

Economically Beneficial Native Afforestation Site Prioritisation

**for carbon sinks
and other purposes**

Kāpiti Coast District

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Paul Hughes

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Introduction

Investment in native afforestation is an opportunity where community social values can be enriched, where economic activities can be protected and boosted, and where ecological processes and systems can be restored and enhanced.

Native afforestation can have many economic benefits that increase the value of a site to a community compared to present land uses.

This report clarifies what native afforestation is, and its benefits over commercial plantation afforestation.

It then identifies the types of economic benefits that can be gained from native afforestation, and where these benefits occur across the landscape.

Using a study site on the Kapiti Coast, priority sites were then selected with high and diverse economic benefits to locate practical opportunities for native afforestation.

These priority native afforestation sites provide significant additional economic benefits compared to any investment solely for carbon sinks.

Aside from this type of economic benefits site prioritisation, analysis of social and ecological benefits of native afforestation should also be undertaken as separate studies for any area.

Native afforestation definition

Native afforestation is the restoration or revegetation of an indigenous native forest ecosystem where none exists at present.

Commercial afforestation is the use of forest for commercial extractive purposes such as timber production.

Economic benefits compared to commercial afforestation

There are several economic benefits that native afforestation has compared to commercial afforestation:

- Avoid periodic deforestation and extensive soil disturbance as in commercial plantation afforestation
- More reliable flood protection
- More reliable water supplies
- Less sediment in rivers and dams

Native afforestation economic benefits considered

Improved protection from landslides and debris floods

Landslides can occur from steep slopes adjoining infrastructure such as transport corridors. Some catchments have an established reputation of disgorging debris floods that inundate and close infrastructure. This is important given the expected increase in high rainfall events from climate change.

Improved protection from flooding

Native afforestation will reduce the amount of runoff from a given area of land. The beneficial effect on downstream infrastructure will depend on the size of the catchment that the native afforestation is undertaken in. The infrastructure can include tourism, retail, commercial, light industrial, and industrial development. The smaller a catchment, the greater the benefits. This is important given the expected increase in flooding from climate change.

Improved water supply low flow quantity and overall reliability

Water supplies are dependent on the contributing catchments for the quantity of water in the river, particularly during drought periods. This is dependent on the amount of permanent native vegetation in the catchment, particularly at higher altitudes where more rain generally falls, and along rivers where evaporation can occur. Low flows that approach or exceed resource consent limits restrict normal economic use, while having negative impacts on the freshwater ecosystem downstream. This can apply to water supplies, hydroelectricity schemes, and irrigation schemes. This is particularly important given the expected increase in the frequency of droughts from climate change.

Water supplies are also dependent on the overall reliability, particularly at times of higher flow. This is affected by excessive flows, and on the amount of erosion that occurs in the catchment at any time. At these times, the high levels of suspended sediment at the intake may stop the abstraction of water for high quality use in treated systems, such as public water supplies.

Improved soil conservation

The erosion of soil and rock adds bedload to rivers that can overwhelm development and infrastructure and fill dams used for public water supply, hydroelectricity and irrigation with sediment that reduces the operating capacity of these investments. This is important given the expected increase in flooding from climate change.

There are no such excessive bedload or dams in Kapiti District.

Districtwide native afforestation economic benefits assessment

Areas considered included grassland, exotic forest, harvested forest, or scrub. All exotic forest is included because after harvest there is often the opportunity to change the land use to native forest and gain the resultant ongoing economic benefits.

All economic benefits were mapped and prioritised so that the overall economic benefits of available sites could be assessed.

