



# Summary of consultation to develop a Regional Strategic Plan

# Durable eucalypt forests:

# A multi-regional opportunity for investment in NZ drylands



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# **1. REGIONAL STRATEGIC PLAN CONSULTATION: SUMMARY OF RESPONSES**

### 1.1. Background

Since 2008, the New Zealand Dryland Forests Initiative (NZDFI) has worked on tree breeding and research to create the foundations for its vision of 100,000 ha of durable eucalypt forests established in New Zealand. The vision is for these forests to be planted in dry east coast regions by 2030, and that they produce a sustainable supply of naturally durable timber products worth \$2 million per annum by 2050. Regional processing and service industries will be required, offering a diverse and sustainable forestry alternative to the employment and income generation associated with radiata pine.

NZDFI is founded on strong partnerships between research providers, landowners and industry supporters. Over \$3 million has been invested into the NZDFI's work to date and work continues apace. A network of trials has been established with a long-term breeding programme that will produce the first genetically improved seedlings by 2020. The production and release of genetically improved seedlings is seen as a critical milestone in the NZDFI programme, as this is when landowners can begin planting with confidence due to the benefit of many years of research and tree improvement.

In 2015, the NZDFI became part of the Forest Growers Research 'Specialty Wood Products' research partnership. Under this programme work on a NZDFI regional strategic plan got underway in July 2017. In November 2017, the new coalition Government launched its 'One Billion Trees' programme and its own regional development programme, providing an opportunity for the NZDFI regional plan to be developed concurrently with this.

Therefore, early in 2018, NZDFI commenced a consultation process to guide the development of its regional strategic plan. A consultation paper was drafted and circulated to central and regional government, the forestry and agricultural sectors, landowners, and other stakeholders and interested parties.

In addition, meetings were held with staff of east coast regional councils and with MPI staff at the Nelson/Marlborough regional office.

We received nine full responses to the questionnaire in the consultation document, as well as other comments via email. All feedback is collated in Appendix 1. In addition, NZDFI sought the ongoing support of key representatives of regional councils and the forest industry to be part of a working group to assist with further input and advice on the development of NZDFI's regional strategy. The Terms of Reference for this group are also set out in this document (Appendix 2).

### 1.2 Summary of responses: overview

Overall, there was mainly positive feedback for the NZDFI from respondents. This included NZDFI having good leadership and communications, along with demonstrating research and practical experience through the trial and breeding work done to date.

Potential benefits of durable eucalypts recognised by respondents are that they will:

- diversify land-use in drier regions, by providing landowners with a new opportunity on marginal land primarily as an alternative to radiata pine
- reduce market and biological risks associated with New Zealand's radiata pine near-monoculture
- increase regional forest industry diversity by creating a sustainable eucalypt wood products supply chain
- give a reputational boost to high-value premium horticulture and wine-growing businesses operating under sustainable or organic production systems (by acting as a replacement to CCA-treated radiata pine)
- control soil erosion, thanks partly to their ability to coppice (regrow vigorously from a cut stump)
- contribute to climate change mitigation by storing carbon
- cope with the increasingly lengthy and intense droughts forecast to become a feature of the already summer-dry areas being targeted by the NZDFI
- produce large quantities of pollen and nectar on which bees and native birds can feed at times of year when supplies from other plant species are short
- increase diversity in rural landscapes.

However, a number of potential negative impacts and barriers to adoption were also highlighted, including:

- a shortage/unreliable supply of planting stock
- lack of growth and economic models so that durable eucalypts can be compared with other potential enterprises on the same land (e.g. livestock grazing, radiata pine, and manuka)
- uncertainty about timber properties and performance
- lack of market information, and lack of evidence of actual markets
- perceived high risk of pests and diseases decimating eucalypt forests
- concern about possible risks eucalypts plantations may pose to water quality and human health
- concern about eucalypt plantations reducing water catchment yield
- concern about eucalypt forests being a significant fire hazard.

This feedback reinforces that while NZDFI's research team can directly work on providing answers to some of these negative aspects, much wider engagement and support is needed for research and land-use planning so that regional communities can successfully grow eucalypts to sustainably deliver the benefits that have been identified.

Some suggestions of options for gaining grower confidence are covered in Section 1.4. There is obviously a critical need to get 'the right tree in the right place', right from the start of the programme, if confidence amongst landowners is to be developed and sustained. Growth and economic models (which include potential returns from carbon) are a significant priority.

Other priorities identified include the provision of more information and evidence around timber properties, processing options, and the potential scale and range of markets for durable eucalypt products.

Respondents generally believe that there is no shortage of land potentially available in the target east-coast regions. This land includes bare pastoral land and also cutover sites following radiata pine harvest. Current high farmland prices are a disincentive to new entrants wishing to buy bare land and plant trees. The challenge is to convince existing landowners to plant eucalypts and to ensure they have the knowledge and resources to do this successfully. Initially it is thought likely that plantings will be relatively small-scale, perhaps with the exception of some Māori properties.

Regional councils are seen as the major driver of extension and planting initiatives, supported by other organisations. Ideally respondents want the economics of growing durable eucalypts to be profitable without any need of grants for planting, but indicated that grants are needed to encourage new planting, with joint ventures considered the best option amongst the various types of planting incentives which are already available, or could be made available in future.

# 1.3 Regional strategy plan consultation

Early in 2018, the New Zealand Drylands Forest Initiative (NZDFI) undertook a consultation process as a first step in the development the New Zealand Dryland Forests Initiative (NZDFI) regional strategic plan. The NZDFI's aim is to establish a sustainable hardwood industry based on durable eucalypts, and the focus is on the dry east coast regions of the North Island and northern South Island.

The consultation document was circulated to key agencies and individuals including central and regional government, the forestry and agricultural sectors, landowners, and other stakeholders and interested parties.

We sought answers to a series of questions: the aim was to gauge support for, and likely commitment to, the NZDFI's initiative, and learn more about the priorities of different stakeholders and their willingness to take ownership of some elements of the programme. We also asked respondents to identify some of the barriers and knowledge gaps they perceive might slow down the uptake of durable eucalypts by landowners. We hoped to learn about the availability of land in the target regions, how best to communicate with landowners, and what incentives and delivery mechanisms might enhance the chances of achieving the NZDFI's aim of establishing 100,000 ha of durable eucalypts by 2030.

We thank all those who took the time to read the consultation document, answer our questions, and/or respond with additional comments. Respondents included four regional authorities representing the great majority of the NZDFI's target land area (Gisborne, Hawke's Bay, Greater Wellington and Marlborough); Landcorp - New Zealand's largest land-owner; Lake Taupo Forest Trust – one of the country's largest Māori forest-owning incorporations; Juken NZ Ltd, a major forest-owning and timber processing company already growing durable eucalypts and collaborating over NZDFI trials; representatives of small forest owners in three target regions, and a number of individuals. The following is a summary of the responses.

# 1.4 Ensuring further progress with achieving NZDFI's vision

### **Economic information**

Respondents confirmed that growers need economic modelling that supports the business case for planting durable eucalypts at different scales and on different land types. This model needs to enable comparison with the other major potential uses for marginal land including livestock grazing, radiata pine and mānuka. Without concise and accurate economic data, landowners are unwilling to commit resources to a relatively long-term and unfamiliar land-use.

More economic information is also needed on the downstream benefits of planting a significant durable eucalypt resource, and the level and types of regional economic development that could be generated by processing to add value; also what service industries could be envisaged to support a new hardwood industry. Work to develop new products utilising the timber from durable eucalypts, particularly laminated veneer lumber (LVL), is a priority, as is work to ensure acceptance of naturally durable products in Japanese and NZ building standards.

Work to develop an economic model for LVL production is already underway at the University of Canterbury School of Forestry. But as most NZDFI species have yet to complete a full, measured rotation in NZ, full sets of growth data are not yet available. However, work by Scion suggests that different fast-growing eucalypt species are likely to follow similar shaped growth curves, so existing growth models including the *E. fastigata* model could be applied to NZDFI species to enable initial economic analysis of NZDFI species. These can be refined as more data comes available over time.

