Natural England Research Report NERR014

The Impacts of Leisure Travel

www.naturalengland.org.uk

NATURAL ENGLAND

Natural England Research Report NERR014

The Impacts of Leisure Travel

Sarah Clifford, Davina Fereday, Anthony McLaughlin, Sofia Girnary

Transport & Travel Research Ltd

Published on 3 July 2008

ISSN 1754-1956

Project details

This report has been prepared for Natural England. Transport & Travel Research Ltd cannot accept any responsibility for any use of or reliance on the contents of the report by any third party.

A summary of the findings covered by this report, as well as Natural England's views on this research, can be found within Natural England Research Information Note RIN014 – The Impacts of Leisure Travel.

Project manager

David Markham
Natural England
Northminster House
Peterborough, PE1 1UA
david.markham@naturalengland.org.uk

Contractor

Transport & Travel Research Ltd,
Minster House
Minster Pool Walk
Lichfield
Staffordshire
WS13 6QT
United Kingdom
Tel: +44 (0)1543 416416
Fax: +44 (0) 1543 416681

Summary

Natural England works for people, places and nature, to enhance biodiversity, landscapes and wildlife in rural, urban, coastal and marine areas; promote access, recreation and public well-being; and contribute to the way natural resources are managed so that they can be enjoyed now and in the future. This report, commissioned by Natural England was conducted by transport consultancy Transport & Travel Research Ltd. The aim of this report is to identify and quantify the impacts of leisure travel on the natural environment and the social and economic benefits of sustainable leisure travel. The report also identifies a number of measures which can mitigate these impacts and outlines some potential funding sources for more sustainable leisure travel.

It is recognised that leisure travel (defined for this report as 'people travelling to access and enjoy the natural environment in all its forms') results in a range of impacts on both the natural environment and on people's enjoyment and tranquillity. These impacts include, amongst others, congestion, loss or damage to biodiversity, noise pollution, visual pollution, carbon emissions and a reduction in local air quality. This, combined with the trend for increased car usage, means that the role of transport's impact on the environment is considerable. 3.6 billion (3,569,000,000) leisure trips were made in 2005 in England; 19.59% (699 million) of these trips were made to 'Countryside' destinations and 2.02% (72 million) of these were made to 'Seaside / Coast' destinations. The reliance on car-based travel for many people undertaking leisure visits means that this form of travel contributes to the overall level of carbon emissions. The UK has a national goal to cut emissions of carbon dioxide by 20% below 1990 levels by 2010. It will, however, almost certainly not achieve this, with a 14% reduction actually anticipated.

The increased use of motorised transport for leisure travel not only results in a global impact on climate change but, through the release of particulates and nitrogen dioxide, can also have a negative impact on local air quality. Air pollution is a greater risk for children, older people and those with existing heart or lung conditions. Leisure travel by car/van is responsible for the vast majority (90.5%) of the 388,069 tonnes of CO2 emissions produced by leisure travel and scheduled bus / coach is responsible for 9.4%.

Generally, air quality policy for England and Wales (via Defra) is focused on reducing the impacts of air pollution on human health and the environment and this has given rise to over 100 Air Quality Management Areas, the majority due to road traffic. Leisure trips made to access the natural environment will start in or pass through urban areas where the majority of the population live. The diversity of species of animals and plants is known to be decreasing as a result of human activity; in the UK, local biodiversity is affected by climate change, loss of habitats through development, and pollution. Increased leisure travel by car increases the risk of loss or damage to biodiversity.

With a relatively low population density in comparison to the rest of the country, much of the countryside retains a natural appearance, with minimal obvious evidence of human impacts. An increase in car usage for leisure travel can alter these fundamental qualities of the countryside. It can adversely affect the sense of place and landscape character and quality and can thus have an impact on peoples' levels of enjoyment of the countryside. With increasing pressures on the rural road network, there is an important balance to maintain between providing access to and from rural areas and preserving the visual amenity and other environmental assets.

The tranquillity experienced in the countryside is important for peoples' enjoyment and as such vehicles of leisure travellers can make a significant impact along both major and minor roads, resulting in significant noise pollution and loss of tranquillity. Traffic accounts for 66% of the total noise generated outside dwellings in the UK, affecting a significant number of the UK population (32 million people). The plan to build new roads over the next decade is one of the threats to tranquillity in rural areas, such as National Parks and Areas of Outstanding Natural Beauty (AONBs).

Increased leisure travel by motorised vehicles results in more accidents involving people and wildlife, whilst increased levels of leisure travel by motorised vehicles result in higher levels of traffic congestion. The Road Casualties Great Britain 2005 (Department for Transport, 2005) reports that 47 people were slightly injured per 100 million vehicle kilometres travelled in 2005. Figures from Transport 2010: The 10 Year Plan (Natural England and others, 2005) forecast that both traffic growth and congestion on rural roads will surpass that on urban roads leading up to 2010. Such predicted growth in congestion will have an adverse impact on the local environment in that greater volumes of traffic moving at slower speeds will produce significantly more pollution. Fear of accidents also has an impact on sustainable leisure travel. 65% of respondents to a survey of users of country lanes for walking, cycling and horse riding felt threatened by road traffic all or some of the time when out in the countryside.

In addition to the negative environmental and social impacts, it is recognised that sustainable leisure travel also has social, health and economic benefits. For example, there were 3.6 billion leisure visits in England during 2005 and the money spent during those visits has been estimated at approximately £90 billion; just under £11.5 billion of this expenditure was spent within the natural environment (defined in the survey as: countryside; seaside coast; national parks and open access land) (Natural England and others, 2005). An increase in sustainable leisure travel by walking and cycling can also bring health benefits, these are wide-ranging and include reducing the risk of coronary heart disease and stroke, reducing body fat, improving self esteem and helping flexibility and co-ordination, hence reducing the risk of falls (British Heart Foundation, 2005; Department of Health, 2000). Measures such as walking and cycling clubs have significant impacts on leisure travel socially and health-wise.

There are a range of measures which can be introduced to mitigate the impacts of increased leisure travel by car and encourage a shift to more sustainable leisure travel. These mitigation measures include planning solutions, pricing structures, smarter choices, visitor travel plans and technological solutions. Planning solutions include transport gateways or ‘green point’ car parks and dedicated bus services, such as the Cornwall Coastal Hoppa bus service, pricing solutions can include car parking charges and inclusive park and ride deals for example, rail fare discounts are available to park and ride customers in St Ives. Visitor travel plans have successfully been introduced at the Yorkshire Sculpture Park and at some National Trust sites in England, technological solutions to provide better travel information to visitors have been introduced to influence modal shift.

Funding is required in order to implement these mitigation measures and in recent years, there have been severe financial cutbacks by both central and local government and its agencies for the development and operation of sustainable transport in the leisure sector. Currently no specific funding mechanisms exist for sustainable leisure transport in England or Wales, however there are potential opportunities for funding from external sources including Local Transport Plans (LTPs), the Transport Innovation Fund (TIF), Local Area Agreements (LAAs), the National Park Sustainable Development Fund and the National Lottery.

With the predicted growth in traffic congestion on rural roads, the significant negative impacts of leisure travel by car and significant benefits of increasing sustainable leisure travel to the natural environment, there is a strong case for improving sustainable access to the natural environment.

Contents

List of tables

List of figures

1 Introduction

1.1 Natural England works for people, places and nature, to enhance biodiversity, landscapes and wildlife in rural, urban, coastal and marine areas; promote access, recreation and public well-being; and contribute to the way natural resources are managed so that they can be enjoyed now and in the future. In order to achieve these goals, Natural England works towards the delivery of four strategic outcomes:

- A healthy natural environment: England's natural environment will be conserved and enhanced.
- Enjoyment of the natural environment: more people enjoying, understanding and acting to improve, the natural environment, more often.
- Sustainable use of the natural environment: the use and management of the natural environment is more sustainable.
- A secure environmental future: decisions which collectively secure the future of the natural environment (Natural England, 2008).

1.2 It is recognised that leisure travel (defined for the purpose of this report as 'people travelling to access and enjoy the natural environment in all its forms') results in a range of impacts on both the natural environment and on people's enjoyment and tranquillity. These impacts include, amongst others, congestion, loss or damage to biodiversity, noise pollution, visual pollution, carbon emissions and a reduction in local air quality. At the same time, more environmentally sustainable forms of leisure travel can deliver a range of social and economic benefits.

1.3 It is within this context that Natural England set out a target within its 2006-2009 Strategic Direction document to 'Develop a plan to reduce the transport impact of nature-based tourism'. The vision is to make leisure travel more environmentally sustainable with the majority of trips being made by low carbon, high health forms of transport, such as walking, cycling, horse-riding and un-powered boats with longer trips being made by rail and public transport. Encouraging people to make more use of their local greenspace in order to reduce their carbon footprint and other adverse environmental effects is a key element in this vision. This shift to more sustainable leisure travel would result in fewer adverse effects on the environment and increased social and economic benefits. This objective lies firmly within Natural England's overall mission statement "…to conserve and enhance the natural environment, for its intrinsic value, the wellbeing and enjoyment of people and the economic prosperity that it brings".

1.4 The aim of this policy research report is to identify the range of environmental and social impacts of leisure travel (section 2), to quantify these impacts where possible (section 3) and assess their significance. The methodology used to quantify these impacts is explained in sections 3.2 – 3.7. In addition to identifying the negative impacts of leisure travel, it is also recognised that sustainable leisure travel and access to the natural environment can also have positive impacts on society, health and local and regional economies and these benefits are covered in section 4 of this report.

1.5 Section 5 provides examples of mitigation measures which could be introduced to reduce the adverse effects of leisure travel and help Natural England to achieve its goal of encouraging more environmentally sustainable leisure travel. Section 6 identifies some of the funding options for implementing measures to increase sustainable leisure travel and the conclusion is included as Section 7.

1.6 Whilst some trips or journeys undertaken can provide access to the natural environment indirectly, it should be noted that leisure travel in this report does not include activities such as

shopping, visiting friends, sport or entertainment. The report is also geographically constrained as it only covers England, and it also does not cover aviation.

2 The environmental and social impacts of leisure travel

2.1 It is recognised that leisure travel (defined for this report as 'people travelling to access and enjoy the natural environment in all its forms') results in a range of impacts on both the natural environment and on people's enjoyment and tranquillity. These impacts include, amongst others, congestion, loss or damage to biodiversity, noise pollution, visual pollution, carbon emissions and a reduction in local air quality. This section of the report identifies the main impacts of leisure travel.

2.2 The England Leisure Visits Survey 2005 reveals that the private car is the dominant mode of travel used for trips to and within key destinations for visitors, such as National Parks and Areas of Outstanding Natural Beauty (AONBs) in England. While local and commercial traffic is also a source of environmental damage and disturbance in many environmentally protected areas in England, the impact of recreational driving and car-related access is a significant negative impact of visitor activity in many of our finest landscapes. While public transport (bus, coach and rail), plus walking and cycling, are used to access the natural environment in England, their impacts are lower in comparison and probably outweighed by the impact of car-borne trips. Therefore, the main impacts on the environment and on people can be stated as leading from use of motorised transport.

2.3 The impacts covered in this section of the report include global and local environmental impacts and impacts that have an effect on the level of enjoyment experienced by people. It is recognised that some of the environmental impacts also have human impacts and some of the global impacts also have an effect on the local area. Some of the impacts identified have a direct effect and some have an indirect effect on the environment and on people. Where necessary this distinction has been highlighted within the text, but below is a summary of the impacts of increased leisure travel by car identified in this section:

- Environmental impacts such as:

1) climate change (a global impact);
2) air pollution (mainly localised effect with an impact on the environment and also on human health); and
3) loss of biodiversity – this has a local and a global impact. Loss of biodiversity could also have a human impact in that it could detract from enjoyment of the natural environment.

- Human Impacts such as:

1) visual pollution;
2) increase in noise pollution (this also has a local environmental impact);
3) accidents and risk of accidents; and
4) traffic congestion.

Climate change

2.4 The increased use of motorised transport for leisure travel results in the release of increased levels of the main greenhouse gas, carbon dioxide (CO_2). Climate change as a result of human activity is now accepted by world scientific opinion as not only happening, but happening perhaps much faster than scientists first believed.

2.5 Emissions of CO_2 do not directly affect the area in which they were emitted but contribute to an overall increase in global levels of CO_2. The impacts of climate change are also seen globally, and the IPPC Fourth Assessment (Intergovernmental Panel on Climate Change, 2007) states that there is observational evidence from all continents and most oceans that shows that many natural systems are already being affected by regional climate changes. In addition, there are already a number of reports in existence which detail likely scenarios in the UK (Department of the Environment, Transport and the Regions, 1998), including patterns of hot summer droughts and heavier autumn rains, more frequent and extreme storms and floods, rising sea levels, and shorter winters.

2.6 The impact that mechanised transport can have upon the environment in terms of the release of carbon dioxide (CO_2) has become increasingly recognised over the last decade, with transport now being the fastest-growing source of CO_2 (Department of the Environment, Transport and the Regions, 1998). Aviation is a major source of transport generated CO_2, both due to emissions from the aircraft themselves and due to surface traffic generated by travel to and from airports. Road transport also accounts for a significant proportion of national CO_2 emissions; in 2005, road transport was responsible for 22% (120 million tonnes) of total annual UK CO_2 emissions (Department for Environment, Food and Rural Affairs, 2008). This, combined with the trend for increased car usage, means that the role of transport's impact on the environment is considerable. The reliance on car-based travel for many people undertaking leisure visits means that this form of travel contributes to the overall level of carbon emissions.

2.7 Against this background, there is an increasing focus on initiatives that attempt to reduce the impact that the transport sector has on the environment, both in line with the Kyoto Protocol, and as part of wider environmental concerns.

2.8 The UK has a national goal to cut emissions of carbon dioxide by 20% below 1990 levels by 2010. It will, however, almost certainly not achieve this, with a 14% reduction actually anticipated.

Air pollution

2.9 The increased use of motorised transport for leisure travel not only results in a global impact on climate change but, through the release of particulates and nitrogen dioxide can also have a negative impact on local air quality. These two key vehicle emissions are significant contributors to a decline in local air quality, with road transport accounting for significant proportions of these, particularly in urban areas. The main impacts of local air pollution affect vegetation and human health as detailed below.

2.10 The deposition of some pollutants, including nitrogen oxides released from fuel combustion, can have an adverse impact on vegetation and ecosystems both locally and further away. Lichens and mosses are particularly affected by these pollutants, but coniferous woodlands can also be affected. (Waldsterben, 1989). Some of these impacts are listed below.

- Nitrogen deposits can cause changes, perhaps lowering certain species' natural tolerance of frost, drought and grazing impact.
- Nitrogen oxides in cloud and rain can also increase the acidity of soils with consequent impact on wildlife habitats (Department of the Environment, Transport and the Regions, 1999).
- The combined impact of nitrogen oxides and sunlight produces ground level ozones which drift to affect rural upland and mountain locations, far more than most of the urban or industrial areas which are the pollution source. A major report on ozone in the United Kingdom (Department of Energy, 1993) indicates that in some of the most remote areas of the country, on anti-cyclonic days of still air and bright sunlight, damage to vegetation begins to occur as ozone levels increase.
- The deposition of pollutants can lead to increased rates of acidification of ecosystems, disturbing the nutrient balance of soils and water systems.

- Increased levels of nitrogen in aquatic systems can also lead to eutrophication, whereby increased levels of nitrogen leads to a fertiliser effect, giving an increase in plant growth and therefore an increase in demand for other plant nutrients.

2.11 Local air pollution also has detrimental effects on human health, which are well known, and include increased risk of respiratory and cardiovascular problems. Air pollution is a greater risk for children, older people and those with existing heart or lung conditions. Hydrocarbons, volatile organic compounds, particulates and benzene all produced by petrol and diesel engines are carcinogenic. The UK Department of Health has estimated that as many as 24,000 people a year may die prematurely as a result of poor air quality, most of it related to road transport (Department of the Environment, Transport and the Regions, 1998).

2.12 Generally, air quality policy for England and Wales (via Defra) is focused on reducing the impacts of air pollution on human health and the environment and this has given rise to over 100 Air Quality Management Areas, the majority due to road traffic. Leisure trips made to access the natural environment will start in or pass through urban areas where the majority of the population live.

2.13 As part of the policy to reduce the exposure of humans to poor air quality, annual limit values are in place for the protection of the natural environment, and these include limits for the annual average concentrations of nitrogen oxides at sensitive sites, and critical loads for the deposition of acidic species, including nitrogen oxides.

