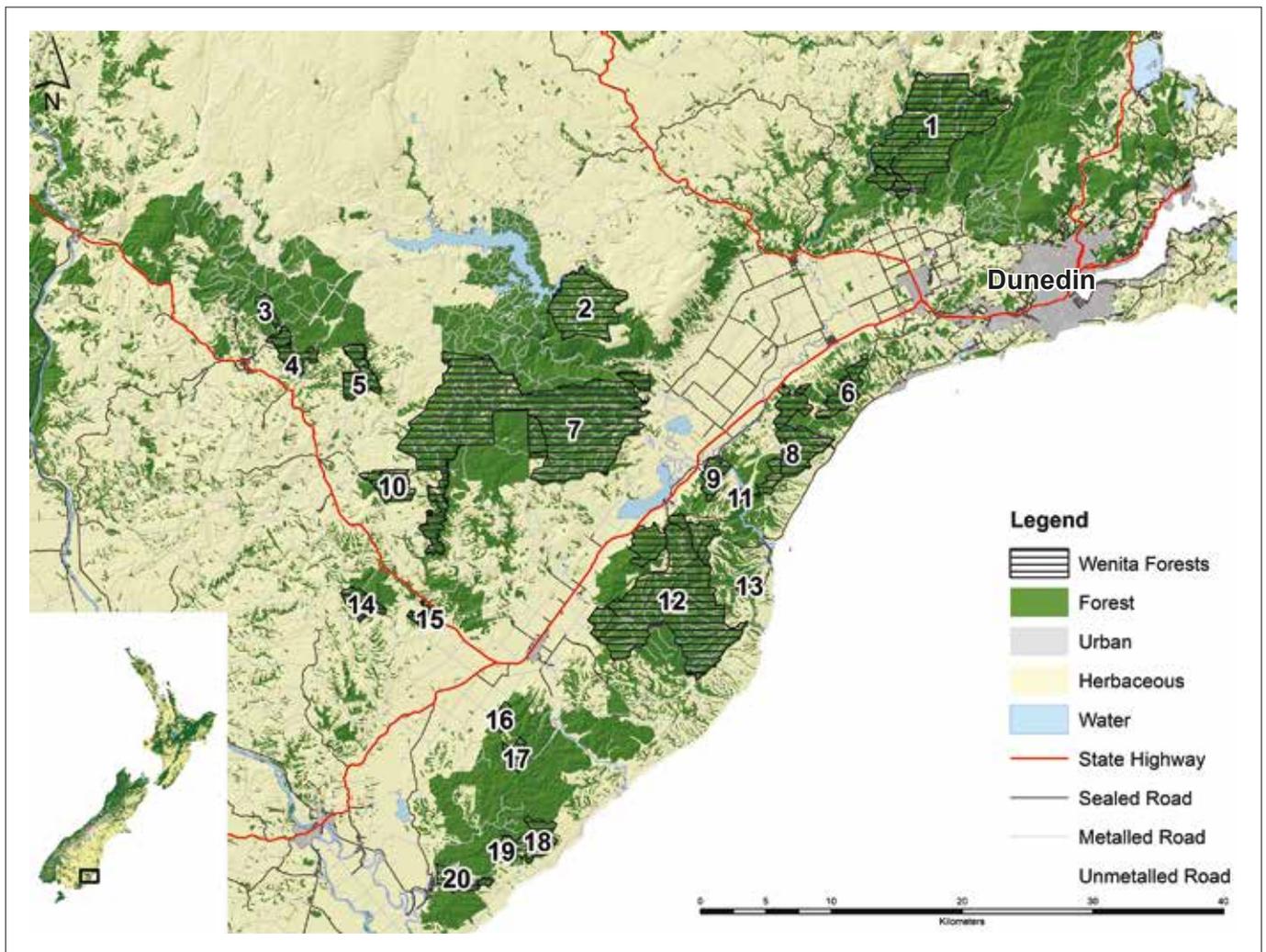




# Ecosystem services in the Wenita forest estate

Environmental and social values account for a greater share of the overall values provided by the Wenita forest estate than the benefits from the sale of timber.





