built Road                | Reserve Ranking          |
| Built Track               | 4. Low                   |
| Decommissioned Road       | Contour                  |
| Quad Track                | 20m (Index)              |
|                           | 5m                       |



# Rata Hills Reserve Map

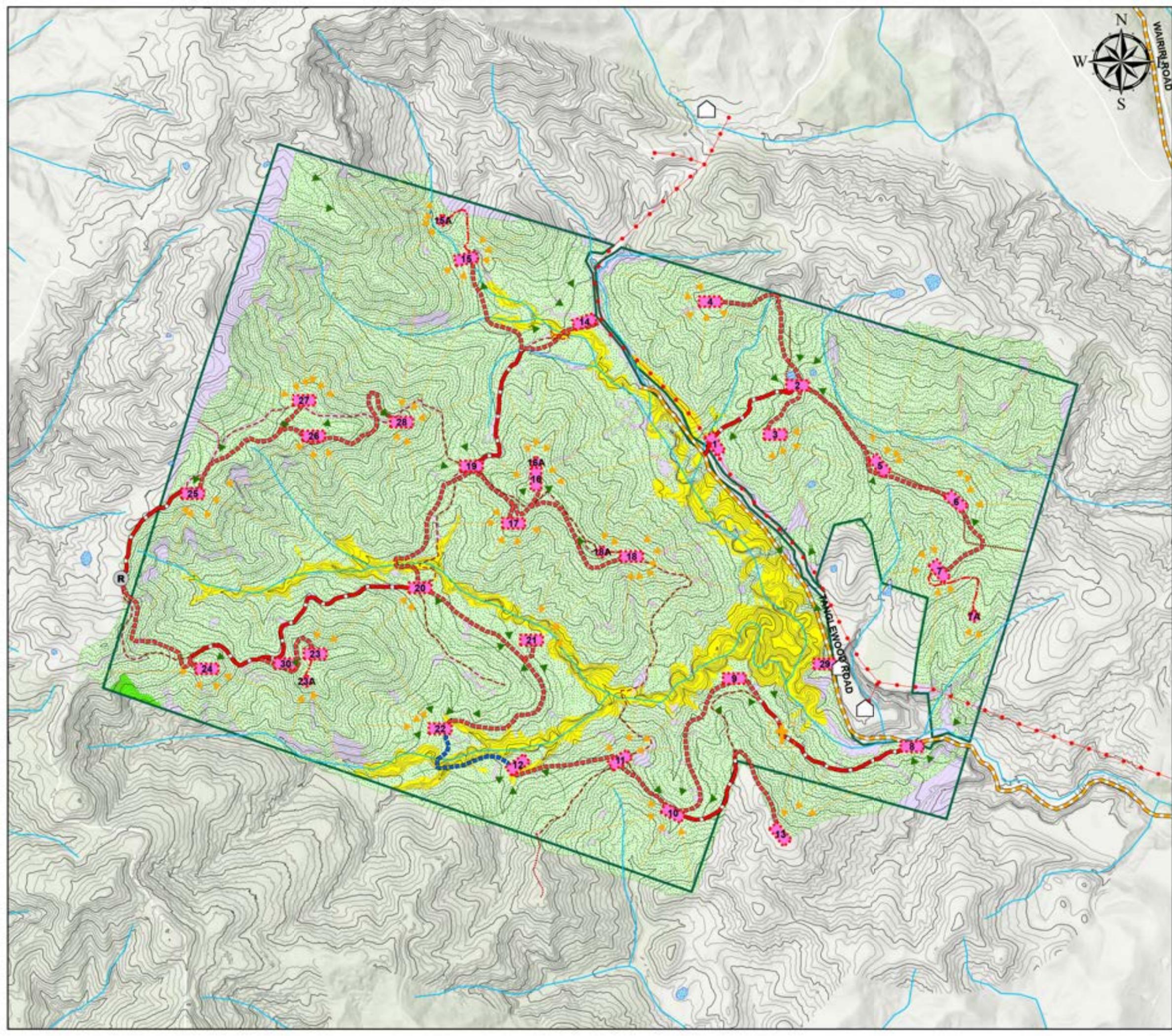
1:10,000



Date: 9/08/2021



- |                           |                           |
|---------------------------|---------------------------|
| Forest Enterprises Estate | Planned crossfall culvert |
| Overhead Wires            | Building                  |
| Ground Based              | Memorial Site             |
| Hauler                    | Rock Pit                  |
| Planned Landing           | Waterbody                 |
| Planned Road              | Streams                   |
| Upgrade Road              | Stocked                   |
| Planned Track             | Non-productive            |
| Alternative               | <b>Reserve Ranking</b>    |
| 4wd Track                 | 3. Moderate               |
| Quad Track                | 4. Low                    |
| Public Road - Metalled    | <b>Contour</b>            |
|                           | 20m (Index)               |
|                           | 5m                        |

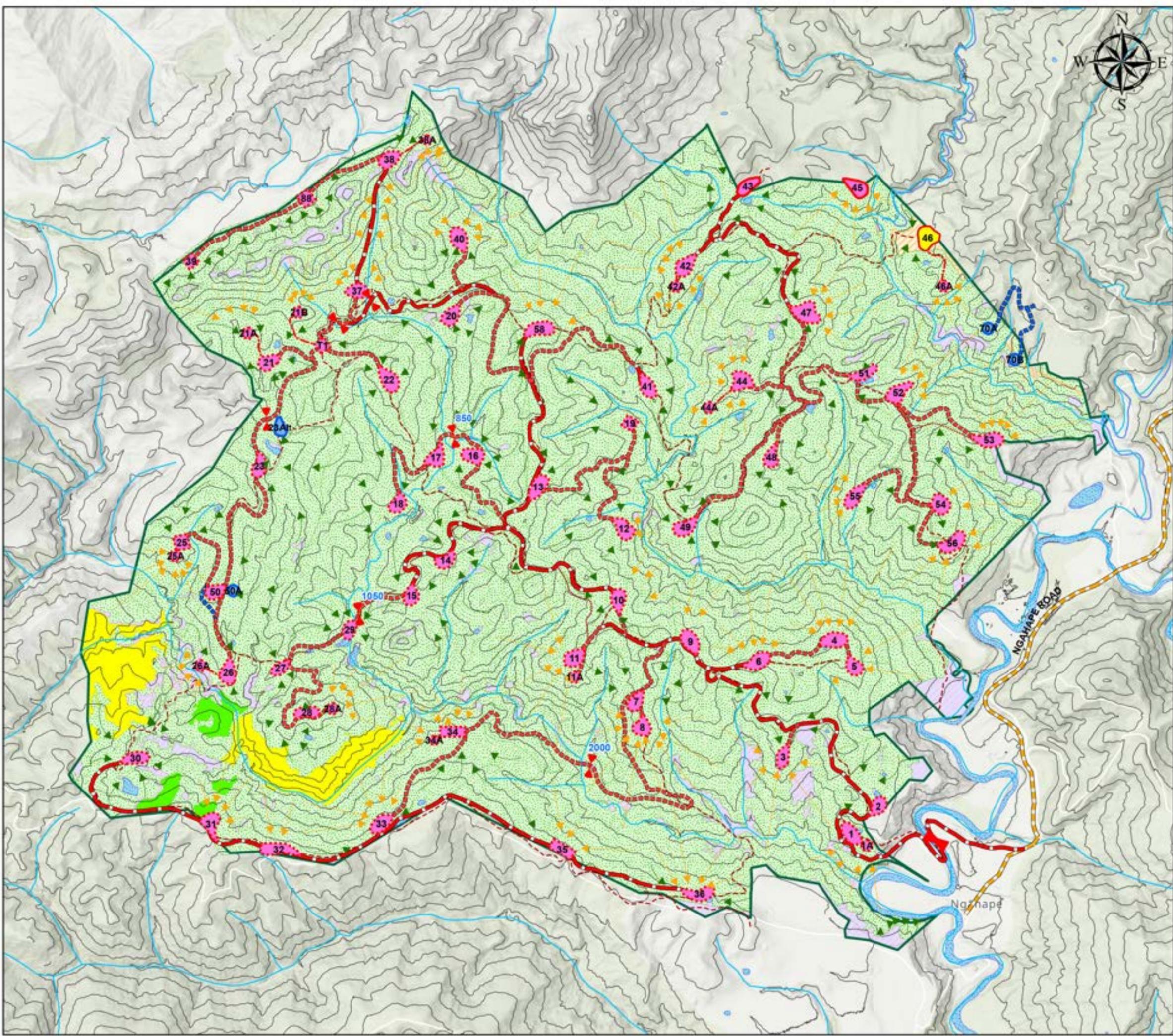


# Ngahape Reserve Map

1:12,000



Date: 9/08/2021



- |                           |                          |
|---------------------------|--------------------------|
| Forest Enterprises Estate | Public Road - Metalled   |
| Ground Based              | Planned Crossing Culvert |
| Hauler                    | Planned ford             |
| Alternative Landing       | Waterbody                |
| Built Landing             | Streams                  |
| Field Marked Landing      | Stocked                  |
| Planned Landing           | Landbank                 |
| Planned Road              | Non-productive           |
| Upgrade Road              | <b>Reserve Ranking</b>   |
| Planned Track             | 3. Moderate              |
| Alternative               | 4. Low                   |
| 4wd Track                 | <b>Contour</b>           |
| Quad Track                | 20m (Index)              |



# Cleland Reserve Map

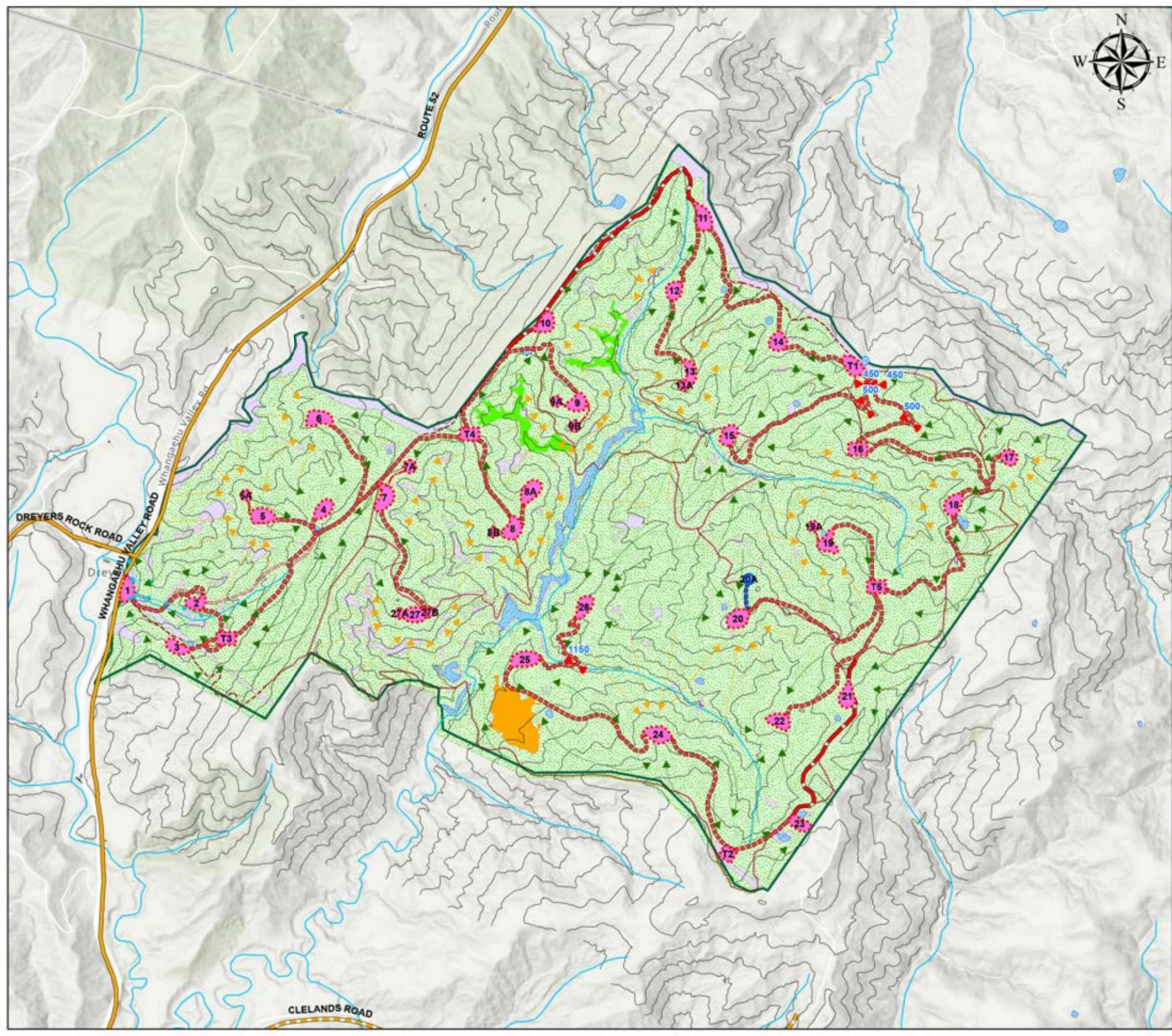
1:11,000



Date: 9/08/2021



- |                           |                          |
|---------------------------|--------------------------|
| Forest Enterprises Estate | Public Road - Sealed     |
| Water Lines               | Public Road - Metalled   |
| Ground Based              | Planned Crossing Culvert |
| Hauler                    | Waterbody                |
| Alternative Landing       | Streams                  |
| Planned Landing           | Stocked                  |
| Planned Road              | Non-productive           |
| Upgrade Road              | <b>Reserve Ranking</b>   |
| Planned Track             | 2. Moderately High       |
| Alternative               | 4. Low                   |
| Forest Road               | <b>Contour</b>           |
| 4wd Track                 | 20m (Index)              |
| Quad Track                |                          |



# Blairlogie Reserve Map

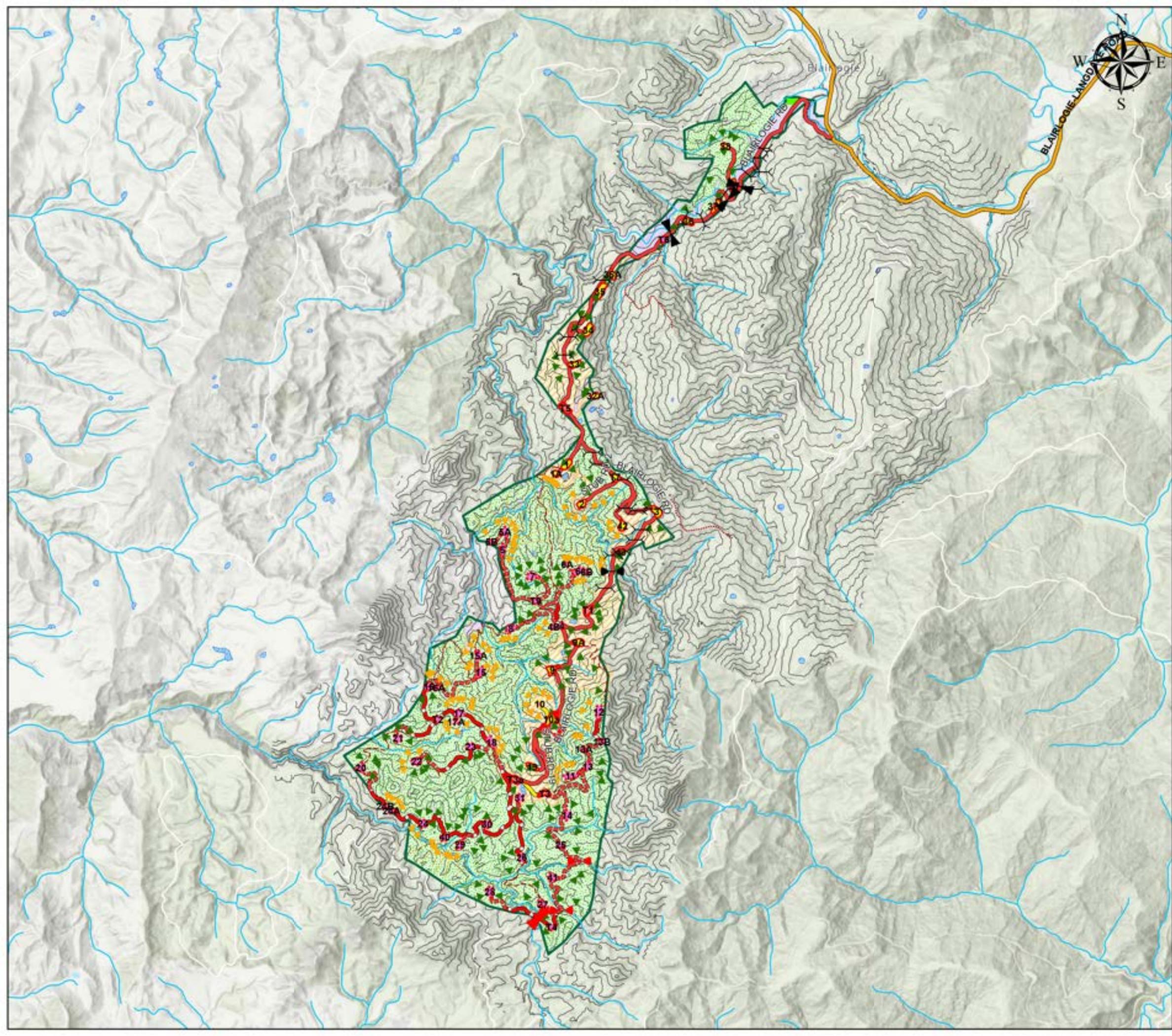
1:24,000



Date: 9/08/2021



- |                            |                          |
|----------------------------|--------------------------|
| Forest Enterprises Estate  | Planned Crossing Culvert |
| Ground Based               | Planned ford             |
| Hauler                     | Culvert crossing         |
| Built Landing              | Culvert                  |
| Temporary Landing          | Ford                     |
| Under Construction Landing | Waterbody                |
| Planned Landing            | Streams                  |
| Planned Road               | Stocked                  |
| Upgrade Road               | Landbank                 |
| Built Road                 | Non-productive           |
| Planned Track              | Reserve Ranking          |
| Under Construction         | 4. Low                   |
| 4wd Track                  | Contour                  |
| Quad Track                 | 20m (Index)              |
| Public Road - Sealed       |                          |



# Blairlogie North Reserve Map

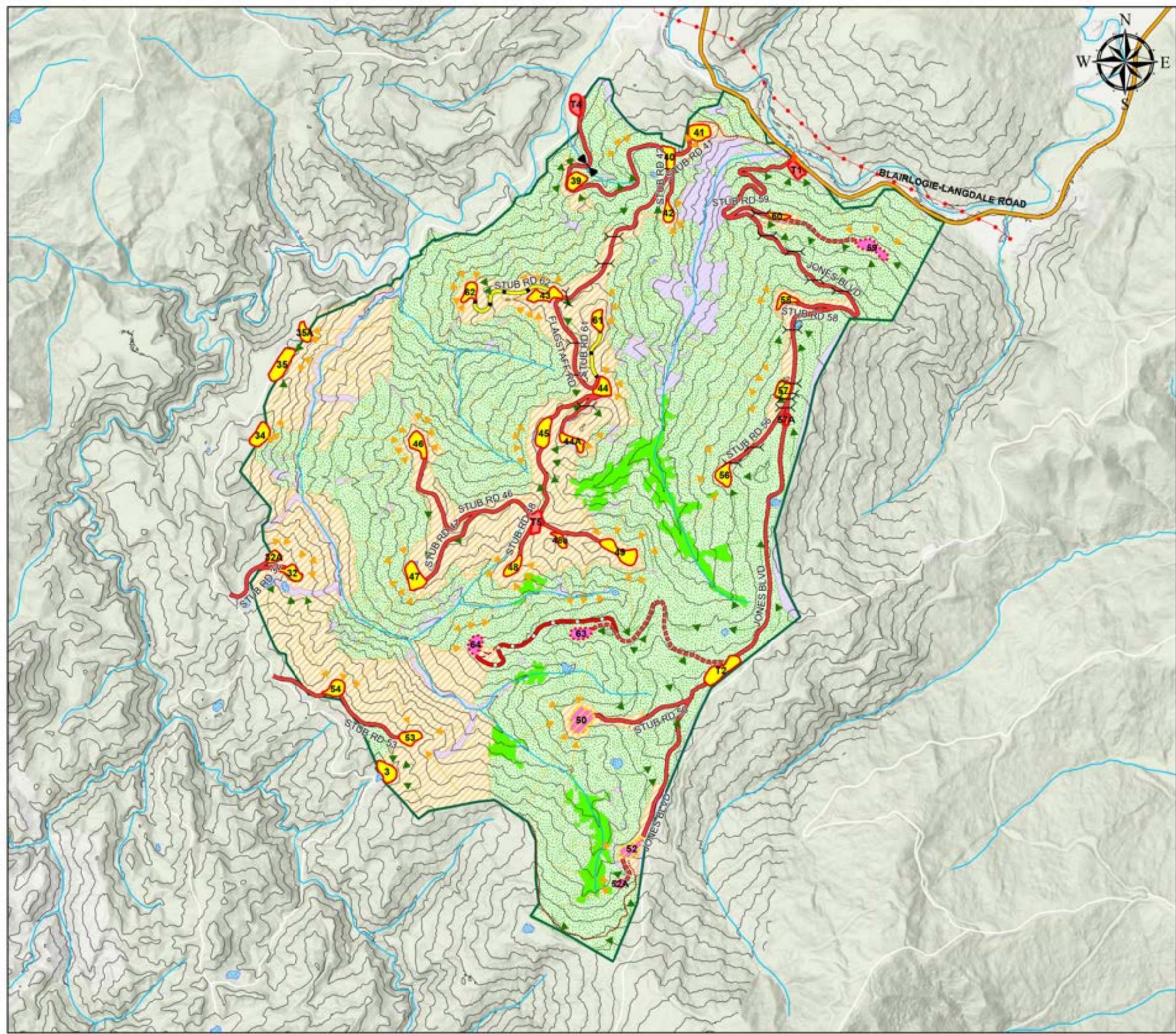
1:13,000



Date: 9/08/2021



- |                            |                      |
|----------------------------|----------------------|
| Forest Enterprises Estate  | 4wd Track            |
| Overhead Wires             | Quad Track           |
| Ground Based               | Public Road - Sealed |
| Hauler                     | Culvert crossing     |
| Traffic Management Plan    | Culvert              |
| Built Landing              | Waterbody            |
| Temporary Landing          | Streams              |
| Under Construction Landing | Stocked              |
| Planned Landing            | Landbank             |
| Planned Road               | Non-productive       |
| Upgrade Road               | Reserve Ranking      |
| Built Road                 | 4. Low               |
| Under Construction         | Contour              |
|                            | 20m (Index)          |



