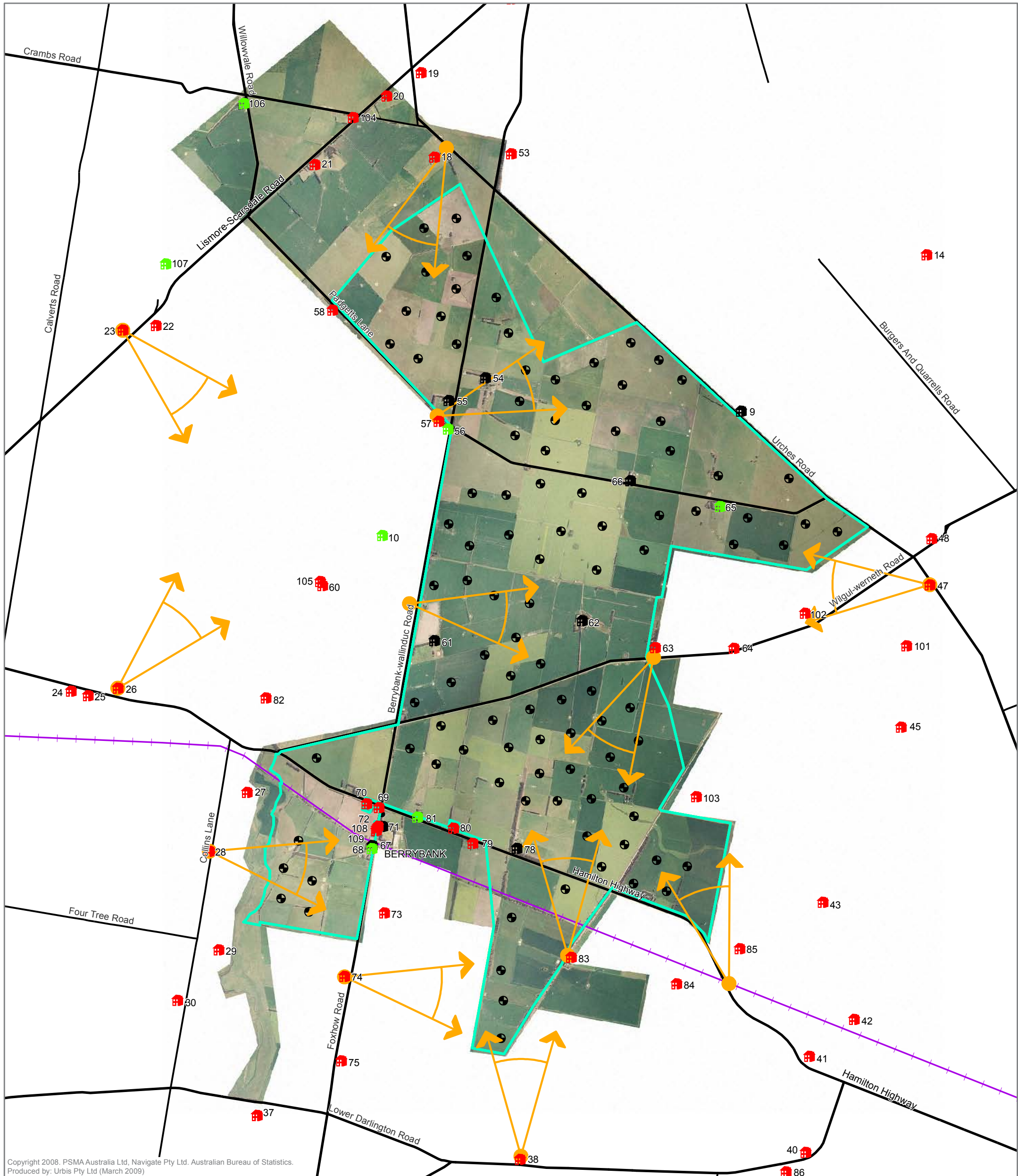












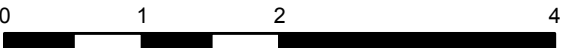
Appendix E Photo simulations



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 Produced by: Urbis Pty Ltd (March 2009)

