

# **UK Biodiversity Group**

## **Tranche 2 Action Plans**

**Cost estimates - terrestrial and freshwater habitats**

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# 1. Introduction

In response to the Earth Summit in 1992, the UK Government published *Biodiversity: The UK Action Plan* in January 1994<sup>1</sup>. The plan commits the Government to meeting the strategic objective of conserving and enhancing biodiversity within the UK. To advise the Government, and to assist with meeting this strategic objective, a Biodiversity Group was established which was charged with developing a range of specific costed plans for key species and habitats. In 1995 the Steering Group published the first tranche of fourteen costed Habitat Action Plans (HAPs)<sup>2</sup>.

In 1997, English Nature on behalf of the Biodiversity Group, commissioned Baker Shepherd Gillespie, in conjunction with the RSPB, to prepare cost estimates for further HAPs. These included the following freshwater and terrestrial habitats:

1. Lowland Beech Woodland
2. Upland Mixed Ash Woodland
3. Wet Woodland
4. Wood Pasture and Parkland
5. Lowland Hay Meadow
6. Upland Hay Meadow
7. Lowland Calcareous Grassland
8. Upland Calcareous Grassland
9. Lowland Dry Acid Grassland
10. Eutrophic Standing Waters
11. Aquifer Fed Naturally Fluctuating Water Bodies
12. Lowland Raised Bog
13. Upland Heath
14. Blanket Bog

Each HAP describes the habitat and its current status, factors affecting the habitat and current action being taken to protect and enhance the habitat. The HAPs set out a number of objectives and targets and a list of proposed actions to that are assigned one or more lead agencies.

In 1998 the second tranche of HAPs was published<sup>3</sup>. This covered ten of the above fourteen plans. In 1999 the remaining four freshwater and terrestrial HAPs were published B upland calcareous grassland, upland heath, blanket bog and lowland raised bogs, together with a number of maritime HAPs<sup>4</sup>.

This report describes the approach adopted to cost these 14 HAPs. It includes the process by which data was collected, how the actions were categorised and costed, how a number of issues relating to opportunity costs and additionality were dealt with in the costing process and difficulties encountered in preparing costings for the HAPs.

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<sup>1</sup> HM Government (1994) *Biodiversity: the UK Action Plan*, HMSO, London.

<sup>2</sup> Biodiversity Steering Group (1995). *Biodiversity: the UK Steering Group Report*. Two Volumes, HMSO, London.

<sup>3</sup> UK Biodiversity Group (1998). *Tranche 2 Action Plans*. Volume II B Terrestrial and Freshwater Habitats. English Nature, Peterborough.

<sup>4</sup> UK Biodiversity Group (1999). *Tranche 2 Action Plans*. Volume V - Maritime Species and Habitats; Volume VI - Terrestrial and Freshwater Species and Habitats, English Nature, Peterborough

## **2. The costing process**

### **2.1 Data Collection**

Costing the HAPs involved gathering data, advice, opinion and estimates from a wide range of sources.

#### **2.1.1 Cost data**

Cost data were sought for each habitat on a range of actions included in the HAPs, for example, habitat maintenance, restoration and creation, survey, research and production of publicity material and the provision of advice.

These data were used to develop indicative costs for particular elements of the proposed actions within the plans. Data were sought from public bodies, non-government organisations, individuals, and private companies. Some cost data collected in 1995 for the first tranche of Habitat Action Plans were also used<sup>5</sup>. Data collection concentrated on gathering information most relevant to costing the proposed actions within the HAPs. Data were gathered by use of questionnaires, through telephone interviews and meetings with key personnel.

#### **2.1.2 Grant data and public sector costs**

Requests for data were made for the major grant schemes operating in the UK. These included: Environmentally Sensitive Areas, Countryside Stewardship, Moorland Scheme, Habitat Scheme, Habitat Improvement Scheme, Farm Woodland Premium Scheme, Countryside Premium Scheme, Woodland Grant Scheme, Tir Cymen, Reserve Enhancement Scheme, Wildlife Enhancement Scheme, and the Peatland Management Scheme. Data was requested from relevant contacts in government offices and statutory agencies.

Data was also sought from these sources for public sector costs arising from site management additional to grant schemes.

Recipients of the questionnaire were asked to attempt to allocate the habitat categories covered by the grant scheme(s) to one of the habitat types included in the HAPs. They were also asked, where possible, to describe any discrepancies between the categories in the grant scheme and the habitats as described in the HAPs. The information on agri-environment schemes requested for each of the HAP habitats is shown in Box 1.

#### **2.1.3 Additional HAP data**

It was also necessary to seek additional information and opinion to the cost data to clarify the targets set in the HAPs and to determine the appropriate level of activity for each action. The type of information requested included; the extent and condition of the overall habitat resource, the extent already in appropriate management, the nature and extent of research

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<sup>5</sup> East Midlands Environmental Consultants (1995). Habitat Action Plans: Habitat cost data. A research report for English Nature, Peterborough.

requirements, case studies of costed work and the extent of the gaps in survey coverage. Data were sought from the authors of the HAPs, academic institutions, individuals, the relevant country agencies, government departments, non-governmental organisations and private companies. This additional information was gathered through telephone interviews and where appropriate meetings with key personnel.

**Box 1:**

**Information requested on agri-environment schemes**

- (a) *Name of the grant scheme*
- (b) *Prescriptions within the grant scheme*
- (c) *Payment rate per hectare (if possible for each prescription and on a regional or country basis if the scheme is administered or has different prescriptions or payment rates in different locations)*
- (d) *Total area included within the scheme as of 96/97 (if possible for each prescription and on a regional or country basis if the scheme is administered or has different prescriptions or payment rates in different locations)*
- (e) *Total cost of the scheme (if possible for each prescription and on a regional or country basis if the scheme is administered or has different prescriptions or payment rates in different locations)*
- (f) *Average cost/ha*
- (g) *Wherever possible can the cost data be divided between payments for habitat management (maintenance and restoration) and habitat creations?*
- (h) *Is it possible to provide the projected expenditure of the scheme in 2003/4 and 2013/14 to meet the targets set within the Action Plan. If these projections cannot be made please make a projection for as far ahead as possible.*
- (i) *On what basis have the payment rates been calculated? Does the grant cover 100% of management costs? If not, what proportion is covered by the grant payment?*
- (j) *If the grant scheme does cover costs other than habitat management (e.g. survey, research, management advice etc). What are these types of costs and what is the annual expenditure on these elements by the grant scheme.*
- (k) *How much does the grant scheme cost to administer on an annual basis?*

## 2.2 Costing habitat action plans

### 2.2.1 Costing proposed actions and targets

The costing of the HAPs was approached by preparing cost estimates for fulfilling the actions outlined in the HAPs such that the 10-15 year targets are met. No attempt has been made to consider the costs in light of what financial resources might be currently available or thought reasonable to put into their delivery.

This approach to costing the HAPs is in line with the costing of Species Action Plans (SAPs) which focused on actions rather than targets. It is assumed that the actions are sufficient to meet the targets (see Box 2, for an example). In addition, by costing specific actions and identifying those actions that should not or cannot be costed in this exercise, it should be possible in future to compare actual costs with those forecast and review the costings.

**Box 2:**  
**Costing actions to meet targets for upland hay meadows**

Target (c) of this HAP is as follows:

*'Refine guidelines for appropriate methods and approaches to establish new stands of upland hay meadow of wildlife value by 2005 and attempt to re-establish 50 ha of upland hay meadow of wildlife value at carefully targeted sites by 2010'.*

This target has been costed through the following action:

**Action 5.1.2**

*'Develop and implement strategies to restore and expand the cover of upland hay meadow, taking into account the need to ameliorate the negative effects of isolation, fragmentation and small patch size.'*

This action has been costed on the basis of an indicative cost of £265/ha for hay meadow re-creation in the uplands of northern England and the scale of the action is determined by the target of 50 ha.

### 2.2.2 Categorisation of proposed actions

To focus the data gathering effort and to determine which actions should or should not be costed, the proposed actions within the draft HAPs were categorised as follows:

- (a) An action that will be incurred as part of the normal duties of the agencies (e.g. notification of SSSI/ASSIs).
- (b) An action that is a statutory requirement not primarily related to the conservation of biodiversity, but contributing to the objectives and target of the HAP (e.g. enforcement of water quality standards under drinking water legislation aimed at protecting public health).
- (c) An action that has a shared cost with another action within the HAP or another HAP, where the cost cannot be readily allocated to each action.
- (d) An action that can be costed based on various existing targets and cost data.

- (e) Conditional future actions. These are actions that will inform the extent and nature of required future actions, which cannot be specified at this time (e.g. an action that requires a review of the extent and status of a habitat to be undertaken and for the data collected to subsequently be used to develop and implement appropriate site protection and maintenance programmes).

### 2.2.3 The inclusion of actions in the costing

The actions that fall into category (a) and (b) are not included in the costings. Some concern has been expressed during the consultation process about the exclusion of some costs that fall into category (a). One or two consultees felt that the true cost of the HAP was not being presented as a result, and particular concern was expressed about the exclusion of the further designation of Sites of Special Scientific Interest. This action, however, whilst being proposed by the HAP, is part of the normal work of the lead agencies. In addition, costing this action would have proved difficult as it was not known how many more SSSIs would have needed to be designated as a result of the HAP, beyond those that would have been designated in the normal course of the work of the lead agencies. On the other hand, the cost of reviewing and changing existing agri-environment schemes to accommodate a greater emphasis on meeting HAP targets was felt to be an action driven by the publication of the HAP, and this action has been costed.

The costs of category (c) actions are included under one action rather than both actions. How these actions have been accommodated is specified in section 3 of each HAP costing section (below).

Category (d) actions are included and have been costed based on the information provided within the HAP and the additional opinion or data.

Actions in category (e) are conditional future actions and have also been included in the HAP costing. Unlike category (d) actions, conditional future actions are difficult to cost at this stage because of the unknown nature of potential future actions. These actions have been costed based on a number of assumptions and opinions derived from consultations with organisations and individuals. The costings are therefore general and could potentially change to varying degrees if the assumptions made have under estimated or over estimated the need for, and the extent of, future conditional actions. Conditional future actions are often comprised of separate actions (see box 3).

**Box 3:**  
**Future Conditional Actions**

Action 5.5.5 of the lowland calcareous grassland HAP states:

*‘Evaluate the need for impact assessment of the effect of atmospheric nutrient deposition on community composition, and commission research as appropriate’.*

In this case the evaluation of the need is a definite action for which an indicative cost can be prepared. The commissioning of research, however, is uncertain as the evaluation may conclude that there is no need for further research. Alternatively if the evaluation does conclude there is a need for further work, until the evaluation is complete the type of research required is unknown. To cost this conditional future action therefore a number of assumptions have to be made. Unless there is a clear opinion to the contrary the costing assumes in such circumstances that the conditional future action will be required.

#### **2.2.4 Indicative and opportunity costs**

The cost of the actions was based on a range of indicative costs, which are presented in Table 1 in each of the HAP costings. These costs were calculated from the agri-environment scheme data, case studies, site specific data and standard costs for various elements such as staff costs, or the cost of a PhD research studentship. The costs were prepared as far as possible to reflect any variation throughout the UK. In agri-environment schemes the variation was reflected in different payment rates in different countries or regions of the UK.

The HAPs for agricultural habitats such as grassland and moorland generally seek to meet their targets through the further use of agri-environment scheme payments or positive management agreements. The payment rates within these schemes are based on detailed assessments by government agricultural departments of the cost to a landowner for managing a habitat in a manner sympathetic to its nature conservation value and not to its maximum productive potential. Consequently, the payment rates reflect opportunity costs in the form of foregone revenue from not converting to a more productive agricultural or forestry land-use. In some cases the foregone revenue calculations are also topped-up as an incentive for landowners to enter the scheme. In other circumstances, e.g. for capital works, the payments are based on the costs of the works.

Those scheme prescriptions that reflect the management necessary to restore or maintain ecologically valuable habitats (e.g. species-rich meadows, or unimproved downland turf) were used to assist in the calculation of indicative costs.

For habitats that are not covered by agri-environment schemes (e.g. lowland raised bogs) the indicative costs were based entirely on average figures for site management based on information collected during the costing process. In some cases these costs represent opportunity costs in the form of foregone revenue. For example, the cost of revoking a peat extraction licence is effectively a compensation payment for lost revenue. Also the cost of buying out-turbury right holders in Northern Ireland is a compensation payment for the loss of a free source of fuel and foregone revenue.

For state owned forestry land, opportunity costs are presented in terms of the lost revenue associated with felling timber before its optimum harvesting date. The full opportunity costs associated with longer-term changes in land use (e.g. from exotic to native species) were not estimated, because of the difficulty of estimating these costs and of identifying to what extent they would be attributable to the HAP.

#### **2.2.5 Current expenditure and its use in the costing process**

Current expenditure on the habitats within the HAPs varies greatly from one habitat to another. For some habitats such as the grasslands there is a significant existing expenditure on the direct management of the resource and on surveys and research into the ecology, status and management of the habitat.

Calculating the full extent of this expenditure is difficult, as many costs cannot be accurately applied to the specific habitats within the HAPs. For example, the administrative cost of the Environmentally Sensitive Areas Scheme cannot be allocated to specific habitats and even the payments through the ESA can be difficult to allocate to a specific HAP, as the habitat categories used in the ESAs are broader than the habitat definitions used in the HAPs. In this

particular situation data on current expenditure was allocated to the specific HAPs based on the assumption that the habitats are represented within the agri-environment schemes in the same proportion as the total resource of the habitats have to each other. For example, upland heath and blanket bog are combined in all the agri-environment schemes as moorland. Consequently, the total current expenditure on moorland was divided in proportion to the total resource levels of upland heath and blanket bog respectively.

Despite these difficulties, however, an indication of the current expenditure through agri-environment and other grant schemes was needed to enable the additional cost of implementing the HAPs to be estimated. The expenditure under the agri-environment schemes is particularly important not only because it represents a significant proportion of the current expenditure, but because many of the habitat management actions and HAP targets will be delivered through expansion of these schemes.

Consequently, the current expenditure shown in Table 2 of each of the HAP costings is an estimate of the current expenditure on the habitat through agri-environment and other grant schemes plus any specifically costed work that is currently being or planned to be undertaken.

#### **2.2.6 Assumptions used in the costing process**

Costing the implementation of the HAPs relies to varying degrees on assumptions based on the opinions and estimates of consultees. The need to make assumptions in the costing process often arises because of conditional future actions (see box 3) or because there is insufficient data on which to base a calculation. Assumptions also are needed where a HAP target is not specific enough.

The assumptions made in the costing process often relate to the amount of habitat or number of sites to be included in the costing process or the number of staff posts or research contracts required to meet the proposed targets. This introduces the potential for an over or underestimate of the cost of meeting the targets and objectives of the HAPs and where assumptions have been made this is clearly stated in the costings.

One potential area for error in the costings is the future use of agri-environment schemes to fulfil the targets and objectives of the HAPs. Most of the HAPs for habitats that are currently subject to agri-environment scheme payments specify an action to review, and if necessary, adjust the payment rates and prescriptions within the existing agri-environment schemes. The indicative costs, however, are partly based on existing prescriptions and payment rates.

Another potential area for error in the costings is in the assumptions made with regard to the phasing of the implementation of the actions. Where possible the targets were used to determine the time scales for implementation. For example, in the blanket bog HAP target 4.2.2 requires the improvement of 450,000 hectares of blanket bog by 2005. There is a clear time scale here against which the costing can be calculated.

Some plans, however, do not include specific dates by which the targets should be met and in these cases assumptions have been made as to how much of the target will be met in the first five years and how much in the following ten years. Generally, unless the target is a very small area or a very large area the total target figure has been costed on the basis of one third in the first five years and two thirds in the following ten year period of the HAP.

It should be noted, however, that if these allocations are not achieved then there is significant scope for the costs being either an over-estimate or an under-estimate. For example, if a greater area is brought into management in the first five years than assumed in the costing there will be a larger area of habitat requiring annual agri-environment scheme payment over a longer period of time than has been allowed for in the costing. Consequently the costing will be an under-estimate. Equally if the area to be included in the first five years is over ambitious and cannot be achieved then the costing will be an over-estimate within the time scale of the costing.

The costings are net of any revenue associated with meeting the plans e.g. revenue from timber income.

The costings assume that no savings in mainstream Common Agricultural Policy expenditure result from implementing these plans. This is a conservative assumption, given that some actions will reduce agricultural production or areas.

### **3. Habitat costings**

#### **3.1 Content of costing reports**

The costs in the following sections:

- ! are indicative only and are based on generic costs of habitat management and other work required to implement the actions of the HAPs, and the estimations and assumptions provided by the authors of the HAPs or habitat specialists.
- ! include the current expenditure within grant schemes and agri-environment schemes administered by the lead agencies.
- ! include the extra financial commitments needed to implement the actions proposed for the lead agencies in the HAP. These do not take account of inflation
- ! are broken down into the four countries of the UK; where this is not possible the cost is presented for the UK as a whole.
- ! include public and private sector costs, but are mainly (at least three quarters) the former, unless otherwise stated.
- ! include opportunity costs (or revenue foregone) to the extent that grant costs, for example, do so. For the woodland HAPs the opportunity costs associated with the early felling of non-native species on state owned forestry land are presented in Table 2 as a footnote, where relevant.
- ! avoid duplication of costs between HAPs and Species Action Plans.
- ! exclude administrative costs.

**Excluded Actions.** This part of the costing presents those actions excluded from the costing with a brief explanation why they have not been costed. A full list of the targets and actions is contained in the published HAPs.

**Indicative costs.** This part presents the indicative costs for those actions included in the costing in Table 1. The actions are ordered numerically and headed with the 6 broad categories under which they are listed in the HAPs. These are policy and legislation; site safeguard and management; advisory; international; research and monitoring and communications and publicity.

**Assumptions.** This part summarises the assumptions on which the costings have been based with a brief explanation of the basis of the calculation of the cost. Assumptions needed to be made about the implementation of a particular action when information was not provided in the HAP. For example, a typical survey cost for a contractor may be , 200/day. However, to provide a total cost an assumption needed to be made about the number of days required, which in turn was based on the area to be surveyed and the frequency of repeat surveys over the time period of the HAP. Similarly, assumptions have been made about the number of pamphlets that need to be printed and disseminated or the number of Ph.D. studentships that need to be commissioned to implement the actions and to meet the targets set by the HAP.

**Total Costs.** This part presents the estimated cost of implementing the actions over the life time of the HAP (15 years) in Table 2. The current expenditure is presented in the second column and was based on the most up-to-date estimates of the total payment made under the various agri-environment schemes. In some cases this is 96/97 data, but the majority of the data is for 97/98. The estimated additional cost of implementing the HAP is presented in the third (2003/2004) and fourth columns (2013/2014). The 2003/04 data are the annual average of five years to this financial year. The 2013/14 data are average of 10 years from 2004/05. The total additional costs to 2003/2004 and 2013/2014 are shown at the bottom of the table.

### 3.1.1 Summary costings tables

The costs that are given shown in Table 2 of each the HAPs are summarised in Tables A and B on the following two pages. Table A shows current annual expenditure and the extra annual costs of implementing the HAPs over the first five years and the following ten years. Table B shows the extra costs aggregated over the five year and ten year periods.

**Table A: Summary of costings for 14 terrestrial and freshwater HAPs**

#### Total Average Annual Cost

	Current expenditure	Total extra average annual cost	
		First 5 yrs to 2003/2004	Next 10 yrs to 2013/2014
	, 000/yr	, 000/yr	, 000/yr
<b>Habitat</b>			
<b>Woodland Habitats</b>			
Lowland Beech and Yew Woodland	Note 2	1,135	993
Upland Mixed Ash Woodland	Note 2	2,482	2,229

	Current expenditure	Total extra average annual cost	
		First 5 yrs to 2003/2004	Next 10 yrs to 2013/2014
		, 000/yr	, 000/yr
Wet Woodland	Note 2	2,215	1,928
Wood Pasture and Parkland	Note 2	675	461
<b>Grassland Habitats</b>			
Lowland Hay Meadows	1,802	443	656
Upland Hay Meadows	108	65	79
Lowland Calcareous Grassland	2,306	1,234	1,396
Upland Calcareous Grassland	1,637	402	454
Lowland Dry Acid Grassland	190	570	1,179
<b>Wetland Habitats</b>			
Eutrophic Standing Waters (Note 1)	377	588	660
Aquifer Fed Naturally fluctuating Water Bodies	0	40	8
<b>Bogs and Heath Habitats</b>			
Lowland Raised Bogs	290	2,022	3,727
Blanket Bogs	3,021	13,974	45,615
Upland Heath	3,514	9,354	18,652
<b>Total extra average annual cost</b>		<b>35,199</b>	<b>78,035</b>

## Notes

General. The figures in the table are rounded to the nearest , 1000. The totals relate to the unrounded figures.

Note 1. The eutrophic standing waters HAP does not include the cost of bringing Tier 1, 2 and 3 lakes into favourable condition.

Note 2. Current expenditure is not shown, as it has not been possible to allocate expenditure to HAP types. However it is estimated that current expenditure is about 25% to 35% of the extra costs shown. This factor means that the extra costs shown for the woodland HAPs may be over stated, but other factors may mean that the figures are under stated, so the figures have not been adjusted.

