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Identifying, measuring and modelling critical elements required of plantation forestry to maintain a social licence for operations and expansion in Gippsland

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Gippsland Centre

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Executive Summary

On 1 January 2024, native timber harvesting in Victorian State Forests ended. To support the industry's transition away from native forest timber and fibre, the Victorian government has been implementing a Forestry Transition program, which includes a focus on establishing new plantation and farm forestry assets on private land. The resource generated from government-supported plantation expansion is intended to contribute to Australia's housing supply shortfall through the provision of new plantation-based timber products necessary to build new homes.

The Victorian Government's Gippsland Plantation Investment Program (GPIP) is intended to support the expansion of the plantation estate in Victoria's Gippsland region over the next ten years. Expanding the area of land under plantations will require the acquisition of suitable land and a change in land use, primarily from agriculture to forestry. To help inform industry strategies to gain social acceptability and retain a social licence to operate (SLO) under new conditions, this project assesses contemporary community perceptions and attitudes towards 1) plantation forestry in Gippsland, and 2) expanding pine plantations in Gippsland. The following research questions guided the study: 1) What are the community attitudes towards existing plantation forests in Gippsland? 2) What are the factors affecting community attitudes to plantation forests in Gippsland? and 3) What are the community attitudes towards an expansion of pine plantations in Gippsland?

Adopting a nested mixed-method approach, focus groups, interviews, and online surveys were used to collect data from the Gippsland community. The study was conducted sequentially, with the focus groups (resulting in qualitative data) preceding and informing the design of an online survey (which provided both qualitative and quantitative data). Thirty (30) participants were involved in the focus groups and interviews, and 155 respondents completed more than 50% of the survey. We identify that attitudes towards plantations vary widely, and are influenced by factors including age, sector of employment, and residence environment (town or rural/regional). Based on the surveyed attitudes towards plantations, we identified five categories of community members, specifically those concerned with 1) Integrated land management, 2) Hazards, 3) Agriculture, 4) Climate Action, and 5) Development and mining. As these groups' attitudes showed significant differences in their sensitivities, they would require specific information and messaging to adequately address their concerns and aspirations concerning SLO.

The research found a high variability in people's views on expanding the area of pine plantation in Gippsland, with different drivers for these views. It is likely that to build social acceptance,

new information and communication strategies will be needed to address a range of distinct audiences.

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Introduction

As populations increase and economies grow, so does the amount of wood required for building (including housing), paper, packaging and many other purposes. Tree plantations offer a potentially sustainable way to supply wood demand, while offering other landscape benefits.

Rhodes and Stephens (2014) suggest that the development of plantation forestry in Australia has followed a pattern of state involvement, which has gradually shifted to more indirect policies for the improved operation of markets and the promotion of ecosystem services such as carbon sequestration. These policies have resulted in sizeable plantation resources and timber processing infrastructure in Australia, supporting approximately 80,000 direct jobs across the entire industry value chain, with an annual economic contribution of ~$24 billion (AFPA, 2021). Australia's plantation estate has been classified as having either a commercial or non-commercial focus. *Commercial plantations* comprise hardwood, or softwood, plantations managed commercially to supply logs for the manufacture of wood and wood fibre products, while *non-commercial plantations* include farm forestry and agroforestry plantations, environmental plantings, plantations within the reserve system, and plantations regarded as non-commercial (ABARES, 2023).

The Victorian state government's decision to end native forest (naturally occurring hardwood forest) harvesting in January 2024, six years early than previously planned, followed severe bushfires and ongoing legal campaigns linked to the protection of biodiversity. The continued need for forest products, balanced with a requirement to protect native forests, has led to proposals to support the growth of plantation forestry in Victoria, Australia.

In Gippsland, Victoria, the plantation forestry industry is a key component of the region's economy. Plantations in the Gippsland region provide a stable timber supply for the construction, paper, and furniture industries. The region's extensive pine plantations cover around 90,000 hectares and are a central investment focus, with major forestry companies working to increase plantation areas to meet growing demand. This expansion is supported by modern forest management practices, which focus on cultural, economic, environmental and social sustainability. As the industry has grown, the processing sector in Gippsland has also developed, with mills and other facilities dedicated to converting the harvested timber into various wood and wood fibre products. Plantation forestry contributes positively to the region, providing economic opportunities and a long-term supply of wood resources. The forestry

industry in the Gippsland region currently supports around 3,400 employees (increasing during harvesting) and comprises around 25% of the plantation estate in Victoria (L. Goodwin, pers. comm.).

The continued need for wood products coupled with the cessation of native forest harvesting in Victoria has influenced various initiatives and policies, from industry and government, geared towards increasing timber supply through plantations, as noted by the former Premier, Daniel Andrews, in a media release dubbed "delivering certainty for timber workers" (Premier, 2023). The Premier cited the need to plan and make provisions to support communities after the cessation of native timber harvesting in Victoria. The Gippsland Plantations Investment Program (GPIP), is part of the Victorian government's commitment to growing more plantations; the government has committed $120 million to plant 16 million trees over the next ten years (DEECA, 2023), with the intention to expand the plantation estate by 14,000 ha. This will provide additional resources to underpin the establishment of a new and innovative wood processing industry to process Gippsland sawlogs for construction. Social licence within Gippsland communities hosting these plantations will be critical to the success and efficiency of the planned expansion. To achieve this, a place-based, deep listening approach is required to understand the values, concerns and opportunities within each potential expansion zone.

This project, therefore, aims to provide an understanding of social acceptance of concerns related to plantations in general, and specifically to pine plantations in the Gippsland landscape, ahead of the GPIP expansion. This may be used to inform industry strategies for building and maintaining social licences for the plantation industry in the region. It is important to note that this work was undertaken in a context where local communities are experiencing other significant transitions in the energy sector, including transmission and renewable infrastructure, closure of coal mines and increased interest in critical mineral mining and high variability in pricing and demand in the agriculture sector, leading to increased uncertainty.

Public perceptions and attitudes to plantations

Large-scale pine plantation expansion can have significant implications for the social licence of the forestry industry, particularly when the long-term benefits of plantation management, harvesting, haulage, and processing activities are not immediately apparent. Whilst Gippsland has an established plantation industry, the area established for plantations has been relatively stable for the last 20 years. The recent government initiative to expand plantations in Gippsland has the potential to unsettle the status quo, particularly at a time when social and economic

uncertainty is high due to significant changes in the power industry, which have already commenced, and ongoing changes in the agriculture sector. There are numerous stakeholders and rightsholders in plantation forestry in Gippsland, including farmers, forestry companies, Traditional Owners, government agencies, NGOs (Landcare, Greening Australia, Trust for Nature), regional forestry groups, agribusiness/consulting forestry professionals, and pulp and fibre processing companies. Stakeholder support is key to gaining and maintaining a social licence for plantation operations, and in a time of plantation expansion, strong engagement and clear communication between the plantation industry and its stakeholders will be essential to the program's success (Dare *et al.* 2008).

Efforts to understand public beliefs and attitudes can assist plantation owners and managers in selecting the most suitable forms of communication (Dare et al., 2011) and provide insights into the impacts of plantations (Williams *et al.*, 2008; Williams and Schirmer, 2012). Much of the previous research demonstrates that public beliefs and attitudes are diverse and contextually dependent, though often dominated by concerns about the negative impacts of plantations (Williams et al., 2003). Some studies have reported positive beliefs concerning plantations, including that plantations provide more significant employment in a region and benefit individual landholders often through sale profits and environmental benefits, such as soil protection (Williams et al., 2003). Beliefs concerning the negative impacts of plantations tend to focus on local population loss and change, the introduction of pests and chemicals and water shortage (Barlow & Cocklin, 2003; Schirmer, 2007; Tonts et al., 2001; K. Williams et al., 2003).

Social perceptions about the impacts of plantations tend to differ across different types of plantations. For example, the effects of pine plantations are often viewed differently from the impacts of eucalypt plantations, but these views are considered likely to change over time (Mercer & Underwood, 2002; Williams et al., 2003; Williams, 2014). Leys and Vanclay (2011) identified a general lack of engagement between commercial forestry companies and communities in addressing environmental and socioeconomic issues, with most community engagement limited to the operational level, leading to a perceived lack of transparency and trust. Table 1 summarises some of the previously identified community perceptions regarding plantations in Australia (Schirmer, 2005).

Table 1: Commonly reported perceptions of the social impacts of plantation.

Positive perceptions	Negative Perceptions
Plantation provides a dignified exit from farming for landowners (e.g. farmers) unable to maintain economic viability, by providing a land user willing to purchase land at a reasonable price	Plantation of agricultural land leads to a decline in rural population through the voluntary or forced removal of previous land users
Plantation can improve local/regional service provision by providing new employment opportunities and spending in local regions	Plantation leads to population decline and this results in the loss of local services (e.g. schools, local shops, and local clubs) in rural regions
Plantation can revitalise declining rural communities by providing new industry and employment opportunities	Plantation leads to loss of local culture and sense of identity because of land use, population and landscape changes.
Plantation provides an increased quantity of employment in a region	Plantation management provides less employment per hectare than other alternative land uses, and employment is located outside local regions
Plantation increases land prices by creating increased demand for agricultural land, creating higher returns for those wanting to sell land	Plantation increases land prices, making it harder for farmers to expand their properties to remain viable
Plantation can increase property value by providing improved environmental outcomes and a valuable crop	Plantation decreases land prices of nearby properties, as there is low demand for land bordering a plantation

Source: Adapted from Schirmer (2005)

Over the past few decades, land use has rapidly changed across various parts of Victoria. These changes have prompted multiple investigations by industry, government and researchers. Studies conducted within the state, and in other parts of the country, have focussed on the nature and level of concern about land use change in south-western Victoria (Petheram et al., 2000; . Williams et al., 2003); wide-ranging concerns about plantations in Tasmania and north eastern Victoria (Schirmer, 2000); and the social impact of plantations in the Shire of Plantagenet, Western Australia (Kelly & Lymon, 2000). The social impacts of plantations have previously been examined in south-western Australia Tonts, Campbell & Black (2001), and in Victoria (Barlow & Cocklin, 2003); and understandings of residents' views on land use change in the Green Triangle and in Central Victoria were reported by (Williams et al., 2008). These studies range from understanding the impacts of land use change related to increased plantation area on the community, to considering the perceptions and social acceptability of such changes held by landowners and the community.

Social licence and acceptance of plantations

The unique characteristics of different stakeholders and rightsholders in the landscape mean that targeted research is required to assess attitudes toward, and perceptions of, land-use change to inform evidence-based management strategies – there is no one-size-fits-all approach to maintaining a social licence in the face of decisions that have the capacity to impact communities in significant ways. Previous research concerning plantation forest expansion in Tasmania identified that demographic characteristics had a greater effect on community support than the location of residence (Williams 2008), with the opposite being found in the Green Triangle/Western Victoria during the expansion of blue gum plantations (Williams *et al.* 2008). These results partially reflect the complex and changing attributes of local community values in a landscape. For example, plantations can be viewed positively by those who place value on a working landscape, whereas plantations are considered a more controversial land use for those who predominately attribute lifestyle and amenity values to the landscape (Anderson *et al.* 2013). Regardless, a strong sense of place is known to enhance the capacity of communities to adapt to changes in the working landscape (Selfa *et al.* 2021) and retaining a sense of place is possible if the identity of the working landscape is carefully managed to this end. Identifying shared place meanings is vital in revealing whether any place meanings are competing among the different stakeholders and rightsholders in the community (Anderson *et al.* 2013). This, together with frequent interactions among the plantation industry and stakeholder community (Pirard *et al.* 2017), can assist in informing the degree to which plantation establishment needs to be integrated within the agricultural landscape (Miller and Buys 2014).

The social acceptability of plantations by communities helps plantation operators to maintain social licences. In forestry, Gunningham, Kagan & Thornton (2004, p. 308) defined social licence as the demands on, and expectations for, a business enterprise that emerge from neighbourhoods, environmental groups, community members, and other elements of the surrounding civil society. Studies of social licence distinguish between two broad ways in which the term is used to define relations between business and culture; the first is a more instrumental use describing social relations in favourable terms, and the second involves a more morally based concern with the relationship between business activities and social expectations (Parsons & Moffat, 2014). There is an apparent interrelationship between social licence and social acceptability. A key strength of social acceptability studies is that they make diversity of perspectives evident. Social acceptability studies can provide a representative picture of public

views on forest policy and management; this serves both to 'make visible' the perspectives of people who may not usually express their views on forestry publicly and to reveal the diversity of opinion across public and stakeholders (Ford & Williams, 2016).

Social acceptance has two quite distinct meanings that are relevant to social licence. The first meaning suggests that social acceptance is a normative concept in resource management and policy (Firey, 1960). Broad acceptance of policies and practices by various groups in society is seen as desirable and associated with stability and durability in decision-making. As with social licence, it is recognised that rather than accept unpopular decisions; citizens can use many methods to influence policy, such as lobbying politicians or attracting media attention to their cause. Factors contributing to socially acceptable policy include well-designed public involvement processes and trust between citizens and forest management agencies (Shindler, 2002). In this policy meaning, social acceptance is similar to the social licence concept. In the second meaning, social acceptance is a psychological concept used in empirical research to investigate broader political social acceptance (Ford & Williams, 2016). Social acceptability in forest management results from a judgemental process by which individuals (1) compare the perceived reality with its known alternatives and (2) decide whether the 'real' condition is superior or sufficiently like the most favourable alternative condition (Brunson, 1996 p.6).

The social licence to operate (SLO) refers to the combination of increasing expectations of industry performance and society's approval of resource development and extraction operations. A social licence to operate is not a singular licence granted by all of society but a range of licences based on prevailing social norms and expectations that apply across society, from local communities to the broader public (Dare et al., 2014). Equally, social licence, whilst earned, can also be lost and therefore requires ongoing review and maintenance. The term social licence has received relatively limited academic attention in the context of forests, which has instead tended to frame its work using social acceptability (Ford and Williams, 2016). In this study, we build from previous work investigating the social acceptance of plantations in Victoria (see Williams, 2008) to inform industry strategies for developing and tracking their social licence to operate. The study provides a novel context for this work, not only geographically (Gippsland) but also temporally – relating to climate literacy and mitigation actions, as well as knowledge dissemination through social media.

