Visitors' Attitudes Towards Wind Farms:

A Study of the English Lake District National Park

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Abstract

The tourism industry is one of the largest in the world. Many nations derive considerable economic gain from tourism markets. At the same time, many nations are pushing for the development of newer greener sources of energy while not understanding the impact this could have on the tourism industry. The Lake District National Park represents the crowning jewel in the United Kingdom's national park system. With an estimated 12 million visitors a year and over 46,000 permanent residents, the Lake District is one of the United Kingdom's busiest parks. Like many natural areas around the world the Lake District has seen an increase in the number of wind farm proposals. There has been an increase in the number of negative reactions to these proposals; partly as a result of presumed negative effects on visitors to the area. The extent to which this opposition is based on evidence is unclear. This study examines the attitudes of visitors towards wind farms, their level of knowledge and their willingness to return if wind farms were to be constructed on the fringes of the Lake District National Park. The development of a scale with a sole purpose of divulging the visitors' attitudes, positive or negative, is the first step to fully understanding the effect that potential developments will have, not only on the geographic landscape, but also on the visitors to the area. With £1.7 billion annually ($3.3 billion CAD) of the Cumbrian Economy reliant on visitors to the Lake District in jeopardy, all facets of the interactions of people and wind farms must be fully understood.

Key words: Tourism, wind farms, attitudes, wind farm knowledge and behaviour

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Chapter 1: Introduction

At the forefront of attempts to reduce the impact of the human species on planet earth is the promotion of "green" technologies (Benediktsson, 2007). The premise behind green technologies is that they are more sustainable than traditional methods; either giving back to the environment or, at least, lessening any impact on it.

Wind farms share the limelight with solar energy as the flag bearers of the new green energy revolution (Drake & Hubacek, 2007). As one of the iconic new forms of green energy production, nations world wide have jumped onto the wind farm bandwagon. To date, most research on green energy has been conducted on (a) engineering problems or (b) economic benefits. Yet, without more research on the human interactions with green energy, neither proponents nor opponents of wind farms can fully understand their potential impact.

This study is designed to explore the complexities of a little known element in the wind farm debate, the "visitor." Understanding the outcomes that wind farm developments have on a visitor to a geographic area can help in the future planning of wind farms. There are considerable push and pull factors in people's decision-making processes (Kim, Lee & Klenosky, 2002). Understanding the impact that an external factor would have on this process can help people plan and better implement long term human management plans for iconic or scenic areas. Tourists are everywhere; this is a fact that many communities have come to embrace and exploit for monetary gain (NFO System Three, 2002). These short-term visitors are a variable in the long term planning process. Estimating the impacts that the construction of wind farms would have on the economic returns from the visitor population is critical for long term planning.

1.1 Research focus

This research focused on studying the attitudes of visitors towards the potential development of wind farms on the perimeter of the Lake District National Park (LDNP) located in the Northwest of England (Figure 1.1); and the effect that potential developments would have on the intended behaviour these visitors to the LDNP.

1.2 The need for the study

This project was designed to give insight into the attitudes of the LDNP visitors toward wind farm construction on the perimeter of the park. This information can help the LDNP in future visitor sustainability planning by looking at the potential impacts of wind farms. Since visitors to the area bring in an estimated £1.7 billion or $3.3 billion (CAD) (LDNP, 2003c) annually it is important to make sure that future plans take into account any potential changes in visitor levels. Impacts to visitation levels caused by wind farm development could be detrimental to the smaller local area economies. Proper planning could reduce negative economic impacts and can even provide local benefits. A majority of the information gathered in the LDNP should be transferable to other parks around the world which face similar kinds of wind farm development.

Lake District National Park

Figure 1.1: The Lake District National Park (Source: National Parks in the UK, 2009)

1.3 Study area

The Lake District National Park (Figure 1.1) is nestled in Cumbria County, in northwestern England. The park was created in 1951 as part of the development of a national park system in England (LDNPA, 2003a; LDNPA, 2003b). The LDNP contains a diverse natural landscape with many exceptional natural features including mountains, fells, pastures, lakes, tarns and forests (LDNPA, 2003e; LDNPA, 2003f). The park contains over 6,000 known archaeological sites which date from prehistoric times to the Second World War (LDNPA, 2003a). At 2,292km², The LDNP is the largest park in England's National Park System. Due to its scale, The Lake District National Park Authority was formed to monitor the area (LDNPA, 2003d). There are 21 conservation areas which include both natural areas as well as small towns and villages (LDNPA, 2003).

The 1991 Census indicated that at least 42,239 people were full-time residents within the LDNP (LDNPA, 2003b). The LDNP encompasses over 3000 km of public right of ways which are utilized as footpaths, bridleways and byways (LDNPA, 2003b). Windermere, Keswick and Ambleside are the largest towns within the LDNP with a combined population of 15,495 (LDNPA, 2003c). The major forms of employment in the area are retailing, transportation and catering. A total breakdown of local industries and the percentage of people employed in the study area is provided in Table 1.1.

Over 12 million people visit the LDNP within any given year which accounts for an estimated £1.7 billion or $3.3 billion (CAN) being introduced into the local economy (LDNPA, 2003c).

Table 1.1 Employment in the
Lake District National Park
(LDNPA, 2003a)

Industry	%
Agriculture, Forestry & Fisheries	9.9
Energy, Water & Mining	4.7
Manufacturing	9
Construction	7.8
Retailing, Transport & Catering	37.5
Service Industries	29.8
Other	1.3

1.4 Purpose of this study

This study was designed in several phases. The first phase explored attitudes towards wind

farms in general. This phase was conducted through a literature review which looked at major

themes on the positive and negative aspects of wind farms. Themes from the literature review

were used to develop part of a survey which explored the relationships between visitors, attitudes

and wind farms. The second phase used the survey to question visitors in the LDNP during the

summer of 2008, designed to answer three questions:

1) How much general wind farm knowledge do LDNP visitors actually possess?

2) What are the LDNP visitors' attitudes towards wind farms?

3) Would the visitors be inclined to re-visit the Lake District National Park if wind farms

were to be developed at various sites around the LDNP?

By studying the effect of the independent variables (socio-demographics, subjective norms

and beliefs) on the dependent variable (attitudes towards wind farms) as shown in figure 1.2, it

was hoped that the behaviour of the park visitors, if wind farms were constructed in the vicinity

of the Lake District National Park, could be predicted.

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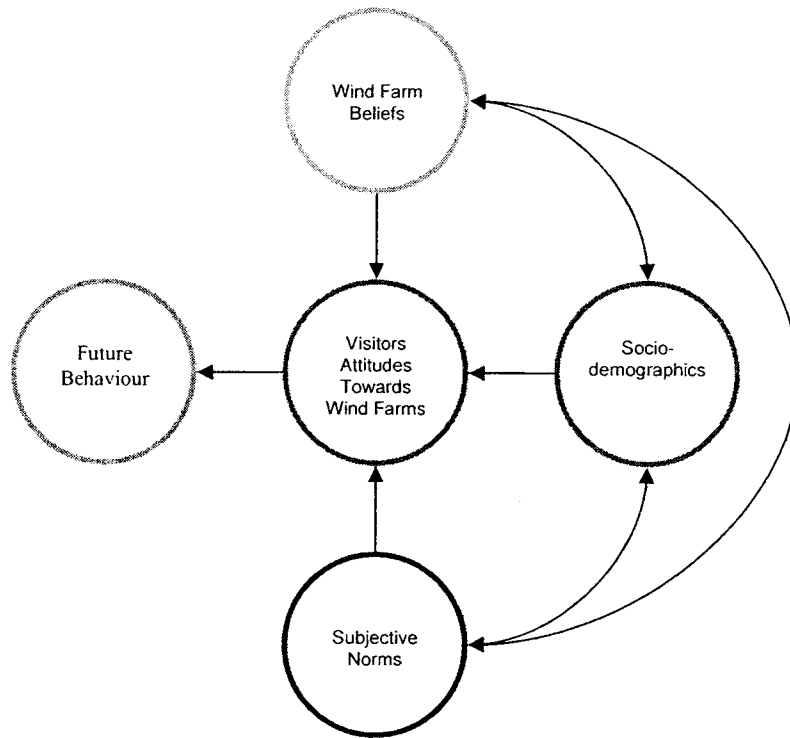
Figure 1.2 Relational Diagram

1.5 Targeted participants

Picking the correct group of people to target for this study was crucial. It was decided to focus on visitors to the LDNP since the visitor population load is high, with over 12 million visitors a year. Residents were not targeted as there are already many studies, such as Janley and Nevin (1999), which target residents and wind farm development both physically and economically. Samples were gathered using a convenience sample method which is designed to select participants who visit an area without the researcher deliberately choosing which individuals to approach (McBurney & White, 2007). The study targeted visitors throughout the entire park. This provided an adequate sample size to determine park visitor attitudes towards wind farms. Sample sites were located in venues throughout the park targeting major visitor

bottlenecks, sites and events. This maximised the collection of visitors' input to gain a representative sample of visitor's attitudes towards wind farm development.

1.6 Summary

When people choose to visit an area for recreational or leisure purposes there are many external factors which can cause a push or pull effect. Understanding impacts that the green energy market will have on the recreation and the leisure sectors will help in understanding people and their destination decision making choices. As people are driven to explore so must the leisure industry explore the impacts that wind farms might have on the leisure industry. With a study which is designed to isolate and explore the attitudes of visitors towards wind farms, only then can the recreation and leisure industry begin to understand the possible impacts, if any, that the green energy industry might have. The following chapter highlights the current literature which relates to the three key questions that the thesis explores, in relation to wind farms, general wind farm knowledge and return rates.

Chapter 2: Literature Review

While there are a number of studies on the impacts that wind farms have on residents

(NFO WorldGroup, 2003) there are many fewer on the impacts that wind farms have on visitors

and their experiences (QA Research, 2005). Benediktsson (2007) discusses the increase in the

level of pressure placed on nations to destroy natural and scenic areas to construct "Green"

energy projects. To meet an ever-increasing energy demand the human species seems intent on

destroying the one thing which can save it (Benediktsson, 2007). The impacts of green energy

production do not end with construction at the site of production. Largely ignored or forgotten

are the many support features required to make green energy work, such as roads, towers,

ditches, clear cuts and transmission stations (Mercer, 2003).

Most of the few studies conducted on the impacts of wind farms have focused on visitor

levels and have tended to shy away from visitor motivations and attitudes. These studies were

done through consultant companies for governments and non-government organizations (ADAS,

2003; BWEA, 2006; NFO World group, 2002). One of the few studies which looked at the

impacts of wind farms on visitors in the LDNP was commissioned by the Cumbria Tourism

Board and undertaken by QA Research (2005). The study's primary area of focus was visitor

reactions to the proposed Whinash wind farms (South East of the LDNP, North East of Kendal)

and their attitudes to wind farms in general. While this study provided some useful insights, it

also raised many questions. For instance, it did not address the relationship between visitors'

attitudes towards wind farms and the potential effect these attitudes might have on future visits to

the LDNP. Other studies -- on the impact of wind farms on the tourist industry in the UK

(BWEA, 2006), in Wales (NFO WorldGroup 2003) and in Prince Edward County, Ontario (The

Tourism Company, 2004) -- all indicated that there would not be a noticeable drop in visitor

levels with the construction of wind farms. However, they did not mention what the attitudes of visitors toward wind farms were and how these attitudes may affect visitation levels over time.

This chapter explores the literature relating to the three main questions asked in Section 1.4. With a fuller understanding of the concept of British landscapes, wind farms, the extent of general wind farm knowledge, visitors to the LDNP, the Theory of Planned Behaviour and wind farm beliefs the three main questions can be addressed.

2.1 Definitions

Visitor:

The term "Visitor" was used for convenience to avoid confusion between multiple terms (such as "tourist" and "excursionist") which are defined variously in terms of length of stay and distance travelled.

For the purpose of this study the phrase "visitor" was use to encompass all persons who at the time of the study were within the physical boundaries of the Lake District National Park but whose permanent residence was elsewhere. Residents of the park and people who lived out side of the LDNP but worked within its boundaries were excluded from the study.

Wind Farms:

For this study the term wind farms refers to industrial wind turbines with the purpose of mass generation of power for regional or national use. A Wind farm can range from as few as two wind turbines up to hundreds of turbines in one designated area.

2.2 British landscapes

Access to rural and open land is considered a basic right by every British citizen, confirmed by the 2000 Countryside and Rights of Way Act (Defra, 2006). The Town and Country Planning Act (1947) changed the status of British land, making it mandatory for the aesthetics of landscapes to be protected and improved where needed. This makes all land in Britain part of the natural heritage of every citizen; something for them to be free to enjoy and to want to see preserved (Lowenthal and Prince, 1965). There is no British equivalent to the Canadian Crown Land or American Public Domain Land. Even the large upland areas of open "common" land are, in fact, privately owned; they are "common" only in the sense that several farmers are entitled to make use of the land "in common." This is the fundamental difference between North America and Britain. In essence within the United Kingdom people live and work the lands located in a national park for economic gain. Where as in North American parks system this is not the case as the government supposedly controls the lands for preservation not economics. The concept of natural heritage has only been applied to protected areas (Gold, 1980) in North America, while leaving the rest of the landscapes open for private ownership and development.

2.3 Wind Farms

Wind farms come in a variety of different sizes and numbers of units. Some are small enough to supply power to a house, while others are large enough to offset the amount of power needed for a large city. With such a diverse range of power and uses most of the research into wind farms has focused on the environmental impacts (Pasqualetti, 2001) and the disruption of wind patterns (Alvarez-Farizo, 2002).

To fully understand the complexity of wind farms the literature was explored for observations on the impacts that other developments near parks and protected areas have on visitors. A common theme that emerged was that of aesthetic appreciation. Mel and Setten (2007) identified a romantic connection between the visual landscape and the visitor. The impact of protected areas for industrial development has become a trend over the years instead of an abnormality (Benediktsson, 2007). It is seen by many that the infringement of industrial development on parks and protected areas which are aesthetically pleasing has the possibility of deterring visitors to an areas (Benediktsson, 2007; Mel & Setten, 2007). The development of industry around natural areas has been found to have an impact on people's perceptions of the aesthetics and the values parks hold if they know of the development (Benediktsson & Waage, 2005).

For this study, focus was placed on gathering visitors' beliefs about wind farms and visitors' knowledge in order to analyse their attitudes. Whether they were for or against wind farms, it was crucial to define some of the core arguments that made up the pros and cons of wind farm developments. Deciphering the themes toward wind farms from the current literature allowed for a list of wind farm beliefs to be generated. The pro-wind farm movement provides the bulk of the literature in the debate. The core beliefs can be summed up from three arguments for green power which are highlighted by Szarka (2004):

1) The release of greenhouse gases from burning fossil fuels is a prime source of climatic disruption.

2) Pollution, combined with the risks (political, extraction and health risks), make fossil fuels a negative energy option.

3) The fear of the security over fuel supply from both political and price insecurities is turning into a world wide epidemic.

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Wind power is seen by many nations as a clean energy alternative which does not require as high a level of investment as other options such as nuclear power. Since wind farms create little or no pollution once constructed, they are seen as a viable alternative to help enhance the economies of rural areas (Alvarez-Farizo & Hanley, 2002). The British government found that there are numerous benefits associated with the development of wind farms in rural areas. Landowners can generate significant income from the rental of their land (Woods, 2003). Wind farms are perceived as a positive method to generate power by much of the world's population (Alvarez-Farizo & Hanley, 2002; ADAS, 2003; The Tourism Company, 2004; BWEA 2006). All levels of the United Kingdom's government are advocating the construction of more wind farms to augment the country's power grid (ADAS, 2003; Baban & Parry, 2001; BWEA 2006; NFO WorldGroup, 2003).

The largest costs associated with wind farm development are found in the manufacturing of the turbines, associated power plants and power lines. The wind farms have a very small operational cost once constructed. Once installed, there has been an increase in awareness and positive attitudes towards conservation in the adjacent areas (Woods, 2003). Companies which operate the farms often contribute revenue to local rural communities (ADAS, 2003; Pasqualetti, 2001). The largest positive element that appears in the literature is that wind farms are seen as a safe and friendly method to reach world Kyoto targets (Haider & Jax, 2007; Pasqualetti, 2001; Pike, 2002; Wolsink, 2007).

Opposition to wind farms is mainly found near the areas of construction by individuals who live within the vicinity of the proposed site (Alvarez-Farizo & Hanley, 2002). The chief complaint of opposition groups is the impact on the visual landscape (Alvarez-Farizo & Hanley, 2002; Benediktsson, 2007; Pasqualetti, 2001; Pike, 2002, ADAS, 2003; Mercer, 2003). Environmental impacts also rank quite high in complaints by opposition groups (Alvarez-Farizo

& Hanley, 2002; Benediktsson, 2007; Pasqualetti, 2001; Woods, 2003; Yeoman et. al, 2007; ADAS, 2003; Mercer, 2003; Caffyn & Prosser, 1998). It was found that wind farms are perceived to have a very large impact on cliffs, visual landscapes, flora, fauna, wind patterns, ambient noise, landscape shadows (Baban, 2001). It has been found that largest impact that wind farms have on animals is on migratory birds, bats and raptors (Alvarez-Farizo & Hanley, 2002; Benediktsson, 2007; Pasqualetti, 2001; Pike, 2002, ADAS, 2003; Mercer, 2003; Drake & Hubacek, 2007; Kousis, 1998; Madder & Whitfield, 2006; Drewitt & Langston, 2006).

Throughout a wide range of planning-related literature, a syndrome is noted in which people do not want any form of change which might impact their at-home lives (Eltham, Harrison & Allan, 2008; Wolsink, 2000). This syndrome is referred to as the "Not In My Back Yard" or the NIMBY attitude. This concept is widely used to describe a mind set in which people agree that they do not want an item, object, or industry in the area where they live (Wolsink, 2000; Wolsink, 1994). It is often argued that the principal concern behind NIMBY is the potential loss of land value following undesirable development near the home; but it has also been noted that there is a component of sense of attachment to the area in which people live and whose character they wish to preserve (Benediktsson, 2007). This attitude towards the protection of a person's residential area has been found in many areas of the world where industry and people clash (Wolsink, 1994).

Most of the literature mentions that renewable energy is a positive thing, although questions have been raised about how positive it really is when construction tends to destroy natural areas by making access roads, clearing hill tops and disturbing scenic vistas (Benediktsson, 2007; Fallon & Kriwoken, 2003; Davis & Morais, 2004; Mels & Setten, 2007; Janley & Nevin, 1999). Action groups such as the Friends of the Lake District (that is against wind farm development) and Greenpeace (that is for wind farm development) have been quite

interested in supporting academic research which would help to bridge the gap between the positive and negative factions. Visitors have real reactions to the development of wind farms in their area of leisure choice and more study is needed to fully understand the reaction and subsequent behaviour which visitors will undertake. This is a substantial gap in the current published literature. It does not take much change in an area to pull in more visitors or to keep them away. The arguments highlighted above are having a large impact on visitors. A better understanding of the attitudes of visitors towards wind farms can help show the intention of visitors towards visiting an area such as the LDNP if wind farms are developed along the park's perimeter.

