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Ouse Valley Link
Trial area report

English Nature
Habitat Restoration Project

Ouse Valley Link Trial Area Report

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MILTON KEYNES WILDLIFE CORRIDOR PROJECT

HABITAT RESTORATION PROJECT

Contents

Preface

The countryside has changed dramatically over the last fifty years; bluebell woods and flower-rich meadows; skylarks and barn owl are just some of the treasured habitats and species that have declined in area or numbers. It is not just that habitats have been lost, but the areas that are left are smaller and more isolated. In signing the International Biodiversity Convention at the Rio Earth Summit of 1992 the Government committed itself to the task of reversing this trend and of increasing the variety of wildlife in our countryside. The UK Biodiversity Action Plan which was produced following the Summit states that 'the fragmentation or isolation of key habitats [is] to be avoided and wherever practicable past fragmentation [is] to be reversed'.

The current agricultural grants and other incentives now provide a means of reversing the tide; to bring back some of the things that we have lost, to link up areas that have become separated, to provide stepping stone patches to help wildlife move across the landscape. There is a chance in the next few years, not to set rigid rules about which habitats should be created where, but to evolve criteria, procedures and practices that will help us, and others, to make the countryside a richer and more attractive place for wildlife and for people.

English Nature is taking a lead, through the Habitat Restoration Project, by establishing four trial areas in which these ideas can be put into practice. Within each we are identifying which habitats and species are most important now, and for which there are opportunities to restore or create. Possibilities include improving areas that have been degraded, such as a neglected hedgerow, or creating new areas, for example establishing wide herb-rich field margins to link patches of old flower-rich grassland. This is being done within the framework of our Natural Areas and the Biodiversity Action Plan.

This initiative is not however something that we can or should do on our own. To be successful it must involve everyone else with an interest in the countryside. Therefore the trial areas are also about building support and enthusiasm among landowners, voluntary conservation bodies, government bodies such as MAFF and the Forestry Commission and local authorities.

The following report sets out how we are going about this in the Milton Keynes trial area where the Project is being publicised as the "Ouse Valley Link".

For further information about the Ouse Valley Link or the Project as a whole please contact:

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1. Introduction

1.1 The Ouse Valley Link Project

The Ouse Valley Link Project is part of a national Habitat Restoration Project, initiated by English Nature in April 1996. The aim of the project is to investigate ways of increasing the variety and abundance (the biodiversity) of wildlife in our countryside. The project will focus on reversing the effects of habitat fragmentation, which have reduced the biodiversity of our countryside, using existing Environmental Land Management Schemes (ELMS) such as Countryside Stewardship. The benefits to wildlife will be monitored over a ten year period. Each area has been chosen to represent a particular type of agricultural landscape typical of lowland England.

Four areas, each of 100 km^2, have been established where practical habitat restoration will be encouraged in cooperation with landowners and farmers.The most important habitat "nodes" along the Ouse Valley have already been identified, and outlined proposals for linking them developed, by the Milton Keynes Wildlife Corridor Project initiated in November 1994. This earlier project was formed from a partnership of local authorities and countryside organisations. The Ouse Valley Link Project is developing these proposals at a finer detail and putting them into action

The project forms part of English Nature's contribution to the UK's Biodiversity Action Plan in achieving targets at the Rio Earth Summit in 1992. Its aims also accord with Article 10 of the EC Habitats Directive.

In the first year of the project we have concentrated on the following:

i. Letting farmers and landowners know about the project and how they can help. Many have allowed us access to their land to carry out a field survey of the existing wildlife, and have answered questions about their view of the value of existing ELMS.

ii. Discussed with representatives of the countryside organisations, statutory and non statutory, how they might support the project, and with them, identified existing incentive schemes which are available to farmers to help them enhance the biodiversity of their farms.

iii. Set up an Advisory Group comprising representatives of the countryside organisations and farming community.

iv. Used our field survey of wildlife, along with existing records from the area, to target the BAP habitats and species which are present, or have occurred recently within the area, for priority action.

v. Combined this information to develop an idealised "vision" for creating a more wildlife friendly countryside with particular reference to the priority BAP habitats and species.

This document sets out this vision, and presents the information on which it is based. Possible ways of implementing the vision are given in Section 5. We will be consulting

widely about its implementation with both farmers and other landowners and the countryside organisations. It should be emphasised that at present the vision is a hypothetical one only. No specific areas of land are being targeted for restoration action.

It is recognised that the aim of the project; to investigate the extent to which BAP targets can be met using existing ELMS, can only be achieved through gaining the cooperation of all interested parties, particularly those who manage our farmland.

1.2 The River Ouse Trial Area

The trial area is based on the River Great Ouse between Beachampton and Lavendon in north Buckinghamshire, with a small part of the project area in south Northamptonshire. The river flows in a south west to north east direction, meanders loosely through the project area, and splits into channels in several places, creating a number of "islands" within the river corridor. The scenery is that of a flat, broad and poorly defined valley with rich pasture and arable land, its widest and lowest point south of Emberton. Beyond the floodplain the land rises to form a wide, gently undulating plateau either side of the river corridor, and is dotted with the occasional large outcrop of oolitic limestone. Its highest point is 100 metres A.O.D , north of Beachampton and the surrounding valley side is at its steepest between Olney and Clifton Reynes, where a distinct limestone ridge rises east of the river with a gradient of approximately 1:5.

Two smaller rivers flow into the Great Ouse within the project area, namely the River Tove at Cosgrove and the River Ouzel at Newport Pagnell. Approximately 4 km of the Grand Union Canal also crosses the project area.

Within this area there are a number of sites of high nature conservation interest although these are generally set in a landscape of intensive agricultural use. The "Ouse Valley Link Project" aims to recreate natural floodplain habitats such as flood meadows, wet woodland and ponds as well as those habitats associated with mixed farming such as field margins and species-rich grassland to link in with habitats that already exist. Part of the valley is designated an Area of Attractive Landscape in the Milton Keynes Local Plan.

2. Past and Present Land use

2.1 History of the Ouse Valley

Archaeological remains found in Clifton Reynes, Newton Blossomville, Sherington, Emberton, Tyringham and Filgrave show that the fertile banks of the River Ouse were under primitive cultivation in the Bronze and Iron Ages and during the Roman occupation. During this time trading centres were established on the Roman Road, Watling Street, at Stony Stratford and on the confluence of the River Ouse and its tributary the Ouzel, at Newport Pagnell.

The Domesday survey of Buckinghamshire can give us an idea of the woodland coverage within the valley before 1086. A.C. Chibnall[2] has used this information to draw a probable map of the woodland around Sherington at this time. Map 1 shows that whilst most of the land around the River Ouse was cleared open land, large areas of woodland remained on the drier ridges. There were approximately 16 Saxon water mills along the Ouse between Calverton and Lavendon where corn from the surrounding fields was milled.

In the late Middle Ages the open, common fields were divided into furlongs and cropped in rotation over three seasons. Wheat was sown one year, peas and beans the next and in the third year the field would lie fallow. Newton Blossomville was unusual in that it retained a two- season system of tillage (where half of the field is cropped and half left each year), until the fields were enclosed in 1810. Each farm within a village had a quota of land alongside the river meadows where the soil was of superior quality and well watered. The field boundaries of the times, for the Parishes of Clifton Reynes and Newton Blossomville, are shown in Map 2. Some of these ancient field boundaries still exist on the present day O.S maps. Around 1485-1547 common fields were partially enclosed for sheep farming which was very profitable locally for wool and this resulted in many wheat fields reverting to pasture.

By 1845 the majority of common land had been enclosed by fencing, usually with a ditch and bank where a hedge eventually grew. Sir Frank Markham[3] described the affect of the enclosures on the local landscape. *"Where previously there had been hundreds of acres with nothing but an uninterrupted stretch of ploughing, ripening corn, or peas and beans or one year in three of weed-choked fallow, with few hedges, trees or buildings, there came now the chequer-board pattern, with every field hedged with green, and young trees springing up in the hedgerows. Ponds were created in almost every large field and the willow began to spread. Roads and streams had been straightened and in marshy or clayey ground.....wide ditches were dug."*

These ditches helped to control water levels on the floodplain as the river regularly flooded the flat valley in winter. In 1891, A.J. Foster[4] wrote in his book about the Ouse, *"The villages which border this broad valley stand some way back from the river, and water meadows border the brimming banks on either side. Even in the summer the river hardly keeps within its bounds, but frequently in a June or July flood, washes over the pasture land."* Controlled flooding brought advantages as silt and sewage from upstream settlements was deposited in these meadows. Also the temperature of the water was above that of the soil water in winter and this encouraged early spring grass growth. The water meadows produced large quantities of hay and after harvesting they were typically

grazed by cattle and sheep. Stock levels on the pasture land were a little lower compared to today. For example, in 1813 average stocking rates were, 2 bulls / 3 acres at Tyringham and 1 bull & 2 sheep /2 acres at Filgrave (Priest, Rev. John[5]). Today the average stocking rate for a beef suckler herd in the lowlands is 0.81 bull / acre and for sheep the rate is approximately 5 ewes / acre.

2.2 Present Day Ouse Valley

Agriculture is still the main land-use activity in the project area although the intensive nature of the farming has meant that natural history interest survives mostly as isolated fragments of land. The woodlands on boulder clay and areas of open water are the most important of these.

There is still a mixture of arable and pasture throughout the project area although arable predominates on the clay plateau above the river corridor. Winter wheat and oil seed rape are the main crops grown and production is intensive with a rapid crop cycle, where ploughing and sowing takes place almost immediately after harvesting.

Although a good network of hedgerows still exists throughout the arable landscape they are generally intensively managed while others are gappy and derelict. Many former hedgerows have been removed or replaced by fence lines. Only a few arable field margins or headlands are managed for either wildlife or game.

Most of the pasture is found adjacent to the River Great Ouse and the River Tove where fields are prone to seasonal flooding. Some of these flood meadows still have open ditch systems draining them but the majority have been ploughed, reseeded and fertilised and are grazed by beef, dairy cattle or sheep. Areas of ridge and furrow grassland are generally found above the floodplain or within old parkland.

A relatively recent and important land use has been the extraction of gravel and sand which has left many areas of open water within the valley. The lakes create significant landscape and nature conservation features, although most are currently used for recreation, particularly fishing and water sports.

The market towns of Olney, Newport Pagnell and Stony Stratford have naturally extended into the countryside of the Ouse Valley to some extent and the new city of Milton Keynes to the immediate south of the project area has also had its effects.

