

Fast growing trees such as pines or eucalypts in harvested plantations reach their maximum carbon storage capacity in about 20 years. Landowners then lose most of those carbon stocks when the forest is harvested; NZ loses most of the embedded carbon when logs are exported; furthermore, the globe loses most of those stocks back into the atmosphere as the products decay, as well as through associated emissions from forest management, transport and processing. **Thus to store more carbon actually requires another forest to be planted on new land that is not already forested, while also continuing to replant and maintain the previous area in forest to recover the lost carbon stocks.** That is, plantation areas will need to be doubled in size with every crop.





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By <u>comparison</u>, a permanent forest growing at half the rate would accumulate twice the carbon stocks and offer positive sequestration for 80 years. To meet NZ's 2050 climate change goals using the fast option requires the current area in plantations to be doubled. That would result, about 20 years later, in NZ having approximately 3.4 million ha of plantations, but no further sequestration. But it is unlikely that climate change will be solved by 2050. Afforestation alone cannot solve the climate change problem, but it can help to offset emissions while emissions reduction solutions are found. But it is not a quick fix. We need to consider the balance of forests that grow faster or slower, those that are permanent or harvested and we also need to know the actual net carbon accumulation rates of forests. At present, we measure only the trees.



Opportunities for permanent forest mosaic into agricultural land, Banks Peninsula

Only after we consider all the emissions inputs and outputs associated with forestry can we know the net impact on the atmosphere. For example, if forests are grown on land that was previously used to graze animals, or if harvested wood products are used to replace steel or concrete in construction, there could be an additional atmospheric gas exchange benefit. Equally, there are emission losses from forest management, soil disturbance, product processing/transport and the decay rate of carbon in harvested wood products to consider. In a harvested system many emission sources are repeated with every future harvesting rotation and so net unaccounted losses will accumulate through time. To understand the actual atmospheric gas exchange benefit that plantation forests offer

requires a full carbon life cycle analysis run for multiple rotations.

There are other threats and risks from substantial increases in plantation forest land, such as more wilding pines, landscape impacts, social impacts of extensive plantation monocultures, a biosecurity risk of having a national policy tied predominantly to a single tree species, reduced water flows in drought prone areas, and increased fire risk. Forest fires are expected to increase under climate change predictions of increased droughts, which impact on surrounding values (seen with recent forest fires in <u>Nelson</u> and <u>Christchurch Port Hills</u>) but also impact on forest carbon stocks themselves.



Grazed vs. ungrazed land, enabling native regeneration when adequate seed source nearby, Cape Lambert(L), Norsewood(R)

Harvested wood products (<u>HWP</u>) such as paper, cardboard and construction boxing typically last only a short time. Timber that is used for building framing or furniture can last for decades. <u>A new</u> <u>global study</u> has shown **the global sink created by HWP to be just 1%** of annual global emissions, so it can be useful but is generally not large. NZ has yet to make an overall assessment of the decay rate of HWP from harvested plantation timber, but <u>it's been shown</u> that the average carbon half life of HWP produced from NZ logs in China, Korea and India were 6.6, 18.0 and 2.5 years respectively. These decay rates represent a large proportion of NZ's harvested timber so it is highly likely that the overall life of HWP for the entire output of NZ pine plantations is relatively short. That is, for plantings already established, by around 2050 they'll no longer be sequestering any carbon.

Permanent afforestation forest that is never harvested, but left to continue to grow to maturity, sequesters more carbon than fast grown harvested plantations. The average carbon stock of pine

plantations in NZ is about 160 tC/ha. The average carbon stocks of a mature native forest exceed 270

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Instead of destocking farms and blanketing them with pines, integrating permanent native forests, long-term tree crops and food forests into productive farmland provides a more sustainable option for communities, their landscapes, and carbon offsets.

Afforestation offsets will play an important role in New Zealand's future climate change response. Fast growing harvested plantations will result in a short term gain but long term potential future impacts affecting national carbon budgets, environment, communities and our lands of small landscapes. Instead, we need to make better use of permanent forest offsets that will continue to accumulate more carbon for a longer time, with less associated emissions. Encouraging extensive areas of naturally regenerating native forests are therefore an obvious part of the solution.

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New Zealand Institute of Landscape Architects Tuia Pito Ora Incorporated (NZILA)

Submission on: the Natural and Built Environment Bill

PUB:1 February 2022



New Zealand Institute of Landscape Architects Tuia Pito Ora Incorporated Submission on: the Natural and Built Environment Bill 1 February 2022

Introduction

 This submission has been prepared by New Zealand Institute of Landscape Architects Tuia Pito Ora (NZILA). It follows our previous submission on the Exposure Draft of the Natural and Built Environment Bill (NBE Bill) and the continued opportunities for engagement to assist in the development of this important legislation.

Our Submission

- 2. We continue to support an outcomes-based approach to resource management which promotes positive environmental outcomes alongside supporting the well-being of present and future generations. This aligns well with a landscape architect's primary responsibility of seeking to reconcile human needs in harmony with the natural environment and its systems. The emphasis of our submission therefore remains on ensuring the proposed planning system acknowledges and engages with all of Aotearoa New Zealand's landscapes as part of promoting outcomes for the benefit of the environment and supporting our collective and on-going well-being.
- 3. At its heart, we recognise the purpose of the NBE Bill aligns well with seeking positive landscape outcomes, including upholding te Oranga o te Taiao through meaningful partnerships of Te Ao Māori and Te Ao Pākehā and the interconnectedness of all its parts. This purpose also accords well with the inclusion of people and communities within the definition of the environment. Through this direction, we support the ongoing need to protect, and in some cases restore, places of national importance, including outstanding natural landscapes and outstanding natural features, alongside the urgency required to mitigate and adapt to increasing impacts of climate change. We also endorse the benefit of directing appropriate outcomes through spatial plans which clearly map out the vision and objectives necessary to shape our regions.
- 4. As landscape architects, we understand that delivering effective landscape outcomes requires engaging with and addressing how relevant landscape attributes or dimensions work together. Such understanding is derived through examining the physical attributes of a place alongside the perceptions and associations of communities who maintain relationships with such areas. Such attributes are dynamic and often operate at the interface of contested resources which also change through time. Whilst we recognise the role of setting environmental limits and the benefit of increased emphasis on restoring degraded areas, the primary focus of our submission remains on ensuring the inherent well-being and identity derived through relationships between communities and places are embedded within the planning system. Such explicit recognition also supports a definition of the environment which embraces the relationships, values and practices of communities within all areas as an integral part. To this end, we recommend direction



related to this aspect of human well-being is included within the suite of Part 5 System Outcomes, by including an additional system outcome as follows:

recognition of the relationships between communities and place that contribute to the identity and well-being of present and future generations.

5. Whilst we recognise that such characteristics of the environment may be incorporated through other system outcomes or subsequently addressed when directed by Natural and Built Environment Plans, we consider such relationships are integral to human well-being and best framed as a separate fundamental outcome of the planning system. Furthermore, we consider addressing this key aspect of human well-being is integral to achieving the NBE Bill's purpose.

Background

- 6. As a profession, we have now published Te Tangi a te Manu: Aotearoa New Zealand Landscape Assessment Guidelines (Te Tangi a te Manu) in July 2022. This was endorsed by Te Tau a Nuku, the Māori group of Landscape Architects under the umbrella of Ngā Aho (the national organisation of Māori design professionals in Aotearoa) and followed deep and broad input within our institute and beyond. Through this, Te Tangi a te Manu promotes an approach appropriate to Aotearoa New Zealand and alignment between Te Ao Māori and Te Ao Pākehā world views through landscape assessment within a statutory planning context. Its essential purpose is to assist decision-makers and others to manage and improve landscape values and promote positive outcomes.
- 7. As landscape architects, we appreciate that enabling positive landscape outcomes requires understanding and responding to the inherent relationships between people and place. All our landscapes shape us and are shaped by us. Through Te tangi a te Manu, we appreciate such relationships are expressed as landscape characteristics and values, all of which are necessarily ascribed by people and recognised by communities. This understanding extends beyond places of national importance and across ordinary everyday landscapes where we mostly live, work and play. Whilst we recognise that addressing such qualitative and intangible matters can generate contested planning issues, we consider effective resource management must continue to engage with communities and support positive relationships with place as an integral planning outcome.

Integration between environment and landscape

- 8. We continue to unreservedly support a definition of the environment that recognises people and communities as an integral part. This definition also accords with a Te Ao Māori world view expressed as te Oranga o te Taiao. With this understanding, we consider system outcomes must also seek to ensure human needs are aligned with the needs of our environments.
- 9. In defining the environment, we also agree that this is not limited to just natural aspects and extends across all of Aotearoa New Zealand including its coastal marine areas. In our opinion, the environment includes a range of natural, built, rural and coastal areas, all of which encompass key characteristics across different landscape attributes or



dimensions through time. It is through examining such landscape attributes, at a variety of different scales, that we build an understanding of the essential relationships between communities and place. Such relationships contribute to our identities and our well-being and operate as part of an integrated system.

10. To remain effective and support human well-being into the future, mapping areas within our environment and directing protection, restoration, development or use must also take account of and address changes in character and values. Environment is ultimately interpreted by people as landscape.

System Outcomes

- 11. We recognise and agree with requirements for protection or restoration of natural character of the coastal environment, wetlands, estuaries, lakes, rivers and their margins as part of an effective system. We also support the ongoing need for protection of outstanding natural landscapes and outstanding natural features. With respect to restoration in the context of a landscape, we recommend this provision would be improved by replacing "if degraded" to "where degraded". We agree, there are always patches or times when restoration may be beneficial within the context of a broader coherent landscape.
- 12. In facilitating positive landscape outcomes outside nationally important areas, we recognise human well-being also relies on ensuring well-functioning urban and rural areas. Whilst we support mutual outcomes which relate to landscape and include ensuring variety, supply, choice, adaptability and accessibility to social, economic and cultural activities, we consider such functions alone do not adequately engage with the characteristics and values which support human well-being. We also agree the availability of highly productive land is integral to ensuring well-functioning rural areas.
- 13. We agree that all landscapes have cultural values, including from perspectives of Māori, Pākehā and other recognised Aotearoa communities. To this end we acknowledge precedence to tangata whenua in defining cultural landscapes in Aotearoa and support the separate inclusion of mana whenua values as set out in Section 5e). Beyond this we support the inclusion of the conservation of cultural heritage as the appropriate means to contribute understanding and appreciation of all New Zealand's history and cultures.
- 14. In essence, we consider system outcomes must also support positive relationships that all humans have with our environments. Landscape values are not limited to just special landscapes or areas. All landscapes contribute to environmental quality and our identity. Whilst we recognise and support a need to maintain efficiency when engaging with and addressing such landscape values, we consider the need to acknowledge and nurture positive human relationships with place remains a necessary part of supporting human well-being. Through our submission, we seek to ensure this matter is explicitly included as a system outcome.



Places of National Importance

- 15. Whilst our submission principally focuses on facilitating positive landscape outcomes across all of Aotearoa New Zealand's landscapes, we consider that there is a tension in the way that outstanding natural landscapes and outstanding natural features are also addressed. The legislation signals outstanding natural landscapes and outstanding natural features as places of national importance. While this may be correct, we note that, to date, such landscapes and features have been identified and evaluated at either a District or Regional scale, rather than a national scale and it will be important to continue to do so in the future. An assessment need not be undertaken at a national scale for a place to be nationally important.
- 16. We also note that Section 559(1) currently states that "Any activity that would have a more than trivial adverse effect on the attributes that make an area a place of national importance must not be allowed...". The trivial threshold applied suggests a higher bar than the existing King Salmon threshold for effects within the coastal environment which support a tolerance of 'minor' or 'transitory' effects. Given that some of our outstanding natural landscapes and outstanding natural features are also partially inhabited or modified landscapes which may involve some ongoing degree of adverse effect, we are concerned that such a threshold may inadvertently discourage communities appreciation and experience of our region's exceptional landscapes and/or their restoration and enhancement.

Spatial Planning

- 17. Regardless of the individuals and communities whose lives are affected by resource management decisions, the provision of graphic, visual, information which is embedded in spatial plans is essential to ensuring informed engagement, be this on a regional or more local scale. Landscape architects often use visual material to explore and communicate planning and design options with clients and communities. Final 'plans' are formally approved by consenting authorities, providing certainty in terms of outcomes and clear direction for individuals, communities, conservationists and developers alike.
- 18. Landscape architects have provided mapped information to inform resource management deliberations since the RMA became law. In our view this will remain critical in establishing the relationships between the Natural and Built Environment Act, the Spatial Planning Act and the Climate Change Act and their integrated delivery through Spatial Plans which must be informed by relevant information and prepared at relevant scales (including the landscape context as directed by Schedules 3, 4 and 5 of the NBE Bill) to be useful. Effective spatial planning and integrated management of natural and built environments necessarily engages with landscape and its inherent relationships between people and place when prioritising its development, use or protection.



Summary

- 19. In summary, we continue to offer support for resource management reform and build on the following directions as part of supporting effective landscape outcomes:
 - a. the establishment of an outcomes approach to planning that seeks to reconcile human needs in harmony with the natural environment;
 - b. the integration of Te Ao Māori, including recognising and upholding te Oranga o te Taiao;
 - the recognition and making provision for the fundamental relationships between communities and place that contribute to the identities and well-being of present and future generations;
 - d. maintaining protection of and, where degraded, restoration of natural character of the coastal environment, rivers, lakes and their margins as key aspects of environment;
 - maintaining protection of outstanding natural landscapes and outstanding natural features, the values and characteristics of which are identified across relevant landscape dimensions at national, regional and local scales; and
 - f. ensuring Spatial Plans engage with and address landscape characteristics and values as part of supporting appropriate development, use or protection.

Summary of Changes Sought

20. To support our submission, we have set out suggested specific refinement of Part 5 of the NBE Bill overleaf:



5. System outcomes

To assist in achieving the purpose of this Act, the national planning framework and all plans must provide for the following system outcomes:

- (a) the protection or, where degraded, restoration, of-
 - (i) the ecological integrity, mana, and mauri of-

(A) air, water, and soils;

(B) the coastal environment, wetlands, estuaries, and lakes and rivers and their margins; and

(C) indigenous biodiversity:

- (ii) outstanding natural features and outstanding natural landscapes:
- (iii) the natural character of the coastal environment (including the coastal marine area), wetlands, and lakes and rivers and their margins:
- (b) in relation to climate change and natural hazards, achieving-
 - (i) the reduction of greenhouse gas emissions:
 - (ii) the removal of greenhouse gases from the atmosphere:
 - (iii) the reduction of risks arising from, and better resilience of the environment to, natural hazards and the effects of climate change:
- (c) well-functioning urban and rural areas that are responsive to the diverse and changing needs of people and communities in a way that promotes—
 - the use and development of land for a variety of activities, including for housing, business use, and primary production; and
 - (ii) the ample supply of land for development, to avoid inflated urban land prices; and
 - (iii) housing choice and affordability; and
 - (iv) an adaptable and resilient urban form with good accessibility for people and communities to social, economic, and cultural opportunities; and
- (d) the availability of highly productive land for land-based primary production.
- (e) the recognition of, and making provision for, the relationship of iwi and hapū and the exercise of their kawa, tikanga (including kaitiakitanga), and mātauranga in relation to their ancestral lands, water, sites, wāhi tapu, wāhi tūpuna, and other taonga:
- (f) the protection of protected customary rights and recognition of any relevant statutory acknowledgement:
- (g) the conservation of cultural heritage:
- (h) recognition of the relationships between communities and place that contribute to the identity and well-being of present and future generations:
- (i) enhanced public access to and along the coastal marine area, lakes, and rivers:
- (j) the ongoing and timely provision of infrastructure services to support the well-being of people and communities.



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Globalisation and forested landscapes: the need for multifunctional landscape structure as a bridge between global space and local place.

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Introduction

Over the past decade, New Zealand's commercial forestry plantations have been rapidly integrated into the global economy. At the same time, there has been growing commitment at both international and national levels and across both public and private sectors to the need for sustainable development. Sustainability is a contested term, but in most formulations includes a commitment to the distinctiveness and resilience of local communities, ecosystems, and biodiversity. These two dynamics of globalisation and sustainability have contrasting spatial logics, described by Castells (2000) as the global 'space of flows' and the local 'space of places'. Both of these are fundamental to sustainable forest management. In this paper, a case is made for the use of forest landscape plans prepared as part of certification to bridge between the two dimensions of sustainable forest management. The plans must address both landscape structure and landscape process. The argument will be illustrated in the presentation with examples that focus upon opportunities to enhance indigenous biodiversity within the working forest.

Changing Dynamics

The management, structure and economics of forestry in New Zealand were radically changed in the 1980s as part of the wider reform of the NZ economy and public sector. Prior to the reforms, the NZ Government was the major plantation owner and the forests had been established for a range of economic, employment, regional development and soil conservation purposes (Roche 1990). Many were managed under a multiple objective regime. The break up of the New Zealand Forest Service in 1987, and the privatisation of the exotic plantations within the forest estate, led to a rapid integration of commercial forestry into the global market for forest investment and forest products (Roche 1993). At the same time, however, the foundation was being laid internationally and within New Zealand for a second wave of change, focused upon the paradigm of sustainable development (WCED 1987). These two imperatives, of economic globalisation and sustainability, are now converging in the concept of sustainable forest management (Ferguson 1996, Maser 1994). However, there are significant tensions between the two dynamics, which become manifest in the forest landscape, and there is a danger that key values will be lost and opportunities missed in the process of reconciling the different needs and demands.

The global and the local

These tensions can be usefully expressed in terms of the global and the local. On the one hand, commercial forest production in NZ is now primarily based upon global capital, technology and markets. The plantation forest is part of a global "space of flows" (Castells 2000), in which information, people and material are linked externally to geographically distant owners, research facilities, processing plants and markets, and increasingly disconnected from local communities and ecology. Three key indicators can illustrate the extent of globalisation. First, in 1989 the exotic forest estate was 100% NZ owned. By 1998, overseas owners were in the majority (NZFOA 1999). Second, processing is highly concentrated and largely controlled by a few multinational companies (MAF 1999). Third, there is a high degree of vertical integration between the 4 largest forest owners who own over 50% of the estate, their processing facilities, and the marketing of products internationally (MAF 1999).

The forests themselves are characterised by homogeneous and exotic land cover. The NZ commercial estate is dominated by *Pinus radiata*, which is selectively bred and cloned, resulting in low genetic

diversity. Commercial imperatives in forest management are expressed in short rotation clear fell regimes, in which the forest is cropped to ground level every 25-30 years. Economically and ecologically, there is much in common between NZ plantation forestry and intensive agricultural cropping regimes. Each forest stand is closely integrated with overseas markets and investors through a vertical investment, information, management, and supply chain.

In contrast, sustainability agendas over the past two decades have emphasised the need for rich local interconnections between community, economy and ecosystems. The sustainability paradigm is perhaps best exemplified by Agenda 21, which emerged from the 1992 World Summit at Rio, promoting the importance of locally managed, multifunctional, bounded territories with distinctive biophysical and cultural identity- an approach to environment and society subsequently described by Castells (2000) as the 'space of places'. Sustainability is of course a highly contested concept, and there are many interpretations (Maser 1994). Nonetheless, a sense of local richness and connectedness is common to most definitions. For example Ludwig et al. (1997) have defined, for semi-arid environments, the importance of integrated landscape patch and matrix dynamics to the creation and maintenance of 'functional, conservative' ecosystems. This contrasts with the lack of spatial integration that is typical of dysfunctional, wasteful or leaky systems. The same principles of spatial complexity leading to tightly bound and recycled resources applies equally to other ecosystems, including plantation forests.

Biodiversity conservation is one essential component of sustainability where there is increasing emphasis upon the need for investigation, evaluation and policy to be grounded in local ecological contexts. In New Zealand, where indigenous flora and fauna have a high level of endemism, resulting from a long period of evolutionary adaptation in isolation (Meurk 1995, 2002), there is a special need for biodiversity to be assessed and managed -at a landscape scale (Norton 1998, Norton and Miller 2000, Meurk and Hall 2000, Brockerhoff et al 2001). A similar focus upon local and regional context is evident in current thinking upon sustainability and social and community development, which emphasises the need for 'thick' social networks to enrich the capacity of regions to respond to the economic opportunities of globalisation (Amin and Thrift 1995).

Sustainable Forest Management

The importance of forests to global, regional and local sustainability has been recognised in a series of international agreements, national statutes, and industry specific protocols. New Zealand is a participant in the Montreal Process, which has developed criteria and indicators for sustainable forest management, and sustainable forest management was recognised as an international priority at the 2002 World Summit on Sustainable Development. The focus of these intergovernmental initiatives is upon reporting and macroscale policy issues. At the regional and local level the Resource Management Act 1991 provides the statutory framework for sustainable management of natural and physical resources, but has so far proven to be largely unsuccessful in resolving landscape scale issues (PCE 2002). The 'effects' based approach makes it difficult to manage cumulative change, and there is resistance by landowners and managers to the introduction of the sort of prescriptive regulatory regimes typically used to achieve sustainable, multifunctional landscapes in Europe, for example.

Instead, the New Zealand forest sector has taken a lead in adopting product certification as an approach to reconciling the potentially divergent trajectories of globalised production maximisation and local sustainability. Schemes such as that of the Forest Stewardship Council focus upon compliance with a set of principles and standards, developed to address key dimensions of sustainable production. The NZ draft national standards include attention to tenure and rights responsibilities, indigenous people rights, community relations and workers rights, multiple benefits from forests, and environmental impacts of forest operations. The certification process requires preparation and implementation of a forest management plan that documents objectives and the means to achieve them.

Although only introduced in 2000, approx 33% of NZ harvest volume is now certified under the FSC scheme. However, there are areas that still need attention. In a review of certification audits, Hock and Hay (2003 in press) found that by far the greatest number of corrective action requests were in the area of environmental impacts, followed by monitoring and assessment. Analysis of the draft standards suggests that a potential limitation of the certification process in its current form is its fragmented approach to spatial relationships within and around the forest being certified. The standard makes a number of references to site-specific requirements in regard to Maori values, and to landscape scale recording and design in regard to environmental protection, ecological conservation and biodiversity, visual and more general 'sustainability' matters. However there is no requirement for an integrated landscape scale forest plan. In a sense, the certification process remains embedded within the global space of the forest, dealing with local space in a set of discrete topic specific actions. This approach carries a real risk of missing opportunities for system (landscape) wide sustainability, and may perpetuate an ecologically dysfunctional local landscape structure.

The need for an integrated landscape perspective

We propose an integrating role for landscape plans prepared as part of certification requirements, as a bridge between the global and the local. The focus of the plans should be to conceptually and biophysically create connections at the landscape scale between the space of flows and the space of places. The approach needs to be strategic, taking a long-term view of the role and function of the forest within the wider regional landscape. The focus of such plans would not be the visual landscape, although visual considerations will be incorporated and are crucial (see Meurk and Swaffield 2000: Fig 1). Indeed, an important role for the plans will be to graphically communicate the overall forest management strategy to local communities and others with an interest in the space of places.

Our concept of an integrated forest landscape plan draws upon a number of precedents. The 1983 NZFS publication 'Creative Forestry' (Anstey et al) articulated a powerful integrating vision of multiple objective forestry within a wider landscape setting that prefigured by nearly two decades many of the current requirements of the FSC scheme. However its perspective was essentially static, focused upon creating a diverse pattern that included 'protected' ecological systems. Over the intervening years there has been growing attention towards the need for self-regenerating landscape systems (Lyle 1986, Hobbs and Saunders 1993, Hobbs and Norton 1996). Landscape ecological concepts of patch, mosaic, corridor and network (Forman 1995) provide a conceptual vocabulary for the creation of a basic landscape structure, within which dynamic processes of self sustaining ecological regeneration can be embedded (Norton 1998).

A key feature of any strategic approach to landscape structure and process must be its equal attention to cultural patterns and processes - both the production of forest products, and the enhancement and use of other forest values and services. Meurk and Swaffield (2000) have articulated a vision of a landscape scale framework for regeneration of indigenous biodiversity within productive agricultural lands, and we see a similar approach being valid for forestlands. Two key features are the utilisation of cultural landscape elements (such as roads, and the production areas themselves) as sites for indigenous regeneration on a long-term basis, and the integration of landscape regeneration across production and conservation areas and networks. Central to this approach is the understanding and modelling of the dynamics of the regeneration of indigenous plant communities within mosaics of exotic species.

We identify five ingredients that are necessary to achieve a forestry regime compatible with an integrated landscape perspective.

- *Environmental Management*:-The avoidance and mitigation of physical environmental impacts. The current focus on sustainable forestry practices largely addresses these types of issue.
- *Habitat Protection* Site level protection of primary habitat or natural/wild occurrences of indigenous species. This aspect has also been recognised within the FSC draft standards, although there is of course continuous pressure to minimise the land area lost from production.

An integrated plan would ensure that the areas which are set aside will provide maximum added value.

- *Landscape Connection*-Maintenance and restoration of system wide landscape integrity where the indigenous component has become dysfunctional. This the repair of 'broken' or fragmented habitats, connections and ecosystem services, so that they are viable and sustainable (Norton 1998). Empirically-based, spatially explicit models of forest and landscape dynamics permit the development of models of the optimal size, density and configuration of forest patches as part of a productive cultural landscape (Meurk and Hall 2000).
- Adding Value and Resilience- Planting, management and harvesting strategies that progress towards mixed species mixed age stands that will incorporate (perhaps over several rotations) increasing proportions of indigenous timber, sub canopy and groundcover species. In the case of New Zealand's idiosyncratic biogeographic context, this is an essential strategy towards providing viable indigenous wildlife habitat (most frugivorous and honey-eating birds and lizards are co-adapted to native fruit- and nectar-bearing trees and shrubs) while curbing biosecurity risks. Again, forest succession models will support the design of harvesting regimes that will achieve this new balance. Exploiting other utilitarian values of native plants (Environment Canterbury and Isaac Centre of Nature Conservation 2003), without undermining the sanctuary quality of key reserves, will also be a key to raising the profile and viability of nature in our working landscapes.
- *Cultural sustainability-* Provision of information, access and interpretation of the forest landscape and its unique, endemic elements for children, tertiary institutions, adult residents, tourists and new immigrants will be a vital part of closing the circle of cultural sustainability (Meurk and Swaffield 2000: Fig. 1). Unless indigenous nature is visible in people's daily lives it will become irrelevant to their sense of place. Integrated forest landscape plans offer a way for commercial production forestry to contribute to cultural sustainability, as well as economic and biological sustainability, by showing how socio-economic wellbeing can be compatible with and reinforce cultural identity.

Conclusion

The forest landscape plan will therefore have several interconnected layers. It will identify the spatial structure of production areas (the space of flows), and their long-term cycles of management, and it will place them within a wider landscape scale framework of protective and regenerative ecosystems (the space of places). It will identify ways to manage the intersections and interfaces between these parts of the forest, and identify sites and corridors that can change their functions over time. It will also identify the cultural and social values that are expressed in the different parts of the forest, and incorporate strategies by which these values can be sustained. Finally it will connect the forest estate to the wider landscape setting.

We can see such integrated plans fulfilling a key role not only within the certification process, but also in linking certified forest management to the processes and requirements of the Resource Management Act, and in the future, to community plans developed under the new Local Government Act. Landscape plans could be a means by which forest managers collaborate with local communities and territorial local authorities to establish a framework of mutual expectations and obligations. At the same time, the plans will fulfil a role in certification by making tangible the ways in which the forest production process respects local landscapes and communities. Forest landscape plans thus offer a way for the forest sector to contribute towards the regeneration of biodiversity and sustainable communities, whilst meeting the demands of international investors and consumers.

References

Amin A and Thrift N (1995) <u>Globalisation, 'institutional thickness' and the local economy</u>, in Healey P, Cameron S, Davoudi S, Graham S, and Madanipour A (eds) 'Managing Cities'. Chichester, John Wiley.

Anstey C, Thompson S, and Nichols K (1983) Creative Forestry. Wellington, New Zealand Forest Service.

Brockerhoff EG, Ecroyd CE, and Langer ER (2001) Biodiversity in New Zealand plantation forests: Policy trends, incentives, and the state of our knowledge. <u>NZ Journal of Forestry</u> May 2001:31-37 Castells M (2000) <u>The rise of the network society</u>. Oxford, Blackwell.

Environment Canterbury and Isaac Centre for Nature Conservation, Lincoln University (2003) Establishing shelter in Canterbury with nature conservation in mind (22 pp). Environment Canterbury, Christchurch.

Ferguson I (1996) Sustainable Forest Management. Oxford, Oxford University Press.

Forman RTT (1995) <u>Land Mosaics: The ecology of landscapes and regions</u>. Cambridge, Cambridge University Press.

Hobbs RJ, and Saunders DA, (eds)(1993) <u>Reintegrating Fragmented Landscapes</u>. New York, Springer Verlag.

Hobbs RJ, and Norton DA, 1996 Towards a conceptual framework for restoration ecology. <u>Restoration</u> <u>Ecology</u> 4:93-110

Hock B, and Hay E, (2003) Forest certification in New Zealand: How are we doing? <u>New Zealand</u> Journal of Forestry, in press.

Lyle JT (1986) Design for Human Ecosystems. New York, John Wiley.

Maser C (1994) <u>Sustainable Forestry: Philosophy, Science and Economics.</u> Delray Beach Florida, St Lucie Press.

Ministry of Agriculture and Forestry (1999) Wood processing industry index.

http://www.maf.govt.nz/forestry/processing/index.htm

Ludwig J, Tongway D, Freudenberger D, Noble J, and Hodgkinson K, (eds) (1997) <u>Landscape Ecology</u> <u>- function and management</u>. CSIRO Australia.

Meurk CD (1995) Evergreen broadleaved forests of New Zealand and their bioclimatic definition. pp 151-197 in Box ED, Peet RK, Masuzawa T, Yamada I, Fujiwara K, and Maycock PF(eds), 'Vegetation Science in Forestry'. Kluwer Academic Publishers, The Netherlands.

Meurk CD, and Hall G, (2000) <u>Biogeography and ecology of urban landscapes</u>. pp 34-45 in GH Stewart and ME Ignatieva (eds), 'Urban biodiversity and ecology as a basis for holistic planning and design'. Proceedings of a workshop held at Lincoln University 28-29 October 2000. Wickliffe Press Ltd Christchurch.

Meurk CD (2002) Threats to native plants and niches for survival in New Zealand cultural landscapes <u>Canterbury Botanical Society Journal</u> 36:18-25.

Meurk CD, and Swaffield SR, (2000) A landscape ecological framework for indigenous landscape regeneration in rural New Zealand Aotearoa.. <u>Landscape and Urban Planning</u> 50(3)129-144 Norton DA, (1998) Indigenous biodiversity conservation and plantation forestry: Options for the future. New Zealand Journal of Forestry 43:34-39

Norton DA, and Miller CJ, (2000) Some issues and options for the conservation of native biodiversity in rural New Zealand. Ecological Management and Restoration 1(1)26-34

New Zealand Forest Owners Association (1999) <u>NZ Forest Industry facts and figures'98</u>. Wellington, NZFOA.

Parliamentary Commissioner for the Environment (2002) <u>Weaving resilience into our working lands:</u> <u>Recommendations for future roles for native plants.</u> Wellington, PCE.

Roche M, (1990) <u>History of Forestry.</u> New Zealand Forestry Corporation with GP Books, Wellington. Roche M, (1993) <u>Forestry</u>, in Le Heron R and Pawson E, 'Changing Places: New Zealand in the Nineties'. Auckland, Longman Paul.

World Commission on Environment and Development (1987) <u>Our Common Future</u>. Oxford, Oxford University Press.



SUBMISSION TO THE MINISTERIAL INQUIRY

into land uses associated with the mobilisation of woody debris (including forestry slash) and sediment in Tairāwhiti/Gisborne District and Wairoa District

Submission 6 April 2023

SUBMISSION TO THE MINISTERIAL INQUIRY SUBMISSION



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1. Introduction

Key messages

Thank you for the opportunity to have input into the Ministerial Inquiry. Our key messages are the need for change in land use in vulnerable parts of the landscape.

Key messages

- 1. Sustainable transition of vulnerable areas to an alternate land use/cover (landscape scale).
- 2. Compensation for land/forest owners and waiver of ETS liabilities.
- 3. Co-operation and collaboration between the Crown, Councils and Plantation Forest Industry is required
- 4. Agreement and action on how build and enhance community resilience
- 5. Practical options to minimise slash in vulnerable areas
- 6. Identification of vulnerable areas (not suited form plantation forestry)
- 7. Sustainable utilisation of current wood waste residues
- 8. Careful review and application of regulation further regulation is not a landscape scale solution and will not deliver sustainable change.

PF Olsen

PF Olsen is a nationwide provider of goods and services to the forest industry. We manage forests for a range of clients, with services tailored to individual client needs at various stages of the forest lifecycle, including:

- Afforestation, replanting, crop tending, forest operations scheduling and management
- Harvest planning, engineering, harvesting and marketing management
- Port services management for log export



- Forest Stewardship Council® certification via the PF Olsen FSC® Group Scheme
- Forest insurance via a Group Scheme
- Carbon-forestry and trading of carbon units advice and management
- Forestry consulting forest management options, forest inventory, yield and estate management, forest valuation and due diligence for purchase
- Radiata pine seed (CP, SSOP, GF Plus[™]) and containerised seedlings and cuttings supply.

Background Information

Since plantation forests were established in the Tairawhiti and Wairoa districts, they have successfully stabilised the landscape and significantly moderated the discharge of sediment as compared to other land uses. In the main, plantation forests have provided protection for all NES-PF Erosion Susceptibility Classifications (ESC). However, in response to significant cyclonic events on top of pre-existing saturated soil conditions, vulnerable land fails regardless of landuse/cover as we have recently witnessed. Not all land has failed, but vulnerable areas have across the landscape. Importantly, most of the RED zoned ESC land in plantation forest has not failed.

In vulnerable areas, e.g. skeletal soils, connectivity to water, flood plains... sediment and trees (woody debris including slash) are susceptible to erosion, they are entrained in flood waters and settle in deposition zones – flood plains, beaches and the coastal marine area. We are deeply concerned about the situation and have recommended potential solutions to enact a resilience change across the landscape. We have purposefully not included in our submission, detailed information on the history of the land use in the districts or the many benefits of plantation forest, as these are well known and widely acknowledged.

We acknowledge:

- Large areas of Tairāwhiti and Wairoa are characterised by highly erodible and unstable lands.
- Major storm events/cyclones are not uncommon and significant downstream impacts on local communities and infrastructure have been recorded for over a century.
- Climate change is projected to increase the frequency and intensity of major storm events/cyclone impact.



- The majority of the plantation forests in the Tairāwhiti and Wairoa areas were established via Government schemes, to address significant erosion and land instability issues and to allow for productive use of the land and economic returns to the community.
- Significantly, most plantation forests have been established on hill country and the easier land has been retained for agriculture, horticulture and housing. Plantation forestry does not control the land where some mitigation can be enacted.
- Landslides, debris flows and flood flows entrain and move debris. It will be transported until there is a change in landform grade which allows deposition, or until flood flows reduce and the debris will be deposited on floodplains, along river valleys, and in the coastal marine area.
- Afforestation and replanting are recognised as effective tools in managing erosion and land instability. Research and experience have underpinned this past best land management decision.
- Due to the highly erodible landscape, there are limitations as to the extent tall forests can mitigate the impact of major storm events/sequences as well as limitations as to the extent infrastructure can be built to withstand these events.
- Plantation forestry directly employs 17.3% of those working in primary industries and generating 11.4% of the gross domestic product of the Gisborne District².

Human capab ty n the pr mary ndustres: Part 2 2015 to 2019 Qua f cat on ana ys s by reg on (mp.govt.nz)

² https://www.stats.govt.nz/ nformat on re eases/reg ona gross domest c product year ended march 2020



2. Submission

1. Sustainable transition of vulnerable areas to an alternate land use/cover (landscape scale)

Potential Solutions:

- a. The following process would enable a reasonable transition:
 - Communication (on going) of the transition project to retire unsuitable areas from plantation forestry – community and stakeholders.
 - Identify areas to be retired from plantation forest land use and vulnerable to deposition from forest discharges modelling, mapping, ground truthing.
 - Determine environmental and socially appropriate alternate land use/cover on a property and catchment scale, including:
 - Longer rotation production species
 - o Retirement and transition to indigenous vegetation
 - What type/s of indigenous vegetation are suitable
 - Retirement and planting with alternate non-production species e.g. crows nest poplar
 - o Abandonment
 - Use of temporary fencing vs permanent
 - Retain current tree cover and convert to carbon forest only
 - Identify mechanisms to support transition from the plantation forest land use to the alternate land use/cover
 - Determine and agree the actions and timeframes required for the successful transition on a property scale Property Transition Plan
 - Implement and maintain the Property Transition Plan
 - The process needs:
 - time, resource (people) and financial support from the Crown, Council, industry and stakeholders.
 - Indemnity from prosecution based on failures of the land and discharge of sediment, woody debris and slash from the areas to be retired .

Background:

PF Olsen acknowledges that there are vulnerable areas of land in Tairāwhiti and Wairoa that are not suited to a traditional plantation forest regime.



Land failure in response to storm events is not restricted to harvested areas or young trees. Pasture, indigenous vegetation and areas of plantation forest greater than 10 years of age are subject to slope failure. This reflects the inherent risk and history of the land.

The majority of plantation forests in the Gisborne Region and Wairoa District were firstly established by the Government or under Government funded schemes in response to severe erosion and land failure. They were also established to bring long term economic wellbeing to the regions. By in large, the forests have delivered these outcomes, however they are not resilient to cyclonic storm events and many land failures have led to unacceptable social, financial and environmental outcomes.

With hindsight and to respond to the needs of the whenua, a transition from plantation forest use to another land use/cover is required, and should be a fair, equitable and inclusive transition.

There needs to be retirement and in some cases abandonment of plantation forest land.

Societal adjustment to the inherent risks associated with the land in the region is also required in high debris deposition risk areas.

Future afforestation of areas no longer suitable for pastoral use, will need to be targeted, with species and management regimes appropriately matched to the risk profile of the area. In highest risk areas, permanent forest of appropriate species, in the appropriate location, will be the best long-term solution. The challenges of planting in indigenous species are well understood with increased costs and reduced survival rates impacting costs and economic returns. These challenges will need to be addressed.

2. Compensation for land/forest owners & waiver of ETS liabilities

- a. Equitable and effective changes to the Tairāwhiti Resource Management Plan to support land use change including 'enabling' regulation as compared to 'restrictive' regulation
- b. Council / Crown acquisition of identified vulnerable land and any carbon credit/liability.
- c. Financial support to caveat/covenant retired land (if not in public domain)
- d. Compensation to forest owners for loss of value of crop
- e. Compensation to land owner for loss of economic use of land



- f. Indemnity from ETS liability during transition to alternate land cover. Post 89 forests could be a beneficial cost recovery option for the Crown (if land acquisition is actioned).
- g. If an alternate species is established that has a lower carbon stock than pinus radiata, a mechanism should be developed to 'value' the offsetting provided by biodiversity or social impact benefit/credit. As an example, if pinus radiata is harvested from the vulnerable area and it is replanted with an indigenous species with a lessor carbon stock, recognition should be given to the benefits of the decreased risk of slope failure and significant impact from the discharge of woody debris reduction. There is no mechanism available in the current NZ ETS which is solely concerned with carbon stock.
- h. Incentives to accelerate the land use/cover change.
- i. Financial assistance to action the transition (e.g. removal of the plantation forest (If not able to be harvested) and planting with indigenous species)
- j. Crown willingness to re-address Tiriti o Waitangi Settlements for areas identified as not suitable for plantation forest.

Background:

The majority of plantation forests in the Gisborne Region and Wairoa District were established by the Government or under Government funded schemes in response to severe erosion and land failure. They were also established to bring long term economic wellbeing to the regions. It is evident that vulnerable areas of plantation forests, bought as an investment, can no longer be part of the forest's financial portfolio, and have become a liability.

Retirement, transition to an alternate land use/cover, permanent carbon forest will not remove liability in the event of subsequent discharges of slash, woody debris and sediment.

Ways need to be found to fairly compensate forest owners for this loss of land and crop. This needs to recognise the wider social and environmental benefit of retiring these lands.



3. Co-operation and collaboration between the Central Government, Council and Plantation Forest industry is required

- a. Central Government led:
 - Ensure/support GDC effectively plans and equitably manages the inherent risks of the land through the review of the Tairāwhiti Resource Management Plan
 - Crown funded research to provide effective tools to manage geological and hydrological risks for both local Government, communities and land users
 - Implement a sustainable transition process to retire vulnerable areas from productive or residential use, including ongoing management of retired lands or the transfer of such lands into central/local Government management/ownership
 - Lead and manage expectations of the land use/cover change and the timeframes required (decades)- through CRI's, Parliamentary Commissioner for the Environment, MfE and MPI
- b. Council and industry collaboration
 - Determine a fair funding mechanism to remove woody debris from valued community beaches.
 - Emergency preparedness develop a storm warning industry response plan and post storm actions.
 - Willingness to work together on solutions to mitigate the impacts of slash discharge.
- c. Central Government and Council
 - Establish reasonable expectations for the ongoing management of the NES-PF red ESC zone land (as distinct from the vulnerable areas where traditional plantation forestry is not feasible) if plantation forestry is to remain a viable land use option for the Region.
 - The adoption of the NES-PF as the primary regulation for plantation forestry.
- d. Council led:
 - Staff retention to enable staff to understand the industry and work with it to improve outcomes and for relationships to develop.
 - Scientific methodology to recognise industry/scientific/mathematical standards e.g. the GDC method to determine the variety of woody debris on the beaches is deficient in mathematical application and results in bias.
 - GDC consents and compliance staff having practical and regulatory plantation forestry knowledge.



- Council compliance reports being written and shared with the consent holder / forest manager within 10 working days of the compliance site inspection
- Resource consent costs being proportionate to the activity
- Resource consent conditions within scope and commensurate with the environmental effects of the activity.
- Resource consent applications being determined by those with industry knowledge.
- NES-PF regulations not provided as consent conditions.

Background:

To enact landscape scale change, support from Central Government is critical, and equally a willingness for all parties to work together for the solutions to be realised.

The relationship between the plantation forest industry and Gisborne District Council is uneasy. It must be improved to enable and support sustainable transition and change.

4. Agreement & action on how to build & enhance community resilience

- a. Identification of infrastructure/investments that is at risk
- b. Managed retreat from high risk downstream areas relocation/redesign of dwellings / significant infrastructural investments (e.g., bridges)
- c. Limited protection of at-risk investment if practicable (e.g., stop bank)
- d. Identification of where mitigation could be undertaken on land that is not forest land or in forest ownership as while many mitigations can take place within forests, some are not able to be due to topography (e.g., wetland development, establishing living slash fences)
- e. Community education covering:
 - o the limitations on any protection measures
 - o landscape response to large storm events
 - o options to build resilience
 - o expectations of timeframes before changes are noticeable
- f. Community and stakeholder consultation and agreed options developed by working groups with cross party interests
- g. Central Government funding for resilience building projects



- h. River maintenance to increase the flood carrying capacity of rivers and freeboard under bridges
- i. Continued afforestation and replanting of plantation forest in lower risk vulnerable areas. Initiatives can be used to encourage afforestation of areas not suitable for pastoral use to reduce erosion and sediment loss.

Background:

Acknowledging that we are all the inheritors of previous land use decisions, and the impacts of those decisions will affect communities, neighbours, individuals, land values and property rights. No apportioning blame to the current land user is an important component of these potential solutions. Acknowledgement is important, but of more significance is to determine how we can work together to build resilience to the impacts of future storm events.

Some solutions are not able to be undertaken in areas of plantation forest (hill country), but in adjacent/downstream areas of deposition (where the land is less steep).

Societal adjustment to the inherent risks associated with the land in the region is also required in high debris deposition risk areas.

5. Practical options to minimise slash in vulnerable areas

- a. Current practices include and should be the first choice of options:
 - Harvest planning to extract the stems from the butt-end, which reduces stem snapping under load.
 - Harvest planning to avoid (where achievable) pulling across gullies where less-than-full suspension creates breakage.
 - On faces where the ground is not incised, cross-slope felling to reduced breakage in the top of the stem
 - On faces where the slope and ground conditions allow utilise mechanical felling to control the direction and dissipate energy to reduce breakage in the top of the stem and branching.
 - On faces where mechanised felling can be utilised, the application of fixed felling heads verse free-swing processor heads increases directional control and dissipation of energy



- b. Fibre recovery instructions to extract all windthrow and broken heads regardless of being merchantable. Off-landing space to relocate unmerchantable pieces from a processing area to a safe disposal site will be required. Practicality is contingent on the harvesting system employed and the financial viability of the operation.
- c. Further research in the extraction of slash from gullies and high risk areas is required, along side access to markets for waste residues.
- d. Recognition that windthrow, non plantation trees, standing plantation trees (not harvested) entrained in landslides are not slash. These examples of woody debris are not regulated under the NES-PF, regional plans or national instruments such as the National Policy Statement for Freshwater Management.

6. Identification of vulnerable areas

Potential Solutions:

- Communicate the intention to transition vulnerable areas from plantation forestry to an alternate land use/cover, and the process and support mechanisms for the transition.
- Identify and assess existing risk assessment tools and, where lacking or further refinement is required, commission further work – use CRI's.
- Identify areas to be transition using an agreed model / mapping (preferably based on the risk of slope failure, unsuitability for productive use and downstream risk and ground truthed).

The areas to retire could include:

- skeletal soils,
- areas impossible to harvest without significant environmental damage/inability to manage slash
- · areas that would never be harvested for safety or access reasons,
- · areas where soil strength would fail under a heavy crop,
- areas that had a very high susceptibility of land-sliding with connectivity to waterbodies

Background:

The NES-PF Erosion Susceptibility Classification (ESC – which was based on Land Use Capability (LUC) units developed under the NZ Land Resources Inventory) underpins the NES-PF regulations. The ESC is not considered by proponents to adequately represent risk at an operational scale. Onsite risks are identified in operational planning, with the ESC





being used as a gate to determine required compliance with regulation. In the Gisborne region the LUC was mapped at a scale of 1:10,000.

An improved national tool or tools suitable not only for risk assessments to underpin the NES-PF (and potentially other regulation) but also for use at an operational scale for designing and managing operations, and to identify vulnerable areas (including erosion and debris movement susceptibility), would benefit the plantation forest industry, land owners / managers, investors and regulators. Decisions would be informed by sound science.

7. Sustainable utilisation of current wood waste residues

Potential Solutions:

- a. Establishment of alternative fibre markets on the East Coast to increase the recovery of merchantable wood and therefore reduce the volume of woody debris and slash remaining in the landscape after harvest.
- b. Commission a feasibility study for an Oriented Strand Board (OSB) facility and other options (e.g. sawmilling, pellet production). This will require Central and local government support for RMA processes, energy supply, location etc. An OSB facility can:
 - o be economic at smaller scale
 - o utilise pulp, branches, offcuts etc
 - o provide local employment

Early discussion with overseas investors does show potential for investment.

Background:

Marubeni has twice looked at the feasibility of a processing option, however were put off by Government and RMA requirements. Hikurangi Forest Farms (HFF) also commenced a greenfield sawmill project. However, after spending \$1 million in consents and consultants HFF withdrew.

When export logs prices are good and harvesting in the Gisborne region is at full capacity, the port cannot handle all the produced volume. This causes backlogs and harvesting crew stoppages. Utilisation of lower grades log products (as well as the woody biomass) will mean only the better grades are exported through the port, ensuring a smoother wood flow.



Transportation is one of the biggest costs on the East Coast. There is no large scale user of energy, so product will most likely have to be exported or transported to another region within NZ. Electricity and pellets etc are easier forms of transportation than wood chips.

8. Careful review and application of regulation – further regulation of plantation forestry will not deliver a landscape scale solution

- a. GDC to timetable the review of the plantation forestry provisions in the Tairāwhiti Resource Management Plan (TRMP) earlier in the review of the TRMP (currently set for year 8 of the review, pers. coms Helen Montgomery GDC) and the NES-PF should be adopted as the primary regulation for plantation forestry.
- b. MPI (Te Uru Rakau) to immediately implement the recommendations of the year one review of the NES-PF - provide further implementation support for councils with specific guidance and training on plantation forestry activities and associated environmental outcomes.
- c. GDC to resource, build and retain in-house land use and specialist plantation forest capacity, across the functions of planning, consenting and compliance.
- d. GDC and the plantation forest industry to improve and nurture their relationship, to collaboratively achieve improved environmental outcomes.
- e. GDC and plantation forestry industry representatives to collaboratively complete the review of the GDC standard consent conditions to ensure they are meaningful, focused, legal, within scope and enforceable.
- f. GDC to recognise and accept that complex and multi-generational historic land use decisions cannot be managed/mitigated through regulation and enforcement alone.
- g. Regulated catchment clearance percentages will not solve the issues of the discharge of woody debris and sediment. Conversely it will likely increase discharges, as increased earthworks for access will be necessary and the plantation forests will be subject to increased windthrow. Slope instability will increase due to root ball holes allowing a direct path of rainwater to the slope shear plane, and increased woody debris captured with slope failure will be able to be entrained.



Background:

The National Environmental Standards for Plantation Forestry (NES-PF) Erosion Susceptibility Classification (ESC) classifies 141,789 hectares of plantation forest as red zoned land in New Zealand. 104,432 hectares (74%) of this is located in Tairāwhiti. The full regulatory constraints of the NES PF apply to the ESC red zone, with resource consent required for afforestation, harvesting, earthworks and replanting.

The Tairāwhiti Resource Management Plan is more stringent than the NES-PF, containing rules for most plantation forest activities. Resource consents are therefore required for most plantation forest activities. The TRMP regulations are currently the most stringent in NZ.

The application of the more stringent regulation in Tairāwhiti has not improved environmental outcomes in response to major storm events.

Thank you for your consideration of our submission and your leadership of change. We are willing to meet with you if you have any questions or require further information.

Yours Sincerely

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Ross Larcombe

CEO



6 April 2023

The Secretariat Ministerial Inquiry into Land Use (MILU) landuse.inquiry@mfe.govt.nz

Submission: Ministerial Inquiry into Land Use (MILU) causing woody debris, including forestry slash, and sediment-related damage in Te Tairāwhiti, Tūranganui-a-Kiwa and Te Wairoa regions.

Kia Ora Koutou

Thank you for your time to receive and review the enclosed submission from Eastland Wood Council - Te Kaunihera Pororakauo Te Tairāwhiti, representing 22 organisations in the region.

Introduction

The issues we face today with regards to land use in our region, and how we deal with them to achieve industry and regional resilience and prosperity, are complex.

The Eastland Wood Council (EWC) and its members have welcomed this ministerial inquiry into past and current land-use practices and the impact of woody debris, including forestry slash and sediment, following the recent devastating cyclones. The forestry industry has accepted the need for change, has made changes following the 2018 storm events, and worked together diligently to put forward a range of measures designed to further mitigate the impacts of severe weather events, to protect our land, waterways and communities.

EWC suggests there are a number of interventions that can be undertaken to mitigate future impacts associated with commercial forestry plantations in the region, in the face of increasingly severe weather. It is clear however, that while the forest industry in isolation, can implement a portion of these, a collaborative approach with all land users, local and central government, and the community, will be required to implement sustainable long-term mitigation.

It has been encouraging to see, amongst the industry, the commitment to contribute to a better future and the changes necessary to make our industry sustainable and viable, and to support our community in the immediate aftermath of the most recent (summer of 2023) storms.

Acknowledgement

We acknowledge the Government's commitment to work with our community and sector on this important inquiry. EWC acknowledges the professional integrity demonstrated by the Panel Members and their support staff and EWC valued the opportunity to engage directly with the Panel Members and support staff in a joint forum on Wednesday 8 March 2023 and during a field trip to visit forestry blocks on Friday 31 March 2023.

EWC and its members really feel for our communities in our region that have been affected by the severe weather events which led to the ministerial inquiry. Member forestry companies have resourced the clean-up of wood debris, including forestry slash, sections of stands (from steep slopes that have failed) and sediment, which impacted their neighbours and communities downstream. EWC and its members have worked closely with the Gisborne District Council (GDC) to support the region's response to the catastrophic impacts caused by Cyclones Hale and Gabrielle.



Executive Summary and Proposed Solutions

Subsequent to the catastrophic cyclone impacts, EWC members have been working together to propose a range of practical solutions that can be undertaken to mitigate the impacts of forestry on the Tairāwhiti community. These measures, if implemented alongside other partners and with a particular reference to improving the relationship between our sector and the Gisborne District Council, will be critical to achieving success for our community.

There is, however, no silver bullet that will immediately solve the issue of slash and sediment in Tairāwhiti. Nor will the changes we propose, come without cost. However, if we are to achieve a sustainable transition that supports land use that is resilient to the increasingly severe weather, as well as achieving good community and social outcomes, then these costs need to be borne across those impacted, and supported by Government intervention where necessary.

In the immediate term, there are a number of further mitigations forestry companies will be implementing, which build on the changes already made since 2018 to improve forest harvesting practices and reduce the waste material able to be mobilised in severe weather events.

There is a lack of public awareness of the steps that have already been taken in the wake of the 2018 storms. The current slash and debris issues seen in the wake of the 2023 storms reflect the long-term legacy of planting and harvesting practices.

EWC members were pleased to show some examples of these changes when we met with Panel Members on Friday 31 March 2023. Further to these measures, which will, over time, serve to better prevent the mobilisation of harvest debris, EWC will be implementing its Good Practice Guideline for Catchment Management, which provides guidance for members to further strengthen and implement more stringent management practices inside forestry gates. Measures include planning to manage and limit the extent of clearcut, staging harvests in larger catchments, and evaluating slope stability and actively undertaking risk assessments based on aspect, slope gradient, slope length, stability, risk of landslides against major weather events.

In the short term, EWC have proposed a fulsome review of land that should be retired from plantation forestry land use. This review needs to incorporate the views of all land users, and should be based on scientific fact. At our suggestion, qualification for areas for consideration may include areas that have skeletal soils, areas impossible to harvest without significant environmental damage, and areas where soil strength would fail under a heavy crop, among other suggested points. In addition, areas identified as vulnerable to forest discharge should be mapped and resilience building mechanisms identified and agreed across all land users.

The extremely vulnerable soils of Tairāwhiti are widely acknowledged as a challenge unique to our region.

In many cases, the majority of plantation forests in the Gisborne Region and Wairoa District were established by the Government or under Government-funded schemes in response to past significant land erosion and slope failures. The forests were established for soil and land conservation purposes as well as to bring long term economic wellbeing.

By and large, the forests have delivered these outcomes. However, they are not resilient to increasingly severe and cyclonic storm events and many land failures have subsequently and most recently led to unacceptable environmental and social outcomes. To make a shift in some areas away from plantation forestry will require


measures to ensure an equitable and sustainable transition, including mitigations to support alternative employment opportunities for the impacted communities, and appropriate compensation for the landowners.

There remain well documented immediate technology and engineering mitigations that, with an improvement in the regulatory environment, can be implemented in the short term while longer term measures are considered and implemented. This includes allowing the installation of slash traps, and the reduction of mid slope roading densities and investment into lower impact harvesting systems.

Over the medium and longer term, EWC have proposed a range of solutions for consideration based on the findings of the aforementioned review of areas for retirement and agreed land use vulnerability exercise. We recommend a whole-sector approach to develop agreed proposals for alternative land use and cover.

In the forestry space, this could include, but is not limited to: retirement and transition to indigenous vegetation; or alternative non-production species, abandonment, or conversion to carbon forest only. For any land conversion to be successful, this will need to be reinforced by mechanisms to support a sustainable transition from the plantation forest land use to the alternate land use/cover, and long term plans to manage the retired land. There also needs to be some consideration of, and investigation into, developing a viable market for wood debris products.

At the same time, an immediate priority for our sector is to restore a positive working relationship with GDC. The resource consenting process is challenging in the Tairāwhiti region and members, in conjunction with EWC, have been attempting to engage GDC with a review of forestry resource consent conditions over a number of years. At the same time, we urge GDC to consider its resourcing for compliance and monitoring of the forestry sector, and to prioritise local knowledge and experience.

Collaboration is underrated. We look forward to working with our partners at GDC to plan and employ solutions together that will positively benefit our community.

In conclusion, the nature of the land in Te Tairāwhiti presents an inherent risk of failure that will persist regardless of land use practices. Mitigating these risks will require a coordinated effort together with iwi, mana whenua, other landowners, Gisborne District Council, Trust Tairāwhiti, central government and stakeholders.

This will need to include retiring land from productive use where the risks of slope failure cannot be mitigated, not building on high-risk flood plains and overland flow paths, and developing community based response plans.

Ends.



1. Discharges

In Tairāwhiti, over the past decade, large storm events have resulted in earthflows and landslides which have transported sediment and woody debris from within catchments, including pine plantations, native forests, riverine forests and pastural land, to downstream locations. This has impacted communities, the environment and infrastructure.

Problem Statement 1: The underlying geology holds inherent risk which contributes to sediment discharges in large storm events and is prone to ongoing erosion.

Problem Statement 2: A large proportion of the newly mobilised debris seen as a result of storms in the last 24 months did not originating from harvesting practices, but instead from crop losses (8 - 10 year old trees). Solutions to reduce the impact of this non-harvest related debris on downstream communities is required.

Problem Statement 3: Given the background outlined above, mobilisation of harvesting debris also presents an ongoing risk that needs to be managed. Practices to reduce harvest debris migration is ongoing as a result of legacy harvesting issues.

Proposed Solutions

Immediately (in the next 12 months)

- Identify areas to be retired from plantation forest land use and vulnerable to deposition from forest discharges.
- Develop processes and timeframes that allow for the risk assessment of land, including the managed retirement of high-risk production forestry land and its conversion to other vegetative cover and provide mechanisms to incentivise this transition.
- Reduce regulatory barriers that allow for engineered (e.g. debris nets) and non-engineered (e.g. vegetative barriers and debris "run off" areas) retention mechanisms to be implemented via a clear and cost effective approval process.
- Communication with local communities that any transition will take some time but that the industry is committed to positive outcomes but further debris migrations are likely in future large storm events due to legacy land use decisions.
- Support research and trials through Te Uru Rakau or other forest industry organisations like Forest Growers Research (FGR) that reduce woody debris and sediment available to be discharged in large weather events.
- Investment into lower impact harvesting systems which will need support for contractors to transition old or unsuitable harvesting equipment.

