

Cuckmere Haven: Assessment of Potential Impacts of Managed Realignment



Final Report
for
English Nature

RPA

June 2005

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prepared for

English Nature

by

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RPA REPORT – ASSURED QUALITY	
Project: Ref/Title	J420d/Cuckmere
Approach:	In accordance with proposal and discussions with English Nature
Report Status:	Final Report
Report Prepared by:	T Fenn, Senior Consultant JRV Ash, Technical Director
Report approved for issue by:	Dr P Floyd, Managing Director
Date:	22 June 2005

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1. INTRODUCTION

1.1 Background

The Cuckmere Haven in East Sussex is a low lying valley with the River Cuckmere flowing through it to the sea. The River Cuckmere has been managed by man over the centuries to improve navigation and now comprises a straight channel with embankments to contain high water and reduce flooding. The old meanders are still visible and are an important landscape feature. However, the whole landscape is under threat from sea level rise and maintaining the sea defences is not a sustainable option due to the high costs associated with raising and strengthening the defences.

In the spring of 2001, the Cuckmere Estuary Partnership comprising The National Trust (NT), English Nature (EN) and the Environment Agency (EA) suggested returning the valley to its natural state to secure its long-term future and maximise the benefits to the landscape and wildlife. This will involve removing the flood defences and allowing the valley to return to saltmarsh and mudflat inland to the A259.

The Cuckmere Valley is well used by visitors throughout the year. From the Seven Sisters Country Park visitor centre base and car parks, some 450,000 to 500,000 people visit Cuckmere Haven, making use of the footpaths to visit the beach and view the Seven Sisters or for birdwatching, walking dogs, etc. There is concern from local inhabitants that changing the character of the Haven will result in reduced visitor numbers and have a detrimental effect on the local economy.

1.2 The Brief

English Nature, as one member of the Partnership, has a view that the restoration to a more natural system will either result in no overall change in visitor numbers or that they may actually increase.

EN therefore asked Risk & Policy Analysts (RPA) to visit the site and prepare a short report on possible approaches to assess any potential changes in visitor numbers and provide a draft specification for a possible research project. This includes consideration of the implications of the visitor surveys carried out by the Seven Sisters Country Park.

Following submission of a Draft Final Report, a number of additional issues have been raised that are addressed in this, the Final Report. These issues include identification of visitor numbers to other managed realignment and bird watching sites, consideration of the potential for educational use of a managed realignment site and the potential for provision of an alternative beach facility.

1.3 Organisation of the Report

Section 2 of the Report discusses observations from the site visit, describes the results of an analysis of the visitor surveys and suggests possible changes in both visitor numbers and visitor spend under a realignment option. Section 3 gives a brief overview of the potential for educational visits and for inclusion of a beach facility following managed realignment, while Section 4 sets out the conclusions and recommendations.

2. REVIEW OF SITE VISIT AND VISITOR SURVEYS

2.1 Site Visit

The site was visited on 18 May 2004 with staff from English Nature and the Environment Agency. The weather was warm and sunny resulting in the car parks being well used with people either walking to the beach or sun-bathing. There were a number (possibly three) school parties visiting the area as part of their studies.

A brief discussion with the Seven Sisters Country Park Manager gave the following information:

- 300,000 to 500,000 people visit the site annually;
- 60,000 people visit the Visitor Centre;
- visitor surveys have been carried out but linked to car park needs;
- numbers are limited at bank holidays by amount of car parking space despite use of adjacent land for overflow cars;
- local visitors (mainly dog walkers) do not spend much money apart from the parking fee;
- in summer people often stay less than 3 hours;
- winter Sundays had same usage as summer Sundays;
- winter weekdays are generally quiet;
- a visit to the Park is often as part of a 'tour' which would include Beachy Head and Alfriston; and
- a change to an estuary landscape would give other opportunities (such as birdwatching) and the local economy may not suffer.

From a visual inspection during the visit it was obvious that the concrete road to the beach was the main walk used by the majority of people. This appeared to be preferred even though the more 'natural' walk over the grass was not prohibited. The footpath to Hope Gap appeared to be much less used although the view of the Seven Sisters from that side of the estuary was better.

2.2 Visitor Survey Analysis

2.2.1 Current Visitor Numbers and Activities Undertaken

Three visitor surveys have been carried out at the Seven Sisters in Summer 1997, Winter 1997/1998 and Summer 1999. The first two surveys were carried out by Chrysalis Marketing Research (1997, 1998), while the Summer 1999 survey was carried out by MarketVoice (1999).

