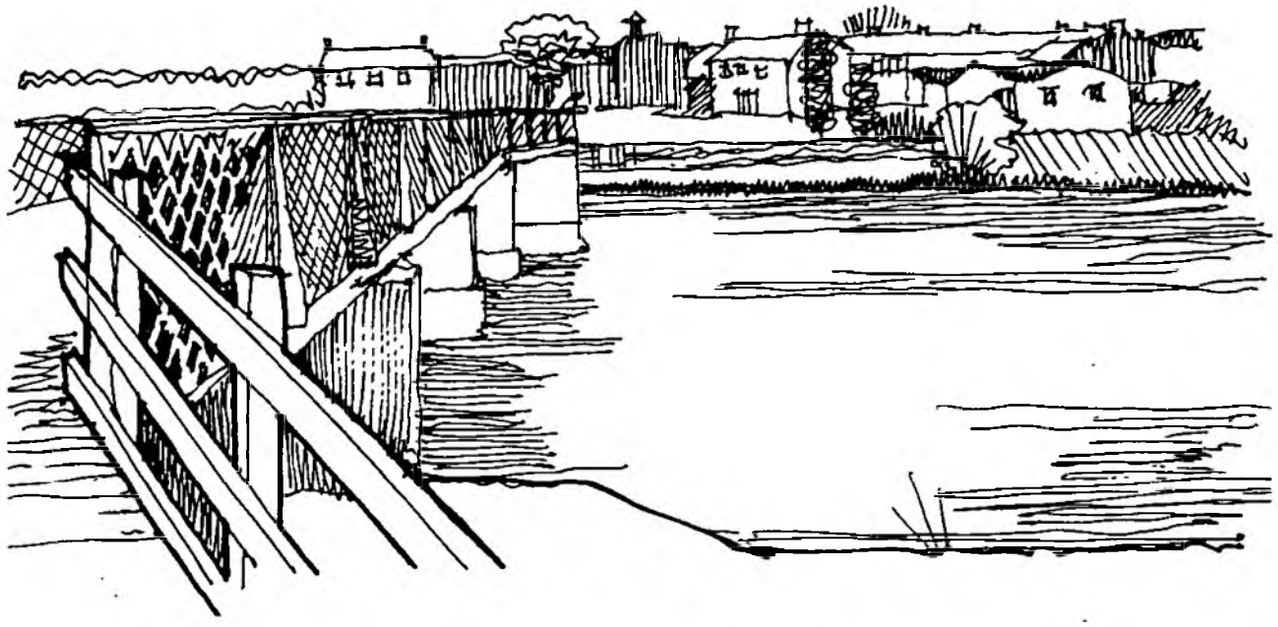
INTEGRATED RIVER CORRIDOR ASSESSMENT

A pilot study of the Rivers Wansbeck and North Tyne in Northumbria



LAND USE CONSULTANTS

1990

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Report

by

Land Use Consultants

in association with Dr Tom Dargie, Ecological Consultant

prepared for

National Rivers Authority, Northumbria Region

August 1990

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August 1990

1. INTRODUCTION

1.1. The Northumbrian region of the National Rivers Authority (NRA) is required, as part of its duties, to promote conservation and recreation on inland and coastal waters and to further the conservation of natural beauty. In pursuit of these duties the NRA agreed, in March 1990, to appoint Land Use Consultants (LUC) to carry out a pilot study to examine the relationships between amenity and recreation, landscape value and ecological interest in river corridors.

1.2. The study has involved the collection of comparable, objective information on two contrasting sections of main river, selected to demonstrate different physical characteristics and patterns of human influence, namely the River Wansbeck on either side of Morpeth, and the River North Tyne between Wark and Bellingham (see **FIGURE 1**).

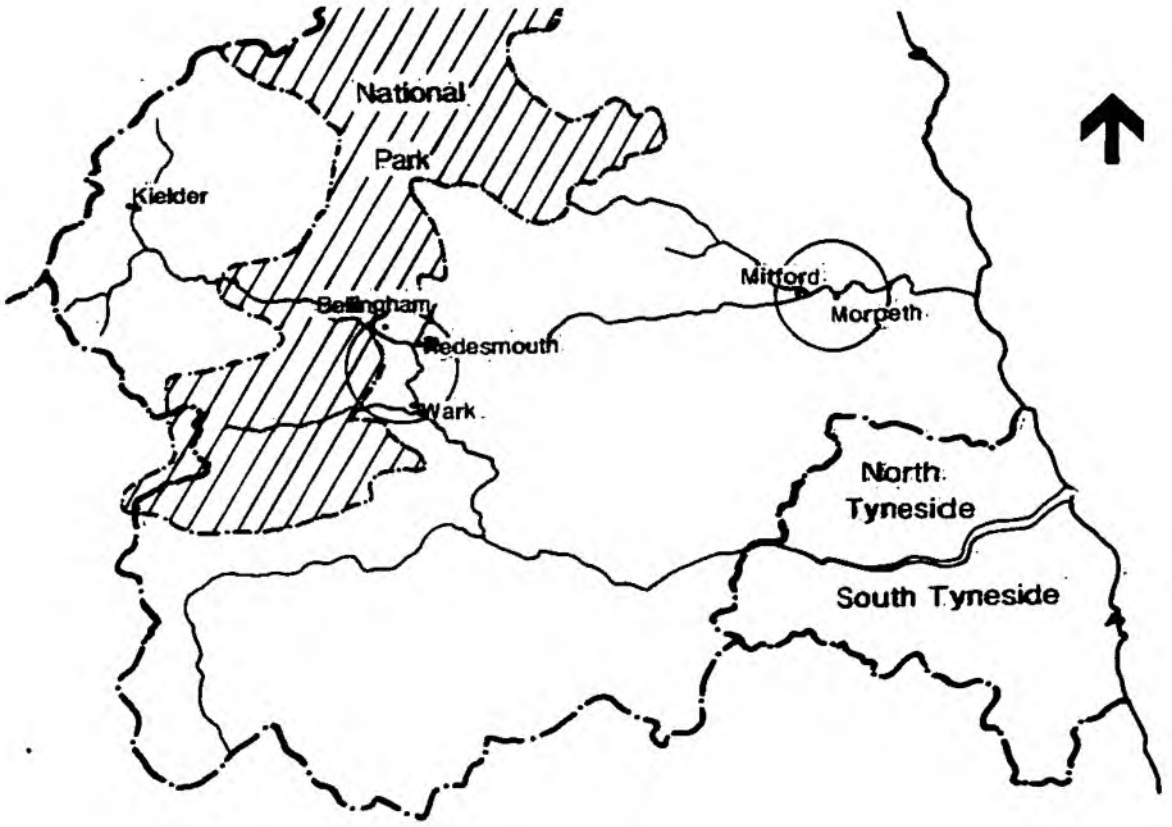


Fig. 1 Location of survey sections
(not to scale)

1.3. Initially the aim of the study was to carry out:-

(i) a river corridor ecological survey
(ii) a landscape assessment
(iii) an examination of existing and potential recreation and amenity facilities.

These studies were intended to be used to develop draft proposals for recreation and amenity within the two study areas.

1.4 As the study progressed, our discussions with NRA officers as well as our own work on the surveys led us to add some broader dimensions to the purpose of the work. In particular it appears that the study may:

(i) demonstrate an integrated approach to river corridor surveys of ecology, landscape and recreation, which can be used either to provide a comprehensive database for the region's rivers, or to react to individual proposals which are likely to affect the river environment, whether flood protection works, water supply or other forms of development.

(ii) help the NRA to determine how best to take a pro-active role in pursuing its duty to promote conservation and recreation.

(iii) Indicate how the NRA can develop co-ordinated and integrated river corridor management strategies which address conservation, enhancement and recreation provision and management.

1.5 This report sets out the findings of the pilot study. In assembling it we have been faced with a choice about how best to present the information. We could either deal separately with the three main subjects of ecology, landscape and recreation/amenity, or we could present the integrated findings for each stretch of river. Because we place particular emphasis on the integration of the different interests we have settled on the second approach. The remainder of the report therefore falls into three parts:-

- Chapter 2 provides a summary of the survey and assessment methods used.

- Chapters 3 and 4 include the findings of the surveys for the Wansbeck and the North Tyne respectively.

- Chapter 5 sets out some general conclusions from the work and reviews the approach.

2. SURVEY AND ASSESSMENT METHODS

Introduction

2.1. The study has involved detailed assessments of ecology, landscape and recreational use of the two stretches of river. In some cases a survey methodology has already existed - notably the river corridor ecological survey method which has been developed in recent years by the NCC, the former water authorities (now the NRA regions) and other groups. A survey of the River North Tyne using this method had already been carried out. We were required to extend the same method to the River Wansbeck.

2.2 For landscape assessment and survey of recreational use and potential, there are no existing approaches developed by either the NRA regions or the former water authorities. We have therefore had to develop our own methods based on our experience elsewhere. Details of all three types of survey are summarised below.

General Consultation and Desk Study

2.3 We contacted a number of organisations and individuals about the study both to collect information and seek views. Though some of these consultations were specific to one or other of the three specific interests, there was often overlap between them. The organisations we contacted, either by letter or telephone, or by a meeting were:

Organisation	**Subjects Covered**
Nature Conservancy Council	Ecological Interest
RSPB (North England)	Ornithological Interest
Northumberland Wildlife Trust	Ecological Interest
Castle Morpeth Borough Council	All aspects of Wansbeck
Tynedale District Council	All aspects of North Tyne
Northumbria County Council (Countryside Section)	All aspects, both rivers
Sports Council, Northern Region	Recreation
British Canoe Union	Recreation and general
NRA Fisheries Officer	Angling
National Federation of Anglers	Angling
Kielder Tourism Development Action Programme Officer	Recreation/Amenity
Mitford and Bothal Estates	General re Wansbeck

2.4 We reviewed a number of documents which were of general relevance, notably:

- the Northumberland County Structure Plan
- the draft Castle Morpeth Local Plan March 1989
- Northumberland Countryside Strategy 1990
- Sports Council Study of Water Sports Development in the Northern Region.

2.5 These documents generally give support to the concept of integrating conservation and enhancement with appropriate recreation development. It therefore seems unlikely that the approach which the NRA is pursuing will conflict with any statutory or draft planning policies or with the spirit of non-statutory documents such as the Northumberland Countryside Strategy.

