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# Tree Plantation Expansion: Impacts on Rural Communities in the Central North of Tasmania

Kyla Flaten  
*SIT Study Abroad*

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# Tree Plantation Expansion: Impacts on Rural Communities in the Central North of Tasmania

Flaten, Kyla

Academic Director: Peter Brennan

Project Advisor: Geoff Mosley

Whitman College

Environmental Studies – Sociology

Launceston, Tasmania, Australia

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## **Abstract**

The goal of my study was to understand the impacts of tree plantation expansion on rural communities in the Central North of Tasmania. This study is particularly relevant with the recent surge of plantation development in the last ten years and the current uncertainty over future plantation expansion because of the supposed shift in the woodchip industry from native forest to plantation-based as well as the proposed Gunns' pulp mill. By understanding the current impacts as well as problems within the system, it is my hope that these results can be used for better planning and change in the future plantation estate.

My methodology consisted of ten in-depth interviews with people of a variety of perspectives during the months of April and May in 2011. During each interview I asked the participant questions about: positive and negative impacts of plantations, how plantations and forestry practices could be improved, their attitude towards the proposed Gunns' pulp mill, and relevant background information. I also strove to understand their connection to the issue of tree plantations to potentially make the connection between a person's responses and other factors. From each interview, I identified impacts mentioned, major problems they saw with plantations, and potential solutions.

There were a variety of results from my study. Participants described a greater number of negative impacts rather than positive impacts. The most mentioned impacts included: water use and pollution, loss of local town infrastructure, visual change, and change in employment. Participants thought that major problems within the plantation system were the current scale, past expansion and lack of planning due to MIS, and a lack of regulation. Across the board, there was more disagreement over environmental impacts in comparison with social impacts.

Within a larger context, the findings point broadly to the fact that there are numerous concerns over tree plantations and their impacts of rural communities. If there is future plantation expansion, this could result in an exacerbation of the impacts found in this study. The disagreement between those in the plantation industry and others over the environmental effects calls for more scientific research into these impacts. Furthermore, the results of this study imply that there needs to be more planning and communication between local councils and land users to ensure that plantations are placed in appropriate places so that negative impacts to communities do not continue.

### **Topic Codes:**

Forestry and Wildlife 608

Social Sciences: General 501

Environmental Studies 537

**Key Words:** Tree plantations, Gunns, Pulp Mill, Forestry, Tasmania

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**Acronyms**

**AFG** – Australian Forest Growers

**FPA** – Forest Practices Authority

**FPC** – Forest Practices Code

**FPP** – Forest Practices Plan

**FSC** – Forest Stewardship Council

**LUPA** – Land Use Planning and Approvals Act

**MIS** – Managed Investment Schemes

**PFT** – Private Forests Tasmania

**PTR** – Private Timber Reserve

**RFA** – Regional Forest Agreement

**TAP** – TAP into a Better Tasmania

**TWFF** – Timber Workers for Forests

**TWS** – The Wilderness Society

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## **1.0 Introduction**

Tree plantations have become more expansive and relevant in Tasmania in recent years. This section will explore relevant background information associated with the current and potential future plantation expansion. I will describe past legislation and agreements so a greater understanding of the current situation can take place. Finally, I will conclude with a description of past research and media coverage on impacts to rural communities in Tasmania. Within the context of this information, I will explain the purpose and relevancy of this study.

### **1.1. Background Information**

The Forest Practices Code (FPC) of 2000 defines a plantation as “a forest stand established by the planting of seedlings or cuttings of trees selected for their wood producing properties and managed intensively for the purpose of future timber harvesting” (Forest Practices Board 99). Plantations can be established for prevention of erosion and to improve salinity problems but this study focuses on tree plantations used for wood production and includes references to those used to offset carbon emissions (Australian Forest Profiles: Plantations). Tree plantations are put into the two major categories of either hardwood or softwood. The two categories are differentiated based on seed structure and other composition characteristics but hardwood plantations are usually made up of eucalypt trees while softwood plantations are made up of pine or fir trees (“Hardwood vs. Softwood”). In Tasmania, hardwood plantations are currently expanding faster than softwood plantations (Schirmer 2). Because of their nature as a long-term crop, hardwood plantations are managed with rotations of fifteen to twenty years (Green 25). According to the Australian Department of Agriculture, Fisheries, and Forestry most hardwood plantations are used for pulpwood while softwood is used for saw logs (Australian Forest Profiles: Plantation). As of 2010 in Australia’s Plantation Inventory, Tasmania currently has 309,190 hectares of tree plantations with the majority being privately owned (Gavran 3-4).

The forestry industry in Tasmania is made up of a variety of organizations both public and private. Forestry Tasmania is the public organization that manages forestry on public lands. Their mission is two fold of “both managing and making money from Tasmania’s Forests” (Gale 62). Gunns Limited is the largest company in the private forestry market in Tasmania (Gale 62). Gunns began in 1875 as a building company (Ajani 285). Gunns eventually entered the timber industry but it was not until recently that Gunns expanded into the woodchip industry. By 2001, Gunns had purchased multiple major woodchip companies



(Buckman 131). Currently, Gunns is the number one exporter of woodchips in the world (Gale 62). At this time, Gunns manages 110,000 hectares of eucalyptus plantation in Tasmania (Gunns Forest Division – Plantations).

In terms of forestry regulation, the Forest Practices Authority (FPA) oversees forestry in Tasmania under the Forest Practices Code. A Forest Practices Plan (FPP) is required to be submitted and approved for plantation growth in certain situations i.e. if the proposed area is over 10 hectares or if the area is “threatened” (Carbon Plantations Project 58). A Forest Practices Officer must approve this plan before any action can take place (Carbon Plantations Project 60).

Controversy has occurred in the past as to whether the FPC is thoroughly enforced. Fred Gale describes one such case in which “investigation and prosecution of forestry practice breaches appears to have been actively discouraged within the very agency meant to uphold appropriate codes of conduct.” (89). In this quote, Fred Gale refers to the frequently mentioned Bill Manning, a former Forest Practices Officer and employee of Forestry Tasmania, who complained of a lack of full enforcement of forestry standards (Ajani 297). Regulation of plantation practices is a contentious topic within the issue of tree plantations.

A Private Timber Reserve (PTR) may also be established on private land, which allows for a plantation to continue in “the event of changes in local planning schemes” (Carbon Plantations Kit 58). Applications for PTRs take place through Private Forests Tasmania. A PTR is especially relevant in the context of plantation actions because “the owner of a declared PTR does not need to apply to Council for a permit in relation to forestry activities, land clearing and preparation, burning off, construction of access roads or transport operations associated with forestry” (“Forestry Fact Sheet: Private Timber Reserves” 1). In this sense, forestry work on a PTR can take place with little influence from the local council or community.

## **1.2 Causes of Plantation Expansion**

Past plantation expansion in Tasmania was partially associated with the Regional Forest Agreement (RFA). RFAs are between the Australian government and each individual state, with each lasting for twenty years (Gale 107). Since the most recent RFA in 1997, there have been three amendments occurring in 2001, 2005 with the Tasmanian Community Forest Agreement as well as most recently in 2007. The RFA of 1997 carried positive implications for the conservation of native forests but also led to further plantation expansion (Buckman 114). Although some reserves were created, Greg Buckman describes how “the worst element of the package was its giving of \$76 million to the state forestry industry that

was used to fund the conversion of native forests to plantations” (114). As a result of this decision, 100,000 hectares of native forests were destroyed (Buckman 114).

