baker shepherd gillespie

ecological consultants

AN INITIAL INVESTIGATION OF THE ACTUAL COSTS OF IMPLEMENTING UK BIODIVERSITY ACTION PLANS

March 2002

Department of the Environment, Food and Rural Affairs
3- 8 Whitehall Place
London
SW1A 2HH

Wye House
Water Street
Bakewell
Derbyshire
DE45 1EW
Telephone: **01629 815544**
Fax: **01629 815577**
E-Mail: **bsg@dial.pipex.com**

File Ref 279-final report4.doc

AN INITIAL INVESTIGATION OF THE ACTUAL COSTS OF IMPLEMENTING UK BIODIVERSITY ACTION PLANS

Authors

P.A. Shepherd and J. Gillespie
Baker Shepherd Gillespie

Guy Garrod and Ken Willis
University of Newcastle-upon-Tyne

March 2002

CONTENTS

ACKNOWLEDGEMENTS

The authors would like to acknowledge the assistance and advice of the project board Steering Group:

Rachel Chandler, Hilary Neal (DEFRA), Jonathan Burney (English Nature), Emma Johnson (FRCA), Matthew Rayment (RSPB), Alastair Johnson (Forestry Commission) and Bob Henderson (Scottish Executive).

We would also like to thank all the respondents to the questionnaires and interviewees who gave their time freely to provide advice, information and comment, but who are too numerous to acknowledge individually here.

The data gathering and presentation of data has been undertaken by the authors arising from interviews and information provided by the Lead Partners and other individuals and organisations contacted as part of this research. The information provided by the consultees has been validated as far as possible, but any errors are the responsibility of the authors.

Guy Garrod and Ken Willis have undertaken research into policy changes and their potential impacts of BAP costings and funding.

EXECUTIVE SUMMARY

This research provides up to date information on the costs of implementing a number of the Tranche 1 UK Biodiversity Action Plans. Thirteen HAPs and seventeen SAPs were selected for investigation.

The principal aim of the research was to identify the costs incurred to date under these BAPs and to improve our understanding of the factors that influence the cost of implementing BAPs and the recording and reporting of costs. In addition, the study sought to review funding availability and to recommend a method for future continuous monitoring and evaluation of BAP costs.

The cost information gathered (the "reported costs") has been compared with the indicative costings published in the UK Steering Group Report (1995). The indicative costings were based on broad assumptions about the actions that might be undertaken in order to implement the BAPs. The comparison of reported and indicative costs indicates where progress has been more or less than it was assumed would take place during the preparation of the indicative costings. It is only in this context that this assessment has been made and no judgement of whether the reported progress is reasonable or not should be inferred.

The reported costs for some BAPs do not represent the total actual cost of implementation to date as some data for areas of known expenditure have not been available. At present, information on many of the implementation costs is not available in a format that lends itself to easy and continuous monitoring, particularly at an individual BAP level. In addition, many costs are not available at all or are available in a format that can not be readily assigned to particular BAPs or to actions within BAPs. As a result, the information that has been gathered in this study should be regarded as illustrative only.

The indicative costings provide a guide to the costs of implementing the UK BAP that were anticipated in 1995. Where there is sufficient explanation of the basis of the indicative costs, it has been possible to make comparisons with the reported costs, and this has provided an insight into why the two costs may have differed. In many cases the reported actions and costs appear to differ from the anticipated actions and costs for a number of reasons:

1. ***Missing data*** has been a significant problem for this study, as a result of either:
   - 1.1. Lack of time to gather data that is widely dispersed amongst a variety of organisations and individuals
   - 1.2. Cost data not being held in a format that allows the data to be readily assigned to particular BAPs
   - 1.3. Cost data not being available (at all)

2. ***Differences in the delivery of targets and actions*** can bring about a difference in reported and indicative costs. This is either because progress against targets has been more, or less, than anticipated; or because actions have been dropped, or new ones added since the publication of the BAP.

3. ***Differences in the cost of particular actions, compared to those assumed in the indicative costings,*** have been encountered in some cases. This can also be affected by changes in delivery mechanisms.

4. ***Actions and costs altered by the implementation of other government policies*** can have a significant impact on the cost of implementing a BAP.

5. ***Uncertainty about assigning expenditure*** can also influence the size of the reported costs. Particular areas of uncertainty relate to the allocation of baseline costs and costs

incurred where there are other benefits in addition to those of biodiversity conservation (for instance, landscape conservation).

A summary of the differences between the predicted and reported costs and the principal reasons for these differences in presented in the Table below.

A summary of differences between indicative and reported costs and the principal reasons identified for the greater or lower reported costs.

	Higher than predicted cost	Lower than predicted cost	Missing data	Differences in the delivery of actions and targets	Differences in cost of actions	Impact of other policy changes	Uncertainty about assigning costs
Habitats							
Chalk Rivers		✔	✔			✔	
Mesotrophic Lakes	-	-		✔ (Note 1)			
Reedbeds	✔			✔ (Note 2)	✔		
Seagrass Beds		✔		✔ (Note 3)			
Saline Lagoons		✔	✔ (Note 4)	✔ (Note 5)			
Upland Oak Woods		✔	✔ (Note 4)	✔ (Note 5)			
Native Pine Woods		✔	✔		✔		✔
Limestone Pavement		✔	✔ (Note 4)	✔ (Note 5)	✔ (Note 6)		
Lowland Heathland		✔	✔ (Note 4)	✔ (Note 5)			
Purple Moor Grass and Rush Pasture	✔			✔ (Note 2)	✔		✔
Coastal and Floodplain Grazing Marsh		✔	✔ (Note 4)	✔ (Note 5)			
Cereal Field Margins	✔			✔ (Note 7)	✔		
Ancient and Species rich Hedgerows	✔			✔ (Note 7)	✔		
Species							
Corncrake		✔		✔			
Skylark	✔			✔			
Otter	✔			✔ (Note 8)			
Red squirrel		✔					
Great Crested Newt and Sand Lizard	(Note 9)	(Note 9)					
Allis and Twaite Shad		✔		✔ (Note 3)			
Southern Damselfly	✔			✔ (Note 7)			
Marsh Fritillary Butterfly	✔			✔ (Note 7)			
Stag Beetle	✔			✔ (Note 7, 10 & 12)			
White-clawed Crayfish		✔	✔				
Freshwater Pearl Mussel	✔			✔ (Note 7)			
Starfuit	✔			✔ (Note 7, 10 & 12)			
Shore Dock	✔			✔ (Note 7)			
Devil's Bolete Fungus	✔			✔			
Green Shield Moss		✔ (Note 11)					
River Jelly Lichen		✔ (Note 11)					

Notes	
1	Although total costs are similar this appears to be due to some costs that were anticipated not being incurred, and other costs being incurred but not anticipated

2	More than anticipated progress against targets
3	Less progress against anticipated targets and actions
4	Missing data on habitat maintenance costs
5	Less progress than anticipated against creation targets
6	Less expenditure on revocations than expected
7	Additional costs arising from more action than anticipated
8	Significant additional action undertaken that was not anticipated
9	No comparison has been made as there is insufficient cost data available
10	New actions carried out
11	No comparison has been made as there is no detailed explanation of the basis of the indicative costing
12	New and/or revised targets

HAP costings

For four of the sample HAPs the reported costs are higher than the original estimates. These are *Cereal Field Margins, Ancient and Species-rich Hedgerows, Reedbeds* and *Purple Moor Grass and Rush Pasture*. Only the *Mesotrophic Lakes* HAP has exhibited little change from the predicted costs, whilst the remaining HAPs have all exhibited lower than anticipated costs.

Of the four HAPs that have exhibited higher than anticipated costs the reasons for the differences have been identified as:

(a) Greater than expected progress against the targets and higher generic costs (Reedbeds)
(b) Greater than expected progress against the targets (Purple Moor Grass and Rush Pasture)
(c) Additional costs of actions not included in the indicative costing (Cereal Field Margins and Ancient and Species-rich Hedgerows)

Unlike the other HAPs, data from the major areas of expenditure were readily available for *Reedbeds*, *Cereal Field Margins* and *Ancient and Species-rich Hedgerows*. The conclusion that higher than anticipated costs have been incurred by the *Purple Moor Grass and Rush Pasture* HAP needs to be treated with some caution because actual cost data was only readily available from one major area of expenditure (ESA payments in Northern Ireland). Nonetheless, the reason for the difference between the anticipated and reported costs was identified as being due to greater than expected progress against the published targets.

Of the eight HAPs that have exhibited lower than anticipated costs the reasons for the differences have been identified as:

(a) Missing cost data (all except *Seagrass Beds*)
(b) Less than predicted progress against the targets, in particular habitat creation targets (all except *Native Pine Woods and Chalk Rivers*)
(c) Changes in generic costs (*Native Pine Woods* and *Limestone Pavements*)
(d) Changes due to actions being undertaken under other government policy activities (*Chalk Rivers*)

<u>Missing data</u>

The unavailability of data in a form that can be assigned to particular HAPs has presented a significant barrier to collating actual cost data and comparing this to the indicative costings. As a result, for some HAPs and SAPs it has proved difficult to determine whether costs have actually been higher or lower than anticipated, and what the reasons might have been for any difference.

Less than predicted progess
Where cost information is available, one of the key reasons for lower reported costs than suggested by the indicative costings seems to be slower progress than was anticipated in 1995. This appears to be the case for the *Seagrass Beds* HAP, where the reported costs are only about one-tenth of the indicative costing. This may also partly explain the difference in the *Upland Oak Wood* HAP costings.

Changes in generic costs
In some cases, lower costs for specific actions are likely to be an important factor, for example in the case of the *Limestone Pavement* HAP, where reported costs are two-fifths of the indicative costing. Alternatively, where some of the actions have been undertaken for other policy purposes, for example for the *Chalk Rivers* HAP, the costs attributable to the HAP have been reduced accordingly (with reported costs of about one-third of the 1995 indicative costing).

Assignment of costs related to other Government policy activity
Agri-environment schemes and other government expenditure meet a major part of the cost of implementing a number of the HAPs. For some HAPs it has not been possible to determine the relevant agri-environment scheme expenditure with any precision. This is particularly a problem for the grassland HAPs. When this data cannot be accurately collated it will have a significant impact on reported costs at any given time.

SAP costings
Of the 17 sample SAPs the reported costs were higher than estimated in 1995 in 10 cases. For two, *Great Crested Newt* and *Sand Lizard*, insufficient cost data were available to undertake a meaningful analysis. For the remaining 5 SAPs the recorded costs were lower than anticipated in 1995.

For those SAPs with higher than anticipated costs, a key reason for the additional expenditure has been a higher level of implementation over that which was anticipated in the indicative costings. Examples of this can be seen in the case of the *Otter* SAP, where reported costs are about three times the indicative costing, the *Southern Damselfly* SAP and the *Marsh Fritillary Butterfly* SAP.

To a lesser extent new actions and revisions to targets have also contributed to higher than anticipated expenditure. Revised targets are a factor, for instance, for the *Stag Beetle* and *Starfruit* SAPs, where the reported costs are, respectively, twice and four-times the indicative costs. In both of these cases it is likely that target revision has been a contributory factor.

In the *Skylark* and *Corncrake* SAPs, the reported costs are similar or marginally higher than those predicted. Despite the similarity, the information available suggests that there has been a change in emphasis in the actions compared to those assumed for the indicative costing. In addition, the possibility of missing data means that higher costs than reported may well have been incurred.

One potential area of missing cost data for the *Skylark* SAP is expenditure on general countryside management measures in agri-environment schemes. Whilst the Review and Assessment Form for the *Skylark* SAP acknowledges the implementation of new or revised agri-environment schemes, it is quite difficult to attribute any of this expenditure to the skylark specifically, which is more likely to be benefiting from improved, more sympathetic management of lowland farmland generally. This has important implications for the reporting of actual costs. The extent to which general agri-environment measures contribute to the implementation of this SAP is unclear, but the cost could be substantial.

The reported costs for five of the sample SAPs were substantially lower than estimated in 1995. Where comparisons are possible, missing data and delayed actions are thought to explain much

of the difference, for example in the case of the *Allis and Twaite Shad* and *White-clawed Crayfish* SAPs. In these cases the reported costs were less than half the indicative costings.

Funding

The principal funding sources are the government departments and government agencies, through grant awards or through annual expenditure on work programmes.

The investigation of the 30 sample BAPs and the survey of non-government organisations indicates that funding for biodiversity work is also provided by a wide variety of non-governmental sources. The types of project that are most frequently put forward for non-governmental funding, or are the most successful in attracting funding, or both, are those that focus on habitat management and protection, survey and monitoring and species management. Those projects that relate to habitat management tend to attract the larger awards.

According to the sample of organisations contacted in this study, habitat creation is not so well supported, or this activity may not be put forward for funding as often as habitat and species management. This may be due to higher priority being given to ensuring existing habitats remain in good management, rather than the creation of new habitats. It may also be due to the relatively higher costs of habitat creation, or it may be because organisations pursue other mechanisms, such as planning gain, to promote habitat creation through private business and industry funding.

There is also an apparently high level of external funding for management and co-ordination of Local Biodiversity Action Plans.

Within the sample surveyed, investment in people, (staff posts and training), is low down the list of projects that have received external funding. It is not known if this is because these categories of work are not successful in attracting funding, or simply that fewer bids for funding for staff posts and training are made.

All of the major sources of funding described in this study and reported by the consultees are still available for future biodiversity work. What is not known, however, is how the sources will change their funding priorities over the coming years. It is likely that major government grant schemes such as agri-environment schemes and forestry grants will continue to be provided (and are in fact the major sources of potential funding for implementing the BAPs and the HAPs in particular). The future of funding through non-government sources such as Landfill Tax Trust, and private business sponsors are less certain and may change in terms of their funding priorities or the level of funding available.

Future monitoring of costs

The study has highlighted a number of difficulties associated with the development of a continuous monitoring and evaluation system of the costs of individual BAPs. These also reflect the more general need for improved monitoring of BAP activities and progress. The production of costed work plans; to provide up to date baselines against which future expenditure can be monitored is a key requirement that needs to be developed and which should underpin future monitoring.

For sources of major expenditure, further work is needed (and is being undertaken) to develop the databases held by government and other agencies so that more detailed information can be extracted in future. Nevertheless, there will remain some expenditure for which decisions on their assignment to individual BAPs will require informed judgement (for instance to avoid double-counting or omission of expenditure). For other sources of expenditure, the development of the Joint Nature Conservation Committee (JNCC) database to include information on costs is expected to provide a way forward.

For monitoring purposes, further work to estimate costs may be useful in cases where it is not feasible to collect all the actual cost information. If information is available or can be estimated about actions being taken (for example from the Reporting and Assessment Forms) then updated

actual cost estimates could be made using updated and standardised assumptions about generic costs, to supplement the monitoring of the actual costings.
Guidance can be given to help standardise the data and to avoid inclusion of expenditure which is not "additional" and which would otherwise be incurred with or without the UK BAP. Despite this the interpretation of the data will still require judgements to be made about the costs of actions which have been undertaken for other policy purposes.

Ideally a future automated method for monitoring and evaluating BAP costs would:

(a) Regularly access and collate identified BAP cost data in a standard format
(b) Analyse BAP cost data and report on the cost of individual actions and groups of actions, and cost progress towards achieving BAP targets
(c) Be available for interrogation on a frequent and regular basis to enable reporting of the latest BAP expenditure for individual BAPs or groups of BAPs
(d) Be an integral part of, or at least be compatible with, the monitoring databases currently being developed by JNCC.

Developing a method of monitoring to this standard will require further work and consultation with Steering Groups, JNCC and the government departments and agencies. In the mean time, a number of recommendations can be made for developing such a monitoring system. In particular, it is recommended that a monitoring system will need to:

(a) **Identify the areas of expenditure to be monitored for each BAP.** The priority areas for data collection should be the major areas of expenditure. These will vary from one BAP to another. For some existing sources of data such, as government expenditure through agri-environment schemes, further work is required to ensure that data can be confidently assigned to particular BAPs.

(b) **Devise a method by which costs can be regularly and systematically collected and analysed.** Consideration is currently being given to the development of monitoring programmes including information on costs. Further consideration will need to be given to how data collection and analysis is organised, but some central co-ordination is likely to be needed.

(c) **Develop guidance for those being asked to undertake monitoring.** In order to ensure that the required data are provided on a common basis in future monitoring programmes, guidance will be required on the level of monitoring, standardisation of cost data, principles for assigning costs, dealing with double counting and the exclusion of baseline costs.

1.0 INTRODUCTION

1.1 Background

In 1994 the UK Government published *Biodiversity: The UK Action Plan*[1]. This was followed in 1995 with a report in two Volumes from the Biodiversity Steering Group[2]. The Steering Group was established by the Government and charged with developing costed plans for key species and habitats. Volume 2 of the Steering Group Report includes 14 Habitat Action Plans (HAPs) and 116 Species Actions Plans (SAPs). These have become known as the Tranche 1 Biodiversity Action Plans (BAPs). Following the publication of the Tranche 1 BAPs work started on a further 31 HAPs and 275 SAPs. These plans have recently been published in six volumes and are referred to as Tranche 2 BAPs[3].

Indicative, estimated costings for the Tranche 1 BAPs were produced under the supervision of the UK Biodiversity Action Plan (BAP) Costings Sub-Group (which currently reports to the UK BAP Biodiversity Information Group). The Sub-Group comprises mainly economists from Government Departments, various agencies and non-governmental organisations (NGOs). Now that the indicative costings for both Tranche 1 and Tranche 2 BAPs have been completed, the Sub-Group has been tasked with monitoring and validating the costs. The DEFRA commissioned this research study to provide information on the actual costs of implementing the Biodiversity Action Plans, in the form of a preliminary investigation, to the Costings Sub-Group.

1.2 Aims and objectives of the research project

The contract specification for this research project set the following overall aim:

"The overall aim of this research project is to provide an initial investigation of the actual costs and funding issues as well as to assist in the development of continuing monitoring and evaluation processes for the BAPs".

The specific aims and objectives of the research as set out in the project brief are:

(a) to identify and measure the actual resource costs of implementing the UK Biodiversity Action Plans;
(b) to compare these costs against those estimated as part of the original BAPs costing exercise;
(c) to identify the areas where policy changes, which have taken place since the costings were first made (e.g. Agenda 2000 and AMP3), might significantly influence costing assumptions and suggest means of assessing this further;
(d) to identify the reported and potential sources of BAP funding for the sample plans and for the BAPs as a whole. To analyse the extent to which funding has been available and is expected to be available to implement the BAPs;
(e) to recommend a methodology for continuous monitoring and evaluation of the BAP costings; and
(f) to provide feedback of the component cost data in order to assist in the development of detailed work plans.

[1] HM Government (1994) *Biodiversity: The UK Action Plan*. HMSO, London.
[2] Biodiversity Steering Group (1995). *Biodiversity: The UK Steering Group Report.* Two Volumes. HMSO, London
[3] UK Biodiversity Group (1998/99). The UK Biodiversity Group Tranche 2 Action Plans. Volumes 1-6.English Nature, Peterborough

1.3 Selection of Sample BAPs

The investigation of actual costs is based on a sample of 30 BAPs including both habitat and species action plans. A sample set of 13 HAPs and 17 SAPs was selected in consultation with the Costing Sub-Group, at the outset of the project (see Table 1). The UK BAPs are at different stages of implementation, with the Tranche 1 plans generally being most advanced. Because of this it was decided that only Tranche 1 plans would be investigated.

The selection of BAPs was made so as to reflect a wide range of circumstances across the different habitats and species. As a first step, each BAP had to have

(a) a reasonable amount of action undertaken since publication to enable a comparison to be made with the indicative costings;
(b) an active steering group and point of contact;

In addition a HAP or SAP could be selected if it met one or more of the criteria set out below.

For Tranche 1 HAPs the selection was guided by those plans that:

(c) cover the range of types of HAPs including coastal, terrestrial lowland, terrestrial upland and freshwater;

(d) cover habitats that are closely linked to agricultural management and those that are not;

(e) are restricted to one country of the UK and those that are present throughout the UK.

For Tranche 1 SAPs the selection was guided by those plans that:

(f) are representative of the main groups including mammals, birds, fish, reptiles, amphibians, invertebrates, lower plants and higher plants;

(g) either rely heavily on one particular type of category of actions (e.g. research programmes) or require action over the full range of categories;

(h) have either a restricted or widespread distribution in the UK.

The criteria relevant to each HAP and SAP is shown in Table 1.

Table 1: Sample BAPs selected for research into the actual cost of implementing each plan.

BAP	Guideline criteria
Habitats	
Chalk Rivers	Restricted to England. This is a non-site based freshwater habitat that is not dependent on agri-environment schemes.
Mesotrophic Lakes	A widely distributed freshwater habitat that is site based, but is not dependent on agri-environment schemes.
Reedbeds	A UK wide habitat with strong links to the Bittern SAP. Good progress has been made against the targets and the habitat is not dependent on agri-environment schemes.
Seagrass Beds	The only inter-tidal maritime habitat in the Tranche 1 HAPs.
Saline Lagoons	A widespread habitat in the UK and the only coastal maritime habitat in the Tranche 1 HAPs not subject to agri-environment schemes.
Upland Oak Wood	A widely distributed habitat in the uplands of the UK. Subject to forestry grant schemes.
Native Pine Woods	Restricted to Scotland and good progress has been made against the targets. Linked to forestry grant schemes.
Limestone Pavement	A limited habitat, which includes revocation costs and is not subject to agri-environment schemes.
Lowland Heathland	A UK wide habitat for which there has been good progress and is subject to agri-environment schemes and forestry management.
Purple Moor Grass and Rush Pasture	A widespread habitat strongly linked to agri-environment schemes and which has been revised since publication in 1995.
Coastal and Floodplain Grazing Marsh	A widespread habitat strongly linked to agri-environment schemes and coastal and floodplain defence policy.
Cereal Field Margins	A widespread arable-based habitat highly dependent on grant schemes.
Ancient and species-Rich Hedgerows	A widespread habitat with links to agri-environment schemes.
Species	
Corncrake	A bird with a restricted distribution associated with meadows in Scotland and Ireland. There has been good progress against targets.
Skylark	A widespread bird with links to farmland and grassland management.
Otter	A widespread and recovering mammal for which there has been a wide range of action taken.
Red Squirrel	A declining mammal for which there have been programmes implemented. Strong links to coniferous woodland management.
Great Crested Newt	A widespread amphibian not linked to any priority HAP. A great deal of work has been undertaken.
Sand Lizard	A reptile with a restricted distribution closely linked to lowland heathland and sand dune priority habitats.
Allis Shad	A widespread fish with links to river and coastal system management and fishing.
Southern Damselfly	An Odonata species with a restricted distribution with links to lowland heathland and stream and river habitats.
Marsh Fritillary Butterfly	A restricted Lepidoptera species strongly linked to lowland calcareous grassland and purple moor grass and rush pasture priority habitats.
Stag Beetle	A southern distributed beetle that has been the subject of extensive public surveys and with links to woodland and urban habitats.
White-Clawed Crayfish	A restricted and highly threatened freshwater invertebrate species that continues to decline.
Freshwater Pearl Mussel	A restricted freshwater species.
Starfruit	A restricted plant of freshwater habitats associated with a few sites that have been the subject of much non-government action.
Shore Dock	A rare maritime plant.
Devil's Bolete Fungus	Fungus of beech woodland in southern England.
Green Shield Moss	A rare and restricted moss of Scottish coniferous woodland.
River Jelly Lichen	A rare and restricted aquatic lichen species.

1.4 The indicative BAP Costings

The indicative costings that were produced under the supervision of the Biodiversity Action Plan Costings Sub-Group are presented in Volume 1 of the UK Biodiversity Steering Group for SAPs, and Volume 2 for HAPs. The costs are presented as headline figures for years 1997, 2000 and 2010 and were calculated as additional to the costs incurred or planned in 1995. Although the costs were expected to be incurred over a 15 year period they are presented in the Steering Group reports using the price base of the year of the publication (1995).