**Table B: Summary of costings for 14 terrestrial and freshwater HAPs**

## Total Extra Cost

Habitat	Total expenditure	
	First 5 yrs to 2003/2004	Next 10 years to 2013/2014
	, 000	, 000
<b>Woodland Habitats</b>		
Lowland Beech and Yew Forest (Note 2)	5,673	9,934
Upland Mixed Ash Woodland (Note 2)	12,410	22,287

	Total expenditure	
	First 5 yrs to 2003/2004	Next 10 years to 2013/2014
Wet Woodland (Note 2)	11,073	19,283
Wood Pasture and Parkland (Note 2)	3,373	4,606
<b>Grassland Habitats</b>		
Lowland Hay Meadows	2,216	6,558
Upland Hay Meadows	327	794
Lowland Calcareous Grassland	6,171	13,956
Upland Calcareous Grassland	2,011	4542
Lowland Dry Acid Grassland	2,850	11,787
<b>Wetland Habitats</b>		
Eutrophic Standing Waters (Note 1)	2,939	6,595
Aquifer Fed Naturally fluctuating Water Bodies	200	75
<b>Bogs and Heaths</b>		
Lowland Raised Bogs	10,111	37,272
Blanket Bogs	69,869	456,149
Upland Heath	46,768	186,522
<b>Total extra cost</b>	<b>175,991</b>	<b>780,360</b>

## Notes

General. The figures are rounded to the nearest , 1000. The totals relate to the unrounded figures.

Note 1. The eutrophic standing waters HAP does not include the cost of bringing Tier 1, 2 and 3 lakes into favourable condition.

Note 2. The woodland habitat costs may be overstated due to inclusion of some current expenditure (see Table A B Note 2).

## 3.2 Woodland Habitats

Four Habitat Action Plans are included in this section. These are Lowland Beech and Yew Woodland, Upland Mixed Ashwoods, Wet Woodland and Wood Pasture and Parkland.

### 3.2.1 Lowland Beech and Yew Woodland

#### *Excluded Actions*

Actions not included in the costing or not costed separately include:

<b>Action</b>	<b>Explanation</b>
5.1.2	Part of on-going work of lead agencies.
5.1.4	Part of on-going work of the lead agencies.
5.1.5	Part of on-going work of the lead agencies.
5.2.1	Part of the statutory duties of the lead agencies.
5.2.4	The cost of promoting long term management plans is assumed to be met within the Woodland Grant Scheme.
5.2.6	Costing included in the relevant species action plans.
5.4.2	Part of on-going work of the lead agencies.
5.5.1	Cost covered by on-going work with an up-date of the national inventory of woodlands and trees.
5.5.3	Part of on-going research programme.
5.5.6	Part of on-going work of the lead agencies.

### *Indicative Costs*

The typical generic costs for the actions by the lead agencies are presented in Table 1. The opportunity costs are discussed below.

**Table 1 - List of generic costs used to estimate the cost of the Habitat Action Plan**

<b>Action</b>	<b>Type of action required by HAP</b>	<b>, K</b>	<b>Indicative costs</b>
<b>1.</b>	<b>Policy and legislation</b>		
5.1.1	Develop national framework for management	<b>25</b>	0.5 officer time to prepare regional management regimes. Undertaken in conjunction with 5.1.2
5.1.3	Review WGS	<b>20</b> <b>0.035/ha/yr</b> <b>0.3/ha/yr</b> <b>0.8/ha/yr</b> <b>0.5ha</b> <b>1.2/ha</b>	0.25 of a band A civil service post plus support costs. Annual maintenance grant Woodland Improvement grant Re-stocking Habitat Restoration Habitat creation
<b>2.</b>	<b>Site safeguard and management</b>		
5.2.2	Develop methods for assessing condition	<b>10</b> <b>0.05/ha</b>	Research contract to develop methodology Cost of sample survey to cover 5% of total resource
5.2.3	Devise criteria to identify priority areas to restore damaged and former beech woods	<b>10</b>	Research contract to develop criteria
5.2.5	Promote and implement the management and restoration of lowland beech and yew woodland in state owned forests	<b>0.027/ha/yr</b> <b>0.5/ha/yr</b>	Maintenance cost Restoration cost
<b>3.</b>	<b>Advisory</b>		
5.3.1	Promote training courses	<b>1/course</b>	One day conference/workshop
5.3.2	Encourage woodland initiatives to provide advice on management and marketing	<b>15</b>	For a marketing study

Action	Type of action required by HAP	, K	Indicative costs
5.3.3	Develop strategies for control of damage caused by deer, squirrel and other species	10	Research contract
<b>4.</b>	<b>International</b>		
5.4.1	Develop links with European organisations to obtain estimates of the extent of this habitat in Europe Exchange experiences on research and management	5 10	Research contract International conference
<b>5.</b>	<b>Research and monitoring</b>		
5.5.2	Detailed monitoring programme	20/site 2.5/site	Establishment cost Annual monitoring cost
5.5.4	Research the benefits in nature conservation terms of minimum intervention woodland sites	90	3 yr. post-doctoral study or equivalent research contract programme
5.5.5	Monitor restoration of damaged beech and yew woods (15 sites)	8/yr	Based on contractor fee for 25-30 days/yr.
<b>6.</b>	<b>Communications and publicity</b>		
5.6.1	Devise strategy for distribution of existing advisory material and identify gaps	5	For marketing study

### *Opportunity Costs*

The opportunity costs associated with the early felling of non-native species on state owned forestry land are presented in Table 2 as a footnote where relevant (Source: Forestry Commission). They are expressed in net present value terms (1997/98 prices), using a 6% discount rate.

#### *Action 5.2.3*

The opportunity cost of the early felling is associated with the restoration and management of the woodlands, such that 100% of the overall target (3) (i.e. 1000 ha) is achieved by 2010. (NB A further 50% of the target is met on private land, but this has not been costed). This involves restoring 85 ha per annum by 2010 (only 70% of which is non-native and requires felling) and maintaining a further 150 ha per annum (only 20% is non-native and requires felling).

### *Assumptions*

#### **Policy and legislation**

#### *Action 5.1.3*

This costing takes into account areas of common work within the review process of each of the 4 woodland HAPs.

The use of the Woodland Grant Scheme to encourage the desired management and expansion targets has been costed by the Forestry Commission for the UK as a whole. It is assumed that 31% of the total semi-natural beech woodland resource will need to be under maintenance

management to meet the HAP targets. This will include 20% under annual management grants (£ 35/ha/yr), 10% under woodland improvement grants (£ 300/ha over 5 years) and 1% being restocked (£ 800/ha). On this basis the total annual maintenance cost for the UK is £ 630,000. Approximately 66 to 75% of this figure is estimated to be additional cost to current expenditure.

The restoration target for the HAP is 1000 ha of restored beech woodland by 2010. Over twelve years this would require 84 ha to be restored a year. The Forestry Commission calculates that a typical cost of restoration is £ 500/ha. It is assumed that 34ha/yr will be restored outside state owned forests at an annual cost of £ 17,000 (50ha/yr within state forest B see 5.2.5).

The HAP requires the total woodland resource (ancient and recent semi-natural woodland) to be expanded by 3000ha by 2010. It is assumed that 2520 ha will be created outside state owned forests at a rate of 210ha/yr over the twelve years to 2010. At a typical cost of £ 1200/ha the cost of creating 210ha/yr is £ 252,000/yr. In addition it is assumed that 480 ha will be created within state forests at a rate of 40ha/yr up to 2010. At a typical cost of £ 1200/ha the cost of creating 40ha/yr is £ 48,000/yr. This gives a total annual cost of £ 300,000/year, for 250ha per year.

All costs shown exclude Forestry Commission on-costs, which run at 15%.

## **Site safeguard and management**

### ***Action 5.2.2***

The costing is based on the assumption that 5% (1500 ha) of the total ancient and recent semi-natural woodland resource will be sampled in the survey at a cost of £ 50/ha (over the first 5 years).

### ***Action 5.2.3***

This action is costed on the assumption that restoration demonstration sites are within areas identified in state owned forests (see action 5.2.5) and the cost for their management is included within the cost of implementing 5.2.5.

### ***Action 5.2.5***

This costing is based on the assumption that 3000ha will be maintained within state forests at an annual cost of £ 80,500. It is assumed that 50ha/yr will be restored in state owned forests for the twelve years to 2010 at an average cost of £ 500/ha (see 5.1.3 above).

## **Advisory**

### ***Action 5.3.1***

This costing is based on the assumption that 10 one day workshops/conferences will be organised throughout the life time of the plan at a cost of £ 1000/event.

## Monitoring and Research

### *Action 5.5.2*

The cost is based on the establishment and monitoring of 10 sites.

### *Action 5.5.5*

The cost is based on monitoring 15 sites.

### *Cost Table*

A cost table below shows the estimated costs of meeting the actions of the HAP. Current expenditure is not given separately, as it has not been possible to allocate current expenditure to particular actions and targets.

Costs are presented for the UK as a whole as there is insufficient data to allocate costings to each of the 4 countries of the UK. This plan, however, only relates to England and Wales, as native beech woodland is not found outside these countries.

<b>Table 2 Costing of the Lowland beech and yew woodland HAP</b>			
		<b>1st 5 yrs to</b>	<b>Next 10 yrs to</b>
	<b>Current expenditure</b>	<b>2003/2004</b>	<b>2013/2014</b>
<b>Action</b>		<b>/, 000/Yr</b>	<b>/, 000/Yr</b>
<b>General (UK-Wide) B Operational Costs (Note 2)</b>			
Action 5.1.1 - Develop national framework		5.0	0.0
Action 5.1.3 - Review WGS		4.0	0.0
Action 5.1.3 - Maintenance outside state forests		630.0	630.0
Action 5.1.3 - Restoration outside state forests (34ha/yr) (Note 3)		17.0	11.9
Action 5.1.3 - Creation outside state forests (2520 ha) (Note 3)		252.0	176.4
Action 5.1.3 - Creation within state forests (480 ha) (Note 3)		48.0	33.6
Action 5.2.2 - Sample survey (target 1500 ha)		15.0	0.0
Action 5.2.3 - Devise criteria to identify priority areas to restore		2.0	0.0
Action 5.2.5 - Maintenance within state forests (3000ha)		80.5	80.5
Action 5.2.5 - Restoration within state forests (50ha/yr) (Note 3)		25.0	17.5
Action 5.3.1 - 10 training events		1.0	0.5
Action 5.3.2 - Marketing study		3.0	0.0
Action 5.3.3 - 1 research contract		2.0	0.0
Action 5.4.1 - Develop links with Europe		1.0	1.0
Action 5.5.2 -10 sites		40.0	25.0
Action 5.5.4 - 1 post-doctoral study		0.0	9.0
Action 5.5.5 - 15 sites		8.0	8.0
Action 5.6.1 - Devise publicity strategy		1.0	0.0

<b>Table 2 Costing of the Lowland beech and yew woodland HAP</b>			
		1st 5 yrs to	Next 10 yrs to
	Current expenditure	2003/2004	2013/2014
Action		/, 000/Yr	/, 000/Yr
<i>Current expenditure (agri-environment schemes)</i>	<i>Note 1</i>		
<i>Total extra average annual cost</i>		<i>1134.5</i>	<i>993.4</i>
<i>Total cost for first 5 years</i>		<i>5672.5</i>	
<i>Total cost for next 10 years</i>			<i>9934.0</i>

**Note 1:** Current expenditure is not shown separately as it has not been possible to allocate expenditure to HAP types. It is estimated that 65-75% of the costs shown are additional to current expenditure.

**Note 2:** The costs are presented for the UK as a whole, but primarily relate to England and Wales. According to the HAP this habitat does not occur in Scotland or Northern Ireland.

**Note 3:** The figures presented in column 4 for habitat creation and restoration are calculated for 7 of the 10 years of this period of the HAP as these actions need to be completed over 12 years. The cost however is averaged out over the full 10 years.

The opportunity cost of the early felling is estimated at , 60,000 in total (not per annum).

### 3.2.2 Upland Mixed Ashwoods

#### *Excluded Actions*

Actions not included in the costing or costed separately include:

<b>Action</b>	<b>Explanation</b>
5.1.2	Part of on-going work of the lead agencies.
5.1.4	Part of on-going work of the lead agencies.
5.1.5	Part of on-going work of the lead agencies.
5.1.6	Part of on-going work of the lead agencies.
5.2.1	Part of the statutory duties of the lead agencies.
5.2.4	The cost of promoting long term management plans is assumed to be met within the Woodland Grant Scheme.
5.2.6	Cost included in the relevant species action plans.
5.3.2	Part of on-going work of the lead agencies.
5.3.3	Guidance to woodland managers will be provided through on-going work of the lead agencies and advisory material provided in other action in the HAP. Guidance to woodland managers will be provided through on-going work of the lead agencies and advisory material provided in other actions in this and other HAPs.
5.4.2	Part of on-going work of the lead agencies.
5.4.3	Part of on-going work of the lead agencies.
5.5.1	Cost covered by on-going work with an up-date of the national inventory of woodlands and trees.

5.5.7 Part of on-going work of lead agencies.

**Indicative Costs**

The typical generic costs for the actions by the lead agencies are presented in Table 1.

**Table 1 - List of generic costs used to estimate the cost of the Habitat Action Plan**

Action	Type of action required by HAP	, K	Indicative costs
<b>1.</b>	<b>Policy and legislation</b>		
5.1.1	Develop national framework for management and determine broad levels of different management regimes	<b>25</b>	0.5 officer time to prepare regional management regimes
5.1.3	Review WGS	<b>20</b> <b>0.035/ha/yr</b> <b>0.3/ha/yr</b> <b>0.8/ha/yr</b> <b>0.5/ha</b> <b>1.2/ha</b>	0.25 of a band A civil service post plus support costs. Annual maintenance grant Woodland improvement grant Re-stocking Habitat restoration cost Habitat creation cost
<b>2.</b>	<b>Site safeguard and management</b>		
5.2.2	Develop methods for assessing condition	<b>10</b> <b>0.05/ha</b>	Research contract to develop methodology Cost of sample survey to cover 5% of total resource
5.2.3	Criteria for priority areas for woodland expansion	<b>10</b>	Research contract
5.2.5	Promote and implement the management and restoration of upland ash woodland in state owned forests	<b>0.23/ha/yr</b> <b>1.22/ha/yr</b>	Forest Enterprise maintenance cost Forest Enterprise restoration cost
<b>3.</b>	<b>Advisory</b>		
5.3.1	Promote training courses	<b>1</b>	One day conference/workshop
<b>4.</b>	<b>International</b>		
5.4.1	Develop links with European organisations to obtain estimates of the extent of this habitat in Europe Exchange experiences on research and management	<b>5</b> <b>10</b>	Research contract International conference
<b>5.</b>	<b>Research and monitoring</b>		
5.5.2	Detailed monitoring programme	<b>20/site</b> <b>2.5/site</b>	Establishment cost Annual monitoring cost
5.5.3	Research history and past management Investigate dynamics of sycamore and beech in upland ash woods	<b>10</b>	Research contract

Action	Type of action required by HAP	, K	Indicative costs
5.5.4	Investigate relationship between this and other key habitats. Research the relevance of upland ash woods for a range of taxa	50	2 yr. research programme
		10	Research contract
5.5.5	Research the benefits in nature conservation terms of minimum intervention woodland sites	90	3 yr. post-doctoral study or equivalent research contract programme.
5.5.6	Monitor restoration of damaged ash woods (15 sites)	8/yr	Based on contractor fee for 25-30 days/yr.
<b>6.</b>	<b>Communications and publicity</b>		
5.6.1	Devise strategy for distribution of existing advisory material and identify gaps Produce and promote advisory material to fill gaps	5	Preparation and production of leaflet Preparation and publication of booklet
		3	
		15	

### *Opportunity Costs*

The opportunity costs associated with the early felling of non-native species on state owned forestry land are presented in Table 2 as a footnote where relevant (Source: Forestry Commission). They are expressed in net present value terms (1997/98 prices), using a 6% discount rate.

#### *Action 5.2.3*

The opportunity cost of the early felling is associated with the restoration and management of the woodlands, such that 100% of the overall target (3) (i.e. 2400 ha) is achieved by 2015. This involves restoring 200 ha per annum between 2000 and 2015 (only 70% of which is non-native and requires felling) and maintaining a further 200 ha per annum (only 20% is non-native and requires felling).

### *Assumptions*

#### **Policy and legislation**

#### *Action 5.1.3*

This costing takes into account areas of common work within the review process of each of the 4 woodland HAPs. All cost shown excludes Forestry Commission on-costs that run at 15%.

The use of the Woodland Grant Scheme to encourage the desired management and expansion targets has been costed by the Forestry Commission for the UK as a whole. It is assumed that 31% of the total semi-natural mixed upland ash woodland resource will need to be under maintenance management to meet the HAP targets. This will include 20% under annual management grants (£, 35/ha/yr), 10% under woodland improvement grants (£, 300/ha over 5 years) and 1% being restocked (£, 800/ha). On this basis the total annual maintenance cost for

the UK is , 1,417,500. Approximately 66 to 75% of this figure is estimated to be additional to current expenditure.

The restoration target for the HAP is 2400ha of restored upland ash woodland by 2010. Over twelve years this would require 200ha to be restored a year. The Forestry Commission calculates that a typical cost of restoration is , 500/ha. It is assumed that 50ha/yr will be restored outside state owned forests at an annual cost of , 25,000 (150ha/yr within state forests B see 5.2.5).

The HAP requires the total woodland resource (ancient and recent semi-natural woodland) to be expanded by 6750ha by 2010. It is assumed that 5910ha will be created outside state owned forests at a rate of 492.5ha/y over the twelve years to 2010. At a typical cost of , 1200/ha the cost of creating 492.5ha/yr is , 591,000/yr. In addition it is assumed that 840ha will be created within state forests at a rate of 70ha/yr up to 2010. At a typical cost of , 1200/ha the cost of creating 70ha/yr is , 84,000/yr. This gives a total annual cost of , 675,000/year at an annual rate of 562.5ha/yr.

### **Site safeguard and management**

#### ***Action 5.2.2***

The costing is based on the assumption that 5% (3375 ha) of the total resource will be sampled in the survey at a cost of , 50/ha (over 15 years).

#### ***Action 5.2.5***

This costing is based on the assumption that 3000 ha will be maintained in state forests at an annual cost of , 67,500. It is assumed that 150ha/yr will be restored in state owned forests for the twelve years to 2010 at a cost of , 1220/ha/yr (see 5.1.3)

### **Advisory**

#### ***Action 5.3.1***

This costing is based on the assumption that 15 one day workshops/conferences will be organised throughout the life time of the plan at a cost of , 1000/event.

### **Monitoring and Research**

#### ***Action 5.5.2***

The cost is based on the establishment and monitoring of 15 sites.

#### ***Action 5.5.6***

The cost is based on monitoring 15 sites restoration sites.

## Cost Table

A cost table below shows estimated costs of meeting the actions of the HAP. Current expenditure is not shown separately, as it has not been possible to allocated current expenditure to particular actions and targets.

Costs are presented for the UK as a whole as there is insufficient data to allocate costings to each of the 4 countries of the UK. According to the HAP upland mixed ash woodland occurs in England, Scotland, Northern Ireland and Wales and action will need to be taken in each country to achieve the UK wide targets.

**Table 2 Costing of the Upland Mixed Ashwood HAP**

		1st 5 yrs to	Next 10 yrs to
	Current expenditure	2003/2004	2013/2014
Action		/, 000/Yr	/, 000/Yr
<b>General (UK-Wide) - Operational Costs</b>			
Action 5.1.1 - Develop national framework		10.0	0.0
Action 5.1.3 - Review WGS		4.0	0.0
Action 5.1.3 - Maintenance outside state forests		1417.5	1417.5
Action 5.1.3 - Restoration outside state forests (, 500/ha/yr)		25.0	17.5
Action 5.1.3 - Creation outside state forests (, 1200/ha/yr)		591.0	413.7
Action 5.1.3 - Creation within state forests (, 1200/ha/yr)		84.0	58.8
Action 5.2.2 - Assess condition		2.0	0.0
Action 5.2.2 - Sample survey (target 2250 ha)		15.0	9.4
Action 5.2.3 - Criteria for woodland expansion		2.0	0.0
Action 5.2.5 - Maintenance within state forests (3000ha)		67.5	67.5
Action 5.2.5 - Restoration within state forests (150ha/yr)		183.0	183.0
Action 5.3.1 - 15 training events		1.0	1.0
Action 5.4.1 - Develop links abroad and exchange data		1.0	1.0
Action 5.5.2 - Monitoring programme		60.0	37.5
Action 5.5.3 - Research history and woodland dynamics		2.0	1.0
Action 5.5.4 - Investigate relationship to other habitats		2.0	5.0
Action 5.5.5 - Research minimum intervention sites		6.0	6.0
Action 5.5.6 - 15 sites		8.0	8.0
Action 5.6.1 - Disseminate information produce new guide		1.0	1.8
<b>Current expenditure (agri-environment schemes)</b>	<i>Note 1</i>		
<b>Total extra average annual cost</b>		<b>2482.0</b>	<b>2228.7</b>
<b>Total cost for first 5 years</b>		<b>12410.0</b>	
<b>Total cost for next 10 years</b>			<b>22286.8</b>

**Note 1:** Current expenditure is not shown separately as it has not been possible to allocate expenditure to HAP types. It is estimated that 65-75% of the costs shown are additional to current expenditure.

The opportunity cost of the early felling is estimated at , 72,533 in total (not per annum).