Furthermore, The Tasmania Community Forest Agreement in 2005 carried two important elements regarding plantations. First, it established the year 2010 as the effective end of conversion of native forests to plantations (“Tasmania Community Forest Agreement: Forests for the Future”). Secondly, it also devoted \$115 million to “to fund additional plantation establishment and productivity improvements in existing plantations and native forests” (“Tasmania Community Forest Agreement: Forests for the Future”).

An influential driver of past plantation expansion is Plantations for Australia: The 2020 Vision. Commencing in 1997, this government program sought to triple the current plantation estate in Australia by 2020 (“Plantations for Australia: The 2020 Vision”). In all of Australia the goal was to amount to three million hectares of plantation (Ajani 252). The program allowed expansion of the hardwood estate under “mass-marketed tax minimizing schemes” (Ajani 253). This type of program is commonly referred to as a managed investment scheme (MIS). The program declined in 2001 but increased once again in 2003 to 2005 (Ajani 259-260). As a result of MIS expansion in Tasmania, 64,000 hectares of native forests was converted to plantations from 1999 to 2006 (Buckman 120). An additional consequence of this expansion was an encroachment of plantation growth onto prime agricultural land. In fact, in this period “15 per cent of the state’s farmland was taken over by plantations” (Buckman 120). MIS received criticism for creating an unfair playing field for land uses (“MIS plantation forestry tax incentives to stay”). However at times this was portrayed positively because MIS offered farmers higher land prices than might normally be available if they wanted to sell their land (Lee). MIS has declined in recent years with many of the companies that invested in MIS collapsing near 2009, including the Tasmanian company, Forest Enterprises of Australia (Main).

### **1.3 Uncertainty over Future Plantation Expansion**

This project is particularly relevant because of the enormous amount of uncertainty related to plantation expansion. A number of factors contribute to this uncertainty including recent actions by Gunns as well as current forestry and environmental agreements. Most recently, the Statement of Principles, officially titled the Tasmania Forest Statement of Principles to Lead to an Agreement, was signed between eight associations including environmental groups such as The Wilderness Society (TWS) as well as industry groups including the National Association of Forest Industries of which Gunns is a member (Gale 319). One of the focuses on the Statement of Principles is a transition of the industry from

native forest logging to a plantation-based system (TWS Statement of Principles). A moratorium on old-growth logging was supposed to take place on March 15<sup>th</sup> of this year but has not been observed (Richards). As of May 6<sup>th</sup>, the talks are reported to be unsuccessful with one of the main complaints being a lack of funding for Tasmania to make the shift away from native forests (“Forest peace talks teeter on collapse”). Depending on the implementation of the Statement of Principles, plantation expansion could continue into the future.

Uncertainty regarding tree plantation expansion is also exacerbated by a growing interest in the use of tree plantations to offset carbon emissions to combat climate change. Recently, Private Forests Tasmania received a grant of 255,000 dollars from the Australian government to explore the potentials for carbon plantations (Carbon Plantations Project 1). The results of this grant will involve the creation of the Carbon Plantations Kit, which will educate landholders about carbon plantation options and information and increase their formation (Carbon Plantations Project). In the future, if plantations start to be used for this new purpose, more expansion of the current estate could occur.

Another factor contributing to the uncertainty over plantation expansion is the change in woodchip markets. Recently, the Japanese woodchip market has begun to favor Forest Stewardship Council (FSC) certified woodchips from plantations rather than native forest (Gale 62). This shift was the result of several successful environmental campaigns directed at Japanese woodchip buyers (Gale 311). This change has a significant effect on forestry in Tasmania because of the Gunns’ reliance on Japanese markets for profit. As of 2010, no native forest or plantations products were FSC certified in Tasmania (Spencer). Gunns is in the process of seeking certification but is not currently FSC certified (Spencer). This lack of certification has contributed to Gunns lack of woodchip markets and influenced a recent shift in their policies to be described later.

Plantation expansion is particularly relevant in the context of the Gunns’ proposed pulp mill. Initially proposed in 2004, the Gunns’ pulp mill in the Tamar Valley was approved in March by Environment Minister Tony Burke who gave the final approval for the pulp mill, which requires the use of only plantation timber (“Burke approves pulp mill”). According to Gunns, an expansion of the plantation estate in Tasmania will not be necessary to feed the mill (“Gunns sees no need to increase plantations”). Despite this claim, there is still evidence to believe that plantation expansion will continue into the future. It is possible that the mill would put additional pressure on the wood supply in Tasmania either on native forest or future plantation expansion.

Despite the uncertainty over the pulp mill, Gunns is making changes in their company that significantly influence the future of plantations. This change is influenced by community pressure as well as the shifts in Japanese preferences. In September 2010, Gunns CEO Greg L'Estrange announced that the company will pull out of native forest logging and shift to plantation based timber ("Timber industry rocked by Gunns' move"). At an industry event, L'Estrange announced:

We must change in order to achieve broader community and investor support for our activities. Our traditional industry has been natural forest, saw milling and wood chip exports. For all the reasons I gave earlier we will not be part of this sector in the future. Our customers, shareholders and other stakeholders have given us a clear message. ("Timber industry rocked by Gunns' move")

Because of this shift, sawmills across Tasmania are closing resulting in a loss of jobs and an uproar of discontent (Gale 318). This shift also resulted in the selling of native forest owned by Gunns. In 2010, Gunns gained 27.5 million dollars from their sale of 28,000 hectares of native forest (Gale 63). Amidst this shift, Gunns is in financial trouble. Recently Gunns has experienced a 99% drop in profits attributed to the global financial crisis, the high Australian dollar, and the decrease Japanese woodchip markets because Gunns lacks the currently desired FSC certification (Butler).

Fred Gale summed up the situation in his discussion of the impacts of the global financial crisis on the forestry industry in Tasmania. He wrote:

One such sector is Tasmanian forestry, which has encountered a 'perfect storm' that includes a recession in major export markets, a woodchip glut, a historically high Australian dollar, and shifting preferences in favour of plantation-based and FSC-certified products in the pulp and paper market" (Gale 307).

In essence, this is an extremely uncertain time for the future of plantation development. Plantation expansion could continue because of the implementation of the Statement of Principles, Gunns' shift away from native forest into plantations, the desire for FSC plantation-based woodchips by the Japanese, the increased interest in plantations for carbon sequestration, and to feed the proposed Gunns' pulp mill.

#### **1.4 Past Research and Media on Impacts to Rural Communities**

Both past research and media coverage have attributed tree plantation expansion with effects on rural communities. One particular report, Technical Report 199, conducted by Jacki Schirmer focused upon the socioeconomic effects on rural communities including

effects on jobs and employment, land prices, and rural population numbers (1-62). She concluded that changes in these factors were associated with plantation expansion but the extent and type of change varies greatly depending on the situation (Schirmer 5). An interesting finding from her study was that a majority of plantation workers are more likely to live in larger cities, which could affect the location of available employment (Schirmer 25). This finding also relates to the lowering of rural population levels. Population levels in rural communities are more likely to lower when a farmer sells their property to a forestry company rather than beginning their own tree farm or leasing their land (Schirmer 33). A different study concluded that more infrastructure may be required to transport materials from plantations (Gerrand et al., 6). Yet at the same time, many communities are happy to accept plantations as “an alternative commercial enterprise” (Gerrand et al., 5).