The published indicative costs do not include figures for the years between 1997, 2000 and 2010. Consequently, no estimate of the total indicative cost over the lifetime of the BAPs has been published. In discussion with the Costing Sub-Group, it was decided that for the purposes of this study the assumed figures for the intervening years would be based on a linear interpolation between the headline years. A summary of the calculation of total costs using the indicative costs for the sample HAPs and SAPs is presented in Tables 2 and 3. The indicative costs have been calculated for the 5-year period between financial year 1996/97 and 2000/01. The calculation is based on a linear scale of increasing or decreasing average annual expenditure during this period, between the cost given for 1997, which is taken to represent financial year 1996/97, and the cost for 2000, which is taken to represent financial year 2000/2001.

Table 2: Indicative costs for HAPs over the last five years

	1996/97 /£K	1997/98 /£K	1998/99 /£K	1999/00 /£K	2000/01 /£K	TOTAL/£K
Chalk rivers	500	663.13	816.75	971.25	1140.00	**4091.13**
Mesotrophic Lakes	170	228.12	283.14	338.55	399.00	**1418.81**
Reedbeds	190	251.99	310.37	369.08	433.20	**1554.63**
Seagrass Beds	330	350.13	359.37	366.30	376.20	**1782.00**
Saline Lagoons	800	1034.48	1252.35	1470.75	1710.00	**6267.58**
Upland oak wood	3400	4509.25	5553.90	6604.50	7752.00	**27819.65**
Native Pine Forest	350	371.35	381.15	388.50	399.00	**1890.00**
Limestone Pavement	130	137.93	141.57	144.30	148.20	**702.00**
Lowland Heathland	1100	1432.35	1742.0	2053.50	2394.00	**8722.25**
Purple Moor Grass and Rush Pasture	160	209.55	255.92	302.48	353.40	**1281.34**
Floodplain and Coastal Grazing Marsh	4200	5570.25	6860.70	8158.50	9576.00	**34365.45**
Cereal Field Margins	500	689.65	871.20	1054.50	1254.00	**4369.35**
Species-Rich Hedgerows	1000	1246.68	1470.15	1692.75	1938.00	**7347.58**
						101,611.75

Note:

The figures presented in this table assume a start year for expenditure of 1996/97. They are based on 1995 prices, and are taken from the summary report on cost estimates[4]. The total expenditure and expenditure for the intervening years between 1995 and 2000 have been calculated by assuming there is a linear progression of expenditure between the base and end years. Inflation over the period 1995 to 2000 has been calculated using the annual growth in Gross Domestic Product (GDP) at market prices. For example, if GDP grew by 2.3% in 1999 and 2.8% in 2000, then one pound in 1998 is equivalent to 1 x 1.023 x 1.028 = 1.05. Therefore £500 in 1998 is equivalent to £500 x 1.05 = £525 in 2000.

[4] Biodiversity Steering Group (1995). *Biodiversity: The UK Steering Group Report. Volume 2: Action Plans*. HMSO, London

Table 3: Indicative costs for SAPs over the last five years.

	1996/97 /£K	1997/98 /£K	1998/99 /£K	1999/00 /£K	2000/01 /£K	TOTAL/£K
Corncrake	550	525.20	479.16	427.35	376.20	**2357.91**
Skylark	104	110.08	112.71	114.61	117.42	**558.82**
Otter	105	115.67	113.04	119.68	102.60	**555.99**
Red squirrel	220	230.77	234.14	235.88	239.40	**1160.18**
Great Crested Newt	110	111.41	108.90	105.45	102.60	**538.36**
Sand lizard	80	83.55	84.40	84.64	85.50	**418.09**
Allis and Twaite Shad	54	56.23	56.63	56.61	57.00	**280.47**
Southern Damselfly	21	20.16	18.51	16.65	14.82	**91.14**
Marsh Fritillary	20	17.51	14.16	10.55	6.84	**69.05**
Stag Beetle	10	9.81	9.26	8.60	7.98	**45.65**
White-clawed Crayfish	41	40.85	39.20	37.19	35.34	**193.58**
Pearl Mussel	41	36.07	29.40	22.20	14.82	**143.50**
Starfruit	4	4.24	4.36	4.44	4.56	**21.60**
Shore Dock	14	13.53	12.52	11.38	10.26	**61.69**
Devil's Bolete	3	2.65	2.18	1.67	1.14	**10.64**
Green Shield Moss	11	10.88	10.35	9.71	9.12	**51.05**
River Jelly Lichen	17	19.36	21.24	23.03	25.08	**105.71**
						6663.41

Note:
The figures presented in this table assume a start year for expenditure of 1996/97. They are based on 1995 prices and are taken from the summary report on cost estimates[5]. The total expenditure and expenditure for the intervening years between 1995 and 2000 have been calculated by assuming there is a linear progression of expenditure between the base and end years. Inflation over the period 1995 to 2000 has been calculated using the annual growth in Gross Domestic Product (GDP). For example, if GDP grew by 2.3% in 1999 and 2.8% in 2000, then one pound in 1998 is equivalent to 1 x 1.023 x 1.028 = 1.05. Therefore £500 in 1998 is equivalent to £500 x 1.05 = £525 in 2000.

1.4.1 The basis of the indicative costings

The indicative costings for Tranche 1 BAPs were based on the information available at the time of their production and in some circumstances were prepared within relatively short timescales. For some BAPs there was a variety of data on which to base the costings whilst for others there was little cost data available. As a result the accuracy of the indicative costs varies from one BAP to another. Depending on the data available the accuracy of the indicative costings was limited by a number of factors, including uncertainties about:

(a) how BAP targets would be achieved in terms of implied actions
(b) who would undertake the actions
(c) the timing of the actions
(d) the assignment of expenditures funded by policies, such as agri-environment schemes, to individual BAPs.
(e) the baseline, *i.e*. what activities/expenditures were already committed/expected and hence should not have been attributed to the BAP costs
(f) the impact of other policies on the need for, and costs of, BAP actions
(g) administration costs

[5] UK Biodiversity Group (2000). Tranche 1 and Tranche 2 Action Plans. Cost estimates – a summary report.

In general the costings were produced on the basis of broad assumptions about how the targets might be met and the likely costs (only to the public sector in the case of HAPs). Anticipated policy expenditures were attributed to BAPs as consistently as possible and double counting avoided, although inevitably some decisions would necessarily have been arbitrary. Care was taken to omit existing cost commitments where they could be identified, although *no allowance was made for further costs that might have been incurred without the BAPs*, for example future additional agri-environment scheme agreements. In all, as stated in the UK BAP Steering Group Report Vol 1, the indicative costings were *at best* approximations (particularly at the individual BAP level). Therefore comparisons with the information gathered in this study must be treated with caution.

1.4.2 Background papers on indicative costs

The data that was used to calculate the indicative cost of implementing the Tranche 1 HAPs and SAPs, and the assumptions that were made in doing so, are only briefly described in Volume 1 of the UK Biodiversity Steering Group Report[6]. No detailed breakdown of the headline figures has been published, although in the case of the HAPs a very brief explanation of the costings is presented at the end of each HAP in Volume 2 of the Biodiversity Steering Group Report.

More detailed explanations of the costs for some of the habitats (lowland heathland, coastal and floodplain grazing marsh and reedbeds) have been published (Harley, 1997)[7]. In addition there are a variety of unpublished papers held by English Nature that provide further information on the basis of the costing of the Tranche 1 HAPs. The usefulness to this study of some of the figures is, however, questionable, as they do not all correspond with the published indicative costings in Volume 2 of the Steering Group Report.

There are also a variety of unpublished papers giving an indication of the basis of the development of the indicative costs for the SAPs. An unpublished paper provided by English Nature does provide an indication of where the costs were expected to fall (Will Simonson, English Nature, unpublished) in terms of type of action and years of expenditure. In the unpublished report, the categories of expenditure are as shown below. Indicative costs are given under each of these categories as appropriate, for 1995 and 2000.

(a) Survey of sites
(b) Autecology research
(c) Genetic/population studies
(d) *Ex-situ* conservation
(e) Seed bank creation
(f) Re-introduction
(g) Habitat management
(h) Habitat creation
(i) Special ELM (environmental land management) schemes
(j) Control of competitors
(k) Wardening of sites
(l) Water improvement (only if not part of normal water quality improvement programme)
(m) Monitoring
(n) Advise to land managers.
(o) PR

[6] Biodiversity Steering Group (1995). *Biodiversity: The UK Steering Group Report.* Volume 1: Meeting the Rio Challenge. HMSO, London
[7] D. Harley (1997). Working Papers for the Habitat Action Plan Costings in the Biodiversity Steering Group Report. RSPB.

This unpublished data is available for all the species under consideration in this study and the totals in the Steering Group Report and those in the unpublished working papers generally compare well. The unpublished figures are therefore used as the basis of comparison between anticipated and reported expenditure in most cases. The only two species for which this is not the case are the lower plants river jelly lichen and green shield moss. In these cases the breakdown of unpublished costs amount to totals that are very much lower than those published in Volume 1 of the Steering Group Report. It is therefore considered inappropriate to attempt to justify any differences between the published indicative costs and the reported costs using the unpublished data as a basis for comparison.

2.0 COLLATING AND ANALYSING COST DATA

2.1 Gathering Cost Data

The gathering of reported costs has been undertaken in four stages.

Stage 1 - Review the BAP Assessment Form

The latest versions of the Review and Assessment Forms[8] prepared by each BAP Steering Group were reviewed. Any changes in the actions and targets within the BAP were identified to inform the analysis of reported cost data and the comparison with indicative costs. The main areas of expenditure were identified as part of the review and any actions that had not been started were also noted. Actions such as the notification of SSSI/ASSIs that were part of the core duties of the lead agencies or part of a work programme established before the start of the BAP were excluded from the review because they should have been excluded from the original indicative costings. The BAP Steering Groups are also in the process of preparing costed work plans, but none were available for the sample BAPs included in this study.

Stage 2 – Interviews with the Lead Partners and Lead Agencies (Lead Contacts)

The review and assessment forms were used as the basis for telephone interviews with primary contacts (provided by the contract steering group) for each of the BAPs. These contacts included Lead Partners for the SAPs and Lead Agencies for the HAPs. The Review and Assessment Forms were used as a basis for these telephone interviews because they identify the principal areas of work that have been undertaken for each action within the BAP.

The primary contacts were asked to provide an indication of how the BAP actions were being implemented, and to report on the associated costs of implementation. Cost data was requested that related to specific projects wherever possible, since the publication of the BAP. Where they did not have access to information themselves, they were asked to provide details of suitable secondary contacts.

Stage 3 – Secondary interviews and data gathering

The secondary contacts were also interviewed (where time permitted and where contact could be made) on the telephone. In some cases meetings were arranged to view data.

Stage 4 – Data validation

Owing to uncertainties about the interpretation of some of the reported cost data, an attempt was made to validate the initial reported cost tables to ensure that assumptions made in calculating and presenting reported costs were acceptable. Validation was sought by copying the draft tables to primary contacts and where it was felt that a re-examination of the draft data would be helpful, to other suppliers of cost data. Not all BAPs could be validated as data gathering for some BAPs continued right up to the deadline for the completion of the contract and there was insufficient time remaining to undertake a final validation. This was the case for five of the SAPs (Corncrake, Crayfish, Skylark, Otter abd Freshwater Pearl Mussel), whilst for three other SAPs (Great Crested Newt, Sand Lizard and Red Squirrel) insufficient data was available to make validation worthwhile. Validation was sought for all of the HAPs, but owing to work commitments not all consultees were able to comment on the costs within the deadline for the contract and for some HAPs only some sources of data, such as agri-environment scheme expenditure was validated. This was the case for cereal field margins, hedgerows, floodplain and coastal grazing marsh, limestone pavement, native pine woods, upland oak woods and reedbeds. There was limited data

[8] The Review and Assessment Forms are progress reports prepared by the Steering Group for each of the BAPs. The form reports on progress to date against the targets and actions of the published plan. They also provide information on how targets and priorities have been amended following further consideration by the steering group.

for the other HAPs provided by a range of organisations and not all of the data used in this report could be validated.

2.1.1 Type of data requested

In order to measure the resource costs of implementing the BAPs over the period 1995 to 2001, information would ideally be gathered about all the resource costs incurred under each plan, and jointly, in implementing actions to meet the BAP targets. Only actions that are additional to those already committed or expected would be counted, *i.e*. all resource costs, incurred by any sector, additional to a baseline, which assumes the UKBAP does not exist. Ideally, this baseline would take account of policies not directly targeted at biodiversity but which reduce the need for BAP actions, for example policies to improve water quality. Also, government expenditures, such as on agri-environment schemes, which support other countryside objectives, (for instance landscape enhancement), would not be fully attributed to the BAP costs.

For this study all financial data was requested where possible that;

(a) Related to new expenditure during the period 1st April 1996 to the end of the financial year 2000/2001. In this way ongoing or committed expenditure agreed prior to 1995 would be excluded (for instance annual expenditure on habitat management through an agri-environment scheme agreement that had been in place before the publication of the BAP).
(b) Included VAT.
(c) Reflected the financial year in which the expenditure was incurred.

Cost data that was definitely not BAP driven, or was considered to be incurred as part of the core duties of government departments and agencies (for example notification of SSSI and SACs) was not included in the reported cost data.

2.2 Problems associated with data collection and analysis

Difficulties were encountered during the process of collating and analysing the reported costs for the 30 sample BAPs. These difficulties have affected both the ability to collect a complete data set of expenditure for each BAP, as well as the level of detail of the analysis. Consequently, for some of the BAPs there are gaps in the cost data where it is known that action has taken place. Some of these gaps are potentially significant as they relate to potentially major cost areas of BAP implementation, whilst others are less so. Some of the difficulties encountered in gathering cost data have implications for the future monitoring of BAP implementation costs. Others also have implications for future monitoring of the progress of BAP implementation against the established targets.

As well as the problems encountered during the collection of cost data it has also proved difficult, for some BAPs, to make detailed comparisons between the reported and indicative costs. This has usually been due to one or more of the following:

(a) Difficulties in assigning reported cost data to BAPs
(b) Unavailability of data
(c) Revisions of the original targets and actions
(d) Lack of information on the basis of the indicative costings
(e) Determination of hidden costs
(f) Determination of local costs in relation to national targets
(g) Questions of the appropriate allocation of reported costs to BAP implementation

2.2.1 Assigning cost data to HAPs from agri-environment schemes

Assigning cost data from agri-environment schemes to particular areas of expenditure is a problem for some of the BAPs included within the sample. For many of the HAPs the main costs

are strongly linked to agri-environment schemes, which are not primarily geared to report on expenditure in UK BAP terms.

It has been possible to derive agri-environment scheme expenditure data relevant to the lowland heathland, cereal field margins, hedgerows and coastal and floodplain grazing marsh BAP costs. This has not been possible, however, for all agri-environment schemes operating across the UK. It has proved difficult, for example, to derive data from agri-environment expenditure since 1995 for the purple moor grass and rush pasture habitat since knowledge of the distribution of this habitat is not so detailed. Only data from the ESA in West Fermanagh in Northern Ireland could be confidently related to this particular type of grassland.

Agri-environment schemes were not designed solely for the purpose of achieving BAP targets. They have wider and more general objectives, including:

(a) Maintaining landscape beauty and diversity;
(b) Improvement of countryside enjoyment;
(c) Conservation of archaeological and historic features;
(d) Improvement and extension of wildlife habitats;
(e) Restoration of neglected land or features; and
(f) Creation of new habitats and landscapes

In addition, the majority of agri-environment schemes were developed and launched prior to the preparation of the UK BAP. As a consequence, the relationship between agri-environment agreements and BAP priority habitat types can be difficult to establish.

Where there are difficulties, a correlation between agri-environment agreements and HAPs can sometimes be made if there is good information available on the distribution of the habitat. This allows a geographical comparison to be made. For example, this has been possible for the coastal and floodplain grazing marsh HAP where MAFF have been able to correlate agreements with a digitised distribution map of the habitat derived from an inventory commissioned by English Nature.

2.2.2 Assigning cost data to actions and targets

Difficulties have also arisen in the assignment of reported costs to particular actions or targets. This is because the organisations implementing some of the SAPs have only been able to report global expenditure figures. Whilst this enables a comparison to be made between total reported costs and total indicative costs, it does not allow a detailed comparison to be undertaken. As such the extent of analysis of the indicative versus reported cost data is limited.

2.2.3 Distinguishing between baseline and additional costs

The indicative costings provide an estimate of the additional expenditure expected to be incurred from 1995 onwards. As such they do not include the funding prior to 1995 or funds committed but not spent before 1995. In many cases, especially for SAPs, it has proved difficult to distinguish between on-going, committed expenditure and new costs (arising out of the BAP process). In these cases all known expenditure since 1995 was requested and a view was sought from consultees regarding how much of the costs should be assigned to the implementation of the relevant SAP since 1995. Two points should be made clear in this respect:

(a) This introduces an element of subjectivity into the determination of BAP implementation costs.
(b) In most cases the view was expressed that it is not possible to readily differentiate between pre-committed expenditure under, say, the Species Recovery Programme, and any new money that might have been made available as a result of the BAP process.

2.2.4 Unavailability of data

It has not been possible to collect cost data for some areas of work that are known to have been undertaken. This has been due to a variety of reasons. These include:

(a) Confidentiality constraints (for example some revocation costs and private sector funded projects)
(b) A lack of financial data recording
(c) Difficulties associated with teasing out cost data from larger projects, and
(d) A lack of staff time to gather costs within the time frame of this study.

Where no cost data could be made available, but where it was known that costs have been incurred, a note to this effect was made.

2.2.5 Consistency of gathered data

As described in Section 2.1.1, data was requested for the years between 1996/1997 to 2000/2001 with VAT. However, data could not always be provided in this format for the following reasons:

(a) For most of the SAPs and some of the HAPs, the distinction between existing and new expenditure is difficult to make (see section 2.2.3). Some data were collected that related to activities that were on-going, but may or may not have continued had the BAP not been implemented. Where it was felt that existence of the BAP had helped to ensure continued funding the data was included in the reported costs.

(b) As a result of the way in which financial data is stored by the different consultees, it was not always possible to split out expenditure across financial years.

(c) In some cases, the ideal time frame for expenditure (‘96/97 - ‘00/01) could not be used. An estimated start time of 1995 onwards was used in some cases; in other cases the start time did not go back as far as ‘96/97.

(d) Expenditure finish times were also problematic - some data were available to the time of the interview, some to the end of the financial year ‘99/00, and some to the end of ‘00/01.

2.2.6 Local actions and national targets

It is apparent from the interviews with consultees that the review and reporting forms do not reflect the full range of activity being undertaken to implement the HAPs and SAPs. As a result, there is an inherent lack of consistency in the reporting of costs. This problem increases with more widespread species and habitats, as there is a greater opportunity for localised action which may not be reported to the national steering groups. However, the significance of localised action in terms of their costs can vary. For example, the reported cost of local action for a very restricted species with a small indicative cost could make a significant difference to the total reported cost, whereas a local action for a widespread species with a large indicative cost may not be so significant unless the local action is repeated frequently or over a large area.

Deciding when to gather local cost data and when not, is a decision that will affect the reported costs of implementing the BAPs. The indicative costings have generally been estimated with the broad national targets in mind and for some restricted HAPs and SAPs for a well defined set of sites. As such, the indicative costings may not have accounted for high levels of local activity. Consequently, if during the course of gathering cost data a great deal of local activity has been costed, this will drive the reported costs upwards.

On the other hand, some SAPs have high levels of local activity, with local and regional targets being set that do not necessarily accord with the original provisions of the published SAP. This may be due to any number of reasons (such as new populations being discovered, or research

suggesting that a particular action is not the best). In such cases it is unlikely that all local action will have been reflected in the reported costs.

2.2.7 Allocation of costs to HAPs and SAPs

The allocation of costs is an issue that has to be considered carefully during the gathering and analysis of cost data. Because of the close relationship between some habitats and species, and between some habitats and other habitats, the potential exists for a double counting of costs within and between HAPs and SAPs. Reedbeds, for example are closely linked to the SAP for bittern and much of the expenditure under the EU LIFE Bittern project has been on the rehabilitation of reedbeds. This work has been necessary to meet the targets for the bittern, but it has also clearly contributed significantly to the reedbed targets. Whilst bittern is not considered further in this research, the example does serve to illustrate the problems associated with disentangling some cost data. Other examples include expenditure on corncrake and machair, on skylark and various agricultural habitats, and on chalk rivers and coastal grazing marshes.

Differing views have been expressed during the course of this study, over the allocation of certain agri-environment scheme expenditure directly to a particular species. In most cases agri-environment money is clearly aimed at habitat and landscape enhancement and maintenance. In the case of sand lizard for instance, heathland payments are being sought for sand lizard sites, but it is recognised in the description of the costing methodology for SAPs that such expenditure should be allocated to the lowland heathland HAP (Volume 1 of the Steering Group Report). In the case of corncrake and the grassland bird measures in ESAs in Scotland, however, the distinction is less clear. It appears that the grassland bird measure prescriptions are very similar to other corncrake initiatives and the view has been expressed that such measures do not significantly benefit any other priority bird species than corncrake. In this case a decision has been made to allocate the expenditure to the corncrake SAP.

The case of potential double counting between habitat types is illustrated in the chalk rivers and coastal grazing marsh HAPs in relation to payments made in Avon Valley and Test Valley ESAs. The review and assessment form for chalk rivers suggests that these ESAs were established primarily to benefit the habitats of the chalk rivers by providing a mechanism whereby diffuse source pollution can be addressed. However, payments made for coastal and floodplain grassland in the ESAs also contributes to the implementation of this other HAP. Additional habitats such as lowland meadows are also likely to benefit.

2.2.8 Hidden costs

It became apparent from the interviews that a proportion of the work undertaken for the biodiversity action plans has been absorbed in-house by the statutory agencies and their non-governmental partners. These costs are extremely difficult to gather. To a certain extent they are part of the 10% administration cost included in the indicative costings and should be collated, but it is likely that a great deal more work is undertaken for which costs cannot be readily obtained. The cost of the time of the steering groups for the SAPs has been estimated where possible and for some SAPs this is a significant element of the reported expenditure. In many cases it is much higher than the 10% administration cost that were originally included in the indicative costings.

A significant volunteer input has been made in the implementation of some SAPs. “Out of work hours” input from a large number of professional conservation staff has also been made during the implementation of various BAPs. It has only been possible in a small number of cases to gather accurate data relating to such volunteer time input, and so for the sake of consistency it was decided not to include volunteer input in the costings calculations.

2.2.9 Problems with the basis of the indicative costings

The Tranche 1 HAP indicative costs were based on a consideration of the habitat maintenance and re-creation *targets*, rather than the individual *actions*. The indicative costs do not in general,

therefore, include (unless stated) the costs of research, monitoring, advice to managers, site safeguard and designations and publicity. Consequently the Tranche 1 indicative costings for HAPs do not include costs for all of the types of action specified in the plans. As a result it is likely that the indicative costings underestimated the true cost of implementing the BAPs.

A brief explanation of the basis of the HAP costings is available in some cases, but this explanation often does not describe any of the assumptions made in the calculations, or the actions that were included in the costing. Neither does it detail any of the generic costs on which the costing has been based. As a consequence, for the HAPs, where there is a difference between the reported and indicative costings it is difficult to identify clearly the possible reasons for the difference.

For the SAPs unpublished tables were provided by English Nature that allocate costs for each of the main areas of action that comprise the indicative costing. Whilst they provide headline cost figures for 1995, 2000 and 2010 against particular categories of action, they do not detail costs against specific actions, or the assumptions that have been made to calculate the costs. Nor do they present the generic costs. This can restrict the analysis of differences between reported and indicative costs.

2.2.10 Revision of targets and actions

The need for a clear understanding of the original basis of the indicative costing is important where actions and targets have been amended once the implementation of the plans has begun. For instance in the coastal and floodplain grazing marsh HAP, a number of new actions have been added since 1995, but in this case they have not seriously affected the costing because the principal area of cost (agri-environment scheme expenditure) has not been affected by the changes. In other BAPs however, such as the purple moor grass and rush pasture and saline lagoon HAPs, the targets have been revised in such a way as to cause the reported expenditure to deviate significantly from the indicative costings. The Starfruit SAP has also had changes made to its targets so that the plan now includes management of extant, as well as potential restoration sites. A higher level of expenditure than anticipated in 1995 may well have been incurred, therefore, as a result of the revision of the original actions and targets.

