

MONITORING REPORT – REDD FORESTS PILOT



Document Prepared By Forests Alive Pty Ltd

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1 PROJECT DETAILS

1.1 Summary Description of Project

The project is designed to protect 790 hectares of native Tasmanian forest which would, if not for the project, continue to undergo selective logging.

This project is on the private land of a family who have owned and logged the land for over one hundred years. The site is therefore under threat of continued selective logging with natural regeneration, a land management policy implemented recently across a significant swathe of the property. The owners are seeking an alternative which will provide them with a comparable income, while protecting and improving the native forests of the region. This will support local biodiversity conservation, maintain watersheds and enhance carbon stocks.

The Pilot Project area includes 865 ha of native forest, includes small stands of old growth. The area is dominated by *Eucalyptus delegatensis*, *E. amygdalina* and *E. viminalis* forest communities, interspersed with *E. obliqua*, *E. ovata* and *A. dealbata*. According to the Tasmanian Forests Practices Authority, 790 ha of this forest is available for logging (and has been extensively logged in the past). The historical baseline involves extensive selective logging of 70% of merchantable timber, a land use that will be continued in the absence of finance from any carbon trade scheme. The establishment of an IFM project therefore prevents 154 847 tCO₂-e emissions from the creation of dead wood during harvest and the conversion and retirement of wood products over the project's lifetime.

Site monitoring was completed in order to examine trends and changes in:

- Project area;
- Carbon stock;
- Illegal logging rates;
- Natural disturbance; and
- Leakage.

Under these headings, the following parameters are addressed as required in the methodology:

1. Illegal logging PRA;
2. Result of limited illegal logging survey;
3. Area potentially impacted by illegal logging in stratum i (ADIST_IL, i);
4. Total area of illegal logging sample plots in stratum i (APi);
5. Area burnt in stratum i at time t (Aburn,i,t);
6. Merchantable biomass as a proportion of total above-ground tree biomass for stratum i (PMPi);
7. Area covered by stratum i (Ai); and
8. Diameter at breast height of tree (DBH).

1.2 Sectoral Scope and Project Type

This VCS Improved Forest Management AFOLU is not within a grouped project.

1.3 Project Proponent

The landowner is the project proponent.

Contact Person: Fiona Archer, Marcus Archer

Address: Poatina Road, Cressy, Tasmania 7302.

Telephone number: +61 363 978 228

1.4 Other Entities Involved in the Project

Forests Alive Pty Ltd is serving as the project developer.

Contact person: Jarrah Vercoe

Title: Project Manager, Forests Alive Pty Ltd

Address: 210 Collins Street, Hobart, Tasmania, 7000

Telephone number: +61 417 137 751

Email: jarrah@forestsalive.com

Website: <http://www.forestsalive.com>

1.5 Project Start Date

1st March 2009

1.6 Project Crediting Period

The project crediting period is 25 years. The start date is 1st March, 2009, and the end date is 1st March 2034. All work was completed before the methodology was approved (methodology approved 11th February, 2011).

1.7 Project Location

The Forests Alive's Project Area (RFPA) is located approximately 20km south of Launceston. The project zone is located close to the communities called Cressy, Poatina, and Bracknell, in the Northern Midlands bioregion of Tasmania. The site (Figure No. 01) lies between the latitudes 41°48'55.84" S and 41°51'03.02" S, and the longitudes 147°01'12.16" E and 146°57'41.47" E. The unique Property IDs for the two properties involved are 6753476 and 6753484.

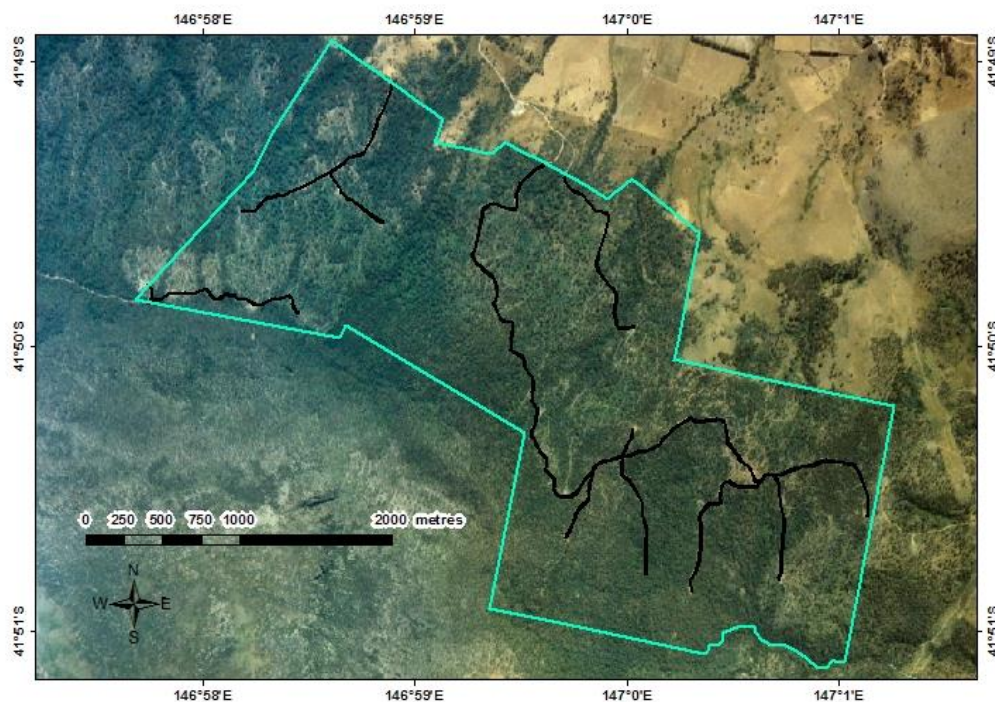


Figure No. 01. Forests Alive's Project Area (Source: Forests Alive's aerial photography, 2007).

1.8 Title and Reference of Methodology

This project uses the VCS-approved VM0010: Methodology for Improved Forest Management: Conversion of Logged to Protected Forests. This methodology was developed by GreenCollar Solutions Pty Ltd, validated by Rainforest Alliance and DNV, and approved on 11 February 2011.

The project has also used:

- The VCS Tool for AFOLU Methodological Issues
- The Tool for the Demonstration and Assessment of Additionality in VCS Agriculture, Forestry and Other Land Use (AFOLU) Project Activities
- The CDM Tool for the Calculation of the number of sample plots for measurements within A/R CDM project activities
- The VCS Tool for AFOLU Non-Permanence Risk Analysis and Buffer Determination

These methodologies fulfill the project proponent's goal of preventing logging of a forest and associated emissions by using carbon finance to protect the project area.

2 IMPLEMENTATION STATUS

2.1 Implementation Status of the Project Activity

The project is registered with the VCS and is currently being actively implemented.

This monitoring report comprises the third annual monitoring event for the Pilot project.

For this project, leakage is not a significant risk. This is based on an assessment of both activity shifting and market leakage, in accordance with Step 5 of the methodology.

Activity Shifting:

Consistent with step 5.1, an assessment will be undertaken to examine the potential for leakage through activity shifting as a result of the project. No leakage from this cause is permitted under the VM0010 methodology.

The logging projections for this project are based upon the historical logging records and will be consistent with current legislation and FullCam regeneration rates.

