

IN THE MATTER of the Resource Management Act 1991

AND

IN THE MATTER of a Board of Inquiry appointed under s146 of the Resource Management Act 1991 to consider an application by Mighty River Power Limited for resource consents to construct, operate, and maintain a wind farm at Turitea

REBUTTAL EVIDENCE OF PETER PHILLIPS

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1. INTRODUCTION

- 1.1 My name is Peter Phillips. I am the Managing Director of Dialogue Consultants Limited, which I set up in 1983. I hold a Doctorate of Philosophy. Over the last 25 years I have undertaken a wide range of public consultations and social impact assessments both here and overseas, mainly on infrastructure development and public policy. These have included water treatment, sewage treatment and disposal, housing developments, airports, power stations, and motorways. Most recently I was the consultation adviser to Transpower on the North Island Grid Upgrade Project. My colleagues and I also undertook the social impact assessment for the project comprising 186 km of overhead line and 20 km of underground cable route.
- 1.2 Over the last 30 years I have undertaken a wide range of applied social science research projects including a range of social surveys. One of these surveys was my introduction to the energy sector, being the first national study of household attitudes to energy use and conservation in this country, with over 10,000 respondents. Most recently I have completed surveys related to the motorway network for the Auckland Motorway Alliance and surveys related to bird flu preparedness planning in Kiribati and Fiji for UNICEF.
- 1.3 Following the initial survey work I subsequently provided the social science input to a wide range of research projects undertaken by the New Zealand Energy Research and Development Committee including a range of market development studies. For ten years I was retained by ECNZ to provide a social science input into corporate and strategic planning. At various stages in my career I have also tutored in Social Statistics and lectured in Population and Resources, and in Environmental Planning.
- 1.4 I confirm that I have read and am familiar with the Code of Conduct for Expert Witnesses in the Environment Court Consolidated Practice Note (2006). I have approached the preparation of this evidence in the same way that I would for the Environment Court.
- 1.5 I am providing this rebuttal evidence to comment on and respond to some of the primary evidence presented in respect of these applications that relate to social impact matters. In particular, I will comment on the evidence of James Talbot Baines presented on behalf of Palmerston North City Council. I will also comment briefly on the evidence of Mr Anstey and Mr Baker where this relates to social science method in relation to the interpretation of qualitative information.

1.6 Specifically, I shall address the following matters:

- (a) Benchmarking the assessment;
- (b) Social aspects of effects;
- (c) Ad hoc versus objective measures;
- (d) Submissions over time;
- (e) Undue focus on opinion;
- (f) Inappropriate interpretation of Citizens Panel results;
- (g) The (alleged) tipping point;
- (h) Standards of objectivity;
- (i) Evidence of Mr Anstey related to social matters and focus groups;
- (j) Inappropriate generalisation of focus group discourse in the evidence of Mr Anstey; and
- (k) Inappropriate imputation of motive in the evidence of Mr Baker.

2. BENCHMARKING THE ASSESSMENT

2.1 A robust assessment of the evidence presented by Mr Baines on the social impact of the proposal can be obtained by benchmarking it against the six principles of social assessment and associated guidelines established by the Interorganizational Committee on Principles and Guidelines for Social Impact Assessment.¹ This Group included Professor Rabel Burdge who Mr Baines quotes in paragraph 2.1.1 of his evidence. The publication is available on the website of the International Association for Impact Assessment,² a voluntary membership group that Mr Baines indicates on his company website that he was the coordinator for the Social Impact Assessment Section between

¹ Interorganizational Committee on Principles and Guidelines for Social Impact Assessment, (2003), in *Impact Assessment and Project Appraisal*, 21, No. 3, pp 231-250, Beech Tree Publishing, Guildford, UK

² The publication is available at: <http://www.iaia.org/modx/index.php?id=74>

2000 and 2006.³ I have previously used a combination of this framework and that of Vanclay⁴ in undertaking social impact assessments.

2.2 **“Principle 1:** *Achieve extensive understanding of local and regional populations and settings to be affected by the proposed action, program or policy.*” The guidelines for this principle cover: “Identify and describe interested and affected stakeholders and other parties; and develop baseline information (profiles) of local and regional communities.”

2.3 **Consideration of Principle 1:** Any assessment of social effects requires an effective characterisation of the affected and interested communities to be able to interpret the nature and scale of effects. Mr Baines presents no systematic evidence on the structure, composition or dynamics of Palmerston North or communities on the eastern side of the Tararua Ranges such as Pahiatua. There are some references to rural residential development for which there are dwelling numbers in paragraph 3.3.4. There are references to a changing sense of community in areas close to the hills and in the valleys east of the river in paragraph 3.3.6. There is also a reference to a more diverse group of families sending their children to (unnamed) rural schools in paragraph 3.3.6, but the implications for social impacts are not assessed. I would have expected to see the sort of information which is described in the section on “Profiling” of a text prepared by Mr Baines’ colleague in the company Taylor Baines⁵, Nicholas Taylor, with two others. The text sets out lists of demographic variables that could have been presented,⁶ and secondary sources of information that might have been used,⁷ but this is missing from Mr Baines’ evidence. It is not possible from Mr Baines’ evidence to rigorously assess potential effects on individuals, households or communities, or how they might respond to, or absorb change because the local and regional populations have not been described. In my opinion, the evidence presented by Mr Baines does not fulfil the requirements of Principle 1.

2.4 **“Principle 2:** *Focus on the key elements of the human environment related to the proposed action, program or policy.*” The guidelines for this principle cover: “Focus on key

³ <http://www.tba.co.nz/people/>

⁴ Vanclay, F (1999), *Contributing Paper: Social Impact Assessment*, World Commission on Dams, 16pp

⁵ C. N Taylor, C. H Bryan, C G. Goodrich, (2004). *Social Assessment: Theory, Process and Techniques*, 3rd Edition, Social Ecology Press, Middleton, Wisconsin, 194 pp.

⁶ Taylor, Bryan, Goodrich, (2004). *op. cit.* p 113.

⁷ Taylor, Bryan, Goodrich, (2004). *op. cit.* p pp114-5

elements of the human environment; identify the key social and cultural issues related to the action or policy from the community and stakeholder profiles; and select social and cultural variables which measure and explain the issues identified.”

- 2.5 **Consideration of Principle 2:** Mr Baines identifies a range of effects. He provides non-specified examples in paragraph 2.3.3; he defines the priority social issues in section 4.2; specifies effects in sections 5 and 6; and he summarise effects in paragraph 7.2.1 (table not numbered) and Table 24; and tabulates a range of social issues and effects in Appendix JTG10. Having indicated that he was using a framework for his assessment derived from social indicators work undertaken in the OECD (as set out in Appendix JTB2), Mr Baines does not systematically assess the range of effects against the framework. I can appreciate that Mr Baines concentrates on those effects that he deems to be important, but this means the only inference that can be drawn for items in the OECD framework that he does not measure in his analysis is that they have no effects in this case. For example, Mr Baines provides no evidence on how the proposal would affect either positively or negatively “Influences on participation in community or society, including participation in organised groups and social activity” beyond the potential displacement of some recreation groups, with leisure and recreation explicitly addressed by a separate item in the framework.
- 2.6 Mr Baines uses a range of qualitative and quantitative variables to scale some of the effects. These include the number of jobs; dollar revenues to landowners and the Council; reported experience of exposure to noise; and opinion of the visual effects of windfarms on the landscape and recreation using rating scales. There are, however, significant gaps in the metrics used. Examples of social impact monitoring variables are given in Table 4.2 of the book on social assessment co-authored by Mr Baines’ colleague.⁸ A number of these variables could be considered to be applicable in this case but were not covered in Mr Baines’ evidence.
- 2.7 In section 6.5 of his evidence, for instance, Mr Baines discusses recreation effects. Mr Baines tabulates the membership and activities of 14 groups he canvassed in his consultation in Appendix JTB7A. This tabulation includes references to various recreation types using areas in the Kahuterawa Valley. Unfortunately there is no way of relating the generalised information on the range of locations visited to the User Survey that provides