These reports give a range of figures that can be used to provide an indication of the potential impacts of managed realignment at Cuckmere on recreational use of the area. However, a number of assumptions have to be made when utilising the information which may result in an under- or over-estimation of (i) the potential change in visitor numbers and (ii) the potential change in visitor spend. These assumptions are described in the approach to estimating the change in visitor numbers and spend following managed realignment.

The surveys asked what activities visitors undertook during their stay. Two of these activities are used to give an indication of potential changes in visitor numbers. These are:

- percent of visitors who went to the beach; and
- percent of visitors who watched birds.

Other activities mentioned by respondents include: walk dog, picnic, walk in forest, ride bike, etc. Respondents could mention more than one activity such that it is uncertain how many of those who walk to the beach also walked their dog. Similarly, it is unknown how many of those watching birds also walked in the forest. To reduce the potential for double counting that would occur if the number of people undertaking different activities were aggregated, only the percentage of visitors who walked to the beach and watched birds are considered in the calculations below.

The managed realignment scheme is likely to result in reduced access to the beach but is likely to attract more and/or a wider range of birds to the area. It is assumed, therefore, that those who wish to visit the beach would no longer visit the site (scenario 1) or only those who visit for a short time (less than 1 hour) (scenario 2) would not visit the beach, but that these 'lost' visitors may be replaced to some degree by additional bird watchers. The change in visitor numbers is based on the following information taken from the three visitor surveys:

- 57% of visitors went to the beach in Summer 1997 while 34% watched birds;
- 66% of visitors went to the beach in Winter 1997/98 while 32% watched birds; and
- 49% of visitors went to the beach in Summer 1999 while 40% watched birds.

- the total number of visits to Seven Sisters in Summer 1997 is estimated at 340,000;
- the total number of visits to Seven Sisters in Winter 1997/98 is estimated at 160,000; and
- the total number of visits to Seven Sisters in Summer 1999 is estimated at 320,000.

- average spend per visitor in Summer 1997 was £2.35;
- average spend per visitor in Winter 1997/98 was £1.56; and
- average spend per visitor in Summer 1999 was £3.21.

2.2.2 Number of Visitors that may be Lost

Scenario 1: All Visitors Walking to the Beach are 'Lost'

The number of beach visits 'lost' is calculated by multiplying the percent of visitors going to the beach by the estimated total number of visitors in that period (i.e. Summer 1997, Winter 1997/98 and Summer 1999). This gives the following estimates of visits 'lost' following managed realignment:

- visits 'lost' based on Summer 1997 survey: 195,000 visits;
- visits 'lost' based on Winter 1997/98 survey: 105,000 visits; and
- visits 'lost' based on Summer 1999 survey: 160,000 visits.

However, the visitor survey only asked which activities were being undertaken by each visitor and did not ask about their main activity. The percentage of activities undertaken by visitors from the surveys are, therefore, greater than 100% suggesting that most visitors undertake at least two activities whilst visiting the site. For Summer 1997, visitors undertook an average of 2.5 activities per visit, in Winter 1997/98, the average was two activities per visit and in Summer 1999, the average was 2.6 activities per visit. This means that some of those visiting the beach may also have watched birds and are assumed not to be lost from the site following managed realignment. This reduces the number of visits lost for each period to:

- visits 'lost' based on Summer 1997 survey: 81,000 visits;
- visits 'lost' based on Winter 1997/98 survey: 55,000 visits; and
- visits 'lost' based on Summer 1999 survey: 28,000 visits.

The number of visits 'lost' is calculated as the difference between the number of visitors who went to the beach (total number of visitors multiplied by the percentage visiting the beach) and the number of visitors who went birdwatching (total number of visitors multiplied by the percentage of visitors that went birdwatching). The number of visits 'lost' is calculated separately for each of the survey periods to give the three revised estimates. The large variation in the estimated visits 'lost' occurs because difference in the percentage of visitors surveyed saying they walked to the beach or watched birds is 23% in Summer 1997, 34% in Winter 1997/98 and 9% in Summer 1999.

