Methods proposal

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

Subproject 1: Community attitudes and values toward land use change

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Introduction

The document outlines the methods proposed for investigating community attitudes towards land use change in the Green Triangle and Central Victoria region.

Research aim

The principle aim of the research is to understand the relative acceptability of new and existing land uses in the Green Triangle and Central Victoria region. Understanding the comparisons residents make regarding these land uses is therefore important. The project also seeks to explore variation in the way different parts of the population view land use change.

This project also builds on research conducted in part of this study region during 1999. Williams *et al.* (2002) investigated community attitudes towards three land uses in southwest Victoria: plantation forestry, dairy farming and cropping. The three land uses had increased over the previous decade, with largest increases in the amount of land used for cropping. A survey (n=551) of residents found that dairy farming and crop growing were viewed more favourably than plantation forestry. Residents of smaller townships and rural areas were more likely to believe plantation forestry had an overall negative impact on their area. Their concerns related most strongly to beliefs about impacts on local employment and population retention. It is intended that the current study allow appropriate comparison between current and past views of land uses.

Rather than simply describe attitudes towards land uses in the region it is anticipated that the project will contribute to understanding these views. One way to understand people's views is to explore underpinning psychological factors. In this study, two key factors will be investigated.

- What outcomes residents value from land use in the study region
- How they believe land uses affect these valued outcomes

In exploring these factors, the project will draw on recent studies of acceptable forest practices (Ford *et al.* 2005) and on broader cognitive hierarchy theories concerning social attitudes (Stern and Deitz 1994).

Research objectives

The project has three stages:

1. Group interviews to explore the range of attitudes and beliefs that selected residents of the study region express regarding land use change;
2. Design of survey and development and pre-testing of questionnaire for quantitative investigation of resident views on land use change; and
3. Delivery and analysis of quantitative survey.

Group interviews were conducted in September 2006 and preliminary analysis has been completed. The results of this analysis were presented to the project Advisory Group in December 2006. The Advisory Group assisted researchers in the process of prioritising issues for further investigation.

A brief summary of the group interview findings and Advisory Group input are presented below.

Group interviews

Eight group interviews were conducted in the study region in September 2006.

Locations

Interview locations were selected in consultation with the project Advisory Group, seeking to maximise the range of groups with regard to:

- Geographical location
- Land use
- Town size

Availability of suitable meeting facilities was also considered. The final locations were: Colac, Warrnambool, Mortlake, Heywood, Penola, Lucindale, Horsham, and Beaufort.

Participants

Potential participants were recruited through two means. First, Advisory Group members were asked to nominate potential participants through their personal or professional associations. Second, a broad range of community organisations such as sporting, service and interest (e.g. environment, historical) clubs were asked to send a member of their group. In both cases it was stressed that participants need have no special knowledge of land use, simply a willingness to talk about their experience of living in the area and their own experience of land use change. A total of 57 people participated in the group interviews.

Procedure

The duration of each interview was around two hours. The complete interview protocol is provided in Appendix 1. Participants were first asked to introduce themselves to the group. They were then asked to develop a list of land use changes in the part of the study area they were familiar with. These land uses were noted on butcher's paper by the researchers. Participants were then asked to indicate which land uses were most significant. This was asked in a relatively open way, and when clarification was requested it was suggested that this should be those land uses which they considered to have had the most important impacts on the area, or which they were most keen to discuss, or which they felt should be investigated further in the broader project. Participants indicated significance by placing five stickers on 1-5 land uses they considered most significance. Once all participants had indicated their priorities, combined responses were used to identify 1-3 land uses for further discussion. Taking each of these in turn, participants described the impacts (positive, negative, neutral) of the land use on the local area. In the final section of the interview, researchers turned attention to the language used to describe the land uses. In recording land uses mentioned by participants, researchers attempted to group these (on the butchers paper) into similar categories. Participants were asked to consider these groupings and identify ways in which concepts were similar and different from each other. Interviews were transcribed for analysis.

Outcomes

Preliminary analysis focused on two aspects of the discussion: land uses described by participants and the language used to refer to these land uses; and impacts described as resulting from land uses changes.

Identifying land uses

Three researchers read through the transcripts and independently developed lists of land uses mentioned by participants. Each researcher also organised these lists into land uses considered closely related. There was considerable similarity across these lists. One example is shown in Appendix 2.

Interview participants named many different land use changes. Key land uses, and descriptions of these are outlined in the following paragraphs.

Blue gum plantations arose as the most frequently noted significant land use across all the interviews. This was even apparent in Horsham where blue gum plantations are likely to have occurred at very low rates. Participants also described other forms of forestry, including farm forestry, pine plantations, and harvesting of native forests. All these were clearly distinguished from blue gum plantations by participants, and described as having different impacts.

Participants referred to this land use variously as blue gum plantations, timber production, property going into trees, plantation, pulp production, plantation forestry, forestry, eucalypt plantations, and gum trees. However the term 'blue gum plantations' was the most commonly used. In one case a researcher specifically asked whether participants distinguished between different types of blue gum plantations with regard to leasing and purchasing. Participant responses suggested little distinction was made:

> *'I don't think we really do differentiate between leasing and purchasing do we?'*
> *'…if you were leasing there would be a slightly different effect on the demographic where because it is only leased the farmer still or is more likely to remain on the land'*
>
> *still*
>
> *'a whole generation gone', 'left to stumps' 'it's the same but on a lesser scale'*

Cropping related changes were mentioned in most areas, but were described as significant in relatively few areas. The changes described relating to cropping were complex because these encompassed general increase in cropping, changes in products (e.g. new crops such as canola and chickpeas), changes in location (e.g. moving south), and changes in production practices such as raised bed cropping. The impacts of these different aspects may be closely interrelated. For example, the practice of raised bed cropping has allowed crop growing to move south and occur at increased levels in these areas. Other practices seem to stand alone, such as continuous/100 per cent cropping.

Water related changes were often described as land use changes. While not often considered a land use per se, in some instances it was clear why participants described water related change in this way. For example, changes in irrigation or irrigation practices such as center pivot irrigation might readily be described as land use change. The situation in South Australia appears particularly complex as farmers described water holding as a land use (i.e. land is occasionally held or seen as valuable for the sake of the water license rather than the land itself, so that the water becomes the primary use). However, in most cases, discussion concerning water suggested that it could more readily be understood as a driver (availability, cost, regulation) or as a consequence (availability) of land use change.

Rural residential development was noted in most group interviews. It was described in many different forms (lifestylers, weekenders, urban growth etc). Warrnambool was the only group where urban growth was rated among the top two changes, but it rated among the 1-3 land use changes for five out of the eight groups.

Changes in farming organization overall appeared to be important. This included overall management approaches such as increasing farm size/farm amalgamation, decreased number of small properties, increased dependence on off farm income, diversification. Only two groups (Heywood, Horsham) highlighted this as a very significant change for the area, but in many instances discussion of impacts appeared to be closely related to broader impacts of increased farm size. A good example is from the Horsham interview where participants explained that many of the impacts they have associated with changes in cropping actually were true of general trends for farms. In many instances the changes seemed to relate to increased property size and many farmers choosing to live in town and commute to their farm.

Dairying was mentioned in most areas, but – as described by participants – dairy related changes appeared to be inconsistent across the area, increasing in some districts, decreasing in others. There was little indication that dairy related changes have had great significance for any one area, except as a change *from* dairying to blue gum or other land use. Participants described a large number of changes within dairying, including increasing farm size and intensification.

Environmental works were mentioned as a significant land use change at all interviews. These encompassed a broad range of changed practices, such as fencing native vegetation, controlling soil erosion etc. There appeared to be some overlap in descriptions of agroforestry and some practices such as establishing shelterbelts.

Mining was mentioned in several areas (Warrnambool, Colac, Horsham) but appears to be a significant impact only in Horsham. Participants noted however that the impact of mining is likely to spread in the future, although participants discussed whether the impacts might be short term since mining may move on once the area is depleted of mineral sands.

Horticulture was mentioned in many groups, but appeared to occur at relatively low levels. The strongest exception appeared to be potato growing, which was described across many of the southern groups. There appeared to be some overlap between horticulture and some niche industries such as herb/wildflower production and, in some areas, viticulture.

Grazing industries were described as experiencing change. Most groups described decreased grazing in their area. Most groups also described changes in outputs (e.g. change from wool to meat production) and in grazing practices (e.g. change to cell or rotational grazing).

Other broad groupings of land use changes described include: recreational use of land, wind farming, major infrastructure projects, pulp mills, piggeries, impacts of fire. These appeared to have quite localized impacts as described by participants.

Identifying land use change impacts

Three researchers also independently assessed the transcripts to identify land use impacts mentioned by participants. Interpretation of these impacts was generally similar across researchers, though interpretation of the relationships between impacts varied.

Table 1 shows one researcher's summary of these impacts. In this case impacts have been organised in relation to seven valued outcomes themes identified in the preliminary analysis:

- Community wellbeing, including permanent population presence
- Healthy soil and waterways
- Opportunity to farm
- Resource availability
- Wealth, profit
- Equity
- Quality produce from land

Table 1. Land use impacts grouped by theme of impacted value.