⁸ Taylor, Bryan, Goodrich, (2004). *op. cit.* p 75.

estimates of annual usage based on five days of observation in early March 2009. Furthermore, in paragraph 6.5.5 Mr Baines has to speculate about the effects of turbines on the recreational experience as this critical aspect of Mr Baines' assessment has not been undertaken in a systematic fashion for the site of the proposed wind farm, either with the recreation groups or with the wider population.⁹

2.8 Mr Baines makes a number of other statements which he does not substantiate with quantitative data or even an adequate proxy. For example, in paragraph 6.5.7 he states his opinion that there is likely to be the displacement of some of the intended future recreational activity. Mr Baines then goes on to state: "I do not have the data to estimate the proportion who might be affected in this way". For reasons I will discuss in section 7 of my evidence, in my opinion, it is not possible to extrapolate from the Citizens Panel results as Mr Baines does. It is therefore inappropriate to then discuss a potential significant adverse effect (as discussed in paragraph 6.5.9 of Mr Baines' evidence) when the negative or positive responses of recreationalists have not been established.

2.9 A significant inconsistency in Mr Baines' cataloguing of effects is observed in the definition of the time frames over which the effects are expected to occur. The standard practice in SIAs is to assign them between and across four stages of a project:

- (a) Planning (sometimes split into general and detailed planning);
- (b) Construction;
- (c) Operation/maintenance; and
- (d) Abandonment/decommissioning.

2.10 Mr Baines does address both the economic effects of the construction and operation phases in terms of employment, but this is only a particular view as he mentions indirect business activity, such as accommodation rentals, and he states in paragraph 6.4.3, "I have not attempted to quantify this." Mr Baines also covers the issue of construction traffic in section 5.7. He agrees with the recommendations of Mr Tate on the use of liaison groups and other mitigation measures, which I understand have been accepted by

⁹ Mr Baines did ask a question about whether respondents were aware of the Mighty River Power proposal in the Citizens Panel, but the results are not reported in Mr Baines evidence

Mighty River Power. Mr Baines also mentions in paragraph 5.7.1, but does not quantify, effects on adjoining properties.

- 2.11 In addition to the formentioned, there are also substantive issues concerning Principle 2 and its guidelines related to the need to separate out the social component of issues in the assessment of effects, to which I will return shortly. Taking all these aspects into consideration, in my opinion, the evidence presented by Mr Baines has only partially fulfilled the requirements of Principle 2.
- 2.12 **“Principle 3:** *The SIA is based upon sound and replicable scientific research concepts and methods.*” This principle is based on the notion that “The SIA process subscribes to the ethic that good science (scholarship) will lead to informed and better decisions.” The guidelines for this principle cover: “research methods should be holistic in scope, i.e. they should describe all aspects of social impacts related to the action or policy: research methods must describe cumulative social effects related to the action or policy; ensure that methods and assumptions are transparent and replicable; select forms and levels of data collection analysis which are appropriate to the significance of the action or policy.”
- 2.13 **Consideration of Principle 3:** Mr Baines indicates in section 2.2 of his evidence that he has used a range of sources of information including his own previous researches, and submissions, with evidence of engagement with a range of affected and interested parties. Mr Baines points out in paragraph 2.1.4 of his evidence that “there is an incorrect inference that impact assessment implies only a focus on adverse effects”. Mr Baines has described a range of what he defines as positive and negative effects. Mr Baines has also undertaken an analysis of cumulative social effects, which he summarises in paragraph 7.2.1 of his evidence. Mr Baines has made available information on the method used in the Ex-post survey and the focus groups, with the exception in the case of the focus groups of the recruitment process. Information has been supplied also on the method used to recruit the Citizens Panel. In my opinion the mix of methods is appropriate and capable of being repeated although the sampling method in the Ex-post survey was a non-probability based approach.
- 2.14 My main concerns related to Principle 3 relate to the final guideline concerning the level of data collection and analysis. While I have some reservations about the comparability of the Ex-post survey with the one undertaken in 2005, particularly in terms of coverage, in my opinion the level of quantitative data collection and analysis used in Ashhurst should

have also been used in the communities closer to the proposed windfarm. Instead the evidence is limited to the outputs of the focus groups on which I will comment in section 11.3 of my evidence.

- 2.15 I also have reservations about the approach Mr Baines adopted to his questionnaire design for the Ex-post survey. There are always issues with single topic surveys, such as this, with the risk being that the way the questionnaire is formulated might induce responses that the interviewee believes that the interviewer might want to hear, irrespective of the professionalism and detachment of the interviewer. There is also the risk that the very asking of questions about a topic will ascribe more importance to the matter than the interviewee might otherwise do, and place emphasis on matters that the interviewee might normally ignore.
- 2.16 I also have some other concerns about the questionnaire design. First, there are issues related to some of the language used in the questionnaire especially the term “impact”, which is often interpreted with negative connotations. The derivation of the somewhat ungainly notion of “pleasant impacts” is unclear as it does not appear to be a term used in the focus groups that Mr Baines conducted, which is a conventional source of language for use in questionnaires. Second, there are issues related to the reliability of recall of perceptions as Mr Baines seeks to test in Question 23. The more reliable approach used by social scientists is a longitudinal study which measures the knowledge, attitudes and practices of the same people over time, so there is no possibility of rewriting history. Mr Baines does not provide any evidence that he re-interviewed the subjects of his 2005 study so this opportunity may not have been taken. For these reasons and the various other reasons discussed earlier, I conclude that Mr Baines has only partially met the requirements of Principle 3.
- 2.17 **“Principle 4: Provide quality information for use in decision-making.”** The guidelines for this principle cover: “collect qualitative and quantitative social, economic and cultural data sufficient to usefully describe and analyze all reasonable alternatives to the action; ensure that the data collection methods and forms of analysis are scientifically robust; and ensure the integrity of collected data.”
- 2.18 **Consideration of Principle 4:** Mr Baines does not canvass all reasonable alternatives to the actions in his SIA, but this may have been determined by the brief for his engagement by Palmerston North City Council, paragraph 1.2.2. Central to this Principle is the second

guideline relating to ensuring that the data collection methods and forms of analysis are robust. In my opinion, the evidence presented by Mr Baines does not fulfil this requirement as the evidence relies to a significant degree on data sources that are not scientifically rigorous and, furthermore, inappropriate interpretations are placed on the results. This issue is of sufficient significance that I will return to it at some length later in section 7 of my evidence. The discussion of Principle 4 also states “To ensure the quality and completeness of information, an SIA should be peer-reviewed after scoping and prior to release.” There is no indication in Mr Baines’ evidence that his SIA of the proposal has been peer reviewed. For these and the reasons set out in Section 7, I am of the opinion that Mr Baines’ evidence does not meet the requirements of Principle 4.

2.19 “**Principle 5:** *Ensure that any environmental justice issues are fully described and analyzed.*” The guidelines for this principle cover: “ensure that research methods, data, and analysis consider under-represented and vulnerable stakeholders and populations; consider the distribution of all impacts (whether social, economic, air quality, noise, or potential health effects) to different social groups (including ethnic/racial and income groups); undertake evaluation/monitoring and mitigation.”