3 Results of Trial Area Survey

3.1 Methodology

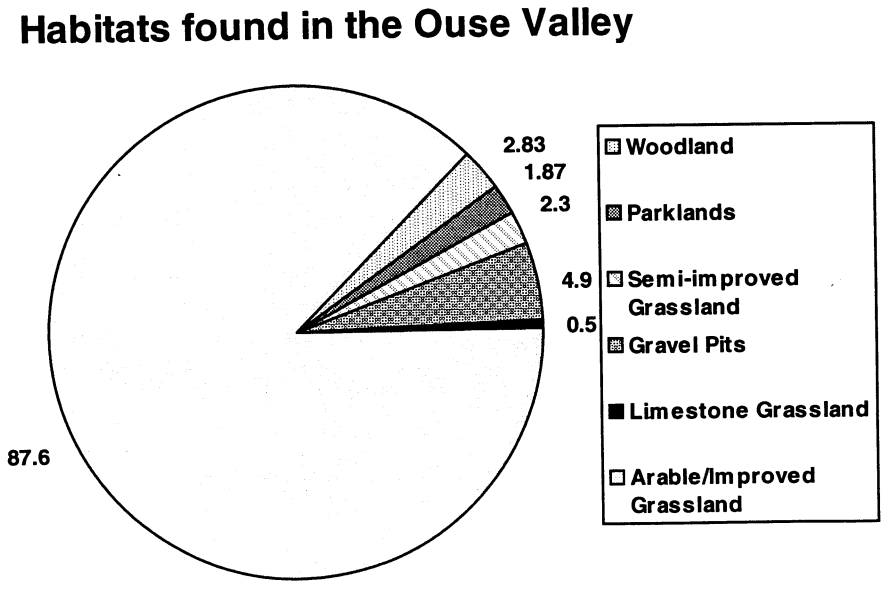
Existing habitat and species data for the Ouse Valley were collected from a number of sources including English Nature, Bucks Environmental Records Centre, British Butterfly Conservation Society, Milton Keynes Wildlife Corridors Project, Northamptonshire Wildlife Trust, North Bucks Bird Club and the Bucks County Council Aerial Photographs 1995.

Between July and October 1996 a field survey was carried out using the standard methodology as described in the "Handbook for Phase 1 Habitat Survey" [6]. Dominant and notable habitats and plant species were recorded and incidental records for animals were made. Target notes highlighted special features of interest.

Landowners were invited to allow access to their land for the survey. Farms were surveyed after this was given. Where landowners did not reply or could not be contacted, a survey was carried out from the rights of way. In a few instances access permission for survey was refused, and in these areas no data was collected, even where the rights of way crossed the land.

3.2 Results

The survey showed the lack of semi-natural habitats in the Ouse Valley, most of which is open and agriculturally improved. Arable farming accounts for large areas, particularly on the flat land outside the floodplain.

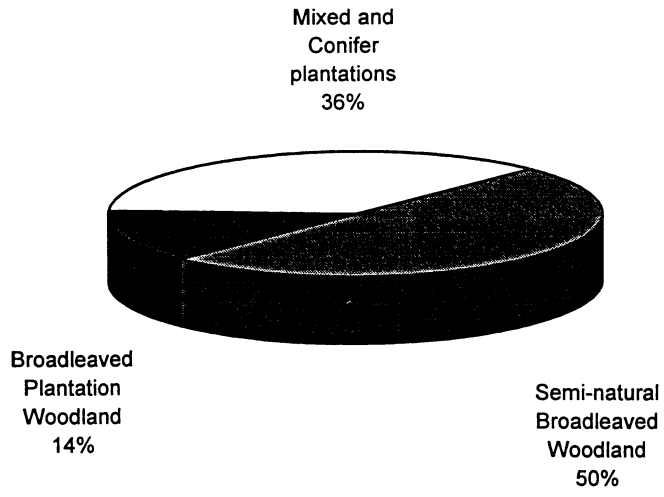


The average field size is approximately 20 hectares, the largest being around 97 hectares whilst the smallest is just 1 hectare.

Woodland cover is less than 3% of the project area and all the remnants of ancient, semi-natural woodland exist in isolation from each other. The largest woodlands are found to

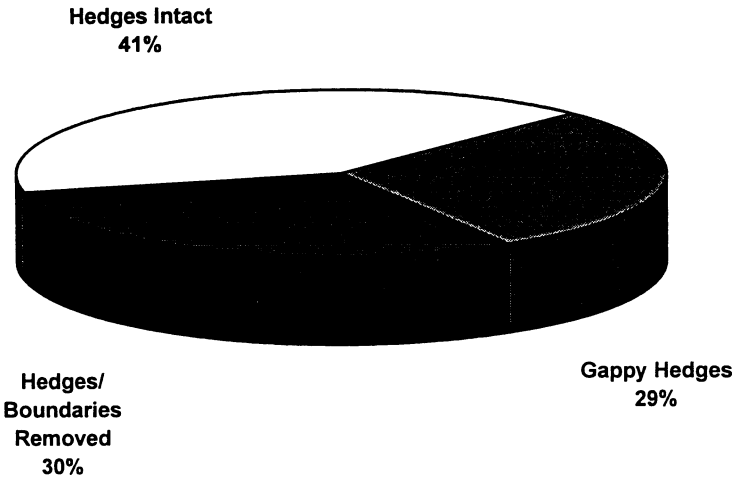
the north and south of the M1 corridor at Gayhurst and Little Linford. In the past most woodland planting has been of broad-leaved trees.

Woodland Types in the Ouse Valley



Hedgerows are a key habitat within the farmed landscape and the Phase 1 survey recorded their general condition. The chart below summarises this data and shows that approximately 60% of hedges are either in decline or have been removed or replaced by fencelines in the past.

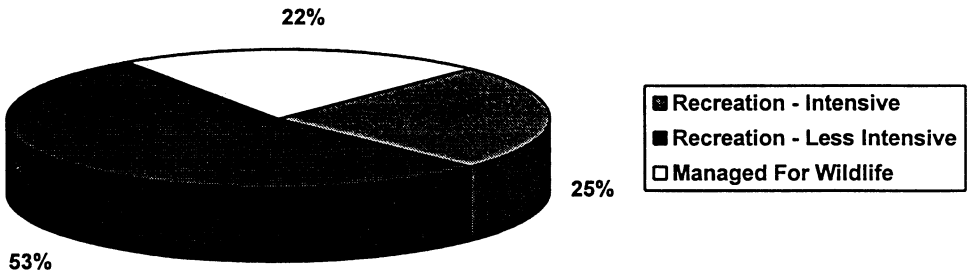
Condition of hedges surveyed in the Ouse Valley



The River Great Ouse is itself probably the most important semi-natural habitat in the trial area. A number of stretches retain pools and riffles, and backwaters, bays and earth cliffs help to increase diversity of channel habitats. However, river deepening has reduced structural and habitat diversity in large sections. Heavy poaching of banks and water eutrophication are also problems throughout though water quality is generally good and the Environment Agency class most of the river as grade II.

Flooded gravel pits in the valley occupy almost 500 ha and form a series of semi-natural nodes along the River Great Ouse. Where the recreational use is limited, the nature conservation value is high relative to the surrounding landscape.

Current Use Of Gravel Pits In The Ouse Valley



Although there are no statutory nature conservation sites within the project area, there are 36 non-statutory sites comprising the following habitat type:

8 wetland sites
3 stretches of river
3 stretches of canal
7 basic grassland sites
2 scrub sites
4 neutral grassland sites
3 broad-leaved woodlands
3 parish hedges
1 conifer woodland
1 heronry

3.3 Landowners and Managers in the Trial Area

About 80 owner/occupiers within the trial area have been identified. Turn out at an initial presentation in June was poor, probably because it coincided with the start of harvest. However, those who were present showed considerable enthusiasm for the project.

Of the landowners contacted, 46 agreed to allow access for a wildlife survey, 9 refused access permission and 25 could not be contacted or gave no reply. The main reasons given for the refusal of survey access were because of the fear of the project having "ulterior motives", namely, promotion of public access and imposition of restrictive conservation designations. All except two of these landowners supported the general nature conservation objectives but preferred to take a more cautious view of the project in the first instance.

Since November discussions have been held with owner/occupiers to show them the survey results for the valley and for their farms. During these interviews a simple questionnaire (refer to appendix 2) was used to help assess their current knowledge of grant schemes and their attitudes to conservation and farming. A detailed analysis of the results of the questionnaire will form part of a later report. The various grant schemes were discussed in the context of their farm and information leaflets on conservation grants were given out.

Overall the response has been positive, particularly in relation to enhancing habitat for game shooting or for species such as the otter and the barn owl. Owner/occupiers interviewed so far are more likely to carry out small-scale improvements such as hedgerow or pond restoration rather than commit themselves to long term land

management agreements at this early stage. However it is difficult to generalise as each landowner/manager has a different viewpoint and attitude to his farm business. Part-time farmers or those reaching retirement age seem more likely to enter agreements that require less intensive farming e.g. reducing stock levels on pasture.

General concerns which have arisen are often those relating to pest control, Canada geese damaging crops and corvids and mink predating on small birds and game species. The view is that restoring habitat might be fruitless without adequate pest control. Depositions of silt in the river were also viewed as a problem because livestock frequently became stuck when the water levels were low.

3.4 Environmental Land Management Schemes (ELMS)

A range of ELMS are currently availableto encourage farmers to increase the biodiversity of their land. The most important of these inrelation to the project are:

i. Countryside Stewardship (MAFF)

This is the main scheme in the Ouse Valley project area which could be used to fund habitat restoration. The scheme could potentially grant aid restoration of all of the target habitats except woodlands. However, this is a discretionary scheme and for Countryside Stewardship applications to be successful they require that many of the farm's habitats are included and not just a small fragment such as a pond or couple of hedges. Where a group of neighbouring farms each submit an application for small improvements and the collective gain for nature conservation is judged to be significant, exceptions could be made. Their success will however depend largely on the quality of competing applications submitted from the rest of the region.

ii. The Woodland Grant Scheme (Forest Authority)

Provides funding for new woodland planting at £1350/ha for broad-leaved plantations up to 10 ha in size. Where new planting is on arable or improved grassland there is a better land supplement of £600/ha. An annual grant of £35/ha/year is also available for on-going woodland management in woodlands with a special environmental value.

iii. Woodland Improvement Grant (Forest Authority)

Provides 50% funding for restoration measures such as coppicing and thinning to improve the environmental value of existing woods.

iv. The Farm Woodland Premium Scheme (MAFF)

Where a woodland establishment grant has been obtained under the WGS a landowner can apply to MAFF for a yearly compensatory payment of £250/ha/yr. for either 10 years or 15 years depending on the ratio of broadleaves to conifers that are planted.

v. Local Authority Grants

Buckinghamshire County Council currently administer a Landscape and Conservation Grant which can provide up to 50% of the costs of small-scale capital improvements such as a pond or meadow creation. It is hoped that Milton Keynes Council will continue with this grant when they become a unitary authority in April 1997. Northants CC administer a similar grant which may be used for small projects in their part of the project area.

vi. Set-Aside (MAAF)

Although the minimum set-aside area requirement has been reduced to 5% in 1997 the scheme does still have the potential to provide habitat for a number of the project's target species. It can be sited and managed to complement, buffer or link existing habitats such as woods, hedges, rivers and meadow and is a valuable habitat in itself when managed as field margins or sown with a wild bird seed mix. There are however many farmers who will choose to produce non-food crops such as linseed, maize, rape etc. on their set-aside land which increases profits but results in little opportunity to manage it for wildlife gain.