Valued outcome	Impact					
Community wellbeing	Population stability/ presence	Presence of viable community groups	School numbers	Local services	Social cohesion/ division	Social isolation
Healthy environment	Chemical use	Weeds	Vermin	Fire risk	Salinity	Loss of biodiversity
Opportunity to farm/Freedom of choice	Opportunity to expand enterprise	Opportunity to exit property	Compatibility with other land uses/ flexibility	Costs of further land use change/ rehabilitation		
Resource availability and cost	Water	Transport/ Road impact	Power	Fire fighting capacity		
Wealth, profit	Employment opportunities (direct, contract)	Financial benefits land owners	Land values	Financial benefit for local businesses	Financial contributions to local government	Tourism
Equity	Distribution of costs and benefits locally relative to region or wider	Distribution of costs and benefits across industries	Distribution of costs and benefits across individuals (may relate to land capability)			
Quality produce from land	Production of socially valued goods	Opportunities for value adding				

A large number of impacts or concerns were raised across the land uses discussed. Most of these concerns or impacts can be characterised as beliefs about the consequences of land uses for valued outcomes. Outcomes relating to community wellbeing, healthy environments, resource availability, wealth, and equity were discussed by many participants. A smaller proportion of participants related concerns to outcomes such as opportunity to farm and quality of produce. These concerns appeared more often raised by participants involved in farming enterprises. Concerns regarding equity of impact are somewhat distinct from other themes. Equity concerns related to both evenness and fairness of land uses impacts, and appeared to 'cut across' the other impacts

described. For example, a land use might be considered as having unfair impacts on water availability or on opportunity to farm.

Advisory group input

On December 13, 2006 project Advisory Group members were presented with an overview of the focus group outcomes (see Appendix 3), and asked to assist the researchers with two tasks:

- Prioritise which land use changes are most and least important to examine as part of the study; and
- Prioritise which types of social and economic impacts are most and least important to examine as part of the study.

The Advisory Group supported the recommendation to focus on three key land uses:

- Blue gum plantations
- Cropping
- Rural residential development

The Advisory Group also discussed other possible land uses for focus. These included the shift from dryland to irrigated land uses, and increased dairy and viticulture. Discussion related to the difficulties associated with providing a clear, readily understood definition of shifts in irrigation, and the likelihood that increased dairying and viticulture are occurring only in parts of the study region.

The Advisory Group considered the large range of land use impacts mentioned by focus group participants. They were asked to individually prioritise the importance of understanding community perceptions of these impacts. From this process, 15 impacts were highlighted:

- Population stability/presence
- Presence of viable community groups
- Local services
- Chemical use
- Biodiversity impacts
- Fire risks
- Opportunity to expand enterprise
- Water availability
- Road infrastructure impacts
- Employment opportunities
- Local business benefits
- Land value impacts
- Opportunity for value adding
- Equity of distribution of impacts locally versus regionally
- Equity of distribution of impacts across industries

During group interviews, it appeared that many participants made a strong distinction between agricultural and forestry land uses. In this context, a number of participants explained that they were concerned about the amount and location of blue gum plantations, and did not want to exclude plantations from an area altogether. To further explore this issue, advisory group members were asked to provide comments on a number of questions regarding ‘balance’ of agricultural and forestry land uses. The questions and responses are summarised in Appendix 4.

In general, it appeared that most Advisory Group members preferred not to nominate a specific 'balance' of agricultural and forestry land uses for the region or their local area. Most preferred to describe principles for determining land use. Broadly two approaches were suggested. The first suggested a preference for free market/landholder choice. Land capability and market forces were generally listed as the prime considerations for the landholder, but ultimately it was the prerogative of the landholder to determine land use within these constraints and without government intervention. Other Advisory Group members suggested forestry land uses should be limited to less fertile or arable land, and that agricultural land should be given preferences in more fertile areas. In this case, government involvement, and public consultation were sometimes considered appropriate in determining land use. Overall, these comments suggest that questions regarding governance of land use will be most useful in understanding resident opinions on 'balance' of land uses.

Other input

Input to the prioritisation of issues was also sought from two further sources. First of all the project Steering Committee was provided with an overview of the group interview outcomes, and Advisory Group recommendations, and was invited to provide further input. Three members responded to this request, and their views were consistent with those expressed by the project Advisory Group.

Second, all Shire Councils in the study region were invited to provide written answers to several questions on major land use changes in their council area, the impacts of these changes within the council area, and which land uses posed the greatest issue for council. The range of land uses mentioned was smaller than those covered in group interviews, but covered similar territory: cropping, timber, rural subdivision, national parks, larger or more intensive dairy production, coastal erosion, sand mining, viticulture, infill urban development, windfarms and purchase of properties by very large landholders. The land uses highlighted as having greatest impact where the same as those highlighted by residents through group interviews: timber (blue gums and softwood), subdivision and cropping.

Survey design

A survey will be conducted to identify the views of a representative cross-section of adult residents of the Green Triangle and Central Victoria regions. A postal questionnaire will be utilised to observe attitudes held towards a limited range of land use changes. The questionnaire will also identify a number of beliefs regarding the impacts of land use change. Questions will also be designed to identify the relative importance of a number of valued outcomes for residents of the study region.

Questionnaire design

Method of observation

Postal questionnaires and telephone interviews were both considered as relatively cost effective means of observing the views of a large number of residents. Some relative advantages and disadvantages of the methods for this project are outlined in Table 2. Both have apparent strengths and weaknesses. The postal questionnaire method has been selected: while it presents some challenges with regard to sampling frames, these are outweighed by the benefits of allowing a larger number of questions, and a larger sample size. The decision was also made in consultation with the

project Advisory Group who suggested that, given the high level of telephone marketing in the region many residents would be more receptive to a postal questionnaire.

Table 2. Comparison of computer aided telephone interviewing (CATI) and postal questionnaire methods of observation. Asterisk indicates method deemed as having greater strength on each consideration.

	CATI	Postal questionnaire
Speed and ease of return	*Data can be collected within 2-3 weeks including data entry	Data collection and entry approximately 10-12 weeks
Availability of suitable sampling frame	*Limits sampling frame to residents with telephone numbers. Filter questions can be used to systematically sample adult members of a household. Random dialling allows better inclusion of recent/transient residents	Access to listings from latest available desktop marketing products are somewhat dated and based on 2003-04 telephone directories, which will bias sample towards longer term residents of region. Legal limitations rule out use of electoral rolls as a sampling frame, which as with telephone listing are an incomplete list of residents, but are often more complete or up to date. Similar legal limitations prevent use of land sales data, which might allow spatial sampling of post addresses.
Response rate/sampling error	Estimated to be 20 per cent response rate at best.	*Response rate likely to be 30 per cent in worst-case scenario. Use of high quality printing, reminder cards and re-mailing likely to result in 50+ per cent response rate.
Suitability to number and complexity of questions to be asked	Budget constraints would mean limiting interview to around 10 minutes. This would allow questions to cover (say) maximum of three land uses, and 10 impacts of each.	*A larger number of questions can be included (limit to 15-20 minutes completion) allowing questions to cover (say) four land uses, 10-15 land use impacts for each, and additional questions on values.
Cost relative to sample size	1,000 participants allowed within budget	*1,500 participants possible within budg*et al.*lowing better coverage of smaller subgroups (e.g. rural residents) and therefore greater confidence in results
Other considerations	Interviewer variation in delivery may result in some inconsistency in the way questions are posed	May exclude those with low literacy

Questionnaire development

Land use change can be defined in many ways. For ready understanding by respondents, questions regarding land use change will be posed in relation to four key land uses. These will be posed as simple increases.

- Increased blue gum plantations
- Increased cropping
- Increased rural residential development
- Increased dairying

This approach aligns the study with the approach used in Williams *et al.* (2002). This approach differs from the conceptualisation of land uses in sub-project two. In studying the social and economic impacts of land use change it is vital to assess change *from* given land uses as well as changes *to* particular land uses. In studying community views of these land uses, it is necessary to use a simpler approach, focusing on current land uses rather than relying on people's memories of previous land uses.

These terms were selected with reference to group interviews, considering not only the types of land uses mentioned, but also the various forms of language used to refer to these. Brief definitions of land uses will be provided in the questionnaire where needed.

A complete copy of the questionnaire can be found in Appendix 5. The questionnaire has been designed to be as brief as possible (eight pages) including:

- An introductory letter
- Questions on increased attitudes towards increased rural residential development, cropping, blue gum plantations and dairying including:
    - Whether the respondent has noticed it in local area
    - Beliefs about impacts of rural residential development
    - Overall attitude toward rural residential development at a regional and local level
    - Beliefs about the relative impacts of land uses small and large towns specifically
- Questions on valued outcomes of land use (rate the importance of a list of outcomes)
- Questions regarding land use governance (statements for agreement-disagreement)
- Questions regarding expectations for future outcomes for each land use

Measurement of overall attitudes towards land uses is consistent with the questionnaire used in the 1999 study in the southwest Victoria (Williams *et al.* 2002), but has been revised to elicit views on impacts at a regional and local level.

For the pre-test, a large number of questions measuring beliefs about land use impacts/consequences will been included. The number of questions will be reduced (to eight pages from the current nine pages) following the pre-test. Evaluation will be based on the following criteria:

- Closely related questions (e.g. Economic impacts at regional and local level; or general economic benefits and specific outcomes for traders) will be examined to identify whether the questions are highly correlated. If answers are very similar, then questions will be amalgamated or one omitted.
- Questions that provide answers very similar for all land uses (do not discriminate between land uses) will be considered for removal.
- Pre-test participants will be asked to comment on questions. Comments will be taken into account regarding the relevance and clarity of questions, with less relevant questions considered for removal, and unclear questions revised.

The approach used to measure valued outcomes is based on that of Ford *et al.* (2005) who used a series of simple statements to clarify the valued outcomes of forest management. This is very similar to the approach used by (Tarrant *et al.* 2003).