In addition, Scion has recently been developing an *E. globoidea* growth model and a request is planned to use this model via the SWP programme.

### Gaining grower confidence

Respondents highlighted the fact that eucalypts have a mixed reputation amongst landowners, so those organisations which take up the challenge of encouraging new planting will have to overcome a number of negative perceptions.

Prices for sheep and beef have been high for some time, so farmers are not urgently looking for alternative land uses. Those who are interested in planting trees may well first consider radiata pine as a 'one-size-fitsall' species seen as relatively low risk, easy to grow on a range of sites, and with a well-established harvesting and marketing infrastructure. Another alternative marginal land-use in some areas is mānuka, which is 'going gang-busters' especially in the Gisborne/East Coast region, and in theory generates a much earlier return on investment than a tree crop.

In contrast, there is an array of eucalypt species which are hard to tell apart, some more and some less durable, some suitable to certain site types and some to other site types. This could be confusing for any landowners lacking an aptitude for trees. Also, some landowners have had negative past experiences with old eucalypt trees and plantations. Old trees with brittle branches cause problems on the farm, and plantations on exposed sites suffer from wind-throw and poor tree form. A developing resistance to exotic species of any kind is reported from Gisborne.

As far as markets are concerned recent experience in Greater Wellington Region with small eucalypt woodlots planted in the 1980s and 1990s is that the trees can only be sold as firewood, if at all.

The variable quality the more recently durable eucalypt plantings, including those in NZDFI trials designed to identify promising genotypes and weed out poor performers, may also have coloured some people's opinions.

As yet, markets for NZ-grown durable eucalypt timbers and products in New Zealand are undeveloped, as there is no resource yet to develop a supply chain. While a valid concern, there are domestic market prices for imported sawn hardwood, including Australian-grown durable eucalypt, that indicate the high value these hardwoods could have. Therefore, economic analysis of small and medium scale sawmilling is also required.

Other grower concerns included potential pests and diseases (including Myrtle rust and various foliage chewing beetles), fear of high fire risk and difficulties in fire-fighting, lack of confidence that there will be a market for the timber or anyone with the skills and equipment to process it on-farm.

### Over-coming/mitigating negative perceptions/barriers to new planting

Respondents to our questionnaire have identified a number of useful approaches to gaining grower confidence including:

- developing 'the full story' around growing durable eucalypts to include more and better information about all aspects of their growth, economic and practical implications for growers
- providing more evidence that there is an integrated supply chain and markets for the timber, giving potential growers confidence that they will not be left with a crop which they cannot sell
- show-casing new breeding stock of NZDFI's selected species the cornerstone of the NZDFI initiative. In theory, the new genotypes will demonstrate consistently good growth and form characteristics along with improved heartwood properties, and the quality and potential of

seedlings available to growers will continue to improve over time. There is a need for more trials and more demonstration sites, and active engagement with potential growers around these resources

 wood manufacturing and durability trials, and developing and show-casing products and markets, including on-farm processing and use, and high-profile use of durable eucalypt timbers in public places.

The NZDFI notes that there are a number of concerns and potential negative environmental outcomes arising from wide-spread planting of durable eucalypts. This highlights the need for regional councils to consider where best to encourage large-scale planting of durable eucalypts. The new Forestry National Environment Standards have recently been implemented and will apply as much to eucalypts as well as other species. Some of the concerns around various possible risks posed by eucalypts may best be addressed through the regulatory environment.

Risk/barrier to adoption	Action proposed	Lead organisation/contributors
Shortage/unreliable supply of planting stock.	Fast-track research and development of genetically improved planting stock and make it available and easy to source for growers. Establish licences and provide training to nurseries to produce high- quality seedlings and clonal stocks.	NZDFI partners and commercial nurseries using XyloGene brand.
Lack of growth and economic models so that durable eucalypts can be compared with other potential enterprises on the same land (e.g. livestock grazing, radiata pine, and manuka). Carbon information for p89 plantings also lacking.	Model development to continue at UC; Scion also is developing model for <i>E.</i> <i>globoidea</i> which will be requested for use by NZDFI.	University of Canterbury and NZDFI industry supporters.
Low grower confidence in eucalypts due to negative earlier experiences.	Continue expansion of multi-regional trial network/ demonstration resource show-casing new breeding stock. Develop extension resources that provide good information backed by accurate advice, to ensure the right trees are correctly established on the right sites.	NZDFI in collaboration with Forestry NZ/MPI; regional councils; forestry consultants; trial host landowners.
Limited knowledge of practicalities of planting and managing durable eucalypts for timber.	Field days/other extension activities and resources linked to regional trial sites to demonstrate how to best manage these species. Conduct research throughout regional trials to determine optimal sites for producing highly durable timber.	NZDFI in collaboration with Forestry NZ/MPI, Regional councils; forestry consultants; NZFFA and trial host landowners.
Uncertainty around the timber properties of different durable eucalypt species.	Research including durability trials, strength and stiffness testing, heartwood colour etc.	UC, Scion and Industry supporters.
Lack of market information and	Manufacturing trials, and developing	UC and Industry

### Addressing specific risks and barriers to adoption

lack of evidence of actual markets.	and show-casing products and markets, including on-farm processing and use, and high-profile use of durable eucalypt timbers in public places. Trials of peeling and LVL development as a first step. Examples of Australian utilisation/ markets.	supporters.
Perceived high risk of pests and diseases decimating eucalypt forests	Continue with research to match species and genotypes to site, enabling breeding for resistance to pests and diseases; develop integrated pest management regimes; collaborate with Scion on bio-control programmes. Educate growers.	UC, Scion, NZDFI
Concern about possible risks eucalypts plantations may pose to water quality and human health.	Careful planning/siting of plantations. Conduct research and consider how to mitigate Possible inclusion in Forestry NES and regional resource management (RM) plans.	Forestry NZ/MPI and regional councils.
Concern about eucalypt plantations reducing water catchment yield.	Careful planning/siting of plantations. Conduct research and consider how to mitigate. Possible inclusion in Forestry NES and regional RM plans.	Forestry NZ/MPI and regional councils.
Concern about the increased risk of fire in eucalypt forests.	Careful planning/siting of plantations. Possible inclusion in Forestry NES and regional RM plans.	Forestry NZ/MPI and regional councils.

# 1.5 What scale of new planting might be feasible, and where?

Respondents to NZDFI's consultation document have confirmed that there is no shortage of potentially suitable land in regions such as Gisborne District, Hawke's Bay and Wairarapa, and Marlborough.

However, respondents from the Hawke's Bay and Central North Island also report that the buoyant pastoral sector means land prices are well above what is considered a normal economic range for corporate forestry investors (an example given was around \$8,000/ha in the central North Island). Therefore, existing landowners need to be the major planters for a target of 100,000 ha of new forests by 2030 to be achieved.

Most of the farm and forest land in question is privately owned, with owners ranging from individual families to syndicates as well as Māori owners, some regional councils and overseas investors.

General consensus from respondents is that on-farm plantings of eucalypts are likely to be relatively smallscale (5-20 hectares, possibly alongside larger radiata plantings) although some of the larger stations and Māori holdings could make more land available if the economics looked promising. Another potential source of land is cut-over forest land, many thousands of hectares of which, at all scales from small farm woodlots to very large plantations, will be harvested over the next decade and beyond in NZDFI's target regions. This presents an opportunity for planting durable eucalypts rather than replanting radiata pine; mānuka is however, another new contender for cut-over land in some regions.

One respondent suggests that, to supply enough timber for a sustainable regional processing industry, some 200,000m<sup>3</sup> of timber per year will need to be harvested. This equates to between 300-500 hectares

of forest available for harvest every year, depending on the industry's desired log size and hence rotation length. As an example, if grown on a 20-year rotation, this would mean between a total of 6,000-10,000 hectares of durable eucalypts in any one region.