Other resources may be available from:
The Environment Agency, for works within the river floodplains, **Rural Action and The Civic Trust**, for conservation work carried out by rural community groups, **Parish Councils, Charitable Trusts** and the new **Landfill Tax.**

4. Vision for the Trial Area

The Ouse Valley Project Area represents a landscape typical of middle England. Here the River Ouse meanders through a broad flat valley of rich pasture and arable farmland. Beyond the floodplain the land rises gently, in places forming a distinct ridge created by an outcrop of limestone. The survey has shown that the areas of wildlife habitat in the Valley are small and fragmented. The vision for future habitat restoration aims to create a wildlife-rich matrix by concentrating on and linking up these remnants. We are not looking to recreate an Arcadian countryside from the past but to assist in the development of a more attractive landscape in which wildlife can flourish. This must be created alongside an efficient and productive agricultural industry.

The potential for restoring each of the target habitats and the species which will benefit are discussed in the following pages and summarised in Table 1. Incentive schemes are now available to achieve much of what is needed. The margins of arable fields can be managed to encourage the grey partridge and brown hare to return, ancient hedgerows can be managed and new ones planted. Even more important is the opportunity to create blocks of new habitat, to extend the fragments of grassland and woodland to provide a properly managed areas extensive enough to support a wide range of the dependant species.

To give a visual picture of what could be achieved we have produced a map (Map 3) which illustrates a habitat restoration vision for the area . This shows large zones where the potential exists for the restoration of particular habitats. It is also important to recognise the potential of non-farmed land such as road verges and railway embankments to achieve linkages that might not be possible elsewhere.

It should be emphasised that the vision map deliberately represents an ideal. Its implementation must however be pragmatic and flexible to meet the aspirations of individual land owners and managers.

4.1 The Target Habitats.

Target habitats and their associated suite of species have been selected by using the "Natural Area Profiles for the West Anglian Plain" produced by English Nature, "The U.K Biodiversity Action Plans" contained in the U.K Steering Group Report and "Buckinghamshire Biodiversity Challenge"[6] produced by Berks, Bucks and Oxon Naturalists Trust. The habitats and species reflect physical characteristics of the project area, such as soil type, aspect and drainage, and those which have resulted from past and present land use such as the historic parks and gravel pits help to create a local flavour. Target species are also chosen because their presence is indicative of high quality, well structured habitats which will support a wide variety of associated species.

In most instances target species are fairly easy to recognise, and likely to attract interest from the farming community and general public. Table 1 below gives information on the target habitats and species chosen and which documents refer to them.

Table 1. Summary of key habitats and species within the trial area indicating their BAP status and the incentive schemes applicable.

Target Habitat	Target Species	Status	Incentives
Cereal Field Margins and Set-Aside	brown hare	BAP, BC, S	Countryside Stewardship
	grey partridge	BAP, BC, S	Game Conservancy Trust
	corn bunting	BAP, BC, S	Set-aside &
	skylark	BAP, BC, S	Habitat Scheme
	meadow brown	S	Environment Agency
	round-leaved fluellen		
Ancient and / or species-rich hedgerows and scrub	gatekeeper	S	Countryside Stewardship
	tree sparrow	BAP, BC	Local Authority Grant
	song thrush	BAP, BC, S	Game Conservancy Trust
	linnet	S, BC, BAP	
	pipistrelle	BAP	
Lowland hay meadows and old permanent pasture	skylark	BAP, BC, S	Countryside Stewardship
	small heath		Local Authority Grant
	yellow meadow ant	BC, S	
	burnet saxifrage	S	
	bird's-foot-trefoil	S	
	cowslip	NP, BC, S	
	lady's bedstraw	S	
	meadow vetchling		
	common knapweed	S	
	yellow rattle		
Alluvial Flood Meadows	adder's tongue	BC, S	Countryside Stewardship
	ragged robin	BC	Environment Agency
	great burnet	NP, BC	
	snipe	NP, BAP, BC	
	lapwing	NP, BAP, S	
	redshank	NP, BAP	
	yellow wagtail	NP, BAP, S	
Standing Open Water (Ponds, Mesotrophic lakes, Reed Beds)	reed bunting	BAP, BC, S	Gravel Companies
	sand martin	BAP,	Local Authority Grant
	ringed plover	NP, BAP	Countryside Stewardship
	gadwall	NP, BAP, S	
	great crested newt	NP, BAP, BC	
	flowering rush	BC, S	
	shining pond weed		
	red-eyed damselfly	NP, S	
Rivers	barn owl	BAP, BC	Environment Agency
	kingfisher	BAP	Local Authority Grant
	water vole	BAP, BC	Countryside Stewardship
	otter	BAP, BC	Set-aside
	black poplar	BC, S	
	willow pollards	NP, S	
	river water-crowfoot	BAP	
	white-legged damselfly	NP, S	
	spined loach		
Broadleaved Woodland	bluebell	NP, BAP, S	Forestry Authority
	early purple orchid	NP, BC	Farm Woodland Premium
	herb paris	NP, BC	Scheme
	wood white	NP, BAP, BC	Local Authority Grant
	black hairstreak	NP, BAP, BC	
	great spotted woodpecker	BAP, BC, S	
	dead wood beetles		
Lowland parkland	mature oaks	NP, S	Countryside Stewardship
	common lime	S	Local Authority Grant
	walnut (non- native but characteristic)		
	parkland beetle (Prioncyphon serraticornis)		
Limestone grassland on disused railways, quarries river bluffs and road verges.	field scabious	S	Countryside Stewardship
	salad burnet	S	Local Authority
	harebell	S	management regimes
	bee orchid	S	
	marbled white	S	

NP = Natural Area Profile **BAP** = Biodiversity Action Plan **BC** = Biodiversity Challenge **S** = Found during phase 1 survey

4.2 Cereal Field Margins and Set-Aside

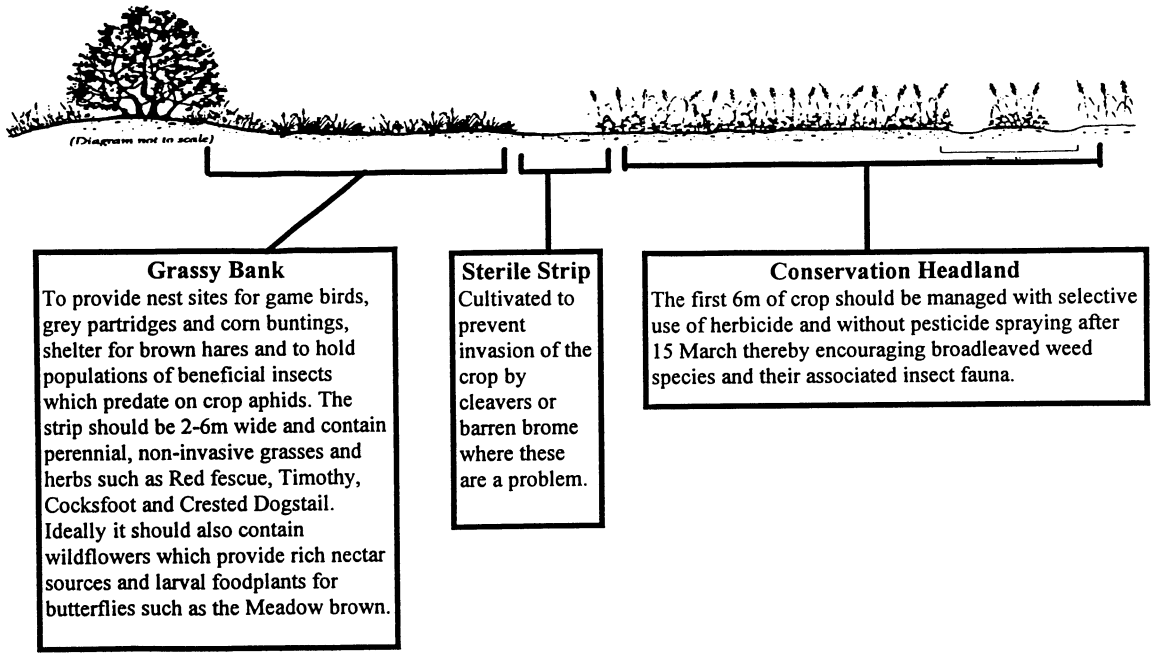
The margins of cereal fields are the zones of most value for nature conservation and least profitability for the arable farmer and they therefore have considerable potential to be enhanced. Here, game birds and passerines feed and nest and insects such as butterflies, grasshoppers and many insect predators of cereal aphids can be found. Arable wildflowers also survive where margins are cultivated once a year and managed as wildlife strips.

Sympathetic management of field margins in the Ouse Valley will be based on providing suitable habitat for the target species listed in the table below.

Species	Species Requirements	Management Prescriptions
Grey Partridge	Dead grass in hedge bank for nesting Insects for chick food Winter stubbles for feeding Bare ground for chicks	Establish grass strip, cut every 2 years. Establish Conservation Headlands. Establish Sterile strip. Establish Beetle banks. Retention of winter stubbles. Sow wild bird cover on set-aside. Delay cultivation of set aside for weed control until as late as possible. Create game cover plots for winter feeding.
Corn Bunting	As for Grey Partridge	as above
Skylark	Spring sown cereals for nesting habitat Winter stubbles for feeding	Avoid cutting set-aside between 1st April-15 July to avoid disturbing nests. Encourage spring sowing of crops Retention of winter stubbles
Brown Hare	Diversity farm habitats Ground cover during winter Shelter during winter	Establish rough grass field margins Establish 20m set aside margins throughout farm. Use permanent set-aside to create long-term cover
Meadow Brown	Warm, open grassland, approx. 0.5m tall, fine grasses and summer flowers.	Establish and manage a permanent grass margin and enhance with suitable herbs
Round -leaved Fluellen	Neutral soils Spring sown crops Nutrient - poor soil	Spring cultivation Establish Conservation Headlands Establish cultivated 6m field margin and maintain without fertiliser and herbicides.