2.20 **Consideration of Principle 5:** In his consultation Mr Baines reports consulting five runanga who represent a significant ethnic minority in the city with 15 percent of the population being Maori (although some of these will no doubt be from other rohe). Mr Baines identifies in paragraph 3.7.1 of his evidence that the Rangitane iwi have traditional interest in the land, which includes the Turitea Reserve and its environs. Mr Baines further states that “Having met with representatives of each of the runanga during this assessment, I understand that unresolved issues over land interests or relationships with statutory bodies are not at the present time matters that need to be discussed in the context of the wind farm application.” This may well be the case but this does not provide any indication of the nature and extent of any social effects that might arise from the proposal. In my experience tangata whenua typically take a holistic view of projects considering economic, social, cultural and environmental aspects. The Board will have the benefit of the Maori perspective through submissions from Te Runanga O Rangitane o Tamaki-nui-a Rua; He Kupenga Hao I Te Reo Trust; and Tanenuiarangi Manawatu Incorporated according to the published list of submitters, but this does not correct the omission of Maori input from the evidence presented of the assessment. Mr Baines does not recognise any other potentially “under-represented and vulnerable stakeholders and

populations” in his analysis. Furthermore, the methodological issues of the Citizens Panel on which Mr Baines relies heavily are likely to mean that the views of low income groups are not properly represented (data on income of participants was collected but is not in the report on the Panel). The social impact assessment set out in Mr Baines’ evidence is therefore incomplete in this respect and, in my opinion, does not meet the requirements of Principle 5.

2.21 **“Principle 6: Undertake evaluation/monitoring and mitigation.”** The guidelines for this principle cover: “establish mechanisms for evaluation and monitoring of the action, policy or program; where mitigation of impacts may be required, provide a mechanism and plan for assuring effective mitigation takes place; identify data gaps and plan for filling these data needs.”

2.22 **Consideration of Principle 6:** The guidelines set out a range of actions to be undertaken in an SIA, but there is only limited reference to evaluation/monitoring and mitigation measures, even though they are integral to a comprehensive independent assessment. Mr Baines does include at paragraph 5.7.4 a discussion of the evidence of Mr Tate on “the use of community liaison groups for providing local input to the development of Construction Traffic Management Plans, the monitoring of traffic-related effects during construction, and as a mechanism for providing accountability and assurances that suitable mitigation measures will be implemented.” This is but one of the major social effects that Mr Baines has identified. It is unclear from Mr Baines evidence whether he considers evaluation/monitoring and mitigation are possible in relation to the other effects. In my opinion Mr Baines has only partially met the requirements of Principle 6.

2.23 In this section 2 of my evidence, I have benchmarked the social impact assessment in Mr Baines’ evidence against a framework of international standing with which I am in no doubt Mr Baines will be well familiar. In my opinion, on the basis of the evidence he has presented to the Board, Mr Baines’ social impact assessment does not meet three of the six principles and only partially meets the remaining three, set out in this framework.

3. SOCIAL ASPECTS OF EFFECTS

3.1 When assessing social impacts it is critically important to separate out the social aspect of an issue from what might be referred to as the technical aspects. For instance, at paragraph 4.2.3 Mr Baines identifies what he terms to be “regional-level issues” identified

most frequently in the several sources of information he used. One of these is the “use of Turitea Reserve: ecological effects and potential risks to the City’s water supply from sediment, disease or chemical spills during construction.” In his summary of social well-being effects in Table 24 he presents the issue under “Potentially negative social effects” and defines it as “Risk to City public water supply: mainly during construction but possibly over an extended period...” Mr Baines estimates the scale of effect as “All ratepayers ~ 28,000”.

- 3.2 Setting aside why Mr Baines might draw a distinction between ratepayers and residents in terms of public drinking water, this is an example of the failure to distinguish between the social and the technical. The substantive issue is actually addressed in section 5.6 of Mr Baines’ evidence entitled “Water supply risks”. There he states, when commenting on the evidence of Mr Taylor, “His main conclusion relevant to social well-being is that risks to public health in relation to the Applicants (*sic*) proposal will be less than minor provided a number of changes are made and conditions met...” I understand that principal technical conditions have been accepted by Mighty River Power.
- 3.3 Given that the actual risks are “less than minor” then the only remaining social aspect is that some individuals may have residual concerns about the issue. This is a matter of perception (social) not of physical risk to the water supply (technical). Such perceptions can be addressed through an information programme. Failure to separate out the social component of this issue opens the potential that an effect will be double counted or, as in this case, presented as a physical risk when this has been discounted by the evidence of an expert witness.

4. AD HOC VERSUS OBJECTIVE MEASURES

- 4.1 In his Ex-post survey, Mr Baines uses distance from a turbine as a proxy for noise exposure. This is inevitably a crude substitute as it does not take into account a range of factors, such as terrain. It is reasonable in the circumstances as a simple way of presenting the results of the survey (although there are always issues about how a continuum such as distance is divided).
- 4.2 Such lay-person measures, however, are not appropriate as a basis for predicting effects as Mr Baines seeks to do in paragraph 5.4.11. Noise modelling and field measurements provide a more robust basis for assessing effects than such *ad hoc* measures, and are the

subject of evidence from expert witnesses. The presence of 122 existing houses and potentially more within this arbitrary boundary is not a reliable measure of the scale of effect. It is interesting to observe that Mr Baker uses a similar “rule of thumb” of 3km in paragraph 64 of his evidence when calculating the number of existing dwellings (256) within that distance from the nearest of the proposed turbines. This is a statement of potential not actual effects which needs to be formally assessed. I note the terminology of potential effect is used by Mr Bray in paragraph 122 of his evidence.

4.3 Mr Anstey’s evidence provides an indication of the effect of making a more detailed assessment on the generalised numbers when he comments in paragraph 72 on what he states are “61 existing houses in the Pahiatua Track area within 3 km of turbines”. Mr Anstey states “I would estimate that 40 of the 62 houses would have views of the Turitea Turbines.” This is a 35% reduction (using Mr Baker’s count of the number of existing dwellings) just based on an estimate.

4.4 In interpreting his distance measure Mr Baines also makes use of a series of unattributed quotations from people about whom no information is supplied, to the point that it is not possible to determine whether these statements are from fourteen individuals or some lesser number, or anything else about the sources which might be of value in interpreting them, such as the time period covered by these symptoms. Such profile information is essential for interpretation, and should include, for instance, information about the duration of residence (which Mr Baines collected in his Ex-post Survey) given that many people become accustomed to noises in the local environment over time. For example, I recall when I first moved to Mulgrave Street, Ashhurst that under certain conditions the trains crossing the Manawatu River Bridge were quite intrusive. When I left to go and live further up in the Pohangina Valley after 18 months they were just part of the environment and totally unrelated to my decision to move.

5. SUBMISSIONS OVER TIME

5.1 Mr Baines presents in section 7.3, the results of a review of submission statistics undertaken by Mr Baker of Palmerston North City Council. Mr Baines discusses both the growth in volume of the submissions and the change in “the balance of support and opposition for these applications” at paragraphs 7.3.3-4.

5.2 As determined in *Upland Landscape Protection Society v Central Otago District Council*¹⁰ the quantity of submissions for or against a proposal is not relevant in RMA proceedings. Furthermore, the submission process is not a reliable measure of community concern. Growing numbers of submissions could, for instance, be a measure of the increasing efficiency of advocacy groups. Mr Baines expresses the view in paragraph 7.3.6 that “there is compelling evidence from a variety of sources that the wider community of Palmerston North has an increasing level of concern about the cumulative effects of wind farm development”. To the extent that this relies on the submission analysis undertaken by Mr Baker, then this statement is undermined. As discussed in section 7 in this rebuttal evidence, its reliance on the results from the Citizens’ Survey means this conclusion is further weakened.