Research questions

This project aimed to assess community perceptions and attitudes towards 1) plantation forestry in Gippsland, and 2) expanding pine plantations in Gippsland to evaluate the requirements for gaining SLO and retention. The study was guided by the following research questions:

1. What are the community attitudes towards existing plantation forests in Gippsland?

2. What are the factors affecting community attitudes to plantation forests in Gippsland?

3. What are the community attitudes towards a possible expansion of pine plantation in Gippsland?

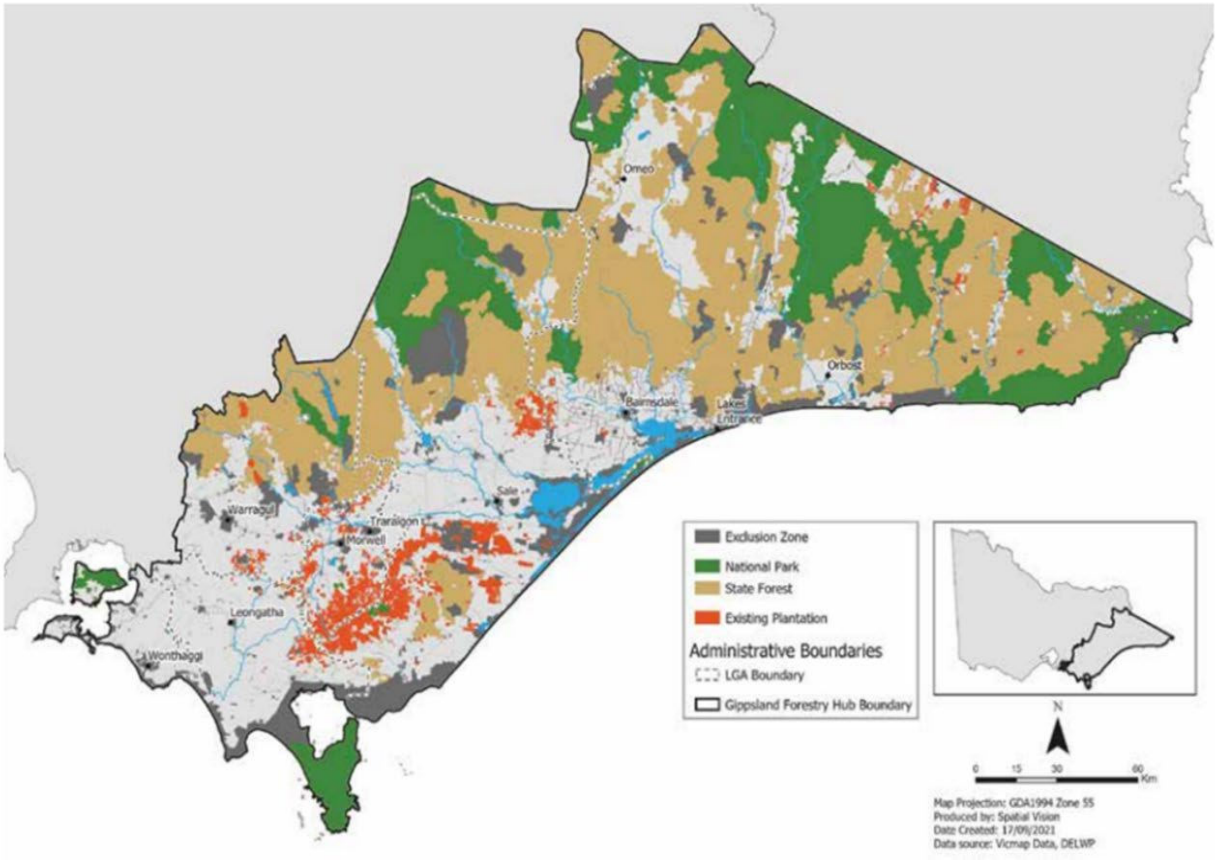
Methods

Study Area

Extending over 40,000 km^2 in the southeastern corner of Victoria, Australia - from the southeastern suburbs of Melbourne to the New South Wales border - and with a population of just over 300,000 people, the Gippsland region embraces a diversity of landscapes from the mountains of the Great Dividing Range and the Strzelecki Ranges to Wilson's Promontory, the 90 Mile Beach and the Gippsland Lakes (ABS, 2021). There are several Traditional Owner groups, including the Gunaikurnai, Boonwurrung, Wurundjeri and Bunurong peoples. Gippsland has been associated with extractive industries since colonisation in the mid-19^{th} century. Timber harvesting, dairy, beef, sheep and horticultural production and coal mining for energy generation are all still major industries for the region. However, many of these are undergoing significant transitions in response to the State Government's climate policy and broader market forces (LVA, 2023).

The Gippsland region already hosts approximately 90,000 hectares of plantations (Gippsland Forestry Hub, 2022). Figure 1 shows the location and extent of current plantation forestry in Gippsland.

Figure 1: Plantation forestry in Gippsland



Source: Gippsland Forestry Hub, 2022

The presence and execution of the GPIP policy in Gippsland identify this as a key area to study community perceptions of plantation expansions and their impact. The timing of the current study allows for an initial empirical study into the community attitudes towards plantations in the Gippsland region, capturing baseline data before the full implementation of GPIP.

Data Collection

The research methodology draws on a framework adapted from Ley and Vanclay (2011) (Table 2). A literature review focused on previously published studies on social acceptance and social licence for plantation forestry, particularly, but not exclusively, in the Australian context. The review identified vital community concerns and aspirations for the expansion of plantations based on comparable studies undertaken over the past 25 years in comparable regions. This review assisted in framing the questions for the focus groups, involving relevant local organisations and landholders, and has resulted in identifying a survey instrument (Williams, 2008), which we adapted for this research.

Table 2: Process flow chart, adapted from Leys and Vanclay (2011)

Process methods	Outcomes
Step 1. *Identify case study territory.* Literature review, Stakeholder mapping	Ascertain suitability of case study region; methodology; ethics approvals; target participants
Step 2. *Setting socio-environmental scene* Focus groups with key NRM and community stakeholder analysis, risk analysis, qualitative data analysis	Understand and map power relations and likely sensitivities; identify and manage risks; gain insights into issues of controversy; seek support for recruitment
Step 3. *Community engagement* Provide information and advertise project, disseminate survey, quantitative analysis	Gauge relative importance of issues, understand levels of awareness of plantation forestry within community, aspirations and concerns
Step 4. *Share learnings* Report on findings for funders and project partners; Plain language report for general community; feedback event	Understanding by partners of community knowledge, awareness and sentiment. Understanding by community that they have been heard.

Focus Groups

Phase 1 of the research involved focus groups, which were undertaken to inform the adaptation of the survey instrument. Focus groups involved people working in key natural resource management agencies across Gippsland and local landholders and were intended to capture place-based contextual aspects to inform any necessary modifications to the survey design.

The initial focus group of 13 participants (Natural Resource Managers' (NRM) Focus Group) was held online for 90 minutes on 22nd March 2024. Participants were regional natural resource managers, forestry practitioners, local council officers, water managers and Traditional Owners from Gippsland. The discussion focused on participants' understanding of the key areas of concern and interest relevant to plantation expansion, such as available land, biodiversity and fire management. The session was recorded and transcribed, with participants' individual responses identified by a code to preserve their anonymity. The session also identified key stakeholder groups to invite to the community focus groups and sought support to disseminate the survey. Several invitees (3) who could not participate in the scheduled focus group agreed to participate in online follow-up interviews. Two organisations represented at the NRM Focus Group, East Gippsland Shire Agricultural Reference Group and Latrobe Landcare Network, surveyed their member base, prior to help inform their responses to the focus group discussion. These responses (28) were shared with the researchers.

Given the large size of Gippsland and the diversity of landscapes and enterprises in the region, we divided the study site into two main regions for the landholder focus groups: Southern Gippsland, including Bass Coast, South Gippsland and Baw Baw Shires and Central Gippsland, encompassing Wellington and East Gippsland Shires. Latrobe City participants were given the

option of which group to attend. The landholder focus groups were held face-to-face on 23rd April in Leongatha (10 participants) and 24th April in Bengworden (4 participants). Each session took place over three hours, and refreshments were provided. Recruitment for the focus groups was through the Landcare Networks of Latrobe, South Gippsland and Bass Coast (Leongatha session) and the Gippsland Agricultural Group (GAgG) (Bengworden).

Each focus group was held at small tables with a scribe, one of the researchers, collecting notes on butcher's paper. Participants were also invited to add their thoughts using post-it notes. The discussions first asked participants to provide a regional snapshot of the key features of their region and to identify recent challenges. The second discussion focused on plantations, including participants' perceptions and understanding of plantations and the challenges and opportunities plantations provide for their region. Finally, participants were asked about the expansion of plantations, including what more information or assurance they would like to have around the GPIP (See Appendix 6).

A hybrid (face-to-face and online) presentation was also provided to the Gippsland Forestry Hub on 23rd April (20 participants) to introduce the project and seek feedback on the approach. Hub members offered to assist in survey testing and dissemination.

These focus groups aimed to better understand the target communities and become aware of any critical sensitivities for consideration in the survey design. The data gathered from the focus groups was analysed using inductive thematic analysis (Braun & Clarke, 2006; Feredey & Muir-Cochrane, 2006). Table 3 below presents a summary of the focus groups and interview participants.

Table 3: Summary of Focus groups and Interview participants

Participants	**Focus group/interview**	**Number of Participants**
Natural resource managers	(Online) focus group	13
South Gippsland landowners	(Face-to-face) focus group	10
Central Gippsland landowners	(Face-to-face) focus group	4
	(Online) interviews	3
Total		30

Survey

With permission from the author, we adapted a previously validated survey instrument (Williams, 2008) to ascertain local communities' attitudes towards plantation forestry and the impacts of plantations on rural land use (William, 2008). The original survey was implemented in Western Australia, Tasmania, and Western Victoria but was not previously implemented in the Gippsland region (Williams 2011, 2013; Williams et al., 2014).

The survey was modified based on the findings from the focus groups, pre-tested and then distributed to community members in the likely expansion areas for plantation forestry in Gippsland. The survey was distributed through trusted networks, such as grower groups, forestry organisations, local councils and Landcare groups via email and social media via Facebook, employing a QR code. The Facebook post was then shared through various interest groups. The survey instrument is presented in Appendix 5.

The data from the survey were analysed to assess baseline knowledge about the value of plantations in the regions of likely expansion and their attitudes towards having more pine plantations in the landscape. We looked for factors that affect landholders' attitudes towards plantation forestry (e.g. impacts on rural land use, concerns around fire, visual amenity, land value). Open-ended responses provided insight to the perceived benefits and disadvantages of an expansion of plantation forestry. It is important to undertake this work to better appreciate communities' levels of understanding and attitudes towards plantation forestry before plantation expansion to help build social acceptance and address and alleviate concerns.

Data analysis

Qualitative data analysis

The data from the focus groups, interviews, and open-ended questions in the survey were collated, de-identified, coded, and analysed using content analysis. The content analysis involved considering frequently expressed concepts, words, and views. Qualtrics software (using Text IQ) was used to analyse the content of the open-ended data responses from the survey and generate the word cloud presented in Figure 3. Each of the qualitative sources has been assigned codes: South Gippsland focus group (SGFG), Central Gippsland focus group (CGFG), Natural Resource Manager (NRM) and Survey (S), respectively. Interviewees' data were grouped into their original focus group classification and not treated as a separate data source.

Quantitative data analysis

Qualtrics software was used to collect and summarize the survey data using the Stat IQ function, and Microsoft Excel generated tables and figures to present descriptive data. Multivariate statistical analysis was conducted using the R Statistical Package.

In the survey, respondents expressed their opinions regarding different land use practices, their personal understandings about plantations, and their views on the social, economic and environmental implications of plantations in their responses to 54 categorical questions. The land use practices included agricultural, animal husbandry, agroforestry, forestry, urban expansion, mining and energy infrastructure, while questions related to personal understandings of plantations included the likely impacts of plantations on their personal lives. Questions related to the social, economic and environmental implications of plantations captured respondents' opinions regarding whether and how plantations might bring social and economic changes and create or decline social and economic opportunities for local people. The respondents were also asked questions regarding how and where they thought plantations should be established.

A useful statistical technique to analyse a large number of exploratory variables is dimensionality reduction, which is generally done using multivariate statistical techniques such as principal component analysis (PCA), factor analysis and cluster analysis. These techniques help categorise responses based on the commonalities of responses and, therefore, help better understand the general properties of responses. Such approaches can summarise differences across many variables into a few dimensions (e.g., factors). These techniques also help avoid multicollinearity – a statistical problem that arises when exploratory variables are highly interrelated. We applied a principal axis factor analysis with oblimin rotation technique, a type of exploratory factor analysis suitable for correlated categorical variables. We developed a parallel analysis scree plot based on the eigen values of potential factors to determine how many factors were to be retained for maximum variability. The plot suggested that five factors had eigen values larger than one, which together explained 60% of the variability in the data. Hence, we calculated the factor loading of each variable for each factor. The highest factor loading score for each variable indicated its association with a factor. We also calculated the factor scores for each factor for further analysis. In addition, we measured the Tucker-Lewis Index of factoring reliability and the root mean square error of the approximation index.

The survey also included demographic questions, asking respondents to select their age group (i.e., young = between 18 and 30, middle = between 31 and 50 and older = more than 50),

residency (i.e., urban or rural), professional history, and associations. One of the main objectives of our analysis is to demonstrate whether and how the demographic characteristics and personal attitudes towards plantations influence the respondents' opinions regarding pine plantations and their expansion in Gippsland. Opinions regarding pine plantations were collected using 18 categorical questions that investigated how respondents felt expanding pine plantations would influence local society, economy and environment. We then developed 18 ordered regression models, taking the opinions on pine plantations as dependent variables and the demographic characteristics and the five factors identified in the factor analysis as independent variables to demonstrate probabilistic relations between the dependent and the independent variables. We also calculated the odds ratio of each variable in each model to show the probabilistic relations and measured the AIC and residual deviance scores of each model to show the reliability of the models.

Limitations and Assumptions

We acknowledge that our research design could not capture the opinions of the whole target community. The results of this research are exploratory and should not be considered representative of all landholders and residents of Gippsland. However, our recruitment plan utilised partner organisations known to the researchers to inform the environmental scan and act as conduits to the community to recruit for the focus groups and disseminate the survey. This provided a level of internal validity and comfort to participants as to the genuine nature of the research. This did lead to a sampling bias, with participants in the Southern Gippsland focus group largely recruited through Landcare networks and focus group participants from Central Gippsland recruited through an agricultural group. The dissemination of the survey was broader and was also facilitated by local council officers and forestry organisations.

The construct validity of the survey instrument was robust, drawing on a published instrument that has been applied in numerous forestry regions across Australia (Williams, 2008). This was adapted using information from each focus group and interview to reflect the temporal and geographic context of this study. The revised instrument was pre-tested with representatives from the Gippsland Forestry Hub.

The broad scope of the research – encompassing all plantations, not just pine, and not identifying specific areas of interest within Gippsland – limits the extent to which we can elicit

specific landholder attitudes towards GPIP. It was noted by the Gippsland Agricultural Group, the grower group that assisted in recruitment for the Central Gippsland focus group, that many members were interested in learning more about the GPIP project, but less interested in a more open-ended Focus Group session and prioritised their farming activities over attending.