Scenario 2: Loss of Visitors Walking to the Beach who Stay Less than One Hour

If the river mouth moves to the east, the beach on the west side will lengthen and people will be able to access this from a path down the western side of the Haven. This may not be as popular/easy as it involves a walk from the car park along a path alongside the A259 across a bridge before reaching the path, but access to the beach will be possible. Under such a situation, it is unlikely that *all* of those visitors that would walk to the beach would be 'lost'. Those who are visiting for a short time only (i.e. who would not be able to walk to the beach because of the increased distances) may, however, choose not to visit Cuckmere in future. The proportion of visitors staying for less than one hour is:

- Summer 1997: 14.5% of visitors stayed for less than one hour;
- Winter 1997/98: 7.4% of visitors stayed for less than one hour; and
- Summer 1999: no data available on proportion of visitors that stayed for less than one hour.

If it is assumed that the time spent at Cuckmere does not affect which activities were undertaken, the number of visitors 'lost' (i.e. those walking to the beach that are staying for less than one hour) can be calculated as:

- visits 'lost' based on Summer 1997 survey: 81,000 visits x 14.5% = 11,700 visits;
- visits 'lost' based on Winter 1997/98 survey: 55,000 visits x 7.4% = 4,000 visits; and
- visits 'lost' based on Summer 1999 survey: 28,000 visits x 14.5% (using Summer 1997 data as there are no data for Summer 1999): = 4,000 visits.

In fact, the car park at South Barn Hill, Seaford (TV505980) is likely to become more popular as it provides an opportunity for a shorter walk to the beach, such that visitors may not be 'lost' as such but may relocate to an alternative car park.

2.2.3 Number of Visitors to Other Sites

However, additional visitors may be attracted to the site to watch the wider range and greater number of birds. As many of the birds may be over-wintering, there is the potential that many of the extra visitors would be attracted to the site during the winter, when the site is less busy. This would have the advantages of spreading visitors more evenly over the year and reducing peak visitor numbers (since most visitors wishing to go to the beach would arrive at the site at peak times).

The number of additional birdwatchers that would be attracted to the site is not known, but estimates can be based on visitor numbers to other areas where managed realignment has been carried out.

Freiston Shore is an RSPB reserve near to Boston, Lincolnshire. It is one of the largest managed realignment sites in the UK, creating 66ha of intertidal habitat (RSPB, nd). Prior to managed realignment, the site received around 11,000 visitors per year. Projections of visitor numbers after breaching indicated around 15,000 visitors per year. In 2002, there were 51,342 visits to the site; this increased to 53,000 in 2003 and estimated 60,000 visitors in 2004 (RSPB, nd). The site has two car parks, a bird hide, information boards and walks around the site. In 2003, HM Prison Service opened a café on land adjacent to the reserve. The presence of a lagoon which supports breeding avocets is considered a particular attraction.

The larger than predicted number of visitors attracted to Freiston Shore is believed to have occurred because there are few alternative sites providing the same opportunities for birdwatching in the East Midlands. The lagoon, which supports breeding avocets, is believed to be a particularly important feature.

Titchwell is an important coastal RSPB reserve in Norfolk and is largely man-made. In 2004, it attracted 110,000 visitors (an increase of 6% over the previous year) (Pers.

Comm., 2005). Minsmere is one of the RSPB's best known reserves, located on the Suffolk coast. The number of visitors to Minsmere was 87,200 in 2004 and 80,000 in 2003 (Pers. Comm., 2005). Both of these sites are located in relatively rural areas and attract visitors from considerable distances.

The visitor numbers to both Titchwell and Minsmere suggest that the number of bird watchers attracted to a new site offering a wide range and large number of birds could be in the region of 80,000 to 100,000. Both Titchwell and Minsmere are in relatively rural locations (Norfolk/Suffolk) which highlights the potential number of visitors that could be attracted to Cuckmere Haven.

2.2.4 Estimating Additional Visitors to Cuckmere following Realignment

The following section sets out an approach to estimating the potential change in the number of visitors to Cuckmere Haven following managed realignment. All of the calculations are based on information contained in a visitor survey undertaken for Freiston Shore, compared and combined with information from the Cuckmere visitor surveys.

The calculations are divided into a number of steps that are necessary due to differences in approach between the two visitor surveys and the different information that each provides. Most of the assumptions made are conservative such that the estimated number of additional visitors estimated could be considered a minimum.

Step 1: Distance Travelled to Freiston Shore (Based on Visitor Survey)

A visitor survey was undertaken at Freiston Shore between August 2003 and April 2004 (RSPB, 2004). This showed that most visitors are local (i.e. from Lincolnshire), but that a considerable proportion of day trippers come from the East Midlands more generally. Information on expenditure on petrol allows an estimate to be made of the average distance travelled to the site (the visitor survey does not record time spent travelling to the site or distance). Average spend per party on fares and petrol is £14.67. If it is assumed that average fuel consumption is 7.5 l/100km (38 mpg) and the price of a litre of petrol is £0.80, the distance travelled (one-way) can be estimated at 120km¹. This seems a relatively long way but correlates very well with the locations from which people have travelled (with small numbers of visitors travelling very long distances, e.g. from the North-West, from the West Midlands, from East Anglia and from the South East).

