



Current Economic Value of the Cuckmere Estuary, East Sussex

For East Sussex County Council

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1. Executive Summary

The Cuckmere Estuary is an important tourist attraction, designated for its natural beauty and biodiversity, and the many visitors support businesses and jobs in the surrounding area.

The old coastal and river flood defences in the Cuckmere Estuary are nearing the end of their useful lives. The Cuckmere Coastal Change Pathfinder Project (CCCPP) aims to work with the community in order to identify the best and most sustainable approaches for the long term management of the Cuckmere Estuary.

This is the report of Phase 1 of the economics research commissioned as part of the CCCPP aims to assess the contribution the Estuary makes to the local economy, in the immediate surrounding area and across the wider Sussex area. This contribution could potentially be at risk under certain flood risk management options that will be considered in Phase 2 of the research.

The economic contribution of the Estuary is estimated using three approaches: (i) through a visitor survey (Tourism South East, 2010) revealing visitor expenditure; (ii) a survey, undertaken for this research, of local businesses' turnover, employment and dependence on visitors to the Cuckmere Estuary; and (iii) separate assessment of the value of agriculture.

Based on data gathered in the visitor survey (Tourism South East, 2010), with some additional assumptions and data, the total annual spend associated with visits to the site can be estimated at approximately £4,750,000 in 2010, of which £3,850,000 is spent in the area within 8 miles of the Estuary. These are approximate figures, and uncertainty over the actual number of visitors means the total expenditure values could be as low as £3 million, or as high as £5.2 million.

A questionnaire was sent to 33 local businesses with connections to the visitor economy, followed up with phone calls. Of the 26 (79%) that replied, most consider themselves moderately to highly dependent on visitors to the Cuckmere Estuary. 22 businesses told us how many people they employed, and 16 revealed their turnover figures. Based on these figures, we estimate that these 26 businesses derive £3,780,000 per year from tourism expenditure. This expenditure supports approximately 96 full-time equivalent jobs; this is composed of full-time, part-time and seasonal jobs, so many more than 96 people gain employment income because of the visitors' expenditure.

Data from Experian give a total of 77 tourism-industry establishments in the immediate local area. Clearly, had we been able to speak to all these businesses, the estimates for turnover and employment would have been higher, and greater than the estimates based on visitor expenditure: as high as £11 million. The main reason is that, where overnight stays are involved, businesses will consider the full length of a visitor's stay as relating to the Cuckmere area, whereas in the expenditure estimates we consider only a single night as directly Cuckmere-related. Other possible reasons could be that businesses overestimate their

dependence on Cuckmere visitors, or that visitors underestimate their expenditure. Overall, the business survey figures lend support to considering the visitor expenditure figures as conservative estimates.

The figures above do not account for the costs of intermediate consumption involved in producing the goods and services bought. Making an adjustment for costs, the net impact on the local economy is a little under £1.6 million per year, with an additional £400,000 net benefit to the wider Sussex economy.

We also spoke to the two farmers using the 79 hectares of land within the focus area of the Cuckmere Estuary (South of the A259). The value of this agriculture is estimated very approximately as £20,000 per year.

This first phase of research suggests that the Cuckmere Estuary is providing important economic value for the local area, around £4 million per year in income and £1.6 million per year net benefit after accounting for costs, and supporting 100 jobs or more. The second phase of research will assess the likely impacts on these economic values of the different future options for the management of the Cuckmere Estuary.

2. Introduction

The Cuckmere Coastal Change Pathfinder Project (CCCPP) aims to work with the community in order to identify the best and most sustainable approaches for the long term management of the Cuckmere Estuary.

The Cuckmere Estuary in East Sussex is changing, with potential impacts on the local community, visitors, property and land owners, businesses as well as the landscape and habitats of the area. The Cuckmere Coastal Change Pathfinder Project (CCCPP) aims to work with the community in order to identify the best and most sustainable approaches for the long term management of the Estuary. The project is one of 15 funded by Defra under the “Coastal Change Pathfinders” initiative, involving local authorities selected to explore new ways of adapting to and planning for coastal change, in partnership with their local communities.

Over the 16 months of the CCCPP, East Sussex County Council has been working and will continue to work with the local community and stakeholders to develop a consensus on preferred solutions for the Estuary’s future management, taking into account the views of visitors to the area.

As part of this programme, CCCPP has commissioned eftec to carry out research to examine:

1. The current economic benefit Cuckmere Estuary brings to the local area (Phase 1), and
2. The economic costs and benefits associated with a range of management options for the estuary (Phase 2).

This report covers the **Phase 1** of this research programme, focusing on the current economic benefit from the Cuckmere Estuary area. The report sets out the situation at Cuckmere and the rationale for the research, and presents the findings, along with an assessment of key uncertainties, and a look forward to the second phase of the research. Key data sources are discussed briefly in Annex 1, the questionnaire for businesses is presented in Annex 2 and notes for the interpretation of data and estimates are provided in Annex 3.

3. The Cuckmere Estuary

The Cuckmere Estuary is an area of low-lying agricultural land on the south coast, important to the local tourism industry and designated for its natural beauty and biodiversity.

The Cuckmere Estuary lies on the south coast of East Sussex, between Eastbourne and Seaford, south of the A259 at Exceat. Figure 1 below shows an aerial view of the Estuary, with the area of particular interest for this study roughly outlined.



Figure 1: Cuckmere Estuary seen from the air, looking south-east (source: adapted from CCCPP website).

The area is covered by several designations for nature conservation and natural beauty, including:

- Site of Special Scientific Interest;
- Local nature reserve;
- Part of the South Downs Area of Outstanding Natural Beauty;
- Part of the national Heritage Coastline;

- Part of Seven Sisters Country Park; and
- Within South Downs National Park.

The Cuckmere and surrounding areas attract thousands of visitors every year, in particular engaging in walking and dog-walking, and also cycling and canoeing. Figure 1 shows the low-lying estuary area, including the canalised part of the river, and above that, the old meanders that form one of the main attractions. Other attractions include, for example, bird-watching, access to the beach, and views of the chalk cliffs (the Seven Sisters), especially from the Coastguard cottages just to the west of the river mouth. The visitor survey (Tourism South East, 2010) gives details on proportions of visitors enjoying specific features of the area.

4. Economic activities¹

The Cuckmere Estuary is an important tourist attraction and the many visitors support businesses and jobs in the surrounding area. There is also some agricultural value, but no industrial or residential areas at direct risk of inundation, although the Coastguard cottages are at risk from coastal erosion.

