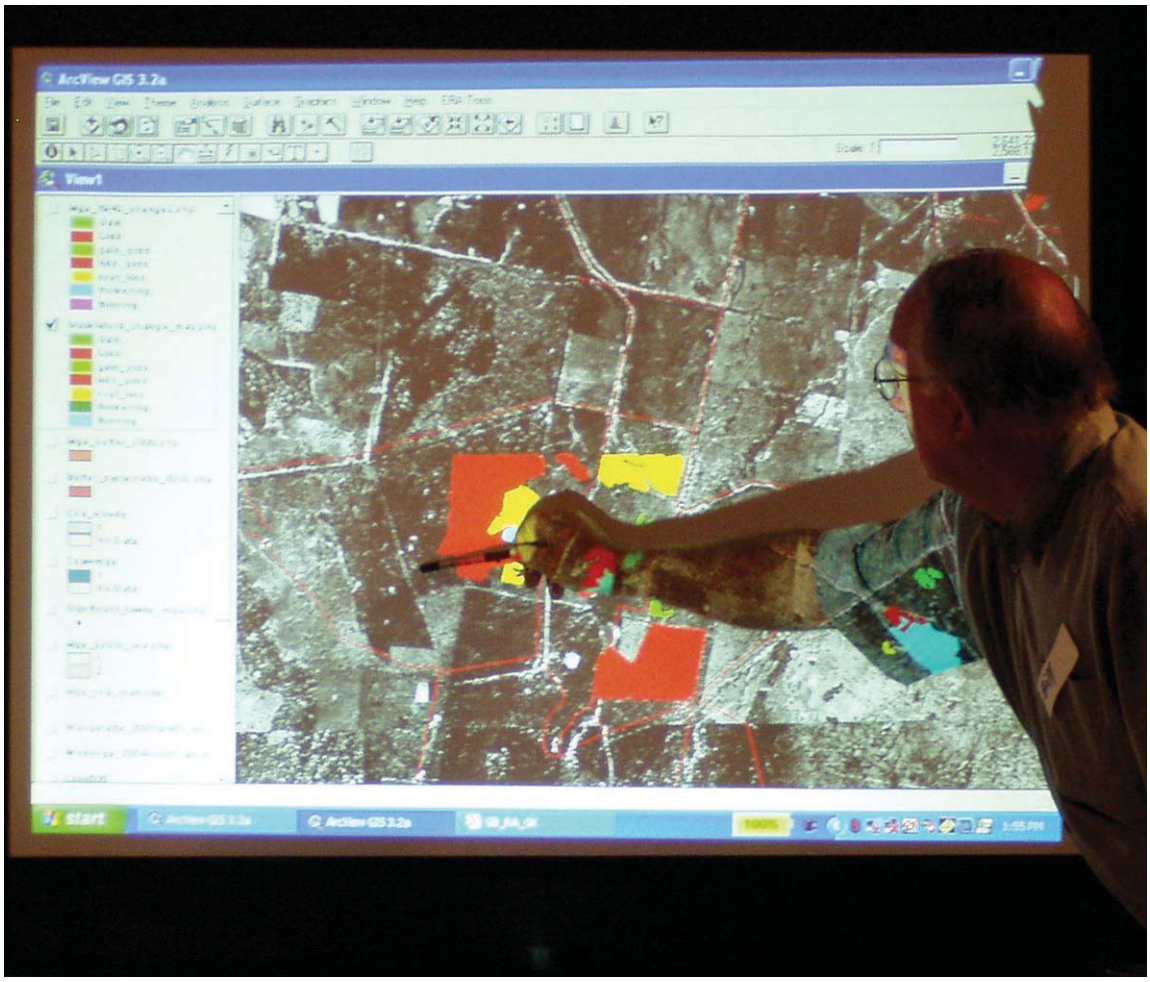
LANDSCAPE LOGIC

LINKING LAND AND WATER MANAGEMENT TO RESOURCE CONDITION TARGETS

Technical Report No. 3

Site selection and methods for retrospective research into vegetation change in northern Victoria

September 2007



Australian Government

Department of the Environment, Water, Heritage and the Arts

Published September 2007
This publication is available for download as a PDF from www.landscapelogic.org.au

Cover photo: Wendy Merritt.

LANDSCAPE LOGIC is a research hub under the Commonwealth Environmental Research Facilities scheme, managed by the Department of Environment, Water Heritage and the Arts. It is a partnership between:

- **six regional organisations** – the North Central, North East & Goulburn–Broken Catchment Management Authorities in Victoria and the North, South and Cradle Coast Natural Resource Management organisations in Tasmania;
- **five research institutions** – University of Tasmania, Australian National University, RMIT University, Charles Sturt University and CSIRO; and
- **state land management agencies in Tasmania and Victoria** – the Tasmanian Department of Primary Industries & Water, Forestry Tasmania and the Victorian Department of Sustainability & Environment.

The purpose of Landscape Logic is to work in partnership with regional natural resource managers to develop decision-making approaches that improve the effectiveness of environmental management.

Landscape Logic aims to:

1. Develop better ways to organise existing knowledge and assumptions about links between land and water management and environmental outcomes.
2. Improve our understanding of the links between land management and environmental outcomes through historical studies of private and public investment into water quality and native vegetation condition.

Site selection and methods for retrospective research into vegetation change in northern Victoria

This document describes the process used to select focus study areas for the Victorian Retrospective Project within the Landscape Logic research hub, funded by the Commonwealth Environmental Research Facility (CERF) program. The aim of the investigation is to clarify and document the impact of natural resource management actions, such as those facilitated by CMAs, to improve the condition (extent and quality) of native vegetation relative to other drivers of vegetation change such as land use and management change, and environmental factors. New understandings, in the form of data and models will be incorporated within decision support tools designed to assist catchment managers in making investment decisions.

Landscape Logic is a large, multi-partner, multi-disciplinary project undertaking applied ecological research of considerable complexity in space and time. In such complex projects, the identification of small case studies has been identified as a key element of success (Tress et al. 2007). We selected case study areas through an iterative process involving a series of five meetings with the project Reference Group (Appendix 2), regional workshops with representatives of our partner CMAs (Appendix 2), and other consultations. There are three case study areas proposed for the investigation of native vegetation condition (extent and quality) change, one case study area within each of our partner CMA regions. These areas are; Muckleford (North Central CMA), Earlston Hills-Longwood Plain (Goulburn Broken CMA) and Springhurst–Wodonga (North East CMA).