Sampling

The population of interest is adult residents of the study region defined by the following Local Government Areas (LGAs):

- Mt Gambier (SA)
- Grant (SA)
- Wattle Range (SA)
- Naracoorte and Lucindale (SA)
- Kingston (SA)
- Robe (SA)

- Kingston (SA)
- West Wimmera (Vic)
- Glenelg (Vic)
- Horsham (Vic)
- Southern Grampians (Vic)
- Moyne (Vic)
- Pyrenees (Vic)
- Corangamite (Vic)
- Colac Otway (Vic)
- Ararat (Vic)
- Northern Grampians (Vic)
- Warrnambool (Vic)

Sampling of this population is designed to provide a sample that is – within the resource and legal constraints presented – representative of adult residents of the study region. It is intended that the sample size allow reasonable confidence that key analyses can be generalised to the population as a whole. Questionnaires will be sent to a sample of 3,000 residents of the study area. Considerable effort will be made to ensure the response rate is equal to or greater than 50 per cent, providing a minimum of 1,500 returned questionnaires. A return of 1,500 questionnaires will allow a confidence interval of 5 per cent at a confidence level of 95 per cent. This means a 95 per cent probability that percentages derived from this sample fall within ± 2.5 of the percentages that exist within the population as a whole[1].

A second concern is to ensure the project design allows comparison of views across different sectors of interest within the population. Where a subpopulation is of interest, but is a relatively small component of the population overall, it may be useful to sample it more intensively to ensure adequate representation. Some comparisons of interest (such as comparisons based on primary producer status, occupation or gender) will be based on demographic information collected within the survey and are not considered within the overall sampling frame. There are two comparisons the project Steering Committee has indicated are of interest that can be more readily incorporated into the sampling process: variation by Local Government Area (LGA), and differences in the views of those residing in large towns relative to small towns and rural areas. The later is based on findings of previous research that residents of smaller townships and rural areas were more likely to believe plantation forestry had an overall negative impact on their area (Williams *et al.* 2002).

It would be ideal to collect sufficient data from each LGA so that trends within these areas could be reported accurately. However, the large number of LGAs, and the varying population within these LGAs, makes it impractical to adequately sample each LGA. Table 3 demonstrates this. It shows the population of each LGA, the estimated number of returns from each LGA (based on total sample of 1,500 and an assumption of equivalent response rates across LGAs) and the confidence interval associated with these sub-samples. Within the resource constraints of the project, the confidence intervals associated with findings from many LGA would be unacceptable.

[1] Confidence Intervals have been calculated assuming results being presented as percentages rather than means since this was the more demanding approach (ie a an equivalent confidence interval might be obtained using a smaller sample size if analyses are based on means).

Table 3. Population by local government areas: expected returns from each LGA (based on total sample of 1,500 and assuming random sampling across the study area) and associated confidence intervals (for hypothetical instances of 50 per cent and 35 per cent of respondents choosing a given answer).

LGA	Pop[1]	Prop of pop[2]	Prop per cent	Estimated no. resp. [3]	CL[4] per cent	CI - 50 per cent	CI - 35 per cent
Ararat (Vic)	11,101	0.05	5	75	95	11.28	10.76
Colac Otway (Vic)	20,089	0.09	9	136	95	8.38	7.99
Corangamite (Vic)	16,675	0.07	7	112	95	9.23	8.8
Glenelg (Vic)	19,288	0.09	9	130	95	8.57	8.17
Grant (SA)	7,481	0.03	3	50	95	13.81	13.18
Horsham (Vic)	17,807	0.08	8	120	95	8.92	8.51
Kingston (SA)	2,226	0.01	1	15	95	25.22	24.06
Mt Gambier (SA)	22,751	0.10	10	153	95	7.9	7.53
Moyne (Vic)	15,062	0.07	7	102	95	9.67	9.23
Naracoorte and Lucindale (SA)	7,970	0.04	4	54	95	13.29	12.68
Northern Grampians (Vic)	12,700	0.06	6	86	95	10.53	10.05
Pyrenees (Vic)	6,360	0.03	3	43	95	14.9	14.21
Robe (SA)	1,391	0.01	1	9	95	32.57	31.07
Southern Grampians (Vic)	16,509	0.07	7	111	95	9.27	8.84
Warrnambool (Vic)	28,755	0.13	13	194	95	7.01	6.69
Wattle Range (SA)	11,622	0.05	5	78	95	11.06	10.55
West Wimmera(V)	4,553	0.02	2	31	95	17.54	16.74
Total	**222,340**	**1.00**	**100**	**1,500**	**95**	**2.52**	**2.41**

1. Estimated population residing in LGA (2001)
2. Estimated proportion of population residing in LGA (2001)
3. Estimated number of respondents from each LGA, proportional to 1,500 returns assuming random sampling of population.
4. Confidence level
5. Confidence interval

Two approaches are proposed to allow research end users insight to the relation between locality and community attitudes. First of all, LGA summaries will be provided with appropriate cautions regarding the precision of results. Second, it might be possible to conduct analyses that provide insight to these relationships (without requiring any changes to sampling strategies). Following data collation, it might be possible to group LGA data in four sub-regions based on proximity and land use similarities. The following groups are suggested as an example:

South Australia:

- Mt Gambier (SA)
- Grant (SA)
- Wattle Range (SA)
- Naracoorte and Lucindale (SA)
- Kingston (SA)
- Robe (SA)
- Kingston (SA)

Victoria northern cluster

- West Wimmera (Vic)
- Ararat (Vic)
- Northern Grampians (Vic)
- Horsham (Vic)
- Pyrenees (Vic)

Victoria south western cluster

- Southern Grampians (Vic)
- Moyne – North west and North east SLAs (Vic)
- Glenelg (Vic)

Victoria south eastern cluster

- Corangamite (Vic)
- Colac Otway (Vic)
- Warrnambool (Vic)
- Moyne - South SLA (Vic)

Using such a post-hoc approach would ensure reasonable levels of confidence for results associated with each LGA grouping.

A second group comparison of interest is testing for differences in the views of those residing in large towns relative to small towns and rural areas. Table 4 presents the proportion of the population living in towns of various sizes, and those living in the 'rural balance'. The largest town size consists of towns with greater than 20,000 people, and includes Warrnambool and Mt. Gambier. The following towns have between 6,000-20,000 residents: Colac, Portland, Hamilton, Ararat, Horsham and Stawell. The towns with populations of between 200-6,000 are listed in Appendix 6. For each group, the expected number of returns (based on proportion of population) is shown, along with the likely Confidence Interval for results. To calculate confidence intervals in this situation, it is necessary to use a hypothetical response pattern with regard to the percentage of respondents who choose a particular response option. A 'worst case' (most statistically sensitive) scenario would see 50 per cent of respondents choose a given response option. A situation in which 35 per cent of respondents choose a given option is less statistically sensitive (and perhaps more likely in the current study) confidence intervals for this scenario are also presented in Table 4. The first scenario results in a return of 1,500 questionnaires, with proportional representation of each town size category. This would allow a confidence interval of approximately 10 per cent at a confidence level of 95 per cent. This means a 95 per cent probability that percentages derived from this sample fall within ± 5 of the percentages that exist within the population as a whole[2].

[2] Confidence Intervals have been calculated assuming results being presented as percentages rather than means since this was the more demanding approach (ie a an equivalent confidence interval might be obtained using a smaller sample size if analyses are based on means).

Table 4. Population by town size residence expected returns from each category (based on total sample of 1,500) and associated confidence intervals (for hypothetical instances of 50 per cent and 35 per cent of respondents choosing a given answer).

					Confidence interval	
					per cent of sample that picks particular answer	
Town size	**Pop[1]**	**Prop of pop[2]**	**No. resp. [3]**	**CL[4] per cent**	**CI - 50 per cent**	**CI - 35 per cent**
20,000+ (Warrnambool, Mt. Gambier)	49,594	0.22	334	95	5.34	5.10
6,000-20,000	55,333	0.25	372	95	5.06	4.83
200-6,000	46,031	0.21	310	95	5.55	5.29
Rural balance	72,092	0.32	485	95	4.43	4.23
Overall	**223,050**	**1**	**1,500**	**95**	**2.52**	**2.41**

1. Estimated population residing in LGA (2001)
2. Estimated proportion of population residing in LGA (2001)
3. Number of respondents from each LGA, proportional to 1,500 returns.
4. Confidence level
5. Confidence interval

Sampling frame

A number of possible sampling frames have been considered and are summarised in Table 5.

Table 5. Summary of Sampling Frame Options.

		Weaknesses	Access
Desk Top Marketing Systems (DtMS)	Names and addresses of residents with publicly available telephone numbers, based on Telstra White Pages.	Limited to residents with publicly listed numbers Dated because based on 2003-04 telephone directories, which will bias sample towards longer term residents of region.	Commercially available and sampling is cost effective
Electoral rolls	Names and addresses of all residents enrolled to vote	Excludes adult residents not enrolled to vote	Prohibited by Commonwealth Electoral Act 1918
RP data/Land sale data	Names and addresses of landholders	Excludes residents who do not own their property	Not eligible for access but application has been made to the valuer general
Municipal land holders	Names and addresses of all landholders	Excludes residents who do not own their property	Protected by privacy laws. Might be managed with cooperation of all municipalities, but costly process and full cooperation unlikely

The sampling frame that will be used for this survey is the DtMS sampling frame, which is comprised of households listed in telephone directories within the study area. As noted above, this listing utilises the White pages directory for 2003-04. This creates a possibility that respondents will

be biased toward longer-term residents and away from shorter term/more transient residents. Other options were considered and rejected. The DtMS can be accessed commercially and we will contract the services of the Social Research Centre (SRC) to randomly select the sample from the latest available Desktop marketing. The SRC would use MicroMatch services to confirm current names and addresses for each resident sampled.

Response rate

One of the major disadvantages of postal questionnaires is a low response rate. Non-response can bias survey data because non-respondents may differ substantially from respondents (Bryman 2004; Dillman 2000; Groves and Couper 1998; Teitler *et al.*. 2003).