In addition, each individual proponent is required to demonstrate the absence of activity shifting leakage. In accordance with the methodology, if the proponent does not own any other forested properties in Australia, this is considered an adequate demonstration that activity shifting leakage cannot occur. In instances where the proponents do own forested land that could be logged which is not entirely included within the project there is opportunity for leakage through activity shifting. In order to address this, the proponent is required to demonstrate whether there has been any logging of any additional forested properties in their possession. At the initial verification of the property, the proponent must detail in the project file:

- the location of the land;
- historical records showing trends in harvest volumes; and
- if available, forest management plans prepared ≥ 24 months prior to the start of the project showing harvest plans on all owned/managed lands.

As part of the annual verification requirements, the landowner must demonstrate that activity shifting has not occurred to any forested land not included in the IFM project. The harvesting record from with-project time for these forested areas is therefore required to show either;

- no deviation from historical trends; or
- no deviation from forest management plans.

If forest management plans have been prepared ≥ 24 months prior to the start of the project, these logging projections are preferable to using historical rates.

In addition, the project proponent has communicated with the project developer during the past 12 months and indicated that *no land within the project area has been subject to disposition and no new acquisitions of viable native forested land has taken place*¹.

Uncertainty:

Estimates of uncertainty have not changed during the third monitoring period.

The main source of uncertainty is from sampling error. Using the Winrock sampling calculator, based in turn on the CDM Tool for the "Calculation of the number of sample plots for measurements within A/R CDM project activities", the pilot was determined to have a variance of 16.5% at a 95% confidence interval. This is calculated using the Winrock sampling calculator, based on the number of plots, the area of the project and the standard deviation in tonnes of carbon (extrapolated to hectare area) between

¹ Archer, Pers Comm, March 2013.

plots. This encompasses error in biomass extrapolations and the Farm Forestry Toolbox allometrics, as the accuracy of both of these averages derives from sampling error.

Project 1: Redd Forests' Pilot was implemented and submitted under the 2007.1 VCS Guidelines, before the 2011 Guidelines had been introduced. The fieldwork was therefore conducted with the purpose of achieving less than 10% variance with a 90% confidence interval. Using these parameters in the Winrock sampling calculator indicates that the project has an uncertainty of 13.5% at a 90% confidence interval. Forests Alive submitted a deviation from the Green Collar IFM methodology for this project. A confidence interval of 90% has been used, and credits deducted for uncertainty greater than 10%, i.e. 13.5% of potential voluntary carbon units are deducted from the Forests Alive's pilot.

This uncertainty is taken into account using Equations 25-26. As the PDD indicates (section 3.4, page 47), uncertainty is not readdressed until five years into the project, and is therefore not subject to monitoring in this verification period.

2.2 Deviations from the Monitoring Plan

The monitoring report is consistent with the approved Pilot Monitoring plan V1.8.

2.3 Grouped Project

This project is not a grouped project.

3 DATA AND PARAMETERS

3.1 Data and Parameters Available at Validation

Data Unit / Parameter:	Area potentially impacted by illegal logging in stratum i (ADIST_IL, i);
Data unit:	ADIST_IL, i
Description:	Participatory Rural Appraisal
Source of data:	According to the Monitoring Plan, there is no further need for additional PRAs at future monitoring events.
Value applied:	Zero
Purpose of the data:	To determine the potential risk for illegal logging
Any comment:	<p>The threat to the project area from illegal logging is negligible within Tasmania, while the threat to native forests from legally permitted logging is significant.</p> <p>This was confirmed by the completion of a Preliminary Rural Appraisal. Between 16 and 26 November 2010, key stakeholders in the timber industry were contacted (see the results in Table No. 04) and absolutely ruled out any risk of illegal logging.</p>

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Data Unit / Parameter:	Total area of illegal logging sample plots in stratum i (AP_i);
Data unit:	AP_i
Description:	N/A
Source of data:	N/A
Value applied:	N/A
Purpose of the data:	N/A
Any comment:	N/A

Data Unit / Parameter:	Area burnt in stratum i at time t ($Aburn_{i,t}$);
Data unit:	$Aburn_{i,t}$
Description:	
Source of data:	SPOT imagery and site assessment
Value applied:	Zero
Purpose of the data:	Determination of area burnt
Any comment:	The project proponent lives on the property, and regularly visits the forested area included within the project. Fire (specifically the parameter 'area burnt in stratum i at time t '), pests and disease are therefore monitored through ongoing surveillance.

SPOT Analysis for Natural Disturbance and Deviation to the Project Description

The NDVI assessment

1. Spot images, or similar satellite image with 4 colour bands are obtained. Images taken at similar times of the year should be obtained if possible (to avoid seasonal variation) however, this is not always possible when obtaining imagery.
2. Conduct an NDVI assessment using the Red and Near infra-red colour bands using the following equation;

$$NDVI = \frac{(NIR - VIS)}{(NIR + VIS)}$$

Where NIR is Near infra-red and VIS is red colour band.

An NDVI assessment has been chosen for this identifies the "greenness" of the forest canopy. The health of the forest canopy is representative of the biomass present and if any natural disturbance has occurred, this will be represented in a thinning or loss of canopy cover.

3. The NIR analysis provides values between -1 and 1, where areas of dense vegetation should be in the higher positive range.
4. The image is compared to the original NDVI assessment of the original SPOT image from the start of the project.

Justification:

The purpose of the imagery is to identify carbon stock changes associated with natural disturbance within the monitoring period. The process described in the original PDD from 2009 (under the prior VCS methodology and VCS Standard) was found to be less effective and unnecessarily complicated in demonstrating changes in carbon stocks associated with natural disturbance than the process described above.

A period of 4 years is a significant amount of time for new methods of imagery analysis to be adopted.

It is appropriate to use NDVI data to monitor longer-term events like the growth of vegetation through a season, or annual rates of deforestation². In addition NDVI is applied in many REDD+ projects as a tool for monitoring carbon stock changes over time.

Reasons for the Change: The [ISOCCLASS] unsupervised analysis suggested in the PD was not a suitable analysis for vegetation condition because forming an isoclass analysis only provides a way of identifying that trees are present and the density of the forest, and not their condition. When natural disturbance occurs (such as fire or disease) the trees may still be standing, but their canopies are severely degraded due to the disturbance, an indication of tree health.

The inclusion of a DEM also felt unnecessary to the overall goal of the analysis. The DEM is used to determine topographic attributes such as slope or aspect. Further analysis of how these factors effect SPOT imagery would be required to reduce their influence over the analysis.

The NDVI approach is commonly used to assess the vegetation condition in REDD projects and the forestry industry. The suggested approach also takes into account the potential for errors in a GIS approach by proposing to identify "Hot Spots" which are areas to monitor closely if discrepancies arise from the analysis.

The NDVI analysis has been conducted for all previous years images for each project and additions in order to provide the baseline for further analysis.

Finally, a more simplified analysis that does not compromise the outcome was considered appropriate in light of the fact that it has been acknowledged that the only significant natural risk to these projects is from fire which is also reported and publicly available on the Tasmanian Fires Service website. By combining the NDVI process with publicly available information on fire the process is even more rigorous.

Date change took place:

This deviation took place in February 2013 as part of the current validation and verification process and will be repeated in all future monitoring events.

The results of the SPOT image analysis have been placed in the appendix section.

² NDVI, A non technical review: <http://www.met.rdg.ac.uk/~swsgrime/artemis/ch3/ndvi/ndvi.html>

Data Unit / Parameter:	Merchantable biomass as a proportion of total above-ground tree biomass for stratum i (PMPi);
Data unit:	PMPi
Description:	Proportion of above ground biomass that is determined as merchantable biomass.
Source of data:	Field data and Farm Forestry Toolbox
Value applied:	N/A
Purpose of the data:	To determine, at 5 yearly intervals, changes in the merchantable biomass from the original baseline data.
Any comment:	Assessed at 5 yearly intervals.