In 2011, Juken NZ commenced planting durable eucalypts and now has the largest planted area in their Gisborne forests with further areas also planted in Wairarapa. Several hundred hectares of smaller plantations have also been established in Marlborough and other regions, and in 2016, Landcorp commenced planting small woodlots and plantations on some of their Hawke's Bay and Central North Island farms

Greater Wellington Regional Council considers that perhaps 100-300 hectares/year might be planted in the early stages; Juken NZ currently re-plant 350-400 hectares of radiata every year, so they could increase their area of durable eucalypts if they have the confidence to do this. It has been suggested that once there are 'runs on the board' in the form of early adopters doing some planting, then others will follow.

The prospect of many small plantations fits with the NZDFI's vision of a mosaic of small and medium-size eucalypt forests as a land-use which compliments existing pastoral farming, horticulture, forestry and mānuka, spread through its target regions. The Wairarapa Farm Forestry Association's hope is for a small eucalypt plantation on every farm, backed by local mobile sawmilling services, providing timber for on-farm use with any surplus available in active local markets.

Successfully scoping how much land, where, and on what scale, will be dependent on regional scale economic modelling of a supply chain based on durable eucalypt processing options and growth models linked to site/species matching within the NZDFI east coast regions. Regional councils can then encourage landowners who have land with potentially high productivity sites through providing incentives to plant durable eucalypts.

# 1.6 Working with landowners

Communicating with landowners, and encouraging them to consider durable eucalypts as a potential landuse, is a major undertaking which needs adequate information and educational resources. Respondents from regional council land management teams have indicated their willingness to take up this challenge. Methods suggested include through use of their own land-owner databases, field events and demonstrations, and promotion via websites and other media. Achieving the 100,000 hectare planting target by 2030 equates to an average of over 8,000 hectares of durable eucalypt planting per year between now and 2030.

Other suggestions from respondents as to how to work with farmers include targeting farmers on land identified as most erosion-prone, working with local opinion leaders, farmer discussion groups, and collaborating with other organisations such as Beef and Lamb NZ, and the NZ Farm Forestry Association to run joint field days.

# 1.7 Establishment of incentives and support

Respondents are generally supportive of financial incentives being made available for planting durable eucalypts. The regional authorities who responded are likely to do what they can to promote eucalypts as an option when landowners are considering existing tree planting funds, e.g. Afforestation Grant Scheme (national), the East Coast Forestry Project (Gisborne/East Coast), and other regional funds aimed primarily at erosion control plantings (e.g. Wairarapa). Funds for planting native trees are also available from various sources.

The current Government is very keen to see more trees in the ground, and further incentives may become available to encourage various types of planting. However, the point is made that often incentives *'are only one election cycle away from being removed at any given time'*, and the economics of growing durable eucalypts ideally need to stack up without subsidies.

The recently launched Crown Forestry Joint Venture opportunity for plantings over 200 hectares is considered a preferable type of subsidy because it will apply for the full crop rotation. Apparently there is a very positive and flexible attitude to JV funding of new plantings (of radiata pine) – for example, with neighbouring farmers able to make a joint application for several blocks of new planting on different farms totalling 200 ha.

In regard to who should be responsible for delivering extension services to promote durable eucalypt planting and to coordinate forest management, it is recognised that many forestry companies (and some regional councils) already provide these services. One respondent suggested that the role of central and local government may be more to facilitate extension, and help with coordinating activities such as harvesting and marketing within certain localities.

The NZDFI's and other stakeholders' role must be to ensure that any central or regional government, forestry company or professional working to encourage new planting is made fully aware of the potential for durable eucalypts, and has good knowledge around site and species choice, and best-practice establishment and early maintenance. This will require further extension efforts, plus some up-skilling of people, including those who have spent their whole career working with radiata pine.

# 2. DEVELOPING THE NZDFI REGIONAL STRATEGY

### 2.1 Establishing a Regional Strategy Working Group

Continued support from key stakeholders is essential to develop and implement a strategic plan which will lead to a significant resource of durable eucalypts being successfully planted in the target regions.

This includes NZDFI establishing a Regional Strategy Working Group. This will comprise various stakeholder representatives who have indicated their willingness to be part of the group. The purpose of this group will be to continue to provide feedback and advice to the development and implementation of NZDFI's regional strategic plan. Terms of Reference for the working group are attached as Appendix 2.

Respondents to the survey, and other stakeholders, have already contributed in many ways, including by providing trial sites, helping with trial management and data collection, and communicating about their own experiences and the potential for durable eucalypts to others. This support has been a key factor in the success of the NZDFI's work to date. Several respondents to the survey are committed to continuing their support through funding and in-kind contributions, including through field work, data analysis, and promotion of durable eucalypts as a land-use and timber resource.

# 2.2 The strategic planning process

The main objective of the NZDFI regional strategy will be to provide recommendations for collaborative industry action and Government support to commence regional-scale planting programmes of durable eucalypts in NZ's east coast regions from Gisborne to Marlborough.

Work commenced in January 2018 on the NZDFI regional strategy under SWP –WP045 with this work plan defining six steps for strategy development. The first three steps are planned for completion by June 2018. These are:

- 1. Consultation paper drafted and circulated; feedback received and collated. Working Group established to guide plan development.
- 2. Feedback reviewed and feasibility analysis proposal developed including an economic model to evaluate a LVL regional value chain. Circulate proposal to Working Group for further feedback.
- 3. Research required to complete feasibility analysis for LVL regional value chain including a preliminary economic model; assessment of capital and infrastructure requirements; and environmental management requirements. Outcome of feasibility analysis reported to working group.

# 2.3 Work Plan – June 2018 onwards

The development of the NZDFI regional strategy will continue with the following steps:

- 4. Prepare report on feasibility analysis and economic evaluation of potential regional value chains with recommendations on optimal size and area for forest establishment. Also annual planting targets to establish a sustainable harvest of durable eucalypt logs able to supply each value chain. Circulate to working group for feedback.
- 5. Review feedback and complete strategy with recommendations for collaborative action to commence regional scale planting programmes. Circulate plan to Working Group.
- 6. Plan and undertake extension programme to promote and implement regional strategy.

Steps 4 and 5 are planned for completion by June 30<sup>th</sup> 2019. Planning of the extension programme under Step 6 will be completed by June 30<sup>th</sup> 2019. It is intended that the extension programme will continue for the following two to three years.

A UC summer scholarship will be offered to the student working on developing the LVL processing regional value chain economic evaluation and modelling.

# 2.4 Partners/collaborators

### • NZDFI Regional Strategy Working Group representation (to be finalised by 30<sup>th</sup> May 2018)

Proseed NZ Ltd Juken NZ Ltd Marlborough District Council Hawke's Bay Regional Council Greater Wellington Regional Council Gisborne District Council Ata Rangi Wines Hawke's Bay Farm Forestry Association Marlborough Research Centre

### • Other interested NZDFI supporters

Marlborough Lines

Landcorp

NZ Farm Forestry Association, local branches (Gisborne, Hawkes Bay, Wairarapa and Marlborough).

Farm foresters, forest managers and other landowners who have planted NZDFI trials in east coast regions.

### Central Government

Forestry NZ/Ministry for Primary Industries

### 2.5 Economic feasibility analysis underway

An economic evaluation of a possible hardwood LVL regional value chain that includes the growing and processing of a durable eucalypt timber species is underway by the University of Canterbury. This is fully described in Appendix 3.

The evaluation includes research and analysis of all the potential growing and harvesting costs so as to estimate a forest gate value for log supply. Also, an analysis of the LVL processing costs and recoveries is planned to assess the potential profitability of producing an internationally accepted product. This is dependent on the outcomes from UC's plan to peel and test veneer from some 14 and 15 year old durable eucalypt trees.

Currently, forest growers have some knowledge of durable eucalypt growing costs as a number of NZDFI landowners started planting trials and woodlots of unimproved durable eucalypts in early 2000s.