2.6 General consultations and desk studies of this type are an essential starting point for any river corridor survey exercise. They provide both specific information which cannot easily be gained by survey work, as well as providing useful background on some of the issues. In this pilot exercise it has proved difficult to pitch consultations at the right level because of the theoretical nature of the exercise and the fact that nothing specific is proposed to happen in either stretch of river.

2.7 We have deliberately avoided detailed consultations with local groups, town or parish councils or landowners for fear of arousing concern about the NRA's plans. It would in any case be difficult to build such a level of detailed consultation into what is intended to be a broad strategic aproach to river corridor planning.

Identifying The River Corridors

2.8 The two river stretches had been broadly identified before the start of the study. They offer a contrast in character and location. The River Wansbeck section lies next to a significant centre of population (Morpeth) in a relatively low lying agricultural landscape (elevation less than 60 metres AOD). The River North Tyne section is a relatively upland stretch of the river where the valley is between 60 and 120 metres AOD in elevation and the surrounding hills rise up to 300 metres AOD. It is in a relatively remote area with only small populations nearby in the villages of Bellingham and Wark.

2.9 The fact that an ecological survey of the North Tyne had already been carried out and that Castle Morpeth Borough Council already have an active involvement in the environment of the River Wansbeck were additional reasons for selecting these stretches of river.

2.10 The first practical step in the work was to identify the physical limits of the two stretches. This was done by site survey at the same time as the survey to define the limits of the river valley landscape or the visual envelope (see paragraph 2.26) which would provide the basis for the landscape assessment. The river stretches were defined to relate broadly to natural changes in physical and landscape character. The two stretches agreed upon for detailed study were:-

(i) River Wansbeck from Mitford Castle east to Bothal Bridge (10.5 kilometres of river)

(ii) River North Tyne from the bridge at Bellingham south to the bridge at Wark (10.5 kilometres of river)

Ecological Survey Of River Corridors

Aims and objectives

2.11 The ecological survey and assessment of the river corridor environment was designed to provide three sets of information:-

(i) information on the current ecological character and variation within a river corridor

(ii) information on recent ecological dynamics (habitat and land use change) as an aid to identifying short-to-medium-term trends influencing a river corridor

(iii) an interpretation of the findings in terms of ecological conservation value and sensitivity to recreation/amenity development.

Timing and method of river corridor survey

2.12 A survey by Moira Owen of the River North Tyne between Bellingham and Wark was supplied by the NRA. A thorough walk of this sector confirmed the survey to be of high quality. The same method (Nature Conservancy Council, 1984, Surveys of Wildlife in River Corridors - Draft Methodology) was applied to the River Wansbeck between Mitford and Bothal Bridge. Briefly this involves recording a range of standard information on the river channel and the left and right banks for 500 metre stretches of the river. The only modification to technique was to extend the map of land use beyond the accepted 100m wide bank corridor to cover the area being considered for landscape character. Examples of the maps and record sheets are included as **Appendix 1.**

2.13 The field survey of the River Wansbeck and check of the survey data on the River North Tyne both took place in early April 1990. The timing of the survey was not ideal (the period May to October is recommended) and prevented accurate observation of seasonal emergent plants, detailed recording of plant communitites to National Vegetation Classification standard, and observation of breeding summer migrant birds such as Sand Martin and Common Sandpiper. Neverthelesss the results give a reasonably comprehensive indication of the ecological character of these stretches of river.

Presentation of Information

2.14 The findings of the ecological survey are presented at three different levels:

(i) Detailed survey records for the 500 metre sectors. Those prepared for the North Tyne are already held by the NRA; those for the Wansbeck are provided as a separate appendix to this report.

(ii) Summary descriptions of the ecological character of the river and of specific stretches within it, indicating the particular features which are valuable and need to be conserved and stretches which are particularly sensitive to disturbance.

(iii) A simple evaluation of the conservation value and the sensitivity of each 500 metre stretch and presentation of this information in graphic form.

2.15 These levels of information are likely to be of value for different purposes. The detailed survey information is a source for the summary descriptions and the evaluation and can also contribute to landscape assessment (see below). It will be particularly valuable in considering the details of individual schemes including access and recreation, flood protection schemes or development proposals.

2.16 The summary descriptions will assist with broader considerations such as river corridor management strategies, or overall schemes to balance conservation, enhancements and access. The graphic presentation of value and sensitivity could be a useful strategic tool both for individual stretches of river and for overall presentation of information about the value of the region's rivers.

Assessing Conservation Value And Ecological Sensitivity

2.17 There are no widely agreed methods of converting river corridor survey data into simplified indicators of ecological conservation value. The London Wildlife Trust working for the former Thames Water Authority have adapted a system developed by the Greater London Ecology Unit and LWT which divides river stretches into:

(i) Critically Important for Wildlife: ecologically important stretches which depend heavily on present hydrological conditions

(ii) Important for Wildlife: sites of high wildlife value but not necessarily closely associated with the river.

(iii) Good for Wildlife: sites of local interest which are less likely to be vulnerable to engineering works.

(iv) Poor for Wildlife: sites of low wildlife interest offering scope for enhancement.

2.18 This system is particularly geared to assessing river engineering schemes and combines both value and hydrological sensitivity. Sensitivity depends of course on what type of change is proposed. This study is concerned particularly with recreation and so sensitivity to disturbance is a key issue. We have therefore chosen to use a different system which deals separately with conservation value and also identifies potential sensitivity to disturbance.

2.19 An **index of conservation value** has been simply calculated on the basis of the weightings attached by NCC to the different habitats, bank and channel features which are recorded in the survey. The index links the weight with the extent of each feature in the 500 metre stretch, for the left bank, right bank and river channel separately.

2.20 The **index of conservation for the left and right banks** is the sum of:

(i) Adjacent NCC Phase 1 habitat 'weight' multiplied by the proportion of the bank occupied by that habitat, summed for all habitats present

(ii) Bank feature 'weight' (for attributes, height, width, slope) multiplied by proportion of bank occupied by that feature, summed for all features present.

(ii) Bank vegetation types present multiplied by their 'weight', summed for all vegetation types present.

The minimum score obtainable is 4 and the maximum obtainable is 54 - the higher the score, the better the habitat quality of the sector. The bank conservation value scores are then aggregated into three groups whose distribution can be simply mapped.

Group	Bank Conservation Value
H HIGH	>20
M MEDIUM	>10-20
S SLIGHT	<10

2.21 The **index of conservation value for the river channel** is the sum of:

(i) Presence of island habitat multiplied by 'weight' of island type

(ii) River habitat type multiplied by its 'weight', summed for all habitats present

(iii) Flora type multiplied by its 'weight', summed for all types of flora present.

The minimum score possible is 4 and the maximum obtainable is 38. The river channel value scores are again aggregated, but this time into four groups:

Group	River Channel Conservation Value
V VERY HIGH	>20
H HIGH	>15-20
M MODERATE	>10-15
S SLIGHT	<10

2.22 Sensitivity to disturbance from recreation or amenity development has been judged on a rough and ready basis relating to the known or suspected presence of important species of birds or animals, as shown below. The sensitivity values are also plotted in simple graphic form.

Ecological Sensitivity		Faunal Characteristics*
HIGH	-	one or more of either Badger, Otter Kingfisher (Schedule 1 species) or Goosander known to be present Large numbers of Dipper, Grey Wagtail.
MEDIUM	-	Badger, Otter, Kingfisher or Goosander possibly present. Sparse number of Dipper, Grey Wagtail
LOW	-	Bird fauna largely restricted to Mallard, Pochard, Moorhen and Little Grebe.

**Summer migrant species such as Sand Martin and Common Sandpiper would also have been added to the high and medium sensitivty list if the field survey had been done later in the year.*

Landscape Assessment of River Corridors

2.23 River corridor landscapes need to be assessed at two different levels - firstly the 'micro' level which is concerned with the nature of the river itself and the banks immediately adjacent to it, and secondly the 'macro' level which relates to the wider landscape setting of the river valley.

2.24 At the 'micro' level the assessment is closely linked to the ecological survey of the river corridor. We have made use of the same survey information, supplemented by our own notes on the landscape character of the river and its banks, to assess the landscape at this level.

2.25 At the broader 'macro' level we decided that the assessment had to:

(i) define the boundary of the wider river corridor;

(ii) identify the main landscape features within this area;

(iii) divide the area into landscape character areas.

Survey of the River Corridor

2.26 Definition of the boundary of the river corridor was carried out on a first visit to the rivers, when the extent of the survey stretch was also defined. The boundary was drawn to coincide with the 'visual envelope' relating to the river, that is the limit of views from it. This generally coincides with the first view line beyond the river bank itself. The nature of the area defined will vary with the character of the river valley. It will be confined where the valley is incised and steep sided but more extensive where the valley is broad and flat. Although the areas so defined may extend beyond the normal area of concern of the NRA (the river and its banks and the adjacent floodplain), it is in our view important that this wider area be considered because it provide the very important landscape setting for the river. These areas are not however as extensive as river catchments which are the focus for study in some NRA regions.

2.27 Field survey of the wider river corridor was carried out by driving all routes with views into the river valleys and by walking all accessible paths throughout the two study areas. The following information was mapped or recorded using checklists:

(i) variations in land form;

(ii) general patterns of land use in the river valley;

(iii) important viewpoints;

(iv) positive landscape features;

(v) detractors.

2.28 On the basis of map information and survey records, a number of landscape character areas are then defined within each river corridor. A character area is defined as an area of distinct character and identity. These areas were originally plotted at 1:10,000 scale, although in this report they are included at a smaller scale. These maps also incorporated other information on landscape features. A summary description of each character area accompanies the map.

Landscape Value and Sensitivity

2.29 Landscape evaluation is a notoriously difficult subject and it is now widely accepted that perceptions vary widely between different people. Nevertheless in a study of this type it is necessary to make some judgements about the value of the river corridor landscape, to provide guidance on the balance to be struck between conservation and change. We have not attempted to devise any quantitative methods of assessing value. Rather we have relied on professional judgement to decide what features of river landscapes are likely to make some stretches more valued than others.

2.30 In order to allow direct comparison with the assessment of ecological conservation value we have used the same 500 metre sections of river corridor to summarise landscape value. For each section we have made a judgement about the relative value of the river channel itself, of the river banks, and of the wider context of the river valley. Each section has been judged to be of high, medium or low value according to the factors set out in **TABLE 1** overleaf. These are the factors which in our judgement influence the value which is likely to be attached to different river landscapes. They relate to the character of the river sections we have dealt with in this study and would almost certainly need to be expanded and amended if they were to be applied to other rivers of different character. An overall value for each 500 metre stretch is assessed on the basis of the three values for channel, banks and surroundings. The values are summarised graphically.