6. UNDUE FOCUS ON OPINION

6.1 In his evidence Mr Baines places great reliance on opinion surveys, in particular the Citizens Panel Survey. As a social scientist by training with over 30 years consulting experience, I am surprised by the weight assigned to this aspect, as opinion is but one facet that social scientists investigate as part of a social impact assessment. In many respects it is one of the least reliable – words are cheap.

6.2 A thorough investigation complements an understanding of peoples’ opinions with, as a minimum:

- (a) corroborating evidence to confirm people’s assertions and to objectively evaluate the nature and scale of the alleged effect;
- (b) an analysis of what people say they will do, what is social science is called “behavioural intention”, particularly in terms of possible flow-on effects from household decisions for the wider community; and
- (c) objective evidence of the way that people are acting in response to a project.

6.3 In the social impact assessment my colleagues and I undertook on Transpower’s North Island Grid Upgrade Project, for instance, there were assertions that the project was causing stress amongst those whose properties were crossed by or close to the proposed transmission line. Interviews were conducted with a number of medical practitioners to

¹⁰ HC Dunedin, 16/09/08, Fogarty J [66]

identify whether their caseloads included people whose symptoms might be linked to the Project. These interviews confirmed that in the professional opinion of the doctors and nurses interviewed there were stress cases that could be related to the Proposal. There was also evidence gained in the investigation about stress within families over how to respond to the proposal. One case was identified of a family where one of the partners had moved out of the family home because she could not bear to look at a view where an existing pylon would be replaced with a larger one because of fears she held about future health effects. Key informants were also interviewed to assess assertions that the project was having an effect on the real estate market.

- 6.4 Turning to behavioural intention, this is an important aspect of social impact assessment that aids interpretation of possible community effects. In the Transpower project, a number of people stated that they would leave the area if the project went ahead. One of the implications could be the withdrawal of students from local schools, such as the Hunua School. A fall in the roll would affect resourcing, including the number of teachers to which the school was entitled.
- 6.5 As part of our assessment we sought to gauge the extent to which this behavioural intention might actually come to pass. Given that there have been very few transmission lines built in New Zealand in the last two decades we investigated the experience with another form of infrastructure, cellular phone towers. The evidence presented to the Board of Inquiry identified eight schools where cellular towers had been built closely in the last 15 years. The analysis showed that three schools reported the withdrawal of students. The largest number was recorded at Shirley Primary School in Christchurch. In Shirley 13 students (from a roll of 250) left after the school lost legal proceedings against the Telecom proposal. At the same time the school gained 18 pupils, nine in new entrants and nine at other levels for a net gain of five pupils. The other two schools that experienced losses (“at least one” in the case of Francis de Sales in Wellington) both made up the numbers quickly. Tower construction did not have a discernable effect on the roll of the other schools - some being stable and others growing through the before and after period.
- 6.6 Mr Baines does not assess the potential ramifications of the project on the local community besides reporting, but not substantiating, in paragraph 3.9.1 “strong community tensions.” Mr Baines does note in paragraph 3.3.5 that the sense of

community in the area “close to the hills” has changed with the “substantial increase in the number of rural residents. Such change is unsurprising given that in 2006 only 33% of the population of Palmerston North were at the same usual residential address as five years before. Mr Baines does not interpret, however, any implications from the project on this changing community dynamic.

- 6.7 I find it ironic that Mr Baines does not interpret this direct evidence of the third focus for social scientists – that of observed behaviour. This is of particular interest because of that old maxim, – “actions speak louder than words”. Mr Baines’ evidence at paragraph 3.3.4, Table 15, shows that the inappropriately named Turitea “catchment area”¹¹ had an increase of 618 permanently occupied private dwellings between 1996 and 2006. This, as Table 15 indicates, is an increase of 154% into an area where there are wind farms to the north and as Mr Baines states at paragraph 3.1.4, into an area close to the Tararua Ranges where “the potential for such commercial windfarm development was identified more than two decades ago”. It is hard to imagine that none of these over six hundred households, or their advisers, considered the possibility that further windfarm development might occur in the hills when, as Mr Baines asserts in paragraph 3.1.4, “Palmerston North has been the focus of wind development for more than a decade.” The observed behaviour is that people have moved into an area close to the ranges notwithstanding the known wind generation potential of those hills and the proximity of existing wind farms.
- 6.8 Mr Baines also provides more direct evidence of people’s behavioural response to wind farms in his Ex-post survey in Ashhurst. Notwithstanding the limitations of the study, one particular piece of information stands out. In paragraph 2.6.11 he states “61% of the survey respondents have taken up residence in their current home during the past 9 years when wind farms have been operating in the ranges.” In this case, the behaviour is unequivocal. People have moved into their homes knowing the wind turbines were there. While individual decision-making no doubt was complex, none of these households were deterred by the presence of the windfarms.

¹¹ The use of the term “catchment area” is somewhat unusual and rather emotive. It is normally applied to phenomena with a physical relationship and formal boundary, like a river catchment or a school catchment, rather than some arbitrary measure like distance. Mr Baines indicates that his so-called “catchment areas” were constructed by identifying 5km contours from each wind farm foot-print”.

7. INAPPROPRIATE INTERPRETATION OF CITIZENS PANEL RESULTS

- 7.1 As I have noted, Mr Baines places great weight in his evidence on the so-called “Citizens Panel Survey” (*the Panel*). I have reviewed the information provided on the way the panel was conducted. In my opinion, the sampling process by which the panel was formed is so fundamentally flawed that there is no statistical basis for asserting that the results are representative of the views of Palmerston North residents.
- 7.2 The problem with the Panel, in terms of applying the results to the wider population of Palmerston North, is that it is not a random sample of Palmerston North residents. Three stages of filtering have been used in establishing the panel:
- (a) First, the potential participants were selected from the telephone directory. Hence all persons without a fixed line telephone, or choosing not to have their number published, were excluded. This selection can be expected to bias the Panel away from younger people, from those on low incomes, and those in sensitive occupations (anecdotal evidence suggests, for instance, that some teachers seek to avoid potential harassment by not being listed). The 2006 Census provides that 11% of households in Palmerston North City did not have a telephone.
 - (b) Second, the panel was conducted over the internet thereby excluding all residents without internet access. This selection can be expected to strongly bias the Panel away from those on low incomes and requires familiarity with the use of a web browser. The 2006 Census provides that 41% of the households in Palmerston North did not have Internet access.
 - (c) Third, the participants in the Panel were a self-selected subset of those approached to be on the Panel. No information has been provided on the number of people that were contacted to achieve the number of participants in the Panel meaning that this is a completely undefined source of potential bias. At the simplest level this could bias participation in the Panel toward those with ample leisure time, or those who take a particular interest in civic issues, but it could have more profound effects.