# Te Karaka Reserve Map

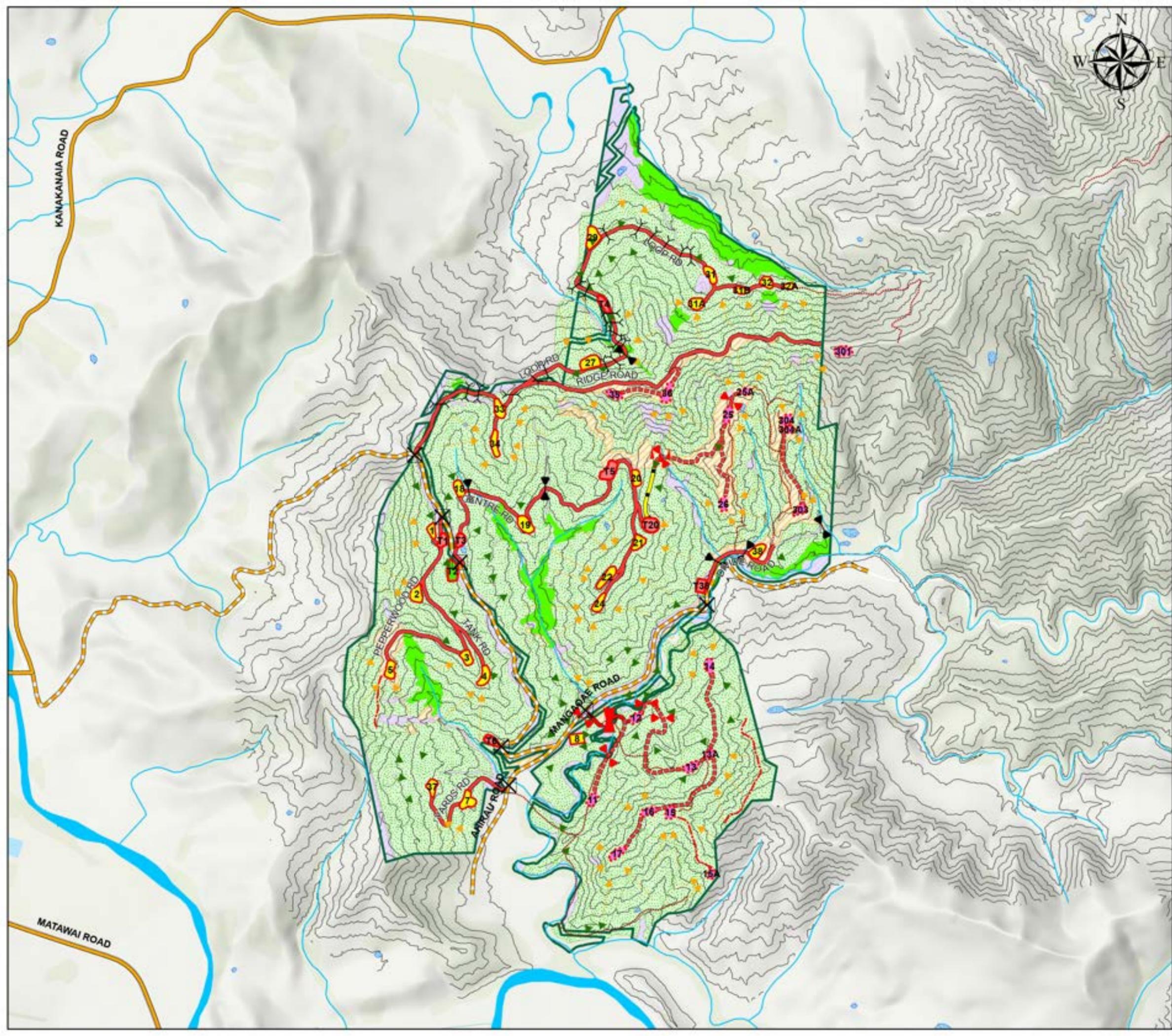
1:16,000



Date: 9/08/2021



- |                           |                          |
|---------------------------|--------------------------|
| Forest Enterprises Estate | Gate                     |
| Ground Based              | Planned Crossing Culvert |
| Hauler                    | Planned ford             |
| Rehabilitated Landing     | Culvert crossing         |
| Built Landing             | Culvert                  |
| Temporary Landing         | Planned Slash Catcher    |
| Planned Landing           | Waterbody                |
| Planned Road              | Streams                  |
| Upgrade Road              | Stocked                  |
| Built Road                | Landbank                 |
| Planned Track             | Non-productive           |
| Under Construction        | Reserve Ranking          |
| Forest Road               | 4. Low                   |
| Quad Track                | Contour                  |
| Public Road - Sealed      | 20m (Index)              |
| Public Road - Metalled    |                          |

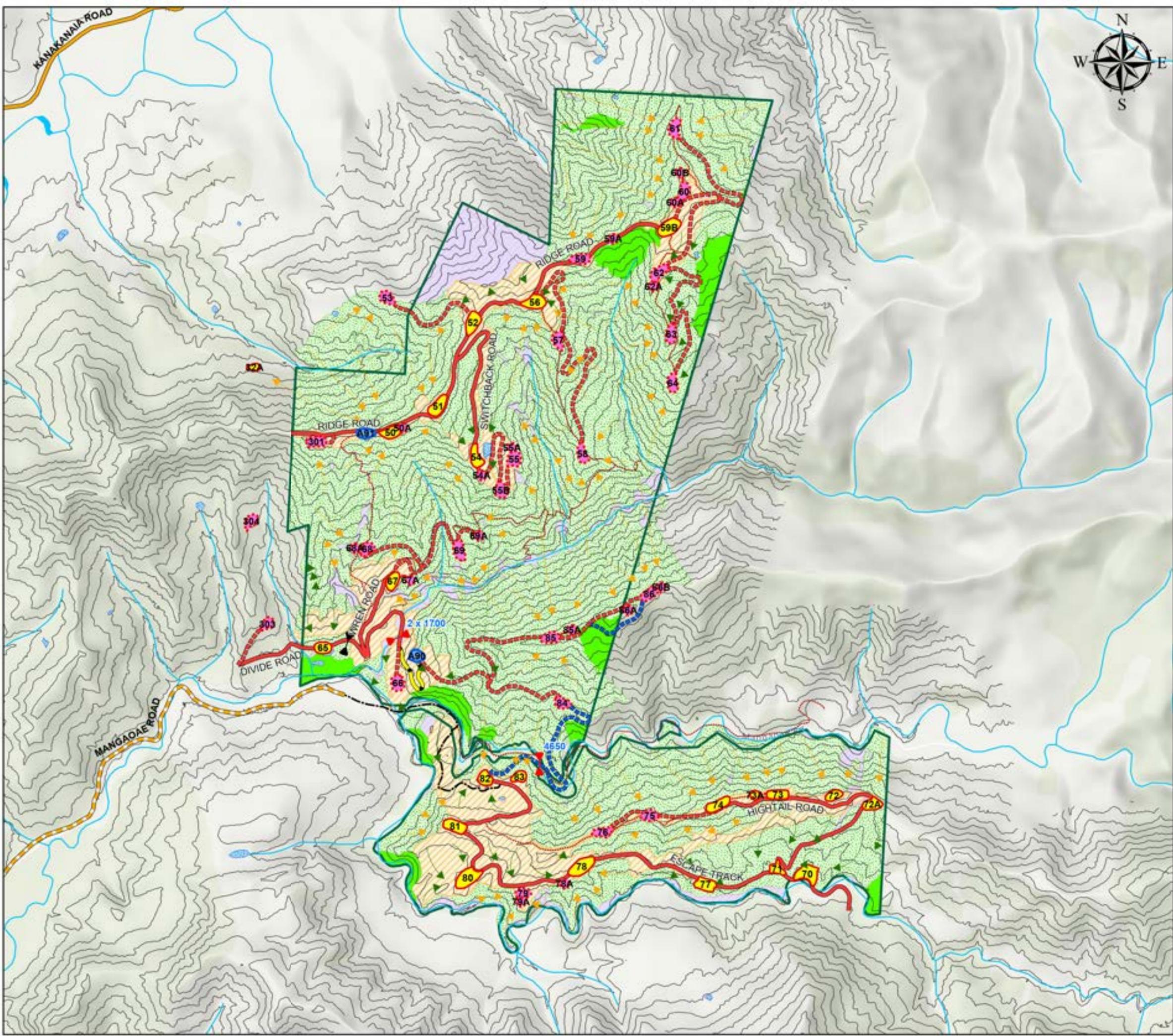


# Te Karaka North Reserve Map

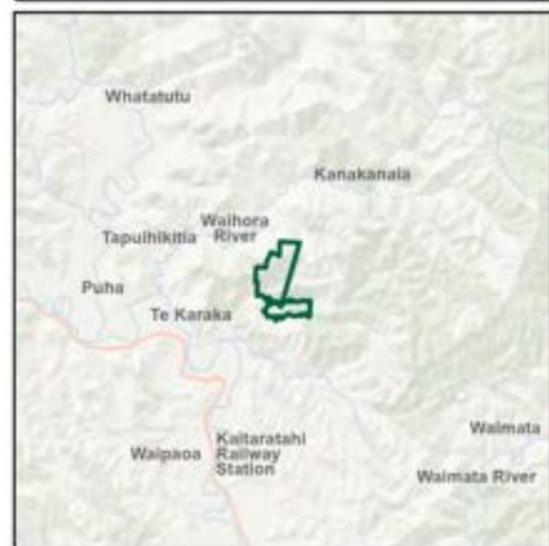
1:14,000



Date: 9/08/2021



- |                           |                          |
|---------------------------|--------------------------|
| Forest Enterprises Estate | Public Road - Sealed     |
| Ground Based              | Public Road - Metalled   |
| Hauler                    | Planned Crossing Culvert |
| Alternative Landing       | Culvert crossing         |
| Built Landing             | Waterbody                |
| Planned Landing           | Streams                  |
| Planned Road              | Stocked                  |
| Built Road                | Landbank                 |
| Planned Track             | Non-productive           |
| Built Track               | Reserve Ranking          |
| Alternative               | 4. Low                   |
| Under Construction        | Contour                  |
| Quad Track                | 20m (Index)              |

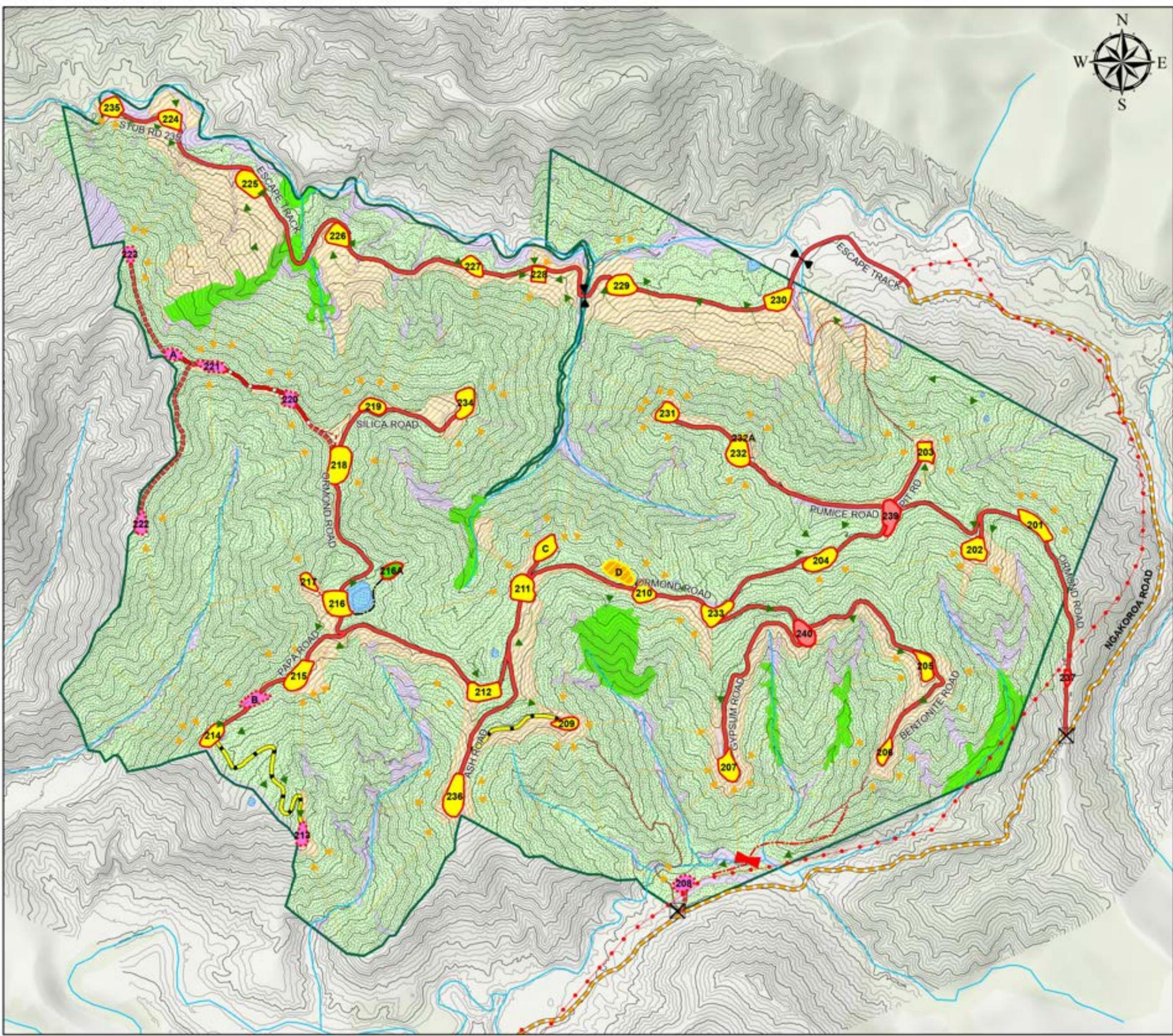


# Ormond Reserve Map

1:10,000



Date: 9/08/2021



- |                           |                        |
|---------------------------|------------------------|
| Forest Enterprises Estate | 4wd Track              |
| Overhead Wires            | Quad Track             |
| Ground Based              | Public Road - Metalled |
| Hauler                    | Gate                   |
| Pad                       | Planned ford           |
| Rehabilitated Landing     | Culvert crossing       |
| Built Landing             | Waterbody              |
| Temporary Landing         | Streams                |
| Planned Landing           | Stocked                |
| Planned Road              | Landbank               |
| Upgrade Road              | Non-productive         |
| Built Road                | <b>Reserve Ranking</b> |
| Planned Track             | 4. Low                 |
| Built Track               | <b>Contour</b>         |
| Under Construction        | 20m (Index)            |
|                           | 5m                     |

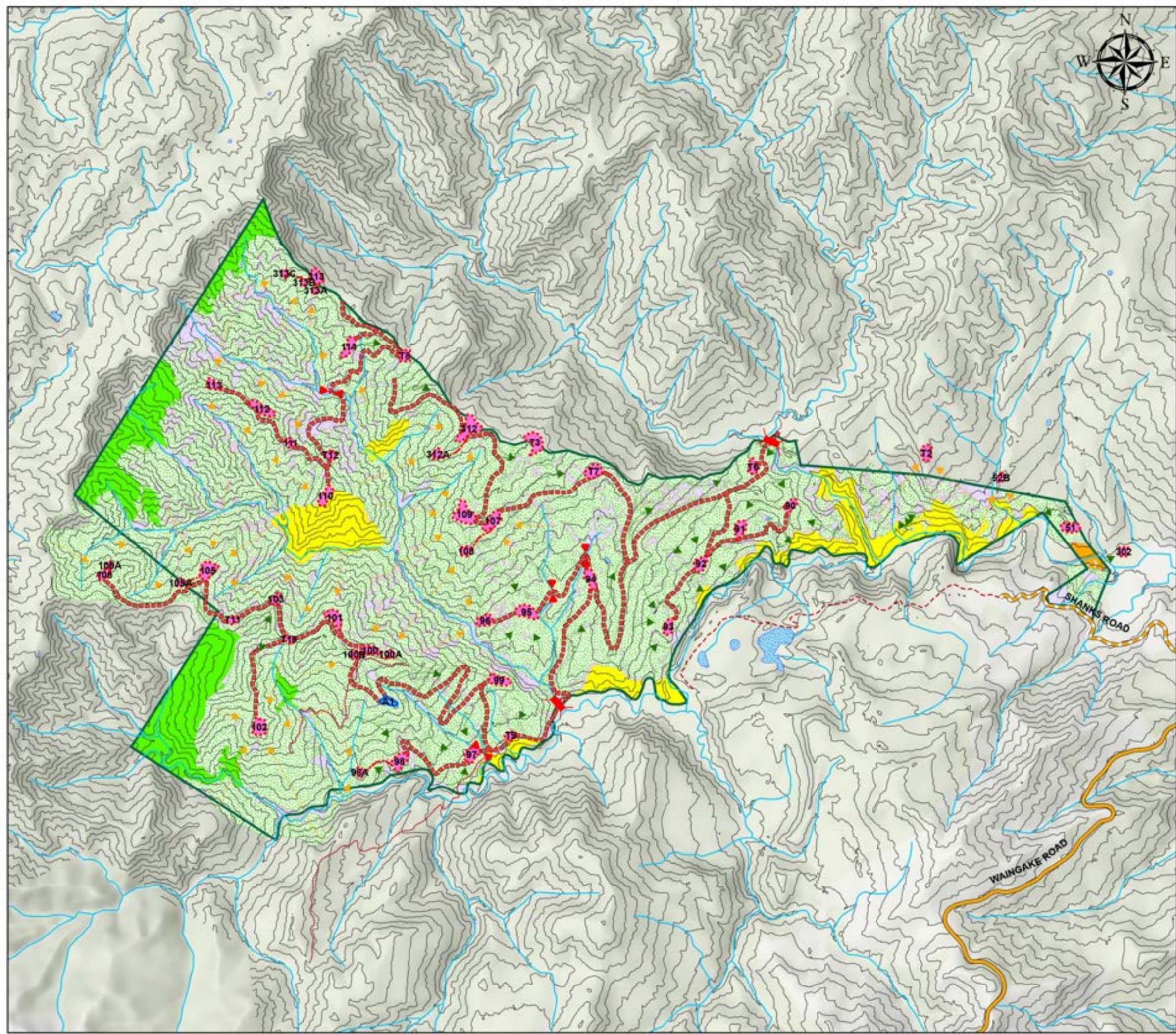


# Millwood Reserve Map

1:16,000



Date: 9/08/2021



- Forest Enterprises Estate
- Ground Based
- Hauler
- Alternative Landing
- Planned Landing
- Planned Road
- Planned Track
- 4wd Track
- Quad Track
- Public Road - Sealed
- Public Road - Metalled
- Planned Crossing Culvert
- Planned box culvert
- Waterbody
- Streams
- Stocked
- Non-productive
- Reserve Ranking**
- 2. Moderately High
- 3. Moderate
- 4. Low
- Contour
- 20m (Index)

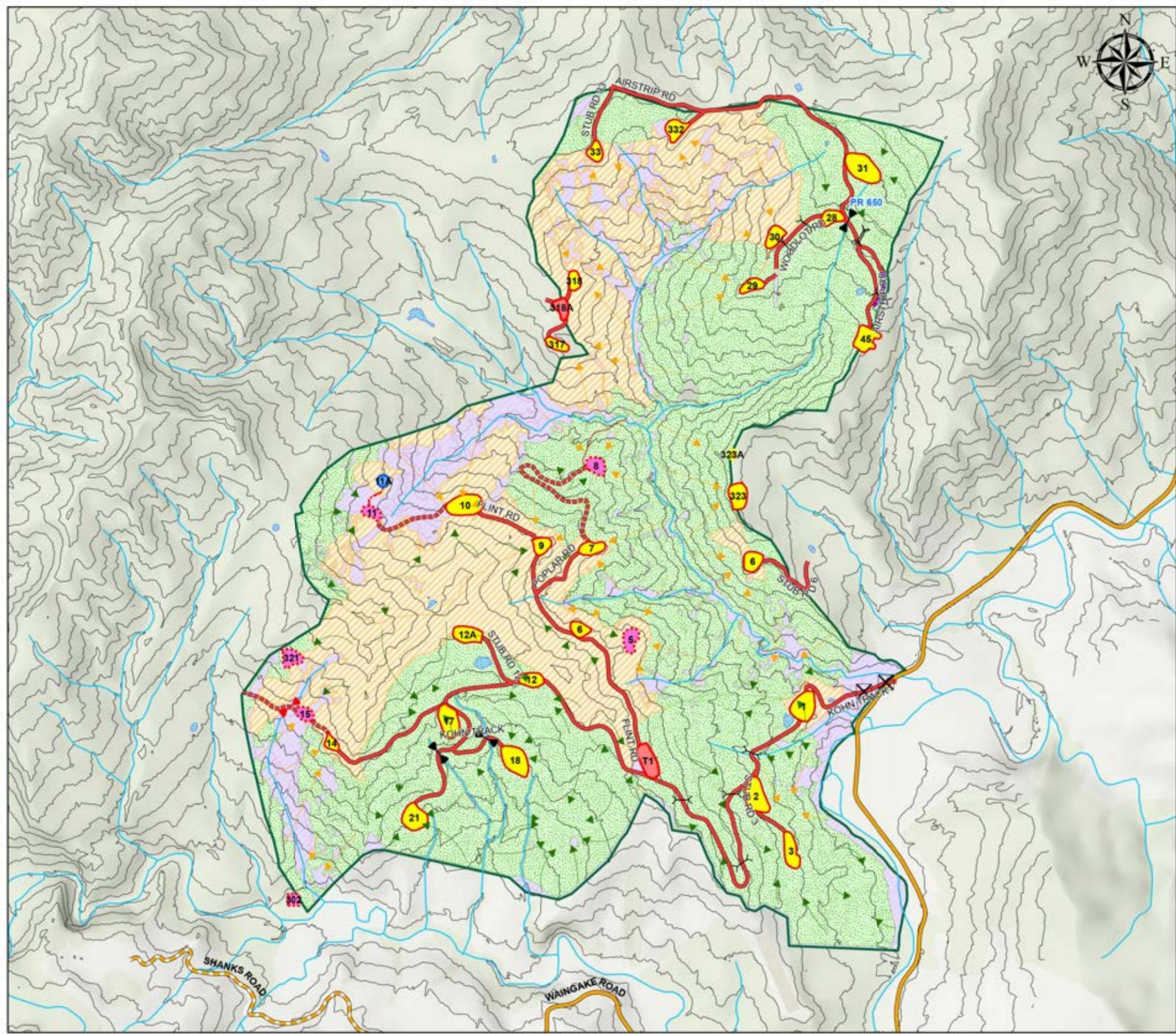


# Majestic Pine Reserve Map

1:12,000



Date: 9/08/2021



- |                           |                          |
|---------------------------|--------------------------|
| Forest Enterprises Estate | Public Road - Sealed     |
| Ground Based              | Public Road - Metalled   |
| Hauler                    | Gate                     |
| Alternative Landing       | Planned Crossing Culvert |
| Pad                       | Culvert crossing         |
| Built Landing             | Culvert                  |
| Temporary Landing         | Waterbody                |
| Planned Landing           | Streams                  |
| Planned Road              | Stocked                  |
| Built Road                | Landbank                 |
| Planned Track             | Non-productive           |
| Decommissioned Road       | Contour                  |
| Quad Track                | 20m (Index)              |