Acronyms

BAP zone	Biodiversity Action Planning zone
CAMS	Catchment Activity Management System
CMA	Catchment management organisations in Victoria
DSE	Department of Sustainability and Environment (Victoria)
DPI	Department of Primary Industry (Victoria)
GBCMA	Goulburn-Broken Catchment Management Authority
GIS	Geographic Information System
NCCMA	North Central Catchment Management Authority
NECMA	North East Catchment Management Authority
NRM	Natural Resource Management

Aim

The purpose of identifying our proposed case study areas in this document is to:

1. Seek confirmation from our regional partners and other stakeholders that the locations selected are appropriate for this study.
2. Communicate these intended case study areas to Landscape Logic colleagues in other projects, particularly Project 1 (Spatial Analysis and Database), Project 2 (Social Research) and Project 7 (Knowledge Broking) to better enable them to assist us in our research.
3. Seek support from our regional partners with the following data related activities:
   - Carrying out quality assurance on the Catchment Activity Management System (CAMS) and other relevant databases.
   - Compiling site level spatial data for on-ground works to add to CAMS (e.g. from programs such as Bushcare, Save the Bush, One Billion Trees)
   - Compiling data on relevant projects that have been undertaken within the areas (see Appendix 1)
   - Capturing local knowledge on landscape histories and public and private investment activities.

Introduction

The Victorian Retrospective Project (Landscape Logic Project 3) aims to improve our understanding of native vegetation condition change (extent and quality) in response to investment in vegetation protection and enhancement activities and other major drivers of land-use change.

The Victorian Retrospective Study will investigate key assumptions about how native vegetation at local and landscape scales responds to change in land use and management. The links established between investment processes and landscape outcomes, developed using process models, will be used to assist future decision making aimed at improving native vegetation condition.

The study aims to:

- Identify the impact of targeted interventions for native vegetation protection or enhancement relative to broader drivers of landscape change such as historical and contemporary changes in land use and land management.
- Provide new knowledge and improved assumptions about the responsiveness of native vegetation condition to targeted interventions and,
- Develop models and contribute to the development of tools which can assist partner Catchment Management Authorities (and other stakeholders) in understanding and reporting likely change in native vegetation condition.

The project is composed of three inter-linked activities:

- Investigating the effectiveness of interventions aimed at re-establishment, protection, enhancement and improved condition of native vegetation (site-scale research),
- Investigating drivers of historical and contemporary change in native vegetation extent within selected case study areas (landscape scale research),
- Investigating the spatial extent of vegetation states and trajectories within selected case study areas (combining vegetation response models from site analyses with gross land cover change information from landscape scale studies)

In combination, investigation of these site and landscape components will result in the improved understanding of native vegetation change from case study areas, and quality change from site based data, will allow the CMAs and regional teams to learn about the effectiveness of the interventions they currently employ and potentially expand the range of approaches they use and improve targeting based on a better understanding of the change processes underway.

Key outputs:

1. New digital spatial data on land use histories, geo-referenced aerial photography, native vegetation enhancement and protection sites
2. Vegetation assessment techniques and a site selection/landscape stratification framework to assess the effectiveness of interventions used to improve vegetation condition
3. New models and tools to support regional reporting and decision making which aimed at improving the extent and quality of native vegetation

Background and project development

Catchment Management Authorities are required to report on progress towards resource condition targets (RCTs) for the entire native vegetation resource within their catchment boundary (*Catchment and Land Protection Act* 1994). While they do not have direct responsibility for land management, they are responsible for guiding public investment towards RCTs, typically in partnership with state agencies and other organisations.

Direct investment mostly involves small areas of land subject to a range of interventions such as fencing and changed stock management. Although the spatial location and area treated is often known, the ecological response to intervention is not. One of the activities in Project 3 is designed to establish response curves for vegetation condition at site

scale in response to management interventions as a means of gaining a better understanding of the ecological effectiveness of management investment decisions. This site-based activity constitutes one of the factors influencing the landscape scale picture of native vegetation extent and condition change (Table 1).

Different categories of native vegetation can be defined in terms of tenure, type of intervention and availability of records (Table 1). These categories collectively contribute to the net change in extent and quality of native vegetation in the landscape (e.g. DSE 2008). It is important to note that areas of native vegetation on private land subject to publicly-funded intervention are also subject to a variable proportion of landholder (private) investment. This varies markedly from site to site and is usually imperfectly known and difficult to identify without social research.

Table 1: Types of native vegetation change and sources of data about their location and extent.

Private land publicly-funded	Native vegetation on private land subject to publicly-funded intervention to improve vegetation condition. Systems exist to record location and area (e.g. CAMS).
Private land privately-funded	Native vegetation on private land managed for improved condition at landholders expense only. There are no systems in place to capture information on location and area of this category. It is assumed that the area in this category is directly proportionate to category one in reference to the two-times assumption.
Native vegetation removal (permits and tracking system)	Areas from which native vegetation has been removed or effectively removed through land-use and land-management change. The area of this category can be estimated from clearing permits and remote sensing (particularly for woodland vegetation types).
Natural regeneration (incidental, no private or public funding)	Areas of native vegetation undergoing natural regeneration (i.e. not subject to private- or publicly-funded intervention) resulting in improved extent and/or condition. The location and area of this category can only be estimated from a combination of local knowledge, social research and analysis of remotely-sensed data.
Native vegetation in public estate	Native vegetation in the public estate, some of which has been subject to intervention to improve condition and degrading processes such as increased fire frequency, weed invasion and overgrazing. The area and location of this category is well recorded.

Examination of vegetation quality change at the scale of individual sites – geographically diffuse activity

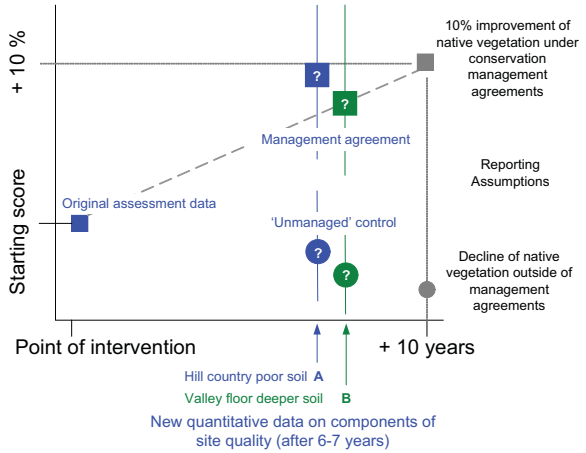
Our site-based research will produce a better understanding of site responses to intervention. This is an important step toward the CMAs learning about the effectiveness of their investments. At present, CMAs and the state use a generic reporting assumption that sites under conservation management agreements will improve in quality by 10% over a 10 year period (Brunt and McLennan 2006; Department of Sustainability and Environment 2008).

The key element required for this aspect is historical data in the form of site assessments that include data or observations on vegetation and structure. The ideal data set would be quantitative data from control and treatment sites at the time they were established (e.g. Figure 1), so that we could learn about the effectiveness of a treatment relative to status quo. Quality data of this kind may not exist and we will pursue research opportunities wherever the most appropriate data occur in relevant ecosystems. As such, this activity could be geographically diffuse. Combined with the concentrated landscape scale research activities below, this research will highlight opportunities for CMAs to better direct their investments for improvements in vegetation condition.