- 7.3 A further selection occurred in conducting this Panel as only a portion of those on the Panel chose to take part; only 226 of the 540 possible participants. This is a response rate of just 42%. Considering that these were people who had previously agreed to participate in the Panel, this is a surprisingly poor response rate. The majority the Panel was not motivated to fill out the questionnaire.
- 7.4 In my experience, people tend to respond to surveys on subjects of concern to them and ignore those of little interest. Hence there is an inherent but unquantifiable risk of bias in the results such that those responding from the panel may not even be representative of the 58% who chose not to take part.
- 7.5 Achieving a high response rate to surveys is often an issue. But the validity of making inferences from a survey sample to a wider population is critically dependent on the quality of the sample. If the selection of survey respondents is random, and of sufficient size, the respondents can be reasonably considered to be representative of the population they are selected from. When response rates are low the question arises, do the respondents have the same characteristics as the non-respondents?
- 7.6 In the case of the Citizens Panel, it is clear that the selection of persons to interview fails the test of being a random sample of Palmerston North's population. Baines notes that the Panel has "an over-representation of older people" and that he adjusted the results to correct for the maldistribution. I have reviewed the data presented in the survey report¹² to assess the extent of this bias. The results are presented in Table 1.

Table 1 Comparison of the age distribution of Palmerston North Population in the 2006 Census and the Citizens Panel

	15-19yrs	20-24yrs	25-29yrs	30-34yrs	35-39yrs	40-44yrs	45-49yrs	50-54yrs	55-59yrs	60-64yrs	65+yrs
Census 2006	11%	13%	9%	8%	8%	9%	8%	7%	6%	5%	15%
Survey	1%	1%	4%	3%	7%	10%	16%	12%	14%	12%	21%

- 7.7 The extent of the bias towards middle aged and older people is fully apparent. 75% of the participants in the Panel were 44 years or older, compared with 41% in the City's population. One third of the Panel participants (33%) were 60 years of age or older compared with 21% of the City's population. At the lower end of the age spectrum the

¹² Rock Research (April 2009), *PNCC Citizens Panel: Wind Farms in Palmerston North: Results from Citizens Panel Survey undertaken in April 2009*, p 24

under-representation is considerable. The Panel had one percent instead of 11% in the 15-19 years age group and one percent instead of 13% in the 20-24 years group - that is two percent instead of 24% in the age range 15-24 years. In my opinion, the under-representation is so large that scaling the results is entirely inappropriate because there can be no assurance that these two percent represent the views of almost one quarter of the survey population.¹³

7.8 Mr Baines does not mention in his evidence other ways in which the sample is not representative of the population of Palmerston North. The survey report by Rock Research,¹⁴ however, includes information on the suburbs in which 231 of the 237 Panel participants lived.¹⁵ I have compared this with the usually resident population of Palmerston North in the 2006 Census by Area Unit.¹⁶ The results are set out in Table 2.

¹³ Depending on rounding in calculating these percentages, these 2% could represent as few as four people. In March 2006 there were 14,724 people in these two age groups in Palmerston North.

¹⁴ Rock Research (April 2009), *op. cit.*, p 25

¹⁵ The discrepancy between the 237 in the Rock Research table on page 25 of the report and the 226 cited as responding to the wind farm survey indicates another level of non-response in the survey results. It is normal practice when reporting survey results to show the actual number of respondents to questions. This is usually indicated as N####. Mr Baines does not do this, so the precise level of non-response to individual questions is unknown.

¹⁶ The two participants reported for Summerhill were incorporated into Aokautere and the three in Riverdale were incorporated into Awapuni as these are the Area Units in which they lie.

Table 2 Comparison of distribution of Palmerston North Population in the 2006 Census and the Citizens Panel by Census Area Unit

	Area Unit		Panel		Variation
	Usually resident	Percent	Number	Percent	
Aokautere (incl Summerhill)	3,171	4.2%	21	9.1%	217%
Ashhurst	2,529	3.3%	1	0.4%	13%
Awapuni (incl Riverdale)	8,043	10.6%	24	10.4%	98%
Cloverlea	2,046	2.7%	4	1.7%	64%
Highbury	3,204	4.2%	11	4.8%	112%
Hokowhitu	10,551	14.0%	57	24.7%	177%
Kelvin Grove	4,845	6.4%	13	5.6%	88%
Linton Military Camp	1,788	2.4%	1	0.4%	18%
Massey University	771	1.0%	1	0.4%	42%
Milson	5,226	6.9%	19	8.2%	119%
Palmerston North Central	3,099	4.1%	6	2.6%	63%
Palmerston North Hospital	2,673	3.5%	2	0.9%	24%
Papaeoia	2,775	3.7%	3	1.3%	35%
Roslyn	5,382	7.1%	15	6.5%	91%
Takaro	5,229	6.9%	8	3.5%	50%
Terrace End	2,982	3.9%	20	8.7%	219%
Turitea	1,614	2.1%	6	2.6%	122%
West End	4,638	6.1%	10	4.3%	71%
Westbrook	4,206	5.6%	6	2.6%	47%
Whakarongo	774	1.0%	3	1.3%	127%
	75,546		231		

7.9 What Table 2 shows is a significant over-representation in some suburbs and significant under-representation in others. The residents of Hokowhitu, for instance, made up 14.0% of the City's population but 24.7% of the Panel. The residents of Aokautere made up 4.2% of the City population but 9.1% of the Panel. In my opinion, the distribution is so badly distorted that weighting would have been inappropriate. It is my view that on this basis alone the survey results cannot purport to represent the residents of Palmerston North.

7.10 Given the biases apparent with respect to age and location it seems likely that these will be by no means the only biases from which the Citizens Panel suffers. Yet Mr Baines reports that he adjusted his results for the age structure bias among the respondents, and claims in paragraph 2.5.7 that "this weighting procedure ensures that the results quoted are representative of the population being sampled". In my opinion, this assertion simply cannot be justified if the "population being sampled" is that of the City of Palmerston North.

7.11 Given these limitations, in my opinion, any claim that the results from the Citizens Panel represents the views of the wider population cannot be sustained. Nonetheless, in

paragraph 2.5.8 of his evidence, Mr Baines asserts that there is a maximum margin of error of 6.5% at the 95% confidence level. Mr Baines then illustrates this by way of a hypothetical result of 50% answering one way to indicate that if applied to the wider population would result in an answer between 43.5-56.5%.

7.12 Mr Baines makes an important comment in paragraph 2.5.8 when seeking to explain confidence limits when he states that “we could reasonably expect 50+/- 6.5% if we sampled the same population randomly 100 times”. In my view, the population has not been sampled randomly at all and the claimed precision is spurious.

7.13 The only basis for claiming any level of precision for the Panel results would be if the 226 responses were a truly random selection from the whole population (and then the precision would be lower than the level quoted). In this case, however, the sample is far from random due to the multiple levels of biased sampling. There is no means available to assess the severity of most of these biases, let alone adjust for them. Weighting the responses to reflect the age distribution of the population may sound scientific but in this case I believe it to be inappropriate. In my opinion, there is no justification for claiming that the sample is even qualitatively representative of the city-wide population, let alone that a numerical limit can be placed on the sampling error.

7.14 There are two well established procedures in social survey to address the problem of non-response and bias evident in the Citizens Panel:

- (a) Establish by some means that the non-respondents are not systematically different from the respondents; or
- (b) Qualify conclusions obtained from the survey by noting that they represent only those motivated to join the Panel and then reply to the questionnaire, and not the wider population.

The first of these techniques is discussed by Mr Baines' colleague in his text on social assessment who, after noting that survey response rates can typically be 10-40% of the sample state, suggests “The rule of thumb here is that the higher the non-response rate the more important it is to establish whether the non-response has a systematic bias.”¹⁷ Mr Baines presents no evidence of seeking to establish the views of the 58% non-

¹⁷ Taylor, Bryan, Goodrich, (2004). *op. cit.* p 126.

respondents (procedure a) and, in quite the reverse of procedure b, continually asserts that the Citizens Panel results are representative of the wider population.