Data Unit / Parameter:	Area covered by stratum i (Ai); and
Data unit:	Ai
Description:	Change in instance area
Source of data:	KML files and property land titles
Value applied:	Zero
Purpose of the data:	Determination of uncertainty in the project activity instance area.
Any comment:	Land title boundaries are recorded and publicly available for review. Any changes in boundary area are easily determined.

3.2 Data and Parameters Monitored

Site monitoring was completed in order to examine trends and changes in:

- Project area;
- Carbon stock (5 yearly);
- Illegal logging rates (Not Applicable, see section 4.2 of the project file);
- Natural disturbance; and
- Leakage.

Name of participant:	Name of organisation:	Date:	Means of communication:	Response:
Mark Cornelius	Landowner TOG representative	24 – 11 – 2010	Face to face	None whatsoever – there is no illegal logging in Tasmania.
John Cameron	Landowner	25 – 11 – 2010	Telephone	No potential – not an issue in Tasmania
Roderic O'Connor	Landowner Director of The Land Conservancy	24 – 11 – 2010	Telephone	Only firewood collection – no logging
Brie Milligan	Forestry Tasmania	16 – 11 – 2010	Face to face	No illegal logging ever recorded
Andrew Morgan	Director, SFM	26 – 11 – 2010	Telephone	Unheard of in Tasmania – no potential

Figure 1 Results from the Participatory Rural Appraisal (PRA) undertaken in 2010 and reported in subsequent monitoring reports.

Data Unit / Parameter:	Project Area A_i
Data unit:	Ha
Description:	Project Area
Source of data:	GPS coordinates and/or remote sensing and/or legal parcel records
Description of measurement methods and procedures to be applied:	Property boundary overlay
Frequency of monitoring/recording:	Annually
Value monitored:	Property boundaries
Monitoring equipment:	Arc GIS, Google Earth, Land Title Documentation, www.thelist.tas.gov.au
QA/QC procedures to be applied:	Standard quality control / quality assurance (QA/QC) procedures for forest inventory including field data collection and data management shall be applied
Calculation method:	N/A
Any comment:	the baseline scenario, strata shall not change with time. The <i>ex ante</i> assumption with the project scenario is that the strata will not change with time: modifications can be made <i>ex post</i> in the wake of disturbance.

Data Unit / Parameter:	Carbon stock
Data unit:	tC/ha
Description:	Carbon stock in aboveground biomass.

Source of data:	Fieldwork and FullCAM model.
Description of measurement methods and procedures to be applied:	Fieldwork to take samples of DBH and tree heights in the field. Allometrics from the Farm Forestry Toolbox (FTT) are used to determine merchantable volume of timber. FullCAM is used once more to project future carbon sequestration.
Frequency of monitoring/recording:	5 Yearly
Value monitored:	DBH of trees in fieldwork plots
Monitoring equipment:	Fieldwork equipment, FFT, FullCAM
QA/QC procedures to be applied:	Data checked on entry and FullCAM checked by independent sources.
Calculation method:	Volume of timber * 1.17 * 0.5 to determine carbon in merchantable timber.
Any comment:	N/A

Data Unit / Parameter:	Illegal logging rates
Data unit:	N/A
Description:	N/A
Source of data:	N/A
Description of measurement methods and procedures to be applied:	N/A
Frequency of monitoring/recording:	N/A
Value monitored:	N/A
Monitoring equipment:	N/A
QA/QC procedures to be applied:	N/A
Calculation method:	N/A
Any comment:	N/A

Data Unit / Parameter:	$A_{burn,i,t}$
Data unit:	Ha
Description:	Area burnt in stratum i at time t
Source of data:	GPS coordinates and/or remote sensing data
Description of measurement methods and procedures to be applied:	Spot Imagery to determine area burnt, field inventory to determine stock changes.
Frequency of monitoring/recording:	Annual
Value monitored:	Ha Burnt, stock changes (in the event of a wildfire)
Monitoring equipment:	ARC GIS

QA/QC procedures to be applied:	Standard quality control / quality assurance (QA/QC) procedures for forest inventory including field data collection and data management shall be applied
Calculation method:	N/A
Any comment:	

Data Unit / Parameter:	Leakage
Data unit:	Ha, harvested, annually from private land within Tasmania
Description:	
Source of data:	Private Forests Tasmania, Annual report 2011
Description of measurement methods and procedures to be applied:	Using the annual report from the Tasmanian Forest Practices Authority, figures on extraction rates and harvesting methods can be attained and compared annually. Figure No. 01 shows a steady decline in extraction rates from native forests across Tasmania (i.e. excluding the first two treatments).
Frequency of monitoring/recording:	Harvesting rates are assessed at annual monitoring events.
Value monitored:	Harvesting rates of native forest from private land within Tasmania
Monitoring equipment:	Private Forests Tasmania, Annual reports. http://www.privateforests.tas.gov.au/publications/annual_reports
QA/QC procedures to be applied:	Comparison of annual report data is cross checked by technical staff members of Forests Alive.
Calculation method:	Comparison of annual harvesting native forest harvesting rates using Microsoft Excel
Any comment:	

3.3 Description of the Monitoring Plan

Consistent with the requirements of the Voluntary Carbon Standard and in accordance with the approved Monitoring Plan, excepting the deviation from that plan as detailed below, the landowner and Forests Alive have undertaken monitoring of the project area.

The Monitoring Plan presents the findings of the verification period assessment for the Forests Alive's Pilot Project. It achieves this by examining trends and changes in:

- Project area;
- Carbon stock;
- Illegal logging rates;
- Natural disturbance; and
- Leakage.

Organisational Structure, responsibilities and competencies

Forests Alive Pty Ltd is acting as implementing partner on behalf of the project proponents (legal landowners) in this project, and is responsible for the development, validation and verification. Forests Alive is a leading forestry carbon project developer in Australia.

Andrew Ratcliffe is co-founder and Chairman of Forests Alive. He also holds the position of executive director of Incon China, established to assist SMEs to do business in China, and director of Sports Entertainment Asia and Smartframe Pty Ltd. Andrew spent almost twenty years working in the financial sector, including work with Price Waterhouse Coopers, ANZ Bank, First Pacific Limited and the stockbroker Dominguez Barry Samuel Montague (now UBS). Andrew has a combined Commerce/ Law degree from the University of NSW and is a qualified Chartered Accountant.

Managing Director, Virginia Young has been focused on building national and international understanding of the role of natural forests in mitigating climate change since the late 1990s. Prior to this she worked in the Federal Treasury and then ran her own business.

Working for The Wilderness Society, she pioneered a continental scale approach to nature conservation in Australia, called 'Wild Country' and was instrumental, together with a science team lead by Professor Brendan Mackey from the Australian National University, in securing one of Australia's pre-eminent research grants to build the scientific underpinnings for this work. More recently, she has completed a significant project working for Professor Jonathan West as a Verification Advisor facilitating the assessment of conservation values in areas of Tasmanian forest proposed for reservation by NGO's.

Working with industry and Drs. Aila Keto and Keith Scott, she was part of a leadership team, which delivered groundbreaking native forest protection in Queensland in 1999, including immediate protection of 425,000 hectares of south-east Queensland's forests and a commitment to phased in protection of 1.2 million hectare. She has amassed a formidable understanding of the global wood and wood products industry and of forest ecology.

