



## Waipoua: A place with its own management style

David Greig

### THE NEED

New Zealand's State highways traverse a number of high values conservation landforms and habitats areas which in some cases are national parks, in particular the central Northland and South Island. These highways open up significant social and economic opportunities and benefits locally and nationally. Travellers are given the opportunity to enjoy natural heritage vistas along with easy access to high biodiversity environments and their values.

Protection of the character and values of these areas is now a major focus nationally and the New Zealand Transport Agency (Transport Agency) is developing its approach to state highway corridors to achieve this in partnership with others stakeholders, in particular Maori. State highway 12 traverses the Waipoua Forest Sanctuary providing an interesting and engaging experience of the unique forest environment for approximately 12 kilometres. The area is one of the largest remaining tracts of native forest in Northland, 3 hours' drive north of Auckland.

### THE LOCATION

The Waipoua Forest Sanctuary (Forest) is recognised as a spectacular natural heritage treasure of New Zealand and a Taonga Tuku Iho to Te Iwi o Te Roroa he tangata. The topography of Waipoua area is moderately elevated and broadly rolling with a very simple horizon and a generally undramatic landform; the edge of the upland is however dissected with deep gullies. Geologically the area is a plateau formed on deeply weathered basalt flows of Lower Miocene age.

Vegetation is a comparatively unmodified example of Northland forest including large areas dominated by the tall conifer kauri (*Agathis australis*). It also contains substantial areas of "heathland" scrub dominated by manuka (*Leptospermum scoparium*) and *Dracophyllum lessonianum*. Vegetation patterns in both forest and scrub are determined largely by topographically linked variation in soil fertility and soil moisture and by altitudinally determined temperature and precipitation gradients.

The Forest is probably best known for the stands of large kauri, which are found only in Northern New Zealand and have high cultural values. Good walking tracks from the State highway give easy access to these the trees, which include Tane Mahuta, Te Matua Ngahere and Yakas. Tracks through the Forest offer the relatively rare opportunity for visitors to experience old growth forest with ease, which are widely promoted as tourist attractions.

## THE APPROACH

A key aspect of the Agency work in conservation areas is gaining an understanding of the existing impacts of roading activities along the transport corridors and wider. Impacts, both short and long-term are often not well researched, and many assumptions are made in recent authorisation processes (permitting) without supporting monitoring information on the nature or duration. In highly sensitive environments, such as those with high ecological values, greater care is now expected from roading authorities to avoid or mitigate significant impacts.

Within the Forest the Transport Agency implements the Waipoua Forest Sanctuary Management Plan (Plan) that specifies highway management activities within and directly adjacent to the State highway corridor. The activities cover vegetation control (maintenance of taonga (valued) plants, clearance, revegetation, pest plants and weeds), soil disturbance and drainage management along with a variety of assessment, operations and governance requirements. The aim is to protect and maintain the Forests unique character and values in a managed and collaborative way.

The Plan also provides the framework for collaboratively managing the Forest with Te Roroa as the land owners having traditional cultural and spiritual responsibilities, the Department of Conservation dealing with conservation values and biosecurity along with both the Ministry of Primary Industries and Northland Regional Council (particularly for *Phytophthora agathidicida*), and the Transport Agency with its highways maintenance contractors. Teaming up, all work together overseeing implementation of the Plan and needed changes.

The Goal of this Plan is to ensure all transportation activities maintain the safe and efficient operation of State highway 12 while minimising the potential for adverse effects on the environment. To achieve this goal, the following objective, values and principles form the basis of how the State highway management is undertaken.

## OBJECTIVE

To implement holistic and integrated management systems that ensures the design, construction and maintenance of the State highway:

- Delivers safe, convenient access for users of the State highway, forest workers and the local community.
- Protects the ecological integrity and biodiversity of the Waipoua Forest Sanctuary.
- Provides for and gives effect to the Principles of Te Tiriti o Waitangi, the Treaty of Waitangi.

**Values** associated with the Waipoua Forest Sanctuary include:

- Te Iwi o Te Roroa's values.
- Biodiversity.
- Unique and intrinsic nature.
- Economic potential for a range of stakeholders.
- Amenity opportunities for sanctuary users.