7.15 In my opinion, the failure to obtain a proper random sample renders invalid all statements which assert that the results from the Citizens Panel are representative of the wider population of Palmerston North. This conclusion applies, but is not limited to, the following statements in Mr Baines' evidence:

- (a) Para 2.5.15 *"the wider community of Palmerston North is saying "Enough is enough"*
- (b) Para 2.5.16 *"In colloquial terms, these survey results are tantamount to about 23,700 residents of Palmerston North..."*
- (c) Para 3.1.1 *"a majority of Palmerston North residents rate the ranges...."*
- (d) Para 3.5.4 *"most residents have not so far experienced a reduction in their enjoyment...."*
- (e) Para 3.9.1 *"Clearly the proposal is also polarising attitudes in the wider regional community....."*
- (f) Para 5.3.3 *"results of the Citizens Panel survey on the attitudes of Palmerston North residents to the landscape values....."*
- (g) Para 6.3.8 *"With the majority of City residents likely not to be in favour...."*
- (h) Para 6.5.5 *"Palmerston North residents in general...."*
- (i) Para 6.5.7 *"I do not have data to estimate what proportion might be affected in this way. However, on the basis of the responses in the Citizens Panel Survey...."*
- (j) Para 7.3.6 *"the wider community of Palmerston North has an increasing level...."*
- (k) Para 9.1.2 *"the Citizens Panel Survey and Ex-Post survey have provided a robust and coherent body of independent empirical data about Palmerston North's experience of wind farm developments...."*
- (l) Para 9.1.7 *"Citizen Panel Survey provides clear evidence of Palmerston North residents' desire....."*

- (m) Para 9.1.9 *“somewhat more residents of Palmerston North are no longer in favour of further wind development....”*
- (n) Para 9.1.9 *“The residents of Palmerston North are not rejecting wind farms but they are beginning to reject the idea of more wind farms nearby.”*
- (o) 9.2.1 *“would be considered by the majority of the wider community....”*

7.16 None of these statements can be sustained because the Citizens Panel was not a random sample. In my opinion, all generalisations, tables (including portions of Table 24) and all comments in Mr Baines’ evidence which purport to represent the views as those of anyone other than the participants in the Panel should be disregarded.

7.17 Similarly, any other evidence which relies in whole or in part on interpretations made from the results of the Citizens Panel should be similarly discounted. Such instances, include paragraph 60 of the evidence of Mr Jeff Baker which reports with approbation on Mr Baines’ assessment; and paragraph 64 (b) of Mr Baker’s evidence where he refers to Mr Wyatt’s lack of access to the social impact analysis as one of a number of reasons to prefer the evidence of Mr Anstey.

8. The (ALLEGED) tipping point

8.1 In his concluding remarks on the social impact assessment Mr Baines chose not to comment on the scale of effects, the balance of factors or some other consideration related to the OECD social indicators framework within which he considered the social impacts. Instead he chose to comment on his view of the balance of public opinion. He asserts that “community support for wind farming in the Manawatu, near Palmerston North, while strong, is at a tipping point”.

8.2 The flaws in the structure of the Citizens Panel mean that I have refrained up until now from commenting on individual results. But issues of methods in relation to the “tipping point” conclusion in paragraph 9.2.1, and previous assertions in paragraphs 2.5.15 and 2.5.16 of Mr Baines’ evidence that “the wider community of Palmerston North is saying ‘enough is enough’” and that “the balance of public attitudes is clearly at a tipping point” require that some comment is made in this instance.

- 8.3 The basis for this interpretation is a classification of respondents into two groups of near equal numbers. Mr Baines defines these two groups as being “for” and “against” further development. In my opinion it is simply not appropriate to classify those who agreed that “there is about the right amount of wind farm development” as being against further development. Yet Mr Baines does just this to construct a result of 41% in favour and 49% not in favour. The numbers could be similarly re-presented to say 74% “not opposed” and 16% “opposed”.
- 8.4 The problem is that the meaning of “about the right amount” is open to multiple interpretations on whether more development (and how much) would trigger opposition. The upshot is that neither Mr Baines’ interpretation nor the counter one I have presented above for illustrative purposes, is appropriate. This ambiguity could have been avoided if Mr Baines had used a simple Likert scale from strong opposition to strong support where the central class was “neither support nor oppose”. Then the result would not have been subject to uncertainty and re-interpretation. It could similarly have been avoided if Mr Baines had asked a specific question about the proposal rather than a generalisation of wind farm development of unspecified characteristics.

9. STANDARDS OF OBJECTIVITY

- 9.1 There are a number of instances where, in my opinion, this assessment falls short of appropriate standards of professional objectivity, particularly through the use of pejorative or emotive language. Examples include, but are not limited to:
- (a) The reference in paragraph 9.1.5 “In one respect it is not unique – it is another energy sector proposal of the Think Big¹⁸ variety, that this country has experienced on numerous occasions.” There is no aspect of this statement that could be considered to be related to an objective, independent assessment of the social impact of the proposed windfarm and the comparison strains credibility;
 - (b) The reference in paragraph 8.2 to the survey undertaken by Research New Zealand Limited as the “MRP Survey” is unworthy. It could be interpreted to imply that the

¹⁸ “Think Big”, for those who may not have met the expression, generally refers to a series of projects which included the Mobil synthetic gasoline plant at Motunui, the Kapuni Ammonia-Urea plant, the Waitara methanol plant, the expansion of the New Zealand Steel plant at Glenbrook, the electrification of the North Island Main Trunk railway, and a third potline at the Comalco aluminium smelter at Bluff, which were all approved/constructed in the early 1980s. The term is closely associated with the Hon. William F Birch who became the Minister of Energy in 1978.

research was designed to serve the interests of MRP as survey sponsor. I have reviewed the evidence presented by Mr Kalafatelis and note that even the interviewers did not know who was funding the research. I have furthermore reviewed the questionnaire and concluded that it is free of any bias that could be interpreted as promoting a favourable assessment of the project.

10. CONCLUSIONS ON THE EVIDENCE OF MR BAINES

10.1 It is inevitable that significant projects will have social impacts. These begin with the announcement of a project which shatters people's illusions that they are in control of their own lives and that change will always be of a nature and in a direction that suits them. The hiatus created by consultation and planning process frequently interrupts people's lives – for example, it is common that somebody is about to buy or sell a property, be they an individual or property developer, and such transactions typically go on hold or even fall through. Further effects can occur in the construction, operation and decommissioning phases of development.

10.2 There are well established principles and guidelines for social impact assessment. I have benchmarked the social impact assessment in Mr Baines' evidence against a framework of international standing. In my opinion Mr Baines' social impact assessment, as presented in his evidence, does not meet the principles and guidelines set out in this framework. In Paragraph 2.1.1 of his evidence, Mr Baines quotes Professor Burdge's definition of social impact assessment which is undertaken "in order that the information derived from the SIA can actually be used in the planning/decision process". In my considered opinion, the evidence presented by Mr Baines is not a reliable basis for decision-making about the possible social impacts of the proposal.

11. INAPPROPRIATE GENERALISATION OF FOCUS GROUP DISCOURSE

11.1 I have previously referred to Mr Anstey's evidence at paragraph 4.2. I would like to return to it to discuss two further issues.