2.31 To complete the assessment the river stretches have been classified according to the sensitivity of the landscape to change. The aim is to distinguish areas where the overall aim is to conserve existing landscape character and where change can less easily be accommodated, from those where there are fewer features to be conserved, where change can be accommodated and where there is scope for positive enhancement. The classification we have used divides the river stretches into:

(i) Landscapes which make an important positive contribution to the study area, and where conservation is very important. Every effort should be made to conserve and where possible enhance their character.

(ii) Landscapes which make an important contribution to the study area, but which also include elements which would benefit from enhancement.

(iii) Landscapes which tend to make a negative contribution to the character of the area, and/or which are under pressure from recreation or development.

Assessment of Recreation Use and Potential

2.32 To determine the recreational use and potential of the river stretches we have used three sources of information:

21. Site assessment of resources for recreation in the area, including footpaths, bridleways, accessible open space, access to the water for boating and canoeing, and tourism facilities, such as caravan sites.

(ii) Consultations with user groups and sporting umbrella bodies to discuss both existing use and potential for the future.

(iii) Review of existing documents which indicate levels of demand for different recreational activity.

TABLE 1 : FACTORS AFFECTING LANDSCAPE QUALITY OF RIVER CORRIDORS

High ..... Medium ..... Low	
RiverChannel	
Clear bright water	Discoloured or polluted water
Free of debris ..... water	Debris and rubbish in
Sounds of moving water ..... water	Still, silent
Fast moving water, riffles etc.	Slack or silted steams
Variety in channel width and depth	Straight or canalised channel
Sinuous channel ..... channel	Straight, uniform
Evidence of fish feeding ..... water	"Lifeless"
Presence of aquatic and/or ..... emergent vegetation	Little or no aquatic or emergent vegetation
Presence of attractive built ..... structures such as historic bridges, weirs,etc	No significant or attractive built structures
River Banks/Margins	
Diverse bank vegetation with ..... semi-natural habitat present	Uniform improved agricultural land running up to banks
Broadleaved trees close to river ..... channel	Coniferous plantations close to river bank
Variety of bank slopes and edge ..... profiles	Straight, uniform banks
Exposed rock outcrops, tree roots ..... or other interesting features	uniform banks with no interesting features
Wider River Corridor	
Good views into river corridor	Lack of good views into river corridor
Good views of surrounding ..... landscape from river	Lack good views of surrounding landscape
Broadleaverd woodland emphasising ..... river valley form	Uniform coniferous plantations obscuring river valley form
Significant areas of parkland ..... or other historic landscape	Significant areas of degraded, derelict or despoilt landscape
Attractive vernacular buildings ..... or other features of interest	Poor quality or inapropriate development or prominent detracting features
Positive overall character and ..... identity	Negative overall character and identity

2.33. We have not carried out any surveys to show actual levels of use of resources such as footpaths or informal access areas. These are extremely difficult to organise and consuming of both time and money and the results are not always particularly useful. We do not believe that they are necessary at a strategic level but may possibly be useful when specific projects are being planned, although even then the difficulties of carrying out such surveys remain.

2.34 The Sports Council policy document 'A Study of Water Sports Development in the Northern Region' provides useful background in considering the needs of water sport in the region. The report states that, for the whole of the Northern Region, there is a shortage of moorings, overnight facilities and other amenities for general boating. It also notes that canoeing suffers from a lack of suitable rivers where agreements allow touring and 'white-water' canoeing, adding that:

> "The access problem arises in particular from exclusive use of many rivers by angling clubs rather than priority use which would enable timetables of use to be agreed, thereby avoiding conflict. Also there is a lack of knowledge of riparian ownership which makes it difficult to establish new agreements".

The study states that there is no shortage of opportunity for fresh water angling.

2.35 Key recommendations to arise from the study are that: where appropriate shared use on a time or space basis of suitable water for as many sports as possible should be encouraged; where appropriate, access to currently inaccessible stretches of suitable water should be negotiated and physical access provided where none is available; closer co-operation between public agencies and sports and conservation bodies should be sought to enable water sport and recreation requirements to be identified and given due consideration in the decisions of the agencies.

2.36 Information about angling has been obtained from fisheries officers of the NRA and, where possible, from the local angling associations, but we received no reply to our letter to the National Federation of Anglers about the study. The British Canoe Union provided valuable information and comment about canoeing use and potential and Castle Morpeth Borough Council's countryside ranger was able to provide details about countryside access in the Wansbeck corridor. We have attempted to summarise all this information graphically.

2.37 Given the nature of the two river stretches and their suitability for recreational use, it has not proved necessary to develop any more complex methodology relating to demand forecasting or projections of use. In more developed river corridors, with greater potential for water sport, this might be necessary.

Integrating the Survey Findings

2.38 Once all this information is assembled for the individual interests, the interrelationships need to be assessed, and conflicts and opportunities identified. The aim has been to avoid unnecessary conflict between recreation and conservation of either landscape or ecological interest. We have presented this information in the form of outline river corridor strategies. These strategies aim to set out, in general terms, the sections of the river where conservation is to be emphasised, areas where management or enhancement are needed, either to benefit landscape or ecology, or both, and areas where provision for recreation might be improved.

3. SURVEY FINDINGS FOR THE RIVER WANSBECK

Description of Survey Stretch

3.1 The River Wansbeck rises at Sweethope Lough, some 35 kilometres west of the point where it flows into the North Sea. The river rises at around 850 metres AOD on the lower limestone uplands, and flows via Kirkwhelpington, through the millstone grit and upper limestone to Mitford, where it is joined by the River Font. East of Mitford, the river runs into the coal measures which extend all the way to the coast. The historic town of Morpeth is the most significant settlement on the course of the river, beyond which it passes Bothal on its way to the sea at North Seaton.

3.2 The chosen section of river is between Mitford Village and Bothal; some 6.5 kilometres as the crow flies, although the river channel itself measures 10.5 kilometres. Between these two points the river falls from 30 metres AOD to about 10 metres AOD. The valley is incised within carboniferous shales and limestones capped with glacial drift. There are large areas of flood plain alluvium and a number of old river terraces. The section is centred on the historic town of Morpeth; upstream of the town the character is predominantly rural but with evidence of much recreational use. East of Morpeth the river corridor is again rural, although it suffers from some environmental problems because of its position downstream from the urban centre and its proximity to the mining community of Pegswood to the north.

3.3 A major feature of the study area is the sequence of five weirs located at Mitford (a gauging station), Highford Bridge-Abbey Mills, Morpeth-Oliver's Mill, East Mill and Bothal Mill. The latter four weirs were originally built to provide abstraction points for water-powered mils but none are now operational. The weir at Highford Bridge has now been adapted for abstraction (above the weir) at Highford Bridge waterworks and treated sewage effluent disposal (below the weir).

Ecological Assessment

3.4 Twenty one 500 metre sectors were surveyed along this stretch of the Wansbeck. Detailed survey records are provided in a separate report. The general ecological character of the river at this point is detailed below.

3.5 The artificial and stepped long profile of the river has a major impact on river corridor ecology. Water ponded behind the weirs is extensive, forms deeper slacks and is more slow flowing than other sectors. The ponded water is more turbid than in normal slacks and riffles, probably reflecting a high nutrient content from treated and untreated sewage discharges from many points. Even in areas of rapid flow there is some turbidity and algae form a major cover to bed materials and bedrock within the channel. There are considerable fish numbers and a rich variety of other wildlife, all suggesting that eutrophication is not a serious problem at present.

3.6 For most of its course the river channel is 10-20m wide and varies considerably in channel, bank and adjacent habitat characteristics, often over short distances. The alternation between ponded slacks and a more normal slack-riffle sequence is a sound basis for zoning of the River Wansbeck. There are three ponded sectors alternating with four normal slack-riffle sequences, giving seven sectors of differing ecological character. These zones of differing ecological character are described on the following pages.

3.7 The assessments of ecological conservation value and sensitivity to disturbance are summarised graphically on **FIGURE 2**. Clear zones of conservation quality exist with very high, high and moderate values on either side of Morpeth, contrasting with lower interest for the river stretch within the urban area. A large water abstraction plant east of Mitford on the left bank produces the only low rank of conservation value outside the urban area. The ecological sensitivity scores, show a concentration of easily disturbed wildlife upstream of Morpeth, a slightly impoverished medium sensitivity sector downstream, and a robust species assemblage (low sensitivity) within Morpeth itself.

3.8 The most important finding relating to conservation value and ecological sensitivity data is the very high habitat quality of most sectors of the Wansbeck. The only major length of lower interest covers the Morpeth urban area. Even here there are large numbers of species tolerant of frequent disturbance. Disturbance by walkers is seen as the major existing and potential impact upon sensitive wildlife. Current levels of other forms of recreation are probably much less important, though any new development could alter this view.

3.9 In order to assess ecological change over time, aerial photography (Fairey Surveys 1967-69, 1:10,560) was obtained and a scanning mirror stereoscope used for detailed interpretation. The following changes over the past two decades were noted by comparison with field notes:

(i) A reduction in woodland clearing area and a marked increase in scrub (mainly Hawthorn) in Borough Wood west of Morpeth. This is possibly the result of decreased sapling grazing by rabbits.

(ii) Substantial left-bank replanting east of Morpeth close to Bothal Bridge, including conifers, which will eventually shade areas of dry heath on steep valley sides.

(iii) Scrub development within small gaps in woodland, the result of tree death from Dutch Elm disease. Dead elm trees were the commonest trees being transported in the river channel.

(iv) Active woodland management (coppicing, selective felling, path maintenance) east and west of Morpeth, probably by conservation volunteers.

(v) Marked concentration of new executive housing on the western edge of Morpeth and in Mitford, all with gardens extending to the river's edge. Most seem to have sewage outlets direct into the river. Several have garden refuse dumped over the bottom fence or into the river.

Zone 1 : Mitford Hall to Mill Farm

This sector contains a sequence of pools (2), slacks (10) and riffles (12), the latter two being most extensive with 75% and 20% of channel area respectively. The river flows over bedrock with a very gentle dip and, apart from algae, the only notable flora is a patchy bryophyte cover.