Tree plantations have also been associated with water use and pesticide issues. Tree plantations by their nature require a large amount of water for growth. Adam Gerrand writes, “the greater water use by tree crops than by pastures means that plantation development on a large proportion of a catchment will reduce river flow and recharge to groundwater” (Gerrand 4). On a positive note, tree plantations are associated with fewer problems with salinity in comparison to the growing of food crops (Gerrand 4). In the past year, tree plantations in Tasmania have drawn significant media attention because of supposed harm to the water systems (Neales). In an article by Sue Neales in the Herald Sun, a community in St Helens, Tasmania, claimed that products from the nearby eucalyptus tree plantation were causing adverse health effects in the community, including cancer. Scientists and others are skeptical of this conclusion but the controversy remains (Neales).

Another example of the problems with pesticides and plantations was described by Richard Flanagan in his article “Out of Control: The Tragedy of Tasmania’s Forests”. A farming couple in Wyena was sprayed by the herbicide, atrazine, as a result of an aerial spray by a Gunns’ helicopter that was supposed to be directed at a nearby plantation (Flanagan 23). This incident contaminated their water supply for which they received bottled water and eventually a water tank that was later removed (Flanagan 23). Chemical use for animal control has also been a significant area of tension within the tree plantation discussion. Methods such as the poison 1080 and shooting have been used to control animals, such as wallabies and pademelons, to prevent them from eating young tree seedlings (Graham Green 47). According to Gunns’ website as well as news articles, Gunns has ceased use of 1080 (“Gunns to stop using 1080 poison”).

In general, past research and media coverage have identified a variety of impacts of tree plantations. In terms of problems with pesticide use and water contamination, there is much disagreement over scientific evidence. Social impacts are evident but there are no completely conclusive studies. Because of this, this project is particularly relevant because it continues the investigation of this contentious issue.

### **1.5 Purpose of Study**

Due to the relative uncertainty related to tree plantation expansion in Tasmania and the current presence of their impacts in the media and other research, my study strives to understand the major concerns and impacts of tree plantations on rural communities. By understanding the impacts, it is my hope that reflection can take place on what is the root of these benefits and problems along with how to control these effects in the future. Through this discussion, a critical evaluation can take place in the future of whether tree plantations are a sustainable wood and paper source. I will look at the situation from the perspective of a variety of people related to the issue to grasp the situation's complexity. I plan on sending my research report to relevant forestry and environmental organizations so a greater understanding can take place of the wide range of impacts and attitudes.

## **2.0 Methodology**

### **2.1 Location**

I chose to base my project in Launceston, Tasmania because of the proximity to both plantation expansion and other competing land uses, specifically agriculture. During my preliminary research, the area of Northern Tasmania also appeared in news publications numerous times because of community opposition to plantation expansion. Furthermore, this area was also chosen because of its proximity to the site of the proposed pulp mill at Bell Bay on the Tamar River. Gunns Limited, who is heavily connected to the issue of plantations, is also based in Launceston. My designation of the project was initially North East Tasmania but this expanded so as to not limit potential participants. Generally, the project was focused on the Central North of Tasmania. In general, most people I interviewed lived within 45 minutes of Launceston.

### **2.2 Method Choice**

I chose to conduct in-depth interviews because of the complexity and emotional depth of the issue. I initially considered traveling to rural towns and passing out surveys, which would have increased my sample size, but decided against it due to transportation logistics, time constraints, and the potential for tension or negative responses. I thought interviews

would capture the most thorough picture of the situation and would be able to capture emotional depth. Interviews would also allow me to clarify responses with follow-up questions and could allow for more potential interview contacts through the use of a snowball method. I also wanted my methods to be as open as possible so as to allow the participant to describe the situation as how they see it with little influence or constraint from my questions. My methodology consisted of interviews with ten participants.

### **2.3 The Value of Multiple Perspectives**

In selecting participants my goal was to view attitudes and concerns of all kinds of perspectives. I strove to contact people who would offer a different perspective of the situation including people who live near plantations, those who live in the city, farmers, forestry employees, people who oppose or support the pulp mill, and other diverse factors. This was an important aspect of the project to me because it not only allowed me to make the connection between a person's background and their attitudes but also to identify points of contention and agreement regarding the impacts of tree plantations across a wide range of backgrounds and opinions. A table displaying interview dates, each participant's profession, and their involvement in key groups is available in Appendix 1.

### **2.4 Finding Interview Contacts**

Many of my contacts were discovered through a snowball method. I originally began my search with the Tasmanian Farmers and Graziers' Association (TFGA) with the hope of gaining contacts with farmers near plantations. The staff at TFGA guided me to Private Forests Tasmania (PFT) who were able to provide contacts. Interestingly enough, I was able to find multiple participants as well as network through my initial search for accommodation prior to arriving in Launceston. I also wanted to gain the perspective of people who might have a more negative view of plantations so I contacted TAP into a Better Tasmania (TAP) and requested the information for any people who have connections to plantations. By attending a TAP meeting during my first week in Launceston I was able to form connections with multiple participants. I have been in contact with TWS since the beginning of my project and they were able to provide background information and contacts. Geoff Mosley provided multiple contacts, particularly in the agriculture sector, through his own personal contacts. The remaining contacts were recommended by other participants.

Interviews took place during the period of April 14<sup>th</sup> to May 5<sup>th</sup>. The average length of an interview was approximately sixty minutes with lengths ranging from thirty minutes to ninety minutes. Interviews took place in a wide range of settings. During a few occasions, I shared a meal at the participants' house and interviewed them afterwards. To accommodate

one busy schedule, I interviewed one participant in the car as he ran a few errands. In the case of a few, I met them at their offices in Launceston. A schedule of my interviews and activities during this period is provided in Appendix 2.

## **2.5 Creating Interview Questions**

When forming my interview questions I strove to understand a number of facets. From each participant I wanted to gain an understanding of: their connection to tree plantations (farmer, forester, etc.), their attitude towards the impacts, which impacts were the most concerning, as well as what they saw as the major causes of these problems. Because my initial understanding of tree plantations was mainly drawn from media sources and was fairly limited, I wanted to leave the interview as open-ended as possible so as to not influence their responses. I wanted to see what impacts were most important to each participant based on what they mentioned and emphasized. The following questions were asked of almost all participants. If a participant was particularly detailed in their responses I sometimes did not ask questions that they had already answered.

My questions included:

- 1) Background Information: Profession, years living in Tasmania, location of home and proximity to plantations
- 2) Are you involved in any groups related to forestry or environmental issues? Which groups?
- 3) What is your connection to the issue of tree plantations?
- 4) In your experience, how has the plantation industry in Tasmania changed recently?
- 5) What positive impacts do you think tree plantations are having on rural communities? Do you think one impact is the most beneficial?
- 6) What negative impacts do you think tree plantations are having on rural communities? Which of these impacts is the most concerning?
- 7) What is your attitude towards the proposed Gunns' pulp mill?
- 8) Do you think plantation expansion for the new pulp mill could be sustainable?
- 9) How do you think plantation practices in Tasmania could be improved?
- 10) How do you think forestry practices in Tasmania could be improved?

## **2.6 Interview Recording and Analysis**

During interviews I took notes in my ISP journal. After each interview, I typed up my notes on the computer and wrote a short reflection on each interview. I strove to categorize the most important impacts for each participant and categorize their own perspective (farmer, forestry employee, lives among plantations, etc.). In categorizing each participant, multiple categories were assigned to each individual.