3.0 REPORTED COSTS

The information gathered in this study is more directly focussed on individual BAP costs and substantial efforts have been made to collect as much cost data as possible in the time available. In most cases, information on the costs incurred in implementing particular BAPs is not readily available from any one source so the collection of data has been a complex exercise. In many cases, by no means all the information about the various costs has been uncovered. The findings are therefore subject to a number of uncertainties, some of which might suggest the true costs would be higher, and others that suggest they would be lower, than that reported. Reasons why the reported costs might be higher or lower than those in the indicative costing fall into five broad categories:

1. Missing data

Data on costs incurred implementing the BAPs may be missing for a variety of reasons including:

(a) Data is known to exist but could not be made available, e.g. data may be confidential
(b) Data that is known to exist but cannot be accurately allocated to a particular BAP, e.g. expenditure under some grant schemes. (The problem of assigning some expenditures from agri-environment schemes to specific BAPs could account for significant variations in the costs attributed to individual plans).
(c) Cost data has not been reported.

2. Changes in the delivery of targets of actions

A number of changes to how actions and targets are delivered can occur. These include:

(a) New or unanticipated targets and actions, e.g. new actions proposed by the BAP steering groups or hidden costs such as agency activities (excluding so-called core duties), leading to costs incurred that were not included in the indicative costing
(b) Variation in the delivery of actions compared to that assumed in the indicative costing e.g. progress against targets has been slower or faster than anticipated and hence costs have fluctuated accordingly. Reports of slower than anticipated progress should not be interpreted as a criticism of the work of the individuals, organisations or the steering group attempting to implement the BAP because a range of different circumstances has influenced the rate of progress against targets. In some cases these have simply been intractable problems that could have been foreseen when the BAPs were being drawn up. For example, with the red squirrel BAP a reintroduction programme was attempted, but it was not successful ecologically and attaining targets for the white-clawed crayfish BAP has been hampered by the crayfish plague. In other cases it has taken longer than anticipated to find out what actions have been required to meet particular targets. In other cases, however, it does also appear that progress has been slower than anticipated because of a shortage of funding or a slower than anticipated uptake of existing delivery mechanisms such as agri-environment schemes.

3. Changes to generic costs

For example, increases or decreases in payment rates under agri-environment schemes since the BAPs were published as a result of changes in market conditions. Differences in generic costs can also arise because they were under-estimated or over-estimated in the indicative costing. In some circumstances the full cost of implementing an action has not been as high as the indicative costing because of voluntary inputs to contracts or because a particular contractor is committed to the research and undertaken work on favourable terms.

4. Actions and costs altered by other policies

For example, costs associated with actions included in the indicative costing may be incurred under the implementation of other government policy.

5. Uncertainty about assigning expenditure/costs
Decisions about whether reported cost data should be assigned to the implementation of a particular BAP can account for differences. Particular areas of uncertainty include:

(a) The inclusion of baseline costs, e.g. expenditures which were already committed to prior to the BAP process
(b) The inclusion of costs where other benefits in addition to biodiversity conservation have been gained, e.g. some agri-environment scheme payments such as bird measures payments in Scottish schemes

The significance of these to the findings for individual BAPs will vary and where appropriate an indication of where these categories is important has been made.

A summary of the reported cost figures is presented below for each of the sample HAPs and SAPs. A detailed breakdown of the reported costs is presented in tabular form in Appendix 1 for HAPs and Appendix 2 for SAPs. In these detailed tables the actual costs are presented under the six broad headings used to group the actions within each action plan. The tables also identify those actions for which cost data is not available and the actions that have not yet been implemented.

The detailed tables also indicate where costs have been excluded because of double counting with expenditure on another HAP or SAP.

3.1 Habitat Action Plans

3.1.1 Chalk Rivers

Indicative and reported costs

Indicative costs (Total 1996/97 to 2000/01)	Reported costs (Total 1996/97 to 2000/01)
Calculated total cost: £4,091,130	
10% administration:£409,113	
Total: £4,500,243	**Total: £1,337,496**

Indicative costs:
The indicative cost estimate was based on a target for maintaining and enhancing 700 km of chalk rivers until 2010. The explanation of the estimate recognises that costs will be incurred by both the public and private sector. The figures given in the indicative costing, however, include public sector costs only. No published breakdowns of the expected actions required or the generic costs underlying the indicative costing are available.

Unpublished papers suggest that the indicative costs for this HAP includes:

(a) Incentive schemes for appropriate land management (around £500,000/year from 2000-2010)
(b) Removal of phosphate from sewage works into SSSI rivers (£6M to 2003),
(c) Assessment of the conservation value of chalk rivers,
(d) Experimental restoration projects and
(e) Research into the impacts of adjacent land-use.

It is not clear whether these types of cost or the levels of indicative expenditure were included in the published indicative costing.

Reported costs:
The data on reported costs includes:

(a) expenditure under two ESAs (Test Valley and Avon Valley)
(b) expenditure on advisory material, research and monitoring

Comparison of data:
The reported costs suggest that to date they have been lower (approximately a third of the indicative costing) than estimated in 1995. This could be for a number of reasons:

Missing data
1) In terms of public sector costs no data has yet been available on EU LIFE funding and there is no database available that allows ready collection of costs for the many small projects contributing to chalk river maintenance and enhancement that are taking place.
2) A number of the reported costs provided do not include data up to the end of this financial year and only include costs to date.
3) The reported costs that have been included for expenditure under the Test Valley and Avon Valley ESAs will also cover actions on other habitats such as coastal and floodplain grazing marsh and lowland hay meadows. However, the costs are attributed here as the predominant habitat is chalk rivers. On other ESAs where this habitat also occurs cost data cannot be readily allocated to Chalk Rivers, as they were not primarily established to benefit the chalk river valley habitat. Expenditure within these ESAs, however, will be contributing to protecting

and enhancing the water quality of chalk rivers within them. It is not known if the indicative costing included expenditure under these schemes.

Actions and costs reduced by other policies

4) It is possible that a number of the costs included in the indicative costing have been undertaken by water companies rather than government departments as a result of requirements to improve water quality in key rivers. The water companies have undertaken a range of beneficial action, including phosphate removal at sewage treatment works and habitat enhancement projects such as the Upper Kennet Rehabilitation Project. The cost of these actions is not currently available and may or may not be attributable to the HAP depending on the principal reasons why they were carried out.
5) One of the principal sources of funding for work that benefits the water quality and habitats of chalk rivers is the Asset Management Programme (AMP) implemented by private water companies. Little work was undertaken on chalk rivers in the AMP2 process and no data is available. AMP3 is addressing sewage effluent treatment on SSSIs on the River Nar, River Wensum, River Kennet, River Lambourn, River Avon, River Frome and on the headwaters of the River Hull. It is also dealing with problems resulting from abstraction on the River Itchen and River Kennet. None of these schemes will be completed until 2002 at the earliest. No cost information is currently available on these initiatives, some of which may be contributing to the HAP targets. These costs may or may not be attributable to the BAP depending on whether the actions are being undertaken principally to meet the BAP targets or for other policy requirements.

Summary:

The reported costs are just over £3M lower than the estimated indicative costs. It is likely that this is due to:

(a) Missing costs
(b) Actions and costs being undertaken under policies other than those associated with the BAP implementation

3.1.2 Mesotrophic Lakes

Indicative and reported costs

Indicative costs (Total 1996/97 to 2000/01)	Reported costs (Total 1996/97 to 2000/01)
Calculated total cost: £1,418,810	
10% administration: £141,881	
Total: £1,560,691	**Total £1,521,600**

Indicative costs:
The indicative costing for this BAP was based on the target of monitoring and restoring 50 priority lakes. The costs provided are recognised to be a preliminary estimate of the likely annual resource costs. No published breakdown is available for the generic cost of restoring Mesotrophic Lakes.

Unpublished information suggests that the indicative cost estimates include:

(a) Phosphate removal from sewage treatment works between 1998 and 2010 at a generic cost of £250,000/year,
(b) The introduction of schemes to protect lakes from diffuse pollution between 1998 and 2010 at a generic cost of £100,000/year and
(c) Restoration of key biota between 1998 and 2005 at a generic cost of £50,000/year.

Reported Costs:
The reported costs that have been collated include:

(a) Erne catchment strategy costs (£52,600).
(b) Other costs associated with policy work (£518,900).
(c) Site protection and management (£180,000)
(d) Advisory work (£55,000)
(e) Research (£380,000)
(f) Publicity and promotion (£22,500)

Comparison of data:
The data on reported costs indicates that the costs to date are of a similar magnitude to the expenditure estimated in 1995. This apparent similarity in expenditure, however, does not appear to be due to an accurate estimate of the indicative costs or because the HAP has been implemented in the manner anticipated in the indicative costing. This is for the following reasons:

Missing data
1) The apparent similarity between the indicative costs and the reported cost data is also potentially mis-leading because there are missing cost data for actions that could have contributed to the implementation of the HAP. These may or may not include: (a) expenditure under the AMP process on measures to control water abstraction or remove point source pollution, and (b) payments under agri-environment schemes for buffer strip and waterside margin management. These agri-environment measures could be making a contribution to the control of diffuse pollution in Mesotrophic Lakes. It is not possible at the current time, however, to draw out the contribution of expenditure under the agri-environment schemes in relation to Mesotrophic Lakes until the list of priority lakes and the proposed lake classification scheme has been finalised. It should be also noted that the expenditure under the AMP process may not be attributable to the BAP if it is incurred for other policy reasons.

Delivering targets and actions

2) According to the Review and Assessment Form, work on this HAP to date has focused on the production of a work plan, the identification of criteria for defining Mesotrophic Lakes and the collation of an inventory of lake sites to be prioritised for remedial action. Progress of remedial works is only likely to be undertaken once a priority list of 50 Mesotrophic Lakes has been produced.

Summary:

The reported cost data collected suggest that there has not been a substantial increase or decrease in costs compared to the indicative costing. However, this does not appear to be because the work undertaken to date has been that included in the indicative costing. It is rather that additional work not included in the costing has been undertaken that coincidentally is equivalent to the expenditure estimated for restoration work to priority lakes.

3.1.3 Reedbeds

Indicative and reported costs

Indicative costs (Total 1996/97 to 2000/01)	Reported costs (Total 1996/97 to 2000/01)
Calculated total cost: £1,554,630	
10% administration: £155,463	
Total: £1,710,093	**£4,684,369**

Indicative costs:
The indicative cost estimate is based on a target of maintaining and restoring 5,000ha of reedbed and creating a further 1,200 ha. The indicative costs were based on a generic maintenance cost of £100/ha/yr (including existing commitments in 1995) and a generic re-creation cost of £620/ha/yr in 2000. The original estimate also assumes that 600 ha would be re-created by 2000.

Reported costs: The data on reported costs includes:

(a) EU LIFE Bittern Project (Expenditure £2,457,369)
(b) Research costs (£93,000)
(c) Other costs (£6,000)
(d) Estimated costs of habitat restoration and creation (£2,000,000)

Comparison of data:
The data on reported costs collected suggest that the costs to date have been much higher than estimated in 1995. Although there appears to have been a significant increase in expenditure compared to that estimated in 1995, it is likely that the true cost of implementing the HAP to date is higher than the reported cost presented in this report. This is likely to be for the following reasons:

Missing data:
1) Whilst none are thought to be very significant compared to the costs of physical management of the habitat, they would contribute to the overall cost of implementing the HAP. As a result the reported costs presented represent a minimum reported cost estimate.

Despite the missing data the reported costs are almost three times greater than the indicative costing. This is likely to be due to the following:

Delivering targets and actions
2) The higher reported costs may be partly due to greater progress in restoring reedbeds than anticipated in the indicative costing. This, however, needs to be off set against the slower than estimated progress in the creation of new reedbed habitat.
3) The reported costs also include research and other costs that were not included in the indicative costing. Whilst the HAP includes actions for publicity, survey and research, no costs for these were included in the indicative costing.

Higher generic costs
4) The review and assessment form suggests that outside the EU LIFE Bittern Project, approximately 323 ha of reedbed restoration and 296 ha of reedbed creation has taken place since the HAP was published. The cost of this work has been estimated by the RSPB as £2.0M at a generic cost of approximately £3200/ha. Similar generic costs have been derived

from samples of reedbed restoration and creation[9]. These estimated generic costs (£1600 and £3200) for reedbed restoration and creation are significantly higher than the generic costs used in the original costing. This is partly because they include the full costs of restoring and creating habitats including project management costs, monitoring costs, aftercare costs and feasibility study costs. This estimate has to be treated with some caution however, particularly with regard to creation projects, as a variety of organisations and methods have been involved in the creation of new reedbeds and their costs may differ significantly from the generic cost detailed above.

5) The reported costs presented for the EU Bittern LIFE Project are also higher than the generic costs used in the indicative costing because they include project management and monitoring costs.

Summary:

There is a substantial difference between the indicative costs and reported costs indicating that the reported costs have been almost three times greater than anticipated. It is most likely that these differences are due:

(a) Higher generic costs for habitat restoration and creation
(b) Additional expenditure not included in the indicative costing
(c) More than anticipated progress against the targets for habitat restoration.

There are also thought to be missing data that would suggest that the true cost of implementing this HAP to date has been higher than suggested by the reported costs.

[9] Shepherd, P. and D. Harley (1999) Preparation and presentation of habitat replacement cost estimates using examples of the restoration and creation of coastal and floodplain grazing marsh, reedbeds and lagoons. English Nature Research Reports 345

3.1.4 Seagrass beds

Indicative and reported costs

Indicative costs (Total 1996/97 to 2000/01)	Reported costs (Total 1996/97 to 2000/01)
Calculated total cost: £1,782,000	
10% administration: £178,200	
Total: £1,960,200	**£226,000**

Indicative costs:
The indicative cost estimate is based on the restoration of 1000ha of seagrass beds. The explanation of the costing states that the cost has been calculated based on a single project in the USA with an average total cost of £5,000/ha.

Reported costs:
The data on reported costs include survey and research costs from the EU Marine SACs LIFE Project. There is no cost data available for habitat restoration, because no restoration work as envisaged by the HAP has yet taken place.

Comparison of data:
The data on reported costs suggests that the costs to date have been significantly lower than estimated in the indicative costing in 1995. This is for the following reason:

Delivering targets and actions
1) There has been no progress against the restoration target, which is the only action included in the indicative costing.

Summary: The reported costs are significantly lower. This is because the restoration work included in the indicative costing has not taken place. In addition the work that has been undertaken, although additional to the indicative costing, has incurred substantially less expenditure.

3.1.5 Saline lagoons

Indicative and reported costs

Indicative costs (Total 1996/97 to 2000/01)	Reported costs (Total 1996/97 to 2000/01)
Calculated total cost: £6,267,580	
10% administration:£626,758	
Total: £6,894,338	**£275,600**

Indicative costs:
The indicative cost estimate was based on a target of maintaining and enhancing 700 ha of lagoon habitat. The explanation of the costing recognises that costs are expected to fall to the private and the public sectors, but that the costs presented are those expected to fall to the public sector only. No published breakdown of the indicative costing is available. Unpublished information indicates, however, that the 700 ha refers to the extent of the resource not within SSSIs or NNRs and that the indicative costs are based on the cost of restoring and bringing into proper management a single lagoon site in the south of England (Widewater Lagoon). Otherwise the generic costs used to calculate the indicative costing is not clearly stated.

The HAP also identifies the need to re-create 120 ha of lagoon, but the cost of implementing this target does not appear to be included in the indicative costing.

This HAP was re-published as a Tranche 2 HAP in 1999[10]. The revised HAP repeats the costing published in the Tranche 1 version for 700 ha but indicates that this is for illustration only and does not exceed the targets set in the re-published version of the plan. The revised targets include a maintenance target of 5200 ha of existing lagoonal habitat. Otherwise the re-creation target of 120 ha remains unaltered.

Reported costs:
The data on reported costs includes:

(a) An estimated cost of creating 30.4 ha of Lagoon (£204,000)
(b) Preparation of inventories and research (£29,800)
(c) Other costs such as advisory work (£22,000)
(d) Publicity (£18,000)

Comparison of data:
The reported costs are substantially lower than those estimated in 1995. This could be for a number of reasons:

Missing data
1) Cost data is not readily available for maintaining and enhancing saline lagoons. No payments are made for this HAP under agri-environment schemes.

Delivering targets and actions
2) The review and assessment form prepared by the HAP steering group assesses progress against the creation target, the identification of some sites of European importance and their management, raising awareness and data gathering through survey. No assessment is made of the progress against the maintenance and enhancement target. Consequently, it is not possible to determine if the lower than anticipated costs are due to an under-delivery against the target of maintaining and enhancing 700 ha of lagoon habitat beyond designated sites.

[10] UK Biodiversity Group (1999). Tranche 2 Action Plans Volume V. Maritime species and habitats.

3) It has been assumed that the indicative cost estimate does include habitat creation as well as maintenance. Consequently, after the first 5 years approximately 40 ha of new lagoon habitat should have been created. The amount of habitat creation reported in the review and assessment form is 30.4 ha. However, without information on the indicative generic cost of creating saline lagoons, as well as data on the reported cost, it is not possible to compare reported and indicative costs. No cost data have been collected for habitat creation, and the reported cost has been calculated based on the known cost of £6700 to create a 1.5 ha lagoon at Salthouse[11]. The cost of creating the lagoon at this site includes land purchase, which is the largest cost element, as well as project management costs, aftercare, planning and monitoring costs. This generic cost should be treated with caution, as some lagoon creation schemes may not have required any land purchase. Consequently, the cost of £204,000 is likely to be an over-estimate.

Summary:
There is a very large difference between the indicative costs and reported costs with the reported costs being just over 4% of the anticipated expenditure. It is most likely that this difference is due to:

(a) Missing data on habitat maintenance.
(b) Slower progress than anticipated against the targets for habitat creation.

[11] Shepherd, P. and D. Harley (1999) Preparation and presentation of habitat replacement cost estimates. Using examples of the restoration and creation of coastal and floodplain grazing marsh, reedbeds and lagoons. English Nature Research Reports 345.

3.1.6 Upland Oakwood

Indicative and reported costs

Indicative costs (Total 1996/97 to 2000/01)	Reported costs (Total 1996/97 to 2000/01)
Calculated total cost: £27,819,650	
10% administration: £2,781,965	
Total: £30,601,615	**Total: £10,254,231**

Indicative costs:
The indicative cost estimates are based on targets whereby 100,000 ha of upland oak wood would be appropriately maintained and enhanced, with 20,000ha assumed as already being in favourable management programmes. The costing also includes the cost of restoring 10,000 ha by 2010. The target for expansion of 10,000 ha does not appear to be included in the indicative costing.

Changes to targets:
The indicative costing is based on restoring 10,000 ha of upland oakwood, however, the HAP steering group has revised this figure downwards to 7,000ha. The same target area of 7,000ha has been set for habitat creation, but it is unclear how this affects the indicative costing as it does not include an estimated cost of habitat creation.

Reported costs:
The data on reported costs includes:

(a) Woodland Grant Scheme (WGS) and other agri-environment scheme expenditure since 1995 on woodland management and expansion.
(b) Management by Forest Enterprise of State Forests.
(c) Atlantic Oakwood LIFE budget
(d) Research and monitoring costs.

Comparison of data:
The reported costs are significantly lower than those estimated in 1995 (a third of the indicative cost). This could be for a number of reasons:

Missing data
1) Cost data is not available on expenditure under some schemes for the years 1999/00 and 2000/01. There is also no data currently available for expenditure on oakwoods in Northern Ireland or from agri-environment schemes.

Delivering targets and actions
2) The review and assessment form prepared by the HAP steering group for the target of habitat maintenance states that *"progress to date cannot be precisely measured, but substantial areas of upland oakwoods are being brought under WGS schemes annually".* The area reported as being under management through Woodland Grant Schemes, Tir Gofal and Tir Cymen, is 6834 ha. No area can be provided for management within state forest, although the review and assessment form reports that local management plans have been completed for 8000 ha. Consequently, determining if the difference between indicative and reported costs is due to slower progress on implementation than anticipated is not possible. Even if the figures presented above are close to the area brought into maintenance management (14,834 ha) since the publication of the HAP it appears likely that progress has not been as fast as anticipated in the indicative costing.

The difference between reported and indicative costs is likely to be greater than it appears from the reported costs data collected. This is because the reported cost data includes additional expenditure to that included in the indicative cost estimate. The difference is also likely to be greater because the area of new woodland planting under the WGS suggests that the target of 7,000ha has already been exceeded.

Summary:
There is a significant difference between the indicative costs and reported costs suggesting that the reported costs have been approximately only a third of that anticipated. It is most likely that these differences are due to:

(a) Missing data on habitat maintenance.
(b) Slower than anticipated progress against the targets for habitat maintenance.

The lower reported costs than the indicative costing also should be considered in light of the fact that the indicative costing is an underestimate of the true cost of implementing the HAP because it does not include the cost of expanding the resource by 10,000 ha or costs of research and other areas of work required by the HAP.

3.1.7 Native Pine Woods

Indicative and reported costs

Indicative costs (Total 1996/97 to 2000/01)	Reported costs (Total 1996/97 to 2000/01)
Calculated total cost: £1,890,000	
10% administration: £189,000	
Total: £2,079,000*	**Total: £13,385,306***

* - these figures relate to different actions and are not comparable – see below

Indicative costs:
The indicative cost was an estimate of the cost of extra actions required to meet the targets of maintaining and enhancing 16,000 ha and expanding the area of native pine wood by 36,000ha. The targets for the HAP require that work to encourage natural regeneration, restoration and creation is completed by 2005. The area of expansion is stated in the plan to be the total cumulative area assumed to be established or prepared for re-generation by 2005 under the WGS since 1989. The HAP states that 14,000 ha had been entered into the WGS between 1988 and 1995, leaving a total additional area of 22,000 ha to be brought into natural regeneration or expansion between 1995 and 2005.

The indicative costing states that the major part of the published costing will be in Forestry Authority grants for additional programmes of natural regeneration within and adjacent to remnant pinewood of 200ha/yr from 1997 to 2005. This would add up to an area of 1600ha at an average annual cost over the eight-year period of £250,000 per year or £1250/ha. Bringing remaining pine wood remnants into favourable management was estimated to result in additional costs of £1000,000 per year, in the form of WGS management grants.

The target area figure for expansion included in the indicative costing (1600ha) is much lower than the outstanding 22,000ha required to meet the expansion target between 1995 and 2005. It appears that the indicative costing was based on the assumption that the remaining area of the 22,000ha for pinewood regeneration/expansion would be funded by existing WGS grants for pine woods. Thus the costing covers only the additional actions required, over and above those taking place at the start of the plan. It is important to note that the indicative costs for pine wood expansion relate to the key action of expanding pine woods through natural regeneration in remnant pinewood areas, not the planting of new pine woods.

No detailed breakdown of the basis of the costing for either regeneration or maintenance has been published.

Reported costs:
The data on reported costs includes:

(a) Expenditure since 1995 under the WGS on habitat management and expansion
(b) Forest Enterprise expenditure on state forest since 1995.
(c) Research and other costs.

As a result, the reported cost estimates vary greatly in scope from the indicative costings.

Comparison of data:
It is not been possible to break down the reported costs for expenditure under the Woodland Grant Scheme into natural regeneration and to relate this to the additional expenditure on the

area of 1600 ha used in the indicative costing. This is because it is not clear which of the reported costs relate to the actions included in the indicative costing, i.e. natural regeneration in and adjacent to remnant pine wood areas.

A direct comparison between the indicative costing and the reported costs suggests that to date there has been just over 6 times more expenditure than estimated in 1995. Making such a direct comparison, however, is misleading as it does not compare like with like, because the reported costs include expenditure through the Woodland Grant Scheme that was assumed to already be committed and was therefore excluded from the indicative costing.

To allow a rough comparison to be made the indicative costing can be adjusted to include the cost of bringing 11,000 (half of 22,000ha) ha into the Woodland Grant Scheme. Of this total it could be assumed that at least 960 ha (three fifths of the 1600 ha) would be at a generic cost of £1250/ha for natural regeneration as stated in the indicative costing. It is not known if a similar generic cost could be used for all or part of the 10,040ha not included in the indicative costing. If this generic cost were used the total cost for expansion of pinewood on 11,000ha by 2000 would be £13,750,000. Added to the indicative maintenance cost of £500,000 between 1995 and 2000 gives a notional total cost of £14,250,000 plus a 10% administration cost of £1,425,000.