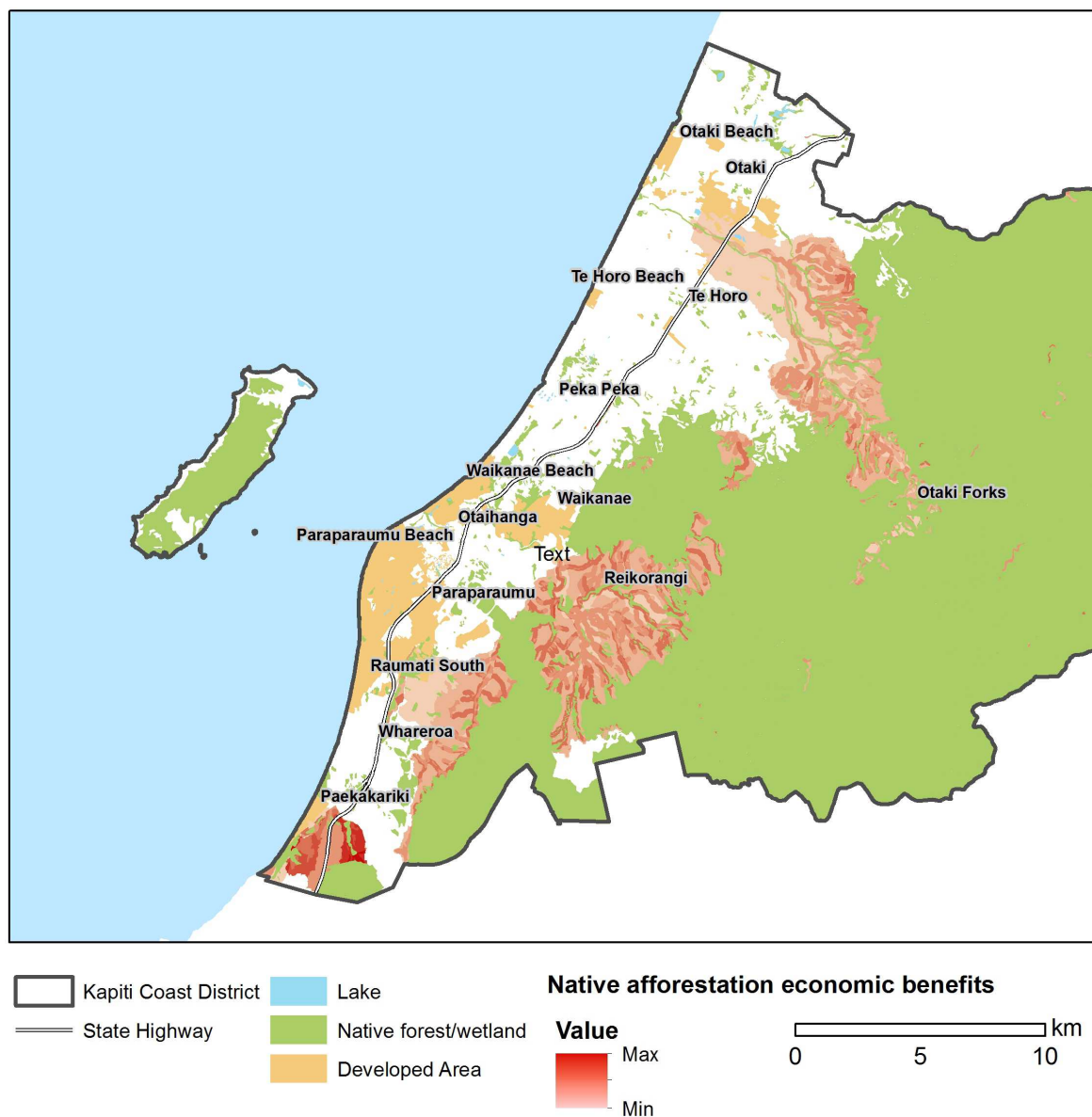


Figure 1 Kāpiti Coast District native afforestation economic benefits

Priority native afforestation economic benefit sites identified

While many areas have multiple economic benefits, several priority sites have been identified with a significant area, a high number of economic benefits, and are not built on.

382 hectares of priority sites were identified.