2.4 The extent of general wind farm knowledge

Through an extensive review of media and tourist information conducted for this study, it appears that there is little information on how much visitors actually know about wind farms. This is even highlighted in NFO System Three's 2002 report which discusses the fact that a lack of information on the level of visitors' wind farm knowledge makes it difficult for future planning of wind farms in areas favoured by visitors. Many of the media reports convey the message that energy from wind farms is "cheap" or even "free." It has been shown that energy from wind farms is in fact more expensive than current energy producing means (Mercer, 2003). This comes from the cost associated with turbine construction and secondary infrastructure construction. Many of the interviews in the media indicate that most people in Britain think that it is cheap to construct wind turbines. The average cost of a single wind turbine is over one million dollars (US), excluding the costs of transporting the components to the site. If people commonly have a misconception about the cost of wind farms, it can be argued that they are likely also to have misconceptions about the rest of the information pertaining to wind farms.

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This is one of the main questions which this study addresses and discusses in further detail in Chapter 3.

2.5 Visitors to the LDNP

The accommodation industry has the greatest economic impact in the LDNP, resulting from the 12 million visitors a year who account for over £1.7 billion annually being introduced to the local economy (LDNPA, 2003c). Once cultivated for farm land, this unique geographic landscape has become the permanent home for many people and a place of adventure and living history for a large number of visitors. The LDNP has been home to many famous authors such as Beatrix Potter and William Wordsworth, whose fame has been a draw for many visitors (LDNPA, 2003d). The largest form of transportation in the LDNP is vehicle-based and this often causes bottlenecks on the roads during peak visitation times (Dilley, 1993; Eckton, 2003; LDNPA, 2003c; LDNPA, 2003b), while visitors search for a chance to view scenic vistas from any high perch of land (LDNPA, 2003f).

It is important that visitors are taken into account when wind farms are proposed since tourism is the largest industry in the area, creating jobs in catering, transportation, the provision of room and board and, increasingly, in services such as interpretation and event planning (LDNPA, 2003c). The park authority has started to place emphasis on making the park a valued added destination (LDNPA, 2003c; LDNPA, 2003d). This has allowed for a large increase in the number of jobs in the LDNP which have been geared towards providing ecotourism destinations.

One major purpose of the LDNP management system is to maintain the uniqueness of the area for visitors. A system of two levels of management has been adopted by the LDNP. The first is with the LDNPA itself. The second level of management is the local tourism boards. The major tourism board in the LDNP is the Cumbria Tourism Board, whose primary role is to attract

visitors to the LDNP. The tourism board provides information on all elements of the county as well as the park to draw in tourists. Most importantly there are over 700 events which have been developed to celebrate the local heritage, mostly during the summer season held within the LDNP (LDNPA, 2003d). The tourism sector in this area draws in a wide variety of visitors, most notably: artists, balloonists, car rallyists, canoeists, coach parties, fell runners, fishermen, hound trailers, huntsmen, micro-light users, mountain bikers, orienteers, rock climbers, sailors, skiers, sub aqua groups, swimmers, walkers, and water-skiers. The marketing efforts of the LDNPA and the tourism boards have made the LDNP a viable destination for many different kinds of enthusiasms.

There is very little information on how tourists will react to wind farm construction on the perimeter of the LDNP. However, there are a growing number of reports which indicate that on a broad scale, tourism will not suffer from the development of wind farms in areas with high tourism use (Q&A Research, 2005; BWEA, 2006 ; NFO WorldGroup, 2003; ADAS, 2003). One of the few pieces of research which addressed the issue of wind farm development impacts on tourism was focused on the Whinash wind farm proposal (Q&A Research, 2005). The Whinash project involved the construction of several large wind turbines within sight of the LDNP. All information gathered was from local residents and tourists over a five day period and looked at what effect the development would have on visitors' willingness to visit the park. The study found that 86 % of the 449 participants felt that wind farms would make no difference to their willingness to visit the LDNP; while 1 % indicated that they would not return to the area if wind farms were constructed in the area. However, it should be noted that 19 % of the participants agreed with the statement that they would avoid an area of countryside if they knew that there was a wind farm there. Almost 40 % of all participants stated that they thought that wind farms should be prevented from being built in an area of national importance.

2.6 The Theory of Planned Behaviour

It is understood that values and beliefs work in conjunction with other factors to influence

behaviour (Ajzen, 1991b). At one point behaviour was thought to be swayed by one positive or

negative influence reacting within an individual (Ajzen, 1998). It is now understood that several

factors converge to create an individual's intention, which, if high enough, will influence

behaviour (Ajzen, 1991b). In 1975 the framework of the Theory of Planned Behaviour (TpB)

was created with the Theory of Reasoned Action (Ajzen, 1998). In the Theory of Reasoned

Action it was assumed by Fishbein and Ajzen (1975) that to understand intention, there were two

main elements, subjective norms and attitudes, which had to be evaluated. A decade later Ajzen

re-approached the concept and added perceived behavioural controls to form the TpB (Ajzen,

1991b).

This theory is valuable since it can show a statistical connection between intention and

behaviour. Ajzen describes motivations as "the psychological factors that propel an individual

toward his or her goals" (Ajzen, 1991a: 413). Motivation can be linked to leisure activities,

benefits and individuals' goals (Ajzen, 1991a). The essential element of both theories is the

intention to do the behaviour (Fishbein & Ajzen, 1975; Ajzen, 1991b). The TpB analyzes the

"intention to try performing a certain behaviour" (Ajzen, 1998). The TpB is shown in Figure 2.1;

the three elements by which an individual's intention is analyzed: attitude towards the behaviour,

subjective norms, and perceived behavioural control (Azjen & Driver, 1992; Ajzen 1998; Ajzen,
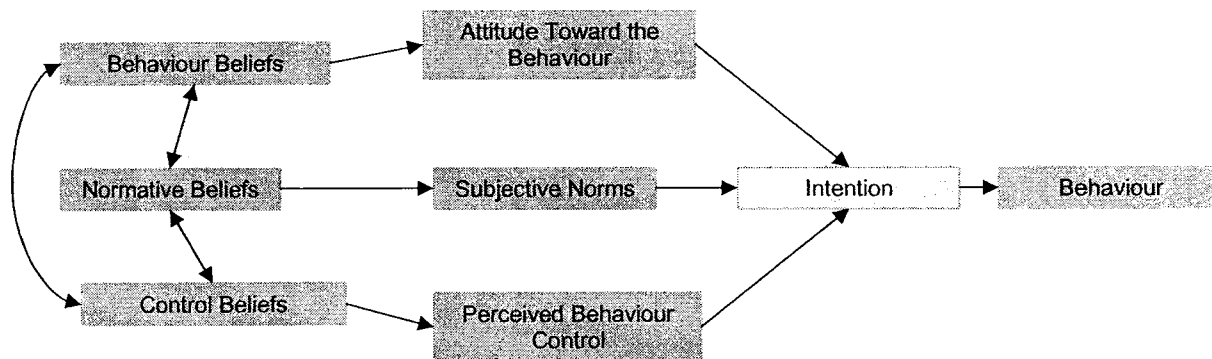
1991a).

Figure 2.1: Theory of Planned Behaviour (Source: Ajzen, 1991a)

Attitude toward the behaviour refers to whether an individual has a favourable or unfavourable view of the action or behaviour and is based primarily on the subject's beliefs about the specific behaviour. Subjective norms refer to outside societal pressures which an individual feels is placed on them to perform or not to perform the behaviour (Ajzen & Driver, 1992). Perceived behaviour control refers to the individual's perceived ease or difficulty in performing the behaviour (Ajzen & Driver, 1992; Ajzen, 1998). It is generally considered that when the attitudes and subjective norms are valued high, then an individual will have a higher perceived behaviour control, which in turn will lead to a higher level of intention (Ajzen & Driver, 1992; Ajzen, 1998; Ajzen, 1991a). Since the creation of the TpB it has been used as a framework for predicting the intentions towards behaviour of individuals in studies by Davies & Prentice (1995) and Lam & Hsu (2004).

Whenever a theory is used, such as the TpB, there is always the possibility that it may not work for every circumstance (Armitage & Conner 2001). It has been shown to be quite strong in exploring the three elements which make up level of intent, however, when it is connect to behaviour in the future it is sometimes unwieldy in use for developing an approach to a hypothetical situation (Armitage & Conner 2001; Connor & Armitage, 2006). It was found that

subjective norms and perceived behavioural controls were not in all cases statistically strong enough to find a level of intent, This problem can be overcome if more focus is placed on attitudes in building behaviour prediction models (Connor & Armitage, 2006).

The TpB is useful in this study by allowing an exploration of attitudes while designing a forecasting model that shows the visitors' intention to return to an area if wind farms are constructed there.

2.7 Summary

The literature which was reviewed in this chapter will help to build a scale which can bring forward the attitudes of the LDNP visitor in the next chapter. The following chapter will explore the methods which were undertaken during this study, by using a dynamic framework which not only looks at quantitative approaches, but also uses an open-ended question to answer two main hypotheses and the three main question highlighted in section 1.4.

Chapter 3: Methodology

This study was split into three sections: a determination of wind farm beliefs from a literature review; a set of quantitative questions to examine the three main questions from section 1.4 and an open ended question on wind farms. This chapter will discuss each of these in turn in the context of the research question: what are the attitudes of visitors towards wind farms?

This study contributes to understanding future visitor levels by the development of a model to explain the behaviour of visitors to the LDNP. This model is then used to analyse visitors' attitudes and their intentions to revisit the LDNP if wind farms were constructed. The outline for the research format is as follows.

1. This study was conducted in a multi-staged approach: The positive and negative beliefs about wind farms were determined through a literature review. This allowed for the visitors' attitudes to be brought out in the second step.

2. A survey was developed to measure:

   a. Visitors' views on wind farms through an open-ended question.

   b. Visitors' attitudes towards wind farms through their beliefs about wind farms.

   c. Whether visitors will revisit the LDNP if wind farms are developed.

   d. Socio-demographic characteristics of the LDNP visitor.

   e. The extent to which visitors are influenced by social pressures regarding wind farms.

   f. How much general wind farm knowledge LDNP visitors possess.

3. The data were collected over a two-month period.

4. The collected data were then applied to the TpB to find the prominent attitudes and to see if those attitudes would have an effect on the intention of visitors towards revisiting the area if wind farms were constructed.

The end result of this process was a model which can be used to predict visitor behaviour in areas with wind farms because the TpB results were inconclusive, so a new model was created.

3.1 Research design

A two-staged approach to gather data by means of an open-ended question and a quantitative survey was used (Creswell, 2002). It allowed for identification of the attitudes of visitors toward wind farms, in a manner that helped to gauge future visitor patterns in the LDNP. Figure 3.1 shows the design of the study with all of the integrated components of the TpB:

- Step one looked at the beliefs towards wind farms by completing a literature review which led to the development of an attitude scale.

- Step two was a survey which was made up of six sections, three of which made up the TpB.
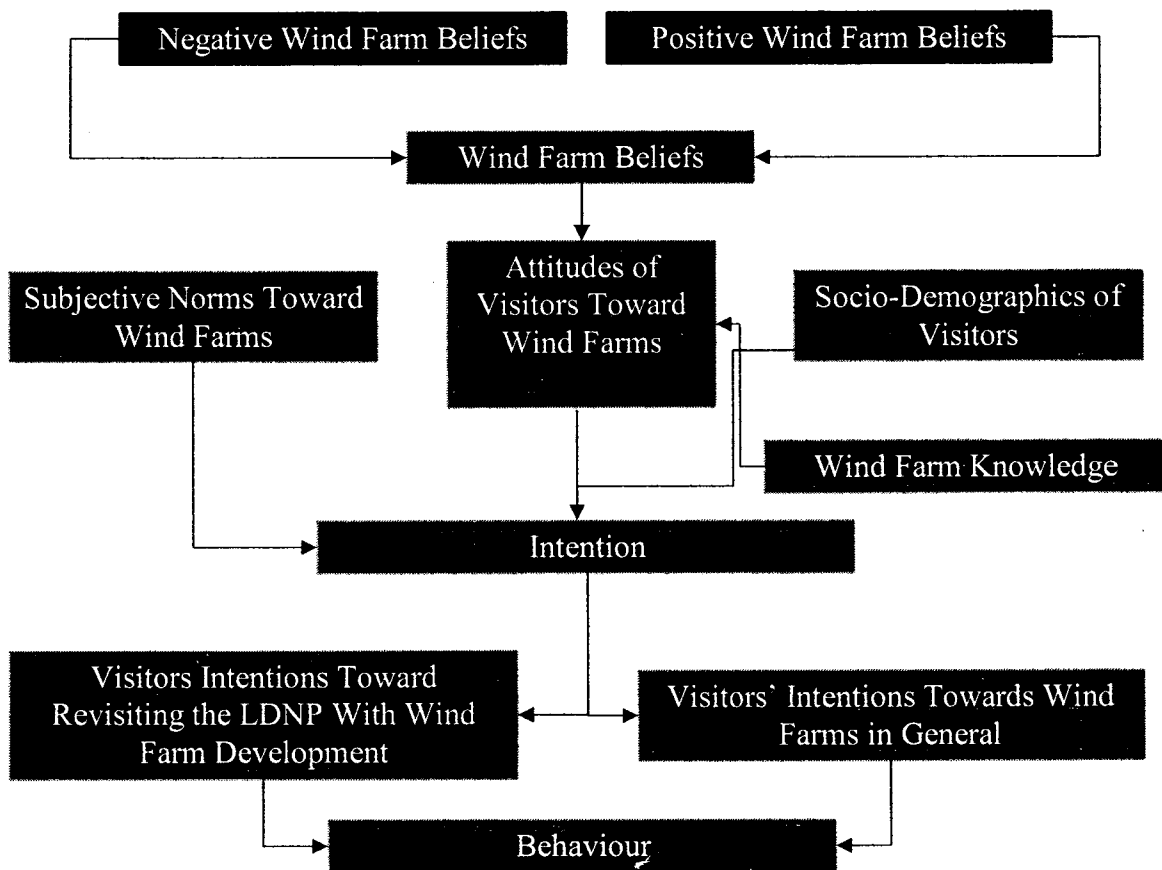
Figure 3.1: Research Design

The TpB is a widely used model for determining the expected behaviour of a group of people (Ajzen, 2006). The use of the TpB as a quantitative survey with an open-ended question is not common. However a few studies have used this approach most notably King & Dennis (2006) and Wall, Devine-Wright & Mill (2008). The use of the open-ended question at the beginning of the survey allowed for an in-depth look at the beliefs of the visitors that may not all be evident in the literature. As shown in Figure 3.1 this study has a different use of the TpB, due to the general lack of wind farm knowledge (NFO System Three, 2002). Using the methods described by Ajzen (2006) the data collected were analysed in sequence to Figure 3.1. There were two ways to apply the TpB. The first is an indirect approach which asks a visitor about

specific behavioural beliefs and then about outcome evaluations. The means would then be multiplied in a matrix to give the level of compliance. This would have involved a longer survey because it asks two questions whereas the direct method uses just a single one. The direct approach was utilized in this study, and was undertaken by asking visitors about their overall attitudes. This allowed for prompt analysis of the data as the direct means could be utilized in a quick manner.

For this study all attitude data were compiled into mean scores which allowed for a clear indicator of the visitors' attitude towards wind farms. The higher the mean score the more positive the attitude towards the subject (Francis et. al., 2004). Since some questions were asked with a negative slant the scoring in these questions was flipped to maintain the mean scores. This was designed on recommendation from Francis *et. al.* (2004) to help maintain the consistency of the data.

To analyse subjective norms the means were calculated. The higher the mean score the more social pressure the visitor feels was placed on them to act a certain way towards wind farms.

The perceived behavioural control was found much in the same way by looking at the mean scores to determine if they were high or low. The higher score meant that there was more perceived behavioural control. This means that the subject feels that there are fewer obstacles to prevent them from visiting the area (Francis et. al., 2004). In theory the higher all three elements are in relation to each other, the higher the level of intention will be.

To find the level of intention to revisit the LDNP Francis *et. al.* (2004) suggest "using a multiple regression procedure, enter intention as the dependent variable, and the direct measures of attitude, subjective norm and perceived behavioural control as the predictor variable." (p, 30). By following all of these steps the level of the visitors' attitudes towards wind farms was

determined, at the same time outlining the intentions of the visitors to revisit. The data were then compared and analysed using the socio-demographic data to define user groups' attitudes. The data placed through the TpB allowed for a prediction model to be developed which indicated the reaction of visitors towards visiting the LDNP if wind farms were constructed. All of the preceding data were combined with the knowledge questions to determine which groups favour which side of the wind farm debate and how educated about wind farms they really were. This helped to determine if the visitors' reactions are based on sound knowledge. Lastly the open-ended data was used to find out non-evident attitudes towards wind farms which had not yet been discovered in the current literature.

3.2 Attitude scale

Many themes recurred throughout the literature found in chapter 2 (Table 3.1 & Table 3.2). It is these recurring themes about wind farms which were used to judge the attitudes of the visitors in the LDNP. The methodology of acquiring the 14 most prominent wind farm beliefs from the plethora of wind farm data was based on the most frequent themes found in the literature review. The wind farm beliefs were split into two sections: positive and negative.

Table 2.1 7 Most Prominent Negative Wind Farm Beliefs

Negative Wind Farm Beliefs	Sources
It has been found that there is a higher avian mortality level associated with wind farm placement.	Drake, Hubacek, 2007; Kousis, 1998; Madder & Whitfield, 2006; Drewitt & Langston, 2006
There is a substantial amount of noise which is produced as the air flows over the blades which can be repellent.	Guidati et. al. 1996
The creation of wind farms requires a large amount of land to be cleared which can be detrimental to flora and fauna in that area.	Benediktsson, 2007; Fallon & Kriwoken, 2003; Davis & Hbacek, 2007; Mels & Setten, 2007; Janley & Nevin, 1999
The sight of wind farms on the visual landscape has been found to be quite obtrusive to many people.	Benediktsson, 2007; Pasqualetti, 2001; Pike, 2002, ADAS, 2003; Mercer, 2003
Wind farms depend on an unreliable source.	Wolsink, 2007.
The currency and petroleum cost of constructing wind farms is staggering.	Mercer, 2003.
Wind farms have been shown to disrupt natural air flow patterns.	Guidati et. al. 1996, Mercer, 2003

Table 2.2 7 Most Prominent Positive Wind Farm Beliefs

Positive Wind Farm Beliefs	Sources
Wind farms are a source of unlimited renewable energy.	Haider & Jax, 2007; Pasqualetti, 2001; Pike, 2002; Wolsink, 2007
Wind farms are a great way to cut energy-producing carbon emissions.	Alvarez-Farizo & Hanley, 2002; ADAS, 2003; The Tourism Company, 2004; BWEA 2006
Many jobs can be created in rural areas with the construction of wind farms.	Alvarez-Farizo & Hanley, 2002; ADAS, 2003; Pasqualetti, 2001
Wind farms are the best form of "green" energy.	Baban & Parry, 2001; BWEA 2006; NFO WorldGroup, 2003; Haider & Jax, 2007; Wolsink, 2007
Wind farms are not reliant on fossil fuels.	NFO WorldGroup, 2003; Haider & Jax, 2007; Pasqualetti, 2001; Pike, 2002; Wolsink, 2007
Wind farms are better than nuclear power.	Alvarez-Farizo & Hanley, 2002; ADAS, 2003; The Tourism Company, 2004; BWEA 2006
Wind farms can suit any landscape.	Baban & Parry, 2001; BWEA 2006; Pike, 2002; Wolsink, 2007, Pasqualetti, 2001.