4.2.1 Habitat Vision - Cereal Field Margins

The diagram below shows an idealised cereal field margin which would provide excellent habitat for the species listed above if it were established in fields throughout the Ouse Valley.



4.2.2. Habitat Target: ***To achieve sympathetically managed cereal field margins within 20% of the arable area.***

4.2.3. Habitat Vision - Set-aside

- Rotational set-aside: Leave stubbles and allow winter cover to establish by natural regeneration. Spray only with selective herbicide e.g. for blackgrass or cleavers or leave a conservation headland of 6-12m unsprayed around the margin.
- Permanent Set-aside: Establish 20m margins around cereal fields and sow a wild bird cover.

4.2.4. Habitat Target: ***To ensure that all set-aside land in the project area is managed to achieve maximum benefits for wildlife.***

4.2.5. Preferred Areas For Restoration.

Cereal field margins and set-aside are target habitats throughout the project area but grass margins will be especially promoted where arable fields are adjacent to rivers and land-owners do not want to convert them to pasture. Beetle Banks can provide similar benefits to grass margins and will be promoted throughout the valley where land is managed for game shooting and where they can help reduce insecticide use for aphid control.

4.2.6. Key mechanisms and incentives available:

i. Countryside Stewardship:

Uncropped arable grass margin 6m	£35/100m/yr.
Uncropped arable grass margin 2m	£15/100m/yr.
Uncropped, cultivated margin 6m	£35/100m/yr.
Beetle banks	£15/100m/yr.

ii. **Game Conservancy Trust:**
Conservation headlands managed for game birds

iii. **Set-aside:**
Create 20m field margins and headlands
Leave to naturally regenerate over winter

iv. **Habitat Scheme:**
Management of valuable habitats established under five year set-aside scheme £290/ha

v. **Other mechanisms:**
The Environment Agency, in partnership with the Hawk and Owl Trust have several river valley barn owl nest box schemes which encourage establishment of rough grass feeding strips along river margins. Integrated Crop Management techniques, and careful crop planning to avoid overuse of pesticides, also provide real benefits for the wide range of species associated with arable farmland. Specialist advice is available from FWAG and The Game Conservancy Trust.

4.3 Species-Rich Hedgerows And Scrub

Many of our hedges were planted by farmers as a result of the Enclosures Act (18th & 19th century) to mark boundaries and to assist rotational management of livestock in a field system. Laying or coppicing kept hedges stock proof. Hedges are attractive, traditional landscape features and provide extremely valuable wildlife habitat. Thick, tall, bushy hedges are essential nesting sites for many farmland birds like song thrushes, greenfinch, chaffinch, yellowhammer and goldfinches and hedgerow trees are used by barn owls, tree sparrows, bats and butterflies. Pheasants and partridges nest in warm, sheltered tussocky grass in the base of thick hedges. The species in the table below have requirements which are typical of many species that depend on hedge and scrub habitat.

Species	Species Requirements	Management Prescriptions
Gatekeeper	Sheltered shrubs/hedges Tall, fine grasses for egg laying Flowers and fruit for feeding	Restore thick, bushy hedges Cut hedges on a 2-3 year rotation so that they produce flowers and berries. Avoid spray drift into hedge bottom.
Tree Sparrow	Holes in trees Seeds during winter for feeding	Retain old hedge trees Allow some hedge trees to establish
Song Thrush	Good cover for nesting Berries, insects and snails for feeding	Restore good hedge structure Cut hedges on a 2-3 year rotation
Linnet	Good cover for nesting Seeds for chicks and winter feed	Create varied scrub structure with rotational management
Pipistrelle	Intact hedges for navigation between roosts and insect rich feeding grounds Insects attracted by fruit and berries Holes in trees for roost sites	Restore and plant up gappy hedges Allow hedge shrubs to flower and produce berries Retain holes in old trees

4.3.1. Habitat Vision

The hedgerow in the next diagram is unmanaged, overgrown, gappy and rapidly declining in wildlife value.

In contrast, the hedgerow in the diagram below will hold a rich diversity of wildlife. It is thick at the base, has a good dense structure, contains a variety of shrub and tree species, is not cut too frequently and is allowed to flower and produce berries. The trees in the hedge are varied in age and there is a rough grass strip left at its base. The project aims to create a network of hedgerows of this quality throughout the trial area.

4.3.2. Habitat Target:

To restore at least 20% of hedges identified as gappy in Phase I survey, to reinstate and replant 10% or moreof those which have been lost.

4.3.3. Preferred Areas For Restoration

This target habitat is appropriate to the whole project area. New hedgerows are needed in some areas, however, the main emphasis will be on restoring gappy and overgrown hedges and reducing the frequency of hedge cutting. This will improve availability of nesting sites and increase the supply of winter berries and seeds, and nectar sources for insects in spring and summer. Where black hairstreak colonies exist the priority will be to enter blackthorn scrub into a long-term, 20 year coppice cycle and to plant blackthorn and privet scrub.

4.3.4. Key Mechanisms and Incentives Available

i. Countryside Stewardship:

Hedge laying	£2/m
Hedge coppicing	£2/m
Hedge gapping-up	£2/m
Hedge planting	£2/m
Hedge management	
(plus supplements for preparatory work)	
Scrub management/clearance from	£150-500/ha

ii. Local Authority Conservation Grant:
up to 50% of cost of hedge work, shrub planting and scrub control.

iii. Landowners may plant/manage scrub to help increase game numbers

4.4 Lowland Hay Meadows and Old Permanent Pasture

Unimproved traditional hay meadows contain a diversity of colourful herbaceous species and are very rare nationally. Within the West Anglian Plain Natural Area these meadows are characterised by species such as burnet saxifrage and cowslip and are of the NVC MG5 crested dog's-tail - common knapweed type and in damp areas, MG4 meadow foxtail - great burnet, grassland type. Historically their great floristic diversity has been maintained by a system of hay cutting followed by grazing, with minimal inputs of fertiliser, usually farmyard manure. Improved grasslands cut for silage can support very few plant species compared to those that are unimproved or semi-improved.

Species	Habitat Requirements	Management Prescriptions
Skylark	Insect prey for chicks Seeds as a food source Rough grass or cereals for safe nesting habitat.	Low-intensity grazing management Hay meadow management or late silage cutting. No harrowing or rolling before 15 July Mixed farming with conservation headlands Reduce use of Avermectins .
Small heath	Open, dry grassland Native meadow grasses Nectar sources	Hay meadow management Reduce nutrient inputs
Yellow meadow ant	Permanent, open pastures Low fertility soils	Continuous grazing of old pasture Reduce soil fertility No harrowing or rolling of grassland
Bird's-foot-trefoil Cowslip Lady's bedstraw Burnet saxifrage Meadow vetchling Common knapweed Yellow rattle	Extensive grazing and / or hay cropping Low fertility soils Low resistance to grazing	Extensive grazing on permanent pasture No inorganic fertiliser No herbicide Re-introduce to suitable sites Hay meadow management Re-introduce to suitable sites

4.4.1. Habitat Vision

A good quality hay meadow should contain between 20-40 flowering plants including up to 12 or more grasses and attract a good variety of meadow butterflies and moths. It should support breeding birds such as skylarks. Pastures should be unevenly grazed, with areas of short turf characterised by meadow ant hills and wildflowers such as cowslips, and patches of longer, rougher grassland suitable for small mammal and terrestrial invertebrate habitat.

4.4.2. Habitat Target:

To increase the amount of semi-improved grassland from 2.3% to 10% within the project area.

4.4.3. Preferred Areas For Restoration

On areas of former hay meadow in the Ouse Valley the aim therefore, is to promote traditional grassland management, encouraging the return to hay production from silage and a reduction in fertiliser and slurry use.

The project will encourage the reduction of fertiliser on the remaining areas of ridge and furrow pasture as these are less likely to have been re-seeded and therefore offer the most potential for restoration of species richness.

4.4.4. Key Mechanisms and Incentives Available:

i. Countryside Stewardship:

Lowland hay meadow management	£85/ha/yr.
supplement for old meadows	£30/ha/yr.
Lowland pastures	£85/ha/yr.
supplement for old pastures	£30/ha/yr.

ii. Local Authority Grant:

Up to 50% of capital costs for structures and works to aid better grassland management.

4.5 Alluvial Flood Meadows

These meadows have similar species to those of the MG4 type mentioned above, and are found within floodplains and low lying areas. They are periodically inundated with water and ditches rich in plants and invertebrates help to maintain high water tables across the meadow. Some contain seasonal water-filled hollows or permanent ponds. Flood meadows are very important for waders such as snipe, lapwing and redshank. These meadows provide excellent pasture and some are also used for hay production.

Species	Habitat Requirements	Management Prescriptions
Redshank	Shallow water in pools or ditches rich in invertebrates, mudflats and "open" shorelines. Damp, tussocky grassland approx. 20cm high for nesting within 100m of feeding area. Protection of nests from trampling	Create wader scrapes and restore ditches in wet grassland. Raise ground and ditch water level on drained floodplain grassland. Exclude cattle between April and June. Low density grazing with cattle between July and October. Hay cut after July, mow in stripes .
Lapwing	Open, damp ground with low, tussocky vegetation, or highly vegetated islands. Insect-rich habitat near nest site Safe roosting areas.	Create wader scrapes, islands and manage to create a tussocky sward. Protect nests as above
Snipe	Wet invertebrate rich grassland and mud flats. Marsh Tall vegetation >25cm	As above, encourage spring and winter flooding of grassland
Yellow wagtail	Damp/wet grassland, short grass Insects associated with cattle dung	Encourage extensive grazing of flood meadows.
Adder's tongue fern Great burnet Ragged robin	Damp ground Low fertility Low grazing levels	Maintain or create high water table in low-lying fields. Manage as traditional hay meadows without inorganic fertiliser.
Grass snake	Sheltered, humid places for egg laying. Varied topography with open, sunny spots and shaded, sheltered areas close to damp, marshy ground	Create undisturbed areas of long grass and shrubs close to gravel pits. Create log piles and heaps of rotting vegetation.