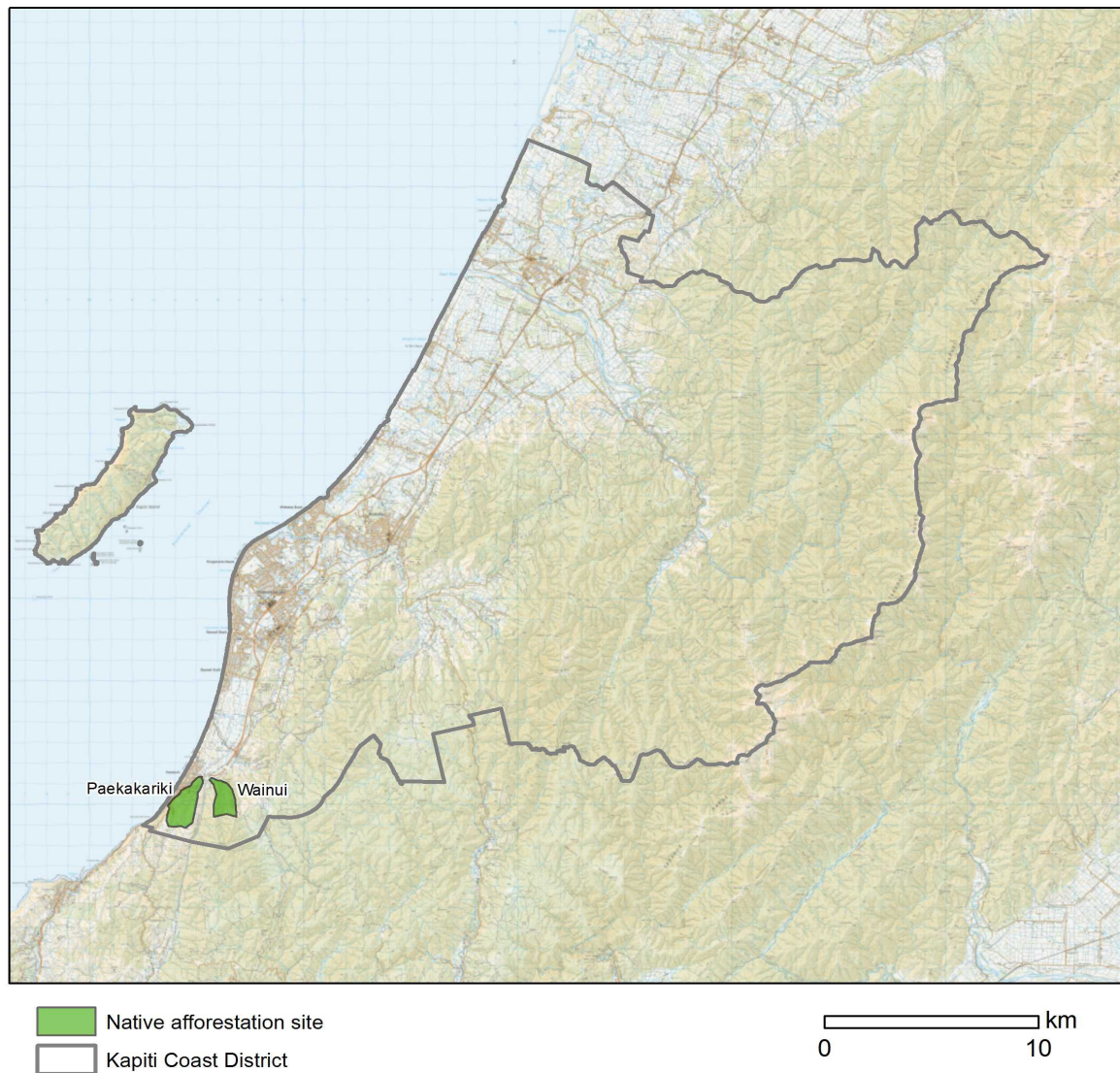


Figure 2 Kāpiti Coast District priority native afforestation economic benefit sites

Wainui

Significant economic benefits

Debris flood, water supply.

Existing land use

Pines, native forest.

Tenure

Two private landowners, Council.