Using the literature in chapter 2, a thematic coding of the most frequent themes in the literature was conducted (Neuman, 2000; Creswell, 2002). After the initial pass-through there were more than 14 main themes. To avoid too much complexity in the questionnaire, 14 (seven negative and seven positive) themes were decided upon. The themes were chosen by their recurrence in not only in the literature but popular media as well, and from pre-testing with volunteers from Lakehead University, Thunder Bay, Ontario, Canada. The 14 beliefs make up the attitude set of question in the TpB (section 2.6) which will allow for the wind farm attitudes of visitors to be analysed.

For this study the visitors' attitudes were explored by analysing the visitors' response to 14 wind farm beliefs. A set of questions was asked in which the visitors indicated how much societal views on wind farms influenced their willingness to visit an area with wind farms. This will form the subjective norms. The perceived behavioural controls were extrapolated from a set of questions and from the visitor socio-demographic information. At this point the TpB was compared with the answers to the knowledge questions. It was this extra layer of analysis which was being applied to the TpB. This allowed for groups to be formed and as well to determine the level of knowledge on which the visitors were basing their behaviour. When the knowledge component is integrated into the TpB there will be 2 hypotheses:

1. Wind farms have *no* effect on behaviour when visitors have *limited* wind farm knowledge.

2. Wind farms have *an* effect on behaviour when visitors have *higher amounts* of wind farm knowledge.

When all three elements were placed in to the TpB to determine the level of intention that visitors had towards returning to the LDNP if wind farms are constructed; not only can the level

of intention be determined: the level of knowledge contained in the intention can be extrapolated was well. This level of intention and knowledge were compared to the visitors' attitudes on wind farms to construct a model for future planning.

3.3 Surveys

The surveys consisted of six sections (Appendix I). Part A was an open-ended question. This was to ascertain the visitors' attitudes towards wind farms before their attitudes could be biased by the following section of the survey. The open-ended question allowed for emergent themes to be drawn out and as well provided a way to validate the use of the attitude scale. The question asked was: *In the space provided please describe what you think of wind farms.*

Part B was designed to judge the attitudes of visitors in the LDNP. This was done by asking 14 statements, which were designed from the wind farm themes identified in the literature. The visitors were asked to rate their agreement to each statement on a Likert Scale from 1(fully disagree) to 5(fully agree). Several of the questions had been given a negative perspective to provide a system of checks to make sure the answers were valid.

Part C was comprised of questions which asked visitors to rate the social influences which they felt were placed on them to feel in a certain way about wind farms on a scale of 1(very little) to 5(very highly).

Part D was designed to gather socio-demographic data and perceived behavioural controls which were placed on visitors. This dataset was comprised of questions which were designed to uncover as much as possible about the statistics of those visiting the LDNP and perceived behavioural controls that were present. The perceived behavioural controls were ranked on a scale of 1(fully disagree) to 5(fully agree).

Part E was designed to find out if the visitors would return to the LDNP if wind farms were constructed around the park. The last section part F asked eight questions which were designed to determine the level of wind farm knowledge that the visitors possessed. These five quantitative sections allowed for further cross examination of individual attitudes towards wind farms and allowed for the best picture to be painted of the visitors in the LDNP.

3.4 Open Ended Question

To fully understand the information gathered in the open ended question at the beginning of the survey (Appendix 1), a qualitative approach was taken to derive the themes provided by the participants. According to Neuman (2000) and Creswell (2002), qualitative analysis is the process of searching the data for patterns and themes. The qualitative approach of Thematic Coding was used. This is defined as "seeing and recognizing themes in the data" (Neuman, 2000). Thematic coding is done in a four-part approach; the first being to recognize patterns in the data. The second is to think of concepts. The third is to have background knowledge on the subject. The last is to possess relevant information on the subject (Neuman, 2000). After this was done all themes for each attitude group were reduced to provide distinct end themes for each individual attitude group. This allowed for the primary themes in each attitude group to be explored and divulged.

3.5 The Sample

For this study 525 visitors were surveyed. With the large number of visitors to the LDNP during the summer of 2008, this sample size was reached without much difficulty over 2 months. The surveys were completed through strategic targeting of visitor bottlenecks, ferries, information centres and the numerous special events scheduled during the summer months. A convenience sampling method was chosen since it allowed for a "a non-random sample that is

chosen for practical reasons even though such selection is not random, one would usually be willing to generalize the results to other similar situations and populations" McBurney & White (2007). This was done by asking all visitors who entered a chosen area to complete a survey. Visitor sampling was gathered from various points throughout the LDNP to provide the largest unbiased convenient sample size.

3.6 Summary

A multi-stage approach to gathering and interpreting the visitor data has allowed this study to provide an increased level of knowledge to fill in the gaps in the literature. The TpB was used as a way to check validation of the attitude scale. With proper examination and analysis of the data a fuller picture of the visitors' attitudes towards wind farms can be compiled and ways of dealing with the outcomes can be strategized. The next chapter will explore the information that was gathered in the quantitative section of the survey. This information helped to develop a new model to work with the TpB in predicting visitors return rates.

Chapter 4: Findings

To understand the attitudes of visitors towards wind farms an analysis of the data collected in the LDNP was conducted. This section of the study explores the many emergent themes found in the data and looks for trends to help develop models for future use. All the information gathered for this study is divided into two chapters. Chapter 4 covers the analysis of the quantitative findings; Chapter 5 examines the open ended question. This allows for the data to be fully analyzed by splitting it up into manageable sections which needed different approaches to analysis. The following chapter will highlight emergent ideas and themes found in the data.

4.1 Sample

Between May 28, 2008 and July 28, 2008 a total of 525 questionnaires were collected, of which 515 (98.09%) were usable and 10 (1.98%) were spoiled. A total of 251 (48.72%) female and 250 (48.58%) male visitors to the LDNP completed the questionnaire (Table 4.1).

Table 4.1 Sample sizes for visitors to the Lake District National Park.

	Males	250	48.58
Gender	Females	251	48.72
	Not Stated	14	2.7
	Total	515	100

For this study the sample was split by gender since there was an almost 50/50 split. The gender split will give a better picture of the visitors in the LDNP than for any other grouping due to the even numbers in each group. The study was also divided by age in section 4.3 to allow for age and gender connections to be examined.

4.2 Geographic characteristics

Respondents were asked to indicate their country of permanent residency (Table 4.2). Of the 515 participants 463, roughly nine tenths, indicated that their permanent residence was the United Kingdom.

Table 4.2 Visitors' Geographic Characteristics

Place of Residence	Frequency	%
United Kingdom	463	89.90
United States of America	6	1.17
Australia	3	0.58
Canada	3	0.58
Belgium	2	0.39
Ireland	2	0.39
France	2	0.39
Argentina	1	0.19
Germany	1	0.19
Italy	1	0.19
Philippines	1	0.19
South Africa	1	0.19
Not Stated	29	5.63
Total	515	100

4.3 Age

The age group with the highest frequency was 51 to 55 (12.82%) followed by 56-60 (11.84 %). The age group with the lowest number of respondents was 76 + (1.17%) (Table 4.3).

Table 4.3 Age segmentation

Age	Frequency	%
18 to 25	44	8.54
26 to 30	47	9.13
31 to 35	35	6.80
36 to 40	47	9.13
41 to 45	58	11.26
46 to 50	55	10.68
51 to 55	66	12.82
56 to 60	61	11.84
61 to 65	54	10.49
66 to 70	19	3.69
71 to 75	20	3.88
Over 76	6	1.17
Not Stated	3	0.58
Total	515	100

4.4 Transportation

When asked about forms of transportation, 75.6 % of males (Table 4.4) and 72.9 % of females (Table 4.5) indicated that they were travelling by automobile. On the other hand only 42.8 % of males indicated that they were walking in comparison with 57.8 % of female visitors. Few of either gender were travelling by bus, bicycle, or camper. This supports the findings in the literature (Dilley, 1993, Eckton, 2003) which show that the highest level of transportation used in the park is the automobile.

Table 4.4 Male visitors transportation

Transportation	N	%*
Car	189	75.6
Walking	107	42.8
Bus	11	4.4
Cycling	10	4
Camper	1	0.4

* May add up to more than 100 % due to multiple answers.

Table 4.5 Female visitors
transportation

Transportation	N	%*
Car	183	72.9
Walking	145	57.8
Bus	14	5.6
Cycling	11	4.4
Camper	5	2

* May add up to more than 100 % due to multiple answers.

4.5 Visitor Activities

Visitors to the LDNP partake in many activities (LDNPA, 2003f). The most prevalent

activity for both men and women was walking, with 72.8 % of males (Table 4.6) and 82.1 % of

females (Table 4.7) respectively participating. Sightseeing was indicated by both men and

women as next most with 56.8 % of men and 61 % of women engaging in the activity.

Table 4.6 Activities participated in by men

Activity	Participated	%
Walking	182	72.8
Sightseeing	142	56.8
Visiting Historical Sites	61	24.4
Boating	55	22
Camping	34	13.6
Bird Watching	28	11.2
Swimming	21	8.4
Cycling	17	6.8
Canoeing	16	6.4
Fishing	13	5.2
Art	11	4.4
Rock Climbing	6	2.4
Fell Running	5	2
Bus Riding	4	1.6
Ballooning	1	0.4

Visits to historical sites were engaged in by 24.4 % of male visitors and 31.1 % of female visitors. Boating, camping and bird watching, all achieved significant participation for both genders.

Swimming, cycling and canoeing were all rather less significant. Women indicated a greater interest in bus riding as an activity (not merely as a mode of transportation) than men. Fishing was found to be more of a male–centred activity.

Table 4.7 Activities participated in by women

Activity	Participated	%
Walking	206	82.1
Sightseeing	153	61
Visiting Historical Sites	78	31.1
Boating	59	23.5
Camping	36	14.3
Bird Watching	35	13.9
Swimming	21	8.4
Cycling	17	6.8
Canoeing	15	6
Bus Riding	13	5.2
Rock Climbing	8	3.2
Art	7	2.8
Fishing	5	2
Fell Running	3	1.2
Ballooning	1	0.4

Figures 4.6 and 4.7 show some differences between activities undertaken by men and women. A factor analysis was conducted which defined the segmentation of activities for both genders (Salkind, 2000). A total of 6 groupings emerged for the activities in which men indicated that they were going to or had participated in while visiting the LDNP. The first group contained swimming, canoeing, fishing and bird watching. The second group contained sightseeing and visiting historic sites. The third group contained walking, boating and ballooning. The fourth

group consisted of camping, bus riding and rock climbing. The fifth group consisted of art while the sixth and final group contained fell running and cycling.

When a factor analysis was conducted on the activities which women indicated that they were going to, or had participated in, in the LDNP a total of 6 segments emerged. The first grouping consisted of ballooning, fell running and fishing. The second group contained cycling, camping and boating. The third group held sightseeing and visiting historic sites. The fourth group consisted only of rock climbing. The fifth group consisted of art and canoeing, and the sixth and final segmentation consisted of just walking.

The information provided by the factor analysis highlighted the activities which will be most likely affected by a change in return rate of the LDNP visitors. If there is a drop in the return rate in men then the six grouping of activities will suffer the most and in turn if there is a rise in the return rate of women then there will be a rise in the number of people undertaking the activities in those six activities.

4.6 Attitudes: Wind farms

To ascertain the average attitude of the LDNP visitor towards wind farms respondents' scores on the Wind Farm Attitude Scale were compared. The scale consists of 14 questions on a Likert scale ranging from fully disagree (1) to fully agree (5). The mean scores were computed using SPSS (Table 4.8). The mean score for the attitudes was 3.3179, with males having a noticeably lower attitude mean (a lower approval of wind farms) 3.3015. Females, in contrast, were more approving with a mean attitude of 3.3307.

Table 4.8 Group statistics for the four scales illustrating the gender, total number of samples, mean and standard deviation

Scale	Gender	N	M	SD
Attitude	Male	250	3.3015	0.51519
	Female	251	3.3307	0.55337
Subjective Norm	Male	248	2.6186	0.60187
	Female	247	2.7132	0.62553
Perceived Behavioural Controls	Male	250	4.1130	0.55477
	Female	251	4.1567	0.55343
Theory of Planned Behaviour	Male	250	3.3473	0.37045
	Female	251	3.4049	0.37136

The second stage in determining the level of intent of visitors towards wind farms is to establish the mean score of the subjective norms. The total mean score for subjective is 2.6676 (Table 4.8). When the mean scores were compiled for the women who were visiting the LDNP the mean score was 2.7132. In contrast the mean score for men was noticeably lower at 2.6186.

The third stage in determining the level of intent that visitors had towards wind farms was to determine the mean score for the visitors' perceived behavioural controls. The total mean score Perceived Behaviour Controls is 4.1352 (Table 4.8). Once compiled the women who visited the LDNP scored higher then the men with a 4.1567. The men scored a 4.113 in comparison. Both scores are above the 2.5 mark and also indicate that perceived behavioural controls do not dictate if they should visit the LDNP.

The final stage in determining the TpB of the visitors is to analyse the mean scores of all three elements once combined. A mean score of less than 3 indicates that there is a negative response towards wind farms while anything in the range of 3 was neutral and above 3 was classified as a positive response. The total mean of the TpB was 3.3761 (Table 4.8). Women were more positive than men toward the level of intent with a score of 3.4049 compared to

3.3761. While both mean scores are in the 3 range it indicates that there is a neutral attitude over all. This indicates that the population which visits the LDNP has the intent to go to the area if wind farms were constructed with in the vicinity of the area. This is why the sum of the TpB parts is more useful than the end result of the TpB: it allows for the examination of the subgroups of age, gender and level of general wind farm knowledge; discussed later on in this section.

4.7 Reliability analysis

Because the Theory of Planned Behaviour consists of several elements, an understanding of the level of reliability for the main element (attitude) of the scale is essential. A factor of reliability was determined for the attitude scale, which was developed from the literature review, using a reliability analysis (Salkind, 2000). The attitude scale was rated an 81.1 % reliability rating (Table 4.9). This high level of reliability demonstrates that LDNP visitors' attitude towards wind farms, whether it is positive or negative, can be accepted with a high degree of certainty. To improve the reliability rating of the attitude scale, the scale itself should be increased from 14 questions to 20 or 30 questions. This will allow for a higher percentage score to be obtained when the attitude scale is placed though a reliability analysis due to the cross examination of samples to a higher level of variables.

Table 4.9 Reliability and number of items within attitude scale

Scale	Number of items	Highest possible score	Reliability Analysis (Cronbach's Alpha)
Attitudes	14	70	0.811
Subjective Norms	4	20	0.504*
Perceived Behaviour Controls	4	20	0.538*
Total	22		

Note: * The low reliability score for the SN and PBC is most likely due to the small number of questions within the scale

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The other two elements of the reliability analysis of the Theory of Planned Behaviour show that the Subjective Norm and Perceived Behaviour Controls have a lower level of reliability with a score of 50.4 % and 53.8 % respectively (Table 4.9). While both of these variables have a positive rating (> 50 %), these factors scored lower levels of reliability due to the fact that each of the two variables were only represented by 4 questions on the Wind Farm Attitude Scale. As the literature indicated in chapter 2 the attitude section of the TpB is more important than the other two section.

The final two variables, Subjective Norms and the Perceived Behavioural Controls, of the TpB do have a positive reliability rating which means that they can be used in the TpB. Given that the focus of the study is on the attitudes of the visitors towards wind farms, the high reliability rating of 81.1 % for the attitudes variable means that the findings relating to visitors' attitudes are both reliable and valid.

4.8 Scale Level of significance

It was found that gender was statistically significant when compared with attitudes. Leven's Test for Equality of Variance was used for the attitude scale to analyze the difference between the variables of Gender and Attitude (Table 4.10). Men and women scored similarly on a majority of the attitude scale. There were differences between the genders in 3 of the 14 attitudes variables. Men were less likely than women to feel that "*Wind farms can fit into any landscape*" (Sig = 0.029, Men had a mean score of 2.51, women had a mean score of 2.74), "*Wind farms disrupt natural air flow patterns*" (Sig = 0.007, Men had a mean score of 3.49, Women had a mean score of 3.29) and "*Wind farms require a lot of land to be cleared which is bad for wildlife and vegetation*" (Sig = 0.049, Men had a mean score of 3.41, Women had a mean score of

3.25. Using this test illustrates the difference between men's and women's answers to the questions on the Wind Farms Attitudes Scale and the level of significance of the variance.

Table 4.10 Independent samples t-test for visitor attitudes scale which illustrates values for gender for t, degrees of freedom and two-tailed significance.

Attitudes	T	df	Sig. (Two-tailed)
Wind farms are a source of unlimited renewable energy	0.878	497	0.381
Wind farms are not reliant on fossil fuels	0.754	493	0.452
It has been found that wind farms kill a lot of birds	1.469	491	0.143
Wind farms can fit into any landscape	-2.19	497	0.029*
Air flowing over the blades can produce a large amount of noise	0.433	494	0.665
Wind farms are better than nuclear power	-4.355	497	0.000
The sight of wind farms on the visual landscape has been found to be quite obtrusive	-0.664	494	0.507
Wind farms generate power constantly	-3.605	493	0.000
Wind farms are a great way to cut carbon emissions	0.051	492	0.959
Wind farms are expensive to construct	0.64	489	0.522
Wind farms disrupt natural air flow patterns	2.712	490	0.007*
Wind farms require a lot of land to be cleared which is bad for wildlife and vegetation	1.971	486	0.049*
Wind farms are the worst form of "green" energy	0.638	490	0.524
Many jobs can be created in rural areas with the construction of wind farms	-1.648	492	0.100

Note: * indicates a variable with a statistical significance less than 0.05 level

When Leven's Test for Equality of Variance was used on the Subjective Norm variable it was found that men and women scored reasonably close to each other in all cases except for one (Table 4.11). The scale variable of "I feel _____ social pressure towards approving of wind farms" scored a significance level of 0.037. This indicates that women in the Subjective Norms have a different stance on the question in which they felt more pressure than men, whereas they tended to score similarly in the other three variables.

Table 4.11. Independent samples t-test for visitor subjective norms scale which illustrates values for gender for t, degrees of freedom and two-tailed significance.

Subjective Norms	t	_Df_	Sig. (Two-tailed)
Most people around me think _____ of wind farms	-1.287	487	0.199
It is expected by other people that I think _____ of wind farms	-0.744	489	0.457
I feel _____ social pressure towards approving of wind farms	-2.086	492	0.037*
I think _____ of media coverage on wind farms	0.303	492	0.762

Note: * indicates a variable with a statistical significance less than 0.05 level

The independent sample t-test for perceived behavioural controls shows that there is a significant variance between men and women (Table 4.12). There was a level of significance between the genders in; "The Lake District is where I most wanted to go" (0.022) in which then women indicated that they wanted to go to the LDNP more than men. For the second question "It will be my decision whether or not I come back to the Lake District" (0.035), women indicated much higher than men that the decision to come back to the Lake District was their decision.

Table 4.12. Independent samples t-test for visitor perceived behaviour controls scale which illustrates values for gender for t, degrees of freedom and two-tailed significance.

Subjective Norms	t	_Df_	Sig. (Two-tailed)
Cost was not an important factor	0.83	477	0.407
It was easy for me to come to the Lake District National Park	0.638	498	0.524
The Lake District is where I most wanted to go	-2.304	496	0.022*
It will be my decision whether or not I come back to the Lake District	-2.119	497	0.035*

Note: * indicates a variable with a statistical significance less than .05 level

4.9 General wind farm knowledge

It is important to understand peoples' level of intent towards visiting areas with wind farms, as well as the knowledge or perceptions that people have and how this influences their level of intent. To understand this connection, data regarding visitors' level of knowledge towards wind farms were gathered concurrently with their attitudinal data.