### 3.2.3 Wet Woodlands

#### *Excluded Actions*

Actions not included in the costing or costed separately include:

<b>Action</b>	<b>Explanation</b>
5.1.2	Part of on-going work of the lead agencies.
5.1.4	Part of on-going work of lead agencies.
5.1.5	Part of on-going work of lead agencies.
5.1.6	Part of on-going work of lead agencies.
5.2.1	Part of the statutory duties of lead agencies.
5.2.2	The cost of promoting long term management plans is assumed to be met within the Woodland Grant Scheme and on-going work of lead agencies.
5.2.6	Cost of implementing SAPs not included in the HAPs, unless it includes general habitat management, the cost of which is included in other actions.
5.3.2	Part of on-going work of lead agencies.
5.3.3	Part of on-going work of lead agencies.
5.3.4	Guidance to woodland managers will be provided through on-going work of the lead agencies and advisory material provided in other action in the HAP. Guidance to woodland managers will be provided through on-going work of the lead agencies and advisory material provided in other actions in this and other HAPs.
5.4.2	Part of on-going work of lead agencies.
5.5.3	Cost is included in the expansion costs provided in other actions in the HAP.
5.5.1	Cost covered by on-going work with an up-date of the national inventory of woodlands and trees.
5.5.7	Part of on-going duties of the lead agencies.

#### *Indicative Costs*

The typical generic costs for the actions by the lead agencies are presented in Table 1

**Table 1 B List of generic costs used to estimate the cost of the Habitat Action Plan**

<b>Action</b>	<b>Type of action required by HAP</b>	<b>, K</b>	<b>Indicative costs</b>
<b>1.</b>	<b>Policy and legislation</b>		
5.1.1	Develop national framework for management. Determine broad levels of different management regimes	<b>25</b>	0.5 officer time to prepare national and regional management regimes

Action	Type of action required by HAP	, K	Indicative costs
5.1.3	Review WGS	20 0.035/ha/yr 0.3/ha/yr 0.8/ha/yr 0.5/ha 1.2/ha	0.25 of a band A civil service post plus support costs Annual maintenance grant Woodland improvement grant Re-stocking Habitat restoration cost Habitat creation cost
5.1.7	Evaluate water management policies	10	Research contracts
<b>2.</b>	<b>Site safeguard and management</b>		
5.2.3	Promote and implement the management and restoration of wet woodland in state owned forests	0.017/ha/yr 1.286/ha/yr	Forest Enterprise maintenance cost Forest Enterprise restoration costs
5.2.4	Devise criteria to identify areas for restoration of wet woods. Criteria for priority areas for woodland expansion	10	Research contracts
5.2.5	Develop methods for assessing condition.	10 0.05/ha	Research contract to develop methodology Cost of sample survey to cover 5% of total resource
<b>3.</b>	<b>Advisory</b>		
5.3.1	Promote training	1	One day conference/workshop
<b>4.</b>	<b>International</b>		
5.4.1	Develop links with European organisations to obtain estimates of the extent of this habitat in Europe. Exchange experiences on research and management	5 10	Research contract International conference
<b>5.</b>	<b>Research and monitoring</b>		
5.5.2	Detailed monitoring programme	20/site 2.5/site	Establishment cost Annual monitoring cost
5.5.4	Investigate relationship between this and other key habitats. Research the relevance of wet woodland for a range of taxa	50 10	2 yr. research programme Research contract
5.5.5	Review impact of major invasive species	5	Research contract
5.5.6	Monitor restoration of damaged wet woods	8/yr	Based on contractor fee for 25-30 days/yr.
<b>6.</b>	<b>Communications and publicity</b>		
5.6.1	Devise strategy for distribution of existing advisory material and identify gaps Produce and promote advisory material to fill gaps	5 3 15	Preparation and production of leaflet Preparation and publication of booklet

### *Opportunity costs*

The opportunity costs associated with the early felling of non-native species on state owned forestry land are presented in Table 2 as a footnote where relevant (Source: Forestry Commission). They are expressed in net present value terms (1997/98 prices), using a 6% discount rate.

#### **Action 5.2.3**

The opportunity cost of the early felling is associated with the restoration and management of the woodlands, such that 50% of the overall target (3) (i.e. 1600 ha out of 3200 ha) is achieved by 2010. (NB A further 50% of the target is met on private land, but this has not been costed). This involves restoring 70 ha per annum between 200 and 2010 (only 70% of which is non-native and requires felling) and maintaining a further 70 ha per annum (only 20% is non-native and requires felling).

### *Assumptions*

#### **Policy and legislation**

#### **Action 5.1.3**

This costing takes into account areas of common work within the review process of each of the 4 woodland HAPs.

The use of the Woodland Grant Scheme to encourage the desired management and expansion targets has been costed by the Forestry Commission for the UK as a whole. It is assumed that 31% of the total semi-natural wet woodland resource will need to be under maintenance management to meet the HAP targets. This will include 20% under annual management grants (£, 35/ha/yr), 10% under woodland improvement grants (£, 300/ha over 5 years) and 1% being restocked (£, 800/ha). On this basis the total annual maintenance cost for the UK is £, 1,260,000. Approximately 66 to 75% of this figure is estimated to be additional cost to current expenditure.

The restoration target for the HAP is 3200ha of restored wet woodland by 2010. Over twelve years this would require 267ha to be restored a year. It is calculated by the Forestry Commission that a typical cost of restoration is £, 500/ha. It is assumed that 197ha/yr will be restored outside state owned forests at an annual cost of £, 98,500 (70 ha/yr. within state forests B see 5.2.3).

The HAP requires the total woodland resource (ancient and recent semi-natural woodland) to be expanded by 6000ha by 2010. It is assumed that 5160ha will be created outside state owned forests at a rate of 430ha/yr over the twelve years to 2010. At a typical cost of £, 1200/ha the cost of creating 430ha/yr is £, 516,000/yr. In addition it is assumed that 840ha will be created within state forests at a rate of 70ha/yr up to 2010. At a typical cost of £, 1200/ha the cost of creating 70ha/yr is £, 84,000/yr. This gives a total annual cost of £, 600,000/year at an annual rate of 500ha/yr. All costs shown exclude Forestry Commission on-costs, which run at 15%.

## **Site safeguard and management**

### ***Action 5.2.3***

This costing is based on the assumption that 4000 ha will be maintained in state forests at an annual cost of , 68,000. It is assumed that 70ha/yr will be restored in state owned forests for the twelve years to 2010 at a cost of , 1286/ha/yr (see 5.1.3).

### ***Action 5.2.4***

This action is costed on the assumption that restoration demonstration sites are within areas identified in state owned forests (see action 5.2.3) and the cost for their management is included within the cost of implementing 5.2.3. The selection criteria will be devised through two research contracts.

### ***Action 5.2.5***

The costing is based on the assumption that 5% (3000 ha) of the total resource will be sampled in the survey at a cost of , 50/ha (over 15 years).

## **Advisory**

### ***Action 5.3.1***

This costing is based on the assumption that 10 one day workshops/conferences will be organised throughout the life time of the plan at a cost of , 1000/event.

## **Monitoring and Research**

### ***Action 5.5.2***

The cost is based on the establishment and monitoring of 10 sites.

### ***Cost Table***

The cost table shown overleaf gives the estimated costs of meeting the actions of the HAP. Current expenditure is not presented, as it has not been possible to allocated current expenditure to particular actions and targets.

Costs are presented for the UK as a whole as there is insufficient data to allocate costings to each of the 4 countries of the UK. According to the HAP wet woodland occurs in England, Scotland, Northern Ireland and Wales and action will need to be taken in each country to achieve the UK wide targets.

**Table 2 Costing of the Wet Woodland HAP**

	<b>Current</b>	<b>1st 5 yrs to</b>	<b>Next 10 yrs to</b>
	<b>expenditure</b>	<b>2003/2004</b>	<b>2013/2014</b>
<b>Action</b>	<i>/, 000/Yr</i>	<i>/, 000/Yr</i>	<i>/, 000/Yr</i>
<b>General (UK-Wide) - Operational costs</b>			
Action 5.1.1 - Develop national framework for action		10.0	0.0
Action 5.1.3 - Review WGS		4.0	0.0
Action 5.1.3 - Maintenance outside state forests (, 35/ha/yr)		1260.0	1260.0
Action 5.1.3 - Restoration outside state forests (, 500/ha/yr) (Note 2)		98.5	69.0
Action 5.1.3 - Creation outside state forests (, 1200/ha/yr) (Note 2)		516.0	361.2
Action 5.1.3 - Creation within state forests (, 1200/ha/yr) (Note 2)		84.0	58.8
Action 5.1.7 - Evaluate water management policies (4 studies)		8.0	0.0
Action 5.2.3 - Maintenance within state forests (4000ha)		68.0	68.0
Action 5.2.3 - Restoration within state forests (840ha) (Note 2)		90.0	63.0
Action 5.2.4 - Devise criteria for restoration and expansion		2.0	1.0
Action 5.2.5 - Sample survey (target 3000 ha)		15.0	7.5
Action 5.2.5 - Research contract		2.0	0.0
Action 5.3.1 - 10 training events		1.0	0.5
Action 5.4.1 - Develop links with Europe, exchange data		1.0	1.0
Action 5.5.2 - 10 sites		40.0	25.0
Action 5.5.4 - Investigate relationship with other habitats		5.0	3.5
Action 5.5.5 - Review impact of invasive species		1.0	0.0
Action 5.5.6 - monitor restoration		8.0	8.0
Action 5.6.1 - Disseminate and produce advisory material		1.0	1.8
<b>Current expenditure (agri-environment schemes)</b>	<i>Note 1</i>		
<b>Total extra average annual cost</b>		<b>2214.5</b>	<b>1928.3</b>
<b>Total cost for the first 5 years</b>		<b>11072.6</b>	
<b>Total cost for the next 10 years</b>			<b>19282.6</b>

**Note 1:** Current expenditure is not shown separately as it has not been possible to allocate expenditure to HAP types. It is estimated that 65-75% of the costs shown are additional to current expenditure.

**Note 2:** The figures presented in column 4 for habitat creation and restoration are calculated for 7 of the 10 years of this period of the HAP as these actions need to be completed over 12 years. The cost however is averaged out over the full 10 years.

The opportunity cost of the early felling is estimated at , 97,200 in total (not per annum).

### 3.2.4 Lowland Wood Pasture and Parkland

#### *Excluded Actions*

Actions not included in the costing are:

<b>Action</b>	<b>Explanation</b>
5.1.4	Part of statutory requirement.
5.1.6	Part of on-going work programme.
5.1.7	Part of on-going work programme.
5.1.8	This action is included in costed actions that are reviewing common land management and legislation in other HAPs.
5.2.1	Part of on-going work programme.
5.2.2	Part of on-going work programme.
5.2.3	Part of on-going work of lead agencies.
5.2.4	Part of on-going work of lead agencies and existing grant schemes. The cost of implementation is included in other actions in the HAP.
5.2.6	The cost of restoration of wood pasture by a variety of methods is included in action 5.2.5.
5.2.8	Included in the cost of meeting other actions within this and other HAPs and Species Action Plans.
5.5.4	Part of on-going duties of lead agencies.
5.5.5	Part of on-going duties of lead agencies.
5.6.2	Cost partly included in action 5.6.1 and is also part of the on-going work of the lead agencies.

#### *Indicative Costs*

The typical generic costs for the actions by the lead agencies are presented in Table 1.

**Table 1 B List of generic costs used to estimate the cost of the Habitat Action Plan**

<b>Action</b>	<b>Type of action required by HAP</b>	<b>, K</b>	<b>Indicative costs</b>
<b>1.</b>	<b>Policy and legislation</b>		
5.1.1	Implement the conclusions of the review of TPO legislation. Review need for further protection.	<b>20</b>	0.25 of a band A civil service post
5.1.2	Review felling consent/licensing policy	<b>20</b>	0.25 of a band A civil service post
5.1.3	Examine safety legislation in relation to veteran trees	<b>20</b>	0.25 of a band A civil service post
5.1.5	Review WGS	<b>20</b> <b>0.035/ha/yr</b> <b>0.3/ha/yr</b> <b>0.8/ha/yr</b>	0.25 of a band A civil service post. Annual maintenance grant Woodland improvement grant Re-stocking
<b>2.</b>	<b>Site safeguard and management</b>		
5.2.5	Promote restoration of derelict wood-pasture.	<b>0.5/ha</b>	Typical Habitat

Action	Type of action required by HAP	, K	Indicative costs
			Restoration costs
5.2.7	Promote expansion of parklands and wood-pasture	25/yr 1.2/ha 4/ha	De-fragmentation project to identify strategic targeted areas for expansion. Habitat Creation costs outside state forests Habitat Creation inside state forests
5.2.9	Consider re-establishment of key species	3/sp.	Based on translocation and monitoring for 5 years. Costs reflect SAPs data
<b>3.</b>	<b>Advisory</b>		
5.3.1	Develop handbook	50	2 yr. preparation and publication
5.3.2	Develop guidance on safety related risk	25	1 yr. preparation and publication
5.3.3	Encourage training	1	One day conference/training event
<b>4.</b>	<b>International</b>		
5.4.1	Develop links with European organisations to obtain estimates of the extent of this habitat in Europe Exchange experiences on research and management	5 10	Research contract Organising and running a conference
<b>5.</b>	<b>Research and monitoring</b>		
5.5.1	Prepare comprehensive list of wood pasture and parkland sites by 2002	15	Research contract
5.5.2	Develop an implement methods to assess the condition of wood-pastures and parkland	10 3	Research contract Production of guidance
5.5.3	Undertake strategic survey	50/yr	3 yr. national strategic study
5.5.6	Encourage research into parkland and wood-pasture flora and fauna	17/yr 5	3 yr. Ph.D. study MSc or equivalent research contract
<b>6.</b>	<b>Communications and publicity</b>		
5.6.1	Increase awareness	3 1/yr 10	Preparation and production of leaflet Press and media work Promotional event

### *Opportunity Costs*

The opportunity costs of the early felling of non-native species on state owned forestry wood pasture and parkland is not estimated because the commercial segments are small and of uneven age: the opportunity cost is negligible.

## *Assumptions*

### **Policy and legislation**

#### ***Action 5.1.5***

This costing takes into account areas of common work within the review process of each of the 4 woodland HAPs.

The use of the Woodland Grant Scheme to encourage the desired management targets has been costed by the Forestry Commission for the UK as a whole. It is assumed that 31% of the total semi-natural wood pasture and parkland resource will need to be under maintenance management to meet the HAP targets. This will include 20% under annual management grants (, 35/ha/yr), 10% under woodland improvement grants (, 300/ha over 5 years) and 1% being restocked (, 800/ha). On this basis the total annual maintenance cost for the UK is , 315,000. Approximately 66 to 75% of this figure is estimated to be additional cost to current expenditure.

All costs shown exclude Forestry Commission on-cost which run at 15%.

### **Site safeguard and management**

#### ***Actions 5.2.5 and 5.2.6***

The restoration target for the HAP is 2500ha of restored wood pasture and parkland by 2010. The Forestry Commission calculates that a typical cost of restoration is , 500/ha. It is assumed that 210ha/yr will be restored outside state owned forests at an annual cost of , 105,000. 40ha will be restored each year in state owned forests at an annual cost of , 40,000. Giving a total annual cost of , 145,000. All costs shown exclude Forestry Commission on-cost which run at 15%.

#### ***Action 5.2.7***

Identifying targeted sites for expansion will be achieved through a 1 yr. project officer post or equivalent cost in research contracts. Implementing the expansion target of 500 ha is based on the assumption that there is no land purchase cost.

It is assumed that expansion will be undertaken over 7 years at a rate of 72ha/yr. It is assumed that 392ha will be created outside state owned forests at a rate of 56ha/yr. At a typical cost of , 1200/ha the cost of creating 56ha is , 67,200. In addition it is assumed that 105ha will be created within state forests at a rate of 15ha/yr. At a typical cost of , 4000/ha, the cost of creating 15ha/yr is , 60,000/yr. This gives a total annual cost of , 127,200 at an annual rate of 72ha/yr.

#### ***Action 5.2.9***

This cost is based on the assumption that 10 species translocation trials will be undertaken at selected sites at a cost of , 3000/trial. Each trial will consist of 3 years monitoring.

## Advisory

### Action 5.3.3

This costing is based on the assumption that 15 one day workshops/conferences will be organised throughout the life time of the plan at a cost of , 1000/event.

## Monitoring and Research

### Action 5.5.6

This costing is based on the assumption that research over the life time of the HAP will involve up to 3 Ph.D. studies or equivalent research contracts and 5 MSc studies or equivalent research contracts. Additional studies may be encouraged.

### Cost Table

The cost table below shows the estimated costs of meeting the actions of the HAP. Current expenditure is not presented separately, as it has not been possible to allocate current expenditure to particular actions and targets.

Costs are presented for the UK as a whole as there is insufficient data to allocate costings to each of the 4 countries of the UK. According to the HAP wet woodland occurs in England, Scotland, Northern Ireland and Wales and action will need to be taken in each country to achieve the UK wide targets.

**Table 2 Costing of the Lowland Wood Pasture and Parkland HAP**

		1st 5 yrs to	Next 10 yrs to
	Current	2003/2004	2013/2014
Action	expenditure	/, 000/Yr	/, 000/Yr
<b>General (UK-Wide) - Operational costs</b>			
Action 5.1.1 - Implement review of TPOs		4.0	0.0
Action 5.1.2 - Review felling consent policy		4.0	0.0
Action 5.1.3 - Evaluate safety legislation		4.0	0.0
Action 5.1.5 - Review WGS		4.0	0.0
Action 5.1.5 - Maintenance costs		315.0	315.0
Action 5.2.5/5.2.6 - Restoration costs outside state forests		105.0	73.5
Action 5.2.5/5.2.6 - Restoration within state forests		40.0	28.0
Action 5.2.7- Setting expansion target		5.0	0.0
Action 5.2.7 - Creation costs outside state forests		67.2	13.4
Action 5.2.7 - Creation costs within state forests		60.0	12.0
Action 5.2.9 - 10 species trials		3.0	1.5
Action 5.3.1 - Develop handbook		5.0	2.5

		1st 5 yrs to	Next 10 yrs to
	Current	2003/2004	2013/2014
Action	expenditure	/, 000/Yr	/, 000/Yr
Action 5.3.2 - Develop guidance on safety risk		5.0	0.0
Action 5.3.3 - 15 training courses		1.0	1.0
Action 5.4.1 - Develop links with European organisations		1.0	1.0
Action 5.5.1 - Prepare comprehensive list of sites		3.0	0.0
Action 5.5.2 B Develop methods to assess condition		2.6	0.0
Action 5.5.3 B Undertake strategic survey		30.0	0.0
Action 5.5.6 - Encourage research (3 PhD and 5 MSc)		12.2	11.7
Action 5.6.1 - Increase awareness		3.6	1.0
WGS	<b>Note 1</b>		
<i>Countryside Stewardship</i>	457.5		
<b>Current expenditure (agri-environment schemes)</b>	<b>Note 1</b>		
<b>Total extra average annual cost /, 000/Yr</b>		<b>674.6</b>	<b>460.6</b>
<b>Total cost for the first 5 years</b>		<b>3373.0</b>	
<b>Total cost for the next 10 years</b>			<b>4606.4</b>

**Note 1:** Current expenditure is not shown separately as it has not been possible to allocate expenditure to HAP types. It is estimated that 65-75% of the costs shown are additional to current expenditure.

### 3.3 Grassland Habitats

Four Habitat Action Plans are included in this section. These are Lowland Hay Meadow, Upland Hay Meadow, Lowland Calcareous Grassland and Lowland Dry Acid Grassland.

#### 3.3.1 Lowland Hay Meadows

##### *Excluded Actions*

Actions not included or individually costed in the costing include:

Action	Explanation
5.1.3	Part of on-going duties of lead agencies.
5.1.4	Part of on-going duties of lead agencies.
5.2.2	This cost is included in the costing for action 5.1.2, as there is insufficient data on the total extent of the habitat and in particular its distribution within SSSI.
5.2.5	The cost of contributing to the SAPs is included in other actions. Specific costs related to the SAP targets are not duplicated here.

- 5.3.3 Cost included in other actions and linked to agri-environment scheme payments
- 5.4.1 Part of on-going duties of lead agencies.
- 5.4.2 Part of on-going duties of lead agencies.
- 5.4.3 Part of on-going duties of lead agencies.
- 5.5.1 Part of on-going duties of lead agencies. Information gathering is included in other actions. This information will be displayed on the World Wide Web.
- 5.5.3 Included in the cost for action 5.1.2.
- 5.5.9 Part of on-going duties of lead agencies.
- 5.6.2 Included in other costed actions, as some agri-environment payments are associated with access.

### ***Indicative Costs***

The typical generic costs for the actions by the lead agencies are presented in Table 1

**Table 1 - List of generic costs used to estimate the cost of the Habitat Action Plan**

<b>Action</b>	<b>Type of action required by HAP</b>	<b>, K</b>	<b>Indicative costs</b>
<b>1</b>	<b>Policy and legislation</b>		
5.1.1	Incorporate conservation requirements into agri-environment schemes	<b>20</b>	Based on 0.25 of a Band A civil service post.
5.1.2	Develop and implement strategies to restore and expand the cover of lowland hay meadow	<b>25/yr</b> <b>0.105/ha/yr</b> <b>0.260/ha/yr</b>	Project officer to prepare strategy. Typical restoration cost in agri-environment schemes. Typical cost of creating hay meadows on arable land
<b>2</b>	<b>Site safeguard and management</b>		
5.2.3	Consider the need for further NNRs	<b>0.198/ha/yr</b>	Based on average cost of managing grassland NNRs
5.2.4	Encourage development of new management techniques and technology	<b>15/study</b>	Cost per year over 5 years
<b>3</b>	<b>Advisory</b>		
5.3.1	Disseminate information on best practice	<b>2</b>	Production and distribution of an information sheet or leaflet and/or one day conference
5.3.2	Produce and disseminate guidelines for Establishing new stands	<b>5</b> <b>2</b>	Research contract to produce guidelines. Distribution of an information sheet or leaflet
<b>5</b>	<b>Research and monitoring</b>		
5.5.2	Undertake a vegetation survey	<b>0.05/ha</b>	Contractor for phase 2 survey
5.5.4	Review and promote ways of integrating modern agriculture with conservation	<b>15/study</b>	Typical cost of studies commissioned by MAFF
5.5.5	Review current research and commission and undertake appropriate applied research on conservation and restoration of this habitat.	<b>5</b> <b>90</b>	Review contract 3 year post-doctoral research post
5.5.6	Review current research and commission and support research into the establishment and	<b>5</b> <b>90</b>	Review contract 3 year post-doctoral research

Action	Type of action required by HAP	, K	Indicative costs
	expansion.		post
5.5.7	Studies on scare animals and plant taxa	17/yr 5	Cost of Ph.D. studentship MSc studentship or research contract
5.5.8	Research on nutrient deposition	17/yr	Cost of Ph.D. studentship
<b>6</b>	<b>Communications and publicity</b>		
5.6.1	Seek opportunities to promote this habitat in popular media and scientific press	1/yr	Press work and preparation of articles for the specialist media
5.6.3	Commission marketing studies	15/study	Typical cost of studies commissioned by MAFF

### *Assumptions*

#### **Policy and legislation**

#### *Actions 5.1.2 and 5.5.3*

The cost of developing strategies with quantified and spatially referenced targets to restore and expand lowland hay meadows is based on the broad distribution of lowland hay meadow in the HAP. Consequently, the costing has assumed that 3 strategic plans will be drawn up for key areas in England, 2 in Scotland, 1 in Wales and 1 in Northern Ireland.