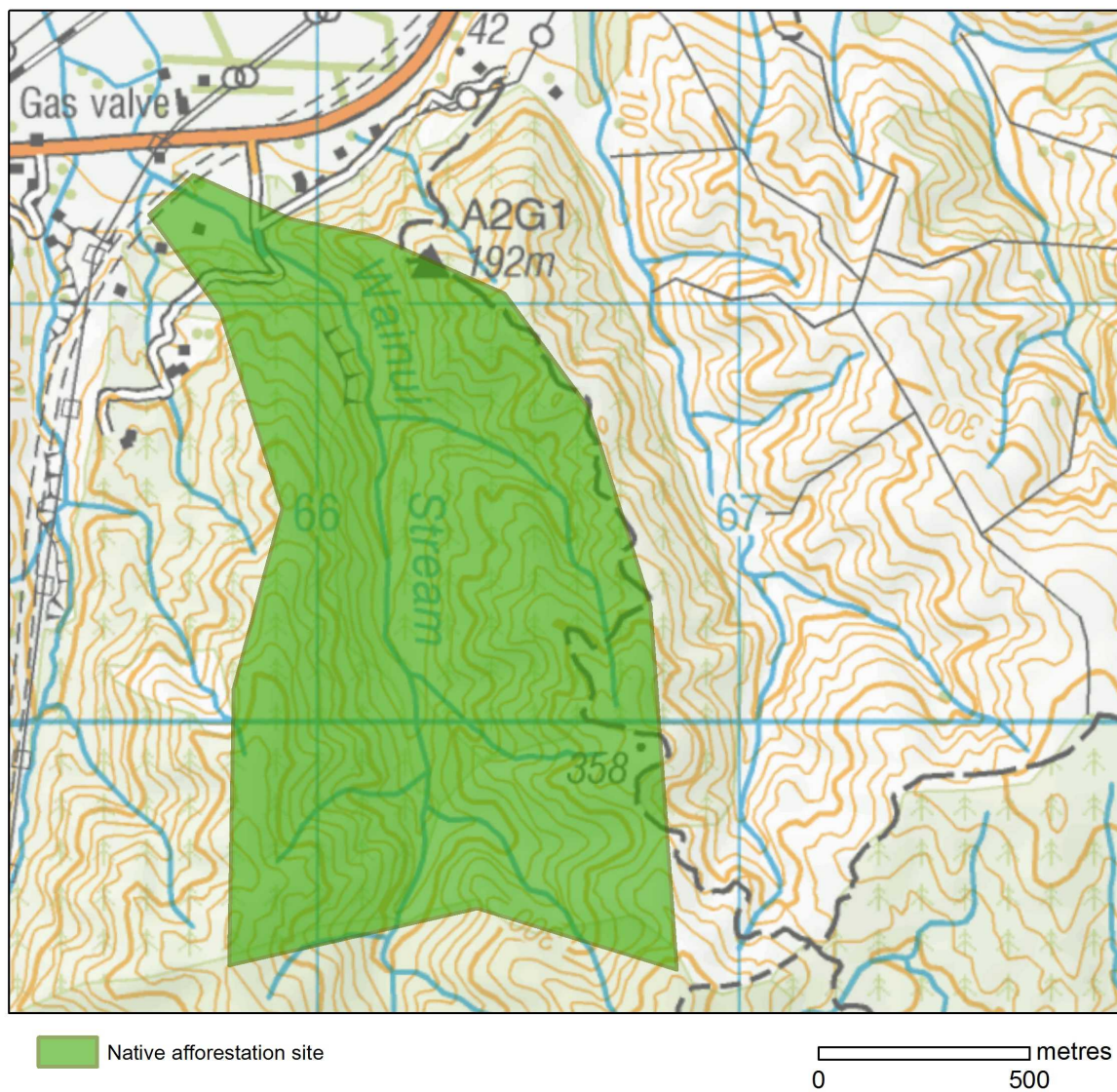


Figure 3.1 Wainui native afforestation site 151 ha.

Paekakariki

Significant economic benefits

Debris flood, landslide, flooding.

Existing land use

Pasture, scrub and native forest.

Tenure

NZTA, Council.