Examination of native vegetation extent (cover) change over landscape and property scales – geographically concentrated activity

The second activity within the Victorian Retrospective study was examining areas where change in extent had occurred, and attempting to attribute those changes to particular causes such as

Figure 1. Sites where interventions occur but are not monitored and a generic reporting assumption is used to estimate resulting change.



natural regeneration, changed tenure, changed land management etc. (Table 1). This part of the project is being carried out in collaboration with Landscape Logic Project 2 (Social Research) with information provided by regional NRM teams from CMAs, DSE, DPI and other bodies like Trust for Nature (a statutory authority).

The investigation of gross change in extent requires geographically discrete case study areas to be defined so that intensive spatial analyses can be carried out. The mapping and other analyses will be supported by available knowledge and specially commissioned social research to identify local social and economic drivers such as demographics, markets, climate, and NRM investment programs. This document sets out the proposed case study areas, and the process by which they were selected.

General criteria for selecting the case study landscape areas

The three partner CMA areas can be further subdivided into their constituent Bioregions, defined by associations of landform, soils and vegetation (NLWRA 2001). Within these bioregions, further subdivisions called ''Biodiversity Action Planning (BAP) landscape zones'' were developed as part of Victoria's biodiversity strategy as a means of making the complex task of planning for native biodiversity conservation manageable (Platt & Lowe 2002).

BAP zones are therefore strategic sub-units within Bioregions. They are landscape scale (<100km wide) and were identified using four main criteria (Davidson, 1996):

- Amount of remnant vegetation cover
- Regional conservation status of vegetation cover
- Size of remnant areas
- Practical boundary features (e.g. roads, administrative boundaries etc were often used to delimit zone boundaries).

These zones were developed in consultation with DSE, CMAs, other agencies and community groups as a means of spatially identifying the most 'significant' zones for conservation within the landscape. The proposed case study areas in this document are based on BAP zone boundaries.

The primary selection criteria used to identify appropriate areas were:

1. Exclude those bioregions that are either predominantly intact forest or largely converted to intensive agriculture or horticulture. These types of landscapes can be defined as entirely ''intact'' and entirely ''relictual'' landscapes, as defined by McIntyre & Hobbs (2001).
2. Identify BAP zones which lie between the extremes of intact and relictual landscapes, being those characterized as transitional fragmented landscapes. These were found to occur in the Goldfields, Victorian Riverina, and Northern Inland Slopes Bioregions. These bioregions feature a high diversity of land use types, have historically received the bulk of investment aimed at vegetation protection and enhancement (outside of conservation park and reserve management), and present significant possibilities for spontaneous regeneration due to land use changes and the presence of native vegetation remnants.

The secondary criteria used to select suitable BAP landscape zones within the Goldfields, Victorian Riverina, and Northern Inland Slopes Bioregions are shown in Table 2:

Table 2: Secondary selection criteria for BAP zones within the Goldfields, Victorian Riverina, and Northern Inland Slopes Bioregions suitable for site-level and landscape-level analysis of vegetation change.

Case study selection criteria
Anecdotal or other evidence of natural regeneration
Diverse representation of land-use in the landscape (e.g. peri-urban, intensive/extensive, private/public lands)
Know investment in native vegetation enhancement and protection over the long-term (at least 10 years)
Record of government investment in the area available through CAMS
Areas that represent transitional zones between intact and relictual landscapes (sensu McIntyre & Hobbs 2001)
Spatial data available for the area
Other relevant vegetation data available for the area (Flora Information System (FIS), Habitat Hectares, other expert information, see Appendix 1)
Bioregional Ecological Vegetation Classes that are relatively common across all three CMAs (this will provide internal contrast between the three CMA regions), as well as produce research results relevant to significant amount of catchment management area.

Proposed landscape case study areas

This process resulted in the identification of the following case study areas:

Table 3 and Figure 5 represent the proposed study areas within the partner CMAs for the project. Figure 2 locates the study areas within CMA boundaries. The additional maps show in more detail where in the landscape the proposed areas are situated, it is important to note that the boundaries are flexible subject to additional information availability.

Additional studies will be undertaken outside these identified case study areas, particularly where we have historical site data or other opportunities that can add value to the investigation (e.g. Appendix 1, Figs 7–9).

Table 3: Proposed case study areas for native vegetation project

Case study area	CMA	Area	Bioregion/s	BAP Landscape Zone/s
Muckleford (Figure 4)	NC	169,151 ha	Goldfields	Muckleford
Earlston Hills–Longwood Plain (Figure 5)	GB	208,862 ha	Victorian Riverina, Northern Inland Slopes	Longwood (part) Violet Town (part)
Springhurst–Wodonga (Figure 6)	NE	137,395 ha	Victorian Riverina, Northern Inland Slopes	Lower Ovens (part) Lower Kiewa (part)

Figure 2: Proposed case study areas for the native vegetation cover change investigation in their bioregional (shading) and BAP zone (grey outline) context. The Muckleford area (A) in NCCMA is entirely contained within the Goldfields Bioregion whereas the Earlston Hills–Longwood Plain area (B) in GBCMA and the NECMA areas (C) have a mixture of Victorian Riverina and Northern Inland Slopes Bioregions.