2.14 The Environment Act 1995 places a statutory duty on local authorities to work towards meeting national objectives for air quality. This is carried out through the Local Air Quality Management (LAQM) process established in the 1997 National Air Quality Strategy (NAQS). This Strategy sets out air quality objective limit values for a number of pollutants; above these limit values pollutant concentrations are judged to have unacceptable impacts on human health or the environment. For each air quality objective, local authorities have to consider whether the required level of pollution concentration is likely to be achieved by the due date. Where it appears likely that the air quality concentration (ie the amount of pollution) is going to be higher than the limits a local authority must declare an Air Quality Management Area. To date, over 100 Air Quality Management Areas have been declared. The majority of these Air Quality Management Areas have been declared because of emissions of the pollutants nitrogen dioxide (NO_2) and particulate matter (PM_{10}) from road traffic.

2.15 English Nature Research Report no.580 documents the effects of air pollution on the natural environment in the vicinity of major roads, noting from the studies conducted a prevalence of accelerated ageing of plant species, limiting of ripened buds and degradation due to high levels of nitrogen oxide (Bignal and others, 2004).

Biodiversity

2.16 The diversity of species of animals and plants is known to be decreasing as a result of human activity, for example, in the UK over 100 species have been lost during the last century, and more species and habitats are at risk (Department for Environment, Food and Rural Affairs, 2008). The rate at which the diversity of species is decreasing is recognised as a major cause for concern. Increased leisure travel by car can have an impact on biodiversity, at both a global and local scale.

2.17 Globally, there are a number of factors that can impact on biodiversity including, for example, loss of habitat through development, deforestation or increased agriculture; pollution of land, water and air; and climate change. The IPPC predicts that if increases in atmospheric levels of CO_2 give a global average temperature increase of 1.5-2.5°C there will be “major changes in ecosystem structure and function, species’ ecological interactions, and species’ geographical ranges, with predominantly negative consequences for biodiversity.”

2.18 In the UK, local biodiversity is affected by climate change, loss of habitats through development, and pollution. Increased leisure travel by car increases the risk of loss or damage to biodiversity. These impacts, many of which are insidious, arise through the demand for more roads, the upgrade of existing roads and pressure for more infrastructure, such as car parks. Inconsiderate parking (either by drivers who can't find a space or don't want to pay) puts pressure on protected roadside verges which impacts on local biodiversity. Roadside verges provide important corridors for the movement of species, and sometimes support plant and animal communities which are important in their own right. Roadside verges are already threatened by road improvement schemes, run off and spray from salt on roads and oil from vehicles and passing vehicles spreading the seeds of unwanted weeds such as ragwort.

2.19 Other impacts on biodiversity can result from people parking their vehicles in dedicated car parking areas. For instance, in a woodland or coastal area increased erosion on footpaths and trampling of vegetation on adjoining areas can result where there are movements of large numbers of people to and from the car parks. There can also be a cumulative impact on biodiversity as illustrated by two studies undertaken beside the M62 at Bradley Moor and Moss Wood which showed evidence of cumulative damage to local species that were situated close to the roadside. In particular oak tree health was shown to improve with distance from the roadside at Bradley Moor, with the largest impact being shown on species within a radius of 50-100m of the roadside (English Nature, 1996; Bignal, 2004).

Visual pollution

2.20 One of the countryside's fundamental qualities is its appearance and attractiveness to visitors, particularly so in contrast to that of urban environments. With a relatively low population density in comparison to the rest of the country, much of the countryside retains a natural appearance, with minimal obvious evidence of human impacts.

2.21 An increase in car usage for leisure travel can alter these fundamental qualities of the countryside. It can adversely affect the sense of place and landscape character and quality and can thus have an impact on peoples' levels of enjoyment of the countryside. With increasing pressures on the rural road network, there is an important balance to maintain between providing access to and from rural areas and preserving the visual amenity and other environmental assets. As such, rural road-building programmes are a contentious issue and the Campaign to Protect Rural England (CPRE) state that approximately 150 national and local road schemes are proposed, with more proposed within Local Transport Plans (Campaign to Protect Rural England, 2005).

2.22 While visual pollution is hard to quantify, there are significant impacts from increased car use for leisure trips and an increase in the number of roads such as roadside clutter from signage, road-side advertising, light pollution at night, traffic and cars in villages, along country roads, parked on verges or in large car parks. These have a visual impact but also give a suburbanised character within many National Parks and AONBs, especially during busy holiday periods.

2.23 Increased car usage for leisure travel, associated car parks and additional infrastructure can increase the impact of light pollution at night in rural areas. For example, in recent years there has been an increase in the levels of light intrusion in the south west of England as illustrated by a study by the Campaign to Protect Rural England 'Night Blight in the South West'. This study showed that between 1993 and 2000, whilst the National Park spaces of Exmoor and Dartmoor have largely remained under dark skies, there has been a significant increase in pollution in Avon and Somerset. Figure 1 shows the changes tracked in the south west during this period. Only 20% of skies in this area remained under dark skies as of 2000 (Campaign to Protect Rural England, 2003).

2.24 A cumulative impact of increased car use for leisure travel is an increased demand for local infrastructure, which can also result in increased light pollution. The Communities and Local Government report "Lighting in the Countryside" explains that lighting from construction in rural

areas tends to be more apparent, and recommends that preventative measures should be considered during the planning of a new development. For example design details should dictate that the use of lights be kept to a minimum and a unified scheme employed, in order that the produced lighting sequence is not only the most attractive but also the least intrusive. Sainsbury's attention to car park lighting details has been recognised by the BAA Campaign for DARK Skies, namely for the scheme used at their store in Ferndown, Dorset. Relatively high lighting columns have reduced the need for density, whilst the lamps are made from high pressure sodium which is designed to minimise light spill during the hours of darkness. This is combined with an integration of vegetation surrounding the site to limit the effects of the car park on the surrounding countryside (Communities and Local Government, 1997).

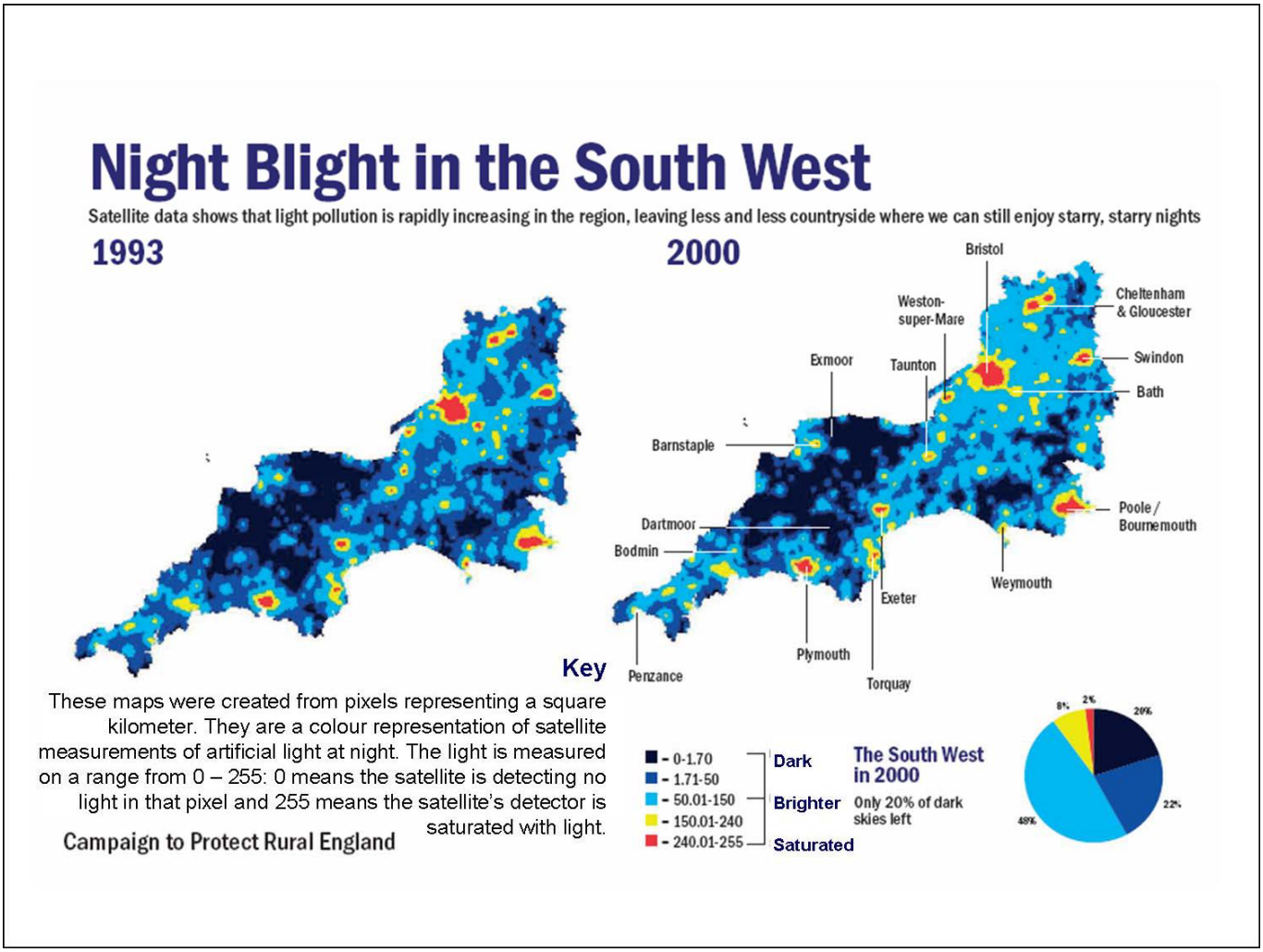

Figure 1 Map showing Night Blight in the south west

Noise pollution

2.25 Use and enjoyment of the natural environment is dependent on visitors being able to access such locations as the countryside, Country Parks, and other rural and open areas. Much of the enjoyment of these areas derives from being able to appreciate the peace and quiet that these areas have to offer, often alongside undertaking other activities.

2.26 The tranquillity experienced in the countryside is important for peoples' enjoyment, and also contributes to mental and physical wellbeing and quality of life. Alongside visual pollution, vehicles of leisure travellers can make a significant impact along both major and minor roads, resulting in significant noise pollution and loss of tranquillity, in particular, motorcycles driven at high speed are intrusive in rural and natural areas.

2.27 The plan to build new roads over the next decade is one of the threats to tranquillity in rural areas such as National Parks and AONBs. According to the CPRE, some of these new roads are planned in designated landscapes and the noise from a busy road can extend over miles of countryside (Campaign to Protect Rural England, 2008).

2.28 Recent campaigns by CPRE and the UK Noise Association have highlighted the impact of traffic noise in rural areas (UK Noise Association, 2007). For example, statistics from the Noise Association show that traffic accounts for 66% of the total noise generated outside dwellings in the UK and affect a significant number of the UK population (32 million people). With an increasing number of vehicles on rural roads, it is likely that there will be a corresponding increase in the volume and / or length of traffic noise.

2.29 The CPRE commissioned a series of detailed tranquillity maps of England which reveal the likelihood someone would experience tranquillity in any locality. The tranquillity map is made up of many layers of information based on what people say adds to and detracts from tranquillity, weighted according to how important those factors are and taking into account the country's topography. Respondents to this survey were asked to state what is 'not tranquillity' and the most common response was 'noise from traffic'.

2.30 The significance of noise intrusion is discussed further in sections 3.19 – 3.21 under 'Noise and visual pollution'.

Accidents and risk of accidents

2.31 Road traffic is a major source of death and injury in England, and increased leisure travel by motorised results in more accidents involving people, livestock and wildlife.

2.32 Further impacts arise through fear of accidents, which can have a negative impact on more vulnerable users even on minor roads – walkers, cyclists and horse riders. Work undertaken by Transport for London for the Countryside Commission in the early 1990s indicated that "fear of traffic" is the principal reason for non-participation in recreational cycling (Transport for London, 1994). This was also borne out by a survey undertaken on behalf of CPRE (Campaign to Protect Rural England, 1999) of users of country lanes for walking, riding and cycling. 65% of those questioned said they feel threatened by road traffic all or some of the time when out in the countryside. It is argued that this leads to even more traffic as people drive themselves and their children rather than being exposed to accident risk. Further discussion on the rates of accidents can be found in sections 3.22 – 3.26.

Congestion

2.33 Increased levels of leisure travel by motorised vehicles result in higher levels of traffic congestion. Forecasts show that unless measures are taken, both traffic growth and congestion on rural roads will surpass that on urban roads leading up to 2010 (Department for Transport, 2000). Whilst traffic was forecast to grow by 22% over the whole network, a slightly higher increase of 25% was forecast for non-urban roads. Meanwhile, congestion was predicted to increase by around 35% in rural areas, compared to 15% over the network as a whole.

2.34 Such predicted growth in congestion will have an adverse impact on the local environment in that greater volumes of traffic moving at slower speeds will produce significantly more pollution, as described in sections 2.9 – 2.15 above. However, greater traffic congestion may also have an effect on a number of other areas. This could include; an adverse impact on visitor numbers through congestion making visiting unattractive for some people, creating delays for local residents and the knock-on effects to local businesses, degradation of the rural road network, greater vulnerability of other road users (particularly cyclists and horse riders), increased incidence of traffic accidents, increased noise and a reduction in people's level of enjoyment of the countryside. Further impacts of congestion in England's National Parks are illustrated in sections 3.23 – 3.27 .

2.35 Despite the advantages associated with increased visitors in rural areas, there are associated detrimental factors; with an increase in visitor figures comes the associated increases in levels of congestion and associated pollutants, which can affect the quality of life for local residents as well as spoiling visitor experience. The impacts of increased levels of congestion are particularly significant during the peak tourist season and in popular locations such as National Parks. In order to mitigate these impacts, congestion in National Parks, particularly, has also become a driving factor behind management decisions. Examples of traffic management measures introduced in National Parks are provided in section 5 on mitigation measures.

2.36 The National Parks Authority recognises the dangers posed by increased car usage on visitor experience; in their position statement of 2007 the authority signalled its intention to put National Parks at the forefront of sustainable travel policy in England, not only for the 209,000 residents in National Parks and the enjoyment of visitors accessing the parks, but to also have a positive impact on the need for extra road space to manage increased traffic flows (English National Parks Authority Association, 2007).

3 The impacts of leisure travel (estimation of scale and significance of impacts)

3.1 Following the identification of the environmental and human impacts of increased leisure travel by motorised transport in Section 2, this section of the report attempts to estimate the approximate scale of these impacts. The methodology used is explained in Sections 3.2 – 3.7, the environmental impacts are estimated in Sections 3.8 to 3.18, the approximate scale of noise and visual impacts is included in Section 3.19 – 3.21, the scale of accidents and risk of accidents is covered in Sections 3.22 – 3.26, and the impact of congestion is quantified in Sections 3.27 – 3.30. Sections 3.31 – 3.33 provides a summary of the scale of these impacts.

Methodology

Datasets used

3.2 In order to gain an understanding of the impact of leisure travel, it is important to recognise the extent to which people travel for such a purpose. The main datasets in relation to identifying travel patterns for leisure travel offer a different set of data and definitions, and each offers a different perspective on the issues related to leisure travel; as referred to previously, leisure travel can be defined as people travelling to access and enjoy the natural environment in all its forms. Various datasets have been adopted in this section, each referring to various types of leisure activities. Whereas the England Leisure Visits Survey 2005 survey details day trip leisure visits, the UK Tourist Survey from 2005/2006 details leisure trips spent away from home only. Whereas some surveys focus on leisure specifics, the National Travel Survey for 2005 details wide information regarding people's travel habits. A more detailed insight into each of these is given below.

- **The England Leisure Visits Survey 2005 (ELVS)** - This survey was undertaken throughout 2005 and was co-ordinated by the Countryside Agency (now Natural England). It provides data on leisure trips made within England that are undertaken within one day (trips that involve an overnight stay are not included). To gather the data, a nationally representative telephone survey was undertaken with 23,542 respondents over the age of 16, evenly spread over the period from February 2005 to February 2006. In relation to the objectives of this project, the ELVS data includes information such as the total number of leisure trips undertaken, distance travelled and the mode of transport used.
- **The National Travel Survey 2005 (NTS)** - This survey, managed by the Department for Transport, is part of a continuous piece of research designed to identify long-term trends within UK transport. Throughout 2005, over 8400 respondents provided details of their personal travel by completing a travel diary over 7 days. Due to its wide scope, the NTS provides comprehensive information regarding national travel patterns; however in terms of this report, there is only a limited amount of information which is of relevance to leisure travel.
- **The UK Tourist Survey (2005/2006)** - The UK Tourist Survey (UKTS) is undertaken by the joint tourist boards of the United Kingdom on a weekly basis throughout the year. In 2005, 100,000 face to face interviews were conducted, based on a weekly sample size of 2000 people, to identify the volume and value of tourism undertaken by the resident population. The UK Tourist Survey differs from the England Leisure Visits Survey in that it focuses solely on visits where nights are spent away from the home; it does not include day excursions. This means that the UKTS can also provide data on business trips as well as holidays and short

trips taken within the UK. With respect to trips to the natural environment, data on the type of location and purpose of the trip are also gathered to provide additional data to that gathered through ELVS.