As can be seen from Figure 1, the Estuary area is primarily agricultural land. The floodplain on both sides of the Cuckmere River is leased to tenant farmers and used for sheep and cattle grazing. The SEA states that the Defra Agricultural Land Classification (ALC) of the areas at risk of inundation is Grade 4 (Poor)² (EA, 2008a). This grade refers to “land with severe limitations due to adverse soil, relief or climate, or a combination of these” and this applies to the poorly drained silt clay soils in the Estuary area. Grade 4 land is suited to low-output agriculture: here, the land is used for light grazing for sheep and cows.

The main economic value arising from the area is associated with tourism and recreation. The Estuary is managed as a country park, with a visitor centre providing information about the wildlife, geology and history of the area, and about local events and activities. The visitor centre houses a Tea Room and bed-and-breakfast facilities. Bicycles can be hired from the Cuckmere Cycle Company, based in the visitor centre complex. The expenditure of the tourists attracted to Cuckmere is an important source of income for these businesses, and also for many businesses in the surrounding area.

The eastern side of the Estuary is the most heavily used by tourists and families, with an easy access track from the road to the beach, suitable for bicycles, prams and wheelchairs. Bathing waters at Seaford (to the west of the study area) and Birling Gap (to the east of the study area) are designated under the EC Bathing Water Directive (76/160/EEC). The SEA report notes that “The quality of these bathing waters was classified by the Environment Agency as ‘excellent’ in 2005.”

¹ These notes draw, inter alia, on <http://www.cuckmere.org.uk/estuary/land-use-and-tourism/>

² One of the farmers told us the land he rented was Grade 2, and the most fertile on the farm, however it is still used for grazing purposes.

Footpaths along the river banks and around the western floodplain provide a quieter route for keen nature watchers and tend to be more popular with local people and dog walkers. The Golden Galleon pub can be used as a start and end point for a circular walk around the western side of the estuary.

To the south of the visitor centre, a canoe barn is run as an educational facility and supports an active local club. The meanders provide ideal conditions for the beginner, whilst the river and open sea are available for those with more experience.

To the best of our knowledge, there are at present no other economic activities in the Estuary area. It was in the past used for gravel abstraction, but this ceased in 1952. Materials are still used within the system, being dredged by the Environment Agency to clear the river mouth and nourish the beach, but there is no extraction for sale. There are no licensed water abstractions in the area. (EA, 2008a).

There are no dwellings susceptible to flooding in the area, but the Coastguard Cottages on higher ground to the west of the river mouth are at risk due to coastal erosion. Their property value was not relevant to this type of study³, so has not been included.

5. Scope of this study

This study aims to assess the contribution the Estuary makes to the local economy, in the immediate surrounding area and across the wider Sussex area, focusing on the existing situation.

The scope of the assessment is to focus on the economic benefits of the Cuckmere Estuary to the 'local area'. 'Local' could be defined in different ways. Clearly it must go beyond the actual boundaries of the Estuary area, because there are no human settlements actually inside the area (other than the Coastguard cottages and Foxhole cottages).

This report depends heavily on the visitor survey data (Tourism South East, 2010; see below) and we consider the local area in two ways:

- The approximate area shown in Map 3 from question 12 of the visitor survey. This was shown to respondents to define 'local', corresponding to very approximately an 8 mile radius⁴ round the Estuary, and
- A broader definition, taking into account visitor expenditure outside this area. Most of this additional expenditure is in places such as Eastbourne or Brighton and so remains local in the broader Sussex sense.

³ This report focuses on local economic activity, resulting in wages and profits: residential housing falls outside this scope.

⁴ The map (Map 3 in the survey) was roughly square, with Cuckmere slightly off-centre, so a precise radius cannot be specified. The map extended to parts of Lewes, Newhaven, Polegate... but not quite as far as Eastbourne.

For agricultural values, we consider only the land south of the A259. The overall intention is to consider the economic values from agriculture and tourism that could *potentially* be at risk under certain flood risk management options.

The economic contribution of the Estuary is estimated using three approaches:

- (i) A visitor survey (Tourism South East, 2010) revealing visitor expenditure (Section 6);
- (ii) A survey, undertaken for this research, of local businesses' turnover, employment and dependence on visitors to the Cuckmere Estuary (Section 7), and
- (iii) Separate assessment of the value of agriculture (Section 8).

6. Visitor expenditure estimates

Based on data gathered in the tourism survey (Tourism South East, 2010), with some additional assumptions and data, the total annual spend associated with visits to the site can be estimated to be approximately £4,750,000 in 2010, of which £3,850,000 is spent in the area within about 8 miles of the Estuary.

The Cuckmere area attracts a large number of visits every year. We do not know exactly how many visited in 2010: a visitor survey was carried out in two phases (summer and winter) in 2010 by Tourism South East. This provides valuable information on visitor characteristics and expenditure (see below) but was not designed to give estimates of *total* visitor numbers. There are earlier estimates of annual visitor numbers and we can draw on these to estimate current visit rates. These estimates are not exact visitor counts, and date back to the late 1990s and mid-2000s. But they are the best figures available, and suffice to give a reasonable approximation of visitor numbers.

According to the project brief, approximately 460,000 people visit the Estuary every year, with approximately 60,000 of these visits including the Seven Sisters Country Park Visitor Centre. This estimate is based on information from the South Downs Joint Committee and from the study by RPA (2005), which in turn drew partly on survey estimates from the late 1990s of approximately 320,000-340,000 summer visitors and 160,000 winter visitors. RPA estimated some 450,000 to 500,000 people visit Cuckmere Estuary annually, and reported the Seven Sisters Country Park Manager estimate of 300,000 to 500,000. Information on the Seven Sisters website⁵ for 2002/3 to 2006/7 suggests an average of about 210,000 summer visitors (April to September) and 120,000 winter visitors (October to March), but this is based on automatic car park counters⁶ and therefore will underestimate total visits.

⁵ <http://www.sevensisters.org.uk/content/page/537/Annual%20visitor%20number%20comparisons.xls>
The numbers here are our calculated averages for summer and winter based on the monthly figures there.

⁶ Seven Sisters Country Park pers. comm.

The actual number of visitors, therefore, remains uncertain. Based on the information available, we will present results for a central estimate of 460,000, composed of 320,000 summer visitors and 140,000 winter visitors.