The following **Principles** drive the Plan

- Plan and design all State highway improvements to the highest standards practicable addressing foreseeable future needs while minimising further encroachment into the forest margin.
- Protect and maintain existing indigenous roadside vegetation, species, habitats and waterways to ensure the intrinsic values of the Waipoua Forest Sanctuary are preserved.
- Provide for the protection of historic values (Maori and non-Maori) by collaborating with Te Iwi o Te Roroa, Heritage New Zealand and Department of Conservation to ensure that sites and values are not adversely affected.
- Avoid the introduction and spread of a range of exotic plants, animals and diseases from transport operations, in particular Kauri Dieback Disease (*Phytophthora agathidicida*).

Management is uniquely adaptive and outcomes are measured with vegetation surveys underpinning weed and taonga plant management. The approach supports the special status of this section of highway both requiring and permitting non-standard road design and maintenance that helps to protect the forest from 'business as usual' methods.

## THE REQUIREMENTS

The Plan provides guidance on design and management of the road carriageway and roadside assets such as barrier and marker posts (colour and scale). Verge and carriageway vegetation management has also been changed to allow for protection of rare and endangered plants, preservation of flora forms, pest plant control and revegetation/restoration of areas effected by natural damage such as tree falls, soil and rock slippages.

The Plan specifies a number of requirements for:-

- New works covering design and construction.
- Kauri Die Back
- Maintenance of vegetation and assets

Planning and maintenance activities are carried out through a contractual arrangement with engineering teams, environmental planners, specialist ecologists and arborists including the local Te Roroa Iwi. The team implements various programmed works, and responds to a range of natural events (meteorological, vehicular accidents, pest and weed invasion and geological / hydrological events). The success of the activities is monitored regularly (at minimum of 6 months) and reported to a management committee consisting of key all stakeholders.

The management committee meets quarterly and provides an opportunity for all to review the monitoring results, lessons learned, set new approaches and establish funding needs.

## THE CHALLENGES

Examples of the issues being addressed in the Forest through the Plan requirements will be provided in the presentation covering ecological issues, engineering and asset management challenges and pest plant and weeds problems. Monitoring and reporting will also be discussed along with the functioning of the management committee.

---

# Waipoua: A place with its own management style

EIANZ Conference 2017

State highway 12 traverses the Waipoua Forest Sanctuary

The area is one of the largest remaining tracts of native forest in Northland, 3 hours' drive north of Auckland

An interesting and engaging experience of the unique forest environment for approximately 12 kilometres.

The Waipoua Forest Sanctuary is recognised as a spectacular natural heritage treasure of New Zealand and a Taonga Tuku Iho to Te Iwi o Te Roroa he tangata.