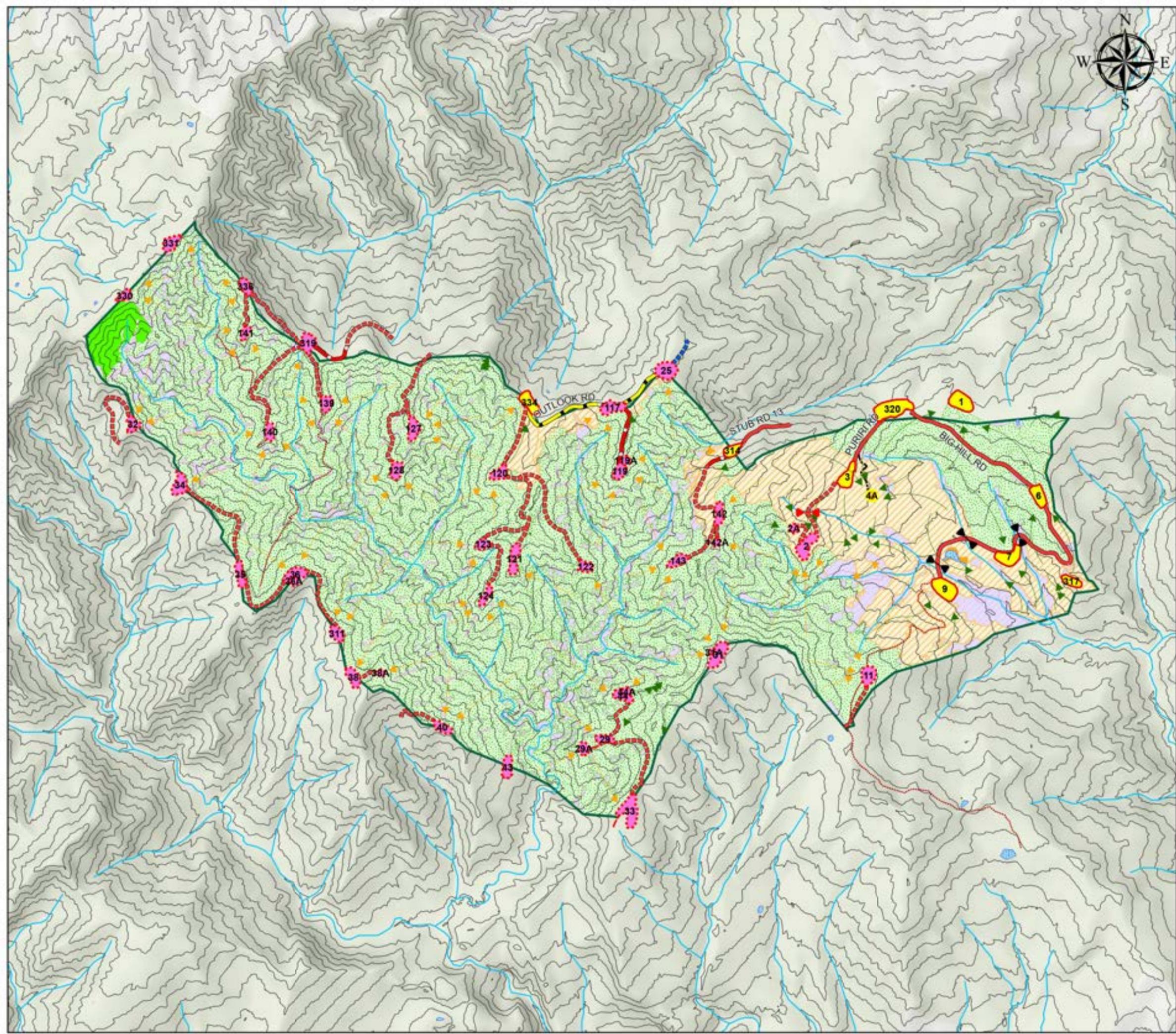


# Longwood Reserve Map

1:14,000



Date: 9/08/2021



- |                           |                          |
|---------------------------|--------------------------|
| Forest Enterprises Estate | Quad Track               |
| Ground Based              | Planned Crossing Culvert |
| Hauler                    | Culvert crossing         |
| Pad                       | Waterbody                |
| Built Landing             | Streams                  |
| Planned Landing           | Stocked                  |
| Planned Road              | Landbank                 |
| Upgrade Road              | Non-productive           |
| Built Road                | <b>Reserve Ranking</b>   |
| Planned Track             | 2. Moderately High       |
| Built Track               | 4. Low                   |
| Alternative               | <b>Contour</b>           |
| Under Construction        | 20m (Index)              |



# Homewood Reserve Map

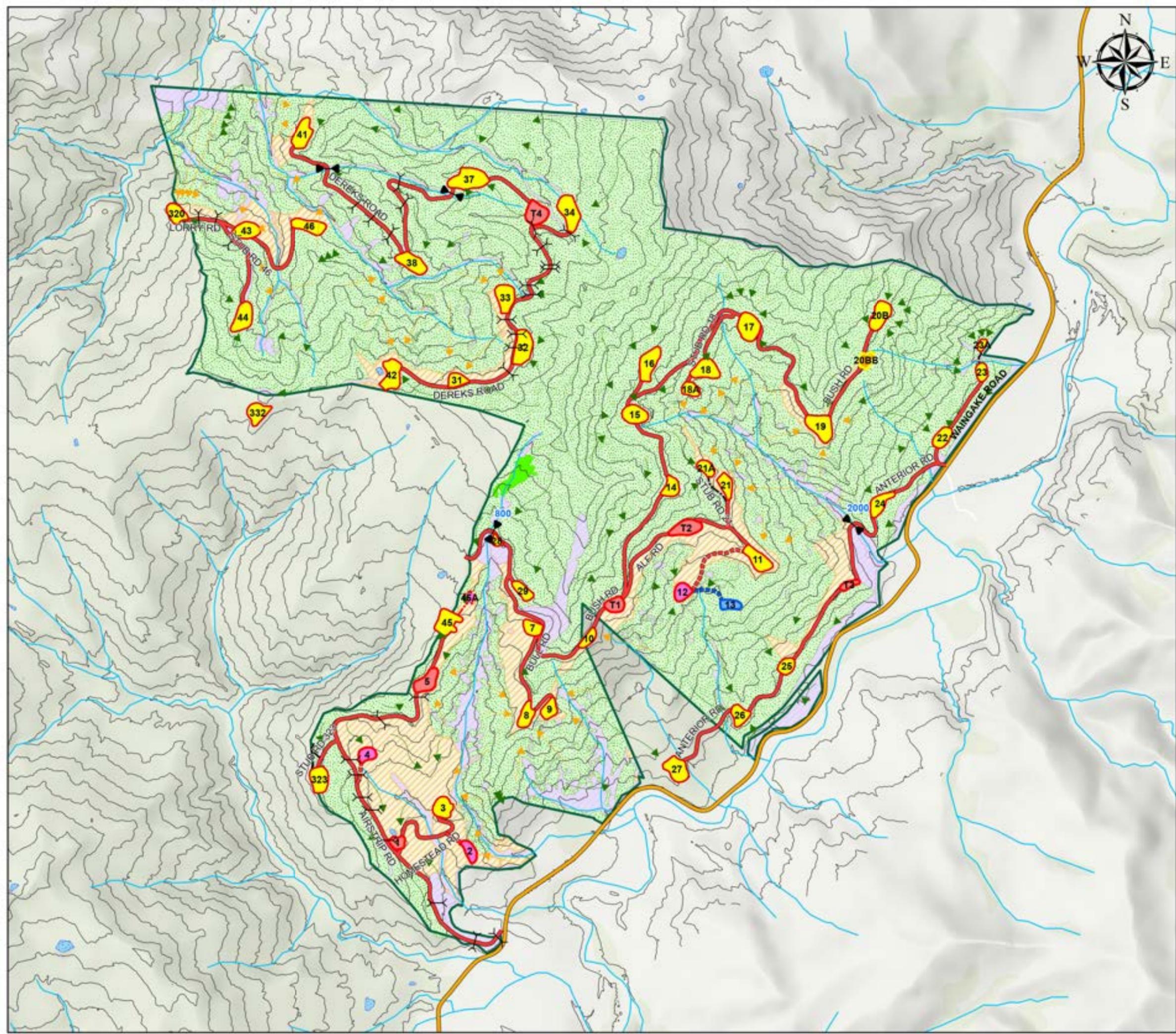
1:12,000



Date: 9/08/2021



- |                           |                      |
|---------------------------|----------------------|
| Forest Enterprises Estate | Public Road - Sealed |
| Ground Based              | Culvert crossing     |
| Hauler                    | Culvert              |
| Alternative Landing       | Waterbody            |
| Pad                       | Streams              |
| Built Landing             | Stocked              |
| Temporary Landing         | Landbank             |
| Field Marked Landing      | Non-productive       |
| Planned Landing           | Reserve Ranking      |
| Planned Road              | 4. Low               |
| Built Road                | Contour              |
| Planned Track             | 20m (Index)          |
| Built Track               |                      |
| Alternative               |                      |



# Hokoroa Reserve Map

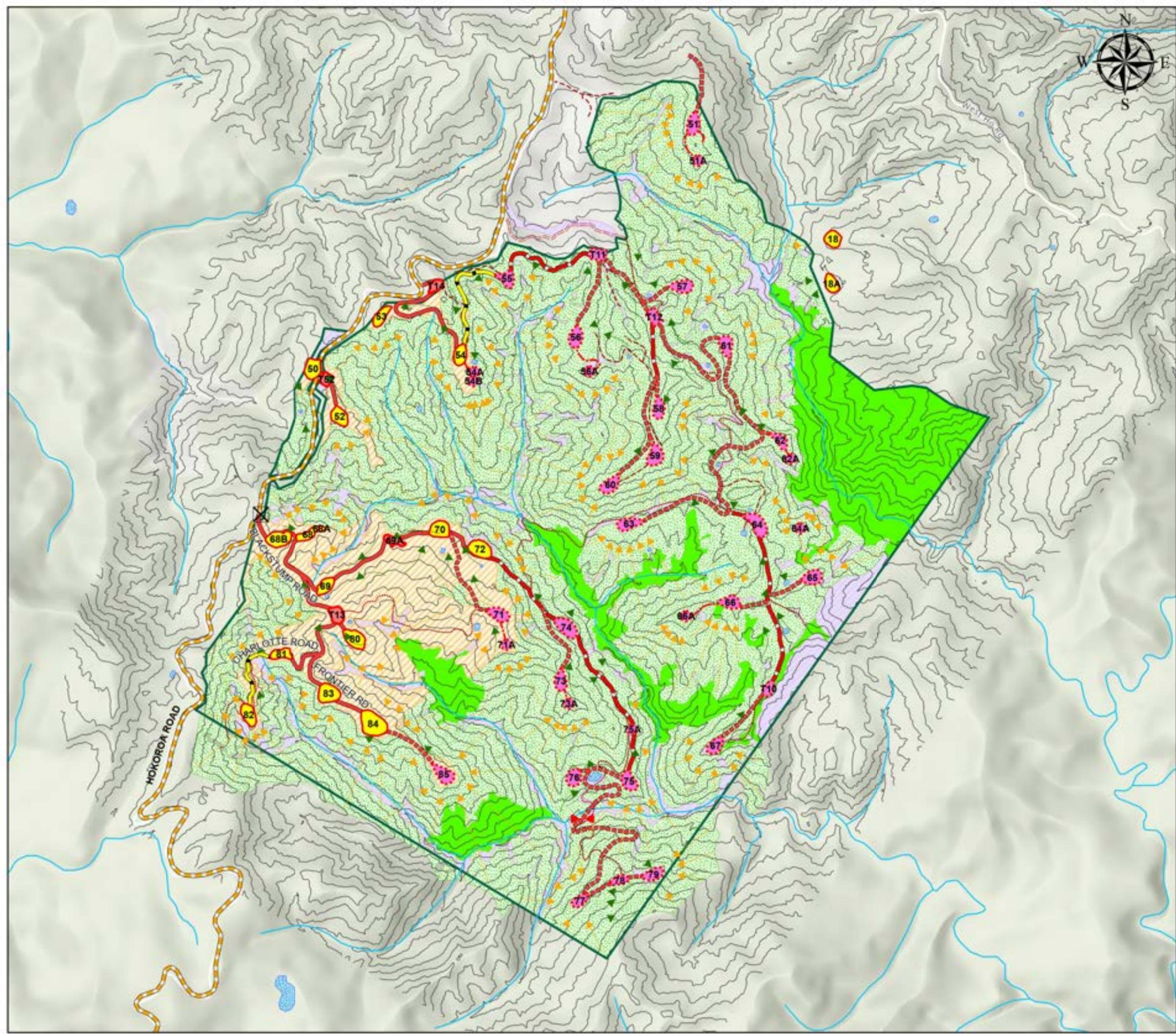
1:13,000



Date: 9/08/2021



- |                           |                          |
|---------------------------|--------------------------|
| Forest Enterprises Estate | Public Road - Metalled   |
| Ground Based              | Gate                     |
| Hauler                    | Planned Crossing Culvert |
| Built Landing             | Waterbody                |
| Temporary Landing         | Streams                  |
| Planned Landing           | Stocked                  |
| Planned Road              | Landbank                 |
| Upgrade Road              | Non-productive           |
| Built Road                | <b>Reserve Ranking</b>   |
| Planned Track             | 4. Low                   |
| Under Construction        | <b>Contour</b>           |
| Forest Road               | 20m (Index)              |
| 4wd Track                 |                          |
| Quad Track                |                          |



# Hokoroa North Reserve Map

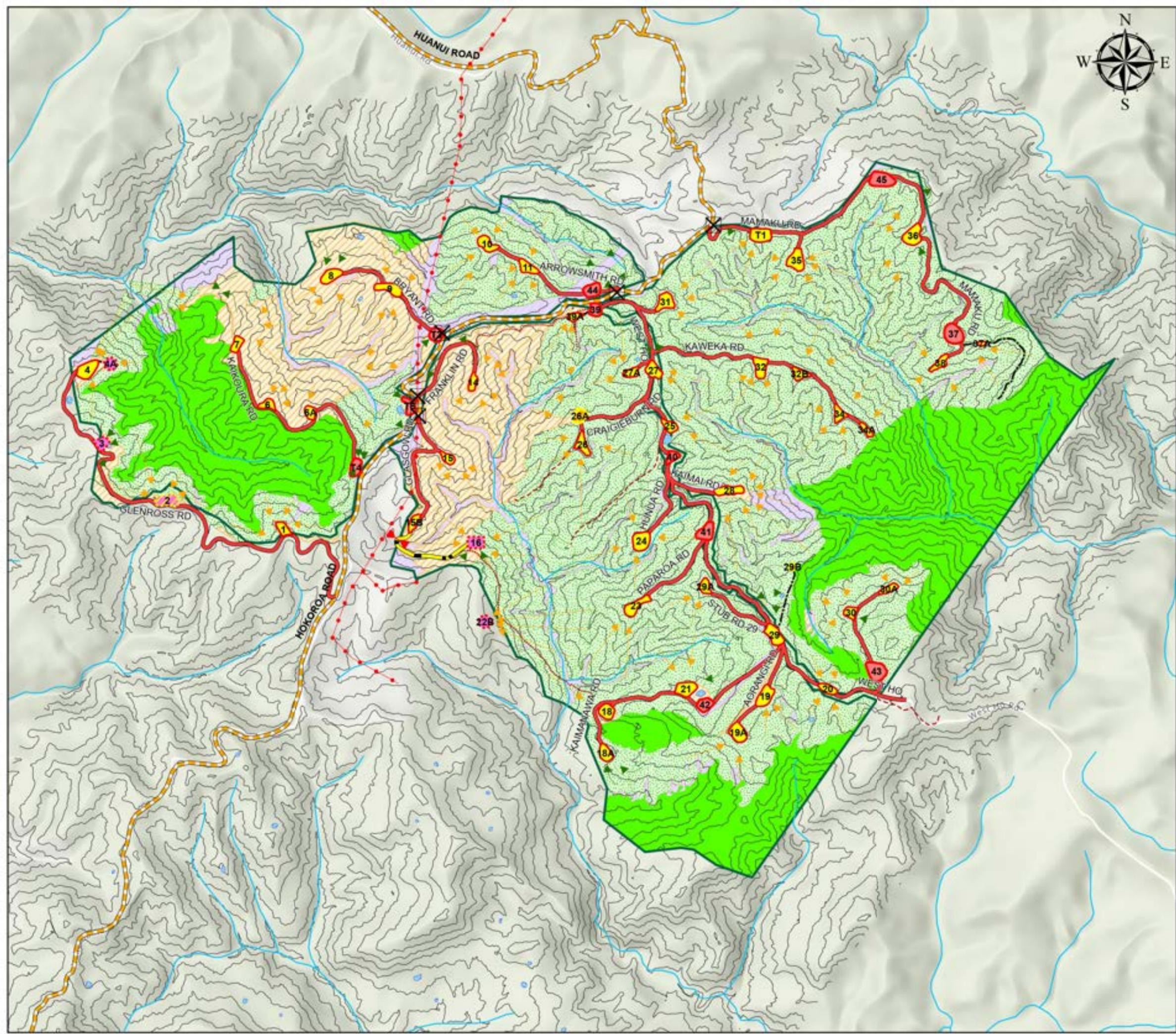
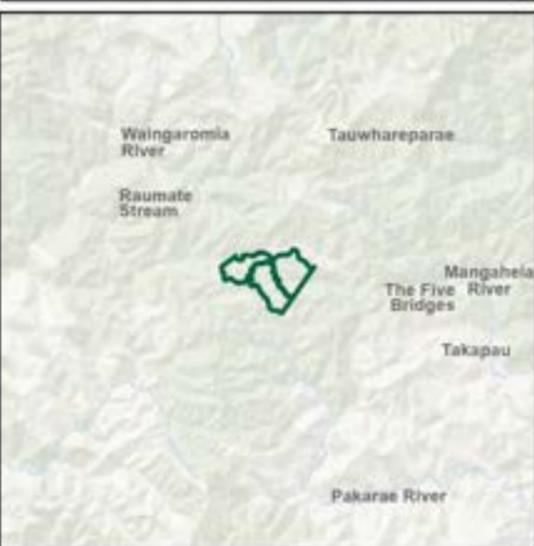
1:14,000



Date: 9/08/2021



- |                            |                          |
|----------------------------|--------------------------|
| Forest Enterprises Estate  | 4wd Track                |
| Bluffs or Rocky Outcrops   | Quad Track               |
| Overhead Wires             | Public Road - Metalled   |
| Ground Based               | Gate                     |
| Hauler                     | Planned Crossing Culvert |
| Pad                        | Streams                  |
| Bull Landing               | Stocked                  |
| Temporary Landing          | Landbank                 |
| Under Construction Landing | Non-productive           |
| Planned Landing            | Reserve Ranking          |
| Bull Road                  | 4. Low                   |
| Bull Track                 | Contour                  |
| Under Construction         | 20m (Index)              |