Over the entire survey period it was found that the majority of visitors were leisure day visitors (71%) who started their trip from home that day and returned home on the same day. Just under a fifth were on holiday (18%). Around 8% of all visitors were in the area visiting friends and family. A small proportion of visitors were visiting for either work-related reasons (1%) or for education-related reasons (2%). In this report, we do not break down expenditure according to these categories, but rather focus on the average (mean) spend per head, across the entire survey, split into summer and winter components⁷. These estimates are then multiplied by the estimates of total visitor numbers for each season to give a total estimated annual spend. Table 1 provides details on the calculation and a breakdown of visitors' expenditure over the year 2010. Further details on some assumptions and issues arising are presented in Annex 3.

Table 1: Visitor expenditure calculations: spend per year (based on 2010 data)					
Activities	Spend per visitor		Total for season		Total for year
	Summer	Winter	Summer	Winter	
Immediate area					
Visits to site			320,000	140,000	460,000
Eating & Drinking (local cafes, restaurants, but not pubs)	£2.02	£1.68	£645,322	£234,944	£880,265
In local pubs	£2.89	£2.71	£926,182	£379,403	£1,305,585
Local shops	£0.81	£1.39	£258,278	£195,083	£453,361
Entertainment (inc. canoe launch, cycle rental, etc)	£0.56	£0.00	£178,022	£0	£178,022
Travel/ transport costs (inc fares, parking charges)	£1.90	£1.37	£608,192	£191,800	£799,992
Overnight stays (local area)	£2.17	£1.49	£173,339	£62,468	£235,808
Total (immediate area)			£2,789,336	£1,063,698	£3,853,034
Elsewhere					
Expenditure elsewhere (outside local area, but mostly in East Sussex)	£0.53	£0.46	£170,481	£64,925	£235,406

⁷ We make separate calculations for summer and winter visitors because there is information from two separate expenditure surveys (showing that the expenditure characteristics are different for summer and winter visitors) and we have separate estimates for the numbers of summer and winter visitors.

Overnight stays elsewhere			£520,018	£141,875	£661,893
Total (all expenditure: immediate area and elsewhere)			£3,479,835	£1,270,298	£4,750,333

Source: our calculations based on data from Tourism South East (2010, 2011).

It should be kept in mind that these results are based on uncertain estimates of visitor numbers. We have assumed 460,000 per year: RPA (2005) states 300,000-500,000. Using RPA's range suggests that the value figures could be as low as £2.5 million per year (immediate area) and £3 million (wider area); or as high as £4.2 million (immediate area) and £5.2 million (wider area), depending on the actual number of visitors to the area.

7. Evidence from businesses in the Cuckmere area

The local businesses who responded to our questionnaire mostly consider themselves moderately to highly dependent on visitors to the Cuckmere Estuary. They estimate on average 60% of the turnover of these businesses depends on Cuckmere tourism, which would equate to £3,780,000 per year and 96 full-time equivalent jobs for the 26 businesses responding. Data from Experian list 77 establishments in the immediate area, and had we been able to contact them all, the total figures would be higher. The main reason for this is that businesses will consider the full length of a visitor's stay as relating to the Cuckmere area, whereas in the expenditure estimates we consider only a single night as directly Cuckmere-related. The business survey results lend support to considering the visitor expenditure estimates as conservative estimates of total value.

Tourism and retail businesses in the local area around the Cuckmere Estuary, and further afield in Eastbourne, Brighton and Hove, and other areas, benefit from visitors to Cuckmere.

The visitor survey results cover evidence for the overall economic impacts that tourism and recreation in the Cuckmere area has on the wider area within which these businesses are located. This can be complemented with information from the businesses that are dependent, to greater or lesser degrees, on this expenditure.

To this end, a questionnaire was developed and circulated to a sample of businesses from the immediate local area, within about 4 miles, a second sample from Eastbourne, and to all commercial accommodation establishments named in the visitor survey. Evidence sought from the questionnaire included:

- Estimation of the extent to which different businesses are dependent on Cuckmere tourism;
- Determination of how the turnover of the businesses breaks down into costs of different sorts (including depreciation), taxes, and profits;

- Determination of the employment and wages/salaries supported by the businesses; and
- The proportion of input cost spent with suppliers in the East Sussex area.

No replies were received from outside the immediate area (i.e. from the Eastbourne survey and from the named accommodation establishments outside the local area, most of which were also in Eastbourne). We did not invest resources in pursuing these initial contacts, but rather focused on the sample from the local area.

A total of 33 questionnaires were sent to businesses in the immediate local area⁸. This was based on a stakeholder map developed by Hopkins van Mil for the CCCPP, plus five additional establishments identified via the visitor survey.

To check the size of our sample in comparison to the total number of businesses, we checked with data from Experian, a leading provider of commercial data, via their Business to Business Prospector service. We searched for tourism-related businesses within postcodes BN09, BN10, BN20, BN25 and BN26, and then removed those addresses that fell outside the local area as defined on the map in the visitor survey. In total we found 94 establishments in this area, including 35 restaurants and 26 pubs.

Within the Seaford-Alfriston-East Dean area, approximately a 4 mile radius from the Cuckmere Estuary, there are 77 establishments listed in the Experian dataset. This area is where we would assume the largest share of the expenditure directly from Cuckmere tourists would take place. Our sample of 33 businesses from this area is therefore a reasonably-sized sample. 26 businesses, or 79%, answered either the full questionnaire or a shorter telephone version. This is an excellent response rate.

Not enough businesses were willing to answer our questions on costs, expenditures and salaries of the businesses for us to draw firm conclusions on these areas, so we need alternative methods to take costs into account (see Section 9 below).

The responses to the questionnaire are summarised in Table 2 (also including the full replies). In order to preserve the strict anonymity we promised respondents, we do not present specific locations and give only approximate equivalents to the estimated employment and turnover figures they gave.

⁸ Not counting the two farmers: see section 8 on Agriculture.

Table 2: Summary of responses to business questionnaire (anonymised figures. We have used the exact values given to us for all calculations).