- **Other Datasets** - Alongside the main datasets discussed above, several national organisations also collect their own data for visitors travelling to their own sites. Whilst this data is useful in providing a snapshot of the different types of locations visited by people undertaking leisure visits, the larger datasets identified above are more suitable for identifying the overall volume of leisure visits. Below is a summary of the other identified datasets:

1) **Sustrans** - 338 million walking and cycling trips on the National Cycle Network throughout 2006.
2) **National Trust** - approximately 62 million visitors to National Trust properties and outdoor areas.
3) **UK Youth Hostel Association** - 1.9 million overnight stays during a 12-month period 2006/2007.

3.3 Having explored the main datasets available, and also considered some of the smaller datasets, it was concluded that the most appropriate data source to use in calculating the number of visitors to the natural environment is the England Leisure Visits Survey (ELVS). Whilst the UK Tourist Survey provides additional useful information, it is difficult to ascertain where additional impacts are generated through travel for overnight stays, alongside the fact that trips made from a holiday base are included within ELVS. The National Travel Survey and other data sources has been on (and referenced) where needed.

Leisure travel calculation

3.4 In order to estimate the impacts of leisure travel, information on the number and type of trips undertaken, data for each destination in terms of the mean distance travelled and the mode of transport has been used. The calculation that has been used is explained below and uses ELVS 2005 data except where indicated. This allows a calculation of the total number of kilometres travelled by each mode throughout 2005, shown in Table 1 and Table 2 for leisure visits to the Countryside and Seaside / Coast destinations respectively.

3.5 Approximately 3.6 billion (3,569,000,000) leisure trips were made in 2005 in England and as shown by Tables 1 and 2 below, 19.59% (699 million) of these trips were made to ‘Countryside’ destinations and 2.02% (72 million) of these were made to ‘Seaside / Coast’ destinations.

3.6 The categories of transport used include; car / van, train / tube / underground, scheduled bus / coach, bicycle / mountain bike, on foot / walking and by taxi. It should be noted that whilst no statistical evidence has been found to support the levels of leisure travel on British inland waters, this form of activity should not be underestimated. The popularity of British waterways such as canals, rivers and lakes for leisure purposes is an ever increasing factor to take into consideration alongside for traditional modes for accessing leisure facilities and locations.

Table 1 Distance travelled for 'countryside' leisure visits by mode

Countryside Modal Split	Percentage (%)	Number of trips	Mean distance travelled by mode (kms)	Total distance travelled by mode (million kms)
Car/Van	58	405,420,000	35.82	8,543.4
Train/tube/underground	0*	0	56.05	0.0
Scheduled bus/coach	1	6,990,000	20.13	140.70
Bicycle/mountain bike	4	27,960,000	19.78	553.0
On foot/walking	33	230,670,000	5.66	1,306.70
Taxi	0*	0	12.38	0.0
Other	4	27,960,000	19.33	540.4
Total		**699,000,000**		**11,084.3**

* indicates a value within ELVS of less than 0.5% but greater than zero. For our purposes this has been treated as 0.

Table 2 Distance travelled for 'seaside / coast' leisure visits by mode

Seaside / Coast Modal Split	Percentage (%)	Number of trips	Mean distance travelled by mode (kms)	Total distance travelled by mode (million kms)
Car/Van	63	45,360,000	35.82	955.9
Train/tube/underground	0*	0	56.05	0.0
Scheduled bus/coach	4	2,880,000	20.13	58.0
Bicycle/mountain bike	3	2,160,000	19.78	42.7
On foot/walking	23	16,560,000	5.66	93.8
Taxi	1	720,000	12.38	8.9
Other	5	3,600,000	19.33	69.6
Total		**72,000,000**		**1,228.9**

* indicates a value within ELVS of less than 0.5% but greater than zero. For our purposes this has been treated as 0.

3.7 The information from tables 1 and 2 shows that a total of 12 billion kilometres are travelled by people undertaking leisure visits to Countryside and Seaside / Coast destinations. This data is combined in Table 3 which shows the total distance travelled by transport mode for leisure visits to Countryside and Seaside / Coast destinations;

3.8 It should be noted that vehicle occupancy figures, where relevant, are not available for people travelling for leisure purposes by modes other than private car or van. For visitors travelling by this mode, the total number of kilometres travelled has been adjusted taking into account vehicle occupancy.

Table 3 Total kilometres travelled for leisure visits ('countryside' and 'seaside / coast' only) by mode

Mode	Total Kilometres (millions)
Car/Van	9,499.3
Train/tube/underground	0.0
Scheduled bus/coach	198.7
Bicycle/mountain bike	595.7
On foot/walking	1,400.5
Taxi	8.9
Other	610.0
Total	**12,313.2**

Estimation of the environmental impacts of leisure travel

3.9 In order to estimate the environmental impacts of leisure travel, information on the number and type of trips undertaken and the environmental impact of each mode of transport has been combined. Using this information, an estimate has been made of the scale and impact of leisure visits, although this estimation will understandably have some limitations.

3.10 To estimate the emissions due to leisure travel, emission factors for each mode of travel have been derived, using values from the National Atmospheric Emission Inventory which are shown in Table 4. It should be noted that the emissions factors are provided per kilometre travelled for each mode of transport and do not take into account the number of occupants of each vehicle.

Table 4 Emissions factors by mode

	Emission factor (g/km)		
	CO_2 (as C)	NO_x (as NO_2)	PM_{10}
Car/Van*	37	0.43	0.033
Train/tube/underground**	3188	103.4	8.4
Scheduled bus/coach	183	5.09	0.12
Bicycle/mountain bike	none	none	none
On foot/walking	none	none	none
Taxi***	26	0.49	0.05

* 15.72% diesel (National Atmospheric Emissions Inventory, 2003)

** factors are for Intercity trains

*** factors equivalent to a diesel car

3.11 Table 5 shows the emissions by mode of transport for leisure journeys. These figures have been calculated by combining the emissions factors by mode of transport presented in Table 4 with the 'total kilometres travelled' data presented in Table 3 to calculate the total emission of each pollutant for each mode of travel for leisure journeys in 2005.

3.12 It should be noted that the data for journeys by car has been adjusted by average vehicle occupancy, whereas the journeys by other modes have not. It is unlikely that each person travelling by bus or coach would be the sole occupant, and therefore the emissions by mode for the bus/coach are in reality likely to be lower.

Table 5 Leisure journeys - Emissions by mode

	Total emission 2005 (tonnes)		
	CO_2 (as C)	**NO_x (as NO_2)**	**PM_{10}**
Car/Van	351,473 (90.5% of total)	4,085	313 (92% of total)
Train/tube/underground	0	0	0
Scheduled bus/coach	36,364 (9.4% of total)	1,011	24 (7% of total)
Bicycle/mountain bike	none	none	none
On foot/walking	none	none	none
Taxi	232 (0.06% of total)	4.4	0.4
Total	**388,069**	**5,100**	**338**

Climate change

3.13 The figures in Table 5 show the total amount of CO_2 generated by leisure journeys, broken down by mode. This shows that leisure travel by car/van is responsible for the vast majority (90.5%) of the 388,069 tonnes of CO_2 emissions produced by leisure travel and scheduled bus / coach is responsible for 9.4%.

3.14 As illustrated in Table 6, in relation to overall CO_2 emissions generated by road transport, leisure travel generates only a small proportion. In 2005, CO_2 emissions generated by all road transport were 120 million tonnes (Natural England and others, 2005), whereas CO_2 emissions generated by leisure travel were 388,069 tonnes.

Table 6 CO_2 emissions by types of travel

	CO_2 emissions contribution 2005 (actual tonnes)
Transport as a whole by all modes	120,000,000
Leisure travel to the natural environment by all modes	388,069
Leisure travel to the natural environment by car	351,473

3.15 The England Leisure Visits Survey states that the average round trip for a given leisure activity was 17.1 miles (27.5 km) in 2005 (Natural England and others, 2005). Combined with the results

from Table 4, the CO_2 emissions from a typical leisure visit by car as of 2005 would have been 1017.5g, NO_2 emissions would have been 11.8g and PM_{10} emissions 0.9g.

Air pollution

3.16 Table 5 shows that leisure journeys, by all modes generated 5,100 tonnes of NOx in 2005. 80% of this NOx was produced by journeys by car/van, and approximately 20% was generated by journeys by scheduled bus/coach.

3.17 Total NOx (as NO_2) emissions from road transport in 2005 were 549,000 tonnes (Department for Environment, Food and Rural Affairs, 2007), and leisure journeys were responsible for a small proportion (0.9%) of total emissions of NOx from road transport in 2005.

3.18 Table 5 shows that leisure journeys, by all modes, generated 338 tonnes of PM_{10}s. Travel by car/van was responsible for approximately 92% of PM_{10}s generated and approximately 7% was generated by journeys by scheduled bus/coach.

3.19 Total PM_{10} emissions from road transport in 2005 were 34,000 tonnes (Department for Environment, Food and Rural Affairs, 2007). Table 5 shows that the leisure journeys by car / van generated 313 tonnes of PM_{10} in 2005; this is approximately 1% of total emissions of PM_{10} from road transport in 2005.

Noise and visual pollution

3.20 Statistics from the Noise Association show that traffic accounts for 66% of the total noise generated outside dwellings in the UK and affects a significant number of the UK population (32 million people). With an increasing number of vehicles on rural roads, it is likely that there will be a corresponding increase in the volume and / or length of traffic noise in rural areas.

3.21 CPRE has produced a study into the areas of England disturbed by noise and visual intrusion (Campaign to Protect Rural England, 2007). Table 7 below details their findings which show that almost half of the total area of England suffers from noise and visual intrusion, with almost 70% of the South East being affected.

Table 7 National and Regional Calculations of areas disturbed by noise and visual intrusion

Region	Region area (km²)	Disturbed % of region	
		Early 1990s	2007
East Midlands	15810.76	40.86	50.18
East of England	19574.10	38.57	49.63
North East	8676.41	30.48	34.69
North West	14922.52	41.45	48.55
South East and London	21002.05	58.95	69.24
South West	24388.83	30.14	42.46
West Midlands	13003.80	42.90	49.19
Yorkshire and Humber	15564.03	37.10	45.88
ENGLAND	132942.50	40.56	49.90

3.22 CPRE illustrate their findings as shown below in Figure 2. The three maps displayed illustrate the increases in noise and visual intrusion in England since the early 1960s, with the areas of green or 'undisturbed areas' becoming marginalised.

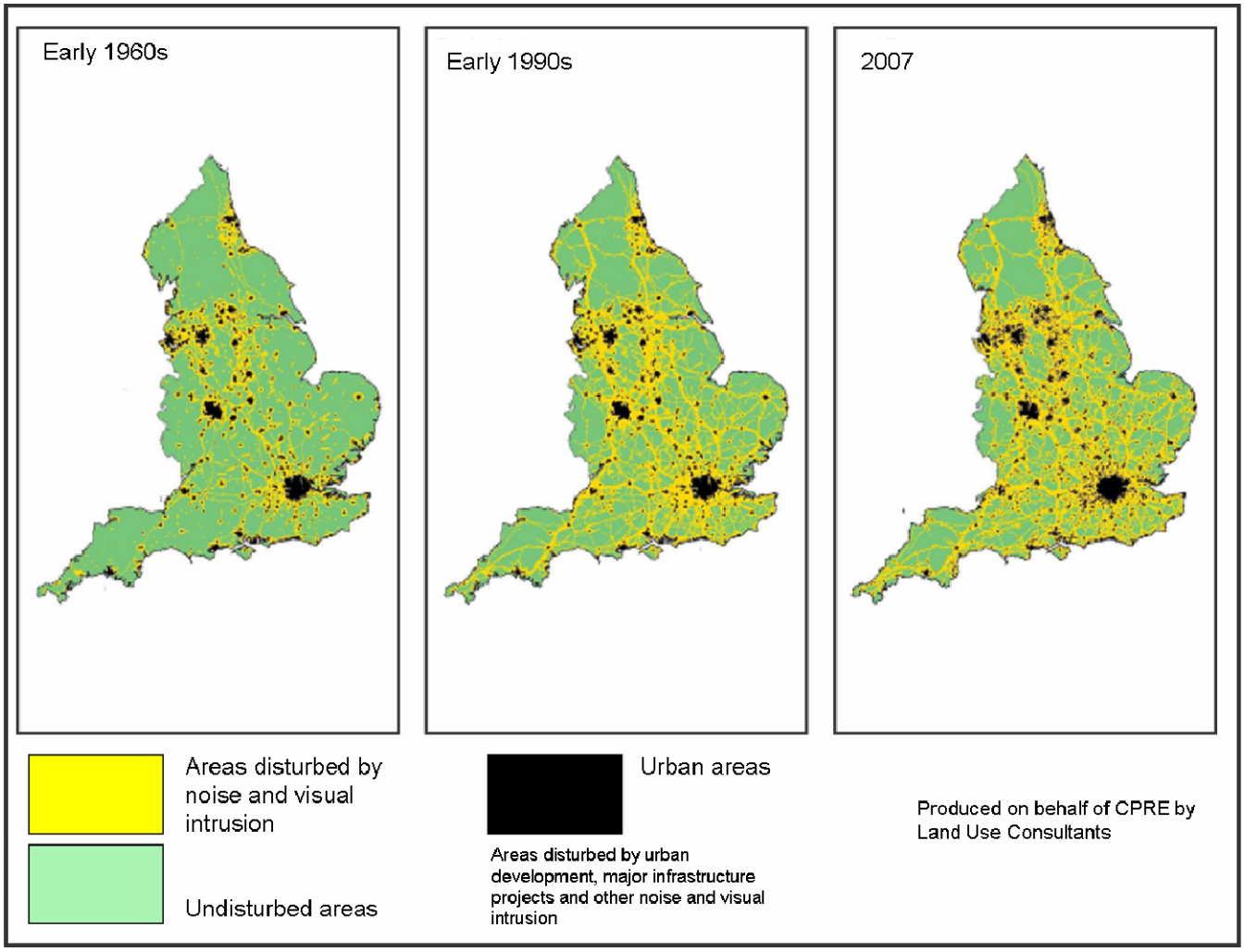

Figure 2 National and Regional Calculations of areas disturbed by noise and visual intrusion, Early 1960s – 2007

Accidents and risk of accidents

3.23 The Road Casualties Great Britain 2005 reports that 47 people were slightly injured per 100 million vehicle kilometres travelled in 2005 (Road Casualties Great Britain, 2005). This data is also available by mode travelled and for leisure trips only as shown in Table 8.

3.24 Increased leisure travel by car also brings an increased risk of accidents involving wildlife and livestock particularly in areas such as the New Forest where livestock and New Forest ponies roam freely. Despite measures to try to reduce traffic accidents involving New Forest ponies, 74 ponies were killed and 8 were injured on the roads in 2003 (Forestry Commission, 2004). The 2006 Road Accidents for Great Britain study shows that one of the higher carriageway hazards was from animal infringement, with 1,091 accidents in 2006 caused by incidents involving all animals except for ridden horses (Department for Transport, 2006). This is a higher figure than other carriageway hazards such as dislodged vehicles, involvement with previous accidents or pedestrians in carriageways (Department for Transport, 2005).

3.25 The Leisure Travel Calculation explained in Section 3.4 – 3.7 has been used to calculate the 'slight injury rate for leisure trips' in Table 8. It should be noted that when calculating the figures for those pedestrians sustaining slight injuries, the significantly lower rate for those injured on

rural roads, as opposed to urban roads, has been used. Whilst both types of roads will be used for some journeys made to the natural environment, it is assumed that rural roads are used for all leisure trips made to the countryside or seaside / coast.

