

GROUPED PROJECT – PROTECTION OF A TASMANIAN NATIVE FOREST



Document Prepared By Forests Alive

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1 PROJECT DETAILS

1.1 Summary Description of Project

This Monitoring Report presents the findings of the third monitoring period for Forests Alive's Grouped Project: Protection of Tasmanian Native Forest. Additions 1,2, and 3 have been through all monitoring periods. Additions 5, 6, 7, 8, and 11 were introduced to the project in the second monitoring period. For the current monitoring period, two more additions are to be validated and included; additions 9 and 10. The project proponents and the implementing partner, Forests Alive, have undertaken site monitoring in accordance with the requirements of the Voluntary Carbon Standard and the validated Monitoring Plan.

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).

This project is located in Tasmania, Australia. The properties are uniquely identified with the PIDs listed in section 1.7.

1.2 Sectoral Scope and Project Type

VCS, IFM, AFOLU, grouped project.

1.3 Project Proponent

The landowners are the project proponents.

Instance:	Addition 1 – Connorville
Contact person:	Roderic O'Connor
Title:	Landowner
Address:	3943 Connorville Rd, Cressy, Tasmania, 7302

Telephone number: +61 (3) 6397 8291

Email: raoc@bigpond.com

Instance: Addition 2 – Charlton

Contact person(s): Eustace Allan Cameron and John Cameron

Title: Landowner

Address: 398 Mona Vale Road, Ross, Tasmania, 7209

Telephone number: +61 (3) 6381 5260

Email: monavaleestate@bigpond.com

Instance: Addition 3 – Beaufront

Contact person(s): Julian von Bibra

Title: Landowner

Address: 395 Tooms Lake Road, Ross, Tasmania, 7209

Telephone number: +61 (3) 6381 5336

Email: beaufront@bigpond.com

Instance: Addition 5 – Large Waddamana Forest

Contact person(s): Andreas Hastrup

Title: Landowner

Address: Fuglebjerggaard, Naestvedvej 14250, Fuglebjerg Denmark

Telephone number: 04540505599

Email: Andreas@hastrup.eu

Instance: Addition 6 - Cleveland

Contact person(s): Tom Shoobridge and John Shoobridge

Title: Landowner

Address: RA 7619 Lyell Highway, Ouse, Tas 7140

Telephone number: 0438362906

Email: clevelandpastoral@bigpond.com

Instance: Addition 7 - Serat

Contact person(s): Charles Downie

Title: Landowner

Address: 4235 Lyell Highway, Gretna, Tas 7140

Telephone number: 0417 591 118

Email: charles.downie@gmail.com

Instance: Addition 8 – Marlborough Estate

Contact person(s): Michael Ross Johnston

Title: Landowner

Address: Forest Lodge, Gordon River Road, Glenora, Tas 7140

Telephone number: 0407761286

Email: mjohnst@bigpond.com

Instance: Addition 9 - Cornelius

Contact person(s): Mark Cornelius

Title: Landowner

Address: 118 Groningen Road, Kingston, Tasmania, 7005

Telephone number: 03 62293591

Email: markcorn@bigpond.net.au

Instance: Addition 10 - Wisedale

Contact person(s): William Robert Gooch

Title: Landowner

Address: 3171 Frankford Road, Frankford, Tasmania, 7275

Telephone number: 0408 961 141

Email: wisedal@bigpond.com

Instance: Addition 11 – P.P Woodland Company Pty Ltd (CAN: 154 177 367)

Contact person(s): Andreas Hastrup

Title: Landowner / Director of P.P Woodland Company Pty Ltd

Address: Fuglebjerggaard, Naestvedvej 14250, Fuglebjerg Denmark

Telephone number: 04540505599

Email: Andreas@hastrup.eu

1.4 Other Entities Involved in the Project

Forests Alive Pty Ltd is acting as implementing partner on behalf of the project proponents, and is responsible for the development, validation and first verification of the Grouped Project. Forests Alive is a leading forestry carbon project developer in Australia.

Contact person: Jarrah Vercoe

Title: Project Manager

Address: 210 Collins Street, Hobart, Tasmania, 7000

Telephone number: 61 (0) 421 670 567

Email: jarrah@forestsalive.com

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

1.5 Project Start Date

Table No. 1; Project Addition start dates.

Unique instance identification number:	Start date	Monitoring Period Start Date	Monitoring Period End Date
Addition 1	1 st April 2010	16 th April 2012	15 th April 2013
Addition 2	1 st May 2010	16 th April 2012	15 th April 2013
Addition 3	1 st June 2010	16 th April 2012	15 th April 2013
Addition 5	1 st June 2011	16 th April 2012	15 th April 2013

Addition 6	1 st June 2011	16 th April 2012	15 th April 2013
Addition 7	18 th August 2011	16 th April 2012	15 th April 2013
Addition 8	15 th August 2011	16 th April 2012	15 th April 2013
Addition 9	15 th September 2011	16 th April 2012	15 th April 2013
Addition 10	26 th July 2011	16 th April 2012	15 th April 2013
Addition 11	1 st June 2011	16 th April 2012	15 th April 2013

1.6 Project Crediting Period

Table No. 2; Crediting Period for each project addition.

Unique instance identification number:	Start date	End Date	Crediting period (Years)
Addition 1	1 st April 2010	31 st March 2035	25
Addition 2	1 st May 2010	31 st March 2035	24.92
Addition 3	1 st June 2010	31 st March 2035	24.83
Addition 5	1 st June 2011	31 st March 2035	23.83
Addition 6	1 st June 2011	31 st March 2035	23.83
Addition 7	18 th August 2011	31 st March 2035	23.6
Addition 8	15 th August 2011	31 st March 2035	23.6
Addition 9	15 th September 2011	31 st March 2035	23.52
Addition 10	26 th July 2011	31 st March 2035	23.7
Addition 11	1 st June 2011	31 st March 2035	23.84

1.7 Project Location

The following table outlines each of the Property Identification numbers (PID) that represents that title boundary for each property, contained within the State of Tasmania, Australia.

Table No. 3; Project Areas and Identification Numbers

Unique instance identification number:	Name of property	Name of owner	PID	Total Hectares
Addition 1	Connorville Estates	Connorville Estates Pty Ltd	2680134	2624
Addition 1	Connorville Estates	Connorville Estates Pty Ltd	67543046	129.74
Addition 1	The Little Run	Roderic Alan O'Connor	6751497	580.4
Addition 1	Connorville Estates	Roderic Alan O'Connor	6208670	212.1
Addition 1	Connorville Estates	Connorville Estates Pty Ltd	6753038	441.7
Addition 1	Connorville Estates	Connorville Station Pty Ltd	6751470	3200
Addition 1	Connorville Estates	Connorville Estates Pty Ltd	6752991	608.6
Addition 1	Connorville Estates	Connorville Estates Pty Ltd	6751489	3579
Addition 1	Connorville Estates	Connorville Estates Pty Ltd	2618138	4647
Addition 1	Connorville Estates	Connorville Estates Pty Ltd	6208881	395.6
Addition 2	Charlton	Eustace Allan Cameron Family Trust	7951124	9927.40
Addition 2	Racecourse	Eustace Allan Cameron Family Trust	6833222	2084
Addition 3	Beaufront	Kenneth D. & Julian E.K. Von Bibra	7951095	2518
Addition 3	Beaufront	Jekpa Nominees	7951108	2782
Addition 3	Beaufront	Jekpa Nominees	6831497	1633

Addition 3	Beaufront	Jekpa Nominees	7951220	1770
Addition 3	Beaufront	Julian E. K. Von Bibra	7951247	1170.7
Addition 5	Large Waddamana Forest	Andreas Hastrup	5010179	2020
Addition 6	Cleveland	Cleveland Pastoral Estates Pty Ltd	7458954	686
Addition 6	Cleveland	Cleveland Pastoral Estates Pty Ltd	1923050	5349
Addition 6	Cleveland	Cleveland Pastoral Estates Pty Ltd	2860741	2015
Addition 6	Cleveland	John Rupert Shoobridge	5476227	363
Addition 7	Serat	Roderick John Downie and Andrew John Downie	2717160	3053
Addition 7	Serat	Andrew John Downie	2717144	125
Addition 7	Serat	Roderick John Downie and Andrew John Downie	2755247	6
Addition 7	Serat	Roderick John Downie and Andrew John Downie	2717152	36
Addition 8	Marlborough Estate	Marlborough Estate Pty Ltd	7692046	2163
Addition 8	Marlborough Estate	Michael Ross Johnston	7692038	1883
Addition 9	Woodbury Tier	Georgina Maria Cornelius and Mark Andrew Cornelius	1972725	2789.4
Addition 9	Judbury	Georgina Maria Cornelius and Mark Andrew Cornelius	5696684	187.5
Addition 9	Old Mans Head	Georgina Maria Cornelius Mark Andrew Cornelius	5848123	2204

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Addition 9	Northern Clyde Run	Georgina Maria Cornelius and Mark Andrew Cornelius	2896058	1549.56
Addition 9	Dogs Head Tier	Georgina Maria Cornelius and Mark Andrew Cornelius	6833214	141
Addition 9	Franklin	Mark Cornelius	1953671	43
Addition 10	Wisedale	Marie Celma Gooch and William Robert Gooch	7331611	649
Addition 10	Wisedale	Marie Celma Gooch and William Robert Gooch	6532163	1003
Addition 11	Little Waddamana Forest	P.P Woodland Company Pty Ltd	7757735	761.9

Table No. 4; Project Addition Areas

Unique instance identification number:	VCS IFM project area (ha)
Addition 1	3249.65
Addition 2	5871.29
Addition 3	4430.51
Addition 5	1948.88
Addition 6	2070
Addition 7	1383.62
Addition 8	1272
Addition 9	2402.38
Addition 10	850.56
Addition 11	761.9

1.8 Title and Reference of Methodology

Agriculture, Forestry and Land Use VM0010, Methodology for Improved Forest Management: Conversion from Logged to Protected Forest, V1.1.

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 Grouped Project is registered with the VCS and is currently being actively implemented.

This monitoring report comprises the 3rd verification event for additions 1,2 and 3.

This monitoring report comprises the 2nd verification event for additions 5,8,7 and 11.

Additions 1,2,3,5,8,7,9,10 and 11 are being actively implemented.

Additions 9 and 10 are being validated and verified in 2013, this monitoring report represents the first verification period for additions 9 and 10.

Table 1 in section 1.5 provides an indication of the project implementation status for each addition with regards to start dates.

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:

One of the proponents (addition 9) does hold other forested properties within Australia that contains commercially viable forest.

The remaining 9 proponents do not have any other forested properties within Australia that are not contained within the project area.

The proponent of addition 9 is required to demonstrate that activity has not occurred at each verification event. Section 1.13 of the Addition 9 project file addresses activity shifting and this is summarized below. In addition, the proponent is required to demonstrate the absence of activity shifting leakage. 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 proponent has demonstrated 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 provided below to demonstrate;

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

Table No. 5. Property Tenure

Name of property	Commercial Forest Area Excluded from IFM	Logging extraction since project commencement <12 months	Logging extraction 24 months prior to project commencement
Woodbury Tier	839	No logging occurred	Woodchip: 1083.78 T Sawlog: 51.73 T
Judbury	N/A	No logging occurred	No logging occurred
Old Mans Head	910	No logging occurred	No logging occurred
Northern Clyde Run	883	No logging occurred	Woodchip: 4699.64 T Sawlog: 42.03 T
Dogs Head Tier	N/A	No logging occurred	No logging occurred
Franklin	N/A	No logging occurred	No logging occurred
Snow Hill	486	No logging occurred	No logging occurred
Lake Leake (Badger Hill)	310	Woodchip: 3,083.1T Sawlog: 796.73 T	Woodchip: 1656.8.1T Sawlog: 558.7T

Consistent with Step 5.1, a detailed assessment of Activity Shifting is undertaken in the Monitoring report for the first verification event that accompanies this PDD. This assessment has confirmed that no activity shifting has occurred for Addition 9.

Conclusion. The landowner's rate of extraction from their forest estate has been in a state of annual decline, as evidenced by historical harvesting records and the volumes shown on existing forest practices plans. Over the past 11 years, the average rate of extraction has been between around 13,500 t per annum, as shown in Table No. 07. This will decline further with the implementation of the IFM project on 2402 ha of land. Outside of the project area, the proponent owns 4267 ha. Table No. 06 above has been compiled from all available records from the project proponent. These included weighbridge records, receipts for payment and forest practices plans. All of this information and summations have been provided to the validation agency for review. This information confirms that during the 24 months prior to the project 8092.68 tonnes of timber were removed from the forest owned by the proponent. On land outside of the project area but within the ownership of the project proponent, a total of 3879.83 tonnes has been logged since the project commenced.

Uncertainty

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

The main source of uncertainty in the baseline scenario derives from uncertainty surrounding projected harvest levels. These vary between the project activity instances, according to the landowners' understanding of forest management and capacity to develop a plausible baseline scenario. The main source of uncertainty in the project scenario derives from sampling error in measuring carbon stocks. This uncertainty is still based upon the original fieldwork, with the variance calculated by using the Winrock Sampling Calculator.

The total uncertainty for the project has not changed during this monitoring period, remaining within the permitted 15% parameters (within a 95% confidence interval) for all pre validated instances.

The newly validated projects (Additions 9 and 10) have uncertainty levels of 16.2% and 15.9% respectively.

2.2 Project Description Deviations

The monitoring report is consistent with the approved Grouped Project monitoring plan V1.8 apart from the proposed deviation for assessing vegetation change.

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 deforestation¹. 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.

¹ NDVI, A non technical review: <http://www.met.rdg.ac.uk/~swsgrime/artemis/ch3/ndvi/ndvi.html>

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

Tree Height Deviation

In some instances, a total of 10 heights could not be recovered for each species in each addition area as first described in the PD. This is due to the accessibility issues when recording a tree height accurately in a dense forest. For example, for addition 9 only nine *Eucalyptus obliqua* and eight *Acacia dealbata* species heights were obtained. The height curves generated by these samples have been compared with height curves generated from data collected from all instances over the project area in the validation process. The results showed that the heights for both additions 9 and 10 were on a conservative side compared to the alternative height curves and therefore it was considered that the records were not biased towards generating steeper height curves.

The process of how these height curves are referenced in Additions 9 and 10 for each tree record has now changed. In previous additions, height records were attributed to each plot using linear regressions from the DBH:Height data before using the Farm Forestry Toolbox to assign estimated heights and merchantable volumes to all trees. For additions 9 and 10, the FFT provided estimated heights for trees of all DBH classes which could then be referenced by the plot data, thereby removing any bias provided by the linear regression. Previously validated additions have been assessed to determine whether this change would affect the avoided emissions of the project by 5% (the percentage that determines whether an error has materiality). The materiality assessment concluded that the change in the total avoided emissions in the Grouped project was less than 5% and therefore not large enough to constitute a re-calculation of previously validated additions of this Grouped project.

2.3 Grouped Project

This Monitoring Report presents the findings of the third monitoring period for Forests Alive's Grouped Project: Protection of Tasmanian Native Forest. In total, 10 additions have been validated and verified. These additions are consistent with the eligibility criteria outlined within the grouped project PDD Version 1.20.

Table No. 6; Addition Validations and Verifications

Verification Year	Additions Validated	Additions Verified
2010	1, 2, 3	1, 2, 3
2011	5, 6, 7, 8, 11	1, 2, 3, 5, 6, 7, 8, 11
2012	9, 10	1, 2, 3, 5, 6, 7, 8, 9, 10, 11

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);
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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:	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. This was confirmed by the completion of a Preliminary Rural Appraisal. Between 16 and 26 November 2010 and November 2012, key stakeholders were contacted and absolutely ruled out any risk of illegal logging.

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
Eric 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

Name	Position	Email	Response	Date
Bruce Hay	Professional Forester, Tasmania	bhay@tasland.org.au	Negligible potential for illegal logging	August 2013, Telephone conversation
Josie Kelman	Director, enviro-dynamics (Tasmania)	info@enviro-dynamics.com.au	Negligible potential for illegal logging	August 2013, face to face discussion.
Axel Meiss	Rural Land Management consultant, Tasmania	axel.meiss@rlm.com.au	Negligible potential for illegal logging	August 2013, face to face discussion.
Oliver Strutt	Manager, Understorey Network, Tasmania	oliver@understorey-network.org.au	Negligible potential for illegal logging	August 2013, face to face discussion.

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 proponents for each instance live on the property, and regularly visit the forested area included within the Forest Alive's Grouped Project. Fire (specifically the parameter 'area burnt in stratum i at time t '), pests and disease are therefore monitored through ongoing surveillance.

Data Unit / Parameter:	Merchantable biomass as a proportion of total above-ground tree biomass for stratum i (PMP_i);
Data unit:	PMP_i
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 (A_i); and
Data unit:	A_i

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 each Addition project file);
- Natural disturbance; and
- Leakage.

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.

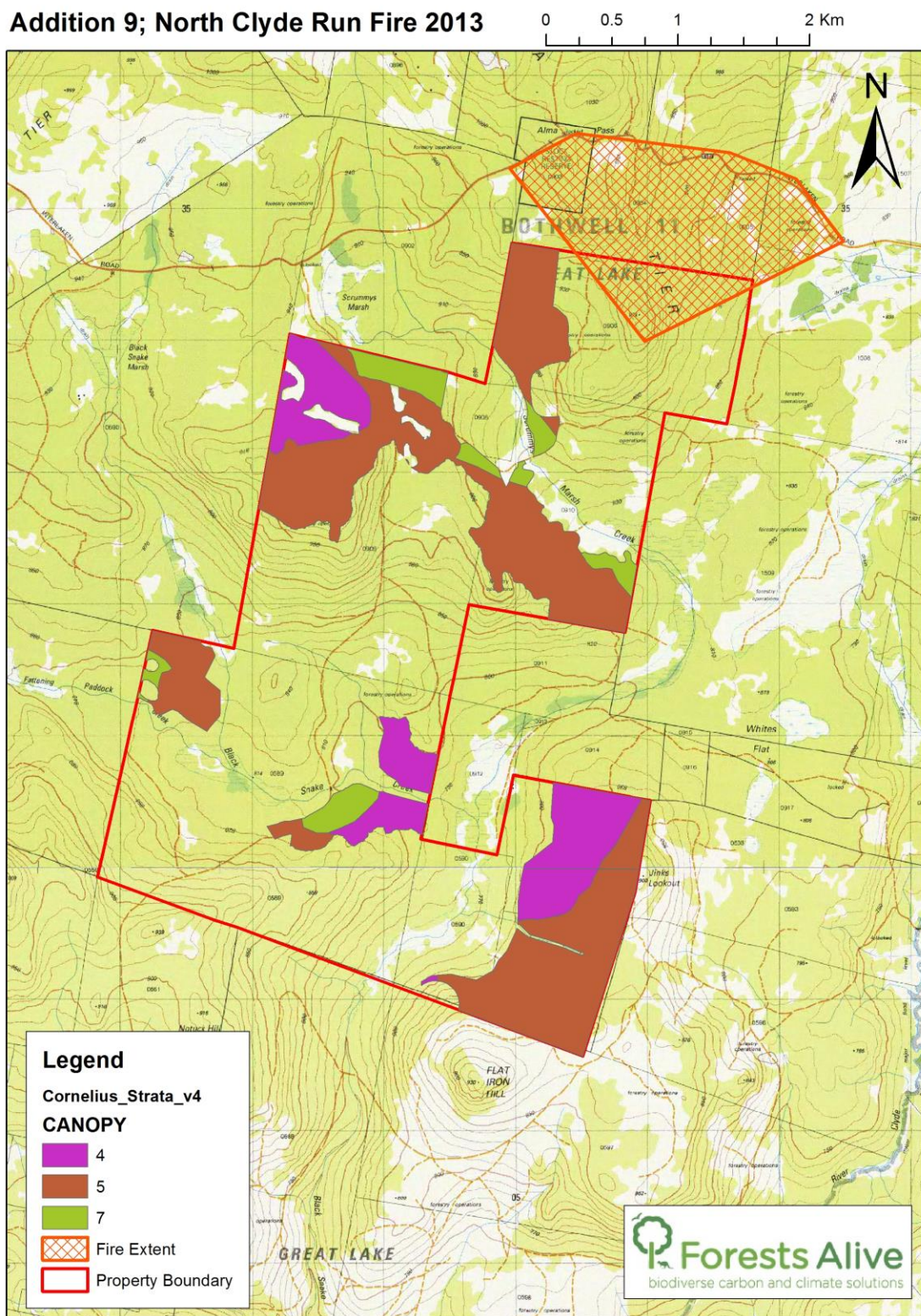
Frequency of monitoring/recording:	Annual
Value monitored:	Ha Burnt, stock changes (in the event of a wildfire)
Monitoring equipment:	ARC GIS
QA/QC procedures to be applied:	Standard quality control / quality assurance (QA/QC) procedures for forest inventory including field data collection and data management shall be applied
Calculation method:	N/A
Any comment:	

One fire has been reported to be close to the project area since the project commencement / *during the current verification period*.