The banks are of earth, 1-2m high and 1-2.5m wide with a gentle slope. The bank vegetation is varied, ranging from thick grassland with scattered trees, through thick scrub to a continuous overhanging tree cover with exposed tree roots. There are rock and earth river cliffs immediately beside the river and also close by. Adjacent habitats are likewise varied, from gardens to pasture (semi-improved and unimproved neutral grassland) and semi-natural broadleaved woodland.

The observed wildlife is of high conservation value (Otter, Dipper, Goosander and probably Kingfisher), and is probably due in the main to bank and channel diversity. Public access to the bank is restricted and there is little regular disturbance, though many species are likely to be sensitive to disturbance.

Zone 2 : Mill Farm to Highford Bridge - ponded

Ponding in this 800m zone is due to two weirs, with only a short pool-riffle sequence below the first at Mill Farm. The channel is usually greater than 1m in depth, with a bed of boulders and cobbles. The earth banks are narrow and steep, with some exposed tree roots and much tree cover which is overhanging. The habitats are probably perfect for Kingfisher and good for Otter. Part of the bank adjoins Borough Wood which is Ancient Woodland. The zone is therefore important for conservation, despite the large water treatment facility at Highford Bridge. The important species are sensitive to recreational disturbance.

Zone 3 : Highford Bridge to Lowford Bridge

This 1.3km length contains a sequence of one pool, slacks (5) and riffles (6). Most of the channel is upon bedrock, with some cobbles and quite extensive banks of shingle related to meander slip-off slopes. There is one long linear island with an earth cover and young trees. The earth banks are narrow and steep, largely wooded with a good woodland groundflora, and with exposed tree roots and overhanging tree canopies and branches. Several large, dead elms were stranded in the channel after the fall of flood waters.

Scotch Gill, adjacent to the left bank, is an area of Ancient Woodland. The right-bank is an area of high conservation interest. The left bank has public access for its eastern length but the recreational impact is, so far, minimal upon the most sensitive species.

Zone 4 : Lowford Bridge to East Mill Weir

This ponded zone extends for 2.4 km and is centred on Morpeth. Two weirs are present, with a short sector of slack and riffle below Oliver's weir in Morpeth centre. The channel is relatively shallow (0.5 - 1m deep) and materials comprise cobbles and pebbles, both suggesting infill behind the weirs following disuse. Slow water velocities have allowed fragments of an aquatic macrophyte flora to develop with Bulrush (*Typha latifolia*), Flote-Grass (*Glyceria fluitans*) and Bur-Reed (*Sparganium erectum*) in small patches.

Contd...

Contd...

The river banks in this zone are largely artificial, vertical and very narrow. Two long stretches either side of Morpeth centre have high flood walls to protect residential areas. There is a thin scatter of trees along much of the zone which has a varied set of adjacent habitats (housing, industrial/commercial premises, amenity grassland, allotments, arable land). Litter is a problem over much of the zone.

Adjacent paths, boating facilities, stepping stones and low bridges allow very high public access to the river bank. The wildlife interest is good given the high level of disturbance and consists of high numbers of Mallard and Pochard, plus some Little Grebe in quieter stretches. The zone lacks sensitive species.

Zone 5 : East Mill Weir to Northstead Banks

This 3.6 km zone is made up of fifteen slacks alternating with sixteen riffles, all within a very restricted valley with steep sides. The channel in slack sectors is about 0.5m deep, based mainly on bedrock (including potholed limestone) but with patches of cobble. Shingle beds are common and relate to meander slip-off slopes. The earth banks are generally steep and 1-2m in height. Woodland with a typical grounflora covers most of the bank and there are long lengths of overhanging trees with exposed tree roots. Dead elm trees are very common in the channel throughout the sector. Most of the right bank is backed by broadleaved deciduous woodland and this is dominant on the left bank, but with a substantial amount of coniferous woodland too.

The observed wildlife was relatively poor but the habitats present suggest that Dipper, Kingfisher and Common Sandpiper should be present, and perhaps even Otter. The conservation value is high and the immediate bank zone, especially adjacent to pools, is probably sensitive to recreational disturbance.

Zone 6 : Northstead Banks to Bothal Mill Weir

This short 500m ponded section has a channel exceeding 1m in depth and a base of bedrock and cobbles. The earth banks are steep and narrow, entirely covered by broadleaved woodland and overhanging trees and exposed tree roots. Woodland extends up the adjacent valley sides which are steep away from the immediate bank.

The zone provides an excellent habitat for Kingfisher and Otter might be present. Conservation status is therefore high and the area should be regarded as sensitive throughout much of its length.

Zone 7 : Bothal Mill Weir to Bothal Bridge

This short 200m sector contains a single riffle zone beyond a small pool at the foot of Bothal Mill weir. Ephemeral shingle islets are extensive. The left bank is low and gentle, with thick open vegetation. The right bank has a length of high rock cliff and a woodland cover. Scrub and small industrial buildings are found beyond the left bank. Conservation value is probably good because Dipper should be common and the sector is also moderately sensitive to disturbance. The weir has a fish ladder.

SUMMARY OF ECOLOGICAL VALUES

Sector	CV-LB	CV-RB	CV-RC	ES
1	24	24	10	H
2	29	29	22	H
3	26	21	12	H
4	26	25	12	H
5	6	12	15	H
6	23	20	9	H
7	13	12	8	H
8	14	13	8	H
9	9	9	10	L
10	8	10	6	L
11	12	5	9	L
12	18	18	9	L
13	19	20	16	M
14	20	20	13	M
15	27	22	15	M
16	20	22	12	M
17	15	16	17	M
18	12	13	12	M
19	17	22	10	M
20	12	15	11	M
21	27	17	16	M

CV-LB Conservation Value - Left Bank
V-RB Conservation Value - Right Bank
V-RC Conservation Value - River Channel
ES Environmental Sensitivity

ECOLOGICAL SENSITIVITY	FAUNAL CHARACTERISTICS
HIGH	Badger or Otter Kingfisher (Schedule 1 species) or Goosander present Larger numbers of Dipper, Grey Wagtail
MEDIUM	Badger or Otter or Kingfisher possibly present Sparse numbers of Dipper, Grey Wagtail
LOW	Bird fauna largely restricted to Mallard, Pochard, Moorhen and Little Grebe

CONSERVATION VALUE:

- High
- Moderate
- Slight

RIVER CHANNEL HABITATS:

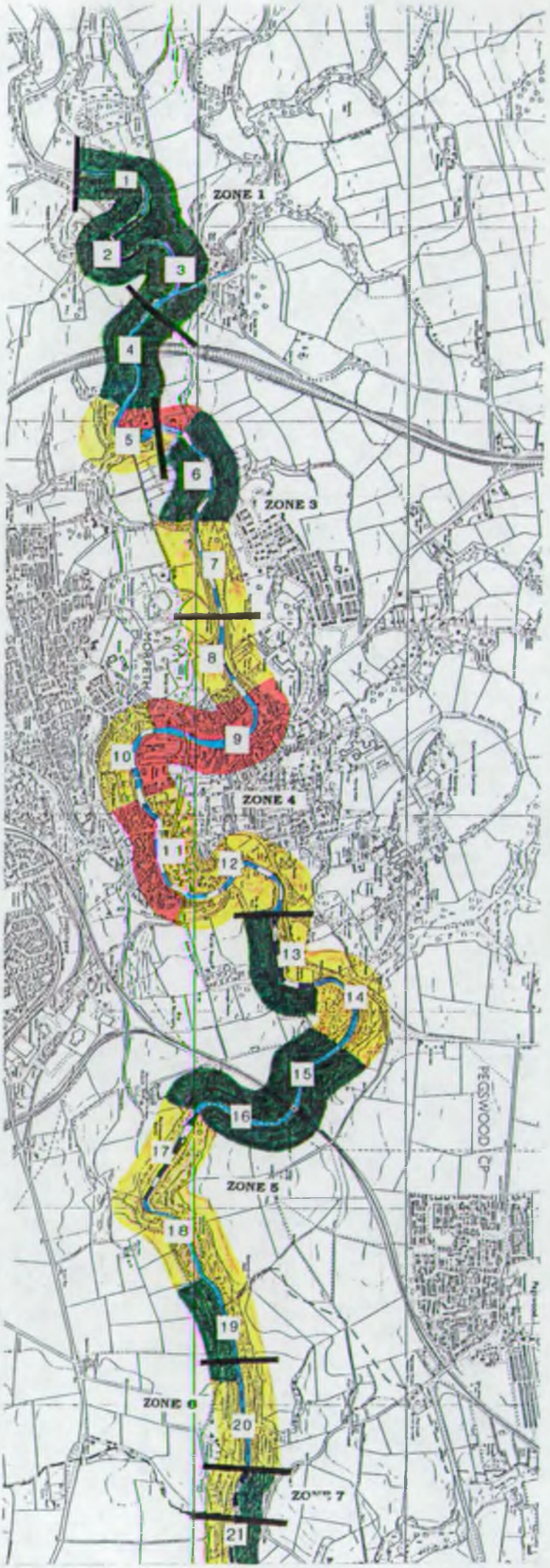
- Very High
- High
- Moderate
- Slight

River Wansbeck

Ecological Status

0 0.5 1km

→ Fig. 2



Landscape Assessment

3.10 There are a number of references which illustrate the distinctive and historic landscape character of the Wansbeck at this point. Indeed, the Latin inscription on the Bough's Coat of Arms reads "Inter sylvas et flumina habitans" (dwelling amongst woods and rivers). In the 16th century, John Leland, the Kings Antiquary, wrote:

> "Morpeth, a market town, is twelve miles long from Newcastle. The Wansbeck, a pretty river, runneth through the side of the town. A quarter of a mile out of the town on the hither side of the Wansbeck was Newminster Abbey, of white monks, pleasant with water and very fair woods about it.....There be ruins of a castle, (be)longing to the Lord Brough, at Mitford, on the south side of the Wansbeck".

In 'The Monthly Chronicle of North Country Lore and Legend' by J R Boyle (Walter Scott Ltd. 1890), Boyle describes "a delightful walk from Morpeth along a road, which, nearly the whole way, follows the course of the Wansbeck and leads past open glades and wooded slopes". The landscape today retains this essential character of an attractive wooded river valley.

