

# Socio-economic impacts of land use change in the Green Triangle and Central Victoria

## Peer Review of Project Methods – April 2007

This document records:

- Comments provided by three peer reviewers on proposed methods for the 'Socio-economic impacts of land use change in the Green Triangle and Central Victoria' project; and
- The response to peer review comments from the project researchers, which includes detail on how methods were changed to address suggestions made by the peer reviewers.

Peer reviewer comments are in **bold** font.

The response from researchers is in normal font.

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### Reviewer 1: Anonymous

#### **PEER REVIEW COMMENTS: SOCIO-ECONOMIC IMPACTS OF LAND USE CHANGE IN THE GREEN TRIANGLE AND CENTRAL VICTORIA**

**Overall, I thought the research proposal was very well developed. The researchers clearly have a sound understanding of survey methods and practice, the methodology is rigorous, and the risks associated with the survey methodology are well thought through and controlled for. Other strengths include the range of methods used, the checks and balances built into the research process, and the use made of the advisory committee and local expertise. I am confident the research will lead to a significant improvement in understanding of the socio-economic impacts of land use change.**

**While all subprojects make use of the group interviews already conducted, at this stage the integration of results across projects is less developed. A confrontation of the data on perceptions (project 1) and the estimated actual impacts (projects 2, 3) would be valuable to identify where they align, and where they don't, possible reasons for this mismatch.**

Researcher comments: We do plan to integrate results, but have not yet identified exactly how and what aspects will be analysed using an integrative approach. We plan to first examine the quality of the data achieved for Subprojects 1 and 2, and discuss with the Project Advisory Group the sorts of analysis that would be of most use to people experiencing land use change in the study region. After this, integrative analysis will be undertaken.

Some more detailed comments on each of the subprojects is provided below.

#### Project 1:

There is a great deal of detail provided about the data collection process, but no discussion of what is to be done with the data once it is received. Perhaps this is because the data analysis stage will simply involve presenting descriptive statistics on the responses to each of the questions? Multivariate analysis techniques could also be relevant and a discussion of whether/how cognitive hierarchy theories will inform the analysis process would have been useful.

Researcher comments: The major analyses of interest to stakeholders are in fact likely to be simple descriptive statistics and percentages: for example, the percentage of respondents within a given category who expressed a given point of view. Other analyses will compare views of the four land uses, or compare the views of different population sub-groups.

Some key analyses are suggested below:

#### General attitudes towards key land uses

- Percentage of participants overall who view each land use as having a positive, neutral or negative impact on the region, and on their local area (means and standard deviations might also be suitable since data is collected on a scale that might loosely be dealt as interval level, but for general public presentations, percentages may be provide a simpler (and arguably more meaningful) description of distributions.
- Percentage of people in defined LGA clusters who view each land use as having a positive, neutral or negative impact (and relevant tests of significance)
- Percentage of people residing in small towns/large towns who view each land use as having a positive, neutral or negative impact (and relevant tests of significance)
- Testing for significance of differences between views on each of the four land uses
- Strength of opinion questions will be collapsed to provide a single indicator of strength of opinion. In combination with general attitudes, this can then be used to show weighted attitudes towards each of the four land uses, both across the study area as a whole, and within LGA clusters
- A component of the project draws on the GIS analysis expertise within DPI. For general attitude, we plan to include some spatial analyses showing the distribution of views across the region.