There are permanent sample plots (PSPs) in some of these early plantings but the development of growth models to assess potential productivity is limited by a lack of older trials or stands of trees. The exception is a growth model for New Zealand plantation-grown *E. globoidea* that was developed by Scion under a SLMACC project completed in 2016. Scion will be asked to make this model available for NZDFI use. The model could be used to predict low, medium and high estimates for potential growth and productivity of *E. globoidea*. These estimates will be based on data inputs from key trial sites in NZDFI PSP network located within the east coast regions.

The potential value of logs to processors remains unknown. This value can be estimated for hardwood LVL production once the cost of converting logs to product has been analysed and can be modelled. This will include modelling yields by stiffness grade for LVL, using radial stiffness profiles from a durable *Eucalyptus* species, and evaluating log values based on LVL product values.

Using the growth model estimates, an assessment of annual planting targets will be made – these will indicate how much forest needs to be planted to provide a sustainable harvest of durable high stiffness eucalypt logs to a LVL regional value chain.

# **Appendix 1: Responses to consultation document**

Responses to the questionnaire in the consultation document have been collated below. A number of additional comments on the document were received, and these are included following the collated responses.

1. Are you (or is your organisation) interested in actively supporting the NZDFI regional strategic plan
development process and being a member of the working group?

Responder	Comment
Landcorp	I am interested in actively supporting the plan development – but not as a member of the working party.
Greater Wellington	Potentially yes, its probably wise for all the regional councils involved to nominate 1
Regional Council	or 2 representatives for the working group.
Hawkes Bay Regional	Yes and yes
Council	
Wairarapa Farm	Yes – although a small group of volunteers with limited resources
Forestry	
Gisborne District	I will help where I can on a personal capacity and promote Euc.s as an option for
Council	landowners and investors. What do you envisage as involvement in the working group?
Juken NZ Ltd	JNL is interested in supporting the development of a regional strategy. We could
	offer assistance for specific areas within the strategic plan but availability for a
	presence on the working group would depend on the time commitment involved.
Hawkes Bay FFA	Yes
Lake Taupo Forest Trust	No
Marlborough District	Yes, MDC is interested in actively supporting the NZDFI. I would be happy to
Council	contribute to the working group.

# 2. If so, what is your (or your organisation's) main interest? Please rank in importance the potential outcomes that could result from the success of NZDFI's vision?

Responder	Comment
Landcorp	Main interest is having an economic alternative to P.rad. Minor interest in ground durable material for organic farm use.
Greater Wellington Regional Council	Provision of a robust economic model that supports the implementation of small farm woodlots. It is important that the economic modelling covers a range of scenarios and not just large scale afforestation. A funding model that supports the implementation through recognition of regional and national benefits.
Hawkes Bay Regional Council	<ul> <li>HBRC's vision is: "A connected and vibrant region with resilient communities, a prosperous economy, and a clean, healthy environment."</li> <li>Desired outcomes of working with NZDFI:</li> <li>Diversification of Hawkes Bay forests and forestry industries. Forests benefit from greater resilience to pest and disease threats. Forest industries benefit from greater resilience to market fluctuations in radiata prices. Communities benefit from greater value added locally and increased</li> </ul>

	employment opportunities.
	<ul> <li>Reduced use of CCA treated pine in Hawkes Bay vineyards and orchards, thereby reducing issues with disposal and leaching, and improving Hawkes Bay's reputation as a region of sustainably produced premium wines and fruit. Improved sustainability credentials also through production of non-rainforest hardwood.</li> <li>Development of markets and infrastructure required to maximise profits from HBRC's own eucalypt plantations come harvest time</li> <li>Multi-use forests. Incorporating eucalypts in forests to meet multiple objectives (eg food source for bees and native species, timber, climate adaptation, carbon removal, erosion control)</li> <li>Erosion control / sustainable land management. An understanding of the soil holding ability of eucalypt plantations relative to radiata, including the effect of their coppicing ability on erosion control in the vulnerable period postharvest.</li> </ul>
Wairarapa Farm	Farm forestry in the Wairarapa can continue to contribute towards sustainable land
Forestry	management, and provide a diversified source of income to hill-country farmers on summer-dry farms. There are also many small investment block owners in the Wairarapa who are members of the FFA. The Wairarapa FFA has a role in promoting innovative forestry alternatives to our members, and ensuring they have access to good quality information.
Gisborne District	Having alternatives to pine on the hills but also in the markets.
Council	<ol> <li>Coppicing trees that will hold the hills together for those high risk years after pine has been harvested.</li> </ol>
	2. Flowering trees for bees (outside of the manuka season)
	3. Reducing reliance on pine
Juken NZ Ltd	Key priorities for JNL area: 1. Increased strength of engineered wood products; 2. Ability to manufacture desired products from durable species (i.e. ability to effectively compose LVL to meet specification); 3. Site species matching to ensure species are matched to correct sites to reduce growing costs while increasing (usable) yield of product; 4. Confirmation of acceptance of naturally durable products in NZ building standards.
Hawkes Bay FFA	<ol> <li>Development of another viable forest tree species in HB aside from P. radiata</li> <li>Developing a sustainable supply chain for Eucalyptus wood products in HB</li> <li>Utilising some of HB's most dry and impoverished sites with a tree species well suited to those conditions</li> <li>Tapping into the Govt's1 Billion tree initiative</li> </ol>
Lake Taupo Forest Trust	N/A
Marlborough District	Reduction in treated vineyard posts going to landfill, increase in economic
Council	returns from forestry, reduction in erosion caused by forestry, availability of trees suitable to grow in dryland farm woodlots

# 3. What action or contribution could you (or your organisation) take or make towards achieving these outcomes?

Responder	Comment
Landcorp	Happy to provide trial sites & meet the costs of establishment & also share data collected during forest management.
Greater Wellington Regional Council	Consider ongoing funding/in-kind contribution to the development of a regional strategic plan. Liaise with LM clients to establish further woodlots that will provide information and advice for local promotional opportunities.
Hawkes Bay Regional Council	<ul> <li>Ongoing research funding contribution</li> <li>Promotion via field trips to HBRC and other eucalypt plantations</li> <li>Investigate options for HBRC-grown eucalypt timber and posts with local vineyards and other industries. Publicise examples of successful use.</li> <li>Sustainable land use advisors can provide advice on species selection, planting, and benefits.</li> </ul>
Wairarapa Farm Forestry	We can support the initiative by promoting durable eucalypts to our members, by encouraging them to visit demonstration plantings, and by making them aware of the various resources available to guide decisions around whether or not to plant, what to plant, and where to plant.
Gisborne District Council	Promoting alternatives to pine in our day to day contact with landowners and investors. GDC do have a rural newsletter that goes out to all rural address; we could include an article from NZDFI.
Juken NZ Ltd	Technical knowledge on processing and potential markets, cost of manufacture (relate back to log sales price), knowledge of species of interest in a range of sites in our local area. In kind support is the most likely form of participation.
Hawkes Bay FFA	<ol> <li>By planting some of our own land in NZDFI species (already done)</li> <li>By encouraging others to do the same</li> <li>By helping to organise and participating in local workshops to further the aims of NZDFI in HB</li> </ol>
Lake Taupo Forest Trust	Being involved in and supporting planting trials
Marlborough District Council	Provide extension services and advice to landowners, GIS mapping services for Marlborough landowners

# 4. What do you (or your organisation) consider are the risks/barriers/knowledge gaps to long term investment by landowners in planting and managing new eucalypt forests? Rank these in order of priority.