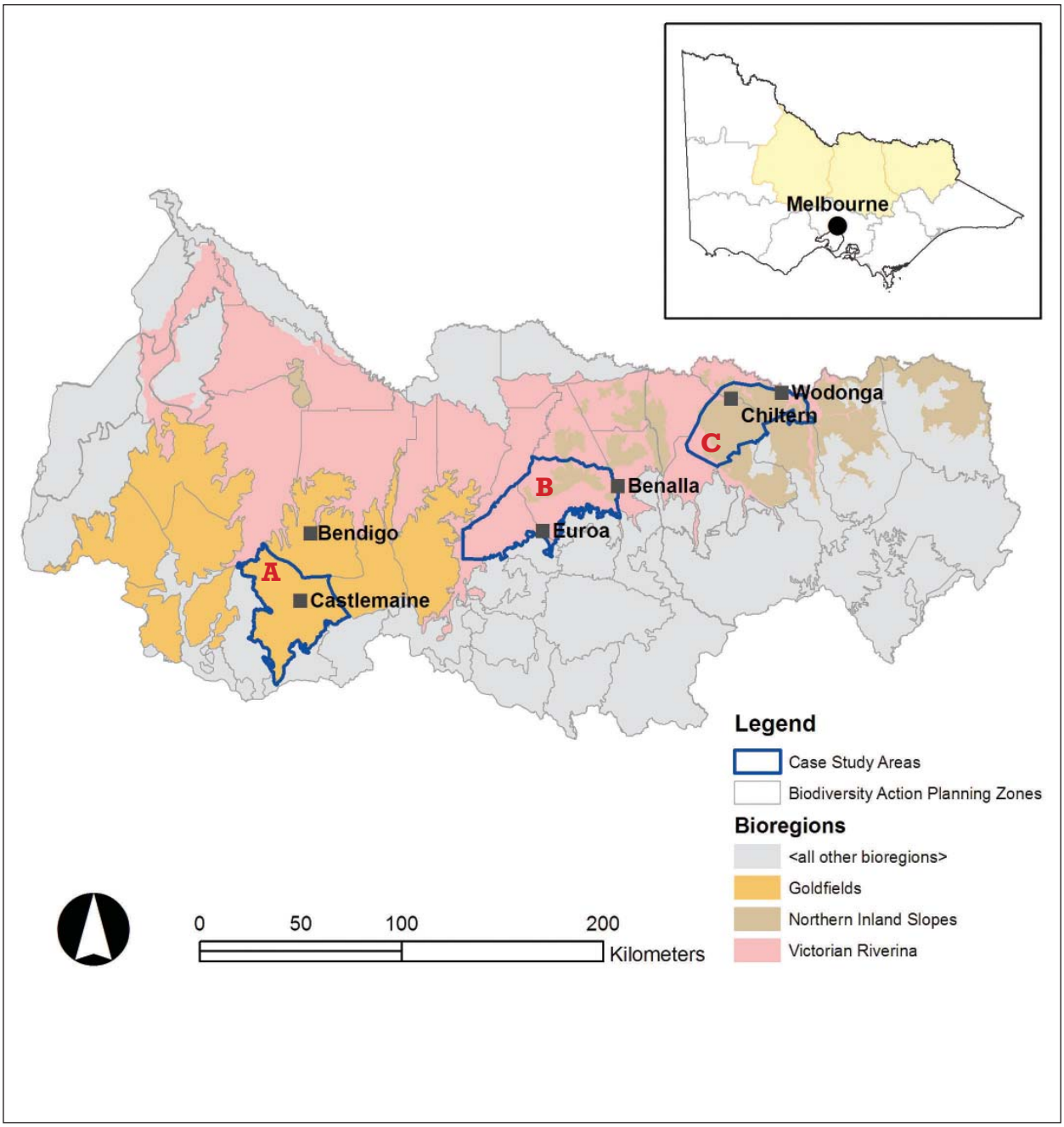


Figure 3. Proposed case study areas detail. Shown are Biodiversity Action Planning (BAP) zone outlines, extant native vegetation cover (green) and the coverage of historical aerial photographs from 1946–1947 (pale yellow indicates imagery present, white indicates absence).

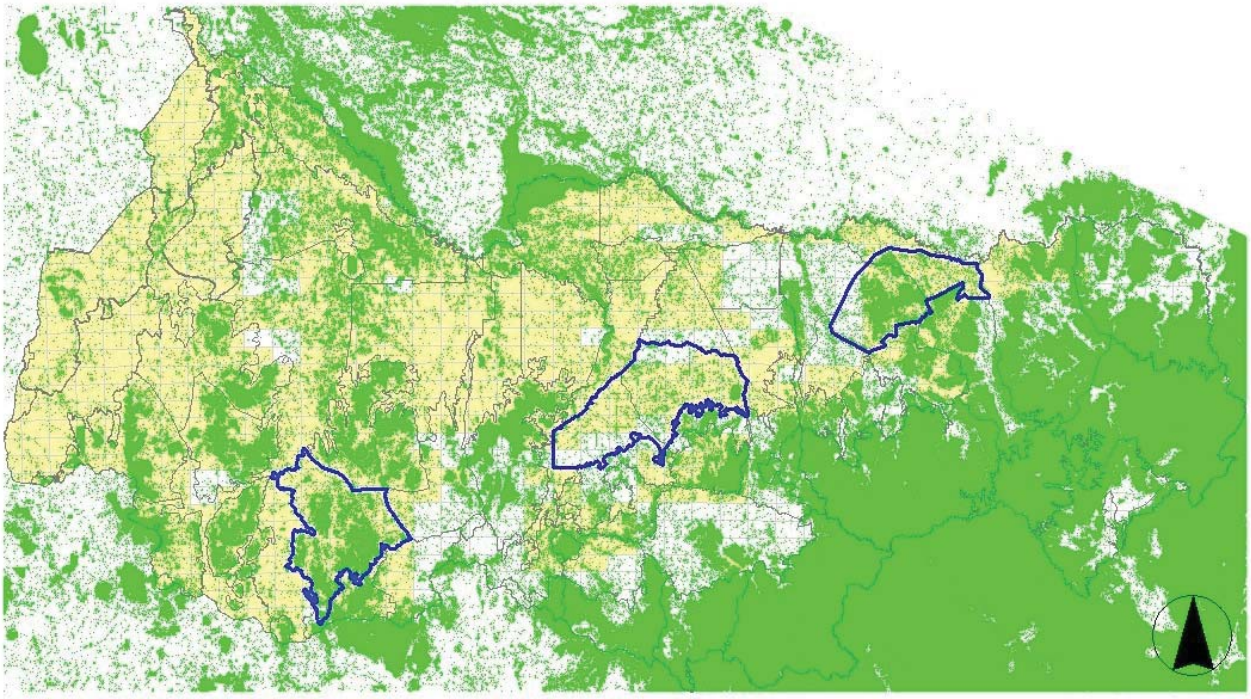


Figure 4: The Muckleford Biodiversity Action Planning Zone within the NCCMA. Completed NRM works as indicated by the Catchment Activity Management System are outlined in black. The yellow shading indicates that there is almost a complete photo record available for the entire area from 1946–47.