The visitor survey for Freiston Shore also showed that most visitors were local (59%), compared with 22% who were day trippers and 18% who were holiday makers. It is most likely to be day trippers who have travelled the furthest to reach the site (with holiday makers generally staying near to site or making a day trip from another location (but which is closer than their home).

¹ Fuel consumption of 7.5 l/100km (38 mpg) may be an under-estimate, but is considered a reasonable approximation given the nature of many of the roads. If a greater fuel efficiency is used, the distance travelled to Freiston Shore increases, making this a conservative assumption. For example, 6.5 l/km (42 mpg) would give an average distance travelled of around 140km.

Step 2: Distances Travelled to Cuckmere (Based on Visitor Surveys)

As a comparison, the average distance travelled by visitors to Cuckmere can also be estimated. The Cuckmere visitor surveys did not ask how far people had travelled in kilometres, but in time. The average journey times to Cuckmere (from visitor surveys) are:

- summer 1997: 0.9 hours;
- winter 1997-1998: 0.6 hours; and
- summer 1998: 1.1 hours.

Assuming an average travelling speed of 40 km/hr (estimate for rural area) gives distances from site of:

- summer 1997: 36 km;
- winter 1997-1998: 24 km; and
- summer 1998: 44 km.

Step 3: Comparison of Distances Travelled to Freiston Shore and to Cuckmere

This is much less than the 120km calculated for Freiston Shore. However, Freiston Shore is thought to attract such a large number of visitors because there is a lack of nature-watching sites in the area and because of the attraction of features such as the lagoon which attracts breeding avocets. Cuckmere is located on a stretch of coastline that is dominated by cliffs. The South Downs Way provides access to the cliffs and provides an important recreational resource. However, it is not a specific nature-watching site as such. The nearest important bird areas are located at Pagham Harbour, Pevensey Levels, Dungeness to Pett Levels along the Sussex coast or The Swale and Medway Estuary and Marshes in North Kent. There is also an RSPB reserve at Pulborough Brooks. Thus, the alternative sites to Cuckmere for nature-watching appear to be a similar distance as the alternatives from Freiston.

Step 4: Division of Visits to Freiston Shore into Local, Day Trippers and Holiday Makers

Of the 60,000 visits to Freiston Shore in 2003-2004, 59% were made by locals, 22% were made by day trippers and 18% were made by holiday makers. Thus, they can be subdivided into:

- 35,400 local visits;
- 13,200 day trips; and
- 10,800 holiday maker visits.

The number of people visiting the site can be estimated by dividing the number of visits by average number of visits per person. The Freiston Shore visitor survey breaks down number of visits by type of visitors such that:

- local visitors make an average of 6.7 trips each to Freiston Shore per year;
- day trippers make an average of 3.2 trips each to Freiston Shore per year; and
- holiday makers make an average of 2.4 trips each to Freiston Shore per year.

Thus the number of *people* visiting Freiston Shore can be estimated at (from number of visits divided by number of visits per person):

- 5,280 locals;
- 4,125 day trippers; and
- 4,500 holiday makers.

Local visitors are taken to be those living in the District of Boston (total population of 55,750 from the 2001 Census data). This indicates that around 9% to 10% of the local population visits Freiston Shore each year. The population within 120km can be estimated at around 8 million (again based on the 2001 Census data). If both day trippers and holiday makers are assumed to travel from this distance to the site, the proportion of the population visiting Freiston Shore can be estimated at 0.1%.

Step 5: Division of Visits to Cuckmere into Local and Non-Local

At Cuckmere, there are an estimated 500,000 visits to the site at present. These can be divided into local and non-local visitors by using the distances travelled to the site. If it is assumed that stating they had ‘travelled for less than half an hour’ are local, the division of visitors is (note: all figures used are an average across the three visitor surveys):

- local: 40%, or 200,000 local visits; and
- non-local: 60%, or 300,000 non-local visits.

The average number of trips by visitor type is (based on the Visitor Survey information):

- local visitors make an average of 6.8 trips each to Cuckmere each year; and
- non-local visitors make an average of 2.8 trips each to Cuckmere each year.