Responder	Comment
Landcorp	First & foremost we need an economic model on which to base a business case for establishment.
Greater Wellington Regional Council	Absence of economic modelling information, regional infrastructure to realise economic returns, funding support for woodlot establishment, evidence of economies of scale at the local level. (list not necessarily prioritised)
Hawkes Bay Regional Council	<ul> <li>Confusing array of species with different timber properties and saleability, site requirements and so on relative to the one species fits all nature of radiata pine</li> </ul>

	<ul> <li>Landowners having had unsatisfactory (or no) past experiences with eucalypts. Uncertainty around eventual returns from timber as opposed to radiata which is seen as a safe investment, particularly under the new Government's afforestation incentives</li> <li>Pests and diseases, especially myrtle rust and EVB currently</li> <li>Internal stresses in the timber</li> <li>Lack of infrastructure and operators with eucalypt experience</li> <li>Uncertain impact of eucalypts on pasture growth or soil health</li> </ul>
Wairarapa Farm Forestry	There is a lot of distrust around eucalypts – problems of form (big old trees), brittle/unstable, lack of markets for the timber, fear that they will be highly inflammable. Whereas growers believe radiata is a relatively risk-free crop.
Gisborne District Council	<ol> <li>Reluctance to plant exotics (sorry but manuka is the buzz here at the moment)</li> </ol>
	2. Initial costs
	<ol> <li>Lack of knowledge and skill (including faith in Eucalypts as there have been problems with form, checking and marketing in the past. Radiata is a safe bet as it is established and has a proven track record).</li> </ol>
Juken NZ Ltd	1. Unknown regime economics (how well will they grow, what will it cost, what sales price will be achievable, will there be a market for large scale?)
	2. Is natural durability of these species going to be accepted for use in NZ or other overseas markets.
	3. Can we process the product effectively
	4. Insect/pathogen effect of crop health.
Hawkes Bay FFA	<ol> <li>Getting the word out there to farmers/land owners in HB that there is potentially a more suitable that traditional landuse. Our local HBFFA branch has not heard much from NZDFI for a while for some reason.</li> <li>Land Values - currently over priced, more geared towards sheep and beef farming etc</li> </ol>
Lake Taupo Forest	1 uncertainty over growth performance
Trust	2 uncertainty whether regional scale will lead to market development
	3 uncertainty over wood properties 4 risks from nests and diseases
Marlborough District	Identification of suitable sites supply of sufficient numbers of seedlings
Council	inappropriate management of new plantations due to lack of labour or knowledge.

#### 5. What action/information/resources would help mitigate these risks/barriers/knowledge gaps?

Responder	Comment
Greater Wellington	Field days, promotion by respected LM staff, evidence of an integrated supply chain.
Regional Council	
Hawkes Bay Regional	<ul> <li>Ongoing genetic improvement and showcasing of growth form and rates in</li> </ul>
Council	field trips
	<ul> <li>Development of markets and infrastructure through:</li> </ul>
	<ul> <li>Small, achievable, well-publicised success stories</li> </ul>
	• High profile use of timber (eg park benches outside Council building,
	interior features in Council buildings)

	<ul> <li>Easily communicable and accessible trusted resources for species selection, planting and maintenance, benefits of eucalypts vs other timber species, water use and needs, and short vs long-term costs and benefits.</li> </ul>
Wairarapa Farm Forestry	Need a convincing economic story with more demonstration sites and more evidence of the products/markets. So need the full story including carbon, opportunity costs, silviculture prescriptions and costs, realistic rotation lengths, and potential on-farm uses for durable hardwoods (and how farmers are going to harvest and process the trees for use on-farm). Also evidence of likely off-farm markets : need to convince landowners that they are not going be left with a crop that can't be harvested because areas planted are too small to meet economies of scale criteria, or changes in harvesting technology, or is only good for firewood, like the current eucs that are being felled in the Wairarapa.
Gisborne District Council	Well-promoted field day; maybe a presence at the A&P show in early October ??
Juken NZ Ltd	Growth models, growing cost calculation (based on real evidence), manufacturing trials, durability testing, building code acceptance.
Hawkes Bay FFA	Proactive advertising - spreading the word on as many fronts as possible
Lake Taupo Forest	Further expansion of trials.
Trust	Continued reporting back on interim performance and key factors in why certain trials / species have or have not performed well.
	Continued breeding developments for promising species.
	Reporting of actual examples of how any harvested products have been used and
	their performance in those uses.
	Developing indicative carbon tables for p-89 plantings.
	More information on bee-keeping implications.
Marlborough District	Field days for farmers would help with finding sites, adding management of these
Council	forests to the curriculum at forestry training courses.

### 6. What scale of planting is needed in any one region to generate a sustainable industry?

Responder	Comment
Greater Wellington Regional Council	At the farm scale uptake is probably limited to 5-20 hectares, larger enterprises (coastal stations etc) could provide up to 100 hectares and would need this scale for economic reasons. Regionally GWRC could expect in order of 100 – 300 hectares annually although it would only emerge if 'runs on the board' were evident from an early adopter.
Hawkes Bay Regional Council	Not sure on these details, Bruce Manley's work may be able to generate an answer.
Wairarapa Farm Forestry	We would like to see a small durable euc plantation on every farm, leading to a service infrastructure of forestry contractors, mobile sawmillers etc, all with skills in working with durable eucs.
Gisborne District Council	Good question; I don't know the answer. We have a very active port here and two sawmills (incl. Juken). If markets can be established there would be no problem exporting.
Juken NZ Ltd	Growth models, growing cost calculation (based on real evidence), manufacturing trials, durability testing, building code acceptance.
Hawkes Bay FFA	10,000 ha
Lake Taupo Forest	sufficient to harvest around 200,000 m3/year

Trust	
Marlborough District	Don't know
Council	

# 7. What would be suitable target locations for new plantings, and what area of new plantations and woodlots (in total, and on individual properties) do you think could be planted annually?

Responder	Comment
Landcorp	don't know – target locations would be identified via an economic model process
Greater Wellington Regional Council	At the farm scale uptake is probably limited to 5-20 hectares, larger enterprises (coastal stations etc) could provide up to 100 hectares and would need this scale for economic reasons. Regionally GWRC could expect in order of 100 – 300 hectares annually although it would only emerge if 'runs on the board' were evident from an early adopter.
Hawkes Bay Regional Council	Hard to give a figure and this would depend on site characteristics. Due to the barriers described in 4. Previously, radiata pine will be the timber species of choice for most landowners. There will no doubt be some growers willing to plant larger areas in eucalypts, however I imagine eucalypts will largely be planted in smaller blocks alongside larger radiata plantations, and in sites that may not be so suitable for radiata. Both eucalypt and radiata suitability may be determined by slope, soil, climate, water availability, access to logging infrastructure, and landowner preference.
Wairarapa Farm Forestry	Any marginal land in the eastern Wairarapa could be suitable: the main limiting factor could be exposure, as a lot of more marginal sites could be quite exposed.
Gisborne District Council	There is currently government subsidy on class V1e and above land (erodible land) across the Gisborne District. Applications are open for another 2 years and claims must be received by 2028. <u>mpi.govt.nz/funding-and-programmes/forestry/erosion-control-funding-programme/</u>
Juken NZ Ltd	There is certainly area available in the Wairarapa for planting eucalypts (or any other species). The area has a reasonable coverage of a variety of species and appears to have reasonable growth when tended correctly. Annual planting will depend on seedstock availability as much as anything. We currently reestablish 350-400ha of P.rad each year and with the timing of establishment different between the two species there is no reason why the same area could not be planted in Eucs – albeit this is extremely unlikely. The key point is the limitation around land and seedstock availability.
Hawkes Bay FFA	All coastal Hawke's Bay, Central HB
Lake Taupo Forest Trust	Most forestry around here (CNI) is corporate - you are already talking with these owners. Other contacts I guess through NZ Farm Forestry
Marlborough District Council	There are large areas in the Flaxborne, Awatere, Waihopai that would be suitable. I wonder if a coppicing species could be developed for wetter sites such as the Sounds?