Table 8 Slight casualty rate by mode

Mode	Slight injury - 2005 Rate per 100 million kms	Slight injury rate for leisure trips
Pedestrians (urban roads)[1]	12	-
Pedestrians (rural roads)[1]	1.5	21
Pedal cyclists	321	1912
Motorcycle users	337	2056
Car users	41	3895
Bus / coach users	146	290

[1]Slight casualty rates for pedestrians are calculated using total vehicle kilometres for all vehicles by road type

3.26 Table 9 shows those drivers or riders who were killed or seriously injured (KSI) per 100 million kilometres for pedal cyclists, motorcycle riders and car drivers. This table shows overall figures and figures for leisure journeys. It should be noted that these figures do not include car passengers so the true figures are likely to be somewhat higher.

Table 9 KSI (Killed or seriously injured) by mode

Mode	Killed per 100 million kms	KSI per 100 million kms	Killed undertaking leisure visits 2005	KSI undertaking leisure visits 2005
Pedal cyclist	3.3	53	20	316
Motorcycle riders	10	113	61	689
Car drivers	0.3	2.4	28	228

3.27 Fear of accidents also has an impact on sustainable leisure travel. 65% of respondents to a survey of users of country lanes for walking, cycling and horse riding, conducted on behalf of CPRE indicated that they felt threatened by road traffic all or some of the time when out in the countryside (Campaign to Protect Rural England, 1999).

Congestion

3.28 Figures from Transport 2010: The 10 Year Plan forecast that both traffic growth and congestion on rural roads will surpass that on urban roads leading up to 2010, unless measures are taken (Department for Transport, 2000). Whilst traffic was forecast to grow by 22% over the whole network, a slightly higher increase of 25% was forecast for non-urban roads. Meanwhile, congestion was predicted to increase by around 35% in rural areas, compared to 15% over the network as a whole.

3.29 There is evidence that congestion has a negative impact on local economies reliant on tourism as illustrated by the National Trust site at Castle Drogo and the Teign Gorge. This National Trust site receives about 135,000 visitors per year. During school holidays the property typically receives 700-1,000 visitors every day and on Bank Holidays numbers can reach 1,700. With almost all visitors arriving by car, access is a major problem which can become completely gridlocked for up to two hours at a time if large vehicles such as coaches or agricultural machinery meet visitor traffic. The congestion on the lanes caused two coach tour companies to drop Castle Drogo from their itineraries in 2004; this resulted in a loss of 4,000 visitors.

3.30 As mentioned above, traffic congestion is predicted to increase by around 35% in rural areas. This, combined with the scale of travel by car to National Parks illustrates the scale of the impact of congestion. Table 10 shows the findings of the National Travel Survey (NTS) 2005 which details the number of people travelling to National Parks in England for 2005 (Department for Transport, 2005). In total, 42.3 million visits were made to English National Parks in 2005. Almost half of all leisure trips made to National Parks were made in the summer season.

Table 10 Number of visits to individual National Parks 2005

	Total visitors (millions)
The Lake District	10.5
The Peak District	10.1
North Yorkshire Moors	7.3
Dartmoor	4.3
New Forest	4.3
The Yorkshire Dales	3.0
Northumberland	1.2
Exmoor	0.8
The Broads	0.7
National Parks total	**42.3**

3.31 Figure 3 shows the modes used to access National Park territory in 2005 (these figures are also taken from the National Travel Survey (Department for Transport, 2006)). As shown, 78% of all leisure visits made to National Park territories were done so by car, something that is unsurprising given the tendency for such trips to be long distance. The average round trip for a leisure visit to a National Park was 35.4 miles. Walking was the next most common mode of travel which accounted for 7% of trips made to National Park territories.

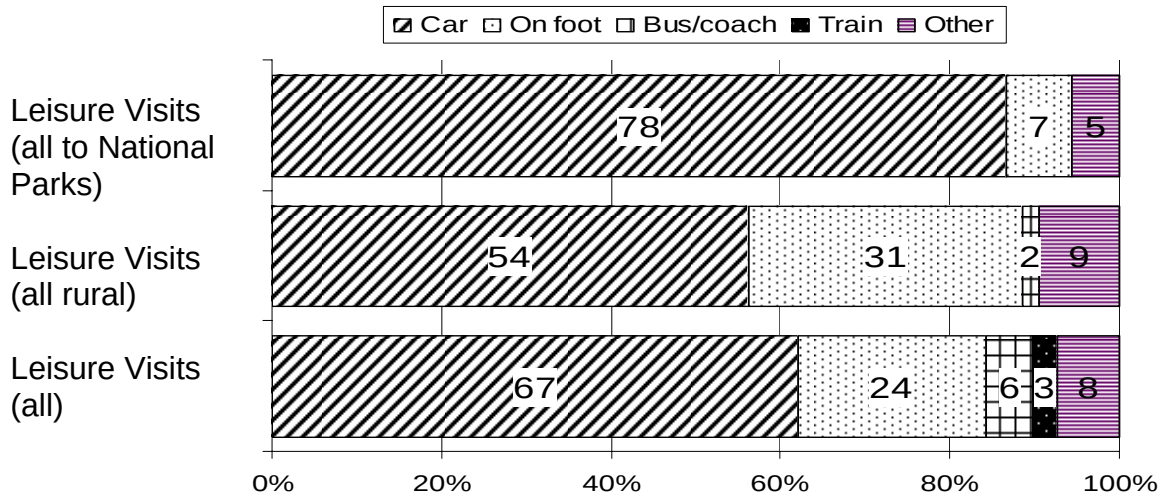

Figure 3 Modes Used to access National Parks 2005

Summary

3.32 The previous sections of this report have attempted to estimate the scale of the impact of leisure travel on climate change, air pollution, noise and visual intrusion, accidents and risk of accidents and congestion. These impacts are summarised below:

- **Climate Change** – As shown in sections 3.12 – 3.14, leisure travel was responsible for producing 388,069 tonnes of the main greenhouse gas CO_2 in 2005, and the majority of this (90.5%), was produced by car / van use. As road transport accounts for a significant proportion of national CO_2 emissions (22% in 2005) and non-urban traffic is predicted to increase by 25% leading up to 2010, the detrimental impact of this increase leisure travel by car on climate change will increase. Climate change has a detrimental environmental on both a global and local scale.
- **Air Pollution** – As shown in sections 3.15 – 3.18, leisure journeys by all modes, generated 5,100 tonnes of NOx in 2005 and 338 tonnes of PM_{10}s. Air pollution has an adverse impact on vegetation and ecosystems and has well known detrimental impacts on human health.
- **Noise and visual intrusion** – as shown in sections 3.19 – 3.21, traffic accounts for 66% of the total noise generated outside dwellings in the UK and affects 32 million people. With the forecast 25% increase in traffic on non-urban roads, it is likely that there will be a corresponding increase in the volume of traffic noise in rural areas. An increase in traffic noise and subsequent loss of tranquillity has a negative impact, including a detrimental impact on people's enjoyment of the countryside. As Figure 2 alludes to, the year on year increase in the levels of noise and visual intrusion will continue to have a damaging cumulative effect on peace and tranquillity, particularly in rural areas where these qualities are steadily being eroded.
- **Accidents and risk of accidents** – Fear of accidents also has an impact on sustainable leisure travel - as illustrated in sections 3.22 – 3.26, 65% of respondents to a survey of users of country lanes for walking, cycling and horse riding, conducted on behalf of CPRE indicated that they felt threatened by road traffic all or some of the time when out in the countryside. As stated in sections 2.33 – 2.34, the high levels of fear can lead to a reliance of cars for family leisure visits, which in turn can have a detrimental impact on levels of congestion and subsequent risks of accidents.
- **Congestion** – as shown in sections 3.27 – 3.30, traffic congestion growth on rural roads is predicted to increase by 35% in rural areas compared to 15% over the network as a whole. Increased traffic congestion has a number of negative impacts on the local level including:

1) Increased local air pollution as greater volumes of traffic moving at slower speeds produce significantly more pollution.
2) An adverse impact on visitor numbers (as illustrated by the National Trust example of Castle Drogo where the congestion on country lanes caused two coach companies to drop this destination from their itineraries in 2004, resulting in a loss of 4,000 visitors).

- **Seasonal impact in National Parks** - As shown in Table 10, 42.3 million visits were made to English National Parks in 2005. 78% of these trips were made by car and almost half of these trips were made in the summer season which has a significant seasonal impact on congestion, noise and visual pollution, local air pollution and accident rates.

3.33 An increase in car usage is a major concern for the natural environment as it causes negative impacts on the sense and landscape of the countryside, as well as on the social, health and economic benefits of leisure. There is a cumulative effect as the demand for leisure travel increases and more people access the natural environment by car; this increases pressure on resources and means that there is more pressure to provide more roads and more car parks. With the increasing number of vehicles on the roads of England, levels of congestion are set to worsen, creating a damaging cumulative effect on congestions levels, particularly on rural roads that have a limited vehicle capacity.

3.34 The following table details the environmental and human impacts of increased leisure travel by car.

Table 11 Environmental and Human Impacts of increased leisure travel by car

	Environmental Impacts	**Human Impacts**
Climate Change	Increased leisure travel causes increased CO_2 emissions, weather fluctuations and rising sea levels	
Air pollution	Increased levels of air pollution can affect not only global climates but local air quality also.	Poor air quality can have detrimental effect on human health, such as respiratory or cardiovascular problems.
Biodiversity (loss of)	Increased leisure travel can have impact on UK biodiversity. Over 100 species of plant or animal have been lost during the last century in the UK, through loss of habitat or increased pollution variants.	
Visual Pollution	Increase in car usage can have negative impact on the sense and landscape of the countryside, leading to a loss of character.	Devalued aesthetics can have a negative impact on people's enjoyment of the countryside.
Increase in Noise Pollution		Any loss of countryside tranquillity can affect physical and mental wellbeing, as well as quality of life. Increased car usage and proposed new roads may only lead to worsen tranquillity levels.

Table continued…

	Environmental Impacts	Human Impacts
Accidents (risk of)		Increased leisure travel and road traffic is a major source of accidents involving people.
Traffic Congestion	Greater congestion levels from increased numbers of vehicles on the road in rural areas will create significantly more pollution with traffic moving at slower speeds.	Increased congestion can be off-putting to visitors, as well as creating extra delays and problems for rural residents.

4 The social and economic benefits of sustainable leisure travel

4.1 In addition to the negative environmental and human impacts outlined in the previous section, it is recognised that sustainable leisure travel also has social, health and economic benefits.

4.2 The role of legislation in protecting the right to access to leisure and green space is detailed in sections 4.3 – 4.6, the benefits to society of sustainable leisure travel are covered in sections 4.7 – 4.13, the health benefits are outlined in sections 4.14 – 4.20 and sections 4.21 – 4.31 outlines some of the economic benefits of sustainable leisure travel. Section 4.32 provides a summary of this section.

The role of legislation in protecting the right to access to leisure

4.3 The role of leisure as an important human activity is recognised and entrenched in both World wide and UK national legislation. The Universal Declaration of Human Rights Article 24 states that everyone has the right to rest and leisure, including reasonable limitation of working hours and periodic holidays with pay. UK national legislation such as the National Parks and Access to the Countryside Act 1949, the Highways Act 1980, the Wildlife and Countryside Act 1981, the Rights of Way Act 1990 and the Countryside and Rights of Way (CROW) Act 2000 exists to safeguard the rights of access for people wishing to enjoy the benefits that accessing the natural environment affords.

4.4 A further important contribution to note here is the Accessible Natural Greenspace Standard (ANGSt). This is a standard measure which is expected to be applied across all regions and has recently been applied across the South East region. The model combines population with available access to natural green space provision and states:

4.5 “That no person should live more than 300m from their nearest area of natural green space of at least 2 ha in size; that there should be at least one accessible 20ha site within 2km of home; that there should be one accessible 100ha site within 5km of home and that that there should be one accessible 500ha site within 10km of home. Its areas of search (up to 10km) extend from towns and cities into rural areas” (Natural England, 2008).

4.6 The results for this standard are reported to vary across the country and as a consequence people’s experience of access to the natural environment also varies.

Social benefits of sustainable leisure travel

4.7 There are many social benefits of access to leisure and sustainable leisure travel including increasing social inclusion. Latest national transport statistics show that 25% of households in Britain have no access to a car (Office for National Statistics, 2007). So by increasing the use of sustainable modes of transport for leisure journeys, accessibility for socially excluded groups is also increased.

4.8 Public transport and other non-motorised forms of transport provide opportunities to make the leisure journeys themselves more fun and a more pleasurable experience, for example by

providing opportunities to interpret the natural environment and improving understanding and awareness of environmental issues. Families can be encouraged to use sustainable forms of transport for leisure travel through incentive schemes such as discounted travel, for example, as part of the Hadrian's Wall sustainable transport scheme, discounted tickets are available for concessionary passholders, whilst free days for children have also been piloted to persuade families to travel by rail or bus as opposed to using the car (Department for Transport, 2005).

4.9 Fulfilling need at both a personal and physical level is crucial if an individual is to maintain their health and realise their potential as individuals, their role within their families, communities, at work and society in general. A significant number of needs contributing to a healthy functioning individual can be met through accessing the natural environment. Many reports highlight the value of social interaction and the collective appreciation of open space as purposeful and therapeutic.

4.10 The value of accessing the natural environment for leisure purposes is complex. Wilson (1984) described the instinctive bond between human beings and other living systems the "Biophilia hypothesis". The term is used to describe a psychological orientation of attraction to all that is alive and vital. Wilson maintains that essentially the term describes "the connections that human beings subconsciously seek with the rest of life."

4.11 Making leisure journeys by more sustainable modes of transport such as walking, cycling and horse riding also has wide ranging social benefits. According to the Department of Health, walking is the most popular physical activity undertaken for pleasure (Her Majesty's Stationary Office, 1998). The benefits of walking in the natural environment and outdoor activity enable an escape from the pressures of modern living, enable an enhanced state of relaxation and refreshment, allow people to tackle new challenges, improve quality of life, improve mental health, and reduce anxiety and stress levels. The implications of these benefits can be extrapolated to include a reduction in risk of antisocial behaviour and a reduction in self destructive behaviour. Such consequences can in time contribute to more purposeful community activity and greater social cohesion.

4.12 An example which illustrates the social benefits of walking outdoors is the Doncaster Assertive Outreach Walking Group (Matthews and McAndrews, 2006); set up in 2003 for people with severe mental health problems. The aims of this walking group are to provide a positive experience of the outdoors, non-urban environments, wildlife, exercise and group activity and to develop and promote self-awareness, confidence and responsibility. This group was successful and building on the success of this group, there are now two additional walking groups. This quote from one of the Doncaster Assertive Outreach Walking Group service users encompasses the wider social benefits of walking in the natural environment:

4.13 "Some people have a stiff drink to make them feel good, but I get the same feeling from the walk group. It does my mind good……I like the fresh air in my lungs and the opportunity to exercise my legs; I also enjoy getting out into the countryside and accessing different places……. I can build up my knowledge of local and distant areas that one day I may be able to access myself. I don't like long and difficult walks but I do feel a great sense of achievement when completing them."

Health benefits of sustainable leisure travel

4.14 An increase in sustainable leisure travel by walking and cycling can also bring health benefits as outlined below.

4.15 Walking is the most popular physical activity undertaken for pleasure according to the Department for Health and is widely advocated as a valuable form of aerobic exercise. There is substantial scientific evidence that supports the claim that walking has many benefits that directly affect an individual's physical health. Health benefits are wide-ranging and include reducing the

risk of coronary heart disease and stroke, reducing body fat, improving self esteem and helping flexibility and co-ordination, hence reducing the risk of falls (Department of Health, 2000).

4.16 Any amount of walking, and at any pace, expends energy, hence there is a potential long term benefit of walking for weight control. The role of walking could be viewed as significant given that the number of men and woman classified as obese nationally (having a Body Mass Index over 30) has increased significantly over the past twelve years.

4.17 There is widespread debate surrounding the lack of physical activity that young people participate in now and the consequences of this. However, walking provides opportunity for young people to break away from the attraction and allure of computer games and TV, for a short while at least and encourages access to the natural environment with adults. If parents or carers express excitement about the prospect of a walk in the countryside, they are more likely to transmit this feeling to their children. By treating a walk as an adventure young people are more likely to want to go again and extend this recreation into their adult life, and enjoy the subsequent advantages.

4.18 Cycling too has many health benefits associated with aerobic exercise as noted above but in particular cycling increases leg strength which is known to improve mobility and contributes to older people in particular being able to get out of chairs more easily avoiding falls and associated injuries. Strength and co-ordination that regular cycling brings makes falls less likely (Rutter, 2000).

4.19 The benefits of cycling can be felt over a relatively short period of time. It has been calculated that new cyclists covering short distances can reduce their risk of death (mainly due to the reduction in heart disease) by as much as 22% (Rutter, 2000).