Business Type	Dependence on visitors to the Cuckmere Estuary?	Employment (in FT equivalent)	Annual Turnover bracket
Recreation	Completely (90-100%)	3-10	£100,000-£500,000
Cafe/Restaurant	Completely (90-100%)	3-10	
Shop	Completely (90-100%)	below 3	Below £100,000
B&B/Guest House	Highly (70-90%)	below 3	Below £100,000
B&B/Guest House	Highly (70-90%)	below 3	Below £100,000
Recreation	Highly (70-90%)	Volunteers	
Accommodation	Highly (70-90%)	below 3	Below £100,000
Hotel	Highly (70-90%)	Over 20	Over £1 million
Pub/Inn	Highly (70-90%)	Over 20	Over £1 million
Cafe/Restaurant	Highly (70-90%)	below 3	Below £100,000
B&B/Guest House	Moderately (30-70%)	3-10	£100,000-£500,000
B&B/Guest House	Moderately (30-70%)	3-10	£100,000-£500,000
Cafe/Restaurant	Moderately (30-70%)	10-20	
B&B/Guest House	Moderately (30-70%)	below 3	Below £100,000
Hotel	Moderately (30-70%)	below 3	Below £100,000
Pub/Inn	Moderately (30-70%)	10-20	
Pub/Inn	Moderately (30-70%)	Over 20	Over £1 million
B&B/Guest House	Slightly (10-30%)	below 3	
Hotel	Slightly (10-30%)	below 3	Below £100,000
Hotel	Slightly (10-30%)	3-10	
Cafe/Restaurant	Slightly (10-30%)	10-20	
Shop	Slightly (10-30%)	3-10	£100,000-£500,000
Shop	Not at all		
Shop (online)	Not at all		
Cafe/Restaurant	Not at all		
Cafe/Restaurant	Not at all		
B&B/Guest House	Refused		
B&B/Guest House	Refused		
B&B/Guest House	Refused		
Accommodation	Refused		
Cafe/Restaurant	Refused		
Accommodation	Unable to contact		
Cafe/Restaurant	Unable to contact		

The results of the phone interviews suggest that most of the businesses we contacted in the area consider that they are moderately to highly dependent on Cuckmere visitors.

The businesses that gave us both turnover and employment estimates had an average annual turnover per full-time equivalent job of approximately £33,000. We used this estimate to construct turnover estimates for the businesses who gave us a figure for employment but did not reveal their turnover.

The total turnover estimate for the businesses that reported turnover is £4,567,000 per year. For the businesses who gave only an employment figure, we estimate total turnover of £1,303,500 per year. But not all of this can be considered as income deriving from Cuckmere visitor expenditure. We estimated the proportion of income deriving from visitor expenditure using the mid-points of the businesses' stated estimates of how much they depended on Cuckmere visitors (the second column in the table above).

By this method, we reach a total estimated Cuckmere-visitor-derived income for these businesses of £3,780,000 per year. This does not include any estimates for the five businesses that refused to complete the survey, or the two we could not contact, or the businesses that are not included in our sample. This suggests that, had we been able to speak to all the businesses in the area, the total would have been substantially higher. It is not possible to say with precision how much higher: extrapolating linearly from 26 to 77 would imply a little less than 3 times greater, or about £11 million.

Applying the same method to the employment estimates, we calculate that approximately 96 full-time equivalent jobs are supported by this expenditure. The total number of people employed will be higher, because many of the businesses use part-time and/or seasonal workers. Again, had we been able to speak to all the businesses in the area, the total would have been substantially higher.

Comparing the estimates presented here with those for local expenditures estimated via the visitor survey in Section 6 (£3,850,000) is difficult. Firstly, the figures estimated here relate only to a sample of businesses, and had we spoken to all businesses we the figures would have been higher. Secondly, the areas represented by the business sample and the 'local area' as defined in the visitor survey are not identical.

So we would not expect figures derived from such different methods to match. The visitor expenditure estimates rely on visitors reporting accurately their expenditure in the local area, and on our assumptions about visitor numbers. The business turnover figures rely in particular on businesses accurately estimating the proportion of their turnover that comes from Cuckmere visitors.

There are four main reasons why the total estimated by surveying all businesses would be higher than that estimated through visitor expenditures.

- One is that businesses may be overestimating the extent to which their turnover depends on Cuckmere visitors: tourists using the business may in fact be visiting some other area.
- A second is that accommodation businesses (hotels, guest houses, B+Bs...) very likely consider the whole value of a guest's stay when reporting their dependence on Cuckmere visitors, whereas in our estimates based on visitor expenditure we consider only one night as relating directly to a Cuckmere Estuary visit.
- A third is that visitors may be underestimating how much they actually spend: they were asked on-site how much they *expected* to spend on the trip, and may well have underestimated how much they would in fact spend on drinks and food at the end of the trip.
- And the fourth is that the number of visitors may be underestimated.

We think the fourth reason is not very likely: although there is uncertainty about the exact number of visitors, the range of 300,000-500,000 is well supported by the data that are available. There is in all likelihood an element of each of the other three reasons at play. The most important is probably the second one, because for visitors staying overnight the median length of stays is 5 nights, and the mean 7.8 nights (Tourism South East, 2011). Our estimates of total expenditure on accommodation in the local area, based on a considering a *single* night as directly related to the Cuckmere, totals £236,000 per year. If the businesses consider about 7 times this value, based on *total* nights stayed, that would come to £1.6 million. It is also likely that businesses will be counting additional non-accommodation expenditures (notably food and drink) associated with these longer stays. This could explain a fair proportion of the discrepancy between the business survey figures and the visitor expenditure estimates.

Taking all these factors into consideration, we conclude that the level of Cuckmere-dependent turnover reported by the businesses gives support to the visitor expenditure estimates, and suggests that, if anything, the expenditure figures may be underestimates, for the third reason given above.

8. Agricultural values

The value of agricultural activity on the focus area of the estuary (South of the A259) is estimated very approximately as £20,000 per year.

Flood management appraisal guidance ("the Multi-Coloured Manual", FHRC 2006a and b) gives different methods for valuing impacts on agriculture depending on the type and duration of impact. Land that is permanently lost to agriculture is valued at 65% of market value - the reduction is made to account for the impact of agricultural subsidies on land values.

For this assessment, we focused on the land south of the A259 which could be impacted under management options. While the guidance recommends using 65%

of the market value of this land for permanent loss, for the purposes of assessing the economic value of the estuary in its current configuration, we are more interested in the annual flow of benefits from the land at present.

Further - arguably - the local focus of the analysis suggests that we should not make the deduction to account for agricultural subsidies. At the national level, such subsidies are a 'transfer payment', representing a benefit to the farmers but an equal cost to taxpayers and hence cancel each other (or not included in the analysis at all). However, at the local level, subsidies are an additional source of revenue for the local area and hence should be included in the local economic loss if land is lost to agriculture.