# Goodwood Reserve Map

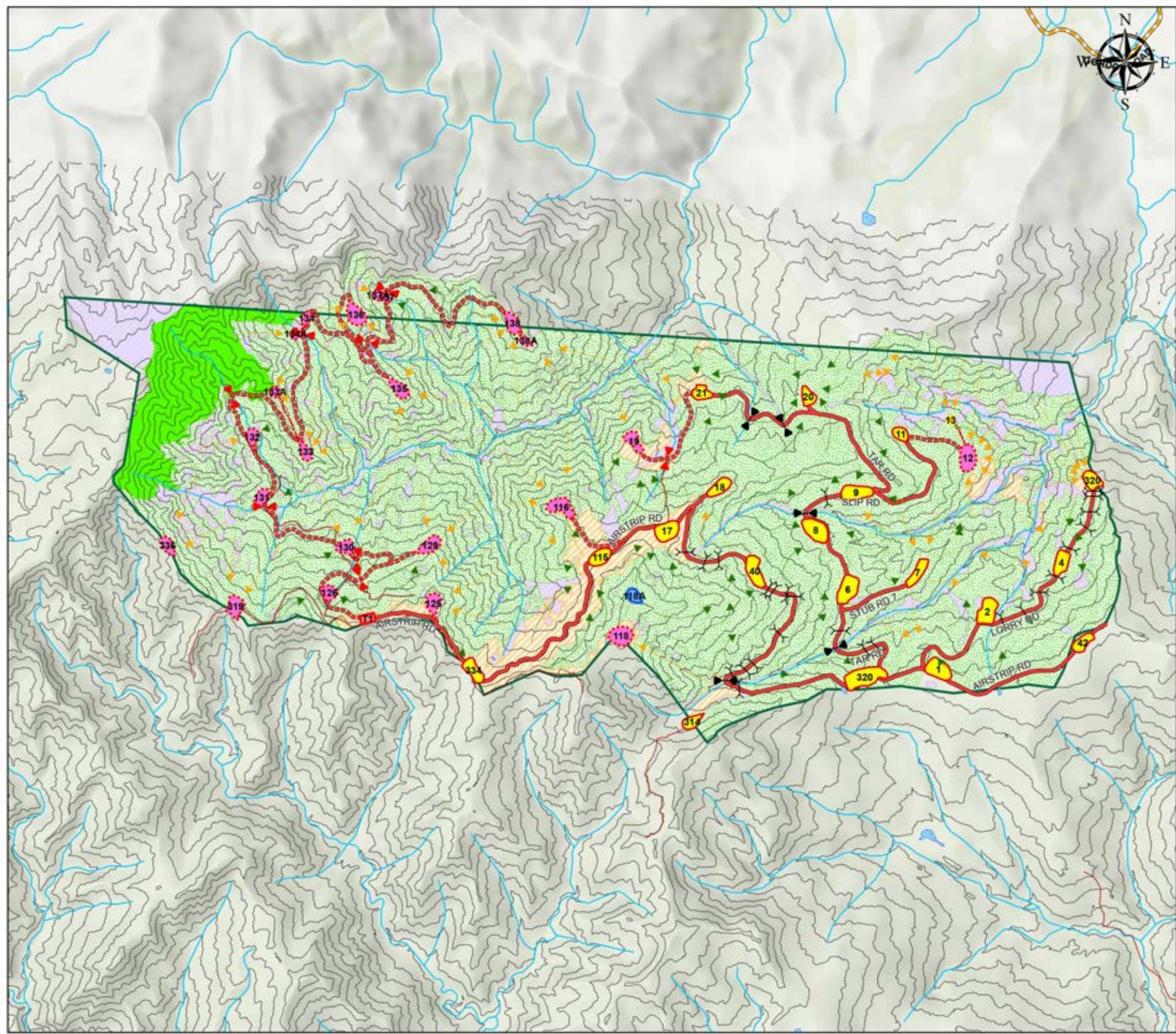
1:13,000



Date: 9/08/2021



- |                           |                          |
|---------------------------|--------------------------|
| Forest Enterprises Estate | Public Road - Metalled   |
| Ground Based              | Planned Crossing Culvert |
| Hauler                    | Culvert crossing         |
| Alternative Landing       | Culvert                  |
| Pad                       | Waterbody                |
| Built Landing             | Streams                  |
| Temporary Landing         | Stocked                  |
| Planned Landing           | Landbank                 |
| Planned Road              | Non-productive           |
| Built Road                | Reserve Ranking          |
| Planned Track             | 4, Low                   |
| Quad Track                | Contour                  |
|                           | 20m (Index)              |



# Glenwood Reserve Map

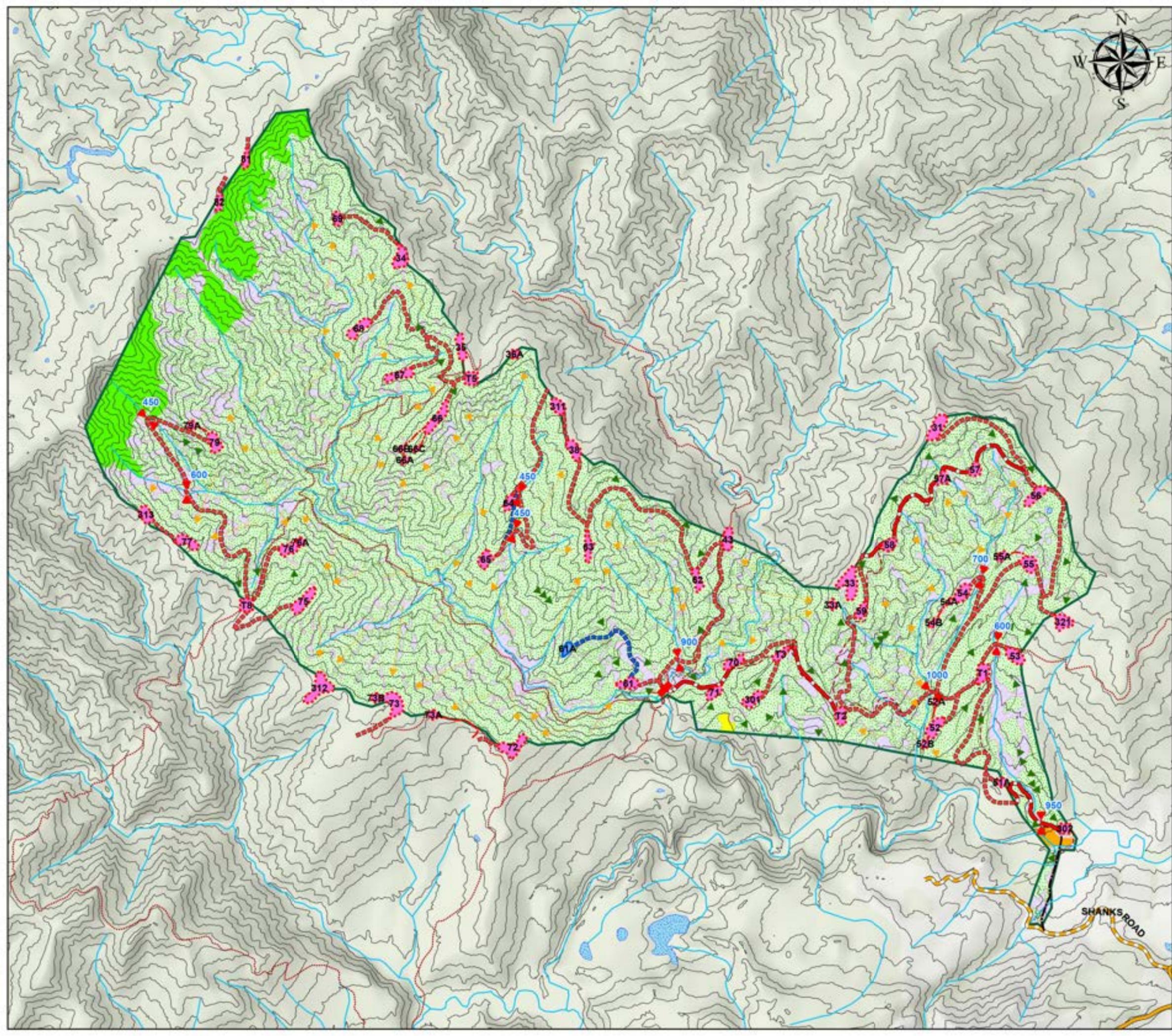
1:14,000



Date: 9/08/2021



- |                           |                          |
|---------------------------|--------------------------|
| Forest Enterprises Estate | Public Road - Sealed     |
| Ground Based              | Public Road - Metalled   |
| Hauler                    | Planned Crossing Culvert |
| Alternative Landing       | Planned box culvert      |
| Planned Landing           | Waterbody                |
| Planned Road              | Streams                  |
| Upgrade Road              | Stocked                  |
| Planned Track             | Non-productive           |
| Built Track               | <b>Reserve Ranking</b>   |
| Alternative               | 2. Moderately High       |
| Forest Road               | 3. Moderate              |
| 4wd Track                 | 4. Low                   |
| Quad Track                | <b>Contour</b>           |
|                           | 20m (Index)              |



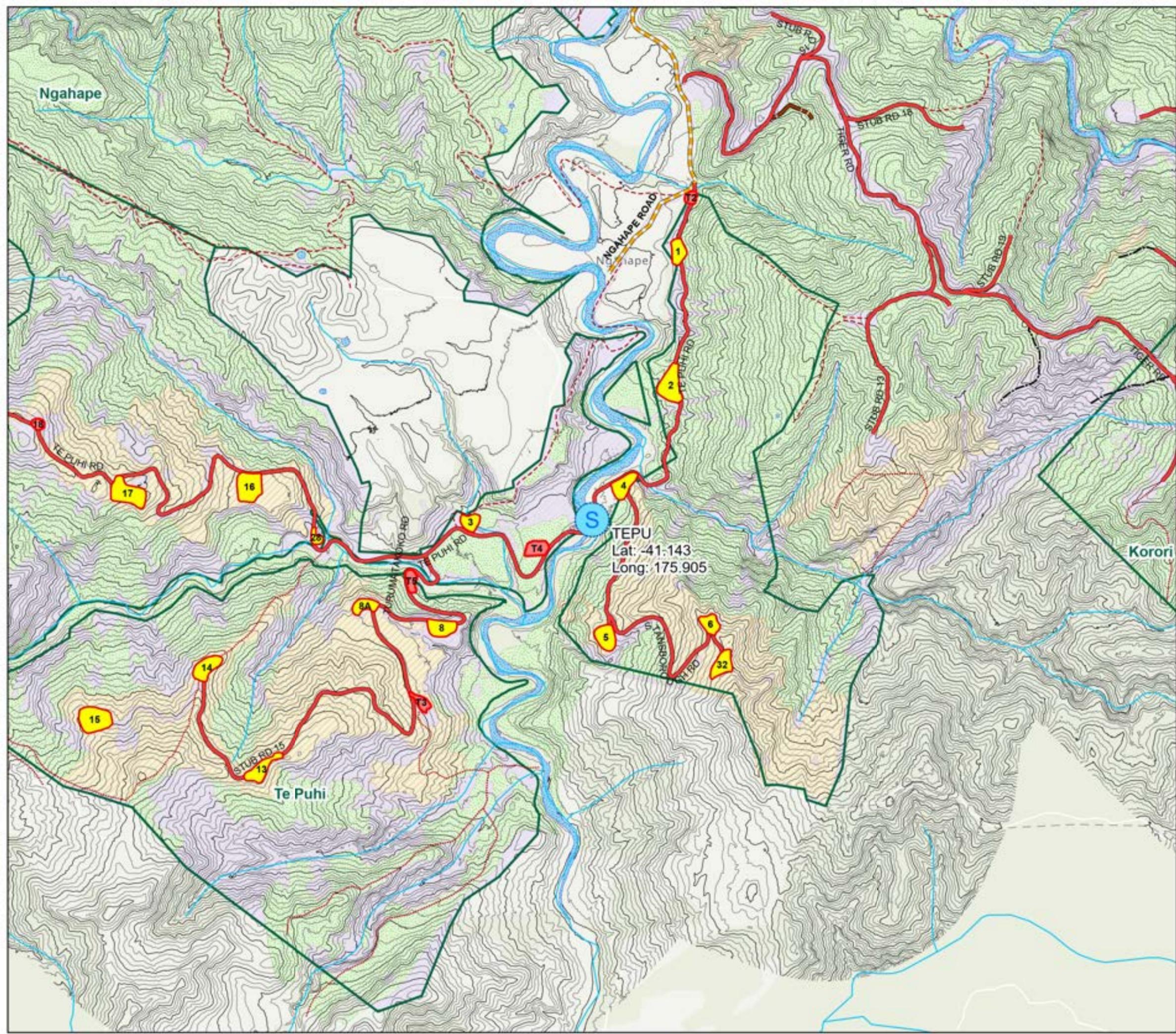
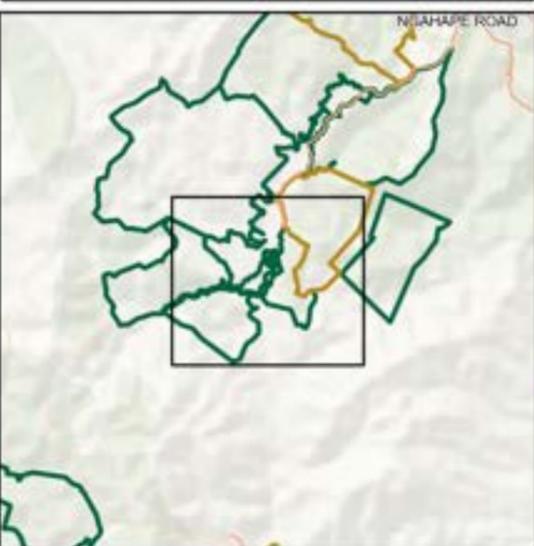
# Te Puihi SHMAK Map

1:10,000



Date: 4/11/2021

- SHMAK Site
  - Legal Boundary
  - Built Landing
  - Temporary Landing
  - Built Road
  - Built Track
  - Unmaintained Road
  - Public Road - Metalled
  - 4wd Track
  - Quad Track
  - Rivers
  - Waterbody
  - Streams
  - Stocked
  - Landbank
  - NonProductive
- Contours
- 5m
  - 20m (Index)



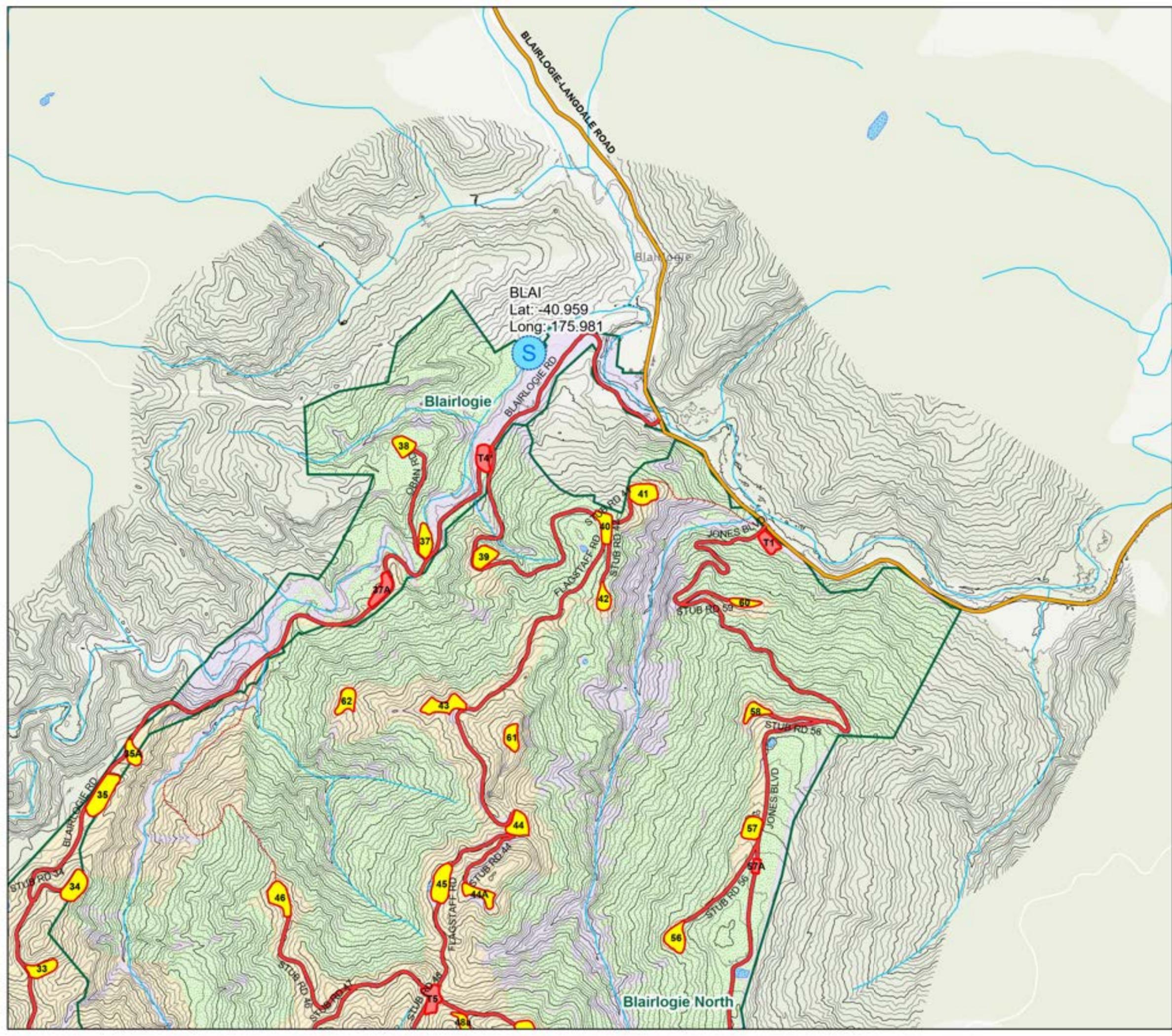
# Blairlogies SHMAK Map

1:10,000



Date: 4/11/2021

- SHMAK Site
  - Legal Boundary
  - Built Land
  - Temporary Land
  - Built Road
  - Public Road - Sealed
  - Quad Track
  - Rivers
  - Waterbody
  - Streams
  - Stocked
  - Landbank
  - NonProductive
- Contours
- 5m
  - 20m (Index)



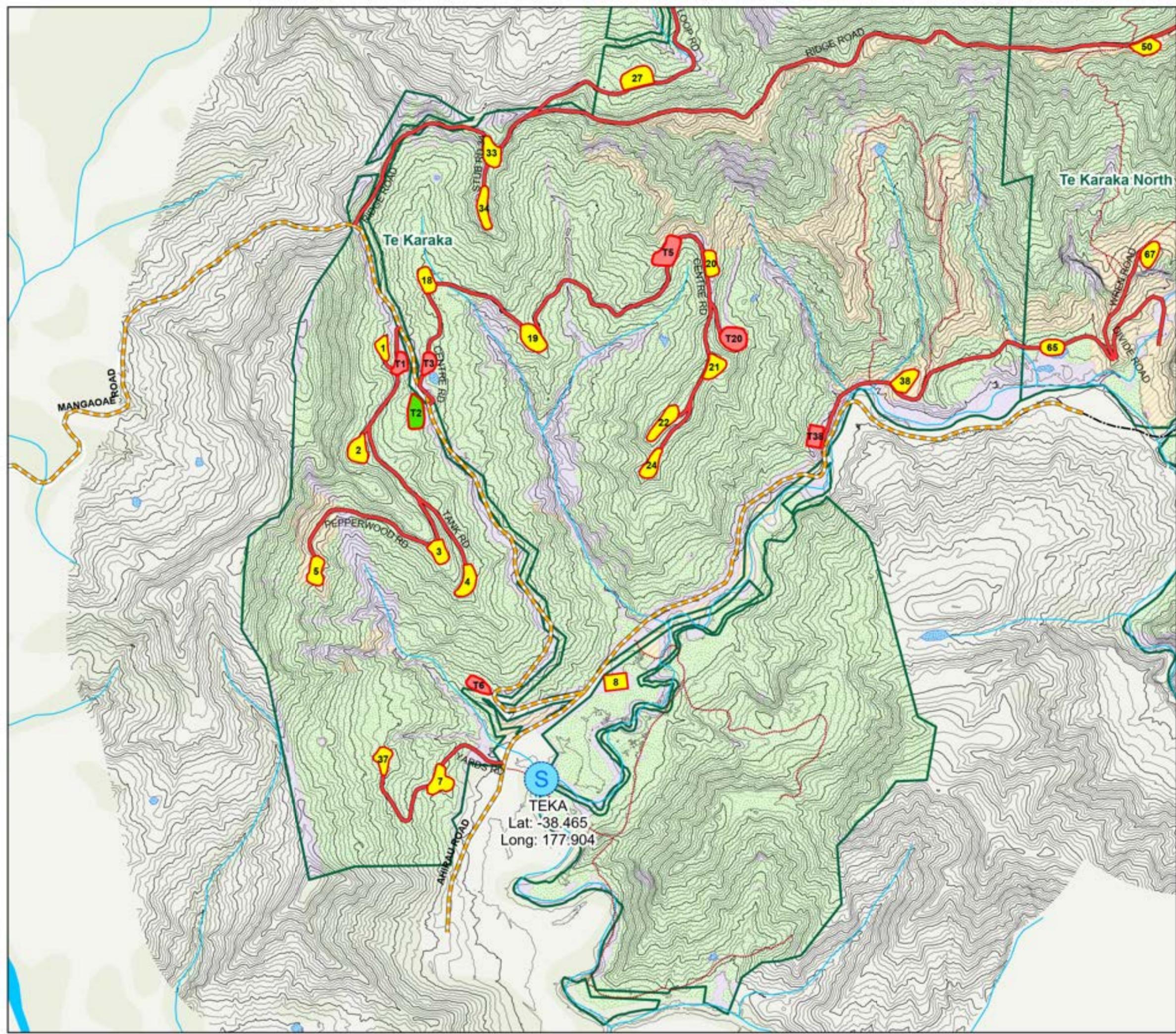
# Te Karakas SHMAK Map

1:10,000



Date: 4/11/2021

- SHMAK Site
  - Legal Boundary
  - Rehabilitated Landing
  - Built Landing
  - Temporary Landing
  - Built Road
  - Built Track
  - Public Road - Metalled
  - Forest Road
  - Quad Track
  - Rivers
  - Waterbody
  - Streams
  - Stocked
  - Landbank
  - NonProductive
- Contours
- 5m
  - 20m (Index)