Her interest in big picture problems and solutions lead her to start exploring the role that natural forests play in fighting climate change. She secured funding for research (again lead by ANU) on the role of forests in mitigating climate change and pioneered policy analysis and development at the national and international level.

She has been involved in international climate processes and campaigns since 2007. The opportunities and challenges which were apparent then lead her to create (working with key ally Global Witness) an alliance of like-minded international ENGO's called the Ecosystems Climate Alliance who work together to bring good science, good policy and nature advocacy into the UNFCCC.

Virginia was awarded Wild magazine's Environmentalist of the Year in 2001, and was recognised as one of 20 'Global Wilderness Visionaries' by the World Wilderness Congress in 2010.

Jarrah Vercoe is the Project Manager responsible for the implementation and management of IFM projects in Tasmania. He has a Bachelor of Science (Honours) from the University of Tasmania, 2003. His honours research comprised a critique of approaches to achieving voluntary conservation on private land within Tasmania. Following graduation, Jarrah worked as an environmental consultant for 3 years with GHD. Notably, in 2008 he delivered a large Commonwealth Government 'Caring for our Country'

project across Tasmania. Prior to joining Forests Alive, Jarrah was the 'biodiversity coordinator' with NRM South.

Jarrah will be supported by the Forests Alive's Technical Consultant, Lawrence Rimmer.

Lawrence graduated in 2010 with a Bachelor of Science (Honours) from the University of Edinburgh. His achievements with Forests Alive include developing a calculation process for IFM projects and designing standardized formats for maps produced in GIS software. Lawrence is responsible for vegetation stratification using GIS software, modelling carbon flows using FullCAM and calculating the voluntary carbon units generated by each project activity instance.

It is standard company practice to employ external environmental consultants to complete the fieldwork: they are provided with Forests Alive's standard operating procedures and on-site training in forest inventory techniques at the start of each week of fieldwork (as specified within the Forests Alive's standard operating procedures for fieldwork).

Describe methods for generating, recording, storing, aggregating, collating and reporting data on monitored parameters.

All data is checked independently as a quality control measure to ensure consistency with the field data. An audit sheet has been included in the template for the carbon calculations to ensure that data is entered accurately, that FullCAM is calibrated against fieldwork results and that the timber harvest plan correctly reflects the baseline scenario. The Forests Alive's standard operating procedures for quality assurance and version control are available for review by the validator.

Electronic and hard copies of all data are stored in the following two locations: Forests Alive's Sydney office: 222 Pitt Street (7th Floor), Sydney, NSW 2000, Australia. Forests Alive's Tasmanian Office: 210 Collins Street, Hobart, 7000

4 QUANTIFICATION OF GHG EMISSION REDUCTIONS AND REMOVALS

4.1 Baseline Emissions

5,062 tCO²-e

4.2 Project Emissions

-1,958.39 tCO²-e

4.3 Leakage

0 tCO²-e

Market Leakage:

Step 5.2 requires a determination of a leakage factor due to market leakage.

VM0010 states:

"The leakage factor is determined by considering where in the country logging will be increased as a result of the decreased supply of the timber caused by the project."

Public forests are harvested to satisfy quotas

State forests (i.e. those on public land) in Tasmania are managed by the government business enterprise, Forestry Tasmania. Specifically, these native forests are managed to meet set quotas of high quality sawlog (300 000m³ per annum from 2010 to 2030) with pulp and other wood products produced as byproducts of the sawlog harvesting process. This is recorded both in their Sustainability Charter³ and in the wood supply agreements with Ta An Tasmania Pty Ltd⁴. Similar agreements have been established for all state forests in Australia, according to the National Forest Policy Statement, in order to “[provide] certainty and security for existing and new wood products industries to facilitate significant long-term investments in value-adding projects in the forest products industry.”⁵ State-specific quotas are detailed in Regional Forest Agreements⁶. Since state forests of Australia are harvested according to long-term quotas, there is no risk that harvesting will be shifted to native forests on public land as a result of the project.

Private native forests in Tasmania produce a minimal quantity of sawlog

The contribution of Tasmania’s private native forests to the national timber industry is not significant. State forests in Tasmania produce around 580 000m³ per year, while private native forests produce around 50 000m³. This has declined steadily from the 200 000m³ produced on private land at the start of the decade⁷. Indeed, Tasmania contributes only 22% of all the sawlog and veneer timber harvested in private native forests, which in turn only contribute 10% of all the sawlog and veneer timber harvested in Australia⁸. Tasmania’s private native forests therefore contribute only 2.2% of high value wood products - a tiny fraction. This low volume ensures that it could have no impact on Australian prices, without even considering it is competing on an international market. Private native forests across Tasmania (let alone the project area) do not produce enough sawlog timber to affect price. The marginal reduction in available timber resources will not affect prices and therefore does not encourage market leakage.

Evidence from past and current forest practices plans indicate that 80-94% of the timber from the project area is used to produce pulp and paper products. However, as detailed above, public forests across Australia and private forests on the mainland are logged for a higher proportion of sawnwood. Tasmania has a historical trend for the harvesting of private and public native forests almost exclusively for woodchips. The market for woodchip products has declined significantly in the past 5 years and it is therefore suggested that there is therefore no risk of market leakage as a result of these projects to mainland Australia because of decreased supply of timber caused by the project. The leakage factor is determined by considering where logging for low value products may be increased in response to the project.

Ecological constraints on forest growth

³ Forestry Tasmania (2008) Forest Management Plan: Sustainability Charter, p19. Available from <http://www.forestrytas.com.au/uploads/File/pdf/Charter_2008.pdf> [viewed 18/02/2011]

⁴ Forestry Tasmania (2010) Wood Supply Agreements. Available from <<http://www.forestrytas.com.au/forest-management/wood-supply-agreements>> [viewed 18/02/2011]

⁵ Department of Agriculture, Forestry and Fisheries (1995) National Forest Policy Statement: A New Focus for Australian Forests, Australia. Available from <http://www.daff.gov.au/_data/assets/pdf_file/0019/37612/nat_nfps.pdf> [viewed 18/02/2011]

⁶ Department of Agriculture, Forestry and Fisheries (2010) Regional Forest Agreements Home, Australia. Available from <<http://www.daff.gov.au/rfa>> [viewed 18/02/2011]

⁷ Parsons, M.; Pritchard, P. (2009) The role, values and potential of Australia’s private native forests, Rural Industries Research and Development Corporation 09/049, Australia.

⁸ Parsons, M.; Pritchard, P. (2009) The role, values and potential of Australia’s private native forests, Rural Industries Research and Development Corporation 09/049, Australia.

Logging of private lands in Australia is managed on a property-specific basis. Harvesting on private land is currently conducted according to individual landowners' intentions and needs, rather than to satisfy quotas from government or processing agencies. Forest Practices Plans (or the state equivalent) are organised by landowners or their representatives. Those landowners who choose to log their native forests (rather than pursue conservation covenants) will continue to do so at one of two maximums. They will either clearfell their land and allow natural regeneration, which generates the highest possible immediate return: this was historical practice on much of the Forest Alive's pilot project, where a quarter of the property was clearfelled in 2006. Alternatively, they will log to obtain the maximum sustainable yield, which involves harvesting roughly 70% of biomass at each harvesting event, exemplified by the baseline scenario for this project area. In either situation, forests are logged according to the landowners' assessments or advice from a forest agency of the volume of merchantable timber available and the price they will obtain for the sale of the woodchips and small quantity of sawn timber. ***It is therefore not ecologically viable to increase permitted extracted volumes within existing concessions because they are already harvested at (or above) the maximum sustainable rate.***

Market demand is unable to satisfy concession requirements

Using the annual report from the Tasmanian Forest Practices Authority, figures on extraction rates and harvesting methods can be attained and compared annually. Figure No. 01 shows a steady decline in extraction rates from native forests across Tasmania (i.e. excluding the first two treatments).