Short term (next 1 - 2 years)

- Identify areas to be retired from plantation forest land use and vulnerable to deposition from forest discharges.
- Develop processes and timeframes that allow for the risk assessment of land, including the managed retirement of high-risk production forestry land and its conversion to other vegetative cover and provide mechanisms to incentivise this transition.



- Development of landscape level risk mitigation through enabling catchment level discussions, collaboration and direction with neighbours and other key stakeholders.
- Determine environmental and socially appropriate alternate land use/cover on a property and catchment scale.
- Commission an independent science-based approach to catchment limits and coupe harvesting limits.
- Review silviculture regimes to determine whether current practices increase risk of slope failure and debris mobilisation and develop techniques to reduce this risk.
- Enable efficient and coordinated collective regional response to large storm events that see woody debris mobilise including the development of an equitable model of costs across all contributing land uses.

Medium term (3 - 5 years)

• Implementation of measures that require immediate and short-term development as outlined above.

Please see Appendix 4 & 11 for more detail on these proposed solutions.



2. Regulatory Environment

Problem statement: The current regulatory environment is not achieving good environmental outcomes. The relationship between the plantation forest industry and GDC does not allow open discussion around challenges and solutions. Experience and understanding of forestry activities by local regulators is currently poor and regulations are not fit for purpose.

Proposed Solutions

We are committed to collaboration with GDC at a sector level. We urge GDC to work with the sector and re-establish a meaningful relationship with EWC members, similar to the Hawke's Bay forestry group model.

We also encourage GDC to review resource consent condition wording, which is outdated and inconsistent, and to establish a well-resourced regulatory team based locally and dedicated to forestry activities.

Over the medium and longer-term, we recommend GDC consider an effectiveness and efficiency review of Tairāwhiti Resource Management Plan rules more stringent than NES-PF, recognising the difficult terrain of the region.

Immediately (in the next 12 months)

- Meaningful relationship development between Gisborne District Council (GDC) and EWC similar to Hawke's Bay forestry group model.
- Review of resource consent condition wording.

Short term (next 1 - 2 years)

• Well-resourced regulatory team dedicated to forestry activities.

Medium and long term (3 - 10 years)

• Effectiveness and efficiency review of Tairāwhiti Resource Management Plan rules more stringent than NES-PF.

Please see Appendix 5 & 11 for more detail on these proposed solutions.



3. Sustainable Transition

Problem statement: There is likely to be a reduction/retirement and in some cases, abandonment of some areas of the highest risk forest land. Ways need to be found to fairly compensate forest owners for this loss of land. There may need to be a transition to adjust socially to the inherent risks associated with the land in the region i.e., farmers moving off floodplains etc.

Proposed Solutions

Support from central and local government for a Just Transition away from plantation forestry in some areas, including financing of alternative employment opportunities for communities, and fair compensation for a loss of productive land.

Short, medium, and long term

- Fair compensation for loss of productive use of land.
- Alternative employment opportunities for communities.
- Acceptance and support of timeframes and continued risk exposure.
- Supporting and enabling downstream processing and value maximisation investments.
- Future inclusive/joint management planning.
- Transition (to native) planning.

Please see Appendix 6 & 11 for more detail on these proposed solutions.



4. High Risk Sites / Legacy / Abandoned sites / Standing Trees

Problem statement: Areas of plantation forestry exist predominantly on lands with high erosion and slope failure risk. Retiring these areas from a production forest regime does not necessarily solve the problem, as trees provide a level of support to the vulnerable soils. There is no clear process for identifying nor transitioning plantation forest into permanent forest or lower risk alternative land use while allowing landowners to achieve economic wellbeing.

Proposed Solutions



There needs to be a clear process established to support the ongoing sustainable management of these lands to ensure robust science and evidence-based decisions are made that are supported by regulatory/resource consent requirements, the ETS, and central and local government. This needs to recognise the wider social and environmental benefit retiring these lands brings to ensure landowners are not left bearing an unreasonable cost and, where possible, can continue to get an economic return off their land.

Short, medium, and long term proposed solutions

- Central Government facilitation to ensure local government planning effectively and equitably enables the retirement / transition to soil conservation management through the relevant regulatory regimes.
- Crown funded research is operationalised to provide effective tools for transitioning plantation forest areas to permanent conservation forest for both local government and private landowners.
- A Just Transition process that incentivises and support landowners to retire high risk land from productive use, that includes ongoing management of retired lands or the transfer of such lands into central/local Government management.

Please see Appendix 7 & 11 for more detail on these proposed solutions.



5. Landscape Management

Problem statement: The landscape is vulnerable regardless of the land use, so we must work together to implement solutions to better manage the landscape and its uses, across all land users.

Proposed Solutions

Immediately (in the next 12 months)

• Adoption and implementation of Eastland Wood Council Catchment Management Good Practice Guide. This guide has been prepared with the input of EWC members, to guide best practice for catchment management. The guide is currently in final draft and ready to be launched.

Short term (next 1 - 2 years)

- Determine environmental and socially appropriate alternate land use/cover on a property and catchment scale.
- Identify areas to be retired from plantation forest land use and vulnerable to deposition from forest discharges.
- Development of landscape level risk mitigation through enabling catchment level discussions, collaboration and direction with neighbours and other key stakeholders.

Medium and long term (3 - 10 years)

• Continue to develop in catchment management practices as learnings are gained though alternative land use, as outlined in appendix 11.

Please see Appendix 8 & 11 for more detail on these proposed solutions



6. Market and Processing

Problem statement: There is currently no viable market for woody debris. The current business environment negatively impacts the viability of expanding the wood processing sector and/or the development of value adding processing of harvesting waste.

Proposed Solutions

There are a range of possible actions/interventions that would contribute to a business environment that attracts investment into downstream processing of forest produce, including harvest waste. The Industry Transformation Plan presents the greatest opportunity to coordinate the relatively complex range of intervention required to actively promote and support industry transformation.

These proposed actions are detailed in Appendix 6.



7. Inherent / Persisting Risk

Problem Statement: The nature of the land presents an inherent risk of failure which will persist. Debris and sediment mobilisation, especially in storm events, will never be eliminated. The expectations of the public for future rainfall events needs to be managed and the role of forestry as a legitimate productive land user recognised.

Proposed Solutions:

- Government support to:
 - Establish a working group that includes forestry, government, GDC reps to work on solutions together.
 - Ensure local government planning effectively and equitably manages the inherent risks of the land through the relevant regulatory regime.
 - Crown funded research is operationalised through ministries to provide effective tools to manage geological and hydrological risks for both local government and private landowners.
 - Government implements a Just Transition process that allows landowners to retire high risk land from productive use or residential use. This will need to include ongoing management of retired lands or the transfer of such lands into central/local government management.
 - o Develop resilient future proofed infrastructure and include risk in civil crisis management planning.
 - Disseminate information and social the challenge relating to persistent risks facing downstream communities.
- Build Resilience together by:
 - Establish an EWC working group to manage beach clean-up.
 - o EWC to develop plan outlining steps to be taken prior to forecasted storm hitting.
 - Establish a memorandum of cooperation with GDC to work together on wood debris solutions and collaborate on development projects for mutual benefit.
 - Improved collaboration with GDC.

Please see Appendix 10 & 11 for more background on this issue and EWC's proposed solutions.



Conclusion

Thank you for your time to receive and review this submission from Eastland Wood Council - Te Kaunihera Pororakauo Te Tairāwhiti in conjunction with its members.

While our forests in Te Tairāwhiti are constantly cleaning the air we breathe, providing shelter, helping to prevent erosion, and growing in value, as a sector we recognise that we have lost our social license to operate.

Social license refers to "the ongoing acceptance and approval of an industry's operations by local community members, and other stakeholders that can affect its profitability".

"Despite demonstrable economic, social and environmental benefits, pine plantations are sometimes perceived as damaging to soils, fresh water, biodiversity, and rural farming communities" (Jones et al).

Misinformation around the effects and risks of plantation forestry have been around for as long as plantation forestry has been in New Zealand. However, anti-forestry rhetoric has increased in response to the impact of the ETS with the benefit of social media.

The Eastland Wood Council is committed to collaborating with central and local government in the spirit of goodwill to help establish reasonable expectations for the ongoing management of these highly erodible and unstable lands, especially as plantation forestry is to remain a land use option for Tairāwhiti.

In conclusion, the nature of the land in Te Tairāwhiti presents an inherent risk of failure that will persist regardless of land use practices. Mitigating these risks will require a coordinated effort together with; iwi, mana whenua, other landowners, Gisborne District Council, Trust Tairāwhiti, government agencies and stakeholders.

This will need to include retiring land from productive use where the risks of slope failure cannot be mitigated, not building on high-risk flood plains and overland flow paths and developing community based response plans.

The writer is available at your convenience if you require any clarification on the points raised in this submission.

Naku noa na

Te Whanau o Ruataupare te hapu Te Aitanga-a-Hauiti te iwi Ngati Porou te iwi

Philip Hope Chief Executive Officer Eastland Wood Council Phone 021 959 450 philip@eastlandwood.co.nz



Attachments

- Appendix 1: About Eastland Wood Council
- Appendix 2: Land use in Te Tairāwhiti
- **Appendix 3: Agreed Facts**
- **Appendix 4: Discharges**
- **Appendix 5: Regulatory Environment**
- Appendix 6: Sustainable Transition
- Appendix 7: High Risk Sites
- **Appendix 8: Landscape Management**
- **Appendix 9: Market and Processing**
- **Appendix 10: Inherent / Persisting Risk**
- **Appendix 11: Proposed solutions**



Appendix 1: About Eastland Wood Council

Our Kaupapa, Our Mission

Eastland Wood Council - Te Kaunihera Pororakauo Te Tairāwhiti is an incorporated society which provides a collective voice for the forestry industry in Tairāwhiti.

Our Philosophy

Eastland Wood Council members are proud to be part of the Tairāwhiti community. Our biggest priority remains the health, safety and wellbeing of our workforce and their families. This includes investing in our people and developing the next generation of leaders, by facilitating forestry training and providing visible career pathways.

We acknowledge production forestry has a key role to help transform our region into a carbon-neutral economy, where all land-based industries are environmentally sustainable.

EWC members represent more than 130,000 hectares of production forestry (not to be confused with permanent carbon forestry). EWC members reflect the supply-chain and include: forestry companies, forestry managers, contractors, trucking organisations, Eastland Port, ISO (stevedoring), timber mills and export.

EWC members represent approximately 80% of production forestry in Te Tairāwhiti. The other 20% of production forestry is made up of a range of different forestry blocks owned and managed independently (some are farmers). GDC will have details of who these other forestry landowners are, where the forestry blocks are located and when they are harvesting.

Planted forestry makes up just 20% of total area in Te Tairāwhiti. EWC does not employ forestry workers, nor do we own or manage forestry blocks. We are aa representative voice for the sector.

Forestry industry harvest volumes (wood availability forecast) are predicted to exceed four million tonnes in the next 2 - 5 years and our members have been planning the significant labour growth required to meet this increased harvest.

What We Do - The Eastland Wood Council, on behalf of its members:

- 1. Lobbies government, regulators, authorities, and non-governmental groups on aspects that are important to the forest industry in Tairāwhiti.
- 2. Provides advocacy for the forest industry.
- 3. Coordinates focus groups to guide positive outcomes for the forest industry in Tairāwhiti.
- 4. Provides proactive promotion of aspects important to the forest industry.
- 5. Coordinates emergency response for the forest industry in Tairāwhiti.
- 6. Provides media liaison for the forest industry in Tairāwhiti, including social media.
- 7. Determines strategies and actions to maintain and improve social licence.
- 8. Is a source of collective data on the forest industry in Tairāwhiti for legitimate organisations both external and internal to the industry.



What Eastland Wood Council requires of members

As members of Eastland Wood Council, we:

- 1. Manage our business according to the Agreed Code of Practise for Safety and Health in Forest Operations (ACoP) and Eliminating Drugs and Alcohol from the Workplace Code of Practise for NZ Plantation Forestry.
- 2. Manage our business according to the NZ Environmental Code of Practise for Plantation Forestry (ECoP).
- 3. Subscribe to the principles of the NZ Log Transport Safety Accord and the NZ Forest Accord.
- 4. Actively promote the recruitment, training, and retention of forestry industry employees.
- 5. Are a responsible and proactive member of the Tairāwhiti community.
- 6. Uphold high ethical standards in business, community, and social interactions
- 7. Take accountability for our actions and inactions.
- 8. Work individually and collaboratively to improve the standards applied to the forest industry in Tairāwhiti.
- 9. Promote and support the practise and the business of forestry nationally.
- 10. Cooperate and collaborate with all EWC members, through the forum of the EWC, to strengthen and improve the business of forestry, forest practices and the positive image of the forest industry in Tairāwhiti .
- 11. Promote the holding of national and international certification of health, safety, and environmental management (e.g., FISC, SafeTree).

Workforce Development

The EWC is dedicated to supporting training and education initiatives that will help build capacity and resilience with the forestry industry and other primary industries.

Generation Programme - Whakatipua to tatou iwi

Since the generation programme was launched by EWC in October 2018 (in conjunction with training provider Turanga Ararau), this workforce development initiative has enrolled more than 100 trainees. At least 70 trainees have achieved NZ National Certificates in Forestry level 2 and/or level 3. The majority of these young leaders have also been awarded NCEA. 65 have gone on to secure 'apprentice type employment' in the forestry industry and the majority of others have gained work in other primary industry.

The Tairāwhiti Road Transport Recruitment & Training Programme (TRTP)

Eastland Wood Council led this important driver development programme, in conjunction with the heavy vehicle industry and MBIE to take a planned approach with; recruitment, training and placing heavy vehicle drivers into employment. EWC's TRTP has trained 294 heavy vehicle drivers which provide diversity and resilience to the heavy transport sector in Te Tairāwhiti . Every industry has benefited from this important driver development programme, including the forestry supply chain which has recruited a further 91 drivers into the forestry industry.



The Forestry Industry is a Key Driver of the Economy in Tairāwhiti

- 1. Further analysis of Facts & Figures 2019/2020 has enabled EWC to obtain a report specific to Te Tairāwhiti
 - a. Forestry represents the largest GDP by industry for our region (\$253 million) for year ending March 2019.
 - b. Forestry export revenues through Eastland Port totals \$438,808,547 for year ending March 2020.
 - c. East Coast and Hawkes Bay together supply and manufacture the second largest volume of sawn timber in New Zealand (493,436 cubic metres)
 - d. The forestry industry in Gisborne employed 1072 FTE's for the year ending March 2019
 - e. The primary industries support services in Gisborne employed 1294 FTE's for the year ending March 2019
- 2. We also acknowledge the significant contribution the forestry industry makes to Trust Tairāwhiti and the community groups that exist because of this philanthropic income.
 - a. In the 12 months to March 2021, Eastland Port's share of 2021's dividend to Trust Tairāwhiti was \$4.4 million. This was 50 percent of the dividend distribution of \$8.8 million. There is another \$1.2 million distribution which is Eastland Ports capital note interest that is paid at Group level.¹
- 3. The forestry industry in Te Tairāwhiti also contributes .33 cents per tonne for all logs harvested; to the NZ Forest Growers Levy Trust. In round figures this equates to approximately \$1 million dollars per year which is used to fund industry R&D programmes and resource important health & safety initiatives.²

¹ <u>https://www.gisborneherald.co.nz/business/20210805/eastland-group-rebounds/</u>

² Forest Growers Levy Trust figures, available: <u>https://www.fglt.org.nz/levy-statistics</u>



Appendix 2: Land Use In Te Tairāwhiti

Planted forestry makes up just 20% of total area in Tairāwhiti, as broken down:³

- 1. Total Area; approximately 819,000 hectares in the District Valuation Roll. This is all assessments +23,000
- 2. Pastoral; approximately 491,500 hectares classed as Pastoral in the District Valuation Roll = this includes ineffective and any planted forestry areas on the farms.
- 3. Pastoral effective; approximately 345,416 hectares classed as Pastoral effective in the District Valuation Roll.
- 4. Planted Forest; approximately 163,156 hectares classed as planted forestry in the District Valuation Roll. Includes farms or 140,000 ha excluding farms.
- 5. Horticultural area; approximately 7,425 hectares classed as Horticulture effective (gross total 8,031ha) in the District Valuation Roll. Adding Arable plus Horticulture classification in takes it to approximately 9,918ha effective (11,000ha gross).
- 6. Area in native; approximately 237,509 hectares classed as ineffective area in mostly bush and scrub-lots reversion in the District Valuation Roll.

Land Use

Forest export returns per hectare are, on average, half as much again as from pastoral farming. This is despite most of the forests growing on inferior hill country land.⁴

Area and Volume

An average pinus radiata tree yields 2.4m3 of wood at harvest.

A hectare of 28-year-old Pinus radiata contains between 650 and 800m3 of wood.

One hectare grows up to 28m3 of wood each year.

A log truck and trailer carries approximately 30 tonnes of logs (some trucks are rated and permitted to carry loads of up to 53 tonnes on specified routes).

Climate Change⁵

Planting trees and forests is one of the best immediate responses to climate change.

Sustainably grown trees capture carbon dioxide from the atmosphere and the carbon is stored in the forest biomass. Wood products and buildings continue to store carbon over their lifetime.

Trees also provide energy alternatives that can substitute for fossil fuels.

Timber and other wood products are low carbon-footprint materials compared with concrete and steel.

Export

A log ship contains approximately 30,000 to 35,000 tonnes of logs. By weight, the ratio of carbon to oxygen in carbon dioxide is 1-2.66

Employment

Plantation forestry is a significant industry in the Gisborne District - directly employing 17.3% of those working in primary industries and generating 11.4% of the gross domestic product of the District.⁶

⁴ Plantation Forestry Aotearoa - Forest Growers Levy Trust

³ Most recent land use reported by Lewis Wright Valuation and Consultancy Ltd (Gisborne District Councils Valuation Service Provider). The date of the District revaluation was 1 September 2020.

⁵ Planted forests and carbon - Scion Research - published by NZFOA

⁶ Human capability in the primary industries: Part 2 2015 to 2019 - Qualification analysis by region mpi.govt.nz; and <u>https://www.stats.govt.nz/information-releases/regional-gross-domestic-product-year-ended-march-2020</u>



Appendix 3: Agreed Facts

EWC has identified the below points of fact, upon which our comments are based.

- Te Tairāwhiti is characterised by highly erodible and unstable lands.
- Te Tairāwhiti has a long history of major storm events, including cyclones, which have had significant downstream impacts on local communities and infrastructure.
- The future is unlikely to be any different with climate change predicted to an increase the frequency and intensity of severe weather events in the Region.
- Afforestation is recognised as an effective tool in stabilising these fragile soils and reducing erosion and landslide risk. This underpinned past land management decisions in the region.
- The establishment of the majority of the pine plantations were promoted by local and central Government schemes aimed at minimising ongoing erosion and instability and to allow for ongoing productive use of the land.
- Storm events mobilise all manner of debris including rock, river aggregate, soil, woody debris (native, plantation, erosion control plantings, and riparian trees), fencing, vehicles, structures etc. These are deposited on floodplains, along river valleys, and in the coastal marine area.
- There are limitations to the extent afforestation can mitigate the impact of major storm events.



Forestry Facts Land use Area & volume **Climate change** An average pinus radiata tree yields 2.4m3 of wood · Planting trees and forests is one Forest export returns of the best immediate responses to per hectare are, on at harvest. climate change. average, half as · A hectare of 28 year-old · Sustainably grown trees capture much again as from pastoral farming. Pinus radiata contains carbon dioxide from the atmosphere between 650 and 800m3 and the carbon is stored in the forest This is despite of wood.

· One hectare grows up to

28m3 of wood each year.

· A log truck and trailer

30 tonnes of logs (some

permitted to carry loads

carries approximately

trucks are rated and

of up to 53 tonnes on

specified routes).

Forestry for life

most of the forests

growing on inferior

(reference - Plantation

Growers Levy Trust).

Forestry Aotearoa - Forest

hill country land

biomass. · Wood products and buildings continue to store carbon over their lifetime.

 Trees also provide energy alternatives that can substitute for fossil fuels.

· Timber and other wood products are low carbon-footprint materials compared with concrete and steel (reference - Planted forests and carbon -Scion Research - published by NZFOA).

Export

· A log ship contains approximately 30,000 to 35,000 tonnes of logs. · By weight, the ratio of carbon to oxygen in carbon dioxide is 1-2.66.

Wood exports by destination

China Australia Japan South Korea India United States Indonesia Thailand Vietnam

> Store carbon in forest biomass

Philippines Taiwan Hong Kong Malaysia Saudi Arabia Netherlands Other countries (Reference - Facts & Figures 2020/21)

Eastland

Wood Council

rākau o Te Ta

A

hera Po



Store carbon

in long lived wood products

Offset GHG emitting livestock

> Substitute for GHG intensive materials such as steel and concrete

Substitute for liquid fossil

fuels and coal



Appendix 4: Discharges

Background

It is hard to identify a set threshold of rainfall that will trigger a landslide, but it has been noted that, generally, an excess of 200mm over a few days leads to "significant regional land sliding events in New Zealand soft-rock hill country".⁷ Once triggered, landslides and subsequent debris flows can rapidly become heavily laden with soil and woody debris, with a transporting power to their size.⁸ These debris flows can occur on any susceptible land use type including pasture and forested land to varying extents. Debris flows from commercial pine plantations contain many sources of woody debris, including younger trees in their entirety as is also seen to occur in native forest, and older trees that have blown over for reasons not associated with harvesting and harvesting residue (slash).

These discharges can be placed into 4 categories in terms of defining specific problem statements to overcome the challenges faced:

- 1. Sediment.
- 2. Woody debris from both native and exotic tree species unassociated with harvesting operations
- 3. Harvesting debris associated with plantation forests.
- 4. Harvesting waste.

⁷ Landslide Hazard and Risk at 522.

⁸ 2018 Marden Report at 22, and Michael Marden, Donna Rowan, and Alex Watson "Effect of changes in forest water balance and inferred root reinforcement on landslide occurrence and sediment generation following Pinus radiata harvest on Tertiary terrain, eastern North Island, New Zealand" (2023) New Zealand Journal of Forestry Science 53:4 <u>https://doi.org/10.33494/nzjfs532023x216x</u> at 13.



Appendix 5: Regulatory Environment

Background

The deterioration in relationship between the forestry sector in Tairāwhiti, and Gisborne District Council, has largely resulted from the enforcement process that was undertaken post the 2018 high rainfall events. It has become impossible for the Forestry sector to implement innovations and solutions. Various attempts have been made by members of the Eastland Wood Council to create dialogue and opportunities to engage between both parties, but these often fail.

The resource consenting process is challenging in the Tairāwhiti Region. GDC contract out much of the forestry consent applications to out of town consultants who are often lacking knowledge of fundamental forestry activities, the Tairāwhiti Resource Management Plan and unique Tairāwhiti landscape, and this issue is multiplied by GDC staff not knowing the NES-PF and the confusing interface this legislation has with the Tairāwhiti Resource Management Plan.

Gisborne District Council consent conditions have largely remained unchanged for the last 10 years.

Additional conditions have duplicated verbatim NES-PF regulation as consent conditions. Many conditions have been ultra vires and are out of scope. There has been no efficiency and effective analysis of consent conditions and it is unclear how current consent conditions would achieve a different outcome over and above that of the regulations in the NES-PF. Eastland Wood Council has been attempting to engage GDC with a review of forestry resource consent conditions. This has been ongoing for more than five years, with the process currently stalled due to the resignation of a key GDC staff member in September 2022.

There is limited capacity and industry experience of the GDC to undertake compliance monitoring. Monitoring visits are sporadic and compliance reports can take in excess of one month to receive post visit. Feedback subsequent to compliance inspections adds limited to no value to improve performance outcomes.



Appendix 6 - Sustainable Transition

Background

The majority of plantation forests in the Gisborne Region and Wairoa District were established by the Government or under Government funded schemes in response to significant land erosion and slope failures.

The forests were established for soil and land conservation purposes as well as to bring long term economic wellbeing. By in large, the forests have delivered these outcomes, however they are not resilient to increasing severe and cyclonic storm events and many land failures have led to unacceptable social outcomes.

With hindsight and to respond to the needs of the whenua, a transition from plantation forest use to another land use/cover is required in some areas, and should be one that is a sustainable transition; fair, equitable and inclusive, and supported by Government and Government agencies.



Appendix 7: High Risk Sites

Background

As well as providing soil and land conservation, along with other environmental benefits, forests that have been established in the Tairāwhiti area were promoted as sustaining long term economic prosperity for the Regions. Large areas of land were planted quickly and to the standards of the day. Trees were planted right to edge of streams and rivers and on very steep, unstable slopes – without thought of how they would be harvested. These practices, which are no longer in place today, were based on the scientific advice and to the standards of the time.

These forests and their legacy plantation practices pose a number of challenges for forest managers

The timing and rate of harvest to meet market requirements and the capability of harvesting equipment pose challenges. Leave them too long and the trees get too big to be harvested, posing an escalating risk.

The steep, often broken landscape often requires an extensive and uneconomic roading and landing network, with its own inherent risks, to reach all planted areas, including;

- Trees that have collapsed into and across rivers and streams as a result of wind throw, toppling, or undercutting riverbanks.
- Highly unstable slopes that, as decision tools become available or as regulation requires, will see areas not harvested.

Ultimately, trees will be left unharvested raising concerns over the ongoing management of these areas especially where the underlying soils cannot support very large trees – especially in storm events. Equally, there will be areas that are harvested that will not be replanted either due to difficulties in harvesting, riparian setbacks, or the risk of or actual slope failure.

While the development of the transition process and the implementation of the support could be delivered in a short to medium timeframe, the retirement and ongoing management of high risk lands will be long to very long term with the full transition to stable multi-species indigenous forest taking decades.



Appendix 8: Landscape Management

Background

The forestry industry in the Tairāwhiti/Gisborne and Wairoa districts are confronted with some relatively unique catchment scale challenges. Large areas of high-risk erosion prone land were planted as part of a wider soil conservation programme.

It is now better understood for pine plantation forest on steep and erodible land, also susceptible to slope stability failures, that the period after harvest and before canopy closure of next tree crop creates a 'window of vulnerability', whereby landslides are coupled with wood residues.

The need for foresters to adopt practices that recognise catchment level issues has been clearly highlighted by a series of weather events that have caused catchment scale impacts from soil and woody debris migration.

However, reducing impacts on downstream properties will not result through a catchment-by-catchment approach from forest owners alone. There needs to be whole landscape planning undertaken to manage the interaction and risk mitigation strategies at a landscape level.

There have been a number of mitigations implemented by EWC members already, which are outlined below. These changes, implemented since the 2018 storms, have had an impact on improving resilience inside the forestry gates.

Fore	est Industry action underway	Additional suggested Government/Council Intervention
•	ore stringent catchment management planning: Managing the extent of clearcuts - Limiting clearcut	Enable carbon credit opportunities for pre 1990 forest on high erosion land.
• •	and staging harvests in a larger catchment. Leaving mature trees to help trap slash. Constructing Slash Traps.	· Facilitate landscape planning with neighbours, iwi and stakeholders.
pote	Evaluating Slope Stability when Planning (aspect, e gradient, slope length, stability, risk of landslides, ential amount of harvest residues, gradient of gullies connectivity to water bodies).	 Take ownership (rather than promote, then prosecute), planning policy, public relations like the soil conservation programme early 1990s. Risk Management Planning
Pla	nting new land and/or replant.	 Forward risk management planning for
harv asse •	best long-term strategy to mitigate catchment risks of rest residues migration is through better risk ssment at time of planting forests. Planting live harvest residue traps in non-	natural deposition of silt and debris. Identify and transition high risk sites and infrastructure. Socialise plan with community.
prod	luction species. the use of coppicing species	
•	or in some circumstances retirement.	



Appendix 9: Market and Processing

Background

There is currently no viable market for woody debris in the Tairāwhiti area. Depending on harvest method, it is estimated that 3-7% of woody material extracted from the forest to landings is not utilised and is left on site as harvesting waste. This results in large volumes of readily accessible feedstock. This volume of material would likely increase if there a was viable market.

Over the past 6-years there have been numerous visits by prospective investors to the region. Some have progressed with detailed due diligence; others have quickly stopped investigations. A range of products have been considered, including:

- woodchips,
- charcoal and activated carbon,
- wood pellets,
- fencing poles,
- and engineered sawn wood products.

Contributing factors

For a range of reasons including the following factors, these have not progressed.

This includes:

- Low product value.
- Fragmented nature and geographical spread of feedstock.
- Regular but relatively small volumes available per collection, making existing loading and transport inefficient.
- Poor infrastructure and infrastructure resilience, impacting transport cost and risk.
- Lack of suitable infrastructure to facilitate cost efficient transport;
 - Port/shipping capacity
 - o Rail
- Long term supply security related to tenure, ownership and ETS options.
- Lack of or limited industry ready zoning in proximity to feedstock. (e.g. Ruatoria)
- Limited services such as power and water in proximity to feedstock.
- Skills and labour shortage in the region.



Proposed Solution Matrix

Factors preventing the development of a viable market for woody debris and some possible solutions, or parts thereof are outlined in the table below.

Factor	Possible :	Solutions
	Forest Industry	Government
Low product value	 Industry collaboration to aggregate supply and develop a viable product offering to a market. 	 Government policy instruments to protect and develop local processing/value adding industry. Tax holidays, Subsidies, penalties for pollution, rebates for processed volumes etc. EECA support for bioenergy plants located throughout the region
Fragmented nature and geographical spread of feedstock	Collaboration and workshop to develop tangible data on locations and volumes over time.	Conduct industry study into volumes over time.
Regular but relatively small volumes available per collection, making existing loading and transport inefficient.	 Industry collaboration to consider/develop a level of supply commitment in order to facilitate bespoke infield and local transport or alternatively currently available transport solutions. 	
Poor infrastructure and infrastructure resilience, impacting transport cost and risk.	 Industry collaboration to provide forecast volumes and road use to council to facilitate focus on specific routes. Make road construction and maintenance resources available for use on council infrastructure. Provide and develop options for metal extraction at a local level to reduce aggregate transport costs for make aggregate available for local road use. 	 Improve efficiency of road maintenance spend. Future and long-term planning to incorporate traffic volumes as a function of Capital upgrades or new route/infrastructure spend. Undertake preventative maintenance on infrastructure. Provide and facilitate local metal extraction consents. Reconsider road maintenance contract model.
Lack of suitable public infrastructure to facilitate cost efficient transport: Port/shipping capacity		 Expedite planned port expansion. Consider overhead, overland, oversea conveyor facility into the bay. Develop coastal shipping capacity Consider shipping/export facilities at Tolaga Bay, Tokomaru Bay, Hicks Bay, Te Araroa



Lack of suitable public		Reconsider rail network
infrastructure to facilitate		expansion, repair, upgrade.
cost efficient transport: Rail		Consider upgrading rail into
		Eastland Port.
Lack of or limited industry		Proactive zoning to provide for
ready zoning in proximity to		development.
feedstock. (e.g. Ruatoria)		Expedite development
		consenting.
Limited services such as		Proactive expansion of
power and water in		networks to facilitate services.
proximity to feedstock.		Consider Co-gen plant
		development on the East Coast.
Long term supply security	• Industry commitment to market.	Expedite the ITP process
related to tenure, ownership		Improve the forestry narrative
and ETS options.		through supportive media statements.
		Communicate plans to reduce
		insecurity.
Skills and labour shortage in	Increased focus on	Investment in tertiary and skills
the region.	mechanisation.	training.
	• Increased focus on automation	Expedite residential zoning and
	and robotics.	consenting to make housing affordable.
	• Increased focus on mechanizing	
	manual labour work and upskill these	
	workers.	



Appendix 10: Inherent / Persisting Risk

Background

The Te Tairāwhiti district landscape consists predominantly of steep hill country, coastal plains, and river valleys. The nature of the land presents an inherent risk of failure that will persist regardless of the land use.

A significant factor contributing to failure risk is the region's geology. The land is characterised by a mix of sedimentary, volcanic, and metamorphic rocks that are prone to landslides, erosion, and soil instability.

For example, the Waiapu and Waipaoa Rivers carry the most sediment in the North Island, transporting 39.6 Mt/y and 9.9 Mt/y, respectively (NIWA, 2019). Their combined load represents 44.8% of the North Island load and 27.3% of the national load (NIWA, 2019). Detailed studies in the Waipaoa catchment at East Cape have estimated that the pre-human sediment load was only about 15% of the contemporary load, with most of the increase occurring following European deforestation (NIWA, 2019).

Erosion and landslip risk is exacerbated by land use practices. For example, the development of intensive farming in the region involved clearing indigenous vegetation for pasture land which lead to soil erosion and increased water runoff. This, in turn, led to landslides, riverbank erosion, and other forms of land degradation.

In response, successive Governments sponsored afforestation programmes that resulted in much of the Region's plantation forests. These forests were often planted within a very short time and, consequently, are being harvested over an equally short time - creating a new risk of erosion and slope failure in harvested areas or areas of young trees.

However, as Cyclone Gabrielle and preceding events showed, slope failure has not been restricted to harvested areas or young trees with both indigenous and areas of pine trees greater than 10 years of age subject to slope failure. This reflects the inherent risk and history of the land.

The largest population concentration in the region is situated in Tūranganui-a-Kiwa Gisborne with Tolaga Bay and Ruatoria being the next largest concentrations. These population centres are clustered around major rivers so that most people in the region live in or adjacent to flood plains which increases the risk of damage to homes during intense weather events.

Rivers not only spill onto flood plains, it is where debris and silt is deposited - which is what creates the fertile flood plains that agriculture and horticulture often rely on. However, as history shows, these plains come with inherent and persistent risk that requires major engineering works to mitigate - works that provide unjustified levels of comfort for many leading to investments in buildings and infrastructure. The inherent risks of these decisions is either not recognised or is significantly discounted.



Appendix 11: Potential Solutions

Internal to Plantation Forests (green text) - for immediate neighbour/ community (blue text) - both parties (black text)

Government support	Benefits	Risks	Integration
1. Improved Harvesting Practices to reduce the waste material able to be mobilised in severe weather events. This includes the following already in place None. BAU and already current practice. • Rehabilitation of landings place • None. BAU and already current practice. • Rehabilitation of landings place • None. BAU and already current practice. • Rehabilitation of landings place • None. BAU and already includes the following already in place • Rehabilitation of landings place • None. BAU and already includes the following already in place • Rehabilitation of landings place • None • Rehabilitation of landings place • None • Rehabilitation of landings blace • None • Pre-bunching to reduce breakage • Pre-bunching to optimal extraction lines.	Reduced material left in forest that can be mobilised.		



Resilience	
support research and trials through Te Uru Rakau or other Forest Industry organisations like FGR (Forest Growers Research). Increased investment in harvesting and engineering technologies to overcome the current trade-off between health and safety and environmental outcomes	Acknowledgment that Industry is making considerable positive steps to reduce risk.
 Improved Engineering tractices to reduce the likelihood of widespread infrastructure failure leading to woody debris mobilising in severe weather events. This includes the following already in place, which could be supplemented by further financial support for research: Harvest Planning improvements e.g. geometric engineered design for all road and landing builds Grass seeding of exposed disturbance Earthworks quality/standards Compaction of fill Reduced sidecast and unmanaged fill. Increased use of slope maps/terrain modelling 	Improved 'other' forestry Practices to reduce the waste material able to be mobilised in severe weather events. This includes the following already in place • Overshowing cutover • Living and mechanical slash catchers
Discharges High Risk land Land management	3. Discharges High Risk land Land management



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Enable carbon credit opportunities for pre 1990 forest on high erosion land.	Facilitate integrated	landscape planning with neighbours, iwi and	stakeholders.	Take ownership (rather than promote then prosecute)	planning policy, public	relations like the soil	early 1990s. Pick Management Planning		Forward risk management planning for natural	deposition of silt and debris.	Identify and transition high	risk sites and infrastructure.	Socialise plan with	community.						
 Development and Implementation of Catchment Management – Good Practice Guidelines, which cover: 	 Catchment management planning 	Managing the extent of clearcuts - Limiting clearcut size, and	staging harvests in a larger catchment.	 Leaving mature trees to help trap 	Constructing Slash Traps.	Evaluating Slope Stability when	slope length, stability, risk of	iandslides, potential amount of harvest residues, gradient of	gullies and connectivity to water hodiae1	 Planting new land and/or 	replant. The best long-term strategy to mitigate catchment	risks of harvest residues	migration is through better risk	forests.	 Planting live harvest residue 	traps in non-production species.	 the use of coppicing species 	 or in some circumstances 	retirement.	
4. Discharges Land	Management High risk land																			

Timeframe	Area	Solution	Government support	Benefits	Risks	Integration
Immediately	Discharges	1. Identify areas to be retired from	Modelling	Community	Delay in modelling	Community
(in next 12 months)	High Risk sites Sustainable	plantation forest land use and vulnerable to deposition from forest	Mapping	understanding of the process and project	and mapping	resilience
	Transition	discharges* (traditional approx. 30-		and the need for a	If modelling and	Operationalising
	Land Management	year rotation of Pinus radiata).	Consultation and collaboration with	Just Transition	mapping not adequately	research
		The areas to retire could include:	stakeholders	Independent	resourced, it could	Meaningful
		 skeletal soils, 		modelling and	be sub-optimal.	Partnerships
		 areas impossible to harvest without significant 	Communication – regular, timely, with all stakeholders	mapping	This could be partially off-set by	Innovation
		environmental damage/inability		Stakeholder	ground truthing.	
		to manage slash,	Financial and/or in-kind assistance	collaboration and		
		harvested for safety or access				
		reasons,	Indemnity from prosecution	Just transition with		
		 areas where soil strength would 	based on failures of the land	fair and equitable		
		fail under a heavy crop,	and discharge of sediment,	allocation of costs		
		areas that had a very high	woody debris and slash from	and benefits		
		susceptibility of land-sliding with	ne areas to be retired	Ability to make		
		connectivity to waterbodies	Commitment from GDC to	changes for the		
		The areas unhorable to forest directored	support transitional	better, without fear		
		should be manned and resilience building	strategies.	of prosecution and		
		mechanisms identified.		resource expenditure		
			Consultation and	to no material		
		These measures could include:	collaboration with	environmental or		
		 identification of 	stakeholders/communities.	social benefit		
		infrastructure/investments that is				
		at risk	Support research and trials			
		 relocation of 	through le Uru Kakau or			
		dwellings/infrastructure	other Forest Industry			



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	Not all catchments will have areas where these can be installed and maintained regularly.	GDC does not take a supportive position and continues to believe that regulation and prosecutions will solve the problem.
understanding of the process and project Action on the ground Stakeholder collaboration and consensus		
trial and integrate research into practices e.g. proven ground cover species to be oversown after harvest. Technology for cleaning out waterways. Contractor and employee training. Support Contractors to transition old or unsuitable harvesting equipment	Commitment from GDC to remove regulatory barriers to implementation	
 practicable (e.g., stop bank) identification of where mitigation would be best undertaken on land that is not forest land or in forest ownership (e.g., wetland development, living slash fences) *Any areas identified by modelling and mapping must be ground truthed to ensure integrity of data and acceptance to stakeholders, Council and Crown 	 Reduce regulatory barriers that enable slash nets & other mitigants to be expedited. 	
	Discharges High Risk sites Land Management	
	Immediately (in next 12 months)	

Immediately (in next 12 months)	Immediately (in next 12 months)	Immediately (in next 12 months)
High risk land Land Management	Regulatory Environment	Regulatory Environment
ف		œ
Identification and assessment of exiting risk assessment tools and, where lacking or further refinement required, commissioning of further work.	Meaningful relationship development between GDC and EWC – similar to Hawkes Bay forestry group model	Review of resource consent conditions
Urgency to the completion and implementation of the NES-PF one year review recommendations - support for councils with specific guidance and training on forestry activities		
	Upskilling regulators & foresters – field days – operational policy Research and technology adoption	Solutions focused Focussed resource consent conditions that are meaningful and enforceable, commensurate with the effects of the activity. Ability to amend consent conditions as we learn more / allow for innovation
	No consensus on process and support mechanisms Process derailed by extreme views/positions and/or unachievable expectations	Lack of robust tools to support process delaying timeframes. Delay in review impacting needed changes now. Staff retention / experience / education and consistency

Timeframe	Area	Solution	Government support	Benefits	Risks	Integration
	1	[Timeframe contingent on robust risk assessment tools being available.]				
Short term (next 1 – 2	Discharges High risk land	 Identify areas to be retired from plantation forest land use and 	Modelling	As above and	As above and	Transition of forests to
years)	Sustainable Transition	<pre>vulnerable to deposition from forest discharges * (traditional approx. 30- year rotation of Pinus radiata).</pre>	Mapping (LUC and Landslide Susceptibility at more granular level than 1:50,000)	Options are available, supported by research	Crown or council could choose not to be part of the	indigenous species
		*Any areas identified by modelling and mapping must be ground truthed to ensure integrity of data and acceptance to stakeholders, Council and Crown		Support mechanisms are enabled and appropriately funded.	solution (consider Crown involvement in Matata, post Canterbury Earthquakes)	Community resilience
Short term	Discharges	2. Determine environmental and	Research into viable	Just transition is		
(next 1-2 years)	Sustainable Transition	socially appropriate alternate land use/cover on a property and	alternate land use/cover	enabled And all parties are		
		catchment scale.	Consultation and	aware of what		
			collaboration with	support mechanisms		
		Alternate land use/cover could include:	stakeholders	are available.		
		 Longer rotation production 				
		species	Communication – regular,	Ability to make		
		 Retirement and transition to 	timely, with all stakeholders	changes for the		
		indigenous vegetation		better, without fear		
		 Retirement and planting with 	Financial and/or in-kind	of prosecution and		
		alternate non-production species	assistance	resource expenditure		
		- e.g., crows nest poplar		to no material		
		 Abandonment 	Fiscal budget from Crown	environmental or		
		 Use of temporary fencing vs 		social benefit		
		permanent	Willingness and commitment	And and a second se		
		 Retain current tree cover and 	from Crown and Council	Stakeholders are		
		convert to carbon forest only		informed and		
			Indemnity from prosecution based on failures of the land	engaged in the proiect		



vill remove and discharge of sediment, woody debris and slash from the areas to be retired	iisms to he e to the (and g. fair ? justice, Te	iclude: ve changes ource	o support uding as	tive'	uisition of	of retired	est owners	do	idowner for s of land	liability	up the land	
Note: none of these options will remove liability in the event of subsequent discharges of slash, woody debris and sediment.	 Identify support mechanisms to support transition from the plantation forest land use to the alternate land use/cover (and underlying principles – e.g., fair opportunity, comparative justice, Te Ao Mãori). 	Support mechanisms could include: Equitable and effective changes to the Tairāwhiti Resource 	Management Plan to support land use change including 'enabling' regulation as	compared to 'restrictive' regulation	Council / Crown acquisition of land	Caveat/covenanting of retired land	Compensation to forest owners	for loss of value of crop	 Compensation to landowner for loss of economic use of land 	 Indemnity from ETS liability 	 Incentives to speed up the land 	use/cover change.
	Discharges High Risk Sites Sustainable Transition Inherent and Persistent risk	L										
	Short term (next 1 – 2 years)											



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				Staff retention / experience / education and consistency
				Focussed resource consent conditions that are meaningful and enforceable, commensurate with the effects of the activity.
				Resources allocated to forming regional planning and monitoring resource dedicated to Forestry activities
 Tiriti o Waitangi Settlements for areas identified as not suitable for plantation forest. Financial incentives to transition high risk land to alternative land use than pine plantations. Support local native tree nurseries to scale up. 	 Enable Efficient and Coordinated collective Regional Response to large storm events that see woody debris mobilise. 	Development of equitable model of costs across ALL contributing land uses.	 Development of Landscape Level Risk mitigation through enabling catchment level discussions, collaboration & direction with neighbours and other key stakeholders 	 Well-resourced regulatory team dedicated to forestry activities
	Discharges 4. Inherent & Persistent Risk Social licence	Ū rē	Discharges 5. Land Management	Regulatory 6. Environment
	Short term (next 1 - 2 years)		Short term (next 1 – 2 years)	Short term (next 1 – 2 years)


Te Kaunihera Pororākau o Te Tairāwhiti

		Integration	Transition to indigenous vegetation Community resilience	
		Risks Int	Not everything can Tra be achieved at the ind same time and with veg pace Co res	Transition Plan will be variable across the community
Timely granting of resource consents Compliance inspections that are timely, focussed and from a collaborative perspective first before enforcement (in line with council enforcement policy).	Government led to being grater high- level coordination to project that has otherwise been disparate.	Benefits	Stakeholder engagement and consensus at a property and catchment level. Research based decisions	Knowledge of options and support mechanisms
	Resources allocated to investigation of barriers for the development of a viable market for debris.	Government support	Consultation and collaboration with stakeholders Willingness and commitment from Crown and Council Financial and/or in-kind assistance	Fiscal budget Dedicated task force to develop and confirm
	Investigation and support for future development of viable market for forestry debris	Solution	 Identify and establish support mechanisms to support transition from the plantation forest land use to the alternate land use/cover. 	 Plan for transition Determine the actions and timeframes required for the successful transition on a property scale (output = Property
	Viable market 7.	Area	Sustainable 1. transition	Sustainable 2 Transition D Inherent & re Persistent Risk p
	Short term (next 1 – 2 years)	Timeframe	Medium term (3 - 5 years)	Medium term (3 - 5 years)



Admity to make changes for the better, without fear	or prosecution and resource expenditure to no material	environmental or social benefit										
catchment management plans.	Indemnity from prosecution based on failures of the land	and discharge of sediment, woody debris and slash from the areas under Property	Transition Plans									
Catchment management plan).	 Options could include: Poisoning existing plantation forest crop 	 Planned/staged harvesting of the existing plantation forest crop (could be at sub optimal age) 	 Abandonment of the existing plantation forest crop for natural transition to indigenous 	 vegetation Felling existing plantation forest crop to waste (leaving a woody dobing is builting) 	 Managed retreat from high risk downstream area including 	relocating building and infrastructure.	Other actions could include:	 Physical work Land acquisition 	Compensation	Caveats/Covenants on Titles	Consider ongoing requirements/implications from: • NPS-IB	 Pest management (wildings, animals, weeds)
regulatory environment												

stland	ood Council	ākau o Te Tairāwhiti
N E		To Kaunihara Dororākau o Ta Tairāw

Te Kaunihera Pororākau o Te Tairāwhiti

Staff retention / experience / education and consistency	
Fit for purpose regulatory regime that is outcome focused Equitable and effective changes to the Tairāwhiti Resource Management Plan to support land use change including 'enabling' regulation as compared to 'restrictive' regulation	Stakeholder collaboration and consensus
Resource allocated to allow for efficient and effective regulatory process Consultation and collaboration with stakeholders Communication – regular, timely, with all stakeholders	
 Effectiveness and efficiency review of Tairāwhiti Resource Management Plan rules more stringent than NES- pF 	 4. Additional / supplementary land management practises Building on the measures already implemented behind forestry gates since 2018 to: Mosaic of Pinus Radiata planted on the high productivity/low risk sites only, coupled with alternative species on protection zones (streams, earthflows, landslide sites).
Regulatory Environment	Land Management High risk land Inherent and persistent risk 2
Medium term (3 - 5 years)	Medium term (3 - 5 years)



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		 Larger stream setbacks but planted in alternative fast growing tree species that prevent woody debris migration at next harvest. Promotion of natives on landslide prone sites is much longer-term strategy only or will only lengthen the window of vulnerability and not enhance shorter term defence needed to hold back wood residue migration. Development of a mosaic harvest regime for next rotation. Enhance opportunities for lower impact harvesting systems. 				
Timeframe	Area	Solution	Government support	Benefits	Risks	Integration
Long term (5-10 years)	High Risk Sties Sustainable Transition	Ongoing management and support of Property Transition Plans / Catchment Management Plans as specified or authorised by amendment in the Property Transition Plan.	As above and Monitoring and measuring change. Adjusting actions according to information from research	As above	As above	As above
Timeframe	Area	Solution	Government support	Benefits	Risks	Integration
Far into the future (10 – 100 years)	Discharges Sustainable Transition	 Ongoing management of retirement areas as specified or authorised by amendment in the Property Transition Plan. 	Communication Monitoring Measuring change	Engaged stakeholders Knowledge of effectiveness on interventions	Financial costs may not be sustained.	Community resilience Transition to indigenous vegetation



		Financial costs may not be sustained.
Task force / people resources for implementation (could include redeployment of existing food and fibre workers).	Indemnity from prosecution based on failures of the land and discharge of sediment, woody debris and slash from the areas to be retired.	
		Long term sustainable management of properties and catchment
		High Risk sites 2. Land Management
		Far into the future (10 - 100 years)

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6 April 2023

The Panel Ministerial Inquiry into Land Use c/- Ministry for the Environment Wellington

Tēnā koutou,

Re: Ministerial Inquiry into Land Use (MILU) causing woody debris, including forestry slash, and sediment-related damage

The devastation wrought by cyclones Hale and Gabrielle has been shocking, and we acknowledge the pain and hardship experienced by affected communities. We also acknowledge that these communities have been affected by a number of similar events in recent years. Recovery will be a long journey that will require discussions around community resilience, sustainable land use, and how Aotearoa New Zealand can make an equitable transition to a low-carbon climate-resilient future.

About Scion and our work

Scion is a Crown Research Institute with 75 years of experience in research, science and technology development for forests, forestry, wood products and wood-derived materials and other biomaterial sectors. For some years we have been working with iwi/hapū, including in Te Tairāwhiti, Tūranganui-a-Kiwa and Te Wairoa, central and local government, industry and communities to better understand and prepare for the risks that come with managing forests and land use change on highly erodible land under a changing climate.

We have a deep interest in the role that afforestation and sustainable forest and land-use management can play in supporting the prosperity and wellbeing of communities in Aotearoa New Zealand. Our Strategy to 2030 aims to ensure that Aotearoa New Zealand has the 'right tree in the right place for the right purpose', helping New Zealand transition to a circular bioeconomy. Our strategy has seven 2050 aspirations for Aotearoa New Zealand, including that all erodible land is planted in permanent forests, with sustainable communities and economies in all regions.

Aspects of our work could assist in delivering the Inquiry's recommendations. We have portfolios of research focussed on establishing indigenous forest, and on designing and establishing future forests to address a range of ecosystem services including protecting soils and water, biodiversity, cultural values, carbon sequestration, in addition to the production of wood. We collaborate with other organisations and key partners to research current and future needs around indigenous forests.

Processing woody biomass, including forestry waste on-site has been an area we are researching in detail. In the future, it will be possible to use transportable 'mini factories' to process forestry waste in forests to create new higher-value products from the woody material, including slash, that is left behind after forests are felled. In addition to reducing the volume of woody debris in forests this approach would also create new jobs for local communities. The approach to distributed manufacturing is presented in the government's Forestry and Wood Processing Industry Transformation Plan (ITP).

Climate change is driving an urgent need for changes in land use in New Zealand. Our research is helping to inform landowners and central and local government about options they have in an uncertain future. Similarly, climate change is driving the need to reduce overall greenhouse gas emissions. Much of the work Scion is doing is helping lead the transition to a circular bioeconomy, providing solutions for sustainable land use, timber, energy, biomaterials, and chemicals that are sustainably sourced and will replace current petrochemical solutions.

Response to the Inquiry's questions

Many of the issues that the Inquiry is addressing are well known and have been for some years¹. These issues are the result of:

- a. Regional landforms, geology, and soil types that are inherently susceptible to erosion and slope failure², in a part of the country that frequently experiences very significant rainfall intensities and cumulative volumes³. Rainfall associated with cyclone Gabrielle is the result of some of the most intense weather systems that the region has experienced.
- b. Historical clearance of original forest cover for pastoral agriculture, which has exacerbated erosion risk in the region. While rates of erosion and slope failure vary with slope, surface geology, and intensity of rainfall, measured rates of erosion are 1.5 17 times greater from pasture than from forest.^{4,5}
- c. Reforestation to quickly and cost-effectively reduce erosion in response to previous storm events, combined with forest management approaches that are not well suited to steep, erosion-prone, isolated land, has led to the establishment of large areas of forest of similar age, harvested at around the same time. Some forests that were planted as permanent protection forests were subsequently harvested as ownership changed. Forest management systems (i.e. clearfell harvesting of even-aged stands of single-species forests) that work well in other places are difficult or inappropriate on steep and highly erodible land.

Economic conditions, particularly transport infrastructure and the distance between forests and processing facilities, that have meant that material which is economic to remove from forests in other parts of New Zealand is not removed from forests in this part of the country. Steep terrain and rugged landscape can also make it difficult and expensive to access and remove the slash from the forest. In 2019, following previous significant storm events affecting the East Cape, Scion assessed processing options to increase the use of post-harvest residues on the East Coast⁶. That study found that the regional forest resource was sufficient to provide a long-term supply of pulp logs of around 350,000 m³ per annum, with some years having much larger volumes available. The gross supply of post-harvest residues in the long term is around 250,000 m³ per annum but with current cost and regulation structures only 150,000 m³ would be considered as economically recoverable. Limited wood processing (especially for low grade logs) and challenging transport options in the region contribute to some material that would make a merchantable log specification in other areas not being removed from forests here.

Not all woody debris is harvesting slash, or post-harvest debris, and not all woody debris is the result of current exotic forest management. Previous assessments of post-cyclone woody debris have encountered material that appears to have been present in catchments for a number of years, and from tree species – exotic as well as indigenous – that are not from managed plantation forests. We have not undertaken our own assessment of woody debris following cyclones Hale and Gabrielle, but are assisting the Ministry for the Environment and Te Uru Rākau – New Zealand Forest Service with assessment of surveys of woody debris in the region.

¹ Jessen, M. R. (1999). Land Use Capability Classification of the Gisborne-East Coast Region: a Report to Accompany the Second-edition, New Zealand Land Resource Inventory. Manaaki Whenua Press.

² Basher L R 2013. Erosion processes and their control in New Zealand. In Dymond JR ed. Ecosystem services in New Zealand – conditions and trends. Manaaki Whenua Press, Lincoln, New Zealand.

³ Prince, H. D. et al. (2021) A Climatology of Atmospheric Rivers in New Zealand. Journal of Climate 34(11), 4383–4402.

⁴ Eyles,G.,Fahey,B.(Editors),2006.The Pakuratahi Land Use Study: a 12 year paired catchment study of the environmental effects of Pinus radiata forestry. HBRC plan No.3868, Hawkes Bay Regional Council, Napier.

⁵ Fahey,B.D.;Marden,M.;Phillips,C.J.2003.Sediment yields from plantation forestry and pastoral farming, coastal Hawkes Bay, North Island, New Zealand. Journal of Hydrology (N.Z.) 42, 49-63.

⁶ Hall, P.; Palmer, D.; Edwards, p.; Wegner, S.; Baillie, B. 2019. *Processing options to increase the use of post-harvest residues on the East Coast.* Scion contract report for Te Uru Rakau (Ministry of Primary Industries), available at https://www.mpi.govt.nz/dmsdocument/33867/direct

Land use in the region needs to change

Reducing the risk from future catastrophic events will require sustained, significant, and long-term changes to land use in the region. Significant areas that are currently in pasture will need to be planted with trees or converted to forest to help stabilize slopes that are at increased risk of slope failure⁷. While there is variation amongst species in terms of their ability to hold soil and reduce erosion risk, in general all tree species are better at reducing erosion risk than pasture or exposed soil. Mobilization of woody debris, including slash and logging residues, does not normally happen in isolation. Debris only tends to flow to if there is a catastrophic slope failure, typically associated with a landslide, and any slope failure in a forested catchment – exotic or indigenous – can produce woody debris that then flows downstream.

Some aspects of forest management will need to change to mitigate the impacts of future extreme events⁸. Our science and innovation can assist communities and land managers to manage forests in sustainable and resilient ways. We have portfolios of research investigating: establishment of indigenous forests; design and restoration of a more diverse range of forest types; and the systems needed to manage forests for a broad range of values and ecosystem services. Our research is also investigating ways that we can accelerate establishment of permanent indigenous forest, including with the transition of exotic forests to indigenous forests.

Future approaches will need to include a greater diversity of management types. Clearfell harvesting in the region will need tighter control, and in some places should no longer be allowed. Forest harvesting using clearcutting techniques in steeplands should be planned/coordinated across watersheds so that a watershed does not have large proportion of area exposed to erosion risk at one time. Management options not currently used in New Zealand, but which are widely used in other steep, erosion prone environments in other countries (e.g. various kinds of continuous-canopy forestry) may be needed.

Similarly, harvesting in riparian zones exposes these areas to increased erosion risk for a period of time. Riparian vegetation may also act as a filter, preventing the movement of materials into the watercourse. Future management could require that vegetation in the riparian area should be under permanent forest cover.

Better implementation of (and possible amendments to) the National Environmental Standards for Plantation Forestry (NES-PF) should be investigated to make sure that these standards are being applied, and that they are addressing the impacts of plantation forest management in the most appropriate way. The effectiveness of the methods adopted should be assessed in light of the information that could be obtained from this event to further improve the standards.

Sustainable land use change will take time, and needs to include all affected communities

Adapting regions to the future climate will need significant changes to land use, including agriculture as well as forestry. That change will take time and is unlikely to completely remove the risk that future severe weather events will mobilise significant volumes of woody debris. Debris flow is closely linked to slope failure which, given the nature of soil and slope conditions, can occur irrespective of the type of forest present. While slope failure under forest is less likely than slope failure under pasture, slopes will still fail, resulting in downslope movement of woody debris irrespective of forest type.