This action has been costed to meet the targets in section 1.1 (b), (c) & (d). The costs are separated into two groups: those for Scotland and those for England plus Wales and Northern Ireland. The bulk of the costs allocated to the second group of 3 countries will fall in England, as it supports the majority of the habitat compared to Wales and Northern Ireland. There is insufficient data on the extent the habitat within each country and the proportion within designated sites to make a more refined allocation of costs.

A total figure of 15,000 ha is given for the UK with approximately 12,000ha in England, Wales and Northern Ireland and 3,000 ha in Scotland. The costing is based on the assumption that 35% (1050 ha in Scotland and 4200 ha in the other countries) of the total resource is in an unfavourable condition. To meet the targets of the HAP this area will need to be brought into restoration management through the extension of agri-environment schemes with 30% (315 ha in Scotland and 1260 ha in the 3 other countries) being brought into management by 2005. The remainder will be brought into favourable condition by 2015. A typical payment of , 105/ha/yr is used in the calculation.

It is assumed that the expansion of the resource by 500 ha will be undertaken predominantly by the conversion of arable land to hay meadow or pasture with 100 ha in Scotland and 400 ha in the other 3 countries. A typical creation/reversion cost in agri-environment schemes is , 260/ha. Commercial seed suppliers, however, estimate a cost of between , 600 and , 2000 one-off cost for wildflower seed. The costing therefore also includes a one-off payment of , 1000/ha. It is assumed that 50% of the creation targets will be met in the first five years and the remaining 50% in the following ten years.

## **Site safeguard and management**

### ***Action 5.2.3***

The costing is based on the assumption that two more National Nature Reserves will be designated at an average area of 20 ha per site (this is the average size of lowland meadow reserves). Capital costs are not included in the costing.

### ***Action 5.2.4***

There is a large degree of shared costs for this action between the 5 grassland HAPs. The costing is based on 5 new development projects each lasting approximately 5 years with a budget of £15,000/each (£3,000/yr for 5 years) (Source: John Bacon, English Nature). One project has been allocated to each of the 5 grassland HAPs.

## **Research and monitoring**

### ***Action 5.5.2***

This action is costed on the estimation that approximately 4000 ha require further survey. None of this is in Wales as according to the HAP approximately 80% has already been surveyed and the remainder is due to be completed by 1999. There has been little or no survey in Northern Ireland and Scotland has only surveyed an estimated 30% (900 ha) of its resource (3000 ha) (Source: T. Blackstock, CCW). Approximately 70% (5250 ha) of England (estimated at 7500 ha) have been surveyed. Therefore 70% of Scotland (2100 ha) and 30% of England (2250 ha) requires survey at £50/ha (over the first 5 years).

### ***Action 5.5.4***

One research contract has been included in the costing of this habitat. The results of this research should complement similar research in other grassland HAPs.

### ***Action 5.5.5 and 5.5.6***

The number of studies that will be required is unclear at this stage. Two post-doctoral applied research studies have been included in the costing. It is assumed that the review of current research will be undertaken through a research contract.

### ***Action 5.5.7***

The need for studies of scarce or declining species associated with this habitat which are not covered by species action plans is unclear. Consequently, two Ph.D. studentships and two MSc studentships or equivalent research contracts have been included in the costing.

### ***Action 5.5.8***

The evaluation of the need for research into nutrient deposition on community composition has not been included as it has been accounted for in the lowland calcareous grassland HAP. It is assumed that research will be commissioned and one studentship has been included.

## Communications and publicity

### Action 5.6.3

Only one marketing study has been included in the costing as similar studies have been included in the other grassland HAPs and it is assumed that there will be a degree of cross referencing between such studies.

#### Cost Table

A cost table is shown overleaf showing the estimated costs of meeting the actions of the HAP. Current expenditure is shown for 1997/98.

**Table 2 - Costing of the Lowland Hay Meadow HAP**

	<b>Current</b>	<b>1st 5 yrs to</b>	<b>Next 10 yrs to</b>
	<b>expenditure</b>	<b>2003/2004</b>	<b>2013/2014</b>
<b>Action</b>	<b>/, 000/Yr</b>	<b>/, 000/Yr</b>	<b>/, 000/Yr</b>
<b>Scotland</b>			
Action 5.1.2 - Scotland. Prepare 2 strategic plans		10.0	0.0
Action 5.1.2/5.5.3 - Restore favourable status (target 1050ha)		33.1	110.3
Action 5.1.2/5.5.3 - Expansion (target 100 ha)		23.0	18.0
Action 5.5.2 - Vegetation survey Scotland (2100 ha)		21.0	0.0
<b>England, Wales and Northern Ireland</b>			
Action 5.1.2 - England. Prepare 3 strategic plans		15.0	0.0
Action 5.1.2 - Wales. Prepare strategic plan		5.0	0.0
Action 5.1.2 - Northern Ireland. Prepare strategic plan		5.0	0.0
Action 5.1.2/5.5.3 - Restore favourable status (target 4200 ha)		132.3	441.0
Action 5.1.2/5.5.3 - Expansion (target 400 ha)		92.0	72.0
Action 5.5.2 - Vegetation survey England (2250 ha)		22.5	0.0
<b>General (UK-Wide)</b>			
Action 5.1.1 - Revise Agri-environment schemes		4.0	0.0
Action 5.2.3 - Two new NNRs		4.0	7.9
Action 5.2.4 - New management techniques		3.0	0.0
Action 5.3.1 - Disseminate best practice		0.4	0.0
Action 5.3.2 - Produce + disseminate guidelines		1.4	0.0
Action 5.5.4 - (1 study)		3.0	0.0
Action 5.5.5 - (post-doctoral research)		18.0	0.0
Action 5.5.6 - (post-doctoral research)		18.0	0.0
Action 5.5.7 - (2 PhD & 2 MSc)		11.2	5.6
Action 5.5.8 - (PhD studentship)		10.2	0.0
Action 5.6.1 B Publicity		1.0	1.0
Action 5.6.3 B 1 marketing study		10.2	0.0
<b>WES</b>	<b>290</b>		

	<b>Current</b>	<b>1st 5 yrs to</b>	<b>Next 10 yrs to</b>
	<b>expenditure</b>	<b>2003/2004</b>	<b>2013/2014</b>
<b>Action</b>	<b>/, 000/Yr</b>	<b>/, 000/Yr</b>	<b>/, 000/Yr</b>
<i>Tir Cymen</i>	153		
<i>ESA</i>	1055		
<i>Countryside Stewardship</i>	305		
<b>Current expenditure (agri-environment schemes)</b>	<b>1802</b>		
<b>Total extra average annual cost /, 000/Yr</b>		<b>443.2</b>	<b>655.8</b>
<b>Total cost for the first 5 years</b>		<b>2216.2</b>	
<b>Total cost for the next 10 years</b>			<b>6557.7</b>

### 3.3.2 Upland Hay Meadows

#### *Excluded Actions*

Actions not included in the costing are:

<b>Action</b>	<b>Explanation</b>
5.1.3	Part of on-going duties of lead agencies.
5.2.1	Part of on-going duties of lead agencies.
5.2.5	Cost is included in the relevant Species Action Plans and habitat management costs in other actions in this Habitat Action Plan.
5.3.3	Included in the costing for other actions for site management.
5.4.1	Part of on-going duties of lead agencies.
5.4.2	Part of on-going duties of lead agencies.
5.4.4	Part of on-going duties of lead agencies.
5.5.1	Part of on-going duties of lead agencies.
5.5.3	Cost included in the project officer post cost of Action 5.1.2.
5.5.6	The cost of contributing to the SAPs is included in other actions. Specific costs related to the SAP targets are not duplicated here.
5.5.7	Cost included in upland calcareous grassland HAP.
5.5.8	Part of on-going duties of lead agencies.
5.6.2	Cost included in the costing of other actions.

#### *Indicative Costs*

The typical generic costs for the actions by the lead agencies are presented in Table 1.

**Table 1 - List of generic costs used to estimate the cost of the Habitat Action Plan**

Action	Type of action required by HAP	, K	Indicative costs
<b>1</b>	<b>Policy and legislation</b>		
5.1.1	Incorporate conservation requirements into agri-environment schemes	<b>20</b>	Based on 0.25 of a band A civil service post
5.1.2	Develop and implement strategies to restore and expand the cover of upland hay meadow	<b>25/yr 0.265/ha</b>	Project officer to prepare strategy Typical cost of expansion based on payment rates in WES
<b>2</b>	<b>Site safeguard and management</b>		
5.2.2	Promote the uptake of positive management of SSSIs and other sites	<b>0.265/ha/yr</b>	Based on costs within the WES
5.2.3	Consider the need for new NNRs	<b>0.198/ha/yr</b>	Based on average cost of grassland NNRs in England
5.2.4	Develop new management techniques	<b>15/project</b>	Management technique project development cost
<b>3</b>	<b>Advisory</b>		
5.3.1	Disseminate information on best practice	<b>2</b>	Production and distribution of an information sheet or leaflet and/or one day conference/training day.
5.3.2	Produce and disseminate guidelines for establishing new stands	<b>5 3</b>	Research contract to produce guidelines. Production and distribution of an information sheet or leaflet and/or one day conference/training day.
<b>4</b>	<b>International</b>		
5.4.3	Review representation in Europe	<b>5</b>	Research contract
5.4.5	Exchange information in the international literature and conferences.	<b>10</b>	Cost of organising an international conference
<b>5</b>	<b>Research and monitoring</b>		
5.5.2	Undertake vegetation survey.	<b>0.05/ha</b>	Contractor for Phase 2 survey
5.5.4	Review current research and commission and undertake appropriate applied research.	<b>5 90</b>	Review research contract Post-doctoral research post for 3 years
5.5.5	Review current research and commission and support research into the expansion of upland hay meadows.	<b>5 90</b>	Review research contract Post-doctoral research post for 3 years
<b>6</b>	<b>Communications and publicity</b>		
5.6.1	Publicise hay meadow conservation in the popular media and scientific press	<b>1/yr</b>	Press work and preparation of articles in specialised press
5.6.3	Commission marketing studies	<b>15/study</b>	Typical cost of studies commissioned by MAFF

## *Assumptions*

### **Policy and legislation**

#### ***Actions 5.1.2 and 5.5.3***

The cost of developing a strategic plan with quantified and spatially referenced targets to restore and expand upland hay meadow is based on one project officer appointment for a 6 month period based in England. This will cost , 12,500.

The implementation of the strategic plan to meet the targets set out in objective (c) will require 50 ha of upland hay meadow to be re-established at a typical cost of 265ha/yr (Source: MAFF and EN). This does not include land purchase costs as the work would be completed through agri-environment schemes to existing landowners. It is assumed that 45 ha will be re-established in England and 5 ha in Scotland.

### **Site safeguard and management**

#### ***Action 5.2.2***

It is stated in the HAP that between 500 and 1000 ha of the total resource (1000ha) in England is within SSSIs. It is therefore assumed that 75% of the total habitat (750 ha) in England is within SSSIs and that 10 ha are within SSSIs in Scotland (Jayne Mackintosh: SNH).

The HAP states that management agreements are already in place for many of the SSSIs. It is therefore assumed that 10% of the 750 ha (75 ha) of upland hay meadow in SSSIs in England are in a sub-optimal condition. All the SSSIs in Scotland (10 ha) are assumed to be in favourable condition and have management agreements.

Of the resource outside SSSIs (250 ha in England and 45 ha in Scotland) it is assumed that 30% is in a sub-optimal condition (75 ha in England and 13.5 ha in Scotland). The target in objective (b) of the HAP requires 30% of this resource to be brought into restoration management by 2005 and the remainder by 2015. Therefore for England 23 ha should be brought into management by 2005 and the full 75 ha by 2015. For Scotland 5 ha should be brought into restoration management by 2005 and the full 13.5 ha by 2015.

The cost (, 265/ha/yr) is based on an average agri-environment grant scheme payment for SSSIs, but is also applied to land outside SSSIs.

#### ***Action 5.2.3***

This is a conditional future action that will be dependent on if there is a need for further NNRs. It is assumed that a further 10 ha (most stands of this habitat are less than 2 ha in extent, Gowk Bank NNR is 15 ha) is designated as NNR and subsequently managed at a cost of , 198/ha/yr. No capital costs have been included and it is assumed that the NNR would be designated in year 1.

#### **Action 5.2.4**

There is a large degree of shared costs for this action between the 5 grassland HAPs. The costing is based on 5 new development projects each lasting approximately 5 years with a budget of £15,000 (£3,000/yr) (Source: John Bacon, English Nature). One project has been allocated to each of the 5 grassland HAPs.

### **Research and monitoring**

#### **Action 5.5.2**

It is estimated that 500 ha will need to be surveyed in England and 30 ha in Scotland at a typical cost of £50/ha (Source: EN and SNH).

#### **Actions 5.5.4 and 5.5.5**

The number of studies that need to be commissioned is unclear at this stage. The two reviews of current research are costed at £5,000 each. Applied research into the management and restoration of upland hay meadow is assumed to require 2 post-doctoral research commissions (Source: Newcastle University).

### **Communications and publicity**

#### **Action 5.6.3**

One marketing study has been included in the costing for this habitat.

#### **Cost Table**

The cost table is shown overleaf showing the estimated costs of meeting the actions of the HAP. Current expenditure is shown for 1997/98.

**Table 2 Costing of the Upland Hay Meadow HAP**

	Current expenditure	1st 5 yrs to	Next 10 yrs to
		2003/2004	2013/2014
Action	£, 000/Yr	£, 000/Yr	£, 000/Yr
<b>England</b>			
Action 5.1.2 - Prepare strategic plan		2.5	0.0
Action 5.1.2 - Expansion target, objective (c) (45 ha)		11.9	11.9
Action 5.2.2 - Restoration sub-optimal SSSI (75 ha)		19.9	19.9
Action 5.2.2 - Restoration sub-optimal non-SSSI (75 ha)		6.1	19.9
Action 5.5.2 - Survey (500 ha)		5.0	0.0
<i>Countryside Stewardship + ESA + WES (Note 1)</i>	108		

	Current expenditure	1st 5 yrs to	Next 10 yrs to
		2003/2004	2013/2014
Action	/, 000/Yr	/, 000/Yr	/, 000/Yr
<b>Scotland</b>			
Action 5.1.2 - Expansion target, objective (c) (5 ha)		1.3	1.3
Action 5.2.2 - Restoration sub-optimal non-SSSI (13.5 ha)		1.3	3.6
Action 5.5.2 - Survey (30 ha)		0.3	0.0
<i>Countryside Premium Scheme</i>	<i>No data</i>		
<b>General (UK-Wide)</b>			
Action 5.1.1- Revise agri-environment schemes		4.0	0.0
Action 5.2.3 (10 ha new NNR)		2.0	2.0
Action 5.2.4 - New management techniques		3.0	0.0
Action 5.3.1 - Disseminate information on best practice		0.0	0.2
Action 5.3.2 - Disseminate information on creating new stands		1.0	0.3
Action 5.4.3 - Review representation in Europe		1.0	0.3
Action 5.4.5 - Exchange information		0.0	1.0
Action 5.5.4 - 1 post-doctoral study + review		1.0	9.0
Action 5.5.5 - 1 post-doctoral study + review		1.0	9.0
Action 5.6.1 - Publicity		1.0	1.0
Action 5.6.3 - 1 marketing study		3.0	0.0
<b>Current expenditure (agri-environment schemes)</b>	<b>108</b>		
<b>Total extra average annual cost</b>		<b>65.3</b>	<b>79.4</b>
<b>Total expenditure over first five years</b>		<b>326.6</b>	
<b>Total expenditure over following ten years</b>			<b>793.6</b>

**Note 1:** Current expenditure cannot be accurately determined as this is a very distinct habitat not identified specifically in the grant schemes. The figure given is based on an assumption of about 800 ha under an average payment of , 135/ha.

### 3.3.3 Lowland Calcareous Grassland

#### *Excluded Actions*

Actions not included in the costing are:

Action	Explanation
5.1.3	Part of on-going duties of lead agencies.
5.1.4	Action not costed as there is an on-going study that will suggest mechanisms by which common land can be brought into management (Source: E. Johnstone, MAFF).
5.2.1	Part of on-going duties of lead agencies.

- 5.2.2 Part of on-going duties of lead agencies. Cost of implementing management plans is included in other costed actions within the HAP.
- 5.2.4 According to the HAP the MoD are preparing integrated management plans for their properties. The cost of implementation is included in the other costed actions.
- 5.3.3 Included in the costing for other actions for site management.
- 5.4.1 Part of on-going duties of lead agencies.
- 5.4.2 Part of on-going duties of lead agencies.
- 5.4.4 Part of on-going duties of lead agencies, and included in the costing for other actions.
- 5.5.1 Part of on-going duties of lead agencies.
- 5.5.3 Cost included in project officer post cost of Action 5.1.2.
- 5.5.4 Cost included in project officer post cost of Action 5.1.2.
- 5.5.7 The cost of contributing to the SAPs is included in other actions. Specific costs related to the SAP targets are not duplicated here.
- 5.5.9 Part of on-going duties of lead agencies.
- 5.6.2 Included in the costing for other actions.

### ***Indicative Cost Data***

The typical generic costs for the actions by the lead agencies are presented in Table 1.

**Table 1 - List of generic costs used to estimate the cost of the Habitat Action Plan**

<b>Action</b>	<b>Type of action required by HAP</b>	<b>, K</b>	<b>Indicative costs</b>
<b>1</b>	<b>Policy and legislation</b>		
5.1.1	Incorporate conservation requirements into agri-environment schemes	<b>20</b>	Review based on 0.25 of a Band A civil service post
5.1.2	Develop and implement strategies to restore and expand the cover of lowland calcareous grassland	<b>25/yr</b> <b>0.290/ha/yr</b>	Project officer to prepare de-fragmentation plan. Creation from arable land. Based on agri-environment schemes
<b>2</b>	<b>Site safeguard and management</b>		
5.2.3	Secure uptake of positive agreements on SSSIs/ASSIs and other sites	<b>0.105/ha/yr</b>	Positive management payment rate. Based on Wildlife Enhancement Scheme
5.2.5	Consider need for additional National Nature reserves	<b>0.198/ha/yr</b>	Based on current cost of managing lowland grassland NNRs in England
5.2.6	Encourage development of new management techniques and technology.	<b>25/yr</b> <b>15/project</b>	Cost of livestock project officer for 3 years. Management technique project development cost
5.2.7	Consider specific measures for rare and declining species	<b>5/yr</b> <b>3/yr</b>	Typical cost for the first 5 years Typical cost for the next 10 years. Based on costed SAPs

Action	Type of action required by HAP	, K	Indicative costs
<b>3</b>	<b>Advisory</b>		
5.3.1	Disseminate information on best practice	<b>2</b>	Production and distribution of an information sheet or leaflet and/or one day conference
5.3.2	Produce and disseminate guidelines on establishing new stands.	<b>2</b>	Production and distribution of an information sheet or leaflet
<b>4</b>	<b>International</b>		
5.4.3	Review representation in other European states	<b>5</b>	Research contract @ , 180/day
5.4.5	Exchange information in the international literature and conferences	<b>10</b>	Cost of hosting an international conference
<b>5</b>	<b>Research and monitoring</b>		
5.5.2	Undertake a vegetation survey	<b>0.05/ha</b>	Contractor for phase 2 survey
5.5.5	Review research needs into the restoration of the habitat and integration with agriculture. Commission studies.	<b>10</b> <b>15/study</b> <b>17</b>	Research review contract Study on integration with agriculture Cost of Ph.D. studentship
5.5.6	Commission research into the creation and expansion of this habitat.	<b>90</b>	3 year post-doctoral research post
5.5.8	Evaluate need to assess atmospheric nutrient deposition and commission studies	<b>10</b> <b>17</b>	Research contract Cost of Ph.D. studentship
5.5.10	Commission marketing studies	<b>15/study</b>	Typical cost of studies commissioned by MAFF
<b>6</b>	<b>Communications and publicity</b>		
5.6.1	Promote this habitat in popular media and scientific press	<b>1/yr</b>	Press work and preparation of articles for the specialist media

### *Assumptions*

### **Policy and legislation**

#### *Actions 5.1.2, 5.5.3 and 5.5.4*

The cost of developing strategies is based on three 6 month project officer posts in England and one in Wales. The cost of implementing the expansion proposed in objective (c) is based on a re-creation of cost of , 290/ha/yr for the target of 1000 ha by 2010. The cost of implementing restoration targets proposed in objective (b) is included in the costing of action 5.2.2. It is assumed 900 ha are created in England and 100 ha in Wales.