The fire encroached onto Addition 9's North Clyde Run property². This was a ground fire and did not result in the loss of trees and subsequently the carbon stock in aboveground tree biomass. Furthermore, the fire did not encroach on any of the forest submitted into the Grouped Project. A map has been provided to demonstrate this;

² Tasmanian Fire Service, www.tfs.tas.gov.au <accessed 24-4-2013>

Addition 9; North Clyde Run Fire 2013



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:	

Addition 9 has reported one logging event between July 2011 and January 2012 on a property not in the project area called Badger Hill. This harvest event took 3,593 tonnes of pulp wood, 579 tonnes of peeler log and 2,851 cm of sawlog. This area is under prescribed harvest regimes and this harvest event was not a result of activity shifting due to other properties owned by the proponent not being available for logging.

In addition, each 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*³.

3.3 Description of the Monitoring Plan

The Monitoring Plan outlines the monitoring procedures to be implemented across the Grouped Project. The project proponents are responsible for monitoring their defined project activity instance in accordance with the PDD and Monitoring Plan, and have acknowledged this responsibility by signing a copy of this Monitoring Plan.

This monitoring plan was developed in accordance with all requirements of the Voluntary Carbon Standard and the grouped project PDD. It identifies the procedures necessary to evaluate project

³ Pers Comm, project proponents for additions, 1, 2, 3, 5, 6, 7, 8, 9, 10, and 11 <September 2012 to march 2013>

performance and monitoring of the net change in carbon stocks. This is essential for verification of the reductions in carbon emissions through the Improved Forest Management project.

Organisational structure, responsibilities and competencies

Forests Alive Pty Ltd is acting as implementing partner on behalf of the project proponents (legal landowners) in the Grouped Project, and is responsible for the development, validation and first verification of each project activity instance. 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.

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 Specialist, Lawrence Rimmer. Lawrence holds a Bachelor of Science (Hons) from the University of Edinburgh. His thesis on agricultural capabilities in Scotland was awarded the James Anthony More Memorial prize (2010). His achievements with Forests Alive include:

- Developing a calculation process for IFM projects for efficient and accurate carbon calculation processing.
- Designing standardised formats for maps produced in GIS software.
- Conducting carbon sequestration modelling using FullCAM, a Full Carbon Accounting Model produced by the Australian Government.
- Provides technical expertise for all projects and has contributed towards company documentation, government submissions and promotional material.

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: Suite 3, Level 7, 222 Pitt Street, Sydney, NSW, 2000

Forests Alive's Tasmanian Office: 210 Collins Street, Hobart, 7000

4 QUANTIFICATION OF GHG EMISSION REDUCTIONS AND REMOVALS

For the quantification of all baseline and project scenario emissions calculation files have been provided to the validator;

Addition	Calculation File
1	Addition 1 Project Calculations.xls
2	Addition 2 Project Calculations.xls
3	Addition 3 Project Calculations.xls
5	Addition 5 Project Calculations.xlsm
6	Addition 6 Project Calculations.xlsm
7	Addition 7 Project Calculations.xlsm
8	Addition 8 Project Calculations.xlsm
9	Addition 9 Project Calculations v6.xlsm
10	Addition 10 Project Calculations v6.xlsm
11	Addition 11 Project Calculations.xlsm

4.1 Baseline Emissions

Table No. 7; Baseline Emissions

Unique instance identification number:	Net Baseline Emissions - Annual
Addition 1	22417.74
Addition 2	25520.20
Addition 3	24416.35
Addition 5	22737.42
Addition 6	9740.66
Addition 7	6342.75
Addition 8	6845.82
Addition 9	11025.65
Addition 10	4085.62
Addition 11	6193.78

4.2 Project Emissions

Table No. 8; Project Emissions

Unique instance identification number:	Net Project Emissions - Annual
Addition 1	-4563.72
Addition 2	-16885.48
Addition 3	-11248.87
Addition 5	-5508.13
Addition 6	-1322.60
Addition 7	-1624.62
Addition 8	-819.48
Addition 9	-3091.84
Addition 10	-1381.71
Addition 11	-2190.88

4.3 Leakage

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 has been 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 all additions are based upon the historical logging records and are consistent with current legislation and FullCam regeneration rates.

In addition, each individual proponent has demonstrated the absence of activity shifting leakage. In accordance with the methodology, where 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.

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.” (Box 2, page 38)

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 Charter⁴ and in the wood supply agreements with Ta An Tasmania Pty Ltd⁵. 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.”⁶ State-specific quotas are detailed in Regional Forest Agreements⁷. 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

⁴ 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]

⁵ Forestry Tasmania (2010) Wood Supply Agreements. Available from <<http://www.forestrytas.com.au/forest-management/wood-supply-agreements>> [viewed 18/02/2011]

⁶ 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]

⁷ Department of Agriculture, Forestry and Fisheries (2010) Regional Forest Agreements Home, Australia. Available from <<http://www.daff.gov.au/rfa>> [viewed 18/02/2011]

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 decade⁸. 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 Australia⁹. 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

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).

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.

⁹ 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.

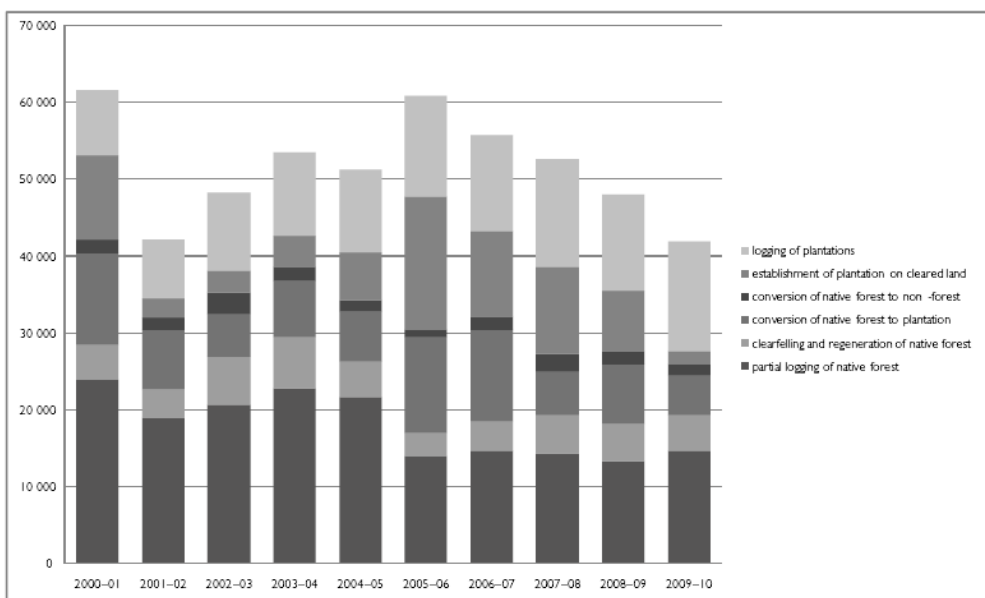


Figure No. 01. Forest area under different harvesting regimes (2000 – 2010)¹⁰.

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.

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

¹⁰ Tasmanian Forest Practices Authority Annual Reports, www.fpa.tas.gov.au<accessed 11/3/2011>

Figure No. 02. The volume of native hardwood extracted per year declined by an average of more than 15% between 2000 and 2005.¹¹

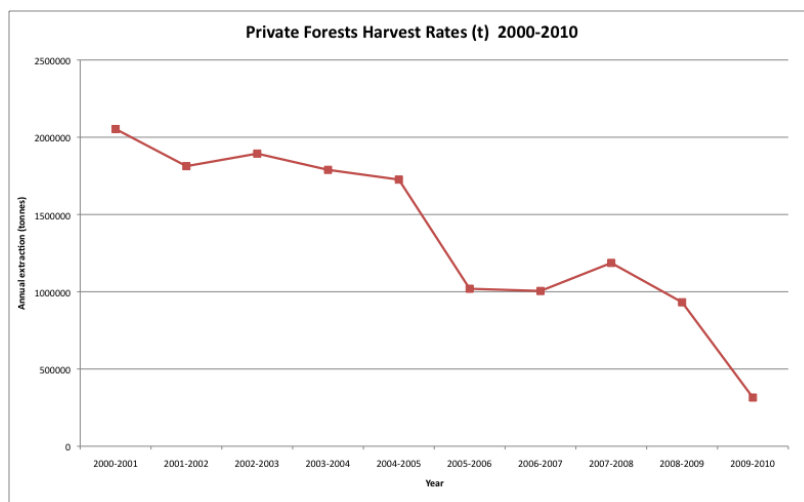


Figure No. 03. The quantity of native hardwood extracted per year has fallen steadily over the past decade.¹²

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.

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%¹³.

The 2011, 2012 annual report¹⁴ 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 preceding 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,

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

¹² Private Forests Tasmania, annual reports<
http://www.privateforests.tas.gov.au/publications/annual_reports <accessed 11/3/2011>

¹³ Private Forests Tasmania, Annual report <
http://www.privateforests.tas.gov.au/publications/annual_reports> (accessed 1st of May 2012)

¹⁴ Private Forests Tasmania, Annual report <
http://www.privateforests.tas.gov.au/publications/annual_reports> (accessed 12th April 2013)

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:¹⁵

“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”.

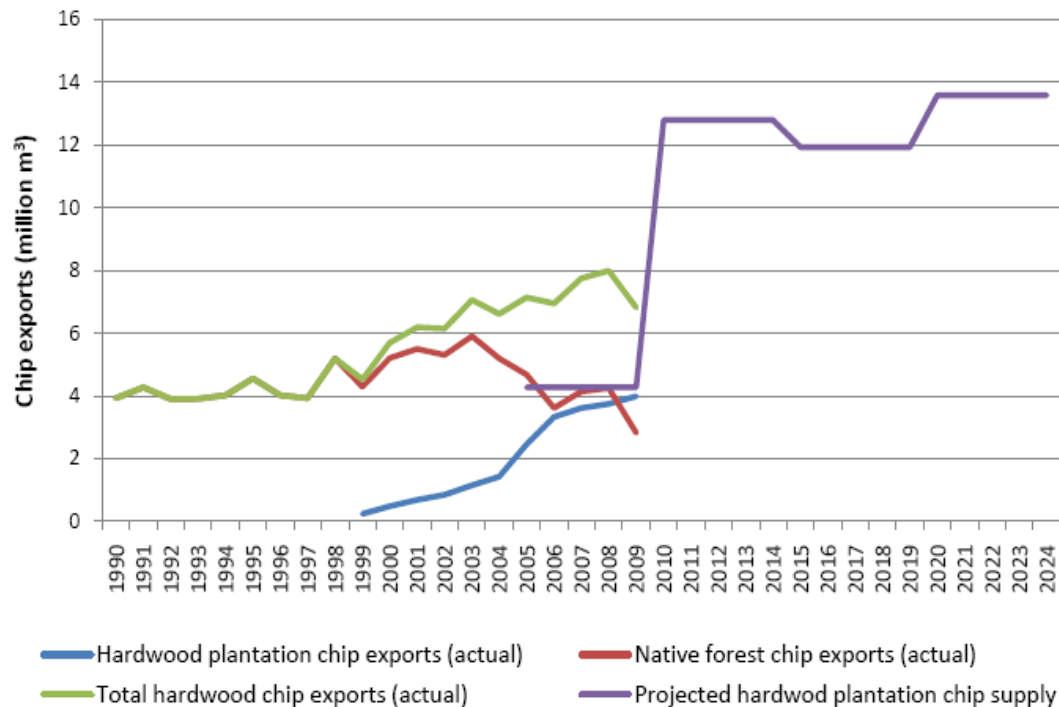


Figure No. 04. Australian hardwood chip exports and projected plantation supply

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.

¹⁵ Ajani, J. (2011) Australia’s wood and wood products industry, situation and outlook, Fenner School of Environment and Society, Australian National University, Australia.

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 years¹⁶.

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 Uruguay¹⁷. On

¹⁶ Ajani, J. (11/10/2007) Gunns’ double-barrelled dilemma, *The Age*. Available from <<http://www.theage.com.au/news/business/gunns-doublebarrelled-dilemma/2007/10/10/1191695991840.html?page=fullpage#contentSwap1>> [accessed 22/02/2011]

¹⁷ 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]

mainland Australia, pulp is produced only as a byproduct of sawnwood¹⁸. 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 establishment¹⁹. 80% of this output is intended to produce low-value woodchips²⁰. 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 down²¹, 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,²² 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 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 plantations²³.

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

¹⁸ 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.

¹⁹ 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/pftpt1.pdf>> [viewed 22/02/2011]

²⁰ 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]

²¹ (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]

²² 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]

²³ Schirmer J (2010) 'Tasmanian Forest Industry, Trends in Forest Industry Employment and Turnover, 2006–10.' CRC for Forestry. (CRC for Forestry: Hobart)

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 2007–08²⁴. 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

The avoided emissions and corresponding Verified Carbon Units from the Forests Alive's Grouped Project are detailed in Table No. 01.

Table No. 9. GHG emission reductions and VCU's for the Grouped Project.

Unique instance identification number:	Annual Carbon emissions avoided by the establishment of an Improved Forest Management project (tCO ₂ -e):	Deduction for Uncertainty NA= Uncertainty less than 15%	Net GHG reductions after uncertainty deductions (tCO ₂ -e)	Buffer Pool Contribution (at 14.5% of total emissions after uncertainty deductions)	Number of VCUs to be issued for verification period 16th April 2012 – 15th April 2013
Addition 1	26,981	NA	26,981	3,912	23,069
Addition 2	42,406	NA	42,406	6,149	36,256
Addition 3	35,665	NA	35,665	5,172	30,493
Addition 5	28,247	NA	28,247	4,096	24,151
Addition 6	11,063	1,777 (16.1%)	9,286	1,347	7,940
Addition 7	7,967	NA	7,967	1,155	6,812
Addition 8	7,665	1,253 (16.3%)	6,412	930	5,483
Addition 9	14,117	2,290 (16.2%)	11,827	1,715	10,112
Addition 10	5,467	846 (15.5%)	4,621	670	3,951
Addition 11	8,385	NA	8,385	1,216	7,168
TOTAL	187,963	6,166	181,797	26,362	155,435

²⁴ Forest Practices Authority, Annual Report, 2008 – 2009.

5 ADDITIONAL INFORMATION

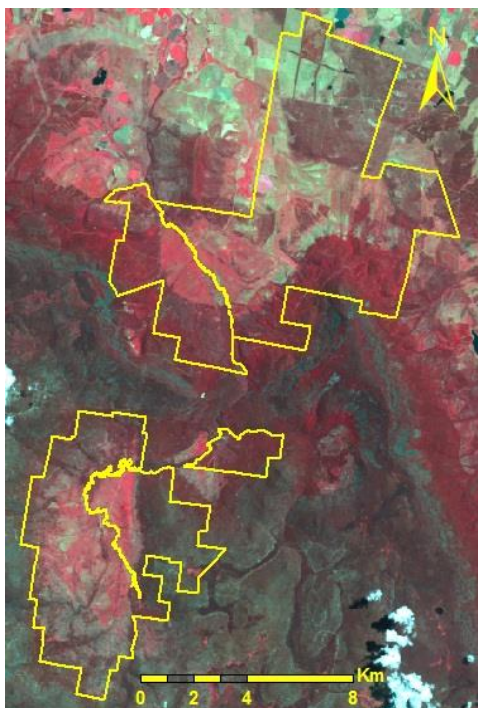
Vegetation Condition Analysis

The SPOT images have been assessed for vegetation cover using the Normalised Difference Vegetation Index (NDVI). The NDVI assessment is widely used to assess vegetation cover and is the most appropriate analysis for the project sites due to the access to SPOT imagery over several project time periods.

Two bands from each SPOT image have been used; Band 1 for visible red spectral reflectance (VIS), and Band 4 for near infra-red spectral reflectance (NIR). The following equation has been used;

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

This assessment has been applied to the SPOT images taken at different points in the project to date. A comparison can therefore be made of the vegetation condition at different times in the project. Images of the SPOT used can be found below, and below that the results of the analysis.



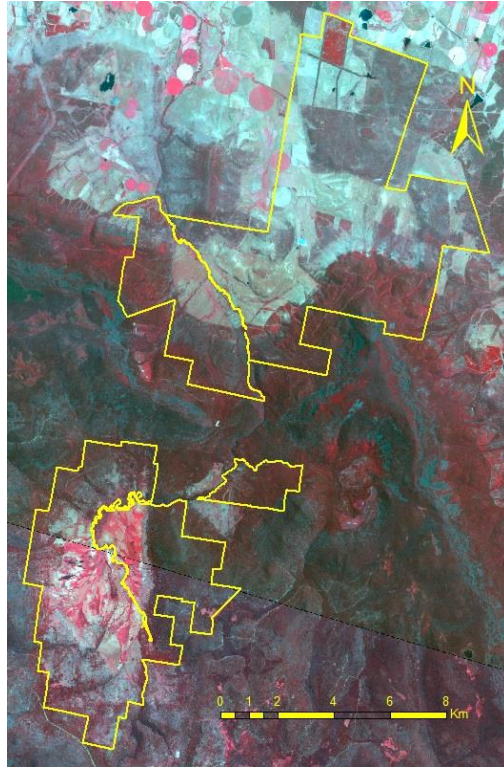
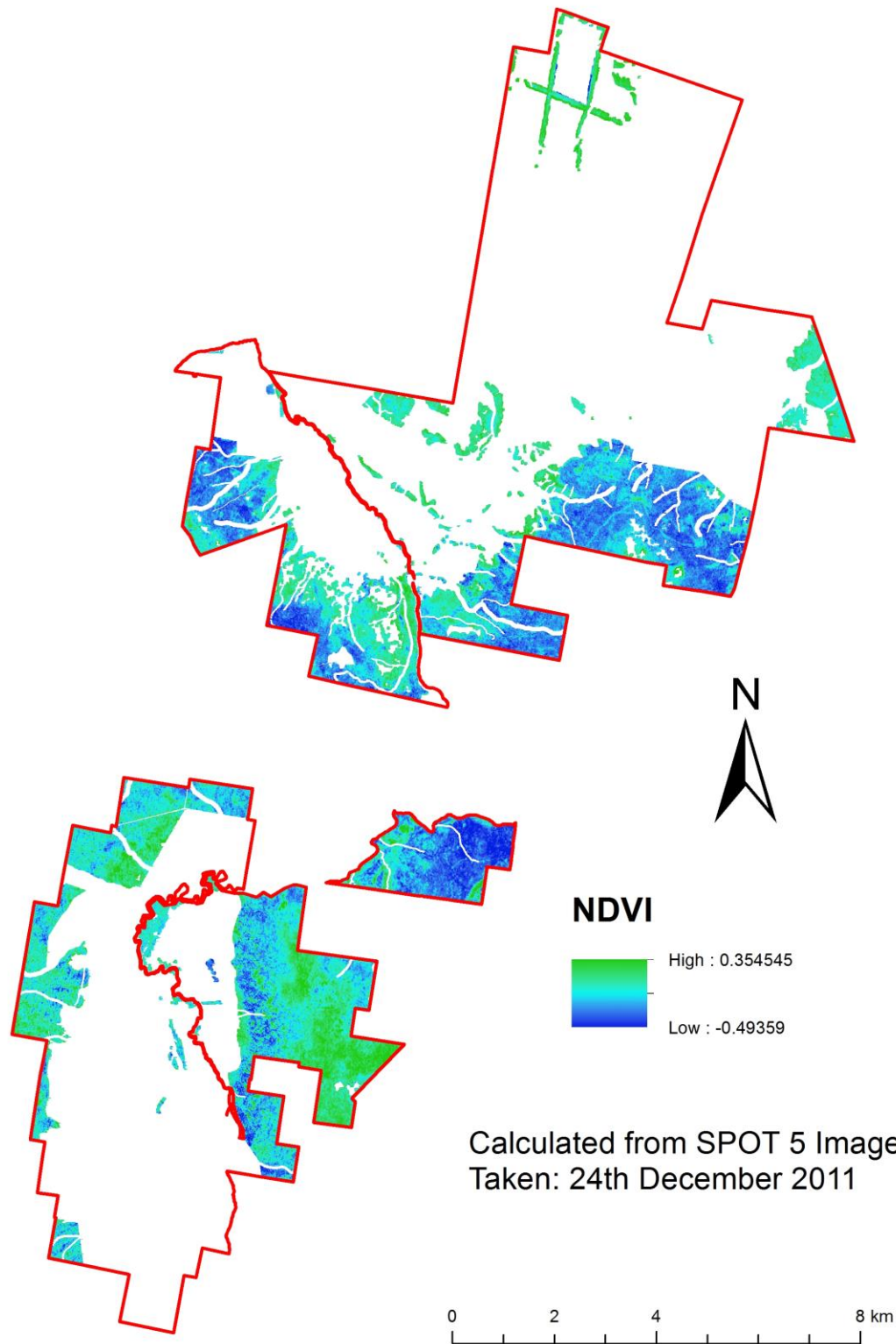


Figure No. 05a. Visual analysis of addition 1. Above image taken 24/12/2011 and the image below is a composite of two images for this verification period both taken 06/01/2013.