Taking land out of primary production will increase the need to support healthy and thriving communities through a new bioeconomy based on distributed energy and manufacturing models and the integration of land use options. Overall, a vision for the future of land use on the East Coast of

⁷ Phillips, C.J.; Marden, M.; Pearce, A.J. 1990: Effectiveness of reforestation in prevention and control of landsliding during large cyclonic storms. Proceedings XIX IUFRO World Congress, USA. Pp. 340-350

⁸ Payn, T., Phillips, C., Basher, L., Baillie, B., Garrett, L., Harrison, D., Heaphy, M., Marden, M. 2015. Improving management of post-harvest risks in steepland plantations. New Zealand Journal of Forestry. 60(2): 3-6.

New Zealand would likely prioritize sustainable development, conservation of natural resources, and community well-being, while also supporting economic growth and cultural heritage.

Establishing new forests will take time. Even in ideal conditions it can take several years to select sites for afforestation, prepare sites for planting, and grow and source seedlings. For *Pinus radiata*, existing demand for seedlings is already significant. Most existing nurseries are fully booked for several years. Sources of indigenous seedlings are still limited, and at-scale production is not yet readily available. If rapid afforestation is required, support to rapidly increase nursery and field establishment expertise is also required. Research into the right species for the right location for the community-led purpose is essential to mitigating erosion risk while trees establish. We have expertise that can assist with this type of design thinking and discovery.

We are already working with iwi/hapū, and central and local government to identify projects that can assist with the immediate cyclone response and, longer term, support recommendations that may result from the Inquiry's work and recommendations. We have submitted some preliminary ideas to MBIE, and a copy of this is attached for the Panel's interest.

Scion's vision for the future of land use in the region

Scion's Strategy to 2030 includes seven 2050 aspirations for New Zealand. One of those is that all erodible land is planted in permanent forest. As we have set out above, achieving that will require changes in forest management and a more deliberate/planned approach to land-use planning and management. This will require community-led approaches to achieve a just transition to future state recognizing that we may need to limit current land uses in agriculture, as well as in forestry. Any response will require working alongside communities to develop an integrated land use systems that provide employment for local people, opportunities for innovation, entrepreneurship, and regional economic development. Scion looks forward to being part of that journey.

Ngā mihi nui, nā

Dr Julian Elder Chief Executive Officer

Te Papa Tipu Innovation Park, Titokorangi Drive, Rotorua Private Bag 3020, Rotorua 3046, New Zealand Telephone +64 7 343 5899 Facsimile +64 7 348 0952 Email enquiries@scionresearch.com www.scionresearch.com



24 February 2023

Attn: Nicola Scott and Kirk McDowall Labour, Science and Enterprise Group MBIE

Via email: Nicky.Scott@mbie.govt.nz Kirk.McDowall@mbie.govt.nz

Tēnā korua

Re: Scion response to immediate science support following Cyclone Gabrielle

Thank you for the opportunity to help identify research needs to assist with research to help with the response to recent cyclones.

In the short time since your request we have identified an initial list of ten possible projects that would provide information to assist with the response, and which would also help with, and respond to, the recommendations of the Ministerial Inquiry into land uses associated with the mobilisation of woody debris (including forestry slash) and sediment in Tairāwhiti/Gisborne District and Wairoa District.

These opportunities, and their estimate project costs are described in the attached table, and include projects that could help:

- Better understand and quantify volume and origin of post-cyclone debris (Projects 1, \$375k, and 2, \$300k)
- Reduce the volume of post-harvest waste via in-forest distributed manufacturing to create new materials, jobs, and opportunities (Project 3, 2 years and \$2.1M)
- Develop rapid-assessment techniques for the time critical data assessment of potential salvage of material following extreme wind events (Project 4, \$300k), including using remote sensing data to map the forestry-related impacts of the cyclone (Project 6, \$450k)
- Repair damage to sensor networks deployed to better understand the effects of rainfall events in forested catchments and expand the current sensor network to sites on the East Coast to better understand the effects of extreme weather events in vulnerable forest types. (Project 5, three sub-projects, \$6.1M combined)
- Develop improved landslide risk mapping, identification, and management tools (Project 7, cost depending on scope up to \$1.2M)
- Develop methods to better plant and manage riparian areas in steep slope catchments to
 mitigate against future debris flows, land slips and other large discharges (Project 8, working
 with collaborators, total \$5.25M p.a. for up to four years), and to better understand the regional
 economic and social implications of changes to forest management, including transition to
 permanent forest (Project 9, \$450k)
- Evaluate the effectiveness of slash mitigation technologies since the 2017/18 Tolaga Bay event (project 10, \$225k)

We have not had the opportunity to coordinate fully with our CRI colleagues and other stakeholders on potential joint and collaborative projects, although we have for some projects identified where potential collaborations might already be possible. We would encourage and welcome opportunities to work with other research providers once research needs are clearer.

Some of the initiatives we have identified are new, and others build on existing work identified as part of Scion's Strategy to 2030, and in response to recent policy initiatives including the Forestry and Wood Processing Industry Transformation Plan and the government's Emissions Reduction Plan. It is likely that other projects will be relevant to your current request, and to outcomes from the Ministerial Inquiry, and we stand ready to discuss those with you as the cyclone response unfolds.

We would note that for most the estimated cost is indicative, as we have not been able to fully cost the proposed projects.

Finally, we draw your attention to a list of data and research needs that Te Uru Kahika, the Regional and Unitary Councils' collective voice, has circulated to a number of science organisations, including through Science New Zealand. We can already see that some of their needs could be met by projects we (and we assume other CRIs) have already identified. We would encourage and support coordination in responses from central and regional/local government in identifying, procuring, and funding research needed to assist with current and future responses.

This response is on behalf of our General Managers of Impact across our three impact areas. Should you have any questions please co-ordinate these through Justine Wilmoth, General Manager of Finance & Corporate Services as a single point of contact.

We look forward to next steps.

Ngā mihi nui

Tan A

Dr Tara Strand General Manager Forests and Landscapes

Dr Henri Baillères General Manager Forests to Timber Products

Portian

Dr Florian Graichen General Manager Forests to Biobased Products

PROJECT SUMMARY

No	Project Name	Indicative funding required
Scion 1	Using lignin biomarkers to identify the source of sediment in intensively managed exotic forests of New Zealand	\$375,000
Scion 2	Slash Composition – to improve the identification of slash and debris to enable future sustainable land use solutions	\$300,000
Scion 3	Distributed Manufacturing – reducing future slash induced issues	Total year 1 \$600,000 and Year 2 onwards \$1,500,000
Scion 4	Rapid Disaster Response – time critical data assessment on windfall in the Rotoaira Estate	\$300,000
Scion 5	Forest Flows – Quantifying and predicting the effect of storm events on forested catchments	Total \$6,118,500
Scion 6	Remote sensing to assess forestry related impacts	\$450,000
Scion 7	Landslide Risk Management: Identification and Tools – helping Tairāwhiti rebuild with knowledge	\$1,200,000
Scion 8	Riparian resilience and steep slope permanent forests for mitigating landslips and discharge.	\$5,250,000 per year for 4 years
Scion 9	Regional economic and social implications reconfiguration of the existing forest estate through riparian buffer establishment and retirement to permanent forest.	\$450,000
Scion 10	An evaluation of the effectiveness of mitigation technologies used since the 2018 event	\$225,000

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\$375,000	000'000
We will collect 50-100 soil and sediment samples. Soils serve as the source, or end- weill be compared. We will collect soils from stream banks, disturbed areas (e.g. ruts, landsides) and undisturbed (e.g., non-eroded) areas within each watershed. Sediment areas within each watershed. Sediments areas within each watershed. Sediments and soils will be analysed for fatty-acids (sovent extraction) and lignin (CuO oxidation). These methods will allow us to develop a chemical fingerprint of sediment sources from over 200 different organal (sources from over 200 different organal value) were analysed to methods will be utilized to determine if these biomarkers are effectively able to disting analysis will be utilized to determine if these biomarkers are effectively able to distinguis sediment sources between after organal areas. This work will be presented in a report with a literature review and critical evaluation of sediment source studies and evaluation of sediment source studies and in a report with a literature review and critical evaluation of sediment source studies and reports that have been performed in NZ.	 To measure and quantify the origins of forestry slash: Define the study area: Determine the boundaries of the forest, rivers, beaches to be measuring, and identify the types of trees and harvesting methods used in the area. Establish sampling plots: Using a random sareain the forest. The number of sampling plots within the study area to provide a representative sample of the forest. The number of plots needed will depend on the size and variability of the study area. Measure slash volume: Within each sampling plot, measure the volume of forester slash using established methods, such as the prism method, point sampling plot, researe the volume of forester slash using established methods, such as the prism method, point sampling the amount of slash within specific sample areas. Record additional data: In addition to slash volume, record other data that may be trelevant, such as the species of trees, the terrain and slope of the study area, and any other factors that may affect the amount of slash volume.
Success of this project will depend on two- factors 1) determination of a suite of lignin and chores 1) determination of a suite of lignin and from several different sources; and 2) a data-set that can be used to write a proposal to fund a larger project examining sediment sources are project examining sediment will benefit forests. Determining the sources of sediment ways. The forests provers to point to a sediment ways. The growers to point to a sediment ways. The first benefit is that this study will allow forest growers to point to a sediment source study with a reliable control watershed (i.e., native fielable evidence about sources. Second, by understanding where sediment is being eroded forest managers can develop better BMPs to protect the soil resource. Time frame: Medium	To mitigate these impacts, forestry management practices such as reforestation, islash removal. and slope stabilization can be invalid remented. Additionally, in areas prone to tropical cyclones, it may be necessary to assess the potential impact of forestry slash on extreme weather events and plan for risk reduction measures accordingly. Time frame: Short
There is a high level of scrutiny on the impact of forestry on sediment in New Zealand's for waterways. High profile incidents (e.g. Tolago Bay) and reports (e.g. several NIWA reports) in the news have kept pressure by the public on industry and policy makers. Sediment has many downstream impacts on aquatic and marine ecosystems as well as infrastructure (e.g., reservoirs, shipping channels). Furthermore, since sediment fluxes are an indication that unsustainable soil loss is occurring that may subsequently result in declines in forest productivity.	 Forestry slash can have several impacts on the environment that can exacerbate the effects of tropical cyclones, including: Soil erosion and landslides: Forestry slash left on hillsides can increase the risk of soil revosion and landslides, particularly during heavy rainfall events such as those associated with tropical cyclones. This can result in damage to infrastructure, loss of soil fertility, and harm to ecosystems and biodiversity. Flooding and river blockages: Forestry slash leading to blockages and streams, leading to blockages and streams, leading to blockages and streams, leading to blockages and infrastructure and tharm to aquatic ecosystems. Fire risk: Dry forestry slash can pose a fire risk during periods for hot, dry veather, perioding in regions prone to tropical cyclones. In the attermath of a tropical cyclone, dry slash can provide fuel for wildfires, further exacerbating the impacts, forestry slash can avait.
We propose to collect and analyse sediment samples to determine if using lignin biomarkers can identify the sources of sediments within ear identify the sources of sediments within forests. Lignin biomarkers are robust tracers of sediments as they are able to distinguish exotic conferous forests from pastures and New Zealand natives. By comparing the molecular make-up (focusing on lignin) of the organic matter content of soils and sediments we will develop preliminary evidence of forestry's contribution to sediment fluxes to New Zealand's waterways.	To inform the discussion around the role of exotic forestry slash and forestry debris on the impact of Cyclone Gabrielle in the Hawkes Bay Te Tairawith the will be critical to determine the origins of the woody debris deposited in rivers and beaches. Measuring forester slash will also be important for a variety of reasons, such as assessing the potential for biomass fuel production or estimating the amount of carbon lost from forest.
Using lignin biomarkers to identify the source of sediment in intensively managed exotic forests of New Zealand Peter Clinton (Scion)	Slash Composition – to improve the improve the indiffication of slash and debris to enable future sustainable land use solutions Andrew Cridge (Scion)
	Success of this project will determined in sing lightin biomarkers There is a bigh level of scurdiny of a suife of lightin and native set of scurding with he sources of sediment in New. Zealands with sources of sediments with sources of sediments with sources of sediments with sources of sediments are observed. With sources and 2) a determining sediment in the set of sediment is sing lightin biomarkers are observed. Number sediment is annow a suifer a proposal to fund a samples. Soils serve as the source, or end-densities. By comparing the molecular member, samples with sediment sources there well as infrastructure (e.g., rubpaces and value). Success of the molecular propertion of a suife of lightin and here is a suifer and stating and native set of sediment sources are observed. Ray and sediments with section in the condition of sources of sediment sources are observed. Bay and bioly and bioly sediment sources and biol and sediment sources and biol and sediment sources and biol and sediment sources of sediment sources are observed. Zaaland natives. By comparing the molecular meriter cources. Support and sediment sources are observed. Internation and sediment sources of sediment sources of sediment sources of sediment sources are observed. Zaaland natives. By comparing the molecular meriter cources. Internation and sediment sources of sediment sources. Internation and sediment sources of sediment sources of sediment sources sediment sources are determined to biol and sediment sources of sediment sources of sediment sources. Zaaland natives. By comparing the molecular mean sources of

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Scion - immediate science support following Cyclone Gabrielle February 2023

Indicative funding required		Total year 1 \$600,000 and Year 2 onwards \$1,500,000 Development phase (estimated to be year 1 and require \$600,000) \$500,000 bus additional funding to de- risk technology trials - estimated at \$1,125,000 p.a)	
What will be delivered	 Analyze and interpret results: Once all data has been collected, analyze it to determine the average amount of slash per hectare, and calculate the overall composition (indigenous, exotic plantation forestry, exotic land stabilization) of the slash produced in the study area. Draw conclusions and make recommendations: Report the amount of slash produced in the study area and any implications this may have for forest management or other uses of nuther research or management actions based on your findings. 	 The project proposed comprises of two phases: Pilot framework development and Execution. Development phase (estimated to be year 1): Establish a task force consisting of iwi, local communities, foresty and hanvesting communities, foresty and hanvesting companies, wood processors, downstream users, and research and innovation to drive a national pilot on using unutilised residues. Align domestic and international linkages to access decentralised, scalable technology options suitable for trials at identified sites and conceptually of interest to the identified sites and processing trials, for example, regional stakeholders. Baseline region-specific characteristics that are input parameters to future technology and processing trials, for example, regional stash volume variation, ease of recovery based on land classes, resource consent limitations for identified site. Execution (year 2 and later): The pilot will financially support industry adoption and adaptation trials of decentralised, mousting technologies and products that will utilise residue, with a focus on adoption and adaptation for example technologies and products that most profitable locations to trial and operate modular unitis based on externalities. The second is obviously the technologies and products that will utilise residue. With a focus on adoption and adaptation of existing technology to enable locations to trial and operate modular unitis based on externalities. The second is obviously the technologies and products that will utilise based on externalised, muni-factory-based processes at a commercially viable cost. Finally, we will investigate how to implement decentralised for the project focuses on the endited on low tenerate profits and enclower to the project and the endition at a commercially viable cost. Finally, we will investigate how to implement decentralised for the project focuses and produces that decondent based on low tenerate profits and enclower the endower to	yolume and underutilised resources.
Impact and time frame (short, medium, long term)		Through the implementation of a decentralised and modular processing pilot program, which will be funded for several years, we can harvesting residues/slash economically viable. The pilot program will de-risk technology adoption and adaption to establish a regional value chain to use slash and derive sufficient value chain to use slash and derive sufficient value trom if for ongoing recovery. This approach will help prevent residues that are currently produced from becoming a slash problem in the future. Companies participating in the pilot program can use it to test and build the value chain for products derived from slash, ranging from mulch, biochar, bioenergy, to other wood-based intermediates products. Overall, this project's impact will be significant in incentivising the immediate removal of new slash while working towards economically, environmentally, and socially sustainable solutions for the future. The project will promote solutions for the future. Foular economy that benefits regional forest communities and stakeholders. Time frame: Medium to long term.	
Problem or opportunity	such as damage to timber resources and disruption of forestry operations.	The decentralized processing of forest harvesting waste (slash) presents a significant opportunity for the country. By establishing mini- itactory networks, slash can be utilised where it is available without the need for transportation, leading to economic benefits for forestry, wood processing, and other primary processing companies and local communities. The concept of decentralised, mini-factories using biomass as feedstock has gained attention globally, with small-scale, decentralized units converting biomass feedstock into value-added products like biofuels, biochemicals, and bioplastics. A key trend in mini-factories is developing low- cost and sustainable biomass conversion processes, leading to innovative technologies that convert biomass into high-value products with low initial capital investment and risk. A key challenge for the adoption of existing technology to process slash into value-added products is the inherent and unavoidable risk that comes even with the adoption of internationally established technology. New Zealand process product or system adaption is required. Decentalised mini-factories can be deployed requirements and can be used to de-risk new value chains.	
Project Description		The decentralised processing of forest harvesting waste (slash) in New Zealand presents a significant opportunity for the country. We propose to establish a pilot program to de-risk technology implementation and to demonstrate pathways for making the removal of harvesting residues economically viable through the implementation of decentralised and modular processing units. The project will incentivise the immediate removal of new stash while working towards participating in the pilot program can use it to test and build the value chain for products participating in the pilot program can use it to test and build the value chain for products future.	ina Outlana Cabinello
Project Name		Distributed Manufacturing – reducing future slash induced issues Marc Gaugler (Scion) Initial Scion lead; but to include key iwi, community, and include key iwi, University and other research and innovation partners.	Soion - immodiata soianoa sunnort fallowina Ouclona Gabrialla
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	\$300,000
 The key work packages will include: Establish a regional slash transfer site, working in a hub-spoke model, to collect material (e.g. material class specific sorting used in Canada and northern Europe) and incubate/test technology to convert harvesting residues. With stakeholders, co-develop the pilot's technology volution, for example, starting with stakeholders, co-develop the pilot's technology options. Support stakeholder-led harvesting residue-based processing trials based on identified lead technologies trials based on identified lead technologies. The pilot stakeholder group has a key role to indentified lead technologies trials based on identified technology trial infinitories (for example, how does residue mulch runoff in heavy rain events). Assessment of forest/harvesting management changes and changes in water retention or soil on soil maniferies and changes in water retention or soil management changes required to enable and changes in which quantities and where based on the identified markets). 	Scion has established an internal funded research project called "rapid disaster research project called "rapid disaster response" that aims to develop a framework and decision tool for efficient forest resource and recovery utilisation after natural disasters. The project addresses various value-chain questions, including what to use the resource for, how much will become available, and when to satvage merchantable logs from blown stands – and when not to salvage. The existing project does not have sufficient funding to such as: log orientation (derived from satellite or UAN images), post-harvest log movement and classification, harvest log movements (for logistic optimisation), ite access limitations, infrastructure), downstream wood processing capacity (to assess and predict offtake and market dynamics, etc.) By combining Scion's current project with the proposed Rotoairs Grous current project with the work for the Lake Rotoaira Forest Trust on the work for the Lake Rotoaira Forest Trust on the
	The project aims to develop a decision-making tool that will enable foresters and communities to efficiently recover available timber resources from forest estates in the aftermath of disasters, from salvage logging and subsequent risk from slash. Scion's Rapid disaster response project is a 12- months project. The collection of post-disaster Rotoaira-specific windfall and recovery data is expected to take at least 6 months and to sit alongside the framework and model development. Data sourcing is time-critical as foresters have already started resource recovery efforts. Time frame: Short - / medium-term.
	Regardless of the species, natural disasters inevitably result in damage and disruption to the environment and forests. Although much of the affected timber may be recoverable after the disaster events, it may be unsuitable for its original intended use. Advanced technology assist in creating small, that can evaluate biomass availability, forestry access, and value-chain options. These systems can be valuable in recovering value after forest disasters. In the Rotoaira Forest estate, extensive wind damage was caused by Cyclone Gabrielle. Scien has already redirected internal funding to use the current situation to identify key aspects of how on-site, modular processing could reduce the impact of future events. However, there is need to collect time-sensitive data to further enhance and support this work and ensure that the findings are immediately relevant to foresters in the area.
	The main objective of this project is to explore the viability of using modular, small-scale wood processing units to quickly recover available timber resources from forest estates in the aftermath of disasters, before they degrade. It combines newest windfall related data acquisition with an existing decision tool development project. The combined project aims to develop a decision-making tool for foresters and communities to effectively utilize modular dister response, which en integrated with dister response, which an grager, climate- adaptive forest management program. The project is specifically focused on the windfall craused by Cyclone Gabrielle in the Rotoaira forest.
	Rapid Disaster Response – time critical data assessment on windfall in the Rotoaira Estate Marc Gaugler (Scion) Will build on existing work with Te Kupenga Hou, Lake Rotoaira Forest Trust and Lake Managements Managements This project will be coordinated with the work that is proposed to be accelerated by the Foressing ITP Interim Governance Panel on this topic.
	The tery vork packages will include: The derivative statements of the statements of

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Scion - immediate science support following Cyclone Gabrielle February 2023

Indicative funding required		Total \$6,118,500 Comprising: \$800,000 Project 1: \$3,367,500 per year. \$3,348,000 per year.
What will be delivered	combination with local super-skid sites or in- forest processing hubs to recover windfall timber will be supported and fast-tracked. The project will inform foresters on how to prepare for future events and how to mitigate the direct risk from secondary events, such as slash issues, posed by unrecovered windfall.	 Both Scion lead projects would include NIWA, University of Southern California. University of Southern California. Upgrade sensors at the Gabrielle impacted primary research site in the Tararua District and investigate the mechanisms of slope failure in Titoki Forest. Take terrestrial and remote sensing measurements throughout Titoki Forest to understand the mechanisms of hillslope failure. Project 2: Leverage the established Forest Flows sites and extend its lifetime to provide more data of the impact of high and extreme rainfal on planted forests over a precipitation gradient. Upgrade sensors at the Gabrielle impacted primary research site in the Tararua District and investigate the mechanisms of slope failure. Data from integrated terrestrial and remote sensing instruments to understand and include be used to identify candimisms of slope failure in Titoki Forest. Upgrade sensors at the Gabrielle impacted primary research site in the Tararua District and investigate the mechanisms of slope failure in Titoki Forest. Ubgrade sensors at the Gabrielle impacted primary research site in the Tararua District and investigate the mechanisms of slope failure in Titoki Forest. Ubgrade sensors at the Gabrielle impacted primary research site in the Tararua District and investigate the mechanisms of slope failure in Titoki Forest. Data from integrated terrestrial and remote sensing instruments to understand on the site conditions that trigger fash floods from forested catchments and hillslopes and fluipes that are vulnerable to high and extreme rainfall events. Inprove understanding on the site conditions that trigger fash floods from forests vulnerable to high and extreme rainfall events. Duesto analysis of SimSAR and bronest. Project 3: Project 3: Establish three new Forest Flows mini-sites in the East Coast Region in three land uses. Identify markense in vulnerable h
Impact and time frame (short, medium, long term)		We propose the leverage the existing Forest Flows team and infrastructure with three proposed projects: Proposed project 1: Take measurements at the existing Forest Flows site at Titoki Forest, Tararua District and additional measurements beyond the existing research site by three years and replace damage sensors from recent storms. This will provide additional and invaluable data from terrestrial and remote sensing instruments on the effect of high and extreme rainfall events for addata pine catchments across a rainfall gradient. In addition, upgrade the sensor network at Titoki Forest to better understand the impact of Gabrielle in the badly hit Tararua District. Di
Problem or opportunity		The Forest Flows programme is using an integrated series of terrestrial and remote sensing measurements to identify the drivers. Out of the 10 Forest Flows research sites have intensive instrumentation that provides real time data every 5 mins from 1.717 instruments. Due to budget limitations, the only site on the East Coast of the North Island is Titoki Forest in the Taranua District. The keystone technology is soll moisture, thus soil propriet an alphote reader that and the complex topography. It provides the ability to efficiently map soil properties and depth for remote areas. It could also identify the advised for est Flows is devoloping a process-based forest carchment that can be upded to predict hydrological processes for existing and new planted forests.
Project Description		Forest Flows is a 5-year MBIE Endeavour Research programme (2019-2024) that is investigating forest hydrology dynamics of panted forest atchments - mostly radiate pine. We have 15 collaborators nationally and internationally. Forest Flows (www.forestflows.nz) main objectives are to (1) quantify the amount of rainfall is stored in the soil and for how long, and (3) quantify where water goes when it is released. We are indifferent goelooy and soils. By directly monthly, seasonal, and yearly hydrological dynamics over a precipitation gradient with different goelooy and soils. By directly measuring individual rainfall events, it can quantify the storage of rainfall during storm events, when it saturates, and identify the conditions on when forested catchments could fail.
Project Name		Forest Flows - Quantifying and predicting the effect of storm events on forested catchments Dean Meason (Scion) Both Scion lead projects would include NIWA, University of Valktand, University of University of Southerm California.
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Ĕ.	Project Name	Project Description	Problem or opportunity	Impact and time frame (short, medium, long term)	What will be delivered	Indicative funding required
					 Improve the process-based forest catchment model for planted forests. Parameterise the process-based model for indigenous forests. Improve hydrological model for pasture. Use the models to compare and contrast hydrological fluxes under extreme rainfall events. Fly SlimSAR airborne campaigns to determine if the radar technology can (1) hillslopes, (2) determine if it can quantify direction and amount of soil water flux after rainfall events, (3) identify areas that have high soil water or are moving, (4) identify hillslopes that are moving, and (5) develop algorithm to identify areas that vulnerable to future high and extreme rainfall events. Create a new data processing pipeline to process SlimSAR data faster for future mapping project. 	
2 8 E 5 5	Remote sensing to assess forestry related frant Pearse and Claire Stewart (Scion)	We are proposing to use a mix of lower-cost medium-resolution and targeted high-resolution satellite imagery from a range of constellations (primarity Planet, Pleiades Neo and WorldView Legion) to map the forestry-related impacts of the cyclone. These data sources make it feasible to obtain near region-wide imagery before and after the cyclone so that we can establish baseline conditions, identify impacted catchments, and assess the scale of the forestry-related impacts.	It is critical to understand the full extent of the impacts of the cyclone both on planted forests. Satellite imagery is well suited to the task as large areas can be assessed and historic imagery can provide information on the commercial satellite constellations it may also upling very high-resolution imagery from commercial satellite constellations it may also be possible to undertake fine-grained mapping of slash on beaches and most magery at scale we can attempt to identify all affected areas. By collecting pre and post-event imagery at scale we can attempt to identify all affected areas. For indisides. Scion holds GIS maps and LIDAR-landsides. Scion holds CIS maps and within these regions and what could be done differents. Within these regions and what could be done differents. We will be partnering with Interpine – agents for Planet satellite imagery to carry out the project.	In the short term, the project would work on a combination of automated and manual mapping methods from satellite imagery to describe the effects of the cyclone on forested catabiments across affected regions. Slash mapping (area) would also be attempted for affected areas of coastline/bridges etc. using high-resolution satellite imagery. In the medium term, we would use historic / arachive imagery (aerial and satellite) to crastline imagery to identify features of forested catchments that were less affected e.g. differences in riparian buffer size/composition. Pre-event forest for quickly the 3D ground surface displacement in some of the would surface displacement in some of the solution and ther factors. In the longer term, we are proposing to use synthetic aperture radar to quantify the loss of solid and the solid of a ground surface displacement in some of the would surface solid on and ther factors. In the longer term, we are proposing to use synthetic aperture radar to quantify the loss of solid and the worts affected catchments that were basesing future events.	 We will purchase large volumes of satellite imagery from a variety of private imagery from a variety of private archive of pre/post-event imagery for analysis. We will use a combination of machine learning and image interpretation to attempt to map slash on beaches and in other severely affected areas in post-event imagery. We will use a combination of machine learning and manual analysis to identify badly affected areas in post-event was a significant land use before the cyclone. 	\$450,000
Can reh de a	 Landslide Risk Landslide Risk Management: Management: Mere landslide Identification and Tools Present under he Indentification Arisk warning at needed to help 1 David Palmer (Scion) mitigation. A ba Mark Bloomberg Mark Bloomberg Misterbury) assist emergeno Canterbury) assist emergeno Conton following to a 	Tairawhiti forests are located in a landscape where landslide and discharge risk is always present under heavy rainfall events. A risk warning and management system is needed to help Tairawhiti rebuild with risk mitigation. A baseline of risk understanding is needed to reduce (mitigate) the landslip and discharge risk, to ready the communities and emergency response for a landslide risk, to assist emergency response and civil defence in responding to a major landslip event (i.e. pre-	High-intensity storms with heavy rainfall impact regularly in Tairāwhiti and acute-extremes are anticipated to increase in frequency with a warming climate. The combination of high- intensity rainfall storms and will result in natural hazards—fandslides and associated discharges of sediment, some with forest slash. These hazards will in turn have <u>consequences</u> for human safety and for downstream environments (built and natural). <u>It is the risk posed by these consequences that</u> <u>must be managed</u> .	This project will help to reduce the devasting impact of high-intensity rainfall events by providing a risk management approach that will allow for catchment-based recognition and understanding of landslide and discharge risk. This recognition and understanding will allow Tairāwhiti to Reduce , Ready , Respond and Recover in the face of continuing landslide and discharge risks. Recover : It will allow Tairāwhiti communities to rebuild with avoidance or mitigation of future events, thus reducing their exposure to	An integrated methodology for assessing and management of landslide and discharge risk will be provided by this project. This methodology can be applied at scales from Tairāwhiti region- ride to local catchment and even property-level risk assessment. This project will deliver: 1. Geospatial data that will provide a comprehensive view of the region's landslide and discharge risk.	For total delivery in 1 year cost is \$1,200,000. Could be \$600,000 per year for 2 years. Delivery of (1) and (2) at \$750,000 and delivery of (3) at \$450,000

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No	Project Name	Project Description	Problem or opportunity	Impact and time frame (short, medium, long term)	What will be delivered	Indicative funding required
		placing resources, pre-warnings, etc.) and to help with recovery. This joint project (Scion, UC, and geomorphologist/landslide mapping subcontractors) will provide a comprehensive landslide and discharge risk management methodology. The project will: Develop the baseline needed for the region to build and recover better in the future by identifying the risk associated with landslide and discharges from 1) the plantation forest estate in Tairäwhiti, including risks arising from logging slash and debris and 2) from from logging ur experience with developing methods for wildfire risk communication methods for wildfire risk communication methods will be associated with a range of frequency x magnitude events. This project is based on onoging and solated discharge risk management work the team is undertaking for Aratu Forests, a medium-sized plantation forest owner in Tairawhiti.	Similar to wildfire risk management, landslide risk management will bring a new level of knowledge of risk to Tairawhit communities, the local forest companies and the local council (Gisborne District Council) allowing for a region- wide view. This holistic view of risk will help the region nebuild with risk avoidance and mitigation and provide a way forward for future event readiness.	landslide and debris flow risk. It will also allow forest managers to design forests that are more resilient to high-intensity rainfall events and less likely to be a source of landslide and discharge hazards. Reduce: Our research will allow land management options to be applied where they will most efficiently reduce landslide and discharge risk. Forest companies and other land managers need tools to apply risk management practices for erosion-susceptible land managers need tools to apply risk management practices for erosion-susceptible land in Tariawhit. Forestry management options include reduced harvest coupe sizes, greater geographical dispersal of harvesting activity, minimising earthworks, planting of atternative communities, forest companies, and councils in allocating limited resources to downstream risk management through a holistic view of landslide and discharge risk. This will allow resources to be allocated where risks are highest. Respond: In a future event this risk readiness will inform emergency response areas with the highest risk, thus allowing them to prepare themselves. Note: A spillover benefit is that it will assist with maintaining the license to operate for forestry companies. Time Frame: Short This tool, a comprehensive landslide and discharge risk. This will allow resources to be used to provide a holistic and transparent platform for communication about landslide and discharge risk. This will allow for the first themselves. Time frame: Short	 A first version of a landslide and discharge risk management methodology for Tairawhiti forests. Tairawhiti forests, wi. Local government in Tairawhiti and Central government to deliver these methods with an agreed framework. 	Note: Cost is based on region-wide delivery, however this could reduce with reduction of area covered.
œ	8. Riparian resilience and steep slope permanent forests for mitigating forests for mitigating fandsips and discharge. This project is a revents in Tairaw and Marida partand amagene hapu and Mi (Ni hapu and Mi	This project is a co-response to the recent events in Tairawhiti. It brings together a local land management business ELandNZ Ltd., hapu and iwi (Ngati Porou) and key CRIs to provide solutions. The project will develop methods to 1) build riparian resilience with solutions and on-ground permanent forest riparian demonstrations with landowners on steep slopes. Riparian areas will be developed specifically to mitigate against future debris flows and sit loading 2) Develop novel, trageted and precision approaches for planting bespoke permanent forests on highly erodible soils. 3) Develop methods for transitioning existing	Never has there been a more critical time to make progress in the area of riparian management within forests and farms, New Zairawhiti forests are located in a landscape trairawhiti forests are located in a landscape be present due to the underlying vulnerable and highly erodible geology. Iwi and hapu, Forest companies, local communities and councils need a path forward that mitigates the landslip petential, reduces sill in the waterways but also allows for economic derivation from the land.	The knowledge of what is needed in a riparian area to provide a structural barrier and economic opportunities to East Coast coast economic opportunities to East Coast coast economic optores species used in the diversification of forests species used in the riparian, using new and complimentary species mixes, continuous foresty silvicultural approaches that, allow for the slowing of erosion and improvement of soil quality will secure environmental social and economic forest services for Tairawhit's future. Steep forested riparian catchments will slow erosion, reduce silt in the waterways, and	We will design a precision forest system optimised to deliver the ecosystem benefits of riparian resilience and steep slope erosion control. This project will deliver: 1. Riparian planting methods and demonstrations to be rolled out across vulnerable East Coast soils. 2. Transition forestry protocols for steep actohments. 3. Methods for panting and managing new forests in steep sloped catchments, i.e., planting under stress on highly modified	Total \$5,25M p.a.for 4 years, with sub- contracts to: ElandNZ \$1.35M to expand operations with science backing. Scion and Manaaki Whenua \$2,5M

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Scion - immediate science support ronowing February 2023

Indicative funding required	partners \$1.35M		
What will be delivered	 environments, UAV seeding, UAV pre and post planting spraying for weed and pest control – including elimination of exotic confers within the newly planted natives. 4. Direct funding of iwi and hapti for codevelopment and Maori-led initiatives 5. Immediate expansion of ElandNZ riparian methodology to other catchments methodology to other catchments monitoring over time to show the impacts of permanent riparian forests within plantation forestry blocks and the biodiversity transformation within these catchments. At least 2 sites. 7. Establishment of long-term monitoring to measure the benefits of permanent forests within plantation forestry for specific environmental benefits of environmental benefits of environmental benefits a corresponse with science. It is a corresponse with science with science. It is a corresponse with sciences ElandNZ tud. and hapu (Ngati Porou). 		
Impact and time frame (short, medium, long term)	provide both environmental and economic benefits to the communities. Riparian zones will be resilient to the eventual landslip and recover faster. Forest debris flows will be reduced. Bespoke permanent riparian forests co- designed with forestry, communities, hapu and purpose for planting and managing forests. The project will allow for jobs in the regions, through social, economic and employment outcomes of changing land-use in riparian as the transformation is made from clearcut forestry to long term native species. The project will work directly with iwi and hapu and will involve co-development as well as Maori-led responses. Timeframe: The Impact realised is short (jobs in the region while planting) to long-term transition forest that mitigates soil erosion and land slips.		
ity	ElandNZ Ltd. has laid the foundation to provide a new way to plant forests in steep riparian catchments. This is an opportunity to synergise what they have done and expand it to other catchments while providing the scientific data they have deemed necessary to de-risk the investment. Hapu and iwi have worked to develop 100-year transformation plans and are ready to move forward into their implementation. Merging of science – continuous cover forestry and precision forest design approaches with operations – ElandNZ Ltd. – already practicing transition forest ty but desires scientific robustness and local communities – iwi. Ngati Porou (and others), with a 100 year restoration for in this new methods to slow the erodible soils and to gain economic, social and environmental derivation from the land while providing new economic resilience.		
Project Description	forests from production to long-term indigenous forests. 4.) Monitor to demonstrate the effectiveness of planted areas. The project will develop a permanent transition forest (exotic to native) using scientifically forest exotic to native) using scientifically forest exotic to native) using scientifically forest and for creating a new type of indigenous forest and for creating a new type of indigenous forest on vulnerable land. This method will allow for continuous vegetation cover on the steep stopes, which will mitigate, but not eliminate, large slips on highly erodible land. The project will specifically undertake: . 1. Build riparian resilience and solutions: a) To work with and expand the operations underway by ElandNZ Ltd. by formalising and applying their methods for mix native species planting to other catchments. ElandNZ Ltd. has worked to establish manuka planting to ther catchments. ElandNZ Ltd. has worked to establish manuka planting in steep riparian catchments with the goal of deriving an economic return from the land (manuka honey) while building landslip mitigation and riparian resilience. b) work with wirb co- develop riparian solutions e.g. rongoa. c) Review and riparian and (b) confinue to support the local communities with economic output from the finand. This will (a) help to build resilience in the riparian and (b) confinue to support the local communities with economic output from the anurse growing environment for adives and and or a substont the local communities with economic output from the anurse growing environment for natives planted alongside or under the develop some bespoke permanent forests to determine therventions for transitioning existing forests from production to long-term indigenous from produc	We will work together in full collaboration with partners in the Waiapu Catchment (Ngati Porou) and ElandNZ and other iwi and hapu on the East Coast through Scion's existing and developing relationships.	This project will support iwi and hapu in their endeavours with research, innovation and
Project Name	Ngati Porou Taiao		
No			

Scion - immediate science support following Cyclone Gabrielle February 2023

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		\$450,000		\$225,000
		Base data on potential implications of revised forestry layouts for both woodflow, economic returns and employment implications. This will will a the transmittion of land use within the Tairawhitt and Hawkes Ba regions.		A picture of what technologies have been deployed since 2018 and their effectiveness.
		This project will provide insights into possible new forest layouts that could be applied in the future. It will enable evaluation of the economic, social and environmental implications of reconfiguring the forest estate. Time frame: Short to medium term		Forest managers and local government agencies will be able to more effectively deploy the most appropriate and effective slash mitigation technologies for their environment. This will overall reduce risk of downstream slash impacts. Time frame: Short term
		The review on land use in the region will assess current practise and will need to identify future approaches to minimise slash. Reconfiguration of the existing estate is one approach. A range of underpinning evidence will be needed at the regional scale. Scion's skills in spatial analysis, economic and social research and our deep understanding of forest ecosystem services can provide very valuable knowledge to support future discussions around land use design		Immediate slash management changes will be needed. There is much knowledge within companies – but it is hard to get a complete regional overview as the companies often work independently.
science. It will also provide a scientific backbone, as requested, to ElandNZ Ltd. as they apply their riparian protection methods. This project includes funding for kaupapa Maori led research and work.	with resource and will be guided by our Maori partners in this research programme. This will be a collaborative project with Scion, Manaaki Whenua, ElandNZ Ltd. and ivi and hapü of the East Coast, including Ngati Porou rünanga where we have existing and developing relationships.	This project will analyse the effects of retiring parts of the existing forest estate into permanent non harvestable cover. These will include establishing various widths of riparian margins alongside waterways. Identifying and retiring extreme high risk steep erodible sites where harvesting risk is too high. This where harvesting risk is too high. This beformal economy and the employment needs. Benefits from other ecosystem services such as decreased and added into the regional picture.	We will use the spatial economic methodology successfully developed and deployed in the Marlborough region where we investigated the impacts of new coastal setbacks on forestry. (Yao et al 2017).	Companies have been implementing a range of new slash mitigation technologies since the 2011/18 Tolaga Bay event. We with companies to develop a regional view on the effectiveness of the range of technologies deployed such as slash traps, buffer plantings or retirement of the most high- risk sites. We will develop a standard survey and assessment approach to gather and assess data on the key technologies deployed.
		Regional economic and social implications reconfiguration of the resconfiguration of the recent inparts testate through ripartan buffer establishment and refirement to permanent forest. Tim Payn (Scion)		An evaluation of the effectiveness of mitigation technologies used since the 2018 event Tim Payn (Scion) In collaboration with Rien Visser at UC and the Hawkes Bay Forestry Group and the Eastland Wood
			Serience III vial also provide a solenidity their region will be control with the control will be control with an interval to the control will be control with an interval be control with an interval be control with an interval be control will be control with an interval and the control will be control with an interval and the contr	Seriere: It all so provide a seriential serientializa seriential seriential seriential seriential seriential s



Submission

Ministerial Inquiry into land uses associated with the mobilisation of woody debris (including forestry slash) and sediment in Tairāwhiti/Gisborne District and Wairoa District

Submission to: The Ministerial Inquiry Panel: Hon Hekia Parata, Dave Brash and Matthew McCloy Email: landuse.inquiry@mfe.govt.nz

6 April 2023



Trees for our future

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Submitter

- 1. The New Zealand Forest Owners Association Incorporated (FOA) is the representative membership body for the commercial plantation forest growing industry. FOA members are responsible for the management of approximately 1.2 million hectares of New Zealand's 1.74 m hectares of plantation forests and over 75% of the annual harvest.
- 2. Forestry export revenue was \$6.2 billion in the year ending June 2022 and this is expected to increase to \$6.47 in 2023. Harvest volumes reached 36 million cubic metres in the year ended March 2022. While 2022 saw a significant decrease in log export revenue due largely to the impacts of the Covid interventions in NZ and abroad, this is forecast to recover by 2024 and then see an increase (SOPI June 2022).
- 3. The forestry sector also supports employment (40,835 FTEs), investment, and development across New Zealand throughout its supply chain in both urban and rural New Zealand.
- 4. The Forest Grower Levy Trust (FGLT) is the body responsible for collecting the harvested wood products levy from forest growers. Forest growers via the FOA and the New Zealand Farm Forestry Association (FFA) manage the allocation of levy funds to industry good projects.
- 5. Investment by the industry via the harvested wood products levy, in research and technology, means plantation forestry is highly innovative. This is reflected in the commitment of the FOA and its members to the highest standards of sustainable silviculture, environmental practice and workforce safety.

Contact details

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Introduction

The FOA has supported an independent inquiry since the outset and welcomes the opportunity to provide input to it. The complexity of dealing with an anxious community, historical landuse decisions, exceptionally challenging geology, limited financial resources, fragile infrastructure and increasing extreme climate events requires a comprehensive review to identify a common, viable, vision for the future. As detailed in our submission, numerous forestry practices have changed in Tairawhiti since 2018, nonetheless we expect the review to provide further guidance on forest management and the industry is committed to playing its part.

Risk mitigation associated with land use is a key element for the inquiry but should not be considered in isolation to building community reliance; this means reviewing historical decisions related not just to land use, but also infrastructure.

We remain concerned about what can be "solved" within the relatively short 2-month assessment period, but fully endorse the independence and scope of the inquiry.



The focus of this submission is not on the assessment of damage which we have been advised will be provided to an extensive degree by government officials. Instead, our submission attempts to offer solutions that will contribute to the collective goal of long-term sustainability for our East coast community as summarized in Table 2.

Summary

The dual cyclone events this year have recalibrated what needs to be managed in the future.

The level of rainfall experienced in parts of Tairawhiti in January and February has been unprecedented. Cyclone Hale was described as devastating with an average 1 in 20-year return probability. Severe cyclone Gabrielle delivered over 450mm of rain and in individual locations across the region delivered return times from 70 to 320 years. What then the probability of two events impacting the same land within 4 weeks? This is the future that needs to be built for.

Woody debris is a multi-source challenge.

A lot of woody material has been inaccurately labelled "slash" and attributed to forest harvest operations, particularly by the media. Any recommendations for the future need to be based on an accurate analysis of what has come from where, and why. Current assessments are inconsistent.

Woody debris in rivers, and on beaches, can be reduced, but not eliminated.

The possibility of large piles of woody debris in rivers and on beaches cannot be prevented. Slash from production forestry has to be reduced but even if plantation forestry was absent from the region such an outcome can still happen as history has proven. This reinforces the need for the emphasis to also be on improving resilience and not re-establishing the same vulnerability.

Silt/sediment is a problem too.

Afforestation was undertaken in Tairawhiti chiefly to reduce the damage from excess sedimentation and massive loss of productive land. Farming spokespeople have pointed out the damage from forestry but have not accepted ownership of the silt damage. Outside the direct impact silt also causes the riverbeds to rise rapidly to new levels thus exacerbating future impacts. Like woody debris this cannot be eliminated but must be part of the focus.

The NES-Plantation Forestry remains a fit-for-purpose framework.

The multi-stakeholder standard for plantation forestry ushered in stricter but consistent controls for forestry with support from the industry. It allows for local authority discretion to impose additional controls which the Gisborne District Council have utilized to require site-specific resource consents across Tairawhiti. In Wairoa implementation and compliance with the NES-Plantation Forestry working with Hawkes Bay Regional Council is functioning well.

Any transition to a new future will need support.

The challenges described above are beyond the capacity of the community and the local authority to address. An equivalent to the "Just Transition" support provided to other regions in New Zealand will be needed here as well. The same consideration may also be needed if it is concluded that forestry becomes unviable in significant areas that the government originally planted, or encouraged private landowners to plant, for harvest.

Alternative forest management approaches offer potential.



This submission discusses a range of potential changes that could mitigate the risk from forest operations. All of the options need careful assessment and will typically not be applicable everywhere. They also differ in the time frame over which they can make a difference. Care needs to be taken to ensure that other, greater, problems such and health and safety risks, or greater susceptibility to windthrow, are not created. Some options are rejected with reasoning provided.

Options considered include:

- Improving land assessment tools
- Improving forest management techniques and practice
- Altered harvesting areas
- Retirement and/or establishment of native forestry
- Utilising carbon or other credits to facilitate change
- Planning changes and assistance to the council with regional planning
- Increased recovery of non-merchantable wood
- Increased afforestation
- Enforcement of good practice guides
- Improvements to NES-PF governance
- Increased research and development
- Support for alternate species

Background and Setting

FOA understands that a national secretariat has been established within Ministry for Primary Industries (MPI) to support the inquiry panel collate information relevant to the inquiry. It is our understanding that records of storm damage such as high-resolution aerial imagery, climate data, etc will be provided by the national secretariat to the inquiry panel. Furthermore, FOA acknowledges that additional evidence of storm damage will be provided to the inquiry panel by the Eastland Wood Council, Hawkes Bay Forestry Group and the individual companies with forests in Gisborne and Wairoa. Ground truthing of the storm damage has also been provided to the panel via onsite visits. Given this, the FOA submission will not be focused on providing further evidence of the damage caused by cyclones Hale and Gabrielle. Rather we will rely on others directly affected and the national secretariat to provide detailed evidence.

Additionally, FOA has not provided detailed information on the physical setting i.e. the geology and climate, or the planting or land use history. We refer the inquiry panel to the submission prepared by the New Zealand Institute of Forestry, which provides comprehensive detail on the setting and background for the inquiry.

Our submission is focused on solutions for the mobilsation of silt and woody debris.

Evidence of cyclone impacts

At a high level and of relevance to the discussion of solutions, a short summary of the unique features of storm damage following Cyclones Hale and Gabrielle is provided below:

- The composition of the woody debris includes:
 - mid rotation trees, approximately 10-15years old. This is unusual and did not occur at the same scale during previous storm events.



- production thinnings;
- trees previously damaged by windthrow;
- and forestry slash, often from older pre-2018 harvesting practices that have since been improved.
- other tree species such as native trees including riparian setbacks, farm shelter belts, poplars and willows planted as erosion control measures.
- Relative to previous storms, roading and landings have *generally* performed well. Post 2018 engineering improvements have typically been effective.
- The climatic settings were unprecedented, two closely spaced extreme storm events occurred following an extremely wet year where soils were already saturated¹.

Woody debris surveys

Surveys of the woody debris accumulated on East Coast beaches have been undertaken by Gisborne District Council (GDC), Hawkes Bay Regional Council (HBRC), some Gisborne forestry companies and Hawkes Bay Forestry Group (HBFG). Two methodologies have been applied: the first was developed inhouse by GDC and has been used by both GDC and HBRC; the second was developed by Interpine² and has been applied by HBFG and Gisborne forestry companies. FOA has commissioned a statistical expert to review both methodologies which is attached as Appendix 1.

In summary, the statistical review noted that it was difficult to compare the methods of the two reports, as they appear to be trying to estimate different quantities. That said, the LIS methods described in the Interpine report are well-established and have been the subject of scientific per-review since the 1960s. The report notes that there is no indication that randomisation is to be used when selecting the locations for the plots using the GDC methodology. This could lead to bias (even subconsciously) in the choice of locations, and also makes a standard statistical analysis less justified.

Industry contribution to Tairāwhiti and Wairoa districts

When considering the policy and regulatory settings to find solutions for the impact of silt and woody debris in Gisborne and Wairoa districts it is important to understand the economic environment. Forestry in both districts is a significant contributor to the well-being via employment of the people who live here. Consideration of the impact of silt and woody debris on local communities must also consider forestry employees as members of the effected communities.

Forestry and sheep and beef farming dominate the economy of Gisborne and Wairoa districts. There are 219,760 hectares of plantation forestry within the inquiry area, 13 percent of the national total. Some 158,548 hectares are in the East Coast and another 61,212 hectares in Wairoa. Besides the forests of the major forest companies, there are substantial iwi forests, and 43,420 hectares of forests smaller than 500 hectares each, mostly farm woodlots smaller than 50 hectares. There are also more than four thousand direct investors in forests in the region run by management companies. Forestry contributes the largest GDP for the Gisborne region \$253M for the year ended March 2019³.

There are four small timber processing facilities in Gisborne and one sawmill in Wairoa. The nearest pulp mill, cable of taking woody residues is the Pan Pac Forest Products Limited (Pan Pac) mill located north of Napier.

³ MPI Human Capacity in the Primary Industries 2019.



¹ https://www.preventionweb.net/news/role-climate-change-extreme-rainfall-associated-cyclone-gabrielle-over-aotearoa-new-zealands ² https://interpine.nz/

Eastland Port currently handles nearly three million cubic metres of logs a year, making it the country's second busiest port after Tauranga, contributing \$439M in export revenue for year ending March 2020. Eastland is expanding its log ship loading facilities to handle an estimated five million cubic metres a year as plantings in the late 1990s mature. One log train per day travels from Wairoa to Napier. Kiwi Rail says a lack of rolling stock is preventing any increase in that traffic. The rail link from Wairoa to Gisborne is unlikely to ever be reinstated.

In 2019 the forestry sector employed approximately 17% of those employed in the primary sector in Gisborne, in total 1,072 FTEs⁴. Unlike other regions where employment rates declined, in Gisborne employment grew at a rate of 1.1% over the 2019-2020 COVID period.

BakerAg in 2019 and PwC in 2020 both pointed to the superiority of forests to generate more capital per hectare than the average New Zealand hill country farm could. Beef + Lamb New Zealand states, putting aside carbon credits, that the ROI for sheep and beef farming and forestry are about the same. Forestry generates both income for the producer and for subsequent processing. For Tairāwhiti there appear to be no other options.

Viability of Forestry

Given that forestry represents such a significant underpinning of the local community's economic future, it is important that discussions around the economic settings of forestry in Gisborne and Wairoa must acknowledge the rapidly increasing operational costs associated with compliance and social license to operate. Prosecution following storm events is a significant, and previously realised, cost to forestry companies in Gisborne. And forestry companies in Wairoa District, supported by FOA, have had to spend significant amounts of money to appeal a proposal by Wairoa District Council to apply an increased rates differential specifically to large forest owners in the district. Individual forestry companies along the East Coast have contributed significant resources to multiple storm clean ups and infrastructure repair alongside sustaining significant damage to their own businesses, storm recovery costs must now be factored into future operational costs. In addition to locally specific cost increases national policy settings, such as the proposal by MPI to recover operational costs of Emissions Trading Scheme (ETS)⁵, are adding further pressure to forestry companies on the East Coast.

Whilst the industry acknowledges that environmental improvements are needed and is in favour of collaboration with Government to find solutions, we note that when the potential costs of solutions are coupled with the increasing operational costs in Gisborne and Wairoa the economic viability of forestry in these areas becomes challenging. Ruling forestry out as a viable proposition will not do our community any favours.

⁵ https://www.mpi.govt.nz/consultations/forestry-in-the-ets-second-set-of-proposed-cost-recovery-fees-and-charge



⁴ MPI Human Capacity in the Primary Industries 2019.

Regulatory reality

The National Environmental Standards for Plantation Forestry

A number of critics of the National Environmental Standards for Plantation Forestry (NES-PF) have claimed that it is an overly permissive regime and that this has contributed to the failures that occurred in Tolaga Bay in 2018 and the cyclone events on the East Coast in 2023. There is also a narrative developing in the media that the regulation was developed by the industry for the industry. This is completely incorrect. The NES PF was developed over an eight year process, initially by the Ministry for the Environment (MfE) and subsequently due to funding and priority issues at MfE was picked up by the MPI. The regulatory approach was developed by ministry staff with input from a multi-stakeholder working group. By necessity the working group did include forestry representatives, but also representatives from a range of ministries, regional and district councils and ENGO's. The goal of the NES-PF was to develop a consistent approach for regulation of plantation forestry across the country. broadly reflecting the existing regulation in place in regional and district plans of the time. Given the broad array of approaches and level of regulation across the country at the time, inevitably the NES-PF required some changes. Far from being a 'permissive regime' as has presented, the NES-PF reflected the upper end of regulation that existed at the time, with end result being either equivalent to or more stringent than the regional and district plan rules relating to forestry that existed at the time. Significantly, it introduced for the first time the requirement to obtain resource consents for afforestation of the most erodible terrain.

In Gisborne District, forestry has always been more heavily regulated that in other parts of the country, due to the erodible geology and the philosophy of the council. Under the Soil Conservation and Rivers Control Act section 34 notices were required for vegetation removal and earthworks being undertaken on erosion prone land. Following introduction of the Resource Management Act (RMA), these notices were deemed to be discretionary activities in the transition process until Gisborne District Council (GDC) introduced a regional plan, under which vegetation removal and earthworks required resource consents. When the NES-PF came into force in May 2018 this continued to require resource consents for earthworks on orange and red zone land, harvesting on red zoned land, and afforestation and replanting on red zone land. GDC have exercised their ability to be more stringent under regulation 6 of the NES PF, to write additional rules controlling forestry. Under the Tairawhiti Resource Management Plan any clearance of plantation forestry vegetation is at a minimum a controlled activity, and in a number of circumstances including if it involves cable logging over a surface water body it is a restricted discretionary activity. Most of the areas that failed in Gisborne in recent storm events were zoned red zone land and therefore under the NES-PF required resource consents for harvesting, earthworks and replanting anyway, however the additional Tairawhiti Resource Management Plan rules over and above the NES-PF effectively require that all harvesting in the district requires consent. The harvesting of areas that failed in the 2018 event in Tolaga Bay was actually completed before the NES-PF came into force, and most of the areas that have failed in more recent storm events were harvested under resource consents granted under the old GDC Plan rules.

In Wairoa District the situation is different. Under the Hawes Bay Regional Plan harvesting in Hawkes Bay was largely permitted. The NES-PF significantly changed the regulatory approach introducing the requirement for resource consents for all orange and red zone land, and also introduced more comprehensive permitted activity conditions for forestry on yellow zone land.

In summary, all plantation forestry harvesting in Gisborne District has been regulated through site specific resource consents, both before and after the introduction of the NES-PF. The NES-PF increased the regulation of harvesting in Wairoa District, requiring resource consents for harvesting and



earthworks in higher risk areas that previously would have been permitted. Therefore, the perception that the introduction of the NES PF regulations has contributed to the erosion and debris movement on the East Coast is simply incorrect.

The definition of slash

Slash is defined in the NES-PF as "any tree waste left behind after plantation forestry activities". This definition includes everything down to pinecones and needles. It does however not include windthrow trees nor trees that are included in a slip, whether they are native or exotic trees. The exception would be trees in slips that are a caused by non-compliance with NESPF or resource consent conditions.

After the cyclones the media and others have used the term "slash' to cover a wide variety of woody debris. The NESPF only regulates "slash" as defined. If any tree leaves a persons property one could be prosecuted for discharge of a contaminant without a resource consent. In Gisborne forestry companies were prosecuted for such a situation. The owners of other trees that ended up in waterways or on the beaches were not prosecuted.

Improvements made since the 2018 Tolaga Bay storm

Eastland Wood Council and the Hawkes Bay Forestry Group

Following the 2018 Tolaga Bay storm event forestry companies on the East Coast invested significant resources into practical operational changes to improve environmental outcomes. FOA understands that a number of these changes have been presented to the inquiry panel onsite by members of both the Eastland Wood Council (EWC) and Hawkes Bay Forestry Group (HBFG).

The EWC developed a *Good Practise Guideline for Catchment Management* following the 2018 Tolaga Bay storm. We note that learnings and improvements from Cyclones Hale and Gabrielle will be incorporated into the Guideline. FOA endorses the Guideline and further work that EWC propose.

Forest Growers Research

Forest Growers Research (FGR)⁶ is part of the FOA and co-ordinates industry input and funding of research programmes relevant to the forest growing sector via the FGLT levy. FGR programmes are often run in partnership with Government agencies, crown research institutes (CRIs) and industry entities. Following the 2018 Tolaga Bay storm event sector workshops were held to explore solutions, those workshops generated a tranche of research from FGR which is ongoing and summarised below.

FGR has been a partner to the Primary Growth Partnership programme over the past four years, this is a programme between industry, research and government titled "Te Mahi Ngahere i te Ao Hurihuri – Forestry Work in the Modern Age". The programme included the following objectives:

- Reduction of environmental risk / impact to waterways.
- Reduce cost of disposal of harvesting residues.
- Reduce waste increase utilisation of forest area, reduce landing size required for slash management.
- Improve recycling nutrients/ stabilise slopes / minimise erosion.
- Investigate potential for sales of processed residue (in future).