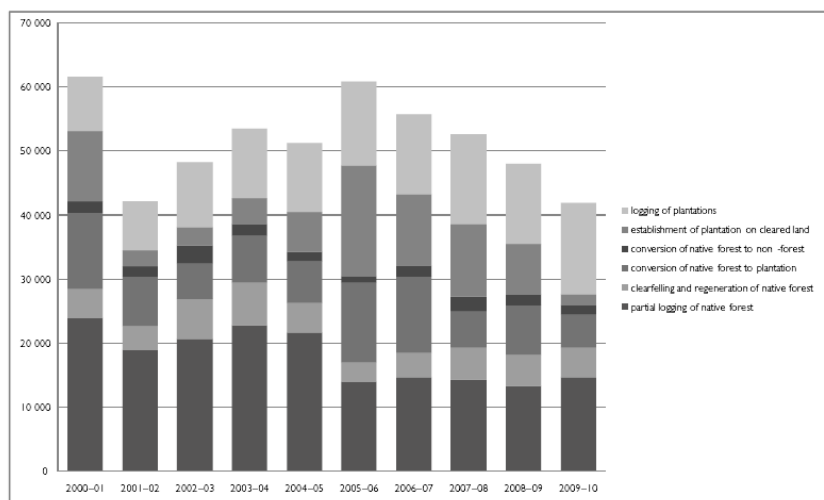


Figure No. 02. Forest area under different harvesting regimes (2000 – 2010)⁹.

Data from Private Forests Tasmania further confirms that there is a downward trend in harvested volumes from native forests on private land in Tasmania. This is the most likely area for market leakage from the project to occur, due to the quota-oriented harvesting on public land and the sawlog-oriented harvesting on the mainland (see PDD for more details). Figures No. 02 and 03 demonstrate and quantify the declining timber volume extracted from private native forests in Tasmania.

⁹ Tasmanian Forest Practices Authority Annual Reports, www.fpa.tas.gov.au<accessed 11/3/2011>

Using the data from the Tasmanian Forest Practices Authority, the average area of native forest subjected to 'partial logging' on private land was 9840 hectares per annum between 2000 and 2009.

Native Hardwood	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10
			No fuel wood	No fuel wood	No fuel wood	No fuel wood	No fuel wood	No fuel wood	No fuel wood	No fuel wood
Harwood Sawlog, Veneer & Ply	125,923	140,972	100,970	119,551	96,816	69,837	48,765	51,980	39,435	52,343
Hardwood Pulpwood	1,912,616	1,669,348	1,792,636	1,668,762	1,628,739	944,096	955,879	1,134,116	891,641	260,343
Minor Log Products, including Fuelwood	14,550	2,551	591	814	446	5,412	470	416	912	2,420
Total	2,053,089	1,812,871	1,894,197	1,789,127	1,726,001	1,019,345	1,005,114	1,186,514	931,512	315,107

Figure No. 03. The volume of native hardwood extracted per year declined by an average of more than 15% between 2000 and 2005.¹⁰

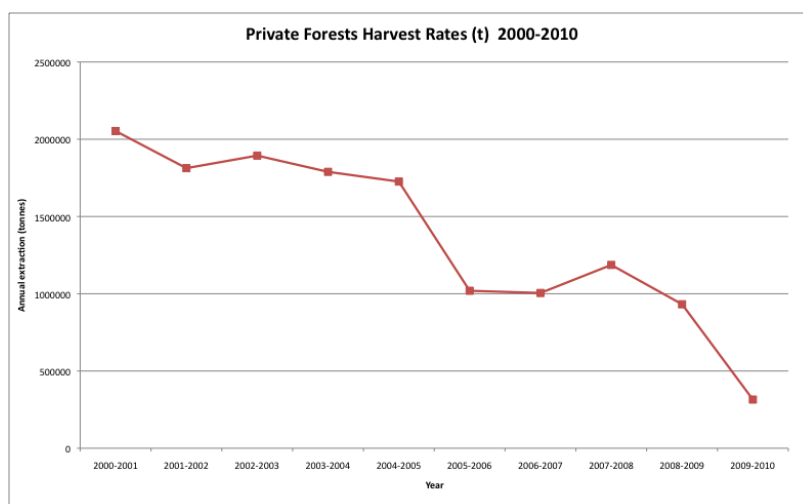


Figure No. 04. The quantity of native hardwood extracted per year has fallen steadily over the past decade.¹¹

Using data from Private Forests Tasmania (Figure No. 03), the average harvest volume for native hardwood (including sawlog, veneer, ply, pulp wood and 'minor log products') was calculated by adding the private forest harvest volumes from Figure No. 03 and dividing this by the number of years. The average over the 10-year period was 1,373,233 tonnes per annum.

¹⁰ Private Forests Tasmania, annual reports, http://www.privateforests.tas.gov.au/publications/annual_reports <accessed 11/3/2011>

¹¹ Private Forests Tasmania, annual reports< http://www.privateforests.tas.gov.au/publications/annual_reports <accessed 11/3/2011>

Using the same data the harvest volume for the year 2009-2010 shows the total volume of extracted timber as 315,107 tonnes. This reflects a 77% decline from the average volume of 1, 373, 233t per annum for the last ten years. The Private Forests Tasmania Annual report for 2010-11 states, that native forest pulpwood declined again from the previous year by a further 20%¹². The 2011, 2012 annual report¹³ indicates a total volume of native forest harvested as being 138, 854 tonnes. This constitutes an annual harvest of private native forests of 10% of the average volume from the preceeding 10 year period.

All available evidence indicates that native forest harvesting within Australia is decreasing. One potential factor that may reverse this trend is a renewed focus upon pursuing biomass burning for native forests, this will be discussed below. In the context of the current trend, consider the following findings from the most recent and comprehensive research into the Australian Forestry sector:¹⁴

“Low consumption growth and surging plantation resources characterises Australia’s wood products industry.

Plantations now supply 82% of the wood for solid wood products manufacturing (sawn timber and wood panels) in Australia (Figure 7). Production of native forest solid wood products has contracted by an average 2% pa over the past two decades.

Hardwood plantation chips are decimating native forest chip exports, the single biggest market for native forest wood. On current trends, we can expect a near complete displacement of Australian native forest chip exports within the next few years”.

¹² Private Forests Tasmania, Annual report < http://www.privateforests.tas.gov.au/publications/annual_reports> (accessed 1st of May 2012)

¹³ Private Forests Tasmania, Annual report < http://www.privateforests.tas.gov.au/publications/annual_reports> (accessed 12th April 2013)

¹⁴ Ajani, J. (2011) Australia’s wood and wood products industry, situation and outlook, Fenner School of Environment and Society, Australian National University, Australia.