### **Site safeguard and management**

#### *Action 5.2.3*

The costing is based on an average positive management agreement cost for lowland calcareous grassland within the Wildlife Enhancement Scheme and Tir Cymen of , 105/ha/yr which are aimed at enhancing the conservation interest of sites. The area of the existing resource within the SSSI series (approximately 24,000ha) which is assumed to be in an

unfavourable condition is 7200 ha (approximately 30%). Of this 200 ha in Wales and 7000 ha in England.

The area of other calcareous grassland outside SSSIs is estimated to be 13000ha in England and 350ha in Wales. The costing is based on the assumption that 45% of the 13000ha in England (approximately 5800 ha) and 200 ha in Wales is in a sub-optimal condition and requiring further financial assistance to meet the targets set in objective (b) conservation condition by 2010.

Thirty percent of the resource outside of SSSIs in a sub-optimal condition should be brought into a favourable condition by 2005 (1700ha in England and 60 ha in Wales) and the remaining 70% (4100 ha in England and 140 ha in Wales) by 2015.

#### ***Action 5.2.5***

This is a conditional future action that will be dependent on if there is a need for further NNRs. It is assumed that a further 100 ha is designated as NNR and managed at a cost of , 198/ha. Capital costs are not included.

#### ***Action 5.2.6***

There is a large degree of shared costs for this action between the 5 grassland HAPs. The costing is based on 5 new development projects each lasting approximately 5 years with a budget of , 15,000 each (i.e. , 3,000/year for 5 years) (Source: John Bacon, English Nature). One project has been allocated to each of the 5 grassland HAPs. The establishment and running of a livestock network through the Grazing Animal Project is included in this HAP and costed at , 25,000/yr for three years. It is assumed that after 3 years the officer post will be self financing (Source: John Bacon, English Nature).

#### ***Action 5.2.7***

Until the necessary autecological studies have been completed it is not known to what extent site specific measures will be required. The costing is based on providing specific management for 4 scarce or declining species of this habitat at 5 sites at a typical cost of , 5,000/species/year for the first 5 years and , 3,000/species/year for the following 10 years.

### **Research and monitoring**

#### ***Action 5.5.2***

This costing is based on an estimate of the gaps in survey coverage for England equivalent to 4,000 ha (Source: English Nature - lowlands team) and none for Wales.

#### ***Action 5.5.6***

The costing is based on one post-doctoral applied research study.

### Action 5.5.7

To reflect Action 5.2.6 four studies have been included in the costing: one Ph.D. and three MSc or equivalent research contracts.

### Cost Table

The table gives the estimated costs of meeting the actions of the HAP. Current expenditure is shown for 1997/98.

**Table 2 - Costing of the Lowland Calcareous Grassland HAP**

	Current expenditure	1st 5 yrs to	Next 10 yrs to
		2003/2004	2013/2014
Action	/, 000/Yr	/, 000/Yr	/, 000/Yr
<b>England</b>			
Action 5.1.2 - Prepare 3 strategic plans		7.5	0.0
Action 5.1.2 - Expansion target objective (c) (900 ha)		130.5	130.5
Action 5.2.3 - Restoration sub-optimal SSSI (7000 ha)		735.0	735.0
Action 5.2.3 - Restoration sub-optimal non-SSSI (5800 ha)		178.5	430.5
Action 5.5.1 - Survey (4000ha at , 50/ha)		40.0	0.0
ESA	1720.0		
WES	22.0		
<i>Note 1: Countryside Stewardship</i>	561.0		
<b>Wales</b>			
Action 5.1.2 - Prepare 1 strategic plan		2.5	0.0
Action 5.1.2 - Expansion target objective (c) (100 ha)		29.0	29.0
Action 5.2.3 - Restoration sub-optimal SSSI (200 ha)		21.0	21.0
Action 5.2.3 B Restoration sub-optimal non-SSSI (200 ha)		6.3	21.0
<i>Tir Cymen</i>	2.9		
<b>General (UK-Wide)</b>			
Action 5.1.1 B Revise agri-environment schemes		4.0	0.0
Action 5.2.5 B 100 ha new NNR		19.8	19.8
Action 5.2.6 - 3 yr. project officer & one development project		15.0	1.5
Action 5.2.7 - 4 species		4.0	1.2
Action 5.3.1 B Disseminate information on best practice		0.4	0.0
Action 5.3.2 B Disseminate information on creating new stands		0.4	0.0
Action 5.4.3 B Review extent in Europe		1.0	0.0
Action 5.5.5 (1 study + research review + 1 PhD)		5.0	5.1
Action 5.5.6 (post-doctoral research)		18.0	0.0
Action 5.5.8 (1 study)		12.2	0.0
Action 5.5.10 (1 study)		3.0	0.0

	Current expenditure	1st 5 yrs to	Next 10 yrs to
		2003/2004	2013/2014
Action	/, 000/Yr	/, 000/Yr	/, 000/Yr
Action 5.6.1 B Publicity		1.0	1.0
<i>Current expenditure (agri-environment schemes)</i>	<i>2305.9</i>		
<i>Total extra average annual cost</i>		<i>1234.1</i>	<i>1395.6</i>
<i>Total expenditure for the first five years</i>		<i>6170.5</i>	
<i>Total expenditure for the following ten years</i>			<i>13956.0</i>

### 3.3.4 Upland Calcareous Grassland

#### *Excluded Actions*

Actions not included or individually costed in the costing are:

Action	Explanation
5.1.4	Part of on-going duties of lead agencies.
5.1.5	Action not costed as there is an on-going study that will suggest mechanisms by which common land can be brought into management (Source: E. Johnstone, MAFF).
5.2.1	Part of on-going duties of lead agencies.
5.2.3	Costs are included in other actions in particular Action 5.1.2.
5.2.4	Part of on-going duties of lead agencies.
5.2.5	Part of on-going duties of lead agencies and habitat management requirements for SAPs will be met through other costed actions.
5.3.1	Cost included in other costed management actions.
5.3.2	Partly achieved through the on-going duties of lead agencies. The cost of leaflets and technical handbooks is provided however.
5.4.1	Part of on-going duties of lead agencies.
5.4.2	Part of on-going duties of lead agencies.
5.6.2	Part of on-going duties of lead agencies.

#### *Indicative Cost Data*

The typical generic costs for the actions by the lead agencies are presented in Table 1.

**Table 1 - List of generic costs used to estimate the cost of the Habitat Action Plan**

Action	Type of action required by HAP	, K	Indicative costs
<b>1</b>	<b>Policy and legislation</b>		
5.1.1	Review livestock support mechanism	<b>35</b>	Based on 2 six month posts at , 35K/yr
5.1.2	Extend agri-environment schemes to achieve favourable conservation status and develop new schemes.	<b>0.065-0.09/ha/yr</b> <b>0.09/ha/yr</b> <b>35</b>	Management to achieve favourable status. Based on agri-environment schemes Re-create. Cost based on a Typical payment with WES. Develop new schemes. Based on 2 six month posts at , 35K/yr
5.1.3	Target areas to restore and expand cover to reduce fragmentation	<b>25/yr</b>	Project officer to prepare de-fragmentation plan
<b>2</b>	<b>Site safeguard and management</b>		
5.2.2	Prepare and implement management plans	<b>2.5/plan</b>	Plan preparation based on typical contractor fee
<b>3</b>	<b>Advisory</b>		
5.3.2	Provide technical handbooks and leaflets	<b>15</b> <b>3</b>	Handbook production Information leaflet
<b>5</b>	<b>Research and monitoring</b>		
5.5.1	Review gaps in survey coverage Undertake vegetation survey to fill gaps in coverage	<b>5</b> <b>0.05/ha</b>	Contractor fee. Contractor fee for Phase 2 vegetation survey
5.5.2	Undertake a sampled condition survey	<b>0.18/day</b>	Contractor fee for sampled condition survey
5.5.3	Commission applied research on management techniques and technology	<b>90</b>	3 year post doctoral applied research grant
5.5.4	Commission applied research on restoration techniques	<b>90</b>	3 year post doctoral applied research grant
5.5.5	Commission research on management for scarce animals and plants	<b>17/yr</b> <b>5</b>	3 year Ph.D. studentship MSc studentship
5.5.6	Promote sociological research into integrating conservation and agriculture	<b>17/yr</b>	3 year Ph.D. studentship
5.5.7	Commission and promote research on the effects of atmospheric deposition	<b>17/yr</b>	3 year Ph.D. studentship
5.5.8	Develop and implement surveillance and monitoring programme to assess progress toward plan targets	<b>0.18/day</b>  <b>5</b>	Contractor fee for a survey to complement the sampled condition survey in action 5.5.2. Development of a monitoring programme
<b>6</b>	<b>Communications and publicity</b>		
5.6.1	Promote upland calcareous grassland conservation in the popular media and scientific press	<b>1/yr</b>	Press work and preparation of articles in specialised press

## *Assumptions*

### **Policy and legislation**

#### ***Action 5.1.2***

It is estimated that existing agri-environment schemes cover approximately 6000 ha in England (3637 ha in WES alone), 2000 ha in Scotland, 1099 ha in Northern Ireland and 700 ha in Wales. It is assumed that the HAP seeks to bring the habitat into 75% favourable conservation status through positive management agreements.

In Wales 500 of the 800 ha are in designated sites. A proportion of the total resource outside designated sites is also in agri-environment schemes. It is assumed that a proportion of these areas is not in favourable condition. Consequently, the costing presented in Table 2 is based on 25% (125ha) of the area in designated sites requiring additional payment of , 30/ha/yr to achieve favourable condition. It is assumed that 60 ha are costed in the first 5 years and the remainder by 2014. The costing also assumes a further 10% of the total resource (80 ha) will need to be brought into an appropriate agri-environment scheme to achieve favourable condition at a typical payment rate of , 80/ha/yr. It is assumed that 40 ha are brought into schemes over the first 5 years and the remainder by 2014.

In Northern Ireland 100 ha of the 1100 ha are in designated areas and it is assumed that this is already in favourable condition. The remaining 1000 ha are assumed largely to be subject to existing agri-environment scheme payments. It is assumed that 25% of this area (250 ha) is not in favourable condition and requires an additional payment of , 30/ha to achieve favourable condition. The costing assumes 100ha are brought into schemes in the first 5 years and the remainder by 2014

In England and Scotland it is assumed that 25% of the area already within agri-environment schemes is not in a favourable condition, but that the remainder is. It is assumed that the 25% will need to be put into different tiers within the agri-environment schemes to achieve favourable condition and that this will cost an additional , 30/ha/yr.

For Scotland this means that 500 ha already in agri-environment schemes will require additional payments. It is assumed that 250ha are brought into schemes in the first 5 years and the remainder by 2014.

For England 1500 ha will require additional payments. It is assumed that 500ha are brought into schemes in the first 5 years and the remainder by 2014.

In Scotland it is assumed that 4500 ha of the 10,000 ha is in favourable condition in designated sites and areas under agri-environment scheme payment. Consequently, a further 3000 ha needs to be brought into favourable condition to meet the 75% target. Of this 500 ha are within existing agri-environment schemes (see above) and a further 2,500 ha will need to be brought into an appropriate agri-environment scheme to achieve favourable condition at a typical payment rate of , 80/ha/yr. It is assumed that 1500 ha are brought into schemes in the first 5 years and the remainder by 2014.

In England it is assumed that 4500 ha of the 10,000 ha is in favourable condition in designated sites and areas under agri-environment scheme payment. Consequently, a further

3000 ha needs to be brought into favourable condition to meet the 75% target. Of this 1500 ha are within existing agri-environment schemes (see above) and a further 1,500 ha will need to be brought into an appropriate agri-environment scheme to achieve favourable condition at a typical payment rate of , 80/ha/yr. The costing assumes that 500 ha are brought into schemes over the first 5 years and the remainder by 2014.

To meet the target set out in 4.2.3 of section 4 will require 200 ha of upland calcareous grassland being re-created. Typical cost of restoring neglected sites within the existing agri-environment schemes is , 140/ha/yr (Source: EN, MAFF, WOAD and SOAEFD). Agri-environment scheme payments will not require land purchase costs. In England and Scotland the costing assumes 90 ha are re-created/restored with 8 ha in Wales and 12 ha in Northern Ireland. The costing assumes the targets are met in the first 5 years.

### ***Action 5.1.3***

The cost of developing strategic plans to restore upland calcareous grassland is based on the appointment of 6 project officers each for a 6 month period (2 in Scotland and England and one each in Northern Ireland and Wales). This will cost , 72,000.

## **Site safeguard and management**

### ***Action 5.2.2***

This action has been costed on a typical contractor fee of , 2500 per site and only applies to Scotland and England as Wales and Northern Ireland are committed to preparing management plans for all SSSIs and ASSIs within existing programmes. There is no data available on the number of sites in Scotland and England without management plans. The costing is based therefore on the production of 100 management plans and the cost cannot be apportioned to the countries. It is assumed that implementation of the plans will be achieved through costed actions in 5.1.2, 5.1.3 and other actions.

## **Advisory**

### ***Action 5.3.2***

The costing is based on the production of colour information leaflets for each country in the UK and the production of one technical management handbook, during the lifetime of the HAP. The cost of the leaflets is based on an A4 full colour production with a print run of 2000 (Source: SNH). It is assumed that the information leaflet is re-published once during the life time of the HAP and that 4 versions are produced to cover the 4 countries of the UK.

The production of a technical handbook is costed at , 15,000 with , 5-7,000 for the preparation of text and , 10-8000 for publication.

## **Research and monitoring**

### ***Action 5.5.1***

The costing is based on a cost of , 5000 contractor fee to identify gaps in the survey coverage and a cost of , 50/ha for the vegetation survey of 8000 ha to fill the survey gaps. The costing assumes 4000ha are surveyed in the first 5 years and the rest by 2014.

### ***Action 5.5.2***

The cost is based on a figure of , 180/day covering up to 400 ha/day for the sampled condition assessment for 25% of the total resource (5500 ha). It is assumed that a survey could be completed in 20 days giving a total fee of , 3600 for a sampled condition survey. The costing assumes 2 conditions surveys are undertaken during the life of the HAP.

### ***Actions 5.5.3 and 5.5.4***

The number of studies that need to be commissioned is unclear at this stage. Applied research into the management and restoration of upland calcareous grassland is assumed to require 2 post-doctoral research commissions.

### ***Action 5.5.5***

This is a conditional future action. The need for studies of scarce or declining species associated with this habitat which are not covered by species action plans is unclear. Consequently, two Ph.D. studentships and two MSc research studentships or equivalent research contracts have been included in the costing.

### ***Action 5.5.6***

One research contract has been included in the costing for this habitat.

### ***Action 5.5.7***

One 3 year Ph.D. studentship or equivalent research contract has been included to undertake research on the impact of atmospheric deposition.

### ***Action 5.5.8***

A cost of , 180/day for a survey to complement the sampled condition survey has been used. The cost is based on an assumed survey period of 20 days giving a total of , 3600. Two monitoring surveys are included in the costing. The cost of developing a surveillance programme is assumed to be equivalent to a small research contract and is costed at , 5000.

## ***Cost Table***

Table 2 shows the estimated costs of meeting the actions of the HAP. Current expenditure is shown for 1997/98.

**Table 2 - Costing of the Upland Calcareous Grassland HAP**

	Current expenditure	1st 5 yrs to	Next 10 yrs to
		2003/2004	2013/2014
Action	/, 000/Yr	/, 000/Yr	/, 000/Yr
<b>England</b>			
Action 5.1.2 - Enter into schemes (target 1500 ha)		40.0	120.0
Action 5.1.2 - Extend existing schemes (target 1500 ha)		15.0	45.0
Action 5.1.2 - Restore (target 90 ha)		6.3	12.6
Action 5.1.3 - Prepare strategic plan		5.0	0.0
Action 5.2.2 - Assumed 50 management plans		25.0	0.0
Action 5.3.2 - Provision of advice		0.6	0.3
	<i>ESA</i>	187.5	
	<i>WES</i>	236.4	
	<i>Countryside Stewardship (Note 1)</i>	343.9	
<b>Scotland</b>			
Action 5.1.2 - Enter into schemes (target 2500 ha)		120.0	200.0
Action 5.1.2 - Extend existing schemes (target 500 ha)		7.5	15.0
Action 5.1.2 - Restore (target 90 ha)		6.3	12.6
Action 5.1.3 - Prepare strategic plan		5.0	0.0
Action 5.2.2 - Assumed 50 management plans		25.0	0.0
Action 5.3.2 - Provision of advice		0.6	0.3
	<i>ESA</i>	160.0	
	<i>CPS</i>	no uptake	
<b>Wales</b>			
Action 5.1.2 - Enter into schemes (target 80 ha)		3.2	6.4
Action 5.1.2 - Extend existing schemes (target 125 ha)		1.8	3.8
Action 5.1.2 - Restore (target 8 ha)		1.1	1.1
Action 5.1.3 - Prepare strategic plan		2.4	0.0
Action 5.3.2 - Provision of advice		0.6	0.3
	<i>ESA</i>	600.0	
	<i>Tir Cymen</i>	10.5	
<b>Northern Ireland</b>			
Action 5.1.2 - Extend existing schemes (target 250 ha)		3.0	7.5
Action 5.1.2 - Restore (target 12 ha)		1.7	1.7
Action 5.1.3 - Prepare strategic plan		2.4	0.0
Action 5.3.2 - Provision of advice		0.6	0.3
	<i>ESA</i>	98.9	

	Current expenditure	1st 5 yrs to	Next 10 yrs to
		2003/2004	2013/2014
Action	/, 000/Yr	/, 000/Yr	/, 000/Yr
<b>General (UK-Wide)</b>			
Action 5.1.1 - Review livestock support		7.0	0.0
Action 5.1.2 - Develop new schemes		7.0	0.0
Action 5.3.2 - Provision of advice - technical handbook		3.0	0.0
Action 5.5.1 - Review gaps in survey coverage		1.0	0.0
Action 5.5.1 - Fill gaps in coverage (target 8000 ha)		40.0	20.0
Action 5.5.2 - (2 condition assessments over 25%)		0.7	0.4
Action 5.5.3 - Post-doctoral research		18.0	0.0
Action 5.5.4 - Post-doctoral research		18.0	0.0
Action 5.5.5 - 2 PhD & 2 MSc		11.2	5.6
Action 5.5.6 - 1 study		10.2	0.0
Action 5.5.7 - 1 study		10.2	0.0
Action 5.5.8 - Implement monitoring programme		0.7	0.4
Action 5.5.8 - Develop monitoring programme		1.0	0.0
Action 5.6.1 - General press and media work		1.0	1.0
<b>Current expenditure (agri-environment schemes)</b>	<b>1637.2</b>		
<b>Total extra average annual cost</b>		<b>402.1</b>	<b>454.2</b>
<b>Total expenditure for first five years</b>		<b>2010.7</b>	
<b>Total expenditure for the following ten years</b>			<b>4541.7</b>

### 3.3.5 Lowland Dry Acid Grassland

#### *Excluded Actions*

The following actions have been included in the costing of this HAP:

Action	Explanation
5.1.3	Part of the on-going work for the lead agencies.
5.1.4	Not costed as there is an on-going study that will suggest mechanisms by which common land can be brought into management (Source: E. Johnstone, MAFF).
5.2.1	Part of the on-going work of the lead agencies.
5.2.2	Part of the on-going work of the lead agencies.
5.2.7	General habitat management costs are included in other actions.
5.3.3	Cost included in other costed actions.
5.4.1	Part of the on-going work of the lead agencies.
5.4.2	Part of the on-going work of the lead agencies.
5.4.4	Part of the on-going work of the lead agencies.

- 5.5.1 Part of the on-going work of the lead agencies.  
 5.5.3 Costs included in action 5.1.2.  
 5.5.9 Part of the on-going work of the lead agencies.  
 5.6.3 Cost included in other costed actions.

**Indicative Cost Data**

The typical generic costs for the actions by the lead agencies are presented in Table 1.