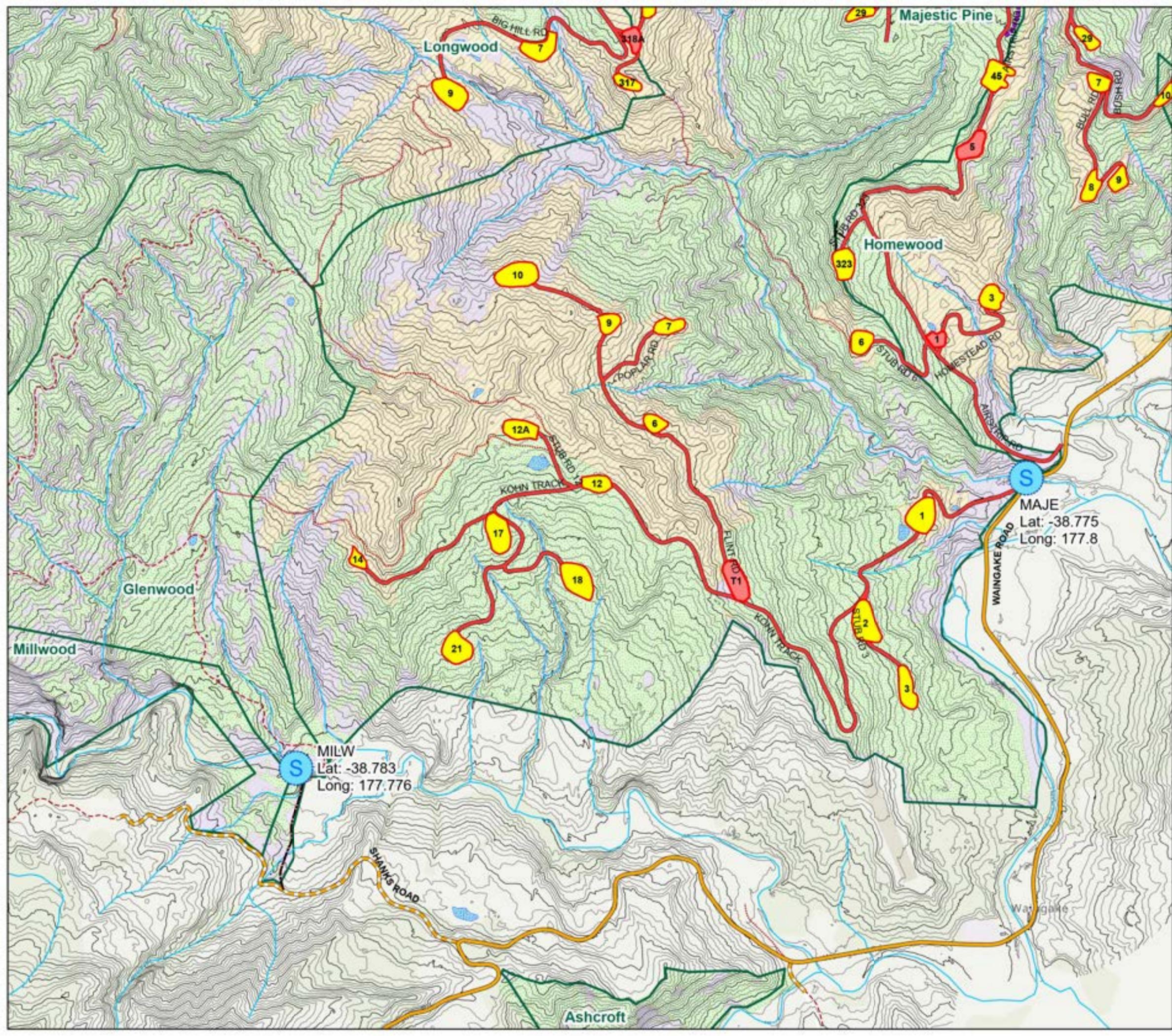
# Emerald Hills SHMAK Map

1:10,000



Date: 4/11/2021

- SHMAK Site
- Legal Boundary
- Built Landing
- Temporary Landing
- Built Road
- Built Track
- Decommissioned Road
- Public Road - Sealed
- Public Road - Metalled
- Forest Road
- 4wd Track
- Quad Track
- Rivers
- Waterbody
- Streams
- Stocked
- Landbank
- NonProductive
- Contours
  - 5m
  - 20m (Index)



# Broadlands SHMAK Map

1:10,000



Date: 4/11/2021

- SHMAK Site
- Legal Boundary
- Public Road - Sealed
- Public Road - Unmetalled
- 4wd Track
- Quad Track
- Rivers
- Waterbody
- Streams
- Stocked
- Landbank
- NonProductive

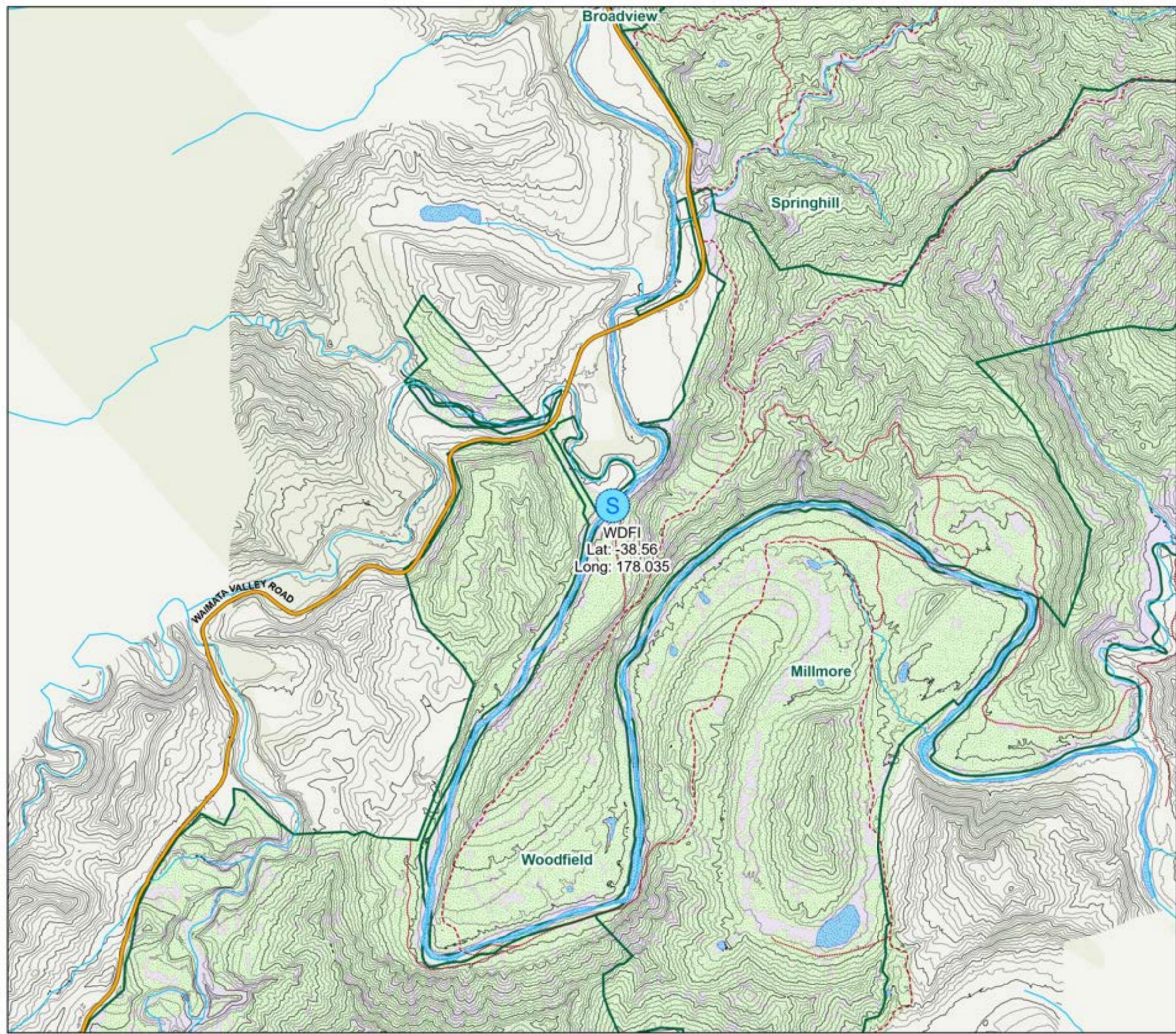
Contours

- 5m
- 20m (Index)

0 240 480 720 Meters

WAIMATA VALLEY ROAD

RIVERSIDE ROAD

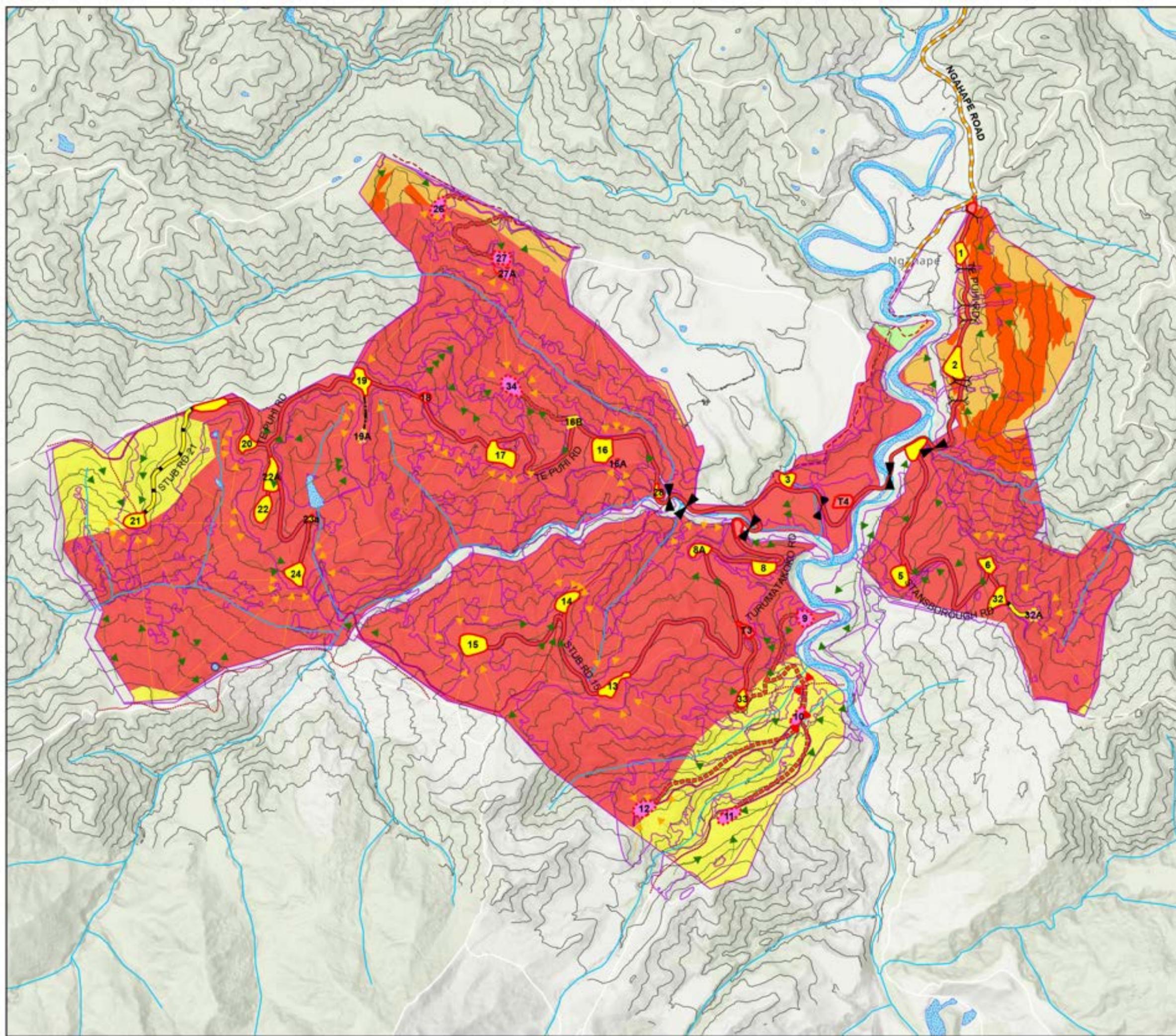


# Te Puhi Erosion Susceptibility Classification (ESC)

1:12,000



Date: 22/11/2021



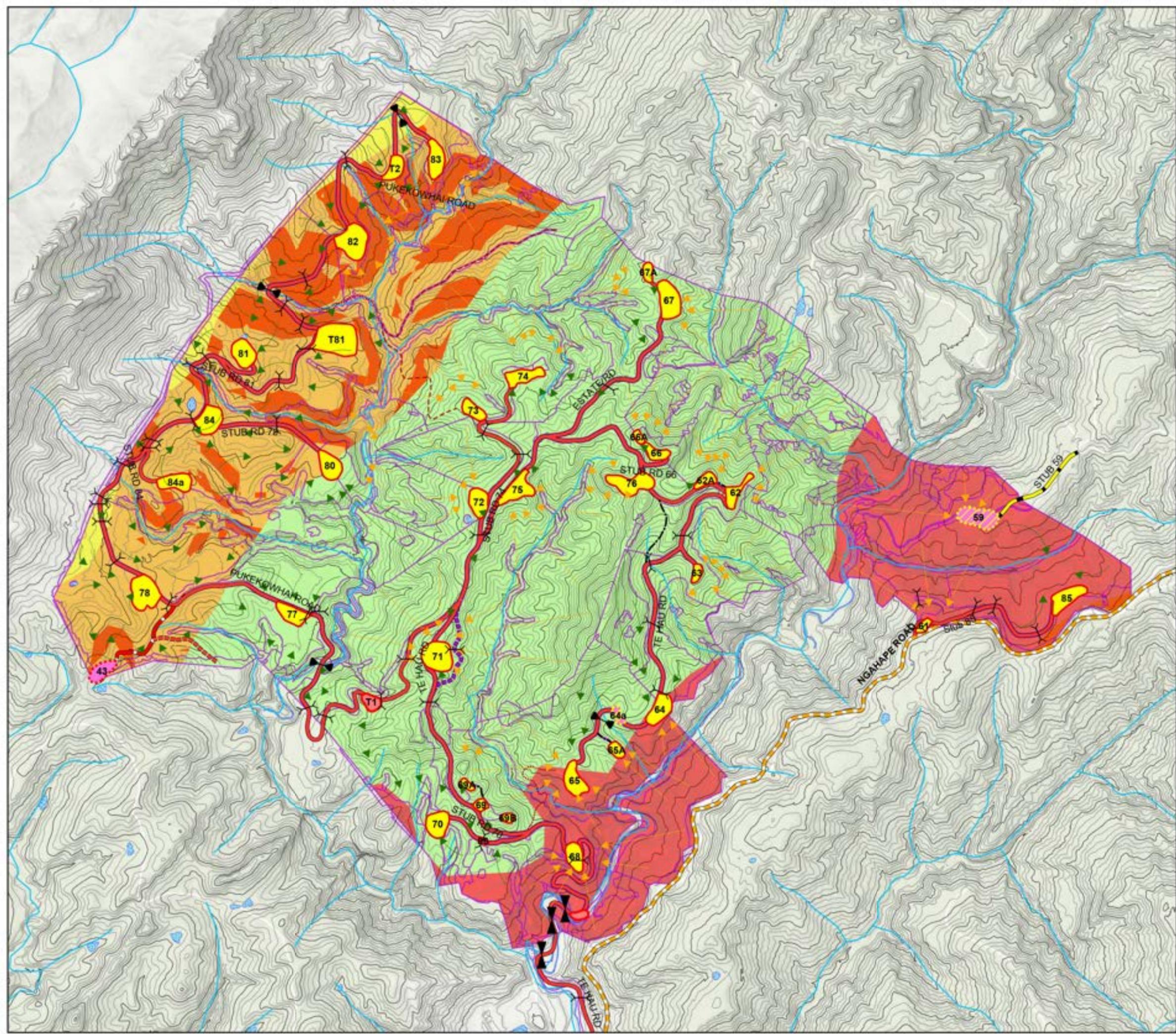
# Te Hau Erosion Susceptibility Classification (ESC)

1:10,000



Date: 22/11/2021

- Legend**
- Patches Outline
  - Culvert crossing
  - Culvert
  - Ford
  - Ground Based
  - Hauler
  - Built Landing
  - Temporary Landing
  - Under Construction Landing
  - Planned Landing
  - Planned Road
  - Upgrade Road
  - Built Road
  - Built Track
  - Under Construction
  - Decommissioned Road
  - Public Road - Metalled
  - 4wd Track
  - Quad Track
  - Waterbody
  - Streams
  - Erosion Susceptibility**
  - Low
  - Moderate
  - High
  - Very High
  - High ≥ 25 Degrees
  - Contours**
  - 20m (Index)
  - 5m





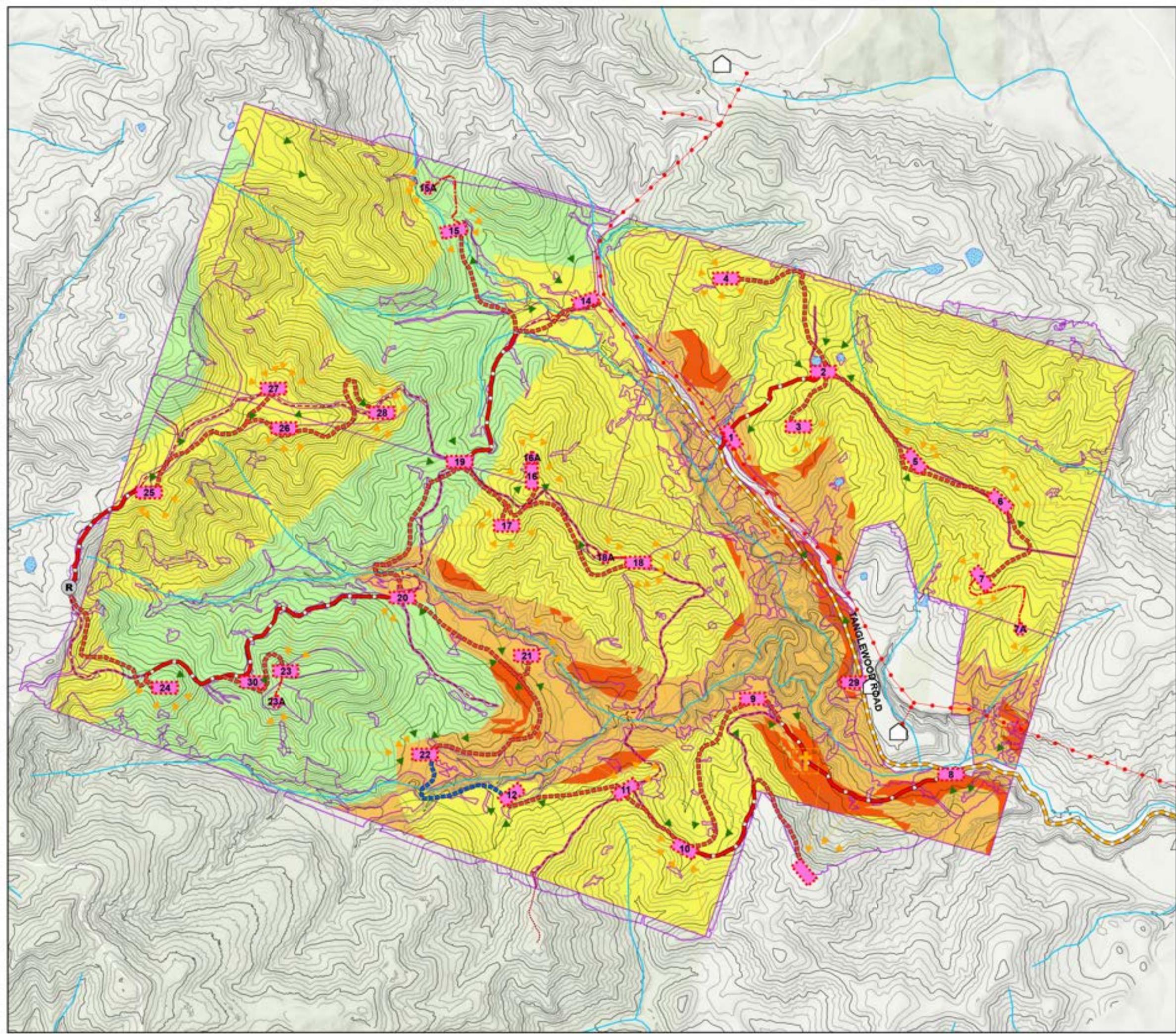
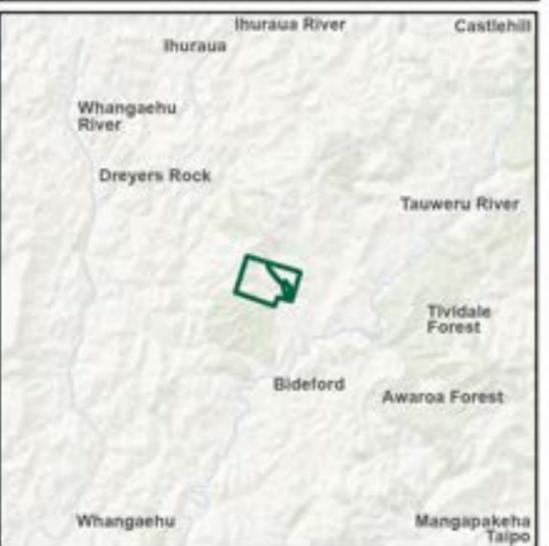
# Rata Hills Erosion Susceptibility Classification (ESC)

1:9,000



Date: 22/11/2021

- Legend**
- Patches Outline
  - Planned crossfall culvert
  - Building
  - Memorial Site
  - Rock Pit
  - Overhead Wires
  - Ground Based
  - Hauler
  - Planned Landing
  - Planned Road
  - Upgrade Road
  - Planned Track
  - Alternative
  - Public Road - Metalled
  - 4wd Track
  - Quad Track
  - Waterbody
  - Streams
  - Erosion Susceptibility**
  - Low
  - Moderate
  - High
  - High ≥ 25 Degrees
  - Contours**
  - 20m (Index)
  - 5m