⁶ https://fgr.nz/



• Other benefits (Improved work conditions, safety of workers)

The programme has generated a wealth of literature that FGR has published on improved residue management and which is available on the FGR website, some examples follow:

- International reviews of the literature on "Biomass recovery operations in New Zealand" ⁷Two FGR technical notes and a technical report have detailed the graduate thesis work of Campbell Harvey at the University of Canterbury looking at residue volumes on steepland harvest sites. The work confirmed that there is a sizable resource available in harvested steepland forests.
- FGR have also progressed a project to design and build a hauler slash grapple which reduces breakage and therefore the volume of harvesting debris. JDT Engineering Ltd in Whanganui completed design and build of the hauler slash grapple. It is now ready for operational trials which are being progressed in Lismore Forest in conjunction with Forest360.

Solutions: what is needed to reduce the environmental impact of forestry?

FOA acknowledges the complexity of the physical, social and economic setting in both Gisborne and Wairoa districts. We note that previously significant effort into practical local and regional solutions for the issues associated with the discharge, damage and accumulation of woody debris and silt has been actioned and investigated but that new climate precedents have been set by Cyclones Hale and Gabrielle, with rainfall totals and intensities not previously recorded. The solutions implemented to improvement environmental outcomes following the 2018 Tolaga Bay storm event have been tested, some solutions have worked well but further solutions are needed to address more severe climatic conditions.

This section of the report will provide discussion around a suite of solutions that could contribute to the mitigation of the issues associated with silt and woody debris. Improving community resilience underpins all of the solutions discussed. We emphasize that there is no one perfect solution and that a cascade of solutions working in tandem will be required to make impactful improvements. The first step is refinement of existing land use assessment tools which will then inform application of a range of land use management options such as which tree species to plant.

A summary table, Table 2, setting out the proposed solutions in the following time bands is provided at the end of this section.

- 12 months
- 24 months
- 5 years for sorting economic impacts.
- 10 years Land use
- Long term vision for region

⁷ https://fgr.nz/documents/download/8199



Solutions for silt

Afforestation

Initiatives to encourage afforestation of steep areas in pastoral use to reduce erosion and sediment loss are key. It is well established that tree cover offers significant soil conservation and water quality benefits over other land use types. The Pakuratahi – Tamingimingi Land Use Study⁸ is a paired catchment study undertaken in collaboration with Hawkes Bay Regional Council and commissioned to address the question of whether land in forestry or pasture will generate more sediment. The study collected water quality data over a period of 11 years from adjacent, comparable pasture covered (Tamingimingi) and planted forest (Pakuratahi) catchments. The study period included pre-harvest, harvesting and post-harvest operations and included forestry activities such as roading, logging and replanting. It showed that two-three times more sediment was generated by the pasture catchment during the pre-harvesting period, sediment yields for the first-year post harvesting were then reversed exceeding pasture yields for a two-three year period before returning to pre-harvest levels, this period is referred to as the 'window of risk' (refer to graph below). The Pakuratahi study concluded that over the rotation of a forest (i.e. 28 years) net sediment yield is substantially less from catchments covered in pine forest than pasture covered catchments. The findings of the Pakuratahi study were confirmed by a similar study undertaken in the Waikato/Waipa catchment⁹, which showed that sediment loss following harvest was highly episodic and when averaged over a 28-year forest rotation, afforestation provides a 78% reduction in a catchment's sediment yield.



Suspended sediment yields for storms sampled concurrently at the Pakuratahi (forested) and Tamingimingi (pasture) catchments, and the ratio of the Pakuratahi to the Tamingimingi yields during the postharvesting period.

⁸ Pakuratahi – Tamingimingi Land Use Study Report, Chapter 5 Forestry Effects on Sediment Yield and Erosion, Barry Fahey and Mike Marden ⁹ Draft for Discussion Purposes: Description of mitigation options defined within the economic model for Healthy Rivers Wai Ora Project, Graeme Doole



Importantly, the Pakuratahi study also demonstrated that significantly less net sediment was lost following storm events from forested catchments (refer to graph below). When compared with pasture catchments, forested catchments offer substantial enhancement to the regulation of storm flow during flood events, typically planted forest can reduce peak flood flows by as much as 50%¹⁰.



Annual suspended sediment yield for the Pakuratahi and Tamingimingi catchments from 1995 to

The paper titled Water Quality in New Zealand's Planted Forests¹¹ compares key water quality parameters in various land cover settings throughout the stages of a forest rotation. It was found that that 'forests can rapidly (within 5-6 years) improve water quality from land previously in pasture' which highlights the potential for afforestation to be used as a 'remedial tool for degraded waterways'. It is noted that whilst episodic harvesting is likely to result in adverse changes in water quality i.e. greater sediment loads at certain points during a forest rotation however 'planted forests produce high water quality for a large component of the forestry cycle, providing valuable community service to downstream users'.

In summary, planting trees in some pasture covered hill country will result in net sediment retention, greater resilience to storm events and water quality improvements over the rotation of a forest. By planting pine trees problematic hill country can still be productive whilst offering environmental improvements. To be clear, FOA is not proposing blanket afforestation reminiscent of Cyclone Bola in the most erodible land, we are proposing considered afforestation using the refined land use assessment tools, detailed below, to identify the best land cover to generate environmental improvements on a slope by slope scale while still considering the best productive use of that land. We acknowledge the place for native tree cover and/or permeant tree cover in a mosaiced landscape which

¹¹ Water Quality in New Zealand's Planted Forests: A Review, Brenda Baillie and Daniel Neary



2005.

¹⁰ https://www.nzfoa.org.nz/resources/file-libraries-resources/environment/factsheets/846-forest-water-dynamics/file

will include a mixture of best suited tree species. Alternative and native tree species are discussed in detail below.

We advocate for further funding to support additional study at the Pakuratahi – Tamingimingi study site, harvesting of second rotation trees is due to commence in the next few years. The opportunity to repeat the study using new monitoring technologies could contribute to greater understanding of both silt management and water quality.

We note another study of relevance to advancing our understanding of silt management, OneFortyOne is facilitating a paired catchment study at Donald Creek in Marlborough in partnership with CRIs and funded via the Government. The study compares various sediment management options in similar, adjacent planted forest catchments.

Solutions for woody debris

Establishing an alternative fibre market on the East Coast

The issue of recovering woody residues on the East Coast is exacerbated as most forests here are on steep terrain with limited flat areas to store and dry woody biomass – landings are typically small. Given this a considerable volume of fibre residues may be left on the cutover and also on landings after harvest. The residues on the cutover are widely dispersed and typically require considerable effort to pull back to the landing. In many cases this will not be profitable unless the market value of wood fuel changes dramatically. The wood pulled to the landing, but not currently sold is easier and cheaper to access. Utilising this resource addresses the issue of stockpiled slash heaps but does not address the wood still in the cutover.

Woody debris from harvest operations is greater in areas where there are no or limited fibre markets such as for MDF, particle board or biomass plants. This is currently the case on the East Coast of New Zealand, with only one substantial pulp mill with the capability to take woody debris, the Pan Pac mill located north of Napier. The mill sustained significant damage from cyclone Gabrielle so will remain out of commission for some time. Prior to cyclone Gabrielle the Pan Pac mill was at capacity. Even if expanded, the mill would have limited capability to take substantial additional volumes due to cartage costs. It can only economically utilise waste wood from a limited geographical range around the mill.

The Forestry and Wood Processing Industry Transformation Plan (the ITP) was finalised in November 2022¹², the plan seeks to drive growth, create jobs and underpin New Zealand 's low carbon future by building up the forestry and wood processing sector. The Government has set aside \$23M to support the ITP. In the development of the ITP the Ministry for Primary Industries (MPI) commissioned a report, the Indufor Stage 2 study¹³ which considered the options for development of the wood processing industry in New Zealand. The study found as a location for investment the East Coast has some of the right fundamental characteristics including a readily available, substantial volume of plantation-based fibre resource. Alternative fibre utilisation options could therefore conceptually reduce the volume of low value fibre currently left in-situ. However, the report identified four major hurdles to this:

¹³ https://www.mpi.govt.nz/dmsdocument/51007-NZ-Wood-Fibre-Futures-Project-Stage-Two-Final-Main-Report



¹² https://www.mpi.govt.nz/dmsdocument/54472-Te-Ara-Whakahou-Ahumahi-Ngahere-Forestry-and-Wood-Processing-Industry-Transformation-Plan

1. Regulatory barriers

Difficultly obtaining resource consent was identified as a significant barrier. Marubeni NZ have twice looked at the feasibility of a processing option on the East Coast however did not proceed given the level of bureaucratic process required. Hikurangi Forest Farms initially spent \$1millon on consents and consultants to develop a greenfield processing plant but walked away from the project when the costs to progress the regulatory requirements became too great. It is recommended that Government is actively involved in site selection.

2. Economic barriers

Development of an East Coast fibre market option must be economically viable supported by sustainable, long-term demand. Government subsidisation as markets are developed could be a viable option, especially through the development of "demonstration" facilities to prove the technology and the economics. It is recognised that in the absence of significant, sustainable biomass consumers locally, such as dairy plants, processors will need to export. Existing sawmillers have identified export tariffs and costs as key barriers to competing successfully offshore. Development of a local fibre market alongside low carbon fuel technology within New Zealand is necessary to support greater use of biomass.

3. Infrastructure constraints

In most parts of New Zealand, good road and rail connections to processing plants or a nearby port means the cost of exporting is (comparatively) low. Further to the Indufor Stage 2 study FOA notes that for forest owners on the East Coast the cost of freight on the fragile infrastructure either via State Highway 35 or the rail link to Wairoa, and the lack of coastal shipping from Tolaga or Tokomaru Bays makes cartage options expensive.

4. Operational costs for new technology

Investment in process improvements and knowledge development for biofuel products near to commercialisation that are relevant to the New Zealand market by the Government is key. FGR is exploring options to progress and operationalise existing tranches of work, discussed below. Dr Julian Elder of Scion provides an example, he proposes an on-site solution for surplus woody residues in the form of *a portable, container-sized mini-factory to process forestry waste on-site, turning it into new high-value products. To date the technology, which is available, has not been seen as financially viable, but "when you factor in downstream impacts, if you leave it [slash] behind with logs and large woody items, then it might change the economics of this". The work Scion is undertaking is looking at the opportunity to have processing plants in the container and on-site, where they're actually producing chemicals or fuel." Government funding would be required to get the initiative started. FOA is aware of other technologies and end users that are either trialling alternative fibre uses or have operationalised fibre products in other parts of New Zealand:*

- Container bio- char operations:
 - Massey University BioChar Research Centre¹⁴
 - Bio-char Network NZ¹⁵

¹⁵ https://biochar.net.nz/



¹⁴ <u>https://www.massey.ac.nz/about/colleges-schools-and-institutes/college-of-sciences/our-research/research-projects-and-groups/new-zealand-biochar-research-centre/</u>

- LUMBR in Milton, producing fuel-grade wood chips to service the commercial heating market in Otago and Southland.
- Canterbury Woodchip Supplies Ltd. and Steve Murphy Ltd in Canterbury are producing multiple landscape products for the consumer market.
- Mackwell Locomotive Co, Christchurch has developed new wood-fuelled boilers for electricity generation, a business case for 150kW size tractors hauling logs to port versus battery electric and diesel 50Max trucks has been developed.

Options like these should be investigated to test the viability for commercialisation as a sustainable end use in Gisborne and Wairoa for surplus woody residues.

New Zealand dairy companies are responding to market demand and exiting the use of coal for their powder drying operations. Dairying is the nation's major industry and powder drying its main operation. The conversion from coal will create massive demand for alternative energy sources including wood material. Fonterra has committed to end coal use by 2037, has plants at Brightwater and Te Awamutu (pellets) already using wood material and two other plants in the conversion process. Danone is operating the drier at its Balclutha plant with wood waste. In February, Genesis and Fonterra signed a biomass development and usage agreement. Taupo based Natures Flame operates a large-scale wood pellet manufacturing operation, supplying Fonterra Te Awamutu and a range of institutional heating needs in the wider region. It exports pellets to South Korea.

Industries in Gisborne, Wairoa and other towns in Tairawhiti do not need the volume of energy which the dairy industry elsewhere regularly consumes. But in aggregate, institutional and residential heating requirements, land transport fuel usage, forest harvesting and farm machinery fuel needs, forest and meat processing, and the bunker oil consumption of exporting three million tonnes of logs, all amount to a considerable biofuel potential in the region. Other options could include torrefied pellets for the Huntly Power Station or development of a local pellet market at Wairoa for meat processing and/or hospital and school boilers.

Options to develop regional export of woody debris, close to the source of the material to other parts of New Zealand where the demand for biofuel is greater should be explored. Options could include new ports along the East Coast which could also provide greater resilience to the remote communities here.

In summary, to generate a fibre market on the East Coast at the scale required to reduce the volume of woody debris from steepland Gisborne and Wairoa, significant intervention and expenditure by the Government to remove regulatory barriers and infrastructure constraints, to promote the development of a sustainable, economically viable fibre market and to fast-track technology that enables scaled use of biomass is needed.

Solutions for both silt and woody debris

Land assessment tools to upgrade the Erosion Susceptibility Classification

The current risk assessment tool used in the NES-PF is the Erosion Susceptibility Classification (ESC). The ESC is based on Land Use Capability (LUC) units developed under the NZ Land Resources Inventory. As the panel will be aware, the ESC was originally developed by Canterbury University and subsequently refined by erosion specialists from Landcare Research. Through this process each LUC class across New Zealand was assessed based on its erosion susceptibility under plantation forestry



specifically and each LUC unit was assigned to one of four erosion susceptibility classifications – low risk (green zone), moderate risk (yellow zone), high risk (orange zone) and very high risk (red zone).

The purpose of the ESC was to create a drafting gate to underpin the activity status in the NES-PF. The ESC classification was used to assess the relative risk of undertaking each activity in a particular ESC susceptibility classification and therefore the appropriate activity status. Of note a number of Regional Councils previously used the underlying LUC classes for the same purpose in their harvesting and earthworks rules, so it was not a new approach. The NES-PF simply refined it for plantation forestry and applied the approach across New Zealand.

A criticism of the ESC has been that it is not of sufficiently fine scale to accurately represent erosion susceptibility at an operational scale. This was never the intent of the ESC. The original LUC mapping was undertaken at a 1:50,000 scale without the benefit of tools that are readily available today, such as LiDAR, so it is true to that it is not of sufficiently fine scale to be an accurate tool to be used operationally. That said, the LUC does generally provide an accurate description of the geology and risks at a landscape scale, and it was the best information available at a national scale at the time the NES_PF was developed. In the Tairāwhiti region, with the significant focus on erosion issues the LUC (and therefore ESC) is arguably the most accurate of anywhere in New Zealand, with finer scale LUC remapping having been undertaken.

Of the total area of 141,789 hectares of red zoned land under plantation forestry in New Zealand, 104,432 hectares (74%) is located within Gisborne District. Most of the areas that failed in cyclones Hale and Gabrielle in Gisborne were zoned red zone, and therefore all subject to the full regulatory constraints of the NES-PF, with resource consents required for all harvesting, earthworks and replanting. It is therefore hard to conclude that inaccurate ESC mapping (or the NES-PF regulations) contributed to the issues that have been experienced.

It is clear that the scale of the mapping underpinning the ESC means that it is not suitable as a tool for detailed forest management decisions such as siting of infrastructure, or decisions on retirement of areas from production. Such assessments require more detailed analysis informed by accurate slope and landscape information assisted through ground truthing and tools such as LiDAR.

Following completion of the ESC layer, Manaaki Whenua Landcare Research recommended further work to develop an operation-level fit for purpose erosion and debris flow susceptibility analysis tool, at a refined enough scale of mapping that it could be used at an operational level. With the advent of tools such as LiDAR, development of such a tool is now viable. Manaaki Whenua submitted a number of bids for funding from the MBIE Endeavour Fund, with support from FOA, but unfortunately the bids were not successful, and the work has not progressed.

The need for such a tool is now needed more than ever. Operational scale refined information will be essential to inform decision-making regarding the areas of existing plantation forest that should be considered for retirement and other land uses in high-risk areas. The tool would also be invaluable to inform decisions on the appropriate location for both permanent and productive afforestation, ensuring decisions on the 'right tree in the right place' are informed by sound science and an objective defensible approach.


Improvements to onsite management techniques and practice

Identifying further improvements to forestry practices in areas that remain in production in the high-risk geology of the East Coast following learnings form the most recent cyclones will be key to continued environmental improvement. Areas of focus may include woody debris management, techniques to trap slash in the landscape via engineered slash traps or living slash traps, planting setbacks and management regimes, harvesting improvements to reduce breakage, catchment limits, silviculture changes, timing of thinning etc. Each of these will require careful consideration in the local context, taking into account expert advice to ensure the solutions won't inadvertently create further problems. FOA defers to the local knowledge of the EWC, HBFG and individual forestry companies operating within Gisborne and/or Wairoa to provide the inquiry panel with the practical, onsite operational improvements that will provide immediate solutions to the storm induced woody debris and silt issues.

We note that the EWC *Good Practice Guideline for Catchment Management* was developed following the 2018 Tolaga Bay storm event, Cyclones Hale and Gabrielle provided new storm precedents that nobody anticipated. FOA understand the EWC will review The *Good Practice Guideline for Catchment Management* in the context of the most recent storms to make improvements, support and resources should be provided to EWC to complete the work.

The use of fire to de-risk slash accumulations on landings should be explored as a viable solution, at least in the short term given there is no viable bioenergy market or pulp mill within 60 to 100 km (the rational maximum economic working-circle). FOA submits that burning non-merchantable woody resides and slash on, and in, birds-nests over the side of, landings is a valid practice to de-risk landings in remote steepland sites.

Non-clearfall vs clearfall harvest

One of the solutions proposed by those outside of the industry is to cease clearfall harvest on the East Coast. The topography of the East Coast is such that the majority of harvest is carried out via cable logging using conventional clearfall harvest. Non-clearfall harvest is practiced in some parts of the world, including either partial strip harvesting or single tree extraction.

It needs to be recognised that on the East Coast the viable harvesting options are significantly constrained by what can safely and practically be achieve in such steep broken topography with high stocking rates. The safe work practices for both falling and extraction are inevitably reliant on an approach of opening up a gap and then falling into that gap and working systematically across a face. Falling in narrow corridors with standing trees either side would be extremely challenging to achieve with a mechanised harvester and unsafe for a manual faller. Similarly, there would be practical difficulties using hauler extraction in corridors. Manual breaking could not be undertaken safely operating in corridors of fallen trees with standing trees either side, so a grapple would be required, which is not viable in some topography. Shifting the backline would also become difficult, requiring a complete reset using a strawline and potentially a drone or helicopter for each line shift rather than simply moving a backline machine, due to the barrier created by the standing trees.

For single tree extraction the only viable option is manual falling and helicopter extraction which would be extremely costly and have a very high carbon footprint per log extracted.

Aside from the practical issues of achieving harvesting in corridors, the more significant issue is the potential additional risks created by such an approach. Forestry companies in many regions of New Zealand have experienced problems with wind throw, which is particularly problematic at the time of



thinning and also harvesting of adjacent stands. Trees develop for the growing conditions they are exposed to, with trees in a stand providing mutual wind protection to each other. It is well understood that removing any trees in a stand will expose the remaining trees and create wind throw risk. For this reason, forest managers implement constraints on the maximum height that stands can be thinned to manage windthrow risk. Harvesting strips in a mature stand would replicate an extreme risk thinning operation, with the tree height well over double the recommended maximum thinning height and creating significantly larger gaps in the canopy. This would inevitably increase the windthrow risk, particularly in erodible geology.

Experience from past storm events has shown that windthrown areas are significantly more vulnerable to erosion than even cutover. As for harvest, windthrow removes the canopy protection, but also the rootballs are ripped from the ground completely removing root reinforcement and creating a conduit for storm water to enter the slip zone between bedrock and overlying soil layer, with the slope loaded with the full weight of the windthrown trees. The effect is effectively an amplified version of the window of risk after harvest. Large areas of windthrow on steep slopes in Tairawhiti has the potential to initiate slope failure and deliver even greater volumes of woody debris to waterways than is currently being experienced. For this reason, corridor harvesting of existing radiata stands is strongly opposed by those in the industry.

In our view it is imperative that any constraints on harvest area must be designed within the limitations of managing windthrow risk.

Native Trees

Native tree restoration of eroded landscapes, or landscapes under threat of erosion, has been frequently cited as a retirement solution to land use problems in the Tairāwhiti and Wairoa districts. While this could well be a valid proposition in many circumstances, it should not be considered as a solution for all situations at all scales.

Native trees are already an important part of the land stabilisation toolkit employed by forest companies in Tairāwhiti, with the planting, restoration or protection of riparian strips of indigenous woody foliage beside waterways. Over time these areas become increasingly effective means of protecting waterways as living slash traps from the intrusion of wood waste from plantation harvests.

Native tree harvest

New Zealand's sustainable indigenous native tree harvest is currently reported at 10,000 tonnes per year, representing less than 0.03% of the total commercial harvest. Native forest consists predominantly of native beech and podocarp species, such as rimu, tōtara, and various beech, but less than 2% of these species are used for timber production.

The main producer of native tree timbers in New Zealand is western Southland based Lindsay and Dixon who have cutting rights over a naturally regenerating 12,188 ha Longwood and Rowallian Forests under an agreement with the Waitutu Holding Company. The forests are primarily Silver beech with some rimu and tōtara. The sustainable harvest of up to 24,727 m³ per year is provided for under specific legislation, the Waitutu Settlement Act 1997, and operated under an approved MPI sustainable forestry management plan under the Forest Act 1949.

Indigenous forestry has been promoted with FGLT funding of the *Wood our low carbon future* campaign which is a joint venture with Te Uru Rakau. One of the seven themes of this campaign is indigenous forestry, which has focussed on totara prospects in Northland and a black beech operation at Oxford.



The high value of native timber enables low environmental-impact extraction through selective harvesting, and in some instances justify low milling extraction rates and complications. Species such as kauri, kahikatea, rewarewa, rimu, taraire, puriri and beech species require no or minimal preservative treatments, a lesser or non-existent chemical footprint gives further weight to the arguments for native timber harvest.

However, there are significant constraints to native timber harvest, such as the time to harvest, for beech trees it is approximately 80 years, matai and rimu are even slower to mature¹⁶. Regulatory barriers are significant, approvals for native tree harvest are protracted and time consuming. The Forests Act requires indigenous timber harvesting to be sustainable and on private land.

Native tree propagation

Native plant propagation in New Zealand amounts to some 40million plants a year, including at least 10 million tree seedlings. Advances in nursery technology in recent years could boost this volume quite quickly, particularly for some species.

Minginui Nursery in the Bay of Plenty was formed out of the unique relationship between the forest, Ngāti Whare and Scion – unifying nature, matauranga māori and science. Minginui Nursery is a purely native tree nursery specialising in revegetation, with a capacity for growing more than one million plants a year for riparian planting or returning disused land to native trees. The nursery was developed to regenerate 640 hectares of pine plantation to native tree cover, as part of the settlement between Ngāti Whare and the Crown.

According to the Native Plant Nurseries submission; An indigenous forestry proposal; The Billion Trees Programme Initial Discussion Paper & Proposal To Produce Millions of Native Trees March 2018, seed sourcing is potentially problematic. Debate rages over whether reafforestation should be carried out with seed which are restricted to genetics from the local conservancy. Care has to be taken matching the tree to the environment, rather than a generalised 'plant for natives' approach. Wetlands and gullies will grow quite different mixes of species to establish different ecosystems to those on eroded and steep slopes.

Native tree establishment

The difficulties of establishing indigenous trees across Tairāwhiti to restore the original plant cover should not be underestimated. The costs are inevitably far greater than those for establishing plantation pine forests, at least with most current practices. Based on scale projects in different parts of New Zealand, costs are variable, depending mostly on the challenges of protecting the native plant seedlings over time. Browsing animal pests and invasive weeds threaten the establishment of most native forests well past their original planting time. The issues regarding the establishment of native trees have been examined by various Government reports.

- Climate Change Commission (CCC) explored issues of native tree planting in He Pou a Rangi the Climate Change Commission | Ināia tonu nei: a low emissions future for Aotearoa in May 2021. The Ministry for the Environment also considered native tree planting in Te hau mārohi ki anamata Transitioning to a low-emissions and climate-resilient future, December 2021.
- The Parliamentary Commission for the Environment (PCE) has commissioned a program of work this year to understand the establishment of native trees in New Zealand and transition from exotic forestry to native tree cover.

¹⁶ Wardle's Native Trees of New Zealand, 2011



 In conjunction with Scion and Te Uru Rākau, Ngati Hine Forestry Trust has ambitious indigenous forest expansion plans, He Ringa Ahuwhenua, He Hanga Mahi – Indigenous Forestry Strategy Development Project 2021-2025.

Reported costs range from \$6,000 per hectare, up to \$50,000 according to MfE's report. Without transitional forestry, Tāmata Hauhā estimates it could cost \$20,000 per hectare to establish a native forest and take 40 years to break even with the Emissions Trading Scheme price. Tāmata Hauhā optimistically believes a transitional regime can cut the cost to \$2,000 per hectare, which is comparable to pine establishment. The Review of Actual Forest Restoration Costs, 2021, by Forbes Ecology for Te Uru Rākau¹⁷ explained in detail the myriad of factors which led to such variations in the costs of establishing native forests.

In 2011, a Primary Growth Partnership project, the Manuka Research partnership led to the development of the Tīmata method. Tīmata is the use of forestry grade nursery seedlings, kanuka and manuka in particular, on marginal pastoral land especially, to kick start the natural reversion process, which reduces cost and improves propagation and labour efficiency. Canopy closure is achieved at 5-10 years, during which time either natural regeneration of other native species, or planting, can be done.

Native tree establishment must also be balanced in the context of a changing climate, for example predicted and imminent increases in the number of days of soil moisture deficit in the region (as the Southern Oscillation reverts to the more typical El Niño pattern) will have their impact as well. This drying trend will not only kill struggling seedlings, but is even likely to harm mature trees, such as taraire which have recently become vulnerable to fungus infection due to droughts in more northern regions.

Conversely myrtle species, such as pohutukawa/rata, may likewise be infected with myrtle rust should humidity increase, or the atmosphere become more humid. Intensity in future will also jeopardise native tree reestablishment as seedlings will be vulnerable to mid slope loss longer than pines are exposed to.

Little is known about the window of risk for native tree establishment, and is complicated depending on the planting regime selected, for example native trees are typically planted in succession. Kanuka and manuka rapidly form strong rooting systems which are more effective at holding soil together than pasture. A paper looking at the erosion control effectiveness of manuka and kanuka¹⁸ noted that at 1,000 stems/ha manuka canopy closed 7-8 years after establishment. At ten years of age, manuka held soil together 65% better than adjacent pasture and kanuka was 90% better than adjacent pasture at 20 years. It is generally understood that native trees are slower growing, given this and based on the anecdotal observations of foresters it estimated that the window of risk for some species is generally far greater for native trees than it is for radiata pine, in the range of 2-15years.

Besides the struggle for native tree establishment which drier conditions will exacerbate, there are the fire risk complications. Fire resistant species would need to be preferred, such as kawakawa, karaka and tupata. The Timata transition method, relying as it does on highly flammable manuka, kanuka or gorse, may have to be substituted for less efficient or more expensive transitional methods.

¹⁸ https://envirolink.govt.nz/assets/Envirolink/1562-HBRC210-A-review-of-research-on-the-erosion-control-effectiveness-of-naturally-revertingmanuka-and-kanuka.pdf



¹⁷ https://www.mpi.govt.nz/dmsdocument/50209-Review-of-actual-forest-restoration-costs-Contract-Report-Prepared-for-Te-Uru-Rakau-New-Zealand-Forest-Service-November-2021

Below is a short list of just some of the projects that may be of interest to the panel:

- Ngāti Whare, through a joint trust with the Crown were asked to regenerate the land back to its former state as part of the Whirinaki Forest Park.
- Marton based Tāmata Hauhā works with Māori landowners to plant transitional tree regimes on marginal country that is too steep or erosion prone for farming. Exotics such as pine, eucalyptus and cedar eventually give way to native trees.
- Tanes Tree Trust¹⁹encourages planting native trees to meet objectives from environmental restoration to sustainable production. It uses data from the Tāne's Tree Trust Indigenous Plantation Database to provide foresters, farmers, iwi, environmental NGOs, other community groups and individuals with realistic expectations for their plantings.
- Pan Pac is supporting research to explore transitional forestry and gain a better understanding of how environmental gradients, landscape matrix characteristics and composition effect the transition potential of an exotic plantation forest to native trees. This research addresses the issues of canopy manipulation, passive restoration, pest control, and at-scale cost feasibility.

Native tree carbon sequestration

Native tree forests have been frequently advocated as a preferred means of carbon sequestration. The Productivity Commission in 2018 and then the CCC in 2021 both issued reports which included target or projected targets for native tree planting as part of goals to reduce net greenhouse gas emissions.

As one of three scenarios, the Productivity Commission presented what it called a Policy Driven option area of 0.9 million hectares of native trees to be planted by 2050 (along with 2.3 million hectares of exotic trees) to achieve a carbon zero goal for New Zealand by 2050. The CCC proposed 300,000 hectares of native trees should be planted by 2035 to meet the 2050 goal, along with 380,000 hectares of exotic trees. According to the PCE however, only 1,300 hectares of native trees were planted in 2018.

MfE, in its report, admitted that rather than chase greater native tree area, the main opportunity to improve climate outcomes is through large scale pest management.

The CCC recommended an expansion of native forests for cultural, biodiversity, erosion control and water quality benefits. The Commission called for incentives to plant native forests so they could *'remove sufficient carbon as Aotearoa gets closer to the 2050 target'*.

There is currently insufficient government assistance, for anything like the scale of the two commissions' indigenous planting projections, either in Tairāwhiti or nationally. Apart from manuka for honey income, there is no immediate market incentive either. Moreover, the pressing time imperatives to achieve global greenhouse gas reductions frankly make a reliance on and advocacy for native trees quite irresponsible. It is reasonable to expect a standard hectare of *Pinus radiata* to have sequestered 1,200 tonnes of CO_2 by age 30, and to reach 2,000 tonnes of CO_2 by 50 years. In comparison, a typical native forest would be anticipated to have sequestered only 100 or so tonnes at 50 years old, and to have reached just 400 tonnes at 100 years of age.

¹⁹ https://www.tanestrees.org.nz/



Additionality and biodiversity credits

Currently there are significant economic constraints to establishing native trees, a system for incentivising the ecosystem services provided by native trees should be explored. This year the Taskforce on Nature-related Financial Disclosures (TNFD) reporting will be promoted globally, New Zeeland was an early protagonist for Taskforce on Climate-related Financial Disclosure reporting, it is anticipated that the Government will be exploring the options to develop a biodiversity credit system here. The Forico Natural Capital Report²⁰ is a clever example from Tasmania which demonstrates how this can be achieved in a mosaiced forestry landscape.

FOA is aware of a collaborative programme of research *Maximising Forest Carbon* between MfE, Te Uru Rakau and the Department of Conservation to understand landscape level carbon storage. The research programme will inform work to quantify biodiversity attributes and also provide the data required to capture additionality in pre-1990 forests. Additionality is an expansion of the ETS that would attribute ETS credits to pre 1990 forests, both native and exotic, when enhancements to carbon sequestration are made. Enhancements might include management interventions such as browsing pest control, fencing, the addition of fertiliser or other actions which promote forest growth. Additionality would capture the conservation estate, this could not only incentivise proactive land management but also native tree planting.

Summary of the issues for planting native trees

The issue around establishing natives and generating economic value from a native cover landscape is a complicated one. Establishment of native trees relative to radiata pine is expensive, labour intensive and more likely to fail. Few options currently exist for extracting revenue from land transitioned to native tree cover. Whilst in principle, harvesting of native timber can be undertaken with minimal environmental impact and generate a premium price the timeframes to harvest and the regulatory barriers are significant.

Even when native trees are established they cannot protect the landscape completely from failure. Midslope failures and stream bank erosion will remove all forms of tree cover to a greater or lesser extent. The weight of larger trees, whether radiata pine or native on the most erodible land is likely to induce failure. Smaller tree species such as manuka, kanuka could be a viable alternative however their life span of approximately 30 years brings other risks. Tōtara, like pines, is shallow rooted and eventually becomes vulnerable to not only slope failure but to windthrow as well. Work is needed to understand the window of risk, i.e. the timeframe over which tree roots offer reduced soil retention value, associated with native tree establishment. Before scaled planting of native trees in the most erodible Gisborne and Wairoa landscape the model for native tree establishment needs to be tested.

The workforce and subsequent community consequences of large-scale native tree planting must be considered. If large tracts of the land in Gisborne and Wairoa are successfully established in native trees then the impact on the workers here will be significant and potentially devastating. There would certainly be some ongoing work in controlling browsing pests and initial work controlling weeds which could replace some of the jobs loses but it is difficult to anticipate this providing enough work for.

Blanket native tree afforestation reminiscent of the large-scale post Cyclone Bola radiate pine planting could repeat similar mistakes, considered planting using a refined land assessment tool to create a mosaiced, nuanced landscape is preferable.

²⁰ https://forico.com.au/volumes/images/Natural-Capital-Report-2021.pdf



Alternative exotic tree species

There is a strong view being promoted that the industry should be planting species other than *Pinus radiata* to add diversity in the forest, reduce the single species risk and diversify markets away from principally 3 markets – the NZ framing market, pulp and reconstituted panels i.e. MDF and the China log market. It is argued if an undesirable biosecurity incursion occurs or any of the market sectors fail or change then the industry has a problem. Because of its light demanding characteristic radiata pine does not lend itself well to uneven aged stand and continuous cover management. These are all worthy considerations and the government and industry over a long period of time have supported research into other species in an attempt to diversify the forest resource.

Earlier forest plantings by the state included a wide range of exotic species but their performance was inferior to radiata pine across virtually all sites and they were replaced by the more productive radiata pine. Earlier stock maps of Kaingaroa Forest show radiata as a minority species but over time virtually all of these plantings have been replaced with the more productive and more commercially attractive radiata pine.

The former New Zealand Forest Service adopted a policy of having 10% of its annual planting programme in species other than radiata pine and Douglas fir in the 1980's to address the issues noted above. Drawing on available research from 30 years or more and practical experience from earlier plantings and despite best efforts across the country this was not successful. On the corporatisation of the state forest assets in 1987 this programme was quickly discontinued and many of the earlier plantings of other species, much of it dating back to the 1930's and 40's were liquidated in favour of radiata pine to improve the commercial performance of the forest estate. Liquidation of these plantings has continued since privatisation and much of the gene pool and information from these earlier plantings has been lost.

The Forest Service, via the Forest Research Institute, undertook a broad programme of research into other species, both hardwood and softwoods, but the impact of user pays and reduced government funding for more applied forest growing research meant a significant reduction and narrowing of the programme. Over the past 15 years the research programme has been progressively reduced down to focus on Californian coastal redwoods, three or four cypress species, *Eucalyptus nitens* and *fastigata*, Douglas fir and a range of durable eucalypt species under the Drylands Forest Initiative. Over the past seven-eight years there has been a greater focus on wood products from the species of interest rather than on the growing aspects.

Of these species only redwoods, *E nitens* and *E fastigata* have been successfully grown at commercial scale. The latter have only been grown and processed for pulpwood and chip. Control of paropsis and other chewing insects remains a challenge with *E nitens*. redwoods, other than very limited quantities, have not been processed commercially and markets for the whole tree, other than as export logs, are so far very limited. A range of other species are grown by smaller growers, the resource is small and scattered and processing is cottage industry, there is no market coordination or cooperation.

Barriers to scaling up plantings of other species, other than those that have been planted at more commercial scale are availability of seed, scaling up tissue culture production (for example redwood tissue culture takes 4-5years and needs to be planned a long way in advance of planting), nursery and establishment expertise, development of seed orchards and management of biosecurity issues. Costs of establishing other species are higher and with a lack of decision support tools and market return information it is currently difficult to demonstrate the commercial benefits of growing other species to forest investors. Being confident there are markets for the whole tree at time of harvest is important for investors if they are to maximise financial returns.



Poplar and willow have been successfully planted in forested and pastoral hill country margins as an effective erosion control or stream bank stabilisation measure. The poplar cultivar Kawa has been studied in Northland for it's agroforestry potential²¹. Research into breeding improvements, biosecurity risks i.e. disease and pest insects, and climate adaption has been undertaken. Further evaluation of these species should be considered when in exploring land use solutions for Gisborne and Wairoa.

In summary, forest investors, other than the small-scale operators, currently lack the knowledge and confidence to plant other species at scale due to the higher costs, market uncertainties and history of failures with other species. Finding other species that can be planted at the scale required is not easy and is a much riskier proposition for forest investors.

Obstacles can be overcome with time, with a well-resourced and long-term research programme including genetic selections, field trials, breeding programmes and establishment and silvicultural trials, processing studies and market analysis along with associated data collection to build and improve the range of predictive tools available to investors and forest managers. Support and extension will be required to build this confidence.

Good practice guides

When the NES-PF was developed MPI provided guidance on the implementation, part of this work was the development of supplementary industry good practice guides. In 2019 after discussions between FOA and MPI it was decided that FOA would be the appropriate body to produce and host forest practice guides to provide guidance on **how** operators could meet the regulations. The guides are not part of the NES-PF but can be enforced as set out below.

The NES-PF provisions for harvesting and earthworks require harvest plans and forestry earthworks management plans. Schedule 3 of the NES-PF sets out the requirements of such plans. Under sections 4 and 5 the plans must set out the management practices that will be used to avoid remedy or mitigate the identified risks of the activities along with the water control measures, sediment control measures and slash management measures.

The process is that an operator chooses the measures that it will implement to meet its regulatory obligations. Once an operator chooses a measure and sets it out in the management plan any non-compliance with that measure is non-compliance with the NES-PF.

FOA has 28 guides version 2 at February 2020²² and a NZ Forest Road Engineering Manual 2020²³. The guides are exactly that, guides. They provide a toolbox with options for an operator. The guides are not statutory conditions/standards but when chosen by an operator and set out in an NES-PF required harvest and or management plans they become conditions to be complied with. In the Hawkes Bay region, i.e. of relevance to Wairoa, FOA considers that this policy setting has provided a major step up in regulatory controls and is a policy setting that is working well.

The forest practice guides (FPGs) are reviewed and updated annually. Nationally uptake of the FPGs has been mixed, some view the guides as industry centric. FOA is currently exploring options to expand the guides to incorporate and update the old Environmental Code of Practice²⁴ (ECOP). Discussions

²⁴ https://www.nzfoa.org.nz/resources/file-libraries-resources/codes-of-practice



²¹ https://www.poplarandwillow.org.nz/documents/wood-production-of-kawa-poplar-rb14.pdf

²² https://docs.nzfoa.org.nz/site/assets/files/1517/amalgamated_guides-2-0.pdf

²³ https://docs.nzfoa.org.nz/live/nz-forest-road-engineering-manual/

have been held with Te Uru Rakau to explore options for making the updated FPGs/ECOP a co-branded document, to promote greater uptake and acceptance of the document as being an independently robust, nationally consistent industry tool.

In Gisborne the EWC have developed their own good practice guidance, the *Good Practice Guideline for Catchment Management*, specific to the unique physical setting here, which FOA endorses. EWC found that the FOA FPGs did not provide the level of detail to manage the site specific requirements in the most erodible steepland.

FOA is aware of work commissioned by Te Uru Rakau to develop a slash management guidance document, we understand that the consultant engaged prepared a draft document in 2021-2022 but the work has not been finalised. Priority should be given to progress this work and have it reviewed by a group of subject matter experts. Practical and realistic standard should be developed with regard to the mobilisation of slash, with slash defined as it is in the NES-PF. The standard should clearly identify the flood event level a forestry owner should be responsible to ensure slash does not leave a site.

With regards to solutions for silt and woody debris, provision of funding and resources by the government to prioritise the work updating, reviewing and expanding the FPGs is recommended. Collaboration with industry to further develop the draft slash management guidance commissioned by Te Uru Rakau in the context of the new climate settings is also recommended. Any proposed updates to good practice guidance should consider the body of work already undertaken such as the EWC catchment management guide.

Research and development

There is a significant amount of existing information that can be applied to the ongoing silt and woody debris problems in Tairāwhiti and Wairoa. This comes from a significant body of research undertaken over the last 50 years in New Zealand by industry, CRI's, government and universities. It is important to look at what has been undertaken and learned, assess where the gaps are and then direct future effort as appropriate.

In response to the ministerial inquiry and to the extreme weather events, FGR have identified key areas for research, for fast tracking or for commercialisation of existing work, as follows:



	1 Year	2 Years	5 Years	10 Years	Ongoing
1. Understanding and stabilising problem and at-risk areas					
Review of existing catchment management tools, gaps analysis, in the context of a changing climate.					
Current high risk sites – how to stabilise harvest or erosion debris in vulnerable areas (options for removing, stabilising, trapping).					
Soil and slope stabilisation – sustainable re-vegetation solutions.					
Retirement and transitioning to native forest – demonstration and guidelines, mosaic landscape approach, co-ordination and review of existing tranches of work.					
Development of a long-term environmental management tranche within FGR. For example, long term programmes similar to existing FGR partnerships, possible collaboration with SFFF funding.					
2. Improving forest management - silviculture					
Pinus. radiata forestry system design and regimes for lower impact					
Diversified species and forestry systems for steep and vulnerable land (including continuous cover forestry and mixed species)					
Improving forest management – harvesting					
Improving harvest planning and management, there is a lot of work and knowledge on this already but, there are issues around implementation and commercialisation.					
Development of low impact mechanised harvesting technology with less stem breakage on steep slopes. This is an area that needs more research – to build on the previous steepland harvesting research programme and the current automation and robotics research Programme.					

Table 1: Research and Development



Maximising wood utilisation at harvest – including integrated harvesting / energy systems. Obvious need for development of better processing and markets within New Zealand.	
'Walking Excavator' for cleaning slash out of waterways in steep terrain forests. Investigation of potential of a highly flexible wheeled machine with stabiliser legs (Menzi- Muck or Kaiser Spyder) to clean out waterways. FGR is exploring options for an operational trial with Schwitzer Contracting Ltd.	
4. Improved log market options, and commercialisation of biofuels	
Exploration of new end uses for example cutting to shorter minimum lengths for pulp/binwood grades, producing wood suitable for road batters or as temporary road or landing aggregate.	
Investigation of biofuel options and promotion/commercialisation of existing pilot programs for example, Mackwell Locomotive Co, Christchurch, wood-fuelled boilers for electricity generation, have agreed that to collaborate with FGR to develop a demonstration project.	



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Governance

At a national scale governance of the NES-PF is confused, as a regulation made under the RMA, MfE is the government agency responsible and hosts the NES-PF on its website. Te Uru Rakau are the administrators of the NES-PF and lead engagement and collaboration with the forestry industry. If there is more than one ministry then there must be transparency as to the lines of governance.

Consultation and implementation of the NES-PF

FOA submits that the implementation of the NES-PF has been under resourced. The *One Year Review* of the NES-PF (commenced May 2018) was not completed until April 2021²⁵. Of significance the review identified that practical implementation of the NES-PF by councils was a significant issue, including skill levels amongst council staff and differing interpretations of NES-PF regulations. 17 months later in October 2022 the government produced a consultation document *"National direction for plantation and exotic carbon afforestation"*. FOA made a submission on the document that can be provided upon request. In section 6.3.2 of the consultation document there were proposals to manage slash, below is the FOA submission on the matter:

r		,
Dle	Amendments to regulation 66 and 69 to clarify that slash on the cutover must be managed to ensure it is not mobilized in heavy rainfall (5% AEP or greater) and to avoid slope instability.	 While FOA understands the intent of the change and all care should be taken to avoid slash mobilizing in storm events, the reality is that the proposal as worded could not practically be met by any landowner in erodible geology. As evidenced in numerous extreme rain events, heavy rainfall in erodible geology will cause erosion and movement of the material that is sitting on the eroded land. This cannot be controlled on farms, the state highway network, within urban areas, and even fully protected native vegetation in the Department of Conservation Estate. Regulating that forest owners alone must be able to prevent erosion and avoid debris movement in all weather events is unachievable and unreasonable. The proposal is also completely at odds with proposed regulation to exclude forestry afforest aron prone land but then must prevent erosion. The only way erosion can practically be avoided in all weather events is to restrict forestry to land with minimal erosion risk (Class 5 and below). FOA requests that MPI seek advice from erosion specialists at Landcare Research and work with the Forest Industry to ensure that any wording changes to these regulations reflects the practical reality of operating in erosion prone landscapes.

²⁵ https://www.mpi.govt.nz/dmsdocument/44914-Report-on-the-Year-One-Review-of-the-National-Environmental-Standards-for-Plantation-Forestry



The obligation for mobilisation of **any** vegetation or woody debris other than "slash" should be regulated equitably.

Land Retirement - Just Transition

Tairawhiti contains some of the most erodible land in the world. One of the difficult matters that will inevitably require consideration in this process is whether some of the land currently in plantation forestry is in fact suitable to remain in productive use. One of the solutions available is retirement of the most erosion prone areas where the geology is such that it cannot sustain any form of harvest without unacceptable risk. Forest owners can absorb the costs of small-scale retirements at the margin, such as for increased planting setbacks and retirement of isolated high risk faces, and indeed this is already occurring. But if the outcome is that large scale areas of forests require retirement, then this brings into issue the need for a just transition for affected forest owners, and their contractors and workers who are dependent on the forests for employment.

The majority of forests in Tairawhiti were either established by the NZ Forest Service on Government purchased farmland, or were encouraged on private land through Government funded afforestation schemes, as a solution to the severe erosion caused by clearance of the land for pastoral farming. Forests that were established as protection forests by the NZ Forest Service were on sold by the Government to private interests as production forests, and more recently to Ngati Porou in resolution for treaty claims. If the ultimate decision is reached that substantial areas of these forests now have to be retired from production due to unacceptable risks of downstream damage at harvest time, given the Government's role in establishing the forests it is unjust and untenable for the full cost of this to be borne by the current owners and their workforce.

A system of transition will be a crucial component of any fair transition, potentially including Government buy out of the most erosion prone areas, as was carried out for farmers in the past. Government investment will also be essential to identify and develop alternative employment opportunities and economic support for the workforce to enable a just transition over time.

If large scale retirements are contemplated, consideration also needs to be given to the ongoing management of areas currently planted in radiata pine. The damage that has occurred in standing trees in Cyclones Hale and Gabrielle has shown that simply ceasing harvest and locking gates will not completely remove the risk of ongoing erosion and debris movement. Slopes will still fail and as the tree crop ages windthrow risk will increase. If a transition from production forest to native forest cover is considered the best long-term alternative in some areas, government assistance will inevitably be required to fund the physical transition process.

It must also be recognised that even if full retirement to native forest is achieved, in extreme weather events floods will still occur, and the geology in this area is such that even under full native cover some landscape failures will continue to occur. If failures occur in forested landscapes then inevitably woody debris will be entrained and delivered downstream. The only change will be the species present in the beach debris. Therefore, regardless of the outcome, any package to improve the resilience of the Tairawhiti community in extreme events must inevitably include consideration of retreating housing and infrastructure from the highest risk locations and the appropriate design of infrastructure. Even a wholesale retirement of the East Coast, which is economically unfeasible, will only reduce but not eliminate the risk of erosion and debris movement.

Additionality for pre 1990 forests and a biodiversity credit system, discussed above, could contribute to the feasibility of retiring land.



As noted in the previous section, it is also essential that any decisions to retire land is based on the best available information to ensure the highest risk areas are identified through a robust defensible process, improvements to existing erosion susceptibility classification tools are discussed above.

Regulation, regionally specific changes

Working group collaboration

Establishment of a working group made up of representatives from industry, specifically the EWC, and GDC to work collaboratively rather than defensively towards practical meaningful environmental improvements would be beneficial. Local forestry companies have advised FOA that the relationship with GDC is at times difficult and can a barrier to effective environmental management. Fortnightly meetings at least initially could be set up immediately to establish the terms of reference for the group, share knowledge, discuss planning settings and projects with common objectives could be progressed. We direct the panel towards the collaborative working relationship that HBRC and the HBFG have built up to foster good practice and ensure that compliance with NES-PF is realised. Similar successful working groups have been established between Northland Regional Council and local forestry representatives.

In addition to a working group a technical advisory group (TAG) could be set up to further support GDC. A TAG could include scientific experts to provide links to the most recent research, planning experts, and industry representatives.

Further training for staff and additional staff resources should be considered to empower the GDC to implement environmental solutions identified by the inquiry process.

Catchment clearance limits

Catchment clearance limits have been applied in some high-risk situations. These are applied in recognition of the window of risk that occurs after harvest and also the inevitable increase in sediment loss.

The situation in Tairawhiti is somewhat complicated by the large-scale planting of eroding farmland over a relatively short period of time by multiple parties, meaning that multiple forest owners' forests in one large catchment can reach harvest age at the same time leading to considerable harvest activity occurring simultaneously. Inevitably the harvest is most concentrated in the first rotation of harvest as roads are being built and the trees are all of a similar age.

Some larger companies use catchment limits as a part of their internal response to managing risk, and in limited cases they have been included as a condition on resource consents. To apply limits in a situation with multiple landowners in one catchment would require either the forest owners to voluntarily cooperate to come up with a system to stagger harvest, or for the council to develop a system that is fair to all and then regulate that via resource consents.

It needs to be recognised that catchment limits do nothing to eliminate the risk of erosion and debris movement. They simply limit the area of the catchment that is at its most vulnerable at any one time and thereby the scale of the damage should a cyclone occur at any point in time. Even with a perfectly spread cut in a catchment, and a 5-year window of risk for radiata pine operating on a 28 year rotation length would mean that an estimated 1/6 of the productive area is vulnerable at any one time, so it is by no means a silver bullet.



Catchment Management Groups

Protection of vulnerable downstream receptors from the mobilisation of silt and woody debris cannot stop at a forest boundary. Collaboration between all of the landowners within each catchment will be required to generate the best environmental outcomes. The best entity to drive the establishment of catchment groups where they don't already exist or to enhance the work of existing catchment groups will be GDC. GDC should be adequately resourced and provided with the appropriate training to do so. Landowners and catchment groups will understand best how to manage their properties, GDC should be empowered to support them to do so.

Recovery of non-merchantable wood, health and safety implications

GDC have signalled intent to further regulate the amount of non-merchantable wood left on erosion prone slopes after harvest, and perhaps use the RMA Enforcement Order mechanism (S3124 to 321)²⁶ to require this. This imperative gives rise to a clear tension between Health and Safety and Environment (under the H&S at Work Act and the RMA) so, to improve worker safety, larger forest owners in Gisborne have directed contractors to use grapples suspended from cables to extract felled trees from steep slopes rather than have workers on those slopes fixing cables (known as chokers) onto trees to facilitate extraction in cable harvesting (in a process termed "breaking out"). Many contractors with grapples struggle to haul difficult to reach logs compared to what was possible with traditional manual breaking out process. The net result is that imperative to improve worker safety has created a sub-optimal environmental outcome (more stems, both non merchantable and merchantable, left on slopes).

Resilience of infrastructure

According to GDC there are 474 bridges in the district, the cyclones destroyed nine of them and 14 were left with major structural issues. The choke points, in a literal sense, were the bridges. Woody material from a range of sources, carried by the massive flood volumes, was seen banking up against bridge piers. How many of the damaged bridges would have succumbed were there less or no woody material is a matter for further investigation. Wood alone cannot be totally responsible.

One of the solutions to the pressure on bridges must be a suit of engineering designs. Longer spans on bridges, or no immersed piles at all, would both reduce the risk of debris accumulating against a bridge and as well provide less impedance to water flow. In some instances where the upstream terrain makes it feasible, settling wetlands and living slash traps could be created, allowing wood debris to demobilise and be cleared at a later date.

Such bridges would be more expensive to build, but less than the expense of frequent repairs or replacement, and without the disruption of waiting for bridges to be repaired. Improved bridges do not reduce the incidence of residue in the watercourses, nor do they prevent the accumulation of wood on beaches. But more resilient bridges would be a backup to upstream woody debris reduction efforts. Bridges without piles would also be appropriate to respect the mauri of the river. Where piles remain, or are necessary, a consideration of in-floodwater engineering diversion structures may lead to effective and inexpensive protection of bridges in the region and people who rely on them.

Environmental regulations limit the area around river and stream beds that forestry companies can access for both storm recovery/clean up works and preparations ahead of storms. The regulatory barriers that prevent forestry companies and others from accessing river and stream beds to take

²⁶ <u>https://www.qualityplanning.org.nz/node/1099</u>



actions to minimise the deposition, mobilisation or damage caused to infrastructure by woody debris and silt should be reviewed.

Review of design thresholds should be considered, should infrastructure be designed to 1 in 50-year storm events instead of 1 in 20 year events?



	12 months	2 years	5 years	10years	Long term
Afforestation	Funding to undertake the Pakuratahi land use study.	land use study.			
	Development of a planting guide to use in combination with land use assessment tools to inform the best tree species to plant on a slope-b scale.	Development of a planting guide to use in combination with land use assessment tools to inform the best tree species to plant on a slope-by-slope scale.			
East Coast fibre market	Remove regulatory barriers to construction of processing options.				
	Consider special planning settings to fast track.				
	Build up the resilience and capacity of costs	Build up the resilience and capacity of regional infrastructure network, road and rail to reduce transport risks and	l rail to reduce transport risks and		
	Explore options to develop additional biofuels to other parts of New Zealand	Exercise to the set of the set			
	Prioritise research and development	Prioritise research and development into biofuel products that will make use of surplus woody debris. Set up a governance committee to co-ordinate and direct best	surplus woody debris. Set up a gov	renance committee to co-ordin	ate and direct best
	Review of projects on biofuels and				
	funding to scale up projects with potential.				
	Facilitation of a fibre market, collabo Huntly Power Station, etc.	Facilitation of a fibre market, collaboration with big end users such as Fonterra, DHBs, Ministry of Education, Huntly Power Station, etc.	DHBs, Ministry of Education,		
Land use assessment tools	Review of existing tools and body of	Operationalise land use tool in			
	previous work to developed refined	Gisborne and Wairoa, as a			
	scale tool.	demonstration project			
		Review intersection with NES-PF			
	Foster and prioritise research work the	Foster and prioritise research work that adds to NZs understanding and contributions to the development of land use assessment, partnerships with CRIs, FGR and	utions to the development of land u	ise assessment, partnerships wil	th CRIs, FGR and
	Government departments.				
Onsite, operational management regimes and	Support EWC to update their Good				
	Management with learnings from				
	the most recent storms, promote to HBFG for use in Wairoa.				
	Remove GDC regulatory barriers to				
	woody debris containment options and other engineering options.				
	Consider new fire management				
	options for burning slash on landings.				
Native tree planting	Co-ordinate body of work being				
	undertaken by a multitude of				
	Government departments, CRIs and				
	ourer erruries by establishing a governance leader to direct				
	research effort and prevent				
	duplication.				

Table 2: Summary of solutions in time bands



	Remove regulatory barriers for sustainable native tree harvest.
	Promotion of sustainable native timber.
	Foster, prioritise and promote research to enhance New Zealand's understanding of native tree establishment and transitional forestry.
	Urgent work is needed to understand the window of risk
	associated with native tree establishment before large scale planting is undertaken.
	Promote and facilitate browsing pest control, link to PF2050.
	Support for native tree nurseries to upscale production and reduce seed and seedling costs
	Direction from Government on native tree provenance i.e. can only local tree genetics be used?
	Operationalise a biodiversity credit system to remove economic barriers for native tree plantine.
	Capture additionality of pre 1990 forests in the ETS.
Alternative species	Review of existing body of research to identify knowledge gaps.
	Foster, prioritise and promote research to enhance New Zealand's understanding of the commercial, biosecurity and environmental viability of alternative tree species.
	seed and seedling costs and lag times.
Good Practice Guides	Fast track work to finalise the slash
	management guidance that Te Uru Rakau commissioned.
	Progress work to merge the ECOP and FPGs and co-brand the document with Te Uru Rakau. Expand, combine and update the existing guides.
Research and Development	Refer to Table 1 for time bound priorities.
Governance	Review responsibility functions between MFE and Te Uru Rakau with
	regards to managing the NES-PF, recommend that TUR hosts the
	NES-PF.
	Explore options for fair
	compensation of the most erodible government planted land.
	Consider managed retreat from high-risk flood plain sites and/or the most erodible land which will be vulnerable to future storm damage
	Establish and facilitate a biodiversity credit system to supplement economic barriers to land retirement and add settings within the ETS to capture pre 1990 additionality.
Regionally specific changes	
	working group made up of industry and council representatives
	Establishment of a TAG to support
	GDC with scientific experts. Empower GDC with additional
	Linpower ooc with additional resources and staff training.



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Summary and scenario analysis: the impact of possible outcomes

Greater regulation and reduced plantation forestry

If solutions implemented by the inquiry panel include greater regulation and therefore greater bureaucratic time and cost burden for forest owners in Gisborne and Wairoa the viability of forestry here, when already under pressure, becomes questionable. A net retreat from forestry in Gisborne and Wairoa will have significant economic impacts for the communities here who depend on the sector to create a living. If the forest gates are locked and the land is unmanaged a much greater problem could be generated. The solutions in Gisborne and Wairoa must remain local and specific to the unique physical setting here. If solutions are rolled out nationally vast areas of New Zealand, in fact most of the remaining areas of the country, will have to carry the burden of overly prescriptive and conservative regulations that are not fit for purpose in other landscapes.

More forestry with improved environmental management

Considered, nuanced afforestation in the right places with improved environmental practices will offer significant benefits to the communities of Gisborne and Wairoa. Jobs and an emerging bioeconomy coupled with greater environmental outcomes such as net sediment reduction, water quality improvements, biodiversity enhancement (certified forests are required to set aside 10% of their estate as native reserves), and carbon sequestration are all foreseeable potential benefits. A mosaiced landscape including radiata pine in the right places can provide net benefits to the community here.