Dillman's (1978) Total Design Method has been widely used for conducting social surveys. Essentially Total Design is the development of survey procedures to create trust amongst respondents and influence expectations about the increased benefits and decreased costs associated with being a respondent (Dillman 2000). This method recommends five key elements needed for achieving high response rate:

1. Respondents frendly questionnaire;
2. Four contacts by first class mail with an additional "special" contact;
3. Return envelopes with real first class stamps;
4. Personalisation of correspondence; and
5. Token prepaid financial incentives.

The researchers aim to achieve a response rate of 50 per cent. To encourage this, most of Dillman's key elements will be used. Within the time and resource constraints return envelopes with real first class stamps is not considered feasible.

Other techniques used to increase response rates that have been suggested are include:

- Ensure respondents understand the importance of their response
- Ensure the questionnaire is of appropriate length and easy to complete

Efforts should be made to increase response rates. However, within the time and resource constraints of a given project it is necessary to evaluate whether the benefits of marginal increase in response rates outweigh the costs. Other measures of increasing the sample or reducing survey error may be more cost effective than a large effort to increase the response rate (Teitler *et al.* 2003).

The following the five-contact model is suggested by Dillman (2000) to maximise survey response:

Week 1 – A brief *prenotice letter*: Potential respondents will receive an initial letter alerting them to the research and requesting their participation.
Week 2 – A *questionnaire* mail out: One week later potential respondents will receive the postal questionnaire, and invitation to participate..
Week 3 – A *thank you/reminder postcard*: The full sample will receive a postcard that provides a thank you or a reminder regarding the questionnaire.
Week 4 - A *replacement questionnaire*: Following an appropriate period, non-respondents will receive a second copy of the questionnaire and invitation to participate.
Week 5 – A *final contact*: Non-respondents will receive a final reminder postcard.

Our plan at this stage is to provide a small incentive to respondents in the form of a chance to win a hamper of regional produce valued at AUD$400. This will be finalised in the coming weeks based on project costs.

At each stage potential participants will be invited to contact the researchers if they wish to be removed from the mailing list.

As a further step to enhance the likelihood of response, there will be carefully prepared media activity at the time of the main questionnaire mail out. There has already been considerable media coverage of the project to date, so public awareness of the project overall is likely to be higher than is the case for many projects. To date there has been little reference to the community attitudes study. Timely media report will alert the public that the survey is being conducted and encourage those who receive a letter to respond to ensure a representative perspective is obtained.

Pre-testing questionnaire

Preliminary testing of the questionnaire will be carried out at several stages prior to executing the survey. This is an important step to ensure survey questions operate well as a whole (Bryman 2004). Preliminary testing has already commenced. The draft questionnaire will then be distributed to around 30 people locally using convenience sampling (i.e. associates, friends and relations). These people will be asked to comment on whether the questions used are getting at the intended concepts, and will be observed completing the questionnaire to determine whether response options are understood and used as expected.

Based on these findings the survey will be revised and a small pilot or pre-testing study will be carried out among residents of the study region. Participants will be selected using convenience-sampling drawing on the resources of the project Advisory Group (15 members). Advisory Group members will be contacted and asked to participate in the pilot study and also asked to suggest two other suitable participants from among their family or neighbours. Questionnaires will be posted or emailed to this group (estimated 30-45 respondents). Wherever possible, respondents will be contacted by telephone to discuss the clarity and relevance of the questionnaire.

Following the pilot study, the questionnaire will be revised.

Ethical considerations

The project methods will be reviewed and approved by the University Human Research Ethics Committee. To ensure the project complies with the protocols set out in the University of Melbourne's human ethic guidelines and the National Statement on Ethical Conduct in Research involving humans the researchers will monitor the conduct of the project through the following measures:

- Regular project meetings between immediate group members from the University of Melbourne;
- Consultation with the Advisory Group and Steering Committee assigned to this project; and
- Regular meetings with the Social Research Centre (company contracted to carry out several tasks involved with the project).

Using a self-response questionnaire will offer anonymity which minimizes the possibility of any harm to research participants.

Data management and analysis

Survey delivery will be managed to a large extent by the Social Research Centre following written protocols established by the researchers. The researchers will meet regularly with representatives of the company to ensure the quality of survey delivery. To ensure quality is maintained, all personal contact will be through the researchers. For example, an 1800 number will be provided to allow participants to ask questions or remove their name from the data base. Project staff will answer calls to this number. Similarly, all correspondence will be from the University of Melbourne, using university letterhead and envelopes.

The major analyses of interest to stakeholders are 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:

Sample description and evaluation

- The demographic characteristics of the sample will be compared with those of the population. Where appropriate, weighted analyses will be used to correct for biases in the sample.

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

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
- Views on consequences/impacts of land uses will be compared with findings of socio-economic analysis (project two). 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 expect future impacts of each land use change to be positive, neutral or negative

Understanding attitudes towards new land uses

- A Cognitive Hierarchy Model will inform analyses that will assist in exploring the way that values and beliefs contribute to overall views of land uses

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Appendix 1: Group Interview Questions

Project: Socio-economic impact of a change in land use

Researchers: Jacki Schirmer (ANU), Prue Borschmann (DPI), Kathryn Williams (UofM) and Caroline Dunn (UofM)

Focus groups Green Triangle September 11-14, 2006 – agenda

Gather people together and sit down: (10 mins)

Introduction by Researchers: (10 mins)

1. Purpose of the study (plain language statement) and Ethics (consent form signed)
2. Introduction to what we mean by 'land-use change' – what do we expect them to talk about.

Group interview:

Land-use changes – observation and impact (45 mins)

1. What are the different types of land use changes you've observed in the study region, or the part of the study region you are familiar with, since 1991?

2. We only have time to discuss a few of these land-use changes, so we will use the 'sticker method' to prioritize them:
    - Choose five of these land use changes which are most important to you, according to your own criteria
    - Place a sticker next to each of your top five land use changes

3. Beginning with the group's highest priority land use change, and working through until we run out of time:
    a) How widespread has the change been?
    b) Why did the change happen?
    c) What have been the consequences of the change? How has it affected the local community and local economy?

4. In the unlikely even that there is extra time: Researchers identify land-use changes considered significant in the region but *not* considered important within this group discussion, ask for participants' ideas about the size, reasons for and impacts of this land-use change?

BREAK (10 mins)

Land-use changes – meaning and terminology (45 mins)

5. The list of phrases/words (terms) used by participants to describe different land-uses will be recorded on the butchers' paper by the 'scribe' during the session before the break.

Terms will be grouped where they have been used to describe a similar land-use, or land-use change

Participants will be told: ‘As we went through the previous discussion, I’ve grouped the different terms which you used to describe similar land-uses, or land-use changes in this region.’ Participants will then be asked will then ask:

6. How are the [terms] (grouped as similar) different to each other?
   (Ie Why is revegetation different to landcare, biolinks, grasslands etc. example taken from DSE/DPI meeting 20 July 2006)
   If you feel that some are similar, then why?
   Would you group them differently?

7. Why are these differences/similarities in meaning significant for you? (How does this kind of distinction make a difference to you?)

Appendix 2: land uses

BLUE GUM PLANTATIONS	blue gum plantations
	timber production
	property going into trees
	plantation
	pulp production
	plantation forestry
	forestry
	eucalypt plantations
	Gum trees
NATIVE FOREST MANAGEMENT	decreased commercial harvesting of native forests
	new national parks
	Increasing conservation areas
	Wildlife reserves
AGROFORESTRY	agroforestry
	sugar gums
	Farm afforestation
	pine plantations
	pine trees
	Sawlogs (for salinity)
	Plantation (for greenhouse)
	woodlots
RURAL RESIDENTIAL DEVELOPMENT	rural residential development
	urbanisation
	lifestylers, lifestyle farmers, lifestyle blocks, lifestyle land
	surburban farmers (farmers living in towns)
	Housing
	urban growth, urban sprawl
	Seachange expansion
	Farmers living in town
	Hobby farms
	Absentee landowners
CROPPING	cropping increase
	100 per cent cropping, continuous cropping, continual farming
	Wheat, hard wheats, barley
	Canola, oilseed, linseed, peas. Chickpeas, legumes
	raised bed cropping
	Cereals, seeds
	feed crops eg lucerne
	growing potatoes
	grain
	Small seeds industry

