Institute of Transport and Tourism

Slow Travel in the Shropshire Hills

Final Report

PREPARED BY:
THE INSTITUTE OF TRANSPORT & TOURISM ON BEHALF OF THE SLOW TRAVEL WORKING GROUP

DECEMBER 2007

Institute of Transport and Tourism

Executive summary

The aim of the project

The aim of the Slow Travel Project in The Shropshire Hills is to present local public transport services [and non motorised transport] as a mainstream part of the sustainable tourism package for visitors.

The project partners were the Institute of Transport and Tourism, National Trust, Shropshire Access Partnership, South Shropshire District Council and Shropshire Hills AONB Partnership. The partners gratefully acknowledge the support of the AONB Sustainable Development Fund to develop this project.

The main recommendations of the report are:

There is good rail access to the Shropshire Hills AONB and reasonably good bus provision to some parts of the area. The integration between these could make for a stronger transport tourism network.

The Shropshire Hills Shuttles have proven to be an excellent provision and it is important to build on the success to date.

Integration between transport and tourism exists but it needs to be strengthened and there is scope for major improvements to information and marketing of every day bus services for tourism purposes they offer excellent scenic rides.

The Working Group endorses the proposal by Shropshire County Council to build bus services by way the major inter-town links.

The introduction of demand responsive transport, however, will do little to enhance tourism transport. Semi fixed services on some routes offer a better option for visitors and there should be consideration to such routes on the Bridgnorth-Ludlow service and Craven Arms to Bishop's Castle service.

There is considerable potential to develop a transport tourism network using an existing or new website to bring travel opportunities to the visitor and tourism provider in a lightly packaged way.

The principal aim of the study was to trial a CO_2 calculation technique at the National Trust property at Carding Mill Valley, Shropshire. The study tested the Fawcett and Hillman and Warwick University CO_2 calculation techniques in order to evaluate the overall travel carbon emissions generated by the site.

The study calculated CO_2 emissions made by visitors to Carding Mill Valley. It used individual CO_2 emission factors for each individual car journey, and up to date emission factors for travel by public transport.

Car travel was, as expected, the main contributor of CO^2 emissions. The 85% of visitors who arrive to the site by car generate an estimated 1405 tonnes of C02 per annum. This is similar to leaving 10,000 personal computers on overnight for one year or flying from London to Aberdeen 6523 times per year.

The report recommends that sites such as Carding Mill Valley should encourage access by rail and bus in order to decrease this level of CO^2 emissions.

The final note

In overall terms, the Slow Travel in the Shropshire Hills report recommends that a larger scale project is developed in order to meet the necessity to reduce the CO^2 emissions of the visitor while at the same time maintaining visitor spending in local economies. This is the main challenge for the future.

Introduction

The Slow Travel in the Shropshire Hills Area of Outstanding Natural Beauty (AONB) grew out of a growing concern by a number of organisations involved in The Shropshire Shuttles that non car based access needed to be nurtured from its current low base.

The Aim

The aim of the Slow Travel project is to present local public transport services [and non motorised transport] as a mainstream part of the sustainable tourism package for visitors.

In the longer term it aims to build on the current pillars of sustainable development within the Shropshire Hills to an extent that the area becomes recognised internationaly as an environmentally friendly destination.

There are a number of specific objectives with associated benefits:

1. Ensure that the public transport network remains sustainable for residents and visitors thus bringing targeted economic impact to local rural communities

2. To encourage modal shift by making visitor access more attractive by other means than the car

3. To reduce the need for infrastructure, such as car parks, which simply generate more traffic within the AONB. Local communities will benefit from reduced traffic.

The project partners were the Institute of Transport and Tourism, National Trust, Shropshire Access Partnership, South Shropshire District Council and Shropshire Hills AONB Partnership. The partners gratefully acknowledge the support of the AONB Sustainable Development Fund to develop this project.

The partners formed a working group, which decided to focus on existing public transport networks seeking an increase in patronage through marketing, training and promotional activities.

On the basis of this initial work it is hoped to develop a much stronger sustainable transport tourism offering through a destination based project, which combines best practice from across Europe.

Institute of Transport and Tourism

The group set out to deliver the following between April and December 2007:

Task 1: **A review of existing public transport provision for tourism purposes in the AONB.**

Task 2: Preparation of material for a website guide for visitors.

Task 3: A tangible demonstration pilot of two specific promotional leaflets

- **A "view the landscape" trail using three bus routes in the AONB**
- **A "bus walks" leaflet using one of the key bus routes in the AONB and the Shropshire Hills Shuttle**

Task 4: A carbon calculation trial with the National Trust based at Carding Mill Valley

The following sections report the findings from the work undertaken in relation to each task. They are written as stand alone documents. The reports were prepared between June and November 2007.

Institute of Transport and Tourism

Task 1   A Review of Public Transport for Tourism and Recreational Access

Introduction

The Slow Travel project asked whether or not local public transport could be an integral part of a sustainable transport package for visitors, i.e. could it encourage modal shift and hence additional trips by public transport. The thinking behind this approach was the need to reduce visitor CO^2 emissions without necessarily decreasing visitor numbers or spending. Different projects throughout Europe have been doing just that and the partners aspired to the idea that the Shropshire Hills Area of Outstanding Natural Beauty (AONB) could be at the forefront of such work and hence make its mark in sustainable development of recreation and tourism.

Within this context, one of the key tasks of the Slow Travel Project working group was to review the potential of existing public transport networks to facilitate travel for recreation and tourism within the Shropshire Hills AONB. While this review was prepared for the AONB it also served the purpose to encourage Shropshire County Council and other organisations that good public transport can attract a new, more environmentally aware market to enjoy some of Shropshire's finest landscapes. It is interesting to note that the Tourism on Board study[1] indicated a growing market in car free tourism. More visitors on board local buses and trains means reduced financial support, retention of the network for residents and a reduction of environmental impacts accruing from more car-borne visitation. It is a prize worth achieving.

The wider policy framework is very clear about the development of sustainable transport and tourism. It also serves to meet the aims of the West Midlands Visitor Economy Strategy (2004), which highlights the importance of passenger transport gateways such as railway stations, sustainable transport projects and accessibility to walking and cycling routes. The Local Transport Plan for Shropshire County Council 2006-2011 also highlights the need to provide a comprehensive public transport network, which is an attractive alternative to the car. The AONB sustainable development strategy also highlights the need to enhance sustainable transport as a core element of sustainable development given that it represents such a high proportion of the overall visitor emissions. Thus, emphasis now needs to be directed to implementation of the fundamental elements to make local transport more attractive for the visitor to the Shropshire Hills as well to the resident.

---

[1] A study undertaken in fourteen areas of the UK in 2005/2006 of bus networks marketed to attract visitors on board. In 2005, day visitors spend on average £16.18 per head excluding accommodation. Over 14% of visitors using such services were on holiday without a car and only 8% were from overseas. Thus, there is a growing market seeking holidays without a car.

This review provides an appraisal of the existing public transport provision from the perspective of a visitor. It evaluates three dimensions:

(a) A review of the existing provision and integration of rail and bus services to access the AONB,
(b) A reflection on current proposals to enhance rural transport provision in Shropshire which includes bus services within the AONB
(c) An evaluation of the provision of information and interface between the transport, recreation and tourism information

This is provided in a summary of findings drawn from field notes made on bus/train surveys of routes undertaken between May-September 2007 (see Appendix A to C for details of service delivery). This is in addition to reviews of key websites and promotional material/timetables.

The main findings are that rail access is a very attractive alternative for the visitor to the Shropshire Hills AONB. All stations serving as gateways to the AONB enjoy a seven-day service from early morning to mid or late evening. The exception to this is Sunday. A coach replacement service offers limited access via the Marches Line on Sunday mornings, which is far from satisfactory.

In contrast, the provision of bus services varies considerably. The delivery of some services such as the Shropshire Hills Shuttles or the Shrewsbury to Minsterley service provide excellent facilities in terms of service frequency, vehicle comfort and driver's understanding of visitor needs. However on many other routes access is limited to one journey a day or one per week and service delivery is satisfactory, and in the case of one operator the level of service provided is very poor.

The Provision of Rail Access

The principal public transport gateway to the Shropshire Hills is Shrewsbury which is well served by trains from the West Midlands, The North West as well as from North, Mid and South Wales. The main provider is Arriva Trains Wales and a summary of railway stations serving the AONB are listed in Appendix One. Service frequency from most areas is at least hourly and in the case of the West Midlands and South Wales more frequently during the daytime. Shrewsbury is also an attractive destination in its own right with a range of facilities and services available for the visitor who has time to spare between interchange.

The integration of rail and bus services at Shrewsbury is not ideal for the visitor but is acceptable. The visitor experience begins at the station. Unfortunately, the station forecourt is dominated by car parking and taxi facilities and this can be off-putting to the visitor. There is, however, a clear walking route signposted to Shrewsbury Bus Station, which takes about 5-10 minutes for most people although wheelchair users will find the

heavy traffic at junctions difficult to negotiate. Most of the bus services to the Shropshire Hills depart from the outside departure stands, such as the one shown below.

Minsterley Motors 553 Shrewsbury to Bishop's Castle Service at Shrewsbury Bus Station

Rail access to the AONB is also possible at Church Stretton, Craven Arms and Ludlow on the Marches Line. These stations enjoy a good service, principally offering an hourly frequency on weekdays from early until late, but there's a far less frequent service on Sunday operating from mid-day onwards.

Church Stretton is promoted as a gateway to the Shropshire Hills and the local tourism group has upgraded the appearance and atmosphere of the station to make it attractive for the visitor. The limited physical access to the station on the western side makes it difficult for buses to call in here. Thus, visitors seeking the Shropshire Hills Shuttle and the number 435 bus [to the Strettons, for example] have to walk for approximately 5 minutes to Beaumont Road.

Craven Arms offers access to Wenlock Edge as well as the Onny and Corve valleys. The station is far less welcoming to the visitor and there is a need for an improved environment at what is a potentially important interchange point. It is currently served by the 745 bus to Bishop's Castle, which offers one trip only at 1308 on Monday to Fridays. This deviates on Thursday and Fridays to serve Newcastle-on-Clun and thus providing access to Offa's Dyke National Trail. The Shropshire Hills Shuttle also calls here three times a day on Saturdays and Sundays. This provides access to Clun, Bishop's Castle and Bridges where it connects with the Stiperstones and Long Mynd Shuttles. There is no longer access from here to Wenlock Edge or near countryside to the east other than on foot.