Map of the Wenita forest estate showing the major forest blocks and the neighbouring areas.

## The Wenita forest estate

Planted forests provide financial benefits from sale of timber. They also provide environmental and social benefits. Wenita Forest Products want to better understand the multiple values provided by the forest estate to more accurately represent the broader value of planted forests in land use planning, investment discussions and to ensure they have a social licence to operate.

The Wenita planted forest estate is the largest in Otago. About 85% of the ca. 29,000 ha estate is production forest planted predominantly in radiata pine (90%). Non-production areas consist of naturally regenerating mānuka and other native bush. About 30 ha of the non-production area have been identified as High Conservation Value Forest (HCVF) with “critical environmental and social values that require special consideration”. Waterways within the estate provide habitats for some indigenous freshwater species such as kōura (freshwater crayfish) and endangered *Galaxias* spp. such as the giant kokopu.

## Ecosystem services

Ecosystem services (ES) are the benefits that people derive from an ecosystem. ES can be categorised into four groups :

1. provisioning, e.g. wood, fuel and fibre
2. regulating, e.g. carbon capture, avoided erosion, water regulation, habitat provisioning
3. social and cultural, e.g. recreation, biodiversity, spiritual
4. supporting services, e.g. biological, chemical and physical processes that underlie the provision of the other services

## Quantifying ecosystem services

Four key ES that could be quantified and give dollar values were identified.

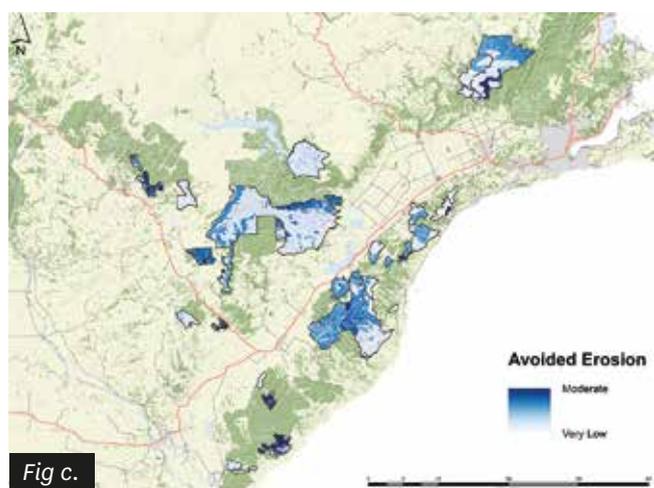
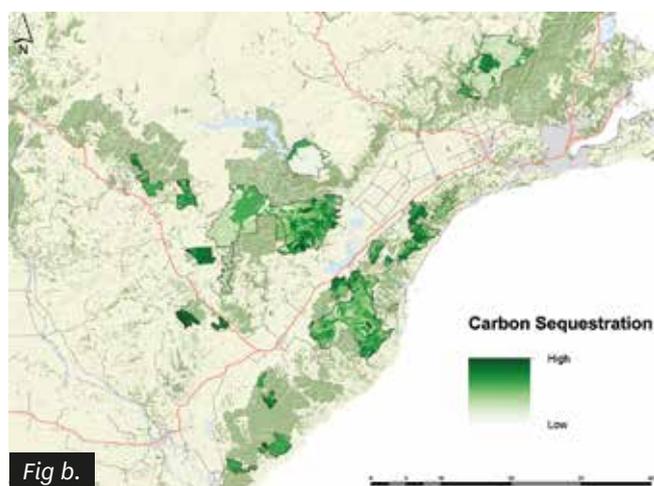
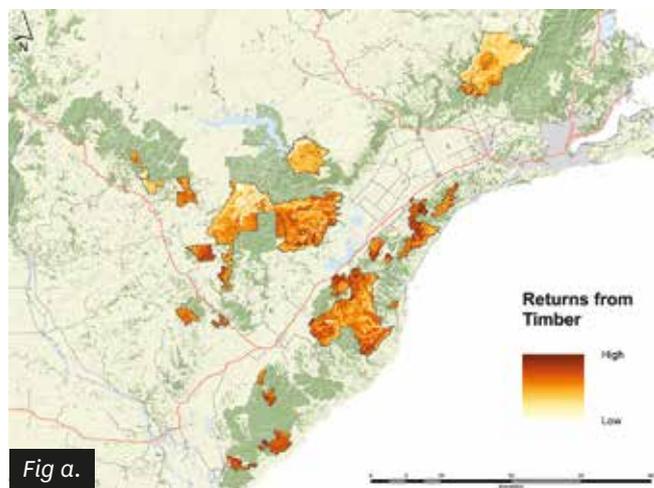
The Forest Investment Framework (FIF) spatial economic tool was used to assess:

- Profitability based on an estimation of the potential log volume and price for a prospective site while accounting for production costs and physical impedances. (Fig a)
- Carbon sequestration and value of carbon credits. (Fig b)
- Avoided erosion as sediment prevented from entering waterways. (Fig c)

The fourth ES, recreational hunting, is as an example of a service with a non-market value. A price-based valuation technique was used to quantify this.

Based on Wenita’s recreational hunting permit database, around 3,000 mostly pig hunting visits took place in 2014 and

2015, collecting around 1500 pigs per year. Assuming a yield of 20 kg of usable meat per pig valued at \$7 per kg, the value of the meat to hunters was about \$220,000 per year. As half of the forest state can be hunted, the value of pig hunting can be said to be around \$15 per hectare on average.

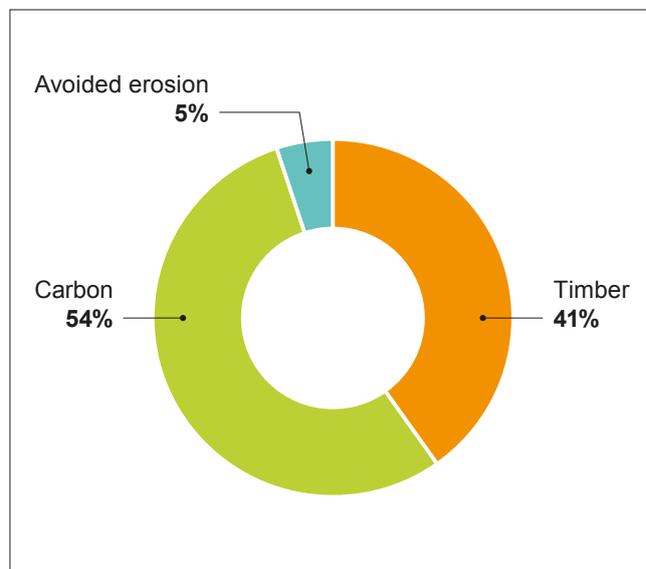


*Spatially explicit estimates of the values of timber, carbon and avoided erosion in the Wenita forest estate. Darker shades indicate higher values while lighter shades have relatively lower values. All values are specific to the Wenita forest estate only.*

## Contribution to true value of the forest

Considering the values for timber, carbon and avoided erosion, an indication of the contribution of each ecosystem service to the true value of the forest can be seen.

Carbon sequestration contributes more to the total value of the forest than timber. The contribution of avoided erosion is low as erosion rates in the forest estate are classified as low to moderate compared with the rest of New Zealand.



**Other non-market value services.** Other ecosystem services identified included general recreation, habitats for native birds, Māori cultural values and access to mānuka plots for honey production.

## Conclusions

Environmental and social values account for a greater share of the overall values provided by the Wenita forest estate than the profit from the sale of timber.

Wenita Forest Products can use the broader picture of the values in discussions about the services the estate provides and as a tool to support planning that maximises the provision of values that benefit the economy, environment and society.

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## About Scion

Scion is the Crown research institute that specialises in research, science and technology development for the forestry, wood and wood-derived materials and other bio-material sectors.

Scion's purpose is to create economic value across the entire value forestry chain, and contribute to beneficial environmental and social outcomes for New Zealand.



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