Legend

-  House No Agreement
-  House Under Agreement
-  House Uninhabitable
-  Turbine Locations
-  Towns
-  View Direction Arrow
-  Proposed Area of Development
-  Roads
-  Railway

N

 Scale 1:55,000 when printed at A3

 0 1 2 4
 Kilometres













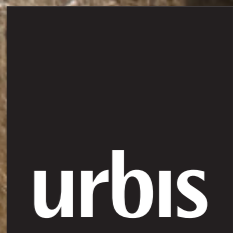














Appendix F Notification Report – Community Perception Studies

3 COMMUNITY PERCEPTION STUDIES

Viewer perception is an important issue to consider for wind farm proposals, especially in areas near tourist destinations or heritage areas. The visual impact of a wind farm ultimately depends on the opinion of the viewer. While not specifically mentioned in the Referral Form’ community perception is discussed in the *Wind Farms and Landscape Values, National Assessment Framework*.

The degree of visual impact also partly depends on how the viewer perceives renewable energy, the wind turbines and the landscape. The presence of wind turbines will change the existing landscape character of this locality, however to postulate that these will create irreplaceable damage to the landscape values and negatively impact the amenity of the area is not substantiated on the basis of perception studies.

Perception studies show many people find wind turbines attractive and have shown that the majority of those surveyed enjoy the view to wind turbines. Therefore for many people the visual impact may be positive, not negative as suggested. And even if the wind turbines are visible at both sunset and sunrise, there is no evidence to suggest that this will be detrimental.

Perception studies continually show that in many Australian and overseas examples that between 60-70% of people find wind turbines an attractive element in the landscape, with up to 15% of respondents remained undecided and 20% disliked wind farms. Viewer perception is an important issue to consider, especially in areas near tourist destinations or other attractions.

3.1 LAL LAL AREA – COMMUNITY PERCEPTION TOWARDS WIND FARMS

A study was undertaken by WestWind Pty Ltd in an area surrounding a proposed wind farm at Lal Lal. Lal Lal is located to the south east of Ballarat, between the Midland Highway and the Western Freeway.

This study (*Lal Lal Wind Farm, Report on Community Perceptions towards Wind Farms in Victoria for WestWind Pty Ltd*, prepared by ERM & Reark Pty Ltd, September 2007) has also shown that there is a high degree of acceptance of wind energy by residents within the area surrounding the Lal Lal Wind Farm.

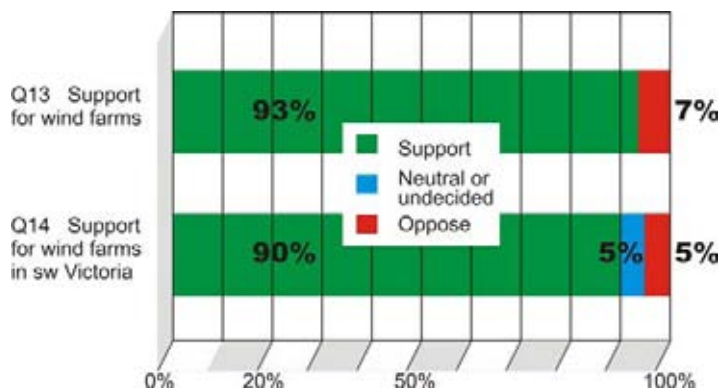


Figure 3.1 Lal Lal area: Support for Wind Farms

Results show an approval rating of more than 9 in 10 (93%) despite the visibility of wind turbines, most people felt that “we need to use wind power as a source of energy even if it means changing the appearance of some landscapes”.

In fact most respondents (82% favour, 8% opposed) were accepting of a wind farm that was set back 5 or 10 km from the coast on flat or undulating grazing land (82% favour; 8% opposed).

These acceptance figures are greater than those found in past Victorian and overseas studies; however they are very similar to the figures for the Ararat Wind Farm.

Similarly, the level of acceptance of a wind farms was also high when the proposed wind farm was near to a respondents place of residence. This is summarised in *Figure 3.2*.