Ludlow is an important hub for the visitor by public transport. The station is well patronised and Ludlow Station Travel Centre provides ticketing and information to would be travellers. Interchange is available at the station onto a limited number of bus services but none destined for the AONB other than the daily 292 bus to the Clee Hills. There is, however, a regular flow of buses from the railway station to Ludlow Market Square between the 0730 and 1730. The configuration of the road junction opposite the station and the location of the bus stop situated nearer to Tesco supermarket means that it is not immediately obvious to the arriving visitor. The walk to Corve Street, which is a calling

point for all services to the AONB is approximately 10 minutes. It is a pleasant walk marred only by traffic movement and noise in this area of the supermarket.

There are a number of stations on the Heart of Wales line that provide access to the southwestern fringes of the AONB. They are Broome, Hopton Heath, Bucknell and Knighton. The first three are well kept rural halts where the intending passenger stops the train by request. There is no realistic bus interchange at these points-they are principally useful for those on foot or cycling. At Knighton [situated in Powys], the station is a 7-minute walk into the town centre or to the bus stops located at the cattle market. The bus stops are not in a good position at the cattle market; it is an isolated location in relation to the centre and to Offa's Dyke Information Centre. Interchange potential to bus is very limited. There are Thursday only buses to Chapel Lawn [738 to Ludlow] and to the Upper Teme valley to Velindre [774 bus]. The final station on this line which offers access to the Upper Teme Valley is Knucklas, which is a welcoming halt serving the village nestled below the historic railway viaduct.

The Heart of Wales line offers great potential to access the south western reaches of the AONB for walking or cycling. The main limitation is the lack of frequency of service. There are only four journeys on weekdays and two on Sundays. There is, however, a suitable timing from Shrewsbury early morning and a return mid afternoon or mid evening for the day visitor.

Access to The Wrekin and Much Wenlock is primarily by way of Telford or Wellington stations which are well served by trains from Shrewsbury and the West Midlands every day of the week. Bus service 39 from Wellington also calls at Telford Bus station to offer three journeys on weekdays to Much Wenlock thus allowing access to Wenlock Edge. Access to the Wrekin, however, is difficult by bus from these railheads.

All stations surveyed had information points, bus timetables and additional information and offer a wide range of opportunities to access the AONB. In summary, travel to the gateways of the Shropshire Hills is relatively easy and the train offers a wide range of opportunities for day trips or overnight stays on every day of the week.

The Provision of Bus Services

Bus services through the Shropshire Hills AONB are provided by a wide range of bus companies. This diversity of provision is good in that several companies are based in the AONB but it brings challenges in terms of lack of ticket integration and the seeming inability of small operators to market their services. For example, other than Arriva, First Bus and the Shropshire Hills Shuttles, local bus operators do not offer a day ticket. There is a Sunday Day Rover but this is not currently marketed.

A list of the services and the company operating them are listed in Appendix Two. A small number of these services are operated commercially by the companies concerned.

The remainder are supported financially by Shropshire County Council in order to maintain services to rural communities where demand is lower.

Buses have the potential to encourage the exploration of the AONB by sustainable means. Most bus services through the Shropshire Hills offer the visitor an almost unique opportunity to view the landscape from a different perspective[2]. This is a fundamental factor in determining travel choice for some market segments and should therefore be a core component in designing a sustainable transport package for the visitor. The bus offers a succession of views over hedgerows and across unusual vistas that are not possible when travelling by car.

The Shropshire Hills Shuttle is the main tourism transport network in the AONB. It has been designed to encourage visitors to access western parts of the AONB and can be benchmarked in line with the best examples of its type across Europe. However, this report is principally about the integration of the other everyday services, which pass though the Shropshire Hills.

The AONB is threaded by market day buses, which deviate along back lanes to call at small hamlets off the beaten track. They also provide a chance for the visitor to sit in the company of local people going about their daily business. This is a rather special cultural feature of market day buses and should not be understated; visitors are often invited to join in to the conversation with locals on these services. Market day services also provide exceptionally good views across the landscape. However, with the exception of the Shropshire Hills Shuttles, the market day routes are not marketed to the visitor. Key routes, which could be marketed for their scenic ride quality, are:

142 Ludlow to Bridgnorth via Ditton Priors
292 Ludlow to Kidderminster via Cleobury Mortimer
435 Shrewsbury to Ludlow service
552/3 Shrewbury to Bishop's Castle
712/713 Ludlow to Bridgnorth via Wenlock Edge [Market Day Bus]
745 Ludlow to Bishop's Castle
748 Shrewsbury to Ludlow via Bishop's Castle [Market Day Bus]
780/782 The Shropshire Hills Shuttles [Currently marketed to good effect]

The provision of bus services to access the AONB is currently better than might be expected for a very rural area. The principal hubs for buses into the AONB are Shrewsbury and Ludlow. Lesser hubs are Bridgnorth, Church Stretton and Craven Arms. Access by way of Telford and Wellington is very limited, especially on Sundays and Bank Holidays.

---

[2] The Tourism on Board study undertaken by the Institute of Transport and Tourism in 2005/6 indicated that the two main reasons for using rural buses for tourism were enjoyment of views from the bus and linear walking. In each case they accounted for over 40% of responses.

Institute of Transport and Tourism

Shrewsbury offers the widest range of opportunities and most frequent services. They are as follows:

435 Shrewsbury to Ludlow via Church Stretton
Two hourly pattern of service. No Sunday service.

436/7 Shrewsbury to Bridgnorth via Much Wenlock
Approximately two hourly including Sundays

540 Shrewsbury to Cardington
Limited service. No Sunday service

546 Shrewbury to Pulverbatch (pictured below)
Approximately two hourly on Mondays to Saturdays: links to the Shropshire Shuttles on Saturdays only-underestimated facility.

552/3 Shrewsbury to Minsterley and Bishop's Castle.
Forty minute frequency on weekdays to Minsterley and six trips through to Bishop's Castle. Sunday service

748 Shrewsbury to Ludlow via Bishop's Castle
Mondays only market day service

Based on the observations made in recent months, the companies operating these services use, in the main, modern low-floor vehicles. Services are reliable in the main. They have clearly legible destination blinds, offer good driving standards/and satisfactory service delivery. Drivers know about their route and possibly other routes their companies operate but appear to have very little knowledge as to where people can catch connecting services at the hubs. There is a real lack in network knowledge.

Ludlow is the second most important hub with services operating as follows:

142 Ludlow to Bridgnorth
Four journeys on Mondays to Saturdays only

292 Ludlow to Kidderminster and Birmingham
Two hourly pattern including Sundays

Institute of Transport and Tourism

435 Ludlow to Shrewsbury
Two hourly pattern. No Sunday service.

738/740 Ludlow to Knighton
Four journeys per day on Mondays to Saturdays

712/713 Ludlow to Bridgnorth via the Corve Valley
One journey operated three days per week

724 Ludlow to Dhustone
One journey per week

745 Ludlow to Bishop's Castle
One journey per day on Mondays to Fridays only

Based on the surveys undertaken, these services were found to be reliable in the main but service delivery by the main operator in Ludlow is variable and this detracts from the confidence that a visitor would have in using the network. The report was written in the summer of 2007 and since then the company involved has closed its Ludlow garage and the services are operated by other companies.

Other hubs include Church Stretton and Craven Arms which offer interchange for the Shropshire Hills Shuttles from rail and the 435 bus service and Bridgnorth for services into Corvedale and the Clee Hills to Ludlow. Integration of bus services at Shrewsbury is good in that all services depart from the bus station and in close proximity to the railway station. There is also less of a problem given that train arrivals are mainly hourly or more frequent and as visitors are also interested in Shrewsbury. Thus, the time penalty and walking between stations is less of a barrier. Integration of services at the smaller market towns is more of a problem in that most services are less frequent.

Other places where interchange takes place can, therefore, be problematic and the visitor will be less confident about making the trip. For example, Bridgnorth has several stops in Northgate and High Street, which are several minutes walk apart. The main problem in most cases is also an often-poor quality environment around the bus stop; this is compounded when a bus arrives late on the stand; the visitor becomes more anxious about the trip. A good example is Much Wenlock where the main bus stop is not located in the centre of town. On finding the stop the passenger is still not entirely certain where the bus will depart from in this locality until it arrives and reverses.

Standing at the roadside en route can be unpleasant because of the volume and speed of traffic passing by and in that the bus is also likely to be travelling at speed to keep to the fairly tight schedules. Wherever possible visitors need to be encouraged to board services at clearly defined locations in villages and hamlets where traffic is minimal or speeds lower.

In summary, best practice is exhibited on some routes such as the 552/3 Shrewsbury to Bishop's Castle where there's a daily service, relatively high frequency, friendly driving staff, modern vehicles and clearly defined bus stops in or near to the settlements on the route. In contrast several of the services observed in the Ludlow area exhibited poor practice in connection with the main operator in the town. Several vehicles had no destination blind, no working ticket machines or even fare tables and in one case a driver was not sure of the route. In another case, the bus simply did not turn up. This portrays a poor image of public transport.

Proposals to enhance the rural bus network

In August 2007 Shropshire County Council set out a proposal to change the way in which rural buses are provided in Shropshire. This section of the review responds to the planned changes as they are likely to have an impact on this project and the interfaces between tourism and transport in the AONB.

The County Council proposal has three main strands:

- Firstly, it is proposed to improve the level of frequency on the core routes and to upgrade vehicles wherever possible.
- Secondly, it is proposed to improve accessibility to the more isolated rural communities into their local towns by way of direct response transport, pre-booked by the user. This will be branded as 'Shropshire Link'. It is intended to maintain existing school contracts but to withdraw market day buses and some of the limited daily services as operated at present between the school runs.
- To upgrade infrastructure and information wherever feasible

The enhancement of core services is vital to the survival of the rural bus network to and within the AONB. This initiative will boost confidence in the tourism sector to advocate making trips by bus and furthermore could be developed to encourage linear walks by visitors, hence increasing revenue on each service. While several operators are likely to be involved and some on a commercial basis this makes it almost impossible to introduce integrated ticketing. However, every effort should be made to encourage all operators to offer a day ticket to cover their routes as well as weekly and other season tickets.