	Specialised seed production
	Broad acre cropping
	Claying and delving
	Irrigated crops
	GM cropping
	Summer, feed crops
	Export hay industry
	Reduced tillage
HORTICULTURE?	potatoes
	Shift in potato industry – from good soil to sandy soil, from fresh to processing
	vineyards, grapes, viticulture
	olives
	Onions
	apples
	Small seed production
	Flowers
	Wildflowers
	Vegetable growing
	Orchards
NICHE PRODUCTS	boar goats
	organic chickens
	Freerange chooks
	Game birds
	Organic veggies
	Venison/deer (challenged)
	Lavender, rosemary farms
ENVIRONMENTAL WORKS	environmental works, land protection, land rehabilitation
	land care
	fencing out pastures, gullies
	salinity works
	contour fencing
	native grassland protection, native grass planting
	Revegetation
	loss of native grasslands, wetlands
	tree planting, planting trees
	Shelterbelts
	Native timber reserves
	Efforts to control salinity
	Conservation and protection of waterways
GRAZING	fat lambs/prime lambs
	Lamb
	Beef, bull beef, breeding bulls
	sheep
	grazing
	pasture improvement

	from potatoes to grazing
	Meat
	decline in sheep numbers
	wool to (lamb) meat
	Wool increases, wool decreases
	Water efficient practices
	Cell grazing
	Rotational grazing
	More intensive stocking rates
	Irrigated pasture
	First cross ewes
	Lamb feedlots
DAIRYING	dairy changes generally
	decreased dairying
	increased dairying
	confinement dairies, feedlot dairies
	organic/biodynamic dairying
	Larger dairy properties
PIGGERIES	Intensive piggeries
	Grazing piggeries
INTENSIFICATION	corporation farming
EXAPANSION	intensive farming industries eg emu farms, feedlots, piggeries
NEW OWNERSHIP ARRANGEMENTS	get bigger or get out
	increased property size
	intensive agriculture
	more intensive fertiliser use
	More irrigation
	Amalgamation of farms
	Corporations buying farms (challenged)
	Less small farms
	More reliance on off farm income
	Increased ‘outpaddocks’
	diversifying
MINING	mining
	quarrying
WATER MANAGEMENT	water related issues generally
	deep bores, underground water access
	decreased rainfall
	water availability, cost
	Water licences
	damming water ways
	rural drainage, drainage
	Water licences for pivots

	centre pivot irrigators More irrigation Salt affected land coming back into use
FIRES	Fires, wildfires crownland management
RECREATION USE	changing recreation use increasing demand for recreation on agricultural properties decreased access to recreation open space, water resources etc coastal areas increasing use tourism cultural sites identified Decreased duck shooting Increased cultural sites rockclimbing
WIND FARMING	windtowers
EARLY CHANGES	squatters to soldier settlement superphosate Improved pasture
INFRASTRUCTURE	gasworks, gas pipe Major infrastructure projects Road and railway expansion
STONE CRUSHING	crushing or burying stones
PULP MILLS	

Listing of land use changes by interview:

* indicates best attempt to match with land uses noted with stars in prioritization exercises (one * per star)

No star sheet available for Beaufort or Coonawarra – for Beaufort I have deduced from the transcript

( ) indicates concepts added when looking at sheets for stars – I didn't add all notes, just ones that had stars but didn't quite match up with my notes from the transcript

Coonawarra

Blue gum plantations
pine plantations
Wool increases and decreases, wool - less, fat lambs- more, wool production to other forms of grazing
beef
water efficient pastures, cell grazing, more intensive stocking rates, lot feeding,
Crops
small seeds industry
specialized seed production
Lucerne seed
broad acre cropping
increase in dairy
olives
wineries
vineyards
viticulture
water licences
center pivot irrigator
dairy – less, fewer larger properties
planting shelterbelts
native timber reserves
potato industry – from good soil to sandy soil, from fresh to processing
horticulture – potatoes, onions, apples, small seed production
lifestyle blocks
tourism – more
bigger farm sizes
Drainage
Use of fertiliser
irrigation – increased

Lucindale

lmproved pasture
Gum trees
Drainage and water licence for pivots
Horticulture, flower, onions, Potatoes*

Cropping increases*
Lifestyle land*
Vineyards
Planting trees
Irrigated pasture
Irrigates crops
Non-irrigates crops
Forestry
Bluegums********
Pines
Farm afforestation
Small seed crops
Raised bed cropping
Claying delving*
Seachange expansion
Rotational grazing cell grazing improved grazing practices higher stocking rates
Farmers living in town
Corporations buying small farms
Amalgamation of farms**
Duck shooting decreased
Tourism
Underground water recharge
Center pivots
GM cropping
(Water issues)**********
(roads)****

Warrnambool

Bluegums******
Farmers more environmentally conscious
Shelter belts
Dairy based agricultural - increase
Wind farms
Intensive use of coasts and beach areas**
Rock crushing***
Urban growth****
Gas works***
Forestry
Major infrastructure projects
Increasing conservation areas***
New national parks
Wildlife reserves
Fencing off gullies and creeks
Land care projects
Increasing size of dairy farms
Raised bed cropping*
Tourism increase*
Vineyards
Olives

(niche products)*
Horses
Boar goats
Organic chickens
Freerange chooks
Gamebirds
Organic veggies
Venison? Deer?
Irrigation
Pivot irrigation systems**
Deep bores
Pulpmills**
Grapes
Vineyards
More use of fertilizers
More intensive fertilizer use
Bull beef
Breeding bulls
Lack of recreational land
Increased awareness of cultural sites
Quarrying, mining, *

Heywood

Increased dairying
Decreased dairying
(dryland farms irrigated)***
Drop in sheep numbers
More cropping
Bluegums, plantations**********
Conservation and protection of waterways, protection of the land, conservation planning, efforts to control salinity and erosion*
From wool production to first cross ewes and prime lambs
Bigger farms, less small ones, larger holdings**********
More relying on off farm income
Beef cattle decreased
Hobby farms *
(lifestyle changes – people moving from cities)*******
Grapevines
(water use)***
(decreased labour)*

Colac

Plantations****
Grain increase
Decrease in dairying in north, (increase dairy in south)**
Increased ‘outpaddocks’
Lifestyle farmers***
Smaller holdings

Suburban farmers
Dairy to meat production
Wool to lamb
Wool to meat*
Grain
Hard wheats, barleys, canolas
Raised bed cropping******
Decline in sheep numbers
Cereals, seeds
forestry
pine trees
bluegum, increased in plantations
shift from pine to eucalyptus plantations
more low rainfall bluegum
sugar gums
growing trees in creeks and gullies
tree planting programs, native grass planting
sawlogs for salinity
plantation for greenhouse
commercial timber production in State forests decreasing, no commercial harvesting**
wildfires
rock crushing*

Mortlake

Soldier settlers**
Grazing, sheep, wool production
Dairy (early days)
Increased dairying**
More cropping**
Introduction of superphosphate**
Increased property size
Trees
Bigger dairy
Pine trees
Confinement dairies, feedlots
Organic dairies, biodynamic
Plantations, plantation forestry**********
Pulp production
Bluegums
Native vegetation for conservation, set aside areas
Potatoes
Urbanization
Housing
Lifestylers
Little blocks
Onions
Center pivot irrigators****** (water issues)
Water cost and availability
Raised bed cropping

Canola
Wheat
Native grassland degradation, wetland degradation**

Beaufort

Rural residential development **(possibly forth most stars)**
Cropping, increased cropping **(second most stars)**
100 per cent cropping
grazing (some remain)
Bluegum plantations **(most stars)**
Plantations for shelter,small woodlots
agroforestry
Canola
Raised bed cropping
Fodder crops
Summer, speciality feed crops
lucerne
Environmental works, soil conservation, landcare, fencing out, encouraging salinity areas, direct drilling, fencing off vegetation, fencing for contour or land class
Fat lambs
Prime lambs
Roads and railways
Damming streams
Vineyards
Lamb feedlots
Emu farms
Drought feedlots
Intensive piggeries
Grazing piggeries
Export hay industry
Woodlots
Mining
Oilseed
Ethanol (future)
Underground bores
Deep bores
Decrease of tourists
Fires
Management of crown land and parks **(third most stars)**
Salt affected land coming back into use
More demand for recreational use
Wind towers
Rural drainage

Horsham

Tourism**
Bluegums*****
Cropping******

Sheep, cattle dreased
Grain
Dairying decreased*
Wood chip
Vegetable growers
Orchardists hobby farmers
Rockclimbers
Absentee owners
Reduced tillage
Farm size increasing***
Urban sprawl****
(Subdivision)
Lifestyle farmers
Hobby farmers
Mining*****
More trees on farms for shelterbelts, firewood plantations, saw log plantations
Wildlife corridors, fencing off creeks and rivers, erosion control, land rehabilitation
Agroforestry
Bluegums
Continual farming
Less fallow
Decreased sheep*
Oilseeds
Grapes
Viticulture
Olives
Goats
Wildflowers
Diversifying***
Lavender farm, rosemary farm
(Irrigation decreased?)
(Water/drought****)

Appendix 3: Report to project advisory group December 13 2006

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

Subproject 1: Community attitudes and values toward land use change

The document proposes (a) land uses and land use changes, and (b) land use attitudes and values for further investigation in Subproject 1 (SP1). It also outlines some of the decisions to be made over the next months regarding survey design. This proposal will be discussed with the Advisory Group and Steering Committee on December 13th 2006. These discussions may lead to modifications of the proposal.

Advisory group role

On December 13th, the Advisory Group will be asked to:

- Prioritise which land use changes are most and least important to examine as part of the study; and
- Prioritise which types of social and economic impact are most and least important to examine as part of the study.

In broad terms, SP1 is deigned find out how residents of the GT/CV view the impacts of land use change. It should be noted however that there is not a simple match between the 'impacts' investigated in SP1 and SP2. Because SP1 is concerned with perceptions, it may be possible to investigate some attitudes that cannot be investigated through independent data in SP2. Furthermore, it may be important to understand some attitudes towards land uses that would not generally be considered impacts.

What is the intended outcome of Subproject 1?

The principle aim is to understand the relative acceptability of new and existing land uses in the Green Triangle and Central Victoria region. Understanding the comparisons residents make regarding these land uses is therefore important.

There are two other outcomes we hope to achieve. First, rather than simply describe attitudes towards land uses in the region; we hope to be able to explain something about why these attitudes exist. One way to understand people's views is to explore two underpinning factors:

- What residents really value about living in the study region
- How they believe land use affect these values

Second, during focus group interviews, a number of participants explained that what they were really concerned about was the amount and location of particular land uses. It may be possible to develop some understanding of preferred amounts and locations for key land uses.

Focus group interviews have provided a good basis for exploring these issues. The discussion points below are prepared to assist the advisory group in contributing to planning the survey to be conducted in 2007.

Which land uses should be studied?

The focus group interviews highlighted a large number of land uses in the region. A relatively small number of these can be evaluated in the survey to be conducted during 2007.