I strove to analyze my data in a variety of ways. During the analysis period I looked back over each individual interview and selected the impacts that they discussed as well as what was most concerning to them if they had indicated. From this information, I made a



chart that can be found on page 16. This information was used when writing a paragraph summing up the results of each interview. To discuss impacts in general, I used the chart on page 16 and tallied the number of times that a specific impact was mentioned. For each impact, I discussed whether it is positive or negative for communities as well as other elaboration or examples participants offered. Finally, I divided participants by their perspective and looked for patterns within attitudes of each group.

## **2.7 Limitations**

My study was limited mainly by time and transportation. Because of the short four-week time period there obviously was not enough time to interview enough people to cover all perspectives within the tree plantation debate. As I interviewed more and more participants, a larger number of people became potential participants due to my snowball method. Near the end of my time in Launceston I was in communication with representatives of Timber Communities of Australia who were potentially able to provide contacts for families who depend on plantations for their income. However, because of my limited time I was not able to follow-up for these interviews. Furthermore, I was not able to interview as many people from rural areas because of transportation constraints. I was mainly limited to people that lived in the Launceston area or who visited the city often enough that they could arrange a time to meet with me. I walked to most of my interviews and was often picked up by my participant. If I had access to a car, I would have loved to travel to more rural areas and interview a greater number of people outside of Launceston. Because of these constraints, my study is not able to convey the full complexity of this issue. Instead, I am able to illustrate aspects of the current situation through the eyes of a diverse few.

## **3.0 Results and Discussion**

### **3.1 Interview Results**

Because of the complex nature of this issue I have decided to present my results in a variety of ways. First, I describe each interview with key characteristics and opinions of each participant. Because the perspective of each person is so unique I believe it is necessary to clearly explain the background of each individual and their relation to tree plantations. Next, I divide the results from the interviews into impacts. Under each impact I describe participants' attitudes and elaborate on areas of agreement or contention among participants. Because of the desire for anonymity of several participants, each participant is identified by their main connection to the issue of tree plantations rather than name.

### **3.1.1 Retired Farmer**

This participant is a retired farmer who lives in a rural area outside of Launceston among plantations. He previously had a farm on King Island before moving to Tasmania in 2006. This participant is a member of TAP, which is where I initially contacted him, as well as other conservation groups. After moving to Tasmania, he immediately became aware of tree plantations after seeing the effects of run-off from plantations on a neighboring farm. He believes that tree plantations provide no positive impacts to rural communities but instead carry a whole range of negative impacts. His main concern is the placement of tree plantations in water catchments and the consequent pollution to drinking water. He is concerned about the dangers of aerial spraying and even described a time when he experienced a persistent headache after being sprayed nearby a plantation. He cited an increase in road and bridge damage as well as a loss of employment as negative impacts of plantations. It was evident that this participant was frustrated with both the government as well as a lack of regulation of the FPC. He also was concerned at the lack of control that local councils have over whether plantations would be developed in their community. In general, he thinks that the scale of tree plantations is the root of the problem. He believes that plantation impacts can be lessened with the banning of aerial spraying, the removal of plantations from water catchments, and the ability of plantations to come under council jurisdiction. This participant was also kind enough to spend a day showing me around the plantations near his house.

### **3.1.2 Agricultural Researcher**

This participant works for the Tasmanian government as an agricultural researcher with a focus on soil science as well as irrigation. He lives in a rural area outside of Launceston that has small farms but no tree plantations nearby. He described himself as apolitical and isn't involved with any environmental or forestry groups. This participant described many of the impacts of tree plantations in a multi-faceted light. He thought that families selling farms for plantations could reduce the viability of small towns but could also provide an opportunity for families to sell their land if they wanted to change their situation. This could be a positive change for individual families but could contribute to the closing down of rural schools and businesses because of the decrease in rural population. However, he speculated that plantations might be only part of the equation for this trend. Potentially, the reduction of rural towns might be part of the general trend toward urbanization, which is influenced by a number of factors beyond tree plantations. This participant also believes that media reports about problems from water contamination from pesticides are exaggerated. He

speculated that there might be political influence and motives within these issues. He also described how the animosity towards tree plantations might be connected to the culture of Tasmania. He described how in Tasmania there is the expectation that everything should be close by and convenient. In this sense, he described the loss of small towns as potentially more threatening to Tasmanians because on the mainland people are used to commuting longer distances and traveling further for daily activities.

### **3.1.3 Agricultural Scientist/Teacher**

This participant is an agricultural research scientist whose current area of exploration is viticulture. She has also worked as a teacher in plant science educating a variety of age groups. This participant thinks plantations are a better alternative to old-growth logging so in that sense they are positive. When I asked about both positive and negative impacts, she was quick to say that a lot of her information comes from hearsay, particularly from communications with farmers who live by plantations. She mentioned heavy water use, effects on neighboring farmers, and the difficulty to revert plantation land back to agricultural land as being some of the major impacts. She believed the most concerning impact was the effects on neighboring farms and the lack of control by farmers nearby. She described how the plantations attract native animals, which invade the crops of neighboring farms.

### **3.1.4 Environmental Campaign Coordinator**

This participant is a campaign coordinator for an environmental organization. She lives in a rural area outside of Launceston with tree plantations neighboring her property. She is involved with several anti-pulp mill groups including Pulp the Mill and Friends of the Tamar Valley. She does not believe there are any positive impacts associated with tree plantations but thought there were numerous environmental impacts including loss of biodiversity, pesticide use, water contamination, and heavy water use. Her main concern revolved around plantations in water catchments and the potential for contamination of water supplies. She attributed a lot of these problems to a lack of long-term thinking and planning. Because of the emphasis to keep jobs and expand plantations (MIS), there is not a clear vision to plantation placement resulting in plantations in inappropriate places. She also described what she termed “social dissonance” in communities. On one side people are angry at the prospect of being sprayed by chemicals but on the other side people want employment so a tension ensues.

### **3.1.5 Landscape Designer**

This participant works in landscape design and construction within Launceston. He owns a conservation reserve area of 500 acres on rural land, which is surrounded by

plantations on three sides. He described how it once felt like wilderness but is now an island. About two years ago, he started a campaign, which successfully stopped the spraying of the plantations near his property for caterpillars. He does not believe positive impacts result from tree plantations but identified several negative social and environmental impacts. On a social level, this participant thought that plantations destroy communities by allowing farmers to disappear and in turn this hurts the need for a town infrastructure. Environmentally, he believed plantations contaminate water supplies and create a loss in biodiversity. In general, the most concerning impact for this participant was the heavy water use of water, poisons, and pesticides.

### **3.1.6 Forester**

This participant lives within the city of Launceston and is involved with other forestry groups including Australian Forest Growers. As a forester, he focuses on working with current farms to incorporate plantations onto private land otherwise known as farm forestry. He is also involved with programs involving plantation establishment to offset carbon. He recognized the complaints people have about spraying and the control of browsing animals, but claimed the codes were strict and properly regulated by the FPA. In terms of positive impacts, he described how plantations provide employment, a new resource for industry, and in terms of private land allow for farmers to diversify their income. For negative impacts, he recognized the lack of planning from MIS and also described an increase in opposition towards plantations from communities. He thinks there should be a greater focus on education by the industry to have people understand that plantations aren't harming the environment. On another note, he mentioned the need for more research on how plantations are affecting other industries. Finally, he speculated that there were political forces associated with plantation opposition and that many negative perceptions about forestry in Tasmania are not true.