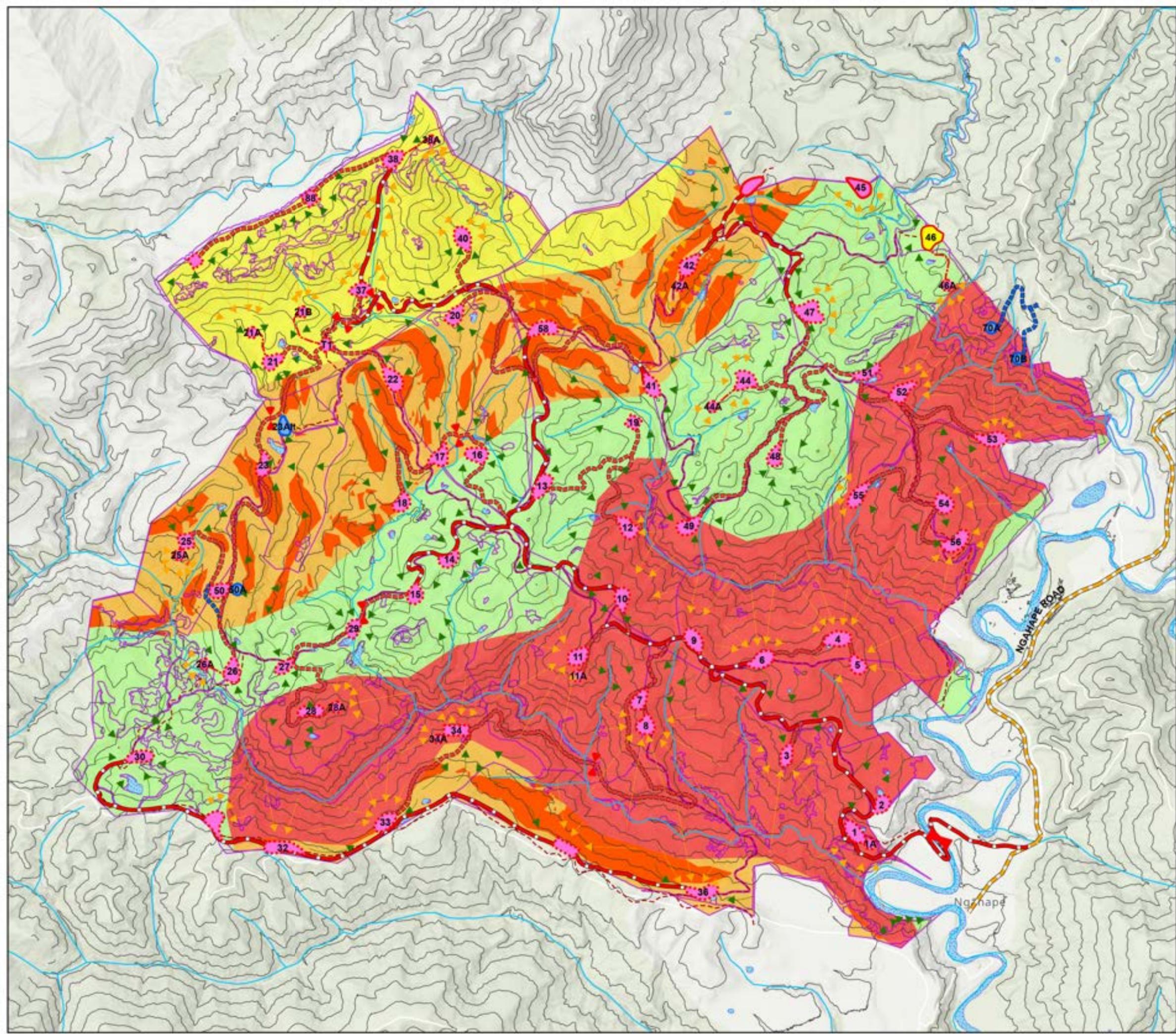


# Ngahape Erosion Susceptibility Classification (ESC)

1:12,000



Date: 22/11/2021



**Legend**

Patches Outline	Public Road - Metalled
Planned Crossing Culvert	4wd Track
Planned ford	Quad Track
Ground Based	Waterbody
Hauler	Streams
Alternative Landing	<b>Erosion Susceptibility</b>
Built Landing	Low
Field Marked Landing	Moderate
Planned Landing	High
Planned Road	Very High
Upgrade Road	High ≥ 25 Degrees
Planned Track	<b>Contours</b>
Alternative	20m (Index)



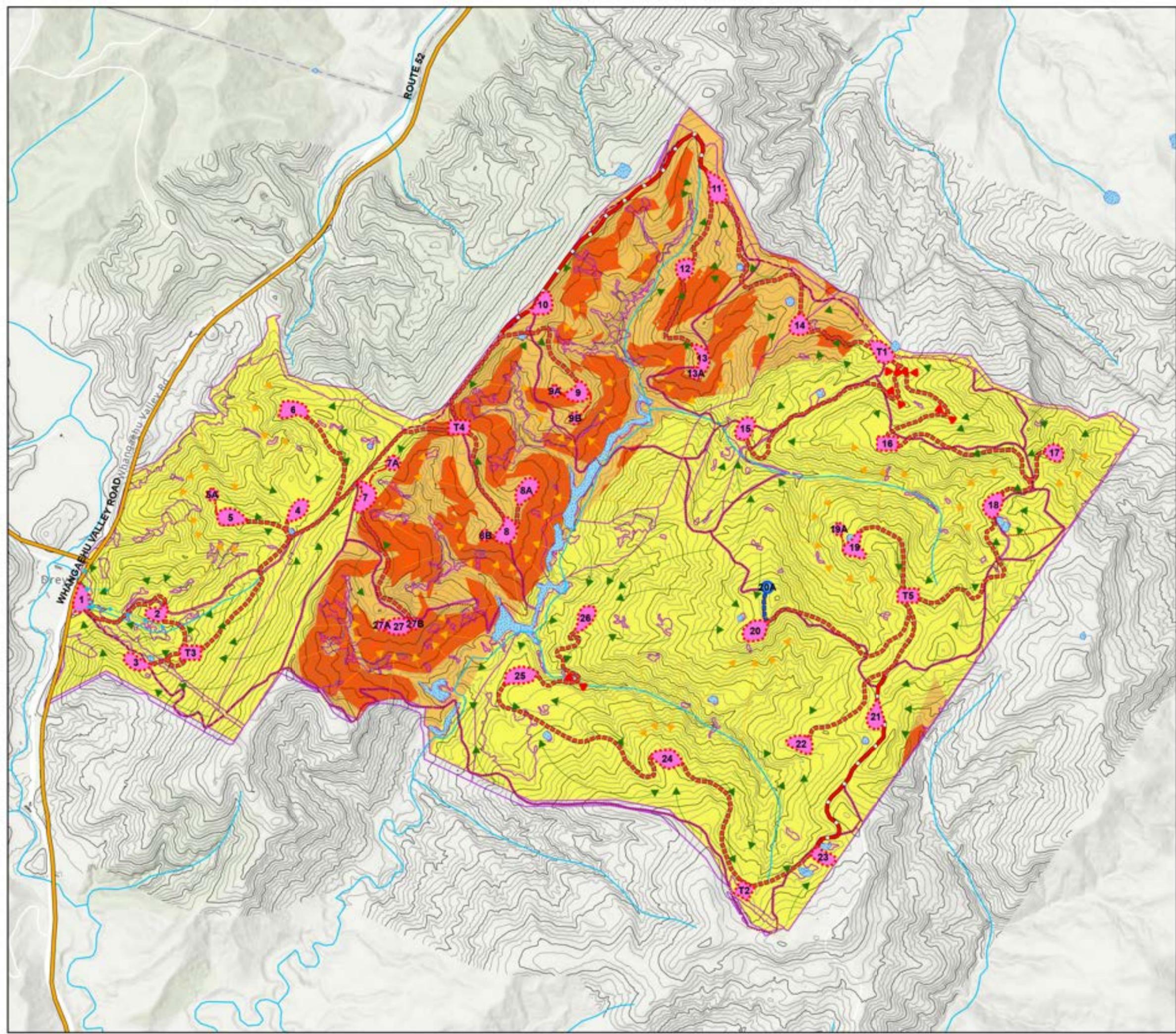
# Cleland Erosion Susceptibility Classification (ESC)

1:10,000



Date: 22/11/2021

- Legend**
- Patches Outline
  - Planned Crossing Culvert
  - Water Lines
  - Ground Based
  - Hauler
  - Alternative Landing
  - Planned Landing
  - Planned Road
  - Upgrade Road
  - Planned Track
  - Alternative
  - Public Road - Sealed
  - Forest Road
  - 4wd Track
  - Quad Track
  - Waterbody
  - Streams
  - Erosion Susceptibility**
  - Moderate
  - High
  - High ≥ 25 Degrees
  - Contours**
  - 20m (Index)
  - 5m



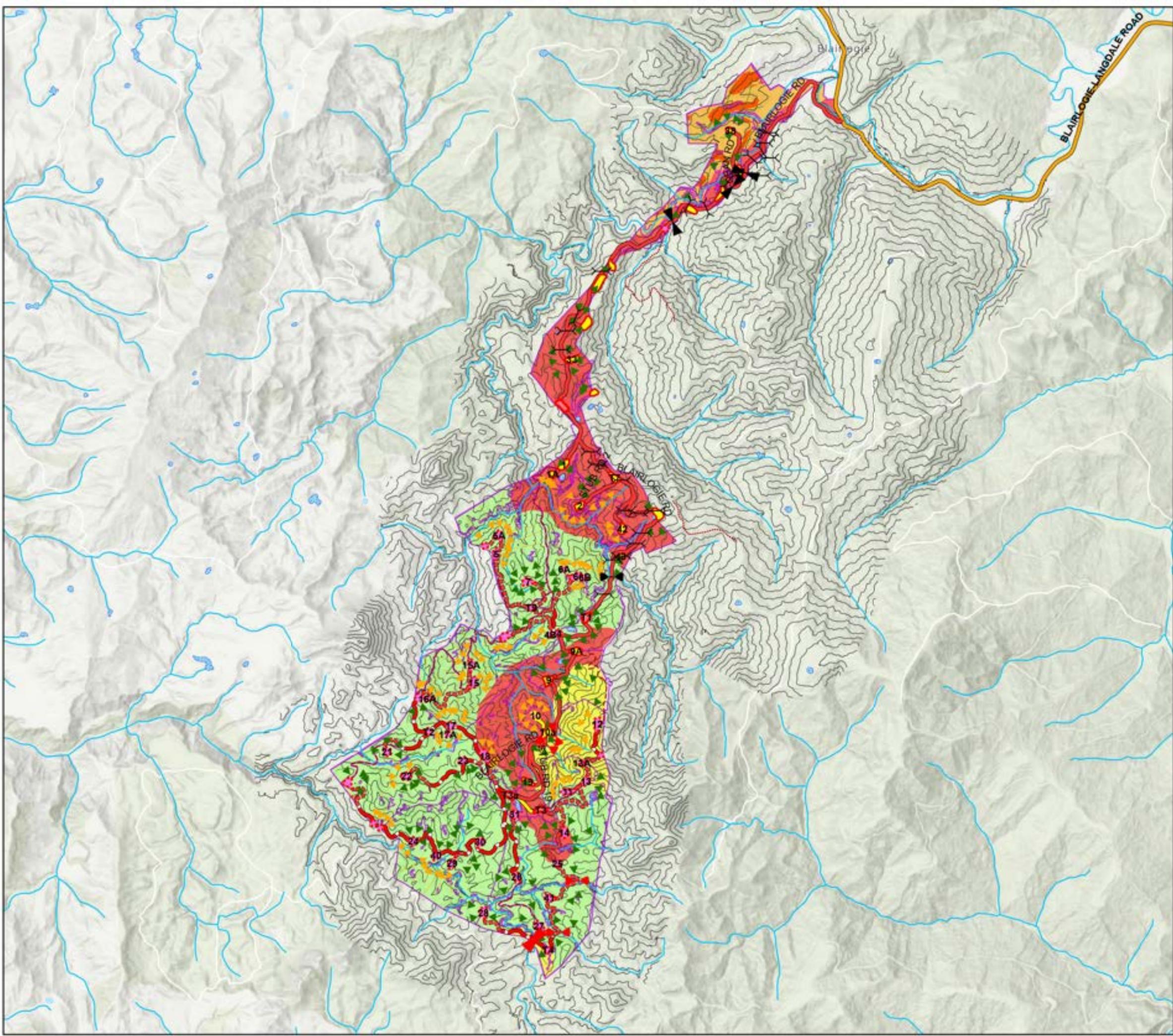
# Blairlogie Erosion Susceptibility Classification (ESC)

1:23,000



Date: 22/11/2021

- Legend**
- Patches Outline
  - Planned Crossing Culvert
  - Planned ford
  - Culvert crossing
  - Culvert
  - Ford
  - Ground Based
  - Hauler
  - Built Landing
  - Temporary Landing
  - Under Construction Landing
  - Planned Landing
  - Planned Road
  - Upgrade Road
  - Built Road
  - Planned Track
  - Under Construction
  - Public Road - Sealed
  - 4wd Track
  - Quad Track
  - Waterbody
  - Streams
  - Erosion Susceptibility**
  - Low
  - Moderate
  - High
  - Very High
  - High  $\geq$  25 Degrees
  - Contours**
  - 20m (Index)



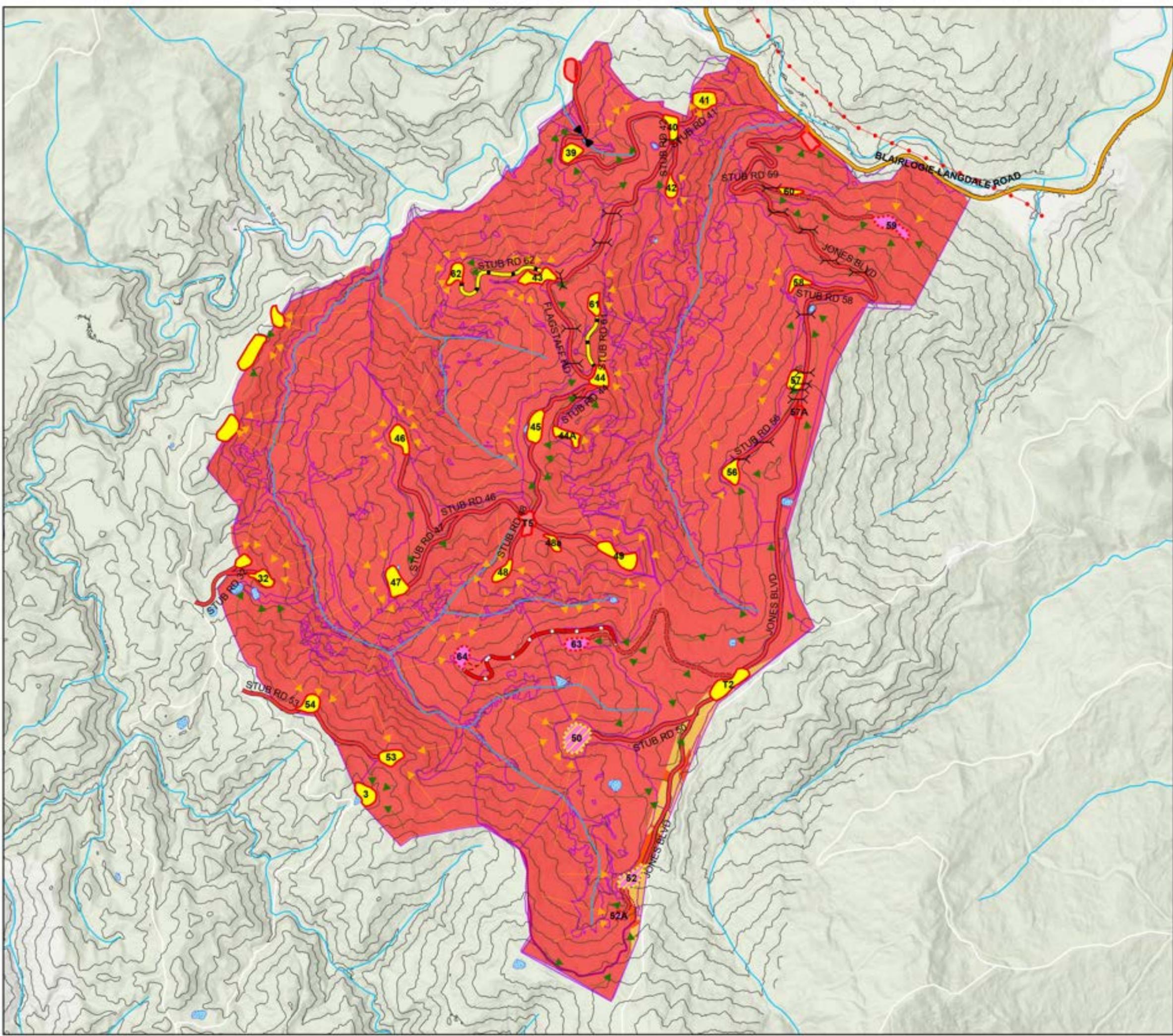
# Blairlogie North Erosion Susceptibility Classification (ESC)

1:12,000



Date: 22/11/2021

- Legend**
- Patches Outline
  - Culvert crossing
  - Culvert
  - Overhead Wires
  - Ground Based
  - Hauler
  - Traffic Management Plan
  - Built Landing
  - Temporary Landing
  - Under Construction Landing
  - Planned Landing
  - Planned Road
  - Upgrade Road
  - Built Road
  - Under Construction
  - Public Road - Sealed
  - 4wd Track
  - Quad Track
  - Waterbody
  - Streams
  - Erosion Susceptibility**
  - Low
  - High
  - Very High
  - High  $\geq$  25 Degrees
  - Contours
  - 20m (Index)



# Te Karaka Erosion Susceptibility Classification (ESC)

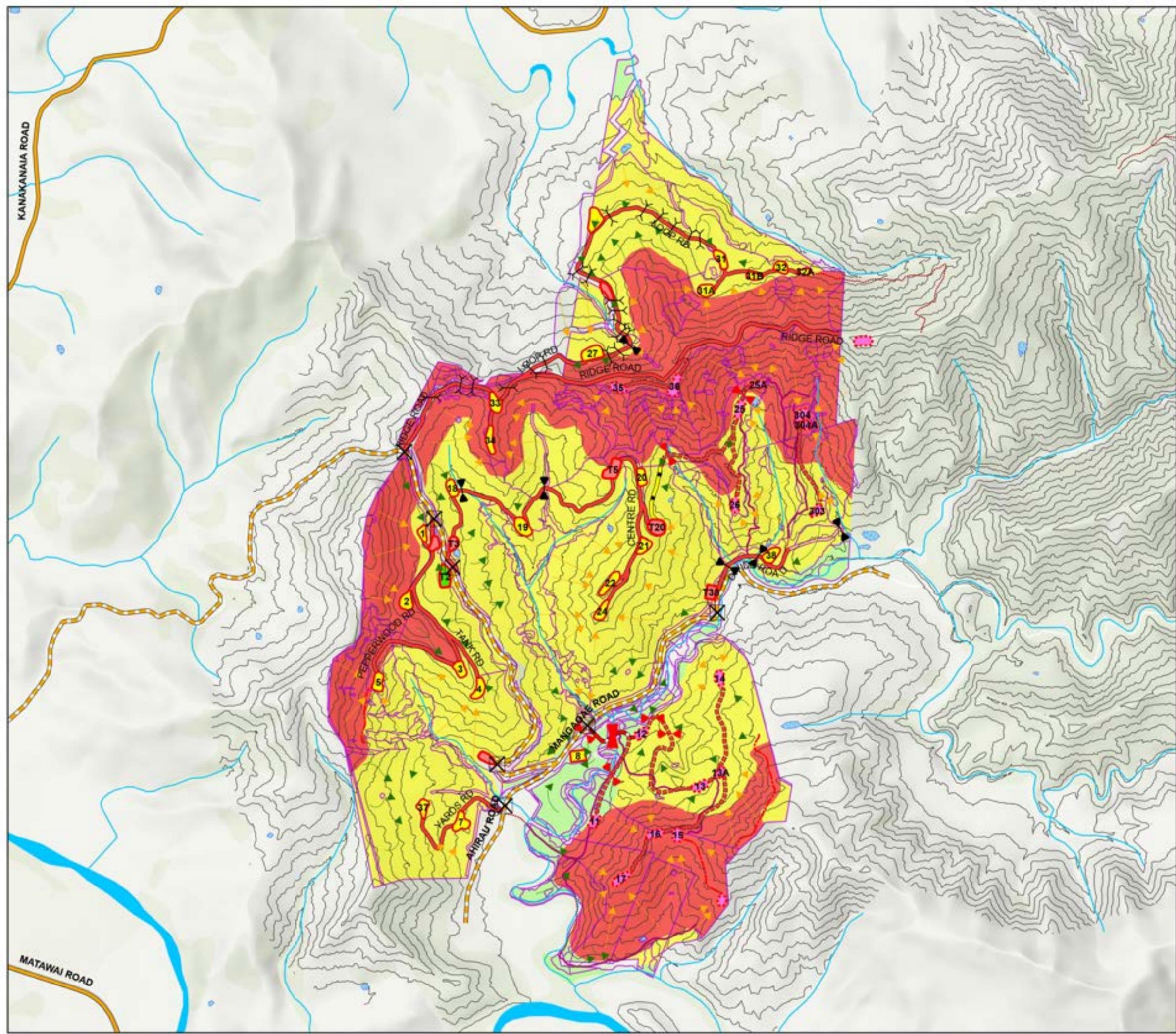
1:15,000



Date: 22/11/2021

### Legend

- |                          |                                    |
|--------------------------|------------------------------------|
| Patches Outline          | Built Road                         |
| Gate                     | Planned Track                      |
| Planned Crossing Culvert | Under Construction                 |
| Planned ford             | Public Road - Sealed               |
| Culvert crossing         | Public Road - Metalled             |
| Culvert                  | Forest Road                        |
| Ground Based             | Quad Track                         |
| Hauler                   | Waterbody                          |
| Rehabilitated Landing    | Streams                            |
| Built Landing            | Erosion Susceptibility - Low       |
| Temporary Landing        | Erosion Susceptibility - Moderate  |
| Planned Landing          | Erosion Susceptibility - Very High |
| Planned Road             | Contours - 20m (Index)             |
| Upgrade Road             |                                    |