In summary, it is imperative that any alternative land use options promoted for this steep, highly erodible, remote landscape do not generate greater perverse outcomes. Whilst there are some solutions that can be implemented immediately other options will take time. It is critical that the solutions considered are underpinned by robust, tested science. Following the 2018 storm and prior to this, the forestry sector has worked hard to find solutions to the mobilisation of woody debris and silt, but in these new climate settings innovative new solutions are needed. A collaborative approach from the industry, councils, central Government, the research community will be needed to find the most effective solutions.

Note on making this submission public

The FOA does not object to this submission being made public. FOA is happy to provide further information to the inquiry panel as required.

Lache Mill



Rachel Millar Environmental Manager David Rhodes Chief Executive



Appendix 1:

Review of Statistical Methods Used to

Assess the Composition of Woody Debris

David Fletcher www.davidfletcher.consulting 6th April 2023

Executive Summary

I was asked by the New Zealand Forest Owners Association to review the statistical methods used to determine the composition of woody debris, as described in the following reports:

"Woody Debris Assessment Methodology" (Interpine Innovation, 3rd March 2023)

• "Large Woody Debris Assessment Guide" (Gisborne District Council, Version 2.1, March 2023)

For simplicity I will refer to these as the "Interpine report" and the "GDC report", respectively. Likewise, I will refer to woody debris as "debris", and debris which has a diameter above a specified minimum as "large debris".

Throughout this report I will focus on the objective of estimating the composition of debris in one or more sites. As there will typically be too much debris at a site to assess all of it, there is a need for suitable sampling techniques to estimate the composition at that site.

I was not asked to review any statistical methods underlying

- Estimation of the potential sources of the debris
- Mapping of the locations of debris using aerial/satellite/drone photography
- Estimation of the volume of debris at inaccessible/dangerous sites using drones

My main conclusions are as follows:

1. The Interpine report uses line-intersect sampling (LIS) to estimate the total volume by area for each type of debris. LIS methods have been studied in detail by scientists and statisticians working in forestry and ecology for many years. There is not universal agreement as to exactly how these methods should be implemented, but it is clear that they provide a cost-effective means of estimating volume per area.

2. The GDC report uses square-plot sampling to estimate the total count per area for each type of debris. It is not clear how the statistical analysis should be conducted, especially as there is no indication as to whether the plots are to be placed in random locations.

3. It is difficult to compare the methods in the two reports, as they appear to be trying to estimate different quantities. That said, the LIS methods described in the Interpine report are well-established and have been the subject of scientific per-review since the 1960s.



Review of Statistical Methods in the Interpine Report

The key points to be made about the methods described in the Interpine report are as follows: 1. These methods are based on line-intersect sampling (LIS), a technique that has been peer-reviewed in the scientific literature, by both forestry scientists and statisticians, and has been used in the forestry industry for several decades.

2. The version of LIS specified in the report involves the following process a. Several three-segment transects are placed in the area. Each transect forms an equilateral triangle, the length of each side being 10m, and each triangle is independently and randomly oriented. The use of triangle-shaped transects, with random orientation, has been shown to provide robustness to non-random orientation of the debris.

b. For each side of each triangle, the diameter of a piece of large debris crossing that line is measured at the point where it crosses, with a piece being defined as large if the diameter at that point is at least 7cm.

c. If a piece of debris crosses more than one side of a triangle, the diameter is measured at each point that it crosses a side (as long as the diameter at that point is at least 7cm). It is not clear from the report if measurements would be made at each point that a piece crosses a single side, if it were to cross that side more than once. There has been an argument put forward in the literature to make at most one measurement per piece per side.

d. If any side of the triangle is on sloping ground, the length of that side is increased to ensure that the horizontal distance covered by that side is still 10m. A table of the required adjustments is given in the Appendix to the report, for a range of possible slope gradients.

e. For each triangle, an estimate of the volume of large debris per area (m₃/ha) is given by a wellestablished formula. This formula is robust to the shape of individual pieces of debris not being cylindrical (e.g. by tapering) in the sense that it does not lead to substantial bias. On the other hand, departures from a cylindrical shape can lead to a decrease in precision of the estimate.

f. An estimate of the volume of large debris per area for the whole site is the mean of the estimates from the different triangles, with a 95% confidence interval around this mean being calculated in the usual way when estimating a population mean from a sample mean. This confidence interval is typically presented on a percentage scale, and is then referred to as a "probable limit of error" (PLE).

3. Two methods are suggested for determining the locations of the triangles. This first, preferred method, is to select a random location (using geo-spatial sampling tools). The second, which may be preferable for long, narrow accumulations of debris, involves selecting the locations to be at equally-spaced distances along a baseline, the first location being suitably randomised. In the latter case, it would be worth exploring the potential for a slightly different method for





calculating the PLE. In many survey settings systematic sampling can lead to a more precise estimate than random sampling, but allowance needs to be made for the type of sampling used. If the results are analysed as if they came from a random sample, the PLE is likely to be overly pessimistic, i.e. the precision is likely to be underestimated.

4. The estimation of volume per area can obviously be done separately for different types of debris, and an estimate of the proportion that a particular type of debris constitutes of the total volume per area can be calculated. Calculation of a confidence interval for this proportion has not been discussed in any of the literature I have reviewed, but standard statistical methods for doing so are easy to apply.

5. There is no discussion of the potential for stratifying the site according to the expected volumes, e.g. low-density versus high-density locations. Again, there is potential benefit in the use of stratified random sampling or stratified systematic sampling, and this is straightforward to apply.

Review of Statistical Methods in the GDC Report

The key points to be made about the methods described in the GDC report are as follows: 1. The focus appears to be on estimation of count per area, rather than volume per area.

2. This leads to the use of a different sampling technique, with a 10m x 10m square plot being placed at several locations in a site, and all the debris of a certain type being counted within each plot.

3. There is no indication as to how the results are to be combined into a single estimate for a site, but I assume that one calculates the mean count per area over all plots. Likewise, there is no indication as to how an estimate of precision is calculated, but I assume that a 95% confidence interval is calculated in the usual way when estimating a population mean from a sample mean.

4. There is no indication that randomisation is to be used when selecting the locations for the plots. This could lead to bias (even subconsciously) in the choice of locations, and also makes a standard statistical analysis (point 3 above) less justified.

5. There is discussion of methods for avoiding observer bias in the counting process, so it is surprising that the possibility of sampling bias (point 4 above) is not discussed.

6. As in the Interpine report, there is no discussion as to how to calculate a confidence interval for the proportion that a particular type of debris constitutes of the total count per area.

7. The rule given for deciding whether to count a log that lies partially outside the plot is vague. If 25% or less of the log lies outside the plot it is to be counted, whereas if "only 25%" lies within the plot it is not to be counted. There are two problems with this definition. First, I assume "only 25%" means "25% or less". Second, and more confusing, it is not clear whether to count a log which lies 26%-74% within the plot. For example, should a log that is 50% within the plot be counted?



Member Survey on Slash/Sediment Impact

New Zealand Federation of Commercial Fishermen



Survey Scope

- members' fishing has been impacted anywhere in New Zealand to 8 questions asking for observations and information about how inform the Federation's submission.
- Survey was sent to all Federation members.
- Representative sample of 20 fishers from across the country.



Q1 Where do you fish?



"Other" included trolling (2), fyke netting (1), lobster and scallops.

Q3: I notice the quality of water where I fish is worse after heavy rain or storms due to silt, slash or other debris/rubbish. "You can see a brown line well out into the harbour from every river/creek. In Kawau Bay this went out at least 4 to 5 kilometres from the shore line. The whole harbour of Leigh was brown to the opening of the harbour. We see logs floating in all ports: Leigh, Sandspit and Ti Point. We get hooked on logs up Pakiri Beach that are submerged in the sand under the water and lose gear and fish."

"We have large areas of short rotation plantation forestry on the eastern side of the Coromandel Peninsula with lesser amounts on the western side. After high rainfall events we fishers see the plumes of sediment laden water exiting from our harbours and coastal catchment rivers and estuaries."

"Following large rain and flood events lots of silty muddy water mixes inshore with various Slash volumes."





Q5: In the past two years, levels of silt, slash or other debris/rubbish in the water have impacted me/my business financially.

"30% of my income - \$100,000"

"\$200,000 to \$300,000 annually"

"10,000 ... we have to move to other fishing areas" "\$200,000 (lost fishing time and damaged nets)"

"Stopped flounder fishing because nets were constantly getting destroyed"



O6: In the past two years, approximately how many times has slash or logs, silt, or boat/equipment, preventing you from going in the direction you needed to etc.)? other debris affected your typical fishing method or location (by damaging your

- month time away from specific grounds could mean missing a fishing "3 times but ... it is the amount of time we are displaced. A 2 or 3 'season'''
- "Approx 20 weeks (trips) our vessel has had to relocate away from areas due to excessive slash and logs being caught"
- early so many sticks an logs. worst I've seen in 31years driving this "Several times. Have fitted driving lights up front of boat for leaving boat"
- "Everyday we catch pine logs or bog our gear in silt."



Supporting Photographic Evidence

12:06 PM Mon 3



Screenshot showing sedimentation plumes extending into Tasman Bay from Wairau River the morning of 2 April 2023. Sourced from Cawthron Institute's Cawthron Eye, a website that displays enhanced, true colour NASA satellite images of New Zealand's coastal waters.





Photographs from Gisborne post-Cyclone Gabrielle, showing (clockwise from top left): Slash build up near a bridge; slash build up on a boat ramp; floating slash and debris on open water; a slip off the Gisborne coast; and wood debris hauled up from the water.



Sediment/silt plumes extending into the marine environment in Hastings.



Aerial photograph of the impact of slash to the north of Wairoa.


Submission to the Ministerial Inquiry into Land Use

6th April 2023



- 1. The Climate Forestry Association (CFA) is pleased to provide you with our submission to this Ministerial Inquiry into Land Use (MILU).
- 2. We would be happy to provide you with any further information that may aid this Inquiry.
- 3. We acknowledge the harm caused to the communities of Tairāwhiti, Tūranganui-a-Kiwa and Te Wairoa and the damage to their homes and communities during Cyclones Hale and Gabrielle.
- 4. As the industry voice for the Climate Forestry community, we are committed to contributing our knowledge and expertise to this MILU process. While we believe our forestry processes are out of scope for this review, we participate to aid in understanding determining the best actions to remedy the devastation and prevent similar future experiences.

Who we are

- 5. The CFA represents foresters, ecologists, Māori and non-Māori landowners, community organisations, consultants, and investors. We support responsible landowners who are committed to tackling the climate crisis with urgency, creating jobs and incomes for communities across Aotearoa and ultimately restoring native forests to recloak the whenua. The CFA promotes the active management of permanent forestry, including continuous canopy harvest forestry, native-only forestry, and transitioning exotic to native forestry.
- 6. Climate forestry is the term we use to refer to forestry that is registered in the Emissions Trading Scheme (ETS). Our members undertake climate forestry, meaning they manage their forests in the long term as a means of carbon sequestration but also to optimise land use by using fit for purpose land, preserving and improving biodiversity, and reducing predators.
- 7. New Zealand, and the world, is facing a climate emergency and action is required now to mitigate the impacts of our changing climate. CFA members and the climate forestry community are deeply motivated to do our part to meet this challenge, by make a meaningful contribution to the sequestration of harmful greenhouse



gasses, while also restoring the whenua of Aotearoa to native, biodiverse forests.

8. We do so by exercising our values, in this submission and in all our discussions and engagements around Aotearoa: to be trustable, constructive and outcome-focused in advocating for the right solutions to meet the challenges of climate change through forestry, and in restoring thriving and biodiverse native forests.



Summary of our submission to MILU

- 9. We are deeply saddened by the destruction, loss of livelihoods and lives that have happened in Aotearoa's eastern regions following cyclones Hale and Gabrielle.
- 10. We support this Ministerial Inquiry into Land Use (MILU) on the basis that the communities of Tairāwhiti, Tūranganui-a-Kiwa and Te Wairoa deserve being heard, and answers need to be provided about whether and how land use contributed to the damage to these regions.
- 11. We further acknowledge the concerns about sedimentation exacerbating woody debris migration. We prefer referring to the core issue of this MILU process in these terms, as we believe that referring simply to forestry waste, or slash, under emphasises the two interrelated issues that may have been responsible for the damage to these regions. Throughout this submission, we will distinguish between sedimentation – which is an issue of erosion control - and woody debris migration, which is an issue relating to specific forestry harvest practices may cause or exacerbate these issues.
- 12. We support measures being designed to reduce the amount of sedimentation, and separately the issues of woody debris left on land after forests are harvested and steps to mitigate the risk it poses.

Climate forestry practices are out of scope

- 13. The climate forestry community is concerned, however, that our industry and practices will be caught in this MILU process, as permanent climate forestry is simply out of scope of this enquiry.
- 14. Our view is based on the scope set in section 12 of the Terms of Reference of this Inquiry:

"12. The scope of the is specific to land uses associated with the mobilisation of woody debris (including forestry slash) and sediment in the Tairawhiti/Gisborne District and Wairoa District."



- 15. By definition, a permanent forest does not create anywhere near the same degree of woody debris as a clear-felled for harvest forest.
- 16. Further, there is substantial research and evidence that permanent forestry is a suitable method for erosion control that reduces sedimentation risks. We encourage this Inquiry process to consult with Scion on the extensive research they have done into erosion management, and the use of forestry of all species to limit and control for sedimentation.

Permanent climate forestry practices offer a way forward

- 17. This MILU process must draw a distinction between two very different kinds of forestry practice:
 - a. permanent, actively managed forestry practices; and
 - b. the clear-felling harvest practices common in rotational forestry,

and ensure the former is left out of this MILU process.

- 18. CFA members undertake forestry on a very different basis than those that are focused on specifically growing wood for harvest and undertaking damaging clear-felling practices. Our members are registered in the Emissions Trading Scheme (ETS) on the basis that they seek to manage these forests in the long term as a means of carbon sequestration.
- 19. In addition, our members will soon be required to commit to the Code of Practice developed by CFA with Ngā Pou a Tāne (the National Māori Forestry Association) – a proactive industry-led self-regulatory measure that we are introducing to improve and standardise practices in climate forestry and provide transparency to our communities in how we operate.
- 20. Climate forestry is not "lock and leave" forestry, nor do our members clear-fell exotic species and replant them. Instead, using transition to native practices, we gradually transition the forests back to native species. As a result our forests do not result in the problem of



woody debris creation in the way the extractive clear-felling of rotational forests does.

- 21. Permanent climate forestry should not be penalised for the practices of rotational harvest forestry. Therefore, any measures to control woody debris should be appropriately targeted and not such a broad-brush approach that they affect all forestry.
- 22. We also recommend the conversion of rotational forests to permanent climate forests as an avenue to reduce the creation of woody debris and enhance erosion management to prevent sedimentation. We do so because this allows a pathway for transition to native forestry.
- 23. Our members are committed to managing climate forests in a balanced manner that maximises the benefits to the communities around them, and to all of Aotearoa. Not only do these forests sequester greenhouse gasses, and thus offset some of the harmful aspects of climate change, they also provide jobs for local communities and diversified income streams for local landowners.
- 24. We believe that an appropriate outcome for the affected regions would involve appropriate use of this fragile land, with practices than maintain, if not enhance this whenua, and the outcomes for the people and communities that live on and work it. Transition to native forestry achieves these outcomes.
- 25. Accordingly, we believe that appropriate land use may look like:
 - a. Actively managing permanent forest cover, with particularly native species over time through transition practices, over the hills of Tairāwhiti, Tūranganui-a-Kiwa and Te Wairoa. Not only will this limit erosion of soils and lands into waterways but will prevent unsightly scarring of the land through extractive forestry practices, and the issues of woody debris migtation and sedimentation that may have occurred following these cyclones.
 - b. Maintaining employment opportunities, skill sets, experience, and expertise, and redeploying those so that the communities on Aotearoa's eastern coastline remain economically viable.
 - c. Respecting the wishes of landowners, particularly Hapū and Iwi, to use their lands as they see fit, whilst abiding reasonable



standards to enhance collective outcomes and prevent wider community harms.

- d. Contributing to offsetting the harmful effects of the dangerous overheating of our climate – the same climate change event that risks having "supercharged" these cyclones in the first place.
- 26. Climate forestry meets these criteria by providing permanent forests, that can be encouraged to transition to native over time through ongoing active management; that provide jobs and incomes to the communities that are experienced experts in forestry practices, and that help meet our collective targets and ambitions to limit harmful greenhouse gasses in the atmosphere.
- 27. We don't believe that clear-felling, intensive rotational forestry practices are appropriate in many parts of Tairāwhiti, Tūranganui-a-Kiwa and Te Wairoa regions. We say this based not only on the evidence of the incredible devastation that sedimentation and migration of woody debris has caused, but also on the availability of viable alternatives for clear felling practices through conversion to permanent climate forestry. We believe that this MILU should consider the range of incentives that are available to forest owners, and how these may be changed immediately to better respect the whenua.
- 28. We believe that this MILU can help all of Aotearoa learn valuable lessons from Cyclones Hale and Gabrielle, and lead to better outcomes not only for Tairāwhiti, Tūranganui-a-Kiwa and Te Wairoa, but for all of Aotearoa.



About climate forestry in Aotearoa

- 29. For the purposes of context, our submission to this MILU includes this background information on the nature and scope of climate forestry in Aotearoa. New Zealand has just over one million hectares suitable for climate forestry, spread across Aotearoa.
- 30. Of that million hectares, there is currently approximately 520,000 hectares of forestry registered in the Emissions Trading Scheme (ETS) as of early 2023. Of that and as of September 2022, the Ministry for Primary Industries/Te Uru Rakau (MPI/TUR) estimate that approximately 64,000 hectares of that is in the Gisborne region, and a further 44,000 hectares in Hawkes Bay.¹
- 31. Registration in the ETS covers both permanent forests i.e., trees that were planted for the primary purpose of carbon sequestration in the long run; and rotational forests, which are registered in the ETS under "averaging" regulations that allow them to contribute to carbon sequestration as the forest is growing before being harvested.
- 32. One key difference between dedicated climate forests and rotational forests is the permanent nature of the former. Climate forestry is now included in the permanent forestry category of New Zealand's ETS. This is based off extensive consideration, consultation and evidence, which results in a recognition that these forests are intended to remain standing to sequester carbon in the long run, all while being actively managed to ensure forest health.
- 33. Importantly, to be registered and recognised in the ETS, these forests must be planted post-1990. Many of the forests in the affected regions may have been planted before this date, as part of the response to Cyclone Bola in 1988.
- 34. Land use, availability and selection is an important to climate forestry. CFA members have adopted a series of proactive practices around land acquisition to ensure climate forestry is undertaken in a balanced and responsible fashion. Most climate forests are planted on land that is Land Use Categorisation (LUC) Grade 6 or above due

¹ Ministry for Primary Industries/Te Uru Rakau,

https://www.mpi.govt.nz/dmsdocument/45232-Emissions-Trading-Scheme-for-Forestry-land-statistics-



to these measures; essentially, land that is less suitable to pastoral and agricultural uses, and more suitable to forestry applications:²



- 35. Due to the permanent nature of these forests, climate foresters can plant in more remote locations without concern for access for harvesting, roadways, or other necessary infrastructure to harvest and remove the wood from the forest, as it is not intended to be harvested the same way that rotational forests are. This results in better utilisation of otherwise marginal, remote land.
- 36. Much of the land that Māori have left in ownership of hapū and iwi is in the higher classifications of the LUC system, and as a result Māori have extensive holdings of land suitable for climate forestry. The CFA works closely with Māori landowners and supports Māori aspirations to use climate forestry to enhance the economic prospects of hapu

² Ministry for Primary Industries/Te Uru Rakau,

https://www.mpi.govt.nz/dmsdocument/45232-Emissions-Trading-Scheme-for-Forestry-land-statistics-



and iwi, while also restoring native forests and enabling Māori to contribute to our climate challenge too.

- 37. Permanent climate forestry does not result in clear-felling whole swathes of forest; any harvesting is limited and maintains canopy coverage. Also, it does not result in the same volume of woody debris as seen in harvest forestry. Sedimentation is also reduced thanks to the soil retention benefits of tree roots, and the lack of exposure to weather conditions the forest canopy offers.
- 38. One of the measures that the CFA will champion on behalf of the climate forestry community is the introduction of a new Code of Practice, which will proactively bind the industry to a series of measures and commitment on best practices in climate forestry. These measures include:
 - a. Land-use.
 - b. Active management.
 - c. Forestry management plans.
 - d. Transition to native planning (see more about this below).
- 39. In doing so, New Zealand can be confident that climate forestry is being done in a manner that helps to meet our climate commitments; preserves or improves the environment through transition to native practices and is responsible in the way that we access and use land.

Benefits of climate forestry to Aotearoa: carbon sequestration

- 40. Land access and land use are critical issues for climate forestry in Aotearoa. For that reason, we wish to share what we see as the benefits to Aotearoa through climate forestry, so that this MILU may consider the range of benefits this practice offers.
- 41. Firstly, New Zealand's climate forests sequester carbon in accordance with the Land Use, Land Use Change and Forestry (LULUCF) measures originally introduced in the Kyoto Protocol. Forestry based carbon offsets contribute to New Zealand's Nationally



Determined Contribution (NDC); the binding requirement we have as a nation to reduce or offset the total carbon emissions by 2050.

- 42. In terms of our increased commitment we made at Glasgow, the shortfall in gross emission reductions is forecast to be 102 million tonnes of carbon by 2050.
- 43. New Zealand's climate foresters are keenly aware of how important it is that the ETS is used to encourage gross-emission reductions, rather than meeting New Zealand's climate targets through offsetting alone. However, we are also concerned there may be an underachievement by emitters in gross emission reductions compared to the budget set out by the Climate Change Commission, which will further add to this gap in New Zealand's NDC.
- 44. This shortfall in gross emission reductions required to meet the NDC is one of the critical issues facing New Zealand, as it may only be met in one of two ways either through domestic offsetting in our own climate forests, or through procuring credits from other countries' climate forests through competing for credits on the international market. The cost of these credits from offshore is estimated to be \$14 billion.
- 45. As a result, CFA advocates for a balanced approach to the scale of climate forestry in recognition of this that climate offsets through forestry should be used to "top up" the shortfall in New Zealand's gross emission reductions, and therefore reduce the need for New Zealand to procure credits from offshore to meet our NDC. The CFA believes that New Zealand is far better off financially, climatically, and credibly sequestering carbon in our own forests, rather than paying other countries to do meet our contribution for us.
- 46. We also believe that recognising the importance of forestry as a carbon sink, and not just as an extractive resource, is an important consideration for this MILU process.

Benefits of climate forestry to Aotearoa: native forest transition and re-establishment

47. Secondly, climate forestry allows for the regeneration of our native forest species and the reestablishment of extensive native forests.



The science of transitional forestry is not new - in fact, there is 50 years of research into it as a methodology, and it mimics and accelerates natural forest ecology that is millennia old.

- 48. The expertise in utilising transitional forestry and accelerating these natural processes in New Zealand exists in the private sector, through many CFA members - those large-scale exotic carbon forest owners that have developed, refined, and deployed these practices, and are continuing to refine these practices through active management of their carbon forests.
- 49. At a basic level, transition practices involve careful site selection and ongoing management to maximise the transition potential to native forest species. The factors for successful forestry conversion include:
 - a. Availability of seed sources, either from proximate stands of native forestry, or from existing seed sources that remain in the ground.
 - b. The potential for weed and pest management, which may include fencing for example, to protect native seedlings as they emerge under the cover of exotic species such as Pinus Radiata.
 - c. The right geographic conditions, including latitude, rainfall and topography, to allow for native re-establishment.
 - d. Ongoing active forest management to facilitate the sprouting of native species at the optimum time, through for example the creation of light wells in the forest cover.
- 50. Transition forestry is being refined across the climate forestry community. It solves an otherwise formidable economic constraints in planting native seedlings directly, by utilising the revenue flows from exotic species and their faster growth potential, as well as faster accumulation of sequestered carbon, to fund the natural transition of the forest to this native state.
- 51. The following images show examples of forests transitioning from exotic species to natives, demonstrating that this practice is real, natural, and achievable where active management and ongoing investment is deployed:









- 52. The CFA has developed important relationships across the Māori forestry community; in particular, with Ngā Pou a Tāne – the National Māori Forestry Association – with whom we developed the Code of Practice. There is extensive experience in the Māori forestry community in transition to native forestry, and mātauranga Māori forest management is aligned with these practices. We believe that Māori are important stakeholders for this MILU process and for any process that impacts on the extensive interests that Māori have in forestry, and we encourage this MILU process to seek the expertise and insight from the Māori forestry community accordingly.
- 53. We believe that there is the right conditions for successful transition in parts of Tairāwhiti, Tūranganui-a-Kiwa and Te Wairoa. In fact, this transition forestry is already underway by CFA members and Māori forestry interests in these regions.
- 54. This represents an opportunity for "the best of both worlds"; predominantly exotic-based climate forestry providing carbon sequestration, jobs, incomes, and benefits to the whenua, that also lead to the re-establishment of native forestry over time.
- 55. The CFA would be happy to share more about transition to native practices if it is valuable to this MILU process.



Benefits of climate forestry to Aotearoa: employment and community benefit

56. Thirdly, climate forestry supports greater employment and economic outcomes for New Zealand's rural communities. When afforestation is combined with transition to native practices, more jobs and a wider variety of jobs are created than farming on marginal land. We include below a snapshot of research undertaken by PWC on behalf of CFA member New Zealand Carbon Farming, which tested the number of jobs created by different land uses.

Results of our analysis

Table 1 and Figure 1 present our estimates of the number of FTEs created by each land use in the local area, on a per hectare basis, annualised over 50 years where relevant.

	Local FTEs per 1,000 hectares
Permanent carbon forestry	2.0
Transitioning from exotic to indigenous forests	6.3
Sheep and beef farming, on low productivity land	4.7

Table 1 Estimated local FTEs per 1,000 hectares





57. We believe that these economic and employment benefits are likely to continue to accrue in the long run due to the climate forestry



community's commitment to long-term management ant native transition of our forests. This is particularly important for communities such as Tairāwhiti, Tūranganui-a-Kiwa and Te Wairoa, with the historic importance of forestry activity in these regions and the number of jobs and livelihoods that are tied to it.



Climate forests during cyclones Hale and Gabrielle

- 58. CFA members have provided us with fixed wing aerial photography immediately after the cyclones and in the affected areas, to provide evidence in support of the points we make in this submission.
- 59. The following photos were taken north of Tutira, north of Napier, near Te Wairoa. They indicate significant on cleared pastoral land, compared to the stability of the stands of exotic forestry around it:





60. Fixed wing aerial photography following the cyclones also shows that native forestry is not immune to erosion, and that native trees alone do not necessarily prevent damage to the whenua – firstly from Parihaka following Cyclone Gabrielle:



61. The following photo is from the Kahurangi National Park, following Cyclone Ita in 2014, showing landslips in native forestry areas:



62. We are not claiming that climate forestry is immune from landslips and erosion. We are however providing evidence that better outcomes are possible in managing slips, sedimentation, and erosion



against weather effects through having extensive, actively managed forest cover, such as that practiced in the climate forestry community, and required under our Code of Practice.

Our concerns with rotational forestry practices following the cyclones

- 63. The CFA also wishes to use this submission to address the elephant in the room in this MILU process – that we are concerned that much of the devastation in Tairāwhiti, Tūranganui-a-Kiwa and Te Wairoa may have been caused or exacerbated by rotational forestry practices. These practices may have resulted in an extensive amount of woody debris left behind following forest harvest, and increased sedimentation of local waterways. These two issues then combined to raise water levels and suffocate water flow, such that extensive flooding and destruction then resulted.
- 64. As we have covered, the creation of woody debris is an important area of distinction between clear-felled rotational forests and permanent climate forests. While climate forestry involves extraction of trees, particularly for the purposes of aiding transition to native forest species, this is done far more precisely and far less extensively and destructively than the clear-felling of harvested rotational forests.
- 65. We are further concerned that the practices in the rotational forestry industry may tar the perceptions of permanent climate forestry, and thus deprive these communities and Aotearoa of the benefits of our practices.
- 66. We further submit to this MILU process that we are concerned that there are a range of incentives that increase the appeal of extractive rotational forestry in these communities. These include offset planting provisions and the average 30-year timeframe to retire rotational forests.
- 67. Offset planting provisions mean that rotational forest owners are able to continue to supply carbon credits to the Emissions Trading Scheme (ETS) while also harvesting the trees that are storing the carbon. Under offset planting provisions, rotational foresters can effectively apply the ongoing credit liability to a newly planted forest,



thus "offsetting" the carbon sequestered in that they have just harvested. This offsetting means that rotational foresters can further augment their revenues with income from New Zealand Units from the ETS, over and above the return from the wood stock itself, while cutting the trees down.

- 68. We believe that offset planting provisions are worthy of further inspection and discussion. In this instance, following the chaos caused by Cyclones Hale and Gabrielle, we are concerned they are exacerbating a perverse set of incentives that encourage extractive forestry, the creation and migration of woody debris, increased sedimentation and the degradation of our whenua.
- 69. We are concerned that rotational foresters will claim that the recommendations of MILU process will be unable to be implemented until the current stock of rotational forests are harvested, utilising clear-felling practices. If so and if accepted, this will delay the impact of measures and recommendations that may come from this process concerning rotational forestry practices. Given the standard harvest timetable for a rotational forest is approximately 30 years, and that seems simply too long to wait for action.

Climate forestry offers a pathway for immediate rotational forest conversion and retirement of destructive forestry practices

- 70. Instead of waiting for potentially 30 years to see change in the practices of the rotational forestry industry, we recommend consideration of a different way forward.
- 71. There is no reason why forests that are intended to be clear-felled cannot be converted into permanent climate forestry. This could happen effectively immediately and result in real change through removing the requirement to undertake destructive clear felling, and thus removing the corresponding creation of woody debris and increased sedimentation. It would also augment the stock of carbon sequestration, thus contributing to the achievement of New Zealand's climate commitments such as the NDC, as well as



offsetting the harmful effects of climate change that exacerbated these cyclones in the first place.

- 72. This would allow these forests to deploy transition to native practices, allowing the reestablishment of healthy, biodiverse native forests over time.
- 73. The return from being ETS registered will allow this activity to be self-funding. In the absence of ETS registration, Government should consider subsidising the conversion of these forests, as we believe this would provide a greater total return on investment than other potential interventions.
- 74. By joining the climate forestry community and committing to our Code of Practice, the rotational forestry industry would still earn a reasonable rate of return from their forests without any requirement for significant further investment in forest establishment – in fact, this transition could be largely painless, and result in significant benefit to of Tairāwhiti, Tūranganui-a-Kiwa and Te Wairoa, as well as the rest of Aotearoa through the establishment of new native forests.



What we envisage for the future of Tairāwhiti, Tūranganui-a-Kiwa and Te Wairoa

- 75. The CFA envisages a future for Tairāwhiti, Tūranganui-a-Kiwa and Te Wairoa that embraces a different kind of forestry than that which may have caused such extensive destruction.
- 76. We recognise that forestry is important to these communities. We also respect the ability for landowners to choose what to do with their lands, mindful of their obligations and requirements to the rest of these communities.
- 77. Climate forestry offers "the best of both worlds". Permanent climate forestry offers ongoing employment and utilisation of the accumulated forestry expertise in these communities, and the ongoing employment and wealth opportunities that come from this. Climate forestry can retain and preserves soil health and prevents erosion on fragile hillsides, thus reducing sedimentation. Climate forestry can remove the requirement for clear-felling and the creation of woody debris, reduce erosion and decrease sedimentation, and provide a pathway for the immediate conversion of these current rotational forest stocks.
- 78. We envisage a future where the communities of Tairāwhiti, Tūranganui-a-Kiwa and Te Wairoa may still enjoy these benefits of forestry, but not the same costs to their communities. That is done by embracing the different forestry practices that will be standardised in the climate forestry community through our Code of Practice.
- 79. In doing so through transition forestry practices, these regions may also then benefit from the reversion to extensive, permanent, healthy and biodiverse native forests, effectively subsidised by ETS returns.



Our recommendations for this MILU: a chance to reconsider land-use through how we do forestry

- 80. Thank you for this opportunity to provide our thoughts to this MILU process. We welcome this process and these questions as a means of both addressing the harm caused to the communities of Tairāwhiti, Tūranganui-a-Kiwa and Te Wairoa, while also exploring what other opportunities are available.
- 81. The CFA believes that climate forestry is a viable solution to the issues raised following Cyclones Hale and Gabrielle. It does that through:
 - a. Reducing the use of extensive clear-felling and woody debris creation.
 - b. Reducing sedimentation through erosion control provided by maintaining forestry cover.
 - c. Providing employment and skills utilisation.
 - d. Providing a return on land, and self-determination for landowners.
 - e. Allowing for the re-establishment of extensive, healthy and biodiverse native forests.
 - f. Contributing to mitigating the climate crisis, that exacerbated these cyclones in the first place.
 - g. Being implementable immediately, without the requirement to wind out current planting commitments over up to 30 years.
- 82. In other words, our recommendation to this MILU is that process represents an opportunity to rethink land use in these communities through rethinking what forestry is, means and achieves.
- 83. We make the following recommendations to realise these benefits and honour the purpose of this Inquiry:
 - a. Acknowledge that permanent climate forestry practices and forests are out of scope of this MILU process.
 - b. Consult with Scion on the extensive research on sedimentation management and erosion control though forestry.



- c. Clearly distinguish between rotational and climate forestry practices; the costs to the communities and the whenua of these practices and the benefits that they create.
- d. Reconsider the use of offset planting provisions, that further enhance the profitability of rotational forestry practices, and the destruction they may cause.
- e. Encourage the immediate conversion of existing rotational forestry stands to permanent climate forestry, and a commitment to the CFA Code of Practice and transition to native practices.
- f. Work with Māori forestry interests to understand the extensive interest Māori have responsible land use, mātauranga Māori practices and transition forestry.
- 84. The CFA thanks you for the opportunity to provide this submission, and would welcome any further assistance we may provide this Ministerial Inquiry.

SUBMISSION – John Kape

Ministerial Inquiry into Slash, Sediment and Sustainable Land Use 6 April 2023

BACKGROUND

Since the 1960s the Government has subsidised planting of pinus radiata in the Gisborne District for the purposes of soil and water conservation. This effort was increased in 1990 with the introduction of the East Coast Forestry Project post the devastation caused by Cyclone Bola. This project and its succesor was targeted at stabilising erosion prone hill country.

Unfortunately the soil conservation benefits of the scheme have not been realised because of weak planting and harvesting rules in both district plans and in the National Environmental Standard for Plantation Forestry (NPS). This is evident in the damage caused by forestry slash and sediment run off from harvested sites damaging surrounding land, waterways and the coastal marine environment. Poor monitoring and enforcement by the regional authority has also contributed.

This submission notes that frequent heavy rainfall events, slash and sediment damage are becoming more frequent as a result of both extended La Nina and climate change.

RELIEF SOUGHT

This submission seeks:

REGIONAL RESILIENCE PLAN IN EFFECT BY 2024

- An overaching regional plan (the Plan) primarily focused on landscape resilience, slash and sediment reduction and soil and water conservation to be in place by December 2024
- It requests that all local and central government resource management policies feed into and support the objectives of this plan with increased monitoring and enforcement by the regional authority.
- That the NPS be amended with new harvest and soil conservation rules to give effect to resilient landscapes and curtailed slash flow on erodible east coast hill country by December 2024.

ALL RIPARIAN MARGINS AND ERODIBLE GULLIES IN PERMENANT VEGETATION BY 2040

- That the Plan have an over riding objective (the objective) that all waterways and erodible gullies be in permanent vegetation by 2040 and that this be a condition for all existing and new planted forests.
- This includes a move towards all catchments having at least 20 30% of the catchment in permanent vegetation targeted at erosion prone soils and riparian margins by 2035.
- That riparian margins:

- are best practise recognising the need for at least 20 metre set backs to help manage the damage of increasingly frequent flood events and help reduce sediment flows contaminating waterways and the coastal marine environment; and
- waterways include ephemeral waterways. These are sites where a lot of forestry slash is currently deposited.
- It also requests consideration be given to requirements in the NPS and District Plans for:
 - o no harvesting activity within 20 metres of any waterway;
 - no forestry harvest slash to be left in gullies, ephermal waterways or within 30 metres of an existing stream or river;
 - smaller more sustainable harvest coup size eg 1 5 ha on erosion prone hill country; and
 - encouragement that landowners remove any mature willow or poplar trees at high risk of ending up in waterways during heavy rainfall events

TRANSITION ASSISTANCE – AMENDED ETS

- To assist the transition to more sustainable land use the panel's report recommend the Emission Trading Scheme be amended to enable transition to achievement of permanent vegetation in all riparian areas and erodible gullies. This includes that:
 - All ETS carbon credits be subject to a requirement/covenant for permanent vegetation in riparian margins and erodible gullies (by planting or regeneration) on ETS supported planting/forest lands; and
 - Fifty percent of the value above \$NZ50 of all carbon credits for exotic forests be levied and that these funds be dedicated to a public good environmental management fund to achieve the objective of permanent vegetation in all riparian margins and gullies and to support catchment projects to achieve this objective
- This amendment creates an on going incentive for improved sustainable landscapes while still enabling income from exotic tree planting for either harvest or permanent carbon credit. It also returns the ETS to its public good purpose and creates an on going revenue stream to fund sustainable land use.

ENVIRONMENTAL COSTS ARE THE POLLUTERS RESPONSIBILITY

• This submission opposes any party receiving compensation for set backs for riparian margins or erodible gullies

• It also opposes forestry companies being compensated to not harvest trees that need to stay in place for soil conservation purposes.

Set back requirements for riparian areas, gullies and slash management will potentially have an impact on total forest and farm income. This is a reasonable cost to meet environmental requirements and is the land managers responsibility. The RMA places this cost at the foot of the activity not the community. The land manager has a right to do what they wish with their land. That does not extend to polluting waterways and degrading the long term sustainability of soils.

This submission supports transition assistance to sustainable catchments through:

- The above proposed amendment to the ETS
- A 10 year \$50m contestable fund to support transition to set backs/permanent vegetation in all riparian margins and gullies; and
- the introduction of an economic innovation fund to support novel start ups and new high value new crops in rural areas funded by the Tairawhiti Trust and the Government.

END THE FORESTRY SUBSIDIES - NEGATIVE ECONOMIC VALUE TO THE COUNTRY

Forestry creates jobs and wealth in the region. However this has been heavily subsidised including through:

- tree planting subsidies for soil conservation;
- weak planting and harvesting standards degrading the environment; and
- expensive roading subsidies with for example Gisborne ratepayers subsidising \$5 10 million per year to repair log truck damage to local roads. This is a burden the ratepayer can not afford.

This submission requests that these subsidies to the forestry industry end immediately including with the introduction of a per tonne log levy at the Port for the industry to pay its local roading costs and stronger planting and harvesting requirements to protect our soils and waterways.

Total forestry employment has been greatly exaggerated at 25% by the industry and Trust Tairawhiti. This figure is incorrect, they have used a multiplier to overstate total forestry employment. Please do not quote this misrepresentative figure in the report. The actual figure is closer to 10% including downstream industries and is less than total employment in the farming and horticulture sector.

The forestry jobs have come at a high cost per job. Given the subsidies and on going environmental and infrastructure damage caused by the industry the net economic value to the country of the East Coast forestry industry is likely negative unless the soil conservation benefits are delivered and the industry pays for its own roading damage.

• Currently the benefits of the subsidies are being capitalised in the value of land and captured by the tree owners and a few local contractors.

SOIL CONSERVATION TRANSITION ASSISTANCE

- This submission requests the Government introduce a 10 year \$50m soil conservation scheme to enable the above objective. This is to enable land managers including farmers to transition to sustainable catchment with riparian and gullies set aside, fencing and planting. It could be part of a national land resilience fund that supports transition to sustainable catchment integrated with the ETS and local plans.
- That MFE and Council work with the farming industry to enable catchment programmes in all erosion prone catchments throughout the Gisborne district.
- That all funds be tendered through a transparent co funded grant scheme that is 100% focused on the objective ie planting and fencing for riparian areas and gullies.

FOCUS ON HIGHEST PRIORITY AREAS TO REDUCE SEDIMENT FLOW

- This submission requests that implementation is guided by science on what areas have highest areas of sedimentation and slash flow including the Waipaoa, Uawa, Waiapu and Waimata catchments. The lack of Council and MfE focus on the Waipaoa is an on going concern and counter to the science.
- It opposes any recommendation or implementation that provides benefits for specific parties eg hapu or iwi that are beyond that provided to all erosion prone land managers in the district. It notes that approximately 70% of the Jobs for Nature scheme has been provided to Ngati Porou affiliated groups despite the scheme being intended for all land managers in the district, that a lot of this grant funded planting was poorly planned and located with inadequate riparian strips, was destroyed during recent floods and that the funds environmental benefits have underacheived and secondary to employment and training outcomes.

COUNCIL CONFLICTED - REPLACE WITH NEW REGULATORY AUTHORITY

Council is conflicted in its role as a unitary authority as a service agency promoting regional development and regulatory authority responsible for environmental protection.

Council staff were aware of the potential slash issue prior to 2018 and that forestry companies were not meeting the harvesting requirements in their consents dumping slash in flood plains. The responsible enforcement officer raised this with the CE and requested Council act and enforce. That was blocked from reaching Council largely due to external pressure from forestry companies and local body politicians on staff. This acutely demonstrates Council's failure to set, monitor and enforce planting and harvesting consent conditions. Council has a liability for not managing this foreseeable mess. Council also avoided putting in place adequate planting and harvesting rules to protect soils leading to the failure of the Crown achieving the soil conservation benefits of its tree planting schemes for the region.

This submission notes Councils conflict of interest as unitary authority, requests the regulatory responsibility be removed from Council and be placed in a new independent regulatory authority for the region.

INQUIRY CONFLICTS OF INTEREST

This submission notes the Inquiry Chair and staff affiliation to Ngati Porou and other entities receiving benefit from forestry activities. This seriously calls into question this inquiry's independence.

It requests Ministers investigate these conflicts to determine whether the chair or any staff on the inquiry have, or may potentially, benefit from any entities that have, or may have, forestry derived revenue. It also notes these affiliation conflicts may potentially exist through the Council's Chief Executive and agency staff.

FIRE INFRASTRUCTURE FOR PERMANENT FORESTS

This submission also requests any amendment to the NPS include provision for fire infrastructure in all permanent exotic forests. This is to provide protection against future fire risk and downstream damage. Exotics because they are more flammable than native bush.

The permanent forest sector is seeking to avoid this responsibility and are not adequately incentivised to put protections eg fire breaks, dams, trained response staff in place with the cost likely to fall on the FENZ, neighbours and the environment. They argue no workers no fire risk. This is 100% false. Most fire risk does not arise from forestry workers but others entering into forests eg hunters, dope growers and other recreational users and from nature eg lightening strike.

6 April 2023



Dear Sir/Madam

Bay of Plenty Regional Council's feedback to Ministerial Inquiry into land uses associated with the mobilisation of woody debris (including forestry slash) and sediment in Tairāwhiti/Gisborne District and Wairoa District

Thank you for the opportunity to provide feedback on the above Inquiry.For matters relating to this feedback, please contact Stephen Lamb at stephen.lamb@boprc.govt.nz or 0800 884 881 ext. 9327.

Our Organisation

The Bay of Plenty Regional Council is responsible for the sustainable management of resources within the Bay of Plenty region. Our role is determined by Central Government through statutes such as the Local Government Act and the Resource Management Act, and is different from that of territorial authorities (district and city councils). Some of our key roles are:

- Regional planning for land, water quality and air quality;
- Setting environmental management policies for the region;
- Allocation of natural resources;
- Flood control;
- Natural hazard response;
- Soil conservation;
- Pest control / biosecurity;
- Public transport;
- Strategic transport planning;
- · Regional economic development; and
- Strategic integration of land use and infrastructure.

Please find our detailed comments attached. We trust you find them constructive.

Yours sincerely

Maph Inmb

pp Stephen Lamb Environmental Strategy Manager

On behalf of:

Reuben Fraser General Manager Regulatory Services

Objective ID: A4346949:

Bay of Plenty Regional Council submission to the *Ministerial Inquiry into land uses associated with the mobilisation of woody debris (including forestry slash) and sediment in Tairāwhiti/Gisborne District and Wairoa District*

The Bay of Plenty Regional Council borders the area that is subject to the Ministerial Inquiry. The mobilisation of woody debris is an issue within the Bay of Plenty as it will be in all forestry areas that are potentially subject to extreme weather events.

It is acknowledged that the *National Environmental Standard – Plantation Forestry* is part of the solution to this issue however Bay of Plenty Regional Council had, and continues to have, concerns about what can be achieved under this regulation. Bay of Plenty Regional Council's submission on the NES-PF is attached to this submission for context.

In summary, the control over the ongoing management of forestry activities and the specific lifecycle events that create higher risk situations (such as harvest) continue to present challenges to local government consenting, compliance and enforcement.

Any recommendations from the enquiry should be applied across the whole country.

Cultural Impacts

The NES-PF is silent on the cultural effects of forestry¹ activities. There is little opportunity for Tangata Whenua to have a voice in this space when an activity is deemed permitted.

The industry best practice relied upon by the NES-PF also doesn't account for cultural effects.

The current forestry earthworks management plan and harvest plan specifications do not include acknowledgement of Tangata Whenua.

Climate Change

Consideration should be given to future climate risks to forestry activities where data exists. Current risk factors are static (soil type, slope, proximity to water) but where know projections are for increased rainfall and intensity of storms, this should be able to be considered.

Consideration needs to be given to how climate change is and will continue to affect the science-based tools used by regulators and the industry to plan and manage risks associated with forestry operations?

- Erosion Susceptibility Classification
- Fish Spawning Indicator
- Wilding Tree Risk Calculator

¹ Unless otherwise specified in this document, "forestry" refers to the commercial use of plantation forests (normally pine trees) and its associated activities.

The NES-PF is written to account for a 5% AEP (Annual Exceedance Probability) or a 1/20 year rainfall event. With the current frequency and intensity of events and future projections accounting for climate change, this is unlikely to remain fit for purpose.

Land Management vs Activity Management

The NES-PF covers eight core forestry activities, that have potential environmental effects. Using a risk-based approach, these activities can only be assessed in silos, rather than allowing for a holistic approach to land management.

The production life cycle of forestry activities are multi-generational and the time scales being considered are more often than not, longer than most other permitted or consented land-use activities. This prevents challenges if the risk profile of the forest where to change over time e.g. due to climate change.

There is no process to enforce changes to land use when the risk profile for a forest changes over time. The often considerable investment of time and money in the forest asset makes it very difficult for a regulating authority to interrupt the production lifecycle of a forest and deem it non-permitted. If a tree is able to be planted, the expectation is that it will be harvested and replanted again.

Harvest plans should be submitted at the time of afforestation or replanting to give consideration to how those activities will be undertaken and any related environmental effects.

Level of Detail

There is a level of detail missing from the NES-PF that makes it difficult to enforce.

Councils previously managed the environmental effects of forestry activities through regional and district plans. As a result of the NES-PF, autonomy was lost and there are few mechanisms for Council(s) to manage local variations, including differences in community priorities and expectations.

There are limited technical standards or discharge limits for monitoring fresh water, instead they are subjective. Again, making them hard to enforce.

Industry needs to make better use of geospatial information and provide this to regulators through the submission of harvest plans.

Deterrent Factor

The changes to the regulatory framework responsible for plantation forestry was largely industry driven. The objectives being to:

- Increase the efficiency and certainty of managing plantation forestry activities.
- Maintain or improve the environmental outcomes associated with plantation forestry activities

The NES-PF offers little by way of deterrence for industry non-compliance.

Community Expectations

There is a differing set of values and expectations between what the forestry sector and communities consider to be industry *best practice*. This is especially evident with the roll out of the Essential Freshwater reforms that has occurred post the NES-PF coming into force. This gap in expectations is only expected to widen with time as freshwater policy is further implemented at the local level.

Civil Defence Emergency Management (CDEM)

Emergency Management Bay of Plenty (EMBOP), the Group Emergency Management Office for the Bay of Plenty CDEM Group, endorses the stance of BOPRC in regard to the future management of forestry slash and woody debris.

EMBOP staff deployed into Tairawhiti and Wairoa during and post Cyclone Gabrielle and Hale saw first-hand the impact woody debris have had in the region. These impacts have been seen across critical infrastructure, the environment and social sphere and are cascading in nature, where a bridge outage not only isolates a community but also disrupts other key infrastructure delivered via the same bridge, for example a fibre cable.

This means the physical isolation caused by a bridge-outage becomes a complete isolation due to communications failure, this exacerbates the negative effects of an emergency event on livelihoods, education, healthcare delivery and community cohesion.

This link between this woody debris and the failure of this key infrastructure means woody debris has a direct impact on Councils and CDEM Groups ability to respond to an emergency. This is due to:

- the geographic spread of these impacts;
- the challenges of emergency response without road access or communications into communities; and;
- the financial, human and physical resources councils are required to put into the restoration of this infrastructure.

This adds unnecessary complexity and challenge to an emergency response, and increases both the human and financial cost of emergency events.

Emergency Management Bay of Plenty believes that both central and local government and critical infrastructure providers have an obligation to ensure that such devastation does not occur again.

As per the National Civil Defence Emergency Management Plan 2015 central government has responsibilities to reduce risk to the communities via the following means:

90 - Reduction at the national level

(3) At the national level, reduction activities for all hazards include-

(a) the development, administration, and review of policy and regulation that facilitate reduction across society (for example, land use planning, regulations for the storage, use, transport, and disposal of hazardous substances, and performance standards and codes for the design and construction of buildings and other structures);

(d) the establishment, monitoring, and evaluation of policies and programmes across the social, economic, built, and natural environments that improve and promote the sustainable management of hazards and support increases in individual and community resilience to the risks that those hazards pose.

As such, central government, via the National Emergency Management Agency and Ministry for the Environment, have a responsibility to make meaningful changes to legislation and accompanying policy to ensure that we learn from these events and make steps to safeguard communities so that when an event of this size occurs again, we do not suffer the same outcome.

Lifeline Utilities

Alongside CDEM, Lifeline utility organisations have a part to play in mitigating the effects these events can have on their networks. Many of these networks have critical interdependencies that mean that if one provider fails it can lead to a cascading failure of multiple networks and can take some time to reinstate.

As per the National Civil Defence Emergency Management Plan 2015 lifeline utility organisations have responsibilities to reduce risk to the communities via the following means:

59 - Principles

The principles underlying the role of lifeline utilities are to-

- a. identify and understand the full range of hazards and risks and implement reduction strategies; and
- b. prioritise the continuity of operations and supply of services in accordance with response priorities set by the Local Controller, Group Controller, or National Controller (even though this may be at a reduced level);

60 - Role of lifeline utilities during reduction and readiness

- 1. To help fulfil their duties under section 60 of the Act, all lifeline utilities are to
 - a. develop business continuity plans to
 - *i. identify critical assets and business processes, assess their vulnerabilities, and undertake appropriate actions to reduce the risks they face; and*
 - b. focus on both reduction and readiness, including planning co-operatively with
 - *i.* other lifeline utilities (whether or not in the same sector), especially those on which they are dependent; and
 - ii. relevant government agencies; and
 - iii. CDEM Groups;

As such, Lifeline utility organisations have a responsibility to build thorough business continuity plans that examine the interdependencies between their networks and work collaboratively to ensure that the effects of an event of this magnitude are understood and minimised where possible.

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TRUST TAIRĀWHITI SUBMISSION TO THE MINISTERIAL INQUIRY INTO LAND USE

INTRODUCTION

Thank you for the opportunity to submit on the Ministerial Inquiry into Land Use. Trust Tairāwhiti is pleased to make the following contribution for the Panel's consideration.

The Trust has drawn from the expertise of our on-the-ground staff in developing our submission, as well as the input of our Trustees who each have deep and wide ties to our communities across the region.

We sought insights from additional key stakeholders with especially relevant understanding of the issues discussed, though the narrow timeframe for developing this submission has severely limited our ability to gain additional insights and contributions from our many affected communities.

ABOUT TRUST TAIRĀWHITI

Trust Tairāwhiti is the regional development trust for Te Tairāwhiti. The Trust invests in the wellbeing of the region's people, the success of its businesses and the future of the region. Since 1993, the Trust (formerly known as Eastland Community Trust) has invested \$60M into Tairāwhiti to help grow our regional economy and support the wellbeing of our communities.

Trust Tairāwhiti provides the region's Economic Development Agency functions (EDA) and also provides the region's Regional Tourism Organisation (RTO). The Trust vision is for:

Our people, whanau, and communities of Tairāwhiti are able to live the lives that matter to us. Together we will transform Tairāwhiti into a place of:

- Te Mana Shared Pride; where culture connects, relationships empower and nature thrives.
- Te Ihi Shared Prosperity; where people flourish, businesses grow.
- Te Wehi Shared Opportunity; where children dream, communities unite and futures inspire.

All of the Trust's decision-making and funding decisions are guided/informed by He Rangitapu He Tohu Ora – the Tairāwhiti Wellbeing Framework.





SECTION ONE: IMPACTS AND EXPERIENCES

Tell us about your experience during Cyclones Hale and Gabrielle? What effects have you experienced?

IMPACTS OF RECENT WOODY DEBRIS AND SEDIMENT AS SEEN BY TRUST TAIRAWHITI

The impacts of Cyclones Hale and Gabrielle have been documented in extensive media coverage, with much commentary around woody debris and sediment as the major (and preventable) contributors to the incredible levels of harm and damage that our communities across Tairāwhiti have experienced–particularly in terms of livelihoods, infrastructure, aquatic systems and water quality.

There are many stories in our communities related to these events that media has not necessarily captured, but these stories remain for those communities to tell in due course. From our view at Trust Tairāwhiti, we can say with certainty that the depth and breadth of the trauma inflicted upon our communities is profound, and recovery in both economic and wellbeing terms will take years.

As discourses turn to 'building back better', we include our submission here to signal the opportunities as we see them for taking actionable steps toward mitigating the impacts of future weather events. These approaches are aligned with community feedback and research, and also contribute to a longterm view for achieving economic and environmental sustainability in Tairāwhiti.

In the following sections we revisit the evidence that demonstrates why areas in Tairāwhiti that are classed Land Use Capability 6 and above are inherently unsuitable for pastoral agriculture and/or exotic monoculture forestry. We then identify the opportunities for change, particularly the Government's role and possible options for facilitating land use change.

Similarly, there are additional legislation and regulation related to land use flexibility for other classes of land that, with some amendments, will encourage business investments into our region; businesses that will also be enabled to achieve better outcomes in environmental terms, without compromising economic gains or risking investor confidence. These are outlined in more detail in section three.

Slash events impact upon the whole community and the costs are in the main borne by ratepayers, with some contribution from forestry companies to help fund recent beach cleanups. Amenity values of our beaches and rivers is adversely impacted. Additionally, forestry and farming activities on steep, erosion-prone land, are the major contributors to the mobilisation of soil and debris causing as yet unquantifiable biodiversity and water quality impacts.

Our response to such events should not involve just the ratepayers of Tairāwhiti but involve council, iwi, forest owners and managers, the farming community and community stakeholders. The forestry industry and the pastoral agriculture sector are each vital to the economic growth of Tairāwhiti, but long-term sustainability requires better management of their impacts– a conclusion and key recommendation of an investigation that followed Cyclone Cook in 2017¹.

¹ Dr Murray Cave and Nicki Davies, 'Cyclone Cook Slash Investigation' (Te Kaunihera o Te Tairāwhiti | Gisborne District Council, October 2017), https://www.gdc.govt.nz/__data/assets/pdf_file/0013/10408/cyclone-cook-slash-investigation-2017-report.pdf.



SECTION TWO: CAUSES

What is it about the way we use land, and how land use has changed over time that led to the effects being so severe?

CURRENT LAND USE

There are a significant number of reports and scientific analysis on the topic of past and present land use in Tairāwhiti, and the associated issues of sedimentation and woody debris. This section summarises key data to demonstrate how the effects of cyclones and heavy rainfall events in Tairāwhiti are made more severe due to inappropriate and unsustainable land use, particularly on areas recognised as Land Use Capability (LUC) classes 6, 7 and 8, to emphasise where local and central Government must focus on in supporting land use change to mitigate future storm impacts.

Of Gisborne's 838,580 hectares, 88% is classed as LUC 6 and above (illustrated in Table 1 below)². LUC classes 6 and 7 are defined as non-arable land, with moderate and severe limitations for perennial pastoral and/or forestry, respectively. LUC 8 is described as "very severe to extreme limitations of hazards that make it unsuitable for cropping, pasture or forestry". These limitations are accentuated due to the region's geology, heavy rainfall, and historic loss of forest cover. Altogether, the result of our past and present use of this land is that Tairāwhiti has 25% of the most severely eroding land in the North Island³.



TABLE 1

Despite the non-arable status and serious limitations for pastoral and forestry use, the majority of LUC 6+ land is currently covered in grassland (sheep and beef farming) and exotic forest. Table 2 illustrates the relevant land use cover using data provided in a 2021 report by BDO⁴, commissioned by Trust Tairāwhiti.

² Land Air Water Aotearoa, 'Land Cover', Land, Air, Water Aotearoa (LAWA), 2023, https://www.lawa.org.nz/downloaddata/.

³ Te Kaunihera o Te Tairāwhiti, Gisborne District Council, 'State of Our Environment: Our Land & Soil | Tō Tātau Whenua, One Hoki.', 2020, https://www.gdc.govt.nz/__data/assets/pdf_file/0026/9971/soe-report-2020-land-soil.pdf.

⁴ BDO Gisborne Limited, 'Report on the Impacts of Permanent Carbon Farming in Te Tairāwhiti Region.' (Gisborne, New Zealand, July 2021), https://trustTairāwhiti.nz/assets/Uploads/Impacts-of-permanent-carbon-farming-on-the-Tairāwhitiregion-July-2021.pdf.