This was accomplished by asking eight general wind farm knowledge questions aimed at determining the visitors' level of knowledge and perceptions of wind farms. A total of 412 (80 % of the total sample size) (Table 4.13) respondents completed this section, with a mean score of 2.517 and a Std of 1.35165.

The highest score attained by any LDNP visitor was 6 out of 8 (or 75 %); the lowest score was zero (Table 4.13). It is important to note that, not a single visitor to the LDNP obtained a knowledge score of 7 or 8 out of 8.

Table 4.13 Level of Visitor Knowledge

Score	N	Percent
0	21	5.09
1	77	18.68
2	119	28.88
3	99	24.02
4	61	14.8
5	29	7.03
6	6	1.45
Total	412	100%

An interesting trend was discovered when the responses to the three sections of attitude related questions were applied to the knowledge or perception scores. The knowledge responses were divided up into the three sections of attitudinal definitions (negative, neutral and positive).

This allowed for the emergence of a clearer picture of visitors' perceptions of wind farms based on their attitudes towards wind farms. This allowed for a fuller understanding of the effects that level of knowledge has on attitudes.

The amount of knowledge possessed by the segment of visitors who held a negative attitude towards wind farms had a mean score of 3 out of 8 compared to the mean score of 2.517 for the overall population. Of those visitors who held a negative attitude towards wind farm, 21% scored a 2, 25.5 % scored a 3, 9 and 2.4% scored a 6 out of 8 on the knowledge component of the questionnaire.

In comparison, the total number of respondents with neutral attitudes accounted for 274 of the total number of respondents with a mean of score of 3 out of 8 on the knowledge component of the questionnaire. The level of knowledge of the LDNP visitors who scored a neutral on the attitude scale towards wind farms had a different spread than the negative attitudes; 13.6 % scored a 1, 24.9 % scored a 2, 17.1 % scored a 3, and only 1.5 % score a 6 out of 8.

The final comparison is with the LDNP visitors who had scored a positive rating on the attitude scale. The segment of respondents with a positive attitude accounted for 28 respondents of the total population, with a missing variable of 3 and a mean score of 2 out of 8. Additionally, 19.4 % scored 0, 25.8 % scored 1, 19.4 % managed to score 2, another 19.4 % got 3 and 6.5 % scored 4 out of 8 on the knowledge portion of the questionnaire.

When all three categories of LDNP visitors were compared it became evident that the level of knowledge was different between the three. Visitors with both negative and neutral attitudes had a mean score of 3 out of 8 while the visitors with a positive rating had a mean score of 2 out of 8. This indicates that the visitors with a positive attitude score have a lower level of knowledge towards wind farms than those with a neutral or negative attitude, although it should

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be noted that within the three groups there is a wide spread of values. There is one main theme which is evident within the usable data. All three attitudinal groupings show a perception of wind farms of being much smaller in size and their impact less on an area than was suggested by the literature (Chapter 2).

In response to the question: *"A single wind turbine that is 65 metres high with a blade diameter of 46 metres continuously generating power for a year will power how many homes?"* (Figure 4.1) visitors to the LDNP reported quite interesting responses; 46.9 % of all respondents reported thinking that wind turbines can power more homes than they actually are able to. Of all the visitors surveyed, 29.4 % of population indicated that they thought that wind farms could provide power for fewer homes than is, in fact, the case (Danish Wind Industry Association, 2003). Only 23.7 % of the visitors indicated the correct number (that the wind turbine could power 200 homes). This indicates that, overall, visitors perceive wind turbines as being able to provide more power than they can.

A single wind turbine that is 65 metres high with a blade diameter of 46 metres
continuously generating power for a year will power how many homes?

Number of Homes
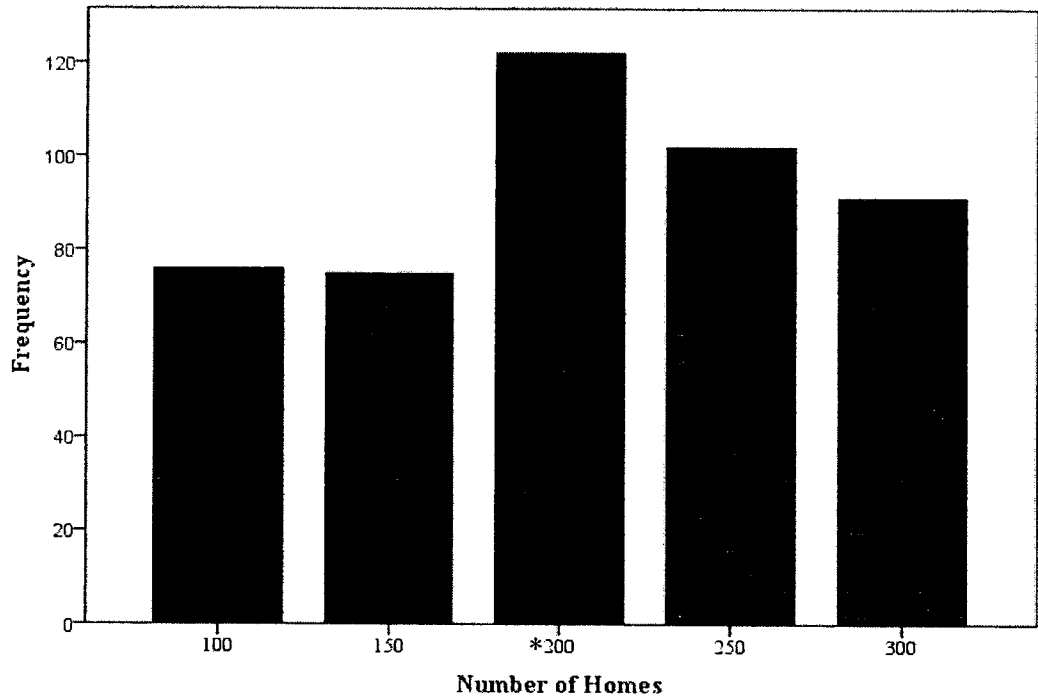
* indicates correct answer
Figure 4.1: Knowledge Question One

The second question: "*Turbines produce what atmospheric effect behind the blades?*"

(Figure 4.2) was designed to shed light on LDNP visitors' level of knowledge regarding the

atmospheric effect of wind turbine blades. This question resulted in clearer answers than the rest

of the questions. With 474 responses (92.0 % of the total visitors) the data show a clear

difference between the perceptions. Only 48.7 % of the total responses indicated that turbulence

is created behind the blades of wind turbines. This higher level of knowledge indicates that the

visitors of the LDNP have a clearer understanding of the atmospheric effects of wind turbines.

Turbines produce what atmospheric effect behind the blades?
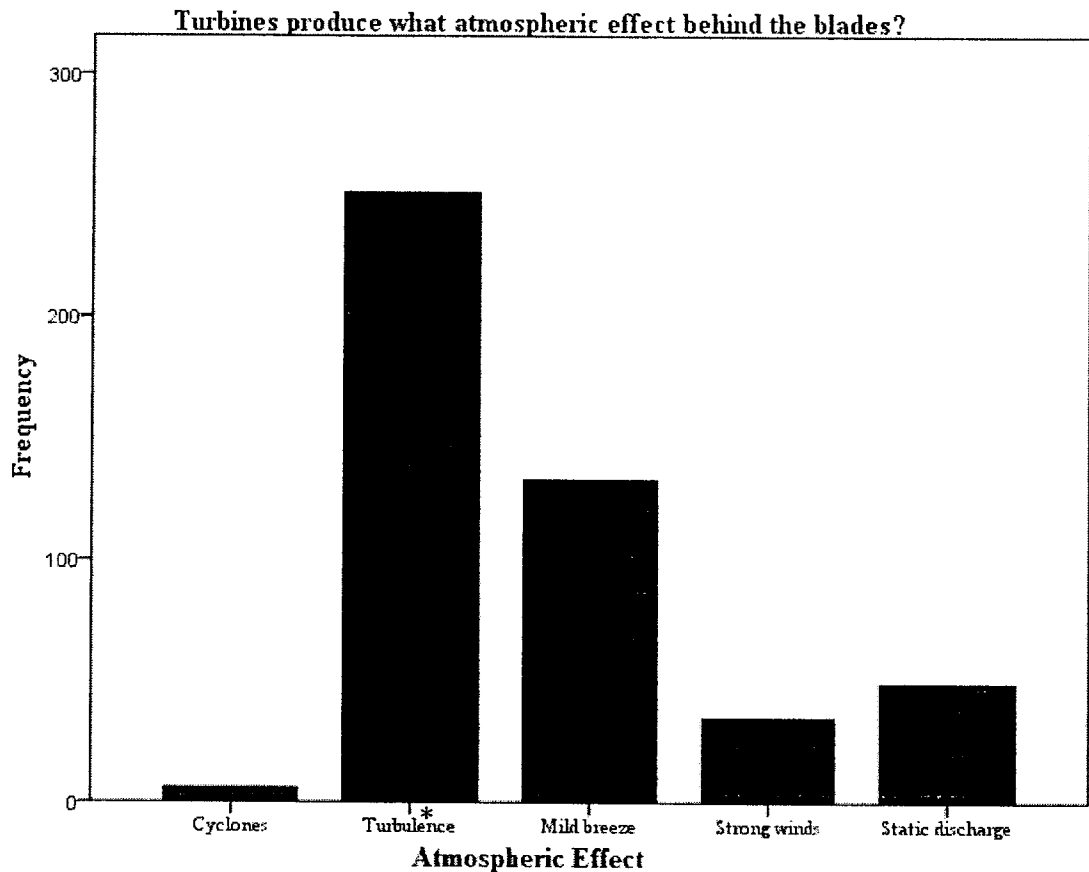
* Indicates correct answer

Figure 4.2: Knowledge Question Two

The third question asked: "*what is the average length of a single turbine blade?*" (Figure 4.3) and was designed to determine the LDNP visitors' perception of the blade length of wind turbines. With a response rate of 91.5 % (or 471 for a total respondents answering this question), the data show an interesting spread of perceptions. Only 14.0 % of respondents indicated that blades were smaller than they actually are (Danish Wind industry Association, 2003). A total of 43 % (combined in three answers) indicated that blades were larger than indicated in the literature. The largest grouping of answers accounted for 34.6% of the total responses; these visitors indicated that turbine blades were the right size.

What is the average length of a single turbine blade?
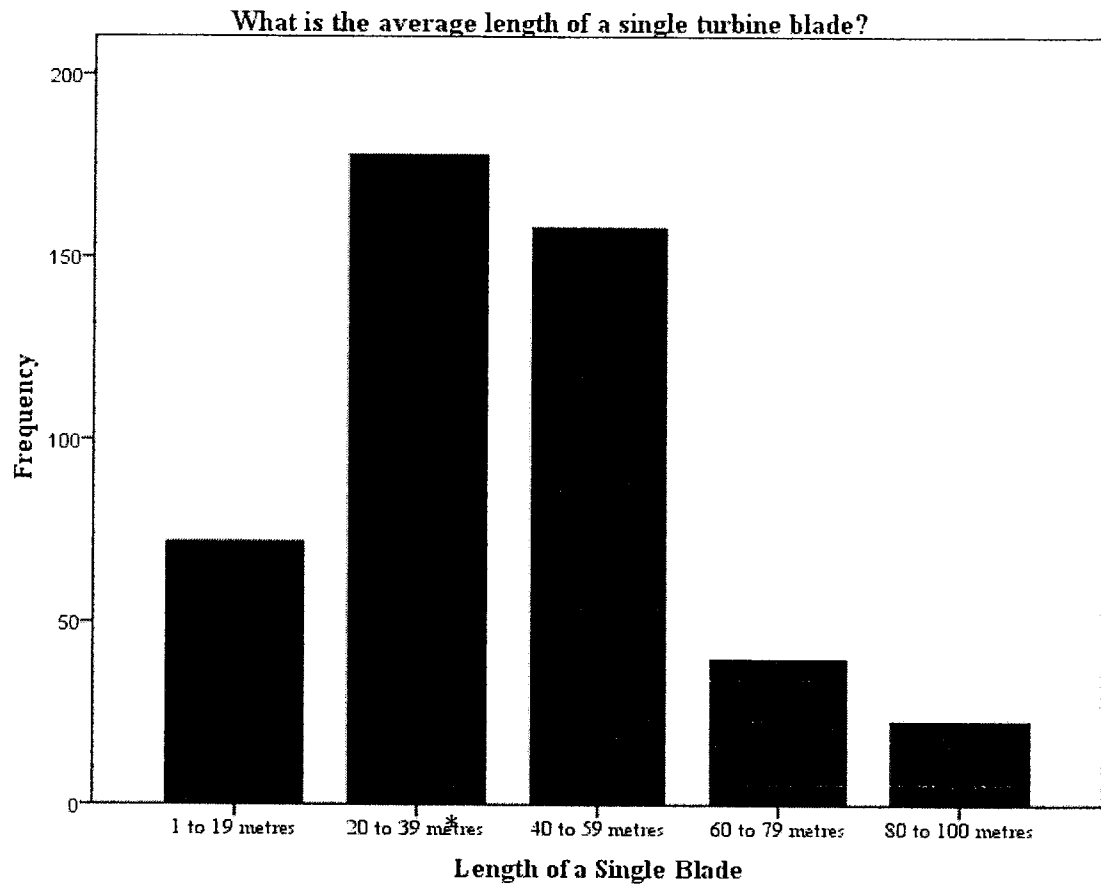
* Indicates Correct Answer

Figure 4.3: Knowledge Question Three

The fourth question: "*How tall is the average utility wind turbine?*", (Figure 4.4) was designed to show the perceived size of a wind turbine. With 477 responses, accounting for 92.6 % of the total data set, a clear level of perception is immediately identifiable. Out of the total, 10.1 % of visitors indicated the correct answer for how tall an average wind turbine is at 91 to 110 metres (Baban & Parry, 2001). A total of 76.4 % of visitors believed that the wind turbines were much smaller than indicated by the literature. The perception of how tall wind turbines are quite clear within the LDNP visitor data set; the perception is that wind turbines are smaller than they actually are.

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How tall is the average utility wind turbine?
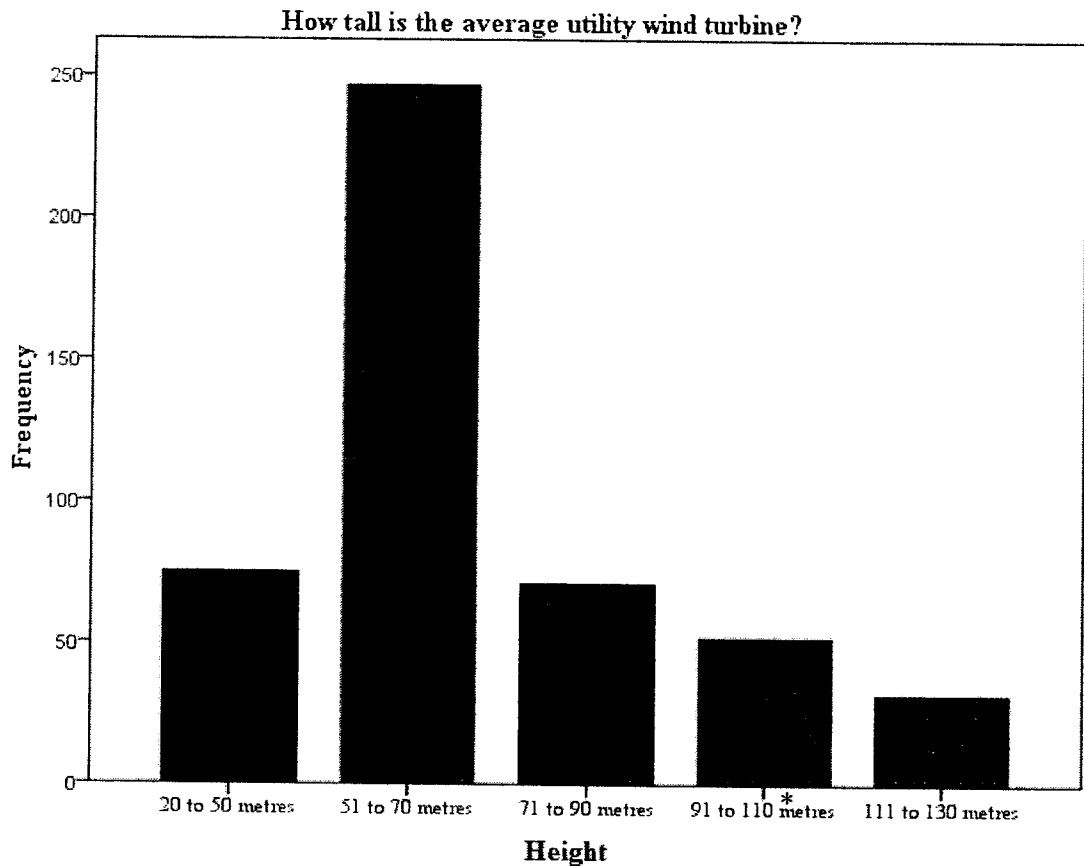
* Indicates correct answer
Figure 4.4: Knowledge Question Four

LDNP visitors' perception of the total size of a wind turbine was determined by asking

what object could fit in the diameter of the average utility wind turbine blade (Figure 4.5). With a

472 responses (91.7% of the total data set) a clear indication of the diameter of the wind turbine

blades was discovered. A total of 73.4 % of respondents indicated that the blades were smaller

than they actually were. Only 17.1 % perceived the correct size which was a jumbo jet (Mercer,

2003), while 1.2% indicated that they were larger than indicated in the literature. This shows that

the average visitor to the LDNP perceived the diameter of the average utility wind turbine to be

smaller than indicated in the literature.