The total amount of agricultural land within the focus of this study is approximately 79 hectares. Some of the land is owned by the National Trust and some by East Sussex County Council. In both cases, it is let to tenant farmers and used for sheep and cattle grazing through part of the year: one farmer does this from approximately April to October, the other year round. The profitability of the grazing enterprise is variable, but we have no exact figures. In any case there are only two farmers involved and it would not be possible to present commercial figures and preserve confidentiality.

The value of the land is estimated by one of the farmers to be in the region of £7500 per hectare, and by the other at £5000 per hectare or lower. This suggests total land values for this area are probably around £400,000 to £500,000.

According to the Farm Business Survey report on Lowland Grazing Livestock Production in England (RBR 2010), lowland grazing livestock farms are the least profitable type of farming in the English lowlands. The average Total Farm Output for this type of farm is approximately £950 per hectare, of which about 40% comes via agricultural subsidies in the form of the single farm payment. After accounting for costs, the Farm Business Income, Defra's preferred measure for estimating farm profitability, is about £217 per hectare. This would imply a total profitability for the 79 ha of approximately £17,180 per year. However, in the specific case of the two farms here, the profitability is likely to be higher because the total farm areas (207ha and 306ha) make the farms rather larger than the average. The average FBI for lowland livestock farms in the "large" category is £252 per hectare, which suggests profits for the 79ha of interest to this study could be £19,920 per year.

These are clearly very approximate figures based on national averages. What is certain is that the agricultural values are a small fraction of the tourism and recreation values, and when the two are added together the agricultural value is in effect 'lost' in the tourism expenditure which is two orders of magnitude greater.

9. Correcting for costs

The figures above do not account for the costs of intermediate consumption involved in producing the goods and services bought. Making an adjustment for costs, the net impact on the local economy is approximately £1.6 million

per year, with an additional £400,000 net benefit to the wider Sussex economy.

Not all of the expenditure associated with Cuckmere tourism can be considered as an economic benefit for the local area. Some of the expenditure represents costs of providing the services - for example, goods that are purchased in shops are first bought in by the owners, in many cases from far afield, so that much of the expenditure in fact goes outside the area.

One way to account for these effects would be to use an 'income multiplier' that relates original expenditures to the final changes in wages, salaries and profits that are the net benefits to the local area. The size of this multiplier varies according to the pattern of tourist expenditure, the nature of an area's economy, and the linkages between sectors in the economy. Bond (2008) cites estimates of income multipliers for UK tourism ranging from 0.18 to 0.47. We do not have data to estimate the income multiplier for Cuckmere tourism.

Alternatively, the expenditure values can be adjusted using Gross Value Added (GVA) to turnover ratios. GVA is a measure of the value of goods and services produced in an area, industry or sector of an economy. It is calculated by subtracting 'intermediate consumption' from gross output or turnover. In effect this 'corrects' the turnover (expenditure) estimates for the costs of goods and services consumed or used up as inputs in production: raw materials, services and various other operating expenses. This results in a 'net' figure that shows how much the turnover adds to the economy in the area.

GVA to turnover ratios give the average results of applying this method for a given area or industrial sector. The ratios vary across industrial sectors. The GVA:turnover ratios are based on input-output modelling and should be more robust than simple multipliers, and allow for differentiating between different kinds of expenditure. We do not have figures for GVA:turnover ratios for specific local areas. However, the most local figures available are for the South East, so we use these.⁹ The key GVA:turnover ratios for this study are:

- Hotel and restaurant: 46.8%;
- Retail: 16.1%; and
- Transport: 37.8%.

We do not apply any correction to the agriculture figures, since the data used already reflect farm profits, not total turnover. Applying these estimates for the figures derived from the visitor survey and the agricultural values suggest a total contribution to the economy in the local area (within 8-10 miles) in the order of £1,590,000 per year, with an additional £400,000 contribution to the wider Sussex area.

Thus the net benefit to the area is estimated at approximately 42% of total expenditure. This falls within the range of UK tourist income multipliers cited

⁹ BIS (2009) RDA evaluation: Practical Guidance on Implementing the Impact Evaluation Framework DECEMBER 2009 Appendix 1 - Beneficiary survey methodology and questionnaire.

above (0.18 to 0.47). The estimates in the table are approximations, and in particular it should be noted that these figures for the South East may give an overestimate of final value to the immediate area, because some of the value added accrues in the South East but not the immediate area. On the other hand, there may be additional value due to 'induced effects' such as some of the increased wages, salaries and profits being spent on additional consumption within the local economy. Overall, within the limitations of the data available and uncertainties about visitor numbers, the figures give a reasonable indication of the general level of benefit to the area. Table 3 presents the results of these assumptions and calculations.

Table 3: Accounting for costs			
	Total for year	GVA:Turnover ratio	Net impact on economy
Visitor expenditure in immediate area			
Eating & Drinking (local cafes, restaurants, but not pubs)	£880,265	46.8%	£411,964
In local pubs	£1,305,585	46.8%	£611,014
Local shops	£453,361	16.1%	£72,991
Entertainment (inc. canoe launch, cycle rental, etc)	£178,022	46.8% ¹⁰	£83,314
Travel/ transport costs (inc fares, parking charges)	£799,992	37.8%	£302,397
Overnight stays (local area)	£235,808	46.8%	£110,358
Total spend (immediate area)	£3,853,034		£1,592,038
Elsewhere			
Expenditure elsewhere	£235,406	41% ¹¹	£96,516
Overnight stays elsewhere	£661,893	46.8%	£309,766
Total (all expenditure, Immediate area + elsewhere)	£4,750,333		£1,998,321

¹⁰ We assume this is the same as the hotel and restaurant trade.

¹¹ This is the average for the local expenditure categories, excluding accommodation.

10. Conclusions

This first phase of research suggests that the Cuckmere Estuary is providing important economic value for the local area, almost £4 million per year in income and a little over £1.6 million per year net benefit after accounting for costs. The second phase of research will assess the likely impacts on these economic values of the different future options for the management of the Cuckmere estuary, once these are finalised.

The results demonstrate the high value of visitor expenditure, in particular in the local area of about 8 miles around Cuckmere. There is substantial uncertainty about the exact value, because we do not know the precise number of visitors in a typical year. However, based on the comparison of several estimates, it seems clear that the local area benefits from something between £2.5 million and £4.2 million expenditure per year, with an additional £0.5 to £1 million for the broader Sussex area.