4.20 Walking and cycling are the second and third single most used modes for leisure travel respectively (Natural England and others, 2005). Any exposure to open space (both passive and active) through either of these modes can also have wide reaching social and economic benefits. The natural environment can provide a focus for recreation, social interaction and community action - all of which have additional positive influences on a person's health and well being.

Economic benefits of sustainable leisure travel

4.21 In addition to the social and health benefits, this section outlines the economic benefits of sustainable leisure travel.

4.22 As illustrated in sections 3.4 – 3.8, in 2005, there were over 699 million leisure trips undertaken to the countryside and 72 million visits undertaken to the coast in England. As shown in Figure 4, there were 3.6 billion leisure visits in England during 2005 and the money spent during those visits has been estimated at approximately £90 billion (see Figure 5). Table 12 shows that just under £11.5 billion of this expenditure was spent within the natural environment (defined in the survey as: countryside; seaside coast; national parks and open access land) (Natural England and others, 2005).

4.23 Figures 4 and 5 show that whilst there is a downward trend in the volume of leisure visits taken since 2002/03, the value of leisure trips has not decreased at the same rate.

4.24 Another economic benefit of leisure travel is expenditure by tourists. Expenditure by tourists in England has been calculated at £11,380 million in 2007, an increase of 3.5% from 2006 (£10,998 millions were spent in 2006) (Visit Britain, 2007). Whilst this figure includes all visits it is still a significant point to consider particularly since the number of trips made by tourists to England has increased slightly from last year (+0.6%) whilst those made to the UK as a whole have decreased (-0.8%). This finding suggests a preference for tourists to visit England with a corresponding increase in spend.

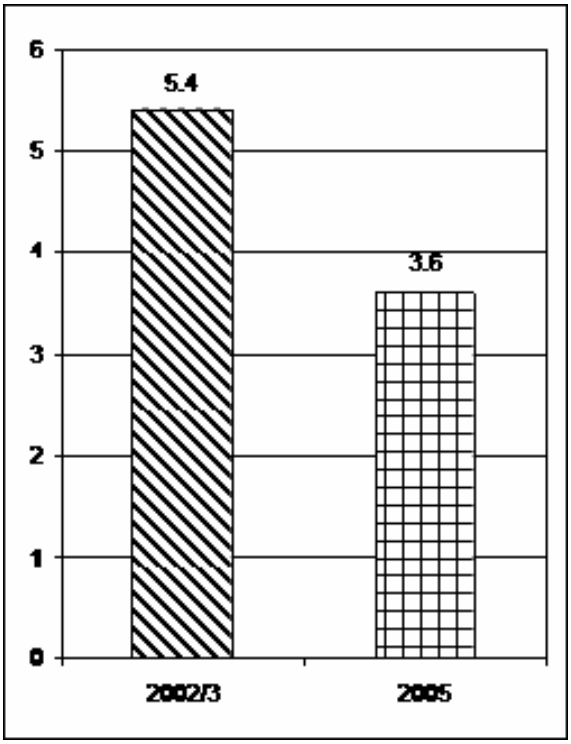

Figure 4 Volume of Leisure Visits; 2002/3 and 2005 (billions)

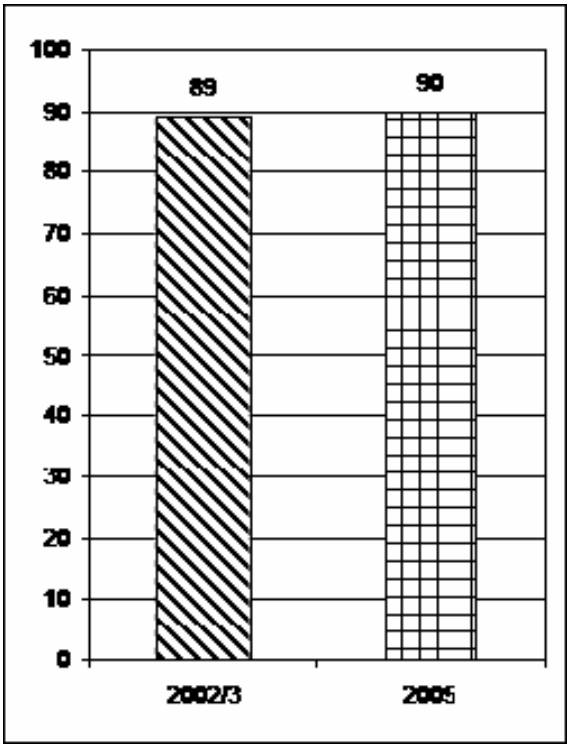

Figure 5 Values of Leisure Visits; 2002/3 and 2005 (£ billions)

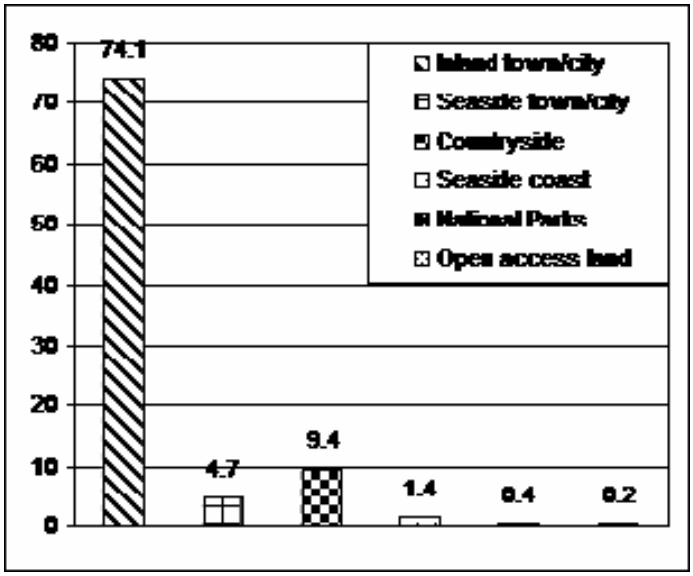

Figure 6 Expenditure on trips; 2005 (£ billions)

Table 12 Volume and value of Leisure Visits to each destination type; 2005

	2005 Volume (millions)	2005 Value (£ bn)
All Visits	3569	89.6
Visits to:		
Inland town/city	2624	74.1
Seaside town/city	174	4.7
Countryside	699	9.4
Seaside Coast	72	1.4
National Parks	35	0.4
Open access land	19	0.2

4.25 Another economic benefit of leisure travel is expenditure by tourists. Expenditure by tourists in England has been calculated at £11,380 million in 2007, an increase of 3.5% from 2006 (£10,998 millions were spent in 2006) (Visit Britain, 2007). Whilst this figure includes all visits it is still a significant point to consider particularly since the number of trips made by tourists to England has increased slightly from last year (+0.6%) whilst those made to the UK as a whole have decreased (-0.8%). This finding suggests a preference for tourists to visit England with a corresponding increase in spend.

4.26 It has been seen that there is significant economic value in people visiting and making visits within England. One of the most popular activities (out of a possible fifteen) undertaken on such leisure visits were walking and eating and drinking (Natural England and others, 2005). In fact, in comparison with the figures for 2002/2003, walking, as a preferred activity, has increased in popularity by 6%. This suggests that spending by walkers continues to provide significant economic benefits to local economies both in terms of income and job generation. It has also been shown that those visitors using sustainable forms of leisure travel (walking and cycling) to access the natural environment often spend more in the local economy because they are unable

to carry food/drinks and other items with them. Instead they have to rely on making these purchases at or on route to their destinations.

4.27 A report commissioned by the Ramblers Association reports that walking in England generates between £1,473 million to £2,763 million income annually in rural areas and that between 180,558 and 245,560 jobs (full time equivalent) are supported as a result of walkers' expenditure (Christie and Matthews, 2003). Furthermore, it is calculated that 38% of these benefits are generated from the expenditure of tourists on short walks; 35% from expenditure of leisure day walkers to the countryside and 16% from the expenditure of tourists on long walks.

4.28 Sustainable leisure travel by bicycle also brings benefits as illustrated by a recent study by Sustrans (2006) which showed how money spent on creating the right environment to encourage more walking and cycling has resulted in large cost savings to the National Health Service, in addition to the health benefits to local people (Sustrans, 2006). Whilst this study focused on urban cycle and walking routes the conclusions suggest that the model can be applied to routes across the National Cycle Network.

4.29 The Institute of Transport and Tourism reported that the North East had seen a direct contribution of £9.6 million from four long distance cycling routes, which represented a value of £13.4 million to the wider North East economy in 2006 alone (Sustrans, 2007). The development of cycle tourism is seen as promising, particularly with a likely increase in domestic tourism due as international tourism decreases.

4.30 In the study an economic appraisal methodology was applied to evaluate the impact of improvement in routes in three case studies. The method used enabled a benefit to cost ratio to be realised and in all three case studies these were high. In addition to cost savings a number of wider, personal and social benefits of the improvements were identified: an increase in physical activity (improved public health) reduced absenteeism (as a consequence improved levels of physical fitness experienced by commuters walking or cycling to work); journey ambience (based on a safety and security value) and an overall reduction in accidents.

4.31 The study showed that the economic and social benefits of improved cycle routes are clearly evident and represent not only a current situation in the three case studies but also indicate the potential to stimulate the economic value of a given area or region in the future.

4.32 In addition to the direct economic impact, sustainable access to the natural environment also has an economic impact as a consequence of health benefits gained. This can be illustrated by the findings of a study commissioned by the Countryside Agency (Regeneris Consulting, 2004) which identified a number of key health related economic impacts as outlined below:

- A lack of exercise is a key contributor to poor health and the cost of this poor health to England's economy is considerable.
- The North East of England has the poorest health record for diseases associated with a lack of exercise of any region in England and it is estimated that the overall cost of ill health in this region, due to a lack of exercise, ranges from around £110m to £410m pa.
- The report suggest that an increase in levels of physical activity by 10% points in adults in the North East would deliver savings of around at least £25m pa in the economic benefits from improved health.
- The greatest health benefits will rise from encouraging those people almost entirely inactive to undertake moderate exercise. Some 20% of adults are infrequent users of public rights of way (PROW) for recreation walking and between 12% and 17% of adults would use PROW more frequently if there were improvements to the network. These are a potential target for using PROW for extra exercise.
- The findings from Walking the Way to Health Initiative (WHI) projects indicate that the benefits of encouraging extra recreation through walking can be longer lasting than other

forms of exercise. The difference shows the added value that can be achieved from a local scheme that promotes walking for health.

Summary

4.33 The previous sections of this report have outlined some of the benefits of sustainable leisure travel which are summarised below:

- **Social benefits** - As shown in sections 4.7 – 4.13, making leisure journeys by sustainable modes of transport such as walking have social benefits such as improved quality of life, reduced anxiety and stress levels and relaxation and refreshment. Activity groups such as the Doncaster Assertive Outreach Walking Group can reduce the risk of antisocial behaviour and a reduction in self destructive behaviour (Matthews and McAndrews, 2006). Such consequences can in time contribute to more purposeful community activity and greater social cohesion.
- **Health benefits** - As outlined in sections 4.14 – 4.20, there are many health benefits associated with more sustainable leisure travel. For example, health benefits of walking include reducing the risk of coronary heart disease, reducing body fat and improving self esteem. It has also been shown that new cyclists covering short distances can reduce their risk of death (from heart disease) by as much as 22%. With Walking and cycling being popular modes of transport, any exposure to open space (both passive and active) through either of these modes can also have wide reaching social and economic benefits, as well as tackling the health and financial constraints that are currently imposed on the National Health Service
- **Economic Benefits** - As outlined in sections 4.21 – 4.31, leisure travel and more sustainable leisure travel has economic benefits. For example, a report by The Ramblers Association has shown that walking in England generates between £1,473 and £3,763 million of income annually in rural areas. Furthermore, Sustrans have conducted cost benefit studies which highlight the economic benefits of introducing improved cycle routes. Sustainable access to the natural environment also has an economic impact as a result of health benefits gained. As stated in “Health Benefits”, sustainable access to the natural environment also has an economic impact as a consequence of health benefits gained. With expenditure by tourists in England being calculated at £11,380 million in 2007, there is a significant economic contribution to the national economy from leisure based tourism. An increase in sustainable leisure travel in rural areas can help to boost the direct economies generated by cycling and walking visitors, which can help to boost local rural economies and support local residents that rely on tourism for their annual incomes.

5 Options for mitigation

5.1 The previous sections of this report have identified and attempted to quantify the impacts of increased leisure travel by car and the social, health and economic benefits of increased sustainable leisure travel. This section of the report outlines a selection of measures which could be used to mitigate the impacts of increased leisure travel by car and encourage a shift to more sustainable leisure travel.

5.2 Good practice examples of environmentally sustainable leisure travel schemes are also considered in separate reports, commissioned by Natural England – 'Guidance on Visitor Travel Plans' and 'Sustainable Leisure Travel – good practice examples'. Good practice examples included in this report include: Peak Connections, Gower Explorer, Heart of Wales line, Northern Rail – walks and rail journeys, Dales Rail, Cotswold Explorer, Sherwood Forester, Cairngorms Explorer, Moorsbus, Cravenlink, Shropshire Hills Shuttle, Breeze the Downs, Norfolk Coast Hopper, Suffolk Coastal Link, Hadrian's Wall Bus, Pendle Witch Hopper, Trossachs Trundler, Widen the Choice – East Anglia, Hadrian's Wall Tourism Partnership, Gateway to the Downs, Pembrokeshire Greenways, Baytrans – Swansea Bay, Harewood House – Service 36, Helston Branch Line and the Lakeland Explorer. These schemes have been omitted from this section to avoid duplication.

5.3 The section below considers the range of options for intervention focusing on successful schemes in England and Wales that are applicable to leisure travel for accessing the natural environment. Whilst some examples are not specific to accessing the natural environment in England, they are nevertheless cited here, on the basis that they are a transferable solution. Evidence has been taken from specific case studies where measures have resulted in greater take-up of sustainable travel options and modal shift. Many of the examples have been obtained from the Campaign for Better Transport (formerly Transport 2000) guide: 'Tourism Without Traffic – A good practice guide' (The Campaign for Better Transport, 2001). Five categories of options for mitigation specific to leisure journeys have been considered in this section and include:

- Planning solutions;
- Pricing structures;
- Smarter Choices;
- Visitor Travel Plans; and
- Technological solutions.

Planning solutions

5.4 Sustainable travel must be affordable, convenient, comfortable and seamless if car owners are to be persuaded to use it for leisure purposes. The following planning-related factors have proved to be key to influencing modal shift:

- **Transport gateways or 'green point' car parks** - these are integrated car park facilities connected by public transport services and walking and cycling infrastructure. They are designed to provide a seamless transfer from car to public transport. Vehicles and stations must accommodate for tourists eg storage for luggage and bikes on the journey, bike hire facilities, good provision of trolleys, lifts and left luggage facilities and the availability of staff are all important pre-requisites for making the journey practical and giving tourists the confidence to travel by bus and rail.
- **Bus and dedicated services** - door-to-door transport which is important to ensure good connections between coach and rail stations and local buses for the onward journey from the main part of the journey by bus or rail to reach key attractions. Accommodation providers

may provide a minibus service from rail stations to and from the hostel and hotel for free with a nominal charge for other journeys. Nationally, the Youth Hostel Association has negotiated a discount on National Express coaches for its members.

Good Practice Examples: Last Links

Coastal Hoppa holiday parks and leisure attractions in south-east Cornwall help finance a hoppa bus service that links them together. Around 30 passengers use the service a day and surveys have shown that 65% of these passengers are car owners.

- **Parking restrictions** can also be an effective way of encouraging sustainable travel. This approach has been implemented specifically to target visitors in Lake District where an 'access only' order was introduced on quiet country lanes to restrict car use to visitors using guesthouses together with 20mph advisory limit, which has benefited walkers and cyclists. Monitoring of the scheme has revealed that 28% of residents changed their behaviour and made more trips in the local area on foot or by bike, which they had previously made by car. 45% of the residents surveyed said they walked and cycled more since the scheme was introduced. The change in behaviour was mainly influenced by lower traffic levels.

Pricing

5.5 **Parking charges** may be introduced at existing car parks with the aim of reducing car\trips and encourage the use of alternatives. The revenue generated from the charges can be used to support public transport, walking and cycling. To encourage modal shift, travel by bus or rail for the onward journey can be included in the cost of a park and ride ticket, as demonstrated by the St Ives scheme.