#### 8. Is there land available in the target locations you have identified suitable for growing eucalypts?

Responder	Comment
Landcorp	Yes
Hawkes Bay Regional	Yes. As above, I think it will be more a case of where landowners are willing/able to

Council	plant them.
Wairarapa Farm Forestry	There is no shortage of suitable land in the eastern Wairarapa, including many thousands of hectares of cut-over sites which are all going back into pine at the moment. Also there is competition from manuka. The difficulty might be persuading landowners to plant up anything other than their very worst – steepest and least accessible- land. More demonstration plantings in different locations and on different site-types could provide some encouragement to farmers.
Gisborne District Council	Yes; particularly north of Gisborne where erosion is worse. Ngati Porou Whanui Forests and others are looking to make the most of the "billion tree" initiative. Most landowners don't have the knowledge, capital or skills but want more from their land. Trouble is, there seems to be a building resistance to exotics, particularly with the high prices paid for manuka honey. A eucalypt that produces flowers with good honey making properties outside of the manuka flowering could be acceptable.
Juken NZ Ltd	Suitable land is available – economics of regimes need to be analysed to assess if land values are acceptable for purchase.
Hawkes Bay FFA	There is a real shortage of suitable forestry land for sale in HB at the present. I have clients wanting to invest in forestry and I am busy looking on their behalf. We need to motivate landowners to plant trees for themselves and for their own benefit.
Lake Taupo Forest Trust	Certainly enough for trial-type areas. I think the big expansion opportunity is on farmland with its ability to claim carbon as p-89 forest. Our investigations in to the billion tree program indicated that only people who already own farm-land can probably make it work, as the price to buy farmland (\$8k +/ha in CNI) makes forestry a challenging prospect (even with carbon income).
Marlborough District Council	Yes. Mostly private land but with substantial funding available for afforestation now this shouldn't be an impediment. A key point will be appropriate design of the plantings to prevent future erosion problems at harvest

# 9. Who are the owners of the land with sites in the target locations suitable for planting new eucalypt forests? Do you have access to a database with their contact details?

Responder	Comment
Landcorp	only have access to Landcorp data regarding prospective sites
Greater Wellington	Private landowners largely, limited opportunity for iwi, although Treaty settlements
Regional Council	for the two local iwi may provide opportunity within the Ngaumu Forest estate.
Hawkes Bay Regional	Varied- some are free-hold land and others are Māori land. We have access to
Council	spatial layers and locations of forested areas as well as erosion prone areas but not
	wide-scale contact details easily accessible at present.
Wairarapa Farm	Land is mainly privately owned and farmed, mostly beef and sheep farmers. The
Forestry	Wairarapa FFA doesn't have access to a database of non-members but the
	NZFFA/NZFOA has a database of over 13,000 small forest owners.
Gisborne District	As 8. above. We cannot give out their details sorry but we can pass on yours if you
Council	wish e.g. in the newsletter.
Juken NZ Ltd	No database available. Local contacts that may be willing to sell land.
Hawkes Bay FFA	I don't but possible the FFA HB branch does, possibly also the HBRC.

Lake Taupo Forest	General freehold land owned by farmers, a few Landcorp farms, we don't have any
Trust	real insights into their contacts
Marlborough District	Mostly private landowners but Council also has land that may be suitable.
Council	Winery wastewater disposal sites may be appropriate also.

# 10. What are the best ways to contact landowners in target locations and inform them about the opportunity to successfully establish and manage durable eucalypts?

Responder	Comment
Hawkes Bay Regional	Field trips, advertisements in the Farm Forestry Magazine, HB Today Farming
Council	Feature, existing farming discussion groups, community groups, and rural delivery mail outs.
Wairarapa Farm	Work alongside agencies already regularly in touch with farmers, such as the
Forestry	regional council and Beef and Lamb NZ. It will be a long, slow process.
Gishorne District	Public meetings and our newsletter
Council	
Juken NZ Ltd	Through Farm Forestry Association
Hawkes Bay FFA	HBFFA, HBRC, Beef & Lamb NZ?
Lake Taupo Forest	NZFFA networks, advertise with links in Friday off-cuts?
Trust	
Marlborough District	Field days, Council extension officers would be good (if we had some!)
Council	

# 11. Can you (or your organisation) assist with contacting and informing landowners? If so, how could you assist?

Responder	Comment
Landcorp	No
Greater Wellington	Databases exist through the regional erosion control programmes. Key landowners
Regional Council	could be identified for initial discussions.
Hawkes Bay Regional	Yes. Advertise on HBRC website and in HBRC sections of local papers. Flag with
Council	landowners we're already liaising with. We would be providing information and showing examples in our own and others' forests, and leaving landowners to make
	their own choices, rather than promoting eucalypts over any other species. In the
	future, members of our catchment management team may target landowners based
Wairarapa Farm	Wairarapa FFA has a good network of farmers, foresters and others. We can contact
Forestry	demonstration /information events. It needs to be a joint effort – e.g. with the
	regional council, Beef and Lamb NZ etc.
Gisborne District	Newsletter
Council	
Juken NZ Ltd	Not in any great capacity
Hawkes Bay FFA	We should continue to use the above organisations to contact landowners
Lake Taupo Forest	We don't really have any inside running on this

Trust	
Marlborough District	Yes, we could locate landowners details, help organise field days, help to map
Council	which areas would be the best planting sites.

# 12. Do you (or your organisation) support central and/or regional government offering direct financial incentives (including low interest loans, grants or joint venture capital) to landowners to plant durable eucalypts within the target locations identified for each region? If so, what incentives will be most effective?

Responder	Comment
Landcorp	yes we would take advantage of any scheme as long as the financial benefits were positive
Greater Wellington Regional Council	Yes, a range of options are available through regional and central government particularly AGS and Hill Country Erosion Fund currently. There is a great opportunity now to work alongside MPI to deliver on the 1 billion trees.
Hawkes Bay Regional Council	Any incentivisation of eucalypts would also need to consider the merits of other species. HBRC will likely be offering financial incentives to planting trees in many areas of our landscape as well as support via our catchment grant teams to make this happen. Grants and joint ventures would be the options we would be most likely using.
Wairarapa Farm Forestry	Yes, any and all initiatives are good. We have a mixture of incentives available in the Wairarapa – WRECI, the AGS, and new MPI joint ventures. Farmers can select the one that suits them best. Hill-country farmers are unlikely to take land out of livestock production and plant trees without incentives.
Gisborne District Council	Yes. Lack of knowledge, skill and initial funding seems to be main obstacles for those that wish to go ahead. The ECFP grant pays \$1500/ha with 50% upfront.
Juken NZ Ltd	Economics of growing these species needs to stand on its own rather than rely on subsidies/grants etc as these initiatives are one election cycle away from being removed at any given time. Joint ventures or low interest loans would be the most suitable option if incentives were to be offered.
Hawkes Bay FFA	I think that the AGS scheme was very good and understand that this may have been replicated in the new government initiative
Lake Taupo Forest Trust	Yes (Central Govt only), making sure landowners are aware of the durable euc opportunity as part of the billion tree and other forestry grant schemes available. Think it likely you will get more buy-in by persuading govt to be aware of your program and take it seriously as part of the existing options rather than seeking a separate incentive deal for your programme.
Marlborough District Council	Yes absolutely, Afforestation Grant Scheme seems appropriate, If MDC gets Hill Country Erosion Fund funding, we would advocate dryland eucalypts as a viable erosion control/woodlot option for the east coast.

13. Do you (or your organisation) support central and/or regional government developing public/private extension services that promote the planting of durable eucalypts; provide woodlot/plantation planning and services including coordination and supervision of forest establishment?

Responder	Comment
Landcorp	Yes
Greater Wellington Regional Council	Probably a central government function strongly supported by resourced up regional programmes
Hawkes Bay Regional Council	As above, HBRC would not necessarily like to promote one species over another but rather to provide information and leave landowners to make their decisions. Not sure there is a need for central and local governments to become involved in planning and supervising, when there are already a lot of forestry management companies that provide those services. Rather we can act as a connector between forestry contractors and landowners. With the large scale afforestation about to proceed and the increasing costs of harvest, especially transporting machines to the relatively smaller sites on farm forest blocks, it makes sense for coordination of sites on different properties where possible to save money further down the track. We may be able to support this coordination at catchment scales.
Wairarapa Farm Forestry	GWRC are already active in this area, especially related to planting trees for erosion control and protecting water quality, and have good access to landowners.
Gisborne District Council	I support this but don't know how this would work. The GDC district has a low population base with very high infrastructure costs. GDC is currently in debt so looking to cut nonessential spending rather than investing/promoting new things.
Juken NZ Ltd	GWRC already offer land management advice and can supervise these operations in the local area for small farm woodlots etc.
Hawkes Bay FFA	Yes!
Lake Taupo Forest	I support central govt providing such extension services, but think they should be
Trust	used to promote all forestry, not just durable eucalypts. However they should be
	aware of the durable eucalypt option so they can put it into the mix and promote it where suitable and where there is interest.
Marlborough District	Yes, absolutely. With sufficient funding, Council would be interested in providing
Council	the extension services similar to those provided by other regional councils.