Which can fit in the diameter of the average utility wind turbine blade?
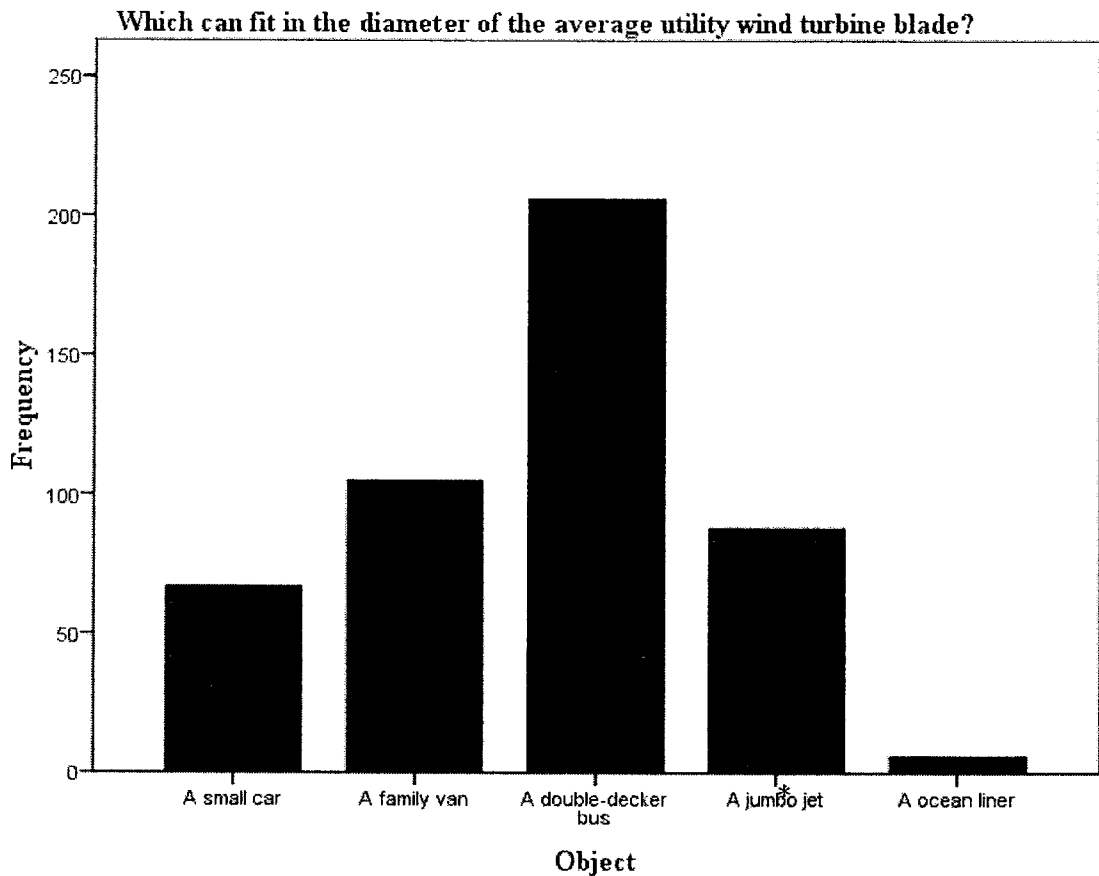
* Indicates correct answer

Figure 4.5: Knowledge Question Five

The perception of the LDNP visitors towards the amount of woodlands which would have to be cleared if wind farms were constructed was determined by asking the questions: *"woodlands would have to be cleared how far around a wind farm?"* (Figure 4.6). A total of 10.9 % of the visitor population thought that land had to be cleared further than needed. Only 25.2 % of the LDNP visitor population indicated the correct amount of distance that land had to be cleared at 500 metres (Baban & Perry, 2001). A much larger percentage of the population (54.8 %) indicated that it was less than is stated in the literature.

Woodlands would have to be cleared how far around a wind farm?
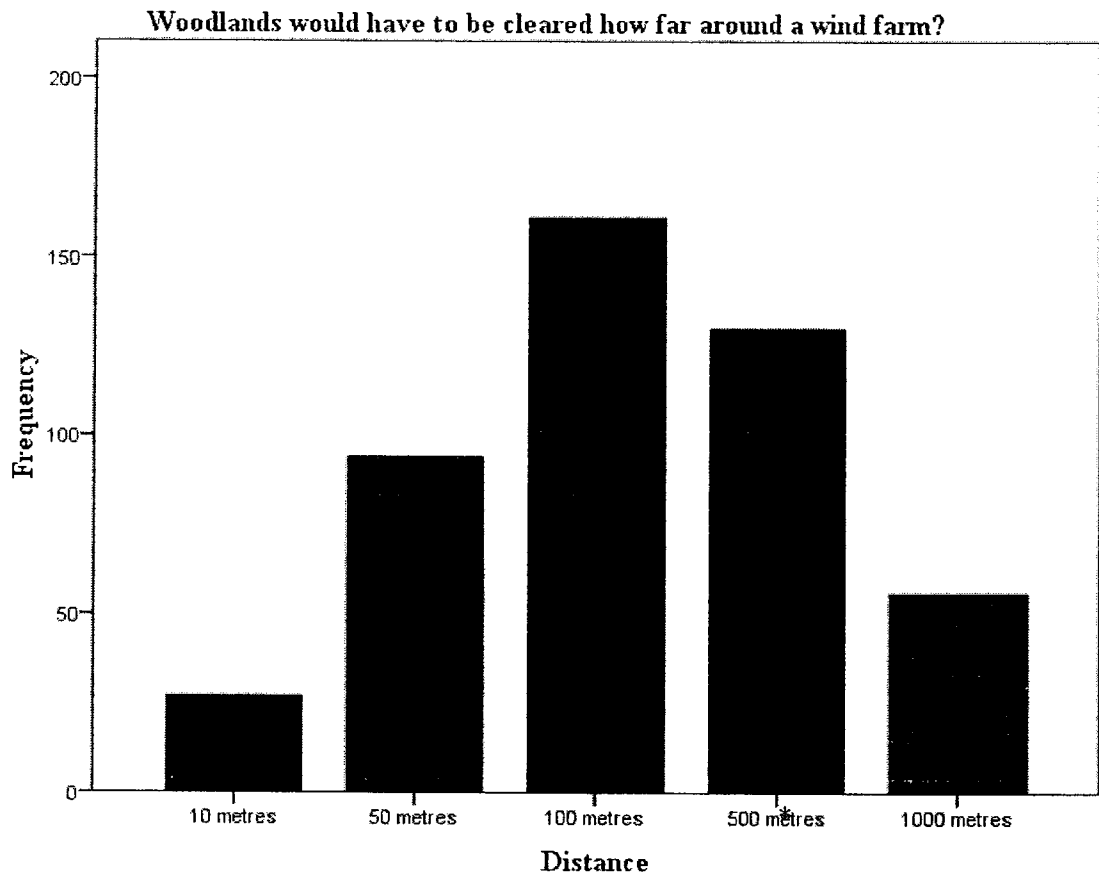
* Indicates correct answer
Figure 4.6: Knowledge Question Six

It was important to determine the perceptions of LDNP visitors regarding how close wind farms can be to an historic site; especially given that the UK has an abundance of cultural and historic sites (Figure 4.7). A total of 468 respondents (90.9 % of the total data set) answered this question. Only 17 % of the visitor population perceived that wind farms could be placed within a distance described by the facts about wind farms as "too close" to historic sites, whereas a much larger percentage (44.3%) indicated a perception that wind farms had be a lot further away. A total of 29.5 % of respondents indicated the correct distance as 500 metres (Baban & Perry, 2001). This shows that the visitors in the LDNP perceive that wind farms have to be further away from historic sites than is supported by the facts.

How close can wind farms be to a historic site?

x-axis: Distance — 10 metres, 100 metres, 200 metres, 500 metres, 1000 metres

y-axis: Frequency
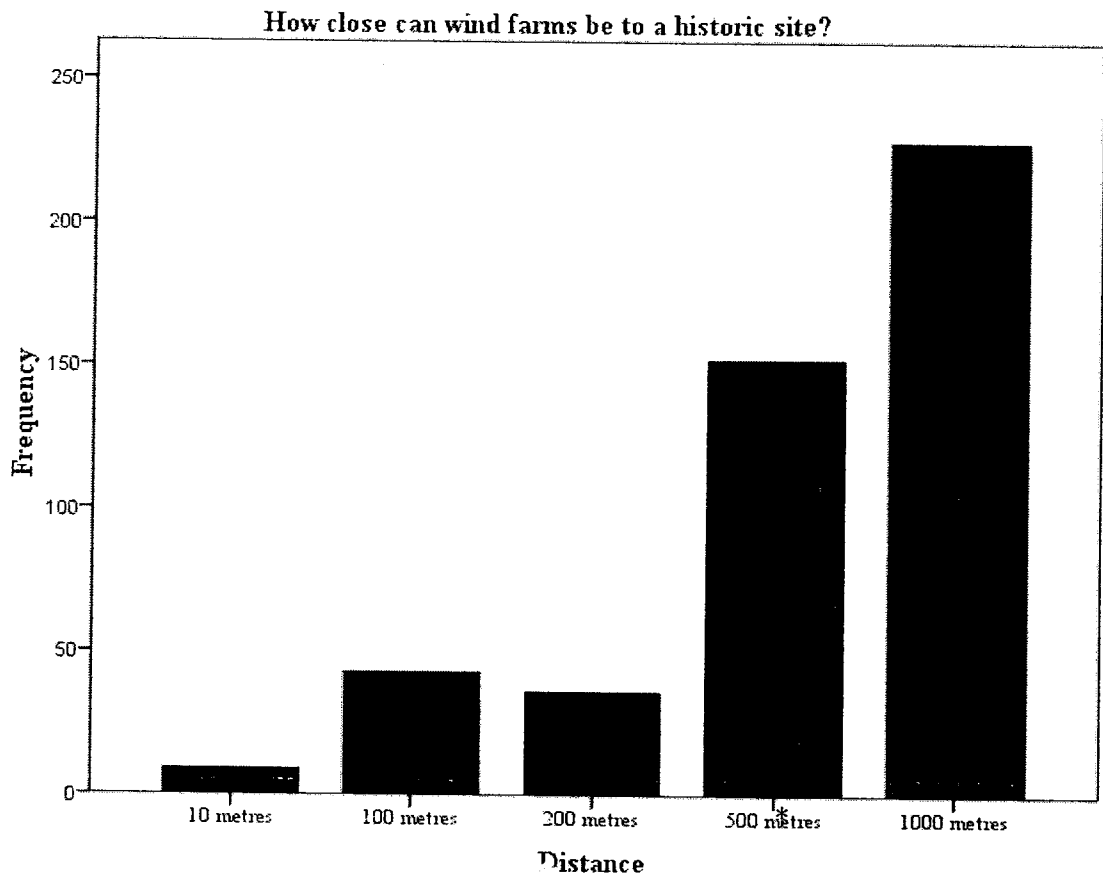
* Indicates correct answer

Figure 4.7: Knowledge Question Seven

The public perception of green energy is a highly contested issue (Chapter 2). It was important to ascertain the percentage of the respondents who perceived that wind farm usage was positive. A total of 481 or 93.4 % of the total data set answered this question (Figure 4.8). A total of 71.7 % of the population indicated that a percent of the UK's power is expected to be supplied by wind farms by 2020. Of these, 28.3 % gave an answer which corresponded with official estimates of less than 10 % (BWEA, 2006) in comparison to the 71.7 % who indicated a percentage greater than 10 %.

What percentage of Britain's power is expected to be supplied by wind farms if all intended farms are built by 2020?
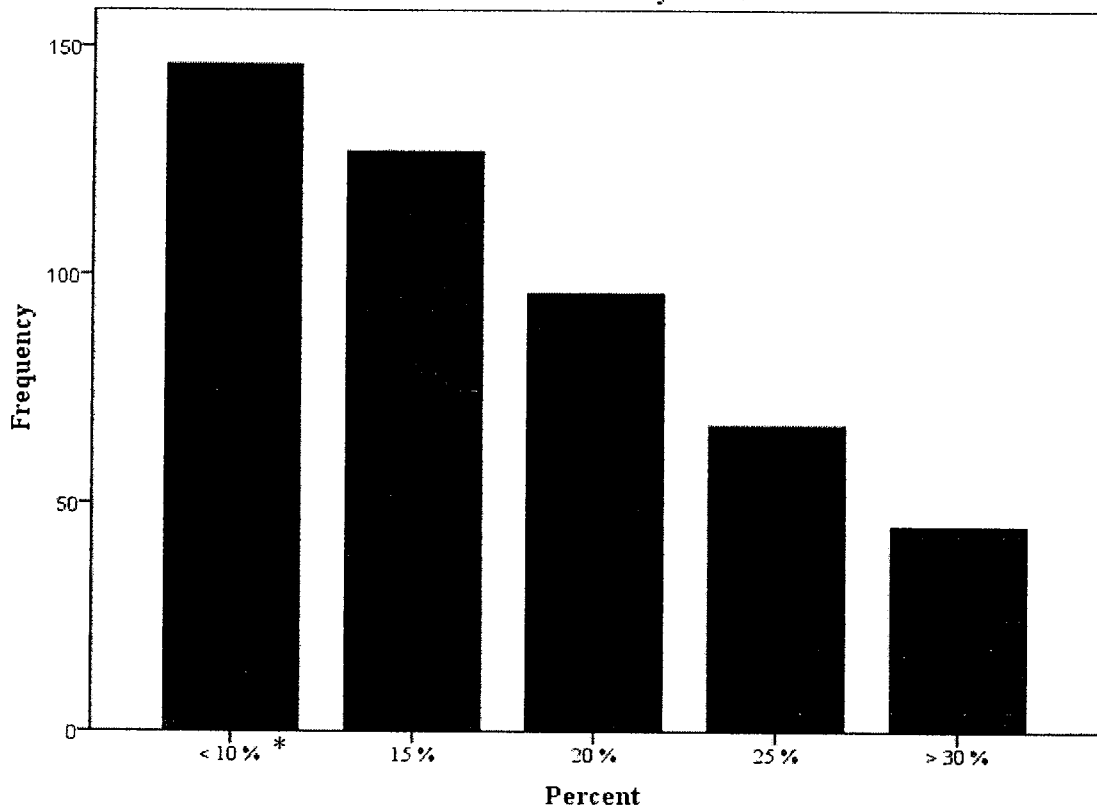
* Indicates correct answer

Figure 4.8: Knowledge Question Eight

4.10 Age and Attitudes

Understanding the significance of age on the attitudes of LDNP visitors is crucial in

targeting the specific groups to help with future planning models (Table 4.14).

The highest attitude rating (most positive towards wind farms) is the 18 to 25 year old age

group; they had a mean score of 3.5335. The age group with the lowest attitude score is the 56 to

60 year old age group with a mean score of 3.1364. While both of these groups do score a neutral

rating on the attitude scale, it is clear that negative attitudes towards wind farms increase with

age: at least until reaching the 76 and older age group who were quite responsive to wind farms with a mean score of 3.4405.

Table 4.14 Mean scores by Age groups

Age	Mean Attitude	Mean PBC	Mean SN	Mean TPB	Mean Knowledge
18 to 25	3.5335	3.9716	2.9148	3.4733	1.8684
26 to 30	3.4612	4.163	2.6993	3.4435	2.2564
31 to 35	3.3805	4.1643	2.6643	3.403	2.2857
36 to 40	3.4472	4.0904	2.7606	3.4327	2.26214
41 to 45	3.365	4.2366	2.7589	3.455	3
46 to 50	3.2557	4.1106	2.6545	3.3403	2.5294
51 to 55	3.2723	4.1616	2.6231	3.3493	2.5918
56 to 60	3.1364	4.1995	2.6708	3.3355	2.8367
61 to 65	3.2444	4.1971	2.5	3.3124	2.6579
66 to 70	3.1504	3.8684	2.2368	3.0852	2
71 to 75	3.1656	4.0792	2.55	3.2649	2.2941
Over 76	3.4405	4.2917	2.7083	3.4802	2.25

LDNP Visitors Mean Scores

Legend:
- *Attitudes
- PBC
- Subjective Norms
- TPB
- Knowledge

Y-axis: Mean Scores (1.5 to 4.5)

X-axis: Age Groups — 18 to 25, 26 to 30, 31 to 35, 36 to 40, 41 to 45, 46 to 50, 51 to 55, 56 to 60, 61 to 65, 66 to 70, 71 to 75, Over 76
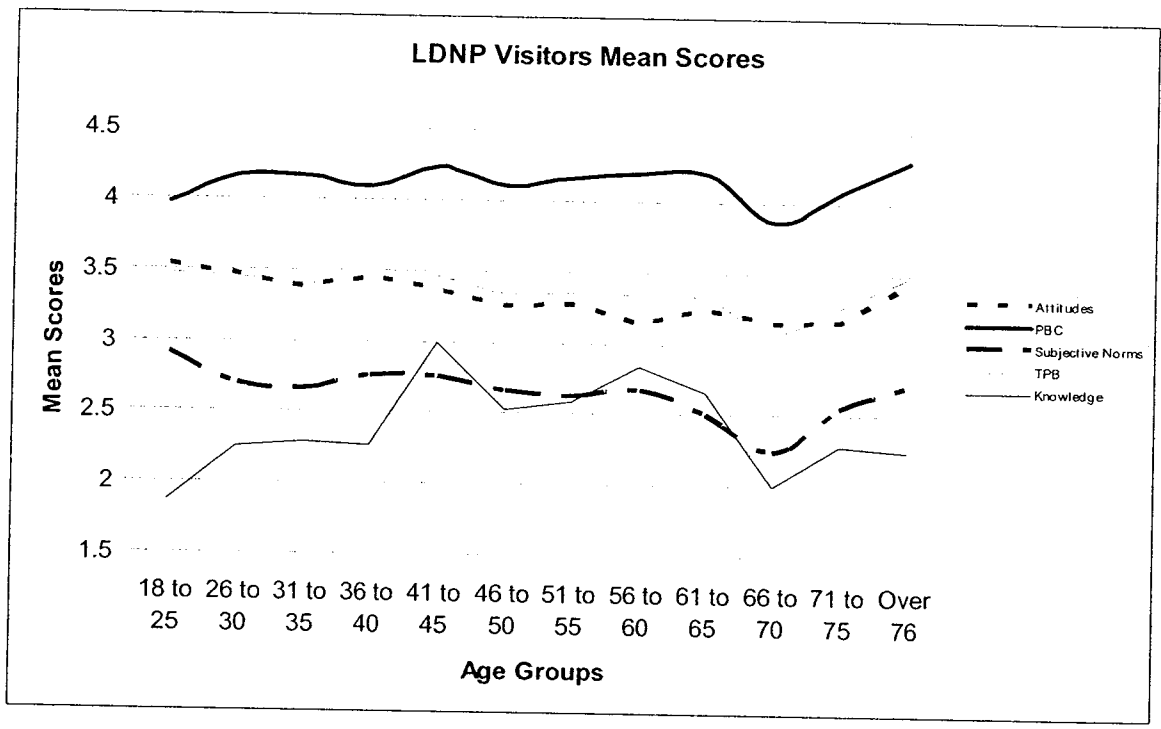
Figure 4.9: LNDP Visitor Mean Scores

4.11 Age and Perceived Behaviour controls

Understanding the impacts of how much control visitors have on their own decision to visit areas in which wind farms may be present is important to understanding the TpB. It is this control variable which would stop visitors from going to the LDNP and influence their decision to return. It is quite evident that there is clear trend in the Perceived Behavioural Control mean scores (Figure 4.9). There is an outlier in the age group of 66 to 70 with a mean score of 3.8684 (Table 4.14). This trend indicates that as the age of the visitors increase so does their comfort with their ability to make a trip with fewer stressors which would stop them from making the decision of travelling to the LDNP.

4.12 Age and Subjective Norms

The influences placed on a visitor by society are very important variables to determine for the study of the TpB. The LDNP visitors indicated that society pressure does not influence their decision regarding wind farms with a mean score of 2.6676 out of 5. This trend declines with age; there is more pressure felt by visitors in the 18 to 25 age group (mean score = 2.9418) and it steadily declines to a mean score of 2.2368 in the 66 to 70 age group (Figure 4.1). At the age group of 71 to 75 there is a small resurgence in the pressure felt by visitors (mean score = 2.55). While there is a downward trend in the data for the LDNP visitors, all the scores are in the negative range which indicates that the visitors do not feel that much pressure is placed on them by society to accept wind farms.

4.13 Age and Theory of Planned Behaviour

Within this sample group there is a distinguishable trend. It is clear from the data set that there is a decrease with increasing age in the visitors' level of intent to visit the area if there were wind farms around it. The highest mean scores are with the 18 to 25 age group; the level of intent to return then starts to decline as the age groups increase until the age group of 66 to 70. It spikes back to a positive rating for 71 to 76 and 76 and over.