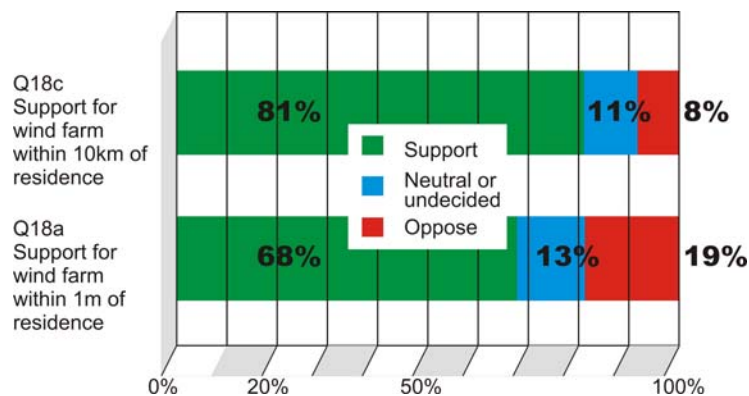


Figure 3.2 *Lal Lal area: Support for Wind Farms near Residence*

This research has demonstrated an increase in acceptability of wind farms to previous studies although it may be hypothesised that the increasing political and community awareness of global warming and its impact on the environment has also increased the level of acceptance within this community.

3.2

OTHER AUSTRALIAN COMMUNITY PERCEPTION STUDIES

The following section builds upon ERM’s discussion of perception issues in past visual assessments of other wind farms and is pertinent to the visual and landscape assessment of the Darlington Wind Farm.

Coastal Headlands

In 2000, a study was undertaken for the Department of Natural Resources and Environment (Kantos & Quint, 2000) on the many issues concerning the Victorian Coastline including the construction of wind farms on coastal headlands. *Figure 3.3* summarises the results of this particular component. The study involved a series of nine workshops as well as telephone interviews (n = 700).

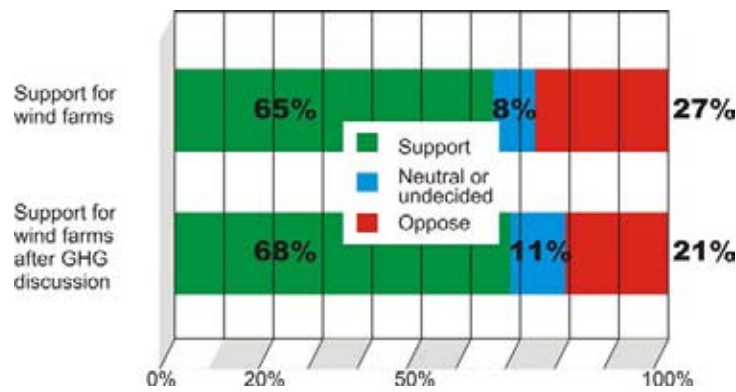


Figure 3.3 *Wind farms on Coastal Headlands – Participant Responses*

Study participants initial support or opposition to the construction of wind farms on coastal headlands was measured. After being exposed to arguments on renewable energy, greenhouse gas emissions and climate change issues their responses were measured again. This study found that there was only a slight increase in participants acceptance of wind farms on coastal headlands, from a 65% acceptance level before arguments on greenhouse gas emissions to 68% acceptance after these arguments were presented. However opposition reduced from 27% to 21%.

Nirranda Wind Farm

Similar figures have been found in a 2002 visitor survey undertaken for Stanwell Corporation Limited (Offer Sharp & Associates 2002) on the possible visual impacts of the proposed wind farm on the Bay of Islands viewing platform that is located adjacent to the Nirranda site, in the Shire of Moyne approximately 250km west of Melbourne.

Approximately 80% of people were generally in support of wind farms, however when presented with a proposal for a wind farm visible from a scenic coastal lookout (the Bay of Islands) the support for a wind farm at this location reduced to approximately 71%, whilst opposition to the presence of a wind farm at this location increased from 3% to 12%.