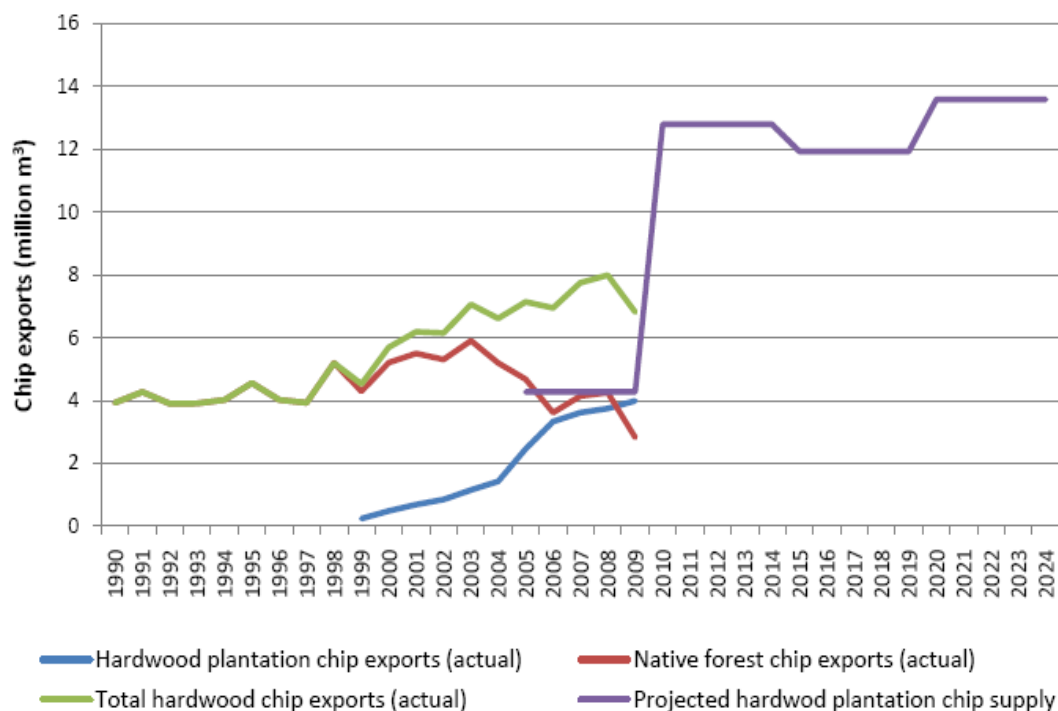


Figure No. 04. Australian hardwood chip exports and projected plantation supply

More importantly, *in the absence of increasing market demand, annual permitted extracted volumes actually cannot be increased, nor can new concessions be issued.* Land owners and forest agencies not only would not want to log without this demand, but actually cannot undertake a commercial logging event in the absence of an established customer demand. This is because the approval of a concession requires demonstration of the following:

- the destination of the forest product (export demand); and
- a commercial transaction record between the seller (landowner) and the buyer.

Clearly, these requirements cannot be fulfilled in the absence of increasing demand – which is the case for native forest-sourced wood products in Australia. Therefore, approval of increased commercial logging within established concessions – or the issue of additional concessions beyond the current rate – is not possible.

Annual extracted volumes are a response to current market demand and the available timber within a planned and approved harvesting area. It is neither legally nor biologically possible to increase the permitted harvest rate nor issue new concessions. This is because native forests are already harvested at the maximum sustainable rate in response to a steadily declining demand.

Biomass Burning

There has been a renewed focus upon establishing opportunities for biomass burning in order to reverse the declining market for native forest logging within Australia. However, no such infrastructure currently exists and biomass burning is not able to generate ‘renewable energy’ certificates through Commonwealth legislation. This is one of the key factors in establishing the viability of biomass burning. A change of politics within Australia could see a reversal of this policy and in this instance, there is a

chance that biomass burning would replace the decline in the woodchip market. This would serve to renew the pressure on native forests on private and public land and would be evident in on-going annual verification events for each project.

Falling prices remove incentives for logging

Finally, it is evident that leakage will not occur due to the shifting incentives. It is clear that timber harvesting on private land in Tasmania is determined by individual landowners in response to market demand. Private landowners, unlike publicly managed forests, are not subject to binding timber supply agreements. Therefore, annual harvesting rates will only increase if the decreased supply of timber from the establishment of the project leads to an increase in price for woodchips.

This is not plausible.

Tasmania's pulp and paper products are competing in international markets, which have been in decline for the past decade. This is firstly because supply is increasingly exceeding demand, and secondly because of a shift in market preferences from native forest-sourced to plantation-sourced wood products. This is reflected in the steadily falling price. Australian National University economist Judith Ajani calculates that the real (inflation-adjusted) price of pulp has trended downwards by an average of 2.4% per year over the past twenty years¹⁵.

The declining value of pulp is only going to be exacerbated as supply continues to outstrip demand. Internationally, the pulp industry is expanding its capacity by more than 25 million tonnes between 2008 and 2012 – roughly five times the world's projected increase in consumption. This growth in supply is concentrated in low-cost competitors such as Indonesia, Brazil, China, Russia and Uruguay¹⁶. On mainland Australia, pulp is produced only as a byproduct of sawnwood¹⁷. In Tasmania, the pulp supply is increasing as Eucalyptus plantations across the state mature (refer to Figure No. 14). Output of plantation timber in 2004 was an estimated 2 520 000 (tonnes + m³), but this is projected to increase to 6 640 000 (tonnes + m³) by 2019 as these plantations mature, even with no new plantation establishment¹⁸. 80% of this output is intended to produce low-value woodchips¹⁹. The timber from the project area is certainly too minimal to impact prices. It is also worth noting that two of the three non-plantation woodchip mills in Tasmania (at Hampshire and Bell Bay) are closing down²⁰, which means that local demand is further suppressed, exacerbating the oversupply of native forest timber.

The well-documented decline in demand for pulp sourced from native forests, rather than plantations,²¹ is driven partially by market preferences and partially by costs. The cost effectiveness of harvesting plantation for pulp far exceeds that for native forests. Harvesting plantation is a largely mechanised

¹⁵ Ajani, J. (11/10/2007) Gunns' double-barrelled dilemma, *The Age*. Available from <<http://www.theage.com.au/news/business/gunns-doublebarrelled-dilemma/2007/10/11/1191695991840.html?page=fullpage#contentSwap1>> [accessed 22/02/2011]

¹⁶ Lang, C. (2007) *Banks, Pulp and People: A Primer on Upcoming International Pulp Projects*, Urgewald, Germany. Available from <http://www.greenpressinitiative.org/documents/BPP_A_FIN_2.pdf> [accessed 22/02/2011]

¹⁷ Parsons, M.; Pritchard, P. (2009) *The role, values and potential of Australia's private native forests*, Rural Industries Research and Development Corporation 09/049, Australia.

¹⁸ Green, G. (2004) *Plantation Forestry in Tasmania: the current resource, current processing and future opportunities*, Timber Workers for Forests. Available from <<http://www.twff.com.au/documents/research/pfpt1.pdf>> [viewed 22/02/2011]

¹⁹ Harwood, C. (2010) Sawn timber from native forests and plantations in Tasmania, *CRC for Forestry Bulletin 13* Available from <<http://www.crcforestry.com.au/publications/downloads/Bulletin-13-Sawn-timber-properties.pdf>> [viewed 22/02/2011]

²⁰ (25/11/2010) Gunns quarantines Triabunna mill from closure, *ABC News*. Available from <<http://www.abc.net.au/news/stories/2010/11/25/3076498.htm?site=northtas>> [accessed 22/02/2010]

²¹ Nicholson, A. (11/06/2010) Demand for plantation timber continues to grow, *Stateline Tasmania*. Available from <<http://www.abc.net.au/news/video/2010/06/11/2925275.htm>> [access 22/02/2011]

operation due to the consistency of tree size and distribution whereas native forests require expensive machinery, manpower and infrastructure. The trend towards plantation-sourced wood is only confirmed by the closure of these woodchip mills. To support this, a 2010 study into trends within the Tasmanian Forest Industry reports that the downturn in the industry has had the greatest impact in the native forest sector, where 41% of jobs have been lost since 2006, compared to 26% of jobs dependent on hardwood plantations and 18% of those dependent on softwood plantations²².