## Beliefs about consequences/impacts of land use changes

- Percentage of participants overall who view each land use as resulting in more or less/fewer of the outcomes questioned
- Comparison of views regarding impacts expressed by people living in defined LGA clusters (and relevant tests of significance)
- Testing for significance of any differences in beliefs about consequences of each of the four land uses
- More an aspect of interpretation rather than analysis, views on consequences/impacts of land uses will be compared with findings of socio-economic analysis (project 2). Areas where resident views are similar or different from impact analysis will be highlighted. For select impacts, it might also be possible to compare the two sources of on a smaller scale (eg LGA clusters)

## Other attitudes

- Mean preferences for valued outcomes of land use change
- Percentage of participants (overall) who agree with statements regarding planning/governance of land use change
- Percentage of participants (overall) who expect future impacts of each land use change to be positive, neutral or negative

## Understanding attitudes towards new land uses

- Cognitive hierarchy will inform regression based analyses that will assist in exploring the way that values and beliefs contribute to overall views of land uses

**The survey methodology is well developed. However, the 50% response rate seems quite ambitious from a mail-out survey of the general population and extended follow up or supplementation may be needed to achieve the target of 1500 returned questionnaires.**

Researcher comments: Extended follow-up of potential respondents is incorporated within the 5-contact point system proposed. This includes a preliminary letter followed by a mail out. Three further contacts will occur: a reminder card, a re-mail of the questionnaire, and a second reminder card. This approach has been effective in achieving response rates greater than 50%, especially when used in conjunction with the other approaches described in the proposal (profession questionnaire, personalised letter, recognised institution as correspondent). There is a possibility that follow-up that extends on this might be construed as harassment. In fact, this issue was raised by the Human Research Ethics Committee (Land and Food Resources advisory group) at the University of Melbourne, who considered the number of follows to be high.

**The paper notes that comparisons of primary producer status, occupation and gender will be based on demographic information collected in the survey, but the survey document does not collect information on occupation (only on primary producer status).**

Researcher comments: This omission was noticed by the researchers prior to regional pre-testing and a question regarding occupation was included in this version of the questionnaire.

**There is little discussion of the risks of getting a non-representative mix of respondents. I would suggest comparing the distribution of respondents to the population distribution for each demographic characteristic (i.e. age, gender, primary producer, rural/major town), clearly pointing out any significant discrepancy to users, and consideration of weighted analysis should there be significant discrepancies.**

Researcher comments: This is a good suggestion, and an approach we have used in other work. Following data collation, demographic characteristics of the sample will be compared with regional statistics (based on Australian Bureau of Statistics and other relevant data sources. If appropriate, weighted analysis will be used for analyses intended to be generalised to the wider population.

## **Project 2:**

**The researchers describe a sound, integrated and holistic approach to assessing whether land use changes are a driver of the observed socio-economic changes. They demonstrate a sophisticated understanding of causality and the complexities of impact analysis.**

**The YourPlace measure of GRP does not meet some of the validity and reliability criterion outlined on p13, in that the methodology is not particularly transparent, and it is not replicable. While YourPlace produces information that appears more timely than other sources, it is reliant on the same limited set of regional input data on economic activity (e.g. ABS population, ATO statistics, DEWR unemployment), coupled with a projection methodology.**

Researcher comments: This has been noted by the researchers, and we will ensure that the limitations of use of this data are clearly reported when any of these data are used, as well as following up on the suggestion below to use the ARTI measure as a useful proxy indicator.

**The BTRE's ARTI (Aggregate Real Taxable Income) measure provides a useful indicator of changes in economic activity at a regional scale. It**

is available at the SLA scale annually from 1990-91. While not capturing all economic activity in a region, the measure is transparent and replicable, and I recommend this be used as an additional measure of regional economic growth, so the study is less reliant on the YourPlace database.

Researcher comments: This is a great suggestion and we will use the ARTI measure in the way proposed by the reviewer.

**I recommend usage of ABS *Estimated Resident Population* (Cat 3218.0 and related) for SLA population numbers and age breakdown, rather than census data. ERP has a number of advantages over the census data in that it is the official population count, adjusted for known problems with the census, and it provides an annual time-series, rather than 5 yearly estimates.**

Researcher comments: When the term 'Census' data is used in the methodology, this refers to using data originally sourced from the Census which may include data based on three measures:

- Place of enumeration on Census night
- Place of work
- Usual resident population (and where appropriate, estimated resident population).