Accounting for the costs of providing goods and services to visitors reduces this gross value by about 58%, based on the GVA:turnover ratios for different sectors in the South East economy. Therefore, we estimate the net benefit to the local area is a little under £1.6 million, with a range of £1 million to £1.7 million.

A survey of businesses in the immediate area, carried out for this research, found that on average approximately 60% of their turnover depended on Cuckmere visitors, though this varied greatly, with some businesses stating they were entirely dependent on Cuckmere visitors, and others only slightly or not at all. Calculations based on the survey results suggested that, for the 26 businesses in our survey, approximately £3,780,000 of income and 96 full-time equivalent jobs are dependent on Cuckmere visitors, based on the business-reported level of dependency on Cuckmere tourism. Data from Experian identifies 77 establishments in the immediate area, and we must assume that had we spoken to all of the businesses the totals would have been substantially higher, perhaps as high as £11 million. This is likely to be for a combination of reasons. The main one is that businesses will consider the full length of a visitor's stay as relating to the Cuckmere area, whereas in the expenditure estimates we consider only a single night as directly Cuckmere-related. Another reason is that visitors may be underestimating total expenditure, suggesting that the total values based on the visitor expenditure survey are conservative estimates.

The second phase of research will assess the likely impacts on economic values of the different future options for the management of the Cuckmere estuary, as outlined in the proposal. The questionnaire results, and further contacts with stakeholders, will be useful for this stage.

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Annex 1: Key data sources

Table 4 gives a list of different reports related to the Cuckmere estuary as well as a brief commentary on each report, with emphasis on facts and figures useful to this study. The single most useful source is the summer visitor survey undertaken by Tourism South East in 2010, revealing information on how much visitors spend in the local economy, as well as on the features that attract visitors to the area. Other sources include in particular various reports and documents available on the Cuckmere Estuary Partnership website, including previous work on the possible impacts of managed realignment (RPA, 2005), a report on community engagement (Hopkins van Mil, 2009) and response from the partnership, the Strategic Environmental Assessment post-adoption statement (Environment Agency, 2008a) and documents on flood risk management (Environment Agency 2007, 2008b, 2009a and 2009b), and finally the Seven Sister Country Park management reports (South Downs Joint Committee 2004 and 2005).

There are also numerous reports and documents not directly related to the Cuckmere estuary itself but that inform calculations and methods used in this study. These sources include reports from the wider Flood and Coastal Erosion Risk Management (FCERM) literature, such as Defra (2009), various guidance documents for valuation and cost-benefit analysis, notably the FCERM-AG (EA 2010), and associated documents including “Economic Valuation of Environmental Effects” (eftec 2010), the Multi-Coloured Manual and Handbook (FHRC 2006a and 2006b) and the Green Book (HM Treasury 2003). Other documents include reports and case studies on managed realignment (Coastal Future nd, Andrews et al. 2006 and Turner et al. 2007). Andrews et al. (2006) and Turner et al. (2007) used Cost-Benefit analysis to respectively illustrate the economic outcome and evaluate the economic efficiency of managed realignment scenarios on the UK Humber Estuary. Additional source also include literature on conservation and local economy (e.g. Rayment and Dickie, 2001 and Shiel, 2002).

Table 4: List of data sources (Cuckmere estuary related references only)		
Author	Title	Summary
Environment Agency (2007)	Cuckmere estuary flood risk management strategy - Consultation Document	Description of the maintenance work carried out by the EA in the Estuary and cost of this work. Description of the different management options for managing flood risk.
Environment Agency (2008a)	Cuckmere Estuary Strategy - Strategic Environmental Assessment - Environmental Report (SEA)	Environmental information. Recreation survey conducted in October 2004, 300 people questioned about their visit to the estuary.
Environment Agency (2008b, c, d)	Project Appraisal Report: Flood Risk Management options at the Cuckmere Estuary Appendix F - Cost breakdown and assessment of optimism basis. Appendix G - Economic Appraisal Environment Agency	Costs of EA proposed management options. Defra priority scores regarding EA proposed management options.
Environmental Agency (2009a)	Managing flood risk in the Cuckmere estuary. Cuckmere Fact Sheet	Description of the maintenance work carried out by the EA in the Estuary and annual cost of this work (between £30,000 and £50,000). Explanation of the reasons for stopping maintenance of the existing flood defences (the estuary is changing and new costs of maintenance would amount to about £18 million over 100 years). Explanation of the processes and possible effects of withdrawal of maintenance.
Environment Agency (2009b)	Cuckmere and Sussex Havens Catchment Flood Management Plan - Summary Report	Probability of flooding and impact of flooding in the estuary and surrounding areas.
Hopkins Van Mil (2009) CPE (2009)	Cuckmere Estuary Partnership Community Engagement Report CPE response to the Hopkins Van Mil Community Engagement Report	Development and implementation of a communication and stakeholder engagement programme. <i>Clarification of the following points:</i> Continued engagement Information provision Community proposals (including transport route, flood defences, naturally functioning estuary, recreation, Increased public use / wildlife balance, Models, Engage local voices in decision making) Fundraising strategy Research Marketing and communication The future of the partnership (CEP)

Author	Title	Summary
RPA (2005)	Cuckmere Haven: Assessment of Potential Impacts of Managed Realignment	<p><i>Data from a brief discussion with the Seven Sisters Country Park Manager:</i> 300,000 to 500,000 people visit the site annually; 60,000 people visit the Visitor Centre; in summer people often stay less than 3 hours; <i>The following data come from three visitor surveys carried out at the Seven Sisters in Summer 1997, Winter 1997/1998 (Chrysalis Marketing Research (1997, 1998)) and Summer 1999 (MarketVoice (1999)) (Note: all 3 surveys were linked to car park needs).</i> The total number of visits to Seven Sisters is estimated at 340,000 (summer 1997); 160,000 (winter 1997/1998) and 320,000 (summer 1999). Average spend per visitor in summer 1997 was £2.35; £1.56 in winter 1997/98; and £3.21 in summer 1999. <i>Other data:</i> Possible changes in both visitor numbers and visitor spend under a realignment option.</p>
South Downs Joint Committee (2004)	Seven Sisters Country Park Management Plan October 2004-March 2007	Result of the visitor survey of the proposed South Down National Park 2003-2004.
South Downs Joint Committee (2005)	Visitor Management of Seven Sisters Country Park	<p>Annual visitor numbers to the Seven Sisters Country Park between 2002 and 2006. SSCP finances (income and expenditure): no figures. Summary of the management objectives for the Park regarding activities taking place in the park, park infrastructure and finances, biodiversity... .</p>