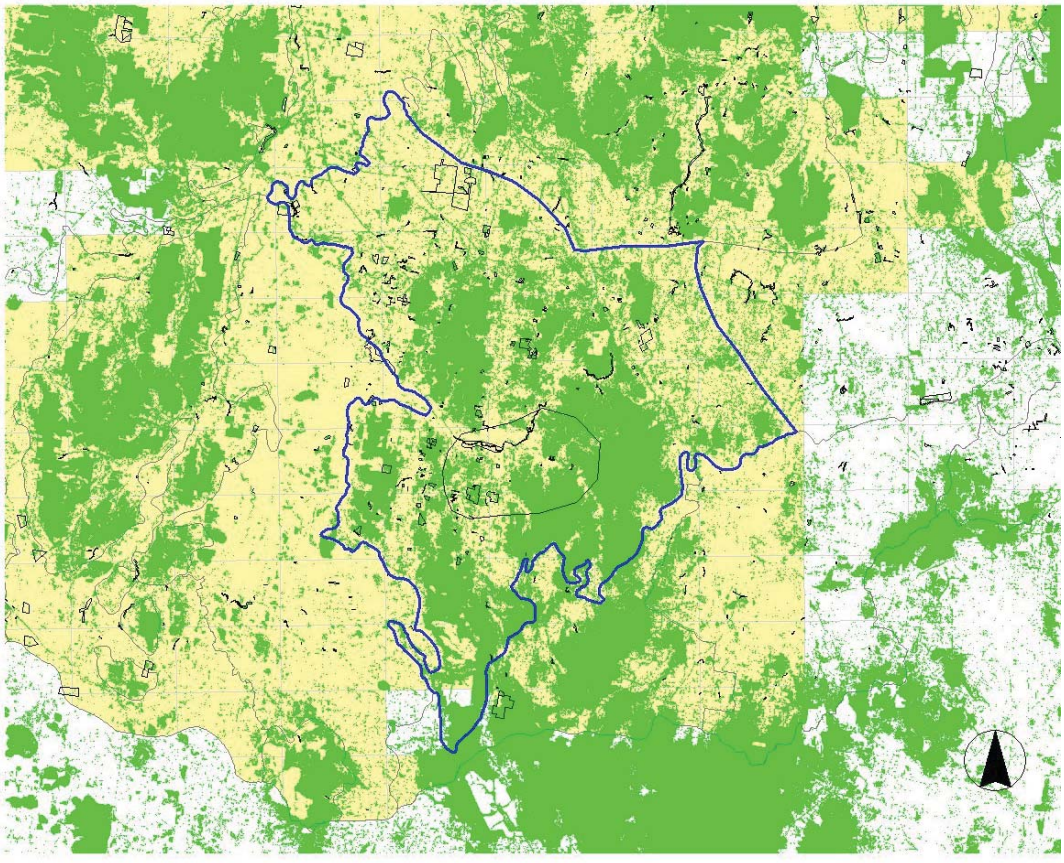


Figure 5: The Earlston Hills–Longwood Plain study area within GBCMA. The area includes the majority of two Biodiversity Action Planning zones Longwood Plain and Violet Town. Completed NRM works as indicated by the Catchment Activity Management System are outlined in black. The yellow shading indicate those parts of the area with air photo records available for 1946–47; however there are some areas (white) for which there may be no coverage.

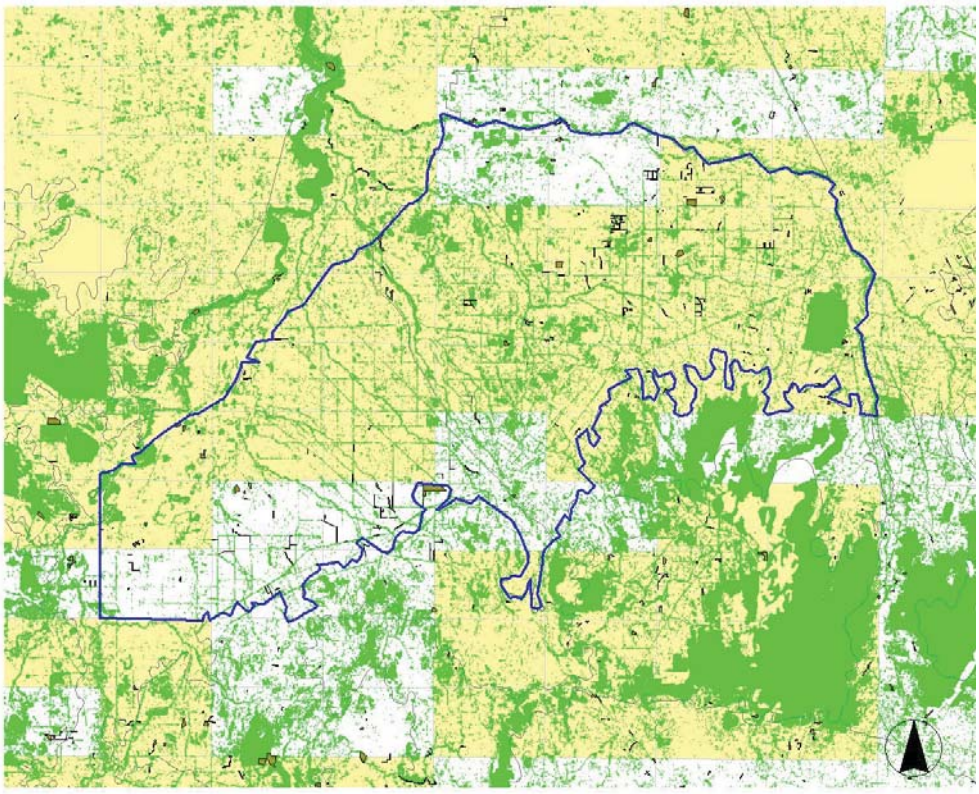
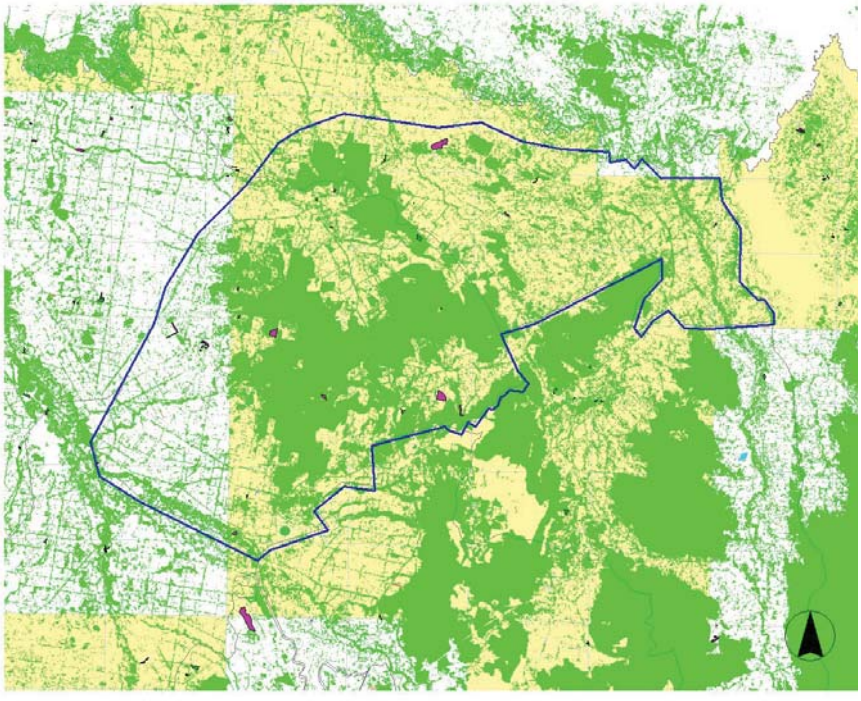


Figure 6: The Springhurst–Wodonga study area within NECMA. The area includes the majority of two Biodiversity Action Planning zones Lower Kiewa and Lower Ovens. Completed NRM works as indicated by the Catchment Activity Management System are shaded in red. The yellow rectangles indicate those parts of the area where there are air photo records available for 1946–47; however there are some areas (white) for which there may be no coverage.



Data requirements and availability

Aerial photography

The availability of the earliest aerial photographs broadly available for Victoria (1946–47) is indicated in the proceeding figures. A spatially referenced database of available photography for the intervening time periods is being compiled. The digitised time-series aerial photography will be used to identify extent change over time while associated social research will identify drivers of that change.

Additional spatial data

- Broad-scale satellite-derived change analysis from White, Newell, Griffeon (unpublished data) as well as at CMA and case study area scale
- Historical land use maps. Landscape Logic has contributed to a DSE initiated activity to digitise and geo-rectify historical land-use maps. Sources of information for this are listed in Table 3. Complete coverage for the case study areas has been achieved for the resources in Table 4.