Thus the number of *people* visiting Cuckmere Haven can be estimated at:

- 29,000 locals; and
- 107,000 non-locals.

The distance at which visitors still consider themselves ‘local’ is not known. However, the assumption that those travelling from less than half an hour are local suggests that a distance of around 20km (12 miles) may be appropriate as an indication of the distance from which local visitors travel (i.e. 30 minutes based on an average speed of 40 km/hr). The approximate population living within 20km of Cuckmere is 240,000. Thus, the proportion of local people that visit the site can be estimated at around 12%.

Non-local visitors appear to travel from between 20km and 40km (25 miles). This includes the rest of East Sussex as well as some of West Sussex and Kent. The estimated

additional population (again based on the 2001 Census data) is 1.1 million. Thus, the proportion of people living between 20km and 40km of Cuckmere that visit the site is around 10%.

These proportions of total population are higher than for Freiston Shore, but the distances travelled to the site are much less. This indicates that there is a much less specialised use of Cuckmere than Freiston. Following managed realignment, therefore, there may be potential for the site to attract visitors from further afield; potentially up to 120km as seen at Freiston Shore. If this were the case, the loss of any local/non-local visitors could be compensated for by visitors from further away. There are indications that realignment could result in a much more varied tidal and intertidal zone, possibly including tidal lagoons, which could result in enhanced habitat for birds and invertebrates.

Step 6: Estimate of the Number of New Visitors that Could be Attracted to Cuckmere

If it is assumed that visitors are attracted at the same proportion as for Freiston, i.e. 0.1% of the population from up to 120km, then the number of potential additional visitors to Cuckmere can be estimated. The population between 40km and 120km from Cuckmere is estimated at 14.1 million (based on the 2001 Census data). This gives a potential additional 14,100 *people* visiting the site. If each day tripper makes 3.2 trips (as at Freiston for those travelling up to 120km to the site), there could be 45,000 additional visitors.

2.2.5 Estimating the Potential Change in Visitor Numbers

Scenario 1: All Visitors Walking to the Beach are 'Lost'

An additional 45,000 visitors attracted from further away would considerably reduce the number of visits 'lost' over an annual period, assuming that all those visitors who wish to walk to the beach are lost:

- visits lost (Summer 1997 to Winter 1997/1998): 91,000 (from 81,000 + 55,000 – 45,000); and
- visits lost (Summer 1999 plus Winter 1999/2000 (assumed same as Winter 1997/98): 38,000 (28,000 + 55,000 – 45,000).

Scenario 2: Loss of Visitors Walking to the Beach who Stay Less than One Hour

Again an additional 45,000 visitors attracted from further away would considerably reduce the number of visits 'lost' over an annual period, assuming here that those visitors who wish to walk to the beach and wish to stay for less than one hour are lost:

- visits lost (Summer 1997 to Winter 1997/1998): -29,300 (from 11,700 + 4,000 – 45,000); and
- visits lost (Summer 1999 plus Winter 1999/2000 (assumed same as Winter 1997/98): -37,000 (4,000 + 4,000 – 45,000).

Therefore, if it is assumed that only those visitors who wish to walk to the beach during a stay of less than one hour are lost, there is a potential gain in the number of visitors of 29,000 to 37,000.

Comments on the Calculations

The number of visits lost under Scenario 1 is an over-estimate since an accessible beach will remain, thus there would still be the potential to walk to the beach following managed realignment. Some visitors could make use of the car park at South Barn Hill to offset the increased distances to the beach following realignment. It is also unclear from the responses to the visitor surveys how many people visited the site with the specific intention of going to the beach and how many walked to the beach because there is a path allowing them to do so (the question asked was 'which of these other activities will you be doing here today' of which one possible response was 'walk to the beach through valley'). Furthermore, taking a greater fuel efficiency for visitors to Freiston Shore indicates that people travel from further than 120km for specialised use of a site.

The number of visits lost under Scenario 2 may be an under-estimate if there is a significant proportion of visitors that come to Cuckmere for its current landscape value. No question on the attractiveness of the landscape were included in the visitors surveys. Managed realignment is likely to result in a change to mudflat/saltmarsh which may be perceived as less attractive by some (but more attractive by others). It is not possible to estimate the impact of a change in landscape on visitor numbers with the current information available. The impact of managed realignment on the attractiveness of the site could be addressed through the use of future visitor surveys.