TABLE 2

KEY ISSUES – LAND USE, EROSION & SEDIMENTATION

Erosion is recognised as a major issue for Tairāwhiti. The topsoil of the region is a precious and limited resource, and natural erosion has been aggravated by land use change over time – primarily via the original deforestation for pastoral farming in the 19th and 20th centuries that exposed the steep hill country. In the 1950's there were some efforts to re-establish forest cover in these areas (using poplar, willow, forestry, native reversion, and manuka), culminating in the East Coast Project in 1970.

However, much of the hill country was still exposed when Cyclone Bola hit the region in 1988. The resulting floodwaters and mobilised sediment contributed to a now sadly familiar story; floods overwhelmed stopbanks, damaged houses, knocked out bridges, thousands were evacuated from their homes, and three people died in a car swept away by the floodwaters. The thick sediment deposited by the floodwaters smothered pastures, orchards, and crops, contributing to horticulture and farming industries facing losses at \$90 million (\$210 million in 2023), and the Government faced a repair bill of more than \$111 million (\$260 million today)⁵.

Cyclone Bola did serve as a catalyst for change. The link was made between the exposed, erosion-prone hill country and the exacerbated impacts of the storm, resulting in legislation and funding being introduced to facilitate land use change.

As part of the post-Bola response, the GDC Resource Management Act recognised the worst eroding land as Land Overlay 3A, and states that this land "*must be treated with effective tree cover or fenced for reversion by 2021*"⁶. The Ministry for Primary Industries provided funding for forestry planting through the Erosion Control Funding Project (ECFP Land Treatments) to assist landowners in the implementation of works plans in conjunction with council⁷.

A key issue here is that while the KPI in the Act for Land Overlay 3A is "establishing effective tree cover", the type of cover and its effectiveness at addressing the challenges of high intensity rainfall

⁵ Ministry for Culture and Heriitage, 'Cyclone Bola Strikes', February 2023, https://nzhistory.govt.nz/page/cyclone-bolastrikes.

⁶ Te Kaunihera o Te Tairāwhiti, Gisborne District Council, 'State of Our Environment: Our Land & Soil | Tö Tätau Whenua, One Hoki.', 13.

⁷ Te Kaunihera o Te Tairāwhiti, Gisborne District Council, 13.



events on LUC6+ land was not specified. As a result, the Act provided the primary enabler for exotic pine forests to be planted at scale, which has led directly to many of the issues experienced in the wake of Cyclones Hale and Gabrielle.

As the decades since Cyclone Bola have illustrated, exotic monoculture *pinus radiata* forests are inherently unsuitable for achieving the land stabilisation outcomes sought. There are a number of reasons for this:

- It typically takes 7 years from planting for a new pine forest to reach canopy closure, during which time the land remains exposed to high rainfall events⁸.
- Pinus radiata has a short economic lifetime of around 30 years, after which it must be harvested. The harvesting process creates significant erosion and land damage which rapidly undoes a material portion of the benefits achieved in the short-lived cover.
- The exotic monoculture plantations provide few biodiversity benefits for native species, and can act as pest reservoirs unless there is ongoing and effective pest management.

PASTORAL FARMING

While the issues around the planting, management and harvesting of exotic forests have received most of the attention following the cyclones, the effects of widespread pastoral farming of LUC6+ land are also significant. The source of much of the sediment that inundated farmland and houses was unprotected pastoral land, which remains as prone to erosion today as it was during Cyclone Bola.

The intent of the changes made after the 1988 disaster was to provide canopy cover over all the highrisk land in Tairāwhiti. Clearly this outcome has not been achieved, primarily because of the focus on monoculture plantations: while there were significant financial incentives to plant *pinus radiata*, there was no incentive to do anything else.

On a sizeable proportion of the LUC6+ land, plantation forestry was a viable activity for landowners, particularly when support was available for the cost of conversion. However, much additional land was not converted, for a variety of reasons; these included the higher economic returns potentially available from continuing to farm, the financial volatility and risks of international log markets, or the likelihood that the resulting *pinus radiata* crop could never be harvested due to the topography or access challenges.

It is clear that landowners largely made rational economic choices. Where it made economic sense to convert pastoral land to exotic forest, this predominantly occurred; but where it made little sense, the land remained as pastoral farm and continued being exposed to subsequent major weather events. In that sense, the fact that more unsuitable LUC 6 and 7 land remains in use as pasture than has been converted to forestry is a policy failure – and there is a direct line to be drawn from this policy failure to the sediment now covering productive land, marae, businesses and homes in Tairāwhiti in the wake of Cyclone Gabrielle.

While support was made available to landowners to transition from one use type to another – from pastoral to forestry – no support was available to transition land to the non-productive but environmentally vital use of restored native forest. At its heart, this is one of the major drivers of the subsequent disasters.

⁸ Te Kaunihera o Te Tairāwhiti, Gisborne District Council, 20.



Are there **specific practices** or ways in which we use the land that have caused more harm than others? Which of these practices are most important? Why?

SPECIFIC PRACTICES – FORESTRY & WOODY DEBRIS

Thirty-five years on, the death toll and economic costs of Cyclone Gabrielle have surpassed Cyclone Bola. Table 2 above illustrates the ongoing use of LUC 6 + land for pastoral agriculture that continues to expose erosion-prone land to erosion and landslides with heavy rainfall.

A key point of difference in terms of the outsized impacts of cyclones Bola and Gabrielle is the presence of woody debris; debris that is directly attributable to specific forestry practices in the region.

The mobilisation of woody debris and forestry slash has been an increasing issue since the 1990s, as the harvesting of exotic forests planted in response to cyclone Bola has been underway. Figure 1 summarises the timeline of events recorded as mobilising woody debris.

Year	Location	Key impacts
2018	Mangapoike, Waimata, Tolaga, Waiau, Waiapu	Extensive landslides and slips with significant mobilisation of forest harvest residues, particularly in the inland Tolaga Bay (Uawa) area, Waiapu, Waimata, Kanakanaia, and Mangapoike
2017	Waimata, Tolaga, Mata	Extensive landslides and slips with significant mobilisation of forest harvest residues, particularly in the inland Tolaga Bay (Uawa) area
2015	Wharerata Forest	Major slash mobilisation, debris on beaches, sedimentation of waterways and coasta environment, destruction of farm infrastructure
2014	Inland Tologa, Wharerata Ranges	Slash mobilisation, debris on beaches
2013	Tokomaru Bay	Slash mobilisation, debris on beaches
2012	Wharerata Forest	Major slash mobilisation, debris on beaches, sedimentation, loss of railway line, loss of culvert on SH2 (closing the road)
2002	Muriwai-Manutuke	Widespread flooding caused by forestry slash blocking culverts on public and private land
1994	Wharerata Forest	First major post-forestry harvest event – substantial erosion and landsliding, sedimentation and slash mobilisation
Annual	Region-wide	Localised storms causing sedimentation of downstream waterways, blocking of private & public road culverts, forestry debris on local beaches

Weather events recorded as causing harvest residue mobilisation in Tairāwhiti

FIGURE 1 : SOURCED FROM THE 2020 LAND & SOIL REPORT"

The 2020 Land & Soil report⁹ describes the risk of landslips and related mobilisation of soil, sediment, and woody debris, is greatest in the 5-7 years following the harvest and replanting of steep land:

"With the relatively high level of harvest residues occurring in Tairāwhiti relative to other regions, this results in forestry harvest residues – including logs, slash and other woody debris – migrating to the waterways. In some instances, the weight of material is so significant it will crash through remaining pine or native riparian areas or buffers, which get incorporated into the mobilised woody residues."

⁹ Te Kaunihera o Te Tairāwhiti, Gisborne District Council, 'State of Our Environment: Our Land & Soil | Tō Tātau Whenua, One Hoki.' 20.



The cause of the high levels of harvest residue in Tairāwhiti is the steepness of the terrain. The hillsides require haulers to log the forests and more debris are left behind compared to the harvesting processes used on the largely flat land of the Central North Island forests.

Following these storms and the public backlash over damage attributed to woody debris, there are sometimes claims that the debris is made up of material other than pine (such as willow). The dominant role of pine in woody debris has been well-evidenced however, particularly through research undertaken following Cyclone Cook in 2017¹⁰. The 2017 report noted that willow does play a role, but that nearly two-thirds of the debris was pine and of this, 67% were abraded logs lost from slash piles or elsewhere within forest boundaries.

Researchers found logs and slash that had been deposited and abandoned in flood plains as a result of previous storm-induced mobilisation events, creating a source of debris prone to remobilisation in future high flow events, in turn creating an increased risk to infrastructure necessary for community resilience (e.g., bridges, water pipes). In effect, debris is washing down-slope and accumulating, whereupon a major weather event sets it in motion.

Research also revealed that forestry operations were not aligned with best practices, contributing significantly to the woody debris mobilisation issues. Slash was being stored, for example, in areas prone to mobilisation such as flood plains and gullies, or already scattered throughout river systems and forested areas. The over-reliance on slash catchers as the primary mitigation measure was also highlighted, with reference to at least two instances of slash catchers failing, and others where they were overtopped and/or bypassed.

The not-insignificant contribution of willow to the debris (30%) was also discussed, and it was noted management practices need to be reconsidered. That is, end-of-life willows need to be cut and removed rather than poisoned, as they are otherwise left vulnerable to failure. And once trees have been cut down, the removal of logs is essential to preventing the simple transference of problems downstream.

Given that forestry and harvesting is set to continue in the coming decades, it is vital that industry practices contributing to the ongoing issues of woody debris mobilisation are addressed with urgency.

The key recommendation from the 2017 report is that overall engineering standards applying to forestry infrastructure need to be assessed, and the minimum acceptable standard needs to be higher than current practice. It is hard to argue with this conclusion.

In practice, implementation of best practice within forests requires a number of material changes, as the report notes:

- That permanent and semi permanent roads within forests, haulroads and tracks are designed to a standard that minimises risk of failure, with sidecasting avoided as much as practicable and where used, are protected using engineered stabilisation methods and consistent with the NES.
- That roadway, haulroad and track watercourses are designed to mitigate against migration of sediment to waterways through the use of silt traps, settling ponds in receiving environments, bunding and silt fencing.
- That ridge top or spur landings are placed is such a way as to eliminate risk of landing edge failure and that suitable areas are established for storing of slash in areas where the risk of mobilising slash into gullies and flood plains is minimised (Back Hauling).
- That slash catchers are subject to rigorous engineering design and hydrological modeling to ensure that they can cope with realistically anticipated flood levels over the harvest and post harvest period and that existing slash catchers are regularly inspected and cleaned. Remote monitoring of slash catchers during an extreme flood would provide valuable information on the performance of the catchers and could lead to design improvements.

¹⁰ Dr Murray Cave and Nicki Davies, 'Cyclone Cook Slash Investigation'.



- That incident reporting of any slash event resulting in the migration of slash into waterways is made mandatory.
- That the current practice of storing slash on flood plains is discontinued, and existing areas of slash storage on flood plains are assessed by forestry companies and measures put in place to ensure that the slash is either removed or protected from mobilisation.
- That forestry companies clear slash from watercourses in areas where slash within permanent watercourses have been identified.
- That Gisborne District Council and the Environmental Focus Group work more closely to ensure that environmental guidelines, and procedures are fit for purpose and consistent with the NES for Plantation Forestry.

As the recommendations show, the actions in many ways seek the conformance of forestry management and harvesting practices to the existing National Environmental Standard on Plantation Forests (NES-PF). The reasons why there is still a gap between theory and practice in this area is explored in Section 3.

Is there anything else we should know about that has contributed to the damage from severe weather?

While the initiatives put in place following Cyclone Bola were well intentioned, there were two significant structural flaws in how they were conceived and implemented, both of which are major contributors to the Cyclone Gabrielle disaster 35 years later:

- There was an over-reliance on a simple solution to a complex problem
- No economic value was placed on the essential ecosystem services provided by native forest cover.

These are discussed in turn.

SIMPLE SOLUTIONS TO COMPLEX PROBLEMS

Pinus radiata is a useful commercial wood crop, and certainly has its place in Aotearoa's national economy. In the flat land and poor soils of the volcanic plateau, it has proven to be a very good use for the land and able to sustain a large and profitable portion of our primary sector.

However, Tairāwhiti is not the volcanic plateau; the motu and its challenges are fundamentally different. Within the region, there are a myriad of land types and topographies which supported very different ecosystems before the whenua was converted to pastoral farming.

It is apparent that monocultures are completely unsuitable for the varied terrain of Tairāwhiti; there is no scenario where one tree would be the solution to every denuded hill and degraded river valley across Te Tairāwhiti. Yet this is the solution that policy makers in the late 1980s and early 1990s sought.

There is an undoubted attraction in looking for a simple solution for complex problems. In the case of *pinus radiata*, it allowed nurseries and planting gangs and forestry companies to operate efficiently and at scale, for planting and management and harvesting. The efficiency of the process is unrelated however, to the effectiveness of the outcom. The resulting over-reliance on a simple solution has not addressed the fundamental challenges presented by Cyclone Bola or any of its successors.

Policy makers need to learn from this experience. Tairāwhiti is a complex and diverse place, and it is unlikely that this diversity can be restored and enhanced in the wake of Cyclones Hale and Gabrielle by a simple and expedient fix. Our nuanced approach to the challenges of our region is discussed in Section 4.



THE VALUE OF ECOSYSTEM SERVICES

As has been noted above, landowners have largely made rational economic decisions when it comes to land use in Te Tairāwhiti; financial sense and profitability were the drivers behind landowners' decisions on whether to convert to plantation forestry or retain land for pastoral agriculture.

The underlying rationale for providing financial assistance for forestry conversion was economic; the resulting plantations had a cash value, they could be monetised at each step of the value chain, and they would produce measurable economic impact in financial and employment terms. Through this narrow lens, forestry made sense – even given the inherent unsuitability of the crop for the terrain of Tairāwhiti.

In the late 1980s and early 1990s, a more rounded and holistic approach to economic wellbeing was not considered – so the value of the ecosystem services provided by ngāhere was largely excluded from the calculations. The measurable and quantifiable benefits of soil retention, watercourse health, biodiversity and long-term carbon sequestration, visitor attraction, social wellbeing – to name just a few ecosystem services – were not taken into account, primarily because the policy makers and decision makers of the time lacked the frameworks and the tools to value these things effectively.

The effect was a strong in-built bias against the very thing that would protect against further cyclone damage: reversion to the native forest that used to cover the hills of Te Tairāwhiti. Because the ngāhere had no value until it was cleared, there was no thought given to the value of the ecosystem services it provides, with disastrous results.

This has proven to be a significant error, but one which we now have the tools and capabilities to reverse. Our proposed approach to this is discussed in Section 4.



SECTION THREE: POLICY FRAMEWORK, INCLUDING LEGISLATION, MARKET SETTINGS AND REGULATIONS

How do the current laws, policies and rules influence the way we use our land? What works well? What is unhelpful? Think about the current legislation, market drivers and conditions, regulations, rules, and the way in which requirements are enforced.

There are multiple interlinked legislative and regulatory controls on land use that heavily influence how the whenua is utilised in Tairāwhiti. While some of the identified issues come from specific legislative drivers, it is the interplay between the controls that have tended to constrain and channel how land is developed and used.

The dynamics of the forestry sector

As has been noted in previous reports stretching back more than two decades, exotic plantation forests were intended to address the problem of large-scale erosion vulnerability in Tairāwhiti— an issue exposed by Cyclone Bola. As the underlying problem was primarily environmental, the economic considerations of how the forests could be economically harvested in the years ahead were secondary. Governments of the day provided subsidies to private landowners to plant *pinus radiata* in an effort to protect the soils of the region; whether and how the resulting forests could be economically harvested was left as a challenge for subsequent decades.

As experience has shown, achieving consistent profitability in the Tairāwhiti forestry sector is a challenge – primarily due to the constraints of topography and geography. This influences how land is developed and used, as well as the behaviours of the forestry sector. There are two key factors at play:

- 1. The steepness of the terrain means that harvesting costs are high compared to other forest areas, such as the Central North Island (CNI). The topography requires the use of haulers to recover wood, with resultant high costs, dangerous working conditions and less recoverable wood per hectare compared to flat terrain.
- 2. The distance from the forests to the port over roads that were never designed or constructed for large-scale forestry operations, and as a result trucking costs are higher than in areas with easier geography. There are direct costs on forestry companies, as well as indirect costs on the communities that contribute to the upkeep of roads as a result (as well as lost economic opportunities where potential businesses view the conditions of roads and infrastructure as a risk).

The costs of harvest

In the CNI, the cost of wood recovery is around \$10-\$11 per cubic metre, with nearly 100% of the tree being harvested. Trees are cut at near-ground level by largely automated means, maximising the return from the thickest part of the tree and reducing the costs of getting it prepared for trucking.

In comparison, recovery costs \$30-\$50 per cubic metre in Tairāwhiti, due to the need to haul timber upslope to ridgelines. Recovery requires much more manual labour and has high accident and death rates due to the technology used and the challenging terrain. In addition, the sloping ground means recovery rates are lower, with only around 80-85% of the tree able to be used. In short, costs are higher, the environmental impacts greater, and the work is more dangerous than in comparable forests in the CNI – primarily because of Tairāwhiti's steep topography.

Forestry in the region is therefore vulnerable not only to relatively high degrees of exposure to international log market volatility (95% compared to 60% for rest of NZ) but also to price shocks due to the inherently lower margins for operators. Shocks can include fuel prices, lower wood prices, and a



range of other factors. The thinner natural margins in Tairāwhiti compared to the CNI means operators must constrain costs as much as possible, which results in predictable behaviours:

- Operators will tend to harvest logs that can produce an economic return, and leave behind logs and forests where the costs of recovery will exceed the likely return
- Operators will seek to minimise their input costs for labour, machinery, fuel and other variable items as much as possible
- They will seek economies of scale wherever possible, innovate to reduce costs and increase returns where feasible
- Operators will minimise their harvest when international log markets make harvesting uneconomic, which in turn introduces volatility into our regional economy and communities and tends to reduce incentives for long-term investment
- Operators will aim to reduce costs not directly associated with log recovery, such as slash management, pest management, watercourse remediation and the like.

It is important to note that operators are by no means badly intentioned when it comes to their indirect costs for slash management, land remediation or waterway protection; the purely economic imperatives they operate under however, and the inherently high costs of the industry in Tairāwhiti – competing in a global commodity market – acts as a tight constraint on how much investment can be made in these indirect costs whilst remaining in business.

The underlying cause of these behaviours is the market volatility and potential for poor returns from *pinus radiata* – a low-value commodity timber – on steep land. The cause of this issue goes back to the reason the forests were planted in the first place, which was primarily as a land stabilisation strategy and only secondarily as an economic development strategy. Many of the challenges in land use and subsequent impact on communities stems from this root cause.

The NES and the District Plan

Communities and the Government have been aware of the challenges of forest management practices on steep land for quite some time – the issues of slash have been with us for decades in various forms. In an effort to ensure the consistency and quality of forestry management practices, the Government has adopted a National Environmental Standard.

The National Environmental Standards for Plantation Forestry (NES-PF) were published on 3 August 2017, and came into force on 1 May 2018. Resource Management (National Environmental Standards for Plantation Forestry) Amendment Regulations 2018 (which include changes to the Erosion Susceptibility Classifications) were published on 26 April 2018 and commenced on 1 May.

The NES-PF main objectives are to:

- Maintain or improve the environmental outcomes associated with plantation forestry activities; and
- Increase the efficiency and certainty of managing plantation forestry activities.

The NES-PF applies to any forest of at least one hectare that's been planted specifically for commercial purposes and will be harvested. The NES-PF enables plantation forestry activities to be undertaken as permitted activities when the risks are lower and where the relevant permitted activity conditions are met. In other situations, foresters will need to obtain a resource consent – this will generally be for a controlled or restricted discretionary activity:

- A controlled activity where consent must be granted, and any consent conditions imposed are restricted to matters over which control is reserved; or
- A restricted discretionary activity where consent can be granted or declined and council's powers in considering the application and imposing any consent conditions are restricted to the matters over which discretion is restricted to.



Permitted activities must be notified to the local authority on the Notice to Undertake Permitted Plantation Forestry Activities at least 20 working days and no more than 60 working days prior to the activity starting. However, no specific permission is required from the consenting authority – in this case the Gisborne District Council – nor are there monitoring provisions. Any enforcement action is undertaken as part of standard District Plan and RMA processes.

The statutory Year One Review of the NES-PF found that, overall, the NES-PF is effective, but some changes could be made to improve environmental outcomes in some areas¹¹. The review noted that further implementation support for councils and the forestry sector is required to lift performance and compliance, including:

- Specific guidance and training to improve compliance with wilding conifer controls, slash management, and the use of stringency; and
- Better national data on permitted activities, consent applications, and risk-based monitoring this will allow development and implementation of a nationally consistent compliance, monitoring, and enforcement framework.

The review concluded the NES is well drafted and well intentioned, and if implemented consistently would help act as a driver for improved practices.

Forestry is recognised as a driver for employment and economic development in Tairāwhiti, as it is in other regions across Aotearoa. To ensure the sector has certainty and is able to invest in long-term assets, the Gisborne District Council District Plan therefore allows forestry as a permitted activity across a range of land classifications. Landowners are allowed to plant exotic forests as of right, on condition the NES is observed, with no further permissions required from GDC.

This right has been important in allowing forests to be established, harvested and replanted. The permissive nature of the right however, means that *GDC has no monitoring or enforcement powers in respect of the NES*; landowners are expected to follow it under their own recognisance. In the event the NES is not followed, GDC's options are limited. We echo previous calls for the necessary reforms that would see local government, iwi/hapū, and communities, empowered to not only identify suitable land uses¹², but also be afforded the well designed and implementable regulation that would see their decisions supported in practice¹³.

The issue is not that the NES is poor, or that the District Plan is lacking, or that the intention of the RMA is flawed; rather, it is the interplay between the various legislative controls that undermines how the components work in practice. Further, landowners and operators are sandwiched between the strictures of the NES and the low margins and high risks of the forestry industry will, in some cases, cut corners, resulting in suboptimal outcomes for communities and the region as a whole.

The pernicious effects of the ETS

While the ETS appears to be a useful tool on the surface, it has many unintended consequences for the exotic forests and the forestry sector in Tairāwhiti.

Given the ETS counts trees planted since 1990 as qualifying for carbon credits, most of the post-Bola forests in Tairāwhiti have qualified for windfall credits that were never contemplated by the

¹¹ Te Uru Rākau – New Zealand Forest Service, 'Report on the Year One Review of the National Environmental Standards for Plantation Forestry', April 2021, https://www.mpi.govt.nz/dmsdocument/44914-Report-on-the-Year-One-Review-of-the-National-Environmental-Standards-for-Plantation-Forestry.

¹² Local Government New Zealand (LGNZ), 'Managing Exotic Afforestation Incentives: Local Government New Zealand's Submission on Proposals to Change Forestry Settings in the New Zealand Emissions Trading Scheme', April 2022, https://www.lgnz.co.nz/assets/Uploads/Carbon-Farming-ETS-Carbon-Farming-Submission-final-submission.pdf.

¹³ New Zealand Productivity Commission – Te Kömihana Whai Hua o Aotearoa, 'Regulatory Institutions and Practices', June 2014, https://www.productivity.govt.nz/assets/Documents/d1d7d3ce31/Final-report-Regulatory-institutions-and-practices-v2.pdf.



Government policy makers of the day, nor by landowners. In that respect, the ETS has been a material contributor to the regional economy.

However, the requirement to keep the forest over the long term – and the timeframes embedded in the ETS – means there is a strong incentive to replant *pinus radiata* after it has been logged, even when the land is fundamentally unsuitable for the crop. Not doing so will require repayment of the carbon credits, which is a significant financial penalty for landowners¹⁴.

There is also a strong financial disincentive in the ETS to revert the land to ngāhere after logging. While the ETS now recognises the carbon sequestration value of native forests, the assumed slower growing rates mean that there are genuine ETS costs incurred from replacing an unsuitable exotic crop with the original native bush cover that has been preventing Tairāwhiti's hills eroding into the ocean for some millennia. This is despite the fact there is wide global scientific consensus that prioritising natural forests – not monoculture plantations – is the best option for sequestering carbon and a key action that all countries should be prioritising in our collective effort on climate change¹⁵.

It is also highlighted in the 2021 Climate Change Commission report that our national reliance on forests will not lock in net zero, and that failing to constrain carbon removals by forests will not drive meaningful decarbonisation and instead will use up land resources in areas where there are proven alternatives (such as native forests) to reduce gross emissions¹⁶. As the Commission notes, failing to recognise this is "... not sustainable, would leave Aotearoa out of step with the rest of the world, and would leave the next generation with the task of reducing gross emissions at the same time as they will need to be adapting to escalating climate change impacts."¹⁷.

The report acknowledges that exotic production forestry continues to have a role to play in removing carbon dioxide, especially whilst more enduring sources of carbon removals like native forestry is scaled up. Nonetheless, native forests can and should be established on the steeper, less productive land, to provide a long-term carbon sink; the benefits of a sustained high rate of planting of new native forests through to 2050 could serve to deliver a long-term carbon sink of more than 4 MtCO2 per year, as well as offsetting residual long-lived greenhouse gas emissions from hard-to-abate sources¹⁸.

The current ETS policy settings are a major roadblock to changing land usage in the region. The Gisborne District Council explored this very issue in some detail as part of an assessment of Pamoa Forest, a Council-owned block surrounding the city's water catchment area. Pamoa Forest was planted in *pinus radiata* following Cyclone Bola, and carbon credits claimed when the ETS came into force. The forest had reached the age of harvest and a decision was required on whether it should be replanted for a commercial crop – and the carbon credits retained – or whether it should be reverted to ngāhere.

A detailed economic analysis was conducted, which showed there were significant benefits in reversion to native bush when assessed in wellbeing terms, using the Living Standards Framework – but that there was a real, material financial cost to the Council and the community in sacrificing the carbon credits. In

¹⁴ BDO Gisborne Limited, 'Report on the Impacts of Permanent Carbon Farming in Te Tairāwhiti Region.' (Gisborne, New Zealand, July 2021), https://trustTairāwhiti.nz/assets/Uploads/Impacts-of-permanent-carbon-farming-on-the-Tairāwhitiregion-July-2021.pdf.

¹⁵ Intergovernmental Panel on Climate Change (IPCC), Global Warming of 1.5°C: IPCC Special Report on Impacts of Global Warming of 1.5°C above Pre-Industrial Levels in Context of Strengthening Response to Climate Change, Sustainable Development, and Efforts to Eradicate Poverty, 1st ed. (Cambridge University Press, 2022), https://doi.org/10.1017/9781009157940; The Royal Society, 'Climate Change and Biodiversity: Interlinkages and Policy Options', 11 October 2021; Pörtner, Hans-Otto et al., 'IPBES-IPCC Co-Sponsored Workshop Report on Biodiversity and Climate Change' (Zenodo, 24 June 2021), https://doi.org/10.5281/ZENODO.4782538.

¹⁶ He Pou a Rangi the Climate Change Commission, 'Ināia tonu nei: a low emissions future for Aotearoa. Advice to the New Zealand Government on its first three emissions budgets and direction for its emissions eduction plan 2022 – 2025.', 31 May 2021.

¹⁷ He Pou a Rangi the Climate Change Commission, 91.

¹⁸ He Pou a Rangi the Climate Change Commission, 94.



wellbeing terms, ngāhere is a good investment – but in the narrow financial measurement of the ETS, it represents a financial cost.

This same equation is true everywhere in Tairāwhiti. Even when the land is known to be unsuitable for exotic forest, the financial obstacles in the ETS mean there is a strong financial incentive to replant *pinus radiata*, and a strong disincentive to restore the native forest cover. This is a pressing issue that needs immediate action from the Government.

Carbon farming

While the narrow framing of the ETS has created a financial trap for forest owners, it is the arrival of carbon farming that is causing significant challenges in land use in Tairāwhiti. Carbon farming has allowed exotic forest to become a permanent carbon sink, irrespective of whether the resulting trees will ever form part of the long-term ecosystem of the region.

Pinus radiata is a short-term (~30 year) crop with an unknown long-term impact on the whenua and ecosystem, yet carbon farming assumes it will be in place in perpetuity to sequester the carbon it contains. Further, the profit from the carbon credits is realised at the outset, yet the costs of maintaining the forest – in pest management, land management, rates and the like – continue in perpetuity¹⁹. For this reason, as the BDO analysis has highlighted, carbon farming has a negative net present value; that is, it destroys more value than it creates.

While carbon farming has value to the owners of the forests, there are negligible indirect economic or environmental benefits to Tairāwhiti, and any direct economic benefits are narrowly held– relying on distribution into the community through investment.

Recent media coverage²⁰ of the negative impacts underlines the effects carbon farming can have on the region:

Satellite images of a former sheep station on the East Coast show a stark difference from surrounding properties after it was sprayed with the intention of planting pine forest to cash in on the government's Emissions Trading Scheme. Horehore Station is 1600 hectares wedged between Waingakia Stream and the Mata River in the hill country north-west of Tokomaru Bay and the waterways end up in the Waiapu River, the main river of Ngāti Pōrou.

Satellite images of the property from early December last year show what appear to be brown spray lines along ridges, with subsequent images showing the land along those lines browned off. By February 7, a large area of the property had browned off and in some areas of the farm it appears significant erosion had taken place. Tracks appear to have been buried, significant slips have opened up in some areas and contours in the stream bed have changed substantially near the confluence of the Mata River and Waingakia Stream, which have been elevated by several metres.

Newsroom cannot confirm the extent of the damage or whether it has been exacerbated by the property being sprayed. However, one expert told Newsroom that, based on the satellite images, it appears there is major erosion of the top 15cm of soil across the property along with the more obvious damage. [...]

Aerial maps from Land Information NZ show the property is conspicuously different from surrounding properties in the amount of damage that happened well before Cyclone Gabrielle. The waterways also change colour after Cyclone Gabrielle and silting is visible in satellite images.

The satellite images in the article graphically illustrate the extent of the problem – all of which has carbon farming as its underlying driver for the damage.

¹⁹ BDO Gisborne Limited, 'Report on the Impacts of Permanent Carbon Farming in Te Tairāwhiti Region.'

²⁰ Aaron Smale, 'East Coast Farm Crumbles after Carbon Group Takes Over', Newsroom, 27 March 2023, https://www.newsroom.co.nz/east-coast-farm-collapses-after-maori-carbon-group-takes-over.



There is also a potential long-term risk to the region's ecosystems from carbon farming. Should the price of carbon rise to the point where the carbon is worth more than the logs, owners may decide to leave forests in place, with unknown long-term consequences. If trees are left to grow past their expected harvest cycle, some may be logistically difficult and uneconomic to fell and recover, particularly on steep land, and there is a material risk the forests will then become unmanaged and act as reservoirs for pest species.

The problem is exacerbated by the fact there is no on-going revenue stream from carbon farming; the profits are received early in the forest lifecycle, and it is not clear how forest management or pest control will be funded decades into the future. In its current iteration, carbon farming looks like an extractive industry that takes more from the region than it contributes. The Government's policy settings in this area need urgent reform to remove the incentives in the ETS for an activity that is actively contributing to adverse environmental and economic outcomes for Tairāwhiti.

The narrowness of the policy frameworks

As we have highlighted, the intentions of specific policies are often well founded; the narrow compartmentalisation across different Acts and different regulatory mechanisms administered by siloed agencies is problematic however, and contribute to unintended consequences that are detrimental to good land use decisions in Tairāwhiti. In summary, these consequences include:

- 1. The economics of forestry in Tairāwhiti and the legacy of *pinus radiata* planted in the wake of Cyclone Bola have resulted in a sector with too many unsuitable trees on steep and unstable land, management practices that don't necessarily meet the good intentions of the NES, and the lack of a sufficiently profitable financial foundation to work in a different way
- 2. The ETS has resulted in a one-time windfall to forestry owners, but has now trapped the industry into a cycle of replanting (assuming that forest owners do choose to harvest) an unsuitable species on steep land in order to avoid the costs of leaving the scheme, whilst setting up a barrier to replanting the ngāhere that has protected the land for millennia and provides much broader ecosystem services & benefits.
- 3. As is clear from experience to date, carbon farming is profitable for owners of the forests in the short-term, but financially and environmentally unsustainable over the medium to long term and risks destroying more value for Tairāwhiti than it will create.

There is nothing inherently wrong in the intentions of the RMA, the ETS, the LGA or the myriad of other Acts that influence how land is developed and used. However, there is a significant absence of an integrated and holistic view of how these individual pieces of legislation interoperate, and it is not clear that there is any agency tasked with ensuring the current inconsistencies and unintended consequences will be identified and addressed.

The legislative impediments to better solutions

As is noted earlier in this submission, there is around 900,000 hectares of LUC6+ land in Tairāwhiti. The whenua itself is varied, from river flats and rolling hills to steep ridgelines, often in the space of a few kilometres. As anyone who has walked the land or lived in the motu can testify, Tairāwhiti is a place where the uses for the whenua are as varied as the landscape itself.

Despite the desire for a simple solution to the ravages of Cyclone Bola, the policy of planting *pinus radiata* everywhere it would take root has caused as many problems as it has solved; today, there is still sediment settled on the fields and flowing to the ocean, there is slash on the beaches and across the farmland, and the ecosystem continues to be degraded by pests and invasive species. The simple solution is clearly not fit-for-purpose.

What is required is the ability to work with the whenua rather than attempt to impose solutions upon it. Some investors already understand the necessity of this approach and are attempting to develop mixed



use projects – but are being impeded in doing so by the constraints of the Overseas Investment Office criteria.

The Overseas Investment Act 2005 regulates investments by "overseas persons" in "sensitive land" and/or "significant business assets", through the Overseas Investment Office (OIO). If consent is required under the Act, then an application must be made to the OIO and consent must be granted before the investment can proceed.

There are four main investment pathways:

Investment pathways:

- Significant business assets applicants must meet the benefit to New Zealand test.
- Sensitive land applicants must meet the benefit to New Zealand test.
- Residential land applicants must meet the benefit to New Zealand test, increased housing test, non-residential use test, or demonstrate a commitment to reside in New Zealand.
- Forestry applicants must meet the special forestry benefits test, modified benefits test, or benefit to New Zealand test.

In certain limited circumstances, the relevant government ministers can call-in and prohibit a transaction even where the investment is not an investment in sensitive land or significant business assets.

The relevant OIO approval class for Tairāwhiti is for forestry, where there is already widespread offshore ownership of forestry assets. There are a number of tests applied for forestry consents:

- 1. **Special forestry test.** This is most streamlined test, for investors who are buying existing forestry land. Under this test, applicants are required to:
 - Use the land exclusively, or nearly exclusively, for forestry activities
 - Replant after harvesting, unless exempt
 - Not live on the land.
- 2. General benefit test. This may be used if applicants intend to convert farm land to forestry, or if applicants plan to use the land only for forestry activities but cannot meet all of the criteria of the special forestry test. Applications under this pathway are assessed against the benefit to New Zealand test, under which the investment must be likely to result in benefit to New Zealand, measured against 7 benefit factors. (Benefits are compared to the current state). Under the general benefit test, applicants are also required to:
 - Use the land exclusively, or nearly exclusively, for forestry activities
 - Replant after harvesting, unless you are exempt
 - Not live on the land.
- 3. **Standing consents.** Investors in forestry or forestry rights may choose to apply for a standing consent. This allows them to apply for consent before identifying the property or land they want to buy. Standing consents are only available for acquisitions of existing forest. A standing consent covers a predetermined number of transactions and may have an expiry date.

Anything else you would like to say about the current policy framework?

Legislative frameworks and investor confidence

It is clear that amendments are required to the existing legislative frameworks to enable better solutions to be developed and implemented. These solutions will need to address the gaps between existing regulation – such as the intentions of the NES and the reality of a permitted activity in the District Plan – and address as a matter of urgency the unintended consequences of the ETS and the OIO. These are not minor matters, but their complexity does not diminish their urgency.

In the process of improving the legislative frameworks, it is important to provide a clear view of the pathway ahead. This is necessary for the communities of Te Tairāwhiti, tangata whenua who have



kaitiakitanga, the businesses of the region, the people who are working to restore the whenua, and the people and institutions who invest in Tairāwhiti. All these stakeholders require the confidence that the solutions will be equitable, that costs and benefits will be shared, and that they will all have meaningful input into what the future will look like.

We propose and discuss some concrete solutions in the section below. However, it is important that Government listen to all the voices in Tairāwhiti, and are then clear about the legislative roadmap – and that it is integrated into Tairāwhiti-centric solutions, rather than continuing the patchwork of overlapping regulatory frameworks with unintended but negative consequences.

SECTION FOUR: SOLUTIONS

1. What is your vision for the future of land use in the region?

When discussing future land use and solutions to these complex issues, it is essential to recognise how our communities and their wellbeing is deeply intertwined with land use practices. For example, nearly a quarter (23%) of direct jobs in region are in the agriculture, forestry and fishing sectors, with sheep & beef farming the largest employer (2,093 workers)²¹. There are further jobs, livelihoods and economic activities which are indirectly supported by the primary sector.

It is clear that the current uses to which a significant proportion of LUC 6+ land in Tairāwhiti is being put are unsustainable, both economically and environmentally. The monoculture plantation forests and the current pastoral farming methods are resulting in adverse effects that cannot be fully mitigated using existing management methods on a large fraction of the whenua.

This is not to say that all LUC6+ land is equally vulnerable; in some cases, the overall LUC classification conceals some of the complexity of the topography and the uses to which the land has been put over many generations, so a fine-grained approach to classification and future usage is required, in partnership with the local communities, farmers and foresters who have a rich understanding of their whenua.

However, the challenges facing the way we inhabit the landscape are set to become more acute over time; both the frequency and intensity of major weather events will increase as global temperatures rise. A warmer planet means more rainfall and more intensity, and Tairāwhiti's soils and topography means the region is uniquely exposed to the adverse effects. However, due to the trajectory of global warming and the rate at which it is accelerating, the window for commencing the transition of inappropriately used LUC6+ land is rapidly closing.

Changing the way we inhabit and use the land is not simple; there are a range of stakeholders, the economic effects are interwoven with the wellbeing impacts, and there is a requirement for just and equitable outcomes with a fair sharing of costs and benefits. The complexity of the issue can give rise to policy inertia and the sense that it is an intractable problem.

However, the complexity of the challenge does not diminish the urgency with which it needs to be addressed. Doing nothing, and continuing to act as we always have, will continue to bring disaster in Tairāwhiti. Urgency of action matters.

The outcome we are seeking

Not all LUC6+ land is unusable from an economic perspective; however, it is a truism that the region requires "the right tree in the right place, with the right practice".

There are portions of LUC6+ land that can and should remain as pastoral farm, and have been farmed and managed sustainably over more than a century. There are portions of flatland that are highly

²¹ Te Kaunihera o Te Tairāwhiti, Gisborne District Council, 'Tairāwhiti 2050 Spatial Plan Factsheet 01', March 2019, https://www.gdc.govt.nz/__data/assets/pdf_file/0019/10387/tairawhiti-2050-spatial-plan-factsheets.pdf.



suitable for farming, but which have been converted to forestry and are vulnerable to being locked up in carbon farms. A fine-grained analysis of which land is suitable for which use needs to be conducted, working alongside the communities and landowners who know the whenua best, supported by the latest in imaging and AI technologies. Our overly simple LUC classification system is a useful starting point, but needs to be brought up to date with better data for more informed decision making.

The restoration of forest cover is going to be required for significant portions of the LUC6+ land. In some cases this can only be ngāhere, but in specific circumstances exotic plantings of both commercial and non-commercial species will be appropriate. Decisions will need to be made on a place-by-place and case-by-case basis about the right solution for each part of the whenua, informed by the local knowledge and experience of Tairāwhiti and better-quality imaging data.

It is apparent that the only long-term use to which significant portions of LUC6+ land can and should be put is in the restoration of the native forest ecosystems that existed prior to deforestation. This ecosystem is the one proven way of preventing the economic and ecological damage to the region and its communities from the major weather events that will become an increasingly frequent occurrence in the decades ahead.

If this path is to be pursued, four questions need to be answered:

- How do we plan for the right tree in the right place?
- How do we ensure the right practices?
- Is the restoration of the whenua on the scale being contemplated feasible?
- How will the transition be managed in order to mitigate the impacts on the region, its people and the economy?

Each will be addressed in turn.

Planning for the right tree in the right place.

Considerable work has been done by a wide range of local, regional and national organisations to understand the landforms and ecosystems of Tairāwhiti, with some of this work stretching back many decades. It is this deep knowledge about what is feasible that must form the foundation of future decisions about land use.

In addition, there are new and emerging technologies that can help provide better data for more informed decision making. These include LIDAR and satellite imagery, and AI-based interpretation models, which are capable of providing fine-grained analysis of the topography and the vegetation in a way that was not feasible when the original LUC classifications were created.

As better data and improved insights become available, they can be integrated with the ground-truthed knowledge of the region, informed by both Western scientific disciplines and the wisdom of mātauranga Māori. In the context of the long-term challenges for Tairāwhiti, both ways of knowing must sit alongside one another and bring their respective methods of understanding to the table. Working in this way will enrich the solutions, and help develop the holistic approaches needed to address all facets of how the whenua is used and inhabited.

The work of understanding needs to be given priority, and then made into a practical roadmap for the land use changes. This means:

- There must be a properly funded and regionally-led data acquisition and interpretation programme, aimed at gathering and collating the fine-grained information about Tairāwhiti's landforms and vegetation. The purpose is to have a rich and accurate data set, freely available to all, that is the agreed starting point for assessing the possibilities for land use. Given the skills, competencies, and existing capabilities, it is proposed this data model resides within the Gisborne District Council, with national funding available to support its implementation and usage.
- An integrated plan for the vulnerable land in Tairāwhiti can then be developed, showing the current and planned uses and the interim changes that need to occur. The plan is informed by



the data model and should allow for scenario planning – that is, playing out the various options for specific areas and the region as a whole, to see how changes could occur and their likely impacts on the whenua, communities and the economy. The plan needs to incorporate both the land and the infrastructure – physical and social – needed to support the transition plan, so that the people and communities and businesses can plan for the decades ahead with a degree of certainty. And the plan needs to be given statutory authority to guide its implementation.

• The plan needs appropriate regional ownership and governance, with sufficient flexibility and adaptability that lessons can be learned and innovation can be fostered. And it goes without saying it must be revised and improved as the years go by, as the work of restoration is likely to take decades.

Ensuring the right practices

It is a key requirement of better land use that the right practices are used in developing, managing, and harvesting on vulnerable whenua. In some cases – in both the pastoral farming sector and the forestry sector – there are outstanding examples of organisations acting with integrity and in the best long-term interests of the community and environment. But there are also examples of organisations behaving with a degree of short-term cynicism about their actions, and taking approaches that are highly damaging.

The key differentiation seems to be the adoption – or not – of good ESG governance frameworks by the appropriate farming and forestry organisations. Where there is governance focus on environmental and social outcomes as well as traditional profitability metrics, then the results on the ground appear to be better. Organisations wedded to traditional approaches (such as an exclusive focus on shareholder returns) seem more inclined to adopt extractive and potentially damaging practices, such as insufficient riparian set-backs or indifferent pest management.

The issue of better ESG governance is not easily solved in the context of a land use inquiry, nor are the consequences easily addressed through one-size-fits-all regulatory controls; it is notoriously difficult to legislate intention. Compliance can be achieved in some behaviours but given the complexity of the Tairāwhiti environment there will always be avenues where bad actors can exploit holes in regulatory frameworks, such as the discontinuity between the NES-PF and the District Plan.

However, setting up the regulatory frameworks – in the ETS, the RMA, the OIO and some other key areas – in order to encourage and incentivise better ESG governance and decision making will go a long way towards changing practices for the better.

The feasibility of restoration

In order to agree the transition plan for Tairāwhiti there must be a common understanding that the resulting outcome can actually be achieved; the plan must be ground-truthed in the restoration work that has already been undertaken in Tairāwhiti, and in the academic and applied research in Aotearoa and overseas.

Much of the research and methodological development for how restoration of vulnerable land can occur has already been undertaken. For instance, Dr Adam Forbes and others have published extensively on restoration methodologies for both the plantation forestry estate and pastoral farms, much of which is highly applicable to Tairāwhiti, or which is based on experiences in the region.

As Dr Forbes and others have identified, a range of techniques have proven to be viable:

In practical terms, the transition of land from plantation forest or pastoral farm to ngāhere has been conducted at a reasonable level of scale in various locations across the region. The practical methods and approaches have been developed and refined by a range of organisations in different locations, working on a variety of projects over the last three decades, underpinned by the academic research.

At a technical level, the reestablishment of native forest is a relatively straightforward process, with a defined approach and proven methodologies. In addition, considerable experience has also been gained in how the work is best undertaken in the practical sense. A range of organisations have conducted



restoration projects at scale and understand the size and nature of the work teams, the number and skills of people required, the type and scale of supporting services and infrastructure, and the management and operational capabilities needed to successfully deliver restoration projects and ongoing native forest management.

At the level of a pilot implementations, there is extensive evidence that restoration programmes work; that they are cost-effective; and that the methodologies for training people, managing projects, evaluating the results, and maintaining the resulting forests are effective. This provides a foundation of knowledge and capability so the projects can be scaled up.

The scale of the restoration is significant however, potentially covering hundreds of thousands of hectares of land over the coming decades. This means significant capability and capacity building will be required, covering:

- Workforce development and capacity
- Workforce training and accreditation, linked to academic and applied research
- Management and project management capability and capacity
- Supply chain development, in areas such as nurseries, transport and construction
- Supporting infrastructure investment in key areas of Tairāwhiti to improve accessibility
- Research, data science and evaluation capability
- Community and iwi engagement and coordination
- Effective and efficient regional governance.

None of these areas are intrinsically difficult, and Tairāwhiti already has considerable expertise and depth of knowledge in most of these domains. That said, the current initiatives require scale in order to transition large-scale land areas, which is critically dependent on the availability of ongoing funding at sufficient scale to effect change across the region.

Managing the transition

As noted above, the first step in the transition to a more sustainable whenua in Tairāwhiti is an agreed plan, grounded in solid data, designed at a local and regional level, and supported by appropriate legislation and funding. This is no small task to achieve.

It is important to note that many of the land use challenges that have arisen over the last few decades have occurred because there was a strong desire for simple solutions to complex problems, and inappropriate interventions were applied. It is important we do not repeat the same mistakes in the way the Tairāwhiti plan is designed and implemented – and this requires that a range of organisations "play in position" and bring their respective strengths and capabilities to the table.

Just transition

It is a core principle of Trust Tairāwhiti that there be a just transition to a better way of inhabiting the whenua. Our prior submissions to the Climate Change Commission²² and on the Emissions Reduction Plan²³ in 2021 highlight our concerns for just transition in the context of land use change.

There are embedded economic interests in the current land uses, which will need to be addressed as part of any transition plan. So where the transition plan includes the process of reversion to native forest and the long-term environmental and economic sustainability of the region, all stakeholders need to be part of the transition project and the long-term kaititanga of the whenua.

In some cases, this may mean that existing landowners are compensated – either monetarily, or through other mechanisms – for the change in land values. This is not to say that all landowners should

²² Trust Tairāwhiti, 'Trust Tairāwhiti Climate Change Commission Draft Advice', March 2021, https://trusttairawhiti.nz/assets/Uploads/Trust-Tairawhiti-CCC-Submission-May-2021.pdf.

²³ Trust Tairāwhiti, 'Trust Tairāwhiti Submission on the Government's Emissions Reduction Plan Discussion Document', November 2021, https://trusttairawhiti.nz/assets/Uploads/Trust-Tairawhiti-Emissions-Reduction-Plan-submission.pdf.



expect to be made whole in all circumstances; there was clearly an acceptance of commercial risk in some of the farming and forestry investments made over the last decades. However, the costs and the benefits must be equally shared, and this may mean that the costs borne by some landowners are shared more widely to reflect the wider ecosystem benefits that come from restoration of the whenua.

Likewise, the employment impacts of changed land uses cannot fall solely on Tairāwhiti communities, particularly on the East Coast. In many cases the livelihoods of entire whānau depend on the forestry and pastoral farming sectors, so if the nature of employment is to change, these communities must not find themselves without work as the land uses transition.

In these circumstances, timing is everything; if certain classes of jobs are likely to decrease or vanish altogether in some Tairāwhiti communities, the re-training programmes and alternative employment options must be established rapidly. Many of these communities and whānau were very badly affected by the neoliberal economic reforms of the 1980s and 1990s, so we must not make the same mistake of providing insufficient support during the transition period.

Embedding new economic opportunities

There are new economic opportunities that can be grasped for Te Tairāwhiti as part of the long-term transition for LUC6+ land. These include:

- Local-level tourism with local communities at the centre, integrated with the Tairāwhiti Destination Management Plan
- Widespread replanting and biodiversity restoration initiatives across the LUC6+ land in Tairāwhiti, led by local communities and iwi, grounded in Te Ao Māori
- Better and more high value uses of woody waste from continuing forests, such as pellet fuels, biochar, coal replacements and a number of others
- Ongoing kaitiakitanga of the existing and transitioned ngāhere, in areas such as pest management, weed management, whenua and awa restoration, led by local communities and iwi, grounded in Te Ao Māori
- Niche high-value industries such as apiaries, which can work with the whenua rather than being extractive.

There are a number of components to ensuring there are new and evolving industries to take up the slack from the scaling back of forestry and some pastoral farming. These include:

- A revitalised Tairāwhiti Economic Action Plan, pivoted to focus on the transition opportunities and challenges, owned by the appropriate regional organisations
- Focused central government funding support for R&D and the commercialisation of new techniques, particularly in the areas of woody waste, aimed at progressing from innovation through to pilot programmes and full commercialisation
- Access to business capital through both private sector investors and public support, where necessary facilitated by Crown loans or underwriting, in much the same way that Kānoa has played an essential role in the expansion of the wood processing sector in Tairāwhiti
- Scaling up support for new and existing businesses, by providing advice, assistance and guidance as part of the existing enablement programmes operated by Trust Tairāwhiti as part of its economic development responsibilities
- Where appropriate, enabling legislation or regulatory change to provide business and investment certainty, by addressing conflicting or inconsistent regulatory frameworks such as the challenges being experienced with the current OIO rules.

Market-based tools are available and these should be used where appropriate. There are Tech & Green capital investment markets that can be accessed to incentivise land use changes to positive environmental outcomes, and there may be the opportunity to build market-based solutions to land being retired. For instance, there may be incentives for farmers and other land owners to retire land and/or offer opportunities for projects with positive environmental outcomes, such as improved biodiversity or native ecosystem restoration.



An example is Toha, which is using a highly innovative approach coupled with the latest technology to develop green markets with biodiversity outcomes. These options should be explored, and where necessary supported by Crown funding or underwriting.

Valuing ecosystem services

The reversion of portions of the LUC6+ land to ngāhere can be seen in narrow economic terms as a reduction in GDP. However, this analysis assumes the ecosystem services provided by native forest – in carbon sequestration, increased biodiversity, topsoil retention, and damage avoidance in major weather events – carry no value. This is clearly not the case.

Aotearoa has well-developed methodologies for valuing ecosystem services, and these should be applied in a consistent way as part of the planning for land use transition. We propose the valuation methodologies are embedded into the Tairāwhiti data model. These valuations will show the effects of ecosystem services at a local, regional and national level.

Merely having a valuation is not enough however, valuations must then be used for decision making about funding allocation. For example, a significant proportion of the carbon sequestration of ngāhere will be attributed to our national emissions accounts; the benefits are felt and accounted for at a national level. Accordingly, the costs of establishing the ngāhere and the ongoing maintenance of it – through effective pest management, for instance – should be funded at a national level. In other words, the sources of funding should match where the benefits are being realised.

Measuring regional outcomes

Trust Tairāwhiti is at the forefront of measuring and valuing wellbeing outcomes in Aotearoa, thanks to the He Rangitipu He Tohu Ora framework, developed and adopted by the Trust over the last three years.

He Rangitipu He Tohu Ora is founded in the values of Te Ao Māori, aligned with the Living Standards Framework, solidly grounded in the latest academic research, and has an established baseline from which changes in regional wellbeing can be measured. The results of the latest Tairāwhiti regional wellbeing survey can be found at https://tairawhitidata.nz/

It is certain that the transition away from existing inappropriate land uses will have wellbeing impacts on individuals, whānau and communities. Rather than new measures being devised to assess these impacts, the Trust strongly advocates for the use of He Rangitipu He Tohu Ora as the measurement and assessment framework.

2. What do we need to do to achieve this vision?

- a. Immediately? (in the next 12 months)
- b. In the short term? (next 1- 2 years)
- c. In the medium term? (3-5 years)
- d. In the long term? (10+ years)
- e. Far into the future? (30 100 years)

The immediate steps

Moving to a better way of inhabiting the whenua is a long-term project. In the immediate future, some key steps need to be taken straight away to prevent the problems experienced in the wake of Cyclones Hale and Gabrielle being endlessly repeated. These are:

- Immediate reparations, i.e., a requirement on forest companies to clean up slash piles and repair infrastructure damage etc
- An immediate change to the ETS to prevent carbon farming in its current form, including some kind of moratorium on the activity



- A commitment by existing forest owners to follow the NES-PF and ensure all the exotic plantations in Tairāwhiti meet best practice standards, enforced by regulatory change. This should include the implementation of improved management techniques such as riparian setbacks and slash retention need to be applied across the region, and the costs of these techniques must be shared equitably if the outcome of negative profitability and the resulting economic and job losses are to be avoided.
- A change to the GDC District Plan to make forestry a discretionary rather than permitted activity, allowing the monitoring and control regimes in the RMA and LGA to be applied, and for the controls to be applied retrospectively to existing forests
- Reform of the OIO to explicitly prevent carbon farming, to encourage mixed use investments that result in the right tree in the right place with the right practices, and to end the singular focus *on pinus radiata*.

The short term steps

In parallel with the immediate steps, the following actions are needed to put in place a plan for transition to more sustainable land uses:

- 1. The establishment of a Tairāwhiti data model for land use, to provide the detailed data about the land and the uses to which it can be put, developed, hosted and maintained by a suitable regional organisation such as GDC.
- 2. A consultation process with the community, iwi, businesses and NGOs across the region to develop the Tairāwhiti transition plan, aimed at building consensus on the long-term goal for how the whenua is occupied and used, and on the steps necessary to get there, focused on a just transition. Development of the plan should be led by a regional organisation such as Trust Tairāwhiti.
- 3. As noted above, there are additional opportunities in biomass, coal substitution and the like that should be adopted quickly and at scale, so there must be R&D and commercial investment funding to establish these industries at the necessary scale, within reasonable timeframes, by extending existing programmes through Kānoa and other central government agencies.
- 4. A review and implementation of the regulatory and legislative frameworks to produce an integrated and joined-up regulatory environment, able to deliver on the environmental, social, cultural and economic outcomes for the region, whilst removing the conflicting, confusing and overlapping rules that are currently creating some of the issues.
- 5. Alongside the regulatory review, the establishment of a single appropriation for Tairāwhiti to achieve the transition outcomes, as agreed in the plan. This will avoid the complexity and overlapping contracts with conflicting conditions that will come from separate agencies funding different aspects of the transition.

The longer term steps

There will be a temptation to regard the issues as fixed once the slash has been removed from the beaches and the roads and houses rebuilt. But this is not the case – the transition of hundreds of thousands of hectares of LUC6+ land in Tairāwhiti will take decades. For this to be done successfully, there needs to be:

- A long-term commitment to funding the necessary work at all levels, from on-the-ground planting and pest management to patient capital investment in new sectors
- A cross-party political consensus to stay the course, rather than having the programme left to the whim of electoral cycles.

Taking a long-term view and building the necessary political support has been done before – after Cyclone Bola. The planting schemes put in place in the late 1980s were still in operation in the early 2000s, so there is no reason why the same approach can't be used again. If we can take the time to plant the wrong species in the wrong place, we can take an equal amount of time and energy and money to restore what we got wrong, and to ensure we have the right land uses across Tairāwhiti.



3. Is there anything that shouldn't be changed, for example, things that if changed would make it worse?

The transition plan must not be seen as the death knell for the forestry industry or for pastoral farming in Te Tairāwhiti. These sectors will continue to be important parts of the social and economic infrastructure of the region, so it is important to provide clarity of communication to the sectors, the whānau that depend on them, and local and international investors, that there will be a continuation of pastoral farming and forestry in Tairāwhiti – albeit with the right practices in the right places. Not communicating clearly runs the risk of significant economic and social disruption.

And while it is tempting to create new organisations to oversee the necessary transition, it is the view of the Trust that this is not necessary – particularly in the short term. New governance or management structures are not immediately required, as there are existing organisations and relationships in place across Tairāwhiti that are demonstrably fit for purpose. These include GDC, Trust Tairāwhiti, iwi/hapū, and a range of others. The imposition of a new governance approach or new delivery organisation will simply add cost and complexity whilst delaying the start of critical projects.

The primary challenge for existing organisations will be the need to scale up capacity, which can be addressed through additional funding from outside the region.

In your view, which groups need to be involved in developing solutions and what is the best way for these groups to be involved?

It is critical that Tairāwhiti develop its own vision for the future and the plan to get there. The process can be facilitated and enabled by central Government, and agencies can and should contribute their knowledge and expertise, but there is strong evidence that the imposition of simplistic solutions from outside the region has not served us well.

We are therefore proposing a collaborative approach with Government in some key areas:

- The sharing of data about the region, as part of the Tairāwhiti data model, in a way that will enable good decisions to be made whilst preserving Tairāwhiti's data sovereignty
- Joint engagement and consultation with iwi, communities and the business sector, to collaboratively develop the transition plan is crucial, led by the region itself
- Central government needs to supply expertise, advice, funding support and legislative change, within the context of the agreed transition plan.

As noted above, neither community nor investor confidence can be eroded as plans are developed, so good and clear communication about and during the process is key, particularly in the creation of the transition plan. This is a responsibility that will fall to both the Government and the region.

There are organisations that can already lead this work, so there is no need to create a new layer of governance or management. These include Trust Tairāwhiti in its role as community funder and EDA; GDC as territorial authority; the iwi of Te Tairāwhiti; and a range of other NGOs who have real-world experience of whenua restoration. There are existing structures with iwi at the heart, and it is our strong view these organisations need to lead the planning and implementation of the transition.