Good Practice Examples: Inclusive Deals with Park and Ride

A **scenic rail service to St Ives** attracted 258,000 trips in 1999 (St Ives attracts 700,000 visitors a year). Drivers can park at the main line station of St Erth or the rail-based summer park and ride at Lelant Saltings. A special fare includes up to five people and parking. From June to September, access restrictions limit visitor traffic into the town for most of the day.

5.6 **Road user charging** can be used as a further tool for restricting car traffic in both urban and rural areas, while encouraging visitors to an area to arrive by walking, cycling or using public transport. Road user charging (also known as congestion charging in urban areas) involves charging drivers directly for road use – particularly at congested times and places. The Transport Act 2000 gave local authorities two powers: to be able to charge for road usage and for workplace parking. But it left local authorities complete freedom about whether and how they might do it, as long as, if they did, they recycled the revenues into traffic management, public transport, infrastructure, or some other way of reducing congestion.

5.7 Revenue generated can be used for improving public transport connections for visitors and paying for conservation measures.

Good Practice: Road User Charging at World Heritage Site

Visitors are charged to drive onto the Durham Peninsula under a congestion charging scheme planned for the narrow street that leads to the city's castle and cathedral, which is a World Heritage Site. Visitors can park a few minutes' walk away, while businesses and residents on the peninsula will be given permits to enter free of charge. The issue here is not just congestion but environmental improvement and increasing the safety of all road users. The solution is relatively low tech: as the area within which charging occurs has only one entry and exit point, a pay-booth and a simple camera suffice. There is a £2 charge for all vehicles using Saddler Street and Market Place between 10am and 4pm on Monday to Saturday. Within 12 months of the scheme being launched, it reduced the flow of traffic entering the narrow streets of the city centre peninsula by around 90%.

5.8 Visitor focus groups conducted in the Sussex Downs showed acceptance for the idea of the 'stick' of car park charges within the area to encourage visitors to travel without their car, if these were used to pay for conservation measures.

Smarter choices

5.9 In recent years, there has been growing interest in a range of transport policy initiatives which are now widely described as 'smarter choices'. The Department for Transport (2007) defines these measures as 'techniques for influencing travel behaviour towards more sustainable options such as encouraging school, workplace and individualised travel planning.' They are relatively small-scale, local measures that help people become better informed about travel alternatives, and the benefits of these alternatives. They typically involve a more psychological approach to encourage modal shift such as travel awareness campaigns, marketing, making improvements to the way services are organised, and providing new services closely focused on a particular target market.

5.10 Sustrans believes that behavioural change is more critical than ever in order to reduce carbon emissions, particularly as current technology does not have the capability to reduce emissions from the present transport sector (Sustrans, 2007). In terms of the natural environment, DEFRA has stated in its 2007 publication '2007 Survey of Attitudes and Behaviour in relation to the Environment' that just under half of those asked had taken at least one flight for leisure purposes in 2006, however just 8% had flown to domestic destinations. One in ten respondents never visited the countryside; however 82% of respondents who did access the countryside did so for walking purposes (DEFRA, 2007). One goal that has been stated as a behavioural goal is to reduce the number of short haul/domestic flights that are taken by people for tourism purposes, opting for more sustainable travel modes instead (DEFRA, 2008).

5.11 Research has shown that smarter choices can be very cost-effective in delivering change in travel behaviour. In the leisure sector there are examples of where 'car free' holidays and day trips are promoted using a range of promotional measures to attract visitors to use public transport which have been successful in encouraging visitors to leave their car and travel by alternatives during their trip. The types of intervention used by the leisure and tourism industry to target visitors are:

- 'leave your car at home' campaigns;
- visitor Travel Plans;
- targeted marketing; and
- promotions.

5.12 These initiatives stress the ease of arriving to tourist attractions by public transport with information on all modes and connections to key attractions and reinforce the message that tourists can leave their cars at home where attractions and walking trails connect with public transport. Transport services (rail and bus routes, dedicated links for the onward journey) have been marketed and branded as being part of the tourist attraction and given a local identify have been particularly successful in attracting car owners and even encouraging more visitors because the service becomes a tourist attraction in its own right. These may include 'fun vehicles' e.g. themed liveries, open-top buses, steam trains, vintage vehicles, converted milk floats and horse drawn carriages – which are particularly effective for providing the last link of a journey, for example from the bus or rail station to a leisure attraction, or from a park and ride to into a leisure area. Railway revivals can also be effective for tourism and recreation on rural railway lines – whereby promotion can give a line an identity of its own built around local attractions including scenic views, rare wildlife and historic sites. Opportunities for walking and cycling from stations along the line can be identified and publicised with 'rail trail' leaflets. A lively programme of events can also help to market the line with guided walks, public picnics and music on the train.

5.13 Such campaigns have been combined with promotional initiatives to further influence leisure travel and promote key attractions by offering discounts on bus and rail fares (eg park and ride tickets, and offers on entry to attractions).

Good Practice: Marketing Campaign for Walking and Cycling

Landsker Countryside Holiday bureau was set up to develop a niche market for walking and cycling holidays in rural Pembrokeshire. Their advertising and specialist tourist guidebooks for the area stress the ease of arriving by rail and enquirers are sent a pack of leaflets about holiday packages which reinforce the message that tourists can leave their car at home. In 2 years 60% of visitors booking have arrived by train. Around half the bookings come through overseas tour operators. The bureau was set up by the South Pembrokeshire Partnership for Action with Rural Communities and has support from a range of agencies, including Pembrokeshire County Council, Wales Tourist Board and the European Union.

Bicycle touring specialist Country Lanes operates a programme supported and self-guided cycling day trips, short breaks and longer tours which all begin with a rail journey to the countryside. Country Lanes' cycle centres are located at rural stations in the Lake District, the New Forest and the Cotswolds making car-free cycling an attractive alternative. Luggage is transferred by bus or taxi. 60% of users are overseas visitors and 40% UK residents, mainly city dwellers who want to avoid the hassle of car travel and are concerned about the environment.

The Ramblers Association promotes the benefits of and encourages the use of public transport services to walkers. They are advertised as adding 'enjoyment and flexibility to the walk' and a generally more attractive option to the car – for the walker and to the environment. The website provides links to public transport information at the national and local levels.

Good Practice: Promotional Campaigns

"Ride to the Rides" - Alton Towers in Staffordshire offers an all inclusive day out including rail travel on Midland Mainline from London or Leicester. Visitors arriving at Derby station are taken by coach to the gates of the theme park, where their special rail tickets gain them entry to the park. Proved popular with the train company extending the scheme to other tourist attractions including Chatsworth House in Derbyshire and Belvoir Castle in Leicestershire, with the option of first class travel and breakfast.

Good Practice: Making the journey enjoyable and part of the attractions

Brighton and Devil's Dyke Open Top Bus - Open top 1960s style buses between Brighton and Devil's Dyke in the Sussex Downs have proved far more popular than covered buses on the same route and have influenced modal shift. Visitor surveys show that half of passengers said they would have travelled by car if the bus had not existed and that 44% of passengers would not have made the trip without it.

Visitor travel plans

5.14 Leisure attractions have developed their own Travel Plans in order to promote sustainable transport and induce a lesser dependency on the car. Not only can attractions diversify their modal accessibility, but they can subsequently explore new customer markets that typically travel by more sustainable methods of transport. Not only can this widen their visitor base, allowing their attraction to be more accessible to a new audience but new links can be forged with local transport bodies and local communities, which can result in a reduction of the impact of traffic in the local area and emphasise a commitment to good practice.

5.15 As part of travel plans, addressing car-free access by targeting other modal accessibility options is a common strategy; raising awareness amongst visitors of other modes of transport and lower price entry for public transport users can help to dissuade visitors from using their cars, whilst shuttle services and package deals that include travel have been adopted by some attractions

that experience parking capacity difficulties. The development of on-site facilities is also important in order to ensure that the site meets sustainable transport needs. Cycle storage, information for visitors arriving and departing by public transport and pedestrian and cycle friendly facilities are some examples of making an attraction more appealing to sustainable transport users.

Good Practice: Visitor Travel Plan

Yorkshire Sculpture Park - A travel plan has been developed for staff and visitors to the Yorkshire Sculpture Park. This park is set in the 18th century landscape of the Bretton Estate, near to the M1 and attracts over 200,000 visitors a year, of which over 90% arrive by car. In order to reduce the amount of car travel to the Park and to cope with an expected rise in visitor numbers, a sustainable travel plan was commissioned which recommendations include:

- Improvements to public transport – enhancement of an existing bus service on Sundays and diversion of another service to the park.
- Annual review of visitor car parking charges.
- Discounts on visitor purchases for public transport users.
- A low-floor minibus for visitors and staff moving around the park.
- The connection of the sculpture park to proposed cycle routes.
- New links between walking trails within the park and trails in nearby countryside.
- Measures to encourage green travel choices by staff – including car-sharing scheme, discounts on a key bus service and assistance in buying a bicycle.

Technological solutions

5.16 The following technological solution has proved to be successful and, if implemented more widely, could be successful in influencing modal shift:

5.17 Transport Direct is funded by the Department of Transport and is designed to provide sustainable travel planning information for internet users, in order that they can make an informed choice on their travel habits. Some attraction websites have developed links with Transport Direct, in order to showcase its ability to provide sustainable transport options to their sites.

5.18 One example of this is the National Trust website, which provides sustainable transport links, including Transport Direct, for many of its attractions.

Good Practice: Transport Direct

Woolsthorpe Manor – As part of www.NationalTrust.org.uk the National Trust provides journey planning facilities to many of its attractions. One example of this is Woolsthorpe Manor in Lincolnshire, the birthplace of Sir Isaac Newton. In the 'getting there' section, National Trust provides a series of links, the majority of which are there to promote sustainable travel. The initial link is to Transport Direct, which allows the user to plan a sustainable journey to Woolsthorpe Manor, which provides an alternative mode of travel to private vehicles (National Trust, 2008).

5.19 Traffic Management in National Parks is another way of mitigating the impacts of increased levels of congestion due to increased leisure travel. Congestion in National Parks, particularly, has also become a driving factor behind management decisions. For example, the economic benefits of tourism in Castleton in the Peak District are constantly weighed against the effects that tourism-induced congestion has upon the area. Increased car park capacity in the area has been offset to prevent further congestion complications and over-commercialisation of the area (Peak District National Park Authority, 2007; DEFRA, Department for Transport, 2007).

Summary

5.20 Where schemes have been successful in the leisure sector at influencing the take-up of sustainable travel and modal shift, they have typically involved a package of measures, including:

- **Travel awareness and marketing campaigns** - all tourism literature recommends public transport links, scenic routes bus, rail, bike, or on foot, and reinforcing to visitors that they can leave the car behind and providing relevant timetable information and details of dedicated links for onward journey to final destination at point of booking.
- **Good signage** (clear and attractive) and maps on arrival at bus and rail stations.
- **Promotion** offers such as the inclusive deals, discounted bus and rail fares and offers on attractions.
- **Dedicated services** – ensuring seamless travel from the main journey, adding enjoyment to the journey by making it part of the tourist trail.
- **Transforming railway lines, gateway stations and vehicles into tourist attractions** – giving them an identity (built around local attractions and scenic routes and giving stations and vehicles a local theme).
- **Parking restrictions** – making visitors leave their car on the fringe of the tourism area and use local transport connections.
- **Dedicated partnership working (both formal and informal)** between the public, commercial and voluntary sectors to enable the delivery of sustainable transport projects, to lobby for improvements to the local sustainable transport network or to influence wider strategic transport policy. All National Park Authorities are involved in formal and informal partnership working with a variety of local and regional private and public stakeholders. Many of these partnerships have contributed significantly to the implementation of sustainable transport solutions to and within the Parks. NPAs continue to focus predominantly on providing incentives ('carrots'), including marketing and enhanced service provision, to encourage people to switch from their cars to alternatives, rather than actively preventing (through the use of 'sticks') car use which is often unpopular.

5.21 The various mitigation measures outlined in this section have been summarised in Table 13 and the relative scale of their significance has been indicated. The allocation of a significance level to each measure is partly subjective but also based on case study examples and statistical evidence put forward by reports such as ELVS, NTS 2005 and the UK Tourist Survey 2005.

5.22 In Table 13, three ticks indicates a 'significant impact on leisure travel', two ticks indicates 'some significance' and one tick indicates 'minor significance'. This table identifies sustainable access to public space, special offers and inclusive deals and sustainable social measures, such as walking and cycling clubs, as having the most significant impacts upon leisure travel as detailed below:

- **Special offers and inclusive deals** are important for instigating a change in leisure travel; the initial financial advantages for visitors are apparent however the impact of such measures as the Coastal Hoppa (see section 5.4) on a reduction of traffic congestion, change in modal shift habits and subsequent improvement on the environment is also encouraging. Whilst schemes such as road user charging may initially prove unpopular with traditional motorists, the boost that such charges can provide to public transport incentive schemes and incentives to induce sustainable travel are also important.
- **Sustainable access to public space** is considered significant due to the impact that a sustainable travel plan can have upon achieving a shift in travel behavioural patterns. The advantages that can be drawn from achieving a sizeable modal shift, a reduction in costs for visitors and the environmental benefits that can be taken from a reduction in the number of private occupancy vehicles all contribute significantly, as is shown in case studies such as Yorkshire Sculpture Park (see Section 5.15).

- **Measures such as walking and cycling clubs** have significant impacts on leisure travel socially and health-wise. The health advantages of groups such as the Doncaster Assertive Outreach Walking Group (see sections 4.7 – 4.13) are not only significant for the person in terms of the physical benefits, but also advantageous for the wider community and the drain on healthcare facilities from poor health. The social benefits of such groups are also important, which subsequently boosts enjoyment factors.

Table 13 Estimation of impacts on leisure travel

	Social Inclusion		Smarter choices					
	Walking and Cycling Clubs	Dedicated Public Space	Promotional leaflets	Individualised marketing	Special offers and inclusive deals	Fun vehicles, gateway stations	Bus and dedicated links	Sustainable Access to Public Space
Applicability to leisure	✓✓✓	✓✓	✓✓✓	✓	✓✓✓	✓✓✓	✓✓✓	✓✓✓
Trip types:								
Trips from home	✓	✓			✓✓	✓	✓✓	✓✓✓
Trips from holiday base	✓	✓	✓		✓✓	✓✓✓	✓✓	✓✓
Length of trip	✓				✓✓		✓	✓✓
Seasonality	✓✓	✓✓	✓✓	✓✓	✓✓	✓✓	✓✓	
Impacts:								
Take-up	✓			✓	✓✓			✓
Modal shift	✓✓		✓		✓✓✓	✓✓✓	✓✓✓	✓✓✓
Environment	✓	✓✓✓						✓✓✓
Enjoyment factor	✓✓				✓	✓✓	✓	✓
Visitor spend	✓	✓		✓✓✓	✓	✓✓✓	✓	✓✓✓
Health benefits	✓✓✓	✓						✓✓
TOTAL	18	11	7	7	18	17	15	23

5.23 The majority of factors put forward in this table have a significant role to play in their impact upon leisure travel. Providing the public with modal choice and highlighting the benefits from a change in travel behaviour are vitally important for impacting positively on a change in leisure travel habits.

6 Policy advice regarding funding for sustainable leisure travel

6.1 Funding is required in order to implement the mitigation measures outlined in section 5. This Section outlines potential funding streams. Current authorities and funding streams have been identified and assessed based on their relevance to the natural environment and the focus of their bid. Sections 6.3 – 6.6 explain the Local Transport Plan process, sections 6.7 – 6.9 cover the Regional Transport Strategies, sections 6.10 – 6.13 covers the Transport Innovation Fund (TIF), sections 6.14 – 6.16 outlines funding opportunities related to Local Area Agreements (LAAs), sections 6.17 – 6.20 covers the National Parks Sustainable Development Fund and sections 6.21 – 6.22 outlines the National Lottery as a potential funding source.

6.2 In recent years, there have been severe financial cutbacks by both central and local government and its agencies for the development and operation of sustainable transport in the leisure sector. Currently no specific funding mechanisms exist for sustainable leisure transport in England or Wales. In England, key funding streams for the development and marketing of leisure travel, such as the Countryside Agency Rural Transport Partnership funding finished in March 2006 and DfT's Rural Bus Challenge funding has also concluded. Many National Park Authorities have sought access to external funds, often in partnership, with other interested parties from the public, commercial and voluntary sectors. It is through these dedicated partnerships that many of the good practice schemes highlighted in the previous section have been made possible. Possible opportunities for funding from external sources have been identified below.