The reported costs are £2.5M lower than this notional indicative cost. The difference could be due to:

Missing Data

1) Cost data that is not available includes; management costs of new agreements for SSSIs (including NNRs) since 1995 and hidden costs in the form of staff time for undertaking many of the actions in-house or for managing contractors. The latter area of additional costs, however, is so varied that it has not been possible within the timescale of this study to make an accurate estimate of these.

Delivery of targets and actions

2) The majority of the reported costs arise from the expenditure through the Woodland Grant Scheme on creation of new pine woodland. The estimated area covered by this expenditure is approximately 10,400 ha which is just short of the 11,000 ha that the target suggests needs to be created by 2000. Progress against the expansion target is lower by 600 ha, which at a generic cost of £1010 is approximately £600,000.

Differences in generic costs

3) The indicative costing was based on a generic cost of £1250 for natural regeneration. The reported cost is on average £1010/ha. The reported costs, however, include natural regeneration and new planting which may be the reason why the reported costs are lower.

Summary:

There is a significant difference between the published indicative costs and reported costs, but a direct comparison cannot be made between these two figures. A rough attempt to adjust the indicative costs has been made. The reported costs are approximately £2.5M lower than this adjusted indicative cost estimate. It is likely that these differences are due to:

(a) Inaccurate assumptions made during the reworking of the indicative costing
(b) Missing data
(c) Differences in the generic cost of creating new native pine forest
(d) Slightly slower progress than expected in implementing the plan targets.

It is important to note that this comparison has been based on an assessment of the estimated costs of delivering the entire HAP for native pine woods (including baseline expenditures). No assessment has been possible of the cost of delivering the key costed target of 200 ha/yr of additional natural regeneration in remnant pine wood areas.

3.1.8 Limestone Pavement

Indicative and reported costs

Indicative costs (Total 1996/97 to 2000/01)	Reported costs (Total 1996/97 to 2000/01)	
Calculated total cost: £702,000	Management reported cost:	£191,390
10% administration: £70,200	Additional reported costs:	£106,638
Total: £772,200	**Reported total cost:**	**£298,028**

Indicative costs:
The indicative costing was based on a target of maintaining 1,600 ha. It is assumed that this is additional to the 700 ha already in conservation management. The costings also recognised that by 2010 new capital works will be required on many areas and expenditure of £40k has been incorporated to reflect this. The indicative costing indicates that the costs are all additional to the public expenditure in 1995.

The indicative costing also included the cost between 1996 and 2000/2001 of £500k for the revocation of existing planning permissions to extract stone.

No published breakdown is provided for the assumed cost/ha used to calculate the figures presented and no explanation is provided on the rate of progress over the first 5 years and following 10 years of the plan.

Reported costs:
The data on reported costs includes:

(a) Expenditure on an additional 300ha of pavement coming into WES agreements (£156,000)
(b) Revocation costs of £35,000
(c) Publicity materials and provision of advice (£16,044)
(d) Research into the trading of water worn stone (£20,000)
(e) Inventory of English pavements (£4,600)
(f) Running costs of the Limestone Pavement Action Group (£60,000)

Comparison of data:
The reported costs are significantly lower than those estimated in 1995. This may be for a number of reasons:

Missing data
1) The reported cost presented above is not complete as cost data for positive management agreements on SSSI outside the WES scheme of the Craven area and costs incurred by other government agencies and public sector bodies are not available.
2) Data on one revocation site was not available and on another the data remains confidential.

Delivering targets and actions
3) There may be a difference in the area of limestone pavement to be brought into favourable management since 1995 compared to the indicative costing. The additional pavement under management since 1995 is reported as being 300ha in the Craven District, which is some 200ha less than suggested in the indicative costing. The apparent difference between the reported cost data and the indicative costs is greater than suggested. This is because the reported cost data includes expenditure on additional areas of work not included in the indicative costing. These include items (c) to (f) listed above.

Changes in generic costs

4) The indicative costing included revocation costs of £500,000. The reported cost data includes revocation costs of £35,000. This is partly because some revocations have been achieved at a lower cost that expected.

Summary:

There is a significant difference between the indicative and reported costs suggesting that the reported costs have been substantially lower than anticipated. It is most likely that these differences are due to:

(a) Missing data on habitat maintenance expenditure.
(b) Slower progress than anticipated against the targets for habitat maintenance.
(c) Lower expenditure than anticipated on revocation of permissions to extract stone.

3.1.9 Lowland Heathland

Indicative and reported costs

Indicative costs (Total 1996/97 to 2000/01)	Reported costs (Total 1996/97 to 2000/01)
Calculated total cost: £8,722,250	Land management: £4,749,085
10% administration: £872,225	Research: £833,000
	Other costs: £27,000
Total: £9,594,475	**Total: £5,609,085**

Indicative costs:
The cost was based on the targets of the maintaining and restoring 58,000ha and creating 6,000ha[12]. No indication of the area of the 58,000ha already in favourable condition is given in the UK Biodiversity Group report (Volume 2). A report on the indicative costs[13], however, indicates that costs were based on the assumption that approximately 37,468 ha were under management with 23,548 ha in private ownership and 13,920 ha in public ownership. Of the total area under management 19,479 ha was estimated to be within agri-environment schemes (9888 ha in Stewardship, 4,125 ha in ESAs, 4,450 ha in WES and 1,000 ha in RES).

The re-creation target was taken to include the area already being re-created in 1995 which was reported as 1,250ha. The indicative costing is therefore for an additional 4,750 ha (at 317 ha per year) to be re-created during the lifetime of the HAP.

The generic maintenance cost used in the indicative costing was £95/ha/yr. The re-creation cost was based on a cost of £300/ha/yr in 2000. The indicative costing also included a public sector land purchase component of 50 ha/yr and 50% grant to private sector land purchases of 120 ha/yr through to 2010.

Reported costs:
The data on reported costs include:

(a) Agri-environment scheme expenditure since 1995
(b) Expenditure on specialist programmes such as Tomorrow's Heathland Heritage
(c) Research and other costs

Comparison of data:
The reported costs are lower than estimated in 1995. The apparent difference between the reported cost data and the indicative costs is greater than suggested. This is because the reported cost data includes expenditure on additional areas of work not included in the indicative costing. These include items (c) and to a certain extent item (b) listed above. Despite this the reported costs are still only 63% of the indicative costing. This is likely to be for a number of reasons:

Missing data
1) No reported data has been collated for land purchase costs, which were included in the indicative costing.
2) Assigning expenditure since 1995 under WES and RES to this habitat has not been possible within the timescale of this study. This is potentially a large area of public sector expenditure.

[12] A range of alternative costings are provided for this HAP from low through to high. The indicative costs used in this study are based on the central estimate of cost.
[13] Harley, D (1997) Working Papers for the Habitat Action Plan Costings in the Biodiversity Steering Group Report. RSPB

The indicative costing estimated a total additional expenditure under WES of £1,125,000 and under RES of £28,400. This could potentially account for a significant proportion of the apparent difference between indicative and reported costs.

3) No cost data is available for the additional expenditure on other SSSI agreements since 1995 outside WES and RES. This could also be a significant cost.
4) The cost of managing coastal heaths in Wales and Scotland has not been included, as there is uncertainty over what proportion of the resource is genuine lowland heathland and what is maritime cliff and slope habitat. There could, however, be a significant level of expenditure associated with these coastal heaths. For example, the Countryside Premium Scheme between 1996 and 2000 expenditure was approximately £260,000 on management of just over 1000 ha of coastal heaths in Scotland.
5) The indicative costing includes the management of public sector land. The costing predicts that 15,660 ha would be in management by 2000: an increase from 1995 of 1740 ha. This public sector land is assumed in the costing to be primarily land managed by the Crown Estates, MoD and Forest Enterprise and the costing is based on the assumption that 80% was already under management in 1995. Data is available for total expenditure by Forest Enterprise on heathland habitats between 1997 and 2000 (£1,017,000) and by the Ministry of Defence between 1995 and 2000 of £941,000. It has not been possible, however, within the timescale of this study to determine the new area of heathland brought into management and the associated expenditure since 1995.
6) In addition to a lack of data, some areas of lowland heathland are not included in current schemes geared towards heathland such as Tomorrow's Heathland Heritage (THH). For example, work on heathland in the New Forest and Sherwood Forest, is not within the THH, but is contributing to the heathland targets. Expenditure data in these two areas is not available in a form that can be readily allocated to heathland as opposed to other habitats benefiting from the work. The New Forest is the subject of a separate LIFE Project; and Sherwood Forest is part of a holistic programme of works attempting to re-create and maintain the full range of Sherwood habitats.
7) Other costs incurred for the preparation of a management handbook and inventories, the running of training courses and hidden costs are not included.
8) Data is only available for the English ESAs as it has not proved possible within the timescale of this study to make a distinction between lowland and upland heath in the Welsh ESAs. Neither can a clear distinction be made between moorland and coastal heath agreements in the Exmoor ESA. In 1995 the English ESAs covered the vast majority of the area under payment (4,100ha). Making a comparison between indicative and reported costs under the ESA is not straight forward. Although the original costings stated that some 4100 ha of heathland is under agreement in 1995, a comparative figure for the period 1995 and 2000 can not be determined using the data supplied as part of this research. This is because there is only one ESA (Breckland ESA) that makes a clear distinction between lowland heathland and other heather dominated habitats. The reported cost data presented above includes the cost of heathland creation in the Breckland ESA on 162 ha and additional management expenditure on 514 ha between 1996 and 1999. This will be only a proportion of the reported costs under the ESAs. The lower costs than those estimated in 1995 (owing to the lack of available data for some ESAs) will be contributing to the apparent difference between the indicative and reported costing.

Delivering targets and actions

9) The review and assessment form prepared by the HAP steering group reports various items of progress under agri-environment schemes. However, the report is unable to provide a detailed summary of progress against the different types of land management schemes available for heathland management, restoration and creation because the data is not available to enable this to be undertaken. As a result it is not possible to determine accurately if the apparent difference between the reported and indicative costs is due to slower progress against the targets than anticipated.
10) The indicative costs are public sector costs and are based largely on future expenditure under agri-environment schemes. For example the indicative costs are based on 31,668 ha

of heathland in the private sector being in management by the year 2000. Of this 29,750 ha will be receiving some form of agri-environment scheme payment. To achieve this target some 10,271 ha of heathland would need to be brought into new agreements. It was estimated that 2112 ha would come under Stewardship, 875 under ESA, 3,284 under WES and RES combined and 4,000 ha other schemes. The reported costs include data on Tir Cymen, Tir Gofal, ESA in England and Countryside Stewardship. The differences between the indicative and reported costs for Countryside Stewardship, ESA, Tir Cymen and Tir Gofal are discussed below.

Countryside Stewardship

The estimated cost for heathland management payments in 1995 under this scheme was £55/ha/yr, which included the current revenue payment levels plus some allowance for capital payments. This was assumed to increase to £100/ha/yr by 2000. The reported cost data provided for management under Stewardship is for a payment rate of £20/ha/yr in 1996 and 1997, but increasing to £50/ha/yr in 1998 and 1999. For the 4,475 ha entered into Stewardship since 1995 therefore there would be a lower level of expenditure than expected if compared to the generic cost used in the indicative costing. However, there has been greater progress in uptake of Stewardship agreements since 1995 with 2363 ha more than anticipated being brought into management. This has resulted in higher expenditure than expected for the Stewardship scheme despite the lower generic payment rates. The uptake anticipated in the indicative costing was for 2112 ha. Assuming an even annual new uptake of 422 ha/yr this would give a total indicative cost of £348,150 between 1995 and 2000. The reported expenditure, albeit on almost twice the area has been £478,238.

The reported cost data provided for the re-creation payment under Stewardship is for a rate of £275/ha/yr, which is the same as the revenue payment rate used in the indicative costing. The indicative costing, however, also included additional costs for capital payments, which gave an indicative generic cost of £300/ha/yr. It would be expected that this difference would lead to a lower reported cost compared to the indicative costing. There has been however greater progress in the uptake of agreements with 425 ha brought into agreement between 1995 and 2000. This is approximately 100 ha more than the area anticipated in the indicative costing for the year 2000. The indicative cost under this scheme therefore was based on 360 ha being re-created at a total cost of £270,000. The reported expenditure has been £272,861.

Tir Cymen and Tir Gofal

The indicative costing was based on an increase in uptake between 1995 and 2000 of some 4,000ha however only 1882 ha have been entered into agreement since 1995. This is a difference of 2118 ha. Assuming an even annual uptake the total indicative cost of bringing 4,000ha into agreement at a payment rate of £90/ha/yr would be £1,080,000. The reported cost to date has been £82,629.60, a difference of £997,371. The payment rates under these schemes is £35/ha/yr, which is lower than the generic cost used in the indicative costing.

The indicative costing also included 300ha/yr of heathland re-creation under other schemes by the year 2000. No heathland re-creation payments appear to have been made under these schemes. The indicative costing used a cost of £300/ha/yr. Assuming an even annual uptake of agreements this would be a indicative cost of £270,000.

Summary:

There is a significant difference between the indicative and reported costs suggesting that the reported costs have been lower than anticipated. It is most likely that these differences are due to:

(a) Missing data on habitat maintenance expenditure.
(b) Slower progress than anticipated at this time.

3.1.10 Purple Moor Grass and Rush Pasture

Indicative and reported costs

Indicative costs (Total 1996/97 to 2000/01)	Reported costs (Total 1996/97 to 2000/01)
Calculated total cost: £1,281,340	Land management costs: £1,885,753
10% administration: £128,134	Research and survey: £788,965
	Other costs: £53,000
Total: £1,409,474	**Total: £2,727,718**

Indicative costs:
The indicative costing was based on maintaining 13,500 ha (including existing commitments) and creating 500 ha. The costing used a generic cost of £92/ha/yr (including existing commitments) for maintenance and £250/ha/yr for re-creation. The costing is also based on completing the 500 ha of re-creation by 2000.

A more detailed unpublished breakdown of the indicative costing suggests that costs were based on the assumption that approximately 98% of the additional expenditure would come through public sector payments on private land through increasing uptake of agri-environment schemes.

In 1995 the public sector expenditure on private land was reported as being £786,000 which at a payment rate of £92/ha/yr would cover an area of 8,400 ha. Consequently, to meet the target for maintenance an additional 5,000 ha would need to be brought into agri-environment scheme management.

Changes to BAP targets and actions:
The HAP Steering Group has recently revised the targets for this HAP to bring this grassland habitat in line with other grassland HAPs. The revised targets are to: (1) arrest depletion of the habitat throughout the UK; (2) initiate rehabilitation of all SSSI/ASSI stands not in favourable condition by 2005; (3) bring 30% of the resource outside of SSSIs into favourable condition by 2005; and (4) re-create 500 ha of this habitat.

Reported costs:
The data on reported costs includes:

(a) Agri-environment scheme expenditure.
(b) Research and survey costs.
(c) Other costs including publicity and officer posts.

Comparison of data:
The reported costs are significantly higher than estimated in 1995. This true difference however, between the reported cost data and the indicative costs is greater than suggested. This is because there is some data unavailable.

Missing Data
There is missing cost data for agri-environment scheme expenditure in England and Wales and costs for habitat re-creation, as no progress towards this target has been reported to date. Missing data includes:

(a) ESA expenditure in Wales, Scotland and England.
(b) Expenditure through the RES scheme in England
(c) Other SSSI management agreements in England and Scotland.

Despite this data being unavailable for most of the agri-environment schemes affecting this habitat the reported costs are over two times greater than the indicative costing. This is likely to be due to:

Delivering targets and actions

1) The target of bringing 5,000ha of additional land in agri-environment agreements has already been met with 8,552 ha of new agreements since 1995. This, however, is also likely to be an under-estimate of the true picture, as there are difficulties in deriving data from ESAs in England, Wales and Scotland because of an incomplete picture of the distribution of the habitat.
2) The indicative costing includes a range of expenditure on work that was not included in the indicative costing including significant expenditure on research.

Changes in generic costs

3) The indicative costing was based on a generic cost for habitat maintenance of £92/ha/yr. A number of changes have occurred in the various agri-environment schemes. For species-rich hay meadows in the Fermanagh ESA in Northern Ireland, which largely relates to this habitat type, the payment rate was £180/ha/yr in 1996, but it was reduced to £150/ha/yr in 1997 and increased again in 2000 to £160/ha/yr. This is higher than the generic cost used in the indicative costing. The increased generic cost in Northern Ireland, however, should be balanced against payment rates in other agri-environment schemes. Under Tir Cymen from 1996 the payment rate was £90/ha/yr and under Tir Gofal the payment rate was £80/ha/yr. In Countryside Stewardship the payment rate was £70/ha/yr in 1996, but this was increased to £85/ha/yr in 1997. Depending on the area included under each grant scheme the reported expenditure per unit area will be less or in some cases more than that estimated.

Comparison with the revised HAP targets

Whilst a comparison against the published indicative costing can be undertaken, it does not correspond to the revised targets prepared by the HAP Steering Group. To a certain extent the implementation of targets 2, 3 and 4 should deliver target 1. For target 2 there are estimated to be 3,800 ha of SSSI in the UK in 1995, but it is not known how much is in favourable condition. The review and assessment form suggests that it could be anything from 50% to 90% of the resource. No area is provided under the revised target. For target 3 the target area can be readily calculated as 15,660 ha that has to be in favourable condition by 2005. However, it is not known how much of the resource outside SSSI/ASSI was already in favourable condition in 1995. The original indicative costing assumed that some 8,400 ha were already receiving public sector expenditure, but what proportion of this is SSSI/ASSI is not known. Consequently, determining a target would require a range of assumptions that have not been made because the indicative costing for the HAP has not been revised together with the targets. Without such a revision it is not possible to compare the reported costs to the original indicative costs.

Summary:

There is a significant difference between the indicative and reported costs suggesting that the reported costs have been substantially higher than anticipated. It is most likely that these differences are due to:

(a) Greater progress against the habitat maintenance and enhancement target than anticipated
(b) Higher generic costs for management in Northern Ireland
(c) Additional expenditure to that included in the indicative costing

The difference between indicative and reported costs is also likely to be greater than suggested by the data presented in this report because there are significant areas of expenditure under agri-environment schemes that could not be accurately assigned to this habitat within the timescale of this study. The comparison made in this report also does not take account of the recent revisions

to the targets of this HAP because the indicative costing has not been revised to reflect these changes.

3.1.11 Coastal and Floodplain Grazing marsh

Indicative and reported costs

Indicative costs (Total 1996/97 to 2000/01)	Reported costs (Total 1996/97 to 2000/01)
Calculated total cost: £34, 365,450	
10% administration: £3,436, 545	
Total: £37,801,995	**Total: £2,196,722**

Indicative costs:
The indicative costing was based on the target whereby 300,000 ha will be maintained and enhanced through to 2010. No indication is given of the 300,000 ha already in favourable condition or the assumed rate of progress up to 2000 is given in the UK Biodiversity Group report (Volume 2).

A more detailed report on the indicative costs,[14] however, indicates that costs were based on the assumption that approximately 90,000ha were already under management with 72,000 ha in the private sector and 18,000 ha in the public sector. Of the total area under management 63,339 ha were estimated to be within agri-environment or other schemes (13,000 ha in Stewardship, 47,459 ha in English ESAs, 2000 ha in WES, 880 ha in RES and none in other schemes). The indicative costing anticipates that agri-environment schemes would increase from 63,339 ha to 108,546 ha by 2000 with an additional 250 ha in RES, 14,957 ha within English ESAs, and 30,000 ha in other schemes (Welsh and Scottish ESAs, SSSI management agreements etc.) No increase in Countryside Stewardship, WES or Habitat Scheme agreements were anticipated.

The costing also includes a public sector land purchase component of 100 ha/yr and a 50% grant to private sector land purchases of 400 ha/yr through to 2010.

No costs are provided for the habitat restoration target of an additional 5,000 ha in ESA agreements or the creation target of 2,500 ha.

Reported costs:
The reported costs data includes:

(a) A proportion of the public sector costs incurred through agri-environment schemes.
(b) Research and inventory costs
(c) Other additional costs including publicity

Comparison of data:
The reported costs are significantly lower (6%) than those estimated in 1995. This is likely to be for a number of reasons:

Missing Data
1) It has not been possible to accurately assign large areas of expenditure to this particular habitat type. As a consequence the figure presented above is an under-estimate of the likely actual costs. In particular cost data cannot be assigned from the ESAs and other schemes in Wales, Scotland and Northern Ireland. This was anticipated to be 30,000ha in the indicative costing which represents 63% of the target for the HAP. The cost of schemes other than ESAs in these countries has been reported covering 3,350 ha which suggests that data is missing for the remaining 26,650 ha of this target or 56% of the total.

[14] Harley, D (1997) working Papers for the Habitat Action Plan Costings in the Biodiversity Steering Group Report. RSPB

2) No land purchase cost data has been obtained.

Delivering targets and actions

3) There has been significantly slower progress in the uptake of ESA agreements in England than anticipated in the costing. Using as a basis the data on the area of this habitat within ESA agreements up to and including 1998 (source: MAFF) the total additional uptake of ESA agreements in England since 1995 have been estimated to be approximately 4100 ha. This is less than a third of the anticipated uptake in England of 15,000 ha between 1995 and 2000. It is not known if a similar shortfall in uptake compared to that anticipated in the indicative costing has occurred for Wales, Scotland and Northern Ireland because no data on the area of the habitat under agreement is available for these countries.
4) It is also likely that there has been slower progress than anticipated in the uptake of agri-environment schemes other than the ESA scheme. It was estimated in the indicative costing that this would be in the region of 30,000 ha in new agreements by 2000. The area of this habitat that has been brought into new agreements for other schemes is approximately 3,350ha.

The difference between the indicative costing and the reported costs is also greater than it would appear because there are significant research and survey costs associated with the implementation of this HAP, all of which are additional to the actions included in the indicative costing.

Summary:

There is a significant difference between the indicative and reported costs suggesting that the reported costs have been substantially lower than anticipated. It is most likely that these differences are due to:

(a) Missing data from principal cost centres, in particular ESA schemes in Wales, Scotland and Northern Ireland, which were anticipated to cover 56% of the targets.
(b) Significantly slower progress against the habitat maintenance and enhancement target than anticipated in England where only a third of the anticipated target area has been brought into agri-environment scheme agreements.

The difference between indicative and reported costs is also likely to be greater than suggested by the data presented in this report because the reported cost data includes additional expenditure not included in the indicative costing including costs for habitat restoration and re-creation and costs for research and survey.

3.1.12 Cereal Field Margins

Indicative and reported costs

Indicative costs (Total 1996/97 to 2000/01)	Reported costs (Total 1996/97 to 2000/01)
Calculated total cost: £4,369,350	
10% administration: £436,935	
Total: £4,806,285	**Total: £7,440,139**

Indicative costs:
The indicative costing was based on targets whereby 15,000ha of cereal field margins are maintained and improved through to 2010. The costs are the amount estimated to be required in addition to the public expenditure commitments in 1995. No information is provided on the assumed generic cost/ha/yr used to calculate the figures presented and no explanation is provided on the rate of progress over the first 5 years and following 10 years of the plan.

Reported costs:
The data on reported costs include:

(a) Agri-environment scheme cost
(b) Research costs
(c) Advisory costs

Comparison of data:
The data on reported costs suggests that to date they have been significantly higher than estimated in 1995 in the indicative costing. This difference between the reported cost data and the indicative costs is greater than suggested. This is because it has not been possible to collate data from a range of other cost centres.

Missing Data
No data could be accurately assigned to this habitat within the timescale of this study from ESAs in Wales, Scotland and Northern Ireland. This is reflected in the review and assessment form which reports that as of the 1st of April 1999 some 6746 ha of cereal field margins were under favourable management. This is 746 ha more than the area for which reported cost data has been collected.

Despite this data being unavailable the reported costs are 1.7 times greater than the indicative costing. This is likely to be due to:

Delivering targets and actions
1) The indicative costing does not include research and advisory costs. Consequently, the only reported costs that are comparable to the indicative costs are those associated with agri-environment schemes. The apparently higher reported costs arise partly from research and advisory work, although the agri-environment scheme expenditure forms the majority of the reported cost expenditure.