The routes that will benefit are:

292 Ludlow to Kidderminster/Birmingham
435 Shrewsbury to Ludlow
436 Shrewsbury to Bridgnorth
552 Shrewsbury to Minsterley/Plox Green

There was an element of uncertainty as to what is going to happen to the 553 Shrewsbury to Bishop's Castle services. The current service is operated on a commercial basis with

certain journeys supported by the County Council to augment the service to Bishop's Castle. Discussions with county council officers indicated that only peak trips would run to Bishop's Castle in the morning and late afternoon. Other journeys between the peaks would be facilitated by the demand responsive Shropshire Link necessitating a 'phone call' in advance. Bishop's Castle is an important gateway to the AONB and is a community that has a strong track record of sustainable tourism over the past decade. Thus, the proposed service reduction would be a retrograde step for day visits to the Bishop's Castle especially during the many events which the town hosts, such as the annual Beer Festival or Michaelmas Fair. There will also be an inevitable level of confusion as to core route and Shropshire Link designation on the service-passengers like simple passenger transport designs.

It is also proposed that all of the market day bus services and two other weekday services will be replaced by the pre booking of Shropshire Links services. There is a variation to the offering; some will operate one day only as in the Clun Forest area and others on weekdays, for example, to cover the Ludlow to Bridgnorth service.

Demand responsive services have been developed in England as one way of serving very rural settlements. It is a sensible approach to meet the requirements of accessibility planning requirements where demand is dispersed and budgets constricted. Demand responsive services are devised principally to meet resident needs and are unsuitable for use by visitors for a number of reasons as researched as part of 'Widen the Choice Rural Transport Partnership' project in the East of England[3]. This involved an analysis of a seven-day a week DRT service in the Suffolk Coast. The principal reasons why visitors tend not to use DRT are:

- perceptions of the services;
- they do not sit well on mainstream information sources;
- their lack of availability [many run on one or two days only]
- the principal barrier is the need to pre-book 2 hours before the trip can be made - visitors do not usually plan their outings in this way

Whilst market day buses are currently limited to one or two days operation per week they can be marketed to good effect as inexpensive scenic day trips with set departure and return times. That is exactly what many visitors want. The point is illustrated in the way transport tourist services provided in Cumbria, Cornwall and Devon and across Wales. Demand responsive services, unfortunately, will not be marketable to visitors as they are planned. Therefore, this aspect will not be an enhancement to the public transport network for visitors or for many tourist providers seeking green accreditation.

There is a proposal to introduce a 'semi-fixed' service between Ludlow and Bridgnorth via Burwarton. The proposal does not specify the level of service nor does it set out the details of this operation other than it will operate Mondays to Saturdays. This type of services does, however, overcome the barriers to visitor use. It has considerable potential

---

[3] Wood, C. (2005) Can Cinderella get to the Ball? The Third UK Transport Practitioners' Meeting, Manchester

to be developed for recreation and tourism. There is a case for providing a daily 'semi fixed' service in other parts of the AONB, for example, Ludlow or Craven Arms to Corvedale and Much Wenlock (or to Bridgnorth). This would enable visitors and residents to gain access to a part of the AONB, which will otherwise be very difficult to get to by non-car users.

There is also a case for a semi fixed service between the Craven Arms interchange and Bishop's Castle interchange. This could provide a similar pattern of service to what is currently available so that residents and visitors can travel to Clun, Newcastle on Clun, and Craven Arms on a service, say after 0900 hours, with a return trip from the mainline bus/train back to Bishop's Castle. A similar trip could thus be offered after 1200 hours allowing shopping and visits between these towns. Visitors will find it difficult to accept that Clun, having such tourist appeal, does not have a scheduled bus service.

The proposals make little comment about evening and Sunday trips. One of the important lessons learned from Lincoln is that passengers want a daily mainline service and one that does not finish at 1700 hours. Within the confines of a restricted budget this is difficult to achieve but visitors arriving into the area often require a mid evening journey to their destination.

The 435 Shrewsbury to Ludlow service does not operate on Sundays. Given budgetary limitations and a competing train service this is understandable. However, Sunday morning train provision is extremely limited between Shrewsbury and Ludlow. There is one coach replacement service in each direction. There is a case for a Sunday service but perhaps this should operate via Bishop's Castle to open up the western parts of the AONB to visitors and residents from Ludlow and Shrewsbury. This might require a re-appraisal of the current Sunday services to Bishop Castle in order to resource this. The operation would preferably be specified as a 30 seat low floor solo Optare in order to cope with demand at the Shrewsbury end of the route and for walking groups at festivals and events. The 292 Ludlow to Birmingham and the 437 service from Shrewsbury to Bridgnorth are essential to the Sunday network. They should remain as at present.

The third core element of the Shropshire County Council proposal is very welcome.
The Tourism on Board study of fourteen tourist bus services including the Shropshire Hills Shuttles indicated that passengers require the full range of information provision including timetables at bus stops when considering trips at short notice. The report comments about provision of information in more detail in the next section.

However, bus stop environment at the minor gateways is one of concern in the AONB at Bishop's Castle, Craven Arms and Much Wenlock and upgrading these should be afforded priority. In many respects it is the poor management of the site rather than the design. The bus shelter at Craven Arms Railway Station, for example, is small and has been devoid of timetable information for over 18 months and the wire to the lighting remained loose for a similar period.

Waiting for the bus and train is part of the visitor experience and these locations should provide confidence in personal security and a feeling that this is a pleasant place to wait. Waiting time is considered to be time wasted so there is an opportunity to provide information and interpretation about the town or village where the stop or shelter is sited. Consideration should be given to a demonstration project to make a feature of bus shelters on a route in the AONB [Craven Arms to Bishop's Castle or Ludlow to Bridgnorth] in partnership with local parishes. The idea would for each parish to choose a design for their shelter and offer the basis for local interpretation as well as about the special qualities of the AONB. If this was developed to good effect, it would not only enhance the local environment but become a notable feature in its own right.

Integration of Transport and Tourism

The interfaces between the transport and tourism sectors form an important dimension in travel choice by the visitor. If tourism and recreation providers have confidence in the public transport network then they will be able to advise and recommend travel to and from their accommodation, event or attraction. There has not been time to discuss these issues with practitioners in the field but the position is that both tourism providers and transport operators are heavily involved in delivering the service to the customer; there is limited time to devote to other matters such as joint marketing.

The core element of integration between the two sectors has to be provision of marketing and information to encourage greater use of existing facilities. This is not happening at present. There has to be a robust supply chain between transport operators, local authorities and tourist providers to work effectively as in the North Yorkshire Moors or in Cornwall where rural shops, public houses and attractions are aware of their local public transport services, stock timetable/promotional information and are generally knowledgeable about where and when to catch buses or trains.

In Shropshire, there are several major barriers. Public transport information as in the form of publicity material, maps and timetables is not readily available on the Shropshire County Council website. The visitor has to visit another website, such as Traveline, for information. The latter does not always provide information in a format required by the visitor-networks, choices and itineraries- rather than bespoke door-to-door trips.

Public transport information is readily available at the gateway railway stations and this is commendable although it is difficult for some people to read these when light is failing. A similar panel is available at Shrewsbury bus station. This type of information, however, is not present at key bus stands at the minor interchanges. This would be a very useful addition.

Even though internet sources and mobile text facilities are being used more there is still a great need for printed word to satisfy most market segments. The area timetable broadsheets are therefore useful for the visitor. They are now partly out of date and revisions to timetables not always readily available, For example, at Bridgnorth and

Ludlow Tourist Information Centres new timetables were being supplied this September as photocopies which could be bought at a small sum per copy. Tourist Information and Library staff are willing to promote public transport access but their experience to date is that information flows are weak. Beyond these key points there appears to be few places where printed information can be readily found.

It is recommended that the current supply chain for information is reviewed as information provision remains an area where real improvements can be made with the tourist sector. This will help front line tourist staff can market public transport access in a more convincing way.

Most tourism and recreation publications make reference to public transport information but often rely too heavily on the visitor having to telephone Traveline; it is another step that visitors will not really want to make. However, their needs are different to most local people who generally want point-to-point journeys on one particular route or in one town. They need to be able to understand the network and what is possible within a day or afternoon. The Shropshire Hills Shuttles website and timetable leaflet is a good illustration as to what can be achieved with a relatively low budget and we would advocate that this is replicated on a larger scale across the AONB.

Thus, there is clearly a need for a web page to set out the following:

- A map of the public transport network across the AONB
- Itineraries for scenic rides
- Core information about how to get to main recreational sites
- Suggestions for linear walks
- How to get to events
- Timetables
- A message about the AONB and access
- Carbon footprint calculator to encourage greener car users to switch
- Contact Details
- Feedback section

The design can be combined so as to produce a timetable booklet such as exists in the case of the highly successful timetable booklets promoted by the Brecon Beacons National Park, Gower AONB, Peak District, Dales Bus, Moors Bus and Wye Valley AONB. Each current publication sets out travel opportunities, walks and events calendar for the visitor and brands the network for the visitor as well as residents. This also allows the AONB another opportunity to get key messages across to a new market about conservation.

Finally, some tourism groups and voluntary organisations are already doing good work to encourage visitors to arrive by sustainable transport and they are making use of local bus networks. For example, the Bishop' Castle walking festival provides discounts to public transport users and utilises local services wherever possible to take groups to the starting points of the walks. Its walking publication is a superb example of how to inform the

customer about green travel. The Clun Valley Beer Festival uses a Shuttle bus network to transport people between the public houses in the valley. The voluntary sector has a key role to play in the development of green transport tourism offerings.

There is a potential to extend current approaches to training and accreditation of tourism businesses in providing:

- Passenger transport briefings
- Support in designing day and half day packages from key settlements to other parts of the AONB
- Augmentation of existing information provision with public transport information

In summary, there is clear evidence that there is integration taking place through the goodwill of staff working in organisations and voluntary groups within the AONB. However, in order for this to become more widespread the supply chain of information needs to be substantially strengthened. This will help to allow a transfer of knowledge between the two sectors. In order for this to happen there's a need for a more strategic review of sustainable access through improved communication approaches.

The integration between sectors would ideally involve:

(a) a forum to discuss options for development of public transport with tourism and passenger transport providers,
(b) training opportunities to advise tourism providers about how to encourage sustainable travel while in the AONB,
(c) the development of online and printed material to lightly package travel opportunities using public transport,
(d) the provision of a web page and booklet covering key services,
(e) briefing for bus company driving staff regarding the needs of tourists

Conclusion

Much of the AONB is accessible to the visitor by public transport. It is vital that the AONB retains these key arteries hence the inclusion of semi fixed services for the Clun Valley and between Ludlow and Bridgnorth. It is also essential to secure and build the Shropshire Hills Shuttle as this is the jewel in the public transport crown within the Shropshire Hills. It has become a visitor attraction in its own right. Given likely changes to rural public transport in Shropshire it will be important to investigate ways in which the proposed demand responsive services can accommodate visitor needs.