Table 4. Summary of broad extent land use/land cover maps available for Victoria (Steve Sinclair (DSE) pers. comm.)

Year	Type	Detail	Resolution	Geo-rectified
Pre-1866	Various		Poor	Yes
1866	State-wide Land tenure		Good	Yes
1888	County scale land cover/ Land use		Good	Yes
1901	State-wide		Poor	Yes
1907	State-wide		Poor	Yes
1911	State-wide		Poor	Yes
1923	State-wide		Poor	Yes
1944	State-wide	High	Poor	No
1951–1970	Region scale	High	Good	No
1970–1980s	Region scale	High	Good	No

Other summary data

The following data will be sought from partner CMAs

- Population/demographics (statistics represented graphically if possible)
- Other census and statistical data relevant to study areas (in collaboration with Project 2)
- Scattered trees/land-clearing record (note in Appendix 1 if quantitative data/report available)
- Current CAMs data of treated vegetation areas (for later comparison with data collected after spatial analysis).

Assistance will be sought from our three regional partners to compile summary data for the case study regions. We see this as an important part of the CMAs buying in to the particular case study areas, and this focus may help to identify useful resources pertinent to the study areas. Some basic items can be compiled by the P3 team. It is proposed that Stephanie Spry visit each region to:

1. Collect summary data with the help of a CMA GIS operator
2. Make notes about what additional spatial data on native vegetation protection and enhancement works might be held by the regions for the proposed case study areas.

Stephanie will also be able to ensure that the data in the table is comparable across each region and that the summary statistics are interpreted in the same way.

Assembling background information

1. Further work needs to be completed to clarify how to obtain CAMS data quality assured by CMAs. Geoff Park and Stephanie Spry will follow up with the three regions to begin a process of compiling historical data that can be spatially referenced through CAMS.
2. Documenting on-ground works by compiling a timeline of funding programs, involving people that have contributed to the on-ground works to report on what was achieved through the programs (Tree Victoria, Save the Bush, Bushcare, NHT1, NHT2, NAP, Envirofund, and National Landcare Program). This will entail identification of key regional contacts and information sources and development of a process for elicitation.
3. Mapping and Spatial data resources. Historical land-use maps at present are not all digitally scanned and rectified, and collaboration with Project 1 may be required to complete this and resolve issues associated with cadastral units.

References

Brunt K and McLennan R (2006) Biodiversity Monitoring Action Plan. Goulburn Broken Catchment Management Authority, Shepparton.

Department of Sustainability and Environment. (2008) Native vegetation net gain accounting first approximation report. State of Victoria, Department of Sustainability and Environment, East Melbourne. Greening Australia, (2003). Bushcare Support, Native Vegetation Analysis: *A needs analysis of regional service delivery in Victoria – Goulburn Broken.*

McIntyre S and Hobbs R (2001) Human impacts on landscapes: matrix condition and management priorities. *Nature conservation 5: Nature conservation in production environments.* DA Saunders. Chipping Norton, Surrey Beatty & Sons: 301-307.

Platt SJ and Lowe KW (2002) *Biodiversity Action Planning: action planning for native biodiversity at multiple scales – catchment, bioregional, landscape, local.* Department of Natural Resources and Environment, Melbourne.

Tress G, Tress B and Fry G (2007) Analysis of the barriers to integration in landscape research projects. *Land Use Policy* 24 (2), 374-85.

VCMC (2007) Catchment Condition Report 2007. Victorian Catchment Management Council, Melbourne.

Appendix 1.
An ad hoc register of relevant data and studies available for proposed Case Study Areas

Earlston Hills–Longwood Plain

Effectiveness of increasing habitat area on Grey-crowned Babbler abundance

Wilson C. W., Robinson D., van der Ree R., McCarthy M. & Vesk P. A. (unpubl) The effectiveness of habitat works on the survival and population status of the Grey-crowned Babbler *Pomatostomus temporalis*. In: *Report to the Goulburn-Broken CMA*. Australian Research Centre for Urban Ecology, Royal Botanic Gardens Melbourne.

Robinson D. (2006) Is revegetation in the Sheep Pen Creek area, Victoria, improving Grey-crowned Babbler habitat? *Ecological Management & Restoration* 7 (2), 93–104

Effectiveness of grazing management in river frontages study (Robinson and Mann)

Robinson D. & Mann S. (1998) Effects of grazing, fencing and licensing on the natural values of Crown Land Frontages in the Goulburn Broken Catchment. Goulburn Valley Environment Group, Shepparton.

VQA revisit pilot study (Wilson, Stothers et al)

2 X assumption mail survey investigation

(Unpublished data. Final report forthcoming from PIRVic [DPI]).

Monitoring of natural regeneration, seed production etc for Bush Returns program

Vesk P, McCallum W and Morris W (2008) *Monitoring eucalypt regeneration within the bush returns trial: Final Report Year 3 (2007–08)*. Unpublished report to the Goulburn Broken CMA. The University of Melbourne, Parkville.

Vesk PA, En Chee Y and Davidson A (in press) Spatial distribution and prediction of seed production by Eucalyptus microcarpa in a fragmented landscape. *Austral Ecology*.

Land Use Impact Model (Sheep Pen Creek)

MacEwan R J, Bluml M, McNeill JM, Reynard K (2004) Land Use Impact Modelling for Native Biodiversity Risk, Policy and Landscape Scenarios. CLPR Research Report 38. Department of Primary Industries, Victoria.

Muckleford (NCCMA)

Spreadsheet model of the effectiveness of native vegetation works (cited in VCMC 2007)

Park, G (unpubl data) Muckleford MERL [MS Powerpoint Presentation]

Climate change adaptation project

Nicole Mazur, Allan Curtis, Thwaites R. & Race D. (2009) Rural landholders adapting to climate change. In: *Landscape Logic Technical Report* No. 5 (ed L. Gash). Department of Environment, Heritage, Water and the Arts, Canberra.

Newell G., White M. & Griffioen P. (2009) Potential impacts of a changing climate on selected terrestrial ecosystems of Northern Victoria. In: *Arthur Rylah Institute for Environmental Research Technical Report Series* No. 187. Department of Sustainability and Environment,, Heidelberg, Victoria.

Charles Sturt University Honours Project (Tobias Grant)

Grant T. (2009) Increases in Woody Vegetation in Central Victoria from 1972 to 2005, Honours Thesis, Charles Sturt University, Albury.

Springhurst–Wodonga

Clearing history narrative for Barnawatha (unpublished GIS analysis)

Anon. History of Clearing – Springhurst – Byawatha Landcare Group [pdf of presentation file]

Analysis of isolated tree cover change

Leahy J. (2003) Tree Decline: A North East Perspective. Department of Primary Industries, Wodonga, Vic.

Figure 7: Vegetation site data – from Flora Information System (FIS) quadrats and vegetation assessments available within Muckleford Case Study Area. The dots are coloured by the year of assessment. The year of those coloured red are currently uncertain.