**Table 1 - List of generic costs used to estimate the cost of the Habitat Action Plan**

Action	Type of action required by HAP	, K	Indicative costs
<b>1</b>	<b>Policy and legislation</b>		
5.1.1	Incorporate conservation requirements into agri-environment schemes	<b>20</b>	Review based on 0.25 of a Band A civil service post
5.1.2	Develop and implement strategies to restore and expand the cover of lowland dry acid grassland.	<b>25/yr</b> <b>0.25/ha</b>	Project officer to prepare de-fragmentation plan Typical expansion cost
<b>2</b>	<b>Site safeguard and management</b>		
5.2.3	Secure uptake of positive agreements on SSSIs/ASSIs and other sites	<b>0.05-0.08/ha/yr</b>	Typical positive management agreement rate
5.2.4	Support positive management within ownership of MoD and draw up site management plans	<b>3/plan</b>	Contractor fee
5.2.5	Consider further NNRs	<b>0.198/ha</b>	NNR management cost
5.2.6	Encourage development of new management techniques and technology.	<b>15/project</b>	Management technique project development cost
<b>3</b>	<b>Advisory</b>		
5.3.1	Disseminate information on best practice	<b>2</b>	Production and distribution of an information sheet and/or one day conference
5.3.2	Produce and disseminate guidelines for Establishing new stands	<b>5</b> <b>2</b>	Research contract to produce guidelines Distribution of an information sheet or leaflet
<b>4</b>	<b>International</b>		
5.4.3	Review representation in other European states	<b>5</b>	Research contract @ , 180/day
5.4.5	Exchange information in the international literature and conferences	<b>10</b>	Cost of hosting an international conference
<b>5</b>	<b>Research and monitoring</b>		
5.5.2	Undertake a vegetation survey	<b>0.05/ha</b>	Contractor for phase 2 survey
5.5.4	Review and promote ways of integrating modern agriculture with conservation	<b>15/study</b>	
5.5.5	Commission and undertake appropriate applied research on conservation and restoration of this habitat.	<b>90</b>	Post-doctoral research or equivalent research contract
5.5.6	Commission and support research into the establishment and expansion of this habitat	<b>90</b>	Post-doctoral research or equivalent research contract

Action	Type of action required by HAP	, K	Indicative costs
5.5.7	Studies on scarce animals and plant taxa	17/yr 5	Ph.D. studentship MSc studentship or research contract
5.5.8	Evaluate need for assessment of atmospheric nutrient deposition and commission research as necessary	17/yr	Cost of Ph.D. studentship
<b>6</b>	<b>Communications and publicity</b>		
5.6.1	Seek opportunities to promote this habitat in popular media and scientific press	1/yr	Press work and preparation of articles for the specialist media
5.6.2	Commission marketing studies	15/study	Based on studies by MAFF

### *Assumptions*

#### **Policy and legislation**

##### *Actions 5.1.2 and 5.5.3*

The cost of developing strategies with quantified and spatially referenced targets to restore and expand lowland hay meadows is based on three 6 month project officer posts in England and one in Wales, Northern Ireland and Scotland. The cost of implementing the strategies to meet the target of 500 ha set for this HAP is based on a typical re-establishment cost of , 250/ha. This figure is based on the assumption that there will no land purchase necessary and that the majority of the target will be met by conversion from forestry to grassland. A cost of , 100/ha/yr has been assumed for foregone revenue from timber production. The additional costs cover habitat restoration management.

#### **Site safeguard and management**

##### *Action 5.2.3*

The costing is based on a typical positive management agreement cost of , 50/ha in England and Wales and , 80/ha for Scotland and Northern Ireland. The cost of bringing all SSSIs/ASSIs into favourable condition by 2010 and the remaining resource outside of designated sites by 2015 is lumped together in this costing as the extent of the total resource and the proportion within SSSIs throughout the UK is unknown at the current time. The total area for the UK is estimated in the HAP to be 30,000 ha. Paul Corbett (EHS(NI)) estimates there are 1043 ha in Northern Ireland and 2000 ha in Wales. There are estimated to be 5000 ha in Scotland and 22,000 ha in England. It has been assumed that 40% of the overall resource is already in a favourable condition and that the remaining 60% (Northern Ireland 625 ha, Wales 1200 ha, England 13,200 ha and Scotland 3000 ha) is not.

It is assumed that this proportion is consistent across the 4 countries. Consequently, to bring 30% of the resource in an unfavourable condition into an optimal condition by 2005, 200 ha in Northern Ireland, 360 ha in Wales, 3960 ha in England and 900 ha Scotland will need to be brought into restoration management. The HAP requires the full 100% to be in a favourable condition by 2015.

#### ***Action 5.2.4***

Management plans for 5 sites are included in the costing with implementation costs included in Action 5.2.2 above. The higher cost of , 3000 is used on the assumption that MoD sites are usually larger than typical sites.

#### ***Action 5.2.5***

It is assumed that one or two further NNRs will be designated covering up to 200 ha in total at a typical cost of , 198/ha/yr.

#### ***Action 5.2.6***

There is a large degree of shared costs for this action between the 5 grassland HAPs. The costing is based on 5 new development projects each lasting approximately 5 years with a budget of , 15,000/each ( , 3000/yr for 5 years) (Source: John Bacon, English Nature). One project has been allocated to each of the 5 grassland HAPs.

### **Research and monitoring**

#### ***Action 5.5.2***

This costing is based on an estimate of the gaps in survey coverage for England equivalent to 10,000ha (Source: English Nature - lowlands team) and an area of 10,000ha for Scotland and 950 ha for Northern Ireland (Source: P. Corbett, EHS). All the resource has been surveyed in Wales (Source: T. Blackstock, CCW).

#### ***Actions 5.5.5 and 5.5.6***

The costing is based on one post-doctoral applied research study for each Action.

#### ***Action 5.5.7***

Four studies have been included in the costing: one Ph.D. and three MSc or equivalent research contracts.

### ***Cost Table***

The cost table shown overleaf presents the estimated costs of meeting the actions of the HAP. Current expenditure is shown for 1997/98.

**Table 2 - Costing of the Lowland Acid Grassland HAP**

	Current expenditure	1st 5 yrs to	Next 10 yrs to
		2003/2004	2013/2014
Action	/, 000/Yr	/, 000/Yr	/, 000/Yr
<b>England</b>			
Action 5.1.2 - Prepare 3 strategic plans		7.5	0.0
Action 5.2.3 - (Target 13,200 ha)		198.0	660.0
Action 5.5.2 - Survey (10,000ha)		50.0	25.0
ESA	109		
<b>Scotland</b>			
Action 5.1.2 - Prepare 1 strategic plan		2.5	0.0
Action 5.2.3 - (Target 3000 ha)		72.0	240.0
Action 5.5.2 - Survey (10,000 ha)		50.0	25.0
ESA	32		
<b>Wales</b>			
Action 5.1.2 - Prepare 1 strategic plan		2.5	0.0
Action 5.2.3 - (Target 1200 ha)		18.0	60.0
ESA	28		
<i>Tir Cymen</i>	10		
<i>HS</i>	11		
<b>Northern Ireland</b>			
Action 5.1.2 - Prepare 1 strategic plan		2.5	0.0
Action 5.2.3 - (Target 625 ha)		16.0	50.0
Action 5.5.2 - Survey		9.5	0.0
<b>General (UK-Wide)</b>			
Action 5.1.1 - Revise agri-environment schemes		4.0	0.0
Action 5.1.2 - Restoration/recreation (target 500 ha)		62.5	62.5
Action 5.2.4 - 5 management plans		3.0	0.0
Action 5.2.5 - 200ha of new NNR		19.8	39.6
Action 5.2.6 - New management techniques (1 project)		3.0	0.0
Action 5.3.1 - Disseminate information on best practice		0.4	0.0
Action 5.3.2 - Disseminate information on creating new stands		1.4	0.0
Action 5.4.3 - Review extent in Europe		1.0	0.0
Action 5.4.5 - Exchange information via international conference		0.0	1.0
Action 5.5.4 - (1 study)		3.0	0.0
Action 5.5.5 - (post-doctoral research)		18.0	0.0

	Current expenditure	1st 5 yrs to	Next 10 yrs to
		2003/2004	2013/2014
Action	/, 000/Yr	/, 000/Yr	/, 000/Yr
Action 5.5.6 - (post-doctoral research)		0.0	9.0
Action 5.5.7 - (2 PhD & 2 MSc)		11.2	5.6
Action 5.5.8 - (1 PhD)		10.2	0.0
Action 5.6.1 - Publicity		1.0	1.0
Action 5.6.2 - 1 marketing study		3.0	0.0
<b>Current expenditure (agri-environment schemes)</b>	<b>190</b>		
<b>Total extra average annual cost</b>		<b>570.0</b>	<b>1178.7</b>
<b>Total expenditure for first five years</b>		<b>2850.0</b>	
<b>Total expenditure for the following ten years</b>			<b>11787.0</b>

### 3.4 Freshwater Habitats

Two Habitat Action Plans are included in this section. These are Eutrophic Standing Waters and Aquifer Fed Naturally Fluctuating Water Bodies.

#### 3.4.1 Eutrophic Standing Waters

##### *Excluded Actions*

Actions not included in the costing are:

Action	Explanation
5.1.4	The installation of Phosphate stripping under the EU Urban Waste Water Treatment Directive is being undertaken within the existing workload and primarily for public health reasons. The cost is therefore not included. The cost of the review of the sensitive areas is costed.
5.1.8	Undertaken within existing programmes of the Forestry Authority and the Department of Agriculture for Northern Ireland.
5.1.9	Undertaken within existing programmes of statutory agencies.
5.2.4	Undertaken within existing programmes of statutory agencies.
5.2.5	Undertaken within existing programmes of statutory agencies.
5.2.7	Undertaken within existing programmes of lead agencies.
5.2.8	The cost of contributing to the SAPs is included in other actions. Specific costs related to the SAP targets are not duplicated here.
5.3.2	Undertaken within existing programmes of the four country agriculture departments.
5.4.1	Undertaken within on-going programmes and implementation covered by other costed actions.

### *Indicative Cost Data*

The typical generic costs for the actions by the lead agencies are presented in Table 1.

**Table 1 - List of generic costs used to estimate the cost of the Habitat Action Plan**

Action	Type of action required by HAP	, K	Indicative costs
<b>1</b>	<b>Policy and legislation</b>		
5.1.1	Criteria for categorisation	<b>15</b>	12 month project officer spread between the lead agencies 1998-2002. Inclusive of on-costs
5.1.2	Site plans for Tier 1 and 2 sites	<b>60/yr</b>	2 full time employees/yr. to 2005 spread between the agencies
5.1.3	Integrated national approach	<b>7.5/yr</b>	Largely covered in England and Wales by eutrophication strategy. An additional 3 months per year of full time employee required
5.1.4	Review of sensitive areas	<b>30/yr</b>	1 full time employee/yr. for 2 years (2002-03) spread between the agencies
5.1.5	Review of agri-environment schemes	<b>20</b>	Based on 0.25 of a band A civil service post. Inclusive of on-costs.
5.1.6	Review of diffuse-source pollution	<b>15/yr</b>	In England and Wales largely covered by eutrophication strategy. An additional 6 months per year of full time employees spread between the agencies for 4 years (2003-2004) required as a result of the HAP
5.1.7	Review effectiveness of measures to revoke abstractions	<b>15/yr</b>	Additional 6 months per year of full time employees time spread between the agencies for 3 years (1998-2000) as a result of the HAP
5.1.10	Review efficacy of fisheries legislation	<b>3/yr</b>	Review already proposed by MAFF, estimated additional time for EA is 0.1 full time employee for 2 years (1998-99) as a result of the HAP
<b>2</b>	<b>Site safeguard and management</b>		
5.2.1	Nationwide programme of nutrient control	<b>100/yr</b>	Estimated cost per year from 2005 by Environment Agency
5.2.2	Site management plans	<b>3/site</b>	Cost for preparing management plan through contractor. Implementation costs are conditional future actions and are assumed to be included in cost for other actions
5.2.3	Prepare and implement catchment management plans for Tier 2 lakes	<b>50/yr</b>	From 2005. This estimate allows for overlap with existing work programmes
5.2.6	Management plans for Lough Neagh and Lough Erne	<b>400</b>	Lough Neagh plan complete. Cost to prepare Lough Erne plan over a 3yr period
<b>3</b>	<b>Advisory</b>		
5.3.1	Provide advice to users and managers	<b>0.2/visit</b>	Extra site visits to provide advice. Manual in preparation by EA

Action	Type of action required by HAP	, K	Indicative costs
5.3.3	Fishery guidelines	10/yr	For 2 years (1999-2000). includes preparation, production and distribution
<b>4</b>	<b>International</b>		
5.4.2	International research	10	To host an international conference
<b>5</b>	<b>Research and monitoring</b>		
5.5.1	Rapid screening system and classification	15/yr	Equivalent of 6 months/yr. over 2 years (1998-99) spread among the lead agencies
5.5.2	Complete water quality classification	15/yr	Scheme in preparation. Application of scheme assume 6 months of a full time employee per lead agency for 5 yrs (2000-2005)
5.5.3	Develop eutrophication risk assessment	25/yr	Assume further R & D for 5 years (2000-2004)
5.5.4	Experimental remedial action and monitoring	50/yr	For 10 years (1998-2008) as contribution spread between lead agencies
5.5.5	Impact of introduced species	5/yr	Research contract of 5 years (2000 to 04)
5.5.6	Effects of climate change	5/yr	Research contract of 5 years (2000 to 04)
<b>6</b>	<b>Communications and publicity</b>		
5.6.1	Publicity and publications	2/yr	Cost per agency during the HAP
5.6.2	Develop interpretative centres	200/site	Based on a typical cost catering for 30-40,000 visitors a year with toilet and parking facilities

### *Assumptions*

#### **Policy and legislation**

##### *Action 5.1.1*

The costing is based on the assumption that two officer posts would be required over the first five year period.

#### **Site safeguard and management**

##### *Action 5.2.1*

The Environment Agency bases the cost on the estimated cost per year from 2005. It is assumed a similar cost of , 100,000/yr will be incurred by the agencies in Scotland and , 50,000 in Northern Ireland.

##### *Action 5.2.2*

The cost is based on the need to prepare plans for 100 sites at a cost of , 3,000/plan. It is assumed that 50 plans will be prepared up to 2004 and 50 between 2004 and 2014.

##### *Action 5.2.6*

This cost is based on a recently completed strategy for the River Erne catchment. A similar approach is to be adopted for Lough Neagh (Source: EHS (NI)).

## Advisory

### Action 5.3.1

The cost is based on an assumed 150 visits to advise landowners, managers and user groups throughout the life time of the HAP. An advisory manual is currently in preparation and not included in the costing (Source: EA). The costing is based on , 2000 per visit.

## Communications and publicity

### Action 5.6.1

The cost is based on , 2000/yr per agency for the life time of the HAP.

### Action 5.6.2

The cost of providing visitor facilities is based on the assumption that it is the cost of just establishing the facility and not its subsequent operation. Assume 20 facilities are built up to 2014, with 5 sites up to 2005 and 15 further sites between 2005 and 2014. Assume each facility costs , 200,000 capital costs. Running costs are excluded. It is assumed that each facility will be established to cater for 30 - 40,000 visitors a year.

### Cost Table

A cost table is shown overleaf showing the estimated costs of meeting the actions of the HAP. Current expenditure is shown for 1997/98.

Only one action (5.2.6) is assigned to one of the four countries within the UK. All the other actions are costed on a UK wide basis. The HAP has been costed in this manner because it is not known how many sites within Tiers 1, 2 and 3 will be each country, until the classification proposed in Action 5.1.1 is completed.

**Table 2 Final Costing of the Eutrophic Standing Waters HAP**

	Current expenditure	1st 5 yrs to	Next 10 yrs to
		2003/2004	2013/2014
Action	/, 000/Yr	/, 000/Yr	/, 000/Yr
<b>Northern Ireland</b>			
Action 5.2.6 - Lough Neagh plan and implementation		80.0	0.0
<i>HIS</i>	<i>No uptake</i>		
<b>General UK-Wide</b>			
Action 5.1.1 - Devise criteria for categorising water bodies		6.0	0.0
Action 5.1.2 - Site plans for Tier 1 and 2 water bodies		60.0	0.0
Action 5.1.3 - Develop integrated approaches to work		7.5	7.5

	Current expenditure	1st 5 yrs to	Next 10 yrs to
		2003/2004	2013/2014
Action	/, 000/Yr	/, 000/Yr	/, 000/Yr
Action 5.1.4 - Review of sensitive areas		12.0	0.0
Action 5.1.5 - Review of existing agri-environment schemes		4.0	0.0
Action 5.1.6 - Review of diffuse-source pollution		12.0	0.0
Action 5.1.7 - Review measures to revoke abstractions		9.0	0.0
Action 5.1.10 - Review fisheries legislation		1.2	0.0
Action 5.2.1 - Nationwide programme of nutrient control		0.0	250.0
Action 5.2.2 - Management plans (100 sites)		30.0	15.0
Action 5.2.3 - Management plans for tier 2 lakes		0.0	50.0
Action 5.3.1 - Estimated 150 visits		3.0	3.0
Action 5.3.3 - Fishery guidelines		4.0	0.0
Action 5.4.2 - International conference		0.0	1.0
Action 5.5.1 - Rapid screening system		6.0	0.0
Action 5.5.2 - 1FTE/agency for 5 years		60.0	0.0
Action 5.5.3 - Eutrophication risk assessment		25.0	0.0
Action 5.5.4 - Experimental remedial action and monitoring		50.0	25.0
Action 5.5.5 - Impact of introduced species		5.0	0.0
Action 5.5.6 - Effects of climate change		5.0	0.0
Action 5.6.1 - Publicity and publications		8.0	8.0
Action 5.6.2 - 20 sites		200.0	300.0
<i>RES</i>	19		
<i>HIS</i>	13		
<i>ESA</i>	345		
<b>Current expenditure /, 000/Yr</b>	<b>377</b>		
<b>Total extra average annual cost</b>		<b>587.7</b>	<b>659.5</b>
<b>Total expenditure for first five years</b>		<b>2938.5</b>	
<b>Total expenditure for the following ten years</b>			<b>6595.0</b>

### 3.4.2 Aquifer Fed Naturally Fluctuating Water Bodies

#### *Excluded Actions*

See attached plan for details of the targets and actions.

Actions not included in the costing are:

Action	Explanation
5.1.1	Not costed as existing policies recognise the needs of SSSI/ASSI and key biodiversity habitats. No additional costs are due to the HAP.
5.1.3	Part of on-going work programme.
5.2.2	Establishing and meeting standards will be met by existing activities and other actions included within this HAP.

- 5.2.3 Part of on-going work programme.  
 5.2.5 Part of on-going work programme.  
 5.2.6 Part of on-going work programme.  
 5.2.7 The cost of contributing to the SAPs is included in other actions. Specific costs related to the SAP targets are not duplicated here.  
 5.3.1 Part of on-going work programme.  
 5.5.1 No cost as work is the study is already planned, but not due to the actions specified in the HAP.  
 5.5.6 Part of on-going duties of lead agencies.

### ***Indicative Cost Data***

The indicative costs of implementing the actions are presented in Table 1.

**Table 1 B Indicative costs**

Action	Type of action required by HAP	, K	Indicative costs
<b>1.</b>	<b>Policy and Legislation</b>		
5.1.2	Ensure fisheries policy recognises needs of these sites	<b>0.3/yr</b>	2 man day/yr. @ , 150/day including on costs
5.1.4	Consider Water Protection Zone	<b>7.5</b>	Cost of initial study
<b>2.</b>	<b>Site safeguard and management</b>		
5.2.1.	Review water resource use and abstraction for Breckland meres	<b>0.3/yr</b>	2 man day/yr. @ , 150/day including on costs
5.2.4	Site management plans Input from Environment Agency	<b>1.5/site 6/yr</b>	Prepare management plan. Advice and information from the EA. and EHS Northern Ireland will largely be covered under actions 5.2.1. 5.5.2 and 5.5.1. Estimated additional input of 6k/yr for 2 years.
	Scrub removal from Breckland meres	<b>2.5/ha</b>	Contractor fee allowing for the revenue generated from timber
<b>4.</b>	<b>International</b>		
5.4.1	Exchange information gained in the UK with colleagues in other countries	<b>10</b>	International conference
<b>5.</b>	<b>Research and Monitoring</b>		
5.5.2	Characterise groundwater quality	<b>1.5</b>	Review and report on water quality data in 1999
5.5.3	Determine likely impacts of any changes in hydrological regime and water quality on biodiversity	<b>5</b>	Research contract

Action	Type of action required by HAP	, K	Indicative costs
5.5.4	Devise and initiate biological and hydrological monitoring by 2000  By 2015 consider long term viability	5/yr  10  75  3  3	Based on additional work required by the EA of 0.1 FTE plus 1k analysis costs. Research contract every 5 years, or when there is water in the Breckland meres 3 yr. research contract on the Welsh turlough In 2013/14 for Breckland Meres and Welsh turlough In 21013/14 for N Irish turloughs
5.5.5	Undertake systematic programme of hydrological and biological survey throughout UK by 2000	10	Research contract
<b>6.</b>	<b>Communications and publicity</b>		
5.6.1	Formulate and implement a publicity strategy for local and national publicity	10	Contract to develop a publicity strategy
5.6.2	Produce a guide to the identification of this habitat and publish advice on protection of its characteristics by 2002	5	Based on the cost of producing 500 folders and/or leaflets

### *Assumptions*

#### **Site safeguard and management**

##### **Action 5.2.4**

The cost of site management plans is based on an assumption that six sites require a specific management plan. The cost of preparing a management plan through a contractor is based on , 1500 per site.

It is assumed that 6 site management plans will be completed by 2004. All site restoration work will be completed in the first 5 years. In England restoration management is required on 18ha. Management costs are based on data supplied by Norfolk Wildlife Trust. The grazing and fencing costs are not included as they are part of the management cost of lowland acid grassland. The cost of scrub and woodland removal is based on a quote provided by a contractor to Norfolk Wildlife Trust. The figure of , 3 - 4,000/ha is off set by , 1,000/ha revenue from the sale of timber and wood chippings giving a cost of , 2500/ha.

It is assumed that no specific site management other than continued grazing is required for the Irish turloughs and therefore a restoration cost is not provided here as grazing costs will be covered by one of the grassland HAPs.

The Environment Agency has estimated that advice will be required from them on the hydrological aspects of the management plans at a cost of , 3,000 over 2 years. This cost is included in the management plan costs. The same cost ( , 3,000) is also included for the Irish turloughs.

## Research and monitoring

### *Action 5.5.2*

The cost of characterising water quality is estimated by the Environment Agency to be , 1500 in 1999. The same figure is used to estimate the characterisation of the Irish turloughs.

### *Action 5.5.4*

Hydrological monitoring for the Breckland Meres and the turlough in Wales is based on an estimate prepared by the Environment Agency. The same figure is used to estimate the cost of hydrological monitoring of the Irish turloughs. There is an on-going hydrological study of the turlough in Wales, which is worth , 2,500 (Source: CCW). As a result of this preliminary study further investigations to define the water balance and groundwater recharge have been recommended and costed at between , 70,000 and , 80,000 over a 3 year period (Source: CCW).