The decision regarding land uses for further study should take into account:

- Participant views on significant land use changes
- Advisory group views on which changes are most important to understand
- Actual land use change and its distribution across the study region
- Potential to clearly define a complex land uses for meaningful evaluation
- Need for comparison between land uses (those viewed positively as well as negatively)

Preliminary analysis of focus group interviews suggests three key land uses that are viewed as having impacts across the region:

- Blue gum plantations
- Cropping
- Rural residential development.

It might also be helpful to include some land uses for comparison. Potentially useful examples might be:

- Dairying
- Pine plantations
- Agroforestry

It would not be possible to include more than 1-2 of these. These three are suggested based on comparisons made by focus group participants.

Understanding values

Values can be understood as ideas of what is important that motivate human action. By understanding the values that residents hold, we can better understand objections to land uses, and potentially plan for landscape level outcomes that better support the outcomes that are valued by residents.

Preliminary analysis of the interviews suggests a number of valued outcomes that may underpin attitudes towards land use change. Examples of possible valued outcomes include:

- Community wellbeing, including permanent population presence
- Healthy soil and waterways
- Opportunity to farm
- Resource availability
- Wealth, profit
- Equality
- Quality produce from land

These preliminary ideas will be further developed through more detailed analysis over the coming months, with reference to work by other researchers. Questions regarding values will be included in the questionnaire.

Which attitudes should be studied?

Focus group participants described a wide range of consequences or impacts of different land uses. These impacts can be described as examples of attitudes because these impacts are generally positive or negative in nature.

It is not possible to investigate all the attitudes people hold regarding land uses. The decision regarding which evaluations to focus on should take into account:

- Which evaluations are important to study region residents (impacts that matter most)
- Project advisory and steering group priorities for understanding resident views
- Which evaluations most clearly differentiate between land uses

Preliminary analysis highlights seven broad areas of impact:

- Community wellbeing: population stability; presence of viable community groups; school numbers; local services
- Healthy soil and waterways: chemical use, weeds, vermin, fire risk, salinity, loss of biodiversity
- Opportunity to farm: land values relative to agricultural income; compatibility of land uses; costs of further land use change
- Resource availability and cost: water, transport, and power
- Wealth, profit: financial benefits for individuals; employment opportunities
- Equality: distribution of costs and benefits locally relative to region or wider; distribution of costs and benefits across industries
- Quality produce from land: production of socially valued goods; opportunities for value adding

It will not be possible to include questions about each specific impact for all land uses.

It appeared that most participants made a strong distinction between agricultural and forestry land uses. In this context, a number of focus group participants explained that what they concerned about the amount and location of blue gum plantations, and did not want to exclude plantations from an area altogether. It would be helpful to examine views on acceptable proportions of forestry and agricultural land uses through 1-2 questions. These questions might ask participants to indicate preferred agriculture-forestry mixes (by proportion). Questions might be framed at a local and regional level. An open-ended question might be included to learn what areas are most acceptable for forestry related land uses.

Participants raised a number of issues relating to ownership and management of land rather than land use per se. For example, one participant drew a comparison between mining and blue gum plantations, explaining that both were characterized by large, centralized operations, which were described as providing little benefit for local areas. Corporate ownership was strongly contrasted with ‘family farms’. It might also be possible to explore resident perceptions of land ownership and its bearing on land use change.

The Advisory Group is asked to comment on the relative utility of understanding resident perception of these impacts and related attitudes.

APPENDIX 4: Advisory Group input on 'balance' of forestry and agricultural land uses

	What balance of agricultural and forestry land use do you consider: >ACCEPTABLE IN THE AREAS CLOSEST TO WHERE YOU LIVE?	What balance of agricultural and forestry land use do you consider: >ACCEPTABLE FOR THE STUDY REGION AS A WHOLE?
Speaker 1	It depends on the type of soil / landscape of the area. In areas arable for cropping you would think 5-15 per cent would be appropriate per farm, therefore up to 15 per cent across the area would be an appropriate level of forestry. In sedimentary or granitic (non arable) soils, levels of 25 per cent would immediately appear appropriate. However if you wish to favour one soil type over another, then you may look to at up to 50 per cent in these types of landscapes.	>As above.
Speaker 2	>I m happy to allow individual landholders to decide what to do with their >land in terms of choosing from a number of rural land uses (which includes >forestry). I would be happy to have a significant proportion of plantation >forestry in my immediate vicinity but think that in reality this won t >happen. Proximity to Ballarat and Melbourne, topography, soil types etc >will ensure most land is not used for broad scale tree growing. The >greatest threat to agricultural use of land in this locality (and region) >is continuing fragmentation of holdings and use for rural residential purposes.	>I don t know how you could quantify an appropriate balance. It s a pity >that forestry isn,t seen as an agricultural use then there d be no >question to answer! How would people react if the question was put: what >balance of dairy and (vs) other rural land uses do you consider acceptable...? >I do think it s important to support diversity of land uses. Where >regions come to depend almost entirely on one particular rural industry >(eg dairy, wool growing, fruit growing) they become at greater risk from >the impacts of seasonal conditions and market forces. Diversity can >provide resilience.
Speaker 3	>It is not a balance of land use it should be more a land suitability issue. >If the land is suitable then it is the option of the land owner (given he >abides by planning requirements) to use the land for its best socio, >economic and environmental use. This will obviously differ between >landowners especially the social component.	>As above. I don't have a particular figure. It is the best use of land that >is my preference.

	What balance of agricultural and forestry land use do you consider: >ACCEPTABLE IN THE AREAS CLOSEST TO WHERE YOU LIVE?	What balance of agricultural and forestry land use do you consider >ACCEPTABLE FOR THE STUDY REGION AS A WHOLE?
Speaker 4	not all land is suitable i believe in my area 30 percent	10 percent
Speaker 5	I believe economic market forces should determine the balance - the IMPORTANT factor is that ALL commodities (?) are able to compete for land/resources on a LEVEL playing field. Investors and farmers alike will only do so if there is a ROI.	As above.
Speaker 6	I don't believe in a free market that there is and correct proprotion of ag to forestry. The principle determinates for both relate to climate (rainfall) and soils Other factors will relate to market location and access, proximity to other produces (area/volume thresholds). For plantations the site limitations will be something like rainfall >650 mm and soil depth >3 m. Location will also be limited by distance for haulage which is theoretically 150 km. Of course there are currently plantations more than 150 km from Portland, but the advent of new processing facilities may alter location.	As above
Speaker 7	I live in Mount Gambier, however, in close proximity we have a strong mix of forestry and agricultural land. From an urban point of view, I have no problem with that mix.	Most land uses are driven by the opportunity for a commercial return. Usually some balancing between various uses occurs and this is healthy. Probably between 10-20 per cent of forestry land use would be acceptable.

	What balance of agricultural and forestry land use do you consider: >ACCEPTABLE IN THE AREAS CLOSEST TO WHERE YOU LIVE?	What balance of agricultural and forestry land use do you consider: >ACCEPTABLE FOR THE STUDY REGION AS A WHOLE?
Speaker 8	Around Naracoorte and the South East of SA there is a huge diversity in agricultural industry because of the relatively fertile soil and access to underground water. Access to this water is restricted and its use has substantial costs associated. The water is the basis of high value agricultural produce. Plantations in the SE have been shown to access the watertable where it is within 6 metres. As such the water is too valuable a commodity to be used for a low value commodity such as woodchips the production of which is not driven by production demand but rather by individual tax benefits. Equally recharge to the aquifer influenced by plantations is an issue. In the SE of SA the future demand for land associated with irrigation is going to increase as different industries are moved out of higher population areas and environmentally significant areas. For example the SA Dairy Plan has a goal to double SA's share of the national milk production in the next 8 years. This is at a time when the Adelaide Hills dairy industry is shrinking fast and the environmental issues of the lower Murray Flats are seeing pressure brought to bear on the dairy farms there. If this plan is achieved the majority of dairies will be established in the SE. This is at a time when timber companies have inflated land prices. Other industries such as the potato industry have in the past had big expansions in the area, but with the nature of agriculture demand from this industry has waned recently. Therefore considering the current level of forestry planting, future development should be restricted to areas of more infertile soil types where the static water table is at greater than 6 metres in depth.	To consider this properly there needs to be a some long term planning as to what the future is for the landscape and more particularly for the land that has recently been planted. There does not appear to be any long-term planning or long-term policy for the tax driven forestry industry. What happens to the land where current trees are planted after their rotation is complete and the tax incentives are discontinued? Until the government makes a long-term policy determination it is hard to answer this question. As a livestock producer in the current drought it is distressing to see good grazing country in the South West of Victoria that has always been "drought proof" under blue gum plantations planted as a tax dodge. Nevertheless in a long-term plan for a region forestry does have a place.

Appendix 5: Draft questionnaire

(Please note: The Draft Questionnaire was modified significantly following regional pre-testing. Final questionnaire is available separately)

Survey: Resident Views on Land Use Change in the Green Triangle and Central Victoria

THE UNIVERSITY OF MELBOURNE

Dear participant,

You are invited to participate in the project 'Resident Views on Land Use Change in the Green Triangle and Central Victoria'. We are interested in your views about land use change in the region. You don't need to have any special knowledge or experience to participate, just be willing to share your view. The map below shows the study region.

Project overview

The aim of this project is to understand how acceptable new and existing land uses are in the region, and to understand comparisons residents make between these land uses. The project looks at four land uses:

- Blue gum plantations
- Cropping
- Rural residential development
- Dairying

The project is being conducted by Dr. Kathryn Williams and PhD student Caroline Dunn from the School of Resource Management at The University of Melbourne. These questionnaires have been delivered to homes throughout the Green Triangle and Central Victoria region selected at random from telephone listings for the study region.

How am I being asked to contribute?