Wherever possible, we plan to use URP data. ERP data will be utilised as appropriate, but cannot be used to estimate rural balance population and have some estimation challenges between Censuses. It is possible that ERP data for the 2006 Census will not be available before the end date of the study. For this reason, it is important to access data based on various Census measures, while clearly reporting the basis on which population has been counted.

**The proposal is to use LGA employment estimates derived from the unemployment and labour force participation statistics available from DEWR's *Small Area Labour Markets* database. DEWR advises that it is inappropriate to derive employment estimates in this way.**

Researcher comments: This is noted; we will utilise the unemployment and labour force statistics while not deriving employment numbers.

**Lifestyle/rural/residential land use change is not clearly defined, and suffers from a lack of relevant data sources in comparison to the other forms of land use change. I'm not clear on whether the focus is on hobby farming (however defined), or whether expansion of the urban fringe is also to be examined (nb: BRS have done some relevant work on peri-urban landholders). In addition to the listed information sources,**

**it may be possible to use census data to provide some insight into the extent of change. For example, a census table of population inflows/outflows to rural balances of the study area disaggregated by occupation (farmer/other) or industry (agriculture/other) could provide relevant information.**

Researcher comments: The lack of clarity is because considerable work will be undertaken in the initial stages of the study to further identify the best approach to defining and identifying lifestyle/rural etc landholders. We are aware of the BRS work as well as a range of other studies examining similar issues and are drawing on these to identify the possible ways of identifying landholders.

The approach suggested by the review of using Census data has been considered by the researchers already. It has possibilities but the major difficulty is the high volume of inflows and outflows of rural residents of many types, only some of whom are "lifestyle" farmers. The major challenge is that both traditional farmers and other "traditional" rural residents can be a relatively mobile population in some parts of the study region, and may also be listed under occupations/industries other than farming if they have a significant off-farm income. We are continuing to consider this and other approaches.

**The focus groups of local residents to assist in interpreting and generating explanations are a very worthwhile addition to the research process.**

**Project 3:**

**Some additional questions about the age of the people who lived on the property (not just the respondent), and the extent to which people who live on the land may work off the land (e.g. in town) would assist in understanding impacts on the local economy and services. Partners and dependents may have important impacts on services (e.g. children of landowner withdrawing from local schools).**

Researcher comments: We plan to do this if possible, subject to how well people are able to answer these types of questions in the pre-survey testing.

**At present, the questions asked of pre-plantation forestry landowners relate only to people living on the property. People who were employed by the business, but lived off farm, are not captured. Information on whether such employees remained in/departed from the area would be useful for assessing population impacts.**

Researcher comments: We agree this would be useful data and will include questions on this in the survey development phase (pre-survey interviews and survey testing). However, it is possible that survey respondents will not be able to identify what impact the change had on employees – so there may be limited ability to capture some of this data via the survey.

**To fully assess population impacts, we need to not only know where previous landowners have moved to, but also where new residents on those properties have come from. They may have been employed from within the local area, in which case there's no net population impact at an LGA scale.**

Researcher comments: We will include this in the survey questions.

**If it does end up being possible for the research team to access addresses, then it may be useful to analyse all of the LGA of property sold vs. LGA of new address data across the entire database (not just those selected to be surveyed). This would make fuller use of the available information from the frame and provide solid data on the extent to which landowners remain in the region or move away. This should complement the much broader range of information (motivation, demographics etc) collected from the survey instrument itself.**

Researcher comments: If possible, we will do this – however, early indications are that we will not be able to access all addresses.

Reviewer 2:

Prof. Dave Mercer

Associate Professor and Co-ordinator, International Urban and Environmental Management Programme, RMIT University, Melbourne.