However, it is the everyday main line network, which needs to be marketed heavily to the intending visitor and it is essential that integration between the tourist and transport sectors is strengthened to allow this to flourish. By encouraging visitors to use the

network it will reduce congestion in the gateway towns, reduce parking in local villages and lessen the CO_2 emissions of the visitor.

It is important to note that this is a small-scale exercise based on a limited review of the existing public transport network and in reality these services are not marketed to visitors nor do they take into account their needs. There is scope for much improvement.

Key Recommendations

There is good rail access to the Shropshire Hills AONB and reasonably good bus provision to some parts of the area. The integration between these could make for a stronger transport tourism network.

The Shropshire Hills Shuttles have proven to be an excellent provision and it is important to build on the success to date.

Integration between transport and tourism exists but it needs to be strengthened and there is scope for major improvements to information and marketing of every day bus services for tourism purposes they offer excellent scenic rides.

The Working Group endorses the proposal by Shropshire County Council to build bus services by way the major inter-town links.

The introduction of demand responsive transport, however, will do little to enhance tourism transport. Semi fixed services on some routes offer a better option for visitors and there should be consideration to such routes on the Bridgnorth-Ludlow service and Craven Arms to Bishop's Castle service.

There is considerable potential to develop a transport tourism network using an existing or new website to bring travel opportunities to the visitor and tourism provider in a lightly packaged way.

Appendix One: Railway stations serving the AONB

Station	Service Frequency	Bus interchange to	Comment
Bridgnorth	Daily 6 or 7 journeys	Wenlock Edge Clee Hills Corve Valley	Steam railway of considerable importance in attracting visitors to Shropshire
Broome	4 on weekdays 2 on Sundays		Access for walkers and cyclists mainly
Bucknell	4 on weekdays 2 on Sundays		Access for walkers and cyclists mainly
Church Stretton	Hourly	The Shropshire Hills Shuttles 435 to Ludlow	SHS operates summer weekends only
Craven Arms	Hourly	The Shropshire Hills Shuttles	SHS operates summer weekends only
Hopton Heath	4 on weekdays 2 on Sundays		Access for walkers and cyclists mainly
Knighton	4 on weekdays 2 on Sundays	Bucknell and Hopton Heath Limited Thursday only service 774 to western fringe	
Knucklas	4 on weekdays 2 on Sundays		
Ludlow	Half hourly in daytime	Clee Hills Corve Valley Clun Valley Knighton	Major interchange for the AONB
Shrewsbury	Daily-Wide range	Stiperstones and Bishop's Castle Pulverbatch Cardington Church Stretton Limited SHS at weekends Much Wenlock	Range of services-major interchange for the AONB
Telford	Daily-Wide range	Much Wenlock	Limited service
Wellington	Daily-Wide range	Much Wenlock	Limited service

Appendix Two: Bus services in the AONB

Route	Operating Company	Frequency-Comment
132	Whittle Bus and Coach	One trip on Mondays
141/ 142 Bridgnorth to Ludlow	Whittle Bus and Coach	4/5 trips Monday to Saturdays
292 Kidderminster-Ludlow	First//Centric	Approx 2 hourly daily
435 Shrewsbury to Ludlow	Minsterley Motors	Approx 2 hourly Mon-Sats
436/7 Shrewsbury to Bridgnorth	Arriva/Travel Choice	Approx 2 hourly Mon-Sats
552 Shrewsbury to Stiperstones	Minsterley Motors	Every 40 mins-Mon-Sats
553 Shrewsbury to Bishop's Castle	Arriva/ Minsterley Motors	Six per day-daily
712/713 Ludlow to Bridgnorth	Whittle Bus and Coach	Three time per week
738/740 Ludlow to Knighton	Whittle Bus and Coach	Four per day Mon-Sats
745 Ludlow to Bishop's Castle	Whittle Bus and Coach/Bromyard Omnibus Co	Two trips Monday to Fridays
748 Shrewsbury to Ludlow	Boultons	One trip each way Mondays only
773 Bishops Castle to Newtown	Whittle Bus and Coach	On trip per week: Tuesdays
774 Presteigne to Newtown	Owens	Tuesdays only
780 Shropshire Hills Shuttles	SCC	Summer weekends
782 Shropshire Hills Shuttles	SCC	Summer weekends
860 Bishop's Castle to Telford	Whittle Bus and Coach	Mondays only
X14 Builth to Ludlow	Veolia	Mondays and Thursdays only

Appendix Three: Survey of Bus Routes in the AONB

Route	Number of times mystery shopper on board	Comment
142 Whittle Bus and Coach	2	Poor service delivery-no tickets, poor driver information. Bus did not operate on third mystery shopper trip
292 First Midland Red	1	Satisfactory service delivery
435 Whittle Bus and Coach	3	Satisfactory service delivery
436 Travel Choice	1	Good service delivery
552 Minsterley Motors	4	Excellent service delivery
553 Arriva and Minsterley Motors	3	Excellent service delivery
712 Whittle Bus and Coach	1	Good service delivery
738 Whittle Bus and Coach	2	Good service delivery on one trip Poor service delivery on second trip
745 Whittle Bus and Coach	4	Poor service delivery: no ticket machines, poor vehicles and on one occasion driver did not know the route
748	1	Good service delivery
780	3	Good service delivery
782	2	Excellent service delivery

TASK 2 Website specification

The second task relates to the need for the visitor to be assured that there is network of bus and trains, which allows access to the AONB and for travel within it.

Unlike the regular user of public transport who habitually makes a trip to work, education or the shops (therefore has both knowledge and experience of the service) and the visitor is often making a one off trip. There is often little or no knowledge of whether this is feasible or not, where to stand for the bus in a village or the location of railway station in relation to the town centre. This lack of knowledge and sometimes confidence in whether or not a service is reliable can be a major barrier to use and a source of additional stress when on holiday.

Like most aspects of tourism marketing it is therefore important to make more evident or tangible a provision of service which is essentially intangible. The benefits which accrue from a bus or train trip in an urban area, are mainly gained at the destination rather than on the trip itself, which is in essence functional. When it comes to travelling through the AONB, however, the trip is a fundamental part of the tourism experience. It is one of the best ways to view the landscape. There can be other benefits such as meeting local people coming home from market towns, waiting time in villages and as in the case of The Shropshire Hills Shuttles being driven by ambassadors of the AONB.

Thus, the aim of information provision on a web page is therefore to:
  (a) provide a package of information and ideas in one location which is easily accessible,
  (b) to assure visitors that it is possible to travel to and through some parts of the AONB by bus and train,
  (c) to provide timetable information which can be downloaded,
  (d) to provide ideas or itineraries for travel,
  (e) provide links to other sources of information.

It is also worth re-iterating that the web needs to be in a format which can be readily accessed by the intending visitor, the tourism provider and information offices in transport and tourism organisations.

In setting out a possible template we reviewed the provision of information on the following sites:

Beacons Bus
Breeze up the Downs
Hadrian's Wall Bus
Moorsbus

Institute of Transport and Tourism

Sherwood Forester
Shropshire Hills Shuttle
Snowdon Sherpa

Thus, it is envisaged that a host website would include the following information:

(a) Core information
- a home page explaining how to get the best of travel by public transport in the AONB and the benefits
- a network map
- a summary of key services, days of operation and frequency
- management of expectations-some parts of the AONB will be accessible by Direct Responsive Transport and that a booking is required

(c) PDF's of timetables will be available - some people like to work out their own itineraries/walks, etcetera

(d) Ideas for travel - classic scenic bus rides, train rides, linear walks, events by public transport, attractions by public transport

(e) Links to SCC, Travel line, transport operators, etcetera

Initially, the working group had in mind to start work on these core elements on a test basis with tourism providers in Bishop's Castle but following discussions with Shropshire County Council about the development of their Rural Transport Strategy and impending public consultation exercise in the summer of 2007 it was decided not to progress web building in this first stage of the project.

Thus, a more detailed appraisal was undertaken of the current transport tourism offering so as to inform future development in a realistic way.

TASK 3 Demonstration approach

The project set out to provide two tangible elements of linking transport and tourism together as part of the sustainable tourism transport project in the summer of 2007. Two initiatives were progressed: -

1. A Classic Walk in the Shropshire Hills leaflet.

This featured a linear walk between the small tourist town of Church Stretton and the villages of Pulverbatch and Pontesbury. The walk is served at either end by a daily bus or train service and thus allows the walker to enjoy the very best of the Shropshire Hills scenery without taking a car. Until the end of October it is also accessed by the Shropshire Hills Shuttle network - an hourly weekend daytime service.

2. A Circular Bus Tour through the Shropshire Hills from Shrewsbury leaflet.

The second leaflet advised passengers to make their own trip by local buses through the AONB. The special feature is that it provides interpretation of the landscape through which three local bus services operate. It was possible to use the leaflet simply by travelling on the buses with single fares between the towns of Shrewsbury, Craven Arms and Bishop's Castle. The benefits positioned to passengers were that they could sit back, relax and enjoy the scenery, stop off at the Shropshire Hills Discovery Centre in Craven Arms and in Bishop's Castle to make a full day out.

The two leaflets are available on the website www.shropshirehills.info. As this was a trial only 2500 of each leaflet were run off and distributed principally in information outlets in Shrewsbury. Given the targeted nature of this trial the working group felt that it would not be appropriate to undertake an on board visitor survey but to evaluate the impact of the leaflets in the following ways:

(a) Seek opinions of tourism providers

Two members of the working group attended familiarisation events for tourism providers in the Bishop's Castle and Craven Arms areas. The leaflets were explained and tourism providers asked to give feedback. In general terms, the leaflet was welcomed; it could be used to encourage their visitors to undertake sustainable trips on at least one day of their stay. Many indicated that they already encouraged visitors to use the Shropshire Hills Shuttle bus.

However, as several of the providers were not located on or near the route they felt that there was a need for a more bespoke system, perhaps web based, which would allow them to offer near bus walks, cycle or cycle and train rides for their visitors. This would encourage visitors to stay more local and travel in a sustainable way within the AONB.

(b) Counts on Service 745 Ludlow-Bishop's Castle

The second approach was to monitor the scenic ride leaflet and the incumbent bus operator was approach in May 2007 to seek cooperation to provide passenger count data for June-October 2006 in comparison to the same months in 2007 to evaluate whether or not a change had taken place. The company concerned agreed to provide this data but during the early summer announced the closure of its Ludlow garage and gave notice to relinquish its contract on the 745.

There followed a period where service provision became unreliable and on some occasions cancelled completely or vehicles used without ticket machines. Requests to the company since then have failed to elicit a response so it is not possible to provide any data regarding this.