The online survey collection technique allowed respondents to answer as many questions as they felt comfortable and interested in, which resulted in some incomplete surveys. We excluded surveys where less than 50% of questions had responses, leading to 155 of the 230 survey responses being included in the analysis. We acknowledge that the length of the survey may have prevented some from completing it.

Another limitation was the accessibility of the online survey. The survey was distributed via email to mailing lists of the organisations included in the NRM focus group and the Gippsland Forestry Hub and made available via QR code through a Federation University Facebook post. We acknowledge that this may have limited access to participants with some level of digital literacy.

We have made the assumption that people who chose to participate in this research have a connection to Gippsland and some interest in land use – or plantation forestry more specifically. Requesting post code of residence and the quality of the survey responses (two-thirds providing informative open-ended responses), enabled us to ascertain that this assumption was valid. Although the dissemination through social media reached a wider audience, almost all respondents indicated they were residents of Gippsland.

Ethics

This research was approved by the Federation University Research Ethics Committee on 2nd February 2024 (Ref: 2023/200).

Results and Discussion

Respondent Profiles

Participants in the study

Data for this study were gathered from participants of the three focus groups and the online survey. Three people who were invited to participate in a focus group but were unable to attend were interviewed (Table 3).

Online survey respondents:

In addition to the 30 people who participated in focus groups and interviews, 230 people completed or partially completed the online survey. Of these 230 returned surveys, 155 had more than 50% of the questions answered. The responses from these 155 surveys were used in the analyses. (Appendix 1)

Age category: Most (68%) of the 155 survey responses included in the analysis were from people over 50 years of age and above, while 22.6% were from people between the ages of 31-50, and 4.5% were between 18-30. The survey results are therefore biased towards the perceptions of the older age group, which is a limitation of the study. Eight (5.2%) respondents did not answer the question about age category.

Residential location: Over half (56.1%) of survey respondents reported that they lived on a property outside a town, while 38.1% lived in a town or regional centre. Nine (5.8%) respondents did not answer the question about where they live.

Work history and association with the forestry and agricultural sectors: Most (64.5%) respondents reported that they had a connection with the agricultural sector (e.g., family members, professional or employment connections, or membership in agricultural interest groups such as Gippsland Agricultural Group (GagG), Victorian Farmers Federation (VFF), and National Farmers Federation (NFF). A lower proportion (44.5%) of respondents reported a connection with the forestry sector.

Most (69%) of the 155 responses were from people who do not/have not worked within the forest industry. Approximately one-quarter (24.5%) of these respondents previously worked or

currently work in the forest industry. Ten people (6.5%) did not answer this question. By contrast, most (65%) of the 155 responses were from people who either currently work or previously worked in the agricultural sector (31% had no current or previous association with the agricultural sector, and seven respondents (4.5%) did not answer this question.

Household income: Almost three-quarters (73.5%) of respondents reported that their overall household income included sources other than their property. Those who derived their entire household income directly from their properties represented 21.3% of the respondents. Eight people (5.2% of respondents) did not answer this question.

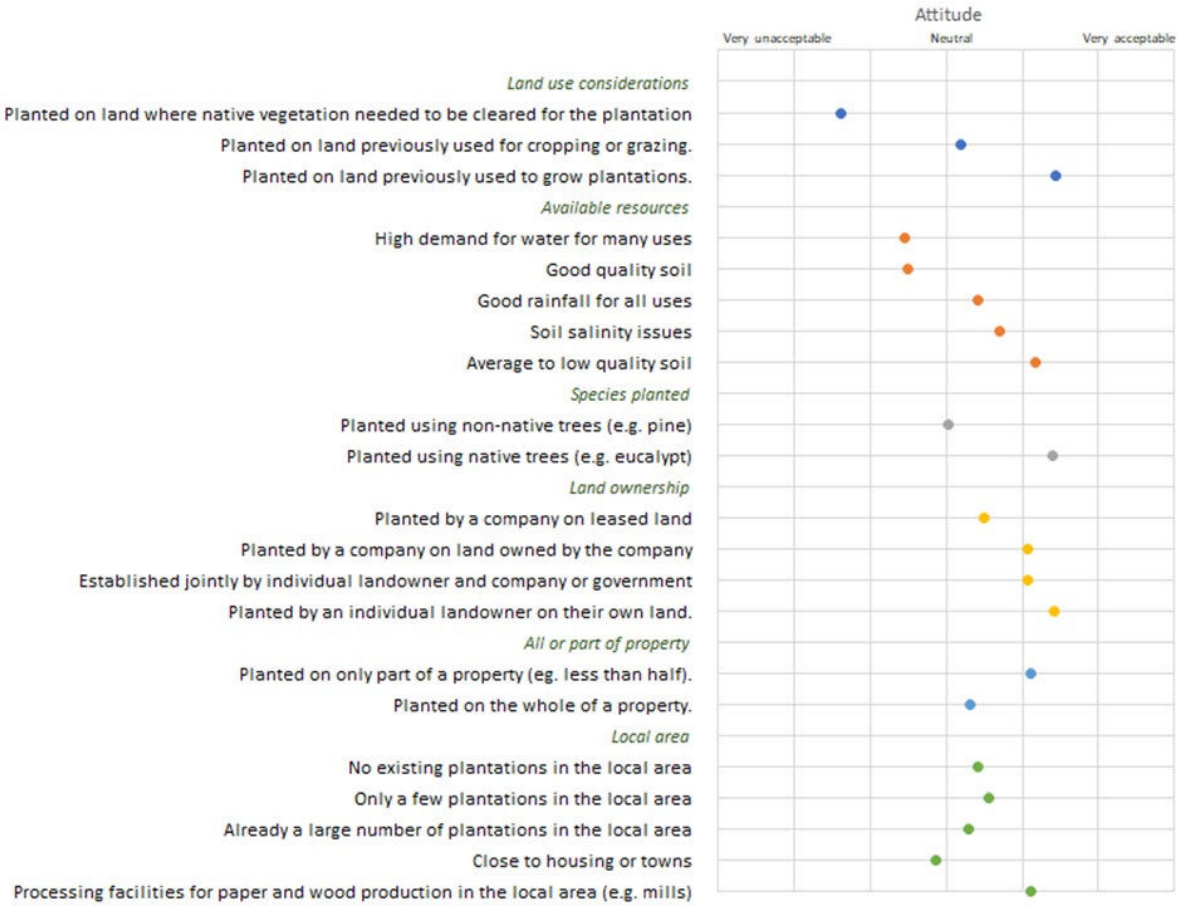
Descriptive Analysis and Discussion

Quantitative (Survey)

Survey respondents were encouraged to consider how their views on the acceptability of commercial plantations were influenced by the landscape context, including alternative land uses, available resources (soil type and quality, water availability), species planted, land ownership, whether the plantation is established on all or part of a property, and which facilities are in the local area (other plantations, housing or towns, processing facilities for wood and paper production). The data from these responses have been summarised in Figure 2 below, and the raw data are presented in Appendix 2.

Figure 2 – Acceptability of plantation establishment based on survey mean scores using a Likert scale from 1 (very unacceptable) to 7 (very acceptable). "Neutral" therefore represents a score of 4 in the survey. For the mean and standard deviation scores, please refer to Appendix 2.

Some situations may be more acceptable than others for commercial plantations. How acceptable do you find commercial plantations where there is/are…



Previous researchers have identified various situations and characteristics contributing to communities' higher or lower acceptability of plantations. Some of these situations may include ownership of plantations, type of land used for plantation, location of plantation, and type of trees used for plantation (Carroll et al., 2011; Schirmer, 2007; Williams, 2014). Some of these factors influence the categories of the findings in Figure 2.

Land use considerations: The average acceptability score (where 1=very unacceptable and 7= very acceptable; 4=neutral) was highest for plantations on land previously used to grow

plantations (5.44) and lowest for plantations on land where native vegetation needed to be cleared for plantation establishment (2.61). These were the highest and lowest acceptability scores recorded in the survey. The acceptability of establishing new plantations on land previously used for cropping or grazing was neutral, with an average acceptability score of 4.19. Williams' (2014) study had similar findings, with plantations planted on land previously used to grow plantations having a higher mean acceptability and those planted on land where there was previously native vegetation had a lower mean acceptability.

Availability of resources: Survey respondents were less accepting of plantations, which might be established in locations with high demand for water for other uses (average acceptability score 3.45) or on land with good quality soils (3.49). Acceptability scores were closer to neutral for plantations established where good rainfall exists to support multiple land uses (4.41) and where there are soil salinity issues (4.7). Plantations established on average to low-quality soils were more acceptable (5.18). Plantations were also considered more acceptable in areas with average to low-quality soils and less acceptable in areas with good soil (Williams, 2014). Carroll et al. (2011) further supports this assertion when they also found that plantations were more acceptable on 'bad land'.

Species planted: Plantations comprised of native species were considered more acceptable (average acceptability score of 5.4) compared to non-native species (4.03). This finding is further supported by Williams (2014) who had similar findings.

Land ownership: Plantations established by a company on leased land were considered less acceptable (4.51) than plantations established by a company on land owned by the company (5.06) or jointly established by an individual landowner and a company or government (5.07). Plantations established by individual landowner on their own land had a high average acceptability score (5.41). This was the second highest ranked item in the survey. This finding is consistent with the studies of Carroll et al. (2011) and Williams (2014), which also asserted that plantations owned and managed by larger companies were less acceptable than plantations owned by individual landholders.

All or part of the property: The average acceptability score for plantations established on only part of a property (5.11) was above those established on the whole property, which received a neutral average acceptability score (4.32).

Local area: Average acceptability scores were fairly neutral for plantations established in an area where there are already a large number of existing plantations (4.29) and where there are

no existing plantations (4.41). Scores were slightly higher for plantations established in an area with some existing plantations (4.56). Plantations established close to housing or towns were less acceptable (average acceptability score of 3.87). Plantations established close to processing facilities for paper and wood production were more acceptable (5.12). This was the third highest ranked item in the survey. These findings were consistent with Williams (2014) in all these situations except in Williams's study, plantations were considered more acceptable in areas with a few plantations than in areas with many or no plantations.

Overall, our findings are generally consistent with previous studies (Barlow & Cocklin, 2003; Carroll et al., 2011; Schirmer, 2005, 2007; Williams, 2008; Williams, 2014).

Qualitative Analysis and Discussion

Focus group respondents, interview participants and respondents to the open-ended survey questions were asked about factors influencing their acceptance of plantation forestry. The survey responses are presented in a word cloud in Figure 3, and the survey responses combined with the focus groups and interview responses are presented in Figure 4.

Figure 3: Word Cloud for considerations influencing plantation acceptability

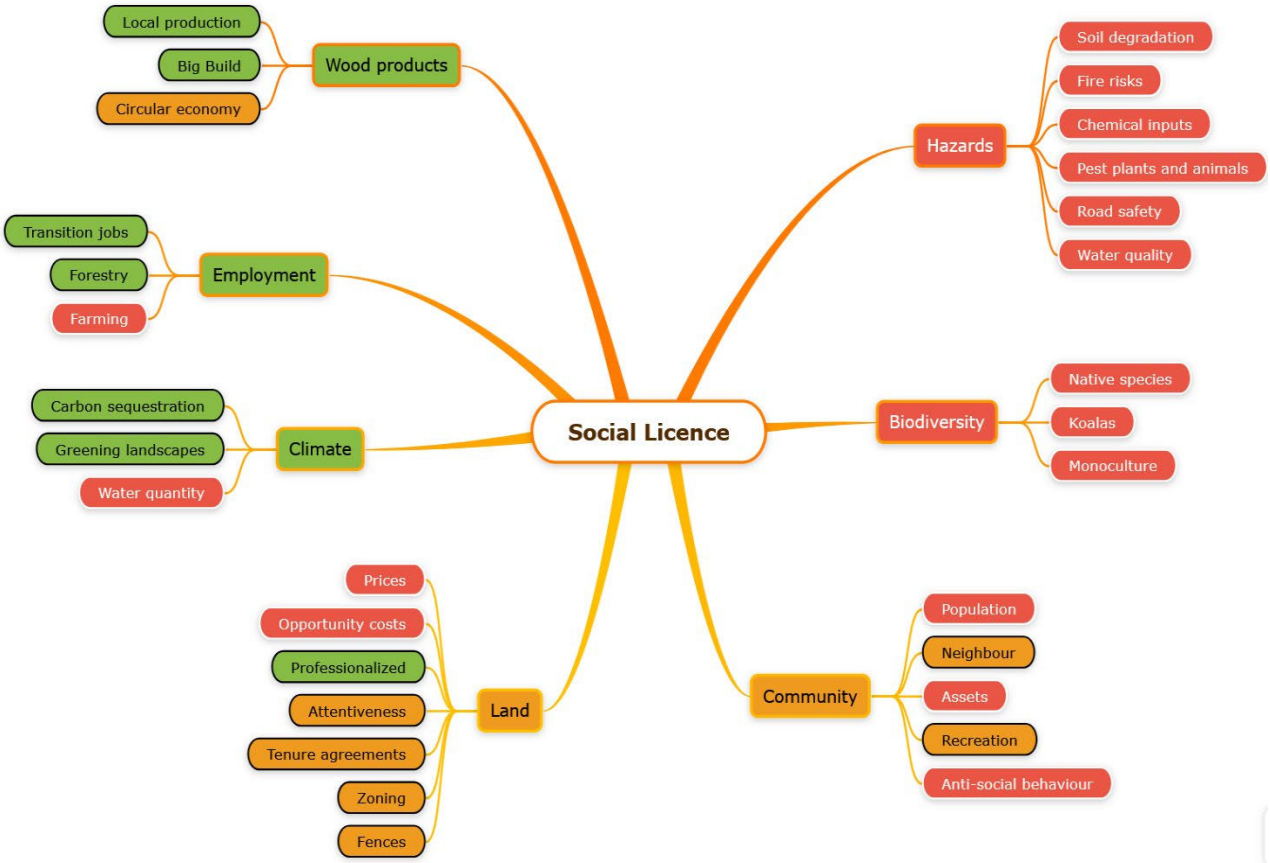
The word cloud in Figure 3 presents words and factors that respondents frequently indicated as influencing their views on plantations from the survey (Q6). From the cloud, words that

were frequently mentioned were “native forestry”, “biodiversity”, “land”, “timber” and “environment”. The following words were indicated but not as frequently as the words indicated earlier “koala”, “weeds”, “carbon”, and “habitat”. Words like “bushfire”, “monoculture”, “Strzelecki”, “wildlife”, and “destroy” were also mentioned. Figure 4 digs deeper into these qualitative survey responses and, combined with the qualitative data collected through the focus group and interview discussions, presents the main areas of social acceptance affecting the social licence of plantation operations in the Gippsland landscape. In Figure 4, colours are used to present the sentiments of respondents on various factors influencing social licence requirements. Red was used to present negative sentiments, Green represented positive sentiments, and orange was used to present those with mixed sentiment. Respondents indicated a wide range of perceptions and sentiments in this study. We found that perceptions about plantation forestry influenced attitudes towards the acceptability of plantations and plantation expansion.