The cost of biological monitoring is based on two research contracts every 5 years to survey key biotic groups. A total cost of , 10,000 is included.

### *Cost Table*

A cost table is shown overleaf showing the estimated costs of meeting the actions of the HAP. There is no current expenditure through current grant schemes or through management agreement payments that can be allocated to this habitat. In the Brecklands the meres occur within SSSIs which receive grant scheme payments, but these relate primarily to other habitats such as lowland acid grassland and have not been included here to avoid duplication of costs between habitats.

**Table 2 Costing of the Aquifer Fed Naturally Fluctuating Water Bodies HAP**

	Current expenditure	1st 5 yrs to	Next 10 yrs to
		2003/2004	2013/2014
Action	/, 000/Yr	/, 000/Yr	/, 000/Yr
<b>England</b>			
Action 5.1.2 - Revise fisheries policy		0.3	0.3
Action 5.1.4 - Consider Water Protection Zones		1.5	0.0
Action 5.2.1- Review Breckland water resources use		0.3	0.3
Action 5.2.4 - 5 site management plans		2.1	0.0
Action 5.2.4 - Site management		5.0	4.0
Action 5.5.2 - Characterise groundwater quality		0.3	0.0
<b>Wales</b>			
Action 5.2.4 - 1 site management plan		0.3	0.0

	Current expenditure	1st 5 yrs to	Next 10 yrs to
		2003/2004	2013/2014
Action	/, 000/Yr	/, 000/Yr	/, 000/Yr
<b>Northern Ireland</b>			
Action 5.1.2 - Revise fisheries policy		0.3	0.3
Action 5.2.4 - 3 site management plans		1.5	0.0
Action 5.5.2 - Characterise groundwater quality		0.3	0.0
<b>General (UK-Wide)</b>			
Action 5.4.1 - Exchange information with other countries		2.0	0.0
Action 5.5.3 - Determine impacts of change on biodiversity		1.0	0.0
Action 5.5.4 - Hydrological & biological monitoring		20.0	2.0
Action 5.5.4 - Long term viability		0.0	0.6
Action 5.5.5 - Hydrological and biological survey		2.0	0.0
Action 5.6.1 - Publicity Strategy		2.0	0.0
Action 5.6.2 - Produce a guide		1.0	0.0
<b>Current expenditure (agri-environment schemes)</b>	<b>0</b>		
<b>Total extra average annual cost</b>		<b>39.9</b>	<b>7.5</b>
<b>Total expenditure for the first five years</b>		<b>199.5</b>	
<b>Total expenditure for the following ten years</b>			<b>75.0</b>

### 3.5 Bogs and Heaths

Three Habitat Action Plans are included in this section. These are Lowland Raised Mires, Blanket Bogs and Upland Heath.

#### 3.5.1 Lowland Raised Bogs

##### *Excluded Actions*

Actions not included in the costing or not separately costed include:

Action	Explanation
5.1.1	Part of the on-going duties of the lead agencies.
5.1.2	The cost of this action is included in the blanket bog HAP. Consequently, it is not duplicated here.
5.1.4	Part of on-going work programme of lead agencies.
5.1.5	Implementing policies in the DANI environmental policy statement and FC guidance note on bogs is part of on-going work of these lead agencies. The cost of developing further guidance on restoration is assumed to be included in

- the cost of action 5.1.7.
- 5.1.6 Part of the on-going duties of the lead agencies.
- 5.1.9 Part of the on-going duties of the lead agencies.
- 5.1.10 Part of the on-going duties of the lead agencies and it is assumed the cost is partly covered in action 5.3.2.
- 5.2.2 Part of the statutory duty of lead agencies.
- 5.2.3 Part of the statutory duty of lead agencies.
- 5.2.4 Part of on-going work programme of lead agencies.
- 5.2.5 Part of the on-going duties of the lead agencies.
- 5.2.6 This action will be achieved through planning consent requirements and the cost will fall primarily to the peat producing sector.
- 5.2.7 Part of the on-going work of the existing Endangered Habitat Action Plans and Forest Design Plans.
- 5.2.8 The HAP will contribute to the relevant SAP through general habitat management. Specific costs are included in the SAPs and are not duplicated here.
- 5.4.2 Part of on-going work programme of lead agencies. It will also be achieved through communication and liaison through action 5.4.1.
- 5.4.3 Part of on-going work programme of lead agencies. It will also be achieved through communication and liaison through action 5.4.1.
- 5.5.4 Part of on-going work programme of lead agencies.

### *Indicative Cost Data*

The typical generic costs for the actions by the lead agencies are presented in Table 1

**Table 1 - List of generic costs used to estimate the cost of the Habitat Action Plan**

Action	Type of action required by HAP	, K	Indicative costs
<b>1.</b>	<b>Policy and Legislation</b>		
5.1.3	Review by 2003 the effectiveness of current agri-environment grant schemes and modify to improve opportunities for appropriate management.	<b>5</b> <b>0.05/ha/yr</b>  <b>0.1/ha/yr</b>  <b>0.5/ha</b>  <b>1/ha</b>	Research contract. Annual management cost for pristine to slightly damaged bogs  Management cost for bogs that have been subject to rehabilitation works and require a more intensive maintenance regime Management cost to start rehabilitation of moderately damaged bogs Management cost to start rehabilitation of extensively damaged bogs
5.1.7	Produce regional guidelines on the requirements for lowland raised bogs through a cross sectoral steering group.	<b>50</b>	Includes running costs for the cross sectoral group and staff time or contract fees to prepare guidelines
5.1.8	Review policies on the consumption of peat by 2000	<b>20</b>	Based on 0.25 of a Band A civil service post

<b>Action</b>	<b>Type of action required by HAP</b>	<b>, K</b>	<b>Indicative costs</b>
<b>2.</b>	<b>Site safeguard and management</b>		
5.2.1	By 2000 establish the areas of lowland raised bog which will be targeted for restoration work.	<b>13</b>	6 month officer post to prepare a restoration strategy. Inclusive of on-costs
<b>3.</b>	<b>Advisory</b>		
5.3.1	Develop and promote training for lead agency staff, landowners and voluntary bodies	<b>3/workshop</b>	Training workshops
5.3.2	Provide advice and encouragement for the development and marketing of peat alternatives.	<b>5</b>	Production of information leaflet for the general public
<b>4.</b>	<b>International</b>		
5.4.1	Develop links with European and international organisations to promote exchange of information and experience in research, management techniques and conservation strategies.	<b>10</b> <b>5</b>	International conference Visits to overseas operations
<b>5.</b>	<b>Research and Monitoring</b>		
5.5.1	Develop methods for defining and assessing the condition of lowland raised bogs.	<b>25</b>	Research contract
5.5.2	Undertake NVC and related survey to fill gaps in knowledge.	<b>0.180/day</b>	Typical cost of field surveyor
5.5.3	Commission further research to improve understanding of the ecology of lowland raised mires including vegetation dynamics, long term vegetation change, hydrology, palaeoecology and the requirements of invertebrate communities and species	<b>17/yr</b> <b>5</b>	3 yr. PhD studentship MSc studentship and/or small research contracts
5.5.5	Review the need for research in atmospheric deposition on this habitat Commission research on the effects of atmospheric deposition	<b>5</b> <b>17/yr</b>	Research contract 3 yr. PhD studentship
5.5.6	Undertake research and development of sustainable alternatives to peat usage	<b>50</b>	2 yr. research and development contract
5.5.7	Develop and implement surveillance and monitoring programmes to assess progress of the HAP	<b>5</b>	Lead agency staff time at , 250/day
<b>6.</b>	<b>Communications and publicity</b>		
5.6.1	Produce simple attractive information packages for site owners	<b>10</b>	Information folder for land owners
5.6.2	Develop a suite of demonstration sites	<b>3</b> <b>1/yr/site</b>	1 day Workshop Monitoring costs
5.6.3	Visitor centres	<b>200/site</b>	Based on a typical cost catering for 30-40,000 visitors a year with toilet and parking facilities
5.6.4	Information booklet for schools and the general public	<b>5</b>	Colour booklet production

## *Assumptions*

### **Policy and legislation**

#### ***Action 5.1.3***

This is the principal cost element of the HAP. It is based on indicative per hectare management costs for maintenance of intact and restored bogs, restoration of moderately damaged bogs and restoration of extensively damaged bogs. The indicative per hectare cost of managing raised bogs has been based on data received from site managers, completed costed rehabilitation site management plans and from an analysis of management costs made by Dr Rob Stoneman of the Scottish Raised Bog Project. The cost of meeting the targets 4.1.2, 4.1.3 and 4.1.4 are included under this action on the assumption that much of the restoration may be achieved through new agri-environment schemes.

**Target 4.1.2** requires the 6000 ha of primary near natural lowland raised bog be maintained. The costing assumes that 75% of this resource is already in favourable condition and management primarily is for designated sites. The additional cost of maintaining or enhancing the remaining 25% (1500 ha) is costed at , 50/ha/yr.

**Target 4.1.3** requires appropriate hydrological conditions to be established by 2005 on a further 7000 ha of damaged primary bog. It is assumed that 30% of this resource is already under appropriate management. The remaining 70% (4900 ha) is costed at , 500/ha for initial management works followed by a cost of , 100/ha/yr for subsequent maintenance. The costing is based on restoration being undertaken in the first 5 years and maintenance thereafter.

**Target 4.1.4** requires long term restoration projects to be initiated on 17,500 ha of the damaged secondary peatland resource. It is assumed that little or none of this resource is already in appropriate management. The additional cost of managing this part of the resource is based on costs provided by the Scottish Wildlife Trust and English Natures lowland peatland programme of , 1000/ha for initial management works followed by a cost of , 100/ha/yr for subsequent maintenance. The costing is based on bringing 25% (4375ha) into management in the first 5 years and the remaining 75% (13125ha) into management by 2014.

### **Site Safeguard and Management**

#### ***Action 5.2.1***

The total cost presented in Table 2 is based on 4 officer posts or research contracts, one for each of the countries of the UK.

### **Advisory**

#### ***Action 5.3.1***

The costing is based on 18 training courses over the life time of the HAP, with 6 in Scotland and 4 each in England, Wales and Northern Ireland.

### ***Action 5.3.2***

The cost is based on the production of one leaflet on peat alternatives. It is assumed each country in the UK will produce its own leaflet.

## **International**

### ***Action 5.4.1***

The total cost presented in Table 2 is based on the assumption 5 visits will be made over the period of the HAP at an average cost of , 1,000/trip with up to two people each visit.

## **Research and Monitoring**

### ***Action 5.5.2***

The total cost presented in Table 2 is based on the assumption that between 5 and 10 % of the target resource (30500 ha) requires further survey. Assuming approximately 2000 ha requires further survey the costing is based on completing 20 ha/day, which gives 100 days of survey at , 180/day.

### ***Action 5.5.3***

The total cost presented in Table 2 is based on 2 PhD studentships and 4 small scale research contracts.

## **Communications and publicity**

### ***Action 5.6.1***

It has been assumed for the production of an information package that it would take the form of a folder with colour A4 leaflet and management inserts produce in-house by one of the statutory agencies. According to English Nature's publication department this would cost approximately , 10,000 for a print run of 5000 folders. A low print run has been assumed as the folder is aimed at site owners and managers.

### ***Action 5.6.2***

This cost is based on the assumption that 10 demonstration sites are established throughout the UK and that a workshop is held at one of the sites every two years. Two workshops will be held at demonstration sites in the first 5 years of the HAP and 5 further workshops in the following 10 years. Monitoring the results of management is costed at , 1,000/site/year.

### ***Action 5.6.3***

The cost of providing visitor facilities is based on the assumption that it is the cost of just establishing the facility and not its subsequent operation. Assume 5 facilities are built up to 2010, with 1 in England, 1 in Northern Ireland, 2 in Scotland and 1 in Wales. Assume each facility costs , 200,000 capital costs. Running costs are excluded. It is assumed that five facilities will be established to cater for 30,000 visitors a year. The indicative cost includes

provision of a wooden building, interpretative panels and displays and boardwalks to gain access to the site.

#### **Action 5.6.4**

The total cost is based on the assumption that a booklet will be produced for each country within the UK.

#### **Cost Table**

The cost table below shows the estimated costs of meeting the actions of the HAP. Current expenditure is shown for 1997/98.

**Table 2 Costing of the Lowland Raised Bogs HAP**

<b>Action</b>	<b>Current expenditure</b>	<b>1st 5 yrs to</b>	<b>Next 10 yrs to</b>
		<b>2003/2004</b>	<b>2013/2014</b>
		<b>/, 000/Yr</b>	<b>/, 000/Yr</b>
<b>General UK-Wide</b>			
Action 5.1.3 - Research contract		1.0	0.0
Action 5.1.3 - Maintenance (1500 ha)		75.0	75.0
Action 5.1.3 - Restoration (4900 ha)		490.0	490.0
Action 5.1.3 - Restoration (17500 ha)		1312.5	3062.5
Action 5.1.7 - Produce regional guidelines		0.0	5.0
Action 5.1.8 - Review policies on peat use		4.0	0.0
Action 5.2.1 - Identify restoration priorities		16.0	0.0
Action 5.3.1 - 10 training workshops		5.4	2.7
Action 5.3.2 - Encourage use of peat alternatives		4.0	0.0
Action 5.4.1 - International conference		0.0	1.0
Action 5.4.1 - Visits to overseas operations		0.4	0.3
Action 5.5.1 - Research contract		5.0	0.0
Action 5.5.2 - Survey (100 days)		3.6	0.0
Action 5.5.3 - 2 PhD studentships		10.2	5.1
Action 5.5.3 - 4 small scale research contracts		2.0	1.0
Action 5.5.5 - Review of research		1.0	0.0
Action 5.5.5 - 1 PhD studentship		0.0	5.1
Action 5.5.6 - Research sustainable alternatives		0.0	5.0
Action 5.5.7 - Develop surveillance programme		1.0	0.0
Action 5.6.1 - Information folder for site owners		0.0	1.0
Action 5.6.2 - 10 demonstration sites (workshops)		1.2	1.5
Action 5.6.2 - 10 demonstration sites (monitoring)		10.0	10.0
Action 5.6.3 - 5 visitor centres		80.0	60.0
Action 5.6.4 - Colour booklet for the public		0.0	2.0

	Current expenditure	1st 5 yrs to	Next 10 yrs to
		2003/2004	2013/2014
<b>Action</b>		/, 000/Yr	/, 000/Yr
<b>Current expenditure</b>	<b>290</b>		
<b>Total extra average annual cost</b>		<b>2,022.3</b>	<b>3,727.2</b>
<b>Total expenditure for the first five years</b>		<b>10,111.0</b>	
<b>Total expenditure for the following ten years</b>			<b>37,272.0</b>

### 3.5.2 Blanket Bog

#### *Excluded Actions*

Actions not included in the costing or not costed separately include:

<b>Action</b>	<b>Explanation</b>
5.1.1	A review of agricultural support mechanisms is costed in the upland heath HAP and consequently is not duplicated in this costing.
5.1.3	Part of on-going work programme of lead agencies.
5.1.4	The effectiveness of muirburn legislation is being reviewed under the upland heath HAP and consequently is not duplicated here.
5.1.5	The cost of reviewing common land legislation is part of an on-going study that will suggest mechanisms by which common land can be brought into management (Source: E. Johnstone, MAFF).
5.1.7	Part of on-going duties of lead agencies.
5.1.10	Part of on-going duties of lead agencies.
5.1.11	This action is included in the cost of the upland heath HAP and consequently it is not duplicated here.
5.2.1	Statutory duty of lead agencies.
5.2.2	Statutory duty of lead agencies.
5.2.3	The HAP states that the country agencies are currently preparing management plans, consequently this action is part of the on-going work of the lead agencies. The cost of implementing the plans is assumed to be generally covered in the cost of meeting the HAP targets and other costed actions.
5.2.4	Part of the on-going work of the existing Endangered Habitat Action Plans and Forest Design Plans.
5.3.1	The cost of preparing de-fragmentation strategies for blanket bog is included in the costed action 5.1.4 in the upland heath HAP.
5.4.2	Encouraging our countries to determine the extent and nature of their resource can be done through meetings with European partners which is included in action 5.4.1.
5.5.2	Part of the on-going work of the lead agencies. Publication of the results of action 5.5.1 and other actions will also meet this action.

#### *Indicative Cost Data*

The typical generic costs for the actions by the lead agencies are presented in Table 1.

**Table 1 B List of generic costs used to estimate the cost of the Habitat Action Plan**

Action	Type of action required by HAP	, K	Indicative costs
<b>1.</b>	<b>Policy and legislation</b>		
5.1.2	Monitor and review effectiveness of FA policies. Review of DANI policies. Prepare regional guidance to support policy delivery	<b>10</b> <b>5</b> <b>20</b>	Research contract Research contract Based on 0.25 of a Band A civil service post
5.1.6	Review by 2000 planning policy guidance in Scotland and Northern Ireland	<b>20</b>	Based on 0.25 of a Band A civil service post
5.1.8	Review current planning law whereby local authorities are liable for compensation claims.	<b>20</b>	Research contract with environmental lawyers
5.1.9	Review planning distinction between domestic and commercial peat cutting	<b>20</b>	Based on 0.25 of a Band A civil service post
<b>3.</b>	<b>Advisory</b>		
5.3.1	Implementation of prioritisation of sites for restoration	<b>0.035/ha</b> <b>0.065/ha</b>	Average typical payment rate for appropriate management Typical restoration rate in agri-environment schemes
5.3.2	Training courses in management objectives and techniques	<b>3</b>	One day training course or workshop
5.3.3	Develop and promote targeted guidance and advisory material	<b>5</b> <b>10</b>	Preparation and production of a leaflet Preparation of a habitat handbook
5.3.4	Promote advice on alternatives to peat	<b>5</b>	Preparation and production of a leaflet
<b>4.</b>	<b>International</b>		
5.4.1	Promote exchange of information within Europe	<b>10</b> <b>5</b>	Cost of an international conference Visits to operations overseas
<b>5.</b>	<b>Research and monitoring</b>		
5.5.1	Establish agreed definition of the resource and determine its condition and extent	<b>20</b>	Desktop research contract to collate existing information. Work on condition assessment is on-going
5.5.3	Encourage research to determine and monitor the nature and extent of diversity within the habitat throughout its range	<b>50</b>	2 yr. research contract including sample surveys
5.5.4	Undertake cross disciplinary research into the role of this habitat as a resource for sustainable land use and freshwater use	<b>50</b>	2 yr. research and development contract
5.5.5	Commission research on the impact of peat extraction for fuel and horticultural purposes	<b>17/yr</b>	3 yr. PhD studentship
5.5.6	Commission research into degradation of blanket bog and its restoration	<b>17/yr</b>	3 yr. PhD studentship
5.5.7	Commission research into the potential effects of pollution and climate change	<b>17/yr</b>	3 yr. PhD studentship

Action	Type of action required by HAP	, K	Indicative costs
<b>6.</b>	<b>Communications and publicity</b>		
5.6.1	Promote through the media and published material, public interest in the habitat	<b>1/yr</b> <b>5</b>	Press work and preparation for the scientific and specialist media Leaflet production
5.6.2	Establish a network of interpretative facilities by 2010	<b>3</b> <b>2</b>	Interpretative boards and Site based information leaflets
5.6.3	Establish a suite of sites across the UK reflecting the range of variation of habitat to demonstrate best management practice	<b>3</b> <b>1/site</b>	Cost of workshops at demonstration sites Annual cost of monitoring management

### *Assumptions*

### **Policy and Legislation**

#### *Action 5.1.2*

Total cost in Table 2 is based on the production of guidance for four regions and a contract for a review of the policies of DANI and the FA.

#### *Action 5.1.6*

The total in Table 2 is based on 2 civil service staff. One for Scotland and one for Northern Ireland.

### **Advisory**

#### *Action 5.3.1*

None of the actions specify the need to restore degraded land as set out in the targets for the HAP. The cost of meeting the targets is included under this action as it relates to prioritising restoration of blanket bog.

**Target 4.2.2** requires the improvement of 450,000 ha (30% of the total resource) that requires no or relatively little restoration to be approaching favourable condition by 2005. The costing assumes that only 15% of this area will require additional payments.

**Target 4.2.3** requires the condition of 375,000 ha of degraded blanket mire that can be less readily restored to be approaching favourable condition by 2010.

**Target 4.2.4** requires the condition of a further 300,000 ha of degraded blanket mire that can be less readily restored to be approaching favourable condition by 2015.

The restoration of 15% of the resource that requires no or relatively little restoration to attain favourable condition has been costed based on an average payment rate of , 35/ha/yr for reduced grazing pressure. Typical payment rates in each country are , 25/ewe in Scotland (Moorland Extensification Scheme), , 30/ha in Wales (ESA, Tir Cymen and Moorland

Scheme), , 40/ha in England (average of ESA payment rates) and , 50/ha in Northern Ireland. A proportion of the payments in Scotland will be for good muirburn practice at a typical payment rate of , 5.50/ha/yr. Consequently, 10% is costed at , 35/ha/yr and 5% at , 5.50/ha/yr. The phasing of the work is driven by the dates set in the targets.

The restoration of 375,000 ha by 2010 and a further 300,000 ha by 2015 of less readily restored blanket mire has been costed on a typical agri-environment scheme figure of , 65/ha/yr. The phasing of the work is driven by the dates set in the targets.

The costs of management have not been divided into the separate countries because the data presented in the HAP is not sufficiently detailed to allow this to be undertaken.