#### 14. Do you have any further feedback?

Responder	Comment
Hawkes Bay Regional Council	Durable eucalypts have a lot of potential for use in small farm woodlots and amenity plantings, to supply posts and other timber for on-farm use via portable sawmills and without requiring treatment.
Gisborne District Council	I whole heartedly support this initiative. It will take time to build trust in Eucalypts; you have started this with your trials which is great. There is a Canterbury University group heading to Wisharts on Thursday this week.

### Additional responses/comments

### 1. Prof John Walker

The key ministers are gung-ho on regional opportunities, native plantings (which NZDFI is wellplaced to help and complement), and environmental sustainable stuff... This is a battle for peoples' attention and imagination so the story must be direct and succinct...

You have to emphasize the superior benefits of eucs vs pine without being explicitly negative on pine. You have to emphasize that this is a unique story with enormous diverse potential that has never been successfully implemented anywhere else.

- 1 **REALLY IMPORTANT**. Emphasize the complementary benefits of our eucalypts <u>alongside</u> Manuka. All govt partners want <u>native</u> plantings so NZDFI must position itself alongside Manuka – explicitly state NZDFI can add value to Manuka plantings, e.g. by providing "offseason" cultivars (so Manuka honey is not contaminated?), yet producing additional, distinct, high-value honeys. <u>This strategy makes native plantings more viable</u> (this is the point you must make time and again). Emphasize that you have identified species/families/individuals that flower in Manuka's "off-season". Also, any benefits (shelter?) in getting Manuka established?
- 2 Emphasise the butt/lower logs have disproportionately more value (5-20x more valuable than sapwood). NZDFI is selecting individuals with 2x as much heartwood that in turn has 2x more coloured extractives (compared to the original/base population). This justifies the claim that we will match the finest tropical hardwoods. You need Clemens' photos of discs with little and with lots of heartwood; also bottles of extractives with little or lots of colour. Or something like the photos below. Catch the reader's imagination. [Sandalwood is being plantation-grown on a 15-yr rotation in Australia. In NZ, long-term, it may be more sustainable to extract smaller, high-value logs more frequently from erosion-prone lands.]
- 3 **Focus on short stubby trees** more stable and less prone to stem breakage in a cyclone that have the same biomass as traditional, tall, columnar (less-tapered) trees.
- 4 Coppice retains the root system (fine roots in pine are gone quickly while decay weakens larger roots within 1-3 years which is why pine is less appropriate on steeper lands). Vigorous coppice growth in eucalypts appears within 2-4 weeks of felling and retains the original root system. Even better, NZDFI eucs are amenable to coppice and standard regimes or successional logging.
- 5 Clearly distinguish between non-durable stiff LVL and elite durable heartwood products.
- 6 You are missing the back-story of the huge success in gathering seed of your key species across their full geographic range in Oz.
   That you have some 200,000 seedlings in single tree plots and that you know the GPS location of every individual seedling's parent tree in Oz giving you enormous genetic diversity that can be structurally maintained. Also, that your breeding populations and trials in NZ are far more comprehensive than is available anywhere else including Oz.
   Your selected species were selected because they thrive on marginal, dry-lands that have few alternative uses.

### 2. Marlborough District Council

I am writing to confirm Marlborough District Council support for the development of the New Zealand Dryland Forests Initiative (NZDFI) regional strategy.

This includes being prepared to endorse an application to the Provincial Growth Fund (PGF) to request central government support to roll out this multi-regional opportunity.

The establishment of extensive dryland eucalypt forests in suitable locations in Marlborough and in wider east coast regions offers significant economic and environmental benefits to New Zealand.

These benefits match with the wider goals of the PGF.

Council has supported the NZDFI since its inception and currently hosts one of the trial sites used to establish the scientific merit of the plant material. The results from this research have identified a number of positive outcomes from the wider planting of these species in our region.

These trees offer a valuable alternative to *Pinus radiata* providing a hardwood resource suitable for high-value laminated veneer products, ground-durable posts, and a source of hardwood timber for multiple other uses. Current import values of such products are more than double that of *P. radiata*. Use of dryland eucalypts will provide a welcome diversification for Marlborough's farmers and foresters providing both alternative timber and sites to help spread risk and improve returns.

Environmental outcomes can be improved if more dryland eucalyptus forests are planted. These species offer alternatives that can grow successfully in dry east coast regions providing a number of benefits including: rapid carbon sequestration, erosion control on very dry sites and a coppicing habit enabling more rapid regrowth (enhancing carbon capture and reducing erosion risk further). Furthermore, the increased availability of ground-durable timber will ease a major environmental problem for Council, namely the annual disposal of hundreds of thousands of broken treated vineyard posts.

Currently, Council is willing to offer support to NZDFI by helping to locate planting sites, aiding promotion of the planting of eucalypts and developing extension services to help landowners successfully establish plantings. Council will also provide a representative on the NZDFI's working group.

MDC believes that this bid would meet the objectives of the PGF by providing opportunities in both the economic and environmental domains.

Yours sincerely

Mark Wheeler

Chief Executive, Marlborough District Council

### 3. Geoff Hoare, Marlborough Lines Company

Marlborough Lines is meantime willing to continue the small scale sponsorship which currently contributes to the SWP partnership and NZDFI.

The Tapp's Road eucalypt forest at Quail Stream represents an investment of approximately \$0.5m to date and is aimed at providing a resource which might (depending on resulting quality) provide cross arm timber in the future. Growth after 6.5 years continues to be good and if you zoom in on either of the attached two photos you can get some idea of the present growth level.

Quail Stream is really a production trial using what we thought were the best seedlings at the time. I don't believe that Marlborough Lines is likely to put more investment into eucalypts in the short term.

That said, I note in the strategic plan that NZDFI intend to be able to supply genetically superior plants by 2020. That is a significant step forward and one which changes the outlook as far as potential timber quality is concerned. I think it also possibly opens doors for you in terms of convincing other electricity networks to look at eucalypt hardwood plantations.

The thought occurs to me also that lobbying the new Minister of Transport (don't know who it is) and Tranzrail to convince them to plant all of their surplus margins in eucs for sleepers would be a no brainer as part of the billion tree campaign. I doubt that sleepers require the same quality timber.

### 4. Hilton Dickens, Wairarapa FFA

Much food for thought. Caution must be exercised before devoting such a large area to one species.

Eucalypts are much more site sensitive than our pinus radiata. Wairarapa through to Wellington in particular has a high wind flow which does not suit eucalypts, with toppling and windthrow common. "Omarapiti" with a range of ground durable eucs is a good example of this.

If large blocks of eucalypts were established they could in the future pose a considerable fire risk, far and away more difficult to fight than a radiata forest fire.

Myrtle rust, site selection, wind, are all problems that could be dealt with. Do we have existing plantations to demonstrate to investors that eucalypts can be profitable from Gisborne to Nelson. At this time you can give it away for firewood, or mill the logs and dry the timber for two years for a sale.

### 5. Gisborne Farm Forestry Association Committee

We discussed your paper at length at our recent branch AGM and decided that a meeting with GDC and MPI would be productive.

We do not have a large number of members who would be in a position to plant a significant area of eucalypts; I would suggest 50 ha would be a very optimistic figure over the next 10 years from our current membership.

Try as we might, the farm advisors in this region have never been supportive of tree growing as a viable alternative to livestock even though harvest returns from plantations have been showing returns on certain classes of hill country that would out strip livestock on that class of country.

Livestock prices are at an all-time high and farmers are not looking for alternative land uses at the moment. A significant drop in prices as has been happening with strong wool could alter this attitude.