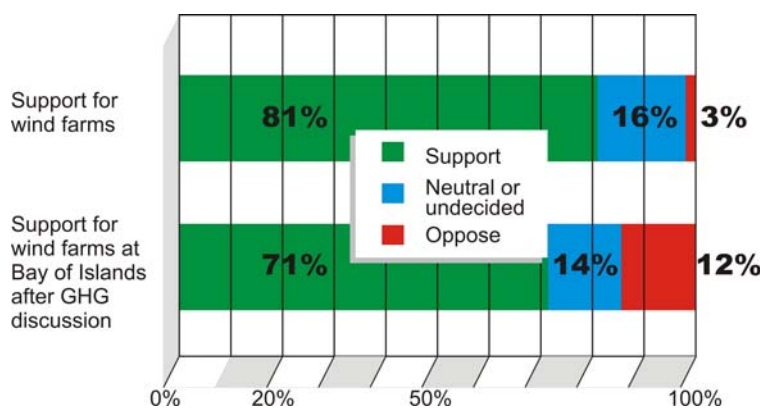


Figure 3.4 *Nirranda Wind Farm Respondents Attitudes to Wind Farms*

This figure of 71% support for wind farms is similar to the Kantos & Quint result of 68% reported previously for wind farms on exposed coastal headlands (refer Figure 3.3 Wind farms on Coastal Headlands – Participant Responses

Yaloak Wind Farm

Research undertaken by Offer Sharp & Associates 2004 presented at the Yaloak Wind Farm panel hearing in 2005 showed a similar level of community acceptance to wind farms on this inland site near Ballan, Victoria.

The study assessed community reaction to images of a wind farm in the Yaloak landscape as well as at another site at Crowlands in Western Victoria. Neither location was identified, however the Yaloak proposal had been publicised for some time before the survey and the landscape may have been recognised by some, and particularly local, respondents. Community reaction to the siting of wind turbines in these landscapes was based on interviews with 200 respondents from each of Melbourne, Bacchus Marsh and Ballarat.

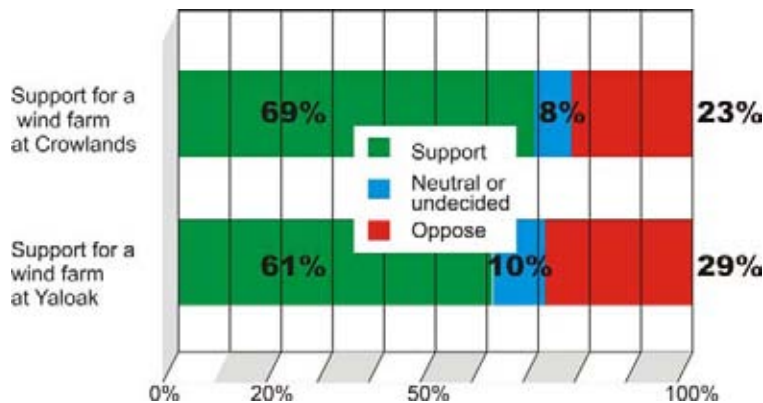


Figure 3.5 *Level of Support for Potential Wind Farms at Yaloak and Crowland*

This data has been extracted from *Table 15 Crowlands* and *Table 19 Yaloak* in the Offer Sharp & Associates 2004 report and illustrates the acceptance levels for wind farms of each of these sites. The study also found slight differences in levels of support at Crowlands (67%, 66% and 73%) for respondents from Melbourne, Bacchus Marsh and Ballarat respectively, and slightly larger differences (61%, 55% and 68%) in support for the proposed wind farm at Yaloak.

However, the overall findings are similar to the earlier studies from the earlier Kantos & Quinn 2000 and Offer, Sharp 2002. All these Australian studies continually show a level of acceptance greater than 60%. Overseas studies show similar results.

3.3

OVERSEAS STUDIES

Community perception studies have also been undertaken overseas to gauge levels of community support and opposition to wind farms.