There is therefore no possibility that reducing timber supply from the project area will lead to harvesting of native forests elsewhere through market leakage. Output is simply too small to affect price, particularly as the supply of plantation wood is increasing rapidly and demand for native forest pulpwood is declining steeply.

The establishment of this project will therefore not lead to an increase in annual extracted volumes or to the issue of new concessions.

Illegal logging is effectively non-existent in Australia, as detailed above.

Summary

The pressure on native forests fluctuates, particularly on private land where landowners log in response to market shifts. Forest practice plans can last for a period of 7 years and as such, permits can be obtained to ensure future income is not constrained by the shift in demand towards plantation-sourced timber and because of high-level discussions about constraining logging of native forests, albeit on public land. It is worth noting that constraints on public land may in fact increase the pressure on private native forests. This is inducing landowners to obtain concessions for logging native forests: this explains why the conversion rate from native forest to plantations within Tasmania increased to 7768 ha in 2008–09 from 5657 ha in 2007–08²³. If private land in Tasmania is not already harvested at the maximum rate, carbon financed IFM projects will not be the reason for any increase. Rather, they provide one of the few mechanisms to protect native forests while generating a competitive return.

Therefore, although this project will permanently reduce harvest levels within the project area, there is no capacity or incentive for timber harvesting to shift to other forests in Australia. Rather, IFM projects will stop not only logging of native forests within the project area, but also establishes carbon finance as a competitive land use. This will deter landowners from either ongoing selective logging or converting native forests to plantation or pasture to compensate for the declining revenue from logging. In this way, the project arguably has a negative leakage effect, promoting positive biodiversity and carbon outcomes.

There will be no leakage from market effects within national boundaries by removing the timber yield from this property. For these reasons, a leakage factor of zero was considered appropriate.

4.4 Summary of GHG Emission Reductions and Removals

Net GHG Emission Reduction: 7,020.39 tCO₂-e

Uncertainty: 13.6%

Net GHG Emission Reductions after uncertainty: 6,062.29 tCO₂-e

²² Schirmer J (2010) 'Tasmanian Forest Industry, Trends in Forest Industry Employment and Turnover, 2006–10.' CRC for Forestry. (CRC for Forestry: Hobart)

²³ Forest Practices Authority, Annual Report, 2008 – 2009.

The non-permanence risk buffer has been calculated to be 14.5% due to the VCS guidance on non-permanence.

Size of VCS Buffer (14.5%): 879.03 tCO²-e

Total VCUs after Buffer removed: 5,183 tCO²-e

5 ADDITIONAL INFORMATION

Forestry product:	Average yield per annum:	Current market price (\$):	Value to the project proponent (\$) (revenue less costs):
Pulp and sawlog	4000 tonnes of pulp 100 tonnes of sawlog	\$5/tonne of pulp \$30/tonne of sawlog	~\$23,000(each event)
Carbon	5365 (VCUs)	\$9/VCU	~\$48,285 (annual)
Project scenario without carbon-financing	0	0	0

The Monitoring Report, related site visits and desktop assessments have been undertaken in accordance with the endorsed Monitoring Plan for the project area.