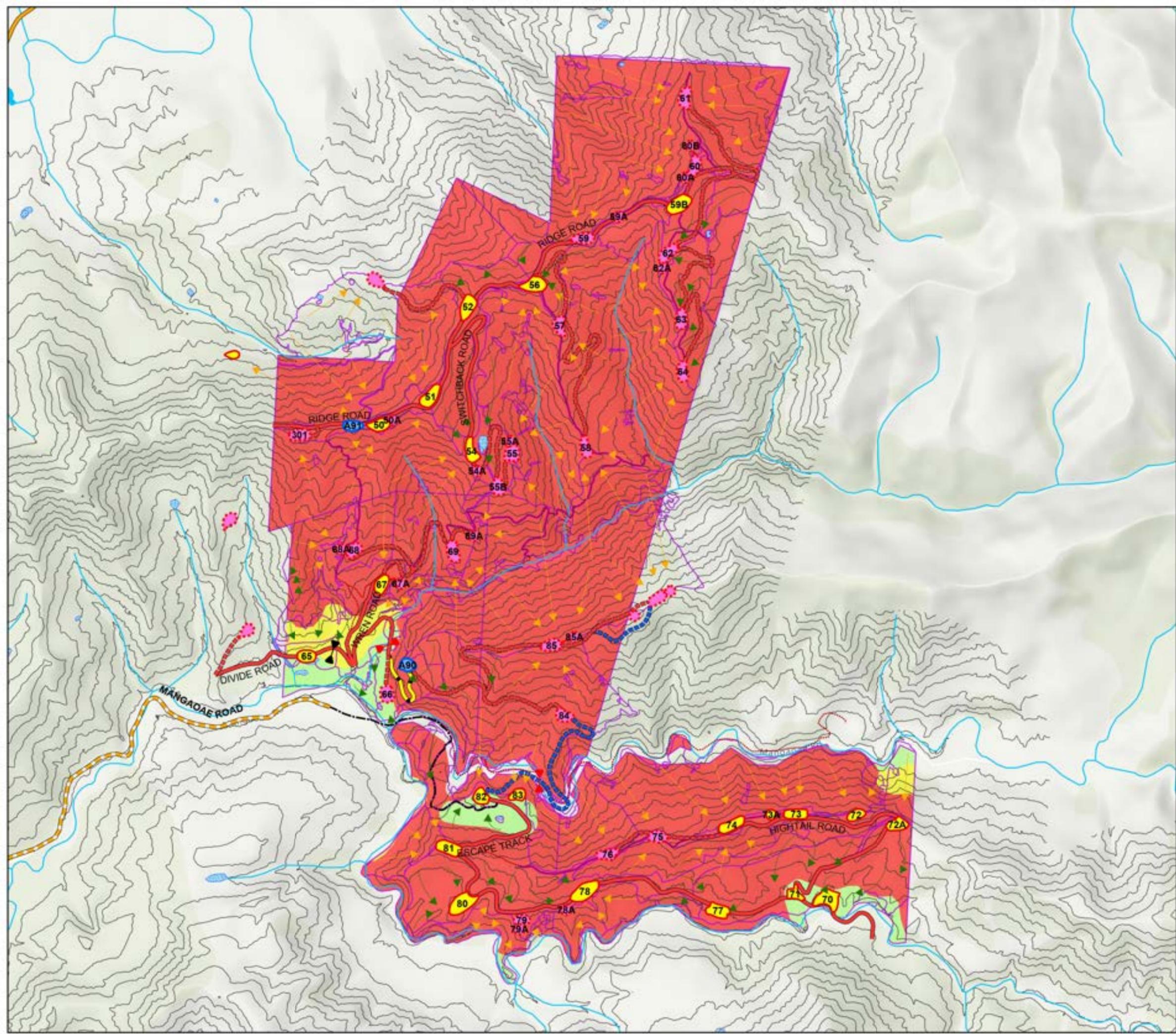
# Te Karaka North Erosion Susceptibility Classification (ESC)

1:13,000



Date: 22/11/2021

- Legend**
- Patches Outline
  - Planned Crossing Culvert
  - Culvert crossing
  - Ground Based
  - Hauler
  - Alternative Landing
  - Built Landing
  - Planned Landing
  - Planned Road
  - Built Road
  - Planned Track
  - Built Track
  - Alternative
  - Under Construction
  - Public Road - Sealed
  - Public Road - Metalled
  - Quad Track
  - Waterbody
  - Streams
  - Erosion Susceptibility - Low
  - Erosion Susceptibility - Moderate
  - Erosion Susceptibility - Very High
  - Contours - 20m (Index)



# Ormond Erosion Susceptibility Classification (ESC)

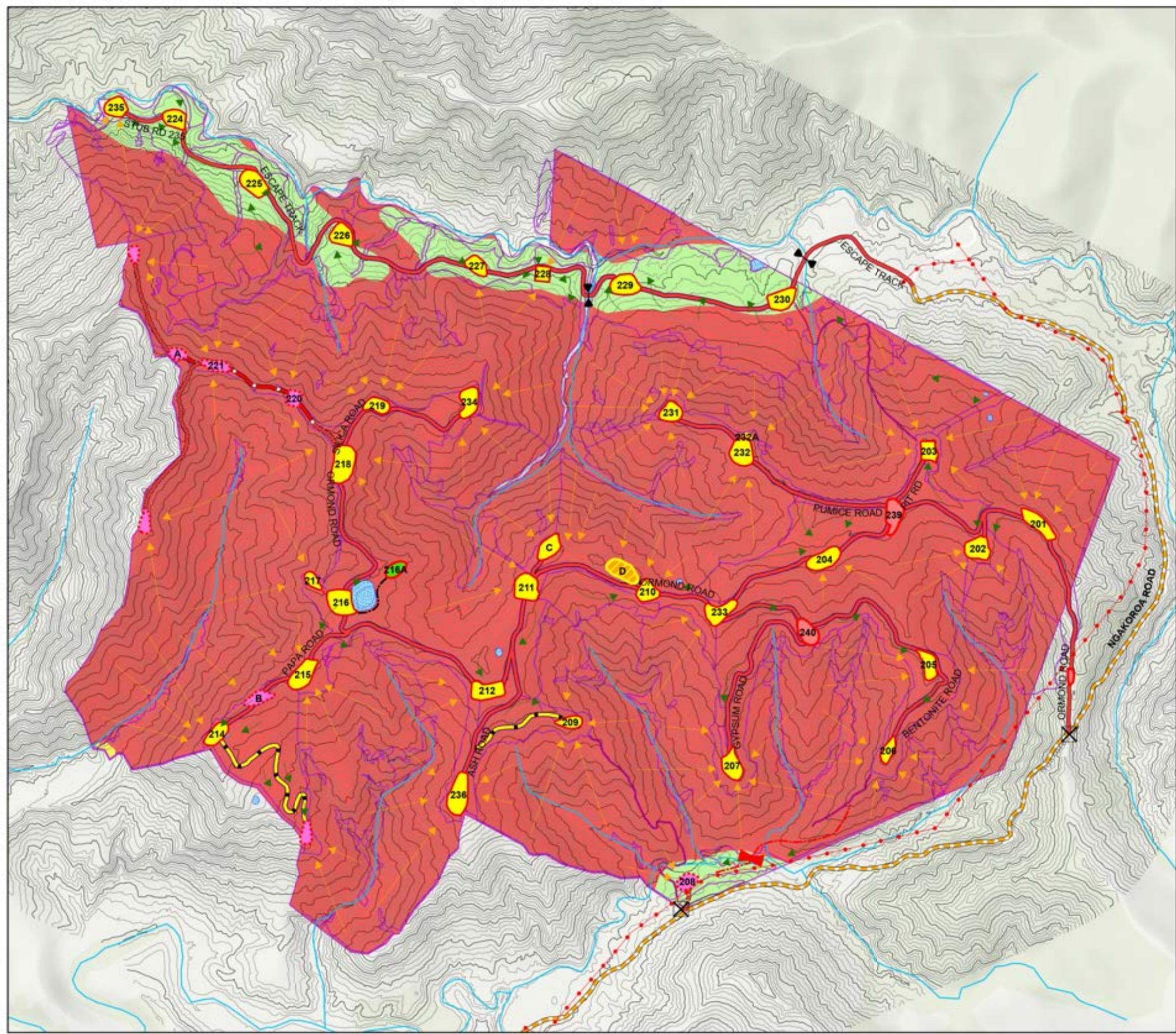
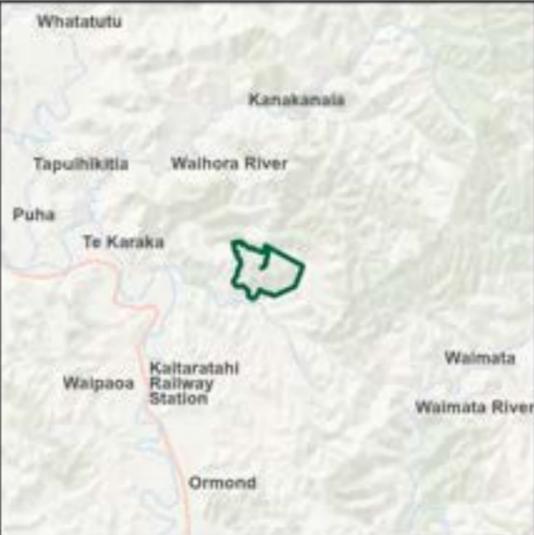
1:10,000



Date: 22/11/2021

## Legend

- |                       |                        |
|-----------------------|------------------------|
| Patches Outline       | Built Road             |
| Gate                  | Planned Track          |
| Planned ford          | Built Track            |
| Culvert crossing      | Under Construction     |
| Overhead Wires        | Public Road - Metalled |
| Ground Based          | 4wd Track              |
| Hauler                | Quad Track             |
| Pad                   | Waterbody              |
| Rehabilitated Landing | Streams                |
| Built Landing         | Erosion Susceptibility |
| Temporary Landing     | Low                    |
| Planned Landing       | Moderate               |
| Planned Road          | Very High              |
| Upgrade Road          | Contours               |
|                       | 20m (Index)            |
|                       | 5m                     |



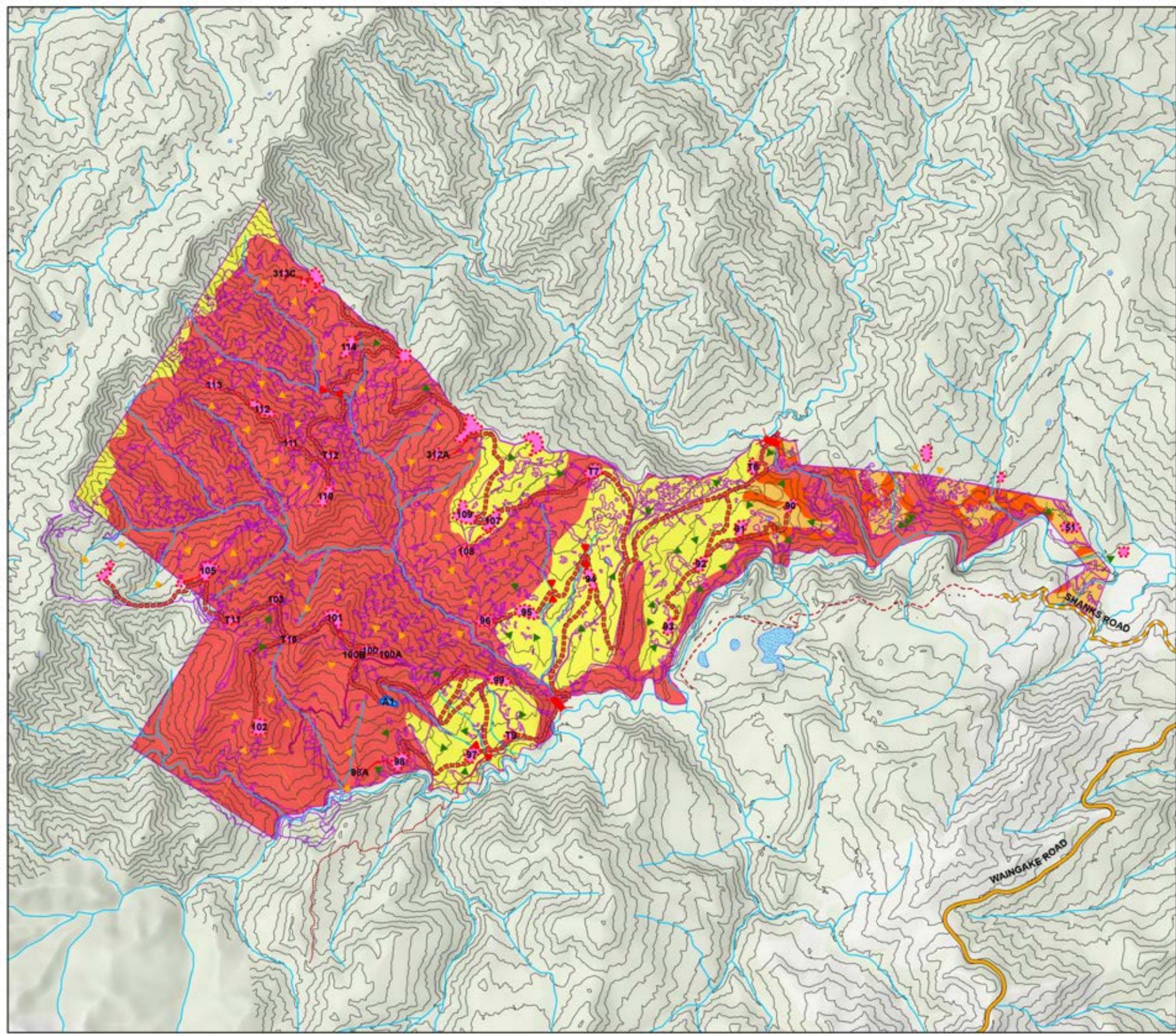
# Millwood Erosion Susceptibility Classification (ESC)

1:16,000



Date: 22/11/2021

- Legend**
- Patches Outline
  - Planned Crossing Culvert
  - Planned box culvert
  - Ground Based
  - Hauler
  - Alternative Landing
  - Planned Landing
  - Planned Road
  - Planned Track
  - Public Road - Sealed
  - Public Road - Metalled
  - 4wd Track
  - Quad Track
  - Waterbody
  - Streams
  - Erosion Susceptibility**
  - Moderate
  - High
  - Very High
  - High ≥ 25 Degrees
  - Contours**
  - 20m (Index)



# Majestic Pine Erosion Susceptibility Classification (ESC)

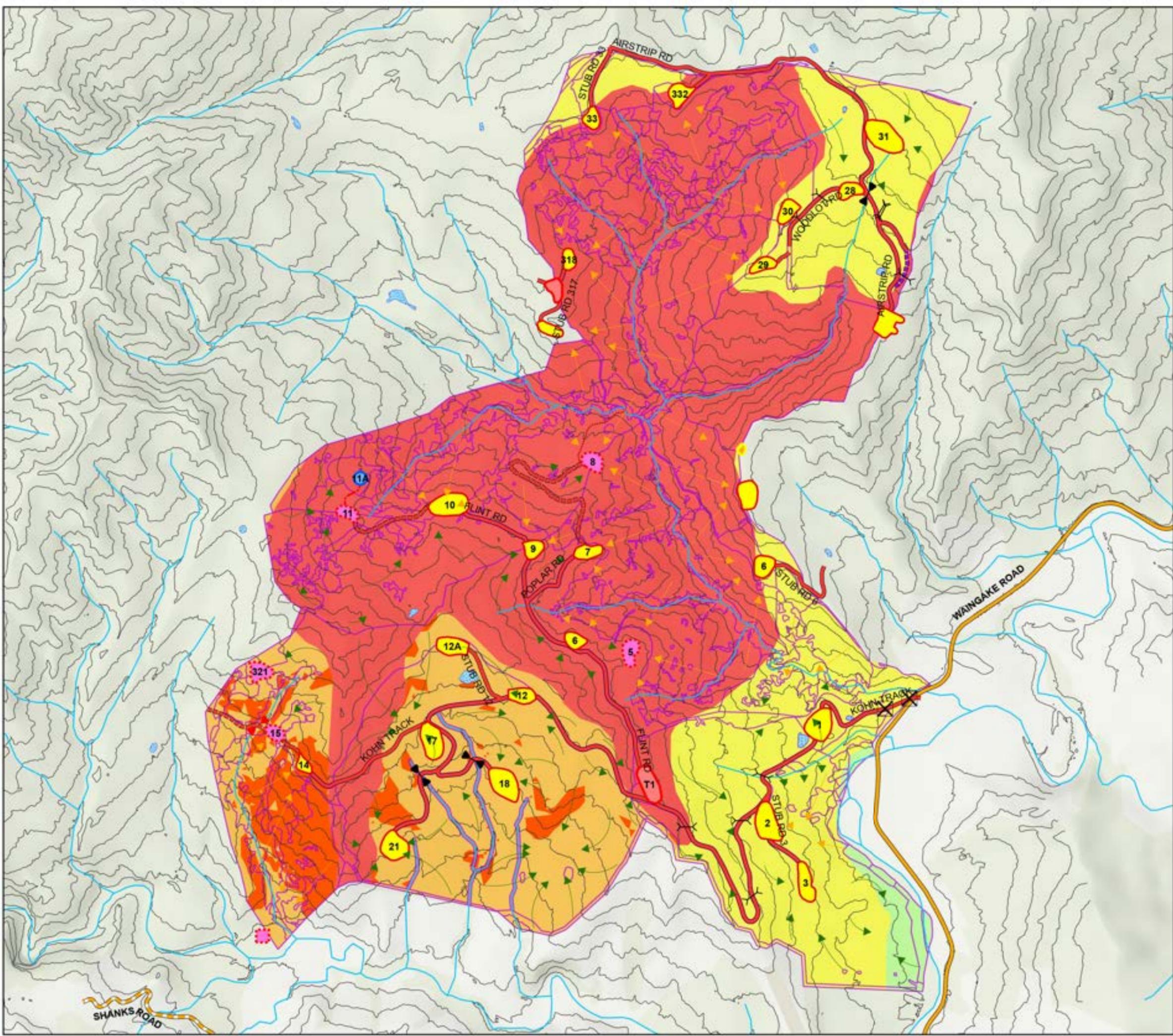
1:11,000



Date: 22/11/2021

Legend

- Patches Outline
- Gate
- Planned Crossing Culvert
- Culvert crossing
- Culvert
- Ground Based
- Hauler
- Alternative Landing
- Pad
- Bull Landing
- Temporary Landing
- Planned Landing
- Planned Road
- Built Road
- Planned Track
- Decommissioned Road
- Public Road - Sealed
- Public Road - Metalled
- Quad Track
- Waterbody
- Streams
- Erosion Susceptibility**
- Low
- Moderate
- High
- Very High
- High  $\geq$  25 Degrees
- Contours**
- 20m (Index)



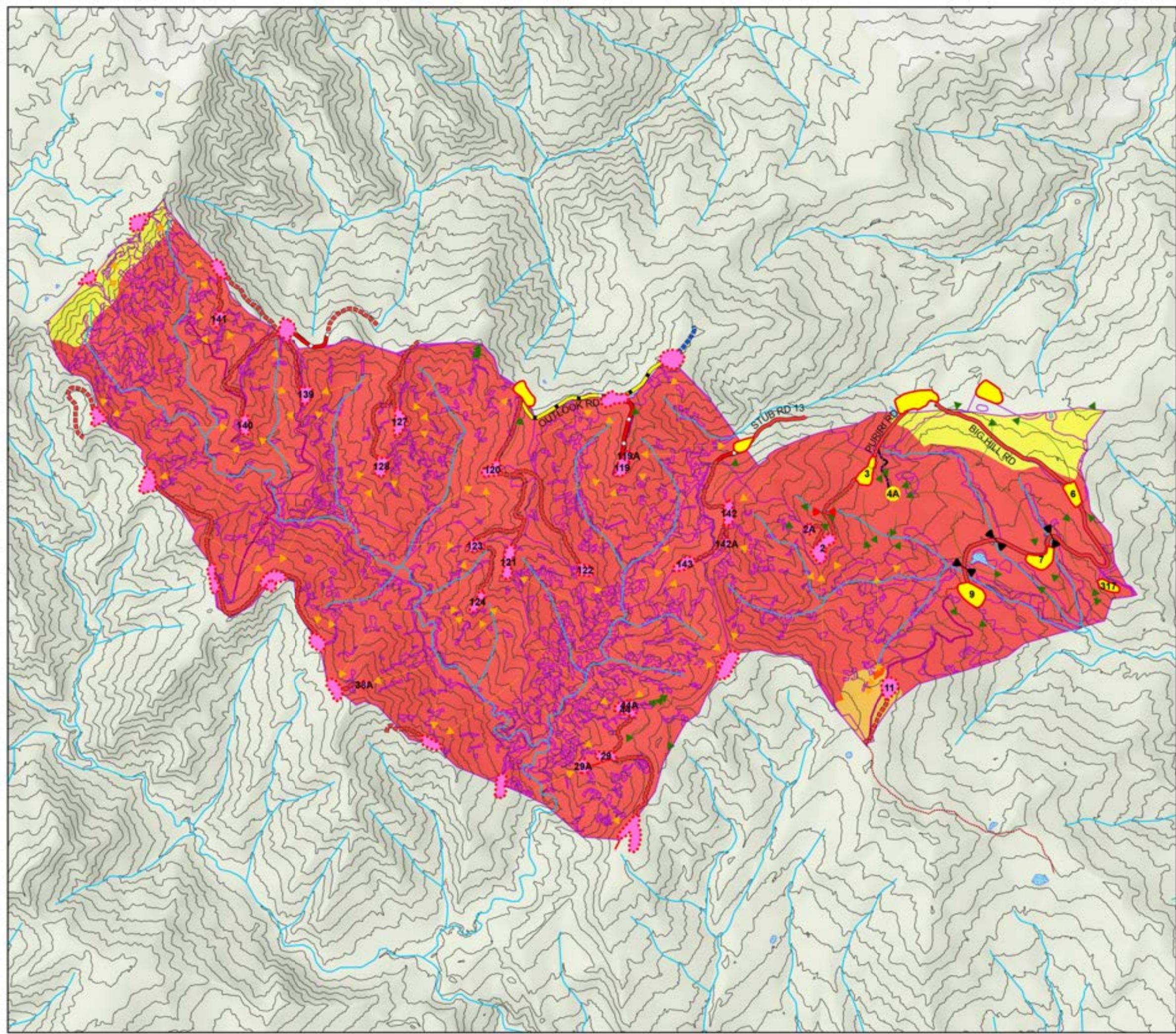
# Longwood Erosion Susceptibility Classification (ESC)

1:13,000



Date: 22/11/2021

- Legend**
- Patches Outline
  - Planned Crossing Culvert
  - Culvert crossing
  - Ground Based
  - Hauler
  - Pad
  - Built Landing
  - Planned Landing
  - Planned Road
  - Upgrade Road
  - Built Road
  - Planned Track
  - Built Track
  - Alternative
  - Under Construction
  - Quad Track
  - Waterbody
  - Streams
  - Erosion Susceptibility**
  - Moderate
  - High
  - Very High
  - High ≥ 25 Degrees
  - Contours**
  - 20m (Index)