Differences in generic costs
2) Although the generic cost used to calculate the indicative costs was not reported in the published explanation of the costing, analysis of the reported cost indicates that almost £3,400,000 more than that estimated in 1995 has been spent on arable field margins. This is not due to greater progress than anticipated in delivering the targets, as the reported cost data is for approximately 6,000 ha under various agri-environment schemes. The difference

is therefore most likely to be due to higher costs per hectare than estimated in the indicative costing.

Summary:
There is a significant difference between the indicative and reported costs suggesting that the costs have been substantially higher than anticipated. It is most likely that these differences are due:

(a) Additional costs to those anticipated in the indicative costing
(b) Higher generic costs per hectare per year.

The apparent difference between indicative and reported costs is also likely to be greater than suggested by the data presented in this report because there are significant areas of expenditure under agri-environment schemes that could not be accurately assigned to this habitat within the timescale of this study.

3.1.13 Ancient and species-rich hedgerows

Indicative and reported costs

Indicative costs (Total 1996/97 to 2000/01)	Reported costs (Total 1996/97 to 2000/01)
Calculated total cost: £7,347,580	Management (3,603 km): £9,185,883
10% administration: £734,758	
Total:£8,082,338	**Total: £9,876,013**

Indicative costs:
The indicative cost was based on maintaining and enhancing 95,000km of hedgerow through to 2010.[15] The costing assumed that 47,000 km will be favourably managed by 2000 and that of this amount 25% (11,750 km) will require programme assistance up to 2000. The costing also includes provision of advice to land managers on hedgerow management at a cost of £250k/yr and survey work and monitoring at a cost of £75k/yr.

No information is provided on the assumed cost/ha used to calculate the figures presented and no explanation is provided of the basis of the costs for the provision of advice, survey and monitoring.

Reported costs:
The data on reported costs includes:

(a) Agri-environment scheme payments. The figures presented are 41% of the total expenditure collected. This percentage has been used, as it was not possible to determine accurately the proportion of hedgerows under agreement that is ancient or species-rich. The estimate is based on the figures for the length of ancient and species-rich hedgerow presented in the HAP.
(b) Research costs
(c) Survey and advice costs

Comparison of data:
The cost data collected for this report are almost 30% higher than estimated in 1995. The difference between the reported and indicative costs is greater than suggested by the data collected as part of this study. This is for a number of reasons:

Missing Data
1) Data from ESA agreements in Northern Ireland and Scotland and other agri-environment schemes has not been available. These will add to the total cost of implementing the HAP.

Delivering targets and actions
2) Although the reported costs are higher than anticipated in the indicative costing progress against the targets for bringing hedgerows into management agreements has been slower than anticipated. In addition the provision of advice and survey has been less than estimated in the indicative costing. This has resulted from difficulties encountered by the steering group in developing inventories of ancient/species-rich hedgerows. Consequently, surveys have not yet been undertaken as guidelines are currently being piloted.

[15] A range of alternative costings are provided for this HAP from low through to high. The total costs presented below are based on the central estimate of cost.

Despite there being missing data and slower progress than anticipated in the indicative costing the reported costs are 1.3 times greater than the indicative costing. This is due to:

Delivering targets and actions

1) A range of additional costs have been incurred that were not accounted for in the indicative costings. These are predominantly research costs. These costs contribute to the higher reported costs compared to the indicative costing.

Changes in generic costs

2) Although the reported and indicative costs are similar in magnitude the length of hedgerow entered into a scheme from which the reported cost derived is a quarter of the anticipated length of hedgerow to be entered into agreement. The difference between the costs is likely to be due to higher generic costs per metre for hedgerow management than anticipated in the indicative costing. The total length of hedgerow included in the reported costs above is 41 % of the total length of hedgerow receiving payment under the various agri-environment schemes for which data was provided.

Summary:

There is a difference between the indicative and reported costs for this HAP suggesting that the reported costs have been higher than estimated in the indicative costing. However, when considered against the slower than predicted progress and the fact that some agri-environment data has not been available the true difference between the indicative costing and the reported cost of implementing the HAP is substantially higher. It is most likely that these differences are due to:

(a) Higher generic costs (agri-environment payments) and to a lesser extent,
(b) Additional costs of research.

3.2 Species Action Plans

3.2.1 Corncrake (*Crex crex*)

Indicative and reported costs

Indicative costs (Total 1996/97 to 2000/01)	Reported costs (Total 1996/97 to 2000/01)
£2,357,910	
10% administration: £235,791	
Total cost:£2,593,701	**Reported cost: £2,071,810**

Indicative costs:
Unpublished information from English Nature suggests that the principal areas of expenditure were envisaged as being habitat management and creation, and land acquisition (38% and 36% respectively, as of 1995). Other major areas of expenditure include special Environmental Land Management schemes (12%) and wardening (7%).

The Review and Assessment Form suggests good progress, with all predicted targets achieved to date.

Reported costs:
The data on reported costs includes:

(a) Detailed expenditure figures from RSPB in Scotland and Northern Ireland (including the Corncrake Initiative, LIFE and SNH/SPA projects, the Corncrake Grant Scheme and other projects such as Corncrake Corners).
(b) ESA bird measures data is also available and whilst there is some debate over the assignment of this tier of grant to corncrakes, we have included some expenditure under the Argyll Islands and Machair of Uist ESAs.

The corncrake initiative scheme in Scotland was running prior to 1995/96 so the calculations have removed the 1994/95 expenditure from all subsequent years to identify the level of additional expenditure.

Comparison of data:
The data collected suggest that the costs to date to the end of 2000 are approximately 20% lower than those anticipated, with reported expenditure of £2,071,810. This is likely to be for the following reasons:

Missing data
1) Some expenditure data has not been gathered, including some agency staff costs and costs associated with corncrake work in England.

2) A small element of the Countryside Premium Scheme bird measures initiative is believed to benefit corncrakes but it has been difficult to determine the proportion that should be assigned. This is also an area of potentially missing data.

Delivering targets and actions
3) Little expenditure has taken place on land acquisition. This may be a result of the apparently greater than anticipated use of ELMs and greater staff costs, which may have reduced the need for land purchase.

As well as the reported costs being lower than anticipated, the proportion of expenditure under different broad categories of cost are also different to those in the indicative costing with the principal areas of reported expenditure being:

(a) (Environmental land management (grants) (56% of total reported expenditure)
(b) Staffing (28% of total reported expenditure)

The difference in proportions of costs appear to be due to the following reasons:

(a) The indicative expenditure on ELMs is much smaller than the reported costs for habitat management. This, however, does not necessarily mean that more habitat management has taken place than anticipated. This is because the indicative costing includes figures for expenditure under ELMs and separate costs for habitat management/creation. It does appear, therefore, that ELMs have been used to a greater extent than anticipated to deliver appropriate habitat management.
(b) Staffing costs are much higher than was estimated in the indicative costings and it appears that greater staff input to deliver the targets was required than anticipated.

Summary:
The reported costs are lower than anticipated in the indicative costing. This is likely to be due to:

(a) Missing data from work in England
(b) Missing data from some agri-environment schemes
(c) Less land purchase than anticipated

The broad targets of the SAP to date, however, appear to have been met. It is the manner in which they have been achieved that seems to be different from that assumed by the indicative costings. There appears to have been:

(a) A shift in emphasis away from land purchase and habitat creation, towards agricultural land management schemes
(b) Increased staffing (needed to promote and implement the schemes)

3.2.2 Skylark (*Alauda arvensis*)

Indicative and reported costs

Indicative costs (Total 1996/97 to 2000/01)	Reported costs (Total 1996/97 to 2000/01)
£558,820	
10% administration:£55,882	
Total cost:£614,702	**£634,665**

Indicative costing:
Unpublished information from English Nature suggests that the principal areas of expenditure were envisaged as being habitat management and autecological research (50% and 46% respectively of the total indicative cost).

The targets for this species were set around maintaining breeding and wintering numbers and distribution in the UK, reversing population decline and protecting habitat.

No agri-environment money was included in the indicative costing and none has been accounted for in the reported costs.

***Reported costs*:**
The data available includes:

(a) Detailed expenditure figures from RSPB and BTO and their partners relating to their activities, which have been funded by these two bodies.
(b) MAFF, JNCC and DEFRA have also funded some of the work, and data on their input has been provided as far as possible by RSPB and BTO.

Comparison of data:
The data collected suggests that the costs to date to the end of 2000 are slightly higher than those anticipated. The proportion of expenditure under different broad categories of cost also appears to be different to those anticipated in the indicative costing. The principal areas of reported expenditure are approximately:

(a) Research (59% of total actual expenditure)
(b) Survey (20% of total actual expenditure)
(c) Advisory and policy work (14% combined)

The difference in proportions of costs, and the slightly higher than anticipated costs appear to be due to the following reasons:

Delivering targets and actions
1) The Review and Assessment Form does suggest that much progress has been made in researching the requirements of the skylark, which goes some way to accounting for the increase in research expenditure.

2) No expenditure on site survey was originally envisaged in the indicative costings, yet, this appears to account for some 20% of the expenditure data collected. The main reason for this would seem to be a change in emphasis in the delivery of the SAP, although most survey work has been done as part of wider countryside and general bird surveys.

3) Habitat management is the main area of work for which less expenditure than originally anticipated in the unpublished breakdown of indicative costings has been reported. This is

likely to be due to a change in emphasis in the delivery of the SAP away from management of certain habitats specifically for skylark, and a move towards better general conservation management of the countryside as a whole.

Although there has been a slight increase in expenditure compared to that estimated in 1995, it is likely that the reported cost is an underestimate of actual spend. This is likely to be for the following reason:

Missing data

4) Some cost data is likely to be missing in the areas of administration and the cost of the time of the Steering Group members. However, as this species tends to be considered alongside nine other lowland farmland birds, it is likely that the latter of these elements compared to the total reported cost will not be significant.

Summary:

The cost of SAP implementation to date is slightly higher than that predicted in the indicative costing. This is due to greater expenditure than anticipated on survey and monitoring, research, and advisory and policy work. This however needs to be set against reduced expenditure on habitat management than was anticipated.

Some missing data suggests that actual costs may be higher than those reported. This consideration excludes the assignment of agri-environment scheme expenditure, which was not included in the indicative costing.

Although not included in the indicative costing or the reported costs, the Review and Assessment Form acknowledges the contribution of new or revised agri-environment schemes to supporting skylark and other farmland birds. It is difficult to attribute any agri-environment scheme expenditure to skylark specifically, but the extent to which general agri-environment expenditure is benefiting the skylark and other farmland birds should not be overlooked and the cost could potentially be substantial.

3.2.3 Otter (*Lutra lutra*)

Indicative and reported costs

Indicative costs (Total 1996/97 to 2000/01)	Reported costs (Total 1996/97 to 2000/01)
£555,990	
10% administration: £55,599	
Total cost: £611,589	**At least £1,639,557**

Indicative costing:
Unpublished papers indicate that the principal areas of expenditure were anticipated to be in autecological research, and habitat management and creation. Monitoring and advice to land managers were also expected to be reasonably significant areas of expenditure (around 10% each). No survey costs were originally envisaged.

(a) Autecology research 37%
(b) Habitat management 23%
(c) Habitat creation 14%
(d) Monitoring 9%
(e) Advice to land managers 9%
(f) Re-introduction 5%
(g) PR 2%

Reported costs:
Data from the Otters and Rivers Project, which began in 1998, have been provided as global figures, with the principal funding sources being Water UK from landfill tax credits, and other local funding from water companies, the Environment Agency and private sources. This is a large cost, in excess of £1.15M alone.

The rest of the cost data, gathered mainly from the Environment Agency and Countryside Council for Wales, amounts to at least £400,000, with key areas of expenditure being research, monitoring and officer time in promoting conservation through other mechanisms (such as LEAPs).

The main areas of expenditure appear to derive from monitoring and survey. No detailed breakdown of expenditure across the different actions has been possible for the global figures provided by the Wildlife Trusts' Otters and Rivers Project. However, discussions with the lead officer suggest that organising and undertaking surveys is a large part of the Project's work (for example, between July 1998 and June 2000 alone, OARP project officers spent 1,555 days surveying and monitoring).

Data were also collected from the OARP that related to the amount of volunteer time involved on work with otters (which is considerable), but this has not been included in the above figure.

Comparison of data:
The data collected suggests that the costs to date are almost 2.6 times higher than anticipated. Although there has been an increase in expenditure compared to that estimated in 1995, it is likely that the reported cost is an underestimate of actual spend. This is likely to be for the following reason:

Missing data
1) It is likely that some data (particularly relating to research costs and locally-led survey and habitat management/creation projects) have not been gathered, because the range of local

consultees is large and it was not possible to contact them all within the programme of research.

Despite the missing data the reported costs are 2.6 times higher than the indicative costing. This is likely to be due to the following:

Delivering targets and actions

2) There appears to have been progress with the majority of the targets and the significant actions, although some research is only just underway. It may be that implementation of some actions has been much more advanced than originally anticipated, as a result of the formation of the OARP which has tapped into large sources of public and private sector funding, and created project officer posts in many counties. There is nothing in the original action plan or the indicative costings that would seem to account for this.

Summary:

In the absence of an action by action breakdown, it is difficult to explain the reason for the large disparity between estimated, indicative costs and the apparent actual costs. However, the following appear to be important:

(a) The success of the OARP appears to have encouraged more action / expenditure than was anticipated (for instance in survey, PR, promotion and employment of project officers) at a local level throughout much of England and Wales.
(b) No survey costs were originally anticipated and these appear to have been significant.

Missing data may mean that the true cost of implementation to date has been higher than reported here.

3.2.4 Red squirrel (*Sciurus vulgaris*):

Indicative and reported costs

Indicative costs (Total 1996/97 to 2000/01)	Reported costs (Total 1996/97 to 2000/01)
£1,160,180	
10% administration: £116,018	
Total cost: £1,276,198	**£794,582**

Indicative costing:
Unpublished papers showing the breakdown of the indicative costing suggest that the principal areas of expenditure were anticipated to be as follows:

(a) Habitat management 46%
(b) Habitat creation 23%
(c) Monitoring 11%
(d) Autecology research 9%
(e) Re-introduction 4%
(f) Others (combined) 7%

Other areas of activity were also anticipated but do not make up a very high proportion of the indicative costing.

Reported costs:
Data was collected from the Forestry Commission, Forest Enterprise, various Red Alert and related projects, the Peoples Trust for Endangered Species (PTES), English Nature and CCW.

It is difficult to estimate the proportion of expenditure that should be assigned to different types of action, as some of the data was presented as a global figure only. In addition, data from two of the Red Alert projects is for the last one or two years only. The collection of data for previous years would require extensive further research that is considered to be outside the scope of this project. It appears that the bulk of the reported expenditure that can be apportioned relates to research (43%) and habitat management (28%).

Comparison of data
The reported costs are 62% of the indicative costs. The main reason for the disparity is likely to be due to:

Missing data
1) Data for three years of the Red Alert Project was not available.
2) General habitat management costs incurred by the Forest Enterprise are not included because the view has been expressed that it is very difficult to disentangle expenditure on work for red squirrel from that which is being undertaken from the point of view of general good conservation management. In addition no consideration has been made of the cost of revenue foregone by Forest Enterprise as a result of the implementation of red squirrel-related management work. To make such a consideration would require extensive further research.

Delivering targets and actions
3) The Review and Assessment Form reports that the main areas of activity have been in assessing the distribution of red and grey squirrel, standardising survey methods and identifying priority areas for conservation. This suggests that less work has been undertaken on habitat creation/management than anticipated. However, it should be noted that it has not

been possible to quantify the potentially large amount of habitat management undertaken by Forest Enterprise.

Summary:
The main reasons for the reported costs being lower than the indicative cost are likely to be missing data on the cost of habitat management (which is potentially very difficult to determine and accurately assign); and difficulties in collating some data (such as for parts of the Red Alert project) within the timescale of this research.

3.2.5 / 3.2.6 Great crested newt (*Triturus cristatus*) and sand lizard (*Lacerta agilis*)

Indicative and reported costs

Indicative costs (Total 1996/97 to 2000/01)	Reported costs (Total 1996/97 to 2000/01)
Great Crested Newt: £538,360	
10% administration: £53,836	
Total for GCN: £592,196	
Sand Lizard £418,090	
10% administration: £41,809	
Total for Sand Lizard: £459,899	
Total cost: £1,052,095	**£794,582**

Indicative costing:
Unpublished papers showing the breakdown of the indicative costing suggest that the principal areas of expenditure were anticipated to be as follows (approximate proportions):

	Great crested newt	Sand lizard
(a) Survey of sites		9%
(b) Autecology research	6%	9%
(c) Genetic/population studies	3%	
(d) Ex-situ conservation	2%	
(e) Re-introduction	4%	4%
(f) Habitat management	14%	18%
(g) Habitat creation	25%	45%
(h) Wardening of sites	25%	
(i) Monitoring	6%	9%
(j) Advice to land managers	2%	4%
(k) Public relations		2%

Reported costs:
Herptofauna Conservation Trust (HCT) provided a good breakdown of their expenditure for 1999 and 2000. Most of their funding comes from two English Nature local teams, RES capital, Sefton Council, Countryside Council for Wales (CCW) and golf clubs.

CCW also provided some data but it seemed likely that it would be tied up in the HCT data, and has not therefore been used separately in this study.

No cost data was available from any of the other Agencies and organisations contacted.

Great crested newt
HCT expenditure 1999 and 2000: £26,000 per annum

Sand lizard
HCT expenditure for 1999 and 2000: £41,000

Comparison of data
For both of these species significant gaps in data exist and no comparison with indicative costings have been attempted.

Summary:
The main reason for the reported costs being lower than the indicative cost is likely to be missing data, although the areas of work for which data is missing is not clear. The data is missing primarily because some consultees were unable to provide data within the time scale of the research.

3.2.7 Allis and twaite shad (*Alosa alosa* and *Alosa fallax*)

Indicative and reported costs

Indicative costs (Total 1996/97 to 2000/01)	Reported costs (Total 1996/97 to 2000/01)
£280,470	
10% administration: £28,047	
Total cost: £308,517	**£115,000**

Indicative costing:
Unpublished information from English Nature suggests that the principal areas of expenditure were envisaged as being:

(a) Survey (89%)
(b) Genetic/population studies (11%)

Reported costs:
The data collected includes:

(a) Global expenditure figures from Environment Agency
(b) Some specific action costs from Environment Agency and Scottish Natural Heritage
(c) Time spend estimates from English Nature and Scottish Natural Heritage

Comparison of data:
The data collected suggest that expenditure against the Allis and Twaite Shad action plan is just over a third (37%) of that anticipated in the indicative costing. The reasons for this appear to be due to:

Delivering targets and actions
1) From the Review and Assessment Form it is clear that a number of actions that could be linked to predicted expenditure to 2000, such as research and some survey actions, have not yet started.

In addition because of the lack of detailed explanation of the basis of the indicative costing it is not possible to determine whether the implementation of these SAPs has utilised the delivery mechanisms assumed to be required in the preparation of the indicative costing. For example, it is not known whether the indicative costing was based on the employment of a project officer or officers as the primary delivery mechanism for England and Wales. If it was, then it is still not known how many project officers were anticipated, and at what cost.

Alternatively the indicative costing may have been based on another method of delivering the targets of the SAP with higher generic costs.

Summary:
The cost of SAP implementation to date appears to be lower than that predicted in the indicative costings. The most likely reason for this seems to be that a number of actions have not started. Other potential reasons cannot be determined because the basis of the indicative costings is not detailed enough.

3.2.8 Southern damselfly (*Coenagrion mercuriale*)

Indicative and reported costs

Indicative costs (Total 1996/97 to 2000/01)	Reported costs (Total 1996/97 to 2000/01)
£91,140	
10% administration: £9114	
Total cost: £100,254	**Total reported expenditure: £134,410**

Indicative costing:
Unpublished data from English Nature suggests the indicative costing was based on expenditure in the following areas of action:

(a) Habitat management 48%
(b) Re-introduction 24%
(c) Autecology research 10%
(d) Advice to land managers 10%
(e) Monitoring 5%
(f) PR 5%

The targets were to (a) maintain existing populations, and (b) to re-introduce the species to five former sites by 2005. The first of these has subsequently been amended to include enhancement as well as maintenance of populations. The latter is not yet considered appropriate (although the presence in the unpublished information of an indicative cost against this action should be noted).

Reported costs:
Within the reported costs, the principal areas of expenditure appear to have been:

(a) 50% on research (almost £70,000)
(b) 12% survey / monitoring (almost £16,000)
(c) 17% maintaining favourable site hydrology – which amounts to site management: a one-off example project in excess of £22,000 as well as other smaller costs for site management for which only some examples are available
(d) 12% administration

Comparison of data:
The data collected suggests that the costs to date are almost 1.3 times higher than anticipated. Although there appears to have been an increase in expenditure compared to that estimated in 1995, it is likely that the reported cost is an underestimate of actual spend. This is likely to be for the following reasons:

Missing data
1) Data is known to be missing and for some of the actions, incomplete data were collected, especially in the areas of monitoring and time spent encouraging the uptake of management schemes, where a diffuse range of local schemes exist. In addition, locally-led practical projects exist, but discussions with one of these suggested that the level of expenditure to be incurred by these projects is likely to be quite small in comparison to the overall expenditure. Example data for these types of local action have been collected, but it was not possible within the within the time constraints of the contract to contact and collate costs associated with all of the local action projects.

Higher reported costs have also been incurred whilst the target for re-introduction of the species to key sites has been determined as a low priority and is not now being progressed. The

estimated, indicative spend on this element over the last five years would have been in the order of £25,000. Despite this and the missing data the reported costs are 1.3 times higher than the indicative costing. This is likely to be due to the following:

Delivering targets and actions

2) The priority area of work was identified by the SAP steering group as a PhD study, which should underpin the delivery of the rest of the plan. This has increased the overall actual research costs compared to estimates in 1995.

3) Although Target 4.1 was changed to include enhancement as well as maintenance of populations of the southern damselfly, the effect of this on the costs is unknown. Whilst, it could reasonably be expected to have resulted in additional habitat management work that was not anticipated in the original indicative costings, reported expenditure on habitat management is low.

4) Expenditure on survey has increased compared to the indicative costing, although they are similar in proportion to the published indicative estimate of 10%.

5) Administration costs have been higher than anticipated.

Summary:

The reported costs of delivering the SAP for southern damselfly are higher than the indicative costing. The main reasons for this would seem to be that:

(a) More research has been undertaken than anticipated to date
(b) More survey has been undertaken than anticipated

It is likely that data is missing that relates to site management, monitoring and research, which suggests that the overall reported cost figure is likely to be lower than the true level of expenditure. In addition the re-prioritisation of the re-introduction of the species should have reduced the cost of implementing the BAP by as much as £25,000.

3.2.9 Marsh fritillary butterfly (*Eurodryas aurinia*)

Indicative and reported costs

Indicative costs (Total 1996/97 to 2000/01)	Reported costs (Total 1996/97 to 2000/01)
£69,050	Management actual costs £250,420
10% administration: £6,905	EN time + general butterfly pot portion: £7640
Total cost: £75,955	**Total reported expenditure: £281,548**

Indicative costing:
The original costings were based on predicted expenditure in the areas of

(a) Survey of sites 28%
(b) Autecology research 28%
(c) Monitoring 28%
(d) Advice to land managers 11%
(e) PR 6%

Reported costs:
The data available includes:

(a) Detailed expenditure figures from Butterfly Conservation Trust (BCT)
(b) Data on expenditure from English Nature and CCW

Comparison of data:
The data collected suggests that the costs to date are almost 3.4 times higher than anticipated. Although there appears to have been an increase in expenditure compared to that estimated in 1995, it is likely that the reported cost is an underestimate of actual spend. This is likely to be for the following reasons:

Missing data
1) Missing data may mean that the actual cost is greater than that reported here (some of the research costs of other partners was not available within the timescale of this project). No data was been received from contacts in Scotland and Northern Ireland, due to workload and contract timescale. However, Butterfly Conservation provided very detailed breakdowns of their time and expenditure on this species. English Nature and CCW also provided advice and spend data and it is felt that a good proportion of the expenditure on this species has been accounted for in the cost table.