4.14 Age and level general wind farm knowledge

Ascertaining the level of knowledge which the LDNP visitors possessed was vital to fully understanding their attitudes towards wind farms. In comparison with the other scales used in this study the knowledge means scores are out of 8 instead of 5. The sample shows that there is a steady increase in the level of knowledge from the 18 to 25 age group (mean score = 1.8684) to the 41 to 45 age group (mean score = 3). After the 41 to 45 age range, the mean knowledge score

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drops to a score of 2 out of 8 (in the 66 to 70 age range). This information indicates that while the lowest score are found in the 18 to 25 age range that there is a steady increase in the level of knowledge until the age group of 61 to 65 and than the level of wind farm knowledge starts to decrease as the visitor's age increases beyond 65.

4.15 Return rates

One of the main factors which directed this study was the desire to determine the impacts that wind farms would have on return rates. Two questions were asked to ascertain possible changes in visitor return rates to the LDNP if wind farms were constructed in its vicinity. To analyze the depth of responses provided by visitors a Likert Scale was converted into percent probability (ranging from highly unlikely to return to high likely to return). This was done to help illustrate the possible change in visitors' willingness to return to the LDNP if wind farms were constructed within the vicinity of the park.

The visitors who chose the value of Highly Likely had a 1.6 % increase between willingness to return and willingness to return if wind farms were constructed (Table 4.15). It was found that there was a 2.9 % increase in the number of visitors who indicated that they would be willing to return if wind farms were constructed. The neutral section of the visitors willing to return had the largest increase with 4.7 % more visitors indicating that they are neutral towards their willingness to return if wind farms were constructed. There was a 5.3 % decrease in the number of visitors who indicated that they would be willing to return if wind farms were constructed. The largest variance was in the highly likely to return if wind farms were constructed with a drop of 12.6 %. The change in the data has indicated that there is a noticeable trend in the data set. This trend shows that there will be a decrease in the number of visitors willing to return to the LDNP if wind farms are constructed within the vicinity of the park.

Table 4.15 Return Rates

Value	Return To the LDNP (%)	Return with Wind Farms (%)	Change % (- +)
Fully Disagree	2.1	3.7	1.6
Disagree	0.8	3.7	2.9
Neutral	2.1	6.8	4.7
Agree	43.2	37.9	-5.3
Fully Agree	59.8	47.2	-12.6
Missing	1	0.8	

4.16 Summary

There are many reasons why a person chooses to go to an area or not to go to an area for recreation or leisure purposes. Found within the data set were some quite obvious and some not so obvious trends. These trends show that, as one would expect, changing an area will in fact cause a change in visitors who go there. This section showed that there was a difference between the genders in all three sections of the TpB. Age is also a confounding factor within the data set. As age increases the attitudes of support for wind farms decreases. There is also an apparent lack of general knowledge about wind farms held by the LDNP visitors. This has allowed for a perception about wind farms to be formulated in which they are perceived as smaller, have less impact and can generate more power than they are able to. With an understanding of the impacts towards attitude and the level of knowledge, a park manager can make an informed decision regarding wind farms in an area. The next chapter examines the second type of data which was collected, the open-ended question. This chapter will look at the themes held by the three types of visitor attitudes; negative, neutral and positive.

Chapter 5: Visitor Themes

To further understand the interactions of visitors to the Lake District National Park and any potential wind farm developments, an additional research approach was undertaken through a study of the open-ended responses. The main focus was to determine the visitors' personal views towards wind farms and to provide more insight into the attitude scale constructed for this study. All visitors who completed the survey were asked to complete the question in advance of the quantitative question so their responses would not be tainted by any information contained in the quantitative section. The question which the visitors were asked was "In the space provided please describe what you personally think about wind farms." It should be noted that out of 515 respondents, 111 declined to answer the qualitative segment.

The idea of wind farms elicited a wide array of answers from over 78 % of all participants in the study. As expected with such a contentious issue, there was evidence of mixed feelings across the visitor population. While some of the population were vehemently opposed to the construction of wind farms, there was an ample number of visitors who expressed neutral opinions towards wind farms and an equal number who embraced wind farms.

All responses were divided into three primary groups using the attitude scale developed for the study. The groups represent the attitudes within each of the LDNP's visitors' responses. The negative designation encompassed visitors who scored an attitude score less than 3 out of 5. The neutral group was designated to those visitors whose score on the attitude score was equal to or greater than 3 but less than 4 out of 5, while the positive designation was assigned to the visitors who had a score of greater than 4 out of 5. Visitors' responses were analysed and coded for emergent codes, which were then classified into themes (Neuman, 2000). Once all of the themes were compiled for each group, the most prominent were selected to determine the most relevant for each attitude grouping. This was done by following Neuman's

(2000) approach to open coding. This method allowed the emergent themes to be identified without relying on themes prominent in the literature (Creswell, 2002). Once the thematic coding was completed the themes were classified as negative, neutral or positive in relation to supporting wind farms and then compared to themes in the literature.

The open-ended question was designed to provide more detail on the quantitative questions which were asked in the later portion of the survey. It also allowed a method to check the development of the attitude scale by seeing if the information matched the group designations. With the division of the qualitative data by the attitudinal mean scores it allowed for a further analysis of the information by determining if there was a connection between the visitors' attitudes and their open ended answers. Special attention was paid to the outliers to determine why characteristics provided by those visitors did not correspond between the open-ended data and the visitor's attitude score. The groups were made based on the visitors' attitude scores. Then the open ended responses were analyzed to determine if they matched the attitude scores. Analysing the quantitative data before the open ended question provided a method of dividing the information into sections for thematic analysis.

5.1 Negative attitude themes

When the responses from the visitors who scored a negative on the attitude scale were compiled there were five prominent themes. These visitors indicated their feelings that wind farms represented a hostile intrusion into their travel area. The mean attitude scale score of the respondents held with in this grouping was > 3. Each of these separate themes represents a negative segment of the visitor population. The studies themes were displayed using Figure 5.1, 5.2 and 5.3 using a visualization method developed by Wozniczka (2009).The five main emergent negative themes were (Figure 5.1):

1. Not in my back yard (NIMBY),

2. Expense versus Return,

3. Aesthetics,

4. Environmental impact,

5. Out at sea.

The negative open ended responses were more likely to report negative attitude scores. Figure 5.1 provides the main themes found in the negative responses. The emergent themes were broken down in the first section of the graph and then combined to eliminate unnecessary themes (Neuman, 2000). What emerged were the main themes which were located in the negative response provided by the LDNP visitors. The outliers for this section were representative of a combination of the other two sections. The negative outliers showed a concern for the visual landscape by expressing comments such as "A necessary thing now that we need alternative energy. Need to be sited in areas where they do not cause too much of a blight on the landscape" and "Although I agree with the energy provided, I despair at the thought of the effect on the country side. Mixed feelings."

Emergent Themes | First Derivative | Final Derivative

NIMBY

Not enough Information Provided

Education

NIMBY

Power Output is too Low

Expense

Expense VS Return

Return

Tranquility

Personal Feelings

Aesthetics

Noise

Visual

Impact

Impact

Not Working

Environmental Impact

Should Be Off Shore

Site Suitability

Out at Sea
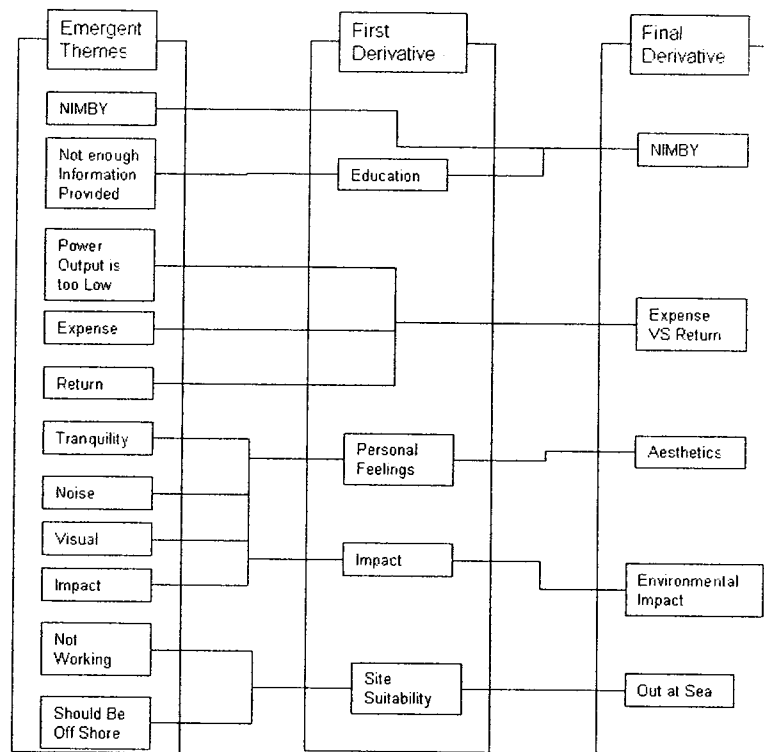
Figure 5.1: Negative Theme Development (Based on Wozniczka, 2009)

The largest negative qualitative response to wind farms was coded as Not In My Back Yard (NIMBY). The visitors indicated that they realized that there might be a need for wind farms, but did not want them in the area in which they live. This theme can be found in much of the literature indicating that there is a human acknowledgement for the need for wind farms, as long as they are not near a place of residence (Wolsink, 2000).

The portion of the visitors' population which expressed a negative attitude towards wind farms indicated that they saw wind farms as something which is needed, however they also indicated that they were not tolerant of residing near them. Evidence of this can be found in responses such as "Something we need unfortunately, not in my back yard" or "Great idea environmentally, but I have an NIMBY attitude and would feel they would spoil areas known for

natural beauty." These responses correspond with other statements such as "Everyone thinks they are a great idea but then no one wants them where they Live!"

A trend within the negative responses expressed concern regarding how expensive wind farms are to construct and operate versus their estimated return. This theme coincides with what was found in the literature which indicated that there was a large initial cost with the construction of wind turbines. This theme was quite evident in the responses such as "EXPENSIVE" or "Expensive, inefficient, unsightly noisy", "An eyesore producing very little electricity and a waste of money not cost effective" and "Dislike wind farms no value for money." This cost is taken on by the developer and the government of the nations where the farms are being built; they are repaid once the wind farms start to produce energy and profit. While this process is evident in the literature, the responses above indicate that this information is not effectively communicated to the general public.

Many of the negative responses also indicated that visitors were concerned about the environmental impact caused by not only the construction of wind farms, but the future impact that constructed wind farms would have on regional flora and fauna. Once established, wind farms have been found to have limited impact on the land, however there is growing evidence that there might be a higher impact on fauna (Woods, 2003).

This perspective is supported by such statements as "Know they can blight scenic area + kill many birds of prey." and "They can provide another source of renewable energy but at what cost to the landscape?" and indicate that the environmental impacts are a key reason why LDNP visitors are not proponents of wind farm developments. Visitors also mentioned that they "Can be spectacular to see. Can be harmful to birds" and "I hate them. I think they will not produce enough electricity to justify their environmental impact."

Some visitors discussed the impact of the development of the material in stating:

"Having worked in a blade factory, I am knowledgeable of the effects of the materials used in their construction. The process incurs an enormous amount of waste that has to go to special landfills. The life of a blade is comparatively short then the blade has to be disposed of where? Epoxy resins are also a serious health hazard to workers used in the construction process. The emissions used in construction far outweigh any benefits."

This shows a connection to the literature by showing that wind turbines are costly not only in a monetary sense however also in an ecological sense (Pasqualetti, 2001).

Many of the negative themes indicate that there needs to be more research into the impact on the environment which is caused by the development of not only wind farms but the construction of wind turbines as a industry as a whole.

The qualitative responses provided by the LDNP visitors indicate a clear negative attitude towards the placement of wind farms; visitors with negative attitudes towards wind farms would prefer that the government and wind farm companies develop sites off shore or far out at sea. This is evident in responses which state "A PR stunt by the UK government. They are only economically feasible because of government subsidy and need conventional power stations to cover for downtime when there is no wind." Other visitors who expressed negative attitudes stated that they were: "Ugly, noisy, spoil scenery, obtrusive. Why can't they be built out at sea", or "Visibility is the big problem, Aesthetics considerations need to be carefully evaluated. I would prefer them to be at sea." Many of the respondents indicated that they had a negative attitude towards wind farms, but would accept them if they were placed at sea.

Humans are very visual in their interpretation of an area (Benediktsson, 2007). Therefore, visual aesthetics play a large role in why people visit certain areas. The impact that wind farms would have on the respondents with negative attitudes is evident. Wind farms are seen as

eyesores, intrusive, capable of destroying scenic vistas and as a blights on scenic landscapes. Visitors to the area also indicated that they would be less willing to return to an area in which the destruction of scenic vistas was allowed. This corresponds to the attitude scores of the attitude scale.

Many responses illustrate this theme, such as "Definitely an eyesore. Not sure if they generate anything meaningful in terms of energy", "They spoil the countryside, "Tolerable where not obtrusive" and "Not particularly keen as I think there are other less scenically damaging ways of getting power." The effect on the visual aesthetics tended to be interpreted as a spoiling effect on an area. It is this effect which will push people who have negative attitudes to stay away from an area with a wind farm. This section corresponds to the quantitative data which shows that there would be a decrease in people willingness to return to areas if wind farms were constructed.

5.2 Neutral attitude themes

When the sample of LDNP visitors was split up into sections there was a clear segment which fell into the neutral attitude category. Within the neutral category there are four main themes. This category of visitor is classified as one who accepts wind farms but is not in favour of wind farms. The mean score within this grouping is > 3 but < 4 on the attitude scale. This is a smaller group due to the restriction set by the selection protocol with in the attitude scale, as outlined (Chapter 4). The 4 major themes which emerged during review of the qualitative answers for the neutral category were (Figure 5.2):

1. Lack of knowledge,

2. Good idea but placement,

3. Necessary evil, and

4. Undecided.

It was found that the visitors who scored neutral on the attitude scale sometimes used negative wording, such as "a blight on the landscape" or "expensive, inefficient, unsightly and noise"; "good idea, but not in the Lake District, its too pretty" or "Great idea environmentally, but I have an NIMBY attitude and would feel they would spoil areas known for natural beauty." Overall, there were very only a few of these outliers who thought that there were some negative elements to wind farms while acknowledging that there were also some benefits. The outliers all had one major theme: the visual impact that wind farms would have. This is also a major theme in the negative section of the attitude section.
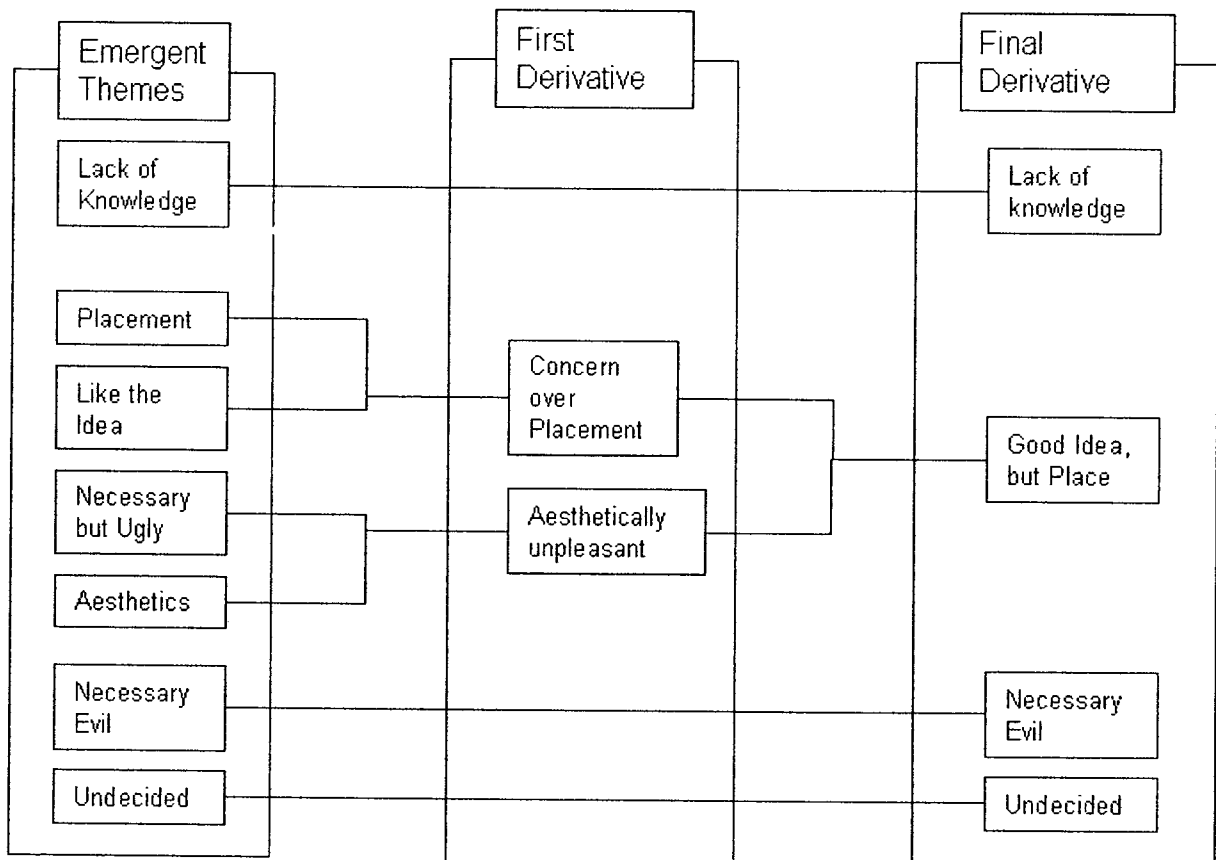

Figure 5.2: Neutral Themes Development (based on Wozniczka, 2009)

When making a critical decision, people weigh the positive and negative outcomes of the decision. When there is a lack of information a person may end up being neutral on the subject. In the case of the LDNP visitors, it seems that lack of knowledge was a major stumbling block in terms of their ability to determine their perspective on wind farms. Visitors made statements such as "The idea of "free" energy is very attractive, but at present, I do not have sufficient information on their costs and effectiveness, to indicate whether or not they are a suitable alternative to other energy forms" and "My knowledge is limited but my impression is that they are a positive eco friendly alternative source of energy production but I am not sure if it is a cost effective on a large scale. They also create a blight on the landscape." Visitors who were neutral on the subject expressed an inability to make a definitive decision because they felt hindered by a lack of information. This helps to explain comments like "I don't know enough about wind farms to give an accurate opinion." The level of knowledge shown by the LDNP visitors is quite vital in building the perceptions of visitors towards wind farms, which shows that they are perceived to be much smaller and to have less damage than they do.

Much like the negative attitude grouping there is a group of neutral visitors who expressed that the idea of wind farms was acceptable depending on the placement of the site. The following responses support this; "Good source of renewable energy, but can be a blithe [sic] on the landscape" and "I like the idea of renewable energy as earth resources are running out. They can be unsightly though in the wrong places." These responses indicate that it is the potential visual impact which makes visitors neutral in their decision. This is backed up by the following "Necessary but ugly" and "Necessary, an eyesore" comments.

Many visitors indicated the understanding that they would accept wind farms due to the lack of another alternative. Visitor statements indicated this by stating that wind farms were "A necessary evil. If positioned with care they can be less obtrusive, unfortunately they usually need

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sitting where they are open to view. They should be used as part of the answer to our energy needs in conjunction with solar energy and energy from tidal movement. This way, hopefully they won't take over the country side."