### **3.1.7 Animal Scientist, Teacher**

This participant has worked as both an animal scientist and a teacher in the wine industry. He currently lives in a suburb of Launceston. He is loosely associated with several anti-pulp mill groups and has a background in various conservation and environmental groups. He is not opposed to the idea of plantations but is worried about the current scale. In terms of community impacts, he divided it into two issues: the health of the environment and social issues. He believed that the land was not extremely harmed by chemical use except for potential run-off but that it should be reduced. He drew connections between the agricultural and plantations by claiming that both industries should cut down on chemical use

and regular spraying. In terms of positive impacts, he said plantations allow people to sell their land at a reasonable price if they wanted to get out of their situation. Another impact he recognized was the effect on roads damage and negative impacts for those sharing the road with the log trucks. For this participant, the scale of the current plantation estate is too big. He described it as “out of balance” and was worried it would continue to spread to all of Tasmania.

### **3.1.8 Plantation Manager**

This participant is a plantation manager who lives in a rural area with plantations and farmland on his own property. He had an in-depth understanding of how plantations have changed over time and associated many of the strong feelings about plantations with a large expansion of the plantation estate in the mid-2000s (MIS). However, he described how plantation expansion has slowed down in the recent years due to the economy, lack of woodchip markets, and a lack of confidence in the industry. In terms of positive impacts, he thought that when proper integration took place there were opportunities for employment, a renewable resource, and environmental services for the land. He thought negative impacts included visual change during harvesting and the potential displacement of other industries such as beef and dairy farming. He thinks forestry is portrayed rather negatively and unfairly in comparison to other land uses and would like to see more trust from society in forestry. He believes the industry is overregulated and scrutinized in terms of pesticide use. He also associated many of the problems of the plantation industry with other land uses (i.e. agriculture). Finally, this participant drew a comparison between the plantation industry in Tasmania and the mainland. He described how there are less concerns about the plantations on the mainland in comparison with Tasmania where the public is more sensitive to these issues. He concluded that the environmental movement is well engrained in Tasmanian culture and employment.

### **3.1.9 Forestry Trainer, Saw miller**

This participant was trained in forestry in Germany and moved to a rural area outside of Launceston twenty-three years ago. He has property of farmland, forest, and pasture neighboring plantations. He has experience in training workers in forestry and currently operates a mobile sawmill. He is involved in many forestry groups including Timber Workers for Forests (TWFF), TAP, Pro-Silva, and FSC International. He thinks forestry practices in Tasmania can and should be improved. He believes the current plantation estate is out of proportion due to MIS. One of his main concerns is that plantations in Tasmania are driven both by bulk and by pulp, which creates a product that has low market value with the

use of monocultures and chemicals. Because of the current management of plantations, he does not see any positive impacts for communities. The negative impacts he recognized included: loss of employment because of increased mechanization, increased fire hazard, and loss of rural towns and schools. He believes plantations should be diversified, managed with the idea of the triple bottom line, and information should be shared internationally.

### **3.1.10 Librarian**

This participant is a librarian living in the city of Launceston who was initially educated in botany and ecology. She has lived in the city for 21 years and has previously lived in a rural area where plantation expansion was just starting to take place around her. She is involved with conservation groups, TWS, as well as several anti-pulp mill groups. She recognized that plantations have expanded due to MIS established under the 2020 Vision. She did not think there were any positive impacts but recognized negative impacts including harm of soil and water, a violation of the space and peace with trucks and chainsaws, as well as the closing down of local towns. The most concerning impacts were the destruction of the environment in which water, soil, and biodiversity become compromised.

### 3.2 Impacts

**Table 1**

This table illustrates the impacts mentioned by each participant. An “X” is illustrated is bold and underlined if the participant expressed that impact as being the most concerning. Not every participant described an impact that was the most concerning.

	<b>Impacts Mentioned</b>							
<b>Participant</b>	Employment	Water use/pollution	Road Damage	Aesthetics and Visual	Loss of town infrastructure	Social Tension	Effect on other industries	Increase in Fire Hazard
Retired Farmer	X	<u><b>X</b></u>	X		X			X
Agricultural Researcher				<u><b>X</b></u>	X			
Agricultural Scientist		X				X	X	
Environme- ntal Campaign Coordinator		<u><b>X</b></u>		X		X		
Landscape Designer		<u><b>X</b></u>		X	X			
Forester	X						X	
Animal Scientist, Teacher		X	X		X			
Plantation Manager	X			X			X	
Former Forestry Trainer	X	X			X			X
Librarian		<u><b>X</b></u>		X	X			X
<b>Total</b>	4	7	2	5	6	2	3	3

#### 3.2.1 Water Use and Pollution

Seven out of ten participants discussed heavy water use and water pollution as impacts of tree plantations. Four out of ten participants identified this impact as the most concerning. Because of the large amount of water required to grow trees, several participants were worried about how this affect water availability for those who live downstream. Similarly, participants were concerned about chemicals from aerial spraying spreading beyond the plantations and polluting water catchments, therefore creating health problems

along with harming the environment. Other participants were skeptical about chemical concerns. One participant, an agriculture researcher, commented that the science behind the claims was faulty and that he sided with the government because of a lack of scientific evidence. Both participants in the plantation industry, a forester and a plantation manager, agreed that there already was heavy regulation of pesticide use and aerial spraying. A plantation manager thought that the industry was already overregulated. In general, this impact was mentioned by the greatest number of participants and seemed to create the greatest amount of concern. However, this pattern was not evident with three participants who were skeptical of this potential impact.

### **3.2.2 Employment**

Change in employment, as a result of plantation expansion into rural communities, was an impact that was mentioned by four out of ten participants. This was one of a few impacts that was described as both positive or negative. Two participants, both involved in the plantation industry, claimed that the development of plantations would lead to an increase in employment for that area. On the other side, two participants both associated plantation expansion with a decrease in jobs because of the increasing use of mechanization for plantation harvesting and maintenance. Employment is one area that there is agreement that impacts are taking place but there is not a clear agreement whether they are good or bad.

### **3.2.3 Loss of Town Infrastructure**

Five out of ten participants mentioned the belief that the selling of farms for plantations decreases rural town viability and causes a loss of local infrastructure. As plantations take over farms and other properties, rural population levels decline resulting in a decreasing need for local town infrastructure. Businesses and schools were mentioned as examples of infrastructure that would suffer with the loss of rural town population. Four participants described this pattern similarly but one participant offered other potential explanations for this phenomena. One participant thought that plantation expansion might be only part of the equation for the decline in rural town viability. He speculated that there might just be a general trend of urbanization, which is influenced by many factors, including tree plantations.

### **3.2.4 Social Tension**

Two out of ten participants mentioned impacts involving social relationships and tension. In her previous position as a teacher, one participant described the wide range of emotions she viewed related to plantations. She said issues like these are very difficult because of the desire for employment by many and the environmental concerns by others.



One participant, an environmental campaign manager, also described what she takes place in communities as “social dissonance”. Some community members object to plantations because of the pesticides and health effects while others support the development for jobs and their own economic well-being. Like many environmental issues, tree plantations present the common difficult relationship between jobs and environmental harm. This difference in opinion and values will inevitably create social tension among members in a community.