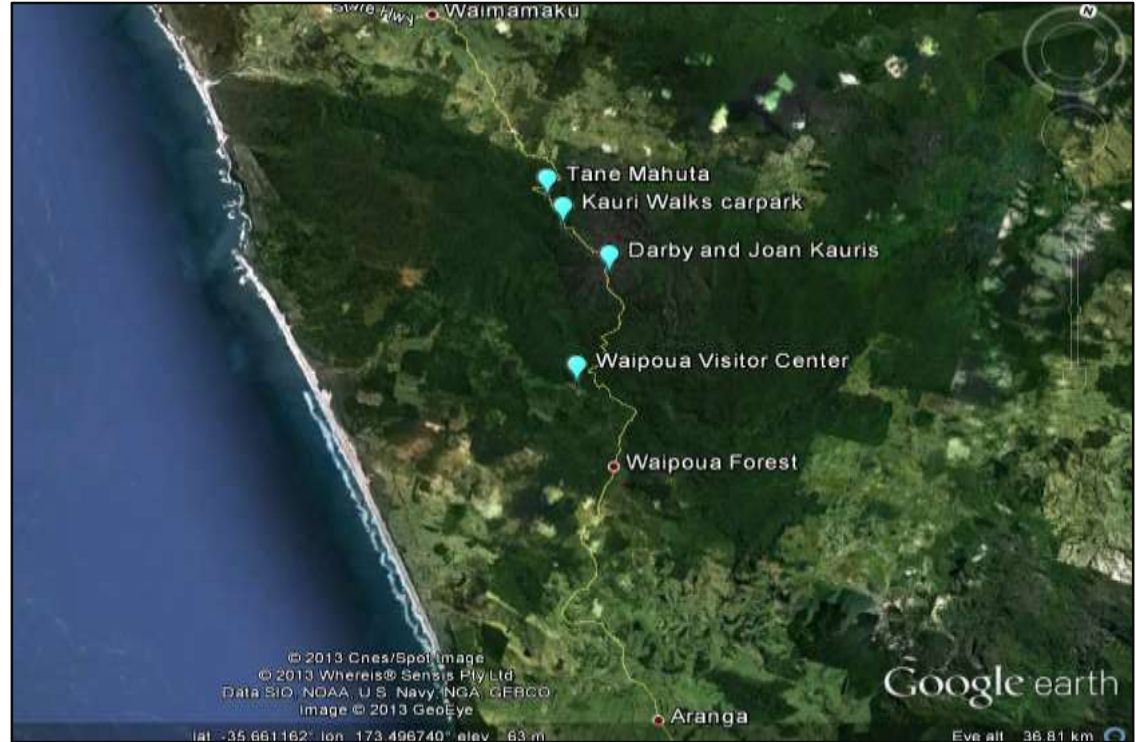
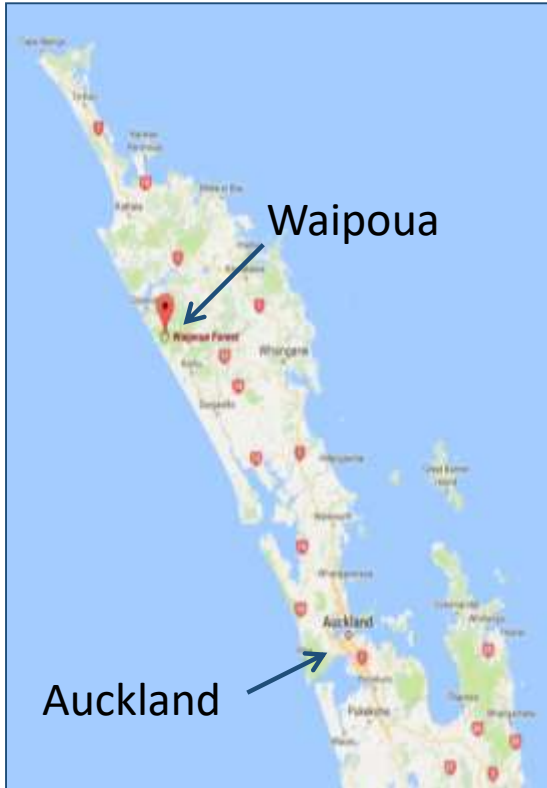
---

# Tane Mahuta

The Forest is probably best known for the stands of large kauri, which are found only in Northern New Zealand and have high cultural values. Good walking tracks from the State highway give easy access to these the trees, which include Tane Mahuta, Te Matua Ngahere and Yakas.



# Here it is !



# Management of road sides in Waipoua

Impacts, both short and long-term are often not well researched, many assumptions made in permitting without supporting monitoring information on the nature or duration.

In highly sensitive environments, greater care is now expected from roading authorities to avoid or mitigate significant impacts.