Signed: _____ Dated: _____

Name: Jarrah Vercoe

Position: Project Manager, Forests Alive

6 APPENDIX: SPOT IMAGE ANALYSIS

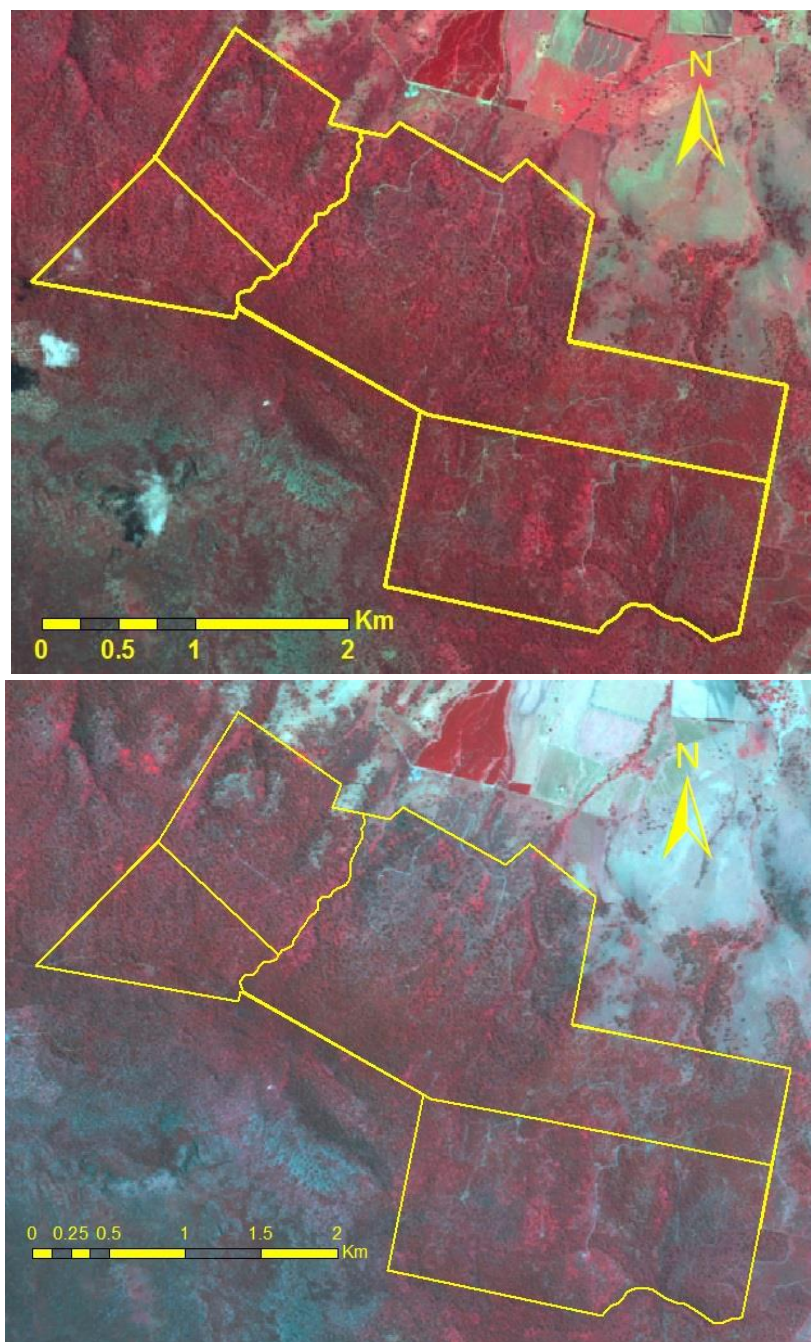
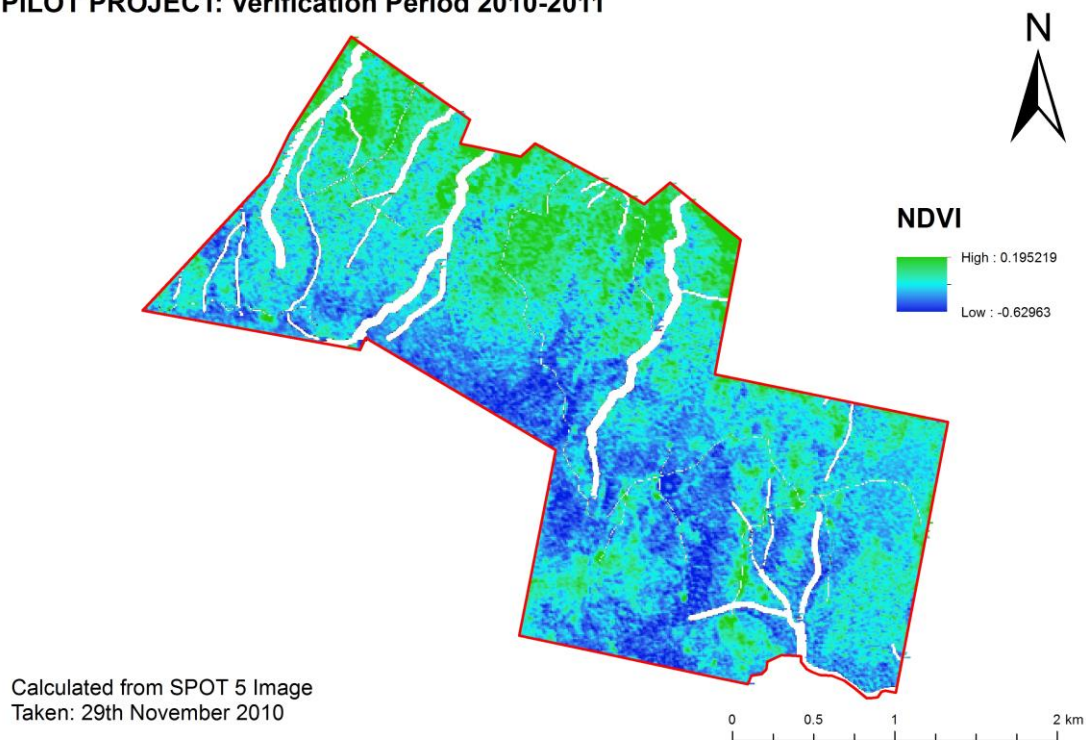
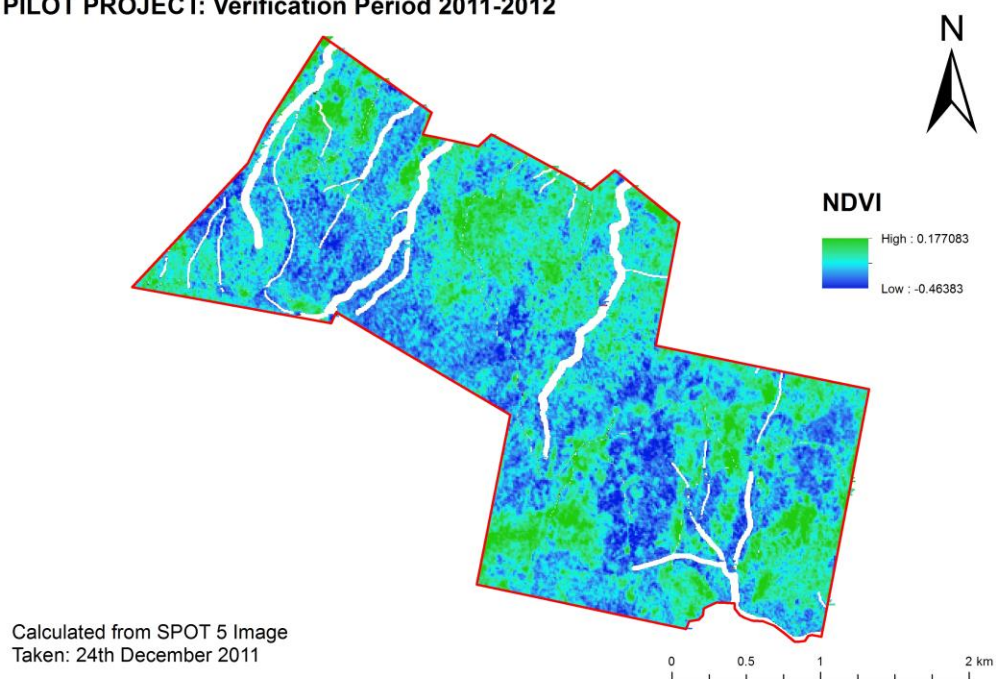


Figure No. 06. A visual analysis of the project area. Above image from SPOT taken 26/02/2011, and image for current verification period below, taken 06/01/2013.

PILOT PROJECT: Verification Period 2010-2011



PILOT PROJECT: Verification Period 2011-2012



PILOT PROJECT: Verification Period 2012-2013

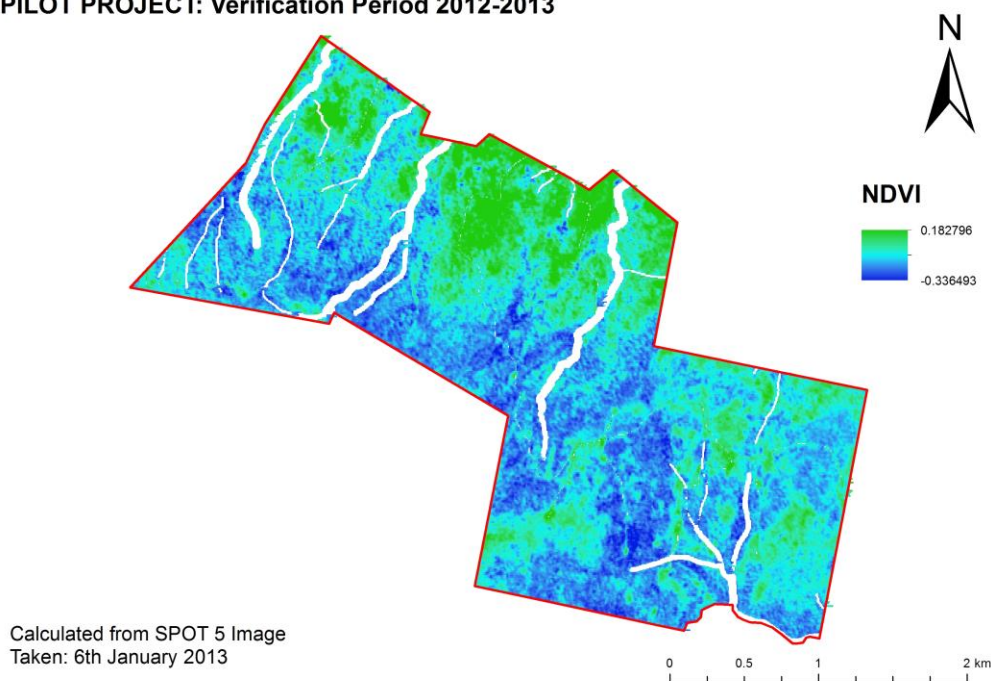


Figure No. 06b. NDVI assessment of the project area

Results from NDVI Assessment

From the NDVI assessment it is clear that the areas of dense vegetation remain the same (the green areas). Some variation does occur between the images but these can be explained as seasonal variation as some images were taken late spring, whilst others were taken mid-summer.

This analysis is a visual aid to show the extent of natural disturbances and illegal logging. With the exclusion of illegal logging (as validated), the only activity that the image analysis is used for is to determine legal logging that the landowner has undertaken, wildfire and/or disease.

Wildfire events are recorded on the Tasmanian Fire Service Website and this demonstrates that no wildfires have occurred within the project area during the project period and this is also confirmed by the project proponents. In light of the fact that the landowner, as part of the IFM project has entered into a contractual agreement not to log their land for the project period, logging is almost entirely ruled out.