2.3 Potential Economic Change

Scenario 1: All Visitors Walking to the Beach are 'Lost'

The Visitor Surveys for Cuckmere ask how much each visitor would spend during their visit. This information is used as the basis for estimating the potential reduction in spend if visitors walking to the beach are 'lost':

- 'lost' spend from loss of 81,000 beach visits in Summer 1997 at £2.35 per trip: £190,000 per summer;
- 'lost' spend from loss of 55,000 beach visits in Winter 1997/98 at £1.56 per trip: £86,000 per winter; and
- 'lost' spend from loss of 28,000 beach visits in Summer 1999 at £3.21 per trip: £90,000 per summer.

This would give 'annual' losses of:

- 'lost' spend from Summer 1997 to Winter 1997/98: £276,000; and
- 'lost' spend from Summer 1999 to Winter 1999/2000 (based on Winter 1997/98): £176,000.

However, an additional 45,000 visitors per year are assumed to be attracted to the site to watch the wider range of birds attracted to the mudflat/saltmarsh following managed realignment. Evidence from RSPB reserves and more general literature on wildlife tourism suggests that people who visit a site to watch wildlife tend to spend more money per trip than those visiting a site for beach use. Average spend at RSPB reserves, including Pulborough, was found to be £3.82 per visitor (Shiel *et al*, 2002); this is taken here as between £3 and £4 to reflect uncertainty. Assuming each visitor would spend, on average, £3 to £4 per visit, giving an additional income of £135,000 to £180,000.

Thus under Scenario 1, income at the site could decrease by £141,000 or increase by £4,000 per year, depending on the year and spend used.

Scenario 2: Loss of Visitors Walking to the Beach who Stay Less than One Hour

Information from the visitor surveys on spend is again used as the basis for estimating the potential reduction in spend if visitors walking to the beach are ‘lost’:

- ‘lost’ spend from loss of 11,700 beach visits in Summer 1997 at £2.35 per trip: £27,500 per summer;
- ‘lost’ spend from loss of 4,000 beach visits in Winter 1997/98 at £1.56 per trip: £6,200 per summer; and
- ‘lost’ spend from loss of 4,000 beach visits in Summer 1999 at £3.21 per trip: £12,800 per summer.

This would give ‘annual’ losses of:

- ‘lost’ spend from Summer 1997 to Winter 1997/98: £34,000; and
- ‘lost’ spend from Summer 1999 to Winter 1999/2000 (based on Winter 1997/98): £19,000.

Assuming each of the additional 45,000 visitors would spend, on average, £3 to £4 per visit, gives additional income of £135,000 to £180,000.

Thus under Scenario 2, income at the site could increase by £100,000 to £160,000, depending on the year and spend used.

Comments on the Calculations

There is considerable uncertainty within these calculations due to the type of data available, uncertainty within the source data and uncertainty within the assumptions that have had to be made to take account of missing information. The range of numbers of visitors ‘lost’ or gained reflects the level of uncertainty. To understand how many visitors could be ‘lost’ before the businesses face a loss in income, it is necessary to consider when the additional spend by ‘new’ visitors is outweighed by the reduction in spend from ‘lost’ visitors. Using spend of £3 per ‘new’ visitor attracted to the site following realignment would give additional income of £135,000 per year (divided into 68% in summer and 32% in winter). Using average spend from the visitor surveys

suggests that the number of visitors ‘lost’ from Cuckmere would have to be as follows to result in lost income to the businesses:

- Summer 1997 average spend of £2.35 per trip: 39,000 visits would have to be lost; (or 11% of all trips to the site in Summer 1997)
- Winter 1997/98 average spend of £1.56 per trip: 28,000 visits would have to be lost (or 17% of all trips to the site in Winter 1997/98); and
- Summer 1999 average spend of £3.21 per trip: 29,000 visits would have to be lost (or 9% of all trips to the site in Summer 1999).

If spend by ‘new’ visitors was £4, the additional income following realignment is estimated to be £180,000 per year. Under this assumption, the number of visitors ‘lost’ to Cuckmere would have to be greater than those calculated above to result in lost income to businesses:

- Summer 1997 average spend of £2.35 per trip: 52,000 visits would have to be lost; (or 15% of all trips to the site in Summer 1997)
- Winter 1997/98 average spend of £1.56 per trip: 37,000 visits would have to be lost (or 23% of all trips to the site in Winter 1997/98); and
- Summer 1999 average spend of £3.21 per trip: 38,000 visits would have to be lost (or 12% of all trips to the site in Summer 1999).