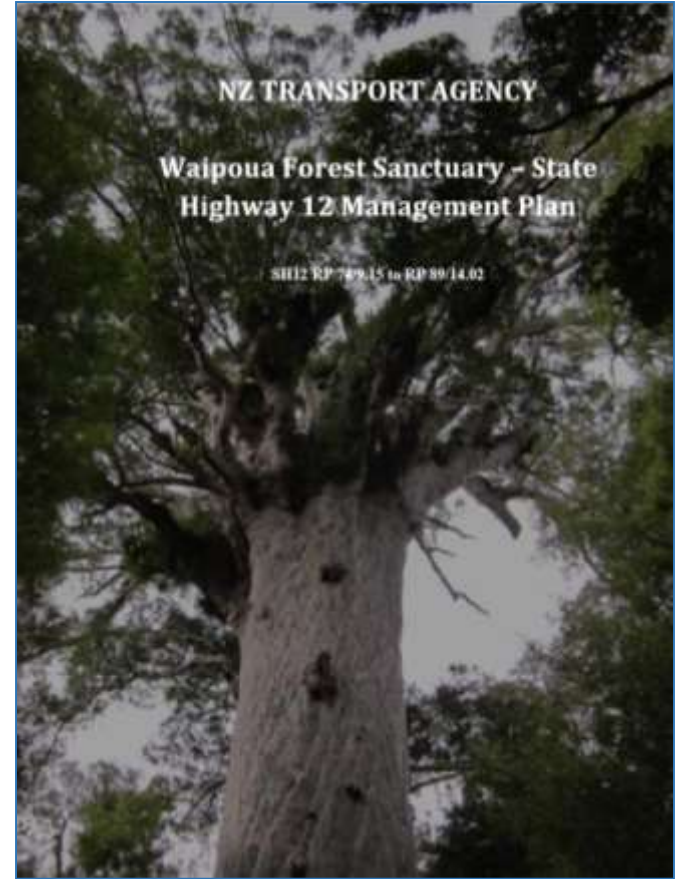


---

# Waipoua Forest Sanctuary Management Plan

Specifies management activities within and directly adjacent to the State highway corridor.

- Vegetation control (maintenance of taonga (valued) plants)
- Vegetation clearance
- Revegetation
- Pest organisms (plants, weeds and Phytophthora )
- Soil disturbance and drainage





---

# Collaboration

The Plan also provides the framework for **Stakeholders** collaboratively managing the Forest

**Te Roroa** as the land owners having traditional cultural and spiritual responsibilities,

**Department of Conservation** dealing with conservation values and biosecurity along with both the **Ministry of Primary Industries**

**Northland Regional Council** (particularly for *Phytophthora agathidicida*), and the **Transport Agency** with its highways maintenance contractors.

**Management Committee** of stakeholders oversees the activities

---

# Process

Planning and maintenance activities are a **contractual arrangement** with engineering teams, environmental planners, specialist ecologists and arborists including the local Te Roroa Iwi.

The **management committee** meets quarterly review works and monitoring results, lessons learned, set new approaches and establish funding needs.

The team implements various **programmed works**, and responds to a range of **natural events** (meteorological, vehicular accidents, pest and weed invasion and geological / hydrological events).

The success of the **activities is monitored regularly** (at minimum of 6 months) and reported to the management committee

---

# What are we aiming for ?

The Goal ensure all transportation activities maintain the safe and efficient operation of State highway 12 while minimising the potential for adverse effects on the environment.

## Objective

Delivers safe, convenient access for users of the State highway, forest workers and the local community.

Protects the ecological integrity and biodiversity of the Waipoua Forest Sanctuary.

Provides for and gives effect to the Principles of Te Tiriti o Waitangi, the Treaty of Waitangi.

## Values

Te Iwi o Te Roroa's values.

Biodiversity.

Unique and intrinsic nature.

Economic potential for a range of stakeholders.

Amenity opportunities for sanctuary users.

# Inappropriate pruning / cutting of heritage plants

Mamaku fronds within 5m high road envelope pruned flush to trunk.

Timing is important (prior to spring flush),

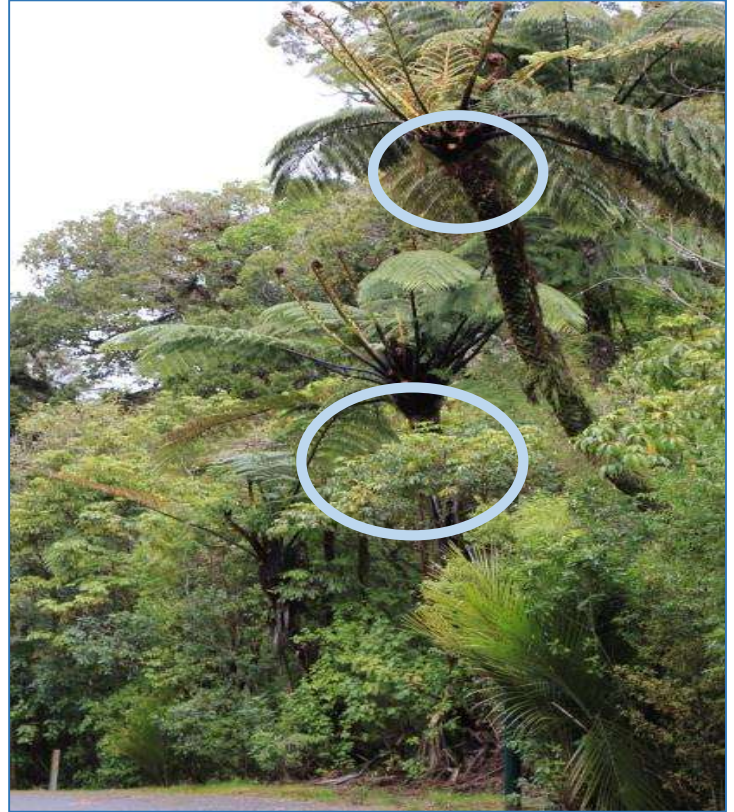
Pruning can hurt ferns by reducing foliage that supports growth. Instead prune just the part of branch infringing the envelope