### **3.2.5 Effect on Other Industries**

Three out of ten participants mentioned the effects on other industries as a negative impact associated with tree plantations. In this context, most participants referred to industries as other land uses, mainly agriculture. Environmentally, one participant described the potential harm that could occur on neighboring farms. Browsing animals are attracted to the plantations for habitat, which can cause them to invade neighboring farms therefore harming their crops. She also described how competition for land is dependent on which industries have money to invest. She speculated that tree plantations are the current industry with the money to invest. The two other participants who mentioned this impact were both involved in the plantation industry. One participant thought that more research was needed into the impact of tree plantations on other industries while the other thought that tree plantations had the potential to displace traditional land uses (sheep and dairy). In relation to the potential effects on agricultural industries, one particular concern about plantation expansion is the encroachment on agricultural land. In 2009 measures were taken through the State Policy of the Protection of Agricultural Land to preserve prime agricultural land from plantation development. One of the eleven principles states, “New plantation forestry must not be established on prime agricultural land unless a planning scheme reviewed in accordance with this Policy provides otherwise” (State Policy of the Protection of Agricultural Land 3). Despite this measure, participants are still concerned that tree plantations will effect and outcompete other land uses.

### **3.2.6 Road Damage and Use**

Damage to roads and bridges was an impact mentioned by two out of ten participants. Although this does not appear to be a major concern by the majority of participants, two participants expressed clear consequences of this damage. One participant, a retired farmer, saw the repair of road and bridge damage caused by the hauling of plantation timber as a cost that would be detrimental to communities because local councils would be responsible for the cost of repairs. Another participant, an animal scientist and teacher, acknowledged the aspect of cost and also discussed the issue of people sharing the road with logging trucks. He

speculated that people, especially tourists, might be reluctant to drive in areas with many logging trucks therefore affecting the tourism industry in the area. For these two participants road damage was an impact that was connected to larger concerns: the economic effects on local councils as well as the economic effects on the tourism industry.

### **3.2.7 Aesthetics/Visual Impacts**

Four out of ten participants mentioned visual landscape change as an impact of plantation development. Three participants associated this change as negative. One participant, a landscape designer, described it as a type of “visual degradation” and a “visual sameness”. Another participant, a librarian, described the sadness associated with visiting country that has been so transformed it is unrecognizable from what it previously was. While these participants objected to the view, a plantation manager saw plantations as being perceived as both visually positive and negative. He described plantations as scenic but also described how, because plantations are a long-term crop, some people get used to the view and object to the visual change once harvesting takes place. Obviously, agreement exists that visual change is an impact.

### **3.2.8 Increase in Fire Hazard**

Three participants mentioned an increase in fire hazard as a negative impact to communities. One participant described that because of the homogeneity of monocultures, every tree in a plantation would burn in a similar way. This creates an extremely volatile environment that allows fire to spread easily. Eucalyptus, a common plantation tree, secretes oil that further fuels fire. This was presented in contrast with an old-growth forest that would contain much more variety, which would create a slower burn. This increase in fire hazard can threaten community safety and health.

### **3.2.9 Other Impacts**

There were a variety of impacts that were mentioned by a small number of participants in comparison to those previously described. These included: effects on land prices, noise pollution, loss of infrastructure on land used for plantations, effects on lifestyle and peace, and harm to soils.

## **3.3 General Themes and Patterns**

After describing the results from individual interviews, it is important to look at other themes present in the interviews. Many results for this topic are based upon responses to the question, “How do you think plantation practices could be improved?” The purpose of looking at general themes is to understand the root of negative impacts of plantation expansion as well as where people see areas for improvement. Potentially, these results

might be beneficial in terms of future plantation establishment and change. Despite my small sample size, there were a number of patterns that were visible. Although it is not possible to generalize these results back to a larger population, it is interesting to consider the relationship between a number of factors and speculate why those relationships occur. Key themes and patterns are elaborated on below.

### **3.3.1 Positive versus Negative Impacts**

In general, participants discussed a greater number of negative impacts rather than positive impacts. Specifically, five out of the ten participants did not mention any positive impacts from tree plantations to communities. Positive impacts that were mentioned included: employment, diversification of farm income, new resources for the forestry industry, increased ability of farmers to sell land, and environmental services (i.e. noise pollution protection, scenic view, and erosion prevention). Although this might not directly affect communities, multiple participants discussed the idea that they preferred plantations to the logging of old growth or native forest. This could be perceived as a positive impact for those communities who oppose old-growth logging. Different participants expressed a few impacts as both positive and negative. This included: employment and visual impacts.

On the other hand, some impacts benefit individual people or families and affect the community in a negative way. In this sense, some of the positive impacts can be seen as negative as well. Two participants discussed the possibility of families being able to sell their land at a reasonable price because there is a demand for land to grow plantations. While this may be positive for individual families it could potentially be negative for the entire community because it could contribute to a loss in rural population and infrastructure. In this sense, the expansion of tree plantations might be positive for those that want to sell their land but negative for those families left in the community after plantation development.

### **3.3.2 Environmental versus Social Impacts**

The most emphasized social impact was a loss of rural infrastructure (6 of 10) while the most emphasized environmental impact was water use and pollution (7 of 10). In general, there was a greater acknowledgment of social impacts rather than environmental impacts across the multiple perspectives. Environmental impacts were portrayed as more black and white as participants either agreed or disagreed with the science behind it. Both participants who work in the plantation industry did not indicate any environmental impacts as negative. One participant, a plantation manager, mentioned the positive impact of environmental services, which included protection from erosion and water quality improvement. On the other hand, multiple participants were extremely concerned about problems with water

contamination and excessive use. For both members in the plantation industry, negative environmental impacts were not occurring because of the strict regulation that was taking place. Social impacts seemed to be slightly more complex because many participants saw them in a multi-faceted light. This means that some saw those impacts as both positive and negative and some offered different explanations for why they were occurring. Environmental impacts seemed to be more polarizing with participants claiming they either were or were not happening rather than a mixed grey area.

### **3.3.3 Managed Investment Schemes**

Managed Investment Schemes (MIS) were a topic that came up in eight out of ten interviews. All participants who mentioned MIS described it in a negative sense and attributed it as a cause of many of the current impacts. Participants described how MIS created a fast expansion in plantations that spurred the placement of plantations in inappropriate places because of the lack of planning. Phrases such as “out of balance”, “no vision to expansion”, “not planned”, and “unfair advantage” were used by both people in the plantation industry and those who oppose plantations to describe the impacts (Anonymous interviews). One participant, a librarian, compared the result of plantation growth by MIS to “a cancer coming”. Two participants focused upon the economic aspects of MIS. One participant, an agricultural researcher, described how the tax incentives allowed people to be “lured in” to establishing plantations so the endeavor is made economically unrealistic. Another participant thought that MIS created an unfair playing field for various land uses. He described how MIS allowed people who want to create plantations to be able to pay more than farmers can to keep their business going.

Five out of ten participants mentioned the current scale of plantations as problematic. Fortunately for many of these participants, rapid expansion is not currently taking place because MIS has ended. In this sense, MIS can be seen as one of the main roots of the current situation and negative impacts. Because of the general agreement over the negativity of MIS, this is one area that future plantation expansion and change can draw on to avoid situations like this. By removing tax incentives to plantations, this will prevent investors from being economically fooled as well as preventing a quick plantation expansion.