Shiel *et al* (2002) gives average spend per visitor at Pulborough Brooks of £3.82, suggesting the number of visits that could be lost before there are financial losses to the businesses at Cuckmere Haven may be closer to those calculated using a £4 spend.

There would also be additional benefits from managed realignment, however, that are not included in the monetary estimates, in that the number of visitors should be spread more evenly throughout the year, with the potential that many of the extra 45,000 specialised visitors would come in the winter to watch over-wintering birds. This would ease some of the parking and overcrowding problems currently experienced as well as reduce the seasonality of income to the local area.

Furthermore, Cuckmere would be a major addition to the geographical spread of muddy inter-tidal habitats, filling a distinct gap between Pagham Harbour and the Swale/Medway, so it may prove to be rather more important as a new ‘local site’ for birdwatchers in the South East that would otherwise go to the estuaries of the Solent or Thames.

This suggests that income lost from those visitors that choose not to visit Cuckmere because of the changes to the site following managed realignment may be more than compensated for by additional income from birdwatchers, with this being distributed more evenly throughout the year.

2.4 Managing Potential Change

From the visual inspection at the time of the site visit, the importance of well defined and accessible routes within the Country Park are obvious. One of the concerns with the restoration project is the loss of the concrete road and the existing beach. Very careful consideration will have to be given to the replacement of footpaths and infrastructure, such as bird hides, to maximise the potential of the new environment, both to maintain the interest of current visitors and to attract new, specialised visitors from further away. Additional/better facilities could also be provided for those enjoying the view from the western side of the site.

Impacts relating to access to the beach could be a disincentive to visit the site by some groups of visitors and ways that this facility could be enhanced for visitors are considered in Section 3. There may also be potential benefits from the changing estuary forming a valuable teaching resource and more visits by school groups could be envisaged. This is also considered in Section 3.

3. EDUCATIONAL BENEFITS AND PROVISION OF A BEACH FACILITY

3.1 Educational Benefits

Managed realignment at Cuckmere Haven would provide opportunities for studying a rapidly changing environment. There would be the flow dynamics associated with the river and the sea, the development and succession of mudflat, saltmarsh and grazing marsh habitats and the potential to monitor changing use of the site, both by birds and animals as well as obtaining data on people's perceptions.

Many of these changes would fit in with specific aspects of the National Curriculum. For geography, there are a number of different key stages that could be directly linked to an educational resource at Cuckmere Haven. This includes:

- Key Stage 2:
 - water and its effects on landscapes and people, including the physical features of coasts and the processes of erosion and deposition that affect them;
 - environmental issues, caused by change in an environment (could include the decision to undertake managed realignment); and
 - carry out fieldwork investigations outside the classroom
- Key Stage 3:
 - geomorphological processes and their effects on landscape and people;
 - ecosystems – how physical and human processes influence vegetation;
 - effects of environmental planning and management on people, places and environment (for example, managing coastal retreat); and
 - carry out fieldwork investigations outside the classroom.
- AS/A2 level:
 - a resource for fieldwork investigations on saltmarsh succession (including the opportunity to investigate initial colonisation following realignment) and mudflats.

There would also be opportunities for higher education (colleges, universities) to use the site for research in a wider variety of areas.

The potential can be seen by the use of an educational site at Gibraltar Point, Lincolnshire. This site is owned by Lincolnshire Wildlife Trust and has been used for (Lincolnshire Wildlife Trust, 2001):

- studies of coastal processes (saltmarsh and sand dune interaction, bird migration and monitoring);
- primary and secondary school courses in biological and geographical fieldwork, environmental studies and conservation;
- adult education courses organised by the University of Nottingham; and
- courses and facilities for special interest groups.

Gibraltar Point attracted 70,000 visitors to the Visitor Centre in 1999, with around 175,000 visitors to the site. Around 2,000 of these visitors were on educational day

visits, with a further 2,600 as residents (visitor days) at the Centre. It was recognised that there were opportunities for expansion of the educational facilities. Gibraltar Point is perceived as an important site, attracting visitors from all over the East Midlands.

There are currently no facilities available at Cuckmere Haven for residential stays, but the site could provide an educational resource for the area. There are few alternative sites along the south coast that offer similar features.

Some educational visits already take place at Cuckmere, however, the potential to study in a changing mudflat environment would be a new opportunity in the Cuckmere area. The potential benefits will need to be investigated through discussions with the local Education Authority, Universities, etc. but could be significant.