Respondents with positive views of plantations, considered plantations as a source of employment, a source of wood products, and an important climate consideration. Some of these views are expressed in the following quotes. *“Importing timber is bad for the economy and local employment. Australia should be a substantial net exporter of timber-based products, not an importer”* (S), *“Economic growth in otherwise not viable land”* (SGFC) *and “Wood and its economic and carbon benefits are some of the opportunities”* (NRM). In contrast, those with negative perceptions of plantations were concerned about biodiversity risks (lack of biological diversity, threats to koala populations and threats to other native species) and hazards (bushfires, pests and weeds, chemical, water quality and road safety). These sentiments are captured in the following quotes. *“More traffic Less wildlife Less natural growth Not aesthetically pleasing No more cows to view Loss of animal habitat Less tourism”* (S), *“Degradation of land after harvest”* (CGFC) *and “Increase in land prices, young people can’t buy in”* (SGFC).

Respondents' sentiments about land and community were mixed. The following quotes from focus groups and the survey express these diverse concerns. *“Impact on community and land neighbours and their farming operations. Plantations also seem to attract illegal activity and undesirable characters - i.e., dumping stolen cars, illegal fires, and firewood collection” (S). “This leads to changes in land values and property prices”* (NRM).

Figure 4: Thematic analysis of qualitative data from open-ended survey responses. Red indicates generally negative sentiments, green indicates more positive sentiments, and orange indicates mixed sentiments.



Categories of respondents based on attitudes to plantations

The factor analysis identified five categories of respondents based on their responses to survey questions about the acceptability of various land uses (Q1), general perceptions about plantation forestry (Q2), and how and where commercial plantations are established (Q3 and 4) and the demographic data.

The five categories reflect the different ways respondents answered the survey and may reflect different ways of thinking about the Gippsland landscape and plantations. Data from the five categories are presented in the factor analysis (FA) table in Appendix 3.

1. **Integrated land management (PA1):** The largest proportion of the variation among all responses to these questions (56%) was explained by a group of respondents whose answers to questions 1-4 were characterised by considerations related to integrated land management. When responding to these questions, these respondents seemed to consider forest science and forest management issues.

   Respondents in the 'integrated land management category' considered changes to the local community (0.533*) and changes to the local economy (1.156***) to be significant and important when considering the acceptability of plantations in Gippsland (See T1 and T3 in Appendix 3). Changes to the local environment were not significantly important or unimportant for this group.

2. **Hazards (PA5):** A second grouping was characterised by responses which reflected respondents' concerns about hazards associated with plantation forestry. For example, this group of respondents associated fires, soil erosion or degradation and dangerous roads with plantations. This category explained 15% of the variation in all responses to questions 1-4.
   Respondents in the 'hazards' category considered changes to the local community to be significantly important (0.564***) and changes to the local economy to be significantly unimportant (-0.113*) when considering the acceptability of plantations in Gippsland (See T1 and T3 in Appendix 3). Changes to the local environment were not significantly important or unimportant for this group.

3. **Agriculture (PA3):** The responses of this third grouping of people indicate an interest in agricultural land uses. This category explained 11% of the variation in responses to questions 1-4.
   The local community, the local environment, and the local economy were neither significantly important nor unimportant for respondents in the 'agriculture' category when considering the acceptability of plantations in Gippsland. However, they found changes to the local community important (See TI, T2, and T3 in Appendix 3).

4. **Climate Action (PA2**): A fourth category of respondents was characterised by responses that suggested concerns about the protection of native vegetation, the

importance of trees for carbon, and land use to support renewable energy. This category explained 9% of the variation in responses to questions 1-4.

Respondents in the 'climate action' category considered changes to the local community (-0.43**) to be unimportant and changes to the local environment to be important (0.809***) when considering the acceptability of plantations in Gippsland (See T1 and T2 in Appendix 3). Changes to the local economy were not significantly important or unimportant for this group.

5. **Development and mining (PA4):** Respondents in this group highlighted residential developments and mining as important land uses for the region. This category explained 9% of the variation in responses to questions 1-4.

   Respondents in the 'development and mining' category considered changes to the local environment (-0.386**) unimportant when considering the acceptability of plantations in Gippsland (See T2 in Appendix 3). Changes to the local community and the local economy were not significantly important or unimportant for this group.

The five categories of respondents identified from the factor analysis are further investigated regarding their perceptions regarding pine plantation expansion. The next section triangulates their perceptions with focus group data, open-ended survey data, and existing studies to identify trends among the categories.

Perceptions concerning pine plantation expansion by demographic grouping and respondent category

Only the statistically significant associations are reported and discussed in the following section. For all other associations, please see from T1 to T18 in Appendix 4.

It was more likely that younger respondents and people who earned income outside their property to associate an expansion of pine plantations with a decrease in local business activities and employment. However, the is a higher probability that people who reside in towns and those in the respondent categories "integrated land management" (PA1) and "development and mining" (PA4) would associate an increase in pine plantations with positive effects on local businesses. It is also more likely that people employed in the agricultural sector

and those in the respondent categories “integrated land management” (PA1) and “development and mining” (PA4) would associate pine plantation expansion with an increase employment.

Some survey respondents and focus group participants noted their views on the likely effect of the expansion of pine plantations on the local economy. These included comments supporting the idea that increasing plantations could benefit small-scale local businesses, including creating more employment, particularly where plantations are established close to local processing facilities. For example, *“Prosperity through employment and economic growth”* (S), *“Employment opportunities - both in processing & recreational”* (S), *“It appears the only regions which benefit from the plantations are those with processing facilities - local jobs are lost to "imported" contractors”* (S), *“Plantation forestry is good for employment and local economy”* (S). Schirmer (2005) and Schirmer (2006) found that plantations generate employment either directly or indirectly, noting that most of the employment is generated by harvesting and processing. Additionally, Aldwell & Whyte (1984) further echoed in their study in New Zealand that local timber processing accounted for seven times as much employment as local industries processing other farm commodities. Therefore, the total employment impact of plantation forestry in a region is likely highly dependent on where processing facilities are located (Schirmer, 2006). Some respondents/participants held the contrasting view that increasing pine plantations could lead to decreased employment and negative effects on local businesses. For example, *“Reduction in intensive farming (high labour use) to be replaced by less employment (forestry)”* (S), *“Employment loss with plantations – don’t require continual on-ground management”* (SGFC), *“Job losses, Road damage, Less tourism”* (S). These sentiments were also shared in the studies of Williams (2008), Drielsma (2001) and Schirmer (2005). Schirmer (2005) indicated that plantation management provided less employment per hectare than other alternative land uses, which supports the quote above, indicating that agriculture requires more labour than forestry.

Survey respondents employed in the agriculture sector, and those residing in towns were more likely to associate expanding pine plantations with increased land accessibility to new owners, while respondents in the ‘hazards’ (PA5) category were more likely to associate it with a decrease in accessibility.

Survey respondents in the ‘integrated land management’ (PA1) category were more likely to associate increasing pine plantations and with an increase in the availability of land for other agricultural uses, while those in the ‘agriculture’ (PA3) category were more likely to associate

it with a decrease in the availability of land for other uses. Respondents with household incomes from outside their property were more likely to associate increasing pine plantations with decreasing opportunities for owners to manage their land, while people who resided in towns and those in the 'integrated land management' (PA1) category were more likely to associate pine plantation expansion with increased opportunities.

Younger respondents and those with household incomes from outside their property were more likely to associate an increase in pine plantations with negative impacts on a landowners' ability to profit from their lands, while those residing in towns and those in the 'integrated land management'(PA1) and 'mining and development' (PA4) categories were more likely to associate it with increased profitability. Respondents in the 'integrated land management' (PA1) category were more likely to associate increasing pine plantations with helping landowners to retire or leave the land.

Respondents in the 'integrated land management' (PA1) and 'mining and development' (PA4) categories were more likely to associate increases in pine plantations with increases in land prices, while those in the 'climate action' (PA2) category were more likely to associate increased pine plantations with decreased land prices. Data from the focus groups supported both perceptions: *"Government programs distort the value and availability of rural land which makes it harder for existing farming business to expand and for young farmers to purchase farms"* (S), *"Change in banking models to be related not to land valuable, but viability of business. What is the economic model for plantation on farm? Would a lease increase the viability of the whole farm? Would expansion of forestry increase land value and decrease viability of adjacent properties?"* (CGFC), *"Increase in land prices, young people can't buy in"* (SGFC). Schirmer (2005) notes that there is a perception that plantation expansion contributes to an increase in land prices, leading to the exclusion of farmers who may want to expand their properties and decrease the prices of nearby properties. However, the value of land is most likely affected by multiple, often regional, factors and difficult to predict. Due to the risks, there is low demand for land bordering plantations. Other studies have found similar perceptions of plantations on land prices. Tonts, Campbell and Black (2001) and Schirmer *et al.* (2005) found that expanding plantations could lead to increasing land values due to higher demand for land. In Bombala, NSW, land sold for plantation establishments generally attracted a higher price from 1998 to 2004 than land sold for other purposes (SMPLRG, 2005). Therefore, with increased demand, prices increase, and farmers and young people are priced out, as noted in the quotes.

Older survey respondents and those in the 'integrated land management' (PA1) and 'mining and development' (PA4) categories were more likely to associate expanding pine plantations with benefits for native animals, while respondents in the 'agriculture' (PA3) and 'climate action' (PA2) categories were more likely to associate it with negative impacts on native animals. Together with respondents with household incomes from outside their property, respondents in the 'climate action' (PA2) category were more likely to associate increases in pine plantations with negative effects on native vegetation. By contrast, respondents in the 'integrated land management' (PA1) and 'mining and development' (PA4) categories were more likely to associate increased plantations with a positive impact on native vegetation. Respondents from the focus groups also raised concerns that plantation expansion may negatively affect native animals and native vegetation, as illustrated by the following quotes: *"Threatened species such as Gippsland earthworm, koalas, frogs"* (SGFC), *"Pine trees destroying soil quality and when close to homes polluting water sources. Wildlife corridors, especially for local koala population"* (S). *"Koalas! They are not safe and have been killed as part of harvesting operations"* (S), *"Insufficient care taken during harvest leading to koala deaths"* (S), *"Impact on bees – and pollinators and other insects more broadly, decrease in biodiversity – due to pesticides, increase in wasps and decrease in insect diversity"* (SGFC), Lockie (2003) and Schirmer & Tonts (2003) had similar findings in their studies, suggesting that plantation management practices such as aerial spraying negatively impacted native animals and vegetation. However, it was unclear if this was observed or inferred. Despite these negative perceptions, survey respondents in the 'integrated land management' category (PA1) were more likely to associate plantation expansion with positive impacts on native vegetation and animals. In Australia and New Zealand, some studies have found that plantations can provide habitat benefits for several species compared to agricultural and pastoral land (Baral et al., 2013; Kavanagh et al., 2007). They can also provide multiple carbon sequestration and fossil fuel displacement benefits through the carbon stored in forests (Lippke et al., 2011; Rhodes & Stephens, 2014), as noted in the following quote, *"Plantation forestry is a form of cropping, which also captures carbon and provides a service in terms of providing timber fibre to service community demand"* (S).

Younger respondents and those in the 'agriculture' (PA3) category were more likely to associate pine expansion with a decrease in the number of people living in the region. In contrast, people employed in the agriculture sector and those in the 'integrated land management' (PA1) were more likely to associate it with an increase in the local population. Younger people were also

mor elikely to associate increasing pine plantations with a decrease in the number of people in community groups, while, again, those in the 'integrated land management (PA1) category were more likely to associate it with an increase. Respondents from the focus groups and interviews expressed concerns that increasing pine plantations would lead to communities losing people and other groups moving out of rural areas. For example, *"Plantation equals fewer farms and fewer people"* (CGFC), *"Loss of family ties"* (CGFC), *"Loss of young people – move to city as soon as finish school"* (SGFC), *"Plantations isolate the remaining farming properties and take families out of the local communities. In the past, this has led to football clubs closing and a loss of community"* (S). Drielsma (2001) also noted community fragmentation and loss of neighbours due to plantation expansions. Respondents in the 'hazards' (PA5) category were more likely to associate increasing pine plantations with increased pests and weeds, while those in the 'climate action' (PA2) were more likely to associate pine expansion with a decrease in pests and weeds. The focus group participants asserted views similar to those of respondents in the 'hazards' (PA5) category, noting that increasing pine plantations would increase pests and weeds. The views are expressed in the following quotes. *"Vermin and weeds, wild dogs"* (CGFC), *"Weeds and pests flourish for 10 years pre maturing of plantation forests in Gippsland"* (S), *"Lack of Weed and pest management Fire /Fuel management Access track maintenance"* (S). Various studies have also found similar perceptions. Rhodes & Stephens (2014) and Carle et al. (2020) found community vulnerability to weeds and pests associated with plantations.

Those employed in the forestry sector and respondents in the 'integrated land management' (PA1) category were more likely to associate an increase in the pine plantation estate with increased soil protection. In contrast, those with a previous association with forestry and those in the 'climate action' (PA2) category were more likely to associate pine expansion with negative impacts on soil. Respondents in the 'integrated land management (PA1) category were also more likely to associate increasing pine plantations with increased wildfire protection, while those in the 'hazards' (PA5) were more likely to associate expanding pine plantations with decreased wildfire protection.

Younger people were more likely to associate increasing the extent of pine plantations with decreases in the standard of roads, while people employed in the agricultural sector and respondents in the 'integrated land management' (PA1) category were more likely to associate improved road standards with an expansion of pine plantations. Some of the focus group

participants also raised concerns about the effect of an increased plantation estate on roads, for example: *"Large trucks travelling without care of our wildlife and too heavy for our roads"* (S), *"Job losses, Road damage, Less tourism"* (S), *"Bad and dangerous roads"* (SGFC). Drielsma (2001), Lockie, (2003) and Schirmer & Tonts (2003) have previously noted that plantation expansion would impact the road infrastructure of rural areas since log cartage traffic is more damaging to rural roads than traditional cartage of farm produce.

Younger respondents were more likely to associate an increase in pine plantations with decreased water availability for other uses. In contrast, respondents in the 'integrated land management' (PA1) and 'mining and development' (PA4) categories were more likely to associate it with an increase. Respondents with a previous association with the agriculture sector and those in the 'integrated land management' (PA1) category were more likely to associate increasing pines with increasing safety in chemical use, while those with a previous association with forestry associated it with decreased chemical safety.