United Kingdom

A paper presented at the 20th British Wind Energy Association Conference (Anne Marie Simon Planning, 1996) gives an overview of thirteen studies undertaken between 1990 and 1996 by wind power proponents, opposition groups, the BBC,

statutory authorities and a Liverpool University dissertation found that in all these studies:

- The overwhelming majority of respondents support the principal of development of wind power in the UK, and they also support their local wind farm;
- Those with direct experience of an operating wind farm are more supportive and positive than those without experience;
- Once wind farms are in operation, concerns about noise and visual impact decrease;
- The majority of people find the wind farms acceptable in the landscape and more find the wind turbines graceful than ugly; and
- A strong majority support and a small minority oppose wind farms, with more expressing no opinion than opposition (Freris 1998).

A summary of the results for eleven of these studies, which is taken from this paper (*Anne Marie Simon Planning, 1996*), are reproduced below.

Table 3.1 *Summary of Eleven Studies Conducted in the United Kingdom into Attitudes to Wind Power from 1990-96*

Location	Sponsor/Organiser	Date	In favour	Against	Don't know
Delabole , England	DTI	1992/3	84%	4%	11%
Cemmaes , Wales	DTI	1992/3	86%	1%	13%
Llandinam & Llangwryfon, Wales	CCW	1992/3	83% 78%	3% 8%	14% 14%
Llandinam	BBC	1994	76%	17%	8%
Rhyd-y-Groes			61%	32%	7%
Taff Ely , Wales			74%	9%	17%
Kirkby Moor , England	National Wind Power	1994	82%	9%	9%
Bryn Titli , Wales	NWP (pre construction)	1996	68% 94%	14% 3%	19% 3%
Trysglwyn, Wales	NWP (open day)	1996	96%	4%	-
Coal Clough , England	Liverpool University Dissertation	1996	96%	4%	-

Notes

NWP = National Wind Power (a wind farm developer).
CCW = Countryside Council for Wales (a statutory body)
BBC = BBC (Wales) and the University of Wales

In all these studies between 61% and 96% of survey respondents were supportive of wind power.

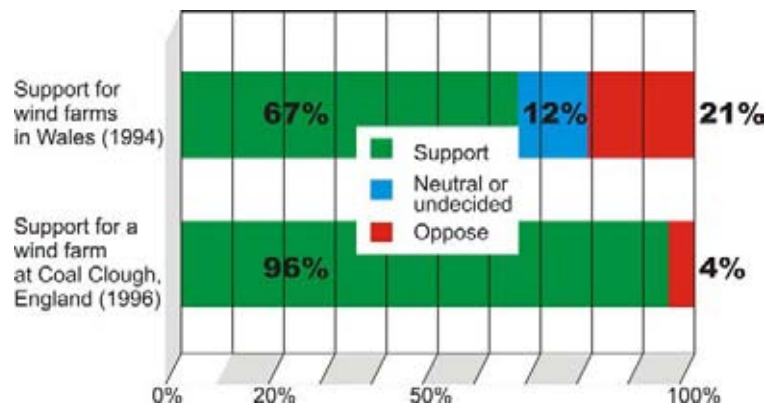


Figure 3.6 *Comparison of Selected Wind Farm Community Perception Studies in the United Kingdom*

The lowest level of acceptance was one area within the BBC 1994 study which looked at attitudes towards wind farms in Wales (Interviews with 268 respondents, conducted in two stages; stage one being just after the wind farm was built and stage two one year later). The BBC study also looked at three locations, Llandinam, Rhyd-y-Groes and Taff Ely) with the lowest support for the wind farm at Rhyd-y-Groes with 61% support and 32% against, whilst overall the BBC study found that 67% of respondents were in favour of the development of wind power in Wales, and 21% were opposed.

The highest approval was that reported in the Coal Clough (Lancashire, England) study (Questionnaire completed by face to face interviews, sample of 50) with 96% approval and 4% opposition.

These figures are similar to those reported in the Australian studies.

Scotland & Ireland

A recent study (November 2005) on community perception of wind farms in Scotland and Ireland also has similar, but higher approval ratings. (found at <http://www.your-energy.co.uk/pdf/windfarmpaper121205.pdf>).