I have absolutely no problems with the methodology or background to the Socio-economic impacts of land use change in the Green Triangle project. The document you sent me is a model of how to set out a research investigation and is a thorough credit to the authors. This is a very fine research project that has been scoped and thought through extremely carefully by the research team. In my view nothing needs to be changed or explained more fully. It has my 100% endorsement and I look forward to learning of the results as they come to hand. Partners in the project can have total confidence that they are involved in a thoroughly professional piece of research that will yield extremely useful background data for them. The only issue that we have no control over is climate change and this could well be the big 'sleeper' for rural land use change in Victoria and South Australia over the coming decades.

If this is all too brief an assessment for you, my apologies. Had I had real concerns about this project and its methodology I would have written pages. That is just not necessary.

Researcher's comments: We note the issue of climate change was raised by the reviewer, and agree this is an important area that can affect land use change. On a shorter-term timeframe, climatic conditions are a key issue as part of the study, as the ongoing drought has potential to influence the results of the study. We are currently considering how to address this as part of the study.

**Reviewer 3: Dr Neil Barr, DPI Victoria**

I have read the three research proposals with enthusiasm, as this area of research is very close to my own.

My overall assessment is that this research is well informed. It is clear that the proponents have undertaken similar research in the past and have learnt from that experience. I would not expect that you would have been able to commission a superior research proposal from any other group.

I do have a few specific comments that you might pass on to the researchers. These might prove only marginally useful to the researchers, but they will indicate to you that I have read the proposals.

**Project 1:**

The proposal is very comprehensive. The questionnaire seems quite user friendly. The methodological issue that will be discussed after this will be the response rate, and more specifically, the non-respondents. I expect that perhaps 20% of the sample will be not found at the address. The remainder of the non-respondents will be a mystery. If there were resources, it would be illuminating to undertake a more direct contact with the non-respondents. Of course, this would be a significant increase in the survey cost.

Researcher comments: A data matching process (against current telephone listings) in establishing the initial sample selection will increase the probability that potential respondents will be found at given addresses. However, this is an important issue as even with an excellent response rate, we will know little about non-repondents. Within the current project budget there is little scope for follow up of nonrespondents. If project resources allow, it would be helpful to use telephone contact with a sample of nonrespondents. A brief interview could establish reasons for nonresponse, and answers to a small number of key questions.

**Project 2:**

1. The use of ABS data to count farm numbers. As well as past problems with a moving EVAO cut-off, the 2006 data will be the first census based upon a population frame drawn from ATO ABN records. This will provide a more accurate count of farms. It will also mean that there will be difficulties in comparing farm counts between 2001 and 2006. This will be particularly the case for industries with a large number of small farms.

Researcher comments: This issue is a significant concern for the researchers, who are aware of the problem. We hope to identify some possible proxy data to assist us in identifying the likely extent of change in farm numbers, and have been considering various options, none of which are ideal.

**2. Land prices. As well as comparing the prices paid by plantation purchasers and other purchasers within the region, it is also worth assessing the overall trend in rural land markets across the state. Rural land prices have more than doubled in real terms in the past 5 years. This is likely to swamp the impact of plantations on land prices, particularly land closer to the coast. This point is partially addressed in 5.2 of sub-project 2.**

Researcher comments: We will do this as part of the process of comparing trends in areas experiencing particular types of land use change to averages for larger areas.

### **Project 3:**

**This type of research is rarely attempted because of the difficulties of contacting ex-farmers. This project is possible because of the support of the forestry companies. I expect there will be much interest in the findings. My only thoughts concern the fate of farm housing in areas that are converted to forestry. Is this housing destroyed, or is it leased? If the latter, who is leasing and should the new occupants be included in the study?**

Researcher comments: We will be able to identify whether housing has been demolished and why as part of the survey, which will include a section for the person or organisation now managing the property. Where management has changed, this will effectively mean there are two separate surveys relating to a single property. Early indications are that it is possible to identify the new occupants of housing and obtain details about them; one challenge is that several occupants may have occupied the property since the land use change. We are currently considering how to address this in the survey questions.