Overall, we can identify the following patterns in these results.

- Respondents in the 'integrated land management' (PA1) category generally were more likely to have positive views around an increase in the pine plantation estate in Gippsland. This may indicate an inherent positive bias towards forestry and forestry products due to being directly employed or benefiting from the industry or because they are better informed and positioned to assess the positive impacts of an expansion. Residents in towns and respondents in the 'integrated land management' (PA1) and 'mining and development' (PA4) categories were more likely to share similar attitudes to pine plantation expansion, such as the potential positive impacts on native animals, native vegetation, and employment.
- Younger respondents were more likely to report negative associations with pine plantation expansion.
- Respondents in the 'agriculture' (PA3) category were more likely to have a negative attitude to pine plantation expansion except for a few factors. This could be due to concerns about competitive land use, a lack of information and understanding of the forestry industry and its operations, and how this may impact or be integrated into their farming enterprise.

- Respondents in the ‘climate action’ (PA2) category had mixed attitudes. They were more likely to be positive for carbon sequestration and increased trees in the landscape but more likely to be negative for impacts on biodiversity.
- Respondents in the ‘hazards’ (PA5) category were more likely to report negative associations with pine plantation expansion, possibly due to a broader concern with environmental and community risks.
- The attitudes of respondents with associations with the forestry industry were more likely to be contradictory to those of respondents in the ‘integrated land management’ (PA1) category, even though both groups could be expected to have some interest in the sector.
- Respondents associated with the forestry industry were more likely to report negative attitudes towards the impacts of pine plantation expansion. This is an interesting finding that warrants further investigation. These respondents may be members of agroforestry groups who prefer native and more diverse plantations over pine. Alternatively, they may be aggrieved workers affected by the cessation of native timber harvesting. Both groups will be important for the industry to work with moving forward.

Conclusions

The recent move to cease harvesting native forests in Victoria has contributed to increased incentives for plantation forestry, such as GPIP, to replace demand for wood and wood products, particularly for sawlogs. This has necessitated the acquisition of private lands for plantation forestry by forestry companies. Therefore, this study assessed community attitudes and perceptions towards plantation forestry and the expansion of pine plantations to inform how the forestry industry may build social acceptance and achieve and maintain social licence in these communities.

The research found a high variability in people's views on the expansion of pine plantations in Gippsland, with different drivers for these views. It is likely that, to build social acceptance, information and communications will need to be targeted to address a range of distinct audiences. The following are some key findings from the study:

- Different levels of familiarity with the management of plantations in the landscape lead to different attitudes towards plantations in general and the expansion of pine plantations specifically.
- Five categories of respondents were identified based on attitudes towards plantations in Gippsland. This is a helpful finding for more targeted and nuanced messaging and outreach.
- Generally, most respondents acknowledged the positive benefits of plantations but also indicated there are more broad-reaching negative considerations.
- Of the productive renewable land uses, plantations are often the least desirable. "Seen as locking up land" – compared with agriculture or renewable energy generation.

The respondent attitudes towards plantation forestry can be summarised as follows:

- Higher acceptability of smaller-scale plantations on private property and integration into farm businesses.
- Higher acceptability of native species for plantations and/or pine plantations with native species corridors.
- Preference for mixed species rather than monocultures.

- Higher acceptability of plantations established on land previously used for plantations or close to infrastructure and communities with timber processing capacity.
- Interest in access to plantations for recreation activities, provided they were monitored (rather than ‘undesirable’ activities).
- Concerns about plantations near koala habitat or on the Red Gum Plains (land that should be prioritised for grazing).

Community suggestions

The participants provided some insights on ways to improve social acceptance and assist in gaining and maintaining social licences for plantation forestry, including for pine plantations. The following suggestions are synthesised from these responses and are presented for further consideration and discussion:

- Prioritise local employment and provide appropriate training for participation in the expanding timber industry.
- Make land accessible for other uses beyond tree growing, such as recreation. This could include monitoring and enforcement or local community-managed areas for access.
- Transparency of intent and operation to inform decision-making by landholders, such as:
    - Clarify position on clearing of native habitat on private property
    - How will the property be left after harvesting or at the end of the lease?
    - Economic impact of incorporating plantations into the farming enterprise or on neighbouring land
- To address some of the noise issues, use drones instead of helicopters
- Encourage broader conversations within local councils to gain support in local government areas for plantation establishment and harvesting
- Explore the potential for local co-operatives to support farm forestry (accessing insurance, knowledge, labour, capital equipment, collective marketing, etc).

The study was intended to capture baseline sentiment toward plantations before the GPIP expansion. The research team recommends that the study be repeated to gain feedback on social licence over time. However, we recommend amending the survey tool to provide a more robust response.We suggest to:

- Further adapt and refine the survey tool used in this study to an identified local context.
- Identify the target population and a trusted conduit to provide access to the target population.
- Develop and implement a communication plan regarding the intended expansion of pine plantations in the identified local context.

- Apply the refined survey tool to the target group after implementing the communication plan.

Refining and repeating the tool at regular intervals will enable a longitudinal analysis that can identify effectiveness and highlight if new or emerging issues need to be considered.

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Appendix

Appendix 1: Demographics
i: Age

Age	Number of respondents	Proportion of respondents (%)
What is your age group?		
18 - 30 years	7	4.5
31 - 50 years	35	22.6
51 years and above	105	67.7
Did not answer	8	5.2
Total	155	100

ii: Residency

	Number of respondents	Proportion of respondents (%)
Which best describes where you live -		
In a town or regional centre (postcode)	59	38.1
On a property outside a town (postcode)	87	56.1
Did not answer	9	5.8
Total	155	100

Iii: Work History

	Do you work, or have you previously worked, within the forestry industry		Do you work, or have you previously worked, within the agricultural sector		Does your household include income that is not directly from your property?	
	N	%	N	%	N	%
Yes	38	24.5	100	64.5	114	73.5
No	107	69	48	31	33	21.3
Did not respond	10	6.5	7	4.5	8	5.2
Total	155	100	155	100	155	100

Iv: Associations to industry

	Do you have, or have you ever had, any connection with the agricultural sector (e.g., family members, professional or employment connections, or membership in interest groups such as GAgG, VFF, and NFF)?		Do you have, or have you ever had, any connection with the forestry industry (e.g., family members, professional or employment connections, or members of interest groups such as Timber Communities Australia and Gippsland Agroforestry Network)?	
	N	%	N	%
Yes	100	64.5	69	44.5
No	48	31	78	50.3
No response	7	4.5	8	5.2
Total	155	100	155	100

Appendix 2: Descriptive Data

DD1: SQ3

How and where commercial plantations are established can alter how people view plantations. How acceptable do you find commercial plantations when they are …	Min	Max	Mean	Standard Deviation	Variance
Planted on the whole of a property.	1	7	4.32	2.07	4.27
Planted on only part of a property (eg. less than half).	1	7	5.11	1.63	2.66
Planted on land previously used for cropping or grazing.	1	7	4.19	2.03	4.12
Planted on land previously used to grow plantations.	1	7	5.44	1.83	3.36
Planted on land where native vegetation needed to be cleared for the plantation	1	7	2.61	2.02	4.07
Planted by a company on land owned by the company	1	7	5.06	1.93	3.74
Planted by a company on leased land	1	7	4.51	2.09	4.37
Planted by an individual landowner on their own land.	1	7	5.41	1.81	3.27
Established jointly by individual landowner and company or government	1	7	5.07	1.89	3.58
Planted using non-native trees (e.g. pine)	1	7	4.03	2.22	4.94
Planted using native trees (e.g. eucalypt)	1	7	5.4	1.75	3.07

DD2: SQ4

Some situations may be more acceptable than others for commercial plantations. How acceptable do you find commercial plantations where there is…	Min	Max	Mean	Standard Deviation	Variance
Good quality soil	1	7	3.49	2.05	4.21
Average to low quality soil	1	7	5.18	1.82	3.31
Good rainfall for all uses	1	7	4.41	2.09	4.38
High demand for water for many uses	1	7	3.45	1.98	3.91
Soil salinity issues	1	7	4.7	2.05	4.18
Already a large number of plantations in the local area	1	7	4.29	2.16	4.67
Only a few plantations in the local area	1	7	4.56	1.95	3.79

No existing plantations in the local area	1	7	4.41	2.11	4.45
Processing facilities for paper and wood production in the local area (e.g. mills)	1	7	5.12	1.97	3.88
Close to housing or towns	1	7	3.87	2.05	4.22

Appendix 3: SPSS Multivariate Analysis 1

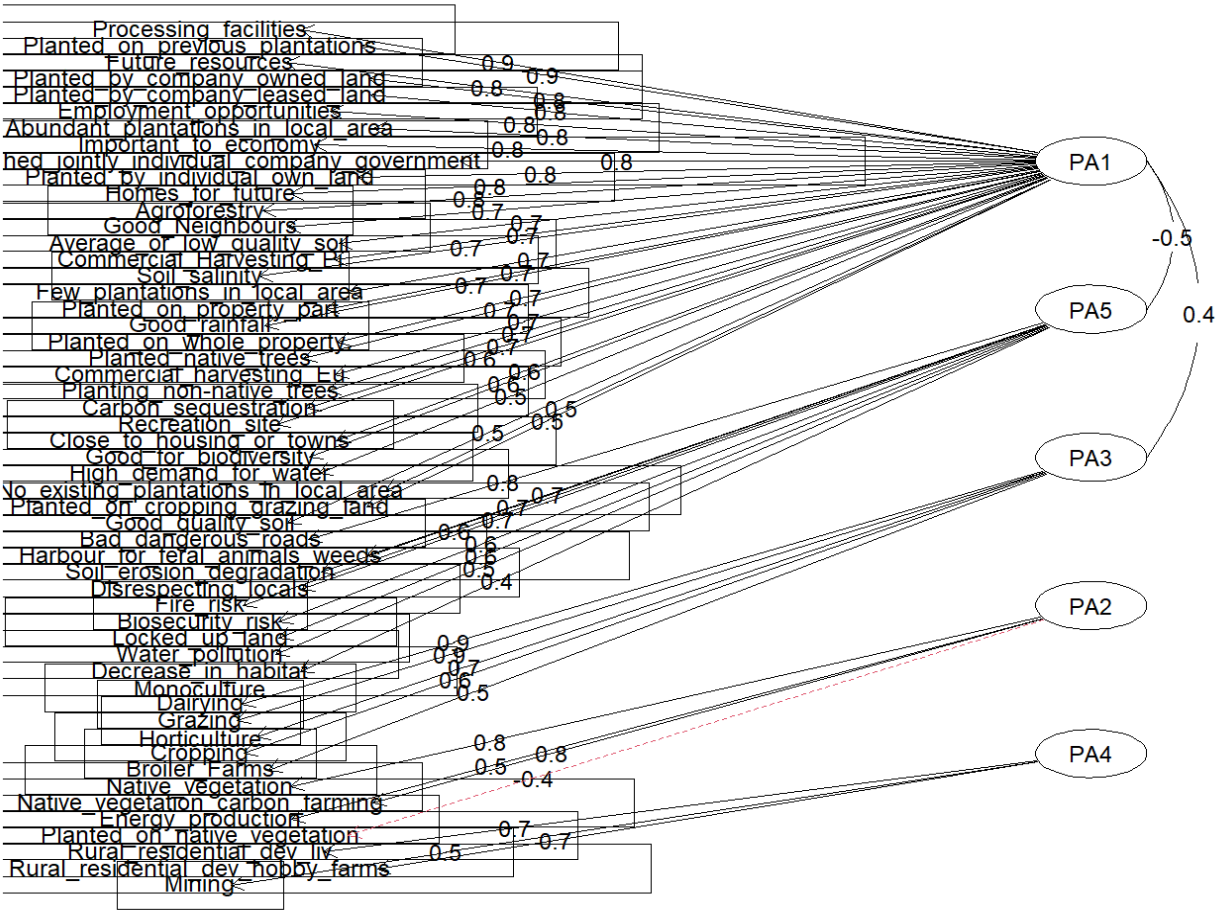

Figure: Categories of respondents based on responses.

T1: Changes to local community

Variables	Value (Std. Error, t-value)	Odds ratio	Value (Std. Error, t-value)	Odds ratio
Age_group.L			-1.226*(0.68, -1.802)	0.294
Age_group.Q			1.068** (0.491, 2.175)	2.909
Employment_forestry_industry.L			0.199 (0.344, 0.58)	1.221
Employment_agricultural_sector.L			0.41 (0.309, 1.326)	1.506
Household_income_outside_property.L			0.484 (0.313, 1.546)	1.623
Association_membership_agri.L			0.624** (0.329, 1.894)	1.865
Association_membership_forestry.L			-0.396 (0.295, -1.342)	0.673
Residence.L			-0.204 (0.284, -0.718)	0.815
PA1	0.533* (0.248, 2.151)	1.705	0.481* (0.258, 1.868)	1.618
PA5	0.564*** (0.214, 2.63)	1.757	0.619** (0.254, 2.44)	1.857
PA3	0.139 (0.195, 0.71)	1.149	0.507** (0.225, 2.259)	1.661
PA2	-0.43** (0.18, -2.382)	0.651	-0.487** (0.192, -2.534)	0.615
PA4	-0.039 (0.188, -0.21)	0.961	-0.023 (0.215, -0.109)	0.977
Not important at all|Not important	-3.627*** (0.516, -7.023)		-4.794*** (0.679, -7.058)	
Not important|Somewhat important	-2.754*** (0.357, -7.715)		-3.842*** (0.557, -6.896)	
Somewhat important|Slightly important	-1.868*** (0.259, -7.207)		-2.832*** (0.484, -5.849)	
Slightly important|Moderately important	-0.583*** (0.19, -3.064)		-1.355*** (0.424, -3.204)	
Moderately important|Important	0.456** (0.187, 2.441)		-0.237 (0.401, -0.591)	
Important|Very important	1.328*** (0.218, 6.087)		0.746* (0.406, 1.838)	
Residual Deviance	435.903		382.529	
AIC	457.903		420.529	