Table 3.2 *Comparison of levels of acceptance between wind farms in Scotland and Ireland*

		Strongly support		Support		Neutral		Oppose		Strongly oppose	
		DL (%)	BH (%)	DL (%)	BH (%)	DL (%)	BH (%)	DL (%)	BH (%)	DL (%)	BH (%)
A.	Wind power is Scotland	55	55	35	22	6	16	2	0	2	7
B.	Local wind farm	63	47	25	16	3	20	3	4	5	13

DL = Dun Law (operational site). BH = Black Hill (proposed site).

(from *Public Perceptions of Wind Power in Scotland and Ireland*, Charles R. Warren, Carolyn Lumsden, Simone O'Dowd & Richard V. Birnie, *Journal of Environmental Planning and Management*, Vol. 48, No. 6, 853 – 875, November 2005, Table 4, p862).

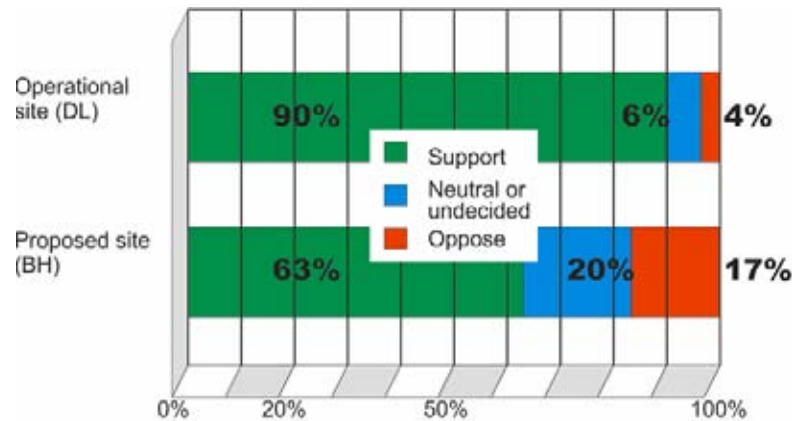


Figure 3.7 *Acceptance levels - Scotland and Ireland*

Once again this reconfirms that the high level of acceptance, and this report also goes further and shows the increased level of acceptance within a community following construction. This is discussed in the next section of this report.

North Carolina, USA

Reported attitudes in a study from North Carolina (NC) in the USA are also similar. A paper prepared on public attitudes (Grady 2004) towards wind energy in eastern NC, which included coastal areas, and western NC, which includes mountainous areas, presented to the 'Efficient NC Conference' also found similar degrees of approval. Note: There was no information in this paper on the sample size.

Table 3.3 *Public Attitude to Placement of Wind Farms in Eastern NC*

Placement	% Prohibited	% Not prohibited	% Don't know
Mainland	11.9	72.8	15.3
Mainland clustered	14.1	69.6	15.1
Sounds	16.6	63.6	19.8
Sounds clustered	28.0	50.2	20.5
Offshore	13.9	68.6	17.6
Offshore clustered	14.4	68.6	15.8

Table 3.3 shows the level of acceptance for clusters of wind turbines reduced to 50% for the Sounds which are the coastal areas along the eastern seaboard of North Carolina. The level of acceptance for clustered groups of wind turbines in the mainland area rose to 69.6%.

This paper (Grady, 2004) also presented levels of acceptance within the more mountainous areas of Western NC.

Table 3.4 *Public Attitudes to Wind Farm Placement – Western NC*

Placement	% Prohibited	% Not prohibited	% Don't know
Ridgetops	20	64	17
Ridgetops clustered	28	57	15
Ridgetops with other towers	16	75	10

The western area of Northern Carolina is mountainous; many parts are uncleared and show few signs of human intervention. The level of acceptance for clustered groups of wind turbines on ridge tops in this area is less (57%) than the level of acceptance reported for the mainland areas of Eastern NC (69%), however if there are other towers on the ridge tops (ie there are obvious signs of human intervention) then the level of acceptance rises to 75%.