### **3.3.4 Regulation**

Another theme associated with plantation impacts was regulation of forestry under the Forest Practices Code (FPC). Participants had varying opinions as to the effectiveness of the FPC. Multiple participants cited a lack of enforcement of the FPC as a problem in plantation practices. However, four participants recognized that the FPC itself was already very

thorough. Two participants, both involved in the plantation industry, acknowledged that communities were concerned about environmental problems however they were confident that no harm was happening because of the strict regulation taking place. One participant, a forester, thought there needs to be more focus on educating communities about tree plantations so they understand that environmental harm is not occurring. On a similar note, a plantation manager thought that forestry is compared unfairly with other land uses. He thought the industry is already regulated and scrutinized despite forestry being ahead of agricultural chemical technologies. He also described the differences between attitudes towards plantations on the mainland in comparison with Tasmania. He thought that Tasmanians might be more sensitive to these issues and attributed part of this to the strong presence of the environmental movement. This dichotomy between skepticism over regulation and a faith in regulation could possibly be connected to a person's general opinion of the forestry industry as well as their connection to it.

### **3.3.5 Plantation Effects Lack Borders**

Another general theme is the idea that many of these impacts stem from the fact that impacts cross borders whether people would like them to or not. One agricultural scientist described the effect of native animals invading neighboring farms close to plantations while many participants remain concerned about pesticide run-off and the dangers of aerial spraying. Although these are two separate problems, they are both based on the idea that one person's decision has numerous consequences for those nearby. Multiple people expressed frustration at the idea that neighbors to plantations receive negative impacts with little to no say. Potentially, this theme is the ultimate root of the spreading of impacts to communities as well as numerous other environmental problems throughout the world. It appears that plantation impacts, like most environmental issues, cannot be contained within borders.

### **3.3.6 Monoculture**

Six participants objected to the use of monocultures or a loss of biodiversity. This was also illustrated with many participants expressing a desire for plantations that are diversified with a variety of species rather than monoculture. Four of these participants who objected to monocultures were also concerned about water pollution in catchments. This makes sense because the need for pesticides is spurred by the invasion of pests to the susceptible monocultures. One participant, a plantation manager, thought that monocultures were necessary and were a reality of the industry. In contrast to monoculture, multiple participants expressed the desire for plantations to be mixed forest, which could lessen the reliance on chemicals.

### **3.3.7 Corruption**

Corruption of a variety of organizations was a common theme in criticism of both the forestry and plantation industry. One participant, an environmental campaign manager was frustrated by what she termed “crony capitalism”. In her perception, politics and the forestry industry are intertwined and supportive of each other. Another participant used the word cronyism to describe Gunns’ connection and control within the government. A participant who works as a forester acknowledged these criticisms but believed that industry and politics were not as connected as people think.

### **3.3.8 Control of Council**

Although only two participants specifically mentioned this topic I believe it is important to explore because of its interconnectedness with all of these issues. One participant, a retired farmer, was frustrated at the fact that planning schemes do not apply to forestry actions so a local council has less control over whether plantations come in. One forester in the plantation industry acknowledged that planning schemes are problematic because a community cannot object to development. This topic seems to underlie many of the described impacts. Specifically, in the case of water pollution issues as well as a loss of town infrastructure, it seems as though more planning by councils would be beneficial to prevent these problems from happening. One way in which councils lack control is over PTR in local communities. Potentially, councils could have more say in deciding if plantations should go into their area as well as their scale and location. One participant mentioned that councils could gain more control by if forestry was held accountable under the Land Use Planning and Approvals Act (LUPA). If forestry was covered under LUPA, this would be beneficial because it would mean that forestry projects would be held under planning schemes for local councils. This would allow communities to have more control over these developments. Private and public land could also be held to the same standards so loopholes around council assessment are removed.

### **3.3.9 Comparison with Other Land Uses**

In several interviews, the participant drew a comparison between other land uses and tree plantations. One participant, an animal scientist, described how many of the current problems with plantations are also problems within the agricultural industry. He thinks that both industries need to reduce their reliance on chemicals and regular spraying. Another participant, a plantation manager, thought that forestry has a negative reputation even though it is more chemically advanced than agriculture. He thought that forestry has an extremely responsible approach and in fact shares many problems with other land uses.

### **3.3.10 Selective Logging**

As a solution to the negative impacts created by tree plantations three out of ten participants suggested selective logging as an alternative. All participants thought that reliance on plantations should be lessened as well as the use of clearfelling. However, one participant speculated that it might be too late to change to a selective logging system. This solution also seems particularly difficult in the context of the Statement of Principles and Gunns' recent shift to a plantation based company.

### **3.3.11 Relationship between Participants Affiliations and Impacts**

One of the main goals of my study was to discover any patterns between a person's connection to plantations and their attitudes towards impacts. To analyze this information I divided participants into various perspectives. I decided that it made sense to place participants in multiple perspectives, as each person could not be assigned only one category.

The factors were:

- 1) Proximity to plantations
- 2) Opinion towards the Gunns' proposed pulp mill
- 3) Involvement in the forestry industry
- 4) Background in agricultural research or science

I compared the interview results of each interview within each group to unearth any potential patterns and connections between a person's attitudes towards tree plantation impacts and other factors in their life.

#### **3.3.11.1 Proximity to Plantations**

In total, five participants owned land neighboring plantations. The four participants that lived or owned property close to plantations but did not own any plantations had extremely negative views of plantations. Each participant was unable to identify any positive impacts. Interestingly enough, the main concerns of each of these participants was environmental in nature rather than social. The one participant who owned and managed plantations described positive environmental impacts but did not share the same concerns over water pollution and use as other participants that lived near plantations. As plantations are part of his job and daily life, it would make sense that he would have a more positive view of plantations and would be less concerned about their environmental impacts. It would also make sense for those near plantations to be primarily concerned about environmental impacts. Many of the impacts they were worried about had harmful consequences for both their personal health and the health of their land.

### **3.3.11.2 Attitude Towards Pulp Mill**

There was a clear difference of opinion towards impacts between those that supported the proposed pulp mill and those that opposed it. In total, six participants opposed the pulp mill, two supported it, and two had a mainly neutral opinion regarding its development. The six participants that opposed the mill all had mostly negative opinions towards plantations with their main concerns being environmental. The two participants who supported the mill were both involved in the plantation industry and saw the pulp mill as a positive economic development for the forestry industry. The two participants who were neutral about the pulp mill were both involved in agricultural science research. In this group, it appears that a negative attitude towards the pulp mill is associated with a negative attitude towards plantations. Potentially, this is because people who are concerned about plantations are also concerned about the forestry industry in general, which would include the pulp mill.

### **3.3.11.3 Involvement in the Forestry Industry**

In my sample, three participants were involved in the forestry industry. As might be expected the two participants I interviewed that were employed in the plantation industry emphasized positive impacts rather than negative. Interestingly enough, the impacts these two participants focused on were social in nature rather than environmental. Both of these participants mentioned the major environmental concerns mentioned by many participants but counteracted these arguments with their confidence in the regulation system. This pattern would make sense because these two participants are heavily involved in the forestry industry, including regulation, and might be more likely to believe that their work is credible. One participant, who was involved in forestry but not plantations directly, saw many environmental problems with plantations much of it related to the issue of monocultures. What this pattern illustrates is that concern over tree plantations is likely connected to a person's relationship to the plantation industry. However, a background in forestry, as all three participants have, does not necessarily indicate shared beliefs or agreement with the current system.