(c) Feedback regarding the walking leaflet

The number of passengers on the Shropshire Hills Shuttles [Stiperstones Shuttle] has increased considerably in 2007 and some of this growth could be attributable to the promotion. Drivers have reported an increased number of walkers but again this might simply be an effect of the cumulative build up of marketing activity attributable to the Shuttles themselves

Local walking groups were asked to comment on the walking leaflet and the feedback was very positive with several seeking additional leaflets and responding that this was a good initiative on which to build.

In summary, the demonstration leaflets have proven to be very useful to illustrate in a tangible format how transport and tourism can be combined to offer an attractive lightly packaged sustainable offering to the visitor, which has minimal impact on the environment.

As a postscript it is interesting to note that the new operator of the 745 has re-established confidence in the service and patronage has been growing. The new operator of the 435 service from Shrewsbury to Ludlow has equally restored patronage on this link with the use of brand new buses and attention to service delivery. Therefore, there is every good reason that a similar promotion in the future could be developed using these three services.

Institute of Transport and Tourism

TASK 4 Carding Mill Valley CO^2 emissions

The fourth task relates to a travel survey of the National Trust property at Carding Mill Valley, one of the major attractions within the ANOB, which generates over 250,000 trips per annum. The report was partly funded by the National Trust.

Executive Summary

This study was undertaken as part of the Slow Travel Project in the Shropshire Hills and partly funded by the Shropshire Hills Area of Outstanding Natural Beauty and The National Trust.

The principal aim of the study was to trial a CO^2 calculation technique at the National Trust property at Carding Mill Valley, Shropshire.

It also provided data regarding travel patterns to the site and patterns of visitation on the day of travel. Three hundred and eighty six responses were analysed from a survey of the site on selected days from June to September 2007. This was a 23% response rate focusing mainly on car travel to the site but also visitors arriving by other means

The study tested the Fawcett and Hillman and Warwick University CO^2 emissions techniques in order to evaluate the overall travel CO^2 emissions generated by the site.

The study calculated CO^2 emissions made by visitors to Carding Mill Valley. It used individual CO^2 emission factors for each individual car journey, and up to date emission factors for travel by public transport.

Car travel was, as expected, the main contributor of CO^2 emissions. **The 85% of visitors who arrive to the site by car generate an estimated 1405 tonnes of C02 per annum.** This is similar to leaving 10,000 personal computers on overnight for one year or flying from London to Aberdeen 6523 times per year.

The extremely small number of travellers by public transport makes it difficult to make accurate projections on an annual timescale. The best estimate is that the 15% of visitors who arrive by other means account for 50 tonnes of C02 per annum.

There was a relatively high level of environmental awareness amongst visitors, as one would expect from visitors to an outdoor National Trust site yet respondents' willingness to switch to public transport currently remains low. Approximately 20-25% of the visitor market, however, could be encouraged to change mode of travel as most visitors are from Shrewsbury, Telford and the Black Country where there are railheads offering an hourly service to Church Stretton by changing at Shrewsbury.

Institute of Transport and Tourism

There are also a number of regular local trips from the Church Stretton area, which could be made on foot, bicycle or Shuttle bus and this warrants further exploration.

SLOW TRAVEL IN THE SHROPSHIRE HILLS PROJECT

CARDING MILL VALLEY: VISITOR TRAVEL SURVEY

Introduction

The Slow Travel Project in the Shropshire Hills Area of Outstanding Natural Beauty (AONB) grew out of the success of the Shropshire Hills Shuttles. The organisations concerned with the Shuttles were interested to investigate the potential of everyday rural services to attract visitors on board.

The Aim of the Slow Travel Project

The Slow Travel project aims to present local public transport services [and non motorised transport] as a mainstream element of sustainable tourism for visitors in the Shropshire Hills ANOB.

In the longer term the project seeks to build on the core principles of sustainable development within the Shropshire Hills so that the area becomes recognised internationally as an environmentally friendly destination.

There are a number of specific objectives;

1. To ensure that the public transport network remains sustainable for residents and visitors thus bringing targeted economic impact to local rural communities,

2. To encourage modal shift by making visitor access more attractive by other means than the car,

3. To reduce the need for infrastructure, such as car parks, which simply generate more traffic within the AONB. Local communities will benefit from reduced traffic.

The first stage of the project was undertaken from May until December 2007 focusing on existing public transport networks and opportunities to encourage modal shift. It did not involve the development of any new services. In 2007 the working group sought to meet the following tasks:

1. To provide an audit of existing public transport provision for tourism purposes in the AONB.
2. To prepare material which could be formed into a website guide for visitors, i.e. public transport availability that could be added to the Shropshire Hills Shuttle website, for example, in due course.
3. To undertake a tangible demonstration pilot of a specific bus walk, include a printed promotional leaflet and to produce a "view the landscape" trail using three bus routes in the AONB, again accompanied by a printed promotional leaflet.
4. To test a carbon foot printing technique with the National Trust property at Carding Mill Valley

A number of project partners are involved:

The Institute of Transport and Tourism, University of Central Lancashire
The National Trust,
Shropshire Access Partnership,
South Shropshire District Council and
Shropshire Hills Area of Outstanding Natural Beauty (AONB).

This report refers to Task 4: the testing of an approach to CO^2 emissions of visitors.

CO^2 emissions calculation - Aims and Objectives

This study aims to measure carbon dioxide (CO_2) emissions from transport of visitors to a single site owned by the National Trust, Carding Mill Valley, located near Church Stretton in the Shropshire Hills Area of Outstanding Natural Beauty. It also gains an insight into the travel choices of visitors to Carding Mill Valley, their journey purposes, spending patterns, attitudes to travel and the environment in relation to travel undertaken on the day of their visit.

There have been a number of calls in recent years for measurement of environmental impact of our everyday life patterns but also including tourism and leisure. In response to this techniques such as Ecological and Carbon footprinting have been developed to measure carbon dioxide emissions and to enable scenario building for policy-making in most sectors. The transport sector is one of the most important to analyse given its widespread impact on society. Increasing use of the private car for personal use is well documented and is continuing to contribute to an increase of CO^2 emissions in the atmosphere, and hence in relation to climate change. While most previous studies have focused on national, regional or at an organisational level there is also a need for measurement at a site level in order to evaluate how best to reduce the overall level of

CO^2 through visitation.

Carding Mill Valley was chosen for the study as it is a popular visitor attraction with demand of 250,000 visitor trips per annum. Of these it is estimated that over 92% of these visits are made by car and this presents major problems at peak periods when physical measures are required to stop cars entering the site at times of saturation. The National Trust has invested, with other bodies, in alternatives to the car such as The Shropshire Hills Shuttle but these are small-scale initiatives and demand for car borne access continues to rise. This is clearly unsustainable even in the short term.

This study aims to provide a first stage evaluation of the CO^2 emissions of visitors to the site.

The specific objectives of this study are to:

- Obtain information regarding visitor travel to Carding Mill Valley – distances travelled, modes of transport, journey purposes and spending patterns
- Pilot a method for converting visitor travel data into calculations of CO^2 emissions
- Determine an appropriate and useable technique for subsequent analyses.
- Attempt to evaluate factors which may affect peoples travel choices in relation to a personalised approach to the reduction of CO^2 emissions in leisure

Research Method

The research approach was formulated after discussions with management staff at Carding Mill Valley. It was decided to take the project forward as part of the Slow Travel in the Shropshire Hills project. There were a number of issues to resolve. The main unit of measurement was visitors travelling solo or as a group by car. Other visitors travelling by other means would also be surveyed and thus it was agreed that surveyors would walk the site on survey dates so as to cover the main entrance for walkers, the Shropshire Hills Shuttle bus and coach park. The researchers also wanted to ensure that respondents recorded details of their entire day visit including stop offs and spending at other places so as to embed the calculation of CO^2 emissions in the pattern of a day visit. Thus, it was agreed that the most effective way to measure this by using a self-completion survey form with a reply paid envelope. The surveyor role was to engage the interest of the respondent in order to increase response rate and reduce non-response bias.

A pilot survey questionnaire was constructed on the basis of a review of the limited literature in the field and previous studies undertaken by the Institute. An initial meeting was held at Carding Mill Valley to test the questionnaire on volunteer respondents and to finalise the questions. The pilot survey was then undertaken and minor changes to wording undertaken. It was decided that the survey should include questions regarding

Institute of Transport and Tourism

the following areas:

1) Demographic details (age, gender, ethnic minority, generating location and postcode data)

Rationale – to ensure a representative sample and to explain differences between personal travel choices or emissions and socio-economic background.

2) Purpose of visit to Carding Mill Valley

Rationale – to find out why people are visiting Carding Mill Valley and whether trip purpose affects travel choices or emissions.

3) A series of statements relating to travel and environmental issues, using a 5 point Likert style scale so as to assess levels of agreement or otherwise with attitudes towards the environment.

Rationale - To ascertain attitudes of people travelling to Carding Mill Valley towards the environment and travel. To understand links between attitudes and emissions / travel choices

4) Spending data

Rationale – To understand who is spending what and when. To ascertain whether there is a link between spending and emissions / travel choice

5) Time and mode of arrival

Rationale – To provide a general picture of how people arrived at the site and to ensure that there was not duplication of the travel data (for example, having records of two people who make the same trip)

6) Holiday visits (Day visit or holiday)

Rationale – To see how many people are on a day trip from home or from a holiday base. This also aided completion of incomplete trip data.

7) Car data (Mileage on day, type, fuel, age and engine size, occupancy)

Rationale – To calculate the CO_2 emissions for each respondent who travelled by car. The occupancy data are used to derive shared emissions. The information about the car is used to calculate its emission factor. The mileage is used to calculate emissions and also to provide information on how far people are travelling on the day they visit.

8) Travel data (For each stage of their journey – Start point, finish point, mode of travel and number of people travelling)

Rationale – to indicate how many places people have visited on the day. This also provides mileage data for people who did not know how far they had travelled. There is a lot of other information, which can be extracted by this data, such as people travelling on routes which could be covered by public transport.

The survey was implemented over a period of two months between 29th of June and 27th of August 2007. The surveyor issued questionnaires to all visitors seen in the area from the bottom car park to the top car park. People were given a pre-paid envelope and were asked to fill the survey out in their own time and return by post.

The data was processed using SPSS data package, and analysed during September/ October 2007. Analysis and writing up was completed in November 2007.