11.2 First, in paragraph 8 of his evidence Mr Anstey states that "I have attended four 'focus group' meetings with Mr Baines where we engaged with community groups to explore their perceptions, aspirations and concern." Mr Anstey refers to the focus groups again in paragraph 34 of his evidence, where he states: "I assisted Mr Baines with focus group meetings held in the foothills communities of Pahiatua Track, Turitea Valley, Ngahere

Park, and Kahuterawa Valley, attending them all.” In Mr Baines’ evidence he indicates at paragraph 2.2.3 that he also held a focus group with seven landowners participating in the proposal. Mr Anstey does not report attending this meeting to gain these landowners views.

- 11.3 Setting aside the influence that the presence of a landscape architect might have on the discussions in these focus groups, it is important to recognise the strengths and limitations of focus groups as a research tool. They are excellent for exploring topics qualitatively and understanding the language people use in discussing various matters. The results, however, cannot be generalised to represent any more people than those who actually took part, who typically selected for their views or some particular attribute. They are essentially anecdotes, useful in their context, but limited in application. Providing robust evidence on the views of wider groups is the role of scientifically conducted surveys, typically using probability sampling.
- 11.4 The respective roles in social research of focus groups and surveys are critical in Mr Anstey’s endeavour “to gain at least some appreciation of how individuals and their communities relate to the foothills landscape and what they think is important.” Mr Anstey may have gained some insights into the views of the 34 individuals, from an undefined number of households, attending the focus groups. But it is entirely inappropriate to assert this as the basis of understanding the views of “their communities” because there is no way of ensuring that they were representative. Similarly, a social scientist would qualify the statement of Mr Anstey in paragraph 37 of his evidence when he states “The responses of the residents” and restate it as “The responses of the residents attending these focus groups”, because that is all that they are. There are other instances in Mr Anstey’s evidence where the same qualification should be applied, such as paragraph 87.
- 11.5 To give a sense of scale I have analysed the meshblock data for the area parallel and including the ranges from Ashhurst Bridge to the Kahuterawa Valley and Greens Road. The data is presented in Table 3 which shows a total of 4,398. Even within the more restricted area from which the focus groups may have been drawn numbers of people invalidates any notion of representativeness of the 34 participants.

Table 3 Population of localities between the Manawatu River and the Ranges

Locality	Residents
Ashhurst Bridge to Pahiatua Track	390
Aokautere	612
Ngahere Park Rd	384
Turitea - upper	39
Turitea - lower	744
Summerhill	1044
Massey periphery	759
Linton (not military camp)	243
Kahutarewa & Greens Rd	183
Total	4398

- 11.6 It is unclear to me whether Mr Anstey is generalising again in paragraph 115 of his evidence when he states “At the four community meetings I attended in the foothills there appeared to be very little support for turbines, presumably because residents regard their environment as one of “the most sensitive locations””. This statement raises two issues from a social research perspective. First, the use of the term “community” could be interpreted as indicating some degree of wider representation, when I have been informed that participation was by invitation. The term is therefore an unnecessary, and potentially misleading, embellishment, second, it is not appropriate from a social science perspective to impute motive or reason on behalf of the focus group participants by making a statement starting with “presumably”. If this matter was not unequivocally established through the focus groups, then Mr Anstey should not infer it.
- 11.7 In summary, it is my opinion that Mr Anstey, a landscape architect, draws inappropriate inferences from the focus groups he attended. These inferences, which are not attributed to any other person, break the basic rules of social science research of not stretching the interpretation of research results. I note in paragraph 7 that Mr Anstey states “Except where I state that I am relying upon the specified evidence of another person, my evidence in this statement is within my area of expertise.” In my opinion, Mr Anstey may have strayed outside his expertise in making these statements.

11.8 Second, Mr Anstey states in his evidence at paragraph 33 that “Mr Baines (sic) evidence fills the ‘gap’ that landscape architects struggle with. The evidence he provides is crucial to informing the process of resolving the tensions between interests, between those who find the proposed wind farm acceptable and those who have reservations.” Mr Anstey does not return to these matters in his evidence to show specifically how this contribution is made. To the extent that this may depend on Mr Baines’ opinions based on the Citizens Panel, such as the alleged tipping point, or any responses to specific questions, then in my opinion Mr Anstey must “struggle” on, as Mr Baines’ evidence does not resolve these matters.

12. INAPPROPRIATE INFERENCES FROM SMALL SAMPLE SURVEYS

12.1 Dr Thorne provides information on “The Manawatu Pilot Study” in Topic H of his evidence. I have reviewed this material and wish to comment as follows.

12.2 In paragraph H8, Dr Thorne states “The Manawatu – Brisbane Pilot Study was established as a focus survey with study offered to respondents to an earlier survey investigating wind farm issues.” I am not familiar with the term “focus survey” as a distinct method but the if the term “study” offered to respondents to an earlier survey investigating wind farm issues means that the participants had previously been surveyed on these matters, then there is a risk that these respondents will have been preconditioned in their responses by the earlier survey.

12.3 Continuing in paragraph H8 Dr Thorne states “The Manawatu respondents are determined as being an ‘environmentally aware’ population. This group was chosen on the basis that this segment of the research required responses from persons who had an interest in their environment and who would be willing to answer a lengthy questionnaire”. Quite what being “environmentally aware” might mean as a sampling criterion is unclear. It would be unfortunate if it were a proxy for “anti-development”. .Furthermore, “willingness to complete a long questionnaire” is an unusual qualification to take part in any survey (persistence can sometimes be an indicator of an axe to grind). The key issue I have with this statement, however, is that Dr Thorne states at the outset that participants were specifically selected. This is a type of non-probability sampling, sometimes referred to as “purposive” sampling. While convenient and sometimes useful to explore the views of a particular group, any results from such a sample cannot be generalised to a wider population.

- 12.4 Dr Thorne concludes paragraph H8 by stating “The occupational status of the Manawatu group was not identified.” In practice, no profile information on the participants in his study is provided in Dr Thorne’s evidence. Even if it were, however, the small numbers (57 participants in the Manawatu according to paragraph H13) and the non-random nature of the sample would mean it would have no utility. In my opinion, the numbers are so small and the sampling procedure so abstruse that nothing could be made of any profile data.
- 12.5 In paragraph H9, Dr Thorne states “It was anticipated that the Manawatu group would exhibit a wide range of noise sensitivities as the group was drawn from different ‘zones’ within the Manawatu: wind-farm affected urban and/or rural locales; and ‘greenfields’ unaffected by wind farms. Setting aside the pejorative language of “affected by” and “greenfield”, and the potential bias in the working hypothesis, in my opinion the notion that any reliable conclusions in relation to a wider population than the respondents themselves could be drawn from a non-random sample of 57 divided between four zones is simply not sustainable.
- 12.6 Dr Thorne indicates in paragraph H10 that “A control group was selected in Brisbane. The Brisbane group was self selected from invitations to musicians, teachers, lawyers and acoustical professionals. The Brisbane group was defined on the basis of previous investigations that indicated these occupations showed considerable attention to detail and focussed on issues more than ‘ordinary’ individuals.” In my opinion, such a peculiarly selected group has no value as a control for anything. If Dr Thorne was seeking a control group he would have been better, in my view to sample his Zone 4. It is unclear why the Brisbane group is needed at all and it is open to speculation as to whether this was just convenient to Dr Thorne as a doctoral student. The Zone 4 people live well away from existing turbines and are much more likely to be otherwise similar to those who live closer. Even so, the numbers required in both the groups under investigation and the control group would have needed to be very significantly larger, and the sampling process undertaken on an equal probability basis, for the results to be applied to a wider population.
- 12.7 In paragraph H13 Dr Thorne states “The analysis of the results from 69 responses (57 in the Manawatu, 12 in Brisbane) indicates that Zone 3 responses are statistically different from the other zones and the Brisbane control. All respondents to the survey are considered to be noise sensitive. This is an unexpected outcome from the study.” In my

opinion, such a statement is unfounded. The numbers of persons surveyed, especially considering the Manawatu sample of 57 is divided into four zones, are so small that nothing derived from them will have any statistical significance. The claim “that Zone 3 responses are statistically different from the other zones and the Brisbane control” in this instance is simply incorrect, and still would be even if the groups were randomly selected.