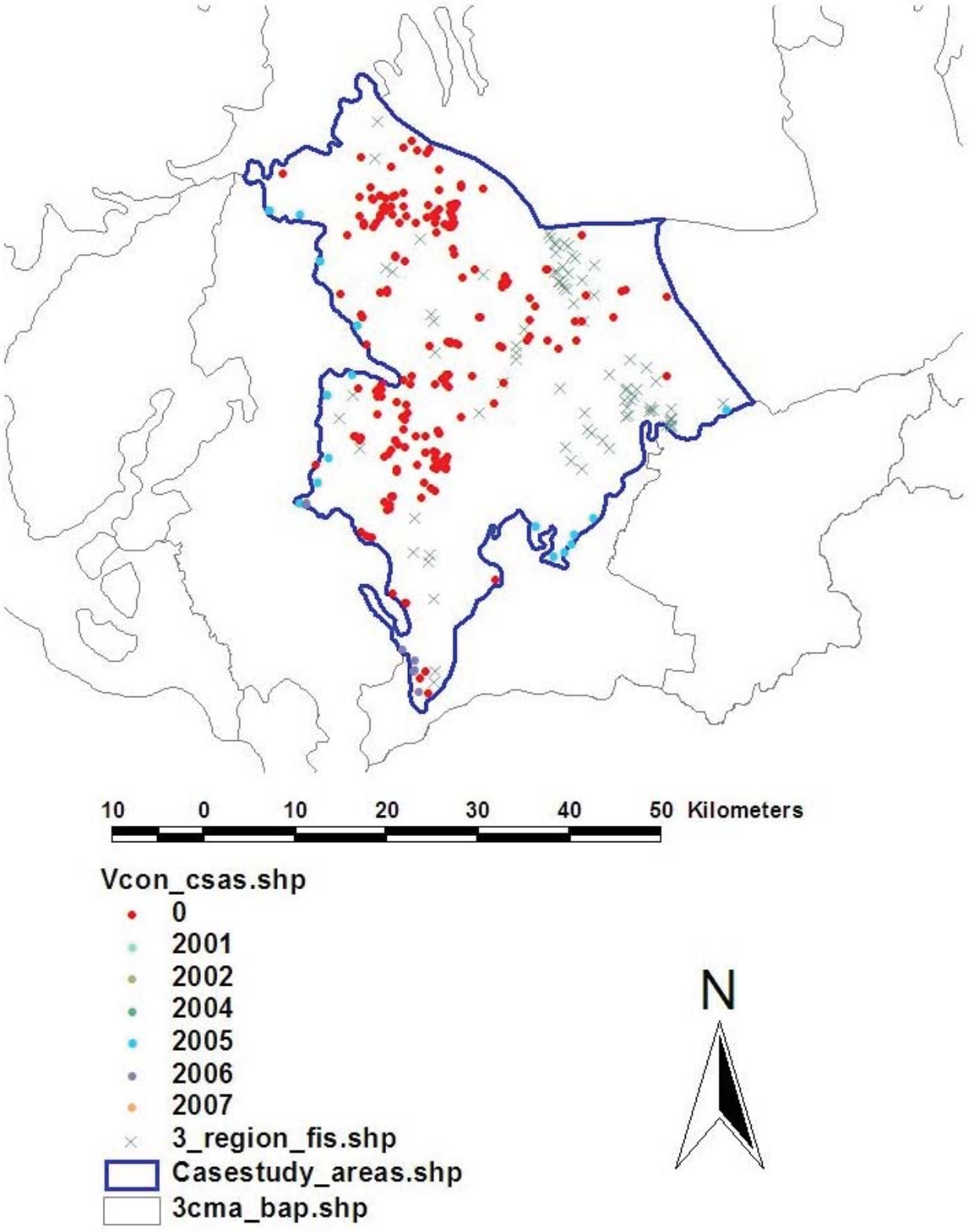


Figure 8. Older native vegetation assessment and FIS Quadrat data available within the proposed GBCMA case study area. The dots are coloured by the year of assessment. The year of those coloured red are currently uncertain.