CO2 Emissions

Calculation of CO^2 emission

It was possible, using the data provided by the respondents regarding their personal travel, and the information on the car they had travelled in, to calculate a carbon emission figure for each respondent. A literature review was undertaken to assess different methods of calculation. As this project was a trial to evaluate the best method of calculation, two different calculations found in the literature were chosen for the analysis in order to compare both results and the ease of analysis, and also to ascertain what type of information it is realistic to gain from this type of data collection method and how much information people are prepared to give. For example, some CO^2 emission calculations ask for extensive amounts of information such as the percentage of urban or rural roads driven on, fuel consumption, tyre wear. This level of information would not have been appropriate for this type of study given that people on a day out are less likely to commit time to filling in details on a form. Inevitably, it is a compromise between level of detail and non-response bias.

For both the chosen calculations, the most important information to collect was the mileage travelled. Car drivers were asked to provide an overall figure. The calculation of overall mileage for anyone who had not given a figure (including users of other transport modes) was derived from their travel data by converting each location on the route into a postcode and using a software package to calculate distance between postcodes.

Once a distance had been calculated for each respondent, for each mode of travel, emissions factors were derived using the car data, cross-referenced to a large database provided by the Vehicle Certification Agency. This then provided all the information necessary to make both calculations.

Hillman and Fawcett Method

Hillman and Fawcett (2004) used a very simple method of calculating individual CO^2 allowances using coefficients based on transport mode, which gives a figure in kilograms (Kg). The method has been used for all trip purposes. The strength of this method is that it only requires a distance travelled for each individual and additionally for car-users, whether the fuel used was petrol or diesel. The basic calculation is set out as follows:

Kg CO^2 = (Distance (miles) / Modal coefficient) / Occupancy

Modal coefficients – Petrol Car = 3, Diesel car = 4, Bus = 4, Coach = 8, Train = 6

Warwick University Method (Modified)

This method was derived from a personal travel CO^2 calculator (Warwick University Carbon Footprint Project Group, 2005), which uses distance travelled and specific emission factors based on type of car, fuel, age and engine size. The emissions are available from the Vehicle Certification Agency (2007 Online), which offers a large database containing several thousand types of car. For the purpose of this study, older cars and those not in the database were given an average emission factor (found to be (179 g/km). As this calculation uses kilometres rather than miles the distances required conversion. Once the emission factor has been acquired the calculation is relatively simple. It is set out below:

Cars

Kg CO^2 = ((emissions factor /1000) * distance(km))

Other modes

In light of differences, which became apparent, between emissions for trains, buses and coaches in the calculations used by the two methods further investigation was undertaken to clarify the differentials between the different modes. A recent methodology paper produced by Defra (2007) provided a revised, more accurate emissions factor for trains based on averages derived from passenger kilometre data from Department for Transport statistics, and electricity / diesel consumption. For buses, journey data from Transport Statistics Great Britain (TSGB), average CO^2/km figures from the Greenhouse Gas Inventory and load factors produced a more accurate emission factor.

Bus, train & coach

Kg CO^2 = Distance (km) * emission factor (mode)

The Warwick University method is described by Brand (2005) as a method used to measure 'hot' emissions. A 'cold' emissions method would also take into account the differences in emissions when starting a car from cold. It was not possible to use this method given the information collected in the survey. Several other methods calculate emissions in a more detailed fashion (Brand, 2005). As these methods required more information such as fuel used, fuel efficiency, driving speed and a breakdown of urban / rural driving, it would not have been possible to get more accurate information and the researchers were not convinced that this would be necessary in relation to the longer distance trips to visitor sites.

Results

Response to the Survey

The survey yielded a total of 386 complete forms, a response rate of 23%. Usually in this type of survey, 300 is an adequate figure to perform valid statistical analysis and the quality of the data gained was good. The response rate was higher than previous car-park surveys undertaken by ITT, which have yielded a 10% response rate. Thus, it is assumed that by emphasising the role of the surveyor to engage interest and hence reduce non-bias response has worked to good effect. In total 2112 people were approached. There was, nevertheless a refusal rate of 13%. Refusals were mainly for three reasons- another person in the group had taken a form, the group had already completed a form on a previous day and not at all interested in filling in a form at the end of the day.

Table 1 – Survey Returns

Number of people surveyed		% response rate
Number of people who took form	1732	
Number of (complete) returned forms	386	22.3

It is important that the survey provides a representative sample of the population visiting Carding Mill Valley as this data may eventually provide the baseline for larger estimates of CO_2 emissions. The sampling strategy was designed to capture a valid cross-section of visitors during a summer season but certain factors were out of the researcher's control.

Weather was one such factor and two of the scheduled survey days (25th and 26th of July) coincided with the very inclement wet weather, which hit The Midlands. Not surprisingly, these days yielded a low number of returns. August saw fairer weather conditions than July, but the number of responses each day was similar, even though more visitors were approached on the dates in August. The explanation is likely to lie in the resistance by casual visitors on peak summer days to spend time to complete the form By running the survey over 13 dates from June 29th to August 27th it is assumed that a more representative balance was achieved across different types of visitors welcomed by the site.

Table 2 – Weather and Response Details by Survey Day

Date	Rain	Temperature	People Surveyed	Forms Returned	% of response
29-Jun	Dry	Warm	125	33	26.4
12-Jul	Showery	Cool	67	24	35.8
14-Jul	Dry	Warm	126	26	20.6
18-Jul	Dry	Warm	74	23	31.1
22-Jul	Showery	Cool	131	32	24.4
25-Jul	Heavy Rain	Cold	49	6	12.2
26-Jul	Heavy Rain	Cold	50	25	50.0
16-Aug	Dry	Cool	267	52	19.5
23-Aug	Dry	Hot	209	22	10.5
24-Aug	Dry	Hot	238	31	13.0
25-Aug	Dry	Warm	203	28	13.8
26-Aug	Dry	Hot	266	32	12.0
27-Aug	Dry	Warm	307	33	10.7

Demographic Details

Gender
(n=371)

The gender distribution of respondents is almost identical to the normal UK distribution.

Table 3 – Gender Distribution

Gender	% of respondents
Male	49.1
Female	50.9

Age
(n=380)

Despite the summer holidays, there were very few 16-19 year olds surveyed; this reflects a number of factors such as the appeal of the site to young families and older visitors rather than young people travelling on their own and the reluctance of young people to complete paper based surveys. Children were not surveyed, but are included in the trip data as car occupants. There were larger numbers of visitors from the older age groups. This fits with the profile of visitors to the site.

Institute of Transport and Tourism

Table 4 – Age Distribution

Age Group	% of respondents
16-19	0.3
20-29	3.4
30-39	12.6
40-49	17.9
50-59	25.0
60-69	28.4
70+	12.4

Ethnic Origin
(n=374)

There was a higher percentage of white visitors than the national UK average population base of 92.1% (National Statistics Online: 2006).

Table 5 – Ethnic Origin

Ethnic Origin	% of respondents
White	98.7
Black / Black British	0.8
Mixed	0.3
Other	0.3

Postcodes

Table 6 – Home Postcodes

Postcode Area		% of respondents
SY	(Shrewsbury)	31.3
DY	(Dudley)	10.4
TF	(Telford)	7.0
WV	(Wolverhampton)	7.0
B	(Birmingham)	6.8
WS	(Walsall)	3.7
ST	(Stafford)	2.5
Other		27.0

Nearly three quarters of the sample were residents of the West Midland Region. Postcodes with the SY prefix contained many people local to the Church Stretton area. The 27% of the sample who reside outside of the region come from 52 postcode areas.

Institute of Transport and Tourism

Purpose of Visit
 (n=386)

<p align="center">Table 7 - Purpose of Visit</p>

Purpose of Visit	% of respondents
Walking	81.1
Tea Room and Shop	30.8
Viewing Wildlife	25.6
Other	15.0
Event	4.4
Information	3.9
Cycling	3.1
Visitor Centre	2.8
Field Trip	0.5

Respondents to the survey were able to select more than one purpose in the questionnaire, hence the above figures add up to more than 100%. Walking was the main purpose, recorded by 81% of the sample.

In some cases, events were specified. These included: 'Book Signing', 'CTC event', 'CTC film', 'Duke of Edinburgh Awards', 'Picnic' and 'Shropshire Tour'.
In some cases, 'other' purposes were specified. These included: 'Breaking up a journey', 'Children playing', 'Coach Trip', 'De-Stressing', 'Dog-walking', 'Picnic', 'Fresh Air', 'Peaceful Surroundings', 'Countryside', 'Fell Running', 'Painting', 'Pioneering Group Walk', 'Scenic Drive', 'Sightseeing' and 'Lunch'.

Visitors on Holiday or Day Visit
(n=357)

	% of respondents
Day Trip	72.8
On Holiday	27.2

A large majority (nearly three quarters) were on a day visit, which fits the wider pattern of visitation to Shropshire. However, over 27% of visitors were staying in the region and visited from a holiday base. It would be possible to determine a secondary footprint, for example by allocating a proportion of their trip to the destination area, but it was decided not to analyse this, due to insufficient data.

Attitudes towards Tourism, Travel and the Environment

The survey questionnaire contained a number of statements relating to tourist travel, sustainable transport and the environment. There were five different levels of agreement: Strongly disagree, Disagree, Neutral, Agree and Strongly Agree [1 to 5]. The overall direction of responses are summarised in Table 8.

Table 8 – Agreement with statements relating to tourism travel and the environment

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Most Frequent Answer	Mean
I try to minimise my car use	2.8	9.4	27.6	**42.3**	17.9	Agree	3.6
I prefer to use public transport when it is available	11.6	26.4	**27.7**	25.2	9.1	Neutral	2.9
I can't afford to use public transport	29.4	**32.0**	26.5	7.8	4.2	Disagree	2.3
I don't know what public transport is available to Carding Mill Valley	10.9	15.7	15.1	**39.4**	18.9	Agree	3.4
Climate change is overstated	22.5	**29.1**	24.4	18.4	5.6	Disagree	2.6
Car traffic destroys the peace of the countryside	4.4	13.7	25.9	**41.1**	15.0	Agree	3.5
I try to reduce household energy use for environmental reasons	1.3	3.1	11.0	**49.4**	35.2	Agree	4.1
Using public transport for leisure trips is impractical	5.0	14.1	20.4	**40.4**	20.1	Agree	3.6
I would prefer to pay more to use my car than use public transport	11.7	27.2	**29.4**	22.2	9.5	Neutral	2.9
Car users should pay higher entrance fees than others	**38.6**	27.6	16.9	11.6	5.3	Strongly Disagree	2.2

Car use – Over 65% agree that car traffic destroys the peace of the countryside. Over 60% agree that they try to minimise their car use, which is obviously an aspiration rather than reality. In contrast, there is non consensus about whether or not they would prefer to pay more to use their car than use public transport. There is a high level of disagreement with the idea that car-users should pay higher entrance fees than others. Only 18% favour this option although this is perhaps a viable market segment indicating a willing to pay for environmental impact.