Addition 1: Verification Period 2011-2012



Addition 1: Verification Period 2012-2013

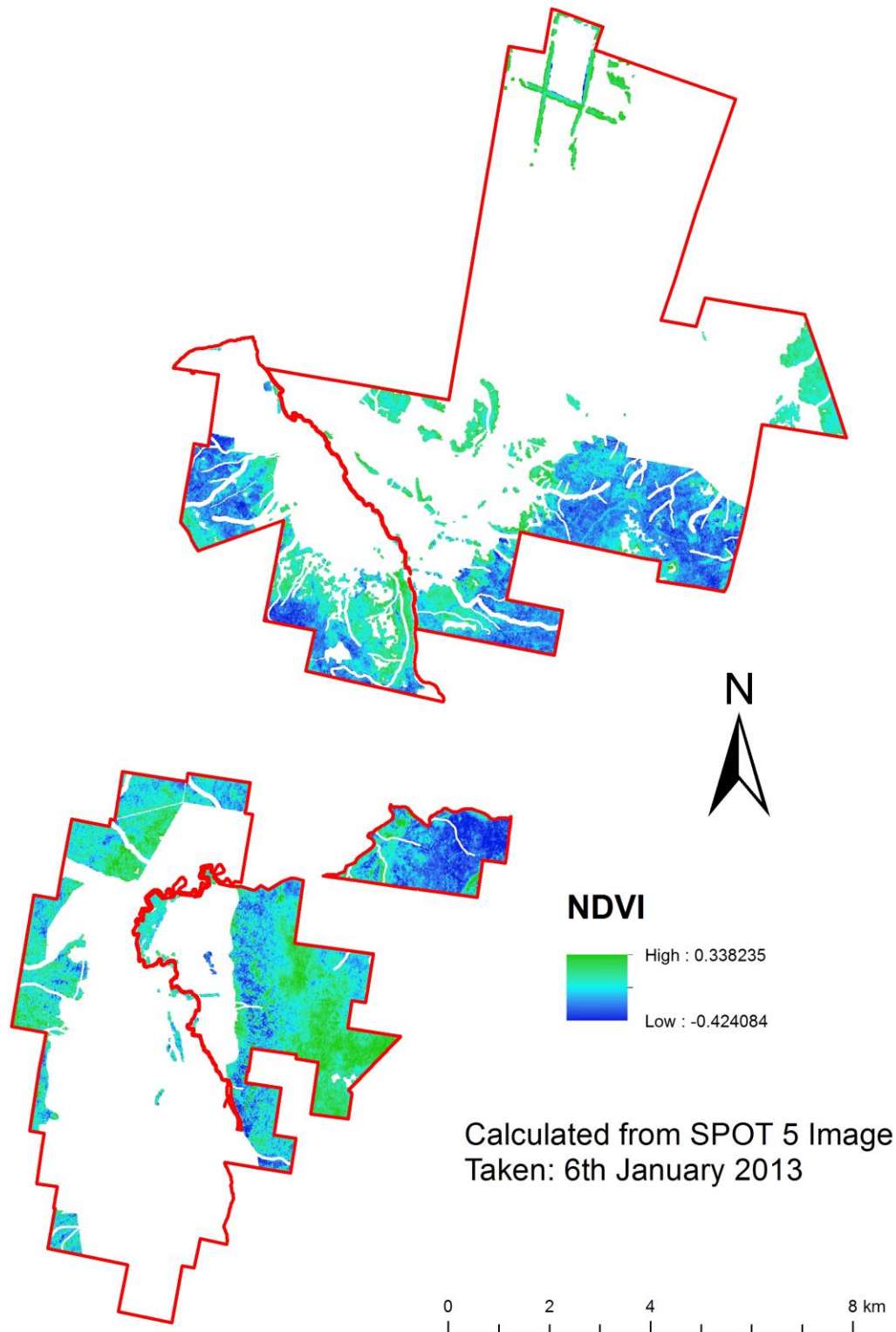


Figure No. 05b. NDVI assessment results for addition 1

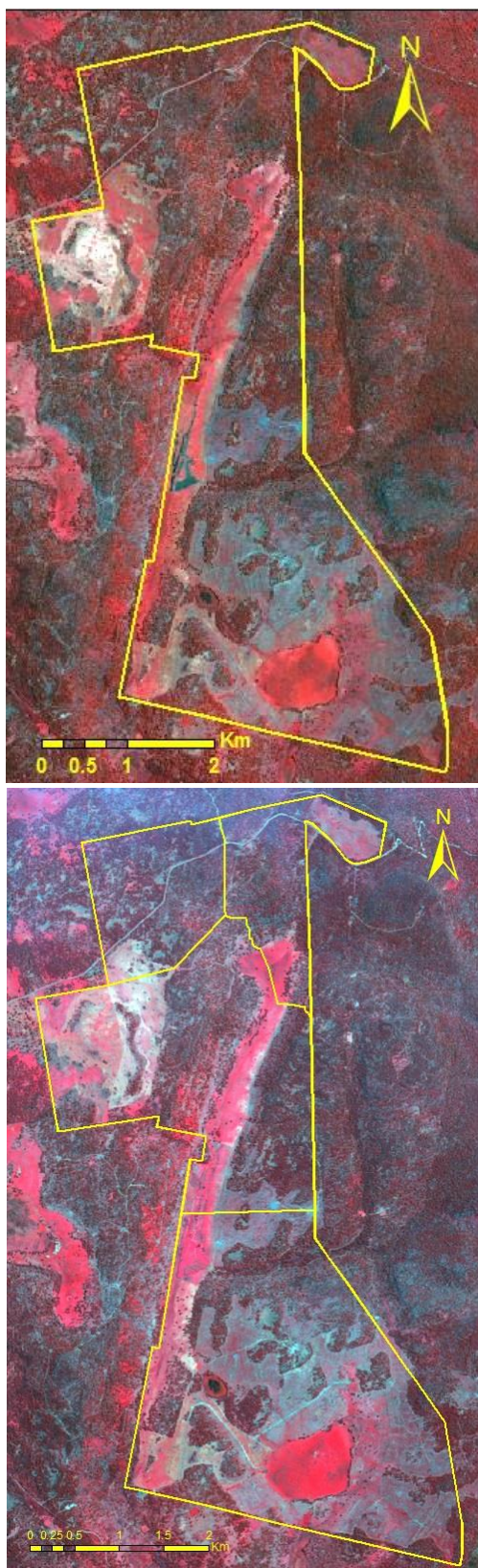


Figure No. 06a. Visual analysis of addition 2. Above image taken 29/01/2012 and the image below is taken for this verification period on 06/01/2013.

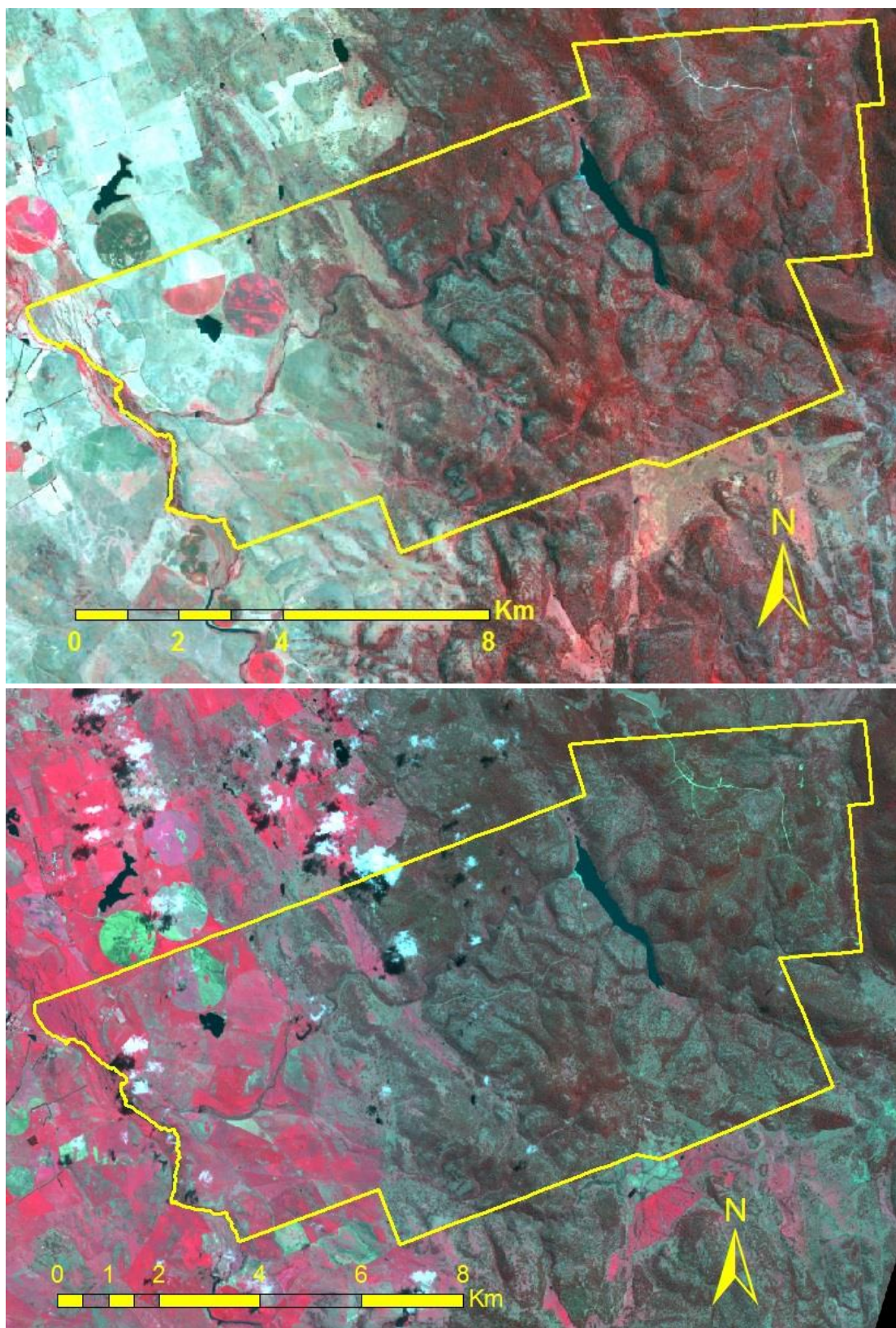
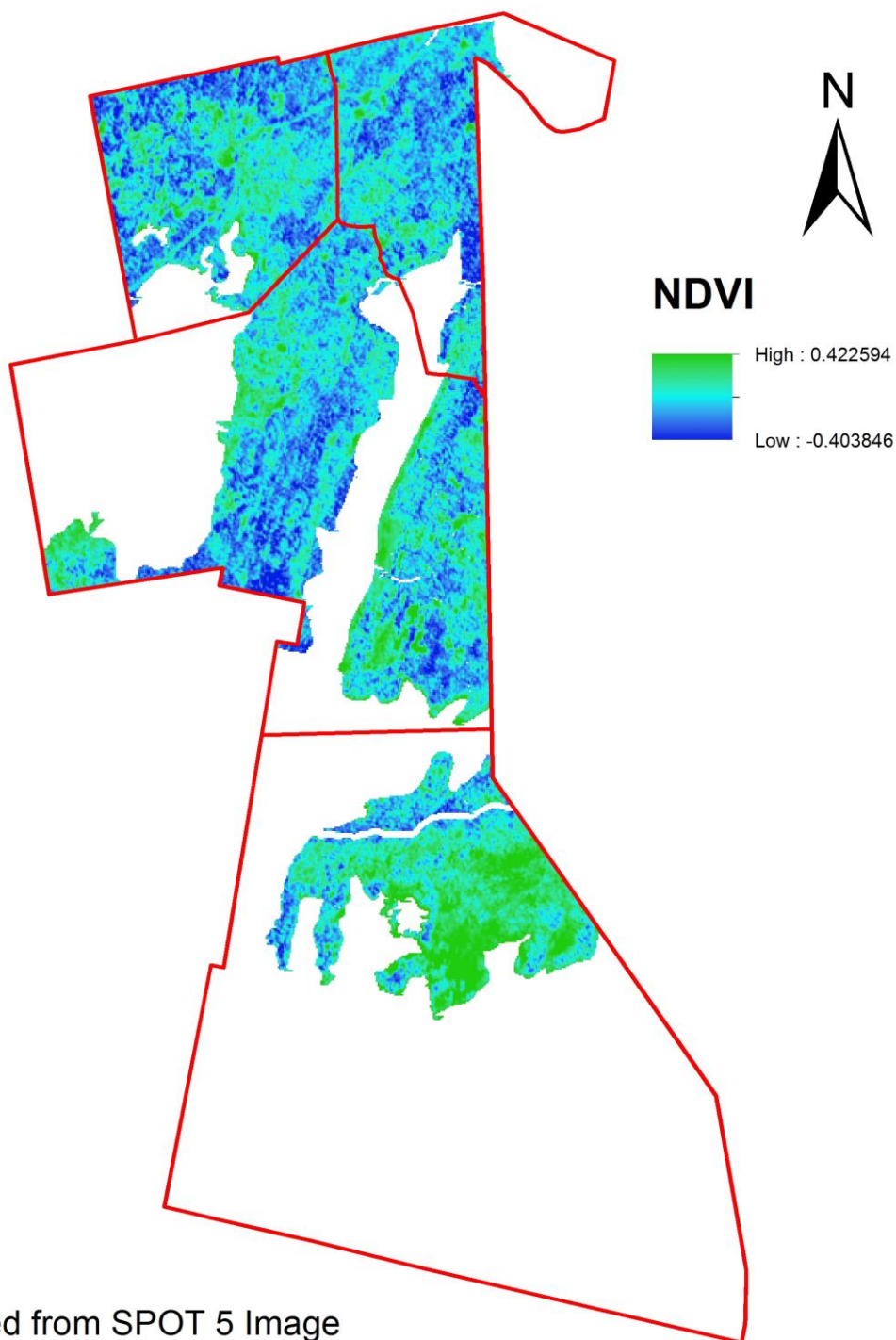


Figure No. 06b. Visual analysis of addition 2. Above image taken 24/01/2012 and the image below is taken for this verification period on 10/11/2012.

Addition 2: Verification Period 2011-2012



Calculated from SPOT 5 Image
Taken: 29th January 2012

0 0.5 1 2 km

Addition 2: Verification Period 2012-2013

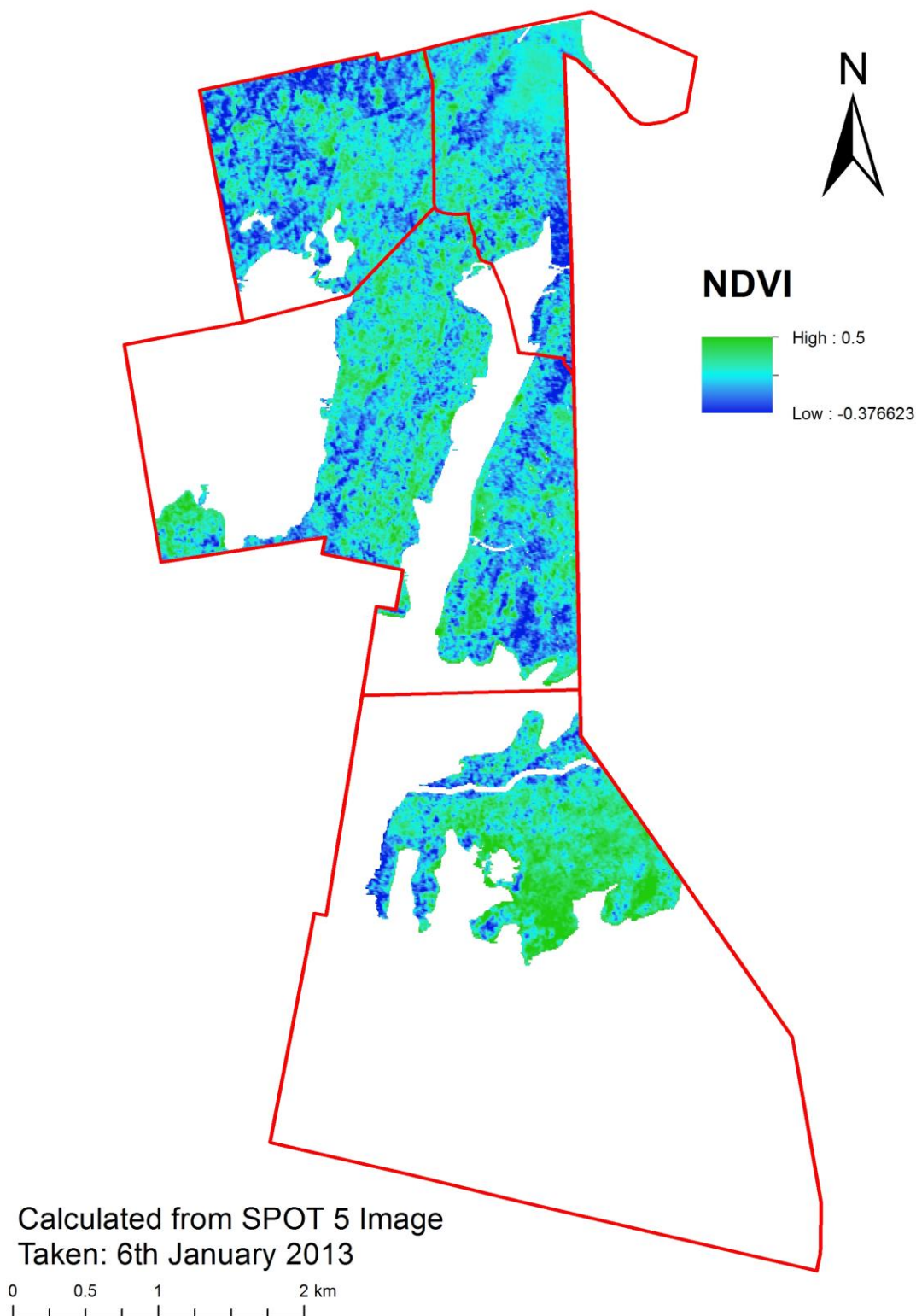
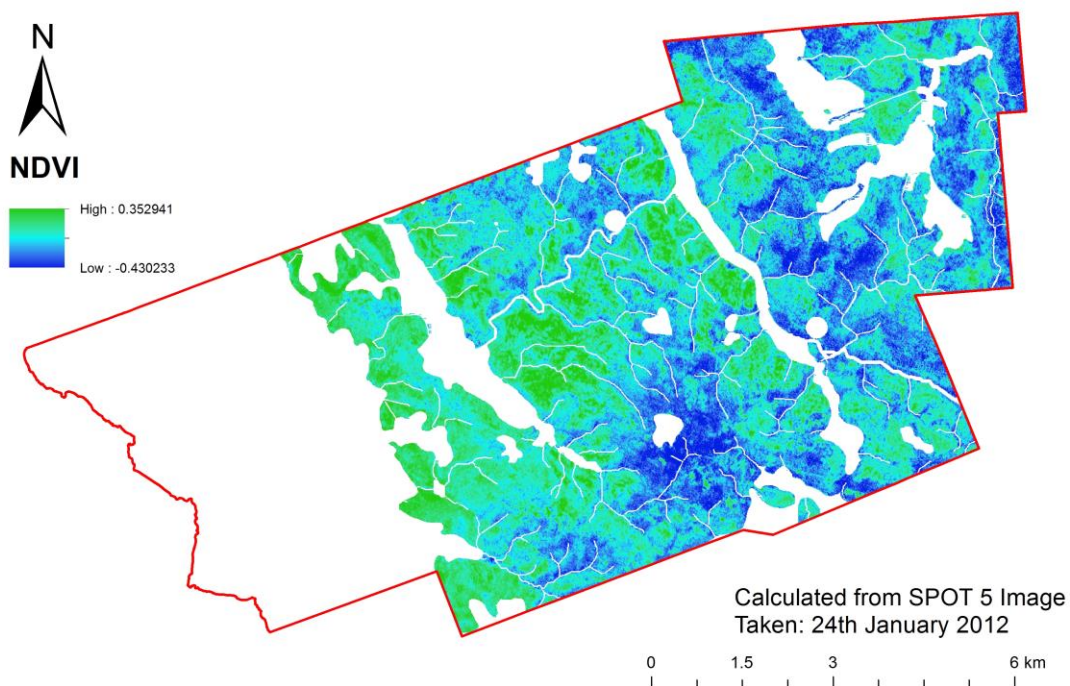