Should you agree to contribute, your participation involves filling out the enclosed questionnaire. The questionnaire should only take around 15-20 minutes to complete.

How will my confidentiality be protected?

This project has been approved by the Human Research Ethics Committee and is part of a major project to evaluate socio-economic impacts of land use change in the Green Triangle and Central Victoria region. The results of this study will be reported as group data only. No individual or identifiable information will be collected. All computer files will be accessible to the researchers and the Social Research Centre only, and will be password protected.

Upon completion a summary of the findings of this research will be available to you on application at the School of Resource Management. The data will be kept securely for five years from the date of publication, before being destroyed.

You must be 18 years of age or older to take part in this survey. Please be advised that your participation in this study is completely voluntary. Should you wish to withdraw at any stage, or withdraw any unprocessed data you have supplied, you are free to do so without prejudice.

Next steps

If you would like to participate, please return completed questionnaire in the reply paid envelope provided. If you are able to return the questionnaire within 2 weeks, this would be greatly appreciated. To thank you for your participation, you will be entered in a lucky draw to win a hamper of produce from the study region. See back page for details.

For more information, or if you have any concerns, please contact the researchers or the Human Research Ethics Committee (see back of booklet for contact details).

Yours sincerely

Study region

Refer to back of booklet for enlarged map

Kathryn Williams

Definitions for the purpose of this questionnaire

Blue gum plantations: Large-scale commercial plantings of eucalypt trees to produce pulpwood for paper products.

Cropping: Large-scale commercial plantings of grains, legumes and oil seeds to produce food products.
Rural residential development: Division of rural land into smaller blocks for urban homes and rural living.

Dairying: Farming dairy cows for milk production.

Part 1

1. Over the past 10-15 years have you noticed any **change in the area of the following land uses** in areas close to where you live?

Land uses	Decrease	No change	Increase
1.1 Blue gum plantations	☐	☐	☐
1.2 Cropping	☐	☐	☐
1.3 Rural residential development	☐	☐	☐
1.4 Dairying	☐	☐	☐

*For each of the following questions please tick **one box for each land use**.*

2. In your view would an increase in these land uses result in fewer or more **people living in small towns and rural areas** (less than 6000 people)?	Fewer 1	2	Neutral 3	4	More 5
2.1 Blue gum plantations	☐	☐	☐	☐	☐
2.2 Cropping	☐	☐	☐	☐	☐
2.3 Rural residential development	☐	☐	☐	☐	☐
2.4 Dairying	☐	☐	☐	☐	☐

3. In your view would an increase in these land uses result in fewer or more **people living in larger towns** (towns with more than 6000 people)?	Fewer 1	2	Neutral 3	4	More 5
3.1 Blue gum plantations	☐	☐	☐	☐	☐
3.2 Cropping	☐	☐	☐	☐	☐
3.3 Rural residential development	☐	☐	☐	☐	☐
3.4 Dairying	☐	☐	☐	☐	☐

4. In your view would an increase in these land uses result in fewer or more **people involved in local service and community groups**?	Fewer 1	2	Neutral 3	4	More 5
4.1 Blue gum plantations	☐	☐	☐	☐	☐
4.2 Cropping	☐	☐	☐	☐	☐
4.3 Rural residential development	☐	☐	☐	☐	☐
4.4 Dairying	☐	☐	☐	☐	☐

5. In your view would an increase in these land uses result in less or more risk of **contact with dangerous chemicals**?	Less 1	2	Neutral 3	4	More 5
5.1 Blue gum plantations	☐	☐	☐	☐	☐
5.2 Cropping	☐	☐	☐	☐	☐
5.3 Rural residential development	☐	☐	☐	☐	☐
5.4 Dairying	☐	☐	☐	☐	☐

6. In your view would an increase in these land uses result in fewer or more **native plants and animals**?		Fewer 1	2	Neutral 3	4	More 5
6.1	Blue gum plantations	☐	☐	☐	☐	☐
6.2	Cropping	☐	☐	☐	☐	☐
6.3	Rural residential development	☐	☐	☐	☐	☐
6.4	Dairying	☐	☐	☐	☐	☐

7. In your view would an increase in these land uses result in less or more **employment in small towns and rural areas** (less than 6000 people)?		Less 1	2	Neutral 3	4	More 5
7.1	Blue gum plantations	☐	☐	☐	☐	☐
7.2	Cropping	☐	☐	☐	☐	☐
7.3	Rural residential development	☐	☐	☐	☐	☐
7.4	Dairying	☐	☐	☐	☐	☐

8. In your view would an increase in these land uses result in less or more **employment in larger towns** (more than 6000 people)?		Less 1	2	Neutral 3	4	More 5
8.1	Blue gum plantations	☐	☐	☐	☐	☐
8.2	Cropping	☐	☐	☐	☐	☐
8.3	Rural residential development	☐	☐	☐	☐	☐
8.4	Dairying	☐	☐	☐	☐	☐

9. In your view would an increase in these land uses result in less or more **water available for all uses**?		Less 1	2	Neutral 3	4	More 5
9.1	Blue gum plantations	☐	☐	☐	☐	☐
9.2	Cropping	☐	☐	☐	☐	☐
9.3	Rural residential development	☐	☐	☐	☐	☐
9.4	Dairying	☐	☐	☐	☐	☐

10. In your view would an increase in these land uses result in less or more **damage to roads**?		Less 1	2	Neutral 3	4	More 5
10.1	Blue gum plantations	☐	☐	☐	☐	☐
10.2	Cropping	☐	☐	☐	☐	☐
10.3	Rural residential development	☐	☐	☐	☐	☐
10.4	Dairying	☐	☐	☐	☐	☐

11. In your view would an increase in these land uses result in less or more **business for traders**?		Less 1	2	Neutral 3	4	More 5
11.1	Blue gum plantations	☐	☐	☐	☐	☐
11.2	Cropping	☐	☐	☐	☐	☐
11.3	Rural residential development	☐	☐	☐	☐	☐
11.4	Dairying	☐	☐	☐	☐	☐

12. In your view would an increase in these land uses result in less or more **risk of bushfire**?		Less 1	2	Neutral 3	4	More 5
12.1	Blue gum plantations	☐	☐	☐	☐	☐
12.2	Cropping	☐	☐	☐	☐	☐
12.3	Rural residential development	☐	☐	☐	☐	☐
12.4	Dairying	☐	☐	☐	☐	☐

13. In your view would an increase in these land uses result in less or more **risk of soil erosion**?		Less 1	2	Neutral 3	4	More 5
13.1	Blue gum plantations	☐	☐	☐	☐	☐
13.2	Cropping	☐	☐	☐	☐	☐
13.3	Rural residential development	☐	☐	☐	☐	☐
13.4	Dairying	☐	☐	☐	☐	☐

14. In your view would an increase in these land uses result in less or more **economic benefits for landholders**?		Less 1	2	Neutral 3	4	More 5
14.1	Blue gum plantations	☐	☐	☐	☐	☐
14.2	Cropping	☐	☐	☐	☐	☐
14.3	Rural residential development	☐	☐	☐	☐	☐
14.4	Dairying	☐	☐	☐	☐	☐

15. In your view would an increase in these land uses result in less or more **economic benefits for the region as a whole**?		Less 1	2	Neutral 3	4	More 5
15.1	Blue gum plantations	☐	☐	☐	☐	☐
15.2	Cropping	☐	☐	☐	☐	☐
15.3	Rural residential development	☐	☐	☐	☐	☐
15.4	Dairying	☐	☐	☐	☐	☐

16. Would an increase in these land uses result in production of goods **more or less important to society**?		Less 1	2	Neutral 3	4	More 5
16.1	Blue gum plantations	☐	☐	☐	☐	☐
16.2	Cropping	☐	☐	☐	☐	☐
16.3	Rural residential development	☐	☐	☐	☐	☐
16.4	Dairying	☐	☐	☐	☐	☐

17. Some people think increases in these land uses have an overall positive impact. Others think these land uses have an overall negative impact. Thinking about the impacts of an increase in these land use at a regional and a local level, **what is your view on this issue**? *(Please tick one box for each land use)*

a. Overall impact for the **region as a whole**		Negative 1	2	Neutral 3	4	Positive 5	**or**	Don't know
17.1	Blue gum plantations	☐	☐	☐	☐	☐		☐
17.2	Cropping	☐	☐	☐	☐	☐		☐
17.3	Rural residential development	☐	☐	☐	☐	☐		☐
17.4	Dairying	☐	☐	☐	☐	☐		☐

b. Overall impact for **towns and rural areas close to where you live**		Negative 1	2	Neutral 3	4	Positive 5	**or**	Don't know
17.5	Blue gum plantations	☐	☐	☐	☐	☐		☐
17.6	Cropping	☐	☐	☐	☐	☐		☐
17.7	Rural residential development	☐	☐	☐	☐	☐		☐
17.8	Dairying	☐	☐	☐	☐	☐		☐

18. Please indicate your **level of agreement** with the following statements:
(for each of the following questions please tick one box for each land use)

a. An increase in these land uses is **good** for **rural areas and small towns** in this region (less than 6000 people)	Disagree 1	2	Neutral 3	4	Agree 5
18.5 Blue gum plantations	☐	☐	☐	☐	☐
18.6 Cropping	☐	☐	☐	☐	☐
18.7 Rural residential development	☐	☐	☐	☐	☐
18.8 Dairying	☐	☐	☐	☐	☐

b. An increase in these land uses is **good** for **large towns** in this region (more than 6000 people)	Disagree 1	2	Neutral 3	4	Agree 5
18.5 Blue gum plantations	☐	☐	☐	☐	☐
18.6 Cropping	☐	☐	☐	☐	☐
18.7 Rural residential development	☐	☐	☐	☐	☐
18.8 Dairying	☐	☐	☐	☐	☐