4.5.1. Habitat Vision

Ideally the floodplain grasslands within the Ouse Valley should contain species typical of the MG4 grassland community type and some should be managed as traditional hay meadows with spring and aftermath grazing at varied stock densities. However where permanent pasture has been a long established regime this management should continue and the priority should be to create ideal conditions for breeding waders such as snipe, redshank and lapwing.

4.5.2. Habitat Target:

To ensure that 20% of grassland in the floodplain is managed as extensively grazed, or hay cropped, flood meadow.

4.5.3. Preferred Areas For Restoration

Flood meadows would have dominated the Ouse floodplain before extensive land drainage took place in the 19th century. In some areas original ditches can still be found but there are no meadows in the floodplain where water levels are controlled. In some locations, such as the old meadows immediately north of Emberton Park, it is appropriate for the project to find ways of restoring the meadows and their ditches so that water can be retained on them. Where this large-scale meadow restoration is impractical or too costly the project will seek to persuade owners and occupiers to create wader scrapes, ponds, and lower lying areas of damp grassland as described above, in the floodplain pasture land, and give advice on sympathetic ditch maintenance.

4.5.4. Key Mechanisms and Incentives Available:

i. Countryside Stewardship :

Lowland hay meadow management	£85/ha/yr.
supplement for old meadows	£30/ha/yr.
Lowland pastures	£85/ha/yr.
supplement for old pastures	£30/ha/yr.
Capital payments for works to control water levels	
Creation of wader scrapes	£1.25/m^2

ii. Environment Authority :

Can bid for funds for projects which improve habitat within the floodplain.

4.6 Ponds, Reed Beds and Mesotrophic Lakes

The Natural Area profile for the West Anglian Plain highlights flooded gravel pits as actual and potential habitats in the region. The Ouse Valley is typical, having six gravel pits; four disused and two still worked. Those managed for wildlife form important nature conservation sites in the valley. They attract many wintering wildfowl and a great variety of dragonflies and are often breeding sites for sandmartins.

However, many lakes either receive intensive recreational pressure; are private fishing lakes, and heavily stocked with fish; or are unmanaged and surrounded by rank grassland. Many could be improved for wildlife without necessarily jeopardising their current use and the project will therefore encourage management for the target species below.

Farm ponds have declined in importance with the provision of water troughs, and many have been filled in or left to dry up with detrimental impacts on their wildlife. Great crested newts are still found fairly frequently in the region although in decline nationally. The recent fall in numbers of frogs and toads is also a concern.

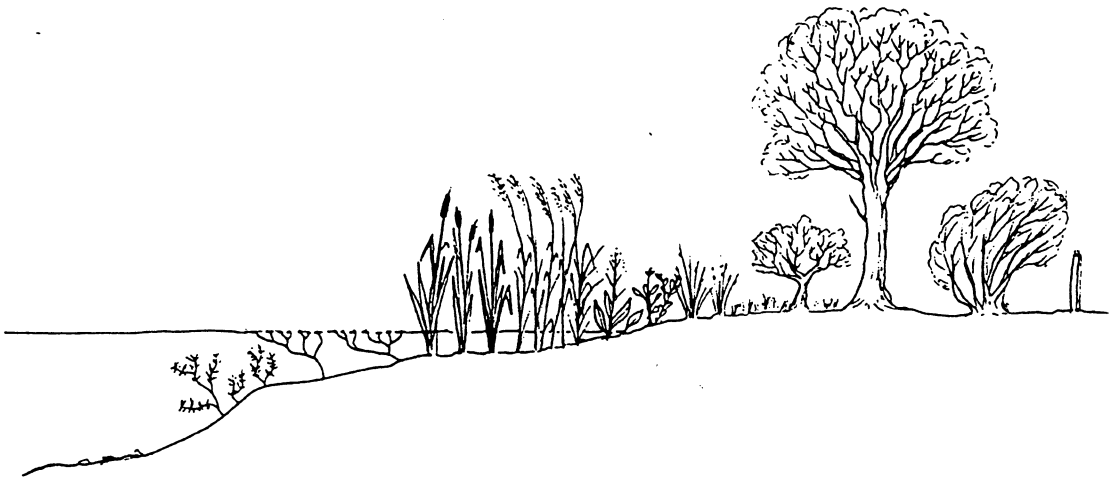
Species	Habitat Requirements	Management Prescriptions
Reed bunting	Marsh, marginal aquatic plants and reed beds for breeding	Create shallow ponds and wide water margins where reeds can establish.
Sand martin	Stable sand cliffs for nesting Reedbeds and open water for insect rich feeding areas	Retain or create 3-4m high clear sand banks with vertical faces. Establish extensive areas of reeds and emergent marginal vegetation around large, open water areas.
Ringed plover	Bare or lightly vegetated, open shingle patches of at least 0.2 ha with a range of stone sizes on waters edge for nesting. Shallow water, invertebrate rich mud	Create / retain areas of shingle on islands or edge of disused gravel pits Keep feeding / breeding areas free from emergent marginals and scrub.
Gadwall	Extensive beds of submerged water plants such as water crowfoot, milfoil, starwort, duckweed Dense grass and scrub near water's edge for nesting Open, bare shores for roosting	Ensure that these habitats are available within a gravel pit site.
Great crested newt	For breeding, a pond with a variable depth and no fish. Located within 250m of other ponds it should contain floating and submerged vegetation with good invertebrate fauna. Within 500m of pond, a variety of vegetation is needed, long grass, shrubs or other places to shelter, good numbers of insects, and undisturbed areas.	Encourage less intensive forms of agriculture in areas known to support newts. Restore and create ponds which provide suitable conditions for newts within 500m of existing ponds. Create log piles for extra shelter and winter hibernacula near to ponds.
Red-eyed damselfly	Slow flowing water. Lakes or ponds where floating broad-leaved pondweed or water lilies are abundant. Grass and shrub shelter on banks but few overhanging trees. Unpolluted water	Create large areas of shallows with submerged vegetation to provide warm conditions with lots of insect prey Patches of emergents are also needed so that adults can climb out of water when emerging.
Flowering rush	Shallow, muddy margins of slow-flowing or still water.	Create gently shelving banks.
Shining pond weed	Lakes, ponds, dykes and streams with still to slow flowing water. Clear water up to 4m deep.	Ensure that water quality is good. Ensure that the lake or pond has depths suitable for this species.

4.6.1. Habitat Vision

To support a diversity of wildlife the wetland in the Ouse Valley should contain a good mix of small ponds linked by ditches to lakes with bays and promontories. A variety of depths created by underwater shelves and gentle slopes should support a wide range of plants, including submerged, floating, emergent and marginal species. Islands or nesting rafts should be present where the lake is of sufficient size.

Some parts of the lake edge should be kept free from dense vegetation to allow access for waders, other sections should be allowed to develop into willow scrub which will attract birds such as sedge and willow warbler. Where gravel pits are extensive, and there is

space for zoning, a wide range of habitats: reed beds, shingle banks and sand martin banks could be created. The surrounding grassland should be varied, with some parts grazed short and others more tussocky possibly enriched with flowery herbs. Seasonally flooded wet grassland should also be an important component of restored gravel pit sites.



Profile of a lake edge showing ideal habitat zones

4.6.2. Habitat Target: ***To ensure that every farm within the project area has at least one healthy pond. To increase the area of gravel pits under sympathetic wildlife management from 22% to 50%.***

4.6.3. Preferred Areas For Restoration

Where gravel pits are to be landscaped for wildlife benefit it is most cost-effective to plan whilst they are still being worked. Active pits will, therefore, be targeted first. Pits used for low intensity recreation have potential for improvement, particularly where they can be zoned and habitat links between lakes and nearby rivers can be restored. Grassland around pits has great potential for nature conservation if managed appropriately and can help compensate for the lack of semi-improved grassland elsewhere in the valley.

Throughout the Ouse Valley pond restoration and creation will be promoted with the aim of establishing at least one pond on every farm to form a network of "stepping stones" linked perhaps by hedgerows.

4.6.4. Key Mechanisms and Incentives Available:

i. Gravel Companies: restoration plans

ii. Countryside Stewardship:

Capital payments for water level controls	
Creating reedbeds and willow/alder carr	£40/ha/yr (for 5yrs)
Managing reedbeds and carr	£100/ha/yr.
Pond creation	£3/m^3
Pond restoration	£2/m^3

iii. Local Authority Grant:

Up to 50% of capital costs for pond works

4.7 Rivers

The survey concluded that the River Ouse was the most important semi-natural habitat in the project area but that large sections suffered from eutrophication and a loss of species diversity associated with channel deepening and inappropriate bank management. The project will therefore attempt to restore a more varied channel structure and to re-establish the links between the river, its banks and floodplain. Species listed in the table below will be used as flagships and indicators for habitat restoration targets.

Species	Habitat Requirements	Management Prescriptions
Barn owl	Rough grass pasture and strips beside rivers for hunting (Total area 1.5 ha per breeding pair) Holes in trees, farm buildings, old barns, straw stacks, nest boxes for nesting and roosting.	Establish network of rough grass strips or rough pasture adjacent to rivers and cut different areas every 3-4 years. Leave old hollow trees e.g.oak and ash. Keep old barns and outbuildings. Provide nestboxes.
Otter	Bankside cover of reeds or scrub for laying up. A network of rivers, streams, ditches, ponds, marshes, reedbeds and lakes in a floodplain with good riparian cover. A variety of channel flows and in-channel features. Clean, unpolluted water with good fish populations. Exposed and eroded roots in river bankside trees for holts.	Plant up suitable areas of bank such as river meander loops with native shrubs and trees for cover. Encourage marginal vegetation where the river bank is low. Reduce fertiliser use on bankside fields to help improve water quality. Retain bankside trees and plant new ones. Encourage in-channel variation. Build artificial otter holts.
Water vole	A mosaic of tall, dense grass and thick marginal vegetation along a wide strip of the bank and water's edge, incorporating at least 130m of river, for feeding and cover from predators. Tall grass and scrub links to other suitable wetland habitats such as marsh. A vertical soil bank approximately 0.5m high. Lower numbers of mink.	Allow dense marginal habitat to develop along river edges. Establish rough grass strips along river banks by fencing and link to marshes, ponds and gravel pits. Encourage patches of scrub along river bank for cover from predators. Keep and create low soil banks. Control numbers of mink by trapping.
Black poplar Willow pollards	Deep, rich damp soils Damp muddy margins of river banks for seed germination sites. Protection from grazing animals when establishing. Pollarding to extend life and create habitat for a wide range of fauna.	Pollard old willows and poplars which have or are in danger of collapsing. Establish new trees by taking cuttings from nearby pollards and fence to protect.
Kingfisher	Eroding soil banks up to 2m high for nesting. Overhanging tree branches used as perching posts. Shallow pools, clear water with good populations of small fish.	Create soil banks and keep them free from vegetation Leave overhanging tree branches or place posts in shallow water where there is suitable nesting and feeding habitat.