### **3.3.11.4 Background in Agriculture Research or Science**

Three participants had a background in agricultural research or science. These three participants were: an animal scientist, an agricultural scientist, and an agricultural researcher. None of these people lived near plantations and only one was involved with conservation or anti-pulp mill groups. Within this group, there was not necessarily a clear pattern. One participant emphasized impacts on neighboring farms, another discussed economic harm to investors in plantations, and another discussed how chemical reliance should be lessened.



Two of the participants' responses were based on experience in agriculture. First, as might be expected, one participant, an animal scientist, thought plantations and agriculture could both be criticized for their reliance on chemicals. The second participant was concerned about the harm of browsing animals on neighboring farms. Both of these responses are informed from their experiences at work and their past education. Overall, there was not a clear set of patterns. This would make sense because each person is involved with different types of agriculture and has other connections to the issue of tree plantation, which might have a greater impact on their opinion.

## **4.0 Conclusion**

### **4.1 Significance of the Study**

The purpose of the study was to understand the current impacts of tree plantations on rural communities from a variety of perspectives within the issue. Ultimately, I discovered that although there is much disagreement between participants, a variety of impacts were carried throughout each interview. Negative impacts were discussed far more frequently than positive impacts. The most concerning impact was the problem of water pollution in catchments as a result of aerial spraying and other pesticide use. Socially, participants were concerned about a loss of town infrastructure. Ultimately, these problems are caused by the fact that it is impossible to assign boundaries to plantations so impacts spread, both positive or negative, to neighbors and community members.

Results from interviews have pinpointed several areas that have caused many of the current impacts. This includes the scale of plantations, the prevalence of MIS, a lack of council control, and the use of monocultures. These results can be used to influence positive change in the future if more expansion occurs.

From this study it was also clear that there are areas of disagreement and agreement across a variety of perspectives. Especially between those in the plantation industry and all other participants there is much disagreement over the environmental impacts of plantations. This finding is important because it means that more research needs to take place into these impacts so a greater understanding can take place among both parties. By looking at areas of agreement, different groups can work together to create positive change based on these points of connection. Furthermore, many participants emphasized the scale of plantations as being a root for most impacts so this could potentially speak to the need to stop plantation development. Although this is a large claim, potentially future plantation development could shift to smaller-scale projects.

## **4.2 Implications for Future Research**

My project has inspired many more ideas for future research possibilities. First, I think it would be interesting to conduct a project comparing media representation of tree plantations with public opinions and attitudes. On top of interviews or surveys similar to my project, a content analysis of media sources could be done to uncover the major concerns of tree plantations in the media. This could present an interesting comparison between the media portrayal of the issue and what people actually think. From these results you could look at the importance of the media in articulating and spreading information about the impacts of tree plantations.

Another idea for future research would be to look at how communities are responding to tree plantation expansion. I would be curious to investigate situations in which rural communities have been able to stop plantation expansion into their area. It could be interesting to look at methods and strategies used by communities.

A third idea for future research emerged in my discussion with participants about the pulp mill. Many of the participants in anti-pulp mill groups discussed the large amount of disagreement present between community groups who opposed the pulp mill. The idea of like-minded groups arguing despite wanting similar outcomes is something that has fascinated me in environmental groups. It often seems as if environmentalists spend more time fighting each other rather than those they truly oppose. I think it would be interesting in the context of the pulp mill to try and understand the different conflicts so hopefully all groups can work better together to accomplish a similar goal.

Within my study there was a wide range of social impacts discussed but a small amount of potential solutions proposed. It would be beneficial to do a project looking at communities in which plantations are successfully integrated. Key characteristics of these communities could be identified with the goal of helping future plantation development be socially sustainable.

A final idea for future research is to study the state of plantation expansion into the future. If and when the Statement of Principles is put into effect and a moratorium on native forests logging begins, it would be interesting to study to what extent plantation expansion takes place and how this further impacts rural communities.

## **4.3 Recommendations and Hope for the Future**

In the coming years it is difficult to predict the potential for future plantation expansion. Especially with the uncertainty over the Statement of Principles and a shift to a plantation-based industry, it is my hope that potential future expansion is carefully considered

and planned. The majority of participants agreed that MIS was damaging to communities so plans like this should be avoided in the future and instead replaced with properly integrated plantations. This could involve the integration of smaller plantations into other existing land uses so that the current populations are able to remain on the land. An example of this was encompassed in the work of one participant whose work focused on incorporating plantations into existing farms. Local communities and councils should have greater control over the integration of plantations into their communities. This could be achieved by removing the forestry's exemption from LUPA. Understandably, more action is needed to prevent environmental harm from plantations. According to participants, this could include: moving away from monocultures with diversification, banning aerial spraying and reliance on chemicals in general, and more reliable regulation. Or perhaps what is needed is a shift away from plantations to more selective logging. Whatever the solution is, because of the vast array of opinions illustrated in this study, there needs to be more discussion among the government, the forestry industry, and rural communities to carefully plan future endeavors and fix current problems.

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## Appendices

### Appendix 1: List of Interview Participants and Affiliations

Interview Date	Profession	Key Groups
April 14 <sup>th</sup> , 2011	Retired Farmer	TAP, Conservation groups
April 18 <sup>th</sup> , 2011	Agricultural Researcher	Tasmanian Government
April 18 <sup>th</sup> , 2011	Agricultural Scientist, Teacher	
April 20 <sup>th</sup> , 2011	Environmental Campaign Coordinator	Pulp the Mill, Friends of the Tamar
April 20 <sup>th</sup> , 2011	Landscape Designer and Construction	
April 21 <sup>st</sup> , 2011	Forester	AFG
April 25 <sup>th</sup> , 2011	Animal Scientist, Teacher	Anti-pulp mill groups
April 27 <sup>th</sup> , 2011	Plantation Manager	TCA, AFG
April 28 <sup>th</sup> , 2011	Mobile Sawmiller, Forestry Trainer	TWFF, TAP, Pro-Silva, FSC Int.
May 4 <sup>th</sup> , 2011	Librarian	TWS, TAP, Conservation Trust

## Appendix 2: Research Schedule – April/May 2011

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
10 <b>APRIL</b> *Background research *Explore Launceston	11 *Background Research at public library	12 *Background Research *Prepare Interview Questions	13 *Printed Informed Consent  *Finalized interview questions	14 *Interview #1 *TAP Meeting – 7 PM	15 *Background Research	16
17	18 *Interview at 6:00  *Interview at 8:00	19 *Background research	20 *Interview at 11:00  *Interview at 5:00	21 *Interview at 9:00	22 Good Friday *Background Research	23 Day Off- Cradle Mt.
24 Day Off – Cradle Mt.	25 *ANZAC Day – Public holiday	26 *Background research *Interview at 5:30	27 *Interview at 3:00	28 *Start organizing data *Interview at 2:00	29 *Data Organization, Beginning of Analysis	30 Drive from Launceston to Bridport – view plantations
1 <b>MAY</b>	2 *Organize data	3 *Write paper	4 *Write paper  *Interview at 4:00	5 *Write paper	6	7 *Edit paper

8 *Edit paper  *Visit to plantations with participant	9 *Fly to Sydney	10 *Edit paper	11 *Print and bind ISP	12 *Fly to Brisbane	13 *ISP due	14 *ISP Oral Presentation
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