

Hon James Shaw
Minister of Climate Change
Wellington

November 24th 2021

Dear Minister Shaw,

Transitioning to a low-emissions and climate resilient future: how eucalypts that produce naturally durable hardwood can contribute to New Zealand's emissions reduction targets

The New Zealand Dryland Forests Initiative ([NZDFI](#)) is a collaborative research and development public/private funded initiative, formed in 2008. We commend your work in developing a strategy for Aotearoa New Zealand to move to a low-emissions, climate resilient future, based on a circular economy. We want to support New Zealand in meeting its international commitments to reducing emissions while building resilient regional economies and communities. It is well-recognised that planting new forests and increasing the use of wood products will play a fundamental role in this future.

The NZDFI's vision is to develop sustainable durable hardwood industries based on a total of 60,000 hectares of eucalypt forests being established in twelve regional wood-supply catchments centred around future processing hubs (5,000 hectares per catchment) by 2050. In the past 13 years we have developed a robust, internationally recognised research programme to select elite trees to improve productivity and wood quality of durable eucalypts adapted to some New Zealand environments. Our extensive trial network includes testing our species in some of the hottest, driest parts of northern and eastern New Zealand, reflecting our awareness right from the start of the programme that our climate is changing, and that new forestry species need to be adaptable and drought tolerant.

The timber produced by NZDFI's selected durable eucalypt species is naturally durable and strong. It can substitute CCA-treated pine, for example as vineyard posts and other fencing material for Aotearoa's primary industries, thereby reducing hazardous waste going to landfill as occurs with CCA-treated pine. It can form a high-strength component in engineered products such as laminated veneer lumber and has many other potential high-value, long-life applications.

Moreover, durable eucalypts have fast early growth rates and produce much denser timber than radiata, meaning they are very efficient at sequestering carbon. They have potential as a short-rotation coppice crop grown for biomass, but alternatively can live for hundreds of years as permanent forests.

Our research programme includes site-species matching, silviculture and growth modelling, wood quality, products and markets, and tree health. About \$10 million from both private and public funds has been invested in NZDFI's research and development programme to date, not including the contribution by the many landowners across northern and eastern regions of New Zealand who host our extensive trial network. In 2020 we were awarded a \$536,000 grant from the MPI One Billion Trees Partnership Fund to assist with accelerating the propagation of improved nursery stock. In spring 2021, and despite serious Covid-related challenges, over 240,000 of our first generation of elite XyloGene[™] branded elite trees were planted. From 2022 onwards we will plan to scale up production of XyloGene planting stock.

Between 806,000-1,370,000 hectares of new forest could be planted between now and 2050 according to the MfE consultation document. The recent Climate Change Commission consultation had lower, but still substantial, projections for new planting. Our call to Government is that policies and support for new forest plantings need to extend beyond radiata pine or native species to include alternative well proven exotic species including NZDFI's durable eucalypts and exotic durable softwood species like redwood and cypresses.

We want to continue to partner with Government to scale up production of our improved nursery stock and ensure that the right trees continue to be planted in the right place over the next thirty years and beyond. NZDFI's vision needs the attention and action of many more people and businesses so that new forests are planted across Aotearoa.

We applaud the work being done by Te Uru Rākau to develop a Forestry and Wood Processing Industry Transformation Plan (ITP). The ITP priorities which include to (i) increase domestic wood processing, (ii) derive more energy from biofuels, and (iii) encourage the production of long-lived and engineered wood products, align very closely with NZDFI's long-term goals. Therefore, our request for continuing support is to ensure that the potential value and benefits offered by NZDFI's vision can be one of the goals set for action under the ITP.

Future forests of durable eucalypts could generate significant value, especially when strategically planted to create regional wood supply catchments. A recent report by Scion indicates each regional wood supply catchment of 5,000 hectares could generate 200 FTEs and contribute \$82.5million per annum by 2050, with a return on capital employed of around 25%. The investment to establish and manage 5,000 ha of durable eucalypt forests over the next 30 years is estimated at a total of \$25-\$30 million (based on current day values).

We appreciate the opportunity to make this submission. We have also responded to the on-line questions, mainly under the categories of 'Moving Aotearoa to a circular economy', 'Waste' and 'Forestry'.

Yours sincerely

Shaf van Ballekom, Chair NZDFI & CEO Proseed NZ

Gerald Hope, CE Marlborough Research Centre

Bruce Manley, HoD, NZ School of Forestry

Paul Millen, NZDFI Project Manager& Director Vineyard Timber



In summary:

- NZDFI's durable eucalypt species are highly productive on the right sites and have rapid early growth rates¹.
- Durable eucalypts have high wood density (higher than radiata pine), so can sequester carbon faster than radiata pine in some NZ environments².
- Current ETS Exotic Hardwood Look-up Tables are not eucalypt specific and are likely to under-represent eucalypt growth and carbon storage rates on many sites.
- NZDFI's extensive trial network has enabled us to select trees based on superior growth, form, and wood properties.
- This trial network could also be used to evaluate carbon sequestration and biomass feedstock production by durable eucalypts.
- NZDFI species coppice vigorously (regrow from a cut stump) following harvest. Living root systems store more carbon than systems where trees have to be replanted following harvest³. They also provide continuing soil protection on steep erodible slopes.
- NZDFI has been breeding these species in dry environments to ensure their adaptability and drought tolerance. They are therefore resilient to predicted changes in climate in New Zealand's northern and eastern regions.
- NZDFI durable eucalypts produce nectar and pollen at times of year when other supplies are limited, benefitting birds and bees and enhancing biodiversity.
- There can be potential issues in establishing eucalypt plantations.
- This includes planting failures as a result of poor planning and site choice as these species can only thrive in some NZ environments.
- Eucalypt plantations can pose a potential hazard in a wild fire; their high water demand may reduce supplies for other users; there can be wine taint if adjacent to vineyards; and there can be wildings although a much lower risk than with some conifers.
- These issues warrant further research so that advice can be provided to farm foresters and forest growers before they plant so they can get the right tree in the right place outcome.

¹ e.g. Salekin, S., Mason, E. G., Morgenroth, J., & Meason, D. F. (2020). A preliminary growth and yield model for *Eucalyptus globoides* (Blakely) plantations in New Zealand. *New Zealand Journal of Forestry Science*, 50

² Bootle, K. R. (2005). *Wood in Australia. Types, properties, and uses*, McGraw-Hill Australia

³ Berhongaray, G., M. S. Verlinden, L. S. Broeckx, I. A. Janssens and R. Ceulemans (2017). "Soil carbon and belowground carbon balance of a short-rotation coppice: assessments from three different approaches." *Global change biology. Bioenergy* 9(2): 299-313