White-legged damselfly	Unpolluted, slow-flowing rivers. Abundant aquatic and marginal vegetation. Unmanaged grass and scrub nearby. Soft river edges and gentle bank slopes.	Create river buffer zones to help reduce nitrates and phosphates entering river. Allow patches of vegetation to become well established in the river. Maintain soft river edges.
River water-crowfoot	Fast flowing, shallow water over gravel riffles.	Maintain gravel riffles. Resist deepening the river.
Spined loach	Occurs in a wide variety of water bodies but prefers s sandy substrate with a dense, yet patchy cover of rooted macrophytes	Encourage growth of submerged/emergent macrophytes. Reduce sediment loading and encourage areas of sandy/silty substrate. Limit populations of roach and bream.

4.7.1 Habitat Vision

The Rivers Ouse and Tove should show the full variety of characteristics which are normally associated with low energy lowland clay rivers. They should have wide meanders with eroding cliffs and depositing bars, and glide, riffle and pool sequences in-channel. Emergent marginal vegetation should be present along with submerged and floating leaved aquatic plants. Tree and scrub covered islands should be present as refuges for birds and mammals and old ox-bows retained within the floodplain as ponds, marsh or willow carr. Bankside trees and wide buffer zones of at least 10m with scrub, rough grass or species-rich wet grassland should complement the river.

4.7.2. Habitat Target: *To ensure that at least 25% of main river meets the criteria in the habitat vision.*

4.7.3. Preferred Areas for Restoration

With support from the EA the project aims to create buffer grassland strips adjacent to river courses. These will help intercept run-off from farmland, and provide feeding habitat for raptors such as barn owls. Suitable sites for shrub and tree planting (e.g. meander loops and islands) will be targeted to create a wider river corridor, providing cover for water voles and otters and helping to reduce problems of excessive bank poaching.

The project will also seek to work closely with the EA to diversify channel structure where possible. O/os will be encouraged to pollard willows, and new willow and black poplar saplings taken from local trees will be planted along tree-less sections of bank.

4.7.4. Key Mechanisms and Incentives Available:

i. Countryside Stewardship:

Tree and shrub planting		£0.65 per tree
Coppicing bankside trees		£15.00 per tree
Tree pollarding		£22.50 per tree
Supplements for guards and fencing		
Grass margin establishment	(6 metres)	£35/100m/yr.
	(2 metres)	£15/100m/yr.

ii. Local Authority Grant:

Up to 50% of capital costs for tree and shrub planting, fencing, pollarding, coppicing.

iii. **Environment Agency:**
Can bid for capital project funds
On-going channel maintenance works

iv. **Set-aside:**
Permanent or rotational field margin buffer zones

4.8 Broadleaved Woodland

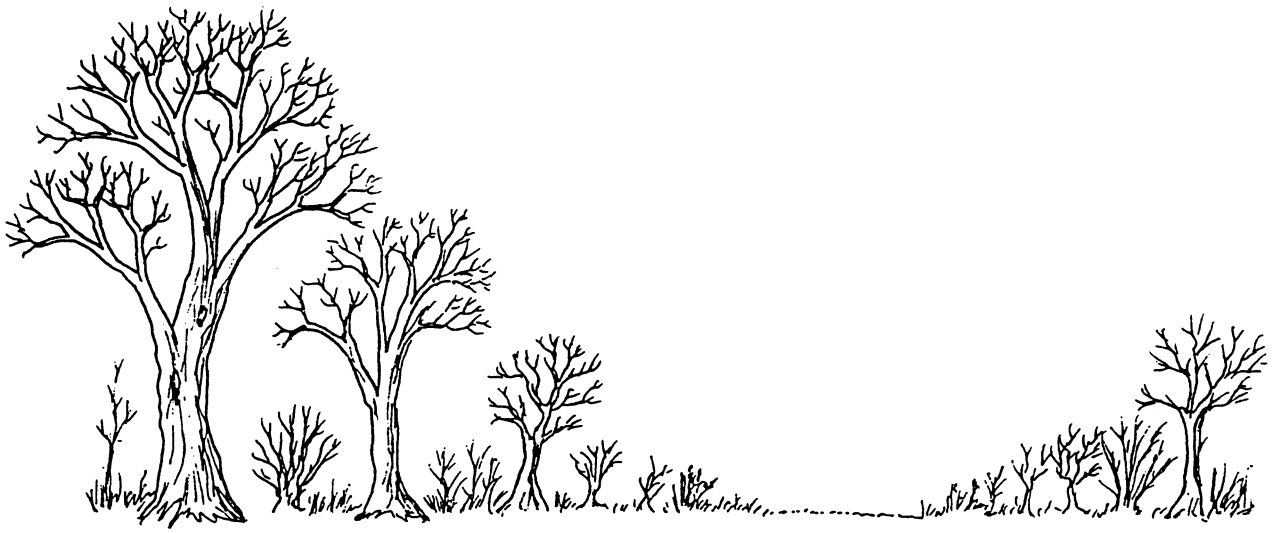
The valley is very sparsely wooded and historical records suggest that this has been the case for many hundreds of years. However the effect that isolation has had on the wildlife of those remaining woodlands is unknown and it is likely that considerable advantages for groups such as butterflies, could be gained by re-establishing links. Farmland and woodland edge birds would benefit enormously from the creation of more small farm woodlands. Many of the existing woods, copses and spinneys in the valley could be significantly improved for wildlife conservation by re-instating management. The target species are therefore those which are indicators of good woodland management and are typical of those found in wet, clay woodlands.

Species	Habitat Requirements	Management Prescriptions
Bluebell Early Purple Orchid Herb Paris	A mix of light and shady conditions created by coppice rotations.	Reinstate traditional coppice management in ancient woodlands.
Wood white	Sheltered woodland rides, shrub edges and young coppice re-growth. Spring flowers such as bugle, ragged robin, birds-foot-trefoil for nectar. Meadow vetchling, bitter vetch, tufted vetch and birds-foot-trefoil for egg-laying..	Restore or maintain woodland rides and glades with shrubby edges. Scallop edges of woodland rides and manage as coppice rotation. Cut ride grassland once a year in centre and every few years at the edge and remove arisings.
Black hairstreak	Field maple, ash, privet, dogrose for nectar. Large, old blackthorn bushes in very sunny, sheltered positions for egg laying and larval foodplant.	Create sheltered, sunny conditions around existing blackthorn. Manage small (10m x 10m) patches of blackthorn on a 30yr coppice rotation or by laying 15m wide strips.
Great spotted woodpecker	Dead wood on ground and standing in shady places. Especially birch, elm, hornbeam, scots pine, oak, ash and alder. Trees with heart rot and cavities.	Leave all dead limbs and fallen timber in situ plus 2-6 whole, dead, mature standing trees per ha.
Dead wood beetles	Dead wood of a variety of species, and sizes and in a range of conditions from shady to sunlit and wet to dry, fallen and standing.	As above. Also create log piles on the edge of woodland rides or glades. Keep fallen timber in ponds or ditches.

4.8.1. Habitat Vision

Ancient semi-natural woodlands should be managed as coppice with standards with a long coppice cycle. If they are large enough, some should be managed as two-storied high forest. Woodland rides should have graded edges, with a margin of grasses and tall herbs, such as meadowsweet, ragged robin and vetches, and shorter vegetation in the centre. Hedges, shrubs and tall grassland should be established around woodland edges to increase shelter and to help protect habitats from damaging farming operations.

New woodland planting should be of locally native species and the planting plan should include the features described above, namely, rides, glades and structured wood edges.



A well - structured woodland ride showing a gradual transition from trees through bushes and tall herbs to short vegetation and bare ground.

4.8.2. Habitat Target:

All woods over 2ha should be brought into sympathetic management. To double the area of woodland in the valley from 2.3% to 5%.

4.8.3. Preferred Areas For Restoration

A priority will be to ensure that existing woods and copses are managed to maintain and improve their nature conservation interest. Any opportunities for new woodland planting will be exploited, especially where it will form links or "stepping stones" between and adjacent to existing woods, on river islands, adjacent to the rivers where the ground level rises above that of the floodplain and along field margins. It may also be appropriate to encourage natural regeneration of woodland and scrub within some of these areas.

4.8.4. Key Mechanisms and Incentives Available:

i. Woodland Grant Scheme:

Annual Management Grant	£35/ha
Woodland establishment grant	£1,350/ha - woods up to 10ha
Supplement for planting arable/ improved grassland	£600/ha
Community woodland supplement	£950/ha
Natural woodland regeneration	£525/ha
Restocking	£525/ha

ii. **Farm Woodland Premium Scheme:**
To compensate farmers for loss of income from farming when establishing woodlands on arable or improved grassland where WGS has been approved, £250/ha.

iii. **Woodland Improvement Grant:**
50% funding for a programme of work to improve a wood's wildlife or amenity value.

iv. **Local Authority Grant:**
Up to 50% of capital costs for tree and shrub planting, fencing, pollarding, coppicing.

4.9 Lowland Parkland

Eight areas of historical parkland, some much larger than others, remain in the valley, where scattered mature trees including oak, lime, grey poplar, walnut and horse chestnut survive. Most of the parklands are grazed, improved grasslands but a few are cultivated.

Species	Habitat Requirements	Management Prescriptions
Oak Lime Walnut	Heavy Clays and loams, neutral soil. Shade intolerant	Pollard trees to prolong their life. Plant new parkland trees.
Parkland Beetle (*Prioncyphon serraticornis*)	Old trees with some dead wood.	Prolong the life of existing parkland trees. Plant new trees within the park. Leave fallen timber scattered in grass underneath mature trees. Manage parkland grassland less. Revert arable parkland to grassland.

4.9.1. Habitat Vision
Parklands should have groups of trees or scattered individuals of varying age, with some pollards. Some, more mature, trees should retain dead limbs and dead trees should be left in situ. Associated grassland should be extensively grazed or managed traditionally for hay. Features such as ponds, stone walls, ditches or ha-has should be restored.