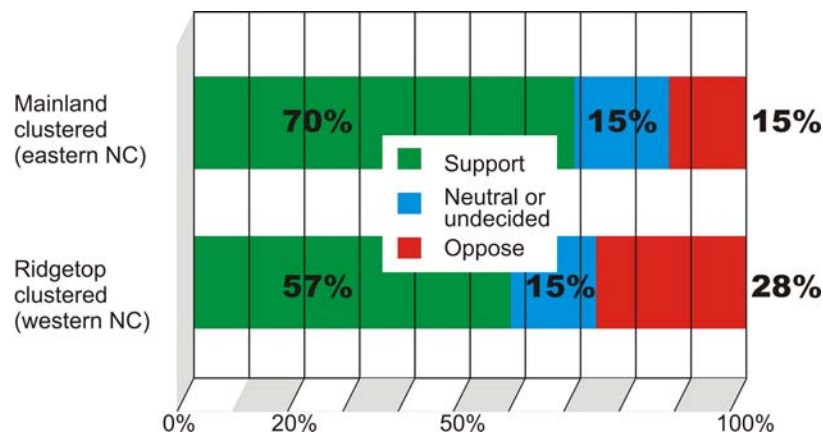


Figure 3.8 *Acceptance Levels - Northern Carolina, USA*

In summary this paper reported that:

- *“within groups of middle aged, middle class, pragmatic, year round residents of the mountain and coastal regions of NC, there is support for developing renewable energy as a future source of fuel for electricity generation.*
- *More than 3 out of 4 would prefer to see more future electricity derived from solar and wind*
- *Less support for turbines in sounds or national forests*
- *2 out of 3 support turbines visible from home*
- *Over 80% support turbines for residential use.”(Grady, 2004)*

The degree to which the respondents believe that wind farms on mainland sites should not be prohibited is very similar to the previously cited United Kingdom and Australian studies; with between 69-73% believing that wind farms should not be prohibited.

3.4

PERCEPTION ALTERATION AFTER CONSTRUCTION

There has been no research done on the visual impact of wind farms in Australia after construction, however overseas studies suggest greater acceptance levels by people who live in the vicinity of wind farms after their construction (Gipe n.d.)

Anne Marie Simon Planning and Research in the previously cited study also found that all studies that looked at perceptions before and after construction, reported an increase in acceptance after the Wind Farm was completed.

It is also interesting to note that the study on Scotland and Ireland (cited above) also shows a 27% increase in acceptance following construction, although the greatest proportion of people who changed their mind were in the “Neutral or undecided” group, there was still a significant reduction from 17% to 4% in the group that opposed the wind farms.

This study supports the view that familiarity does not increase opposition to a wind farm, but rather increases acceptance and support for wind turbines in the landscape.

Part of the assessment must consider if the landscape around the proposed Berrybank Wind Farm is of such a quality that the majority of viewers would be disturbed by the presence of a wind farm. Research supports the proposition that the vast majority of the community supports the creation of a further wind farm in the Ararat area.

It should also be acknowledged that while the older research may target viewers in the general community, including visitors, tourists and residents, viewing the wind farm from local roads, tourist locations and from other publicly accessible locations, the later research is focused on those who live in the area, those that are the most familiar with the local landscape.

These recent studies show a discernible rise in the level of public acceptance over the older studies on community perceptions to wind farms in Australia and overseas. The earlier research continually shows a level of community support at around 60-70% and a level of opposition between 5-30%, while the more recent research (Lal Lal Wind Farm) shows a level of community support in excess of 90% and a level of opposition of between 3-5%.

It is important to realise that this acceptance level is unique to wind farms. Similar research to the visual impact of a transmission line, a major road or other large infrastructure projects would show a greater degree of dislike for the changes these projects make on the landscape. The much greater acceptance of wind turbines in the landscape may well be a result of their clean lines and aerodynamic shape, or perhaps with their perceptual link with green energy. Irrespective of the reason, it is clear that wind turbines are generally accepted by the majority of viewers in all but the most sensitive of locations.