Author	Title	Summary
Tourism South East (2010), (2011)	Valley Summer Survey, Summary report of key findings	Visitor profile Visitor age profile Group size and composition Visitor origin Where overnight visitors are staying Type of accommodation stayed at Main reason for visiting Trip start point Routes taken Specific locations come to see Main two attractions of Cuckmere Valley Whether changes affect future visits Aspects most important to enjoyment of trip Facilities used during visit Frequency of visits Mode of travel Information sources used Other places visited Overall trip enjoyment Trip expenditure

Annex 2: Questionnaire for local economic interests

Dear

Eftec (Economics for the Environment Consultancy Ltd, www.eftec.co.uk) has been asked by the Cuckmere Pathfinder Project (<http://cuckmerepathfinder.org.uk/>) to undertake research with the following objective:

To investigate the current economic value of the Cuckmere Estuary and using this, economically appraise future management options for the site.

Some of the current economic value comes through farming but most of it comes through tourism. Visitors to Cuckmere spend on food, accommodation, activities and other purchases, especially in the Cuckmere and Seaford areas. We have a good idea of the total amount spent through the results of a visitor survey. This short questionnaire is to help us find out more detail about how local businesses benefit from visitors to the Cuckmere Estuary, and how this creates further benefits for the local economy through employment and expenditures by the businesses dependent on tourism.

We would be grateful if you could complete the questionnaire below.

- It should not take long.
- If there are any questions you prefer not to answer, they can be skipped: we will still be able to use partially completed questionnaires.
- Financial information does not need to be exact - approximate figures are fine.
- Information provided will be kept **strictly confidential**
- Information will only be used for the purpose of this study and the Cuckmere Pathfinder Project.
- eftec is an independent company based in London and has no involvement with any economic interests in the area, except for our work on this project.

Please complete the questions in the tables or spaces provided (and feel free to add more space if you need to) then send the answers back to us at rob@eftec.co.uk or by post to eftec, 73-75 Mortimer Street, London W1W 7SQ. If you would prefer to give your answers over the phone, please let us know a convenient time and number, and we'll call you. We can be reached on 02075805383.

Many thanks for your help! We will contact you in early January to check you have received this questionnaire.

Yours sincerely,

Dr Rob Tinch

1. Contact details

Name of business or organisation:

Address:

Contact person:

If we need to contact you for clarification or further information, how would you like us to do this? (email, telephone at particular days/times, by letter?)

2. Type of business / activities

Briefly state the main type(s) of business or activities carried out:

3. Ownership

What is the ownership of the business - e.g. privately owned and run, franchise, branch of a national company...?

4. Seasonality

How seasonal is the business? Please describe briefly, or use the table below if that is simpler.

Month	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Peak season												
Normal												
Low season												
Closed												

5. Importance of Cuckmere Estuary tourism

In your opinion, how dependent is the business on visitors to the Cuckmere Estuary?
Please tick/cross one row below, and/or describe this in your own words.

Description	Proportion of trade from visitors	Cross the row that applies:
Completely dependent	90-100%	
Highly dependent	70-90%	
Moderately dependent	30-70%	
Slightly dependent	10-30%	
Not at all dependent	0-10%	

6. Employment

Please complete the following table and/or describe briefly the employment in the business.

Type of worker	Number of people active at some point during a normal year	Average number of weeks worked per worker, per year	Average number of hours worked per worker, per week	Approximate average wage or salary (please state period)
Business owner(s)				
Family members				
Employees				
Volunteers				

7. Assets used

Please briefly describe the main assets used in the business, using the table below

Type of asset	Replacement value	Annual depreciation	Comments or description (optional)?

Current economic value of the Cuckmere estuary, East Sussex

Buildings / land			
Machinery			
Fixtures and fittings			

8. Financial information: turnover, costs, profits, local expenditures

Please give approximate figures for recent financial years in the table below (note that we can use incomplete information - even if all you can tell us is the approximate turnover from a single year, that's still useful to us).

	Most recent year	Previous year	Year before	Comments
Dates of your financial year				
Turnover				
Cost of sales				
Gross profits				
Taxes				
Net profits				
<i>If possible, please also state approximately how much of the costs noted above are:</i>				
Spent with suppliers in East Sussex?				
Wages/salaries?				
Raw materials/ other inputs?				
Rent and rates?				
Depreciation?				

Annex 3: Notes on interpretation of expenditure data.

Several assumptions were required in the analysis of the expenditure data. These are described below: the figures in the main text above have been calculated taking these factors into account.

Duration of overnight trips

Although many visitors stayed for several nights, we have only counted one night as being specifically related to a visit to Cuckmere.

- The majority of these respondents are likely to spend only one day at Cuckmere, and other days at other attractions, so it would be inaccurate to consider the entire accommodation cost as due to Cuckmere.
- If in fact the respondent spent more than one day at Cuckmere, this increases the chance of their being sampled in the survey, so counting the additional nights would bias the per head estimates upwards.

The best way to treat this is to consider the overnight visitors as having required one overnight stay explicitly for their trip to Cuckmere.

Displacement and surplus effects

In the survey, the vast majority of visitors (91%) were British residents, and over half of domestic visitors resided in home locations in East Sussex (56%).

For the East Sussex visitors, it could be argued that a significant proportion of money spent on the trip may be displaced from other East Sussex expenditure. This could be a rationale for reducing the 'local' economic value ascribed to the estuary. On the other hand some part would have been spent outside the local area (for example on alternative trips outside East Sussex), or some alternatives might have involved significantly lower expenditure (for example eating at home instead of spending on local pubs/restaurants).

The more narrowly 'local' is defined, the less important this point becomes, so for the immediate local area (as defined above) a much larger proportion of visits are defined as starting from outside the local area than if 'local' refers to the whole of East Sussex.

Unpicking these relationships is not a simple matter of defining 'local' and working out the proportion of visits coming from outside this boundary. In particular, we would expect that the more local trips involve less auxiliary expenditure, on average, than trips from further afield. This is supported by the survey finding that the average spend for daily visitors is much lower (£2.41 per head) than for general day visitors (£8.31 per head). Given the uncertainties inherent in the whole analysis - in particular relating to the total number of visitors - we do not

think it is necessary to attempt small corrections for possible displacement effects relating to small average expenditures by local residents.