4.9.2. Habitat Target: *To maintain all existing areas and restore all former areas of parkland.*

4.9.3. Preferred Areas For Restoration
Within the eight areas of parkland in the Ouse Valley, those which are least fragmented, still retain most of their mature trees and are grazed will be targeted.

4.9.4. Key Mechanisms and Incentives Available

i. **Countryside Stewardship:**

Lowland Pastures	£85/ha/yr. (£30 supplement for old pastures)
Re-creating grassland on cultivated land	£280/ha/yr.
Tree planting	£6 per tree, 30p tree guard

Tree surgery	£22.50 minor £50 major
Various payments for restoring water features	
Payment for a restoration plan	

ii. **Local Authority Grant:**
Up to 50% of capital costs for tree planting, fencing, pollarding and pond restoration.

4.10 Limestone Grassland

The Natural Area Profile for the West Anglian Plain includes little detail on limestone grassland as a habitat typical of the region. However, it is found frequently on the slopes of the Ouse Valley and its presence is reflected in the building stone of many of the villages north of the city. It is also a habitat particularly rich in species. The pockets of limestone grassland were found to be deteriorating and it will therefore be a priority to safeguard their presence through appropriate grassland management.

Species	Habitat Requirements	Management Prescriptions
Field scabious, Salad burnet, Harebell, Bee orchid	Dry soils of a calcareous nature. Low fertility Light to moderate grazing or disturbance.	Where these species occur in grassland, light grazing will be promoted and fertiliser additions discouraged. Livestock should be removed before poaching occurs in the autumn. On roadsides a management regime of cutting twice a year in June and September and raking the arisings off will be encouraged.
Marbled white	Tall calcareous grassland containing species such as field scabious, knapweeds, sheep's fescue, red fescue, cocksfoot and timothy on warm, sheltered, sunny banks, road verges and woodland rides.	As above. Scrub control in some locations.

4.10.1. Habitat Vision

Restored calcareous grassland should contain species typical of NVC community CG5 and be managed so that a range of vegetation heights is achieved. It should be species-rich and at least 20 different species should be present as well as numerous butterflies.

4.10.2. Habitat Target:

To ensure all existing limestone grasslands are in sympathetic management and to double the current area of this habitat.

4.10.3. Preferred Areas for Restoration

This habitat can be re-created or enhanced only on appropriate soils, so efforts will be concentrated where the survey has identified remnant patches of this grassland, and, in areas where these pockets could also be linked via road verges which overlay the limestone as indicated on the restoration map. The mainline and disused railways also form excellent corridors for this habitat.

4.10.4. Key Mechanisms and Incentives Available

i. Countryside Stewardship:

Limestone Grassland management	£60/ha/yr.
Scrub control £50/ha plus	£100/ha <25% cover
	£250/ha 25-75% cover
	£500/ha >75% cover

ii. Local Authority:

Road verge management regime

5. Implementation

The vision identifies the priority habitat and species within the Ouse Valley the restoration of which would contribute to achieving the BAP targets. We have also identified the mechanisms and financial incentives available to assist its implementation. Clearly the vision can only be successfully implemented with the agreement and support of the farmers and other landowners of the Ouse Valley. The resources and influence of the many countryside organisations will also be vital to success of the project.

During the first year many farmers and other landowners have already supported the project by allowing us access to their land, while the countryside organisations including MAFF, Forestry Authority, Environment Agency, National Farmers Union, Country Landowners Association, Farming and Wildlife advisory Group. Game Conservancy Trust and Royal Society for the Protection of Birds and given us practical help and advice.

We will now be consulting further over the vision and how we can work together to implement it. It is only by working together in this way that the BAP programme can be implemented at a landscape level. A summary of ways that each of the partner organisations can help is given in table 2. The following actions will therefore be taken in the next few months.

5.1. To canvass opinion on the vision statement and its implementation we will be consulting with the following.

I. The Advisory Group.

ii. Local farmers and other landowners.

iii. The statutory and non statutory countryside organisations.

5.2. To implement the vision at the farm level our Project Officer will:

i. Visit farmers to advise them on the priorities for habitat restoration and the availability of practical advice to undertake the restoration.

ii. Produce short farm reports, identifying sources of funding through ELMS and producing costed action plans. In appropriate cases it is proposed to grant aid the production of more detailed "Landwise Plans" by FWAG or other approved specialist advisor.

iii. Assist farmers to complete application forms for Stewardship and other ELMS and liaising with the relevant officers at MAFF/FRCS and the Forestry Authority.

iv. Liaise with other landowners and managers such as Milton Keynes Council, Milton Keynes Parks Trust, Parish Councils, the Environment Agency and gravel companies to encourage them to enhance the wildlife value of their land within the project area.

5.3. To achieve wider publicity about the Project and Habitat Restoration we will:

i. Organise farm walks and demonstrations on restoration techniques for farmers in partnership with the Game Conservancy, Countryside Stewardship and others.

ii. Produce a biennial Newsletter about the project for participating farmers and other land managers.

iii. Submit articles for publication in the farming and nature conservation press. Press releases in local newspapers will also be used to inform the public about positive conservation measures carried out by Ouse Valley farmers.

5.4 To monitor the success of the Project we will:

i. Monitor the take up of Environmental Land Management Schemes to determine the number of schemes applied for, the extent of wildlife habitat restored/created and whether habitat fragmentation is being reversed.

ii Monitor the quality of the habitat created and the wildlife it can support to determine whether biodiversity targets are being met.

iii Maintain a dialogue with participating farmers to determine whether they remain happy with the schemes they have entered.

Monitoring will occur during the last (third)year of the project, then five and ten years later (years eight and thirteen).

Table 2. Ways in which the other Countryside Organisations could support the Project.

Organisation	Potential Contribution
MAFF	Responsible for administration of the Countryside Stewardship Scheme and Set-aside including the Habitat Scheme.
FRCA (Formerly ADAS)	The Stewardship Officers in Bucks and Northants are able to advise on the acceptability of individual Countryside Stewardship applications.
Countryside Commission	An provide advice on the landscape implications of the Habitat Vision for the Ouse Valley
Forestry Authority	Responsible for administration of the Woodland Grant Scheme (WGS) and Woodland Improvement Grant (WIGS) and can . advise on individual applications.
Environment Agency	Advice on river and flood plain restoration. May be able provide funding for small projects such as tree planting, ponds, riverside strips and planning meanders.
Ouse IDB	Can provide technical advice on land drainage within the floodplain and comment on their acceptability
Country Landowners Association	Able to promote the project among its membership by assisting with farm walks, and demonstrations. The CLA is kindly providing space in their tent at the Buckinghamshire Show for a project exhibit.
National Farmers Union	Able to promote the project among its membership through article/s its newsletters.
Northamptonshire County Council.	Can provide general support and advice. NCC runs small grant scheme which is available within the Trial Area. Can enhance the value of road verges as linking habitats through its management policies.
Milton Keynes Council	MKC is a major contributor to the Project providing financial support for the Project Officer. MKC also owns land within the Trial Area with opportunities for habitat enhancement/ restoration which could be eligible for Stewardship funding. Can enhance the value of road verges as linking habitats through its management policies.
Milton Keynes Parks Trust	MKPT is a major contributor to the Project providing office accommodation and other support for the Project Officer. Also major landowner within the Trial Area with opportunities for habitat enhancement/restoration funded where appropriate by Stewardship.

Game Conservancy Trust	Able to provide advice, including a range of fact sheets on many aspects of habitat restoration and management. An advisor on restoration management for wildlife and game is available to assist with farm demonstration events.
Farming and Wildlife Advisory Group	Able to provide advice, including a range of fact sheets on many aspects of habitat restoration and management. FWAG's whole farm "Landwise Plans" provide a suitable methodology for delivering the aims of the project.
Royal Society for the Protection of Birds	Able to provide advice, including published fact sheets on many aspects of habitat restoration and management. Can provide detailed advise on habitat restoration/management for farmland birds.
BBONT and Beds/Cams/Northants Wildlife Trusts	Able to provide help and advice on all aspects of habitat restoration and management
Wildfowl and Wetlands Trust	Able to provide help and advice on all aspects of wetland restoration and management
Woodland Trust	Able to provide help and advice on all aspects of woodland creation and management.

6. References

1. The UK Steering Group Report (1995) "Biodiversity: Volume 1: Meeting The Rio Challenge & Volume 2: Action Plans".

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3. Markham, Sir Frank. (1986). "History of Milton Keynes and District"
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4. Foster, A.J. (1891) "The Ouse"
Society for Promoting Christian Knowledge

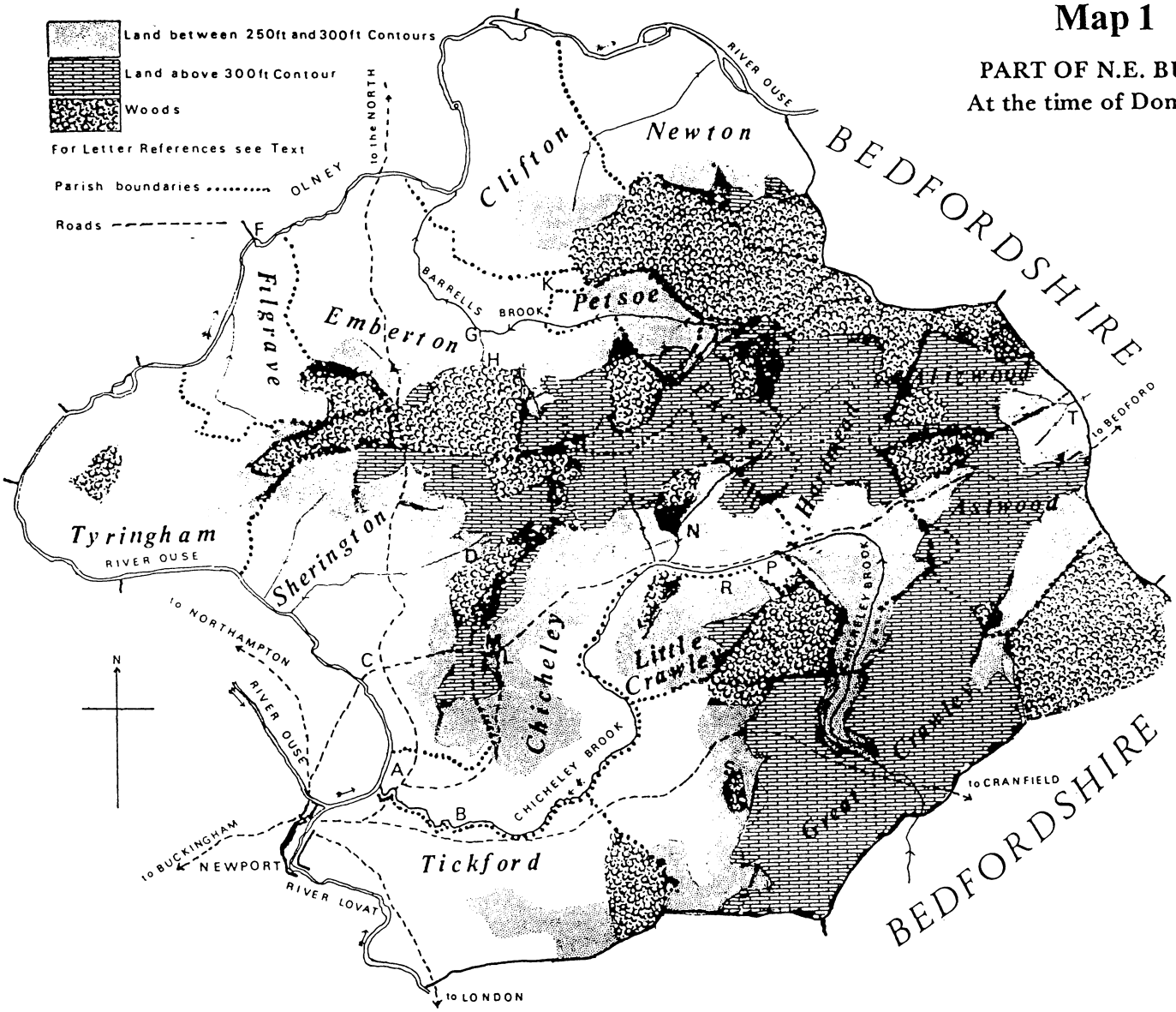
5. Priest, The Reverend S.T. John (1813) "General View of the Agriculture of Buckinghamshire".