Local transport plans (LTPs)

6.3 The majority of transport funding for local transport schemes, as opposed to major road or rail-infrastructure schemes, comes to the English highway authorities via the Local Transport Plan process. Recipients are the Local Authorities, be it County Councils, or in Metropolitan areas shared between the City Council and the Public Transport Authority. Significant transport funding is managed in the Greater London area through Transport for London, and distributed to the Boroughs via the Local Implementation Plan process. It is this type of funding that is probably the most significant for promoting sustainable travel choices for leisure trips and access to the natural environment. The previous round of LTPs in 2000 tended to focus on the key services identified by the Department for Transport e.g. access to employment, education and health. Research commissioned by the Countryside Agency and English Nature confirms that the previous LTPs largely overlooked the benefits of sustainable access to the countryside and the knock-on benefits to landscape, biodiversity and quality of life (Countryside Agency, English Nature, 2005). However, the second round of LTPs has seen the introduction of strategic environmental assessments, accessibility strategies and Rights of Way Improvement Plans (required in 2007) thus widening the scope for improving access to natural environments. A review of the second round of LTPs shows that local authorities highlight the need to improve the environment but only some LTPs include detailed or site-specific acknowledgement of protecting actual landscape value and biodiversity, and are mainly for areas that include National Parks and where the beauty of the environment is a strong economic driver (Countryside Agency, English Nature, 2005). The report cites the following examples of good practice:

- Rights of Way Improvement Plans and similar countryside access strategies in most LTPs;

- Sustainable Tourism Day (Durham) to promote sustainable access to the countryside;
- Green Space Strategy (Durham) to improve green spaces around the County;
- Sleep Zone Initiative (North Yorkshire) to enhance the tranquillity of the countryside by prohibiting quarry traffic from driving through the towns of Settle and Giggleswick at certain hours of the night; and
- leisure cycle routes that improve access to and within the countryside (Herefordshire, Northumberland, North Yorkshire, West Yorkshire).

6.4 A key finding of the evaluation was that although there is a general acknowledgement of the importance of sustainable access to the natural environment in most of the LTPs reviewed, they are no specific actions or deliverables. The review stresses the need for current LTPs to take greater consideration of designated and protected areas, and of the landscape and biodiversity impacts of Major Schemes and the significance of cumulative effects of minor schemes, or how opportunities could be taken to improve landscape and biodiversity. As previously identified by the Countryside Agency and Natural England, there is a need for local authorities to ensure that the Strategic Environmental Assessments, Rights of Way Improvement Plans and Accessibility Strategies are integrated so that the strong policies and focus of each are fed into policies and actions in the main LTP in order to ensure that environmental and access elements are adequately addressed.

6.5 The establishment of sustainable transport development partnerships (both formal and informal) between National Park Authorities (NPAs) and their constituent local highways authorities is offering some NPAs the opportunity to influence the content, priorities and delivery of Local Transport Plans (LTP2 in England). These plans are critical for capital expenditure on transport infrastructure and the implementation of traffic management schemes such as Quiet Lanes or village calming projects. However they often tend to be concentrated around urban areas and the challenge is for NPAs to raise the profile of and therefore funding for rural and recreational transport initiatives. For example, as identified by the Council for National Parks (Council for National Parks, 2006), good partnership working between Dartmoor NPA and Devon City Council ensured that key priorities identified in the updated 2005 DNPA Traffic Management Strategy were incorporated into the Devon LTP2. The Lake District NPA has also received funding through LTP2 through forming a strong partnership with Cumbria County Council which has facilitated opportunities to pilot new initiatives, through, LTP2, including 'added value ticketing' and innovative sustainable transport promotion in key car parks.

6.6 Local Authorities in England are currently drafting the next round of Local Transport Plans in preparation for submission in 2011. This preparation process provides a good opportunity for Natural England to work with the Local Authorities to raise the profile of sustainable leisure travel in the next round of LTPs.

Regional transport strategies (RTS)

6.7 As part of the 2004 Spending Review, the Government announced that it would be examining new ways to integrate transport, economic and spatial development strategies in each of the English regions. This aims to give regions the opportunity to feed into future spending decisions and show how their priorities for their region can be better strategically aligned. Regional Transport Strategies (RTS) in England set out the broad transport strategy for each region, and are an important element of Regional Spatial Strategies (RSS), which set out a broad development strategy for each region for at least 15 years ahead. The RSS identifies, amongst other things, the scale and distribution of future provision for new housing, the priorities for economic development, long term environmental and social considerations and the implications for transport needs and priorities within the overall framework of sustainable development.

6.8 Whilst the RTSs are not a potential funding source for sustainable leisure transport, the RTSs provide a strategic framework for Local Development Documents (LDDs) and Local Transport Plans (LTPs) and are therefore important to take into account when considering potential funding

sources. The RTS' role in relation to LTPs should focus on policy priorities at the sub-regional level including those that cross LTP area boundaries and on identifying transport measures of regional significance to be taken forward as part of the LTP process. This will include measures that address intra-regional and cross-boundary issues and relate for example to priority areas for regeneration and planned housing growth. The aim should be to add value to the national guidance on LTPs which emphasises the need for local transport authorities to demonstrate that the policies and priorities set out in LTPs are consistent with the RTS. It also makes clear the importance of local authorities considering the feasibility, affordability and value for money of transport measures identified in the RTS before including them in their LTPs. This reinforces the need for effective partnership working between regional bodies, local transport authorities and others in preparing and delivering the RTS.

6.9 The following areas are covered in the RTS guidance which may be of relevance to sustainable leisure transport:

- **Managing and improving the trunk road network and local roads of regional or sub-regional significance** - measures that are related to an important objective of the spatial strategy (eg those serving a priority area for regeneration or area for plan-led expansion, or relieving environmental pressure on a key area for environmental protection); measures related to major problems of congestion; projects that will play an important role in improving integration with the national road network, other modes and key transport nodes such as major airports, ports, freight interchanges, or railway stations; and measures which are needed to provide service access for regionally significant airport and port expansions.
- **Developing a strategic framework for public transport.**
- **Development of airports and ports** - co-ordinated region-wide marketing and through ticketing initiatives; major new public transport infrastructure or services which link to other major national public transport network.
- **Parking policies.**
- **Demand management.**

Transport innovation fund (TIF)

6.10 In ‘The Future of Transport’ White Paper (2004), the Secretary of State announced the creation of the Transport Innovation Fund (TIF). The Transport Innovation Fund is a separate Government initiative intended to help local authorities fund schemes aimed at reducing congestion on the road network by supporting innovative local transport packages that combine demand management initiatives, such as road user charging and workplace parking charges, with better public transport services and other measures to encourage the use of alternatives to the car. The Transport Innovation Fund (TIF) is providing significant resources to Local Authorities interested in implementing major (local) transport improvements, which should contain an element of demand management. Currently the process is on the cusp of moving from study to full scheme development stage, although there are delays with the submission of firm plans from a number of the early TIF Authorities. The relevance of TIF funding will depend on how many relevant Local Authorities, Metropolitan Authorities and groupings of the above are planning on taking TIF bids forward with the DfT, and the focus of their TIF bids. In some cases there will be a significant focus on intra-urban trips, where in others (perhaps the East Midland grouping) the opportunity to influence inter-urban and urban to rural trip making will be more significant.

6.11 The Department has supported those authorities that want to bring forward innovative schemes to address specific local congestion problems. Up to £200 million per year from TIF will be made available (Department for Transport, 2007). Funding will be allocated particularly to schemes that can pilot approaches to road pricing elsewhere as well as provide benefits locally and small schemes that could be up and running by 2010/11 and larger local schemes within two years of that.

6.12 Whilst the TIF is not a direct potential source for sustainable access to the natural environment, it could benefit such journeys indirectly by reducing traffic to rural areas which might include National Parks, cycling and walking holidays for example it has been used to improve sustainable access to an historic centre (Shropshire) and world heritage site (Durham city).

6.13 Table 14 includes the 'TIF Authorities', and where appropriate, identifies their relevance to sustainable leisure transport and the focus of their bid.

Table 14 Summary of TIF local authorities and measures

	TIF Funding (approx)	Funding Allocation					Delivery	Relevance to leisure
		Public transport	Road user charging	Smarter choices & travel awareness	Walking & cycling	Parking management & charging regimes		
Tyne & Wear	£950,000		●	●		●		Not found
Greater Manchester	£1.25million	●	●	●				Not found
Cambridgeshire	£1.1million	●		●	●	●		Not found
Reading	£680,000	●	●	●				Not found
Norfolk	£250,000 (from DfT), £250,000 (from County Council)	●	●					Not found
Shropshire	£850,000	●	●	●	●			Measures proposed include historic centre
Durham		●	●		●		2010/11	Measures proposed to relieve congestion and improve visitor and residential access to the city (World Heritage Site).
West Midlands	£2.6million	●	●		●			Not found
East Midlands	£1.8million	●	●	●				Not found

Table continued…

	TIF Funding (approx)	Funding Allocation					Delivery	Relevance to leisure
		Public transport	Road user charging	Smarter choices & travel awareness	Walking & cycling	Parking management & charging regimes		
Greater Bristol	£1.5million secured for scheme development. A business case for the improvements could be submitted to DfT in early 2008.	●	●	●	●			Not found

Local area agreements (LAAs)

6.14 LAAs are about improving local services and increasing economic prosperity for local people. Together with the sustainable community strategy and spatial development strategy, the LAA sets out the vision and delivery priorities for each place. They are normally a three-year agreement with priorities agreed between all the main public sector agencies working in the area and with central Government. Everywhere in England currently has an LAA and from 2008 this will become a much more powerful framework for devolution, taking the programme of freedoms and flexibilities further still. Pooled funding, for example, will enable delivery partners to work together towards shared outcomes for their citizens. The new LAAs will give partnerships (between the main public sector agencies working in the area and with central government) greater financial flexibility to provide the best solutions for their areas, and less Whitehall intervention will enable them to focus on a smaller set of core priorities for each locality within the new performance framework. LAAs aim to secure better outcomes for local people, delivering the vision for the area contained within their Sustainable Community Strategy. This may mean improvement targets where there is evidence of under performance, or a need to meet local ambitions as well as providing a basis to tailor local services to local circumstances.

6.15 Within the LAA the new performance system will drive improvement and effective partnership working. With regard to leisure travel, this might offer opportunities for partnership working between local authorities, transport operators, accommodation providers, tourist boards, local authorities, holiday parks and leisure attractions in the delivery and marketing of sustainable travel. This type of partnership working has proved essential to the success of smarter choices measures, dedicated links and integrated public transport for visitors accessing natural environments or leisure facilities, as demonstrated in section 5 of this report.

6.16 The new LAAs also allow more freedom in spending decisions - the local authority will be able to make decisions about spending priorities with partners locally without these being conditioned by centrally imposed targets. Transport is not considered a priority within most LAAs so they should not be considered to be a major potential funding source for improved sustainable leisure transport.

National Parks sustainable development fund

6.17 National Park Authorities and the local highways authorities have a clear obligation to adopt strategies which will promote and enhance sustainable transport solutions to and within the National Parks. With money from Defra and the Welsh Assembly Government the National Parks in England and Wales run the Sustainable Development Fund (SDF). This funding programme was launched in July 2000 in Wales and 2002 in England and is meant to encourage individuals and communities to find sustainable ways of living and working, whilst enhancing and conserving the local culture, wildlife and landscape. The SDF is available to NPAs to fund sustainable transport projects. Projects receive money from the Sustainable Development Fund, up to 70% of their total cost in England and up to 50% in Wales. Applications can be made by individuals, businesses and community groups, in the public, private or voluntary sector. Projects need to cover the following:

- environmental, social and economic sustainability;
- conservation and understanding of the National Park;
- explore models or best practice for sustainable living though innovative ideas;
- create new partnerships that have no access to alternative public funding;
- support or involve local communities;
- involve action by young people; and
- encourage links with urban groups and visitors.

6.18 In July 2002 the Department for Environment, Food & Rural Affairs (DEFRA) set up a new £1 million Sustainable Development Fund for the eight national parks in England. While this fund is not specific to transport schemes it does allow for the promotion of sustainable travel, however this has tended to be on a very small scale. For instance one project in 2007 has involved the production and distribution of 20,000 leaflets promoting walking and cycling access to the Yare Valley, its nature reserves, walks, rides and other attractions.

6.19 Current policy guidance and plans by National Park Management Plans and the Countryside Agency's Guidance recognise the need for developing and marketing sustainable transport measures for leisure travel, however funding opportunities seem to be limited.. The exception to this is the North Yorkshire Moors project whereby over £300,000 was allocated to sustainable transport projects. Most funding provided by NPAs for sustainable transport is used as revenue support for key leisure bus services and to market them, both directly and in partnership with others.

6.20 The Council for National Parks recognise that NPAs play an important role in the delivery and marketing of sustainable transport solutions and that dedicated strategic sustainable transport partnerships can enable the delivery of sustainable transport projects, lobby for improvements or influence the strategic policy. The strategic nature of these partnerships means that they are focused and structured which helps to secure funding from external bodies such as the Regional Development Agencies. Welsh Assembly Government and Europe – external funding to supplement NPAs own budget e.g. LTP2 funding (see above) and also to provide additional staffing capacity, as highlighted in a report by the Council for National Parks (Council for National Parks, 2006). The report highlights examples in Northumberland, Pembrokeshire Coast, the Lake District and the Yorkshire Dales where the actual financial contribution of the respective NPAs is not high but partners have contributed themselves, and have been able to draw in from external funding sources, significant amounts of additional financial support, as well as providing support in kind (e.g. additional staff capacity). The report stresses that careful and robust monitoring of sustainable leisure transport services, including qualitative and quantitative information about visitor activity and spends in the local economy as well as usage, is essential if continued funding is to be secured.

Other potential funding sources

6.21 Other potential funding sources for sustainable leisure transport identified in this section, include the Regional Development Agencies (RDAs) and the National Lottery. The role of the Regional Development Agencies (RDAs) is to ensure that economic development in the regions takes into account the current and future needs of local and regional communities and the natural environment in which they live. As a result, there may be opportunities to obtain funding for sustainable leisure transport initiatives through these agencies.

6.22 The BIG National Lottery Fund offers opportunities for sustainable transport projects - the most recent example being the UK-wide Sustrans Connect2 project which received £50 million of funding. This grant is for the creation of new cycling and walking routes to improve and encourage local sustainable travel in 79 communities and was successful via a competition involving four other project applications on public vote. Other latest programmes include 'The Breathing Places' programme which is a UK wide small grants programme developed in partnership with the BBC. In phase 1 and 2 of the programme around £5 million was distributed for projects that improved the local environment or created new breathing places, and considers projects that increase the number and range of people making use of, and helping to develop and maintain, breathing places (i.e. local woodland, roadsides, parks, local nature reserves or wildlife areas, ponds, green corridors and wildflower meadows), and make a lasting improvement to the natural environment of new and existing breathing places. Voluntary and community groups, schools, statutory health bodies, parish councils in England, community councils in Scotland and Wales, district councils in Northern Ireland and town councils are able to apply for funding.

7 Conclusions

7.1 This research has identified the range and significance of the environmental and social impacts of leisure travel to access the natural environment. The evidence is based on secondary data sources such as national transport statistics and travel surveys, leisure visits and tourist surveys. Mitigation measures and possible funding streams have also been identified to reduce the adverse effects of leisure travel and help Natural England to achieve its goal of encouraging more environmentally sustainable access to the natural environment.

7.2 The assessment focuses on leisure travel, defined as people travelling to access and enjoy the natural environment in all its forms, rather than leisure travel generally, which would include activities such as travelling for shopping, visiting friends, sport or entertainment. This explains why some of the impacts (particularly CO_2 emissions) appear less to be less significant in relation to overall CO_2 emissions from car travel. The assessment is also geographically constrained as it only covers England, and it also does not cover aviation.

7.3 The private car is the dominant mode of travel used for leisure trips to the natural environment in England and is a significant negative impact of visitor activity. There is a cumulative effect as the demand for leisure travel increases and more people access the natural environment by car; this increases pressure on resources and means that there is more pressure to provide more roads and more car parks. An increase in car usage is a major concern for the natural environment as it causes negative impacts on the sense and landscape of the countryside, and on the social, health and economic benefits of leisure.

7.4 Recreational driving and car related access to natural environments is responsible for producing around 0.9% of the total contribution of CO_2 transport emissions in England. Leisure travel in all its forms accounts for 6.7% of the total CO_2 transport emissions. Whilst these figures would suggest that leisure travel to access the natural environment has a limited impact on CO_2 emissions overall, leisure travel as a whole (including travel to the cinema, visiting friends, shopping etc) does have a more significant impact on carbon emissions.