FINAL NOTES

As a final note, we wish to state for the record that the narrow consultation timeframe has precluded us from developing a more comprehensive submission. The challenges and solutions are complex, with many stakeholders with whom we would have engaged further in the development of this submission had more time been available.



BIBLIOGRAPHY

- Aaron Smale. 'East Coast Farm Crumbles after Carbon Group Takes Over'. *Newsroom*, 27 March 2023. https://www.newsroom.co.nz/east-coast-farm-collapses-after-maori-carbon-group-takes-over.
- BDO Gisborne Limited. 'Report on the Impacts of Permanent Carbon Farming in Te Tairāwhiti Region.' Gisborne, New Zealand, July 2021. https://trusttairawhiti.nz/assets/Uploads/Impacts-ofpermanent-carbon-farming-on-the-Tairawhiti-region-July-2021.pdf.
- Dr Murray Cave and Nicki Davies. 'Cyclone Cook Slash Investigation'. Te Kaunihera o Te Tairāwhiti | Gisborne District Council, October 2017. https://www.gdc.govt.nz/__data/assets/pdf_file/0013/10408/cyclone-cook-slash-investigation-2017-report.pdf.
- He Pou a Rangi the Climate Change Commission. 'Ināia tonu nei: a low emissions future for Aotearoa. Advice to the New Zealand Government on its first three emissions budgets and direction for its emissions eduction plan 2022 – 2025.', 31 May 2021.
- Intergovernmental Panel on Climate Change (IPCC). *Global Warming of 1.5°C: IPCC Special Report on Impacts of Global Warming of 1.5°C above Pre-Industrial Levels in Context of Strengthening Response to Climate Change, Sustainable Development, and Efforts to Eradicate Poverty.* 1st ed. Cambridge University Press, 2022. https://doi.org/10.1017/9781009157940.
- Land Air Water Aotearoa. 'Land Cover'. Land, Air, Water Aotearoa (LAWA), 2023. https://www.lawa.org.nz/download-data/.
- Local Government New Zealand (LGNZ). 'Managing Exotic Afforestation Incentives: Local Government New Zealand's Submission on Proposals to Change Forestry Settings in the New Zealand Emissions Trading Scheme', April 2022. https://www.lgnz.co.nz/assets/Uploads/Carbon-Farming-ETS-Carbon-Farming-Submission-final-submission.pdf.
- Ministry for Culture and Heriitage. 'Cyclone Bola Strikes', February 2023. https://nzhistory.govt.nz/page/cyclone-bola-strikes.
- New Zealand Productivity Commission Te Kōmihana Whai Hua o Aotearoa. 'Regulatory Institutions and Practices', June 2014. https://www.productivity.govt.nz/assets/Documents/d1d7d3ce31/Finalreport-Regulatory-institutions-and-practices-v2.pdf.
- Pörtner, Hans-Otto, Scholes, Robert J., Agard, John, Archer, Emma, Bai, Xuemei, Barnes, David, Burrows, Michael, et al. 'IPBES-IPCC Co-Sponsored Workshop Report on Biodiversity and Climate Change'. Zenodo, 24 June 2021. https://doi.org/10.5281/ZENODO.4782538.
- Te Kaunihera o Te Tairāwhiti, Gisborne District Council. 'State of Our Environment: Our Land & Soil | Tō Tātau Whenua, One Hoki.', 2020. https://www.gdc.govt.nz/__data/assets/pdf_file/0026/9971/soe-report-2020-land-soil.pdf.
- Te Kaunihera o Te Tairāwhiti | Gisborne District Council. 'Tairāwhiti 2050 Spatial Plan Factsheet 01', March 2019. https://www.gdc.govt.nz/__data/assets/pdf_file/0019/10387/tairawhiti-2050spatial-plan-factsheets.pdf.
- Te Uru Rākau New Zealand Forest Service. 'Report on the Year One Review of the National Environmental Standards for Plantation Forestry', April 2021. https://www.mpi.govt.nz/dmsdocument/44914-Report-on-the-Year-One-Review-of-the-National-Environmental-Standards-for-Plantation-Forestry.

The Royal Society. 'Climate Change and Biodiversity: Interlinkages and Policy Options', 11 October 2021.

Trust Tairāwhiti. 'Trust Tairāwhiti Climate Change Commission Draft Advice', March 2021. https://trusttairawhiti.nz/assets/Uploads/Trust-Tairawhiti-CCC-Submission-May-2021.pdf.



Trust Tairāwhiti. 'Trust Tairāwhiti Submission on the Government's Emissions Reduction Plan Discussion Document', November 2021. https://trusttairawhiti.nz/assets/Uploads/Trust-Tairawhiti-Emissions-Reduction-Plan-submission.pdf.

Civil Defence monitors Mangapoike River slip north of Wairoa

Hawkes Bay Today

23 Mar, 2018 09:20 PM @2 mins to read



A lake which has been created on the Mangapoike River between Wairoa and Gisborne due to a landslide earlier this month. Photo/Supplied

A large slip which has created a lake between Wairoa and Gisborne is being monitored.

Hawke's Bay Civil Defence Emergency Management Group is working with local authorities to monitor the growing dam of water and sediment sited on the regional boundary between Wairoa and Gisborne.

The landslide, likely triggered by a small localised earthquake earlier this month, has resulted in approximately 80 million tonnes of material forming a large dam on Mangapoike River (a small tributary to the Wairoa River).

The new lake is about 50 metres deep and rising.

The area affected by the landslide is 25.8 hectares and the landslide is still moving.

No water is currently leaking from the dam, but it is rising by about 60cm each day.

Hawke's Bay Civil Defence Group Manager Ian Macdonald said the slip has become a significant hazard and people are warned to stay away from it.

"Downstream landowners and river users are strongly advised to keep out of the riverbed."

The landslide and dam are located on private property and in a remote area, but authorities want local people and downstream communities to be aware of the hazard risk.

Wairoa District Council and Civil Defence staff have been talking directly with potentially affected residents.

The dam might fail at any time and there is a significant amount of water behind the landslide, he said.

"We're working closely with Gisborne and Wairoa district councils, with support from Hawke's Bay Regional Council to assess the risk of dam failure and develop an ongoing management plan. Specialised engineers engaged by the Hawke's Bay Regional Council were due on site on Thursday.

Paparatu Rd is closed to the public because of this and appropriate signage has been installed.

There is no date for when the road will reopen at this stage.



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Submission to the Ministerial Inquiry Land Use

Mitchpine is an established family run sawmill and manufacturer of sawn timber, wooden poles, and fence posts located on the border of the Wellington, Horowhenua and Manawatu regions. Mitchpine is the only sawmill in New Zealand to produce sawn timber, wooden poles, and fence posts, and we run our site boilers on biomass (forestry residues which come from logs bought to site).

As a wood processor taking delivery of logs that have been defected in the forest, I have been thinking a lot about how the industry can do things differently. Recent extreme weather events have highlighted the issue of forestry residues/slash left in the forest causing considerable damage to infrastructure as they were washed downstream. Now is the time for industry to look at different ways of doing things to reduce forestry residues/slash being left in the forest and the likelihood of damaging events occurring in the future.

Currently trees are felled and defected at skid sites located in forests. At these skid sites trees are graded and cut down to sizes that customers have ordered. This process results in approximately 15% of a tree being left behind. Grading on a skid site requires a lot of heavy equipment to be taken to site which also has a hazardous element attached to it.

I see potential to run my business in a more sustainable way by investing in equipment that will 'utilise the whole tree', therefore reducing forestry residues/slash left in the forest.

By removing the "whole tree" from the forest and bringing it to the sawmill for processing it will:

- reduce log scaling in the forest
- reduce potential harm to workers
- reduce the skid site footprint.

Mitchpine intends to invest in equipment that will enable it to process long stems that **have not been defected in the forest**. Long stems will be collected and processed at our mill site and will allow us to utilise up to 15% of the log that is currently set aside as waste / left in the forest. We are located where there is an abundance of forestry material that is underutilised because of the lack of major processing facilities.

Mitchpine will then convert forestry waste into biomass that can be utilised in a range of value chains, including products that can substitute some fossil fuels as an energy source (e.g., wood pellets). It is envisaged that the volume of biomass produced will generate a secure supply chain for biomass. Risks around an insecure biomass supply chain are currently restricting innovation and investment by companies further along the value chain.

In conjunction with the Energy Efficiency and Conservation Authority (EECA), Mitchpine have recently undertaken a feasibility study which considered and assessed the implications of an accelerated investment scale-up based on available wood resource; market and customer insights and development; opportunities for commercial partnerships with other players along the value chain; an options assessment for future investment; forecast and validate the potential benefits of scaled biomass production for the forestry sector and for New Zealand.

Mitchpine will use the feasibility study to support its funding applications and inform decision making when making future investments. Aiding businesses who want to upscale to reduce forestry residues and assist industry to reduce its carbon footprint needs to be prioritised.

Lee Mitchell Managing Director 021 037 2961



April 2023

Submission Document

Ministerial Inquiry into land uses associated with the mobilisation of woody debris (including forestry slash) and sediment in Tairāwhiti/Gisborne District and Wairoa District

This submission is made on behalf of Fleetwood Forest Partnership, managed by Roger Dickie NZ ltd

Submitter Background

Roger Dickie (N.Z.) Limited (RDNZ) is a forestry investment manager and licensed Managed Investment Scheme provider under the FMCA 2013. RDNZ's forest investment dates back more than 30 years including significant concentration of investment in the strong forest growing regions of New Zealand, namely the Gisborne and Wairoa districts.

RDNZ manages a total of 38,000 hectares including 21,200 hectares in the Gisborne and Wairoa districts, the subject of this enquiry. Of those investments, 10,275 hectares are retail syndicate (Partnership) investments owned by more than 1,100 investors, predominantly New Zealand Mum and Dad investors, the remaining properties are owned by family office and institutions of local and foreign origin.

The activities of RDNZ and its investors have materially contributed in a positive manner to the economy, employment, and the environment within these regions, as well, our managed area equates to 9.6% of the total forest area within the enquiry regions, making our forests and the investors we represent a significant forestry voice and related party to the enquiry.

Executive Summary

Forestry is a long-term investment that has from time to time been incentivised via the Government and regional councils to combat erosion and soil degradation, as well, to increase the productivity of some classes of land. The decision to invest in forestry has often been motivated by those prerogatives on top of forestry's alignment with the investors long-term investment drivers.

The heightening of weather events, which many associate with climate change, is the very reason greater levels of afforestation are necessary, especially in temperate and high rainfall areas where there is strong tree growth coupled with erodible land. A study by the Waikato District Council recommended that pasture slopes generate 2 to 5 times more sediment than comparable forestry slopes.



Other comparisons of production forestry and farming on hill country land are often made, with the results showing that forestry far exceeds farming with respect to expenditures, employment, export receipts and environmental impacts, including carbon sequestration and soil stabilisation.

Forest feasibility reports prepared for us by independent forest consultants project expenditure of more than \$2,500 per ha average over the 28-to-30-year forest rotation, this expenditure is for management, harvesting and transport of our forests and does not include off farm added value at timber mills and export operations. Many of our forests that have completed harvesting have exceeded this expenditure figure. In contrast independent surveys in the Wairoa area have stated that average annual expenditure per ha over a 30-year period is \$500 to \$700 per ha (approximately 1/3 of forest expenditure).

In large weather events, mobilisation of debris will always happen, whether it be from forestry planted for production purposes, permanent crops, natives, riparian plantings, shelterbelts, fences, buildings etc. Take the Esk Valley for example, production forestry did not occur in this catchment in 1938, however the Esk Valley was severely impacted at this time by a weather event that caused three meters of silting and destroyed bridges from debris mobilisation.

Is forestry doing better, yes, can forestry do better, yes. The changes implemented by the National Environmental Standards for Plantation Forestry (NES-PF) mitigate debris left on slopes and ensure waterways are better protected; however, at the same time it can be argued that weather events are becoming more frequent and more severe.

The consenting obligations and practices required to uphold consents already impose significant costs on forest owners, those significant costs come on top of targeted forestry rates applied by the Councils in the enquiry regions. Forestry by-in-large is meeting these consenting requirements while paying higher (targeted) rates, begging the question, is forestry being provided the appropriate public infrastructure commensurate to its contribution to the regions.

How do we do more, there are short- and long-term solutions that need to be worked towards in conjunction with one another, RDNZ recommends the following:

- Short Term Solutions:
- Harvest activities that occur on high-risk areas (High-LUC, High-ESC) where slopes are immediately adjacent to waterways or host upstream catchments exceeding a minimum threshold should require a riparian buffer zone be maintained at harvest.
- Slash-Trap consenting requirements reduced, allowing slash traps to be implemented with lower thresholds and greater carrying capacity to sustain higher intensity weather events.
- Standardisation of the interpretation of the NES-PF
- Hauling more of the non-saleable logs and slash to the skid site and burning it.



Long Term Solutions:

- The Forestry Transformational Plan intends to incentivise greater domestic processing, clearly the Government should incentivise or co-invest in woodchip and fibre projects to encourage removal of debris and supply the increasing biofuel markets.
- The Emissions Trading Scheme to recognise debris with nil commercial value that are buried on site. Trapping of carbon in soils can be quantified and emission units received to help offset the cost of removing debris from the slope and burying them.
- Hauling more of the non-saleable logs and slash to the skid site and burning it.

RDNZ is strongly opposed to any recommendations of a move of production forests towards permanent forestry, select (non-clear fell) harvesting and harvest catchment restraints. Each of those strategies have dire consequences, including the destruction of statutory property rights.

The future of forestry needs to be supported here to retain investment in the subject regions. Production forestry is a major contributor to both GDP and employment in these regions and we as forest owners and managers are very aware of our social license to operate. You will be aware of many stories of forest companies helping the clean-up, some instances not remotely related to forestry, meanwhile we are yet to see a story of a farmer helping to remove the sedimentation deposited onto crops and homes.

RDNZ urges the Ministerial review to refrain from allowing the emotional element to supersede the economic, employment and environmental considerations of this matter. It is evident that the media and narrow voices can be powerful whilst ill informed. The New Zealand Government is responsible for seeing through emotional statements and to make decisions that protect the economic aspirations of the country whilst aligning to its policies and the policies that such forestry activities were implemented under.

History of the Land

For hundreds of years New Zealand underwent deforestation with much of this occurring in the 1800's and early 1900's, making way for what was thought to be productive farmland. For the Gisborne and Wairoa regions this was not always the case, with many highly erodible soils unable to withstand large precipitation events.

By the 1930's the Government was already embarking on a large-scale afforestation program under the State Forest Service to address issues of soil erosion and land degradation, and more recently in 1992, the Gisborne region established the 'Erosion Control Funding Programme' or 'ECFP', providing grants for production forestry to be established on erodible parts of farmland.

The ECFP never envisaged that these trees should be established on a permanent basis, in fact, the payments received under the ECFP were staggered as progress payments to make sure that trees established under the ECFP were appropriately tended (I.e., Thinned to a final crop stocking suitable for production harvest), implying that those trees should be harvested.



Volume of Water

The media and public opinion are quick to dismiss the severity of the weather events that are being endured, instead looking for the scapegoat. Any area of land or large catchment that receives +500mm of rainfall in a 24-hour period is going to have a high degree of sedimentation and debris mobilisation, if you then apply this rainfall to already water ladened soils, as we have seen, this delivers severe mid-slope failure.

Sedimentation

Afforestation of farmland was incentivised to help prevent mass erosion and sedimentation from farms into waterways which is then deposited onto other farmland, crops, and residential areas. As we have recently seen, this sedimentation is also responsible for damaging aquatic ecosystems such as the destruction of crustacean habitats near river mouths.

Sedimentation is driven mainly by precipitation, with geology and land use explaining much of the residual difference between sites. Studies by the Waikato District Council with reference to other independent reports, recommend that pasture slopes generate 2 to 5 times more sediment than comparable forestry slopes except for during harvest periods, however sediment loss, with good forest management is said to be restored to pre-harvest levels within one to two years.

While we are happy to support cost effective changes in the forestry sector that drive improved results, we are also acutely aware that this is a Land Use enquiry in the broader sense. We are confident when comparing farmland and forestry, that sedimentation arising from farmland has played a significant role in the damages resulting from Cyclone Gabrielle. Therefore, any result of this enquiry could not unjustly impact forestry without imposing consequences for sedimentation caused by farming.

Woody Debris & Harvest Slash

Woody debris can be defined as any dead, woody plant material, including logs, branches, standing dead trees, and root wads. Within the definition of woody debris are harvest residues, known as forestry slash.

Slash is a by-product of harvesting operations, ranging from the branches removed from logs to trees which don't meet commercial specs. Slash proves useful in returning nutrients to soils and assisting in providing cover for ground erosion, particularly in areas of highly erodible soil.

Woody debris left on stable ground present low risk of moving, however given the increasing effects of climate change and increasing likelihood of high-intensity rainfall events, managing debris such as harvest slash will continue to be an important topic in the forestry sector.

In large rainfall events, soil mobilisation, slope failure and rising water currents can all dislodge woody debris, moving them down slopes that lead to tributaries and rivers. The sheer volume of rainfall has dislodged Pine, Poplar, Regional Council Riparian plantings and native vegetation alike.



Land Use

It is important to consider the outcomes of different land uses when subject to extreme weather events such as January and February 2023. For the purpose of this, let's consider the three land uses below:

- Farmland Land solely used for farming has less root matter to bind the soil and allows water to quickly flow and carry high levels of sedimentation. The weight of sediment and speed of water would be expected to cause infrastructure washouts and high levels of sedimentation downstream.
- 2) Native Bush Land solely in native bush will be able to sustain a level of rainfall by slowing movement, eventually mid-slope failure would happen, sedimentation levels would be low, but debris may include large trees that are likely to cause infrastructure washouts.
- 3) Harvesting Forests The result would strike the middle ground as stumps help to bind the soils reducing sedimentation when compared with farmland, while smaller debris and logs may mobilise, causing infrastructure washouts.
- 4) Growing non harvested exotic forests (Radiata Pine). From the age of 3 or 4 years until harvest at 28 to 30 years a Radiata Pine production forest has showed many times in the past and again in Cyclone Gabrielle that there is little damage by way of washouts and off farm sedimentation. Photographs from Cyclone Gabrielle prove this, and our Sovereign Forest in the Wairoa area is a prime example. This forest is more than 20 years old and had a very low percentage of erosion during Cyclone Gabrielle, this is in contrast to the surrounding farmland which had massive slipping and slope movement resulting in huge volumes of sediment leaving the farms and entering waterways and damaging flood plains further down.

While the above analysis isn't scientifically proven for the purpose of this submission, it is plain to see that each land use has its own set of consequences. We must then include economic, employment and environmental considerations along with those results, to get the full picture.

Strongly Oppose - Permanent Forestry

Permanent forestry in the form of plantation (exotic) forestry or native forestry will ultimately have an undesirable set of consequences. If harsh rules were applied to foresters when managing their harvest, then the obvious choice would be for foresters to move away from production forestry to permanent carbon forestry, using the Emissions Trading Scheme to monetise additional stored carbon.

Permanent forestry will have a diminished benefit to the forest owner; however, it will have dire consequences both socially and environmentally. The harvest of forests would diminish in favour of low-cost forestry, diminishing employment and devaluing the land to zero or worse. Eventually those exotic trees will give way, becoming too heavy for the erodible soils, making it highly likely that much larger debris will mobilise.


Native permanent forestry is not feasible due to the very high costs of establishment and slow rate of carbon sequestration, such a mechanism to force native forestry without incentives or subsidies would drive foresters to relinquish land.

Strongly Oppose – Select (Non-Clear-Fell) Harvest

Select harvesting happens globally on land that is easy in contour allowing machinery to move through the forest or access stems from road carriages. The topography of land in the subject regions means that harvesting is almost always carried out via cable-based systems. Harvesting in these regions under cable-based systems is already hugely expensive and to work effectively, needs to allow for entire settings (faces) to be cleared. Any restriction to this activity would make the activity unsafe due to the confined zone of operation on erosion prone slopes requiring harvesting personnel to be present on the slopes. As well, forests opened up in strips allow for windthrow damage and potential mobilisation in forested areas alongside any strip harvesting. Any such restriction would not be feasible and would cause harvesting to cease in these areas, as well, such a restriction would slow the rate of harvest which removes the forester's ability to react to the commodity driven market.

Strongly Oppose – Catchment Restraints

Any maximum rate of harvest applied to any one catchment would considerably impede the forester's ability to optimise harvest age, act within financial covenants and react to financial markets, thus taking away fundamental property rights that go against freehold ownership of land. Any type of decision would drive large legal proceedings and seriously undermine confidence in freehold land rights and investment into forestry and other assets. Any catchment restraints would restrict forest owners' ability to harvest their forest in times when this is suitable weather (i.e., summer vs winter) or financial objectives. (i.e., a forest might be consented for only a part of the year where log prices are reduced).

Why Production Forestry

While the harvest process creates a short-term debris and sedimentation issue, the public have been very quick to dismiss the substantial environmental, social, and economic benefits of forestry, such as:

- Soil Conservation: Trees help to prevent soil erosion and maintain soil quality.
- Water Conservation: Forests help to regulate water flows and maintain water quality.
- Carbon Sequestration: Trees absorb and store carbon dioxide from the atmosphere, which helps to mitigate climate change.
- Biodiversity Conservation: Forests provide habitats for a wide range of plant and animal species, which helps to preserve biodiversity.
- Employment: Production forestry provides substantially more employment than comparative hill country farming operations. Forestry is said to employ one in four families in the Gisborne region, placing a huge importance of renewable and sustainable practices.



- Timber Production: Forests provide a renewable source of wood products, generating a perpetual supply of revenue through the rotational harvest of forests.
- Economic Contribution: Forestry is a significant primary sector, establishing large services sector expenditures and generating export receipts well in advance of comparative hill country farming.

Proposed Changes

While we are strongly against changes that only adhere to social drivers or that simply create further costs or barriers of entry in the form of consents, rates, or other inefficient taxations, we would be open to making pragmatic changes that further reduce or mitigate the likelihood of debris mobilising.

RDNZ suggests there are solutions that should be managed in conjunction with one another in order to achieve short term mitigation while incentivising programs and operations that form a solution while creating value. The movement toward biofuels and other fibre-based solutions coupled with the lack of pulp/woodchip processing facilities in the subject regions appears to present a real opportunity for the government to create positive solutions.

Short Term Solutions:

- Harvest activities that occur on high-risk areas (High-LUC, High-ESC) where slopes are immediately adjacent to waterways or host upstream catchments exceeding a minimum threshold should require a riparian buffer zone be maintained at harvest.
- Slash-Trap requirements to be implemented with lower thresholds and greater carrying capacity to sustain higher intensity weather events.
- The NES-PF has been established in relation to the events of 2018 in Gisborne. Our view is that the rules under the NES-PF are suitable to produce the desired outcome with respects to debris management. There needs to be stronger controls in the checks and balances as they relate to monitoring of consents and harvesting in all forests, but particularly red zoned land, which encompasses most of the forest in the Gisborne region. If all harvesting entities and forest managers complied at the higher level of the NES-PF we would significantly reduce the chance of debris mobilisation and the consideration of future land use changes.
- Burning the non-saleable wood and debris on the skid sites immediately after harvest is completed.

Long Term Solutions:

- The Forestry Transformational Plan intends to incentivise greater domestic processing, clearly the Government should incentivise or co-invest in woodchip and fibre projects to encourage removal of debris and supply the increasing biofuel markets.
- The Emissions Trading Scheme to recognise debris with nil commercial value that are buried on site. Trapping of carbon in soils can be quantified and emission units received to help offset the cost of removing debris from the slope and burying them.
- Burning the non-saleable wood and debris on the skid sites immediately after harvest is completed.



The first two of these solutions enhance the climate obligations of New Zealand, one through the circular economy and the use of renewable energy, and the other by the reduction of carbon being released to the atmosphere. At the same time, they remove some or all of the financial burden to extract the material from harvested slopes. The third solution is carbon neutral.

Roger Dickie NZ Ltd and the 21,600 hectares for forestry that we manage though the enquiry area, remain strong focused on delivering the best economic, environmental, and social outcomes for the region and are committed to continued improvement in these aspects.

We would welcome the opportunity to speak to our submissions and are happy to be contacted for further information as required.

Regards,

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Roger Dickie,

Will Dickie, Jeff Dickie,

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April 2023

Submission Document

Ministerial Inquiry into land uses associated with the mobilisation of woody debris (including forestry slash) and sediment in Tairāwhiti/Gisborne District and Wairoa District

This submission is made on behalf of Fairway forest Partnership, managed by Roger Dickie NZ ltd

Submitter Background

Roger Dickie (N.Z.) Limited (RDNZ) is a forestry investment manager and licensed Managed Investment Scheme provider under the FMCA 2013. RDNZ's forest investment dates back more than 30 years including significant concentration of investment in the strong forest growing regions of New Zealand, namely the Gisborne and Wairoa districts.

RDNZ manages a total of 38,000 hectares including 21,200 hectares in the Gisborne and Wairoa districts, the subject of this enquiry. Of those investments, 10,275 hectares are retail syndicate (Partnership) investments owned by more than 1,100 investors, predominantly New Zealand Mum and Dad investors, the remaining properties are owned by family office and institutions of local and foreign origin.

The activities of RDNZ and its investors have materially contributed in a positive manner to the economy, employment, and the environment within these regions, as well, our managed area equates to 9.6% of the total forest area within the enquiry regions, making our forests and the investors we represent a significant forestry voice and related party to the enquiry.

Executive Summary

Forestry is a long-term investment that has from time to time been incentivised via the Government and regional councils to combat erosion and soil degradation, as well, to increase the productivity of some classes of land. The decision to invest in forestry has often been motivated by those prerogatives on top of forestry's alignment with the investors long-term investment drivers.

The heightening of weather events, which many associate with climate change, is the very reason greater levels of afforestation are necessary, especially in temperate and high rainfall areas where there is strong tree growth coupled with erodible land. A study by the Waikato District Council recommended that pasture slopes generate 2 to 5 times more sediment than comparable forestry slopes.



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Is forestry doing better, yes, can forestry do better, yes. The changes implemented by the National Environmental Standards for Plantation Forestry (NES-PF) mitigate debris left on slopes and ensure waterways are better protected; however, at the same time it can be argued that weather events are becoming more frequent and more severe.

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- Hauling more of the non-saleable logs and slash to the skid site and burning it.



Long Term Solutions:

- The Forestry Transformational Plan intends to incentivise greater domestic processing, clearly the Government should incentivise or co-invest in woodchip and fibre projects to encourage removal of debris and supply the increasing biofuel markets.
- The Emissions Trading Scheme to recognise debris with nil commercial value that are buried on site. Trapping of carbon in soils can be quantified and emission units received to help offset the cost of removing debris from the slope and burying them.
- Hauling more of the non-saleable logs and slash to the skid site and burning it.

RDNZ is strongly opposed to any recommendations of a move of production forests towards permanent forestry, select (non-clear fell) harvesting and harvest catchment restraints. Each of those strategies have dire consequences, including the destruction of statutory property rights.

The future of forestry needs to be supported here to retain investment in the subject regions. Production forestry is a major contributor to both GDP and employment in these regions and we as forest owners and managers are very aware of our social license to operate. You will be aware of many stories of forest companies helping the clean-up, some instances not remotely related to forestry, meanwhile we are yet to see a story of a farmer helping to remove the sedimentation deposited onto crops and homes.

RDNZ urges the Ministerial review to refrain from allowing the emotional element to supersede the economic, employment and environmental considerations of this matter. It is evident that the media and narrow voices can be powerful whilst ill informed. The New Zealand Government is responsible for seeing through emotional statements and to make decisions that protect the economic aspirations of the country whilst aligning to its policies and the policies that such forestry activities were implemented under.

History of the Land

For hundreds of years New Zealand underwent deforestation with much of this occurring in the 1800's and early 1900's, making way for what was thought to be productive farmland. For the Gisborne and Wairoa regions this was not always the case, with many highly erodible soils unable to withstand large precipitation events.

By the 1930's the Government was already embarking on a large-scale afforestation program under the State Forest Service to address issues of soil erosion and land degradation, and more recently in 1992, the Gisborne region established the 'Erosion Control Funding Programme' or 'ECFP', providing grants for production forestry to be established on erodible parts of farmland.

The ECFP never envisaged that these trees should be established on a permanent basis, in fact, the payments received under the ECFP were staggered as progress payments to make sure that trees established under the ECFP were appropriately tended (I.e., Thinned to a final crop stocking suitable for production harvest), implying that those trees should be harvested.



Volume of Water

The media and public opinion are quick to dismiss the severity of the weather events that are being endured, instead looking for the scapegoat. Any area of land or large catchment that receives +500mm of rainfall in a 24-hour period is going to have a high degree of sedimentation and debris mobilisation, if you then apply this rainfall to already water ladened soils, as we have seen, this delivers severe mid-slope failure.

Sedimentation

Afforestation of farmland was incentivised to help prevent mass erosion and sedimentation from farms into waterways which is then deposited onto other farmland, crops, and residential areas. As we have recently seen, this sedimentation is also responsible for damaging aquatic ecosystems such as the destruction of crustacean habitats near river mouths.

Sedimentation is driven mainly by precipitation, with geology and land use explaining much of the residual difference between sites. Studies by the Waikato District Council with reference to other independent reports, recommend that pasture slopes generate 2 to 5 times more sediment than comparable forestry slopes except for during harvest periods, however sediment loss, with good forest management is said to be restored to pre-harvest levels within one to two years.

While we are happy to support cost effective changes in the forestry sector that drive improved results, we are also acutely aware that this is a Land Use enquiry in the broader sense. We are confident when comparing farmland and forestry, that sedimentation arising from farmland has played a significant role in the damages resulting from Cyclone Gabrielle. Therefore, any result of this enquiry could not unjustly impact forestry without imposing consequences for sedimentation caused by farming.

Woody Debris & Harvest Slash

Woody debris can be defined as any dead, woody plant material, including logs, branches, standing dead trees, and root wads. Within the definition of woody debris are harvest residues, known as forestry slash.

Slash is a by-product of harvesting operations, ranging from the branches removed from logs to trees which don't meet commercial specs. Slash proves useful in returning nutrients to soils and assisting in providing cover for ground erosion, particularly in areas of highly erodible soil.

Woody debris left on stable ground present low risk of moving, however given the increasing effects of climate change and increasing likelihood of high-intensity rainfall events, managing debris such as harvest slash will continue to be an important topic in the forestry sector.

In large rainfall events, soil mobilisation, slope failure and rising water currents can all dislodge woody debris, moving them down slopes that lead to tributaries and rivers. The sheer volume of rainfall has dislodged Pine, Poplar, Regional Council Riparian plantings and native vegetation alike.



Land Use

It is important to consider the outcomes of different land uses when subject to extreme weather events such as January and February 2023. For the purpose of this, let's consider the three land uses below:

- Farmland Land solely used for farming has less root matter to bind the soil and allows water to quickly flow and carry high levels of sedimentation. The weight of sediment and speed of water would be expected to cause infrastructure washouts and high levels of sedimentation downstream.
- 2) Native Bush Land solely in native bush will be able to sustain a level of rainfall by slowing movement, eventually mid-slope failure would happen, sedimentation levels would be low, but debris may include large trees that are likely to cause infrastructure washouts.
- 3) Harvesting Forests The result would strike the middle ground as stumps help to bind the soils reducing sedimentation when compared with farmland, while smaller debris and logs may mobilise, causing infrastructure washouts.
- 4) Growing non harvested exotic forests (Radiata Pine). From the age of 3 or 4 years until harvest at 28 to 30 years a Radiata Pine production forest has showed many times in the past and again in Cyclone Gabrielle that there is little damage by way of washouts and off farm sedimentation. Photographs from Cyclone Gabrielle prove this, and our Sovereign Forest in the Wairoa area is a prime example. This forest is more than 20 years old and had a very low percentage of erosion during Cyclone Gabrielle, this is in contrast to the surrounding farmland which had massive slipping and slope movement resulting in huge volumes of sediment leaving the farms and entering waterways and damaging flood plains further down.

While the above analysis isn't scientifically proven for the purpose of this submission, it is plain to see that each land use has its own set of consequences. We must then include economic, employment and environmental considerations along with those results, to get the full picture.

Strongly Oppose - Permanent Forestry

Permanent forestry in the form of plantation (exotic) forestry or native forestry will ultimately have an undesirable set of consequences. If harsh rules were applied to foresters when managing their harvest, then the obvious choice would be for foresters to move away from production forestry to permanent carbon forestry, using the Emissions Trading Scheme to monetise additional stored carbon.

Permanent forestry will have a diminished benefit to the forest owner; however, it will have dire consequences both socially and environmentally. The harvest of forests would diminish in favour of low-cost forestry, diminishing employment and devaluing the land to zero or worse. Eventually those exotic trees will give way, becoming too heavy for the erodible soils, making it highly likely that much larger debris will mobilise.



Native permanent forestry is not feasible due to the very high costs of establishment and slow rate of carbon sequestration, such a mechanism to force native forestry without incentives or subsidies would drive foresters to relinquish land.

Strongly Oppose – Select (Non-Clear-Fell) Harvest

Select harvesting happens globally on land that is easy in contour allowing machinery to move through the forest or access stems from road carriages. The topography of land in the subject regions means that harvesting is almost always carried out via cable-based systems. Harvesting in these regions under cable-based systems is already hugely expensive and to work effectively, needs to allow for entire settings (faces) to be cleared. Any restriction to this activity would make the activity unsafe due to the confined zone of operation on erosion prone slopes requiring harvesting personnel to be present on the slopes. As well, forests opened up in strips allow for windthrow damage and potential mobilisation in forested areas alongside any strip harvesting. Any such restriction would not be feasible and would cause harvesting to cease in these areas, as well, such a restriction would slow the rate of harvest which removes the forester's ability to react to the commodity driven market.

Strongly Oppose – Catchment Restraints

Any maximum rate of harvest applied to any one catchment would considerably impede the forester's ability to optimise harvest age, act within financial covenants and react to financial markets, thus taking away fundamental property rights that go against freehold ownership of land. Any type of decision would drive large legal proceedings and seriously undermine confidence in freehold land rights and investment into forestry and other assets. Any catchment restraints would restrict forest owners' ability to harvest their forest in times when this is suitable weather (i.e., summer vs winter) or financial objectives. (i.e., a forest might be consented for only a part of the year where log prices are reduced).

Why Production Forestry

While the harvest process creates a short-term debris and sedimentation issue, the public have been very quick to dismiss the substantial environmental, social, and economic benefits of forestry, such as:

- Soil Conservation: Trees help to prevent soil erosion and maintain soil quality.
- Water Conservation: Forests help to regulate water flows and maintain water quality.
- Carbon Sequestration: Trees absorb and store carbon dioxide from the atmosphere, which helps to mitigate climate change.
- Biodiversity Conservation: Forests provide habitats for a wide range of plant and animal species, which helps to preserve biodiversity.
- Employment: Production forestry provides substantially more employment than comparative hill country farming operations. Forestry is said to employ one in four families in the Gisborne region, placing a huge importance of renewable and sustainable practices.



- Timber Production: Forests provide a renewable source of wood products, generating a perpetual supply of revenue through the rotational harvest of forests.
- Economic Contribution: Forestry is a significant primary sector, establishing large services sector expenditures and generating export receipts well in advance of comparative hill country farming.

Proposed Changes

While we are strongly against changes that only adhere to social drivers or that simply create further costs or barriers of entry in the form of consents, rates, or other inefficient taxations, we would be open to making pragmatic changes that further reduce or mitigate the likelihood of debris mobilising.

RDNZ suggests there are solutions that should be managed in conjunction with one another in order to achieve short term mitigation while incentivising programs and operations that form a solution while creating value. The movement toward biofuels and other fibre-based solutions coupled with the lack of pulp/woodchip processing facilities in the subject regions appears to present a real opportunity for the government to create positive solutions.

Short Term Solutions:

- Harvest activities that occur on high-risk areas (High-LUC, High-ESC) where slopes are immediately adjacent to waterways or host upstream catchments exceeding a minimum threshold should require a riparian buffer zone be maintained at harvest.
- Slash-Trap requirements to be implemented with lower thresholds and greater carrying capacity to sustain higher intensity weather events.
- The NES-PF has been established in relation to the events of 2018 in Gisborne. Our view is that the rules under the NES-PF are suitable to produce the desired outcome with respects to debris management. There needs to be stronger controls in the checks and balances as they relate to monitoring of consents and harvesting in all forests, but particularly red zoned land, which encompasses most of the forest in the Gisborne region. If all harvesting entities and forest managers complied at the higher level of the NES-PF we would significantly reduce the chance of debris mobilisation and the consideration of future land use changes.
- Burning the non-saleable wood and debris on the skid sites immediately after harvest is completed.

Long Term Solutions:

- The Forestry Transformational Plan intends to incentivise greater domestic processing, clearly the Government should incentivise or co-invest in woodchip and fibre projects to encourage removal of debris and supply the increasing biofuel markets.
- The Emissions Trading Scheme to recognise debris with nil commercial value that are buried on site. Trapping of carbon in soils can be quantified and emission units received to help offset the cost of removing debris from the slope and burying them.
- Burning the non-saleable wood and debris on the skid sites immediately after harvest is completed.



The first two of these solutions enhance the climate obligations of New Zealand, one through the circular economy and the use of renewable energy, and the other by the reduction of carbon being released to the atmosphere. At the same time, they remove some or all of the financial burden to extract the material from harvested slopes. The third solution is carbon neutral.

Roger Dickie NZ Ltd and the 21,600 hectares for forestry that we manage though the enquiry area, remain strong focused on delivering the best economic, environmental, and social outcomes for the region and are committed to continued improvement in these aspects.

We would welcome the opportunity to speak to our submissions and are happy to be contacted for further information as required.

Regards,

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Roger Dickie,

Will Dickie, Jeff Dickie,

Mal unfina the



April 2023

Submission Document

Ministerial Inquiry into land uses associated with the mobilisation of woody debris (including forestry slash) and sediment in Tairāwhiti/Gisborne District and Wairoa District

This submission is made on behalf of Greens Forest Partnership, managed by Roger Dickie NZ ltd

Submitter Background

Roger Dickie (N.Z.) Limited (RDNZ) is a forestry investment manager and licensed Managed Investment Scheme provider under the FMCA 2013. RDNZ's forest investment dates back more than 30 years including significant concentration of investment in the strong forest growing regions of New Zealand, namely the Gisborne and Wairoa districts.

RDNZ manages a total of 38,000 hectares including 21,200 hectares in the Gisborne and Wairoa districts, the subject of this enquiry. Of those investments, 10,275 hectares are retail syndicate (Partnership) investments owned by more than 1,100 investors, predominantly New Zealand Mum and Dad investors, the remaining properties are owned by family office and institutions of local and foreign origin.

The activities of RDNZ and its investors have materially contributed in a positive manner to the economy, employment, and the environment within these regions, as well, our managed area equates to 9.6% of the total forest area within the enquiry regions, making our forests and the investors we represent a significant forestry voice and related party to the enquiry.

Executive Summary

Forestry is a long-term investment that has from time to time been incentivised via the Government and regional councils to combat erosion and soil degradation, as well, to increase the productivity of some classes of land. The decision to invest in forestry has often been motivated by those prerogatives on top of forestry's alignment with the investors long-term investment drivers.

The heightening of weather events, which many associate with climate change, is the very reason greater levels of afforestation are necessary, especially in temperate and high rainfall areas where there is strong tree growth coupled with erodible land. A study by the Waikato District Council recommended that pasture slopes generate 2 to 5 times more sediment than comparable forestry slopes.



Other comparisons of production forestry and farming on hill country land are often made, with the results showing that forestry far exceeds farming with respect to expenditures, employment, export receipts and environmental impacts, including carbon sequestration and soil stabilisation.

Forest feasibility reports prepared for us by independent forest consultants project expenditure of more than \$2,500 per ha average over the 28-to-30-year forest rotation, this expenditure is for management, harvesting and transport of our forests and does not include off farm added value at timber mills and export operations. Many of our forests that have completed harvesting have exceeded this expenditure figure. In contrast independent surveys in the Wairoa area have stated that average annual expenditure per ha over a 30-year period is \$500 to \$700 per ha (approximately 1/3 of forest expenditure).

In large weather events, mobilisation of debris will always happen, whether it be from forestry planted for production purposes, permanent crops, natives, riparian plantings, shelterbelts, fences, buildings etc. Take the Esk Valley for example, production forestry did not occur in this catchment in 1938, however the Esk Valley was severely impacted at this time by a weather event that caused three meters of silting and destroyed bridges from debris mobilisation.

Is forestry doing better, yes, can forestry do better, yes. The changes implemented by the National Environmental Standards for Plantation Forestry (NES-PF) mitigate debris left on slopes and ensure waterways are better protected; however, at the same time it can be argued that weather events are becoming more frequent and more severe.

The consenting obligations and practices required to uphold consents already impose significant costs on forest owners, those significant costs come on top of targeted forestry rates applied by the Councils in the enquiry regions. Forestry by-in-large is meeting these consenting requirements while paying higher (targeted) rates, begging the question, is forestry being provided the appropriate public infrastructure commensurate to its contribution to the regions.

How do we do more, there are short- and long-term solutions that need to be worked towards in conjunction with one another, RDNZ recommends the following:

- Short Term Solutions:
- Harvest activities that occur on high-risk areas (High-LUC, High-ESC) where slopes are immediately adjacent to waterways or host upstream catchments exceeding a minimum threshold should require a riparian buffer zone be maintained at harvest.
- Slash-Trap consenting requirements reduced, allowing slash traps to be implemented with lower thresholds and greater carrying capacity to sustain higher intensity weather events.
- Standardisation of the interpretation of the NES-PF
- Hauling more of the non-saleable logs and slash to the skid site and burning it.



Long Term Solutions:

- The Forestry Transformational Plan intends to incentivise greater domestic processing, clearly the Government should incentivise or co-invest in woodchip and fibre projects to encourage removal of debris and supply the increasing biofuel markets.
- The Emissions Trading Scheme to recognise debris with nil commercial value that are buried on site. Trapping of carbon in soils can be quantified and emission units received to help offset the cost of removing debris from the slope and burying them.
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RDNZ is strongly opposed to any recommendations of a move of production forests towards permanent forestry, select (non-clear fell) harvesting and harvest catchment restraints. Each of those strategies have dire consequences, including the destruction of statutory property rights.

The future of forestry needs to be supported here to retain investment in the subject regions. Production forestry is a major contributor to both GDP and employment in these regions and we as forest owners and managers are very aware of our social license to operate. You will be aware of many stories of forest companies helping the clean-up, some instances not remotely related to forestry, meanwhile we are yet to see a story of a farmer helping to remove the sedimentation deposited onto crops and homes.

RDNZ urges the Ministerial review to refrain from allowing the emotional element to supersede the economic, employment and environmental considerations of this matter. It is evident that the media and narrow voices can be powerful whilst ill informed. The New Zealand Government is responsible for seeing through emotional statements and to make decisions that protect the economic aspirations of the country whilst aligning to its policies and the policies that such forestry activities were implemented under.

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For hundreds of years New Zealand underwent deforestation with much of this occurring in the 1800's and early 1900's, making way for what was thought to be productive farmland. For the Gisborne and Wairoa regions this was not always the case, with many highly erodible soils unable to withstand large precipitation events.

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Volume of Water

The media and public opinion are quick to dismiss the severity of the weather events that are being endured, instead looking for the scapegoat. Any area of land or large catchment that receives +500mm of rainfall in a 24-hour period is going to have a high degree of sedimentation and debris mobilisation, if you then apply this rainfall to already water ladened soils, as we have seen, this delivers severe mid-slope failure.

Sedimentation

Afforestation of farmland was incentivised to help prevent mass erosion and sedimentation from farms into waterways which is then deposited onto other farmland, crops, and residential areas. As we have recently seen, this sedimentation is also responsible for damaging aquatic ecosystems such as the destruction of crustacean habitats near river mouths.

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While we are happy to support cost effective changes in the forestry sector that drive improved results, we are also acutely aware that this is a Land Use enquiry in the broader sense. We are confident when comparing farmland and forestry, that sedimentation arising from farmland has played a significant role in the damages resulting from Cyclone Gabrielle. Therefore, any result of this enquiry could not unjustly impact forestry without imposing consequences for sedimentation caused by farming.

Woody Debris & Harvest Slash

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Slash is a by-product of harvesting operations, ranging from the branches removed from logs to trees which don't meet commercial specs. Slash proves useful in returning nutrients to soils and assisting in providing cover for ground erosion, particularly in areas of highly erodible soil.

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Land Use

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- Burning the non-saleable wood and debris on the skid sites immediately after harvest is completed.

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Regards,

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Will Dickie, Jeff Dickie,

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5 April 2023

QEII Trust submission – Ministerial Inquiry into Land Use

QEII Trust is a statutory non-government organisation, established in 1977. Our mission is to inspire private landowners to protect and enhance open spaces of ecological and cultural significance. We work alongside landowners in Aotearoa New Zealand to place covenants on their land to protect areas with open space values, in perpetuity. The scope of 'open space' is wide: covenants protect areas of cultural, historical, landscape, and most often, land with high indigenous biodiversity and conservation values. Through our work of over 40 years, more than 180,000 hectares of open space is protected with QEII covenants.

We're interested in the Inquiry into Land Use because of how the recent weather events have impacted the landowners we work with and the native ecosystems we protect in Te Tairāwhiti, Tūranganui-a-Kiwa and Te Wairoa. Additionally, as an organisation with a track-record of partnering with landowners to protect indigenous biodiversity on private land, we know that protection and regeneration of native ecosystems must be prioritised for a climate resilient future in these regions.

Our submission addresses several of the consultation questions and covers the following-

- Impacts to QEII covenants from Cyclones Hale and Gabrielle
- Land-use has changed considerably over time in the region, and recent weather events show the resilience of native ecosystems compared with highly modified "productive" land uses
- Recent/current policy is driving wide-scale land use conversion to exotic forestry, leading to some negative impacts for the environment and local communities
- Among a mosaic of land uses, protection and regeneration of native ecosystems must be prioritised for a resilient future for Te Tairāwhiti, Tūranganui-a-Kiwa and Te Wairoa
- Changes to policy, regulations and economic incentives need to be made to facilitate land use change – the protection and regeneration of native ecosystems needs to be an economically viable option for landowners

Question 1 – Tell us about your experience during Cyclones Hale and Gabrielle? What effects have you experienced?

In the regions included in this inquiry (Te Tairāwhiti, Tūranganui-a-Kiwa and Te Wairoa) there are 245 registered or approved covenants, protecting over 7000 hectares of predominantly primary and secondary native forest. The impact to these areas from Cyclones Hale and Gabrielle is significant. Many of these blocks are temporarily inaccessible due to closed roads and slips over farm tracks etc., making it difficult to carry out a comprehensive assessment of damage. However, we have been able to use 0.2m resolution aerial imagery to undertake initial assessment and this shows 72 of these 245 covenants have significant damage from the cyclone events. It is likely other blocks have small slips, washed out floodgates, and fence damage that can't be seen in these aerial photos.

In covenant blocks that are in hill country, the damage was primarily due to slips from pasture up slope from the block, damaging fences and native vegetation, and in some cases washing out fences and flood gates. Damage to covenant blocks in the lowlands includes washed out fences and pine

forestry slash and willow branches caught on fences. In many areas silt has completely inundated fences and ground cover species within established native forests. In some areas, mature podocarp riverside forests have been entirely washed away. Most of the damage to covenants comes from surrounding land uses as opposed to events within covenants, with some exceptions.

This damage impacts covenant sustainability and the biodiversity values that are protected – in some cases, slips, silt inundation, etc have damaged or wiped out native species (for example *Jovellana sinclairii*, (classified as At Risk – Declining) has been likely lost entirely from one of our Gisborne covenants), while damage to covenant fences undermines physical protection of covenants, leaving blocks open to grazing by stock, and increasing the ability of feral deer and goats to browse.

Invasive weeds in the flood water are also a concern. One covenant has already had many thousands of willow fragments introduced by flood waters – these fragments have already grown roots and shoots and if left would completely ruin the values of the covenant block concerned. We have also found tradescantia growing in silt where it had not previously been recorded, and expect seeds of willow, gorse, old man's beard and other invasive weeds to have been transported with flood waters, and to start popping up in covenants where they haven't been recorded.

Compared to loss of livelihoods and more "productive" land, these impacts are less significant in the short-term, however we submit that from a longer-term perspective, the integrity and sustainability of these precious remnants of indigenous biodiversity are critical for wellbeing and sustainability of the region going forward.

Question 2 – What is it about the way we use land, and how land use has changed over time that led to the effects being so severe?

Land-use has changed significantly in Te Tairāwhiti, Tūranganui-a-Kiwa and Te Wairoa from its prehuman state. Some areas of bush were burned by Māori, but large-scale land clearance started after European settlement. Land was cleared of native forest and scrub for pasture, with large areas of that land being planted into pine plantations after Cyclone Bola in 1988. This conversion of pastoral land to pines has continued in the last decade with financial incentives leading to permanent pine plantations for sequestering carbon. Both farmland (pasture) and forestry have contributed to the effects of the recent weather events – while forestry debris has caused significant damage, a large proportion of slips and landslides appear to have occurred on pasture.

The topography, geology, and soil types in many parts of Te Tairāwhiti, Tūranganui-a-Kiwa and Te Wairoa mean that slopes are highly erodible, particularly where land has been cleared of its natural vegetation. Any wide-scale land-use modification away from its original pre-human state (i.e. native vegetation) is going to change natural processes during significant weather events like recent Cyclones Hale and Gabrielle, so some of the effects experienced in recent months are unfortunately not a surprise, given the highly modified landscape in question.

In our initial analysis of the effects of the recent cyclones, it appears that the areas with less damage are those that are still in native scrub and/or bush. Native vegetation holds the land together very well and a closed canopy, with healthy understory and diverse ground cover, slows and absorbs water much more effectively than soil in pasture or pine plantation – this is even more evident in areas where feral ungulates are controlled. Using post-Gabrielle aerial imagery to compare different land-uses within the same catchment shows clear differences between areas of forestry, pasture,

and native forest, with significant damage sustained in some areas of forestry and pasture, while nearby land in native forest/scrub is relatively unscathed. We imagine that more detailed analysis of this imagery will form part of the inquiry panel's work.

Question 5 – How do the current laws, policies and rules influence the way we use our land? What works well? What is unhelpful? Think about the current legislation, market drivers and conditions, regulations, rules, and the way in which requirements are enforced.

As described above, land-use in these regions has changed considerably over time with influence from both economic drivers and government policy.

The most recent of these trends has been conversion from pasture to exotic forestry for carbon credits, and QEII has made several submissions in the last two years relating to policies that have influenced this trend. Like other environmental organisations, QEII is concerned that well intentioned policy is driving wide-scale land-use change to exotic forestry, leading to negative impacts for the environment and local communities.

New Zealand Emissions Trading Scheme (NZ ETS) -

Current policy settings and market drivers are overwhelmingly encouraging land-use conversion to exotic forestry. This is the case for the regions subject to this inquiry, where comparatively less lucrative sheep and beef farming cannot compete with the high (though short-term) financial returns of exotic forestry for carbon. QEII recognises that forestry has a role to play in the economy and in reducing greenhouse gas emissions, but we would like to see a more holistic and long-term approach taken, to ensure that unintended perverse consequences do not eventuate.

QEII is particularly concerned about wide-scale conversion to exotic forestry in the context of climate change related extreme weather events. Exotic forests will not provide the same climate resilience that native biodiversity does. Plantation forestry is more vulnerable to disease, presents significant fire risk, can reduce natural absorbency of catchments (e.g. drying up downstream wetlands) and if not carefully managed can harbour pest and weeds, and present risk of wildings invasion into the surrounding landscape.

QEII was disappointed that the government did not proceed with its proposal to restrict the ETS permanent post-1989 forest category to native forests only. We appreciate the complexities of this decision, but it would have been an effective way to begin addressing the imbalance between exotic and native afforestation in the ETS.

The Government is currently reviewing the emissions trading scheme and we were pleased to see that the scope of the review includes examination of what level of emissions reductions should be from exotic forestry (we submit that there should be a limit), and how incentives for indigenous afforestation can be improved under the scheme.

NES Plantation Forestry (NES-PF) -

QEII supported the Government's proposal in November 2022 to bring "exotic carbon forests" into the NES-PF so that all types of forestry, plantation and permanent, are subject to the same regulatory oversight.

However, we note that this is not a panacea – the NES-PF is not currently fit for purpose in guiding "right tree right place" and managing and mitigating the impacts of forestry. We are increasingly

seeing the negative impacts of exotic forestry (plantation and permanent) on indigenous biodiversity where plantations are adjacent to covenants, and many of these impacts at both individual covenant scale and landscape-scale are not adequately addressed by the NES-PF and other regulations. We support other environmental organisations such as Environmental Defence Societies' calls for a full review of the NES-PF.

In the context of the recent weather events and devastation across Te Tairāwhiti, Tūranganui-a-Kiwa and Te Wairoa, particular focus should be on reviewing the activity status for forestry activities, improving risk assessment (especially susceptibility to erosion), and adjusting planting and harvesting to so it is more appropriate to land class. In addition, afforestation and harvest technique should be addressed with larger buffers left along waterways, and smaller areas within a catchment being harvested at one time.

The Tairāwhiti Resource Management Plan (TRMP) -

We think the Tairāwhiti Resource Management Plan (TRMP) is either too permissive, not adequately enforced, or consents are given too easily when it comes to the spraying of "scrub" (native scrubby vegetation), and the protection of PMA (Protection Management Areas) blocks. As mentioned earlier, land in native scrub is more resilient in heavy rainfall events like those experienced earlier this year. We regularly see sprayed out areas of scrub with significant slips that add to the sediment load of rivers, and the negative downstream effects including effects in the ocean. Given the ability of kānuka and mānuka to hold together steep land in extreme weather events, and provide habitat for other indigenous biodiversity, the protection of these areas is important.

Question 7 – What is your vision for the future of land use in the region?

As mentioned above in our response to Question 2, analysis of the available post Gabrielle aerial imagery shows that native forest and mature scrub holds the land together very well. This has also been shown by Manaaki Whenua researcher Mike Marden. The healthier the forest, the better it performs in reducing the effects of weather events such as Cyclones Hale, Gabrielle, and other extreme weather events we've seen in Te Tairāwhiti in recent years. A closed canopy, healthy understory, functioning wetlands, diverse ground cover and a deep layer of leaf litter all assist in slowing or absorbing water.

The 1100-hectare native primary forest (and QEII Covenant) at Waingake contains a deer and goat exclosure plot that has been in place for approximately 50 years. Just outside the exclosure where until recent years there has been no browser control, the ground is hard, dry, and erodes in any heavy rainfall event. However, within the plot the ground is covered in moss and ferns, which are growing in a damp cushion of 50 years of accumulated leaflitter breaking down into soil – all acting as a very effective sponge. The capacity of healthy, browser free native forests to slow the effects of huge rainfall should not be underestimated.

The value of trees in Cyclone Gabrielle was also seen locally on Awapapa Station with its large number of mature poplars, where, compared to neighbouring farms there were relatively low numbers of slips. Likewise, the mature riparian native forest in the Waikura catchment on Pehiri Road, alongside areas where the streams were able to spread across alluvial flats, combined to slow the water, causing less damage than some landowners expected. Considering these factors, we submit that protection, management, and regeneration of areas of indigenous biodiversity should be a central part of a future for the region that is resilient to the effects of cyclones and other extreme rainfall events. Recognising that there is still a need for economic activity to sustain livelihoods and communities, we imagine a mosaic of land-uses, among which pockets of remnant biodiversity are protected and the upper reaches of streams are planted or allowed to regenerate into native vegetation, fenced from stock, with deer and goats controlled. Alongside increasing the resiliency of erosion prone land in severe weather events, these actions would sequester carbon in a way that creates co-benefits for biodiversity and freshwater.

Question 8 – What do we need to do to achieve this vision?

In the short-term achieving this vision would require existing native vegetation in the region (including "scrub") to be given a higher level of protection. This would require Gisborne District Council to increase enforcement against un-consented spraying, tighten up the conditions under which spraying can occur, and be less permissive when it comes to consenting the spraying of scrub.

We would suggest that alongside rates relief (already provided by the council), other financial incentives should be introduced to accompany any regulatory changes to aid these areas becoming as healthy as possible, and permanently protected. We acknowledge that strengthening enforcement and providing incentives to landowners would require the council to have more capacity and resource, and that central Government support would likely be required.

In addition, in the short-term, more fine scale mapping of land use capability should be carried out as we anticipate this would be a prerequisite to a more diverse mosaic of land-use than is currently seen on many farms. We consider that in conjunction with more comprehensive land-use mapping, farm environment plans could be a mechanism for shifting towards more fit for purpose land-use. In QEII's view, the most high-risk areas should be allowed to regenerate into native forest and scrub, given their resiliency to weather events, and their co-benefits for biodiversity.

As mentioned earlier in this submission, one of the reasons that we're seeing high rates of conversion of land to exotic forestry is because the ETS provides relatively high financial returns (at least in the short-term). Exotic forestry is considerably more lucrative than other "productive" land-uses like sheep and beef farming, let alone setting aside land for protection and enhancement of native forest and scrub. For most primary industry landowners, to change or diversify their land-use there needs to be some kind of incentive or financial advantage to doing so. For facilitating native protection or regeneration on private land, beyond 'it's the right thing to do', these incentives are currently limited, especially when compared with highly profitable alternatives.

While some landowners in the region are already protecting and managing regenerating native forest on their land, it is currently incredibly difficult for these areas to be assessed and registered in the ETS, despite the ongoing carbon sequestration occurring. Moreover, the returns for native forests in the ETS are considerably lower than exotic forestry due to the slower sequestration rate (though native forests do store more carbon over a longer period of time).