Comments like "Can be a useful source of localized energy production, but can not be depended upon to supply continuous energy resources to the national grid" show that there is an understanding that wind farms are needed but may not be the best form of energy provision. Additional comments such as "like the "idea" of wind turbines as natural sources of power, However I am not clear on the total cost and agree that sitting [sic] have to be carefully considered. Wind turbine power can not produce all our energy needs currently and consideration of energy + fusions (not fission) power is important long term goals for sustainable power" support this statement.

Many of the visitors who indicated that they fell within the neutral category highlighted that they were undecided. Statements like "Undecided. While I think there is a need for more ways of making energy using natural resources. I sometimes fear if impacts on the breathtaking scenery" show that some visitors have not made their decisions about wind farms. Most of the comments which indicated that visitors are undecided also refer to their lack of knowledge These visitors interjected comments like "I think that although unsightly, they will eventually help with energy conservation. I would be more appreciated [sic] if we could "see" the total benefits of wind farms against the damage they cause to birds etc."

5.3 Positive attitude themes

Visitors who had a attitude rating which was > 4 were classified as having a positive attitude towards wind farms. Out of the plethora of responses which emerged five themes were evident (Figure 5.3):

1. Aesthetically pleasing,

2. Renewable energy,

3. Social responsibility,

4. National energy independence, and

5. Necessary.

The use of the scale to find emergent themes was supported with visitor comments such as "A very good idea. Good renewable energy source", "All for them, anything to assist with energy for everyone's future" and "A good use of natural sources." The positive open-ended section had more responses than the negative and the neutral section; however there were fewer outliers held within the positive section.
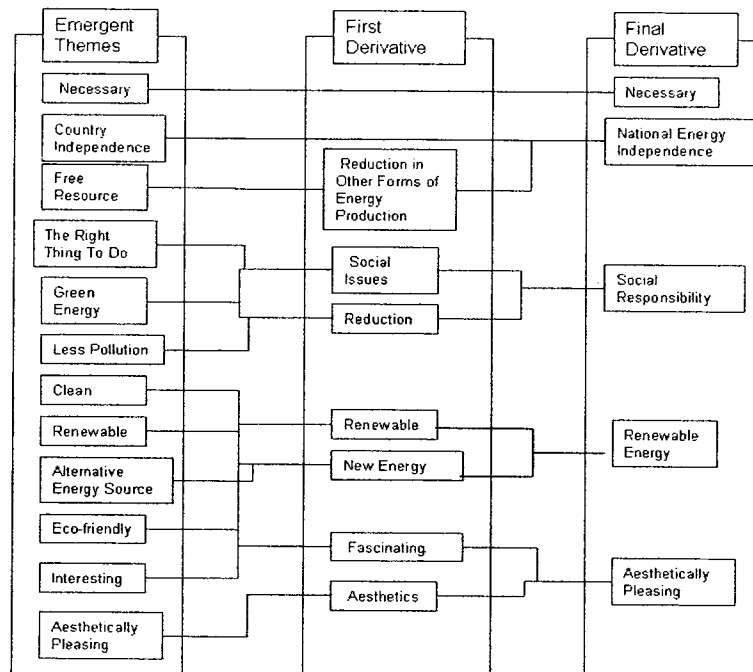

Figure 5.3: Positive Theme Development (based on Wozniczka, 2009)

One main theme kept reoccurring and that was the fact that the majority of LDNP visitors who ranked positive for attitude indicated that they found wind farms to be aesthetically pleasing. Visitors mention that "I actually like the look of wind farms, they are pleasing to the eye as well

as environmentally pleasing"; others stated that they were "Environmentally friendly and interesting to look at."

Some visitors also indicated that they "like the general look of a wind farms." The fact that the positive LDNP visitors liked the look of wind farms indicates that the image of wind farms may have taken on an iconic appeal in society as being representative of environmentally friendly energy alternatives and perhaps are slowly being accepted. One visitor indicated this by stating:

"I love to watch the windmills and on many occasions my husband has stopped for me to try and listen to them, unfortunately I've only really heard them once, and I love the swishing sound. I find it very calming and can't see why anyone has a problem with them."

The literature suggests that a sub-culture of people visit wind farms, as a possible leisure activity, simply so they can see them (NFO WorldGroup, 2003). The aforementioned statement indicates that some of the visitors interviewed in the LDNP may fall into this recreational leisure class.

Among the visitors who are positive towards wind farms and who find wind farms to be aesthetically pleasing, there is the acknowledgement that care must be taken to place wind farms in areas where they will not infringe upon the aesthetic enjoyment of people with less positive attitudes towards them. Also, while these visitors find them attractive, they do not want them were they are going for their vacation unless they are specifically going to visit wind farms for leisure purposes.

With the world's supply of non-renewable sources of energy being slowly used up there is an increasing need to construct renewable energy networks (Drake & Hubacek, 2007). Several

visitors indicated that they believed that wind farms are the best source of available renewable energy. Other respondents support the renewable energy theme by discussing the global fall of carbon dioxide associated with the construction of wind farms. Responses such as "I think that they are a good idea and that using natural energy forms are a good addition to other forms of energy production" illustrate a sub-theme articulated by many visitors, that that there has to be another form of energy production in addition to wind farms. Statements such as "they are a fantastic idea and a good source of renewable energy" indicate that some of the LDNP visitors think that wind farms are one of the best forms of renewable energy.

As society expands there is increasing global pressures placed on finite natural resources, nature and wilderness. In the developed nations, the protection of our remaining resources is seen as a social responsibility (Benediktsson & Waage, 2005); choosing alternatives which will benefit all of human kind is encouraged. The energy produced by wind farms is seen as a socially responsible energy form which must be chosen over other forms of power generation (those which are not as clean and which use non-renewable resources). Some statements such as "The trade off of disfiguring the landscape is a price we MUST pay for assisting green issues / carbon emissions. Once established wind farms will be accepted by [the] majority although consideration for sites must be put through full consultation process" help to illustrate the public's understanding and perspective on this issue. With that being said there is a connection between the level of general wind farm knowledge and the LDNP visitors. The level of general wind farm knowledge is in fact the lowest in the positive attitude scores. The highest level of general wind farm knowledge is in the negative scores. The data indicates that the higher a person's level of knowledge the lower his or her attitude towards wind farms is in fact going to be.

Visitors make statements such as: "in our present economic climate and with the lack of natural resources like oil and gas I suggest wind farms ... provide our only source of energy for the future and considering gas increases like 35 % this must be more effective." A failure to make the wrong energy choice is perceived as having dire consequences. This comment illustrates the level of social responsibility felt by visitors with positive attitudes towards wind farms.

The secondary function of wind farms or renewable forms of energy is to allow nations to provide themselves with a level of independence from other nations which export energy produced. It is this draw towards forms of renewable energy which have made sources such as wind farms so popular. If a nation is able to provide a vast majority of its own power from renewable sources, it is less likely to be left vulnerable to market fluctuation and supply problems such as those currently occurring with crude oil, gasoline and petroleum based products.

Many of the visitors who rated positive on the attitude scale indicated that wind farms would provide a level of national independence from the use of fossil fuels, such as that described above. Visitor statements included, "A very good idea, it will make our country independent" while others indicated, "Excellent. I think if we could have more it would decrease our dependence on fossil fuels." Other positive statements follow this theme: "Fossil fuels are in decline and therefore to look to the future we only have wind, solar, tidal or nuclear." The theme of national independence is reflected in statements like: "I think wind farms provide one part of the solution to the problem of over reliance on fossil fuels." The literature also indicated that the dependence on fossil fuels is a major driving force behind why many nations are switching to wind power as an alternative source of energy production for national power grids. The second largest reason is that it helps to cut carbon emissions from power plants.

The final emergent theme in the positive attitude segment was that visitors felt wind farms were necessary. Visitors' statements such as "It's so nice to be here and it is necessary. Energy source for the future" and "They are a necessary part of lean energy production" support this theme. Others added that wind farms were "Useful in the right place and possibly necessary in the future" as well as that they were "A necessary thing now that we need alternative energy." These statements illustrate an inherent understanding within the positive LDNP visitors: wind farms are more than just a side attraction to energy production, and that they are a necessary element of sustainable power production. Several visitors indicated that wind farms are "necessary to assist energy sources" a perspective supported by the literature (Janley & Nevin, 1999). This shows that segments of the population with positive attitudes are keen on the development of wind farms based on the opinion that they are necessary for energy and resource conservation.

5.4 Summary

The open-ended question helped to verify the findings and validates the Wind Farm Attitude Scale which was highly beneficial to the analysis of the findings of this study. The data support the development and use of the attitude scale and further serve to validate the Scale-related quantitative findings. The data elucidated several key emergent themes and helped to clarify the understanding of the wind farm attitudes of visitors to the LDNP. Within each section of the attitude scores there were emergent themes which help in understanding the attitudes of the LDNP visitors towards wind farms. The emergent themes show the main concerns of each group of visitors. This information shows that there is a connection between the attitudes and the level of knowledge. This connection stems from the interaction of the open ended data and the quantitative data. The study shows that as a visitor's level of knowledge increase in regards to

wind farms the more negative their attitudes become. The following chapter will examine the themes found in the previous two chapters. The discussion therein will look at exploring emergent themes and answering the three questions found in section 1.4.

Chapter 6: Discussion

This chapter will discuss how the information conveyed in the quantitative chapter helped to prove or disprove the two original hypotheses that:

a) Wind farms have *no* effect on behaviour when visitors have limited wind farm knowledge; and

b) Wind farms have *an* effect on behaviour when visitors have higher amounts of wind farm knowledge.

This chapter will first look at the visitor's attitudes towards wind farms and then examine the TpB in relation to wind farms. The visitor's level of general wind farm knowledge will be analyzed. This chapter will next explore an emergent theme found in the open-ended data that has been termed the Double Edged Visitor Attitude. Following the emergent theme the two hypotheses of the study will be examined before the looking at the return rate of visitors. In this chapter is the answer to the three main questions which were asked in chapter 1.

The chapter will conclude by summarizing the connections between the findings relating to both the original hypotheses and research questions with both the quantitative data and open ended data.

6.1 Attitudes

The data showed the emergence of three different categories on the Wind Farm Attitudes Scales: negative, neutral and positive attitudes. It was important to assess the difference in the attitude in each of these categories in order to fully understand all of the wind farms attitudes held by LDNP visitors. As the TpB illustrated, attitudes, whether positive, neutral or negative, are key indicators in determining intent. As indicated by Armitage and Conner (2001) it is the sum of the parts which is more usable than the end result of the TpB.

The mean attitude scores were segmented by age and gender. These two groups were chosen as they would provide the most trends and would highlight segments in the visitors who frequented the Lake District National Park. The attitude scale designed specifically for this study was shown to have an 81.1 % reliability rating in terms of its ability to predict visitors' attitudes towards wind farms. The high reliability rating means that the attitude mean scores are well above the research average and are valid for use in this study (Salkind, 2000).

Gender played an important role in determining the attitudes of the LDNP visitors. The results of this study showed that there were significant differences between the gendered responses on three different questions within the attitude scale. It was found that women are more likely to have a higher attitude (more positive) score than men towards wind farms when asked the question "if wind farms can fit into any landscape." It was also found that men scored higher than women in the two questions, "wind farms disrupt natural airflow patterns" and "wind farms require a lot of land to be cleared which is bad for wildlife and vegetation." The results also indicated that men scored higher on questions which dealt with the impact of wind farms, while women scored higher on questions which focused on the visual and community aspects of wind farm construction. Except for three outliers, the attitude scale showed that men's attitudes had a higher positive rating towards wind farms with regards to impact and technical issues than had women's. The scale also indicated that women scored a higher positive rating in regards to supporting green energy and the visual elements of wind farms than men did.

The main trend evident within the data shows that LDNP visitors who are in the younger age range (18 to 25) had the highest positive score. The mean score quickly drops to the 76 and older age range in which there is a sharp increase which seems to indicate that when very old visitors are more receptive towards wind farms. It may be that the 76+ age group just did not care either way about wind farms.

The findings in this study suggest that the attitudes of visitors play more than just a simple role in decision-making process with regards to their intent to visit areas in which wind farms are constructed. The gender segmentation showed that there was a clear divide between the gendered responses; men were more interested in the impacts and the technical side of wind farms while women were more interested in the visual and the green energy elements. The segmentation also illustrated that there is more support for wind farms in the younger age groups and that support decreases sharply as the visitor's age increases.

6.2 Theory of Planned Behaviour

Part of this study used Azjen's Theory of Planned Behaviour (1985) to show the level of intent of the Lake District National Park's visitors towards going to an area with wind farms. To study the visitors' level of intent towards visiting areas with wind farms, the three main elements of the TpB were studied:

1. The visitors' attitudes,

2. Perceived behaviour controls, and

3. The subjective norms.

The TpB was used due to the fact the study was of visitors who were in the park at the time, not visitors who would come in the future. The theory allows for a level of intent model to be used since it is impracticable to gather data from visitors who may visit the park in the future. The TpB was used to build a predictive model using the level of intent of the visitors, based on their attitudes, perceived behavioural control and the subjective norm.

The mean scores of individual participants were determined and then added together to get an overall mean score. This showed the level of intent that the visitors to the LDNP had towards visiting areas in which wind farms were constructed. It was determined that the visitors

had a level of intent towards wind farms which fell in the neutral range. This study showed that men had higher level of intent towards wind farms (mean score = x / y) than women (mean score = z / y).

The TpB is more than just a sum of its three parts. The main lynch pin of the TpB is the use of an attitude scale. The attitude scale was shown to have a reliability of 81.1 % and was fully supported by the qualitative data. This lends a lot of credibility to the use of the TpB and its results. The results from the attitude scale and the literature review showed that a segment of the population finds wind farms to be an intrusion on the natural landscape (Alvarez-Farizo & Hanley, 2002); they are tolerated by a larger segment with reservation, and embraced by a smaller segment (Kousis, 1998). The TpB showed that there was a neutral intent towards wind farms.

This study used the TpB to determine the level of intent that the visitors have towards wind farms. With a neutral rating assigned to the level of intent awarded to the visitors it was decided to focus more on the attitudes than the Subjective Norms and the Perceived Behavioural Controls. This decision was made due to the fact that more could be learned from the attitudes in relation to behaviour and developing a hypothetical situation in which the TpB might be weaker (Armitage & Connor, 2001). Focusing on the attitude component allows for a more inclusive prediction model to be developed.

6.3 General wind farm knowledge

This study used eight knowledge questions to answer two of the main research questions with regards to the visitors who use the Lake District National Park. This section found the indicators showing the amount of general wind farm knowledge available to society, and possessed by LDNP visitors, as well as societal perceptions of wind farms.

The first question which this study approached, with regards to knowledge, is how much general wind farm knowledge do the visitors to the LDNP actually possess? This study found that 76.67 % of all visitors scored less than 50 % on the knowledge section. It was also found that out of the three attitude groups, those who felt positively towards wind farms on the landscape had the lowest level of knowledge while those who felt negative on the issue had the highest.

This study found that visitors to the LDNP possessed very limited knowledge of wind farms. It is not clear if this is because there is not enough readily available information on the topic, or if visitors just do not care enough about wind farms to find out about them. It may not be necessary for visitors to know the exact dimensions of wind farms. Nonetheless, the observed fact that those most enthusiastic about them are the least knowledgeable, and the most knowledgeable are least enthusiastic, suggests that a better-informed general public might feel very differently about the erection of wind farms around the LDNP. More research on the relationship of knowledge and attitude in the context of this and related issues seems to be desirable.

With the understanding of the level of general wind farm knowledge which the visitors possess, this study was able to ascertain visitors' perceptions towards wind farms. Answering the second question allowed a picture to be painted of how visitors see wind farms. It was shown that visitors perceive wind farms as:

a) Smaller in size than they actually are,

b) Producing much more energy than they are capable of producing,

c) Having inaccurately sized diameters of the blades, and

d) Requiring more land than necessary to be cleared for their construction.

This lends credibility to the call for more information which can be provided to the general public so the general perceptions of wind farms can be brought closer to reality. This will allow

people to make their own informed opinion in regards to wind farms. This will heat up the discussions in society about the viability of wind farm power.

6.4 Double Edged Visitor Attitude

The open-ended information which the LDNP visitors provided was useful not only in supporting the use of the developed attitude scale; it also provided a new theme. Contained in all three segmentations of the open-ended attitude sections were elements which, when analysed, showed the emergence of a common theme, which was absent in the literature review.

The elements indicated that visitors showed recognition that wind farms needed to exist, however they did not want them in their residential geographic area. At the same time, visitors indicated that they also did not want wind farms in areas which they may or may not visit recreationally, or in their leisure time, in the future. For the purpose of this study this new emergent theme has been designated as the Double Edged Visitor Attitude or DEVA.

It was evident that the DEVA phenomenon was acting upon visitors' intention to return to or visit areas in which wind farms might be constructed in the future. Visitors expressed a concern about the environmental impact of wind farms, while also acknowledging that there needs to be a change to sustainable energy production. Decreasing the use of non-renewable energy resources will ultimately benefit both the earth and society.

However, there was an emergent theme in which the visitors did not want this change to impact their at-home lives (as evidenced by their expression of the 'Not In My Back Yard' or NIMBY attitude (Wolsink, 2000)) as well as not wanting the presence of wind farms in the recreation or leisure areas which they might visit in the future (Jackson, 1986; Pasqualetti, 2001), particularly if they have formed a sense of attachment to said place(s) (Benediktsson, 2007).

The name Double Edged Visitor Attitude connects back to the codes and themes in the literature and the components identified in the open-ended data. "Double Edged" refers to the apparently contradictory stance taken on the subject of wind farms. NIMBY, as discussed in Chapter 2, implies an unwillingness to accept a development in a person's local area. It says nothing about whether that person supports such development elsewhere. DEVA, however, occurs when someone is enthusiastic for a development (in this case, wind farms) in general and fully supports having them erected in areas away from favoured or potential recreation and tourist areas and cherished landscapes. People displaying DEVA might not even insist on NIMBY. Those living in an undistinguished part of the country might not mind a wind farm being visible from their houses while objecting to them at their favourite seaside resort or in the LDNP.

For the purpose of this study, Double Edged Visitor Attitude is therefore defined as: "The recognition that an item or object, such as a wind farm, needs to exist, while simultaneously expressing the desire not to have said item or object in an area which the person or persons finds aesthetically appealing and which they may wish to visit in the future."