Figure No. 06c. NDVI assessment results for addition 2

Addition 2: Verification Period 2011-2012



Addition 2: Verification Period 2012-2013

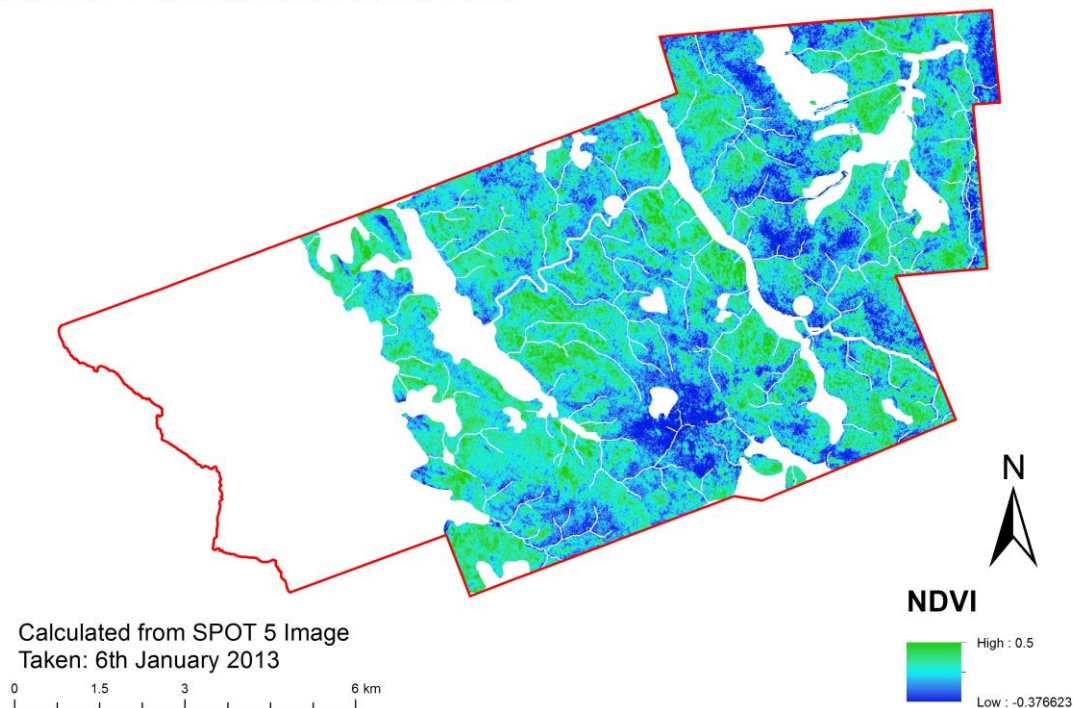


Figure No. 06d. NDVI assessment results for addition 2

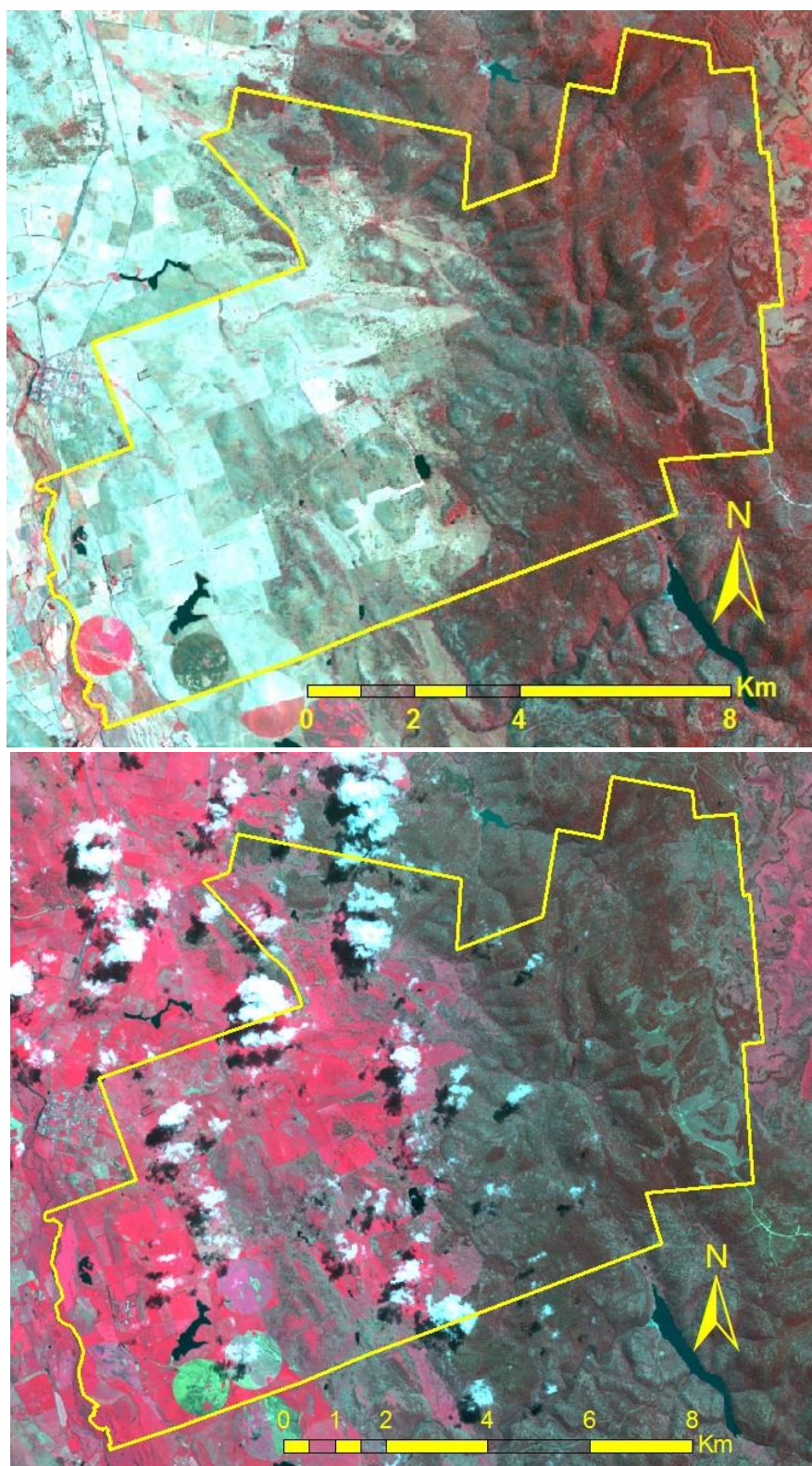
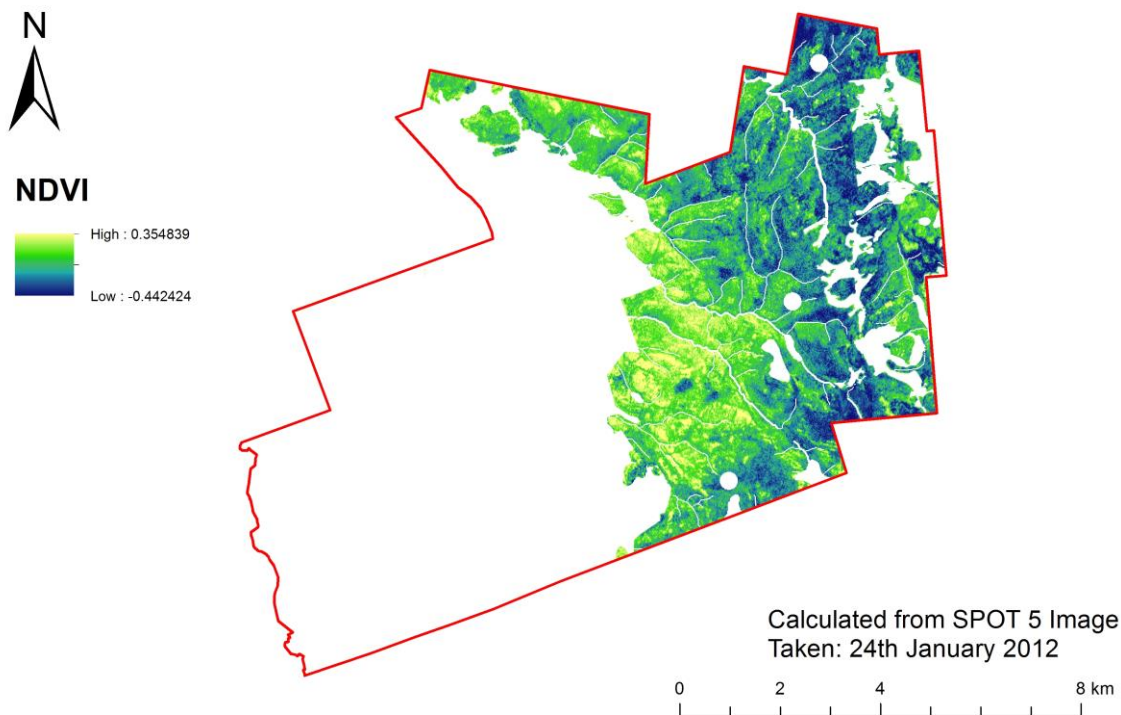


Figure No. 07a. Visual analysis of addition 3. Above image taken 24/01/2012 and the image below is taken for this verification period on 10/11/2012.

Addition 3: Verification Period 2011-2012



Addition 3: Verification Period 2012-2013

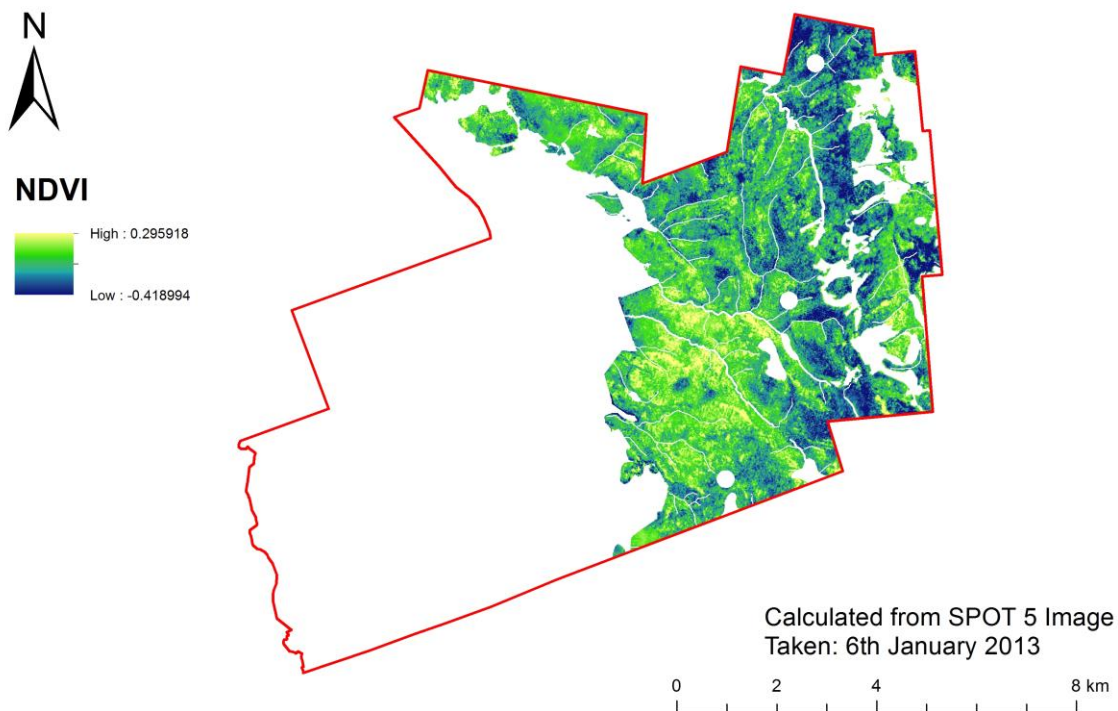


Figure No. 07b. NDVI assessment results for addition 3

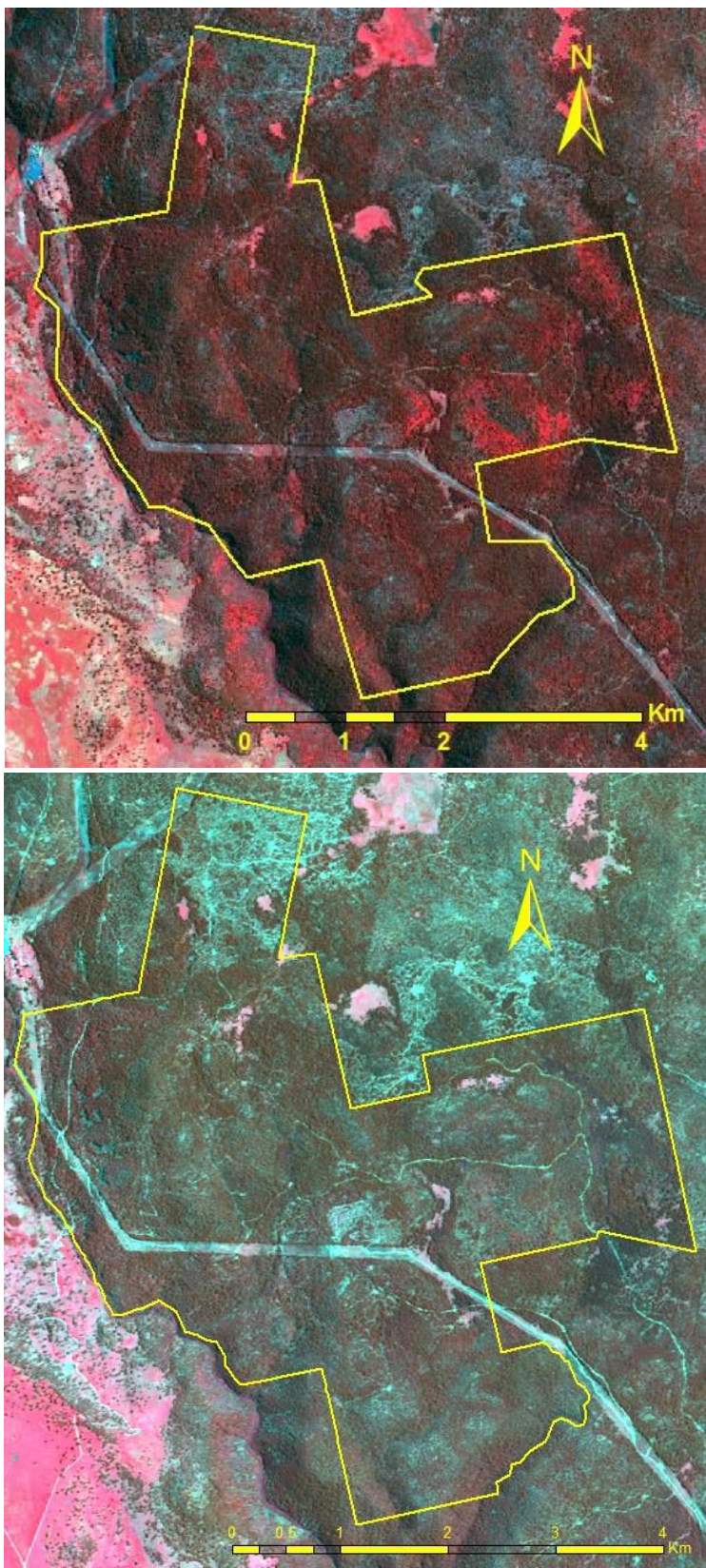
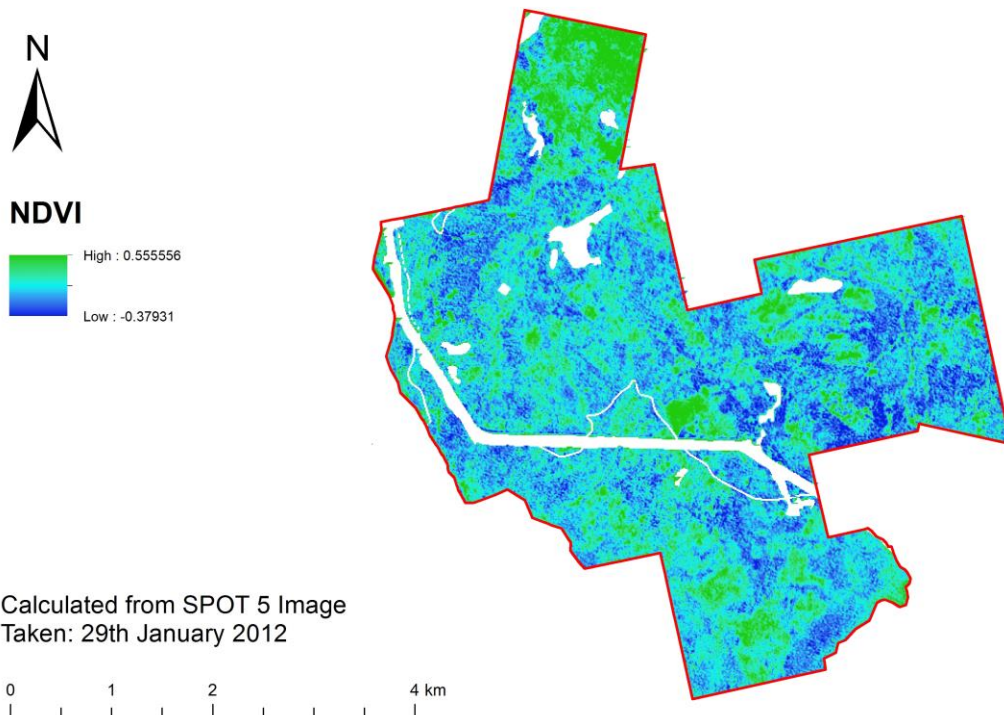


Figure No. 08a. Visual analysis of addition 5. Above image taken 29/01/2012 and the image below is taken for this verification period on 25/11/2012.