### ***Action 5.3.2***

Costing is based on 10 training courses over the life time of the HAP, with 6 in Scotland and 4 each in England, Wales and Northern Ireland.

### ***Action 5.3.3***

Costing is based on the production of 2 targeted leaflets/country in the UK at a cost of , 5000/leaflet for a 10,000 print run.

### ***Action 5.3.4***

The total cost is based on the production of 1 information and advisory leaflet for each country in the UK at a cost of , 5000/leaflet.

## **International**

### ***Action 5.4.1***

The total cost presented in Table 2 is based on the assumption 5 visits will be made over the period of the HAP at an average cost of , 1,000/trip with up to two people each visit.

## **Research and Monitoring**

### ***Action 5.5.5***

The total cost in Table 2 is based on 1 PhD studentship.

### ***Action 5.5.6***

The total cost in Table 2 is based on 2 PhD studentships.

### ***Action 5.5.7***

The total cost in Table 2 is based on 1 PhD studentship.

## Communications and Publicity

### Action 5.6.1

The cost of , 5000 for preparing and disseminating information in a publicity leaflet is based on , 1000 for research and , 4000 for printing. The total cost in Table 2 assumes 4 versions will be produced, one for each of the countries in the UK.

### Action 5.6.2

The total cost is based on the assumption that England and Scotland will each have 2 key sites for which interpretative materials will be produced and Northern Ireland and Wales will have one site each. A cost of , 5,000 per site has been used to calculate the total cost.

### Action 5.6.3

This cost is based on the assumption that 5 demonstration sites are established throughout the UK and that a workshop is held at one of the sites every two years. Two workshops will be held at demonstration sites in the first 5 years of the HAP and 5 further workshops in the following 10 years. Monitoring the results of management is costed at , 1,000/site/year.

### Cost Table

A cost table is shown overleaf showing the estimated costs of meeting the actions of the HAP. Current expenditure is shown for 1997/98.

**Table 2 - Costing of the Blanket Bog HAP**

	Current expenditure	First 5 yrs to	Next 10 yrs to
		2003/2004	2013/2014
Action	/, 000/Yr	/, 000/Yr	/, 000/Yr
<b>England</b>			
Action 5.3.2 - Training courses (4 courses)		0.6	0.9
Action 5.3.3 - Produce leaflets		1.0	0.5
Action 5.3.4 - Advice on peat alternatives		1.0	0.0
Action 5.6.1 - Promote public interest		2.0	1.0
Action 5.6.2 - Establish interpretation (2 key sites)		2.0	0.0
ESA	940		
WES	9		
RES	9		
<b>Scotland</b>			
Action 5.1.6 - Review planning policy guidance		4.0	0.0
Action 5.3.2 - Training courses (6 courses)		1.2	1.2
Action 5.3.3 - Produce leaflets		1.0	0.5

	Current expenditure	First 5 yrs to	Next 10 yrs to
		2003/2004	2013/2014
<b>Action</b>	/, 000/Yr	/, 000/Yr	/, 000/Yr
Action 5.3.4 - Advice on peat alternatives		1.0	0.0
Action 5.6.1 - Promote public interest		2.0	1.0
Action 5.6.2 - Establish interpretation (2 key sites)		2.0	0.0
<i>PMS</i>	126		
<i>ESA</i>	327		
<i>Moorland Extensification Scheme</i>	47		
<i>Countryside Premium Scheme</i>	No uptake		
<b>Wales</b>			
Action 5.3.2 - Training courses		0.6	0.9
Action 5.3.3 - Produce leaflets		1.0	0.5
Action 5.3.4 - Advice on peat alternatives		1.0	0.0
Action 5.6.1 - Promote public interest		2.0	1.0
Action 5.6.2 - Establish interpretation (1 key sites)		1.0	0.0
<i>ESA</i>	217		
<i>Tir Cymen</i>	464		
<i>Moorland Scheme</i>	10		
<b>Northern Ireland</b>			
Action 5.1.6 - Review planning policy guidance		4.0	0.0
Action 5.3.2 - Training courses		0.6	0.9
Action 5.3.3 - Produce leaflets		1.0	0.5
Action 5.3.4 - Advice on peat alternatives		1.0	0.0
Action 5.6.1 - Promote public interest		2.0	1.0
Action 5.6.2 - Establish interpretation (1 key site)		1.0	0.0
<i>ESA</i>	872		
<i>Moorland Scheme</i>	No uptake		
<b>General (UK-Wide)</b>			
Action 5.1.2 - Monitor FA policies		2.0	0.0
Action 5.1.2 - Monitor DANI policies		1.0	0.0
Action 5.1.2 - Prepare regional policy guidance		0.0	8.0
Action 5.1.8 - Review planning law		4.0	0.0
Action 5.1.9 - Review planning for peat cutting		4.0	0.0
Action 5.3.1 - Restore less degraded bog (45000ha)		1575.0	1575.0
Action 5.3.1 - Restore less degraded bog (22500ha)		123.8	123.8
Action 5.3.1 - Restore degraded bog (375000ha)		12187.5	24375.0

	Current expenditure	First 5 yrs to	Next 10 yrs to
		2003/2004	2013/2014
Action	/, 000/Yr	/, 000/Yr	/, 000/Yr
Action 5.3.1 - Restore degraded bog (300000ha)		0.0	19500.0
Action 5.3.3 - Prepare habitat handbook		0.0	1.0
Action 5.4.1 - International conference		2.0	0.0
Action 5.4.1 - Visits to operations overseas (10 trips)		1.0	0.5
Action 5.5.1 - Establish definition and extent		4.0	0.0
Action 5.5.3 - Determine and monitor diversity		0.0	5.0
Action 5.5.4 - Research role for sustainable use		10.0	0.0
Action 5.5.5 - 1 PhD studentship		10.2	0.0
Action 5.5.6 - 2 PhD studentships		10.2	5.1
Action 5.5.7 - 1 PhD studentship		0.0	5.1
Action 5.6.3 - 5 demonstration sites - workshops		1.2	1.5
Action 5.6.3 - 5 demonstration sites - monitoring		5.0	5.0
<b>Current expenditure</b>	<b>3021</b>		
<b>Total extra average annual cost</b>		<b>13973.9</b>	<b>45614.9</b>
<b>Total expenditure for the first five years</b>		<b>69869.3</b>	
<b>Total expenditure for the following ten years</b>			<b>456148.5</b>

### 3.5.3 Upland Heath

#### *Excluded Actions*

Actions not included in the costing or not costed separately include:

Action	Explanation
5.1.1	The action to implement the environmental cross compliance conditions is not included in the costing as it would be undertaken as part of the on-going work of the lead agencies.
5.1.2	This action has not been costed as the Countryside Commission is currently examining potential changes to common land legislation (Source: MAFF).
5.1.5	Part of the on-going work of the lead agencies.
5.1.6	Part of the on-going work of the Forestry Commission.
5.2.1	Part of the on-going work for the lead agencies
5.2.2	The HAP states that the country agencies are currently preparing management plans, consequently this action is part of the on-going work of the lead agencies. The cost of implementing the plans is assumed to be generally covered in the cost of meeting the HAP targets and other costed actions.
5.2.4	The cost of increasing positive management agreements is included in the cost for action 5.1.4 because positive management agreement data from schemes

- such Countryside Stewardship and Tir Cymen are included in this action and are of an equivalent amount to agri-environment schemes.
- 5.2.5 Part of the on-going work of the lead agencies driven by the Birds and Habitats Directives.
- 5.2.6 The HAP will contribute to the relevant SAP through general habitat management. Specific costs are included in the SAPs and are not duplicated here.
- 5.3.5 Part of on-going duties of lead agencies.
- 5.4.1 No cost is given in this HAP as it is assumed that the costs provided in the Blanket Bog HAP for these types of actions will be shared between the two HAPs.
- 5.4.2 Part of the on-going work for the lead agencies and achieved through publicity actions included in this costing.
- 5.5.2 According to the HAP this action is part of an existing programme of work.
- 5.6.2 Part of the on-going work of the lead agencies.

### ***Indicative Cost Data***

The typical generic costs for the actions by the lead agencies are presented in Table 1.

**Table 1 B List of generic costs used to estimate the cost of the Habitat Action Plan**

<b>Action</b>	<b>Type of action required by HAP</b>	<b>, K</b>	<b>Indicative costs</b>
<b>1</b>	<b>Policy and legislation</b>		
5.1.1	Review and modify livestock support mechanisms in the LFA	<b>20</b>	Based on 0.25 of a Band A civil service post. Inclusive of on costs
5.1.3	Review muirburn legislation	<b>20</b>	Based on 0.5 of HSO grade officer in SNH and a smaller amount of senior staff time
5.1.4	Review and modify agri-environment schemes. Extend and/or develop new schemes	<b>20</b> <b>0.025-0.050/ha</b> <b>0.065/ha</b>	Based on 0.25 of a Band A civil service post. Typical payment rate for appropriate management. Typical restoration/creation rate in agri-environment schemes.
5.1.7	Develop strategies and target areas to reduce deer numbers in Scotland	<b>13/yr</b>	0.5 of a project officer to prepare deer strategy
<b>2</b>	<b>Site safeguard and management</b>		
5.2.3	Review the effectiveness of the SSSI/ASSI network in delivering favourable management for the habitat	<b>15</b>	Research contract
5.2.7	Develop proposals by 2002 for increasing biodiversity	<b>15</b>	Research contract
<b>3</b>	<b>Advisory</b>		
5.3.1	Encourage the establishment and use of demonstration sites	<b>3</b> <b>1/yr</b>	Workshops on site. Monitoring and dissemination of results.

<b>Action</b>	<b>Type of action required by HAP</b>	<b>, K</b>	<b>Indicative costs</b>
5.3.2	Provide advice and information on land management through leaflets and handbooks	<b>5</b> <b>10</b>	Leaflet Preparation of habitat handbook.
5.3.3	Consider adequacy of existing planning guidance	<b>15</b>	Research contract
5.3.4	Provide training for staff delivering advice to farmers and land managers	<b>3</b>	Training workshop
<b>5</b>	<b>Research and monitoring</b>		
5.5.1	Develop national inventories	<b>10</b>	Desktop research contract.
5.5.3	Undertake sample survey of vegetation condition	<b>0.18/day</b>	Contractor cost covering 4km <sup>2</sup> per day.
5.5.4	Commission and undertake applied research on conserving and restoring upland heath	<b>90</b>	3 year post-doctoral research
5.5.5	Compile inventory of priority sites for restoration	<b>10</b>	Research contract based on , 180/day
5.5.6	Commission and undertake research on impacts of reducing or removing grazing and burning	<b>17/yr</b>	PhD studentship
5.5.7	Promote research to investigate the effects of acid deposition and nitrogen enrichment on upland heath species	<b>17/yr</b>	PhD studentship
5.5.8	Promote sociological research to explore ways of integrating agriculture, sport and recreation with nature conservation	<b>10/study</b>	Based on FRCA/MAFF past contracts
5.5.9	Develop and implement surveillance and monitoring programme	<b>5</b>	Lead agency staff time @ , 250/day
<b>6</b>	<b>Communications and publicity</b>		
5.6.1	Promote conservation of upland heath through the scientific press	<b>1/yr</b>	Press work and preparation for the scientific and specialist media

### *Assumptions*

### **Policy and legislation**

#### *Action 5.1.1*

The total cost presented in Table 2 is based on the need for 2 staff posts.

#### *Action 5.1.3*

This action is costed based on 6 months of a band D civil service post in Scottish Natural Heritage plus a lesser input from senior staff (Source: Scottish Natural Heritage). It is assumed that the cost would be spread out over a 2 year period.

#### *Action 5.1.4*

The cost of the review of agri-environment schemes is based on the need for 4 staff posts to cover the countries of the UK.

**Target 4.2.2** states that progress should be made by 2010 towards achieving favourable conservation status for 75% of the resource.

It is assumed this target will require financial support through existing or new agri-environment schemes to bring the resource into favourable condition. Typical costs for enhancing and maintaining through reduced grazing pressure within existing schemes are , 25/ewe in Scotland (Moorland Extensification Scheme), , 30/ha in Wales (ESA, Tir Cymen and Moorland Scheme), , 40/ha in England (average of ESA payment rates) and , 50/ha in Northern Ireland. In Scotland the payment for following good muirburn practice is , 5.50/ha.

Based on the assumption that 25% of the existing upland heath in England, Wales and Northern Ireland is already in a favourable condition (pers comm - Allan Drewitt, English Nature) a further 50% of the total resource in these countries will need to be brought into favourable condition by 2010. For Scotland it is assumed that a greater area (55%) of the resource is already in favourable condition. It is also assumed for Scotland that the proportion of land to be brought into a payment scheme under the muirburn payment rate reflects the current allocations between payments for the reduction of grazing and those for good muirburn practice. Approximately 86% of the area to be brought into agreements will therefore be subject to the muirburn payment rate.

Therefore, to meet target 4.2.2, it is assumed that in England, 135,000 ha (50% of 270,000 ha) of upland heath will need to be brought into an agri-environment scheme during the lifetime of the HAP. In Wales the figure is 40750 ha and in Northern Ireland the area is 34750 ha (50% of 69500 ha ). In Scotland it is assumed a further 417500 ha (25% of 1,670,000 ha) will need to be brought into an agri-environment scheme payment and that 86% of this (359050 ha) will be subject to muirburn payment rates and 58450 ha to payments aimed at reducing grazing.

The target requires all areas to be management by 2010 consequently the phasing has assumed that half of the totals in each country need to be met by 2005 and the remainder by 2010.

**Target 4.2.4** establishes areas for restoration in the four countries. These are 20,000 ha in England, 20,000ha in Wales, 20,000ha in Northern Ireland and 40,000ha in Scotland. The cost of , 65/ha is used to meet the targets for restoration of heathland.

The target requires all areas to be management by 2010 consequently the phasing has assumed that half of the totals in each country need to be met by 2005 and the remainder by 2010.

**Target 4.2.5** requires 5,000 ha of heathland to be re-created. The cost of meeting this target is based on a typical cost of , 65 ha/yr. for restoration management under an agri-environment scheme grant. It is assumed that the majority of this target will be met by the conversion of forestry to upland heath. The area of re-creation in each country is assumed to be equivalent to the percentage of the total resource each country supports (i.e. 80% in Scotland, 13% in England, 4% in Wales and 3% in Northern Ireland). The opportunity cost of foregone revenue from the loss of forestry is not included. This is typically , 100/ha/yr.

The target requires all areas to be management by 2010 consequently the phasing has assumed that half of the totals in each country need to be met by 2005 and the remainder by 2010.

**Target 4.2.6** in the HAP is not specifically included in any of the actions. It is assumed that to meet targets 4.2. and 4.2.5 that target 4.2.6 will be required and it is therefore costed under this action.

**Target 4.2.6** is costed based on the appointment of 6 month project officer posts to prepare de-fragmentation strategies for key areas of upland heathland that will lead to the restoration and re-creation targets set for the HAP. Three project officers are proposed for each country. The officer post is costed pro-rata at , 25,000/yr. It is assumed that the cost of meeting the target for the natural expansion of upland woodland is included in other relevant HAPs.

## **Advisory**

### ***Action 5.3.1***

The cost is based on the assumption that 5 demonstration sites are established throughout the UK and that a workshop is held at one of the sites every two years. Two workshops will be held in the first 5 years and a further 5 workshops in the following 10 years. Monitoring the results of management at each demonstration site is costed at an average cost of , 1000/site/year.

### ***Action 5.3.2***

The total cost given in Table 2 is based on the assumption that a handbook will be produced jointly by the lead agencies from the 4 countries of the UK, but that leaflets will be prepared and produced individually for each country. The cost of leaflet production is based on a print run of 10,000 copies of an A4 leaflet per country in the UK. It is assumed that two targeted leaflet will be printed during the lifetime of the HAP.

### ***Action 5.3.4***

The total cost is based on four workshops each of Northern Ireland, England and Wales during the lifetime of the HAP and 6 in Scotland.

## **Research and monitoring**

### ***Action 5.5.3***

The cost of undertaking a sample survey of vegetation for 10% of the upland heathland resource is based on , 45 per km<sup>2</sup>. Two surveys have been included within the costing to allow for future monitoring. 10% of the total upland heathland resource is 209,100 ha or 2091 km<sup>2</sup>. At , 45/ km<sup>2</sup> the cost is , 94,095. Assuming the level of survey in each country reflects the percentage of the overall upland heathland in each, then 80% (1673 km<sup>2</sup>) of the survey will take place in Scotland, 13% (271 km<sup>2</sup>) in England, 4% (83 km<sup>2</sup>) in Wales and 3% (64 km<sup>2</sup>) in Northern Ireland.

#### **Action 5.5.4**

A number of upland heathland restoration projects have been undertaken. Consequently, the cost of only one post-doctoral study is included in the costing

#### **Action 5.5.6**

The costing is based on two PhD research studentships to study impacts of reducing grazing and burning.

#### **Action 5.5.7**

The costing is based on one PhD studentship.

### **Communications and publicity**

#### **Action 5.6.1**

The total cost in Table 2 is based on £1,000/yr for each country in the UK.

#### **Cost Table**

Table 2 shows the estimated costs of meeting the actions of the HAP. Current expenditure is shown for 1997/98.

**Table 2 - Costing of the Upland Heath HAP**

	Current expenditure	First 5 yrs to	Next 10 yrs to
		2003/2004	2013/2014
Action	£, 000/Yr	£, 000/Yr	£, 000/Yr
<b>England</b>			
Action 5.1.4 - (Target 135,000 ha)		2600.0	5400.0
Action 5.1.4 - Restoration (Target 20,000 ha)		650.0	1300.0
Action 5.1.4 - Expansion (Target 650 ha)		21.1	42.3
Action 5.1.4 - Prepare 3 strategic plans		7.5	0.0
Action 5.3.2 - Information leaflet		1.0	0.5
Action 5.3.4 - Training for staff - 6 workshops		1.2	1.2
Action 5.5.3 - 2 Surveys (area 271 km)		2.4	1.2
<i>ESA</i>	1747		
<i>Countryside Stewardship</i>	374		
<i>WES</i>	13		
<i>RES</i>	16		
<b>Scotland</b>			
Action 5.1.4 - muirburn (Target 359050 ha)		987.4	1974.8
Action 5.1.4 - reduced grazing (Target 58450 ha)		730.6	1461.3

	Current expenditure	First 5 yrs to	Next 10 yrs to
		2003/2004	2013/2014
<b>Action</b>	/, 000/Yr	/, 000/Yr	/, 000/Yr
Action 5.1.4 - Restoration (Target 40,000 ha)		1300.0	2600.0
Action 5.1.4 - Expansion (Target 4000 ha)		130.0	260.0
Action 5.1.4 - Prepare 3 strategic plans		7.5	0.0
Action 5.3.2 - Information leaflet		1.0	0.5
Action 5.3.4 - Training for staff - 6 workshops		1.2	1.2
Action 5.5.3 - 2 Surveys (area 1673 km)		15.1	7.5
<i>ESA</i>	491		
<i>Moorland Extensification Scheme</i>	70		
<i>Countryside Premium Scheme</i>	No uptake		
<b>Wales</b>			
Action 5.1.4 -(Target 40750 ha)		611.3	1222.5
Action 5.1.4 - Restoration (Target 20,000 ha)		650.0	1300.0
Action 5.1.4 - Expansion (200 ha)		6.5	13.0
Action 5.1.4 - Prepare 3 strategic plans		7.5	0.0
Action 5.3.2 - Information leaflet		1.0	0.5
Action 5.3.4 - Training for staff - 4 workshops		0.6	0.9
Action 5.5.3 - 2 Surveys (83 km)		0.7	0.4
<i>ESA</i>	112		
<i>Tir Cymen</i>	239		
<i>Moorland Scheme</i>	5		
<b>Northern Ireland</b>			
Action 5.1.4 - (Target 34750 ha)		868.8	1737.5
Action 5.1.4 - Restoration (Target 20,000 ha)		650.0	1300.0
Action 5.1.4 - Expansion (150 ha)		4.9	9.8
Action 5.1.4 - Prepare 3 strategic plans		7.5	0.0
Action 5.3.2 - Information leaflet		1.0	0.5
Action 5.3.4 - Training for staff - 4 workshops		0.6	0.9
Action 5.5.3 - 2 Surveys (64 km)		0.6	0.3
<i>ESA</i>	449		
<i>Moorland Scheme</i>	No uptake		
<b>General (UK-Wide)</b>			
Action 5.1.1 - Review livestock support		12.0	0.0
Action 5.1.3 - Review muirburn legislation		4.0	0.0
Action 5.1.4 - Review of agri-environment schemes		16.0	0.0
Action 5.3.1 - Demonstration sites (5 workshops)		1.2	1.5
Action 5.3.1 - Demonstration sites (monitoring)		5.0	5.0
Action 5.3.2 - Handbook		2.0	0.0
Action 5.5.4 - 1 post-doctoral research post		18.0	0.0

	Current expenditure	First 5 yrs to	Next 10 yrs to
		2003/2004	2013/2014
Action	/, 000/Yr	/, 000/Yr	/, 000/Yr
Action 5.5.5 - 1 research contract		2.0	0.0
Action 5.5.6 - 2 PhD studentships		10.2	5.1
Action 5.5.7 - 1 PhD studentship		10.2	0.0
Action 5.5.8 - 1 sociological study		2.0	0.0
Action 5.6.1 - General PR		4.0	4.0
<b>Current expenditure</b>	3514		
<b>Total extra average annual cost</b>		<b>9353.5</b>	<b>18652.2</b>
<b>Total expenditure for the first five years</b>		<b>46767.7</b>	
<b>Total expenditure for the following ten years</b>			<b>186522.3</b>