Looking further into the future, if we want to encourage a future for Te Tairāwhiti, Tūranganui-a-Kiwa and Te Wairoa like what we've described above, we need to make it economically viable in a way that is sustainable for communities and the environment. We encourage the Government to explore the following ways of incentivising protection and regeneration of native ecosystems –

- Minimising upfront costs of protection and regeneration activities (fencing, weed control, feral ungulate control, planting) through local and central government grants, funding agencies like QEII that support landowners with this work.
- Changes to the ETS to improve accessibility for native forests, encourage native afforestation and provide some revenue for landowners.
 - Improve measurement of carbon sequestration, particularly for regenerating forest recent developments in the use of satellite imagery and artificial intelligence for assessing carbon stock mean that very accurate assessments of carbon can be undertaken. We should be investing in this technology and supporting local companies and researchers to pilot and adopt these methods. This would reduce barriers to registering naturally regenerating forests in the ETS.
 - Recognise carbon sequestration in *managed* pre-1990 native forest we know that ongoing management of pre-1990 native forest enhances carbon sequestration, and this should be recognised.
 - Introduce a premium price for 'biodiversity' native carbon credits higher payment for native forests in the ETS should be considered to reflect the co-benefits for land resilience, biodiversity and freshwater conservation that biodiverse native ecosystems provide.
- Biodiversity credits/payments for ecosystem services biodiversity credits for ecosystems that aren't suitable for inclusion in the ETS.



6 April 2023

Submission to the Ministerial Inquiry into Land Use

Online submission: https://consult.environment.govt.nz/land/ministerial-inquiry-land-use/

ICNZ link = <u>https://consult.environment.govt.nz/land/ministerial-inquiry-land-use/consultation/return?user_id=ANON-KXGS-PUG9-</u> 2&key=5ba0f0390cf8388b75d05b09055c377a76479988

Background:

The Hon Stuart Nash (Minister of Forestry) and the Hon David Parker (Minister for the Environment) announced on 23 February (2023) a Ministerial Inquiry into Land Use (MILU) causing woody debris, including forestry slash, and sediment-related damage in Te Tairāwhiti, Tūranganui-a-Kiwa and Te Wairoa regions.

Submitter name
Te Kāhui Inihua o Aotearoa / Insurance Council of New Zealand (ICNZ)

2. What is your contact email address? 9(2)(a)

3. Are you submitting as an individual or on behalf of an organisation? Organization

4. Which region are you in? Wellington

5. Please choose any you are associated with: - Industry body

Section 1: Impacts and Experiences

There is **one** question that can be answered within section one. In this section we are seeking to understand how you have been affected during severe weather events.

This could include personal effects (such as on your home, your ability to access services, and disruption to your life), or could include effects on the organisation you represent (such as a business, trust, Infrastructure provider, or charity).

1. Tell us about your experience during Cyclones Hale and Gabrielle? What effects have you experienced?

ICNZ members are general insurers and reinsurers that insure about 95 percent of the Aotearoa New Zealand general insurance market, including over a trillion dollars' worth of Aotearoa New Zealand property and liabilities. ICNZ members provide insurance products ranging from those usually

purchased by individuals (such as home and contents, travel, and motor vehicle insurance) to those purchased by small businesses and larger organisations (such as product and public liability, business interruption, professional indemnity, commercial property and directors and officers insurance).

ICNZ routinely collects data on weather events from members at the 1-month (provisional) mark and 3-month (final) mark. The cost of natural disaster data is <u>published here</u>. As of 1 April 2023, with respect to the Cyclone Gabrielle event, ICNZ members have dealt with the following claims:

Summary: 1 April 2023	Cyclone Gabrielle
Claims Received	44,650
Claims Settled	6,819
Claims Open*	37,831
Claims paid to date	\$147,068,198
Estimated cost	\$1,155,301,657

(*Open claims include partially settled)

These claims range across residential (20,661), contents (9,756), business (8,010; including policies such as commercial property and business interruption), motor vehicles (5,570), marine (187), crops (58), and other miscellaneous policy types (408).

The data on claims cited above can be drilled down further. In the Hawkes Bay, our estimated insured losses are almost \$600 million which includes 4,170 house claims (value estimated at \$275 million) and 2,843 business claims (value estimated at \$203 million). The corresponding figures in Tairāwhiti being \$93 million losses including 711 house claims (estimated value \$26 million) and 519 business claims (estimated value \$16 million).

We would also note that many hundreds of thousands of tonnes of silt and debris also impacted on property damage in addition to the flood waters. We do not know the extent to which slash contributed to how events played out. There is documented evidence of slash building up around bridges. This may have led to water backing up and overflowing onto the surrounding area.

ICNZ and its general insurance members established information and assistance hubs in the affected areas to provide customers with advice and support in making claims to their respective insurers. Insurers also handle the processing of EQCover claims for land damage on behalf of Toka Tū Ake EQC.

We are unable to provide data on Cyclone Hale at this time.

Section 2: Causes

There are **three** questions that can be answered within section two. In this section, we are seeking your views on how land-use has contributed to the size and scale of the impacts of severe weather.

2. What is it about the way we use land, and how land use has changed over time that led to the effects being so severe?

It is crucial to recognise that climate change is increasing the frequency and severity of extreme weather events, and we must take immediate action to protect ourselves, our communities, and our economy. A sustainable insurance sector, one where cover is available and affordable for New Zealand homes and businesses, needs a more comprehensive approach to land use, repair, and development that prioritises adaptation and resilience. Unless, we improve resilience to extreme weather events, our communities will become more vulnerable and insurance less affordable. It is also important to

look at risk in a broader sense than one hazard, but in terms of the potential for cascading perils. For example, flood banks may be constructed to withstand a 1:100 year flood event, but the models used to inform riverine flooding may well not have considered the impact of landslides and slash being washed into river systems during times of very heavy rainfall.

Land use: This is a critical factor in determining the vulnerability of a community to natural disasters. The recent events have shown that land use planning needs to be improved to ensure that communities are not exposed to unnecessary risk. This means that future development should consider the potential impact of natural disasters and be designed in a way that minimises risk to people and property. It is essential to recognise that land use planning is a long-term process, and decisions made now will have a significant impact on the future of our communities. We understand that there is plenty of historical evidence held by territorial local authorities in both the Hawkes Bay and Tairāwhiti regions from previous flood events that would have suggested that some areas should not be rebuilt with residential property. Over the years, this has been ignored.

Repair: In the aftermath of an extreme weather event, repair work needs to be carried out quickly and efficiently to ensure that people can return to their homes and that businesses can resume operations. This requires a collaborative effort between government, businesses, and communities. As noted, insurance proceeds play a very significant role in supporting economic recovery. General insurers recognise the need for timely and effective repair work to ensure that the impact of natural disasters is minimised. Our members work closely with their clients to ensure that claims are processed quickly, and repairs are carried out efficiently. However, it is crucial to recognise that repair work is not enough on its own. Without a focus on climate change adaptation and resilience, communities will continue to be vulnerable to natural disasters.

Development: An emphasis on adaptation and resilience is the key to reducing the impact of natural disasters. New infrastructure should be designed in a way that can withstand extreme weather events. Additionally, existing infrastructure should be upgraded to ensure that it is resilient to natural disasters. It is essential to recognise that climate change is increasing the frequency and severity of extreme weather events, and our infrastructure needs to be able to cope with this changing climate. The recent events have highlighted this.

New Zealand's general insurance sector recognises the importance of taking immediate action to protect ourselves, our communities, and our economy. This requires a comprehensive approach to land use planning, repair, and development that prioritises climate change adaptation and resilience. It is essential to recognise that climate change is increasing the frequency and severity of extreme weather events, and we must act now to ensure that our communities are prepared for the future. By working together, we can create a more resilient New Zealand that can withstand the challenges of a changing climate.

3. Are there specific practices or ways in which we use the land that have caused more harm than others? Which of these practices are most important? Why?

Stop developments in areas vulnerable to flooding or sea level rise.

Developers should take the long view about where to locate new developments and consider future risks. However, with the demand for housing high a shorter-term view is likely to prevail if land is relatively cheap. It is often cheap for a good reason – it is of poor quality or prone to natural hazards

like flooding. We note recent and planned development near the mouth of the Esk River in areas impacted by ex-Tropical Cyclone Gabrielle and are close to sea-level.

It is critical that this attitude changes and the country avoids further investment in new property and supporting infrastructure on land that is vulnerable to flooding or will be in future due to climatic changes and/or sea level rise. Where the risks become too high, insurance will signal this through higher prices, reduced cover, or unavailability. If property value or the property itself is at risk, pressure falls on government to invest in protection or to compensate owners. Whether investing in protection will be practical or affordable will depend on the circumstances.

Insurance only responds to unforeseen and sudden events. Damage due to sea-level rise alone is not unforeseen and gradual. Therefore, there will be no insurance cover from the impact of sea-level rise over time.

To avoid these sorts of adverse outcomes, local authorities to preclude or deny consent applications for new developments where taking the long view shows risks from hazards will increase too much. Some local authorities should already be applauded for tackling the issue by reviewing their district plans and signalling the need to avoid or retreat from vulnerable areas.

ICNZ looks forward to participating in the process for developing the National Planning Framework and engaging with local governments on more detailed planning, as envisaged in the RMA reform legislation package¹. We believe that councils need more backing to do the right things in land-use planning and infrastructure investment.

4. Is there anything else we should know about that has contributed to the damage from severe weather?

In the ICNZ <u>submission</u> on the Natural and Built Environment Bill, we endorsed that legislation making reference to both natural hazard and climate change risks and impacts. That said, separate regard must be had to both matters (e.g. considering the risk and impact of fire or earthquake when building denser housing in an area without reticulated water supply or that is prone to liquefaction). It is also possible for these matters to overlap and/or interact and regard should be had to that.

For example, climate change:

- increases the likelihood and severity of a range of natural hazards including floods, storms, and other weather-related events,
- is attributable to the sea-level rising and associated issues such as coastal erosion and inundation, and
- increases the likelihood and severity of droughts, heat waves, water shortages and wildfire.

Conversely, land and waterways damaged by an earthquake may be more susceptible to climate change impacts such as increasingly frequent and severe floods, storm surges or the sea-level rising.

¹ The Natural and Built Environment, Spatial Planning, and Climate Adaptation laws.

Section 3: Policy framework, including Legislation, Market settings and Regulations

There are **two** questions that can be answered within section three. In this section we are seeking your views on the laws, policies and rules that influence the way our land is used.

5. How do the current laws, policies and rules influence the way we use our land? What works well? What is unhelpful? Think about the current legislation, market drivers and conditions, regulations, rules, and the way in which requirements are enforced.

Consistent with the precautionary approach and given there is a degree of uncertainty about natural hazard and climate change risks and impacts (as outlined below), we consider that it is imperative that resource management decisions are made with a view to ensuring these risks/impacts are kept within tolerable levels and ideally do not increase. This reflects that while it may not be possible to reduce these risks/impacts in all cases, they should nonetheless be actively managed to a level that is tolerable (e.g., within the applicable risk appetite).

We acknowledge that this approach would need to be supported by guidance (either within the national planning framework, the Natural and Built Environment Bill, and/or in some other form) detailing what the applicable tolerance levels were and how risks/impacts would be assessed against them.

Consideration needs to be given to having clear roles and responsibilities across, and interface between the Natural and Built Environment Bill, the Climate Change Adaptation Act (**CAA**) and the Spatial Planning Act (**SPA**), so that they fit together and form one coherent package. Our long-term infrastructure planning needs to be resilient to climate-related risks as do the activities and land uses that infrastructure supports.

A clear and joined-up approach in all these respects will be critical to ensuring that:

- the reform objectives are achieved
- there is effective risk management
- good progress is made towards the Government's climate change goals, and
- there is sufficient clarity from a regulatory perspective, including in respect of relevant parties' legal rights and obligations, with an efficient regime that avoids costly and unnecessary duplication and inconsistencies.

It would also assist to reflect upon **timeframes** that decision-makers must have regard to. One of the current challenges local governments must work through for planning and investment purposes is the different timeframes set out in the applicable legislation. For example, the Local Government Act 2002 refers to a Long-term Council Community Plan with an anticipated 10-year minimum timeframe and the Resource Management Act 1991, providing for a Regional Policy Statement and Regional and District plans, refers to 10-year timeframes. However, the requirement under the Local Government Act 2002 to produce an Infrastructure Strategy identifying significant infrastructure issues refers to at least a 30-year period.

6. Anything else you would like to say about the current policy framework?

There needs to be greater clarity and priority attached to long-term climate change impacts in the planning and consenting process.

Section 4: Solutions

There are **four** questions that can be answered within section four. In this section, we are seeking your vision for the future about the way we use our land in Tairāwhiti, Tūranganui-a-Kiwa, and Te Wairoa.

7. What is your vision for the future of land use in the region?

Our vision for these areas is one where there is a tolerable level of risk to people, their property, their cultural assets and the environment and where the transfer of risk to insurers is enabled. We acknowledge that the key decisions needed to achieve this vision will rest with the local community and what mitigations to natural hazards may be feasible and affordable.

We support the following approaches to help support the achievement of that vision:

- explicitly require consenting authorities to give primacy to climate impacts where the risks will become intolerable over a 50-year horizon.
- acknowledge that the cascading and compounding impacts of climate change will require collaborative, cross-sectoral responses at local and national levels.
- ensure the Avoid, Control, Transfer and Accept (ACTA) risk management framework is consistently applied by consenting authorities.
- mandate a Dynamic Adaptive Policy Pathways (DAPP) approach to coastal areas and flood plains where the risks will become intolerable over a 50-year horizon.
- stop new development in high-risk locations where the risks will become intolerable over a 50-year horizon.
- identify and prioritise those areas that are at highest intolerable risk.
- intolerable risk needs to be holistic (social, environmental, cultural, uninsured and insured economic loss taken into account)
- acknowledge that managed retreat will in almost all situations be a last resort if it is feasible, once all other adaptation measures are exhausted by taking a precautionary approach.
- apply a DAPP approach acknowledging the long lead time required to design, plan, and execute flexible adaptation solutions that.
- a greater focus needs to be applied to roles and responsibilities for adapting to climate impacts which will lead to greater clarity about tackling managed retreat.
- building codes and standards should prioritise resilience as a principle underpinning the design standards for flood.
- how we build and where we build will interact with adaptation initiatives including managed retreat.
- develop a simple resilience rating standard for all homes to reflect their vulnerability to key climate risks like flooding.
- develop an open-source portal that the public can access to assess their vulnerability to key climate risks like flooding.
- increase the use of sustainable drainage systems in developed areas and improve flood plain management and resilience measures for homes and businesses.

8. What do we need to do to achieve this vision?

Please think about:

• Immediately? (in the next 12 months)

The identification of high-risk areas, a clear understanding why they are high risk areas and an assessment made about what feasible mitigation action can be taken to keep the risks to a tolerable level. People in these areas need to be given certainty about the future risks to their property as soon as possible. In the first 12 months, mitigation is likely to focus on rebuilding stop-banks and straightforward engineering solutions.

• In the short term? (next 1- 2 years)

It is likely that the feasibility of longer-term solutions and options have been developed by this time. Consultation with communities on these options showing the likely costs, sources of funding and timeframes should occur.

- In the medium term? (3-5 years)
- In the long term? (10+ years)
- Far into the future? (30 100 years)

Whatever occurs in terms of hazard mitigation should be informed by the long-term and longer-term horizon, so medium term mitigation is consistent with future options. It would be a mistake to segment these timeframes in a way that one did not naturally lead into the other; the starting point should be the "far into the future view" deploying a dynamic adaptive pathway policy approach.

9. Is there anything that shouldn't be changed, for example, things that if changed would make it worse?

Please explain your answer here

It is critical that decision making by people, businesses and governments is underpinned by good quality information on natural hazard risks at both a community and individual property level. Significant natural hazard risks already exist, and climate change will affect various locations and properties in different ways. Some will face changes over time in the frequency of certain weather-related events (e.g. storms, droughts). Others will face changes in the nature or extent of such events, and for properties exposed to sea level rise the increased risks and inexorable impacts of this will be driven by the speed and extent of sea level rise. The need for such risk information is not limited to climate change but it is a crucial dimension of it.

It should be a goal to ensure that all property owners are able to easily access and understand the specific natural disaster risks facing their properties (e.g. from flooding, earthquake, landslip etc), both now and in the future. This understanding will help to inform sensible investment and motivate action on resilience by people, businesses, and communities.

10. In your view, which groups need to be involved in developing solutions and what is the best way for these groups to be involved?

Please explain your answer here:

We can make New Zealand more resilient by bringing together ICNZ members and banks with the research community, local and central government, and Toku Tū Ake EQC to inform adaptation measures. Government advisors, regulators, and politicians can gain a deeper understanding of insurance issues through quality briefings and submissions.

We must recognise that some issues are too big for one entity and so solutions often require broad, co-ordinated, cross-sectoral responses over the long-term.

A collaborative approach from government and industry can deliver solutions for issues with broad impacts across Aotearoa: social, financial, environmental, and technological impacts that cannot all be managed by a single department or Ministry. There needs to be private sector input into policy development processes and the development of implementing actions. And, perhaps most importantly, communities must be part of the process so they can understand and buy-into solutions.

Provide general feedback

You can provide **general comments** on this consultation, and upload up to **one PDF** in this section. **Any general feedback on the consultation** Add your comments, ideas, and feedback here:

While this inquiry inevitably has a strong focus on how slash contributed to loss from these weather events, the principles applied here should be applied more widely. That is, we need to take a long view to the impact of hazards, the changing climate landscape and a broader view of potential cascading secondary perils which can often be more destructive than the original hazard. And while extreme rainfall and flood may be an obvious focus, we should also consider other hazards, such as, wildfire.

Thank you again for the opportunity to submit to this Inquiry. If you have any questions, please contact our Regulatory Affairs Manager by emailing <u>greig@icnz.org.nz</u>.

Yours sincerely,

Greig Epps Regulatory Affairs Manager



April 2023

Submission Document

Ministerial Inquiry into land uses associated with the mobilisation of woody debris (including forestry slash) and sediment in Tairāwhiti/Gisborne District and Wairoa District

Submitter Background

Roger Dickie (N.Z.) Limited (RDNZ) is a forestry investment manager and licensed Managed Investment Scheme provider under the FMCA 2013. RDNZ's forest investment dates back more than 30 years including significant concentration of investment in the strong forest growing regions of New Zealand, namely the Gisborne and Wairoa districts.

RDNZ manages a total of 38,000 hectares including 21,200 hectares in the Gisborne and Wairoa districts, the subject of this enquiry. Of those investments, 10,275 hectares are retail syndicate (Partnership) investments owned by more than 1,100 investors, predominantly New Zealand Mum and Dad investors, the remaining properties are owned by family office and institutions of local and foreign origin.

The activities of RDNZ and its investors have materially contributed in a positive manner to the economy, employment, and the environment within these regions, as well, our managed area equates to 9.6% of the total forest area within the enquiry regions, making our forests and the investors we represent a significant forestry voice and related party to the enquiry.

Executive Summary

Forestry is a long-term investment that has from time to time been incentivised via the Government and regional councils to combat erosion and soil degradation, as well, to increase the productivity of some classes of land. The decision to invest in forestry has often been motivated by those prerogatives on top of forestry's alignment with the investors long-term investment drivers.

The heightening of weather events, which many associate with climate change, is the very reason greater levels of afforestation are necessary, especially in temperate and high rainfall areas where there is strong tree growth coupled with erodible land. A study by the Waikato District Council recommended that pasture slopes generate 2 to 5 times more sediment than comparable forestry slopes.



Other comparisons of production forestry and farming on hill country land are often made, with the results showing that forestry far exceeds farming with respect to expenditures, employment, export receipts and environmental impacts, including carbon sequestration and soil stabilisation.

Forest feasibility reports prepared for us by independent forest consultants project expenditure of more than \$2,500 per ha average over the 28-to-30-year forest rotation, this expenditure is for management, harvesting and transport of our forests and does not include off farm added value at timber mills and export operations. Many of our forests that have completed harvesting have exceeded this expenditure figure. In contrast independent surveys in the Wairoa area have stated that average annual expenditure per ha over a 30-year period is \$500 to \$700 per ha (approximately 1/3 of forest expenditure).

In large weather events, mobilisation of debris will always happen, whether it be from forestry planted for production purposes, permanent crops, natives, riparian plantings, shelterbelts, fences, buildings etc. Take the Esk Valley for example, production forestry did not occur in this catchment in 1938, however the Esk Valley was severely impacted at this time by a weather event that caused three meters of silting and destroyed bridges from debris mobilisation.

Is forestry doing better, yes, can forestry do better, yes. The changes implemented by the National Environmental Standards for Plantation Forestry (NES-PF) mitigate debris left on slopes and ensure waterways are better protected; however, at the same time it can be argued that weather events are becoming more frequent and more severe.

The consenting obligations and practices required to uphold consents already impose significant costs on forest owners, those significant costs come on top of targeted forestry rates applied by the Councils in the enquiry regions. Forestry by-in-large is meeting these consenting requirements while paying higher (targeted) rates, begging the question, is forestry being provided the appropriate public infrastructure commensurate to its contribution to the regions.

How do we do more, there are short- and long-term solutions that need to be worked towards in conjunction with one another, RDNZ recommends the following:

- Short Term Solutions:
- Harvest activities that occur on high-risk areas (High-LUC, High-ESC) where slopes are immediately adjacent to waterways or host upstream catchments exceeding a minimum threshold should require a riparian buffer zone be maintained at harvest.
- Slash-Trap consenting requirements reduced, allowing slash traps to be implemented with lower thresholds and greater carrying capacity to sustain higher intensity weather events.
- Standardisation of the interpretation of the NES-PF
- Hauling more of the non-saleable logs and slash to the skid site and burning it.



Long Term Solutions:

- The Forestry Transformational Plan intends to incentivise greater domestic processing, clearly the Government should incentivise or co-invest in woodchip and fibre projects to encourage removal of debris and supply the increasing biofuel markets.
- The Emissions Trading Scheme to recognise debris with nil commercial value that are buried on site. Trapping of carbon in soils can be quantified and emission units received to help offset the cost of removing debris from the slope and burying them.
- Hauling more of the non-saleable logs and slash to the skid site and burning it.

RDNZ is strongly opposed to any recommendations of a move of production forests towards permanent forestry, select (non-clear fell) harvesting and harvest catchment restraints. Each of those strategies have dire consequences, including the destruction of statutory property rights.

The future of forestry needs to be supported here to retain investment in the subject regions. Production forestry is a major contributor to both GDP and employment in these regions and we as forest owners and managers are very aware of our social license to operate. You will be aware of many stories of forest companies helping the clean-up, some instances not remotely related to forestry, meanwhile we are yet to see a story of a farmer helping to remove the sedimentation deposited onto crops and homes.

RDNZ urges the Ministerial review to refrain from allowing the emotional element to supersede the economic, employment and environmental considerations of this matter. It is evident that the media and narrow voices can be powerful whilst ill informed. The New Zealand Government is responsible for seeing through emotional statements and to make decisions that protect the economic aspirations of the country whilst aligning to its policies and the policies that such forestry activities were implemented under.

History of the Land

For hundreds of years New Zealand underwent deforestation with much of this occurring in the 1800's and early 1900's, making way for what was thought to be productive farmland. For the Gisborne and Wairoa regions this was not always the case, with many highly erodible soils unable to withstand large precipitation events.

By the 1930's the Government was already embarking on a large-scale afforestation program under the State Forest Service to address issues of soil erosion and land degradation, and more recently in 1992, the Gisborne region established the 'Erosion Control Funding Programme' or 'ECFP', providing grants for production forestry to be established on erodible parts of farmland.

The ECFP never envisaged that these trees should be established on a permanent basis, in fact, the payments received under the ECFP were staggered as progress payments to make sure that trees established under the ECFP were appropriately tended (I.e., Thinned to a final crop stocking suitable for production harvest), implying that those trees should be harvested.


Volume of Water

The media and public opinion are quick to dismiss the severity of the weather events that are being endured, instead looking for the scapegoat. Any area of land or large catchment that receives +500mm of rainfall in a 24-hour period is going to have a high degree of sedimentation and debris mobilisation, if you then apply this rainfall to already water ladened soils, as we have seen, this delivers severe mid-slope failure.

Sedimentation

Afforestation of farmland was incentivised to help prevent mass erosion and sedimentation from farms into waterways which is then deposited onto other farmland, crops, and residential areas. As we have recently seen, this sedimentation is also responsible for damaging aquatic ecosystems such as the destruction of crustacean habitats near river mouths.

Sedimentation is driven mainly by precipitation, with geology and land use explaining much of the residual difference between sites. Studies by the Waikato District Council with reference to other independent reports, recommend that pasture slopes generate 2 to 5 times more sediment than comparable forestry slopes except for during harvest periods, however sediment loss, with good forest management is said to be restored to pre-harvest levels within one to two years.

While we are happy to support cost effective changes in the forestry sector that drive improved results, we are also acutely aware that this is a Land Use enquiry in the broader sense. We are confident when comparing farmland and forestry, that sedimentation arising from farmland has played a significant role in the damages resulting from Cyclone Gabrielle. Therefore, any result of this enquiry could not unjustly impact forestry without imposing consequences for sedimentation caused by farming.

Woody Debris & Harvest Slash

Woody debris can be defined as any dead, woody plant material, including logs, branches, standing dead trees, and root wads. Within the definition of woody debris are harvest residues, known as forestry slash.

Slash is a by-product of harvesting operations, ranging from the branches removed from logs to trees which don't meet commercial specs. Slash proves useful in returning nutrients to soils and assisting in providing cover for ground erosion, particularly in areas of highly erodible soil.

Woody debris left on stable ground present low risk of moving, however given the increasing effects of climate change and increasing likelihood of high-intensity rainfall events, managing debris such as harvest slash will continue to be an important topic in the forestry sector.

In large rainfall events, soil mobilisation, slope failure and rising water currents can all dislodge woody debris, moving them down slopes that lead to tributaries and rivers. The sheer volume of rainfall has dislodged Pine, Poplar, Regional Council Riparian plantings and native vegetation alike.



Land Use

It is important to consider the outcomes of different land uses when subject to extreme weather events such as January and February 2023. For the purpose of this, let's consider the three land uses below:

- Farmland Land solely used for farming has less root matter to bind the soil and allows water to quickly flow and carry high levels of sedimentation. The weight of sediment and speed of water would be expected to cause infrastructure washouts and high levels of sedimentation downstream.
- 2) Native Bush Land solely in native bush will be able to sustain a level of rainfall by slowing movement, eventually mid-slope failure would happen, sedimentation levels would be low, but debris may include large trees that are likely to cause infrastructure washouts.
- 3) Harvesting Forests The result would strike the middle ground as stumps help to bind the soils reducing sedimentation when compared with farmland, while smaller debris and logs may mobilise, causing infrastructure washouts.
- 4) Growing non harvested exotic forests (Radiata Pine). From the age of 3 or 4 years until harvest at 28 to 30 years a Radiata Pine production forest has showed many times in the past and again in Cyclone Gabrielle that there is little damage by way of washouts and off farm sedimentation. Photographs from Cyclone Gabrielle prove this, and our Sovereign Forest in the Wairoa area is a prime example. This forest is more than 20 years old and had a very low percentage of erosion during Cyclone Gabrielle, this is in contrast to the surrounding farmland which had massive slipping and slope movement resulting in huge volumes of sediment leaving the farms and entering waterways and damaging flood plains further down.

While the above analysis isn't scientifically proven for the purpose of this submission, it is plain to see that each land use has its own set of consequences. We must then include economic, employment and environmental considerations along with those results, to get the full picture.

Strongly Oppose - Permanent Forestry

Permanent forestry in the form of plantation (exotic) forestry or native forestry will ultimately have an undesirable set of consequences. If harsh rules were applied to foresters when managing their harvest, then the obvious choice would be for foresters to move away from production forestry to permanent carbon forestry, using the Emissions Trading Scheme to monetise additional stored carbon.

Permanent forestry will have a diminished benefit to the forest owner; however, it will have dire consequences both socially and environmentally. The harvest of forests would diminish in favour of low-cost forestry, diminishing employment and devaluing the land to zero or worse. Eventually those exotic trees will give way, becoming too heavy for the erodible soils, making it highly likely that much larger debris will mobilise.



Native permanent forestry is not feasible due to the very high costs of establishment and slow rate of carbon sequestration, such a mechanism to force native forestry without incentives or subsidies would drive foresters to relinquish land.

Strongly Oppose – Select (Non-Clear-Fell) Harvest

Select harvesting happens globally on land that is easy in contour allowing machinery to move through the forest or access stems from road carriages. The topography of land in the subject regions means that harvesting is almost always carried out via cable-based systems. Harvesting in these regions under cable-based systems is already hugely expensive and to work effectively, needs to allow for entire settings (faces) to be cleared. Any restriction to this activity would make the activity unsafe due to the confined zone of operation on erosion prone slopes requiring harvesting personnel to be present on the slopes. As well, forests opened up in strips allow for windthrow damage and potential mobilisation in forested areas alongside any strip harvesting. Any such restriction would not be feasible and would cause harvesting to cease in these areas, as well, such a restriction would slow the rate of harvest which removes the forester's ability to react to the commodity driven market.

Strongly Oppose – Catchment Restraints

Any maximum rate of harvest applied to any one catchment would considerably impede the forester's ability to optimise harvest age, act within financial covenants and react to financial markets, thus taking away fundamental property rights that go against freehold ownership of land. Any type of decision would drive large legal proceedings and seriously undermine confidence in freehold land rights and investment into forestry and other assets. Any catchment restraints would restrict forest owners' ability to harvest their forest in times when this is suitable weather (i.e., summer vs winter) or financial objectives. (i.e., a forest might be consented for only a part of the year where log prices are reduced).

Why Production Forestry

While the harvest process creates a short-term debris and sedimentation issue, the public have been very quick to dismiss the substantial environmental, social, and economic benefits of forestry, such as:

- Soil Conservation: Trees help to prevent soil erosion and maintain soil quality.
- Water Conservation: Forests help to regulate water flows and maintain water quality.
- Carbon Sequestration: Trees absorb and store carbon dioxide from the atmosphere, which helps to mitigate climate change.
- Biodiversity Conservation: Forests provide habitats for a wide range of plant and animal species, which helps to preserve biodiversity.
- Employment: Production forestry provides substantially more employment than comparative hill country farming operations. Forestry is said to employ one in four families in the Gisborne region, placing a huge importance of renewable and sustainable practices.



- Timber Production: Forests provide a renewable source of wood products, generating a perpetual supply of revenue through the rotational harvest of forests.
- Economic Contribution: Forestry is a significant primary sector, establishing large services sector expenditures and generating export receipts well in advance of comparative hill country farming.

Proposed Changes

While we are strongly against changes that only adhere to social drivers or that simply create further costs or barriers of entry in the form of consents, rates, or other inefficient taxations, we would be open to making pragmatic changes that further reduce or mitigate the likelihood of debris mobilising.

RDNZ suggests there are solutions that should be managed in conjunction with one another in order to achieve short term mitigation while incentivising programs and operations that form a solution while creating value. The movement toward biofuels and other fibre-based solutions coupled with the lack of pulp/woodchip processing facilities in the subject regions appears to present a real opportunity for the government to create positive solutions.

Short Term Solutions:

- Harvest activities that occur on high-risk areas (High-LUC, High-ESC) where slopes are immediately adjacent to waterways or host upstream catchments exceeding a minimum threshold should require a riparian buffer zone be maintained at harvest.
- Slash-Trap requirements to be implemented with lower thresholds and greater carrying capacity to sustain higher intensity weather events.
- The NES-PF has been established in relation to the events of 2018 in Gisborne. Our view is that the rules under the NES-PF are suitable to produce the desired outcome with respects to debris management. There needs to be stronger controls in the checks and balances as they relate to monitoring of consents and harvesting in all forests, but particularly red zoned land, which encompasses most of the forest in the Gisborne region. If all harvesting entities and forest managers complied at the higher level of the NES-PF we would significantly reduce the chance of debris mobilisation and the consideration of future land use changes.
- Burning the non-saleable wood and debris on the skid sites immediately after harvest is completed.

Long Term Solutions:

- The Forestry Transformational Plan intends to incentivise greater domestic processing, clearly the Government should incentivise or co-invest in woodchip and fibre projects to encourage removal of debris and supply the increasing biofuel markets.
- The Emissions Trading Scheme to recognise debris with nil commercial value that are buried on site. Trapping of carbon in soils can be quantified and emission units received to help offset the cost of removing debris from the slope and burying them.
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The first two of these solutions enhance the climate obligations of New Zealand, one through the circular economy and the use of renewable energy, and the other by the reduction of carbon being released to the atmosphere. At the same time, they remove some or all of the financial burden to extract the material from harvested slopes. The third solution is carbon neutral.

Roger Dickie NZ Ltd and the 21,600 hectares for forestry that we manage though the enquiry area, remain strong focused on delivering the best economic, environmental, and social outcomes for the region and are committed to continued improvement in these aspects.

We would welcome the opportunity to speak to our submissions and are happy to be contacted for further information as required.

Regards,

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Roger Dickie,

Will Dickie, Jeff Dickie,

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April 2023

Submission Document

Ministerial Inquiry into land uses associated with the mobilisation of woody debris (including forestry slash) and sediment in Tairāwhiti/Gisborne District and Wairoa District

This submission is made on behalf of Heywood Forest Partnership, managed by Roger Dickie NZ ltd

Submitter Background

Roger Dickie (N.Z.) Limited (RDNZ) is a forestry investment manager and licensed Managed Investment Scheme provider under the FMCA 2013. RDNZ's forest investment dates back more than 30 years including significant concentration of investment in the strong forest growing regions of New Zealand, namely the Gisborne and Wairoa districts.

RDNZ manages a total of 38,000 hectares including 21,200 hectares in the Gisborne and Wairoa districts, the subject of this enquiry. Of those investments, 10,275 hectares are retail syndicate (Partnership) investments owned by more than 1,100 investors, predominantly New Zealand Mum and Dad investors, the remaining properties are owned by family office and institutions of local and foreign origin.

The activities of RDNZ and its investors have materially contributed in a positive manner to the economy, employment, and the environment within these regions, as well, our managed area equates to 9.6% of the total forest area within the enquiry regions, making our forests and the investors we represent a significant forestry voice and related party to the enquiry.

Executive Summary

Forestry is a long-term investment that has from time to time been incentivised via the Government and regional councils to combat erosion and soil degradation, as well, to increase the productivity of some classes of land. The decision to invest in forestry has often been motivated by those prerogatives on top of forestry's alignment with the investors long-term investment drivers.

The heightening of weather events, which many associate with climate change, is the very reason greater levels of afforestation are necessary, especially in temperate and high rainfall areas where there is strong tree growth coupled with erodible land. A study by the Waikato District Council recommended that pasture slopes generate 2 to 5 times more sediment than comparable forestry slopes.



Other comparisons of production forestry and farming on hill country land are often made, with the results showing that forestry far exceeds farming with respect to expenditures, employment, export receipts and environmental impacts, including carbon sequestration and soil stabilisation.

Forest feasibility reports prepared for us by independent forest consultants project expenditure of more than \$2,500 per ha average over the 28-to-30-year forest rotation, this expenditure is for management, harvesting and transport of our forests and does not include off farm added value at timber mills and export operations. Many of our forests that have completed harvesting have exceeded this expenditure figure. In contrast independent surveys in the Wairoa area have stated that average annual expenditure per ha over a 30-year period is \$500 to \$700 per ha (approximately 1/3 of forest expenditure).

In large weather events, mobilisation of debris will always happen, whether it be from forestry planted for production purposes, permanent crops, natives, riparian plantings, shelterbelts, fences, buildings etc. Take the Esk Valley for example, production forestry did not occur in this catchment in 1938, however the Esk Valley was severely impacted at this time by a weather event that caused three meters of silting and destroyed bridges from debris mobilisation.

Is forestry doing better, yes, can forestry do better, yes. The changes implemented by the National Environmental Standards for Plantation Forestry (NES-PF) mitigate debris left on slopes and ensure waterways are better protected; however, at the same time it can be argued that weather events are becoming more frequent and more severe.

The consenting obligations and practices required to uphold consents already impose significant costs on forest owners, those significant costs come on top of targeted forestry rates applied by the Councils in the enquiry regions. Forestry by-in-large is meeting these consenting requirements while paying higher (targeted) rates, begging the question, is forestry being provided the appropriate public infrastructure commensurate to its contribution to the regions.

How do we do more, there are short- and long-term solutions that need to be worked towards in conjunction with one another, RDNZ recommends the following:

- Short Term Solutions:
- Harvest activities that occur on high-risk areas (High-LUC, High-ESC) where slopes are immediately adjacent to waterways or host upstream catchments exceeding a minimum threshold should require a riparian buffer zone be maintained at harvest.
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Long Term Solutions:

- The Forestry Transformational Plan intends to incentivise greater domestic processing, clearly the Government should incentivise or co-invest in woodchip and fibre projects to encourage removal of debris and supply the increasing biofuel markets.
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RDNZ is strongly opposed to any recommendations of a move of production forests towards permanent forestry, select (non-clear fell) harvesting and harvest catchment restraints. Each of those strategies have dire consequences, including the destruction of statutory property rights.

The future of forestry needs to be supported here to retain investment in the subject regions. Production forestry is a major contributor to both GDP and employment in these regions and we as forest owners and managers are very aware of our social license to operate. You will be aware of many stories of forest companies helping the clean-up, some instances not remotely related to forestry, meanwhile we are yet to see a story of a farmer helping to remove the sedimentation deposited onto crops and homes.

RDNZ urges the Ministerial review to refrain from allowing the emotional element to supersede the economic, employment and environmental considerations of this matter. It is evident that the media and narrow voices can be powerful whilst ill informed. The New Zealand Government is responsible for seeing through emotional statements and to make decisions that protect the economic aspirations of the country whilst aligning to its policies and the policies that such forestry activities were implemented under.

History of the Land

For hundreds of years New Zealand underwent deforestation with much of this occurring in the 1800's and early 1900's, making way for what was thought to be productive farmland. For the Gisborne and Wairoa regions this was not always the case, with many highly erodible soils unable to withstand large precipitation events.

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Volume of Water

The media and public opinion are quick to dismiss the severity of the weather events that are being endured, instead looking for the scapegoat. Any area of land or large catchment that receives +500mm of rainfall in a 24-hour period is going to have a high degree of sedimentation and debris mobilisation, if you then apply this rainfall to already water ladened soils, as we have seen, this delivers severe mid-slope failure.

Sedimentation

Afforestation of farmland was incentivised to help prevent mass erosion and sedimentation from farms into waterways which is then deposited onto other farmland, crops, and residential areas. As we have recently seen, this sedimentation is also responsible for damaging aquatic ecosystems such as the destruction of crustacean habitats near river mouths.

Sedimentation is driven mainly by precipitation, with geology and land use explaining much of the residual difference between sites. Studies by the Waikato District Council with reference to other independent reports, recommend that pasture slopes generate 2 to 5 times more sediment than comparable forestry slopes except for during harvest periods, however sediment loss, with good forest management is said to be restored to pre-harvest levels within one to two years.

While we are happy to support cost effective changes in the forestry sector that drive improved results, we are also acutely aware that this is a Land Use enquiry in the broader sense. We are confident when comparing farmland and forestry, that sedimentation arising from farmland has played a significant role in the damages resulting from Cyclone Gabrielle. Therefore, any result of this enquiry could not unjustly impact forestry without imposing consequences for sedimentation caused by farming.

Woody Debris & Harvest Slash

Woody debris can be defined as any dead, woody plant material, including logs, branches, standing dead trees, and root wads. Within the definition of woody debris are harvest residues, known as forestry slash.

Slash is a by-product of harvesting operations, ranging from the branches removed from logs to trees which don't meet commercial specs. Slash proves useful in returning nutrients to soils and assisting in providing cover for ground erosion, particularly in areas of highly erodible soil.

Woody debris left on stable ground present low risk of moving, however given the increasing effects of climate change and increasing likelihood of high-intensity rainfall events, managing debris such as harvest slash will continue to be an important topic in the forestry sector.

In large rainfall events, soil mobilisation, slope failure and rising water currents can all dislodge woody debris, moving them down slopes that lead to tributaries and rivers. The sheer volume of rainfall has dislodged Pine, Poplar, Regional Council Riparian plantings and native vegetation alike.



Land Use

It is important to consider the outcomes of different land uses when subject to extreme weather events such as January and February 2023. For the purpose of this, let's consider the three land uses below:

- Farmland Land solely used for farming has less root matter to bind the soil and allows water to quickly flow and carry high levels of sedimentation. The weight of sediment and speed of water would be expected to cause infrastructure washouts and high levels of sedimentation downstream.
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- 3) Harvesting Forests The result would strike the middle ground as stumps help to bind the soils reducing sedimentation when compared with farmland, while smaller debris and logs may mobilise, causing infrastructure washouts.
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While the above analysis isn't scientifically proven for the purpose of this submission, it is plain to see that each land use has its own set of consequences. We must then include economic, employment and environmental considerations along with those results, to get the full picture.

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Permanent forestry will have a diminished benefit to the forest owner; however, it will have dire consequences both socially and environmentally. The harvest of forests would diminish in favour of low-cost forestry, diminishing employment and devaluing the land to zero or worse. Eventually those exotic trees will give way, becoming too heavy for the erodible soils, making it highly likely that much larger debris will mobilise.



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Any maximum rate of harvest applied to any one catchment would considerably impede the forester's ability to optimise harvest age, act within financial covenants and react to financial markets, thus taking away fundamental property rights that go against freehold ownership of land. Any type of decision would drive large legal proceedings and seriously undermine confidence in freehold land rights and investment into forestry and other assets. Any catchment restraints would restrict forest owners' ability to harvest their forest in times when this is suitable weather (i.e., summer vs winter) or financial objectives. (i.e., a forest might be consented for only a part of the year where log prices are reduced).

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While the harvest process creates a short-term debris and sedimentation issue, the public have been very quick to dismiss the substantial environmental, social, and economic benefits of forestry, such as:

- Soil Conservation: Trees help to prevent soil erosion and maintain soil quality.
- Water Conservation: Forests help to regulate water flows and maintain water quality.
- Carbon Sequestration: Trees absorb and store carbon dioxide from the atmosphere, which helps to mitigate climate change.
- Biodiversity Conservation: Forests provide habitats for a wide range of plant and animal species, which helps to preserve biodiversity.
- Employment: Production forestry provides substantially more employment than comparative hill country farming operations. Forestry is said to employ one in four families in the Gisborne region, placing a huge importance of renewable and sustainable practices.



- Timber Production: Forests provide a renewable source of wood products, generating a perpetual supply of revenue through the rotational harvest of forests.
- Economic Contribution: Forestry is a significant primary sector, establishing large services sector expenditures and generating export receipts well in advance of comparative hill country farming.

Proposed Changes

While we are strongly against changes that only adhere to social drivers or that simply create further costs or barriers of entry in the form of consents, rates, or other inefficient taxations, we would be open to making pragmatic changes that further reduce or mitigate the likelihood of debris mobilising.

RDNZ suggests there are solutions that should be managed in conjunction with one another in order to achieve short term mitigation while incentivising programs and operations that form a solution while creating value. The movement toward biofuels and other fibre-based solutions coupled with the lack of pulp/woodchip processing facilities in the subject regions appears to present a real opportunity for the government to create positive solutions.

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- Burning the non-saleable wood and debris on the skid sites immediately after harvest is completed.

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The first two of these solutions enhance the climate obligations of New Zealand, one through the circular economy and the use of renewable energy, and the other by the reduction of carbon being released to the atmosphere. At the same time, they remove some or all of the financial burden to extract the material from harvested slopes. The third solution is carbon neutral.

Roger Dickie NZ Ltd and the 21,600 hectares for forestry that we manage though the enquiry area, remain strong focused on delivering the best economic, environmental, and social outcomes for the region and are committed to continued improvement in these aspects.

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Regards,

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April 2023

Submission Document

Ministerial Inquiry into land uses associated with the mobilisation of woody debris (including forestry slash) and sediment in Tairāwhiti/Gisborne District and Wairoa District

This submission is made on behalf of Eagle forest Partnership, managed by Roger Dickie NZ ltd

Submitter Background

Roger Dickie (N.Z.) Limited (RDNZ) is a forestry investment manager and licensed Managed Investment Scheme provider under the FMCA 2013. RDNZ's forest investment dates back more than 30 years including significant concentration of investment in the strong forest growing regions of New Zealand, namely the Gisborne and Wairoa districts.

RDNZ manages a total of 38,000 hectares including 21,200 hectares in the Gisborne and Wairoa districts, the subject of this enquiry. Of those investments, 10,275 hectares are retail syndicate (Partnership) investments owned by more than 1,100 investors, predominantly New Zealand Mum and Dad investors, the remaining properties are owned by family office and institutions of local and foreign origin.

The activities of RDNZ and its investors have materially contributed in a positive manner to the economy, employment, and the environment within these regions, as well, our managed area equates to 9.6% of the total forest area within the enquiry regions, making our forests and the investors we represent a significant forestry voice and related party to the enquiry.

Executive Summary

Forestry is a long-term investment that has from time to time been incentivised via the Government and regional councils to combat erosion and soil degradation, as well, to increase the productivity of some classes of land. The decision to invest in forestry has often been motivated by those prerogatives on top of forestry's alignment with the investors long-term investment drivers.

The heightening of weather events, which many associate with climate change, is the very reason greater levels of afforestation are necessary, especially in temperate and high rainfall areas where there is strong tree growth coupled with erodible land. A study by the Waikato District Council recommended that pasture slopes generate 2 to 5 times more sediment than comparable forestry slopes.



Other comparisons of production forestry and farming on hill country land are often made, with the results showing that forestry far exceeds farming with respect to expenditures, employment, export receipts and environmental impacts, including carbon sequestration and soil stabilisation.

Forest feasibility reports prepared for us by independent forest consultants project expenditure of more than \$2,500 per ha average over the 28-to-30-year forest rotation, this expenditure is for management, harvesting and transport of our forests and does not include off farm added value at timber mills and export operations. Many of our forests that have completed harvesting have exceeded this expenditure figure. In contrast independent surveys in the Wairoa area have stated that average annual expenditure per ha over a 30-year period is \$500 to \$700 per ha (approximately 1/3 of forest expenditure).

In large weather events, mobilisation of debris will always happen, whether it be from forestry planted for production purposes, permanent crops, natives, riparian plantings, shelterbelts, fences, buildings etc. Take the Esk Valley for example, production forestry did not occur in this catchment in 1938, however the Esk Valley was severely impacted at this time by a weather event that caused three meters of silting and destroyed bridges from debris mobilisation.

Is forestry doing better, yes, can forestry do better, yes. The changes implemented by the National Environmental Standards for Plantation Forestry (NES-PF) mitigate debris left on slopes and ensure waterways are better protected; however, at the same time it can be argued that weather events are becoming more frequent and more severe.

The consenting obligations and practices required to uphold consents already impose significant costs on forest owners, those significant costs come on top of targeted forestry rates applied by the Councils in the enquiry regions. Forestry by-in-large is meeting these consenting requirements while paying higher (targeted) rates, begging the question, is forestry being provided the appropriate public infrastructure commensurate to its contribution to the regions.

How do we do more, there are short- and long-term solutions that need to be worked towards in conjunction with one another, RDNZ recommends the following:

- Short Term Solutions:
- Harvest activities that occur on high-risk areas (High-LUC, High-ESC) where slopes are immediately adjacent to waterways or host upstream catchments exceeding a minimum threshold should require a riparian buffer zone be maintained at harvest.
- Slash-Trap consenting requirements reduced, allowing slash traps to be implemented with lower thresholds and greater carrying capacity to sustain higher intensity weather events.
- Standardisation of the interpretation of the NES-PF
- Hauling more of the non-saleable logs and slash to the skid site and burning it.



Long Term Solutions:

- The Forestry Transformational Plan intends to incentivise greater domestic processing, clearly the Government should incentivise or co-invest in woodchip and fibre projects to encourage removal of debris and supply the increasing biofuel markets.
- The Emissions Trading Scheme to recognise debris with nil commercial value that are buried on site. Trapping of carbon in soils can be quantified and emission units received to help offset the cost of removing debris from the slope and burying them.
- Hauling more of the non-saleable logs and slash to the skid site and burning it.

RDNZ is strongly opposed to any recommendations of a move of production forests towards permanent forestry, select (non-clear fell) harvesting and harvest catchment restraints. Each of those strategies have dire consequences, including the destruction of statutory property rights.

The future of forestry needs to be supported here to retain investment in the subject regions. Production forestry is a major contributor to both GDP and employment in these regions and we as forest owners and managers are very aware of our social license to operate. You will be aware of many stories of forest companies helping the clean-up, some instances not remotely related to forestry, meanwhile we are yet to see a story of a farmer helping to remove the sedimentation deposited onto crops and homes.

RDNZ urges the Ministerial review to refrain from allowing the emotional element to supersede the economic, employment and environmental considerations of this matter. It is evident that the media and narrow voices can be powerful whilst ill informed. The New Zealand Government is responsible for seeing through emotional statements and to make decisions that protect the economic aspirations of the country whilst aligning to its policies and the policies that such forestry activities were implemented under.

History of the Land

For hundreds of years New Zealand underwent deforestation with much of this occurring in the 1800's and early 1900's, making way for what was thought to be productive farmland. For the Gisborne and Wairoa regions this was not always the case, with many highly erodible soils unable to withstand large precipitation events.

By the 1930's the Government was already embarking on a large-scale afforestation program under the State Forest Service to address issues of soil erosion and land degradation, and more recently in 1992, the Gisborne region established the 'Erosion Control Funding Programme' or 'ECFP', providing grants for production forestry to be established on erodible parts of farmland.

The ECFP never envisaged that these trees should be established on a permanent basis, in fact, the payments received under the ECFP were staggered as progress payments to make sure that trees established under the ECFP were appropriately tended (I.e., Thinned to a final crop stocking suitable for production harvest), implying that those trees should be harvested.



Volume of Water

The media and public opinion are quick to dismiss the severity of the weather events that are being endured, instead looking for the scapegoat. Any area of land or large catchment that receives +500mm of rainfall in a 24-hour period is going to have a high degree of sedimentation and debris mobilisation, if you then apply this rainfall to already water ladened soils, as we have seen, this delivers severe mid-slope failure.

Sedimentation

Afforestation of farmland was incentivised to help prevent mass erosion and sedimentation from farms into waterways which is then deposited onto other farmland, crops, and residential areas. As we have recently seen, this sedimentation is also responsible for damaging aquatic ecosystems such as the destruction of crustacean habitats near river mouths.

Sedimentation is driven mainly by precipitation, with geology and land use explaining much of the residual difference between sites. Studies by the Waikato District Council with reference to other independent reports, recommend that pasture slopes generate 2 to 5 times more sediment than comparable forestry slopes except for during harvest periods, however sediment loss, with good forest management is said to be restored to pre-harvest levels within one to two years.

While we are happy to support cost effective changes in the forestry sector that drive improved results, we are also acutely aware that this is a Land Use enquiry in the broader sense. We are confident when comparing farmland and forestry, that sedimentation arising from farmland has played a significant role in the damages resulting from Cyclone Gabrielle. Therefore, any result of this enquiry could not unjustly impact forestry without imposing consequences for sedimentation caused by farming.

Woody Debris & Harvest Slash

Woody debris can be defined as any dead, woody plant material, including logs, branches, standing dead trees, and root wads. Within the definition of woody debris are harvest residues, known as forestry slash.

Slash is a by-product of harvesting operations, ranging from the branches removed from logs to trees which don't meet commercial specs. Slash proves useful in returning nutrients to soils and assisting in providing cover for ground erosion, particularly in areas of highly erodible soil.

Woody debris left on stable ground present low risk of moving, however given the increasing effects of climate change and increasing likelihood of high-intensity rainfall events, managing debris such as harvest slash will continue to be an important topic in the forestry sector.

In large rainfall events, soil mobilisation, slope failure and rising water currents can all dislodge woody debris, moving them down slopes that lead to tributaries and rivers. The sheer volume of rainfall has dislodged Pine, Poplar, Regional Council Riparian plantings and native vegetation alike.



Land Use

It is important to consider the outcomes of different land uses when subject to extreme weather events such as January and February 2023. For the purpose of this, let's consider the three land uses below:

- Farmland Land solely used for farming has less root matter to bind the soil and allows water to quickly flow and carry high levels of sedimentation. The weight of sediment and speed of water would be expected to cause infrastructure washouts and high levels of sedimentation downstream.
- 2) Native Bush Land solely in native bush will be able to sustain a level of rainfall by slowing movement, eventually mid-slope failure would happen, sedimentation levels would be low, but debris may include large trees that are likely to cause infrastructure washouts.
- 3) Harvesting Forests The result would strike the middle ground as stumps help to bind the soils reducing sedimentation when compared with farmland, while smaller debris and logs may mobilise, causing infrastructure washouts.
- 4) Growing non harvested exotic forests (Radiata Pine). From the age of 3 or 4 years until harvest at 28 to 30 years a Radiata Pine production forest has showed many times in the past and again in Cyclone Gabrielle that there is little damage by way of washouts and off farm sedimentation. Photographs from Cyclone Gabrielle prove this, and our Sovereign Forest in the Wairoa area is a prime example. This forest is more than 20 years old and had a very low percentage of erosion during Cyclone Gabrielle, this is in contrast to the surrounding farmland which had massive slipping and slope movement resulting in huge volumes of sediment leaving the farms and entering waterways and damaging flood plains further down.

While the above analysis isn't scientifically proven for the purpose of this submission, it is plain to see that each land use has its own set of consequences. We must then include economic, employment and environmental considerations along with those results, to get the full picture.

Strongly Oppose - Permanent Forestry

Permanent forestry in the form of plantation (exotic) forestry or native forestry will ultimately have an undesirable set of consequences. If harsh rules were applied to foresters when managing their harvest, then the obvious choice would be for foresters to move away from production forestry to permanent carbon forestry, using the Emissions Trading Scheme to monetise additional stored carbon.

Permanent forestry will have a diminished benefit to the forest owner; however, it will have dire consequences both socially and environmentally. The harvest of forests would diminish in favour of low-cost forestry, diminishing employment and devaluing the land to zero or worse. Eventually those exotic trees will give way, becoming too heavy for the erodible soils, making it highly likely that much larger debris will mobilise.



Native permanent forestry is not feasible due to the very high costs of establishment and slow rate of carbon sequestration, such a mechanism to force native forestry without incentives or subsidies would drive foresters to relinquish land.

Strongly Oppose – Select (Non-Clear-Fell) Harvest

Select harvesting happens globally on land that is easy in contour allowing machinery to move through the forest or access stems from road carriages. The topography of land in the subject regions means that harvesting is almost always carried out via cable-based systems. Harvesting in these regions under cable-based systems is already hugely expensive and to work effectively, needs to allow for entire settings (faces) to be cleared. Any restriction to this activity would make the activity unsafe due to the confined zone of operation on erosion prone slopes requiring harvesting personnel to be present on the slopes. As well, forests opened up in strips allow for windthrow damage and potential mobilisation in forested areas alongside any strip harvesting. Any such restriction would not be feasible and would cause harvesting to cease in these areas, as well, such a restriction would slow the rate of harvest which removes the forester's ability to react to the commodity driven market.

Strongly Oppose – Catchment Restraints

Any maximum rate of harvest applied to any one catchment would considerably impede the forester's ability to optimise harvest age, act within financial covenants and react to financial markets, thus taking away fundamental property rights that go against freehold ownership of land. Any type of decision would drive large legal proceedings and seriously undermine confidence in freehold land rights and investment into forestry and other assets. Any catchment restraints would restrict forest owners' ability to harvest their forest in times when this is suitable weather (i.e., summer vs winter) or financial objectives. (i.e., a forest might be consented for only a part of the year where log prices are reduced).

Why Production Forestry

While the harvest process creates a short-term debris and sedimentation issue, the public have been very quick to dismiss the substantial environmental, social, and economic benefits of forestry, such as:

- Soil Conservation: Trees help to prevent soil erosion and maintain soil quality.
- Water Conservation: Forests help to regulate water flows and maintain water quality.
- Carbon Sequestration: Trees absorb and store carbon dioxide from the atmosphere, which helps to mitigate climate change.
- Biodiversity Conservation: Forests provide habitats for a wide range of plant and animal species, which helps to preserve biodiversity.
- Employment: Production forestry provides substantially more employment than comparative hill country farming operations. Forestry is said to employ one in four families in the Gisborne region, placing a huge importance of renewable and sustainable practices.



- Timber Production: Forests provide a renewable source of wood products, generating a perpetual supply of revenue through the rotational harvest of forests.
- Economic Contribution: Forestry is a significant primary sector, establishing large services sector expenditures and generating export receipts well in advance of comparative hill country farming.

Proposed Changes

While we are strongly against changes that only adhere to social drivers or that simply create further costs or barriers of entry in the form of consents, rates, or other inefficient taxations, we would be open to making pragmatic changes that further reduce or mitigate the likelihood of debris mobilising.

RDNZ suggests there are solutions that should be managed in conjunction with one another in order to achieve short term mitigation while incentivising programs and operations that form a solution while creating value. The movement toward biofuels and other fibre-based solutions coupled with the lack of pulp/woodchip processing facilities in the subject regions appears to present a real opportunity for the government to create positive solutions.

Short Term Solutions:

- Harvest activities that occur on high-risk areas (High-LUC, High-ESC) where slopes are immediately adjacent to waterways or host upstream catchments exceeding a minimum threshold should require a riparian buffer zone be maintained at harvest.
- Slash-Trap requirements to be implemented with lower thresholds and greater carrying capacity to sustain higher intensity weather events.
- The NES-PF has been established in relation to the events of 2018 in Gisborne. Our view is that the rules under the NES-PF are suitable to produce the desired outcome with respects to debris management. There needs to be stronger controls in the checks and balances as they relate to monitoring of consents and harvesting in all forests, but particularly red zoned land, which encompasses most of the forest in the Gisborne region. If all harvesting entities and forest managers complied at the higher level of the NES-PF we would significantly reduce the chance of debris mobilisation and the consideration of future land use changes.
- Burning the non-saleable wood and debris on the skid sites immediately after harvest is completed.

Long Term Solutions:

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