WFS-MP identifies timing and envelope (developing diagrams for contractors).

Documentation underway.

Tension between 'reactive' pruning and 'proactive 'envelope pruning'.

Monitoring will help check effects



# Inappropriate trimming?



Kiokio trimming... management of overhanging vegetation to maintain high light levels as low down the batter as possible. This helps keep fern fronds short.

On other batters identified some tree saplings need removal (and may die if this summer drought is severe, so could delay until autumn)

# Orchid management

Areas of high orchid density or diversity along roadside as well as trees.

Less common orchids have been subtly marked (wood peg and pink spot as in photo).

These areas are excluded from general spraying and have been hand-weeded by the ecologist

No orchids are sprayed when in flower;



# Mitigation opportunities

Locations of managed trees now recorded/available for contractor

Many opportunities for management of other species, especially orchids, mairehau, fuchsia and epiphytic species (subject to agreement)



# Windfall management





# Windfall management example

Procedure for tree fall developed – includes ecologists

Tree may have masses of lilies and orchids

Checking of risk needed Was it anticipated

Were outcomes successful?

Tree removed from road to adjacent layby (free-flow of traffic); three orchid species are intact (list)

Layby environment proved suitable for their survival in the medium term;

Some lilies put on an exposed part of the road batter to suppress weeds (reduce maintenance and add aesthetic value).



# Marker posts

Three weekly audits since July 2015.

97 / 1000 non compliant in July

45 in September (20 obscured)

Review of all post locations planned

Pruning approach clarified during multi-agency field discussions

Example:

Lower branches removed from sapling to ensure clear view of road marker and allow growth into the future (indicated by arrows)

Hangehange will require regular pruning – consider lifting if suitable vegetation is underneath (e.g., Dianella, kiokio)



# Marker posts & taonga plants

Tree fuchsia sapling likely to infringe envelope

Options are to tie it back, stake it back, move marker post or add another marker post. In past cuttings have been taken from such plants and placed in a better site on the adjacent lit edge to reduce maintenance costs, reduce risk to plant



# Lack of view shaft management



Managing view of kauri canopy involves (1) maintaining dense vegetation up to 1.2m height at road edge = buffer, discourages stopping, suppresses weeds, (2) lifting canopy of trees in foreground and topping or removing shrubs entering this zone to maintain the view BUT (3) allowing 'special' plants to enter and grow through the viewing zone

# View shaft management



Mamaku interior view: This area has been managed in the past to allow views of mamaku across a hairpin corner by removing and trimming understory plants such as hangehange, however, this opens the area to wind (desiccation)

# Weed management

Invasion of new weed species

Fleabane, daisies, etc. allowed to seed

Unsightly spraying outcomes in summer

Spreading of selaginella and aristeia



# Current weed management

Ongoing weed management according to monthly planner

- identify & map weeds
- prevent seeding (spray & bag)
- eradicate

Training of vegetation team in weed ID and recording

Review of monthly weed actions (mid month and end of month)

Knowledge being built up, documented, shared

# Weed buffer management needed

Discussion and agreement/MOU with Management Committee  
Internal roads and Northern boundary in particular





# Recommended action for EIANZ

Unique conservation areas being developed (tourism, roading, water supply) should have disturbance activity management strategies developed well in advance of works.

Currently any management approaches across the various activities do not have easily accessible good practice to follow, bespoke approaches are developing and little understanding of their success is available.

This is inefficient.

Conservation management relies heavily on the skills of many EIANZ members.

EIANZ should take a lead in this area of conservation management helping coordinate understanding good practice (supported by monitoring of effectiveness).