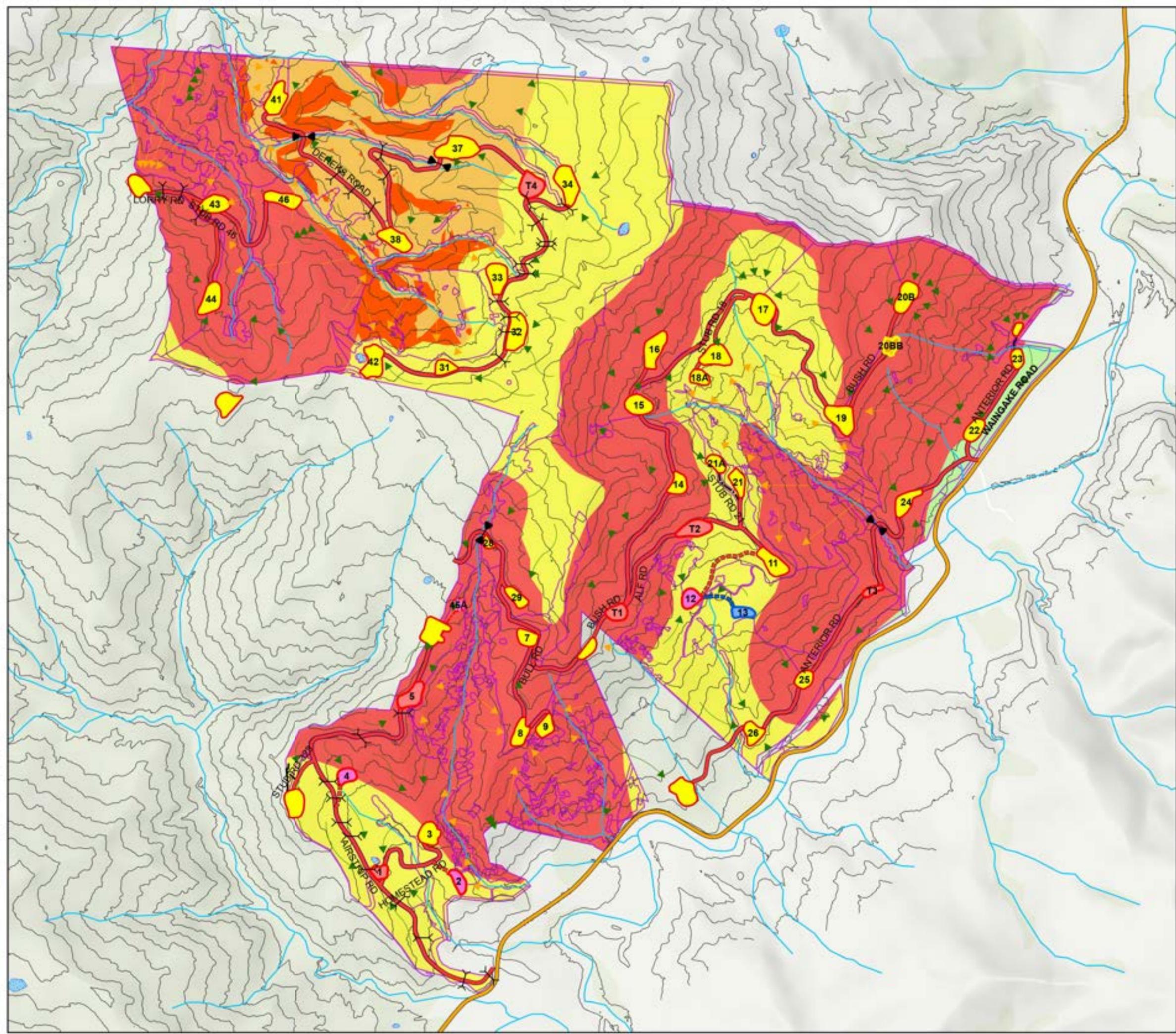
# Homewood Erosion Susceptibility Classification (ESC)

1:11,000



Date: 22/11/2021

- Legend**
- Patches Outline
  - Culvert crossing
  - Culvert
  - Ground Based
  - Hauler
  - Alternative Landing
  - Pad
  - Built Landing
  - Temporary Landing
  - Field Marked Landing
  - Planned Landing
  - Planned Road
  - Built Road
  - Planned Track
  - Built Track
  - Alternative
  - Public Road - Sealed
  - Waterbody
  - Streams
  - Erosion Susceptibility**
  - Low
  - Moderate
  - High
  - Very High
  - High ≥ 25 Degrees
  - Contours**
  - 20m (Index)



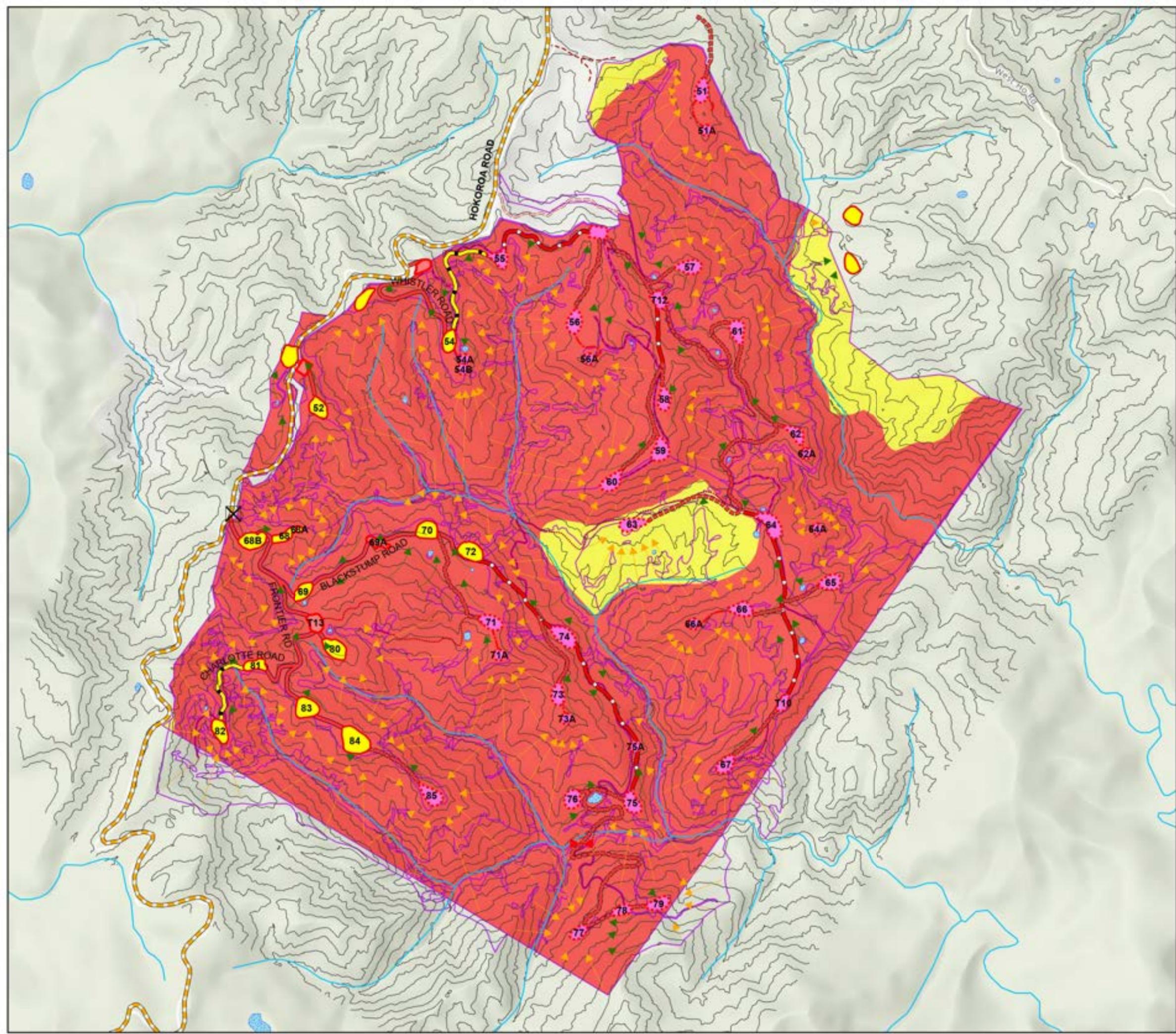
# Hokoroa Erosion Susceptibility Classification (ESC)

1:12,000



Date: 22/11/2021

- Legend**
- Patches Outline
  - Gate
  - Planned Crossing Culvert
  - Ground Based
  - Hauler
  - Built Landing
  - Temporary Landing
  - Planned Landing
  - Planned Road
  - Upgrade Road
  - Built Road
  - Planned Track
  - Under Construction
  - Public Road - Metalled
  - Forest Road
  - 4wd Track
  - Quad Track
  - Waterbody
  - Streams
  - Erosion Susceptibility**
  - Moderate
  - Very High
  - Contours**
  - 20m (Index)



# Hokoroa North Erosion Susceptibility Classification (ESC)

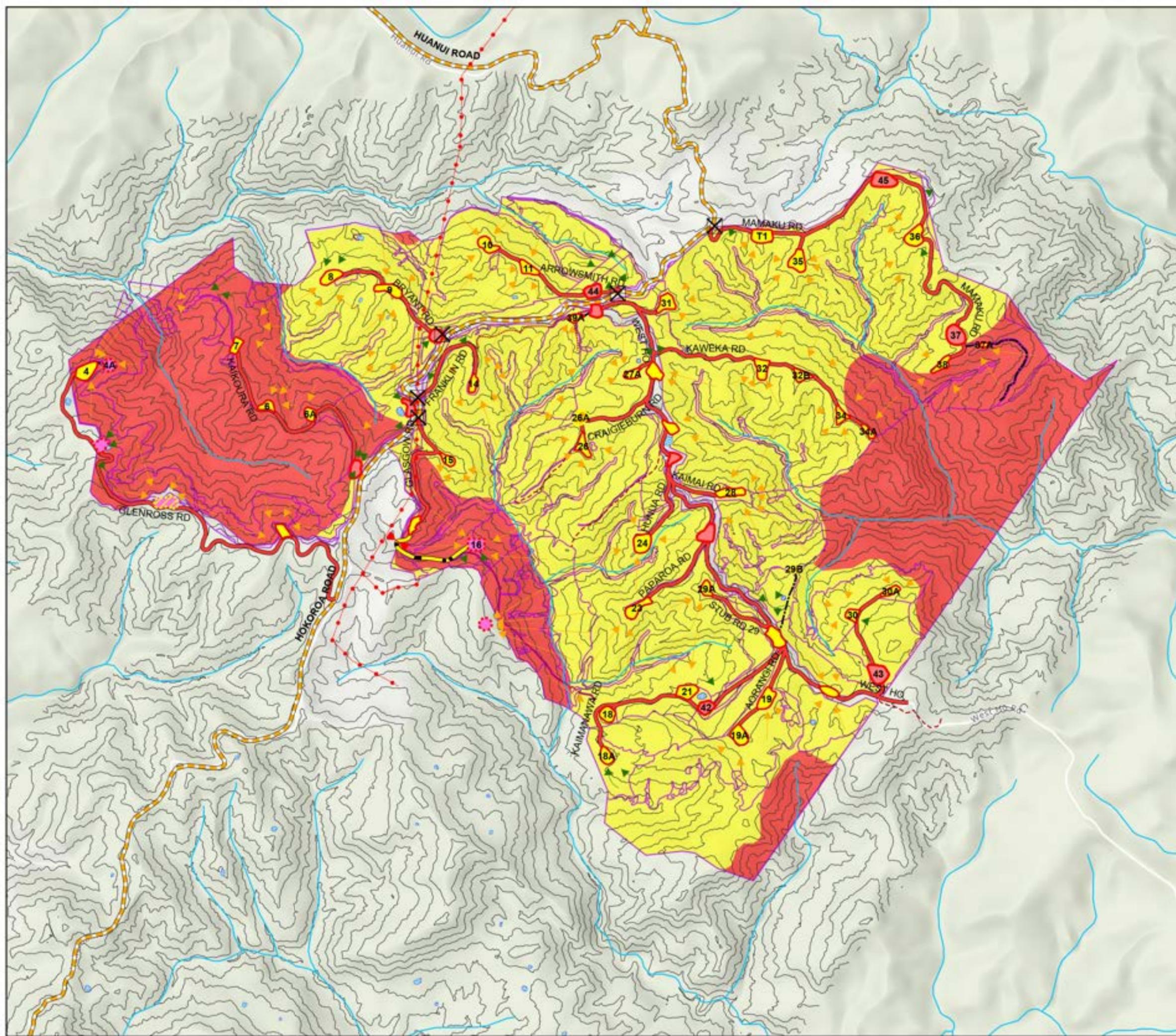
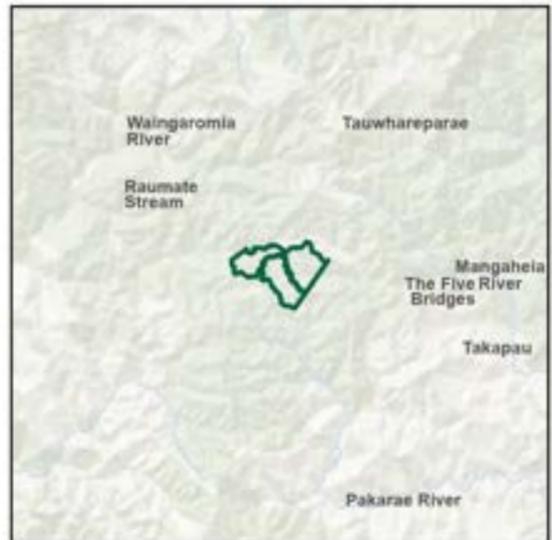
1:14,000



Date: 22/11/2021

Legend

- Patches Outline
- Gate
- Planned Crossing Culvert
- Bluffs or Rocky Outcrops
- Overhead Wires
- Ground Based
- Hauler
- Pad
- Built Landing
- Temporary Landing
- Under Construction Landing
- Planned Landing
- Built Road
- Built Track
- Under Construction
- Public Road - Metalled
- 4wd Track
- Quad Track
- Streams
- Erosion Susceptibility**
- Moderate
- Very High
- Contours**
- 20m (Index)



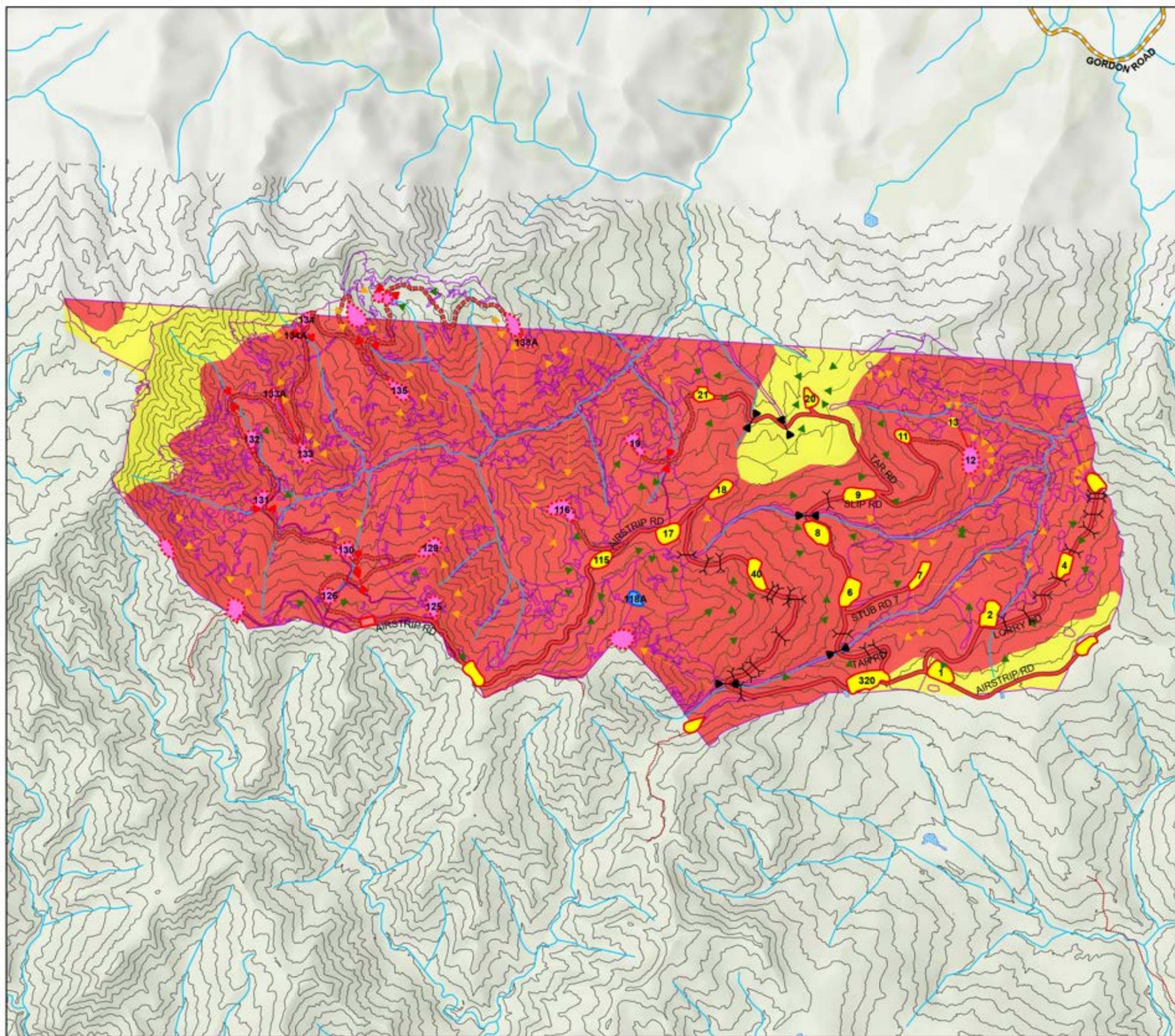
# Goodwood Erosion Susceptibility Classification (ESC)

1:13,000



Date: 22/11/2021

- Legend**
- Patches Outline
  - Planned Crossing Culvert
  - Culvert crossing
  - Culvert
  - Ground Based
  - Hauler
  - Alternative Landing
  - Pad
  - Built Landing
  - Temporary Landing
  - Planned Landing
  - Planned Road
  - Built Road
  - Planned Track
  - Public Road - Metalled
  - Quad Track
  - Waterbody
  - Streams
  - Erosion Susceptibility**
  - Moderate
  - Very High
  - Contours**
  - 20m (Index)

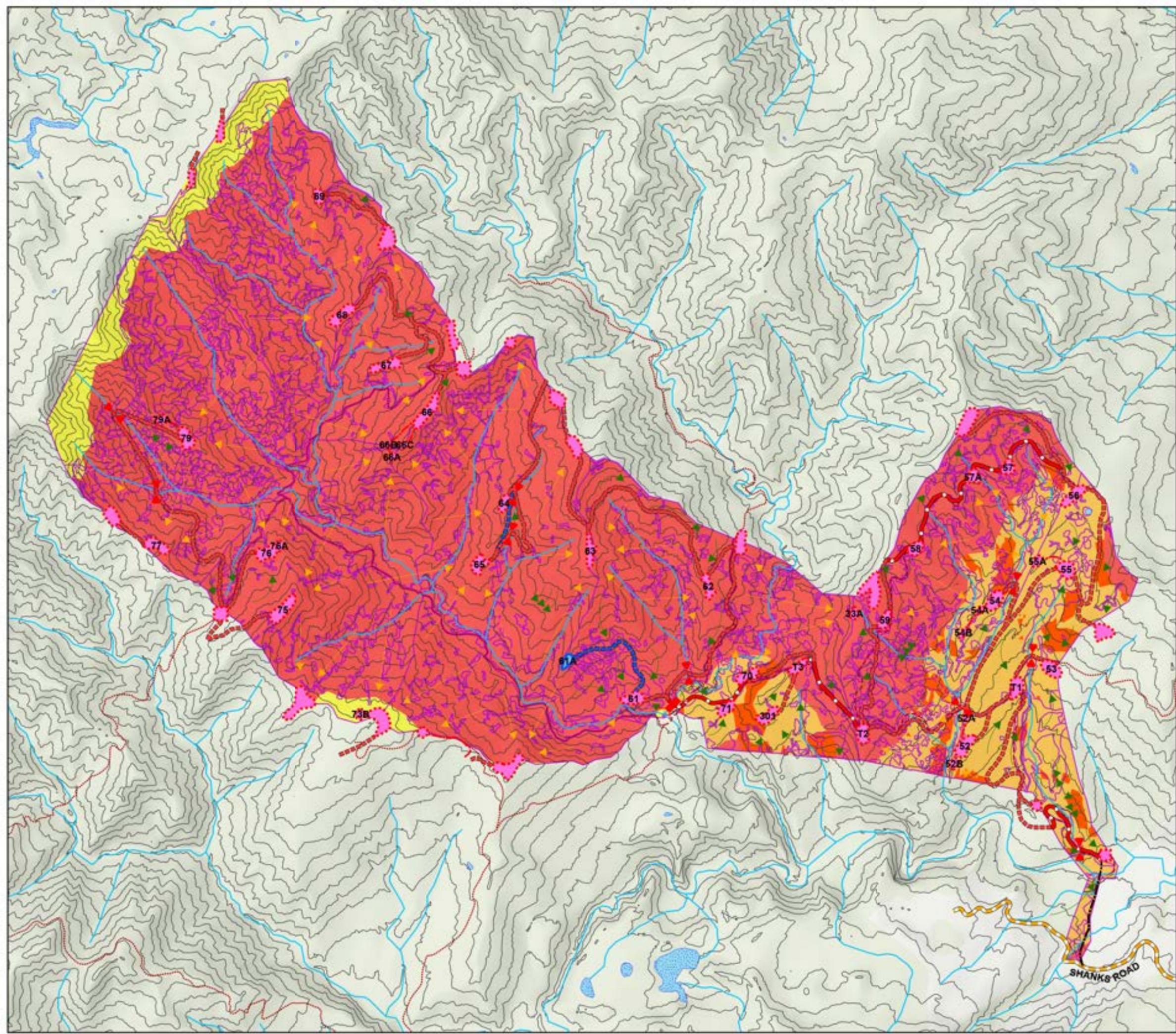


# Glenwood Erosion Susceptibility Classification (ESC)

1:13,000



Date: 22/11/2021



- Legend**
- Patches Outline
  - Planned Crossing Culvert
  - Planned box culvert
  - ▶ Ground Based
  - ▶ Hauler
  - Alternative Landing
  - Planned Landing
  - Planned Road
  - Upgrade Road
  - Planned Track
  - Built Track
  - Alternative
  - Public Road - Metalled
  - Forest Road
  - 4wd Track
  - Quad Track
  - Waterbody
  - Streams
  - Erosion Susceptibility**
  - Moderate
  - High
  - Very High
  - High  $\geq$  25 Degrees
  - Contours**
  - 20m (Index)