7.5 The most significant impacts of car related travel on the natural environment appear to be at the local level and mostly relate to biodiversity, air pollution and congestion. These impacts of leisure traffic all have a knock-on effect on people's enjoyment of the natural environment and the character of the natural environment. In addition to the harmful effects that traffic congestion has on the biodiversity and air quality of the local environment, it also increases the risk of accidents on country roads and fear of personal safety among people using them. For instance survey data suggests that motorised traffic on country roads has caused people to feel vulnerable using sustainable transport modes - walking, cycling and horse riding. Furthermore there are impacts of congestion on the local and regional economy, for example, coach tour companies cancelling scheduled trips due to problems of access caused by traffic congestion on rural roads.

7.6 The impacts of leisure travel appear to be seasonal and spatial (for example, tourism 'honeypots') as demonstrated by visitor activity in National Parks. A majority of visits to English National Parks are made in the summer season with a significant seasonal impact on congestion, noise and visual pollution, local air pollution and accident rates.

7.7 With the predicted growth in traffic congestion on rural roads and the impacts of leisure travel in mind, there is a strong case for improving sustainable access to the natural environment. There are a number of environmental, social and economic benefits associated with increased use of sustainable modes of transport for access to the natural environment. For example, walking and cycling have been shown to improve quality of life, reduce stress levels and reduce the risk of heart disease. More sustainable leisure travel has been shown to generate additional rural income and bring other economic benefits.

7.8 There are a number of successful measures in England that have resulted in a positive modal shift from car to sustainable modes of travel for accessing the natural environment. These measures are highlighted in this report and in other good practice guides by Natural England and Defra. A critical success factor has been good partnership working eg between local authorities, national park authorities, transport operators and local businesses to promote and deliver sustainable travel schemes for accessing the natural environment.

7.9 Funding is a key challenge for improving sustainable leisure access to natural environments and lessening the negative impacts of car related access. Whilst funding sources for sustainable transport have been identified in this report, they offer very little funding for sustainable access to the natural environment. The most significant funding stream is likely to be through Local Transport Plans (LTPs). The introduction of strategic environmental assessments, accessibility strategies and Rights of Way Improvement Plans in LTP2 has widened the scope for improving access to natural environments. While this has led to an increased acknowledgment of the importance of sustainable access to the natural environment in LTPs, this awareness has not carried through to any real actions or deliverables. With the establishment of sustainable transport development partnerships (both formal and informal) between National Park Authorities and their constituent local highways authorities, there is an opportunity to influence the content, priorities and delivery of LTPs in England. Dedicated partnerships (between national parks, transport operators, local businesses) can help fund schemes as shown by the good practice measures in section 5.

7.10 This report has gone as far as to highlight the negative impacts and benefits of leisure travel on the basis of existing data. It should be noted that the data is subject to a number of caveats. For a significant number of the impacts, there is limited quantitative data available eg noise impacts / socio economic impacts of leisure travel and it was necessary to interpret data from a number of sources in order to estimate the significance of the impacts of leisure travel. In many cases, quantitative data was not available, so a lot of the evidence reported is anecdotal (for example, the impact of increased traffic congestion on the rural economy, illustrated by the example of Castle Drogo and the impact that increased leisure travel by car has on people's enjoyment of the natural environment).

7.11 There are a number of areas where further research on the impacts of leisure travel for access to the natural environment would be useful as outlined below:

- The data collected as part of the English Leisure Visits Survey (ELVS) should be consistent in future years so that trends can be more easily established. Also:

1) Although some finer-grained analysis is possible, the categories used to present the data could also be refined to make it easier to identify the significance of leisure travel for accessing the natural environment, in relation to leisure travel as a whole.
2) Furthermore, the data should be collected in such a way that enables the proportion of this travel related to access National Nature Reserves, National Parks and other types of nature-based destinations to be identified.

- Further research could be undertaken to try to assess the qualitative impacts that increased levels of leisure travel by car have on people's enjoyment and the character of the natural environment. These impacts have been identified in this report but currently there is little hard evidence available.
- Further research into the effectiveness of the mitigation measures outlined in Section 5 could usefully be undertaken.

7.12 This report has identified that there are significant negative impacts of leisure travel by car and significant benefits of increasing sustainable leisure travel to the natural environment. It is, therefore, recommended that increasing sustainable leisure travel be given more priority in policy making and funding allocations.

8 References

BIGNAL, K., ASHMORE, M. & POWER, S. 2004. The ecological effects of diffuse air pollution from road transport, pp69-9, Natural England [online], URL: http://naturalengland.communisis.com/naturalenglandshop/docs/R580.pdf [Accessed January 2008].

CAMPAIGN TO PROTECT RURAL ENGLAND [online], URL: www.cpre.org.uk/campaigns/landscape/tranquillity/threats-to-tranquillity [Accessed January 2008].

CAMPAIGN TO PROTECT RURAL ENGLAND 1999. Rural Traffic Fear.

CAMPAIGN TO PROTECT RURAL ENGLAND 2003. Night Blight in the South West. [online], URL: www.cpre.org.uk/library/results/light-pollution [Accessed January 2008].

CAMPAIGN TO PROTECT RURAL ENGLAND 2005. Putting the countryside back into transport policy.

CAMPAIGN TO PROTECT RURAL ENGLAND 2007. Developing an Intrusion Map of England 2007 [online], URL: www.cpre.org.uk/library [Accessed January 2008].

CHRISTIE, M AND MATTHEWS, J. 2003. The Economic and Social Value of Walking in England. London: The Ramblers Association.

COMMUNITIES AND LOCAL GOVERNMENT 1997, Lighting in the Countryside: Towards Good Practice [online], URL: www.communities.gov.uk/documents/planningandbuilding/pdf/158352.pdf [Accessed February 2008].

COUNCIL FOR NATIONAL PARKS 2006. Tackling Traffic: Sustainable Leisure Transport in Natural Parks – an overview of National Park Authority Involvement.

COUNCIL FOR NATIONAL PARKS 2006. Tackling Traffic: Sustainable Leisure Transport in Natural Parks – an overview of National Park Authority Involvement.

COUNTRYSIDE AGENCY AND ENGLISH NATURE, 2005. The Treatment of Landscape, Biodiversity, Access and Recreation in Sixteen Provisional Local Transport Plans' Research on behalf of the Countryside Agency and English Nature [online], URL: www.countryside.gov.uk/Images/Final%20Report%20v3e_tcm2-28360.pdf [Accessed February 2008].

DARTMOOR RAILWAYS. [online], URL: www.dartmoorrailway.co.uk/ [Accessed January 2008].

DEPARTMENT OF ENERGY 1993. United Kingdom Photochemical Oxidants Review Group - Ozone in the United Kingdom.

DEPARTMENT FOR ENVIRONMENT, FOOD AND RURAL AFFAIRS [online] URL: www.defra.gov.uk/environment/statistics/globatmos/gagccukem.htm [Accessed January 2008].

DEPARTMENT FOR ENVIRONMENT, FOOD AND RURAL AFFAIRS, 2007. Biodiversity [online] URL: www.defra.gov.uk/wildlife-countryside/biodiversity/index.htm [Accessed January 2008].

DEPARTMENT FOR ENVIRONMENT, FOOD AND RURAL AFFAIRS [online], URL: www.defra.gov.uk/environment/statistics/airqual/download/xls/aqtb06.xls [Accessed January 2008].

DEPARTMENT FOR ENVIRONMENT, FOOD AND RURAL AFFAIRS [online], URL: www.defra.gov.uk/environment/statistics/airqual/download/xls/aqfg21.xls [Accessed January 2008].

DEPARTMENT FOR ENVIRONMENT, FOOD AND RURAL AFFAIRS. Survey of Attitudes and Behaviour in relation to the Environment [online] URL: www.defra.gov.uk [Accessed January 2008].

DEPARTMENT FOR ENVIRONMENT, FOOD AND RURAL AFFAIRS. A Framework for Pro-Environmental Behaviours [online], URL: www.defra.gov.uk/evidence/social/behaviour/pdf/behaviours-jan08-report.pdf [Accessed January 2008].

DEPARTMENT FOR ENVIRONMENT, FOOD AND RURAL AFFAIRS & DEPARTMENT FOR TRANSPORT 2007. Good Practice Guide - Integrated Transport Measures in National Parks [online], URL:

www.dft.gov.uk/pgr/regional/buses/busgrants/rbs/parks/gpg/goodpracticeguideintegratedt3549 [Accessed February 2008].

DEPARTMENT FOR ENVIRONMENT, FOOD AND RURAL AFFAIRS 2008. A Framework for Pro-Environmental Behaviours, 27 [online], URL: www.defra.gov.uk [Accessed January 2008].

DEPARTMENT FOR ENVIRONMENT, FOOD AND RURAL AFFAIRS 2007. Survey of Attitudes and Behaviour in relation to the Environment [online], URL: www.defra.gov.uk [Accessed January 2008].

DEPARTMENT FOR TRANSPORT 2000, Transport Ten Year Plan.

DEPARTMENT FOR TRANSPORT 2000. Transport Ten Year Plan 2000.

DEPARTMENT FOR TRANSPORT 2005. Road Casualties Great Britain 2005: Annual Report.

DEPARTMENT FOR TRANSPORT 2006. Road Casualties Great Britain 2006: Annual Report [online], URL: www.dft.gov.uk/162259/162469/221412/221549/227755/rcgb2006v1.pdf [Accessed January 2008].

DEPARTMENT FOR TRANSPORT 2005. National Travel Survey 2005 [online], URL: www.dft.gov.uk/162259/162469/221412/221531/223955/223958/NTS2005pdf [Accessed January 2008].

DEPARTMENT FOR TRANSPORT 2005. National Travel Survey [online], URL: www.dft.gov.uk/pgr/statistics/ [Accessed January 2008].

DEPARTMENT FOR TRANSPORT 2006. National Travel Survey [online], URL: www.dft.gov.uk/pgr/statistics/ [Accessed January 2008].

DEPARTMENT FOR TRANSPORT, Encouraging Sustainable Travel [online], URL: www.dft.gov.uk/pgr/regional/buses/busgrants/rbs/parks/gpg/encouragingsustainabletravel

[Accessed January 2008].

DEPARTMENT FOR TRANSPORT 2007. Review of the Take-Up of Smarter Choices in Local Transport Plans Initial Findings from a Review of LTPs, Prepared by the Operational Research Unit for Sustainable Travel Initiatives Branch.

DEPARTMENT FOR TRANSPORT 2007. "Transport Innovation Fund and Local Road Pricing Schemes" statement by the Secretary of State for Transport [online], URL: www.dft.gov.uk/press/speechesstatements/statements/stattif080207 [Accessed January 2008].

DEPARTMENT OF ENVIRONMENT, TRANSPORT AND THE REGIONS 1999. A New Deal for Transport.

DEPARTMENT OF ENVIRONMENT, TRANSPORT AND THE REGIONS 1998. Climate Change Impacts in the UK; DETR: Climate Change Scenarios in the UK.

DEPARTMENT OF ENVIRONMENT, TRANSPORT AND THE REGIONS 1998. A New Deal for Transport: Better for Everyone – The Transport White Paper.

DEPARTMENT OF ENVIRONMENT, TRANSPORT AND THE REGIONS 1999. United Kingdom Review Group on Impacts of Atmospheric Nitrogen: Impacts of Nitrogen Deposition on Terrestrial Ecosystems.

DEPARTMENT OF HEALTH 2000. British Heart Foundation 2000, Walking the way to Health' Newsletter 5.

ENGLISH NATIONAL PARKS AUTHORITY ASSOCIATION, Position Statement [online], URL: http://www.enpaa.org.uk/transport_policy.pdf [Accessed January 2008].

ENGLISH NATURE 1996. The significance of secondary effects from roads and road transport on nature conservation. Peterborough: English Nature. [online] URL: http://naturalengland.communisis.com/NaturalEnglandShop/product.aspx?ProductID=c4ef5618-b5b1-47b9-9533-d95bba1a039a

FORESTRY COMMISSION 2007. An analysis of accessible natural greenspace provision in the South East' Forestry Commission.

FORESTRY COMMISSION 2004. New Forest Fact File' [online] URL: www.forestry.gov.uk [Accessed 12/2/08].

HER MAJESTY'S STATIONERY OFFICE 1998. Walking in Great Britain: transport statistics report [online], URL: www.dft.gov.uk/press/speechesstatements/statements/stattif080207

[Accessed January 2008].

M.L. PARRY, O.F. CANZIANI, J.P. PALUTIKOF, P.J. VAN DER LINDEN and C.E. HANSON, Eds., IPCC, 2007: Summary for Policymakers. In: Climate Change 2007: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change, 7-22. Cambridge: Cambridge University Press.

MATTHEWS, T. & MCANDREWS, Y. 2006. Walking: the benefits to health and well-being [online], URL: www.naidex.co.uk/page.cfm/link=78 [Accessed January 2008].

NATIONAL ATMOSPHERIC EMISSIONS INVENTORY [online], URL: www.naei.org.uk [Accessed January 2008].

NATIONAL ATMOSPHERIC EMISSIONS INVENTORY [online], URL: www.naei.org.uk/other/uk_fleet_composition_projections_v2.xls [Accessed January 2008].

NATIONAL PARKS [online], URL: www.nationalparks.gov.uk/livingin/sustainable-development.htm [Accessed January 2008].

NATIONAL TRUST 2008. Woolsthorpe Manor: Getting There [online], URL: www.nationaltrust.org.uk/main/w-vh/w-visits/w-findaplace/w-woolsthorpemanor/w-woolsthorpemanor-gettingthere.htm [Accessed January 2008].

NATURAL ENGLAND [online] URL: www.naturalengland.org.uk/about/default.htm: [Accessed January 2008].

NATURAL ENGLAND AND OTHERS 2005. The England Leisure Visits Survey 2005 [online], URL: www.naturalengland.org.uk/leisure/ [accessed January 2008].

NATURAL ENGLAND. The ecological effects of diffuse air pollution on road transport, online information source [online] URL: http://naturalengland.communisis.com/naturalenglandshop/docs/R580.pdf [Accessed January 2008].

OFFICE FOR NATIONAL STATISTICS 2007. Transport Statistics Great Britain 33rd Edition, London: Department for Transport.

PEAK DISTRICT NATIONAL PARK AUTHORITY. Study area 7 [online], URL: www.peakdistrict-nationalpark.info/studyArea/factsheets/07.html [Accessed January 2008].

REGENERIS CONSULTING 2004. Health Impacts of Countryside Access Routes in the North East.

RUTTER, H. 2000. Modal Shift, Transport and Health: A policy report on the health benefits of increasing levels of cycling in Oxfordshire [online], URL: www.modalshift.org/reports/tandh/print_version.htm [Accessed January 2008].

SUSTRANS 2006. Economic appraisal of local walking and cycling routes [online], URL: www.sustrans.org.uk/webfiles/general/Economic%20appraisal%20of%20local%20walking%20and%20cycling%20routes%20-%20summary.pdf [Accessed January 2008].

SUSTRANS 2007, New research shows cycle tourism is the route to riches for the North East, [online], URL: www.sustrans.org.uk/webfiles/rmu/Economic%20Impact%20of%20Cycle%20Tourism%20NE.pdf [Accessed February 2008].

SUSTRANS 2007. Information sheet FF44 "Reducing the climate change impact of road transport" [online], URL: www.sustrans.org.uk [accessed February 2008].

THE CAMPAIGN FOR BETTER TRANSPORT. 2001. Tourism Without Traffic – A good practice guide.

TRANSPORT FOR LONDON AND OTHERS 1994. The Market For Recreational Cycling – report to the Countryside Commission.

UK NOISE ASSOCIATION 2007, Traffic Noise [online], URL: www.ukna.org.uk/index_files/page0029.htm [Accessed December 2007].

UNITED STATES DEPARTMENT OF HEALTH AND HUMAN SERVICES 1996. Physical activity and Health: A report of the Surgeon General.

Waldsterben 1989. Stiftung Wald in Not. Bonn.

VISIT BRITAIN 2005. United Kingdom Tourist Survey 2005 [online], URL: www.tourismtrade.org.uk [Accessed January 2008].

VISIT BRITAIN 2008. United Kingdom Tourism Survey [online], URL: www.tourismtrade.org.uk/MarketIntelligenceResearch/DomesticTourismStatistics/UKTS/UKTS.asp [Accessed January 2008].

WILSON, E. 1984. Biophilia. Cambridge: Harvard University Press.

Natural England works for people, places and nature to conserve and enhance biodiversity, landscapes and wildlife in rural, urban, coastal and marine areas.

www.naturalengland.org.uk