Despite this and the missing data the reported costs are almost 3.5 times higher than the indicative costing. This is likely to be due to the following:

Delivering targets and actions
The principal areas of reported expenditure are approximately:

(a) Research (33%)
(b) Survey and monitoring (30%)
(c) Species/site protection work (22%)

2) Whilst it is difficult to relate all the categories of action in the unpublished indicative costings to those reported, it is clear that the bulk of the expenditure to date has been on research, survey and monitoring, and species and site protection. Around £90,000 has been spent on research as compared to an estimated indicative cost of £25,000. Expenditure on PR and

advice-related work, including BCT officer time at policy meetings and advising on agri-environment scheme applications, amounts to at least £51,000 as compared to the prediction of approximately £12,000. Expenditure on survey and monitoring combined has amounted to at least £80,000 as compared to the £50,000 estimated in the indicative costing.

Summary:
The cost of SAP implementation to date appears to be much higher than the estimated costing, most likely as a result of greater expenditure on:

(a) Research, perhaps as a result of expansion to meet new requirements
(b) Survey and monitoring
(c) PR / awareness raising

It is also likely that the true cost of implementing the SAP is higher than reported because of missing data for some areas of work in Scotland and Northern Ireland.

3.2.10 Stag Beetle (*Lucanus cervus*)

Indicative and reported costs

Indicative costs (Total 1996/97 to 2000/01)	Reported costs (Total 1996/97 to 2000/01)
£45,650	
10% administration: £4,565	
Total cost:£50,215	**Total actual expenditure: £89,600**

Indicative costing:
The unpublished papers showing the breakdown of the indicative cost for stag beetle was based on expenditure on:

(a) PR (£3-5,000 per annum - 50%)
(b) research (£2,000 per annum - 20%)
(c) monitoring (£2,000 per annum - 20%)
(d) advice (£1,000 per annum - 10%)

The targets for the species were set as raising awareness, identifying and monitoring key sites, maintaining strong populations, and undertaking further research.

Reported costs:
The bulk of the reported cost data was provided by the Peoples Trust for Endangered Species (PTES), with further data from English Nature.

PTES provided an estimate of the breakdown of their expenditure, as follows:

(a) Communications and publicity	40%	(£24,400)
(b) Research and monitoring	40%	(£24,400)
(c) Management and protection (includes handbook)	18%	(£10,980)
(d) Policy and legislation	2%	(£1,220)

In addition, approximately £7,000 (estimated) has been spent on two survey projects, from data supplied by English Nature and over £21,000 in time spent in steering group meetings.

Comparison of data:
The data collected suggests that the costs to date are almost 1.8 times higher than anticipated. Although there appears to have been an increase in expenditure compared to that estimated in 1995, it is likely that the reported cost is an underestimate of actual spend. This is likely to be for the following reasons:

Missing data
1) Some data is likely to be missing, due to the timescale constraints of the research, which is likely to have prohibited contact with a range of people implementing work on this species locally.

Despite the missing data the reported costs are higher than the indicative costing. This is likely to be due to the following:

Delivery of targets and actions
2) No survey or site management costs were included in the indicative costing. These additional costs are contributing to the higher than estimated expenditure in implementing this SAP.

3) The reported costs include a significant amount of administrative time in Steering Group meetings (calculated at £21,600) as compared to just over £4,500 in the indicative costing.

Summary:
The cost of SAP implementation to date appears to be higher than the indicative costing, most likely as a result of:

(a) Spending on new actions (survey and management)
(b) Greater than anticipated expenditure on communications and publicity
(c) Overall, greater spending on administration

In addition, the actual cost is likely to be higher than that reported, because it has not proved possible to collect all of the actual cost data for this SAP.

3.2.11 White-clawed crayfish (*Austropotamobius pallipes*)

Indicative and reported costs

Indicative costs (Total 1996/97 to 2000/01)	Reported costs (Total 1996/97 to 2000/01)
£193,580	
10% administration: £19,358	
Total cost: £212,938	**£80,139**

Indicative costing:
The original costing was based on predicted expenditure in the following areas, with relative proportions of expenditure shown (based on unpublished information from English Nature):

(a) Survey of sites 17%
(b) Autecology research 5%
(c) Genetic/population studies 12%
(d) Re-introduction 12%
(e) Control of competitors 20%
(f) Monitoring 22%
(g) Advice to land managers 10%
(h) PR 2%

The indicative costing appears to have been based on a wide spread of activities, with no principal area of expenditure.

The target for this species was set as maintaining distribution of the species by limiting the spread of crayfish plague and non-native crayfish, and by maintaining appropriate habitat conditions.

Reported costs: The data collected includes:

(a) Research contribution figures from English Nature.
(b) Environment Agency expenditure.

The principal areas of reported expenditure appear have been in:

(a) Research
(b) Advisory, policy and legal work
(c) Steering Group work

Comparison of data:
The reported costs to the end of 2000 are approximately 40% of those estimated in the indicative costing. This is likely to be due to the following:

Missing data
1) During the interview process, it became apparent that a lot of survey work is being carried out on a local basis, by regional/local offices of different government agencies. It was not possible within the timescale of this work to collect all of this diffuse, locally funded action and more success was gained through national co-ordinators. This potentially represents a significant lack of data.

Delivering targets and actions

2) Re-introduction and control of competitors appears to have taken place to a lesser extent than anticipated.

Summary:

The cost of the SAP implementation to date appears to be much lower than was originally estimated. However, the likelihood of a significant amount of missing data means that the conclusions drawn for this species should be treated with caution.

The general spread of reported expenditure across the different types of activity are difficult to split, although:

(a) The proportion of expenditure on research appears to have increased.
(b) Re-introduction and control of competitors appears to have taken place to a lesser extent than anticipated
(c) The amount of spend on survey data is unclear, given the comments above on missing data. This also means that the proportions of expenditure on different types of action would be likely to change if this missing data was gathered

3.2.12 Freshwater pearl mussel (*Margaritifera margaritifera*)

Indicative and reported costs

Indicative costs (Total 1996/97 to 2000/01)	Reported costs (Total 1996/97 to 2000/01)
£143,500	
10% administration: £14,350	
Total cost: £157,850	**£419,991**

Indicative costing:
Unpublished information from English Nature suggests that the principal areas of expenditure were envisaged (as of 1995) as being

(a) Survey and Monitoring 73%
(b) Re-introduction 12%
(c) Research 7%

The original targets for this species involved:

(a) The determination of the current status of the mussel and its ecological requirements
(b) The maintenance of all populations
(c) The re-colonisation onto former areas
(d) The establishment of educational and monitoring programmes
(e) The assessment of effects of controlled exploitation

Target (b) has been revised to cover all viable populations. Target (e) has been revised as a result of the increased legal status of the species.

Reported costs:
Detailed expenditure figures were available from

(a) Environment Agency
(b) Environment and Heritage Service
(c) English Nature
(d) Scottish Natural Heritage

From the data gathered, the principal areas of reported costs are approximately:

(a) Survey and monitoring 63% of total actual expenditure
(b) Policy/advisory/promotion 13% combined
(c) Research 15%
(d) Re-introduction 2%
(e) Administration 6%

Comparison of data:
The data collected suggests that the costs to date are almost 2.5 times higher than anticipated. Although there appears to have been an increase in expenditure compared to that estimated in 1995, it is likely that the reported cost is an underestimate of actual spend. This is likely to be for the following reasons:

Missing data

1) The reported cost data may well be a lower cost estimate, as some data is known to be missing, mainly as a result of time constraints on this project. In particular, no contact with SEPA was made and this Agency may have further data to add on expenditure.

As well as missing data it appears that less re-introduction work has been carried out than was originally envisaged: indeed Action 5.3.2 (*research best catchments for re-introduction*) has been put on hold pending further funding. Some re-introduction work has been undertaken under Action 5.3.2. This amounts to expenditure of only around £7.5K whereas in the indicative costings, as much as £25K might have been spent in this area of activity. Despite this and the missing data the reported costs are higher than the indicative costing. This is likely to be due to the following:

Delivering targets and actions

2) The Review and Assessment Form indicates that survey and monitoring effort has been the main focus of work on this species under the SAP. The proportion of expenditure on this activity as anticipated in the indicative costings was also very high. Whilst the proportions of expenditure on survey and monitoring are similarly high, it seems that the amount (and associated cost) of action in this area is much higher than was anticipated.

Summary:

The cost of SAP implementation to date appears higher than that predicted in the indicative costings. This appears to be mainly as a result of much higher expenditure in survey and monitoring, and possibly in research, and in policy and advisory work.

The known lack of some data suggests that actual costs are likely to be higher than recorded.

3.2.13 Starfruit (*Damasonium alisma*)

Indicative and reported costs

Indicative costs (Total 1996/97 to 2000/01)	Reported costs (Total 1996/97 to 2000/01)
£21,600	
10% administration: £2,160	
Total cost: £23,760	**Total reported expenditure: £95,986**

Indicative costing:
The unpublished breakdown of indicative costs for starfruit was based on predicted expenditure mainly on habitat management (over 50%). Other areas of expenditure anticipated as being important included survey, monitoring, advice, and PR, each accounting for approximately 10% of the unpublished costing.

Reported costs:
The data available includes:

(a) Global estimates of time and money spent by Plantlife
(b) Data on expenditure by a county, a district and a parish local authority

Comparison of data:
The cost data collected is 4 times higher than estimated in the indicative costings. Although there has been an increase in expenditure compared to that estimated in 1995, it is likely that the reported cost is an underestimate of actual spend. This is likely to be for the following reasons:

Missing data
1) No data has been gathered within the timescale of this contract from at least one other local authority and one other conservation body.

Despite the missing data the reported costs are higher than the indicative costing. This is likely to be due to the following:

Delivering targets and actions
2) Target 4.3 was changed to include long-term management of extant as well as restored sites. This could have led to more management than was anticipated and therefore may account for some of the increased expenditure as compared to the indicative costing.
3) The control of New Zealand stonecrop does not appear to have been anticipated in the original SAP (and presumably, therefore, was not accounted for in the indicative costings). This may also account for the increase in habitat management expenditure.
4) Administration costs for the work of the Steering Group amounts to over £13,000 and Plantlife estimate £10,000 to date on administration and management other than their input to the steering group. This amounts to £21,000 more than was originally estimated for administration. The £10,000 administration figure is an approximation, derived from a larger figure for a range of species and covers general running costs, meetings and expenses.
5) £7,000 (of the £30,020 Plantlife expenditure on plan implementation) was provided by the EA for production of a WLMP (mainly targeted at starfruit). This element does not appear to have been accounted for in the original cost estimate.

Summary:
The cost of SAP implementation to date appears to be higher than the estimated costing, most likely as a result of:

(a) Spending on new actions including *Crassula* control.
(b) The introduction of changed targets.
(c) Increased administration costs.

3.2.14 Shore Dock (*Rumex rupestris*)

Indicative and reported costs

Indicative costs (Total 1996/97 to 2000/01)	Reported costs (Total 1996/97 to 2000/01)
£61,690	
10% administration: £6,169	
Total cost: £67,859	**£101,451**

Indicative costing:
From the unpublished information from English Nature, the approximate proportions of expenditure against different types of action appear to have been estimated at:

(a) Survey of sites 43%
(b) Autecology research 36%
(c) Re-introduction 14%
(d) Ex-situ conservation 7%

The targets include restoration of favourable conservation status, safeguard against coastline developments and re-introduction if feasible. The last of these is being reviewed in England, as a result of the location of new populations, although attempts were made to re-introduce the species to three locations in 1996. No data has been collected on the cost of undertaking this action.

Reported costs:
Plantlife and English Nature provided data and although no overall breakdown of cost has been gained on an action by action basis, however, some breakdown was possible:

(a) Administrative time by the steering group was estimated at £9,600. Plantlife time spend on general administration was estimated at £10,000, giving almost £20,000 in total, as compared to the indicative £5750 (the £10,000 administration figure is an approximation, derived from a larger figure for a range of species and covers general management costs, meetings, expenses and so forth)
(b) A global figure for other expenditure associated with plan implementation was provided by Plantlife (£40,561 since 1997)
(c) English Nature provided a figure of £32,490 for research under the SRP since 1995. This has been included because the work of the SRP has been specifically mentioned during the research as continuing under the guise of the SAP

Comparison of data:
The reported cost is 1.5 times higher than estimated in the indicative costing. Although there has been an increase in expenditure compared to that estimated in 1995, it is likely that the reported cost is an underestimate of actual spend. This is likely to be for the following reasons:

Missing data
1) The actual cost of implementing the SAP is likely to be higher because no data has been gathered from the Welsh agencies due to time constraints. It is considered likely that data is missing that relates to the re-introduction of the species at three sites in 1996.

Despite the missing data the reported costs are still higher than the indicative costing. This is likely to be due to the following:

Delivering targets and actions

2) As most of the delivery costs are global it is difficult to say with any degree of certainty whether the level of delivery of any particular action has led to greater than anticipated expenditure. However, from data supplied by English Nature it is evident that there has been greater than anticipated expenditure on administration and research.

Summary:

In the absence of an action by action breakdown, it is difficult to explain the reason for the disparity between the indicative costing and the reported costs. However, it would appear that administration and research costs have been higher than anticipated.

In addition, although the reported costs are higher than anticipated, the actual cost of implementing the SAP is likely to be even higher because it has not been possible within the time constraints of the research to collect cost data on re-introductions to sites in Wales.

3.2.15 Devil's bolete fungus (*Boletus satanus*)

Indicative and reported costs

Indicative costs (Total 1996/97 to 2000/01)	Reported costs (Total 1996/97 to 2000/01)
£10,640	
10% administration: £1,064	
Total cost: £11,704	**Total actual expenditure: £13,989**

Indicative costing: The indicative costing was based on areas of expenditure including:

(a) Survey	up to £1,000 per annum	(25%)
(b) Research	up to £1,500 per annum	(38%)
(c) Wardening	up to £500 per annum	(13%)
(d) Monitoring	£500 per annum	(13%)
(e) Advice	£500 per annum	(13%)

The targets include maintaining known populations and surveying suitable and former sites to assess the current status of the fungus.

Reported costs:

Plantlife and English Nature supplied data.

This species forms part of a group of sixteen fungal priority species that are treated as a group, so it is difficult to derive a straight forward allocation of resources to one species in particular. This presents difficulties in assigning either administrative time or conservation action to any one of the species. However, Plantlife provided a global expenditure figure. Discussion with Plantlife suggests approximately £10,000 expenditure on administration and £3,200 on survey and production of a report. The administration figure is an approximation, derived from a larger figure for a range of species and covers general running costs, meetings and expenses.

Further data on expenditure for promotion of suitable management (£184), awareness raising (£289) and steering group meetings (£316) was provided by English Nature.

Comparison of data:
The reported cost of implementing the SAP to date is 1.2 times greater than the indicative cost. However, a number of considerations should be made in comparing these figures.

Delivering targets and actions

1) Due to survey work and research initiated by the SAP, this species is now known to be more widespread than was originally believed. In addition, one of the actions has been dropped, and while this may have had an effect on the estimated costs of wardening, it is not possible to state this with certainty. The view has been expressed that not a great deal of work to date has been undertaken on this species (and hence not a great deal of expenditure).
2) Active habitat management is not now viewed as appropriate for this species, but as it was not represented in the original indicative costing, this is likely to have had little effect on the comparison.
3) Administration costs have been higher than estimated in 1995.

Summary:
The reported costs are 1.2 time higher than the indicative cost. In addition it appears that a change in the way the SAP has been delivered has resulted in a re-distribution of costs across the different types of action. Most notably:

(a) Research has shown different requirements in habitat management.
(b) One action has been dropped (although the financial effects of this are unclear).
(c) Principal expenditure appears to have been on administration and survey/reporting.

3.2.16 Green Shield Moss (*Buxbaumia viridis*)

Indicative and reported costs

Indicative costs (Total 1996/97 to 2000/01)	Reported costs (Total 1996/97 to 2000/01)
£51,050	
10% administration: £5,105	
Total cost: £56,155	**Total actual expenditure: £5,112**

Indicative costing:
The unpublished breakdown of indicative costings cannot be used to reliably compare the indicative cost with the reported expenditure. This is because the indicative costing that was published changed significantly from the unpublished indicative costing, the latter being the figure for which a breakdown of anticipated costs is provided. The unpublished breakdown of indicative costings for the river jelly lichen is in the region of £15,000 whereas the published figure is almost 4 times higher than this.

It can be noted, however, that the areas of expenditure at the time the unpublished indicative costings were produced, were:

(a) survey
(b) research
(c) wardening
(d) advice to land managers

Reported cost:
Data was supplied by Scottish Natural Heritage. The main areas of actual expenditure appear to have been

(a) PR and advice (costs estimated)
(b) Research
(c) *Ex-situ* conservation (just started)
(d) Management planning (costs estimated – not gathered)

Comparison of data:
The reported costs to the end of 2000 are just over 9% of those estimated in the published indicative costing. The unpublished indicative costings are much closer to the reported expenditure, but it is considered inappropriate to use the unpublished figure as the relationship between the published and unpublished indicative figures are so different. However, the following can be noted:

Missing data
1) Data relating to Agency staff time has been difficult to split out from core work, and it is known that some data was not gathered accurately, and has been estimated.

Delivering targets and action

2) The Review and Assessment Form indicates that no Steering Group has yet been set up and this will have lessened administrative costs.
3) *Ex-situ* conservation work has been reported as only just starting, but the total cost of the project is spread across 64 species at a total cost of £96K (*i.e.* and average cost of £1.5K) so this factor is unlikely to be significant.

4) Good progress at the extant Scottish site has been reported and a further site has recently been discovered. However, these factors do not help to explain the very much smaller reported costs than were anticipated.

Summary:
The reported costs on this species are much lower than the published indicative costing. The reasons for this are not clear, especially as the unpublished costing information differs so markedly from the published cost. However, they may result in part from difficulties in assigning staff time and lower administrative costs than were anticipated.

3.2.17 River Jelly Lichen (*Collema dichotomum*)

Indicative and reported costs

Indicative costs (Total 1996/97 to 2000/01)	Reported costs (Total 1996/97 to 2000/01)
£105,710	
10% administration: £10,571	
Total cost: £116,281	**£23,200**

Indicative costing:
The unpublished breakdown of indicative costings cannot be used to reliably compare the predicted with the actual expenditure, This is because the indicative costing that was published changed significantly from the unpublished indicative costing, the latter being the figure for which a breakdown of anticipated costs is provided. The unpublished breakdown of indicative costings for the river jelly lichen is in the region of £30,000 whereas the published figure is almost 4 times higher than this.

In addition, it is not clear whether the same proportions of expenditure were anticipated in the final published indicative costing as that in the unpublished. Despite this, however, it can be noted that the main areas of expenditure at the time the unpublished indicative costings were produced, were:

(a) survey
(b) research
(c) water improvement.

Reported costs
The main areas of reported expenditure, discounting the Steering Group time and associated administration, appear to have been on survey and awareness raising. Little has been spent on research, the reported costs here being mainly Environment Agency and CCW staff time.

Comparison of data:
The reported costs to the end of 2000 are approximately 20% of those estimated in the published indicative costing. The unpublished indicative costings are much closer to the reported expenditure, but it is considered inappropriate to use the unpublished figure because the relationship between the published and unpublished indicative figures is so different. Because of this it is difficult to make a comparison between the anticipated and reported expenditure. However, the following can be noted:

Delivering targets and action
1) From the Review and Assessment Forms, most actions seem to be on going. It is therefore possible that differences in anticipated and reported expenditure arise mostly as a result of differences in the extent to which actions have been undertaken to date. Alternatively, the generic cost of undertaking the actions may have been lower than anticipated.

Summary:
The reported costs for this species are much lower than the published indicative costing. The reasons for this are not clear, especially as the unpublished costing information differs so markedly from the published cost. However, they may result in part from differences in the rate of implementing actions, or from differences in the basic cost of implementing the actions.

3.3 Summary analysis

A summary of the analysis of the findings and in particular the comparison between reported and indicative costs is presented below in Tables 4 and 5.

3.3.1 Habitat Action Plans

For four of the sample HAPs the recorded costs are higher than the original estimates. These are *Cereal Field Margins*, *Ancient and Species-rich Hedgerows*, *Reedbeds*, and *Purple Moor Grass and Rush Pasture*. Only the *Mesotrophic Lakes* HAP has exhibited little change from the predicted costs, whilst the remaining HAPs have all exhibited lower than anticipated costs.

Of the four HAPs that have exhibited higher than anticipated costs the reasons for the differences have been identified as:

(a) Greater than expected progress against the targets and higher generic costs (*Reedbeds*)
(b) Greater than expected progress against the targets (*Purple Moor Grass and Rush Pasture*)
(c) Additional costs of actions not included in the indicative costing (*Cereal Field Margins* and *Ancient and Species-rich Hedgerows*)

Unlike the other HAPs data from the major areas of expenditure were readily available for *Reedbeds*, *Cereal Field Margins* and *Ancient and Species-rich Hedgerows*. The higher than anticipated costs associated with the *Purple Moor Grass and Rush Pasture* HAP need to be treated with some caution because actual cost data was only readily available from one major area of expenditure (ESA payments in Northern Ireland). Despite this the difference between the anticipated and reported costs was identified as being due to greater than expected progress compared to the published targets.

Of the eight HAPs that have exhibited lower than anticipated costs the reasons for the differences have been identified as:

(a) Missing cost data (all except *Seagrass Beds*)
(b) Less than predicted progress against the targets, in particular habitat creation targets (all except *Native Pine Woods and Chalk Rivers*)
(c) Changes due to actions being undertaken under other government policy activities (*Chalk Rivers*)
(d) Changes in generic costs (*Native Pine Woods* and *Limestone Pavements*)

The unavailability of data in a form that can be assigned to particular HAPs has presented a significant barrier to collating actual cost data and comparing this to the indicative costings. As a result, for some HAPs it has proved difficult to determine whether costs have actually been greater or lower than anticipated and what the reasons might have been for any difference.

Agri-environment scheme and other government expenditure meet a major part of the cost of implementing a number of the HAPs. For some HAPs it has not been possible to determine the relevant agri-environment scheme expenditure with any precision. This is particularly a problem for the grassland HAPs. When this data cannot be accurately collated it will have a significant impact on reported costs at any given time.

Where cost information is available, one of the key reasons for lower reported costs than suggested by the indicative costings seems to be slower progress than was anticipated in 1995. This appears to be the case for the *Seagrass Beds* HAP, where the reported costs are only about one-tenth of the indicative costing. This may also may partly explain the difference in the *Upland Oak Wood* HAP and *Coastal and Floodplain Grazing Marsh* HAP costings. In some cases, lower costs for specific actions are likely to be an important factor, for example in the case of the *Limestone Pavement* HAP, where reported costs are two-fifths of the indicative costing. Alternatively, where some of the actions have been undertaken for other policy purposes, for

example for the *Chalk Rivers* HAP, the costs attributable to the HAP have been reduced accordingly (with reported costs of about one-third of the 1995 indicative costing).

3.3.2 Species Action Plans

Of the 17 sample SAPs the reported costs were higher than estimated in 1995 in 10 cases. For two, *Great Crested Newt* and *Sand Lizard*, insufficient cost data were available to undertake a meaningful analysis. For the remaining 5 SAPs the recorded costs were lower than anticipated in 1995.

For those SAPs with higher than anticipated costs, a key reason for the additional expenditure has been higher levels of implementation compared to the indicative costings. Examples of this occur in the *Otter* SAP, where reported costs are about four times the indicative costing. This has also been the case in the *Southern Damselfly* SAP and the *Marsh Fritillary Butterfly* SAP where the extent of actions has been much greater than anticipated.

To a lesser extent new actions and revisions to targets have also contributed to higher than anticipated expenditure. Revised targets are a factor, for instance, for the *Stag Beetle* and *Starfruit* SAPs, where the reported costs are twice and four-times the indicative costings respectively and it is likely that target revision has been a contributory factor.

In the *Skylark* and *Corncrake* SAPs, the reported costs are similar or marginally higher than those predicted. Despite this similarity, the information available suggests that there has been a change in emphasis in the actions compared to those assumed for the indicative costing and the possibility of missing data means that higher costs than reported may have been incurred. One particular area of missing cost data for the *Skylark* SAP is expenditure on general countryside management measures in agri-environment schemes.