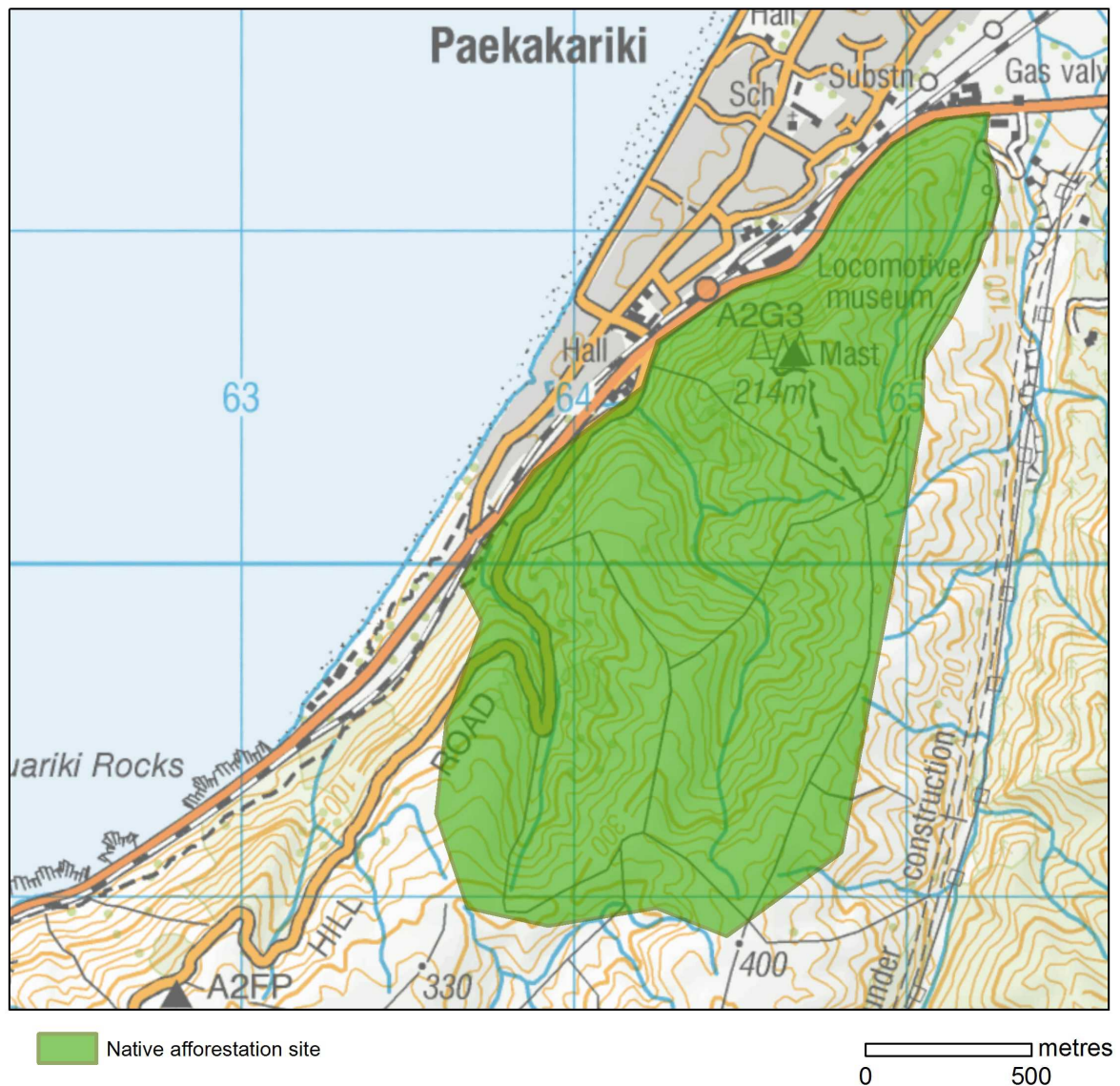


Figure 3.2 Paekakariki native afforestation site 231 ha.

Other native afforestation economic benefit site opportunities

This report identifies sites with high economic benefits across the board. There are still significant economic benefits to be gained from other sites that have high value for individual economic benefits such as landslide/debris flood, flooding , or water supply.

Some site opportunities identified include: Paekakariki Scarp southern end – debris flood and landslide, Raumati Scarp debris flood and landslide, Upper Wharemauku catchment – flooding, Waikanae Catchment riparian margins – water supply, and Upper Ringawhati – water supply.

Conclusions

This report identifies practical opportunities to gain maximum economic benefit from any investment in native afforestation.

Native afforestation can have many economic benefits that increase the value of a site to the community over and above any economic, social or carbon sink benefits.

The process is applicable to any organisation wishing to undertake native forest revegetation for economic purposes, as it identifies many layers of value to the investment.

It is applicable to any organisation that wishes to offset carbon emissions and benefit the community economically at the same time. This particularly applies to Councils and Central Government Agencies.