Land available in this East Coast district for planting is largely in private ownership or held by various Tribal Authorities. Much of the forested land is owned or leased by off shore companies. JNL seem to retrenching rather than expanding but their focus seem to be in high value pine for processing.

There may be a small number of private forest owners who could be interested in re-planting in some species other than pines. The returns from some of the remote forestry blocks will be adversely affected by high transport costs and some of these owners may be looking for a more valuable species to replant.

A stable long term market for carbon credits might help but this will depend on Wellington sorting out some of the bugs in the present system.

#### 6. Hakai Tane

While there are several Eucalypt communities that will be of considerable benefit to NZ~ particularly in replacing treated timbers ~ there are considerable risks and hazards involved with some durable Eucalypts ~ particularly when established as plantations. For this reason Eucalypts grown for timber in forestry regions of Australia are predominantly grown as self-regenerating forest communities within their natural ecosystems with a diverse range of companion genotypes. This helps alleviate but does not eliminate serious risks and hazards.

1. The red gum group of Eucalypts are proven hosts of the pathogenic virus *Cryptococcus neoformans gattii* ~ which infects healthy people with a viral influenza and kills less healthy folk with viral meningitis ~ World wide research has confirmed that in every region of the world where red gums are planted these pathogenic health hazards are considerable. The leading Australian researcher on these red gum health hazards, from the Women and Childrens Hospital Adelaide coordinated world wide research and published several papers in the UK Lancet Journal publicising these hazards in the 1990's. I have many of these papers and his press releases.

2. CSIRO researchers in the 1990's published research on the ecotoxicity of various Eucalypts genotypes which revealed they contain very high levels of lignins tannins and polyphenols capable of killing all in-stream biota during periods of low flows ~ this happens periodically in the Murray-Darling Basin rivers and streams with disastrous ecological consequences.

3. The late Prof Lindsay Pryor ~ one of Australia's leading forestry academics and the pioneer of Eucalypt taxonomy ~ confirmed in discussions with me in the 1990's, that Eucalpyts are only safe in high rainfall regions where their toxicity is reduced to safe levels by dilution and leaching ~ in low rainfall regions (under 1000 mm/annum) their ecotoxicity accumulates to dangerous levels in their litter. He advised Farm Forestry groups in the Canberra region with low rainfall, to only plant the Box Group of Eucalypts to prevent ecotoxicity hazards occurring on their farms and in their waterways.

4. You are no doubt aware of the pyrophytic nature of Ecalypts ~ they are capable of generating fire storms of a kind never witnessed in NZ. I have survived two fire storms on the south Coast of NSW and audited the Sydney Fire Storm of the mid 1990's ~ these mega hazards should not be imported to NZ. Eucalyptus plantations are likely to generate these mega hazards. Prof Stephen Pyne ~ a world authority on fire ecology documented the fire history of Australia in **Burning Bush** (Henry Holt Books 1991) It is mandatory reading for anyone wanting to know the ecological dangers of Eucalypt forest communities.

5. The honey from many Eucalpts is so unpleasant it cannot be sold ~ it is used mainly in manufacturing ~ or as bee feed. Planting these Eucalypt plantations on the East Coast has a high probability of damaging if not destroying the manuka honey industry through contamination. As a researcher of beefarming in ANZ and China, I am aware of the many benefits and dangers of Eucalyptus floras.

Please note I am not a Biological Nativist. I welcome all appropriate floras where they are ecologically and economically safe in Oceanic environs.

I have studied Eucalypts in the NZ environs and found the same risks and hazards mentioned above. For these reasons, I recommend the deployment of more ecologically sustainable methods of self-regenerating forests of mixed Eucalypt communities of non-toxic genotypes ~ and only in high rainfall regions. These forest ecosystems offer higher economic and ecological values ~ ensuring a more diverse range of sustainable livelihoods ~ as shown by leading Farm Foresters in the Canberra region. I am able to introduce you to their

leading exponents.

Please note over 50 years professional experience in watershed ecology and ecological planning in Asia-Oceana and North America has demonstrated unequivocally:

PLANTATION FORESTRY IS MAINLY FOR THOSE WHO ONLY UNDERSTAND INDUSTRIAL METHODS OF SILVICULTURE

GLOBAL EXPERIENCE HAS PROVEN SUSTAINABLE EUCALYPT FORESTRY INVOLVES SELF-REGENERATING FORESTRY ECOSYSTEMS.

# **Appendix 2: Working Group Terms of Reference**

The role and activities of the Working Group members are:

- To support the development and implementation of the NZDFI regional strategy.
- To participate in the strategic planning process by providing feedback and input via e mail; telephone discussions and one to one meetings with the Project Manager.
- To provide input and feedback on the development of NZDFI's educational resources.
- To promote the option of planting durable eucalypts in their region through planning and undertaking extension activities in collaboration with NZDFI including presentations, workshops and field days.

The Working Group membership has yet to be finalised (May 2018), but will include representatives from the full spectrum of relevant organisations including regional council land management teams, landowners, small forest growers and the research sector.

# Appendix 3: Feasibility analysis including developing an economic model to evaluate a LVL regional value chain

NZDFI has proposed a regional value chain based on short rotation forests that from 2035 commence production of the supply of small peeler logs to produce super stiff LVL.

This is a unique opportunity to add value to New Zealand's current forest industry by increasing the value of NZ's forest exports through the manufacture of speciality wood products.

NZDFI's research of durable eucalypts has established that on optimal sites, some species can achieve very fast growth, greater than that of radiata pine, while producing much stiffer wood. Additionally the heartwood is naturally durable.

Currently, existing LVL peeling technology used in New Zealand is unable to effectively peel small diameter (less than 200mm) eucalypt logs. The lathes available at LVL mills in NZ. are set up for radiata and leave large peeler cores. The exception are lathes used for cutting veneers for plywood manufacture. These can peel shorter logs (1.2m) to smaller diameter (6 cm peeler core) handling logs that are 15 – 80 cm in diameter.

Outside of New Zealand there are spindle-less lathes. These were first developed in Japan in mid-1990's and use a power roller nose bar to hold and peel small hardwood logs (Ozarska). China rapidly adopted this spindle-less lathe technology and developed its own lathes. These are widely used for peeling plantation grown non-durable sub-tropical eucalypt species and leave peeler cores of ~2 cm (Arnold et al. 2013).

More recently the Department of Agriculture and Fisheries / Queensland undertook a research project to peel small diameter logs from several temperate plantation eucalypt species using a spindle-less lathe. This produced high conversion results from log to veneer of 70-80% (McGavin 2016)

Therefore, eucalypts could be well suited to supply wood for structural timber products such as LVL or plywood, achieving different objectives.

- 1. The production of higher value structural products (16 GPa and above) that requires exceptionally stiff veneers could be obtained from some eucalypts in reasonable quantities.
- 2. If considering standard LVL products (8 to 13 GPa), which are currently manufactured from radiata pine, fibre costs could be reduced by utilising trees grown in shorter rotations and achieving higher veneer yields.
- 3. Naturally durable eucalypts have the potential to comply with building regulations without the use of preservatives.

Under the SWP programme, a small 15-year-old pruned *E. bosistoana* stand and 14 year-old pruned *E. quadrangulata* stand have been assessed for felling to provide logs for a peeling trial.

While 90 peeler logs of variable length could be produced, due to the constraint of there being no spindle-less lathes in New Zealand, it had been planned that JNL would peel the logs on their plywood lathe in Gisborne. This is not possible due to sudden mill closure in January. Therefore, other options are being investigated by UC to peel the logs.

If veneer can be produced this can be tested for drying and degrade; gluing into LVL and the LVL samples then available for further testing by UC's wood engineering research team.

A model has been developed to predict peeler log value based on log MOE. Log value will be predicted in the modelling, using veneer outturn by stiffness category and LVL product values.

Another model is under development to estimate the cost of growing *E. bosistoana* or *E.quadrangulata* based on information provided by Merrill and Ring who for 14 years have been the forest managers for plantation management of these species on behalf of Marlborough Regional Forests.

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