T2: Changes to local environment

Variables	Value (Std. Error, t-value)	Odds ratio	Value (Std. Error, t-value)	Odds ratio
Age_group.L			0.075 (0.773, 0.097)	1.078
Age_group.Q			0.311 (0.517, 0.602)	1.365
Employment_forestry_industry.L			0.279 (0.335, 0.833)	1.322
Employment_agricultural_sector.L			-0.246 (0.339, -0.724)	0.782
Household_income_outside_property.L			0.214 (0.329, 0.651)	1.239
Association_membership_agri.L			0.476 (0.354, 1.344)	1.61
Association_membership_forestry.L			-0.109 (0.299, -0.365)	0.897
Residence.L			0.12 (0.301, 0.34)	1.128
PA1	0.044 (0.265, 0.164)	1.045	0.104 (0.281, 0.372)	1.11
PA5	0.086 (0.216, 0.399)	1.09	0.15 (0.262, 0.571)	1.162
PA3	-0.243 (0.222, -1.094)	0.784	-0.099 (0.243, -0.408)	0.906
PA2	0.809*** (0.193, 4.196)	2.246	0.902*** (0.203, 4.436)	2.463
PA4	-0.386** (0.194, -1.989)	0.68	-0.546* (0.226, -2.418)	0.579
Not important at all|Not important	-3.888*** (0.543, -7.159)		-4.053*** (0.693, -5.849)	
Not important|Somewhat important	-3.270*** (0.424, -7.720)		-3.394*** (0.596, -5.692)	
Somewhat important|Slightly important	-2.830*** (0.358, -7.901)		-2.904*** (0.544, -5.337)	
Slightly important|Moderately important	-1.623*** (0.242, -6.696)		-1.673*** (0.472, -3.543)	
Moderately important|Important	-0.319* (0.193, -1.654)		-0.381 (0.446, -0.853)	
Important|Very important	0.418** (0.193, 2.165)		0.452 (0.448, 1.01)	
Residual Deviance	368.254		331.425	
AIC	390.255		369.425	

T3: Changes to local economy

Variables	Value (Std. Error, t-value)	Odds ratio	Value (Std. Error, t-value)	Odds ratio
Age_group.L			0.448 (0.692, 0.647)	1.565
Age_group.Q			-0.479 (0.504, -0.951)	0.619
Employment_forestry_industry.L			0.630* (0.369, 1.708)	1.878
Employment_agricultural_sector.L			0.258 (0.333, 0.774)	1.294
Household_income_outside_property.L			0.206 (0.304, 0.678)	1.229
Association_membership_agri.L			0.473 (0.342, 1.382)	1.604
Association_membership_forestry.L			-0.311 (0.310, -1.004)	0.733
Residence.L			-0.010 (0.283, -0.037)	0.99
PA1	1.156*** (0.283, 4.078)	3.177	1.066*** (0.299, 3.569)	2.904
PA5	-0.113 (0.219, -0.513)	0.894	-0.335 (0.260, -1.288)	0.715
PA3	0.255 (0.193, 1.319)	1.291	0.434* (0.229, 1.892)	1.543
PA2	-0.066 (0.181, -0.364)	0.936	-0.039 (0.191, -0.204)	0.962
PA4	0.181 (0.194, 0.937)	1.199	0.182 (0.224, 0.812)	1.199
Not important at all|Not important	-4.241*** (0.559, -7.587)		-4.123*** (0.665, -6.202)	
Not important|Somewhat important	-3.027*** (0.376, -8.046)		-2.874*** (0.515, -5.585)	
Somewhat important|Slightly important	-2.890*** (0.354, -7.928)		-2.642*** (0.496, -5.318)	
Slightly important|Moderately important	-1.191*** (0.235, -5.079)		-0.970** (0.415, -2.336)	
Moderately important|Important	0.133 (0.203, 0.653)		0.290 (0.401, 0.724)	
Important|Very important	1.136*** (0.224, 5.076)		1.448*** (0.425, 3.409)	
Residual Deviance	363.548		328.972	
AIC	385.548		366.972	

Factor analysis (FA)

	PA1	PA5	PA3	PA2	PA4	h2	u2	com
Commercial_harvesting_Eu	**0.68**	-0.12	-0.04	0.26	0.13	0.68	0.32	1.4
Commercial_Harvesting_Pi	**0.72**	-0.08	-0.02	-0.03	0.16	0.66	0.34	1.1
Agroforestry	**0.76**	-0.01	0.08	0.16	0.02	0.69	0.31	1.1
Good_Neighbours	**0.74**	-0.07	-0.15	0.05	0	0.54	0.46	1.1
Important_to_economy	**0.8**	0	0.09	0.04	-0.08	0.68	0.32	1.1
Recreation_site	**0.63**	0.14	-0.13	-0.12	0.01	0.29	0.71	1.3
Future_resources	**0.84**	0.03	-0.01	0.18	-0.26	0.7	0.3	1.3
Carbon_sequestration	**0.65**	0.16	-0.04	0.19	-0.18	0.39	0.61	1.5
Good_for_biodiversity	**0.6**	-0.05	-0.03	-0.14	0.09	0.42	0.58	1.2
Homes_for_future	**0.77**	0.15	0.07	-0.01	-0.04	0.54	0.46	1.1
Employment_opportunities	**0.81**	0.01	0.04	-0.05	-0.08	0.64	0.36	1
Planted_on_whole_property.	**0.68**	-0.12	0.01	-0.08	0.17	0.66	0.34	1.2
Planted_on_property_part	**0.69**	0	0	0.18	-0.11	0.51	0.49	1.2
Planted_on_cropping_grazing_land	**0.49**	-0.16	-0.1	0.29	0.23	0.52	0.48	2.5
Planted_on_previous_plantations	**0.86**	0.03	0.07	0.03	-0.11	0.75	0.25	1.1
Planted_by_company_owned_land	**0.83**	0.02	0.12	-0.11	0.05	0.79	0.21	1.1
Planted_by_company_leased_land	**0.82**	-0.02	0.03	-0.09	0.07	0.75	0.25	1
Planted_by_individual_own_land	**0.77**	-0.03	0.22	-0.02	-0.11	0.78	0.22	1.2
Established_jointly_individual_company_government	**0.79**	-0.02	0.18	-0.01	0.01	0.78	0.22	1.1
Planting_non-native_trees	**0.67**	-0.08	0.05	-0.21	0.23	0.71	0.29	1.5
Planted_native_trees	**0.68**	-0.11	0.05	0.24	-0.04	0.64	0.36	1.3
Good_quality_soil	**0.45**	-0.23	-0.07	0.05	0.42	0.65	0.35	2.6
Average_or_low_quality_soil	**0.73**	-0.14	0.07	0.08	-0.05	0.7	0.3	1.1
Good_rainfall	**0.69**	-0.12	-0.07	0.06	0.21	0.67	0.33	1.3
High_demand_for_water	**0.55**	-0.1	0.03	-0.06	0.32	0.58	0.42	1.7

Soil_salinity	**0.71**	-0.05	0.1	-0.1	-0.02	0.6	0.4	1.1
Abundant_plantations_in_local_area	**0.81**	-0.02	0	-0.09	0.11	0.73	0.27	1.1
Few_plantations_in_local_area	**0.7**	-0.21	0	0.09	0.14	0.76	0.24	1.3
No_existing_plantations_in_local_area	**0.52**	-0.27	0.08	0.1	0.19	0.64	0.36	1.9
Processing_facilities	**0.93**	-0.03	-0.05	-0.09	-0.04	0.83	0.17	1
Close_to_housing_or_towns	**0.62**	-0.13	-0.03	-0.05	0.19	0.57	0.43	1.3
Fire_risk	0.05	**0.65**	0.12	-0.01	-0.08	0.42	0.58	1.1
Water_pollution	-0.16	**0.49**	-0.24	0.11	0.13	0.45	0.55	2
Decrease_in_habitat	-0.29	**0.42**	-0.11	0.3	0.05	0.53	0.47	2.9
Harbour_for_feral_animals_weeds	0.16	**0.71**	0.15	-0.17	-0.2	0.52	0.48	1.5
Bad_dangerous_roads	-0.03	**0.76**	-0.1	-0.01	0.2	0.61	0.39	1.2
Disrespecting_locals	-0.09	**0.68**	-0.12	0.09	0.05	0.57	0.43	1.2
Soil_erosion_degradation	-0.08	**0.7**	-0.05	0.26	0.03	0.67	0.33	1.3
Biosecurity_risk	-0.16	**0.62**	0.03	0.13	0.13	0.51	0.49	1.3
Locked_up_land	-0.18	**0.57**	0.07	-0.16	-0.15	0.52	0.48	1.6
Grazing	-0.01	-0.02	**0.9**	0.02	-0.06	0.82	0.18	1
Dairying	-0.05	-0.03	**0.92**	-0.01	-0.01	0.82	0.18	1
Broiler_Farms	0.19	-0.05	**0.46**	-0.29	0.25	0.5	0.5	2.8
Cropping	0.23	0.03	**0.61**	0.09	0.18	0.6	0.4	1.5
Horticulture	0.11	0.06	**0.68**	0.21	0.15	0.6	0.4	1.4
Monoculture	0.11	0.2	**0.18**	**0.18**	0.06	0.12	0.88	3.8
Energy_production	0.1	0.04	-0.12	**0.5**	0.27	0.35	0.65	1.8
Native_vegetation	0.01	0.07	0.15	**0.83**	0.01	0.73	0.27	1.1
Native_vegetation_carbon_farming	0.15	0.06	0.01	**0.78**	0.01	0.66	0.34	1.1
Planted_on_native_vegetation	0.29	-0.01	-0.04	**-0.45**	0.32	0.43	0.57	2.6
Rural_residential_dev_liv	-0.02	0.03	0.07	-0.02	**0.74**	0.53	0.47	1
Rural_residential_dev_hobby_farms	-0.1	0.07	0.04	0.12	**0.72**	0.49	0.51	1.1

Mining	0.32	0.07	0.03	-0.23	**0.45**	0.4	0.6	2.4

General properties of the factor analysis

	PA1	PA5	PA2	PA3	PA4
SS loadings	17.81	4.77	3.49	2.83	2.78
Proportion Var	0.34	0.09	0.07	0.05	0.05
Cumulative Var	0.34	0.43	0.49	0.55	0.60
Proportion Explained	0.56	0.15	0.11	0.09	0.09
Cumulative Proportion	0.56	0.71	0.82	0.91	1.00

With factor correlations of

	PA1	PA5	PA2	PA3	PA4
PA1	1.00	-0.48	0.40	0.08	0.25
PA5	-0.48	1.00	-0.06	0.15	-0.20
PA2	0.40	-0.06	1.00	-0.01	-0.03
PA3	0.08	0.15	-0.01	1.00	-0.03
PA4	0.25	-0.20	-0.03	-0.03	1.00

Mean item complexity = 1.5
Test of the hypothesis that 5 factors are sufficient.
df null model = 1378 with the objective function = 55.71 with Chi Square = 7604.98
df of the model are 1123 and the objective function was 16.31
The root mean square of the residuals (RMSR) is 0.04
The df corrected root mean square of the residuals is 0.05
The harmonic n.obs is 153 with the empirical chi square 735.07 with prob < 1
The total n.obs was 156 with Likelihood Chi Square = 2172.6 with prob < 1.8e-69
Tucker Lewis Index of factoring reliability = 0.787
RMSEA index = 0.077 and the 90 % confidence intervals are 0.073 0.083
BIC = -3498.39
Fit based upon off diagonal values = 0.99

Measures of factor score adequacy

	PA1	PA5	PA2	PA3	PA4
Correlation of (regression) scores with factors	0.99	0.95	0.96	0.94	0.92
Multiple R square of scores with factors	0.98	0.91	0.93	0.89	0.85
Minimum correlation of possible factor scores	0.96	0.81	0.86	0.78	0.70

Appendix 4: SPSS Multivariate Analysis 2

T1: Dependent: Pine_plantations_Business_local

	Value	Std. Error	t value	Odds ratio
Age_group.L	-1.131*	0.588	-1.922	0.323
Age_group.Q	-0.203	0.456	-0.446	0.816
Employment_forestry_industry.L	0.384	0.352	1.09	1.468
Employment_agricultural_sector.L	0.0769	0.323	0.238	1.08
Household_income_outside_property.L	-0.522*	0.313	-1.666	0.593
Association_membership_agri.L	0.297	0.337	0.882	1.345
Association_membership_forestry.L	-0.2	0.297	-0.674	0.818
Residence.L	0.645**	0.279	2.308	1.906
PA1	1.075***	0.277	3.876	2.931
PA5	-0.095	0.243	-0.39	0.91
PA3	-0.117	0.23	-0.507	0.89
PA2	0.124	0.189	0.656	1.132
PA4	0.514**	0.21	2.445	1.671
Not important at all|Not important	-4.151***	0.564	-7.359	
Not important|Somewhat important	-2.281***	0.426	-5.359	
Somewhat important|Slightly important	-1.025***	0.395	-2.594	
Slightly important|Moderately important	-0.321	0.386	-0.834	
Moderately important|Important	1.218***	0.397	3.07	
Important|Very important	2.792***	0.486	5.749	
Very important|Don't know	3.933***	0.614	6.402	
Residual Deviance	388.36			
AIC	428.36			

T2: Dependent: Pine_plantations_Employment

	Value	Std. Error	t value	Odds ratio
Age_group.L	-1.422**	0.634	-2.244	0.241
Age_group.Q	-0.342	0.459	-0.746	0.71
Employment_forestry_industry.L	-0.37	0.351	-1.054	0.691
Employment_agricultural_sector.L	0.71**	0.324	2.194	2.034
Household_income_outside_property.L	-0.823***	0.315	-2.615	0.439
Association_membership_agri.L	-0.284	0.331	-0.859	0.753
Association_membership_forestry.L	0.319	0.305	1.049	1.376
Residence.L	0.374	0.272	1.376	1.453
PA1	1.086***	0.287	3.7849	2.963
PA5	-0.151	0.246	-0.613	0.86
PA3	-0.129	0.23	-0.564	0.879
PA2	0.131	0.19	0.69	1.14
PA4	0.524**	0.215	2.44	1.689
Not important at all|Not important	-4.978***	0.65	-7.656	
Not important|Somewhat important	-3.482***	0.508	-6.854	
Somewhat important|Slightly important	-1.61***	0.438	-3.675	
Slightly important|Moderately important	-0.771*	0.422	-1.828	
Moderately important|Important	1.161***	0.413	2.812	

Important|Very important	2.264***	0.452	5.008	
Very important|Don't know	3.7***	0.581	6.372	
Residual Deviance	371.541			
AIC	411.541			

T3: Dependent: Pine_plantations_land_Accessibility_new_owners

	Value	Std. Error	t value	Odds ratio
Age_group.L	-0.298	0.627	-0.475	0.743
Age_group.Q	0.39	0.468	0.832	1.476
Employment_forestry_industry.L	0.297	0.339	0.877	1.346
Employment_agricultural_sector.L	0.597*	0.311	1.919	1.816
Household_income_outside_property.L	-0.424	0.315	-1.345	0.654
Association_membership_agri.L	-0.357	0.327	-1.092	0.659
Association_membership_forestry.L	-0.213	0.305	-0.698	0.808
Residence.L	0.484*	0.276	1.757	1.622
PA1	0.344	0.27	1.273	1.41
PA5	-0.417*	0.253	-1.651	0.659
PA3	-0.127	0.229	-0.553	0.881
PA2	0.117	0.179	0.651	1.124
PA4	0.328	0.2	1.639	1.388
Not important at all|Not important	-2.68***	0.483	-5.546	
Not important|Somewhat important	-0.858**	0.405	-2.118	
Somewhat important|Slightly important	0.258	0.399	0.646	
Slightly important|Moderately important	1.007**	0.406	2.479	
Moderately important|Important	1.726***	0.419	4.119	
Important|Very important	2.415***	0.451	5.358	
Very important|Don't know	3.25***	0.523	6.203	
Residual Deviance	435.8904			
AIC	475.8904			