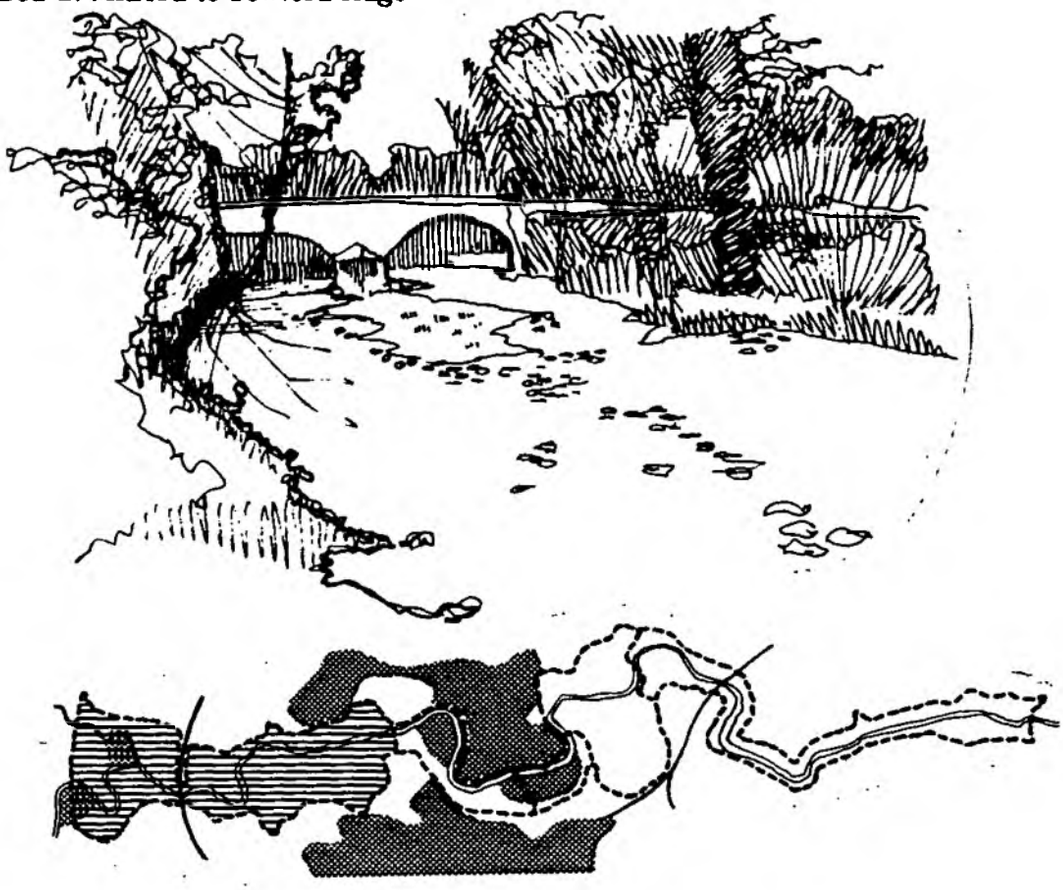
3.11 The main landscape features are shown on **FIGURE 3**. At the western end of the section, surrounding land uses relate to Mitford Estate and the picturesque hamlet of Mitford. The well wooded slopes, and the ruin of Mitford Castle give the area its special character. Towards the town centre, the valley bottom is more intensively farmed; and there is again evidence of historic occupation at Newminster Abbey, sited on the flood plain. The valley woodlands of Scotch Gill and Borough Wood provide an attractive backdrop to the river, extending to within 0.5km of the town centre. The western edge of Morpeth is well defined although there is some new ribbon development alongside the river. The early development of the town was centred on the river bridging point, although more recent growth has been on the valley sides to the north and south of the river. To the east of the town, and beyond to Parish Haugh, there is pressure for new development on flood plain land. Beyond this, the river enters a steep wooded gorge, which continues to Bothal Mill. Reflecting this general pattern we have identified five landscape character areas which are shown on **FIGURE 3** and described briefly in the following pages.

Landscape Value and Sensitivity

3.12 **FIGURE 4** summarises our assessments of landscape value and sensitivity based on the 500 metre sectors defined in the ecological survey. The pattern which emerges confirms that the landscape quality is closely related to the conservation value at the micro or detailed scale. The aggregated "scores" for the river, its banks, and the wider corridor are either high or medium throughout the section, apart from one 'low' score to the east of Morpeth town centre. A more general definition of "landscape sensitivity" is overlain on **FIGURE 4**. This contrasts sectors which are highly sensitive to any change or disturbance, notably to the west of Morpeth, with the less sensitive zone through the town centre where improvements could and should be initiated to enhance the existing landscape. Intermediate values are shown throughout the gorge down to Bothal, where, for example, footpath improvements and woodland management for nature conservation interests would enhance landscape quality. Particular problem areas outside of the town centre emerge around the Highford Bridge abstraction and treatment plant, and at the river access point near Bothal Mill. Sensitive planning, tree planting and positive management could resolve these problems.

RIVER WANSBECK: LANDSCAPE ASSESSMENT

Character Area 1: Mitford to Lowford ridge



Description:

Landform: Steep valley sides with a variable width floodplain.

River form: The river has a meandering form at the confluence between the River Font and the Wansbeck, becoming less sinuous beyond Highford Bridge. A series of weirs at Mitford Castle Bridge, Mill Farm, and Highford Bridge interrupt the flow, creating pools and fast flowing sections.

Land Use: The steep valley sides are well wooded; the ancient woodlands are very distinctive landscape features, e.g. Borough Wood and Scotch Gill. The flood plain is developed either for housing as at Mitford Village; market gardening as at Abbey Mills, or grazing land. School playing fields also occupy part of a former river terrace.

Key Features:

- rural character
- picturesque settlements and historic bridges
- ancient woodlands on steep slopes
- intensively used flood plain
- attractive river character with weirs

Weir at Oliver's Mill in Town Centre.

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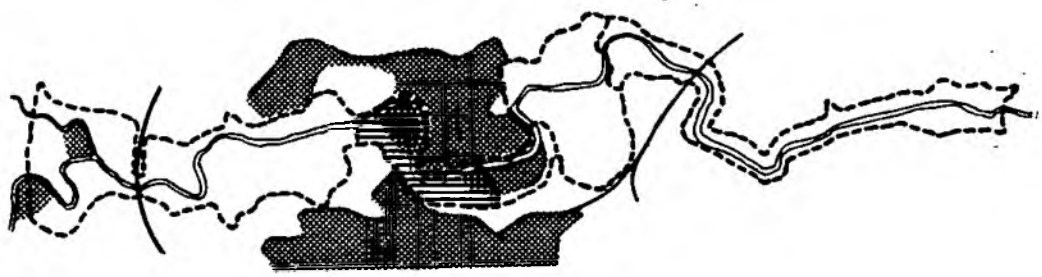
was given to Town Council "received with appreciation" in 1945

Only in 1990 did NWA realise it was paying for maintaining a structure that belonged to the Town.

Character Area 2: Lowford Bridge to Heritage Centre



Description:

Landform: Morpeth Town Centre is sited on a broad river terrace to the north of the channel. To the south, the land rises steeply up to the site of the historic Morpeth Castle.

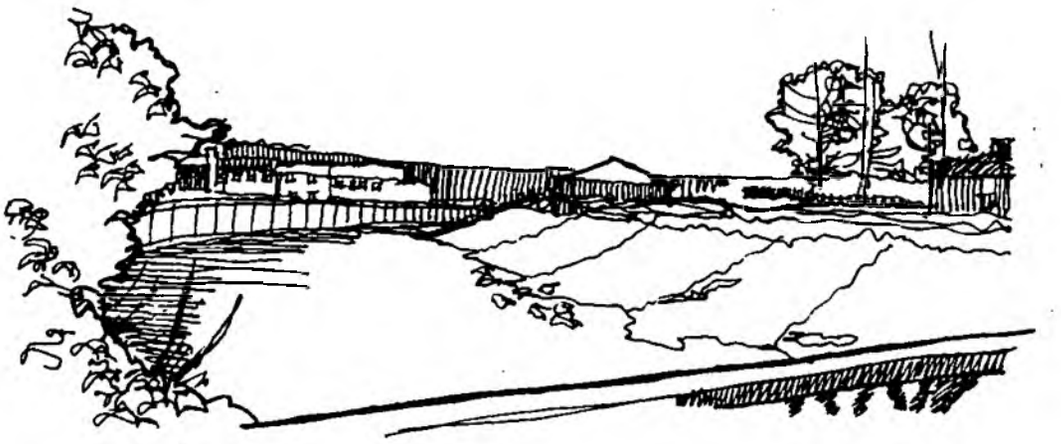
River Form: The river takes a wide meander through the built-up area of the town; the banks are predominantly modified with either flood protection walls or garden structures. A weir close to the pedestrian Elliot Bridge retains a pool with a distinctive character upstream of the barrier.

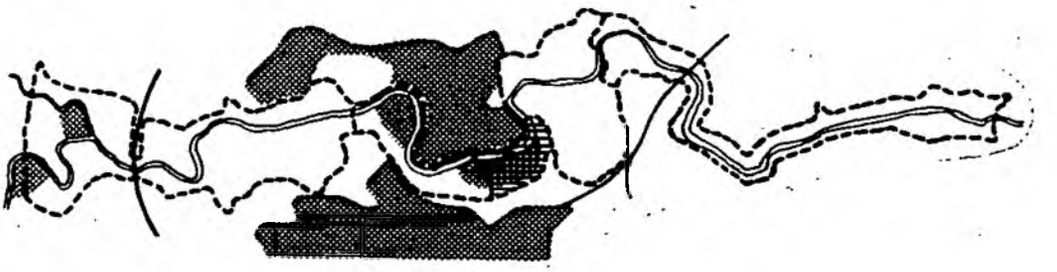
Land Use: The northern side of the river is intensively developed as the town centre of Morpeth. On the southern banks, public open space has been laid out almost continuously from High Stanners to Carlisle Park and the Castle. The open space is formally laid out with paths and grassed areas adjacent to the river; there are fine views into the town from the open space and from the pedestrian crossing points.

Key Features:

- pedestrian bridge crossings, and Morpeth town centre
- flood protection walls
- weir and pool
- formal open space on the south bank
- views of townscape and a variety of built forms

Character Area 3: Heritage Centre to Borehole Lane





Description:

Landform: The land rises more steeply to the south beyond the Victorian housing and up to the railway line on the plateau above the town. To the north, there is a gently sloping river terrace.