Addition 5: Verification Period 2011-2012



Addition 5: Verification Period 2012-2013

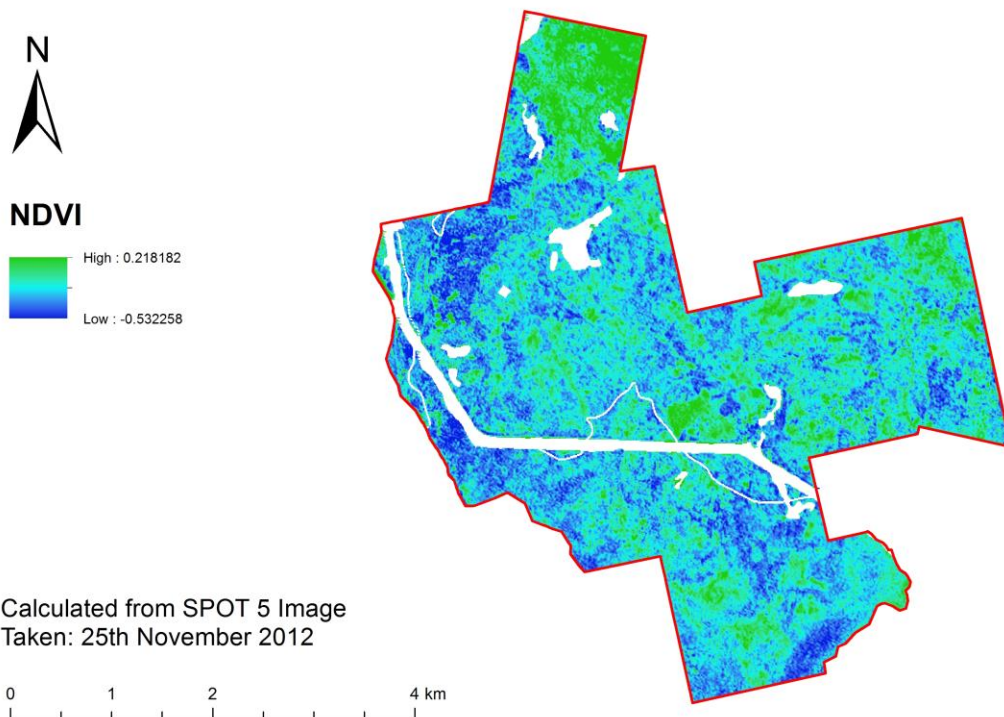


Figure No. 08b. NDVI assessment results for addition 5

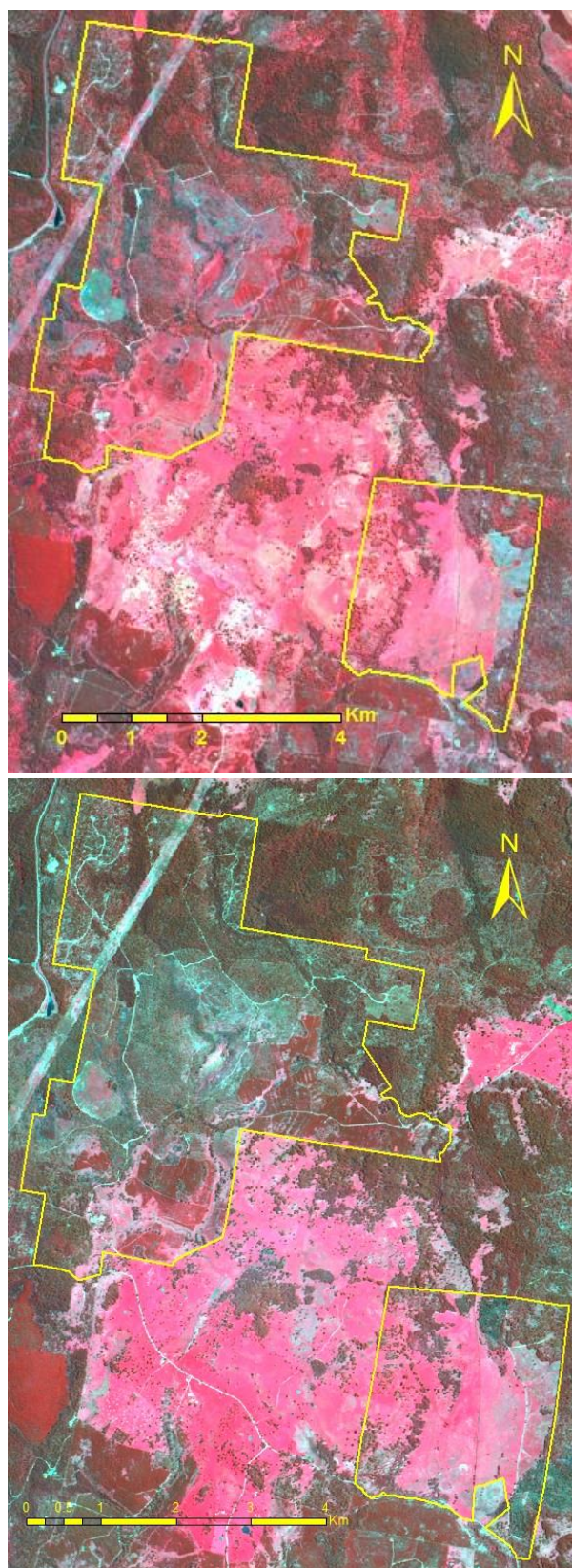


Figure No. 09a. Visual analysis of addition 6. Above image taken 19/01/2012 and the image below is taken for this verification period on 25/11/2012.

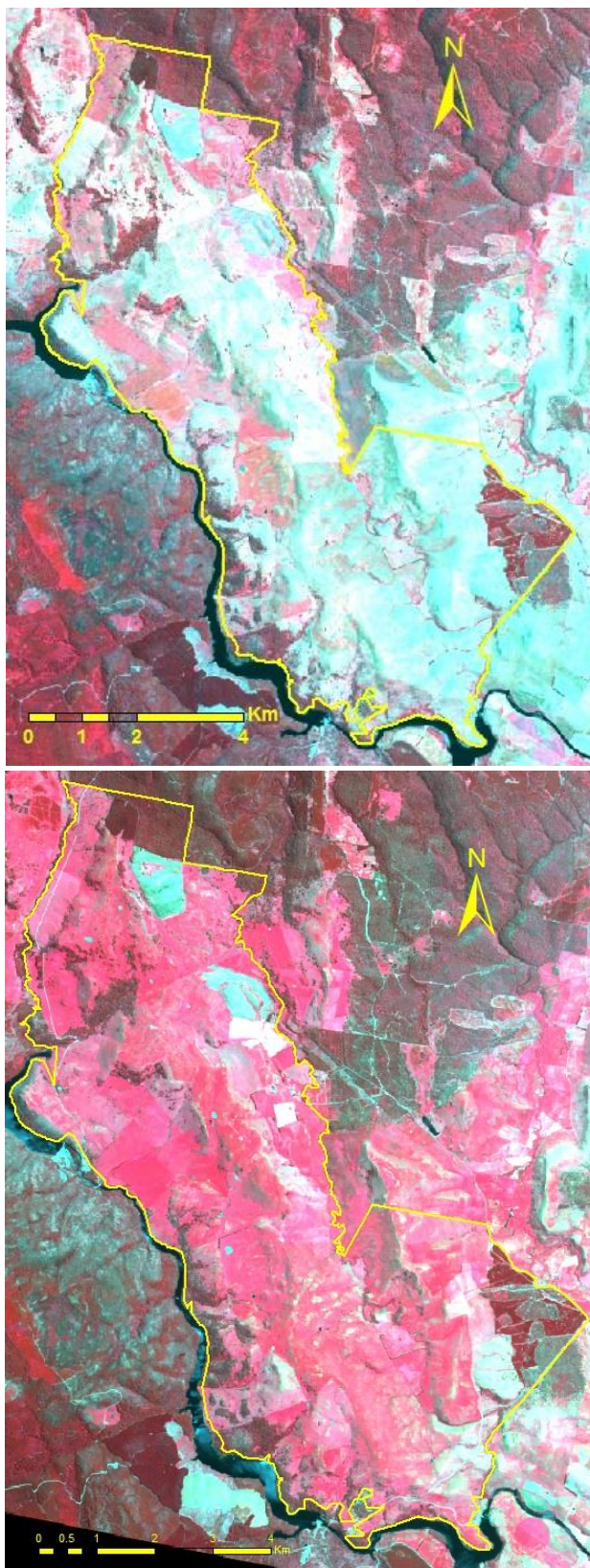
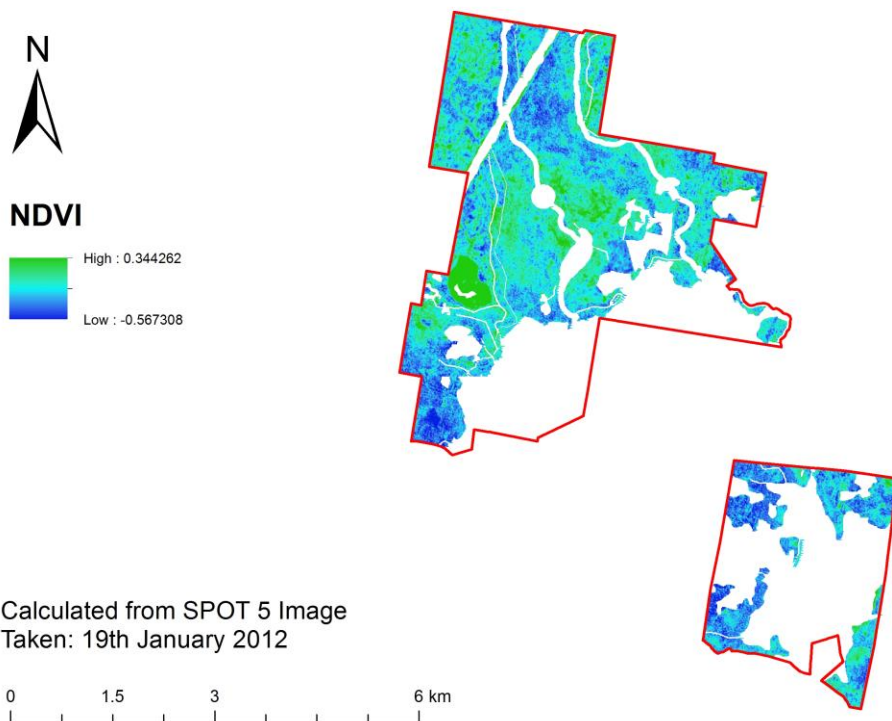


Figure No. 09b. Visual analysis of addition 6. Above image taken 19/01/2012 and the image below is taken for this verification period on 25/11/2012.

Addition 6: Verification Period 2011-2012



Addition 6: Verification Period 2012-2013

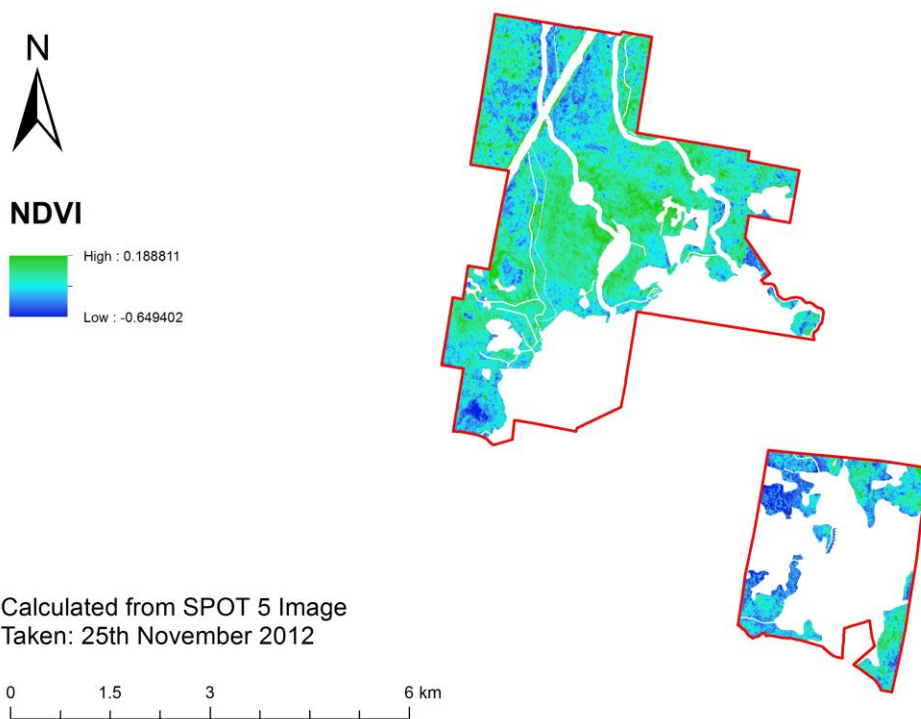
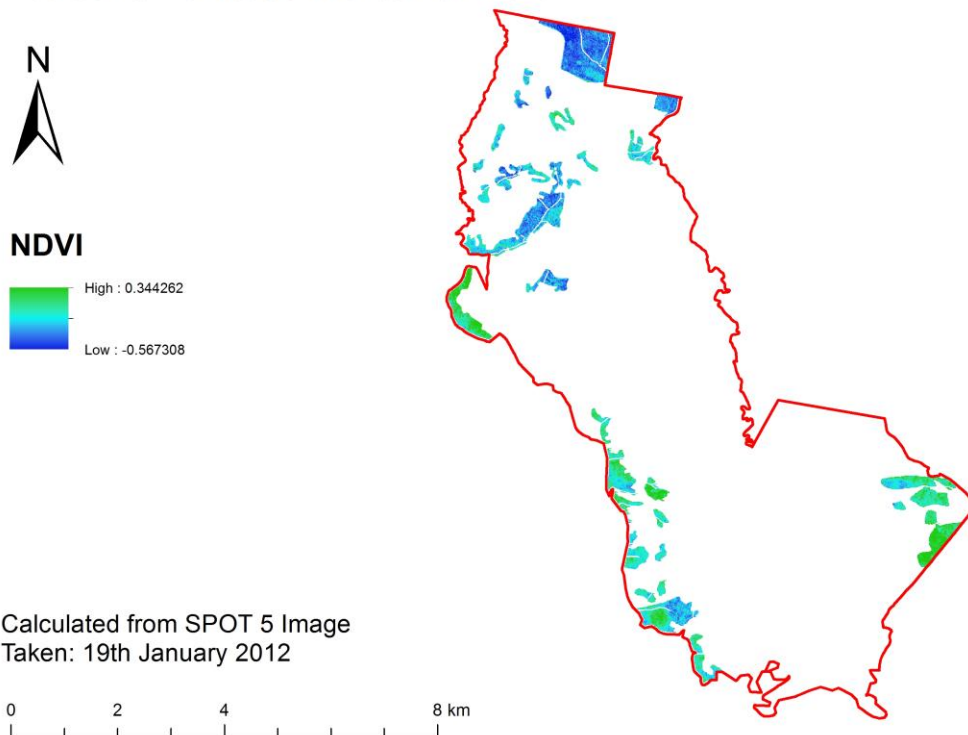


Figure No. 09c. NDVI assessment results for addition 6

Addition 6: Verification Period 2012-2013



Addition 6: Verification Period 2012-2013

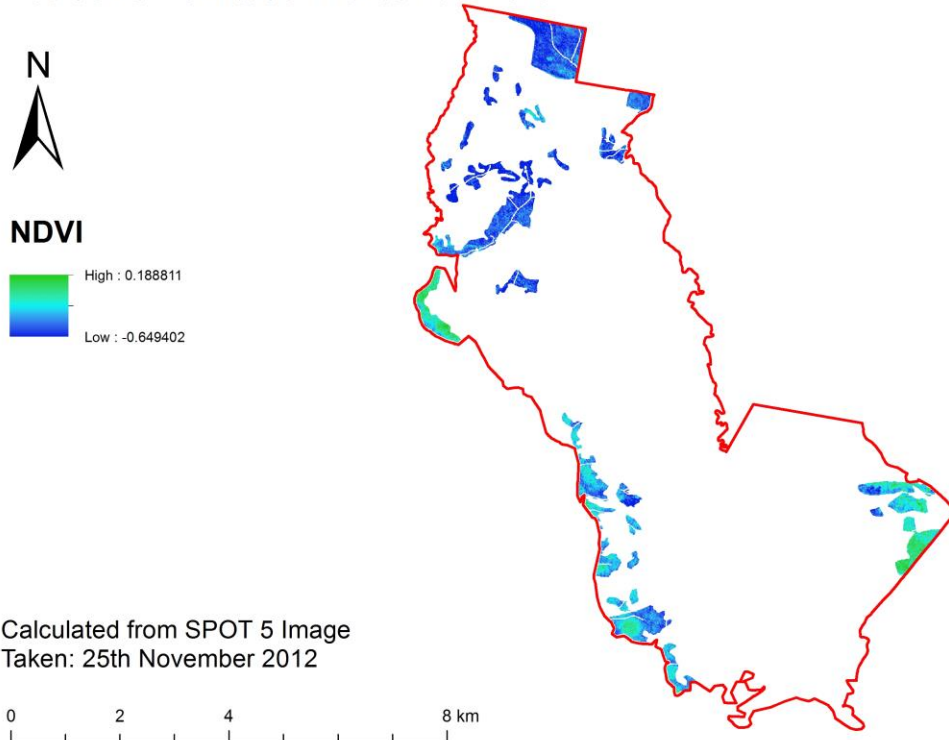


Figure No. 09d. NDVI assessment results for addition 6

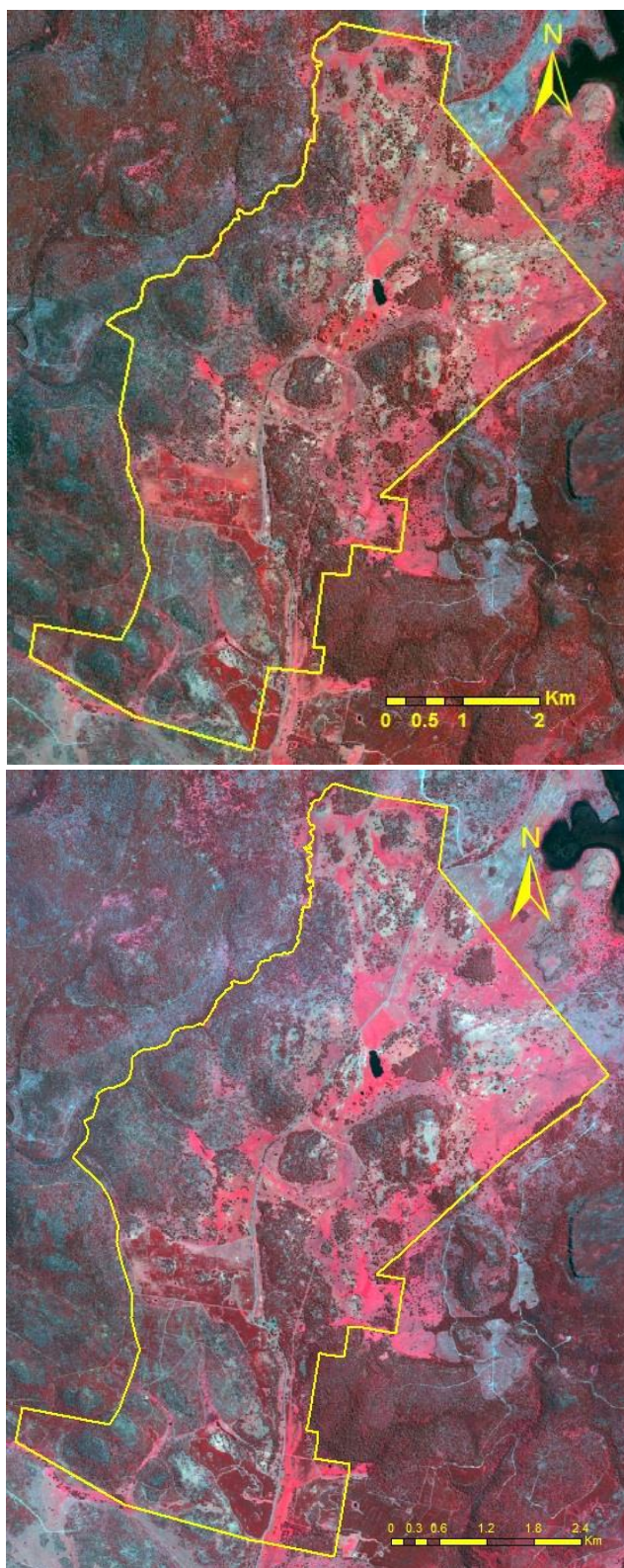
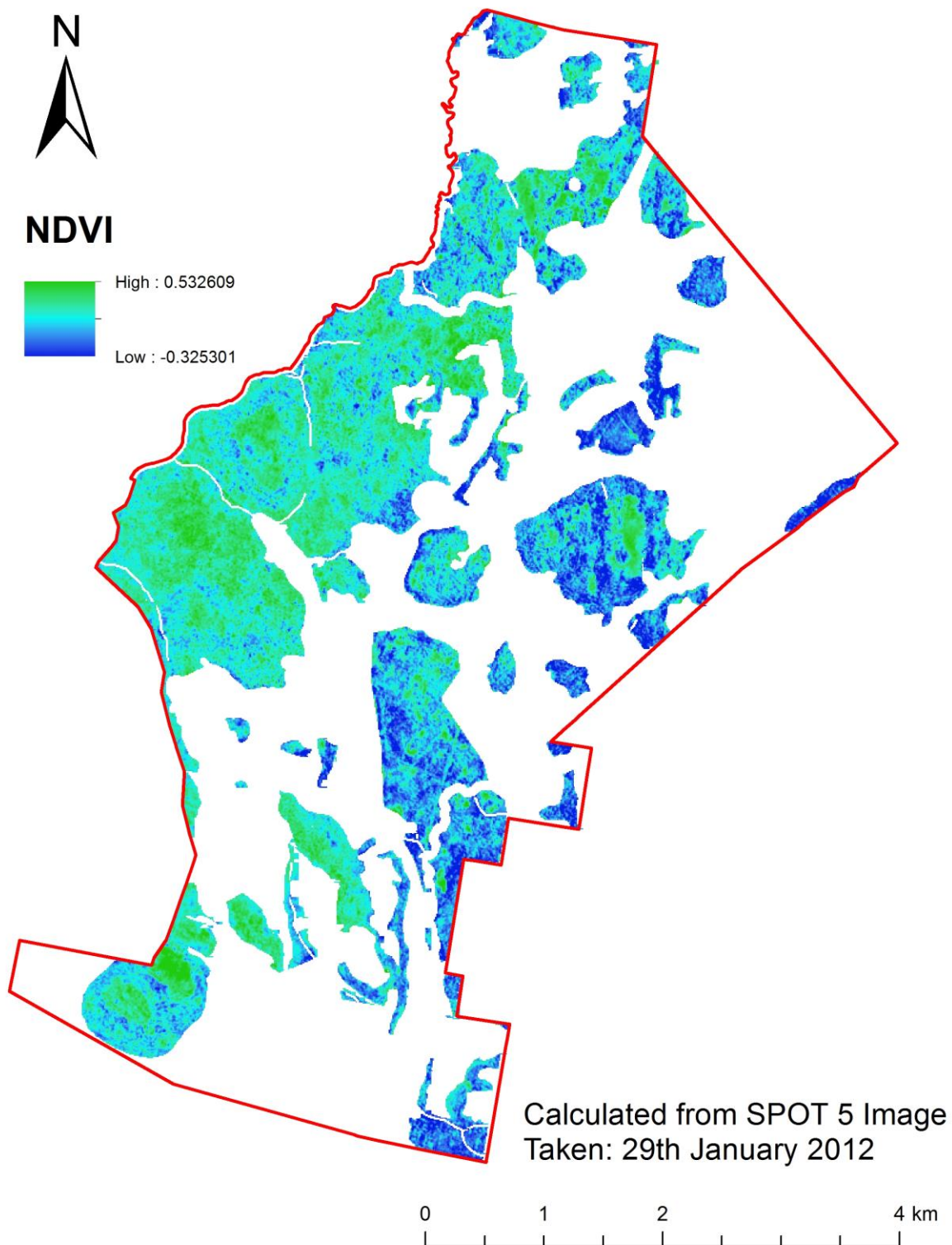


Figure No. 10a. Visual analysis of addition 7. Above image taken 29/11/2010 and the image below is taken for this verification period on 06/01/2013.