Public Transport – Over 68% do not have knowledge about public transport access to Carding Mill Valley. This requires careful interpretation as they might not see it as relevant. Only 34% show a preference for public transport when available and in the context of leisure trips some 60% see it as impractical. On a more positive note, over 26% do have some knowledge and this is a sizeable market segment on which to build action from awareness.

Environment – Over 85% of respondents agree they try to reduce their energy use because of environmental concerns but 24% believe that climatic change is overstated and an equal percentage indicated that they held a 'neutral' position.

Overall, the response to these statements reflect that visitors are reasonably 'environmentally conscious', which is to be expected, perhaps, of visitors to outdoor National Trust properties. However, collective ambivalence to certain statements (most significantly 'I prefer to use public transport when it is available') reflects a value-action

Institute of Transport and Tourism

gap often found when examining travel behaviour.

Visitor Spending
(n=386)

Each group (or solo visitor) was asked about the level of spending on the day visit.
The mean spending per group is £12.86; this falls to £8.99 when spending on fuel is excluded. The mean per head spending is £6.08, again falling to £4.21 when fuel is excluded. Over 79% of groups surveyed spent during the day, with and average spend per group amongst these of £16.30.

Table 10 - Mean spend by category

	Mean (£)
Fares	0.24
Parking	0.78
Fuel	3.87
Food & Drink	5.70
Entrance fees	0.11
Other	12.14

Travel to Carding Mill Valley
(n=386)

Table 11 – Mode of arrival at Carding Mill Valley

Mode	% of respondents
Car (Driver)	56.5
Car (Passenger)	28.5
Bus	1.3
Train	1.3
Walk	12.2
Cycle	3.1
Other (Minibus, Motorhome & Motorbike)	0.8

In the main, most people either travelled by car or walked. A small number used public transport or cycled.

Travel Diary

Most of the respondents (98.9%) gave some or all of their travel movements on the day of their visit. This data included locations of start and end points, mode of travel and number of people travelling. This data was also used to calculate distance of car travel for those who had not given an overall mileage for the day. In the responses, 21.8% of respondents did not give a mileage; their total distance travelled to be calculated using post codes.

Table 12 – Trips by different modes made on the day of the survey

	Number of respondents	% of respondents	Number of trips	Average per person
Car	325	84.2	713	2.2
Walk	55	14.2	84	1.5
Train	7	1.8	16	2.3
Bus	6	1.6	8	1.3
Coach	2	0.5	6	3.0
Bike	11	2.8	23	2.1
Taxi	0	0.0	0	0.0
Minibus	2	0.5	3	1.5
Other	2	0.5	3	1.5
Motorhome	0	0.0	0	0.0
Motorbike	2	0.5	4	2.0

As expected, a large majority of respondents arrived by car, and an equally large proportion of the trips made by respondents were by car. 14.2% of people had walked to the site (not including within the boundaries of Carding Mill Valley). 869 journey stages were recorded in total (giving an average of 2.3 per person. A journey stage is defined as part of the overall day trip involving a journey and a stop at a place en route or returning from Carding Mill Valley. Some 101 people (26.1%) visited at least one other place on the day. Of the 219 extra trips made by these people 79 (36.2%) were made to Church Stretton, 18 (8.2%) to Much Wenlock 11 (5%) to Bridgnorth, 10 (4.5%) to Shrewsbury and 5 (2.3%) each to the surrounding countryside such as The Long Mynd, Craven Arms and Cardington. The highest number of journey stages recorded in one day was 8

Distances Travelled

Individual distances were recorded for transport modes (which emit CO^2). Out of 325 people who travelled by car, over 16,500 miles were driven during the day. On average visitors drove just under 50 miles. Due to the extremely low numbers of people travelling by public transport the average figures can not be considered as representative.

Table 13 - Distances Travelled

	Total miles driven	Average miles per Person
Car (includes minibus & motorhome)	16573.9	49.9
Coach	256.2	128.1
Bus	88.7	22.2
Train	273.5	45.6

Car occupancy

Table 14 - Car Occupancy Figures

Occupants	number of trips	% of trips
1	36	5.1
2	338	47.8
3	120	17.0
4	136	19.2
5	55	7.8
6	16	2.3
7	6	0.8

A large majority of visitors have travelled in cars containing more than one occupant, with almost half (47.8%) travelling as a couple. The average occupancy was 2.9 people per car trip.

CO^2 Emissions

The most obvious finding is that the private car contributes the majority of CO^2 Emissions caused by visitors to the site (over 99% in accordance with the Warwick University method). The figure varies between methods, particularly for coaches, buses and trains but it is suspected that the Hillman and Fawcett method overstates emissions from these modes. The extremely low number of responses from people who travel by public transport modes makes it difficult to analyse their personal emissions adequately. It must be considered that public transport trips do not actually generate extra trips as the service will already be scheduled. When a car is used the extra journey causes extra CO^2 to be emitted into the atmosphere. This is not the case for public transport where occupancy levels determine the level of overall impact. Every time another person steps on board the environmental impact per person is reduced.

Table 15 sets out the calculation of CO^2 emissions using the Hillman and Fawcett approach whereas the results using the modified Warwick University approach is noted in Table 16 and registers a lower figure for car travel and for those travelling by bus or train.

Institute of Transport and Tourism

Hillman & Fawcett Calculation
(n=386)

Table 15 – kg CO^2 from trips in sample (Hillman & Fawcett)

	Total kg CO^2
Car (includes minibus & motorhome)	2325.2
Coach	32.0
Bus	22.2
Train	45.6

Warwick University Calculation (using Defra emission factors)
(n=386)

Table 16 – kg CO^2 from **trips (Warwick University)**

	Total kg CO^2
Car (includes minibus & motorhome)	2174.9
Coach	36.7
Bus	12.7
Train	26.5

Comparison of methods

Figure 1 - Hillman & Fawcett / Warwick methods
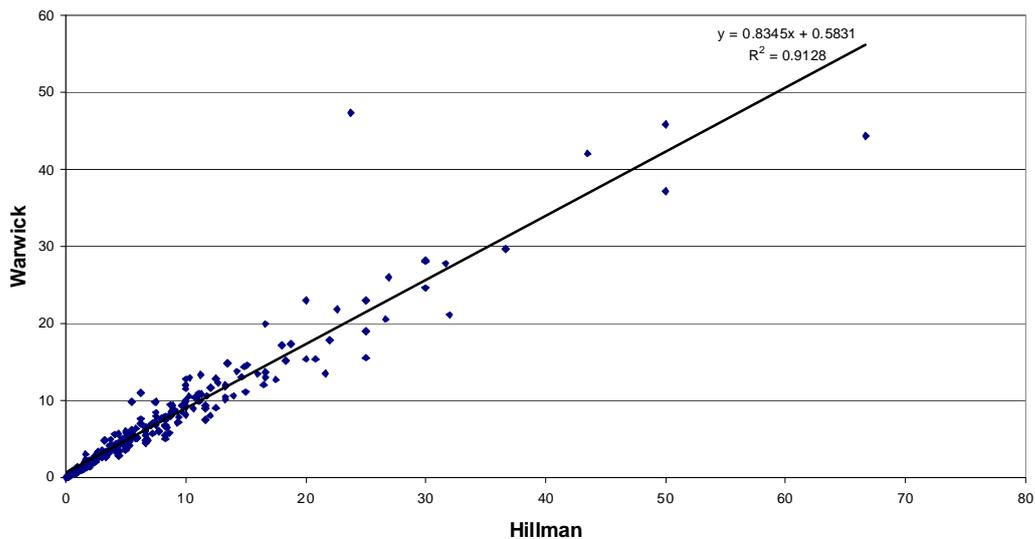
For each individual respondent, calculations using both methods were plotted onto a

scatter graph. The line of best fit and the R^2 value indicate a reasonably strong similarity in the results from both methods. The differences in the results using each method for other modes are greater, although the small numbers of respondents using other modes may affect this. However, the main form of travel, the car, provides fairly robust estimates.

Annual estimated CO_2 emissions

As the analysis has taken into account car occupancy, it is possible to use the sample figure and calculate an estimated figure for annual CO_2 emissions caused by trips to the site. Assuming the sample is representative and based on the current total estimate of 250,000 visitors a year, a total figure can be achieved. The figure is stated in metric tons (1 ton = 1000 km).

Table 17 – Estimated annual CO_2 emissions

	Annual Emissions (Tonnes CO_2)
Car	1405.4
Coach	23.8
Bus	8.2
Train	17.2
Total	1454.6

The total amount of CO_2 emissions from travel to and from Carding Mill Valley in one year is roughly equivalent to:

1 Boiling a kettle 44,079,445 times[1]
2 Leaving one 100w light bulb on eight hours a day for 4,546 years[2]
3 Flying from London to Aberdeen and back 6,523 times[3]
4 Leaving more than 10,000 PCs on overnight for a year[4]
5 The amount of CO_2 which would fill 808 hot air balloons[5]

1. Based on a calculation relating to energy efficiency of electrical appliances found at http://www.techmind.org/energy/calcs.html 2. Based on a figure of Co2 emissions for a 100w bulb found at http://www.thebulb.com/store/t-cflmath.aspx. 3. Based on a carbon calculator produced by Transport Direct (2007 Online). 5. Based on figures provided by Peterborough City Council's Travelchoice team (2007 Online)

Scenarios using CO_2 emission data

Replacing short trips by car with a bus journey

From the trip data, all journey stages which ended at Carding Mill Valley (338) were extracted – 278 by car (including 14 pairs), 49 walk trips, 1 by bus, 1 by coach, 7 by cycle, 2 by motorbike. These journeys were split into trips under and over 6 miles (10 km) as a measure of local and non local journeys. Local journeys would cover a distance to include The Strettons.

Institute of Transport and Tourism

Table 18 – Trips to Carding Mill Valley

	Total	Car	Walk	Bus	Coach	Cycle	Motorbike
Over 6 miles (10km)	218	209	3	1	1	3	1
Under 6 miles (10km)	120	69	46	0	0	4	1

Using the Warwick University method modified with the Defra emission factors two scenarios were projected – replacing 25% or 50% of short car journeys with a bus journey. This estimated savings ranged from 5027-10,055 kg of C02 emissions.