12.8 In paragraphs H15-H21 Dr Thorne reports the experiences of his esoteric samples in a way more commonly found in random sample surveys. In my opinion, none of these results have any value whatsoever in understanding the experiences of people living in either the Manawatu or Brisbane. It is worth considering the numbers involved in the results for Brisbane, a city of 1,857,594 people, of whom Dr Thorne sampled an eclectic selection who then self-selected to participate in his survey. These are set out in Table 4 based on the information supplied in paragraph H13 that there were 12 respondents in Brisbane.

Table 4: Brisbane component of Dr Thorne’s Table H.1

Locale	Reading		Watching TV		Listening, Talking		Relaxing		Sleeping	
Percent	33%	67%	13%	87%	13%	87%	48%	52%	52%	48%
Number	4	8	2	10	2	10	6	6	6	6

12.9 In addition to the statistical issues in the results presented, in my opinion, there are also issues of relevance. None of the results are other than descriptive of the experiences of a few individuals as there were only 57 responses in the “Manawatu” survey. It is also unclear to me what significance should be attributed to the result that 65% of the small group in the Manawatu found noise in your environment (including your home environment) a problem.” The sources of such problematic noises (such as neighbours, boy racers, freight trains or an approach to Runway 25 at Palmerston North Airport) are completely unspecified.

12.10 In paragraph H19, Dr Thorne has apparently a smaller number of respondents to individual questions as he states “Questions concerning the character of the sounds within

the local environment were answered mainly by the Zone 1 respondents (27 of the Manawatu **total of 32** (emphasis added)). This appears to be a significant non-response rate compared with the 57 referred to in paragraph H13, but it is hard to interpret from the evidence presented. It is perhaps worth noting in passing, that in the large number of survey reports I have seen over the years I have never encountered the scaling of raw numbers such as that undertaken by Dr Thorne in paragraph H19. In my opinion, Dr Thorne's approach to dealing with statistical data could be (politely) considered unconventional.

12.11 Under the heading of "A study of noise sensitivity vs. specific sounds" in paragraph H22 *et seq.*, Dr Thorne goes on to deal with an even smaller self-selected subset of the Manawatu respondents (13), and 14, as opposed to the original 12, self-selected participants in Brisbane. In my opinion, the notion in paragraph H27 that a meaningful "statistically significant difference exists between the mean ranks of the Manawatu (M) and Brisbane (B) groups" has no meaning whatsoever for the consideration of this proposal.

12.12 Again it is worth considering the numbers involved in Dr Thorne's study as set out in his Table H.2. Again, in my opinion, the numbers are so small as to have no value as indicators of anything.

Table 5: Responses to “Does noise affect you while...” in Dr Thorne’s Table H.2

Locale	Reading		Watching TV		Listening Talking		Relaxing		Sleeping	
Manawatu Percent	8%	92%	0%	100%	14%	85%	31%	69%	31%	69%
Manawatu Number	1	12	0	13	2	10	4	9	4	9
Brisbane Percent	29%	71%	0%	100%	15%	85%	36%	64%	7%	93%
Brisbane Number	4	10	0	14	2	12	5	9	1	13

12.13 In paragraphs H30 to H38 Dr Thorne reports a small experiment with sound files and concludes that “any attitudinal study that asks questions concerning environmental modification (whether wind farm, waste dump or any other similar industrial activity) will be significantly biased if the respondents have no first-hand experience of the activity. The decision process developed from this work recognises this ‘enviro-cultural’ influence.” In my opinion, this conclusion is somewhat overstated given that it is based on what Dr Thorne refers to a “pilot study”, and has what can only be considered to be an eclectic selection of 27 people participating.

12.14 A conclusion of this nature cannot be derived from a sample survey like this, even if the samples were much bigger and better. At most, this could only establish that prior experience makes some difference to the distribution of responses. It still would not show which, if either, group is biased. The underlying technical issue is that the hypothesis being tested has not been specified.

12.15 The “calculated unbiased annoyance scores for annoyance values” which Dr Thorne sets out in paragraph H37 are, in my opinion, similarly flawed as the number in the sample and

the strange selection process render them utterly without merit in terms of extrapolating them to the wider community of the Manawatu.

12.16 The final paragraph in this section, H38, states “Based on my research I hold the opinion that the proposed Turitea wind farm will not be acceptable within the Manawatu community as the evidence is that wind farms are held very negatively by the community most affected.” In my opinion, none of the information presented by Dr Thorne in any way sustains such a conclusion. Dr Thorne has undertaken a small pilot study with a peculiar sample which simply cannot be generalised beyond the very limited number of people involved and none of the questions he presents in his evidence provides any specific information related to the Turitea proposal.

12.17 Dr Thorne then goes on in paragraph 38 to state that It can be inferred that a “tipping point” may have been reached, with another wind farm just one wind farm too many.” In my opinion, there is nothing in the evidence that Dr Thorne presents that even remotely relates to the notion of a “tipping point” which, as I noted earlier, cannot be sustained by Mr Baines’ evidence either. In my opinion, this conclusion is so unrelated to any of the foregoing evidence such that it could be taken to indicate a measure of predetermination in Dr Thorne’s views.

13. INAPPROPRIATE IMPUTATION OF MOTIVE IN THE EVIDENCE OF MR BAKER

13.1 Mr Baker states in paragraph 67 of his evidence that “I do not in my evaluation place any weight on the landscaping mitigation proposed by the applicant.” He also states “where the effects are experienced in highly populated areas, such as in this case this mitigation response is in my opinion unrealistic and unacceptable. My reason for this is that it imposes the burden of managing visual effects on private property owners who have likely bought their properties in the first place for the sense of space, openness and vistas of the hillside”. Mr Baker presents no information to support his interpretation that property owners “likely bought their properties in the first place for the sense of space....” There are a significant number of recent location decisions involved, as in the Census Area Unit of Aokautere (N=3,171), 50% of the residents at the 2006 Census were living elsewhere in New Zealand and a further 15% were overseas. As with Mr Anstey, it is simply not appropriate for Mr Baker to impute motive.

14. CONCLUSIONS

- 14.1 Social impact assessment has an important role to play in decision-making on projects. In my opinion the evidence of Mr Baines does not fulfil the requirements of an SIA. Furthermore, Mr Baines' reliance on the unrepresentative Citizens Panel invalidates all the generalisations he makes about the views of the population of Palmerston North and all those made by other witnesses that rely on his evidence. It is unfortunate that both Mr Anstey and Dr Thorne fall into the same trap of generalising from data that is relevant only to a small group of people, and that Mr Anstey and Mr Baker both make inappropriate statements inputting motive. In my opinion, the evidence presented by these experts on social impacts and social surveys is not a reliable basis for assessing the social effects of this proposal.
- 14.2 Finally, I note that my rebuttal evidence has been subjected to peer review by Mr Murray Ellis whose formal qualifications include a Bachelor of Arts in statistics and economics, a Bachelor of Science (with Honours) in mathematics, and an MPhil in engineering economics. He has significant project experience in applied statistics and is regularly involved in the design, implementation and analysis of random sample surveys.

Dr Peter Phillips

5 June 2009