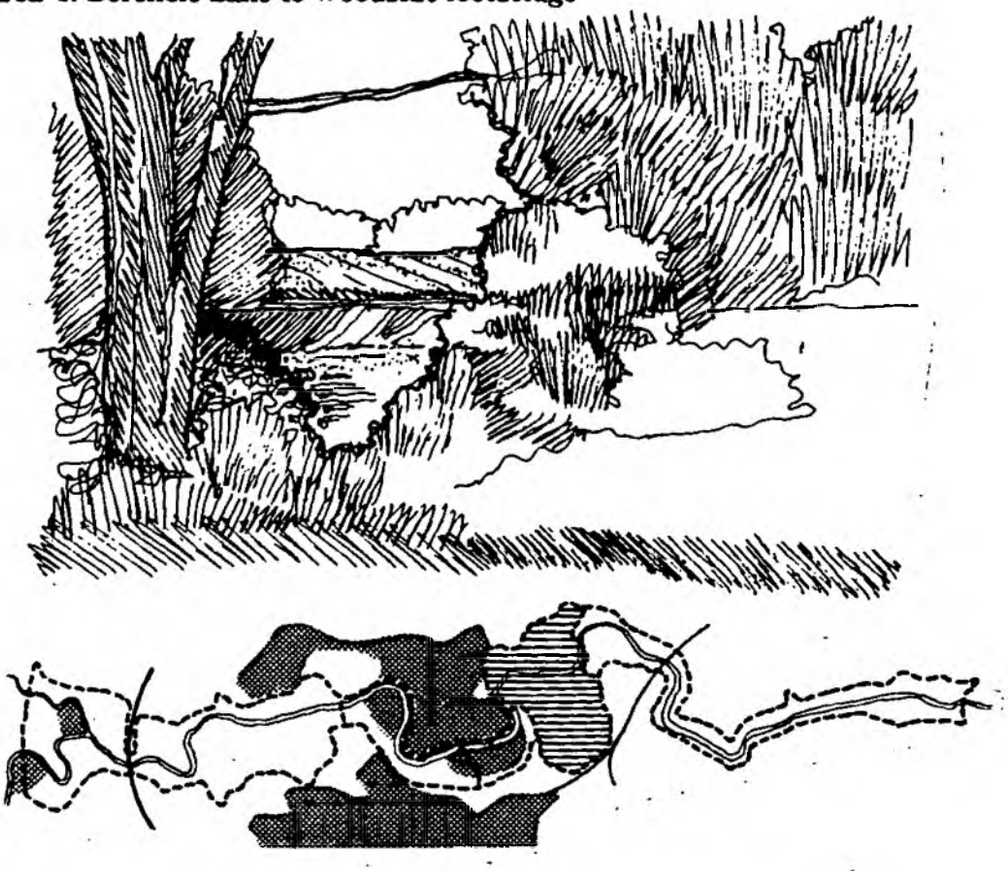
River Form: There are no weirs in this section, however the river channel appears to have been modified, and there is a flood wall throughout on the southern bank. Debris washed from the town centre gives a downgraded character to the river.

Land Use: Victorian housing at high density dominates the southern side of the river, whilst the northern terrace is being redeveloped as an industrial area. This section generally is the less favoured part of Morpeth.

Key Features:

- dominant flood wall
- canalised character to channel
- redevelopment on the northern terrace
- high density housing on the south side
- poor quality landscape

Character Area 4: Borehole Lane to Woodside footbridge



Description:

Landform: The floodplain opens out on the southern side, bounded by steep slopes beyond up to the plateau level. The valley sides rise steeply on the north side and to the east of this section the river to runs into the steep gorge which characterises the remainder of the study area.

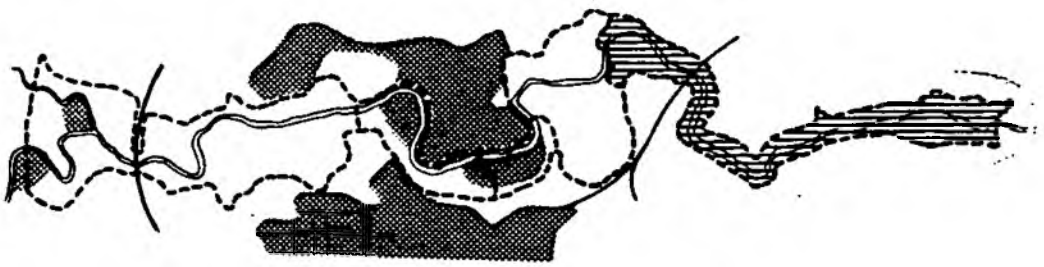
River Form: The river flow is controlled by a weir to the west of East Mill; the pool above the weir is a less interesting stretch of the river than the section beyond which flows towards the gorge.

Land Use: The flood plain to the south side of the channel is at present used for market gardening; although there are plans for developing this area for housing and retail uses which would have a major impact on the river corridor. To the north, a former hospital is built into the valley side, and extensive woodland extends northwards to the How Burn valley. A sports ground is sited on the valley side between the river and the Whorral Bank road.

Key Features:

- open flood plain with sewage works to the south
- steep wooded slopes to the north
- major weir influencing the river character
- inaccessible river banks

Character Area 5: Woodside footbridge to Bothal Mill



Description:

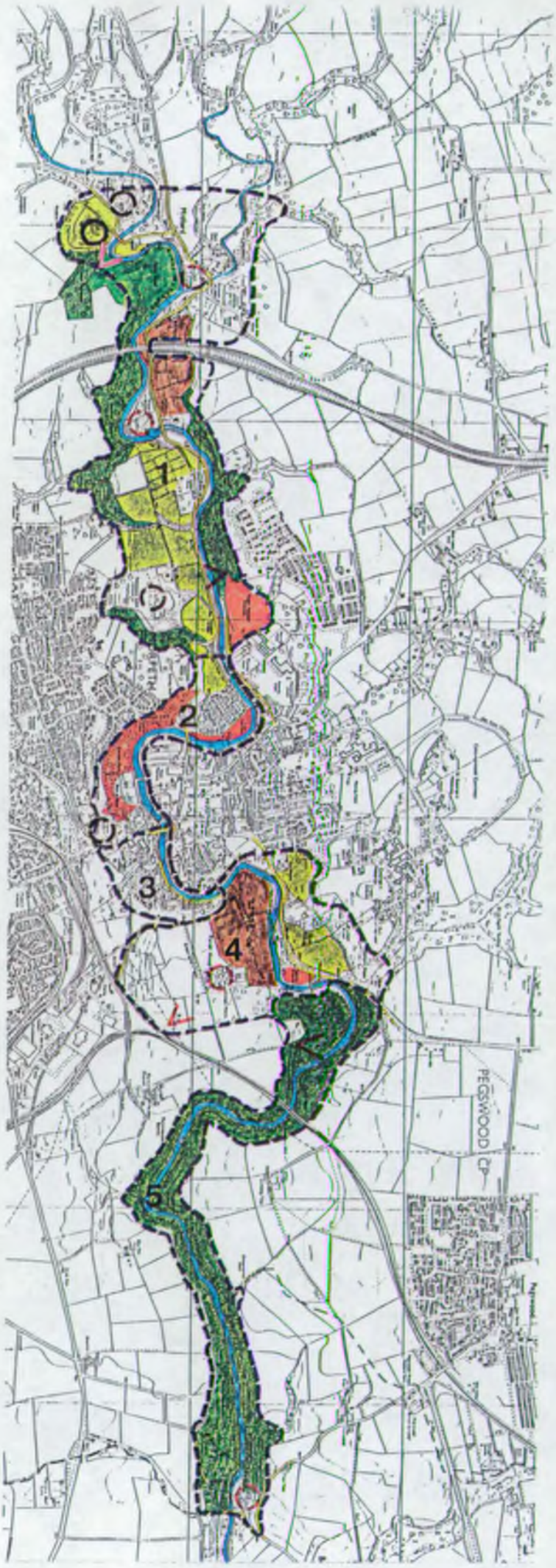
Landform: The river flows into a steep sided gorge on both sides of the channel, cut in some thirty metres below the surrounding plateau level. Rocky outcrops appear at intervals throughout the gorge giving the impression of a deep cutting.

River Form: The river flows over outcrops of bed rock, forming a series of pools and rapid sections: the form of the river varies with abrupt changes of directions. The immediate banks are steep, and clad with dense vegetation, often overhanging the channel.

Land Use: The valley sides are almost exclusively wooded; with either coniferous plantations, or modified semi natural broadleaved woodlands. Conifers appear out of place in this picturesque gorge.

Key Features:

- steep sided rocky gorge
- wooded slopes
- conifers modifying the character
- riverside walk on northern bank