6. England Field Survey Unit NCC (1990) "Handbook for Phase 1 Habitat Survey; A technique for environmental audit", *Peterborough.*

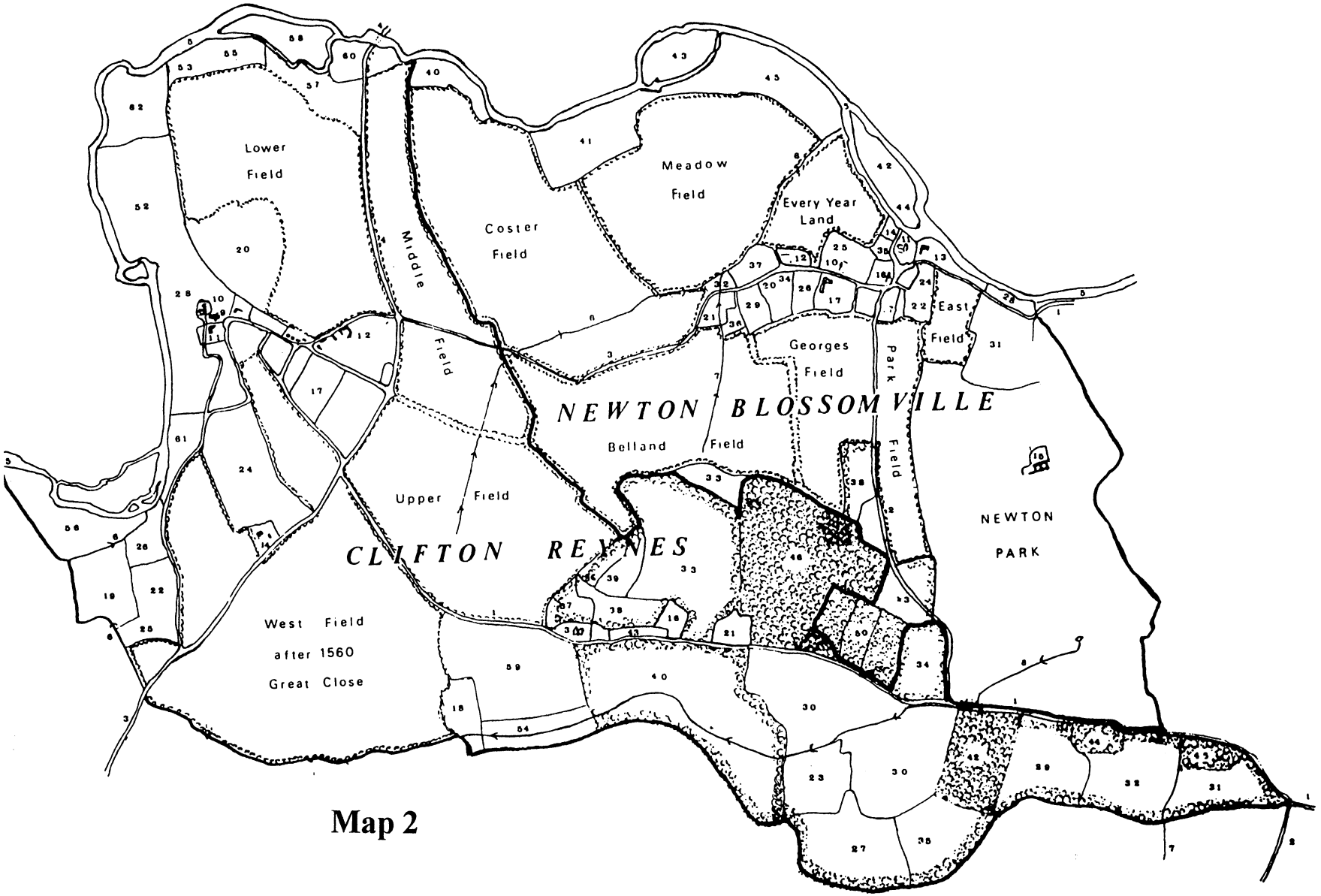
7. "Biodiversity Challenge: Buckinghamshire" (1996) *A BBONT publication*

Map 1

PART OF N.E. BUCKS
At the time of Domesday

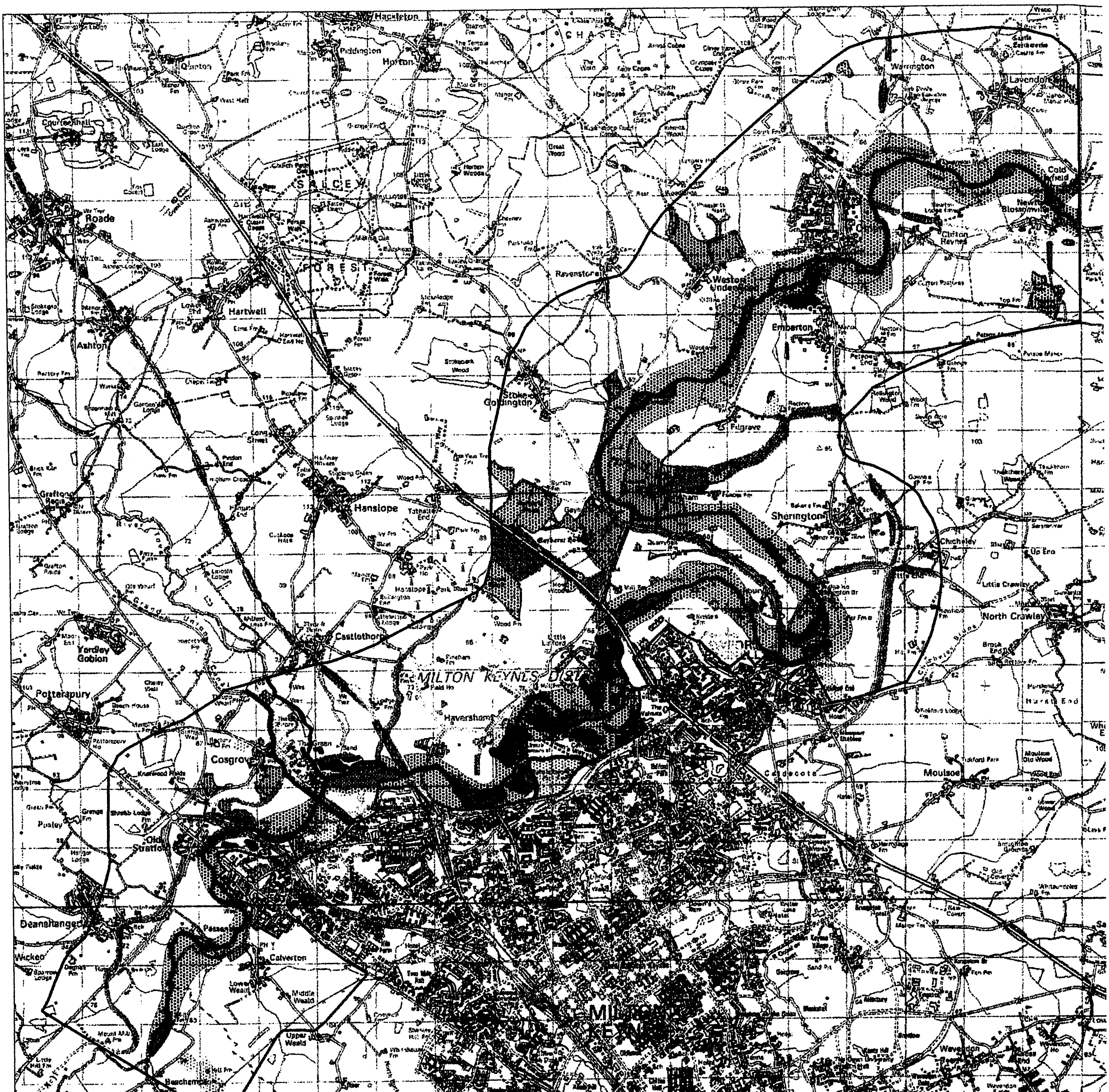


(From Chibnall[2])


Lower
Field
Middle
Field
Coster
Field
Meadow
Field
Every Year
Land
East
Field
Georges
Field
Park
Field
NEWTON BLOSSOMVILLE
Belland
Field
Upper
Field
CLIFTON REYNES
NEWTON
PARK
West Field
after 1560
Great Close

Map 2

Figure 5 A 'Vision' for Habitat Restoration



Existing Habitats Suitable for Restoration Management

- Rivers, Streams and Lakes
- Woodland
- Parkland
- Meadow on ridge and furrow
- Limestone grassland

Zones where Habitat Creation should be Technically Feasible

- Floodplain habitats (floodplain forest and alluvial grassland)
- Woodland
- Limestone grassland

1:100000

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