T4: Dependent: Pine_plantations_Land_agricultural_uses

	Value	Std. Error	t value	Odds ratio
Age_group.L	-0.35	0.66	-0.529	0.705
Age_group.Q	0.305	0.476	0.641	1.357
Employment_forestry_industry.L	-0.006	0.339	-0.019	0.994
Employment_agricultural_sector.L	0.36	0.313	1.151	1.433
Household_income_outside_property.L	-0.098	0.305	-0.32	0.907
Association_membership_agri.L	0.019	0.331	0.058	1.019
Association_membership_forestry.L	-0.253	0.293	-0.865	0.776
Residence.L	0.2	0.278	0.72	1.222
PA1	1.128***	0.286	3.949	3.088
PA5	0.019	0.258	0.074	1.019
PA3	-0.569**	0.244	-2.33	0.566
PA2	-0.134	0.186	-0.72	0.875
PA4	0.226	0.204	1.108	1.254
Not important at all|Not important	-1.85***	0.449	-4.12	

Not important|Somewhat important	-0.724*	0.418	-1.732	
Somewhat important|Slightly important	0.182	0.413	0.44	
Slightly important|Moderately important	1.37***	0.429	3.198	
Moderately important|Important	1.77***	0.442	4.004	
Important|Very important	2.072***	0.458	4.52	
Very important|Don't know	2.671***	0.507	5.271	
Residual Deviance	409.8306			
AIC	449.8306			

T5: Dependent: Pine_plantations_land_owners_management_choice

	Value	Std. Error	t value	Odds ratio
Age_group.L	-0.857	0.616	-1.391	0.425
Age_group.Q	0.337	0.464	0.726	1.401
Employment_forestry_industry.L	0.163	0.347	0.471	1.178
Employment_agricultural_sector.L	0.212	0.321	0.661	1.236
Household_income_outside_property.L	-0.691**	0.308	-2.24	0.501
Association_membership_agri.L	-0.074	0.324	-0.228	0.929
Association_membership_forestry.L	-0.026	0.3	-0.086	0.974
Residence.L	0.799***	0.287	2.784	2.223
PA1	0.585**	0.271	2.161	1.795
PA5	0.058	0.24	0.24	1.059
PA3	0.162	0.234	0.691	1.175
PA2	-0.005	0.199	-0.027	0.995
PA4	0.311	0.214	1.451	1.364
Not important at all|Not important	-4.241***	0.679	-6.247	
Not important|Somewhat important	-2.628***	0.45	-5.838	
Somewhat important|Slightly important	-0.589	0.382	-1.544	
Slightly important|Moderately important	-0.377	0.38	-0.991	
Moderately important|Important	1.057***	0.398	2.657	
Important|Very important	1.607***	0.42	3.828	
Very important|Don't know	2.626***	0.481	5.458	
Residual Deviance	386.858			
AIC	426.858			

T6: Dependent: Pine_plantations_land_owners_profit

	Value	Std. Error	t value	Odds ratio
Age_group.L	-1.271*	0.617	-2.061	0.281
Age_group.Q	0.667	0.461	1.447	1.949
Employment_forestry_industry.L	-0.154	0.343	-0.45	0.857
Employment_agricultural_sector.L	0.538	0.33	1.63	1.713
Household_income_outside_property.L	-0.76**	0.322	-2.359	0.468
Association_membership_agri.L	-0.24	0.332	-0.725	0.786
Association_membership_forestry.L	0.124	0.294	0.423	1.133
Residence.L	0.567**	0.277	2.049	1.763
PA1	0.603**	0.273	2.209	1.828
PA5	0.224	0.243	0.925	1.252

PA3	-0.286	0.226	-1.265	0.751
PA2	-0.109	0.188	-0.579	0.897
PA4	0.433**	0.208	2.088	1.542
Not important at all|Not important	-4.276***	0.632	-6.764	
Not important|Somewhat important	-2.625***	0.454	-5.778	
Somewhat important|Slightly important	-0.539	0.388	-1.391	
Slightly important|Moderately important	-0.25	0.386	-0.648	
Moderately important|Important	1.036***	0.397	2.61	
Important|Very important	1.481***	0.413	3.588	
Very important|Don't know	2.144***	0.452	4.746	
Residual Deviance	392.4676			
AIC	432.4676			

T7: Dependent: Pine_plantations_land_owners_retire

	Value	Std. Error	t value	Odds ratio
Age_group.L	-0.672	0.664	-1.013	0.51
Age_group.Q	0.078	0.476	0.163	1.081
Employment_forestry_industry.L	-0.054	0.326	-0.165	0.948
Employment_agricultural_sector.L	0.173	0.315	0.548	1.189
Household_income_outside_property.L	-0.403	0.317	-1.271	0.669
Association_membership_agri.L	-0.246	0.314	-0.784	0.782
Association_membership_forestry.L	-0.084	0.283	-0.297	0.919
Residence.L	0.424	0.271	1.564	1.529
PA1	0.888***	0.275	3.226	2.43
PA5	-0.018	0.234	-0.076	0.982
PA3	-0.176	0.227	-0.776	0.838
PA2	-0.097	0.183	-0.527	0.908
PA4	0.053	0.201	0.263	1.054
Not important at all|Not important	-4.367***	0.696	-6.279	
Not important|Somewhat important	-3.015***	0.494	-6.098	
Somewhat important|Slightly important	-1.04***	0.398	-2.612	
Slightly important|Moderately important	-0.854**	0.395	-2.163	
Moderately important|Important	0.622	0.398	1.564	
Important|Very important	1.514***	0.422	3.589	
Very important|Don't know	2.99***	0.513	5.833	
Residual Deviance	398.5507			
AIC	438.5507			

T8: Dependent: Pine_plantations_Land_prices_value

	Value	Std. Error	t valu	Odds ratio
Age_group.L	-1.023	0.692	-1.479	0.36
Age_group.Q	0.638	0.496	1.286	1.892
Employment_forestry_industry.L	-0.162	0.347	-0.468	0.85
Employment_agricultural_sector.L	-0.056	0.32	-0.174	0.946
Household_income_outside_property.L	0.318	0.306	1.038	1.374
Association_membership_agri.L	-0.072	0.331	-0.217	0.931

Association_membership_forestry.L	-0.025	0.301	-0.082	0.976
Residence.L	0.16	0.271	0.589	1.173
PA1	1.137***	0.285	3.985	3.118
PA5	0.061	0.238	0.255	1.063
PA3	-0.194	0.222	-0.877	0.823
PA2	-0.458**	0.187	-2.453	0.633
PA4	0.428**	0.21	2.04	1.535
Not important at all|Not important	-3.439***	0.529	-6.506	
Not important|Somewhat important	-2.514***	0.476	-5.279	
Somewhat important|Slightly important	-0.563	0.415	-1.356	
Slightly important|Moderately important	0.245	0.409	0.598	
Moderately important|Important	0.768*	0.417	1.843	
Important|Very important	1.375***	0.434	3.168	
Very important|Don't know	2.379***	0.482	4.935	
Residual Deviance	416.758			
AIC	456.758			

T9: Dependent: Pine_plantations_Native_animals

	Value	Std. Error	t value	Odds ratio
Age_group.L	-0.944	0.673	-1.401	0.389
Age_group.Q	0.897*	0.49	1.832	2.452
Employment_forestry_industry.L	-0.012	0.333	-0.036	0.988
Employment_agricultural_sector.L	-0.055	0.323	-0.17	0.947
Household_income_outside_property.L	-0.2	0.325	-0.614	0.819
Association_membership_agri.L	-0.303	0.342	-0.888	0.738
Association_membership_forestry.L	-0.038	0.301	-0.127	0.963
Residence.L	-0.083	0.283	-0.295	0.92
PA1	1.453***	0.31	4.685	4.276
PA5	0.113	0.259	0.439	1.12
PA3	-0.472*	0.245	-1.927	0.624
PA2	-0.662***	0.21	-3.149	0.516
PA4	0.581**	0.227	2.558	1.787
Not important at all|Not important	-1.64***	0.439	-3.733	
Not important|Somewhat important	-0.589	0.416	-1.416	
Somewhat important|Slightly important	0.496	0.4177	1.187	
Slightly important|Moderately important	1.412***	0.435	3.245	
Moderately important|Important	1.943***	0.45	4.32	
Important|Very important	3.062***	0.508	6.023	
Very important|Don't know	3.727***	0.578	6.445	
Residual Deviance	386.7345			
AIC	426.7345			

T10 : Dependent: Pine_plantations_Native_vegetation

	Value	Std. Error	t value	Odds ratio
Age_group.L	-0.702	0.723	-0.971	0.496
Age_group.Q	0.816	0.518	1.575	2.262

Employment_forestry_industry.L	0.399	0.346	1.153	1.491
Employment_agricultural_sector.L	-0.034	0.34	-0.1	0.967
Household_income_outside_property.L	-0.648**	0.329	-1.972	0.523
Association_membership_agri.L	-0.131	0.362	-0.361	0.878
Association_membership_forestry.L	-0.157	0.31	-0.505	0.855
Residence.L	-0.197	0.293	-0.673	0.821
PA1	1.393***	0.309	4.514	4.026
PA5	-0.313	0.263	-1.188	0.732
PA3	-0.388	0.261	-1.488	0.678
PA2	-0.527***	0.2	-2.634	0.59
PA4	0.525**	0.209	2.514	1.691
Not important at all|Not important	-1.348***	0.469	-2.875	
Not important|Somewhat important	-0.019	0.457	-0.04	
Somewhat important|Slightly important	1.591***	0.479	3.321	
Slightly important|Moderately important	2.665***	0.511	5.216	
Moderately important|Important	3.149***	0.534	5.894	
Important|Very important	4.206***	0.626	6.723	
Very important|Don't know	4.206***	0.626	6.723	
Residual Deviance	338.3696			
AIC	378.3696			

T11: Dependent: Pine_plantations_number_of_people

	Value	Std. Error	t value	Odds ratio
Age_group.L	-1.065*	0.605	-1.76	0.345
Age_group.Q	0.168	0.448	0.374	1.183
Employment_forestry_industry.L	0.554	0.338	1.637	1.739
Employment_agricultural_sector.L	0.738**	0.324	2.279	2.092
Household_income_outside_propertyYes	0.425	0.435	0.978	1.53
Association_membership_agri.L	-0.156	0.326	-0.479	0.855
Association_membership_forestry.L	-0.339	0.295	-1.147	0.713
Residence.L	0.405	0.278	1.454	1.499
PA1	0.895***	0.276	3.239	2.447
PA5	0.139	0.251	0.554	1.149
PA3	-0.412*	0.23	-1.788	0.663
PA2	0.103	0.182	0.566	1.109
PA4	0.195	0.2	0.975	1.216
Not important at all|Not important	-2.962***	0.564	-5.248	
Not important|Somewhat important	-1.433***	0.492	-2.913	
Somewhat important|Slightly important	0.043	0.474	0.091	
Slightly important|Moderately important	0.997**	0.484	2.061	
Moderately important|Important	2.313***	0.53	4.365	
Important|Very important	3.009***	0.586	5.135	
Very important|Don't know	3.526***	0.647	5.452	
Residual Deviance	400.1588			
AIC	440.1588			

T12: Dependent: Pine_plantations_people_in_local_community_groups

	Value	Std. Error	t value	Odds ratio
Age_group.L	-1.316**	0.618	-2.13	0.268
Age_group.Q	0.095	0.451	0.21	1.099
Employment_forestry_industry.L	0.307	0.345	0.888	1.359
Employment_agricultural_sector.L	0.409	0.326	1.257	1.505
Household_income_outside_propertyYes	0.151	0.455	0.333	1.163
Association_membership_agri.L	-0.008	0.339	-0.024	0.992
Association_membership_forestry.L	-0.238	0.31	-0.77	0.788
Residence.L	0.054	0.278	0.195	1.056
PA1	0.674**	0.276	2.447	1.963
PA5	-0.052	0.259	-0.201	0.949
PA3	-0.335	0.243	-1.378	0.715
PA2	0.197	0.183	1.08	1.218
PA4	0.299	0.21	1.426	1.349
Not important at all|Not important	-3.316***	0.603	-5.498	
Not important|Somewhat important	-1.713***	0.519	-3.31	
Somewhat important|Slightly important	0.361	0.497	0.726	
Slightly important|Moderately important	1.065**	0.51	2.09	
Moderately important|Important	1.794***	0.54	3.321	
Important|Very important	2.546***	0.599	4.254	
Very important|Don't know	2.846***	0.61	4.519	
Residual Deviance	379.2832			
AIC	419.2832			

T13: Dependent: Pine_plantations_Pest

	Value	Std. Error	t value	Odds ratio
Age_group.L	-0.785	0.68	-1.15365	0.456
Age_group.Q	-0.268	0.473	-0.56696	0.765
Employment_forestry_industry.L	-0.551	0.345	-1.59937	0.576
Employment_agricultural_sector.L	-0.023	0.312	-0.07432	0.977
Household_income_outside_property.L	0.049	0.29	0.169791	1.05
Association_membership_agri.L	0.209	0.321	0.651445	1.233
Association_membership_forestry.L	-0.379	0.305	-1.24568	0.684
Residence.L	0.05	0.287	0.171606	1.05
PA1	-0.034	0.26	-0.13044	0.967
PA5	1.111***	0.275	4.042737	3.039
PA3	-0.042	0.236	-0.17922	0.959
PA2	-0.401**	0.188	-2.13245	0.67
PA4	-0.148	0.202	-0.73537	0.862
Not important at all|Not important	-4.933***	0.72	-6.84792	
Not important|Somewhat important	-4.013***	0.565	-7.0978	
Somewhat important|Slightly important	-2.109***	0.442	-4.7699	
Slightly important|Moderately important	-1.721***	0.43	-4.01052	
Moderately important|Important	-0.487	0.394	-1.23685	
Important|Very important	0.64*	0.388	1.651945	
Very important|Don't know	2.302***	0.471	4.88658	
Residual Deviance	406.7678			
AIC	446.7678			