Addition 7: Verification Period 2011-2012



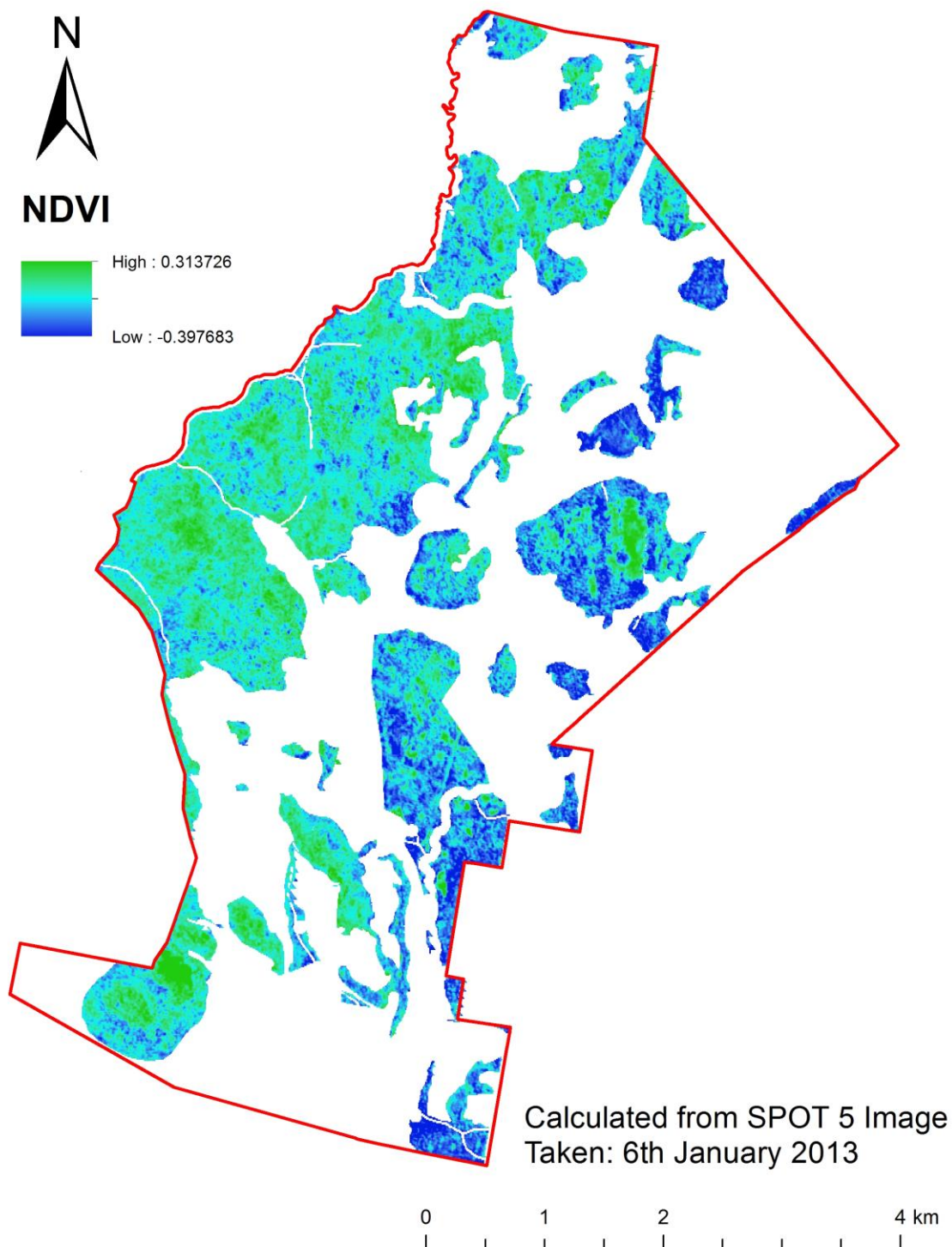
Addition 7: Verification Period 2012-2013

Figure No. 10b. NDVI assessment results for addition 7

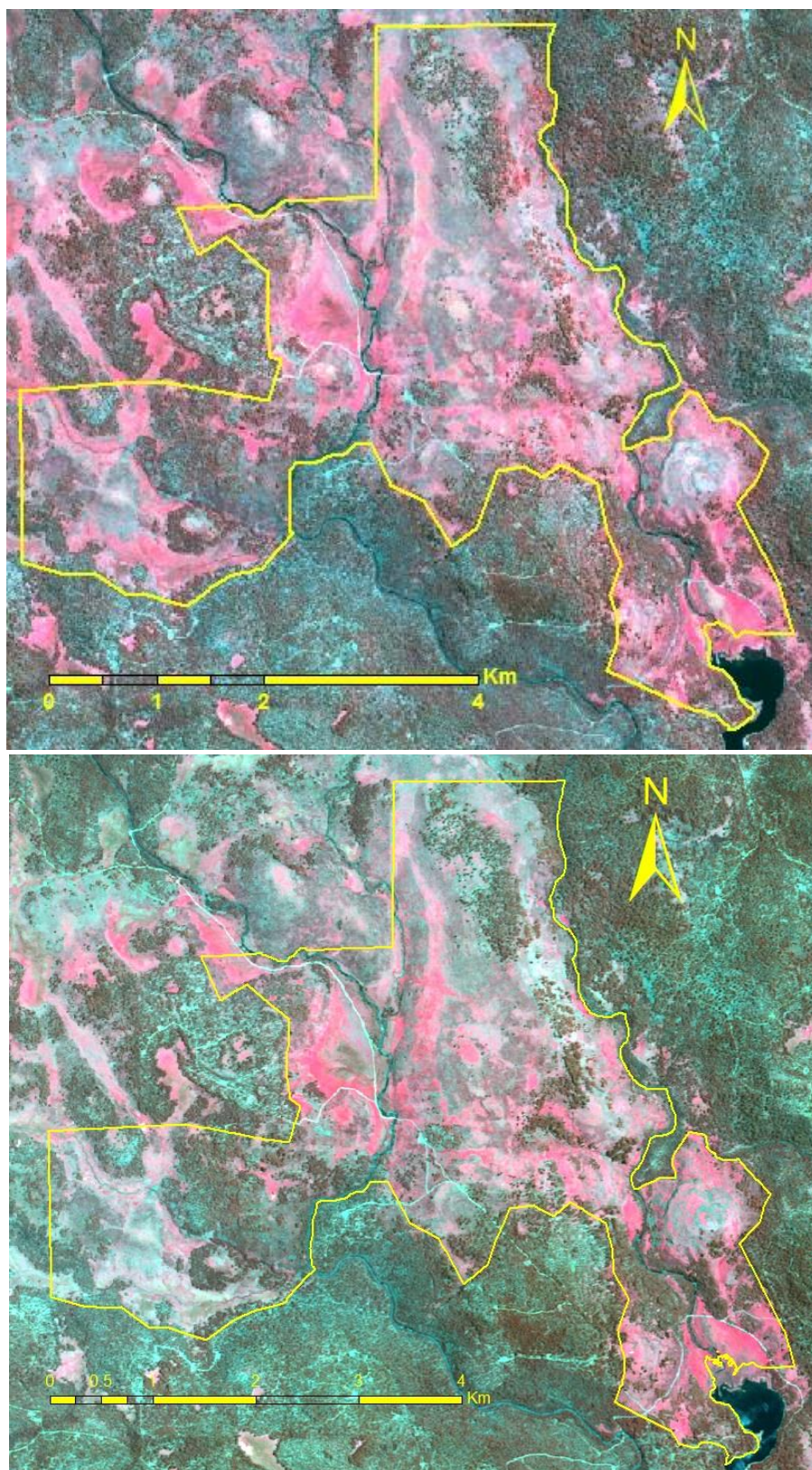


Figure No. 11a. Visual analysis of addition 8. Above image taken 19/01/2012 and the image below is taken for this verification period on 25/11/2012.

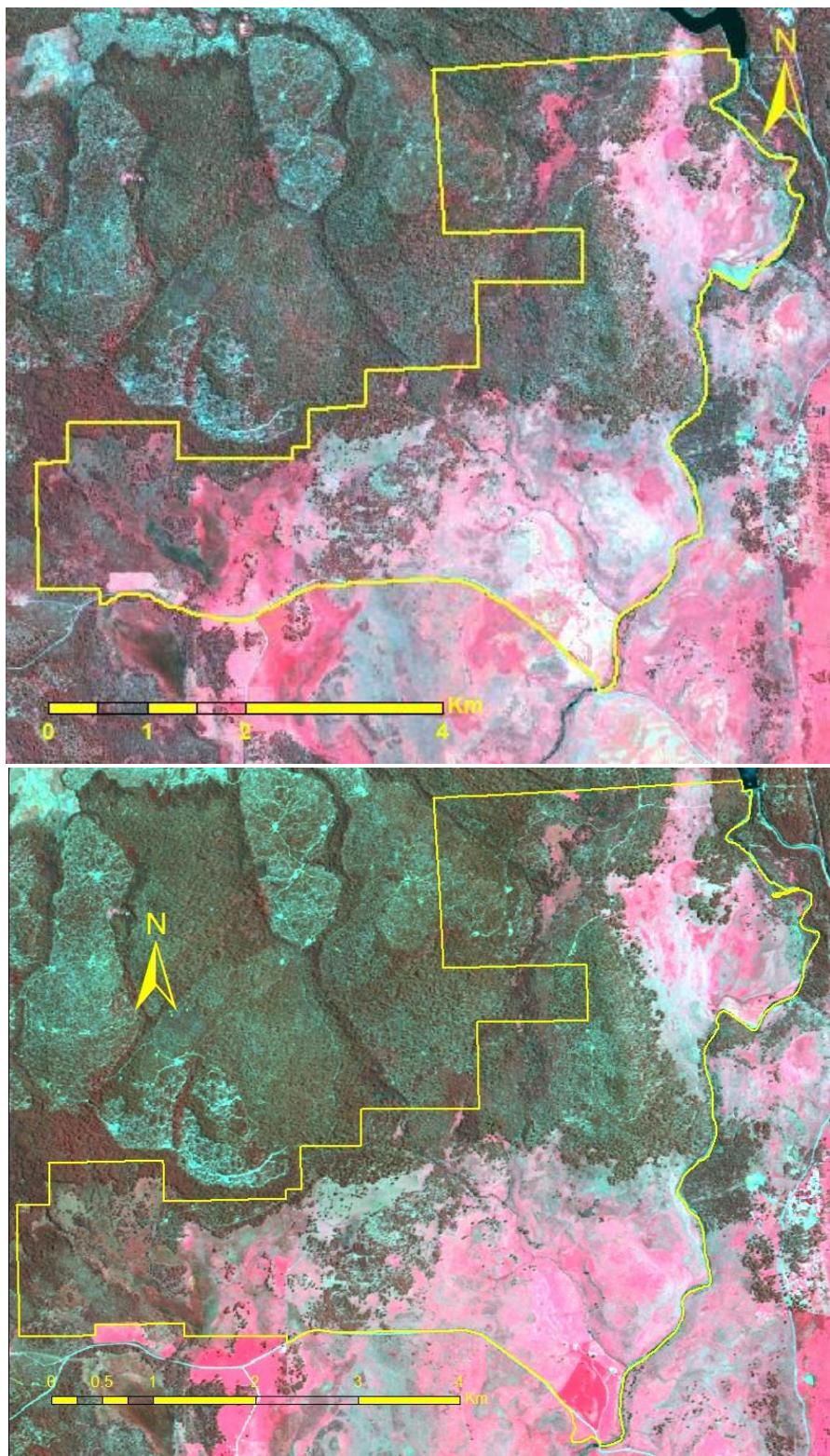
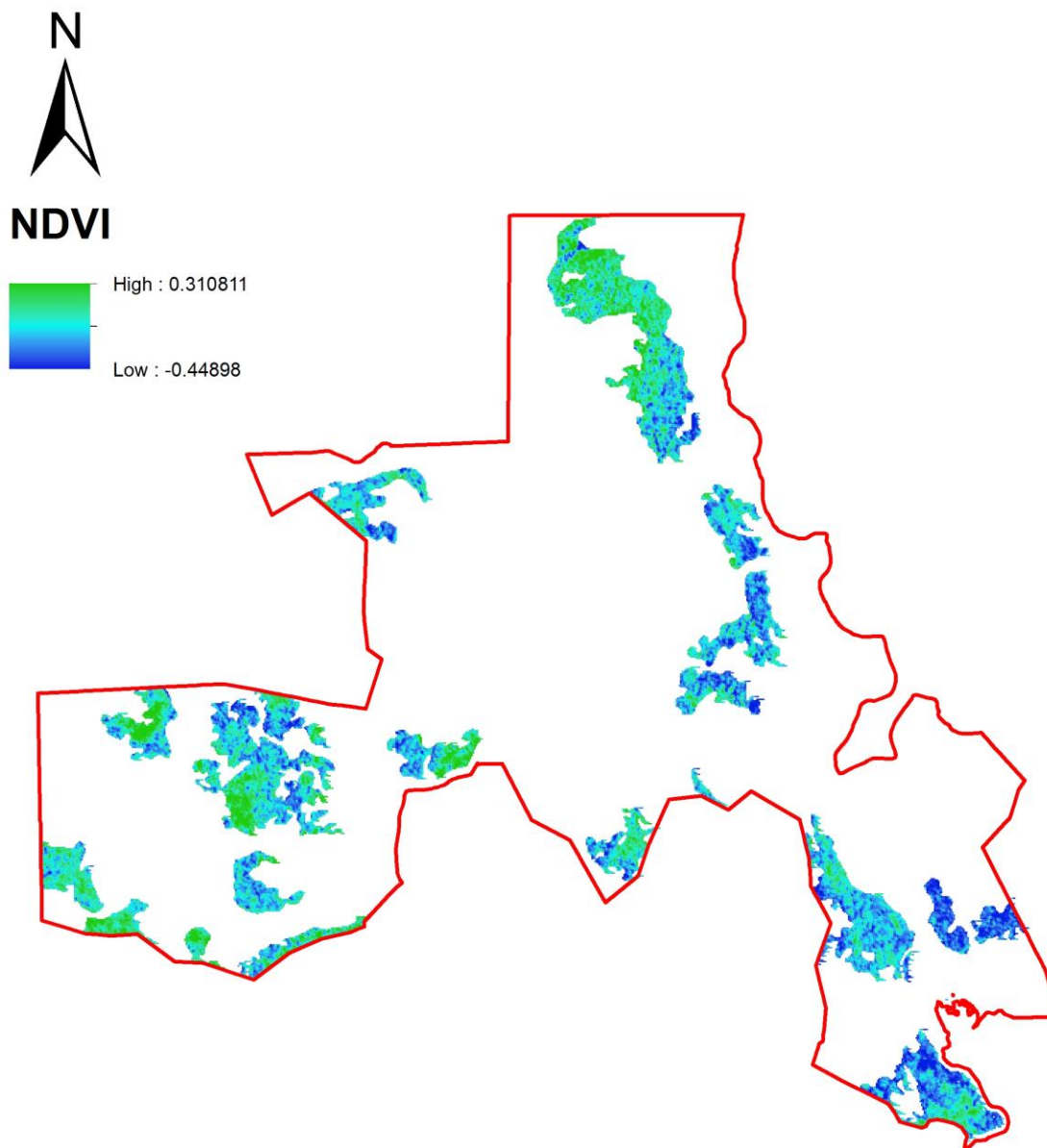
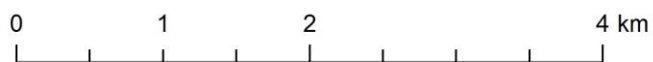


Figure No. 11b. Visual analysis of addition 8. Above image taken 19/01/2012 and the image below is taken for this verification period on 25/11/2012.