As indicated in Chapter 2, people in the UK have a strong connection to the heritage of the landscape which encourages the development of DEVA (Figure 6.1). In places where this protective attitude towards the landscape is less widespread tendencies to DEVA may be weaker.
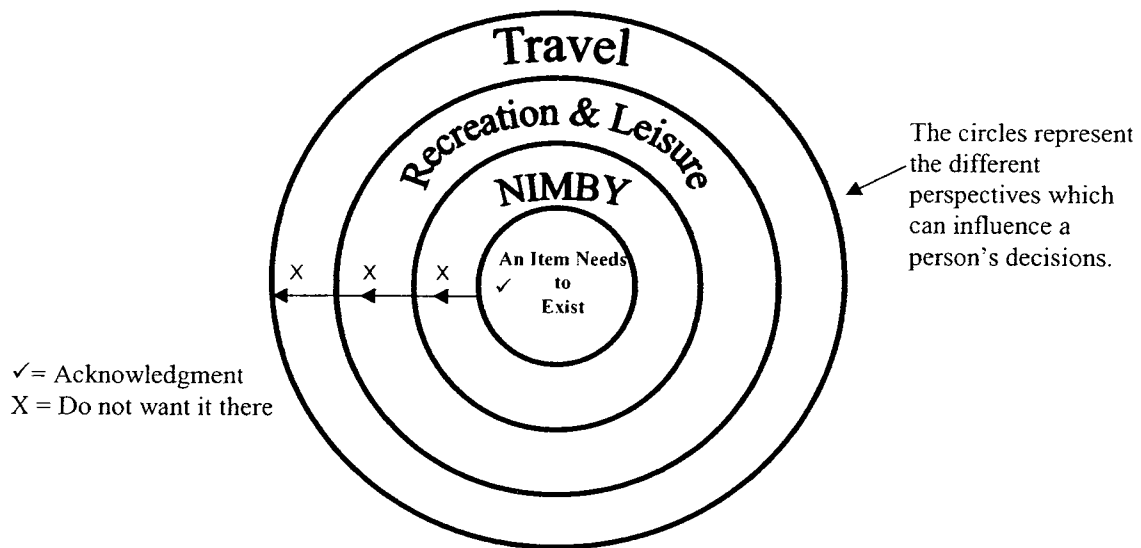
Figure 6.1: Double Edged Visitor Attitude

6.5 Testing the Hypotheses

To fully understand the interaction of visitors in the LDNP and wind farms, two

hypotheses were developed and tested for this study. The two hypothᵤses were:

1. Wind farms have no effect on behaviour when visitors have a limited amount of wind

farm knowledge, and

2. Wind farms have an effect of behaviour when visitors have higher amounts of wind

farm knowledge.

The validity of these two statements should allow a fuller understanding of the potential impacts

of wind farm developments on potential visitors to be developed.

The first hypothesis was that "wind farms have no effect on behaviour when tourists have

limited wind farm knowledge." It was found that when visitors to the LDNP had less than 50 %

for their level of knowledge of wind farms then the mean score for the TpB was 3.3872 . This is

higher than the total mean for the TpB component of the questionnaire at 3.3761. This indicates

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that the first hypothesis is not supported and that wind farms do have a small effect on the behaviour of visitors who have a limited knowledge of wind farms.

The second hypothesis was that "wind farms have an effect on behaviour when visitors possess higher amounts of wind farm knowledge." It was found that the mean scores of the visitors to the LDNP who had a level of knowledge over 50 % was 3.3365. This is lower than the overall TpB mean score of 3.3761 and indicates that there is an effect on behaviour. This supports the second hypothesis that wind farms do in fact have an effect on behaviour when visitors have a higher amount of wind farm knowledge.

The data fully support the second hypothesis and fails to support the first. These data show that there is a limited level of knowledge found in the visitors of the LDNP. Further research into the level of knowledge pertaining to wind farms done at a societal level will help to expand of the findings of this section.

6.6 Return Rate

Park managers in the LDNP are much concerned with the question: would visitors be inclined to re-visit the LDNP if wind farms were developed on a large scale around the park? This is the major question this study undertook to examine. To further understand the question regarding the return rate of the LDNP visitors it must first be broken down into attitudes to further understand the visitors. It was found that there was in increase in the return rate found within the positive segment of the visitors with a mean score of 4.68 from 4.63 (Table 4.17). At the same time it was found that there was a very large decrease in the return rate indicated by the negative segment of the visitor population with a mean score of 3.77 from 4.46. This indicates that there will be a large decrease in the return rate of negative users in comparison to positive users if wind farms were to be constructed near the LDNP.

Table 6.1 Visitor Return Rate By Attitude

Visitor Attitude	Return Mean	Return with Wind Farms
Positive	4.63	4.68
Negative	4.46	3.77

When the above information is related back to two of the core findings a noticeable trend was established. When the return rates were combined with the level of knowledge it showed that the visitors with a limited level of wind farm knowledge tended not to be deterred from further visits to the LDNP. Conversely the data showed that there was a significant difference between the visitors who had a higher level of knowledge. The study indicated that the visitors who had a higher level of wind farm knowledge would be less likely to visit the LDNP in the future. It can be extracted from this study that as the wind farm knowledge increases in the general public and wind farms are made a more prominent form of energy production that there will be more people with a higher level of knowledge and, therefore, a drop in visitation rates. The impact be on the visitors return rates was determined by looking at the return rate responses and their percentage change. Overall there is an 8.7 % drop in the indicated return rate for the visitors to the park. This would account for a potential decrease of 1,044,000 visitors a year to the LDNP. This would also potentially decrease the revenue of the areas by £14,790,000 a year (equivalent to about $30,000,000 CAN). Understanding the impacts that wind farms will have on the return rates is important to managers, government, developers and the service industry. With the provision of the information of a decrease of 8.7 % of the potential visitor load will help in the future

management of the LDNP and other areas around the world were there may be a potential interaction of wind farms and visitors.

6.7 Summary

There are many numbers which are used by the for and against wind farm groups to influence people. Very little research has examined the impacts to the visitor load to an area with wind farm potential. This study shows that there would be a decrease in the number of visitors who may attend an area and, as well, shows that there is an affect on behaviour when visitors have a higher amount of wind farm knowledge. From the open-ended data obtained for this study was discovered of an emergent theme. The Double Edged Visitor Attitude will be useful to future research by connecting what was out in society and what was already hidden in the literature. More research is needs to be undertaken on this emergent theme to fully understand its implication.

Chapter 7: Conclusion

While the human race strives forward in its advancement of greener forms of energy production there is always the possibility for a negative impact on another sector. As the demand for wind farms grows world wide many organizations and governments have been racing to fill the need. The demand for power will never falter, however the supply can. With emphases placed on the provision of power, the green energy solutions are winning with very little research being conducted on the possible impacts to not only the planet, but society as well.

The Lake District National Park represents a unique challenge in the UK park system. The combination of traditional land uses and the tourism sector requires a unique blend of management strategies. With over 46,000 permanent residents and 12 million visitors a year the LDNP offers a window into the future of tourism management when wind farms are introduced into the tourism equation.

While the discussion about wind farms is debated all over the world, a person has to stop and ask what is going to happen when wind farms are placed in an area that is dependent on tourism. It is evident in this study that the placement of wind farms near areas with high visitor loads has to be conducted with great care. It was found in this research that there will be a noticeable drop in the visitor load if wind farms are placed within the vicinity of the LDNP. With over 12 million visitors a year even a 10 % change (120,000) in the visitor load can have a dramatic impact on the local economy.

Managers should consider all available information before deciding to implement wind farm plans in areas with high visitor loads. While a vast majority of the information pertaining to wind farms is based on the effects, both positive and negative, it is based on the natural impacts of wind farms. This study showed that there is a connection in the level of knowledge and attitude towards wind farms. As the visitors' level of knowledge increases there is a dramatic

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decrease in their attitudes towards wind farms. Further research should be conducted to understand the connection between the level of knowledge and attitudes towards wind farms so that a proper education system can be developed to educate people in a non biased manner.

This study found that the age of visitors plays a role in their attitude towards wind farms. The younger visitors have a more positive attitude. On the other hand, as a person's age increases there is a noticeable drop in the level of support for wind farms. This information is very important to managers and educators as it highlights the attitudes of the different age groups which can be important for future decision-making purposes.

The emergence of the Double Edged Visitor Attitude model (DEVA) can help managers by provide a stepping stone in their decision making process. The DEVA theory can be used in more than just the wind farm debate. More research should be conducted to better understand the effects that the DEVA could have on a area in which conflict can arise and as well to develop a way to circumvent it for management purposes.

Finally, this study recommends that further research be undertaken to explore the interactions of visitors and wind farms. With the amount of information that is provided on the impacts felt by communities it is important to make sure that there is adequate research conducted on the transient population called visitors and tourists. With the economic impact which is felt by the visitors in these areas knowing more about what impacts them is crucial to future management decisions. Only with enough social research can the impacts of emergent technologies such as wind farms be truly understood.

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Appendix 1: Park Cover Letter

Attitudes of Visitor's Towards Wind Farms

To whom it may concern:

I will be seeking volunteers to take part in a study concerning the attitudes of visitor's towards wind farms in the Lake District National Park. I would formally like to ask permission to conduct my research on your property.

The intent of this research is to examine the attitudes of visitor's towards wind farms and the effects that potential wind farm developments would have on the intended behaviour of current visitor in the Lake District National Park. An understanding of these attitudes and the level of intention of visitors to return if wind farms are developed, will aid in future management decision of not only the Lake District National Park, but your local area as well.

I will be looking for participants who volunteer to participate in this research, completing the survey called "Attitudes of Visitor's Towards Wind Farms." The survey will take 8 to 10 minutes to complete. This survey will take place where ever the volunteer is most comfortable. The volunteer may withdraw from the study at any time without penalty. They are not required to answer questions that they do not want to answer or do not feel comfortable with answering. If a potential participant declines the opportunity to partake in this study, their choice will be respected and they will not be bothered.

All questions from the surveys are designed to maintain complete confidentiality and anonymity. Volunteers are asked not to provide any identifying information. Any surveys with identifying information will be null and void and destroyed to maintain complete participant confidentiality and anonymity. The survey will not be labeled to identify who completed it. Only my academic supervisor (Dr. Robert Dilley of Lakehead University) and I (David Shepherd) will have access to the original surveys. The information from all surveys will be coded onto a computerized statistics software package (SPSS) and analyzed, and then securely stored at Lakehead University for five years. No individual will be identified in any report since the survey is designed to be anonymous.

The findings of this study will be shared with Lakehead University, The Friends of the Lake District and the University of Cumbria's: International Centre for the Uplands. If you wish a summary of the report can be obtained from me upon request and it will be sent to you via email upon completion of the project (summer of 2009). Data will be securely stored for five years at Lakehead University, as per the research data storage policy. All data will be stored in such a manner that maintains participant anonymity..

I look forward to your participation in this ground breaking research study. If you have any questions concerning this study, I can be reached via email at dwshephe@lakeheadu.ca or you may also contact my supervisor, Dr. Robert Dilley, by e-mail rdilley@lakeheadu.ca or by phone 00-1-807-343-8658. As well you may contact the Lakehead University Research Ethics Board at 00-1-807 343-8283.

Sincerely,
David Shepherd

Attitudes of Visitor's Towards Wind Farms

Dear Potential Participant:

Thank you for volunteering to take part in a study concerning the attitudes of visitors towards wind farms in the Lake District National Park.

The intent of this research is to examine the attitudes of visitor's towards wind farms and the effects that potential wind farm developments may have on the intended behaviour of current visitors in the Lake District National Park. An understanding of these attitudes and the level of intention of visitors to return if wind farms are developed, will aid in future management decision of not only the Lake District National Park, but many other parks world wide which are facing the same wind farm development pressures.

By volunteering to participate in this research, you agree to complete the survey called "Attitudes of Visitor's Towards Wind Farms." The survey will take 8 to 10 minutes to complete. This survey will take place where ever you are most comfortable. You may withdraw from the study at any time without penalty. You are not required to answer questions you do not want to answer or do not feel comfortable answering.

All questions from the surveys are designed to maintain complete confidentiality and anonymity. Therefore it is asked that you do not provide any identifying information. Any surveys with identifying information will be null and void and destroyed to maintain complete participant confidentiality and anonymity. The survey will not be labeled to identify who completed it. Only my academic supervisor (Dr. Robert Dilley of Lakehead University) and I (David Shepherd) will have access to the original surveys. The information from all surveys will be coded onto a computerized statistics software package (SPSS) and analyzed, and then securely stored at Lakehead University for five years. No individual will be identified in any report.

The findings of this study will be shared with Lakehead University, The Friends of the Lake District and the University of Cumbria's: International Centre for the Uplands. If you wish, a summary of the report can be obtained from me upon request and it will be sent to you via email upon completion of the project (spring of 2009). Data will be securely stored for five years at Lakehead University, as per the research data storage policy. All data will be stored in a manner that maintains participant anonymity.

I'm interested in hearing your point of view regarding wind farms, and I look forward to your participation in this ground breaking research study. If you have any questions concerning this study, I can be reached via email at dwshephe@lakeheadu.ca or you may also contact my supervisor, Dr. Robert Dilley, by e-mail rdilley@lakeheadu.ca or by phone 00-1-807-343-8658. As well you may contact the Lakehead University Research Ethics Board at 00-1-807 343-8283.

Sincerely,

David Shepherd

Attitudes of Visitor's Towards Wind Farms

My signature on this sheet indicates that I agree to participate in the study conducted by David Shepherd, on the *Attitudes of Visitor's Towards Wind Farms: A Case Study of the Lake District National Park.* I understand that I will be participating in a completely anonymous survey. I have received an explanation about the study and its purpose. I have read and understand the cover letter for this study and give my consent to use all information in the survey.

My signature on this sheet also indicates that I understand the following:

1. I am a volunteer and can withdraw from the survey at any time from the study.
2. I am 18 years of age or older.
3. I have not been intimidated or coerced into participating in this research.
4. There is no apparent risk of physical or psychological harm to my person.
5. I may choose not to answer any questions.
6. The information I provide will remain completely confidential and anonymous.
7. I understand that no question will ask for any information on my level of income.
8. I can access a copy of the studies results, upon request, in the spring of 2009.
9. The information I give will be stored at Lakehead University, Ontario, Canada for five years and then destroyed.

Signature of Participant   Please Print Name

Date

Attitudes of Visitor's Towards Wind Farms

Part A:

1) In the space provided please describe what you personally think about wind farms.

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

Part B:

For each statement please circle the best answer:

1. Wind farms are a source of unlimited renewable energy.
   Fully Disagree   Disagree   Neutral   Agree   Fully Agree

2. Wind farms are not reliant on fossil fuels.
   Fully Disagree   Disagree   Neutral   Agree   Fully Agree

3. It has been found that wind farms kill a lot of birds.
   Fully Disagree   Disagree   Neutral   Agree   Fully Agree

4. Wind farms can fit into any landscape.
   Fully Disagree   Disagree   Neutral   Agree   Fully Agree

5. Air flowing over the blades can produce a large amount of noise.
   Fully Disagree   Disagree   Neutral   Agree   Fully Agree

6. Wind farms are better then nuclear power.
   Fully Disagree   Disagree   Neutral   Agree   Fully Agree

7. The sight of wind farms on the visual landscape has been found to be quite obtrusive.

| Fully Disagree | Disagree | Neutral | Agree | Fully Agree |

8. Wind farms generate power constantly.
   | Fully Disagree | Disagree | Neutral | Agree | Fully Agree |

9. Wind farms are a great way to cut carbon emissions.
   | Fully Disagree | Disagree | Neutral | Agree | Fully Agree |

10. Wind farms are expensive to construct.
    | Fully Disagree | Disagree | Neutral | Agree | Fully Agree |

11. Wind farms disrupt natural air flow patterns.
    | Fully Disagree | Disagree | Neutral | Agree | Fully Agree |

12. Wind farms require a lot of land to be cleared which is bad for wildlife and vegetation.
    | Fully Disagree | Disagree | Neutral | Agree | Fully Agree |

13. Wind farms are the worst form of "green" energy.
    | Fully Disagree | Disagree | Neutral | Agree | Fully Agree |

14. Many jobs can be created in rural areas with the construction of wind farms.
    | Fully Disagree | Disagree | Neutral | Agree | Fully Agree |

Part C:
For each statement please circle the best answer:
1. Most people around me think _____ of wind farms.
   | Very Little | Little | Neutral | Highly | Very Highly |

2. It is expected by other people that I think _____ of wind farms.
   | Very Little | Little | Neutral | Highly | Very Highly |

3. I feel _____ social pressure towards approving of wind farms.
   | Very Little | Little | Neutral | Strong | Very Strong |

4. I think _____ of media coverage on wind farms.
   | Very Little | Little | Neutral | Highly | Very Highly |

Part D:
Please answer each of question   City/County
1. Where is your permanent place of residence?   _____

2. What is your occupation?   _____

For each of the following statement please circle the best answer:
3. Do you agree with this statement:

 Cost was not an important factor in my choosing to visit the Lake District.

 Fully Disagree   Disagree   Neutral   Agree   Fully Agree

4. Do you agree with this statement:

 It was easy for me to come to the Lake District.

 Fully Disagree   Disagree   Neutral   Agree   Fully Agree

5. Do you agree with this statement:

 The Lake District is where I most wanted to go.

 Fully Disagree   Disagree   Neutral   Agree   Fully Agree

6. Do you agree with this statement:

 It will be my decision whether or not I come back to the Lake District again.

 Fully Disagree   Disagree   Neutral   Agree   Fully Agree

7. What is your gender?   □ Male   □ Female

8. What is your age?

18 to 25	□	51 to 55	□
26 to 30	□	56 to 60	□
31 to 35	□	61 to 65	□
36 to 40	□	66 to 70	□
41 to 45	□	71 to 75	□
45 to 50	□	Over 76	□

9. How long are you staying in the Lake District? _____

10. How are you getting around while visiting the park?

Car	□	Cycling	□
Camper	□	Walking	□
Bus	□	Other	_____

11. What activities are you participating in while visiting the park?

Art	□	Cycling	□
Ballooning	□	Boating	□
Canoeing	□	Walking	□
Fell running	□	Bird watching	□
Fishing	□	Rock Climbing	□
Camping	□	Swimming	□
Bus riding	□	Sight seeing	□
Visiting historic sites	□	Other	_____

12. Is this your first time visiting the Lake District and if not how many times have you visited before?　　　　　　　　　　　　Yes: ☐　　　　No: ☐ / If no then how many time: ____

Part E:
For each statement please circle the best answer:
1. I will return to the Lake District on future trips?
　　　　Fully Disagree　　Disagree　　Neutral　　Agree　　Fully Agree

2. I will return to the Lake District even if wind farms were constructed along the fringes of the Lake District?
　　　　Fully Disagree　　　Disagree　　Neutral　　Agree　　Fully Agree

Part F:
Please circle the correct answer for each question.
1. A single wind turbine that is 65 metres high with a blade diameter of 46 metres continuously generating power for a year will power how many homes?
　　　　a. 100　　　b. 150　　　c. 200　　　d. 250　　　e. 300

2. Turbines produce what atmospheric effect behind the blades?
　　　　a. Cyclones　　　b. Turbulence　　　c. Mild breeze
　　　　b. d. Strong winds　　e. Static discharge

3. What is the average length of a single turbine blade?
　　　　a. 1 to 19 metres　　　b. 20 to 39 metres　　　c. 40 to 59 metres
　　　　　　d. 60 to 79 metres　　　e. 80 to 100 metres

4. How tall is the average utility wind turbine?
　　　　a. 20 to 50 metres　　　b. 51 to 70 metres　　　c. 71 to 90 metres
　　　　d. 91 to 110 metres　　　e. 111 to 130 metres

5. Which can fit in the diameter of the average utility wind turbine blade?

　　　a. 　　　A small car　　　b. 　　　A family van

　　　c. 　　　A double-decker bus　　d. 　　　A jumbo jet

　　　e. 　　　A ocean liner

6. Woodlands would have to be cleared how far around a wind farm?
　　　　a. 10 metres　b. 50 metres　c. 100 metres　d. 500 metres　e. 1000 metres

7. How close can wind farms be to a historic site?
　　　　a. Not within 10 metres　　　b. Not within 100 metres

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c. Not within 200 metres   d. Not within 500 metres

e. Not within 1000 metres

8. What percentage of Britain's power is expected to be supplied by wind farms if all intended farms are built by 2020?

     a. < 10 %   b. 15 %   c. 20 %   d. 25 %   e. > 30 %

Part G:

Comments:

_____

_____

_____

_____

Thank you for tanking your time and volunteering to take part in this study concerning the attitudes of visitor's towards wind farms in the Lake District National Park. Please return your survey once complete.