T14 : Dependent: Pine_plantations_Protection_soils

	Value	Std. Error	t value	Odds ratio
Age_group.L	0.562	0.685	0.821	1.754
Age_group.Q	-0.464	0.476	-0.976	0.628
Employment_forestry_industry.L	0.586*	0.331	1.771	1.797
Employment_agricultural_sector.L	0.113	0.308	0.367	1.12
Household_income_outside_property.L	-0.332	0.308	-1.079	0.718
Association_membership_agri.L	-0.304	0.321	-0.948	0.738
Association_membership_forestry.L	-0.553*	0.296	-1.867	0.575
Residence.L	0.18	0.273	0.658	1.197
PA1	1.182***	0.285	4.144	3.262
PA5	-0.257	0.25	-1.03	0.773
PA3	0.08	0.235	0.34	1.083
PA2	-0.611***	0.195	-3.133	0.543
PA4	0.0004	0.219	0.002	1.0004
Not important at all|Not important	-2.144***	0.467	-4.591	
Not important|Somewhat important	-0.778*	0.424	-1.835	
Somewhat important|Slightly important	0.394	0.415	0.948	
Slightly important|Moderately important	1.515***	0.432	3.511	
Moderately important|Important	2.387***	0.457	5.219	
Important|Very important	3.183***	0.5	6.373	
Very important|Don't know	4.296***	0.596	7.209	
Residual Deviance	410.471			
AIC	450.471			

T15: Dependent: Pine_plantations_Protection_wildfire

	Value	Std. Error	t value	Odds ratio
Age_group.L	-0.725	0.632	-1.147	0.484
Age_group.Q	0.234	0.457	0.512	1.264
Employment_forestry_industry.L	0.087	0.33	0.264	1.091
Employment_agricultural_sector.L	0.034	0.326	0.106	1.035
Household_income_outside_property.L	-0.369	0.312	-1.182	0.691
Association_membership_agri.L	-0.188	0.339	-0.554	0.829
Association_membership_forestry.L	-0.182	0.293	-0.623	0.833
Residence.L	-0.211	0.269	-0.786	0.809
PA1	1.178***	0.285	4.139	3.248
PA5	-0.436*	0.257	-1.698	0.647
PA3	-0.329	0.232	-1.417	0.72
PA2	0.1	0.182	0.547	1.105
PA4	0.266	0.204	1.306	1.305
Not important at all|Not important	-1.93***	0.427	-4.518	
Not important|Somewhat important	-0.51	0.401	-1.272	
Somewhat important|Slightly important	0.385	0.396	0.973	
Slightly important|Moderately important	1.468***	0.407	3.604	
Moderately important|Important	2.005***	0.427	4.7	

Important|Very important	3.148***	0.495	6.361	
Very important|Don't know	4.269***	0.632	6.758	
Residual Deviance	397.7585			
AIC	437.7585			

T16: Dependent: Pine_plantations_Safe_chemical

	Value	Std. Error	t value	Odds ratio
Age_group.L	-0.23	0.607	-0.379	0.795
Age_group.Q	-0.054	0.45	-0.119	0.948
Employment_forestry_industry.L	0.35	0.324	1.08	1.419
Employment_agricultural_sector.L	-0.2	0.332	-0.6	0.819
Household_income_outside_property.L	-0.151	0.305	-0.496	0.86
Association_membership_agri.L	0.601*	0.338	1.778	1.825
Association_membership_forestry.L	-0.494**	0.294	-1.682	0.61
Residence.L	-0.409	0.278	-1.473	0.664
PA1	0.77***	0.276	2.792	2.16
PA5	0.019	0.235	0.081	1.019
PA3	-0.338	0.225	-1.505	0.713
PA2	-0.226	0.183	-1.233	0.798
PA4	0.202	0.199	1.015	1.223
Not important at all|Not important	-2.886***	0.498	-5.796	
Not important|Somewhat important	-1.719***	0.414	-4.152	
Somewhat important|Slightly important	0.083	0.371	0.223	
Slightly important|Moderately important	0.392	0.372	1.055	
Moderately important|Important	1.065***	0.383	2.779	
Important|Very important	1.626***	0.402	4.041	
Very important|Don't know	2.678***	0.475	5.633	
Residual Deviance	438.8113			
AIC	478.8113			

T17: Dependent: Pine_plantations_standard_roads

	Value	Std. Error	t value	Odds ratio
Age_group.L	-1.719**	0.691	-2.488	0.179
Age_group.Q	0.138	0.47	0.294	1.148
Employment_forestry_industry.L	0.376	0.332	1.131	1.456
Employment_agricultural_sector.L	0.754**	0.322	2.346	2.126
Household_income_outside_property.L	-0.466	0.305	-1.527	0.628
Association_membership_agri.L	-0.289	0.336	-0.859	0.749
Association_membership_forestry.L	-0.292	0.295	-0.99	0.747
Residence.L	-0.089	0.269	-0.33	0.915
PA1	0.733***	0.278	2.64	2.081
PA5	-0.28	0.264	-1.061	0.756
PA3	-0.26	0.232	-1.123	0.771
PA2	-0.137	0.192	-0.711	0.872
PA4	0.299	0.204	1.468	1.348
Not important at all|Not important	-3.242***	0.502	-6.452	

Not important|Somewhat important	-1.938***	0.443	-4.378	
Somewhat important|Slightly important	-0.841**	0.424	-1.986	
Slightly important|Moderately important	0.201	0.415	0.484	
Moderately important|Important	1.156***	0.421	2.748	
Important|Very important	2.079***	0.451	4.61	
Very important|Don't know	3.236***	0.555	5.832	
Residual Deviance	422.3969			
AIC	462.3969			

T18: Dependent: Pine_plantations_Water_availability

	Value	Std. Error	t value	Odds ratio
Age_group.L	-1.709**	0.706	-2.42	0.181
Age_group.Q	0.766	0.494	1.551	2.151
Employment_forestry_industry.L	0.086	0.33	0.261	1.09
Employment_agricultural_sector.L	0.046	0.323	0.141	1.047
Household_income_outside_property.L	-0.021	0.319	-0.066	0.979
Association_membership_agri.L	0.004	0.351	0.011	1.004
Association_membership_forestry.L	-0.118	0.297	-0.396	0.889
Residence.L	0.24	0.274	0.878	1.272
PA1	0.831***	0.276	3.009	2.296
PA5	-0.295	0.253	-1.169	0.744
PA3	-0.055	0.243	-0.225	0.947
PA2	-0.092	0.193	-0.478	0.912
PA4	0.431**	0.204	2.112	1.539
Not important at all|Not important	-3.596***	0.525	-6.852	
Not important|Somewhat important	-1.875***	0.45	-4.165	
Somewhat important|Slightly important	-0.659	0.43	-1.534	
Slightly important|Moderately important	0.853**	0.428	1.995	
Moderately important|Important	1.368***	0.439	3.114	
Important|Very important	1.935***	0.463	4.179	
Very important|Don't know	2.272***	0.483	4.703	
Residual Deviance	391.0045			
AIC	431.0045			

Appendix 5: Survey Instrument

Survey Questions										
PART A - These questions are about your views on land use in Gippsland										
Q1	While rural land can be used for a range of different activities depending on factors such as rainfall, soil type etc, people may find some land uses to be more acceptable than others. In general, how acceptable do you find the following land uses in your area (assuming the land has already been cleared of native vegetation)?									
	Please tick one box in each row	Not acceptable		Neither acceptable nor unacceptable			Very acceptable			
		1	2	3	4	5	6	7		
	Grazing: growing pasture as feed for beef cattle, sheep, goats etc.									
	Dairying: farming dairy cows for milk production.									
	Broiler Farms: Intensive chicken farming for meat									
	Cropping: commercial planting of grains, legumes and oil seeds to produce food products.									
	Horticulture: commercial scale planting of orchards, vineyards, vegetables									
	Native vegetation: planting of trees and understorey species for conservation and biodiversity.									
	Native vegetation: planting of trees and understorey species for carbon farming projects									
	Eucalypt plantations for commercial harvesting: timber for building or furniture, or pulp for paper and cardboard production									
	Pine plantations for timber for building or furniture, or pulp for paper and cardboard production									

	Agroforestry: planting of trees for commercial harvest within other farming practice									
	Rural residential development: dividing rural land into smaller blocks for urban homes and rural living.									
	Rural residential development: Smaller acreage "lifestyle" blocks/hobby farms									
	Commercial energy production: Wind turbines and/or solar panels for energy production.									
	Mining: Sand, critical minerals, limestone, gravel, other.									
PART B - These questions are about your views on plantation forestry in general										
	What is plantation forestry? In this study, plantation forestry is used to mean trees of one type (such as pine or eucalypt/gum trees) planted in large blocks and harvested for use as timber, such as for building or furniture, or forwoodchips for pulp and paper production. Plantations can also be used to capture and store carbon or to provide ecosystem services that can be marketed.									
Q2	What does plantation mean to you?									
	Please tick one box in each row	Strongly disagree		Neither agree nor disagree			Strongly agree			
		1	2	3	4	5	6	7		
	Monoculture									
	Good neighbours									
	Fire risk									
	Water pollution									
	Decrease in habitat									
	Important to the economy									
	Harbour for feral animals and weeds									
	Recreation site									

	Bad and dangerous roads									
	Disrespecting locals (e.g. hours of truck operation, use of air breaks and behaviour on roads)									
	Soil erosion and degradation									
	Source of future resources									
	Carbon sink/sequestration									
	Good for biodiversity									
	Homes for the future									
	Employment opportunities									
	Biosecurity risk									
	Locked up land									
Q3	How and where commercial plantations are established can alter how people view plantations. How acceptable do you find commercial plantations when they are …									
	Please tick one box in each row	Not acceptable		Neither acceptable nor unacceptable			Very Acceptable			
		1	2	3	4	5	6	7		
	Planted on the whole of a property.									
	Planted on only part of a property (eg. less than half).									
	Planted on land previously used for cropping or grazing.									
	Planted on land previously used to grow plantations.									
	Planted on land where native vegetation needed to be cleared for the plantation									
	Planted by a company on land owned by the company									
	Planted by a company on leased land									
	Planted by an individual landowner on their own land.									

	Established jointly by individual landowner and company or government									
	Planted using non-native trees (e.g. pine)									
	Planted using native trees (e.g. eucalypt)									
Q4	Some situations may be more acceptable than others for commercial plantations. How acceptable do you find commercial plantations where there is…									
	Please tick one box in each row	Not acceptable		Neither acceptable nor unacceptable			Very Acceptable			
		1	2	3	4	5	6	7		
	Good quality soil									
	Average to low quality soil									
	Good rainfall for all uses									
	High demand for water for many uses									
	Soil salinity issues									
	Already a large number of plantations in the local area									
	Only a few plantations in the local area									
	No existing plantations in the local area									
	Processing facilities for paper and wood production in the local area (e.g. mills)									
	Close to housing or towns									
Q5	When judging the acceptability of a plantation, some things may be more important than others. How important are each of these considerations to you?									
	Please tick one box in each row	Not Important					Extremely Important			
		1	2	3	4	5	6	7		

	Possible changes to the local community									
	Possible changes to the environment									
	Possible changes to the regional economy									
	Please describe (optional)									
Q6	Are there any other considerations important in forming your views on plantation forestry?									
	If so, please write in this space.	OPEN TEXT BOX								
PART C - Your views on the impacts of commercial pine plantations.										
	The following section is about your views on pine plantations grown commercially for timber or paper production on land previously used for agriculture.									
Q7	In your view would an increase in pine plantations result in an increase or decrease in…									
	Please tick one box in each row	Decrease		Neither increase or decrease			Increase		don't know	
		1	2	3	4	5	6	7	8	
	The number of people living in the region									
	The number of people in local community groups									
	Employment in the region									
	Business for local shops and traders									
	Water availability for other uses									
	Native vegetation growing in the region									
	Native animals in the region									
	Pest animals and Weeds									
	Safe chemical use									

	The standard of roads									
	Protection from wildfire									
	Protection of soils from erosion									
	How much land owners can profit from the land									
	Opportunities for land owners to choose how they manage their land									
	Opportunities for land owners to retire or 'leave the land' if they wish.									
	Accessibilty of land to new owners									
	Land prices/value									
	Land for other agricultural uses									
PART D - How strong are your views?										
Q8	How strong are your views on increasing trees in the landscape?									
	Please tick one box	Not strong					Very strong			
		1	2	3	4	5	6	7		
	Please indicate your strength of view on increasing trees in the landscape									
Q9	How strong are your views on plantation forestry?									
	Please tick one box	Not strong					Very strong			
		1	2	3	4	5	6	7		
	Please indicate your strength of view on plantation forestry									
Q10	How strong are your views on pine plantations?									
	Please tick one box	Not strong					Very strong			
		1	2	3	4	5	6	7		

	Please indicate your strength of view on pine plantation forestry									
Q11	How often do you discuss forests or forest management with friends or family?									
	Please tick one box	Not often					Very often			
		1	2	3	4	5	6	7		
	Please indicate how often you discuss forest management									
PART E - Information about you										
	Finally it is important for us to report anonymous information on the people who took part in this study.									
Q12	What is your age group?									
	18 - 30 years									
	30-50 years									
	50+ years									
Q13	Rural work history	Yes	No							
	Do you work, or have you previously worked, within the forestry industry									
	Do you work, or have you previously worked, within the agricultural sector									
	Does your household include income that is not directly from your property?									
Q14	Associations with rural land uses	Yes	No							
	Do you have, or have you ever had, any connection with the agricultural sector (eg family members, professional or employment connection, membership of									

	interest groups such as GAgG, VFF, NFF)?									
	Do you have, or have you ever had, any connection with the forestry industry (e.g. family members, professional or employment connection; member of interest groups such as Timber Communities Australia, Gippsland Agroforestry Network)?									
Q15	Which best describes where you live:									
	In a town or regional centre (postcode)									
	On a property outside a town (postcode)									
Q16	To show our appreciation we would like to make a donation to a charity of your choice. Please tick one box to indicate your choice of charity.									
	Country Fire Authority									
	Greening Australia									
	Please do not make a donation on my behalf									

Appendix 6: Plantation Focus Groups Guide

Regional snapshot

- How would you describe your region? What is it known for? What are you proud of?
- What are some of the challenges this region is facing or has recently faced? (economic, social, demographic, climate, shifts in land use)

Plantations

- What does plantation mean to you?
- What opportunities do you think plantations bring?
- What challenges are there associated with plantations?
- If there was to be an expansion of pine forests in this region, where would you consider the greatest opportunities and what areas should be avoided – and why?
- What sorts of information would like to know either to consider some of your land being used for plantation forestry or an expansion of plantations in the landscape

Wrap up

- Is there anything else you would like us to know about your region or your community?
- What more would you like to know to be able to be able to engage in further discussions?