Addition 8: Verification Period 2011-2012



Calculated from SPOT 5 Image
Taken: 19th January 2012



Addition 8: Verification Period 2012-2013

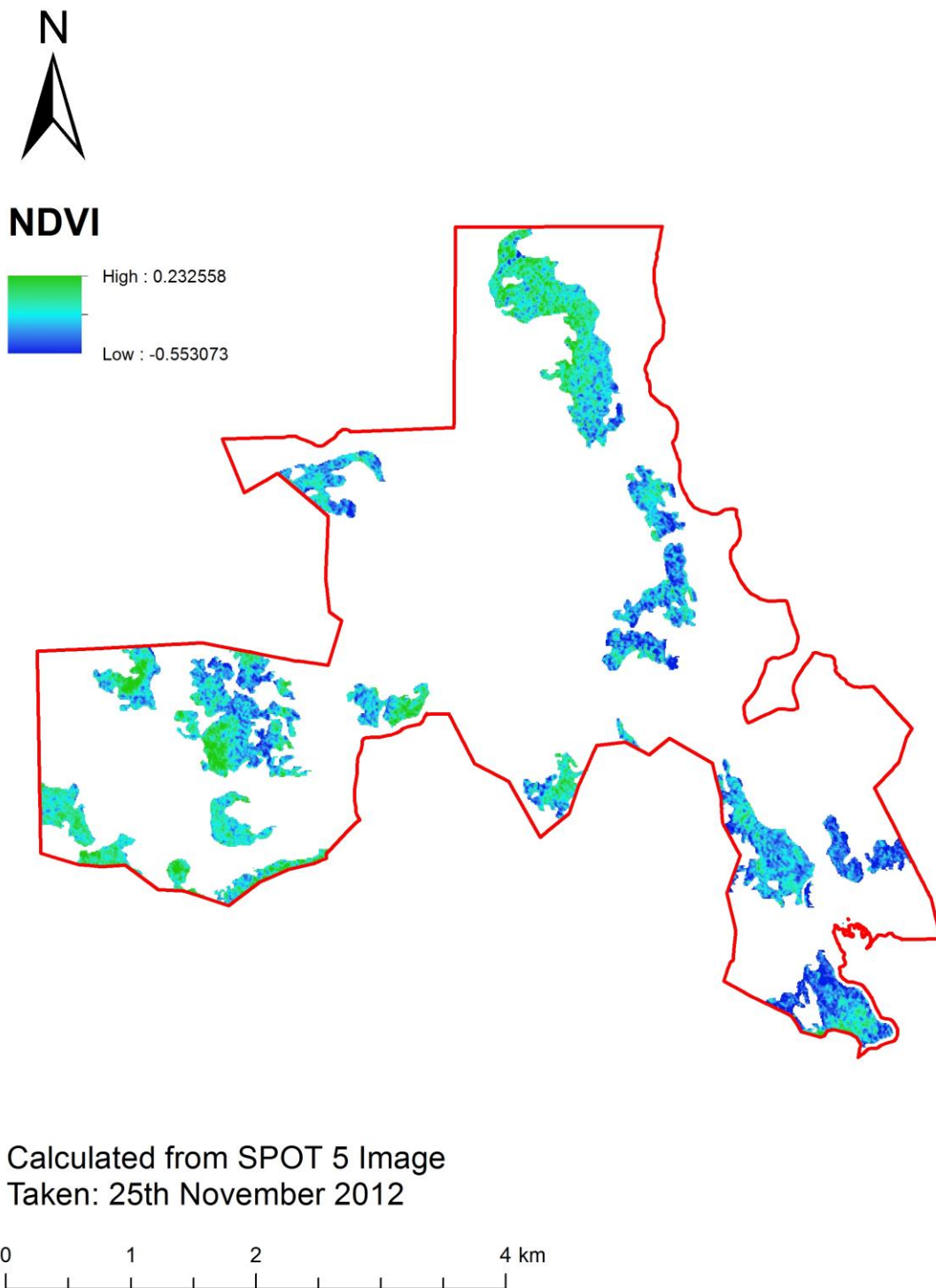
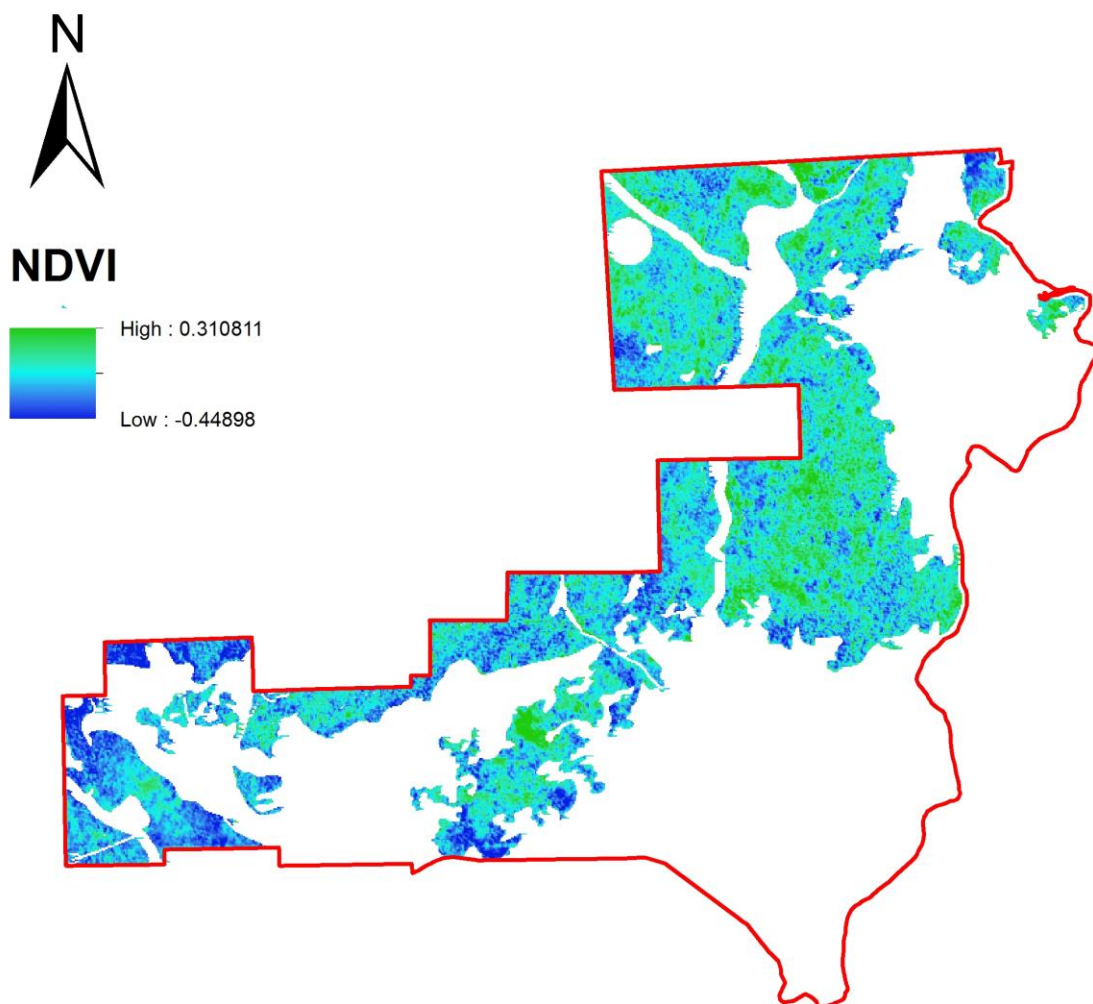
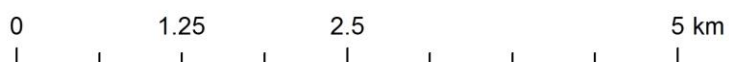


Figure No. 11c. NDVI assessment results for addition 8

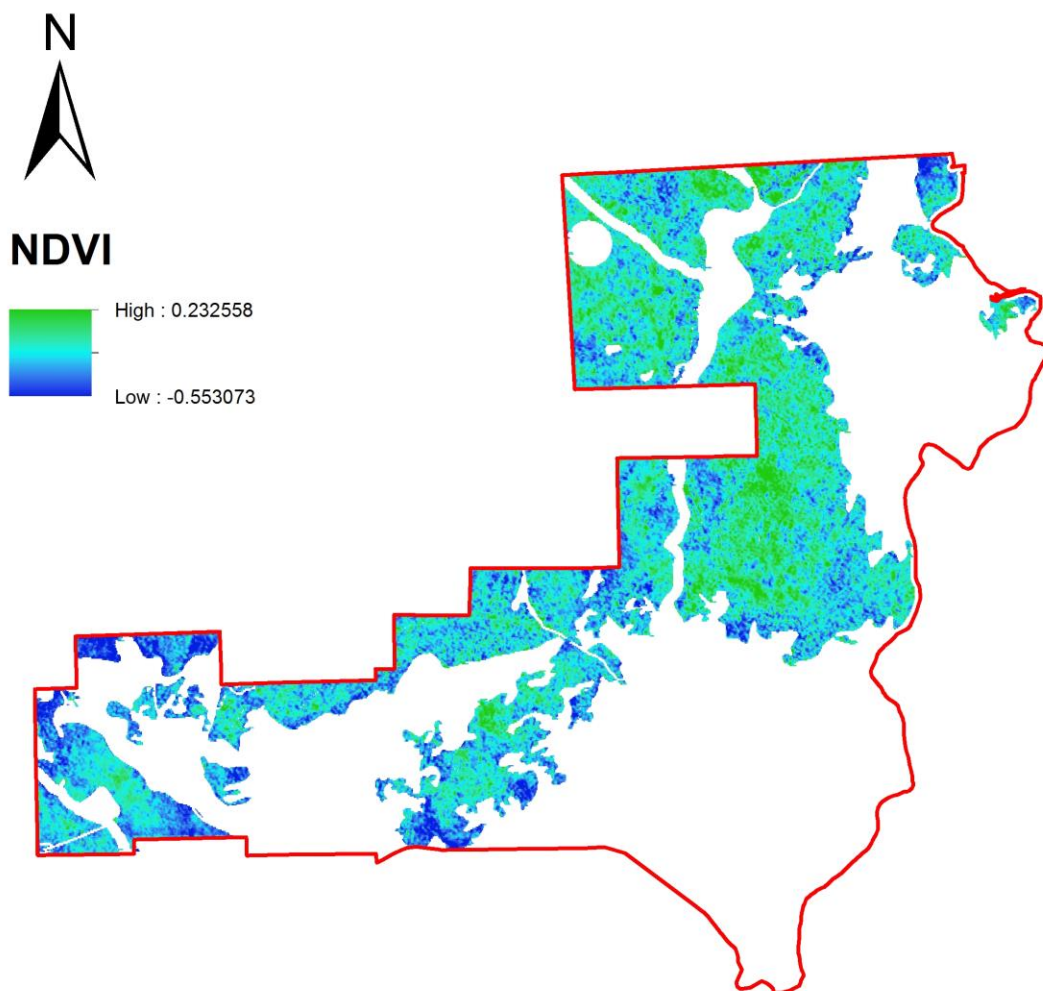
Addition 8: Verification Period 2011-2012



Calculated from SPOT 5 Image
Taken: 19th January 2012



Addition 8: Verification Period 2012-2013



Calculated from SPOT 5 Image
Taken: 25th November 2012

Figure No. 11d. NDVI assessment results for addition 8

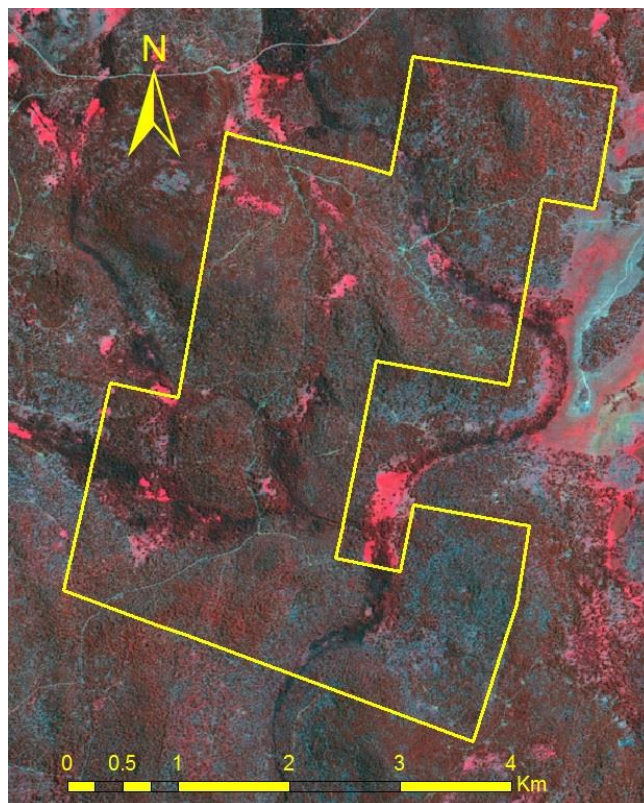


Figure No. 12a. Visual analysis of addition 9. This is addition 9's first verification period and this image acts as the baseline (taken 29/01/2012).

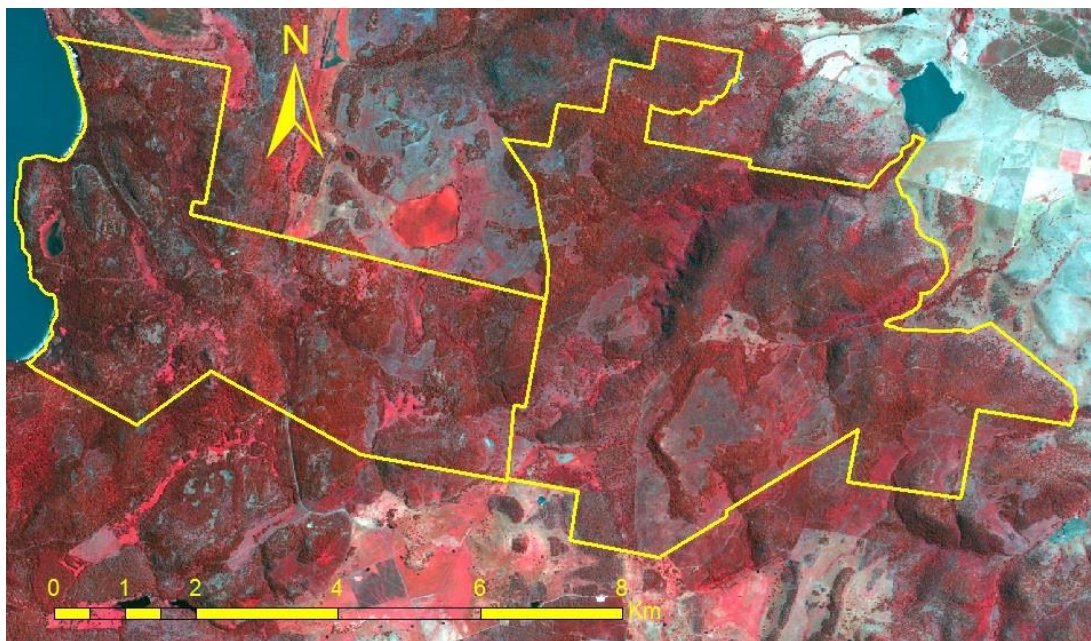


Figure No. 12b. Visual analysis of addition 9. This is addition 9's first verification period and this image acts as the baseline (taken 29/01/2012).

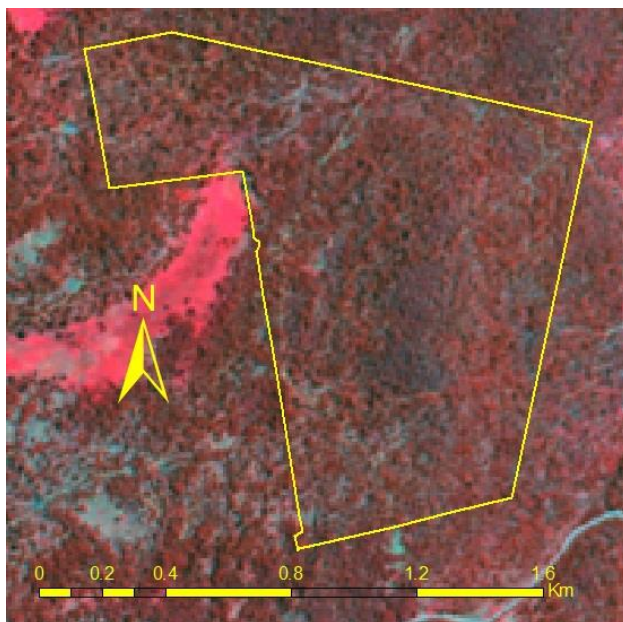
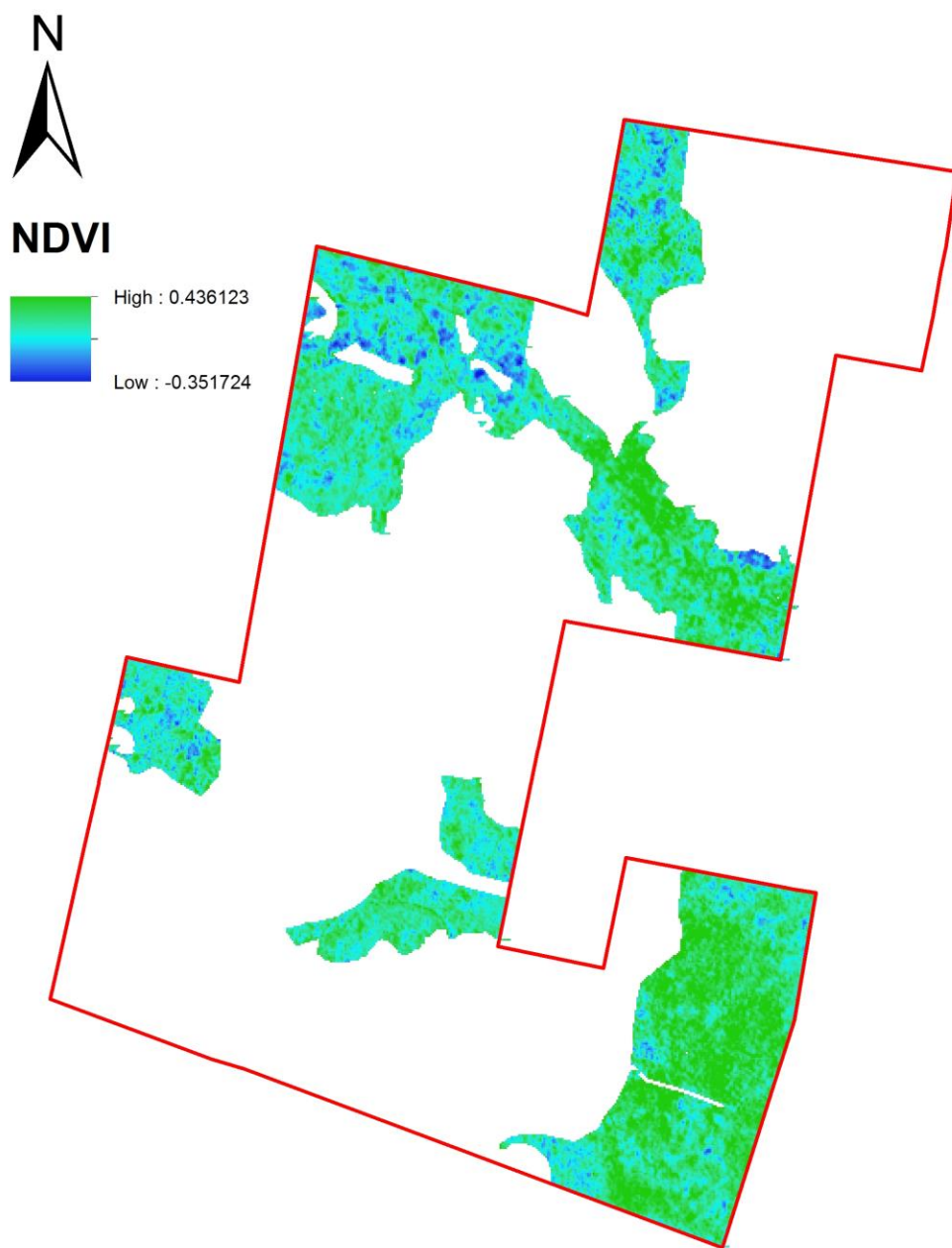


Figure No. 12c. Visual analysis of addition 9. This is addition 9's first verification period and this image acts as the baseline (taken 29/01/2012).

Addition 9: Verification Period 2012-2013



Calculated from SPOT 5 Image
Taken: 29th January 2013

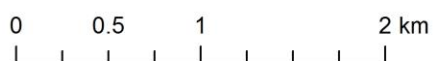


Figure No. 12d. NDVI assessment results for addition 9

Addition 9: Verification Period 2012-2013

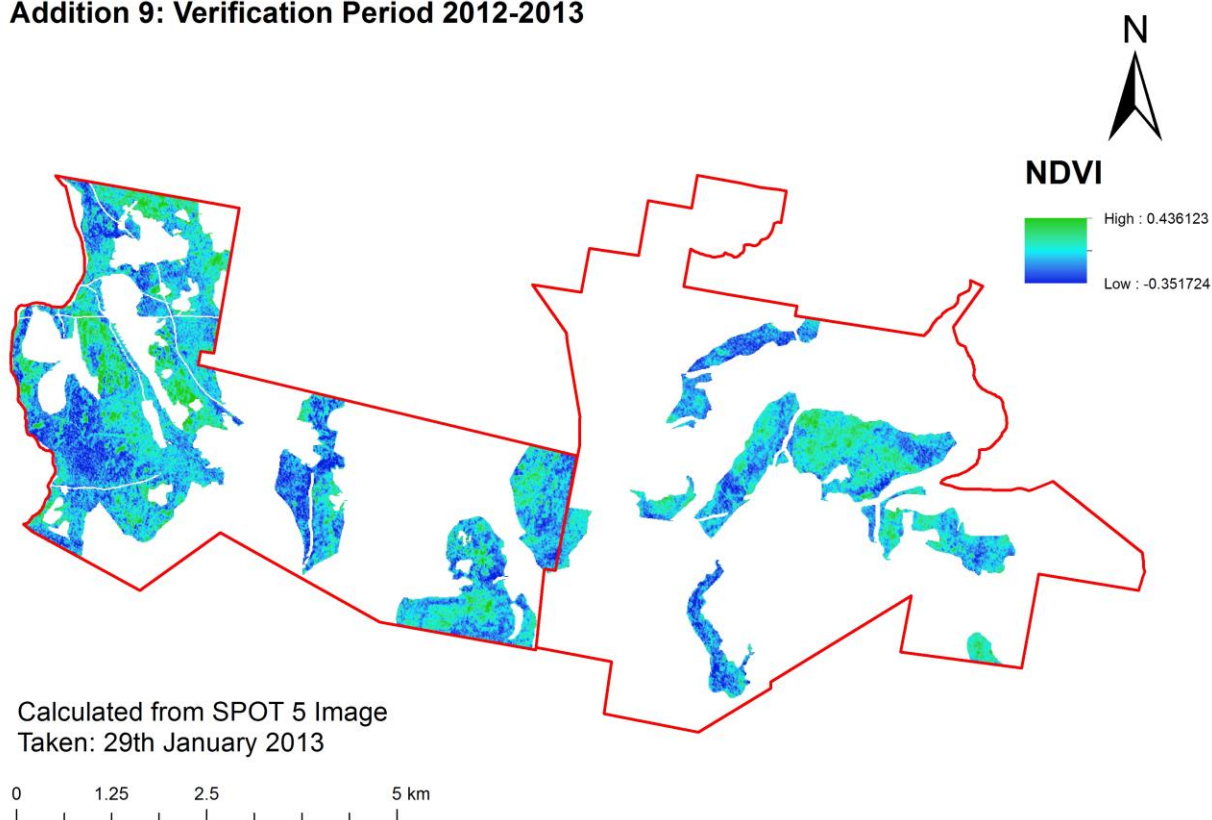
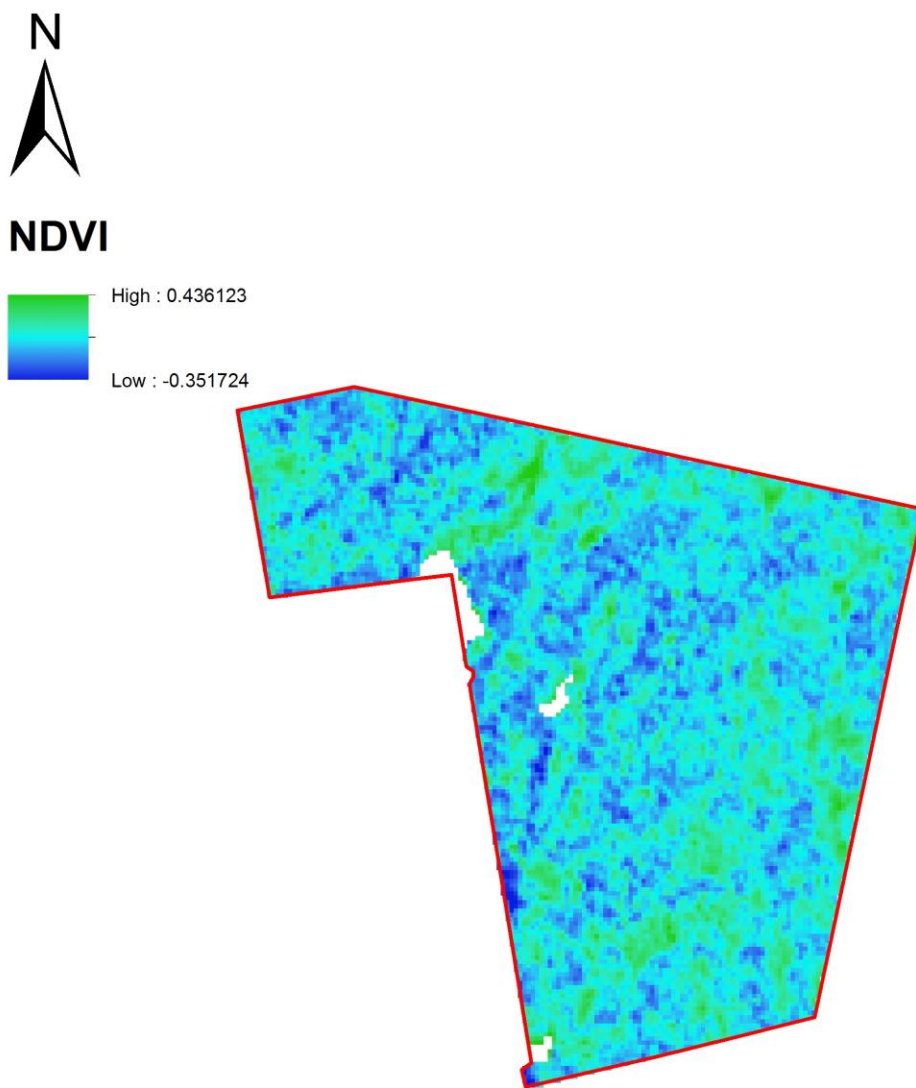