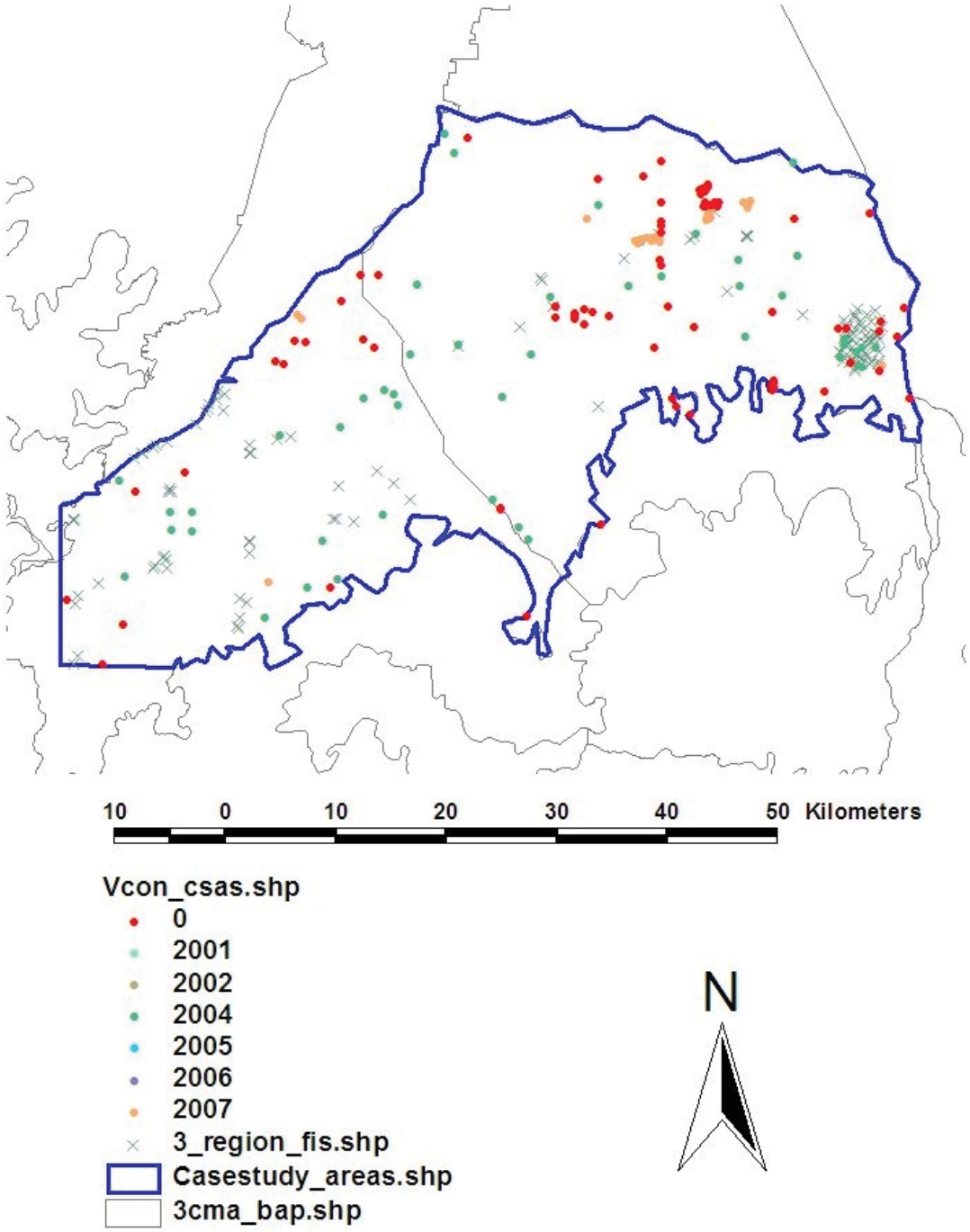
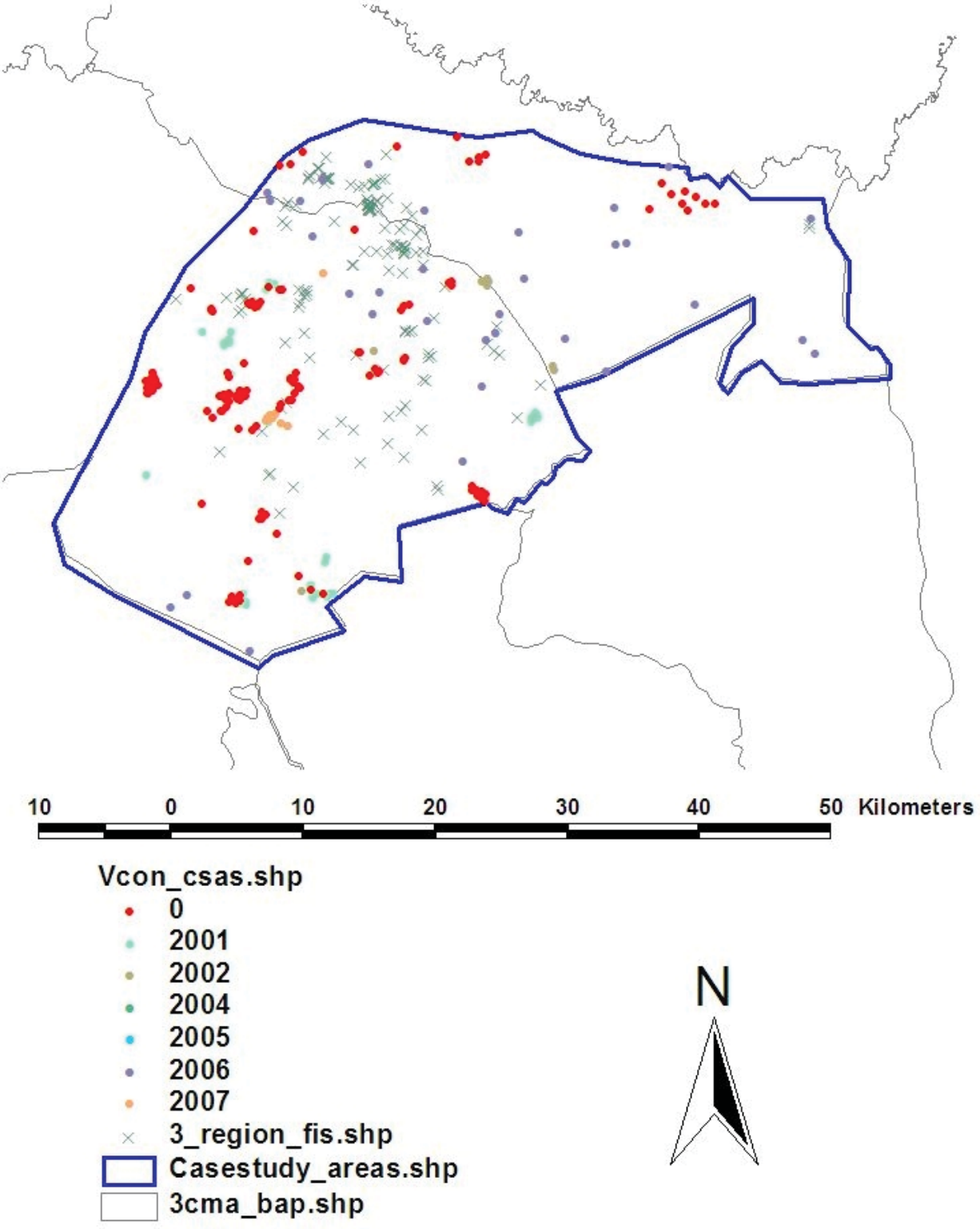


Figure 9: Location of older vegetation assessment and FIS quadrat sampling points within the proposed NECMA case study area. The dots are coloured by the year of assessment. The year of those coloured red are currently uncertain.



Appendix 2: Consultation towards identification of case study areas

Project Reference Group – regular and occasional members

Name	Organisation
David Duncan	Arthur Rylah Institute for Environmental Research (ARI)
Geoff Park	North Central Catchment Management Authority (NCCMA)
Adam Hood	Department of Sustainability and Environment
Graeme Newell	Department of Sustainability and Environment
Vanessa Keogh	Goulburn Broken CMA
Tim Barlow	Goulburn Broken CMA
Geoff Robinson	North East CMA
Sue Berwick	DSE NE region
Aaron Gay	NCCMA
Hayley Rokahr	DSE
James Todd	DSE Native Vegetation Policy Unit
Alan Curtis	Charles Sturt University
Jenifer Ticehurst	iCAM/ANU
Grant Dickins	RMIT
Shayne Annett	DSE Sustainable Landscapes

North East Region visit and tour

Greta Quinlivan	NECMA
Geoff Park	NCCMA
Sue Berwick	DSE NE region
Aaron Gay	NCCMA
Peter Ockenden	DPI

Goulburn Broken region visit and tour

Vanessa Keogh	Goulburn Broken CMA
Kate Stothers	DPI
Geoff Park	NCCMA
Sue Berwick	DSE NE region
Aaron Gay	NCCMA
Hayley Rokahr	DSE
James Todd	DSE Native Vegetation Policy Unit
Shayne Annett	DSE Sustainable Landscapes

North Central region visit and tour

Geoff Park	NCCMA
Aaron Gay	NCCMA
Adrian Martins	NCCMA
Peter Morrison	DSE
Peter McRostie	NCCMA
Ren Bennett	University of Melbourne

February 8 Project 3–Project 2 collaboration workshop, Benalla

Vanessa Keogh	Goulburn Broken CMA
Royce Sample	Charles Sturt University
Geoff Park	NCCMA
Tim Barlow	GBCMA
Jim Blackney	Trust For Nature (Vic)
Alan Curtis	Charles Sturt University
Wendy Minato	Charles Sturt University
Adam Hood	DSE
Graeme Newell	ARI/DSE
Digby Race	Charles Sturt University