Boundary of character area

River Wansbeck

Road with view of river

Major/significant attractor

Major/significant detractor

View point

Public open space

Grassland

Parkland

Woodland

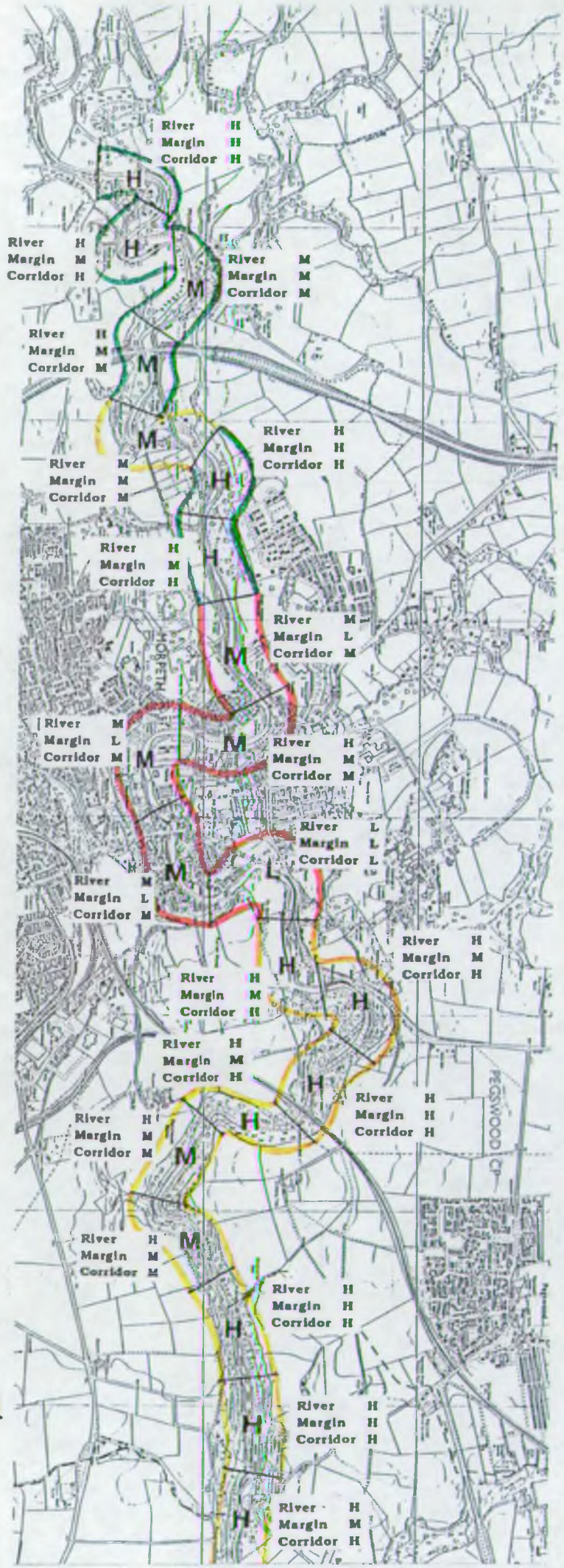
Arable

River Wansbeck

Landscape Assessment

0 0.5 1km

→ Fig. 3



H, M and L indicate High, Medium and Low values for the river, margin and corridor respectively, judged according to factors set out in Table 1.

The overall value of the sector is an aggregate value combining the three components.

Landscapes which make an important positive contribution to the character of the study area. Every effort should be made to conserve and wherever possible enhance their character. Any proposed development which may result in damage to these landscapes should be strongly resisted.

Landscapes which on the whole make an important positive contribution to the character of the Study Area, but which also include elements which would benefit from enhancement.

Landscapes which tend to make a negative contribution to the character of the Area, and which are under pressure from development.

River Wansbeck

Landscape Evaluation and Landscape Sensitivity

0 0.5 1km

→ Fig. 4

Recreation Use and Potential

3.13 **FIGURE 5** illustrates the range of existing recreation opportunities in the study area, which have been mapped using available sources of information, together with our own data gathered from field survey and consultations.

The main recreation resources and activities in the area are:

Footpaths: A network of public footpaths exists, many of which run close by or parallel to the river corridor. In addition to this, Borough Wood and Scotch Gill are designated local nature reserves, managed by the Borough Council, and allowing public access. Castle Morpeth Borough Council would like to achieve a river valley walk between Mitford and Bothal.

Parking and Roads: Laybys exist at Highford Bridge, Lowford Bridge picnic site and adjacent to East Mill; town centre parking also allows easy access to the riverside if required. There is scope for creating new parking lay-bys, possibly with interpretation signboards at Mitford, and close to Bothal Mill. We have identified several roads with a good view of the river, which allow visitors to Morpeth to appreciate the river valley to either side of the town.

Tourist Information Centre: At present, the TIC has a simple display of points of interest in the Wansbeck Valley mounted on the wall in the exhibition area. This could well be improved and developed, with an accompanying leaflet to interpret the river and to describe walks or drives, starting from Morpeth town centre.

Canoeing: A recent unofficial BCU survey of clubs in the area categorised the study stretch of the Wansbeck as sustaining a second level of use (out of 3 levels). This represents around 200-250 passes per year. The Morpeth stretch is used mainly by local canoeists. During dry seasons with low flows there is little use; this view is backed up by the Mitford Estate Agent who has stated that in recent years, canoeing has almost completely disappeared from the Mitford area. The main area of interest is between the East Mill Weir and Bothal, although improvements could be made to the launching and parking areas.

Boating: A small boating pontoon behind the swimming pool in Morpeth is leased on an annual basis to a private operator who uses the stretch upstream of the weir. An estimated 10,000-15,000 people take advantage of this facility in an average season. Boating is otherwise limited because of the number of weirs along the study section.

Horse riding: No bridleways exist in the study area, although the Council's Countryside Ranger suggests that there is a shortage of routes for horses generally.

Caravans & Camping: A small Caravan Club site operates beside the river at East Mill, with a capacity of around 12-15 pitches. A further site at Quarry Bank Woodlands is now under construction.

Angling: There are three angling interests within the study area; Wansbeck District Angling Association, who control the stretch from Stubbs Ford to Bothal; West Denton Angling Association, who control the stretch from Mitford to Bakerhouse Steps (Mitford Estate are the riparian owners) and a public section in the town stretch between High Stanners and Low Stanners, administered by Castle Morpeth Borough Council. The Wansbeck District Association, who are the main user within the study stretch, have around 500 members. 5,000 brown trout are introduced to the river each year, and it is estimated that 2,000 fish are caught annually by members on the study stretch. The public section is undocumented, and no information was from the West Denton Association.

3.14 There is potential for conflicts between different groups of anglers, between anglers and canoeists and pleasure boaters and between walkers and horseriders:

(i) The anglers in the central public stretch are not as closely controlled as those run by the Angling Association. Conflict is possible because the Association anglers believe that the others are unfairly taking fish which they stock, without putting anything back by way of funding.

(ii) Pleasure boat users and canoeists occasionally disturb anglers in the central section. This is the only area in Morpeth for pleasure boating or novice canoeing, although beginners may also practice at Queen Elizabeth Country Park in Ashington. Pleasure boat use finishes at 5.30 p.m. before most anglers arrive, so interactions between these two groups are generally limited. There are also potential conflicts between canoeists and anglers on the superior stretch (from both sports' points of view) between Morpeth and Bothal. However, even here the level of canoeing is too low to cause serious problems for anglers.

(iii) There have been occasions where horseriders have used footpaths illegally, causing danger and inconvenience to pedestrians.

Interrelationships between Interests

3.15 Ecological and landscape values are generally though not always quite closely linked. In the town there may be individual features which are of high landscape value, such as the open grass, mature trees, beach and stepping stones at High Stanners, which are of very low ecological value. However, the two interests are rarely in conflict and are often mutually supportive. At the 'micro' level of the river channel and banks, the features which make the river ecologically interesting also tend to create an attractive and valued landscape.

3.16 The high landscape quality of much of the river corridor provides an ideal setting for recreational activities such as angling and canoeing, though participants are much more likely to be attracted by the suitability of the river for their particular activity than by the landscape. Walkers using the footpaths are no doubt very much aware of the landscape setting as are tourists visiting the town. There are therefore good reasons to seek to enhance those sections of the river which are not of such good quality and which detract from the overall character of the river valley.

3.17 The main scope for conflict is between ecology and recreation:

(i) Canoeing at the second level of use; (200-250 passes/year) is too infrequent to be a major disturbance to wildlife. Higher frequencies of use, and peak days may present disturbance problems for sensitive species, and the growth of canoeing should be monitored with this in mind.

(ii) Angling to the west of the town is from a number of particular points as there is no continuous access along the banks. Disturbance is therefore probably not great. However, access by anglers is likely to cause more disturbance to the east of the town.

(iii) General public access on foot is likely to be a source of potential disturbance to sensitive wildlife. High levels of access east of Morpeth are likely to have contributed to reduced numbers of Dipper and Grey Wagtail. In the town itself disturbance leads to the virtual disappearance of sensitive species where public feeding encourages high numbers of Mallard and Pochard.

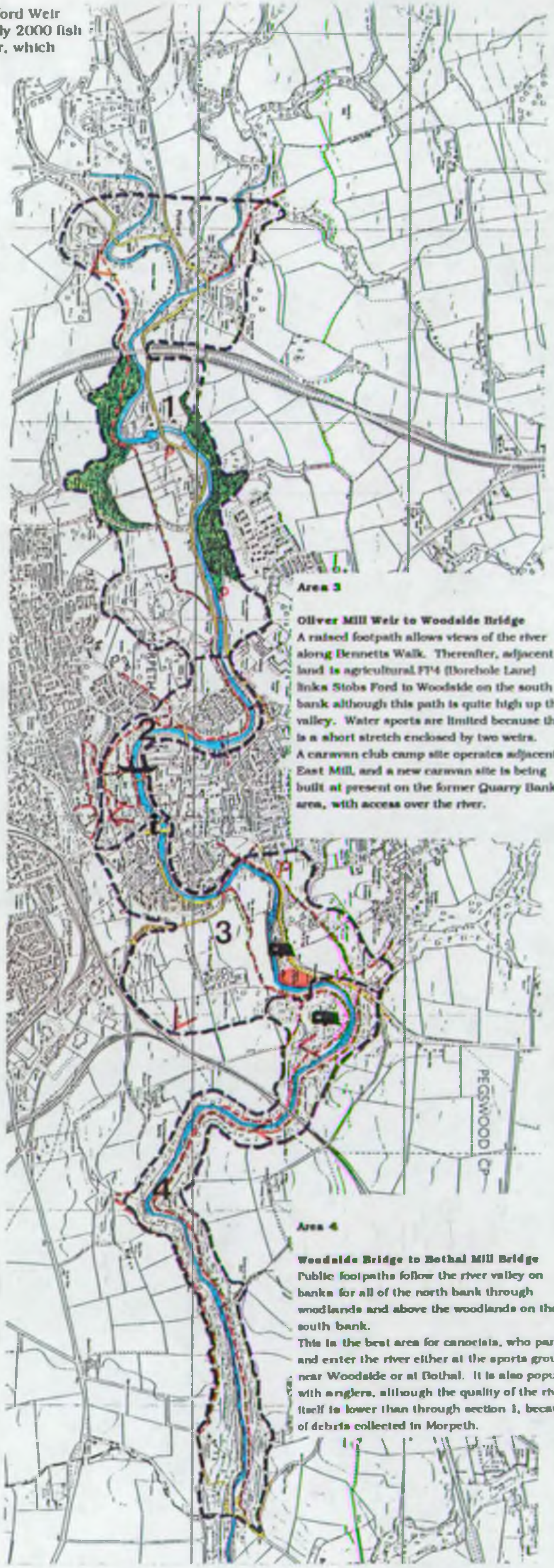
Wansbeck District Angling Association control the river between Highford Weir and Bothal. They have around 500 members; who catch approximately 2000 fish each year. The river is re stocked with 5000 7" Brown Trout each year, which are ideally caught 'wild' the following season.