Whilst the Review and Assessment Form for the *Skylark* SAP acknowledges the implementation of new or revised agri-environment schemes, it is quite difficult to attribute any of this expenditure to the skylark specifically, which is more likely to be benefiting from improved, more sympathetic management of lowland farmland generally. This has important implications for the reporting of actual costs. The extent to which general agri-environment measures contribute to the implementation of this and other SAPs is unclear, however, the cost could potentially be substantial.

The reported costs for five of the sample SAPs were substantially lower than estimated in 1995. Where comparisons are possible, missing data and delayed actions are thought to explain much of the difference, for example in the case of the *Allis and Twaite Shad* and *White-clawed Crayfish* SAPs, where the reported costs were less than half the indicative costings in each case.

Table 4 Summary of analysis of reported cost data for HAPs

HAP	Summary of comparison results
Chalk Rivers	**Reported costs of £1.3M, almost £3.2M less than anticipated.** This is largely due to a lack of data on areas of work such as river restoration, maintenance and enhancement and removal of phosphate from sewage treatment works, which may have been undertaken for other policy purposes.
Mesotrophic Lakes	**No significant difference between actual and indicative costs.**
Reedbeds	**Reported expenditure of £4.6M, almost £3M more than anticipated.** The extra costs arise from higher generic costs than anticipated, additional costs that were not included in the indicative costing and better progress on habitat restoration than anticipated.
Seagrass beds	**Reported costs of £226K, over £1.5M less than anticipated.** The difference is due to the fact there has been no progress on active habitat restoration, which comprises the bulk of the indicative costing. Actual costs that are presented are additional to the costs included in the indicative costing.
Saline lagoons	**Reported costs of £275K, over £6.5M less than anticipated.** The difference between actual and indicative costs is thought largely to be due to a lack of available actual costs data on site management outside designated sites.
Upland Oak Wood	**Reported costs of £10.5M, almost £20M less than anticipated.** The difference between actual and indicative costs can be partly explained by a lack of available data for key areas of habitat management, but it may also be partly explained by under-delivery against the habitat management targets.
Native Pine Woods	**Reported costs of £13.1M, just over £2.5M less than anticipated once adjustment is made for the basis of the indicative costing.** The lower costs are likely to be due to missing data, differences in generic costs and slightly slower progress than anticipated.
Limestone Pavement	**Reported costs of £298K, almost £500K less than anticipated.** The low reported cost compared to the indicative costs is due to the much lower actual revocation costs and lower habitat management expenditure than anticipated.
Lowland Heathland	**Reported costs of £5.6M, almost £4M less than anticipated.** The difference between reported and indicative costs can be mainly explained by missing data from some agri-environment schemes.
Purple Moor grass and Rush pasture	**Reported costs of £2.7M, almost £1.4M more than anticipated.** The difference is partly due to greater progress against the management target compared to that assumed in the indicative costing. This is despite under-delivery against the re-creation target.
Coastal and Floodplain Grazing marsh	**Reported costs of just under £2.2M, almost £36M less than anticipated.** The difference is due to missing data for a number of agri-environment schemes and the slower than anticipated uptake under these schemes in England since 1995. For English ESAs progress is about one third of that anticipated.
Cereal Field Margins	**Reported costs of £7.4M, which is £2.6M more than anticipated.** The difference appears to be due to higher generic costs/ha than anticipated in the indicative costing and additional costs not included in the indicative costing.
Ancient and species-rich hedgerows	**Reported costs of £9.8M, which is £1.8M more than anticipated.** The difference results form higher generic costs than assumed in 1995 because, despite the higher cost, progress against the targets has been slow and survey and monitoring has not been as extensive as anticipated. The figures have been adjusted to take account of the proportion of British hedges that are thought to be ancient or species-rich.

Table 5 Summary of analysis of reported cost data for SAPs

SAP	Summary of results
Corncrake	**Reported costs of £2.1M, almost £530,00 less than anticipated.** The reported costs are lower than anticipated in the indicative costing. This is likely to be due to missing data and less land purchase than anticipated. The broad targets to date appear to have been met, but the manner in which they have been achieved appears to be different with a shift away from land purchase and habitat creation, towards agricultural schemes and increased staffing.
Skylark	**Reported costs of £640,000, which is £200,000 more than anticipated.** There have been changes in emphasis with less expenditure than anticipated on habitat management; more research; more advisory and policy work; and more survey and monitoring. Some data is also missing so actual costs may be higher than recorded.
Otter	**Reported costs of £1.6M, just over £1M more than anticipated.** In the absence of an action by action breakdown it is difficult to explain this difference. However, the success of the OARP may have led to more action/expenditure than anticipated. In particular, no survey costs were anticipated and these appear significant. Missing data may also mean that the true actual cost is higher.
Red squirrel	**Reported costs of almost £800,000, which is just over £400,000 less than anticipated.** This lower than anticipated cost is likely to be a result of missing data and the actual cost of action to date is likely to be higher.
Great crested newt	No comparison possible due to unavailability of sufficient cost data
Sand lizard	No comparison possible due to unavailability of sufficient cost data
Allis and Twaite Shad	**Reported costs of £115,000, which is almost £200,00 less than anticipated.** A number of actions have not started. It may also be due changes in delivery mechanisms and missing data.
Southern damselfly	**Reported costs of £134,410, which is almost £34,000 more than anticipated.** More research and survey work has been undertaken than anticipated. It is likely that data is missing suggesting that actual expenditure is higher. The shelving of the re-introduction programme has been counter-balanced by increased research and survey costs.
Marsh fritillary butterfly	**Reported costs of £281,000, which is £205,000 more than anticipated.** This is most likely the result of greater research, survey and monitoring, and PR / awareness raising costs.
Stag beetle	**Reported costs of £90,000, which is £40,000 more than anticipated.** This is likely to result from increased spending on: habitat management, as a result of changed targets, and on survey, PR and administration.
White-clawed crayfish	**Reported costs of £80,000, which is £133,000 less than anticipated.** This is likely to be primarily due to missing data.
Freshwater pearl mussel	**Reported costs of £420,000, which is £260,000 more than anticipated**. This is due to unanticipated research, monitoring, survey and provision of advice costs.
Starfruit	**Reported costs of £96,000, which is £72,000 more than anticipated.** This is due in part to a revision of the targets to include the management of existing sites, which has led to increased management costs. There have also been increased costs associated with the running of the steering group.
Shore dock	**Reported costs of £101,000, which is £33,000 more than anticipated.** In the absence of an action by action breakdown it difficult to explain the difference..
Devil's bolete fungus	**Reported costs of £14,000, which is just over £2,000 more than anticipated**. It appears that although there have been changes to the way the SAP has been delivered, the higher actual costs are due to higher than anticipated administration costs.
Green shield moss	**Reported costs of £5,000, which is £51,000 less than anticipated.** The reason for the difference cannot be determined because there is no explanation of the basis of the indicative costing.
River jelly lichen	**Reported costs of £23,000, which is £93,000 less than anticipated.** The reason for the difference cannot be determined because there is no explanation of the basis of the indicative costing.

4.0 FUNDING SOURCES FOR BAPS

The objective for this part of the study is stated in section 1.2 of this report.

"To identify the reported and potential sources of BAPs funding for the sample plans and for the BAPs as a whole. To analyse the extent to which funding has been available and is expected to be available to implement the BAPs"

This has been addressed through the collection of data on funding sources for implementing biodiversity work and consideration of potential funding sources through interviews with consultees.

The principal funding sources for implementing the sample BAPs are described in Section 3 under the reports on the individual BAPs. Funding sources have been varied, ranging from government expenditure through grant schemes to private land owners to projects funded by sponsorship from private business and individuals. Where possible the individual reports on the sample BAPs also describe the extent to which funding has been available.

4.1 Data collection

Data on the sources of funding for Biodiversity work in general and the implementation of BAPs specifically, has been obtained from the gathering of reported cost data for the 30 sample BAPs and from a survey of non-governmental organisations (NGOs).

A list of non-government organisations to be interviewed (*i.e.* recipients of grants for implementing UK Biodiversity Action Plans) was agreed in discussion with the Costings Sub-group at the outset of the research programme. The list was primarily based on an analysis of the organisations involved in the implementation of the national BAPs.

A semi-structured questionnaire was used to collect data on funding sources, but before sending the questionnaire, the consultees were first contacted via telephone to explain the nature of the research and the information required. The preliminary telephone call also enabled informal interviews to be conducted. The nature of this research did not require an entirely structured questionnaire as it was felt necessary to allow a degree of flexibility to enable consultees to present their own views and experiences of funding sources for biodiversity work. The questionnaire requested data on the following:

(a) The source of external funding
(b) The type of biodiversity work supported by the funding
(c) The level of funding
(d) How matching funding was secured
(e) Any restrictions on the use of the funding
(f) The most frequent providers of funding
(g) The largest single funding source

4.2 Results and Analysis

Sixty three non-governmental organisations (including 38 local Wildlife Trusts) were contacted. Responses were received from 45 organisations, of which data has been recorded from 41. The results are summarised in two tables presented in Appendix 3. An explanation of the tables is also provided in the appendix.

The questionnaire requested data on funding that had been received from external sources. Fundraising from the membership of the organisations contacted was not included as external funding. For the purposes of the analysis, the biodiversity work for which the funding had been

received has been grouped into 11 categories, a number of which correspond broadly to the categories of actions within the Biodiversity Action Plans. The categories are:

1. Management and co-ordination of Local BAPs,
2. Staff funding,
3. Education and community work,
4. Advisory work,
5. Biological survey and monitoring,
6. Research,
7. Training,
8. Habitat/land management and protection,
9. Habitat creation,
10. Species management and
11. Land purchase

There is potentially an overlap between some of these categories, especially where grant applications have been made to support projects that cover more than one of the categories listed above. For example, a project to co-ordinate the implementation of a Local BAP would fall under category 1, but may also include funding for a biodiversity officer staff post (category 2). Where there is an overlap such as this, both categories of action have been listed in the tables in Appendix 3.

4.2.1 Non-Wildlife Trust NGOs

Of the 17 NGOs that are not Wildlife Trusts, and which responded to the questionnaire, 4 had received no external funding for implementing BAPs. These were the Game Conservancy Trust, the Mammal Society, the Marine Conservation Trust and the Wildfowl and Wetlands Trust. For the remaining non-Wildlife Trust NGOs, the main sources of external funding are the Statutory Government Nature Conservation Agencies: English Nature (EN), Countryside Council for Wales (CCW) and Scottish Natural Heritage (SNH). Around a third of the NGOs have received funding from Charitable Trusts, a limited number have tapped into the Private Sector (mainly Water Companies and Business) and only one, the RSPB, has secured funds from both the Landfill Tax Trust and the National Lottery Fund.

4.2.2 The Wildlife Trusts

The Wildlife Trusts have attracted funding primarily from the Statutory Agencies such as English Nature, the Environment Agency, Local Authorities and the Landfill Tax Trust. One common source of funding for the Wildlife Trusts has been local authorities, which reflects the local role of Wildlife Trusts and their close working relationships with local authorities. The majority of the local authority support has been for the local BAP work, staff funding and education and community programmes.

Less than half of the Wildlife Trusts reported that they have tapped into the Private Sector. The Wildlife Trusts nationally have also received very significant funding from the Heritage Lottery Fund for nature reserve management, but only a few of the individual Trusts that responded to the questionnaire noted this particular funding programme.

4.2.3 Level and provision of funding

Different levels of funding are provided by the external funding sources. Some projects received 100% funding whilst others have been as low as 20%. More commonly 50% funding has been provided. Where 100% funding has not been forthcoming applicants have had to provide matching funding themselves or find other compatible funding sources to make up all or part of the outstanding costs of the project. A number of funding sources allow matching funding to be comprised of costs derived from existing staff posts, volunteer time and other office expenditure.

4.2.4 Categories of work funded

Using the 11 categories of work an analysis of the number of projects to have received funding indicates that category 8 (habitat management and protection) and category 5 (surveying and monitoring) attracted the highest number of external grant awards from the greatest range of sources of funding. For both categories of work 46 projects were supported from 18 different funding sources coming from the private, charitable and public sectors. The next most frequently supported categories of work were:

(a) category 10 (species management) with 26 projects supported,
(b) category 6 (research) with 23 projects supported
(c) category 1 (Local BAP co-ordination and management) with 22 projects supported.
(d) category 4 (advisory) with 18 projects supported
(e) category 3 (education and community) with 11 projects supported and
(f) category 9 (habitat creation), also with 11 projects supported.

The species management category (10) has been funded from a good range of sources including private business, major grant awarding bodies such as the Landfill Tax Trust and the Heritage Lottery Fund as well as government agencies. The funding sources for LBAP co-ordination (1) are less diverse with over half of the projects being supported by the statutory nature conservation agencies and the Environment Agency.

The least well supported categories of work in terms of numbers of projects are:

(a) category (2) staffing (4 projects),
(b) category (11) land purchase (4 projects) and
(c) category (7) training (3 projects).

In addition to the number of grant awards, consultees were asked to indicate the sources of funding that provided the largest single award. The Wildlife Trusts and the RSPB reported that the largest awards were provided by Landfill Tax Trusts, the Heritage Lottery Fund, and EU LIFE grants. These awards were primarily given for projects involving habitat creation, restoration and management, a number of which included funding for new staff posts and land purchase. As major landowners these organisations are well suited to these types of projects and hence the larger size of grant award, which can range from over £20,000 to hundreds of thousands of pounds. It can be seen that, projects based on habitat management are not only the most frequently funded but also tend to attract the larger grant awards.

The other smaller or more focussed NGOs in general received their largest grant awards from the statutory government agencies or through private sponsorship (for example, Tog 24 have been a major sponsor for the stag beetle SAP). One body has received its largest award through a Charitable Trust (Froglife) and the BTO's largest single funding source was reported as being from their own fund raising appeal. With the exception of the research grant provided to the Natural History Museum from the NERC these awards are typically less than £20,000.

The scale of the awards received also reflects the scale of work required to meet the objectives of the BAP. For instance, smaller amounts of money are usually required to implement BAPs for restricted species than habitats.

4.2.5 Availability of funding

The responses from the consultees reflect a wide range of experiences in attracting external funding for biodivesity work. The larger NGOs appear to have a greater capacity to attract external funding from a wider range of sources. Those organisations with significant landholdings such as the Wildlife Trusts and the RSPB can apply for and receive funding from agri-environment schemes and statutory agencies for site management. This funding can also be used to match private sector funding. The larger NGOs also have the in-house resources to

employ professional fund-raising staff and are able to absorb the greater costs associated with the application process. This was an issue that was highlighted in the informal interviews where it was reported that lack of staff time, knowledge and expertise were all constraints to some degree on the ability of organisations to successfully attract external funding for projects. It was also suggested that the ability to attract external funding was influenced by the particular species or habitat for which funding was sought. It is perceived that there are some areas of work that are currently a low priority for funding sources.

Another concern expressed has been one of the lack of continuity of funding over time, especially from the private sector. Organisations have found that they can attract first year funding but subsequently find it difficult to secure on-going support once the initial grant support comes to an end.

The ultimate sources of funding, as reported by the non-governmental organisations, should be treated with caution: government agencies often act as distributors of funds derived from sources such as the EU LIFE programme and Heritage Lottery Funding, but this may simply be reported as "government funding". For instance, there have been several EU LIFE projects that have, and are, making significant contributions to meeting the biodiversity targets (for example the EU LIFE Bittern Project and EU LIFE Atlantic Oakwoods Project). The Heritage Lottery Fund has also made a very significant contribution to the Tomorrow's Heathland Heritage project administered by English Nature.

4.2.6 Future funding

All of the major sources of funding described in this study and reported by the consultees are still available for future biodiversity work. What is not known, however, is how the sources will change their funding priorities over the coming years

Some funding may become more difficult to obtain: for instance the Wildlife Trusts have been particularly successful in attracting funding from Landfill Tax Trusts and to a lesser extent the Heritage Lottery Fund. These sources of funding may be less available in future as increasing numbers of potentially competing applications are made and if funding priorities for the Landfill Tax Trusts change to ensure that funding is provided to areas of work other than biodiversity and nature conservation.

Private sector funding for the implementation of the UK BAP has been forthcoming for some areas, such as funding from the water industry for a range of species and habitats. Some of the consultees, however, reported difficulty in attracting funding support from other business sectors, especially for the more obscure species.

Funding for work on species to the more focussed and smaller NGOs has been well supported by the statutory agencies through programmes such as the Species Recovery Programme. However, it is clear that current levels of funding are not high enough to provide support to all of the species within the UK BAP. Despite this the funding from statutory agencies is likely to remain as one of the principal sources of funding for these types of BAPs.

4.3 Policy changes and the impacts of BAP costings and funding

4.3.1 Introduction

This section seeks to identify areas where policy changes that have taken place since the original BAP costing exercises were undertaken, might significantly influence the actual costs of implementation compared with the indicative costs. It also attempts to identify policy changes that have influenced the availability of BAP funding and to analyse the extent to which policy changes can be expected to make funds available for the implementation of BAPs.

Changes to policy have three key influences on the costs of implementing BAPs, these are:

(a) increasing or decreasing the actual costs of BAP actions;
(b) meeting the costs of BAP actions and therefore removing the need for additional spending;
(c) reducing the need for BAP actions.

The first of these relies on the notion that policy changes can alter the financial costs of BAP actions, for example through a reduction in administration costs or changes in the costs of various other inputs. The second point covers any policy changes that go towards meeting the costs of BAP actions. Thus, policies that provide biodiversity improvements as an externality benefit (e.g. the Water Framework Directive) may lead to biodiversity objectives being achieved at a lower cost than would otherwise have been the case. The third contribution made by policy changes is that they can reduce the need for BAP actions. Thus, by eliminating activities that currently result directly or indirectly in a loss of biodiversity, Government can reduce the need for BAP actions that ameliorate against these practices.

It is also important to consider the scope of these policy changes. Some will have an influence over the cost of BAP actions at all relevant sites, while others may only influence costs at some sites. This depends on the design of the instruments aimed at delivering particular policy objectives and on whether particular measures are mandatory (e.g. water quality regulations) or voluntary (e.g. agri-environment schemes). In the latter case it will be difficult to estimate the overall impact on costs unless information is available on the area of BAP habitat covered by a particular initiative.

The following sections attempt to summarise how policy changes within a number of key areas can influence BAP costs.

4.3.2 Agriculture and Rural Development

Three categories of policy change are particularly important in this respect. First, policies that increase the scope and availability of BAP funding. Second, policy changes that have positive biodiversity benefits for a range of widespread species but which do not significantly alter the published costs of SAPs. Third, policies that actually change the costs of implementing BAP actions.

Measures to implement the Rural Development Regulation (RDR) will have a significant impact on meeting the costs of a range of HAPs. Within this framework, the national seven-year Rural Development Plans (RDPs), will incorporate significant levels of increased spending on agri-environment schemes, particularly Countryside Stewardship and the Organic Aid Scheme. This will not only improve the availability of funding for BAP work but is likely to produce general biodiversity benefits by encouraging less-intensive farming practices. Monitoring the extent to which these general changes will benefit particular BAPs however may not be easy to achieve because they are unlikely to be habitat or species specific. It is also not clear whether the additional general spending will reduce or remove the need for funding of specified actions within BAPs. As a result although there may be more spending on some agri-environment schemes it does not necessarily mean that the cost of implementing the BAPs will be reduced. For example, less intensive farming will potentially benefit farmland birds such as skylark, corncrake and lapwing and invertebrates such as marsh fritillary butterfly and shrill carder bee. It may also help to reverse the decline of a range of arable weeds such as corn cleavers, cornflower, corncockle and western ramping fumitory. The identified costs of delivering SAPs for these species, however, largely comprise species-specific research, survey and advisory costs, and therefore, in spite of the potential additional biodiversity benefits associated with less intensive farming, the published costs are likely to remain unaffected.

This reflects the difficulty in identifying the contributions made by agri-environment schemes to individual SAPs. The inability to account for expenditure on SAPs across the various schemes makes it difficult to estimate how improvements in the delivery and efficiency of agri-environment measures might impact on costs. Such efficiency gains could result, for example, from the introduction of more whole-farm and single-objective agreements aimed at supporting particular BAP-relevant species and habitats. Such agreements may improve the efficiency of agri-environment measures by reducing fragmentation and increasing habitat coverage, developments that particularly benefit widespread species that rely on an overall healthier environment.

Additional funding opportunities can also be created by the development of new measures that support land management in BAP habitats that are currently not covered by agri-environment schemes. For example, the Countryside Management Scheme (CMS) in Northern Ireland has incorporated agreement types for the management of lowland raised bogs and parkland and includes options that can support BAP priority species such as lapwings. These measures were not included within existing ESA management prescriptions in Northern Ireland, and their inclusion in the CMS demonstrates how the design or revision of agri-environment schemes can be geared towards BAPs for which there is currently no obvious delivery mechanism for habitat or species management. However, as with general benefits arising from increased agri-environment scheme spending new measures will not specifically reduce the costs of implementing the BAPs, but will provide a delivery mechanism for funding where one does not currently exist.

One way in which policy changes could alter the published costs of BAPs would be through their influence on the payments associated with agri-environment schemes. These payments are based on the foregone revenue associated with the changes in agricultural activities required under the various schemes. If external circumstances led to a reduction in the potential revenue from these activities, then this would in turn lead to a reduction in payments. Therefore, reductions in agricultural production support or falling commodity prices should make it cheaper to deliver agri-environment schemes and reduce the costs of implementing the HAPs. This phenomenon can be illustrated by the reductions made by MAFF to payments under the Countryside Stewardship Scheme in England for arable field margins in response to price falls brought about by unfavourable exchange rates and low commodity prices (themselves a reflection of reductions in price support). Conversely, a substantial increase in cereals prices could have the opposite effect of increasing foregone revenue, leading to an increase in payments and consequently higher BAP costs.

Maintaining or extending agricultural support measures that have a positive impact on biodiversity will also influence the cost of some BAP actions. For example, a recent decision by the EU not to end payments for field margins under the arable area payments scheme has helped to maintain a valuable habitat and prevented a possible increase in BAP costs if an alternative mechanism for protecting arable field margins had been needed.

4.3.3 Forestry

Current forest policies focus on the multiple-use of forests as outlined in 'Sustainable Forestry: The UK Programme,'[16] and are mirrored in the UK Forestry Commission's (FC) stated mission to 'protect and expand Britain's forest and woodlands and increase their value to society and the environment'. Alongside this, the FC has an international commitment to the principle of sustainable forestry as set out in the 'UK Forestry Standard'[17]. Sustainable management of forestry is to be delivered through a combination of regulation and grant-aid, supported by

[16] Secretary of State for the Environment *et al.* (1994). *Sustainable Forestry: The UK Programme.* HMSO, London.
[17] Forestry Commission (1998). *UK Forestry Standard: The Government's Approach to Sustainable Forestry*. Forestry Commission, Edinburgh.

measures such as the UK Woodland Assurance Scheme (UKWAS) and the Woodland Grant Scheme (WGS). The latter is a key mechanism for meeting the cost of woodland HAPs. It incorporates a range of targeted payments including the Woodland Improvement Grant, a discretionary payment to support one-off operations that further the implementation of the UKBAP, and Woodland Expansion Grants which are available for the planting of new woodlands and for expansion by natural regeneration.

The aim of sustainable forest management is supported by the RDR and reflected in the three RDPs, each of which envisage significantly increased spending on both the WGS and Farm Woodland Premium Scheme (FWPS). The latter could contribute to BAP objectives by providing additional annual area payments over 15 years for planting broadleaf or native Scots pine on agricultural land. Investment in new afforestation should help to achieve BAP objectives aimed at species dependent on woodland habitats, especially those that have been greatly affected by forest fragmentation and commercial production (e.g. capercaille, Scottish crossbill, bats and dormouse). While these initiatives could deliver significant biodiversity benefits, there seems little scope for policy changes to reduce the associated costs. One exception may be the FWPS where, as in other agri-environment schemes, payments are based on foregone agricultural revenues.

4.3.4 Water Resources

A number of important policy areas surrounding the management of water resources could have impacts on the funding and costs of BAP actions. The need for water companies to cut costs during the AMP3 planning period, should not have a significant impact on BAP funding and water companies are likely to continue to target their biodiversity management initiatives towards BAP priority areas such as chalk rivers. Reduced expenditure on vegetation management may increase biodiversity in some areas, e.g. through reduced intensity of the management of riverbanks, though this is not reflected in the sample BAPs in this study.