19. Thinking about the future, in 5-10 years time do you believe the impacts of these land uses will be positive or negative overall? *(Please tick one box for each land use)*

Future impact of land uses	Negative 1	2	Neutral 3	4	Positive 5	**or** Don't know
19.1 Blue gum plantations	☐	☐	☐	☐	☐	☐
19.2 Cropping	☐	☐	☐	☐	☐	☐
19.3 Rural residential development	☐	☐	☐	☐	☐	☐
19.4 Dairying	☐	☐	☐	☐	☐	☐

PART 2

20. Please indicate your level of agreement with the following statements:

		Strongly disagree 1	2	Neutral 3	4	Strongly agree 5	or	Don't know
20.1	It's up to individual landholders to decide how their land should be used	☐	☐	☐	☐	☐		☐
20.2	Local planning laws should control the way land can be used	☐	☐	☐	☐	☐		☐
20.3	There should be a limit on the amount of land planted to forestry	☐	☐	☐	☐	☐		☐
20.4	Governments should improve planning for land use change	☐	☐	☐	☐	☐		☐
20.5	The market is the best way to determine what the mix of land uses should be	☐	☐	☐	☐	☐		☐
20.6	Local residents should have a say in the way land is used	☐	☐	☐	☐	☐		☐
20.7	People should be consulted if there might be a change in land use on neighbouring properties	☐	☐	☐	☐	☐		☐
20.8	Managed investment schemes (MIS) are threatening traditional farming	☐	☐	☐	☐	☐		☐
20.9	Managed investment schemes (MIS) are a good way of bringing money into rural areas	☐	☐	☐	☐	☐		☐
20.10	Plantation forestry has tax advantages over other rural industries	☐	☐	☐	☐	☐		☐

21. How strong are your views about the following topics? *(please tick one box for each land use)*

		Not strong 1	2	3	4	Extremely strong 5
21.1	Land use change in general	☐	☐	☐	☐	☐
21.2	Blue gum plantations	☐	☐	☐	☐	☐
21.3	Cropping	☐	☐	☐	☐	☐
21.4	Rural residential development	☐	☐	☐	☐	☐
21.5	Dairying	☐	☐	☐	☐	☐

22. Thinking about a good mix of land uses for your region, how important are the following outcomes? *(Please tick one box for each outcome)*

		Very unimportant		Neutral		Very important
		1	2	3	4	5
22.1	Minimal chemical risk	☐	☐	☐	☐	☐
22.2	Minimal risk of bushfire	☐	☐	☐	☐	☐
22.3	Health of native plants and animals	☐	☐	☐	☐	☐
22.4	Minimal risk of soil erosion	☐	☐	☐	☐	☐
22.5	Land uses are matched to soil type and rainfall	☐	☐	☐	☐	☐
22.6	Water remains available for rural and residential use	☐	☐	☐	☐	☐
22.7	Minimal impact on roads and transport	☐	☐	☐	☐	☐
22.8	Economic benefits for landholders	☐	☐	☐	☐	☐
22.9	Economic benefits for region as a whole	☐	☐	☐	☐	☐
22.10	Contribution to employment at a local level	☐	☐	☐	☐	☐
22.11	Contribution to employment at regional level	☐	☐	☐	☐	☐
22.12	Large number of people living in rural regions	☐	☐	☐	☐	☐
22.13	Success of community groups such as service and sporting clubs	☐	☐	☐	☐	☐
22.14	Sense of trust and sense of community	☐	☐	☐	☐	☐
22.15	Importance to society of products from land use (e.g. food, timber, recreation, housing)	☐	☐	☐	☐	☐
22.16	Fair distribution of impacts for people living within the region	☐	☐	☐	☐	☐
22.17	Fair distribution of impacts for people working in different primary production industries	☐	☐	☐	☐	☐
22.18	Stability of land uses	☐	☐	☐	☐	☐
22.19	Minimal impact on nearby land uses	☐	☐	☐	☐	☐

Part 3

We will use the questions below to report on the kinds of people who took part in the study.
Please select one box or fill in the space for each of the following questions.

23. What is your age group?

1	18-24 ☐	2	25-34 ☐	3	35-44 ☐	4	45-54 ☐
5	55-64 ☐	6	65-74 ☐	7	75+ ☐		

24. What is your gender? 1 Male ☐ 2 Female ☐

25. What is the name of the suburb, rural locality or town where you live?

_____

26. What is the postcode where you live?

27. What is the closest road intersection to your residence (names of the two roads that intersect)?

_____

28. Are you a primary producer? 1 ☐ Yes 2 ☐ No

29. Are you a member of any land use interest groups, for example an agricultural or forestry industry group, or relevant community groups? Please provide names of groups in space below.

_____

Thank you for completing this questionnaire

Please return in the reply paid envelope within the next 2 weeks

To thank you for your participation, you will be entered in a lucky draw. Three lucky participants will win a hamper of gourmet products from the Green Triangle and Central Victoria regions. To be eligible, return your questionnaire and separate entry card by **. If you would like to keep in touch with the project, and hear the survey results, please also indicate this on the response card.**

Contact Details

If you require any further information about this research please contact:

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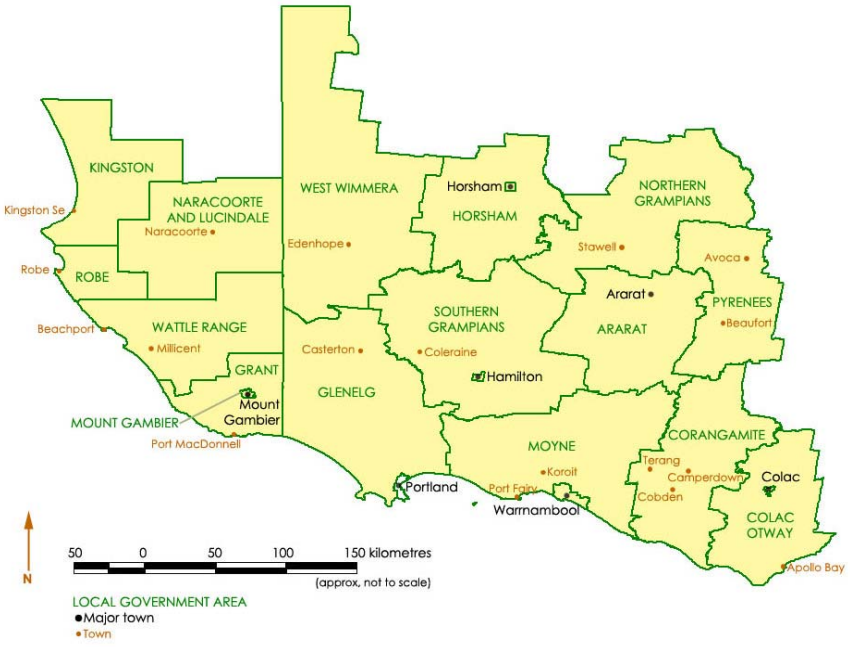
Human Research Ethics Committee, **The University of Melbourne:**
Phone: (03) 8344 2073
Fax: (03) 9347 6739
University Ethics Research Application No. 0710160.1
Title: Survey of Resident Views on Land use change in the Green Triangle and Central Victoria.

Map of the study region – Green Triangle and Central Victoria



Appendix 6: Town populations within study area

Towns 20,000+	LGA	Towns b/n 6000-20000	LGA	Towns b/n 200-6000
Warrnambool (26,843)	Colac-Otway	Colac (10,182)	Colac-Otway	Birregurra (L)
Mt. Gambier (22,751)	Glenelg	Portland (9,588)	Colac-Otway	Beeac (L)
	S. Grampians	Hamilton (9,128)	Colac-Otway	Apollo Bay (1996), Apollo Bay-Marengo (2001)
	Ararat	Ararat (7,052)	Warrnambool	Bushfield-Woodford (L)
	Horsham	Horsham (13,241)	Warrnambool	Allansford (L)
	N. Grampians	Stawell (6,142)	Corangamite	Terang
			Corangamite	Skipton (L)
			Corangamite	Noorat (L)
			Corangamite	Lismore (L)
			Corangamite	Derrinallum (L)
			Corangamite	Camperdown
			Corangamite	Timboon (L)
			Corangamite	Port Campbell (L)
			Corangamite	Cobden
			Moyne	Mortlake (L)
			Moyne	Macarthur (L)
			Moyne	Port Fairy
			Moyne	Koroit
			Glenlg	Heywood
			Glenlg	Dartmoor (L)
			Glenlg	Merino (L)
			Glenlg	Casterton
			S.Grampians	Coleraine
			S.Grampians	Balmoral (L)
			S.Grampians	Penshurst (L)
			S.Grampians	Dunkeld (L)
			Ararat	Willaura (L)
			Pyrenees	Avoca (L)
			Pyrenees	Snake Valley (L)
			Pyrenees	Beaufort (L)
			Horsham	Natimuk (L)
			N. Grampians	St Arnaud
			N. Grampians	Halls Gap (L)
			West Wimmera	Kaniva (L)
			West Wimmera	Goroke (L)
			West Wimmera	Edenhope (L)
			Kingston	Kingston S.E.
			Naracoorte and Lucindale	Naracoorte
			Naracoorte and Lucindale	Lucindale (L)
			Robe	Robe (L)
			Grant	Tarpeena (L)
			Grant	Port MacDonnell (L)
			Wattle Range	Penola
			Wattle Range	Nangwarry (L)
			Wattle Range	Kalangadoo (L)
			Wattle Range	Tantanoola (L)
			Wattle Range	Mount Burr (L)
			Wattle Range	Millicent
			Wattle Range	Beachport (L)