Figure No. 12e. NDVI assessment results for addition 9

Addition 9: Verification Period 2012-2013



Calculated from SPOT 5 Image
Taken: 29th January 2013



Figure No. 12f. NDVI assessment results for addition 9



Figure No. 12g. Visual analysis of Addition 9, Franklin. The first image is from 2/6/2013 and the second image (above) is from 13/3/2010. Due to the small size and location of these additions it has been decided that for future verification periods a site visit, with tracklogs and photos will be conducted as an alternative to the SPOT/NDVI analysis presented in the other project areas. Due to this site being validated at the same time as this verification period the site visits were made during the field inventory stage of the project (see Addition 9 PDD). The area is small and it is clear that no wildfires, logging or disease impacts have occurred during the verification period. This is made even more clear by the obvious visibility of roading and logging adjacent to the site.



Figure No. 12f. Visual analysis of Addition 9, Judbury. The first image is from 2/6/2013 and the second image (above) is from 13/3/2010. Due to the small size and location of these additions it has been decided that for future verification periods a site visit, with tracklogs and photos will be conducted as an alternative to the SPOT/NDVI analysis presented in the other project areas. Due to this site being validated at the same time as this verification period the site visits were made during the field inventory stage of the project (see Addition 9 PDD). The area is small and it is clear that no wildfires, logging or disease impacts have occurred during the verification period. This is made even more clear by the obvious visibility of roading and logging adjacent to the site.

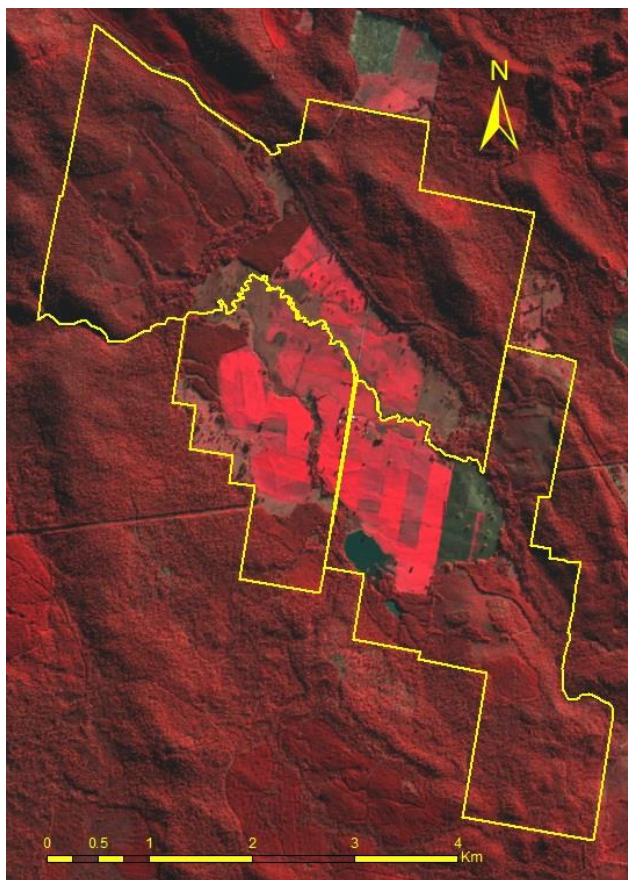


Figure No. 13a. Visual analysis of addition 10. This is addition 10's first verification period and this image acts as the baseline (taken 29/01/2012).

Addition 10: Verification Period 2012-2013

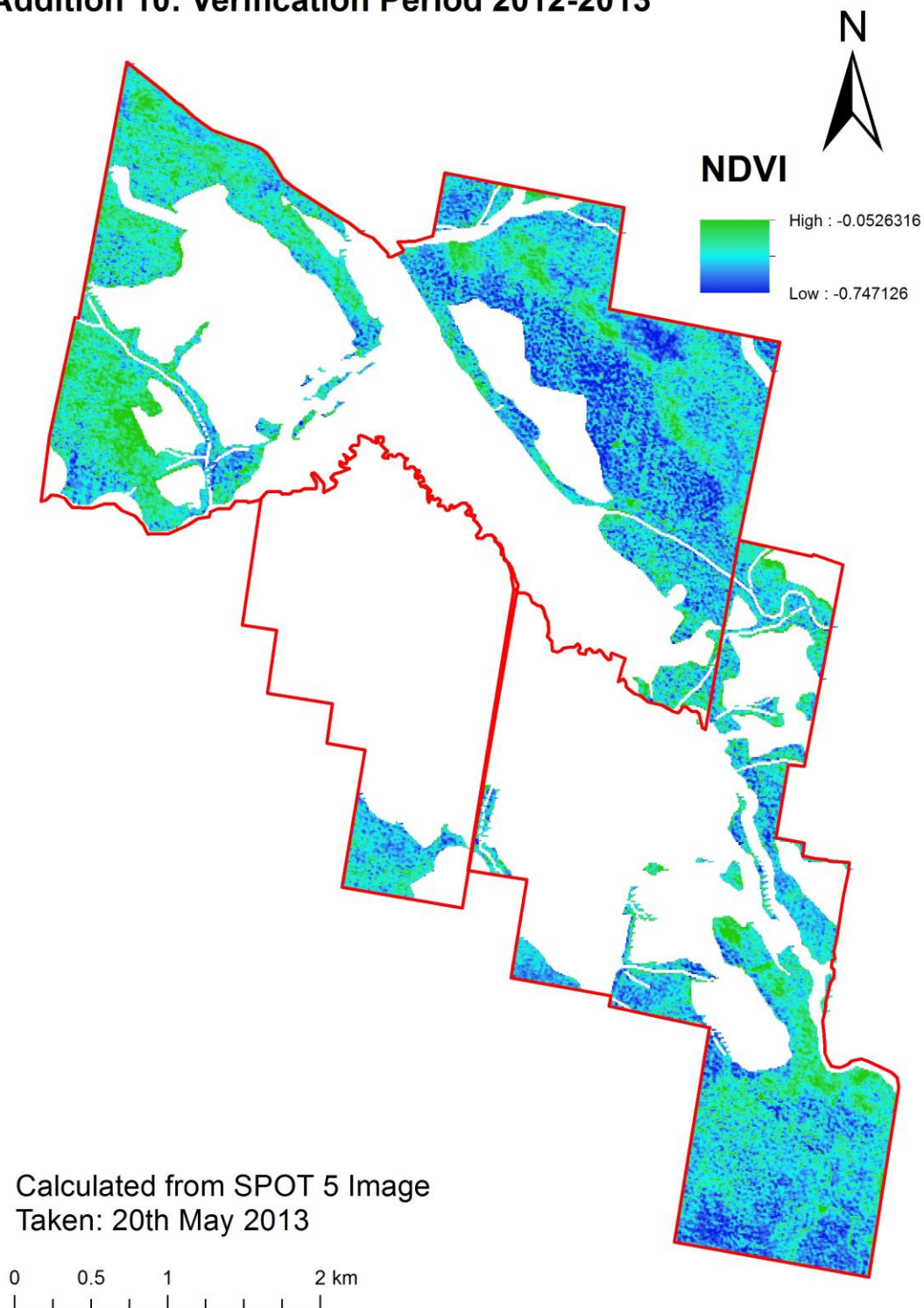


Figure No. 13b. NDVI assessment results for addition 10

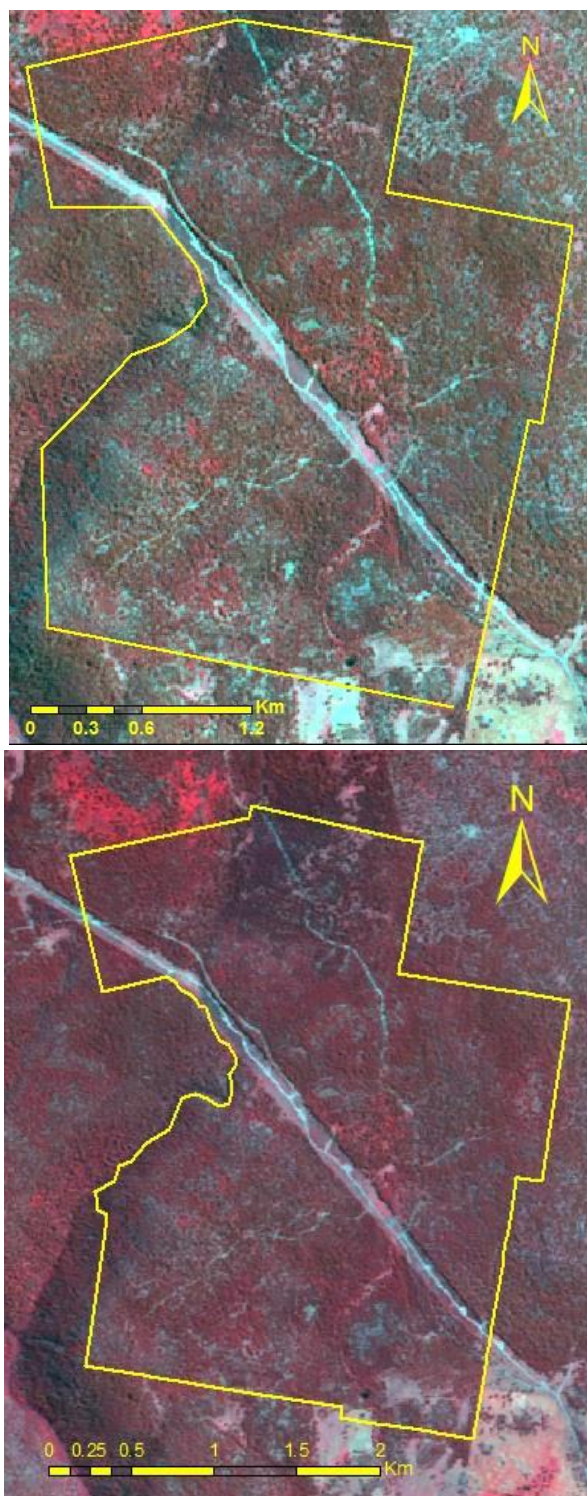
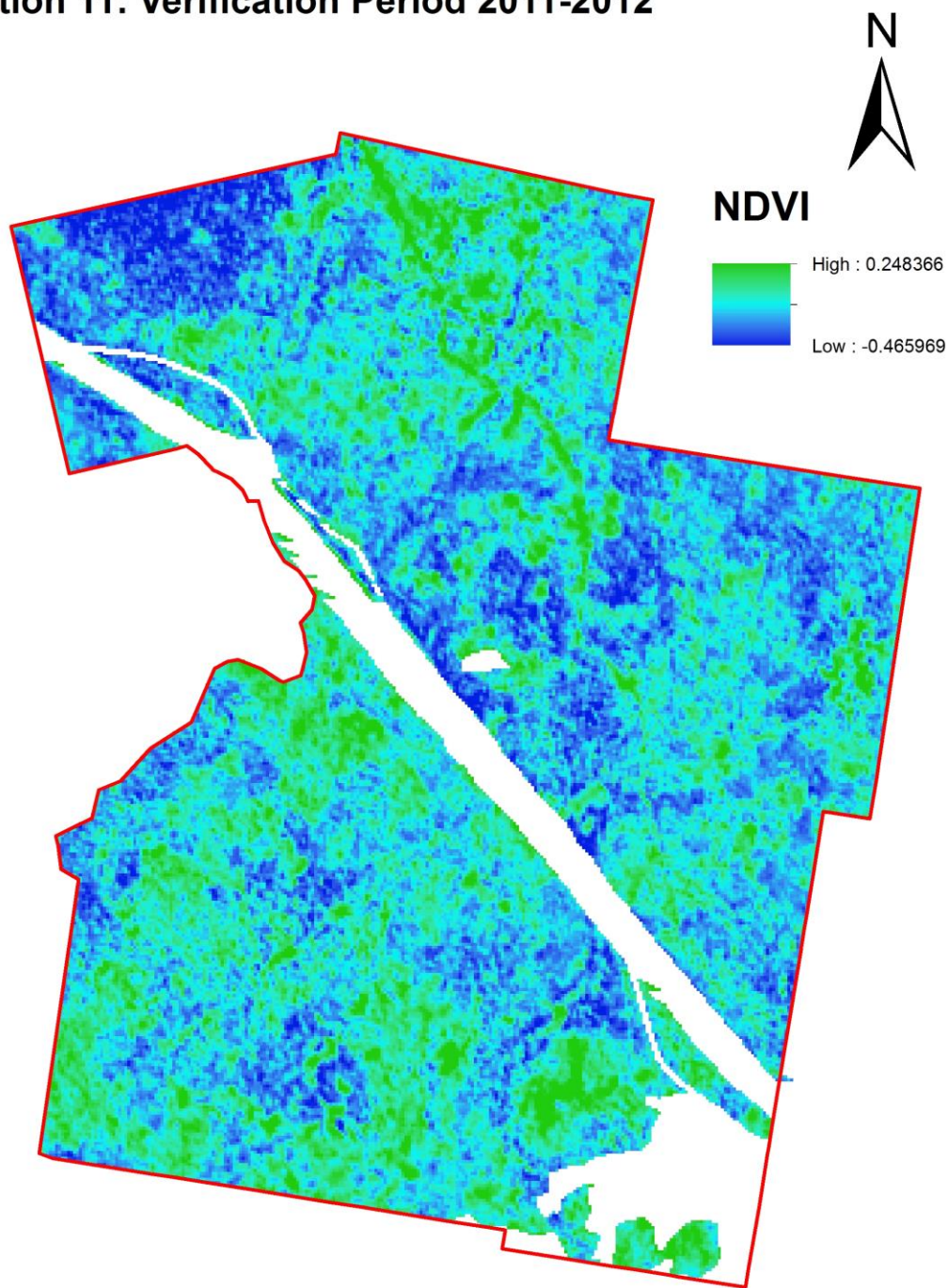


Figure No. 14a. Visual analysis of addition 11. Above image taken 25/11/2012 and the image below is taken for this verification period on 06/01/2013

Addition 11: Verification Period 2011-2012



Calculated from SPOT 5 Image
Taken: 1st January 2012



Addition 11: Verification Period 2012-2013

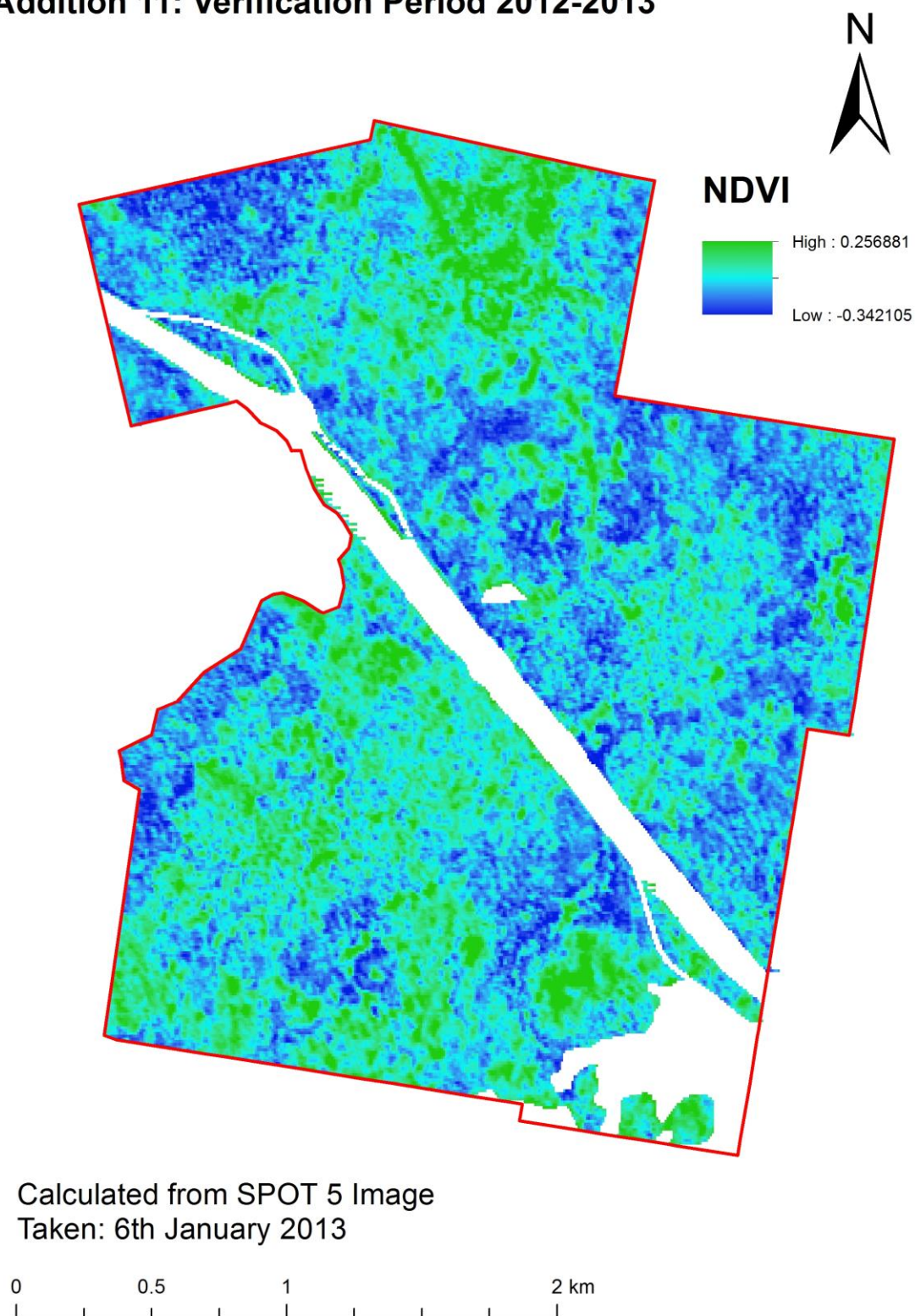


Figure No. 14b. NDVI assessment results for addition 11

Results of 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.