Consumer surplus of recreation

It can also be stated that the consumer surplus of these trips (i.e. those starting within the local area) accrue to local residents. It would be relatively straightforward to estimate an approximate figure for the non-market value of recreation at Cuckmere, breaking this down by place of residence of the visitors, and this may be necessary in Phase 2 of the research. It would also be possible to use similar techniques to value the opportunities for volunteering at Seven Sisters Country Park. For present purposes, our focus on contribution to the local economy means that these non-market values are beyond the scope of the report

Overnight visitors

Those visiting friends and relatives will not be spending directly on accommodation and food, but there will still be some boost to the local economy if the hosts spend more on food and drink. We have not attempted to quantify this, and note that in any case it is quite difficult to ascribe this kind of expenditure directly to the impact of visits to the Cuckmere area, because the main attraction in this case may often be the visit to friends or relatives in itself, with the trip to Cuckmere / Seven Sisters a secondary benefit of that visit, rather than the other way round.

Those staying overnight in other accommodation are mostly, but by no means exclusively, staying in East Sussex (Table 5 shows the summer survey locations). Roughly 75% stay in East Sussex (many of the others stay in Brighton and Hove, or West Sussex). Rather fewer stay in the immediate local area as defined above - approximately 25% of summer overnight visitors, and 32% of winter overnight visitors (though this is a much smaller sample so we should not draw conclusions from the apparent difference between these figures). We have used these figures to split the overnight accommodation expenditure between the immediate local area and the wider total.

Table 5: Distance of overnight stay location (summer survey)

	TOTAL	Holidaymaker	Visiting friends/relatives	In East Sussex	Within immediate local area
Base	128	99	29		
Eastbourne	34	26	8	Yes	No
Brighton	16	11	5	No (UA)	No
Seaford	12	9	3	Yes	Yes
Alfriston	7	7	0	Yes	Yes
London	6	4	2	No	No

Current economic value of the Cuckmere estuary, East Sussex

Hastings/St Leonards	5	4	1	Yes	No
Pevensey Bay	4	4	0	Yes	No
Battle/ Hooe	4	4	0	Yes	No
Touring around / not sure yet	3	3	0	na	na
Norman's Bay	3	3	0	Yes	No
Lewes	3	2	1	Yes	Yes
Wilmington	2	2	0	Yes	Yes
East Dean	2	1	1	Yes	Yes
Bexhill	2	1	1	Yes	No
Hove	2	1	1	No (UA)	No
Heathfield	2	2	0	Yes	No
Hailsham	2	2	0	Yes	No
East Hoathly	2	2	0	Yes	No
Birling Gap	1	1	0	Yes	Yes
South Ferring	1	1	0	No	No
Herstmonceaux	1	1	0	Yes	No
Oxford	1	0	1	No	No
Robertsbridge	1	1	0	Yes	No
Chichester	1	1	0	No	No
Cuckmere Valley	1	1	0	Yes	Yes
Tunbridge Wells	1	1	0	No	No
Firle	1	0	1	Yes	Yes
Polegate	1	0	1	Yes	Yes
Jevington	1	1	0	Yes	Yes
Newhaven	1	1	0	Yes	Yes
Bishopstone	1	0	1	Yes	No
East Preston	1	1	0	No	No
Linton	1	1	0	No	No
East Grinstead	1	0	1	No	No
Horsted Keynes	1	0	1	No	No
% of holidaymakers				75.8%	25.2%

Joint visits and attribution of value to the Cuckmere Estuary

In the 2010 survey, 28.4% of visitors also visited another area on the same day as their trip to Cuckmere. Respondents who visited other places were asked if they would have still visited the other places without coming to the Cuckmere Valley. Overall a half replied that they would still have visited, while nearly a third (29%) replied that they would not. However the reverse question - "would you still have visited Cuckmere without visiting the other area?" - was not asked.

It is not straightforward, therefore, to break down the expenditure to say what is specifically related to Cuckmere, what non-Cuckmere expenditure is in fact dependent on trips that also involve Cuckmere, and what Cuckmere expenditure is dependent on trips to other areas. However, over 70% of visits are exclusively to the Cuckmere area. To a first approximation, it is acceptable to assume that all the expenditure reported is a result of visits to Cuckmere (but see below on possible double-counting issue).

What is much harder to determine is the dependence on specific features of the Cuckmere and Seven Sisters area. This is not a problem for assessing the economic value of the area generally, but will be an issue when attempting (in phase 2 of the research) to determine what could be the economic impacts of changed conditions that influence specific features and access conditions for the area.

Problem of double-counting in the survey results:

In the Tourism survey, Question 12 asks: "How much do you expect that you and your immediate party (please incl. all party members) will have spent today on your trip to the Cuckmere Valley. Please incl. all expenditure related to this specific trip, including expenditure in local towns (Show Map 3 of wider area incl. main towns)."

But question 16 asks "Did you visit the valley as part of a day out that included other places?" and follows that with "Which other places did you visit?" and "Roughly how much did you spend there?"

The intention (Tourism South East, pers. comm.) was that question 16 should refer only to towns not shown on Map 3. But in fact it is clear from the responses that the respondents did not make this distinction.¹² There were 17 places mentioned more than once by respondents (39 overall) and of these 10 (16) were on Map 3 and therefore 'local towns'. In terms of visits, 129 were to local towns, out of 191 in total. It is also worth noting that only 145 respondents reported visiting another area, so the 191 figure means several have cited more than one other area.

¹² The numbers that follow ignore one response 'sheep farm', because it is not clear where this is, although in all likelihood it is local.

Overall, therefore, it is clear that there is a significant overlap between question 12 and question 16, and that it is not possible to assume that all the expenditure stated under question 16 is additional to that stated under question 12. On the other hand, the single most visited 'other place', Eastbourne (30 mentions), is not on Map 3, and nor is the third most visited (Beachy Head, 21 mentions), so it would be wrong to conclude that all the expenditure cited under question 16 has already been counted.

To resolve this issue we need an approximate assumption, based on the information available: 129/191 is approximately two-thirds, so we assume that two-thirds of the expenditure cited in question 16 is already recorded under question 12, and the remaining one third is additional expenditure.