Table 19 – CO^2 Savings depending on modal switch

	Annual Saving in personal emissions (Kg CO^2)	% of total personal CO^2 emissions saved
Replace 25% of short car journeys with a bus journey	5027.5	0.35
Replace 50% of short car journeys with a bus journey	10055.1	0.70

Replacing trips by car with train journeys

Over 45% of the sample (176 people) travelled to Carding Mill Valley or Church Stretton from places served by a railway station. This is probably an underestimate of people who could potentially use a train, as it does not include people living in towns or villages without a station but in close proximity to one. This figure includes respondents from the following destinations, which have a daily service of approximately one hourly frequency:
Telford [15 respondents]
Shrewsbury [37 respondents]
Birmingham [7 respondents]
Wolverhampton [10 respondents].

If the train were used instead of a car for the 45% who have the potential to switch, the total annual emissions resulting from travel to and from Carding Mill Valley would be severely reduced-see Table 20. There are two ways of looking at this reduction. By subtracting all the emissions from cars and then adding back personal emissions based on the Defra emission factors there would be a considerable reduction. However if we assume the trains would be running regardless of whether these people used it or not and therefore no extra emissions had been caused the reductions would be substantially greater (around 45% of total emissions).

Table 20 – Annual CO^2 reductions if car journeys were replaced by train journeys

	Annual Saving in personal emissions (Kg CO^2)	% of total personal CO^2 emissions saved
Replace 25% of car journeys from origins near to stations with a train journey	32829.7	2.3
Replace 50% of car journeys from origins near to stations with a train journey	68844.2	4.9

Comparisons between attitudes towards the environment / public transport and energy use

Using the personal CO^2 emissions of each respondent it was possible to cross-reference average personal emissions with responses to three selected statements (detailed in section 4.5).

Table 21 – Selected statements cross-referenced to personal CO^2 emissions

Statement	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Prefer to use public transport when it is available	3.9	6.8	6.5	5.8	3.3
Climate change is over stated	5.9	5.7	5.4	5.7	5.1
Using public transport for leisure trips is impractical	2.3	5.2	6.5	6.5	4.9

From this analysis it can be inferred that the people who agree to the statement 'I prefer to use public transport when it is available' make on average lower emissions personally than those who disagree with the statement. Additionally people who agreed to the statement 'Using public transport for leisure trips is impractical' averaged considerably higher emissions. Both of these analyses suggest that the people who cause higher emissions during their trips to and from the site are less amenable to the idea of public transport. The level of spend per person on non fuel items is also relatively modest.

Comments

Respondents only had the opportunity to leave comments during the pilot study; there is no recurrent theme to report. The design of the survey form beyond this stage meant that other respondents had no space to add any additional comments. The early comments received are listed in Appendix One for information.

Conclusions

Key Findings

This study produces a calculation of CO_2 emissions made by visitors to the Carding Mill Valley. It used individual CO_2 emission factors for each individual car journey, and up to date emission factors for travel by public transport.

Car travel was, as expected, almost the main contributor of CO_2 emissions. The extremely small number of travellers by public transport makes it difficult to make accurate projections on an annual timescale.

There was a relatively high level of environmental awareness as one would expect from visitors to an outdoor National Trust site yet respondents' willingness to switch to public transport remains low.

The level of information on personal travel and basic car specifics (i.e. type of fuel, age and engine size) asked for in the survey was accurately predicted - respondents largely were able to provide this information.

Walking was the most popular activity among visitors to the site so on arrival carbon footprint is likely to be very low.

The demographic make up of the sample was as follows - male / female balance almost equal, age distribution skewed towards older age groups, low ethnic diversity and a large proportion of visitors from the West Midland region.

Visitors are travelling in small groups mainly (the car occupancy is averaged at 2.9) which reduces the CO_2 emissions overall.

However car journeys create potentially reducible CO_2 emissions and if there were modal shift by some of the visitors to more sustainable modes this would cut CO_2 emissions to the site - and increase the occupancy on public transport modes, thus reducing passengers' personal emissions.

This report provides a baseline audit. Additional research might highlight changes according to seasonality such as more solo visitors in the winter months and a lower level of expenditure with more limited opening times of the Pavilion at this time of year.

An extension of the research might be to undertake depth interviews of different types of visitors who are likely to switch mode. However, given limited resources it might be better to simply trial a campaign and include depth interviews as part of this applied approach.

Institute of Transport and Tourism

Management Implications

The study has focused on methods to measure CO_2 emissions and an audit of existing travel to the site. However, in conducting the study the research team have gained some insights into travel patterns and visitor attitudes, which could have implications for future management of visitor access. These are listed below in brief.

The site enjoys a heavy visitation on an annual basis but demand is peaked during bank holiday weekends or at spells of fine weather near to these periods. At these times visitors are physically turned away from the site when it reaches saturation. This happens with regularity each year and presumably many potential visitors feel not satisfied by the experience. There will be a negative impact of congestion and illicit parking within Church Stretton and alternative overspill car parks have not been possible. Therefore, it might be worthwhile giving consideration to 'de-marketing' Carding Mill in the run up to these days in the year advising visitors that it might be better to enjoy the very best of the site at other times or to travel by public transport.

Visitors to the site are generally aware of the environment, and feel as though they are 'doing their bit'. A significant minority of visitors are beyond the stage of contemplation; some of these people are clearly ready to take action, have the agency to do so and no real barriers to change. Therefore some may be open to making changes to sustainable modes if they are encouraged to do so. For the majority, there remains an ambivalent attitude to travelling to the countryside by public transport. However, the existing rail service and the likelihood of an enhanced bus service between Ludlow and Shrewsbury provides an attractive alternative transport corridor if ticket prices are attractive. There needs to be an improvement of service level on the prime visitation day-Sunday and the Shuttle to the railway station and bus stops might need to be configured in due course to offer that level of convenience so that the site is available by bus - Shuttle and walk or train - bike, train- Shuttle, or train and walk.

However, there will need to be a more significant campaign than currently developed to help people to take action. For those who are willing to shift modes it would be ideal to have personalised travel plans from their home or home town to Carding Mill Valley. This would require hard information re times and fares as well as the benefits of an enjoyable travel time, scenic ride, comfort, relative convenience, etcetera. This is possible through website development. There would also be a need to offer some form of reward when arriving on site.

Shrewsbury or Telford would be ideal generating destinations to trial this approach, perhaps testing it in the first instance with members, volunteers or enquirers.

There are a number of people who are taking similar journeys to Carding Mill Valley that could transfer to existing rail routes from several destinations and it is likely that these places would make a good start to roll out a wider awareness campaign followed by some form of personalised travel approach. Considerable emissions

would be saved if this happened.

There needs to be a general awareness on site and using the techniques similar to those applied in this study it would be possible to generate an information sheet for visitors which allowed them to check out their emissions and then to provide them with information about reducing CO_2 emissions made available at the site may be another way of persuading visitors to switch modes.

Local trips are also important. They are likely to be made with regularity. Walking trips are popular to the site. Perhaps promoting combined train and walking trips may be successful. There is also a case for developing more formalised cycle and walking trails from The Strettons to Carding Mill Valley to encourage modal shift. This might require physical improvements accompanied by soft measures and rewards such as loyalty cards for non car based trips.

These ideas are presented in no particular priority nor are they comprehensive. In reality, the research team suggest that Carding Mill Valley would prove to be an ideal site to test approaches to recreational travel plans for this type of National Trust property in order to reduce environmental impacts without losing visitor revenue.

Appendix One: Comments

When travelling by car we like to break the journey with a visit to an interesting place for a short walk.

The only journey I do in my car each week. We try very hard to do lots of lift shares for children. Public transport to places like Carding Mill not great when you are restricted for time.

The Landrover vehicle we only use when touring our caravan. We have a smaller (1.0cc) car for a day-to-day use and other trips. We bought our caravan to reduce holiday abroad using planes. So although our carbon footprint may seem large it should be contrasted to alternatives.

Regular visitor to elderly relation who lives in Church Stretton. Normally travel by train and then walk. Car travel necessary for elderly and infirm / disabled persons. Train Link to Church Stretton and walk to Carding Mill Valley fine for fit people.

Is tourism a good idea? We have to build car parks and lavatories and very little money is spent in the area. Wrong questions asked.

I used the car today as I had a 74 year old not a good walker and an 89 year old a bit wobbly.

I often come to the cafe in Carding Mill Valley for a walk and lunch.

General circular tour Ratlinghope (overnight camp) monitoring 7 Duke of Edinburgh bronze groups as they navigate (or fail to do so) routes.

Came to Stretton on business. Drove to the valley for coffee and to enjoy the scenery because my husband is disabled and the weather has confined us to the house for a week. Today was sunny. We have enjoyed walking in the valley many times in the past. We have a big car because we take a caravan.

Although Carding Mill Valley is served by the railway station in Church Stretton, this would not be a practical way to travel for a family with picnics, folding chairs, fishing nets etc. Even for walkers like ourselves, by the time you had arrived in Carding Mill by bus / train carrying walking packs / food / drink etc you would not have as much time or energy to explore the hills as when travelling by car.

A really lovely place to visit and do some peaceful walking. Church Stretton is a jewel in Shropshire.

Institute of Transport and Tourism

Contact: Nick Davies, Researcher, ITT: 01772 895897

Institute of Transport and Tourism

References

Brand, C. (2005) *Integrated Travel Emissions Profiles: Methodology Report* Oxford: Transport Studies Unit & Environmental Change Institute

Defra (2007) *Passenger Transport Emissions Factors: Methodology Paper* London: Defra

Hillman M. & Fawcett T. (2004) *How we can save the planet* London: Penguin

National Statistics Online (2003) *Ethnicity: Population Size* available @ http://www.statistics.gov.uk/cci/nugget.asp?id=273 accessed: 1/11/07

Peterborough City Council (2007 Online) *Green travellers thanked for helping curb carbon dioxide emissions* available @ http://www.peterborough.gov.uk/page-12304 accessed: 18/11/07

Techmind.org (2007 Online) *Energy Efficiency Calculations* http://www.techmind.org/energy/calcs.html

Thebulb.com (2007 Online) *The Bulb Math* available @ http://www.thebulb.com/store/t-cflmath.aspx accessed 16/11/07

TransportDirect.info (2007 Online) *Co2 Emissions* available @ http://www.transportdirect.info/TransportDirect/en/JourneyPlanning/JourneyEmissionsCompare.aspx accessed: 16/11/07

Warwick University Carbon Footprint Project Group (2005) *Carbon Calculator: Calculation Explanation – Travel* available @ http://www.carboncalculator.co.uk/explanation_travel.php accessed: 23/4/07