European Union Directives may reduce freshwater BAP costs by improving water quality. These Directives will impact on costs by altering consents for such activities as discharges and abstractions on designated conservation sites. These actions are designed to meet other policy objectives rather than biodiversity conservation, e.g. public health, and therefore the compliance costs associated with these Directives are not directly attributable to BAPs.

The new EC Water Framework Directive may provide better protection by improving the regulation of various toxic substances that have a negative impact on biodiversity in certain key habitats. In terms of the marine environment, proposals for the designation of Marine Environmental High Risk Areas and policies regarding bathing water quality may have some positive impacts on environmental quality in coastal zone areas.

The EU Urban Waste Water Treatment Directive and the EU Bathing Waters Directive require greatly improved levels of treatment for sewage discharges. This will reduce local pollution, and may reduce the need for some biodiversity conservation actions related to freshwater and marine water HAPs currently adversely affected by poor or degraded water quality.

4.3.5 Flood and Coastal Defence

The costs of coastal BAPs are likely to be affected by the application of current policies, and by the interpretation of good practice guidance in evaluating coastal protection plans and projects. The application of recent policy changes with respect to coastal management may affect the costs of biodiversity conservation in the long-run. Two policy areas are relevant: the EU Habitat Directive (Council Directive 92/43/EEC 1992) and those of MAFF on coastal protection.

Plans by MAFF to implement sustainable coastal defence policies may alter BAP costs, depending upon whether or not the cost of replacing any lost habitat exceeds the costs of protecting it through maintaining or improving sea defences. Moves by MAFF towards a more

flexible 'sustainable coastal defence policy' could reduce the need for BAP expenditure where coastal habitats would be enhanced by the new policy (e.g. saltmarsh). In some cases, however, the increased costs of maintaining existing defensive measures may lead to some areas of BAP habitat (e.g. coastal and floodplain grazing marsh habitats) being lost as existing sea defences are not maintained. This may lead to an increase in costs for these HAPs as further action becomes required to replace habitat lost in order to meet BAP targets.

Measures under the EU Habitat Directive may influence costs through requiring additional protective measures at designated sites. Under the Directive, member states are required to maintain habitat and species levels at a favourable conservation status. Shoreline Management Plans that contain such sites will need to reflect the special protection afforded by the EU designation. While this would not directly increase existing BAP costs, it could result in higher overall site management costs as conservation targets are raised.

4.3.6 Planning

As with coastal policy, there is a question over the extent that town and country planning policies alter net BAP costs. Much planning work is invariably simply one of co-ordination as exemplified in local authority reviews of their BAPs and Local Agenda 21 partnerships. However, some of the activities of planning authorities are placing an increasing emphasis on protecting wildlife. This is being achieved through the formulation and implementation of development plan policies. These activities are likely to result in greater protection for species and habitats through the use of planning gain, which is likely to increase costs to the private sector, but which may in turn, reduce the cost to the public sector.

Planning gain is already being used to create new habitats especially in relation to mineral extraction. Significant new stands of habitats such as reedbed and coastal and floodplain grazing marsh are being created through the use of planning gain. As a consequence the overall cost to the public sector of meeting habitat creation targets may be reduced by greater use of planning gain as the proportion of the habitat creation target originally anticipated to be met by the public sector is reduced.

Greater impacts can be expected from changes in policies regulating public access to priority habitats or that control development in the countryside. For example, policies in statutory development plans are important to the long-term protection of biodiversity in that they set out the framework for land-use change, and provide the key reference in determining development applications. Removal of constraints on the use of prime agricultural land for the commercial and housing developments included in the new Rural White Paper could have a limited long term impact on the costs of some BAP actions.

4.4 Summary

The investigation of the 30 sample BAPs and the survey of non-government organisations indicates that funding for biodiversity work is provided from a wide variety of sources. Principal funding sources, however remain government departments and agencies through grant awards or through existing resources.

The investigation of external funding to non-government organisations indicates that the types of project that are most frequently put forward for funding or the most successful in attracting funding or both are those that focus on habitat management and protection, survey and monitoring and species management. Those projects that relate to habitat management also tend to attract the larger awards.

According to the sample of organisations contacted in this study habitat creation is not so well supported, or it may not be put forward for funding as often as existing habitat and species management. This may be due to higher priority being given to ensuring existing habitats are in

good management than the creation of new habitats. It may also be due to the relatively higher costs of habitat creation or because organisations are able to utilise other mechanisms such as planning gain to undertake habitat creation funded by private business and industry.

There is also an apparent high level of support in terms of projects financed for management and co-ordination of Local Biodiversity Action Plans.

The investment in people in terms of staff posts and training is low down the list of projects that have received funding, but it is not known if this is because these categories of work are not successful in attracting funding or if fewer bids for funding for staff posts and training are made.

All of the major sources of funding described in this study and reported by the consultees are still available for future biodiversity work. What is not known, however, is how the sources will change their funding priorities over the coming years. It is likely that major government grant schemes such as agri-environment schemes and forestry grants will continue to be provided and are in fact the major sources of potential funding for implementing the BAPs. The future funding through non-governmental sources such as Landfill Tax Trust, and private business sponsors are less certain and may change in terms of their funding priorities or the level of funding they provide.

The review of the potential impact of policy changes on BAP costs and funding has identified three key influences on the costs of implementing BAPs, these are:

(a) increasing or decreasing the actual costs of BAP actions;
(b) meeting the costs of BAP actions and therefore removing the need for additional spending;
(c) reducing the need for BAP actions

Consideration of potential impacts of policy change has been made for agriculture and rural development, forestry, water resources, flood and coastal defence and planning.

With regard to agriculture and rural development measures to implement the Rural Development Regulation (RDR) will have a significant impact on meeting the costs of a range of HAPs. Within this framework, the national seven-year Rural Development Plans (RDPs), will incorporate significant levels of increased spending on agri-environment schemes, particularly Countryside Stewardship and the Organic Aid Scheme.

Another way in which policy changes could alter the published costs of BAPs would be through their influence on the payments associated with agri-environment schemes. These payments are based on the foregone revenue associated with the changes in agricultural activities required under the various schemes. If external circumstances led to a reduction in the potential revenue from these activities, then this would in turn lead to a reduction in payments. Therefore, reductions in agricultural production support or falling commodity prices should make it cheaper to deliver agri-environment schemes and reduce the costs of implementing the HAPs.

The aim of sustainable forest management is supported by the RDR and reflected in the three RDPs, each of which envisage significantly increased spending on both the Woodland Grant Scheme (WGS) and Farm Woodland Premium Scheme (FWPS). The latter could contribute to BAP objectives by providing additional annual area payments over 15 years for planting broadleaf or native Scots pine on agricultural land. Investment in new afforestation should help to achieve BAP objectives aimed at species dependent on woodland habitats. While these initiatives could deliver significant biodiversity benefits, there seems little scope for policy changes to reduce the associated costs.

A number of important policy areas surrounding the management of water resources could have impacts on the funding and costs of BAP actions. The need for water companies to cut costs during the AMP3 planning period, should not have a significant impact on BAP funding and water

companies are likely to continue to target their biodiversity management initiatives towards BAP priority areas such as chalk rivers.

European Union Directives may reduce freshwater BAP costs by improving water quality. These Directives will impact on costs by altering consents for such activities as discharges and abstractions on designated conservation sites. These actions are designed to meet other policy objectives rather than biodiversity conservation and therefore the compliance costs associated with these Directives are not directly attributable to BAPs. In particular, the new EC Water Framework Directive, the EU Urban Waste Water Treatment Directive and the EU Bathing Waters Directive may provide better protection by improving the regulation of various toxic substances and through improved levels of treatment for sewage discharges. In terms of the marine environment, proposals for the designation of Marine Environmental High Risk Areas and policies regarding bathing water quality may have some positive impacts on environmental quality in coastal zone areas.

The costs of coastal BAPs are likely to be affected by the application of current policies, and by the interpretation of good practice guidance in evaluating coastal protection plans and projects. The application of recent policy changes with respect to coastal management may affect the costs of biodiversity conservation in the long-run, in particular the EU Habitat Directive (Council Directive 92/43/EEC 1992) and those of MAFF on coastal protection.

Plans by MAFF to implement sustainable coastal defence policies may alter BAP costs, depending upon whether or not the cost of replacing any lost habitat exceeds the costs of protecting it through maintaining or improving sea defences. Moves by MAFF towards a more flexible ‘sustainable coastal defence policy’ could reduce the need for BAP expenditure where coastal habitats would be enhanced by the new policy (e.g. saltmarsh).

Better implementation of policies that promote planning gain for biodiversity may affect the cost of implementing the BAPs. Much planning work is invariably simply one of co-ordination. However, some of the activities of planning authorities are placing an increasing emphasis on protecting wildlife. This is being achieved through the formulation and implementation of development plan policies. These activities are likely to result in greater protection for species and habitats through the use of planning gain, which is likely to increase costs to the private sector, but which may in turn, reduce the cost to the public sector. Planning gain is already being used to create new habitats especially in relation to mineral extraction. Significant new stands of habitats such as reedbed and coastal and floodplain grazing marsh have already been created on the back of commercial activities.

5.0 MONITORING AND EVALUATING BAP COSTINGS

The BAP Costing Sub-Group has been tasked with monitoring and validating the costs of implementing the BAPs and one of the objectives of this initial investigation was to *"recommend a methodology for continuous monitoring and evaluation of the BAP costings".*

This study has sought to gather information on all areas of significant expenditure associated with the BAPs sampled, from those organisations and individuals incurring the costs. It was anticipated that as a result of this it would be possible to make firm recommendations for future monitoring methods. This, however, has not been the case, mainly for the reasons described in section 2.2 of this report which highlights a number of problems associated with data collection and assigning cost data to BAPs.

5.1 Issues to be addressed in a future monitoring system

Some of the problems that will need to be addressed by a future method for continuous monitoring and evaluation of BAP costs relate simply to the ease by which relevant data can be accessed. Others relate to which costs to include in the monitoring process and how they should be recorded and presented.

5.1.1 Agri-environment scheme expenditure

Expenditure through the agri-environment schemes is a major element of the costs for many of the HAPs and therefore a very important source of cost data. During this study difficulties have been experienced in extracting data on expenditure since 1995 that can readily be related to BAP habitat types. This has not been the case for all of the HAPs in the sample, but significant difficulties were encountered for some habitats. These difficulties arise because many agri-environment schemes were established before the UK BAP was published and were not designed specifically to deliver BAP objectives. In fact most agri-environment schemes are fulfilling a much wider range of objectives than biodiversity conservation. As a consequence expenditure under the schemes is not specifically collated against BAP habitat types. Where there have been difficulties for some habitats such as coastal and floodplain grazing marsh it has been possible to make estimates of expenditure where there is sufficient data on the distribution of the habitat. Where there is insufficient knowledge of the distribution of a BAP habitat it is currently difficult to readily relate agri-environment agreements to the habitat type.

Where data on expenditure can be collated that relates to a particular habitat type there are other issues associated with agri-environment scheme data that need to be considered. This is particularly important if a greater understanding of whether a particular agri-environment scheme agreement is delivering the desired quality required by a target. For example, whilst it may be possible to identify the expenditure through an agri-environment scheme on a habitat it is currently unclear if all agreement types within the scheme will deliver the desired habitat quality required by the target. Consequently, decisions need to be made about which tiers of agreement to include in the BAP costs, when trying to determine whether an area of habitat is likely to reach, and be maintained, in favourable conservation condition. It has not been possible to make this assessment within the timescale of this study, as it will require research into particular prescriptions within agri-environment schemes and how they are affecting the quality of the habitat concerned.

5.1.2 Government agency expenditure

As with agri-environment schemes, difficulties associated with collating and allocating cost data to BAP habitat types have been encountered during this study for other sources of public sector expenditure, by government agencies, on grant schemes and designated site management.

It has not been possible to associate expenditure with specific BAP habitat types based on the data held in existing agency databases which, as with agri-environment schemes, were established prior to the publication of the UK BAP. Whilst these difficulties are not insurmountable they do require staff time and resources to interrogate the existing databases to achieve a best estimate of the extent of particular habitat types and associated expenditure. This is illustrated in the review and assessment form for the Purple Moor Grass/Rush Pasture HAP, which states:

"Interrogation of EN's ENSIS system indicates that using Phase 1 type B5 (Marshy Grassland) Level 1 interest feature as equivalent to the HAP type, 54% of SSSI Units were in favourable condition sensu Common standards definitions on 1/4/1999. Should digital distribution data become available, it would be possible to identify the area of this habitat within SSSIs that is under agri-environment scheme agreement".

The extent to which digitised distribution data will become available over the next few years is unknown, but without such data allocating costs to specific BAP habitat types is likely to remain a difficult task.

5.1.3 Small scale and local BAP costs

As well as the major areas of expenditure associated with implementing BAPs there are a wide range of small scale, local costs. The difficulty associated with collating this type of small and often diffuse data is that it can be extremely time consuming, as each individual project needs to be approached separately for cost data.

Whilst some costs may be relatively small, if they are repeated over a wide geographical area they can collectively be substantial and should not be discounted lightly.

The monitoring of the national BAP also will need to consider the extent to which actions undertaken through LBAPs should be allocated to the monitoring process. Potentially the combined efforts at a local level may result in much greater activity than required to the national BAP targets. To a certain extent this could be addressed through the Steering Group work programmes.

5.1.4 Hidden costs

Whilst most cost data can be readily allocated to particular targets and actions, there are a wide range of hidden costs associated with implementing BAPs, in particular administration costs. Gathering this data can be difficult and also time consuming, as it is often not recorded in a systematic manner, if at all. However, these costs can be a significant element of the cost of implementing a BAP. One of the difficulties of working with these costs is determining which staff costs should be allocated to BAP work, and which should be allocated to the normal duties of the organisations involved in the work.

5.1.5 Double counting

As well as the difficulties of determining which data to collect and to which BAP the data should be assigned, this study, like the indicative costings, has also had to address issues of double counting expenditure. There are potential problems associated with allocating costs more than once if care is not taken. This can occur between HAPs and SAPs (e.g. bittern and reedbeds), between SAPs (e.g. farmland birds) and between HAPs (e.g. management of chalk river floodplains to reduce diffuse pollution and a range of other habitats). In the examples given above the same expenditure is fulfilling the objectives of the different HAPs and SAPs.

A further issue is that of determining which costs are attributable to the BAP process. If BAP actions are undertaken for other policy purposes then the principal driver of the action undertaken will need to be determined in order to avoid attributing expenditure incorrectly.

5.1.6 Baseline costs and additionality

Expenditure already planned prior to the publication of the BAPs should be excluded from monitoring. Baseline costs are relevant to monitoring since the purpose is to monitor the additional expenditure above the defined baseline. Guidance should be provided on how baseline costs should be defined. During this study there has been some uncertainty reported by consultees about the inclusion of expenditure since 1995 under schemes that existed before this date (for instance English Nature's Species Recovery Programme). This has arisen because of uncertainty about how likely it would have been for funding to continue through the existing scheme if it had not been for the publication of the UK BAP. In this study a judgement has been made where this circumstance has arisen.

5.2 Future monitoring of BAP costs

Although this study has encountered a number of difficulties associated with data collection and the assignment of cost data to particular BAPs, these are not insurmountable. It is suggested that these issues can best be addressed through the development of a co-ordinated methodology for monitoring and evaluating BAP costs that is an integral part of the overall BAP monitoring process.

5.2.1 Ideal monitoring system

Ideally a future automated method for monitoring and evaluating BAP costs would:

(a) Regularly access and collate identified BAP cost data in a standard format.
(b) Analyse BAP cost data and report on the cost of individual actions and groups of actions and the cost of progress towards achieving BAP targets.
(c) Be available for interrogation on a frequent and regular basis to enable reporting of the latest BAP expenditure for individual BAPs or groups of BAPs.
(d) Be an integral part of, or at least compatible with, monitoring databases currently being developed by JNCC.

Developing a method of monitoring to this standard will require further work and consultation with Steering Groups, JNCC and the government departments and agencies, but a number of recommendations can be made for a practical way forward for developing such a monitoring system.

5.2.2 Recommendations

It is recommended that a future monitoring system will need to:

1. Identify the areas of expenditure to be monitored for each BAP
If future monitoring of expenditure and progress against targets is to be successfully achieved, it will be essential that each major area of expenditure for each BAP is identified and the necessary data made available in a form that is reliable and readily accessed.

The monitoring of costs depends fundamentally on the reporting and monitoring of the actions undertaken. Consequently, identifying the major areas of expenditure should be guided by the costed work plans being prepared by the Steering Groups. The costed work plans should include all the actions by which the BAP will be implemented over a determined time span including expenditure through agri-environment schemes. The work plans should then, enable all the major areas of future expenditure to be identified for monitoring. These main cost areas should be included in the monitoring database being developed by JNCC.

The priority areas for data collection should be the major areas of expenditure that are identified. What constitutes a major area of expenditure will vary from one BAP to another. For many of the HAPs the major costs are land management costs in the form of agri-environment, other grant

schemes and management by government agencies. For SAPs a highly restricted species may be entirely linked to the management of one or two identified sites.

In relation to agri-environment schemes and other government sources of expenditure, further work should be undertaken to develop a method of their reporting. This is likely to require further work on the correlation between grant scheme agreements and some BAP habitats in particular.

In an attempt to try and help resolve the difficulties of measuring the contribution (in costs terms and otherwise) of agri-environment scheme agreements to HAP targets, MAFF are currently exploring a number of approaches to improving the quality of BAP-related information on agreement land. These include:

(a) Collecting more focussed data on the ground,
(b) Using sample survey data from long-term monitoring programmes, and
(c) Working with others, particularly English Nature to access improved GIS-based data on the distribution of habitats.

Further consideration will need to be given to how best to derive data from grant schemes and then assign it to particular BAPs. This is likely to require the manipulation of existing data and the use of assumptions. It is important that the methods used to extract expenditure data are documented in order that future data collection can be undertaken in a consistent manner. Ideally, in the longer term the agri-environment and other government grant scheme agreements and designated sites data should be categorised by BAP habitat types. This would enable expenditure on BAP habitats to be readily collated without the need to manipulate databases or correlate agreements with digitised maps of the distribution of habitat types.

2. Devise a method by which costs can be regularly and systematically collected and analysed

Consideration is currently being given to the development of monitoring programmes for the implementation of BAP actions. Ideally methods of monitoring the costs should be developed in conjunction with these. Monitoring should be cost-effective and may need to operate at a national, regional or local level depending on the sources of the major areas of expenditure identified for each BAP.

Ideally collation of cost data should be a continuous procedure. Whatever the frequency of reporting (whether over fixed periods or on an on-going basis) information will need to be made regularly available using clear and repeatable methods of data retrieval. This is likely to require the development of a structured mechanism for reporting expenditure from organisations implementing the BAPs at a national, regional or local level as appropriate.

Further consideration will need to be given to how data collection and analysis is organised, but given the large amount of costs data that will be required in order to monitor the BAP process, it is likely that it should be centrally co-ordinated. Possible routes of reporting data may be through the Steering Groups or JNCC, but there may be staffing constraints associated with both of these approaches.

3. Develop guidance for those being asked to undertake monitoring

In order to ensure that the required data is provided on a common basis guidance should be provided on the:

(a) Level of monitoring,
(b) Standardisation of cost data,
(c) Principles for determining if costs should be attributed to the BAP process (additionality),
(d) Avoiding double counting,
(e) Exclusion of baseline costs

Guidance on the level of monitoring will be derived from the identification of the major areas of expenditure. Part of the process of determining the appropriate level of monitoring should involve consideration of the relationship between the national BAP targets and Local Biodiversity Action Plans (LBAPs). During the course of this investigation many interviewees reported projects of which they were aware in different parts of the country. However, it was not readily obvious whether these costs should be gathered, if not recognised as part of the national BAP implementation process. For widespread species there is an extremely wide range of local action taking place which cannot be readily summarised. Collectively local action may well be delivering much more than the original BAP targets envisaged at the national level. Whilst this is a positive aspect of LBAP work it can cause confusion and, potentially, inconsistencies in the collection of cost data from one year to the next. Guidance is needed on which areas of activity should not normally be included in the monitoring process. It is likely, however that the actions proposed in the work plans developed by the Steering Groups will form the bulk of the cost of implementing BAPs at the national level.

There is a need to standardise the cost data that is collected and how it is presented in a monitoring programme. For instance, guidance is required on issues such as the inclusion or exclusion of VAT, use of a common base-price, costing of staff time, on-costs and expenses.

Guidance should also be given on avoiding double counting costs and additionality. For example, on certain areas of work such as funding packages based around SACs or SPAs, double counting could easily arise. A number of EU LIFE funded projects have concentrated on SACs (e.g. the Marine SACs LIFE project) but also have made significant contributions to the implementation of one or more BAPs.

Overlaps exist between many of the BAPs where there are shared costs resulting from actions that benefit more than one species or habitat. In these circumstances it may be more efficient to monitor costs at a group level instead of trying to allocate proportions of particular costs to individual BAPs. For example, it may prove more efficient to monitor expenditure on bittern and reedbed jointly.

5.3 Summary

This study has identified a number of problems that will need to be addressed in any future system of monitoring. However, much guidance on addressing these problems is already in existence in various technical reports. With the dissemination of this information and the preparation of additional guidance to all potential providers of cost data, a start can be made in ensuring an appropriate level of consistency in data collected.

There is a need to ensure that the data to be collected is clearly identified. This may require data collection at national, regional and/or local levels depending on the distribution and extent of the habitats and species covered by each BAP and the complexity of actions required. This should be linked to the process of developing costed work plans and the monitoring database being developed by JNCC.

The management of the data collection process can be addressed through standardisation of reporting through existing channels of communication that are appropriate for each HAP and SAP. The process of collecting and analysing cost data should also be centrally co-ordinated to ensure that data is collated and assigned appropriately.

GLOSSARY

AMP	Asset Management Programme
ASSI	Area of Special Scientific Interest (Northern Ireland)
BC	Butterfly Conservation
BCT	Bat Conservation Trust
BTO	British Trust for Ornithology
CCW	Countryside Council for Wales
CEH	Centre for Ecology and Hydrology
CMP	Catchment Management Plan
CPS	Countryside Premium Scheme
CS	Countryside Stewardship
DEFRA	Department of Environment, Food and Rural Affairs
EA	Environment Agency
EHS	Environment and Heritage Service (Northern Ireland)
ELMS	Environmental Land Management Schemes
EN	English Nature
ENRR	English Nature Research Report
ESA	Environmentally Sensitive Area
FA	Forest Authority
FC	Forestry Commission
FE	Forest Enterprise
FRCA	Farming and Rural Conservation Agency
FWPS	Farm Woodland Premium Scheme
HAP	Habitat Action Plan
HCT	Herptofauna Conservation Trust
HLF	Heritage Lottery Fund
JNCC	Joint Nature Conservation Committee
LBAP	Local Biodiversity Action Plan
LEAP	Local Environment Agency Plan
MAFF	Ministry of Agriculture, Fisheries and Food
MoD	Ministry of Defence
NGO	Non-governmental organisation
NNR	National Nature Reserve
OARP	Otter and Rivers Project
PTES	People's Trust for Endangered Species
RDR	Rural Development Regulation
RDP	Rural Development Plan
RES	Reserve Enhancement Scheme
RSPB	Royal Society for the Protection of Birds
SAC	Special Area of Conservation
SAP	Special Protection Area
SEPA	Scottish Environmental Protection Agency
SG	Steering Group
SNH	Scottish Natural Heritage
SPA	Special Protection Area
SRP	Species Recovery Programme
SSSI	Site of Special Scientific Interest
THH	Tomorrows' Heathland Heritage
UKWAS	UK Woodland Assurance Scheme
WCA	Wildlife and Countryside Act
WES	Wildlife Enhancement Scheme
WGS	Woodland Grant Scheme
WIG	Woodland Improvement Grant

WLMP	Water Level Management Plan

APPENDICES

Appendix 1 – Habitat Action Plan reported cost tables

Appendix 2 – Species Action Plans reported cost tables

Appendix 3:– Summaries of funding provision