3.2 Continued Use of a Beach Facility

Modelling undertaken by Binnie, Black & Veatch (1998) suggests that removal of the training walls could result in the disturbance of the established areas of shingle vegetation. The river would also be allowed to oscillate its position naturally over time as happened before the training walls were constructed. This means that provided both sides of the valley are accessible to take account of the oscillations of the river mouth, there could still be a beach to which visitors could walk.

If the river mouth moves to the east, the beach on the west side will lengthen and people will be able to access this from a path down the western side. This may not be as popular or easy as it involves a walk from the car park along a path alongside the A259 across a bridge before reaching the path, but access to the beach will be possible. Consideration should be given, therefore, to construction of a new path away from the main road to maintain access to the beach along a safe route.

Use of the car park at South Barn Hill, Seaford (TV505980) is likely to increase as there is a shorter walk to the beach from it. This could have benefits in terms of reducing overcrowding in the Cuckmere car parks and encouraging visitor spend in Seaford.

4. CONCLUSIONS AND RECOMMENDATIONS

The suggested changes to the Cuckmere Valley to provide sustainable flood management within a more natural estuary will change the landscape and the present facilities enjoyed by visitors. However, if the change is properly managed there may be economic advantages to the area. This is predicted to arise because income lost from those visitors that choose not to visit Cuckmere because of the changes to the site following managed realignment may be more than compensated for by additional income from birdwatchers, with this being distributed more evenly throughout the year.

The two main areas of concern relate to the potential reduced access to the beach and loss of the concrete road, and the provision of new and/or different facilities must be very carefully considered as an integral part of the proposals. As the current beach is likely to change with the oscillations of the river mouth, it will be necessary to provide formal paths along both sides of the site to allow continued access and to encourage continued visitor usage of the site. The potential for a circular walk appears limited, but other facilities such as bird hides and picnic areas could be provided. The inclusion of tidal lagoons are likely to be an important feature to attract birdwatchers.

The Cuckmere Estuary and proposed changes are unique and it is therefore recommended that detailed visitor surveys are undertaken to obtain the views of existing and potential visitors. Specific questions should be asked regarding current and potential future use (including the main reason for visiting the site) and spend. Full descriptions of the changes together with photo montages, etc. should be used to ensure that there is a full an understanding as possible of what will be provided. While this will not provide data on the potential to attract new visitors to the site (particularly birdwatchers), it should provide a better basis for considering how many of the current visitors would choose to go elsewhere.

One way of identifying those people who may wish to visit Cuckmere could be to survey RSPB members. However, care is needed both when asking people what they intend to do (as it is often much easier to say you will visit somewhere than to actually go there!) and in interpreting the results.

5. REFERENCES

- Binnie, Black & Veatch (1998): **Cuckmere Haven Feasibility Study**, Final Report prepared for the Environment Agency, 1998.
- Bryden D (2002): **Quality of Wildlife Tourism Survey**, Inverness, Consultancy in Rural Development and the Environment.
- Chrysalis Market Research (1997): **Severn Sisters Country Park Summer Visitor Survey**, Research Report.
- Chrysalis Market Research (1997): **Severn Sisters Country Park Summer Visitor Survey**, Tabulations.
- Chrysalis Market Research (1998): **Severn Sisters Country Park Visitor Survey Winter 97-98**, Research Report.
- Chrysalis Market Research (1998): **Severn Sisters Country Park Visitor Survey Winter 97-98**, Tabulations.
- English Nature (nd): **Coastal Habitat Restoration – Towards Good Practice: Abbots Hall**, Summary downloaded from the English Nature Internet site (http://www.english-nature.org.uk/livingwiththesea/project_details/good_practice_guide/habitaterr/ENRestore/CHaMPs/EssexEstuaries/RealignmentSites/AbbotsHall/Summary.htm).
- Lincolnshire Wildlife Trust (2001): **Education and Community Action Project**, Support Document, December 2001.
- MarketVoice (1999): **Seven Sisters Visitor Survey Summer 1999**, Research Report.
- MarketVoice (1999): **Seven Sisters Visitor Survey Summer 1999**, Tabulations.
- RSPB (nd): **Saltmarsh: Restoration Requirements under the Water Framework Directive**, Annex 3: Economic Case Studies of Re-Alignment and Pers. Comm. (RSPB).
- RSPB (2004): **Freiston Shore Visitors' Survey**, RSPB Market Research Team, November 2004.
- Shiel A *et al* (2002): **RSPB Reserves and Local Economies**, report by the Economics Section/Reserves Management of the RSPB, October 2002.