Area 1

Mitford Castle - Lowford Bridge
This stretch of river has a tight, wooded corridor, much of which is ancient woodland owned by Castle Morpeth Borough Council. Public footpath 4 runs through Borough Wood where it follows the corridor. Borough Woods are owned by the Borough Council who have placed interpretive boards at the site. There is also a riverside woodland walk at Scotch Gill. Parking in both of these cases is limited and there are no signposts in the sites. Mitford Castle and Newminster Abbey are both privately owned with no public access allowed. The Rugby Ground is also in Council ownership. Angling is controlled by the Mitford Estate to Highford Weir, and there onwards by the Wansbeck District Angling Association.

Area 2

Lowford Bridge to Olivers Mill Weir
An urban area with public access on the south bank for all of the section, and on the north bank from Oldgate to the weir. There is public open space at Castle Wood. Carlisle Park and High Stanners, elsewhere there is built development or car parking. Casual fishing takes place although the quality of angling is low. The Council control fishing between High Stanners and Low Stanners. This area is used for pleasure boating and there is a small pontoon behind the swimming pool, where between 10,000 and 15,000 people use the facility each year. The area of operation is limited to between the weir and the end of the promenade because the water is too shallow upstream of this point.



Area 3

Oliver Mill Weir to Woodside Bridge
A raised footpath allows views of the river along Bennetts Walk. Thereafter, adjacent land is agricultural.FP4 (Borehole Lane) links Stobs Ford to Woodside on the south bank although this path is quite high up the valley. Water sports are limited because this is a short stretch enclosed by two weirs.
A caravan club camp site operates adjacent to East Mill, and a new caravan site is being built at present on the former Quarry Bank area, with access over the river.

Area 4

Woodside Bridge to Bothal Mill Bridge
Public footpaths follow the river valley on banks for all of the north bank through woodlands and above the woodlands on the south bank.
This is the best area for canoeists, who park and enter the river either at the sports ground near Woodside or at Bothal. It is also popular with anglers, although the quality of the river itself is lower than through section 1, because of debris collected in Morpeth.

- Boundary of character area
- River Wansbeck
- Public footpath
- Public bridleway
- P Parking
- i Tourist information centre
- Road with view of river
- < Viewpoint
- Watersports access point
- Boating
- Caravan site
- Picnic site
- Accessible woodland

River Wansbeck
Recreational Use

0 0.5 1km

→ Fig. 5

An Outline River Corridor Strategy

3.18 The main objectives for this stretch of the river should be:

(i) to ensure that those sections of high ecological and landscape value are conserved and appropriately managed to maintain their value;

(ii) to promote the role of the Wansbeck valley as an important resource for tourism development in Morpeth, by interpreting its history and features of natural and cultural interest;

(iii) to further develop footpath access between Mitford and Bothal in a way which is sensitive to the ecological value of the river corridor, locating routes away from the river at sensitive points and leaving some stretches undisturbed;

(iv) to guard against any potential conflicts between different recreational activities and to make any necessary low-key provision which will assist those using the river for angling and canoeing;

(v) to seek improvements in those stretches of the river which are currently of low ecological and/or landscape value;

(vi) to protect the river corridor environment and safeguard access to it, in any development proposals which may be under consideration.

3.19 **FIGURE 6** illustrates an outline strategy for the study section of the Wansbeck. The strategy aims to effectively integrate the objectives set out above, addressing the need for landscape conservation and enhancement, nature conservation, and provision for recreation, and aims to resolve conflict between the objectives. The strategy is set out on two levels: firstly a zoning of sectors where a similar approach would be appropriate; this relates closely to the landscape sensitivity zones, and includes policies for **conservation**, **enhancement**, and **positive improvement** in problem areas. The positive improvement areas relate to the Bothal sector, and the urban area of Morpeth which present the main opportunities for improvement. The intermediate enhancement zones include the sector around the Highford abstraction works, and the Bothal woodlands to the east of the town. A number of **overall objectives** for the corridor are also set out as policy guidelines. These include the creation of a **long distance footpath** between Mitford and Bothal, and the protection and management of stretches with high ecological and landscape value. Outline prescriptions for individual zones are set out under the headings of **Conservation**, **Enhancement**, and **Recreation Provision**.

3.20 Castle Morpeth Borough Council already have a number of policies in their draft local plan which are aimed at ensuring the protection and management of the valley of the Wansbeck at this point. In particular:

(i) the valley is designated as a Area of Great Landscape Value within which any potentially detrimental development will be resisted, especially if it interrupts the skyline;

(ii) a number of the woodlands have been identified as being of nature conservation importance. High House Wood, Scotch Gill and Davies Wood are owned by the Borough Council, have been designated a local nature reserve and are the subject of a management plan;

(iii) 'green corridors' along the main routes into the town are maintained and enhanced and include the corridor along the B6343 Mitford Road and the north-eastern approach on the A197;

(iv) the potential of the Wansbeck Valley west of Morpeth for recreation and tourism is recognised and the area is managed by the Council's Countryside Ranger service as an informal country park. It is intended to acquire additional woodlands as resources permit;

(v) the Council is committed to developing tourism in the area and recognises the need to maintain the character of the town and the surrounding countryside to achieve this. The potential of Newminster Abbey and of the Wansbeck valley is particularly recognised;

(vi) the brief for development of town centre land next to the river south of Bridge Street (the market site) emphasises the need to provide an attractive riverside footpath and to capitalise upon the advantages of a riverside frontage.

3.21 Given the active involvement of the Borough Council in the Wansbeck Valley, the objectives of the outline river corridor strategy would best be met by some form of partnership between the NRA and the Borough Council. This could either take the form of financial support to the existing countryside ranger service, to allow it to increase its range of activities in the Wansbeck Valley, or of support for specific projects. Further discussions with the Borough Council would be required before the best course of action could be determined.

Policy Areas - General Types:

Conserve and enhance the existing character. Monitor and resist any development which could result in damage to the corridor.

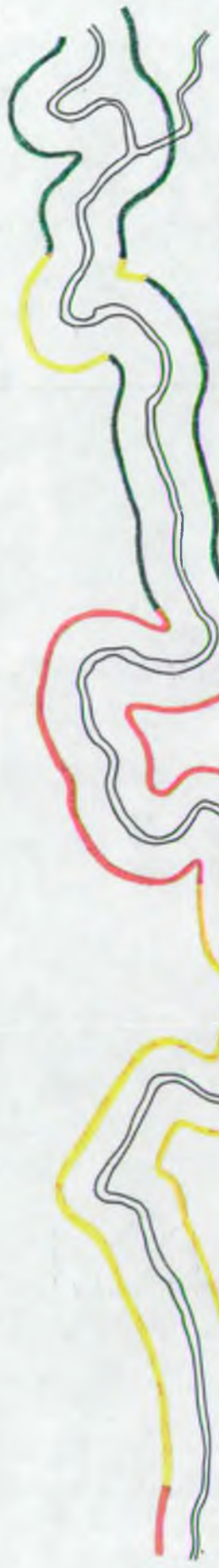
Encourage new initiatives to improve the river corridor, identify particular projects and investigate scope for partnerships with others.

Identify problem areas, and help to initiate positive improvement works, for the benefit of nature conservation and recreation.

General River Corridor Policies

-Create, promote and maintain a long distance footpath between Mitford and Bothal.
-Take account of other adjacent wildlife conservation plans, e.g. Borough Woods, Scotch Gill
-Liaise with landowners about access and recreation problems and consider support for a countryside management team for the Wansbeck Corridor, in partnership with CMBC, possibly as an extension of existing ranger services.
-Protect stretches of high ecological and landscape value and ensure appropriate management.
-Initiate or assist with the production of interpretative material related to the river corridor.

channel and banks to be maintained. Development control to be carefully monitored especially in Mitford village.
Enhancement: Explore the restoration/ stabilisation of Mitford Castle Ruins.
Provision for recreation: Explore possible sites for parking lay by in Mitford, to include interpretation signboard.



Conservation: Protect channel and banks from damage, especially adjacent to water treatment works, and make good existing damage.
Enhancement: Draw up plans for planting/ screening at water treatent works. Encourage other riparian owners to carry out new planting where appropriate.
Provision for recreation: Improvements to lay by parking area; include interpretation board. Improve footpath links to woodlands.

Conservation: Support plans for managing adjacent ancient woodlands and resist further development adjacent to river.
Enhancement: Positive management of channel and banks to improve conservation interest.
Provision for recreation: Interpretation boards at Lowford Bridge picnic site.

Conservation: Monitor planning applications with impact on River corridor.
Enhancement: Clean up campaign for local industries/shops.
Refurbish channel banks where appropriate. Investigate additional natural style greening in parks. Support initiatives to extend the riverside walk where practical, especially to link with TIC.
Provision for recreation: Provide interpretation of features of interest for visitors to Morpeth.

Conservation: Encourage management of broadleaved woodland for nature conservation interests as well as timber. Discourage conifer planting adjacent to river corridor. Discourage felling of broadleaved woodlands with high amenity/nature conservation interests.
Enhancement: Improve surfacing and route of riverside walk throughout. Clear debris/fallen trees from channel.
Provision for recreation: Positive management to minimise conflict between canoeing and angling.

Conservation: Conserve historic buildings and structures such as the Mill. Discourage inappropriate development with impact on river corridor.
Enhancement: Improve stepping stones.
Provision for recreation: Investigate siting of canoe access area. Investigate the creation of a parking lay by. Offer assistance to landowner re: poaching and illegal access.

River Wansbeck

Outline Corridor Strategy

0 0.5 1km

→ Fig. 6

4.0 SURVEY FINDINGS FOR THE RIVER NORTH TYNE

Description of the Survey Stretch

4.1 The River North Tyne rises above Kielder Reservoir, and flows for approximately 45 kilometres south east where it joins the River Tyne west of Hexham. The river rises at around 1500 metres AOD, and joins the Tyne at a level of 230 metres AOD. The valley bisects a large area of moorland, below which the river passes over narrow bands of limestone before it joins the South Tyne. Kielder is the largest of the man made reservoirs in Northumberland, and is sited in the extensive Forestry Commission owned Kielder Forest.

4.2 The chosen section of river is between Bellingham Bridge and Wark Bridge; a distance of 6.5 kilometres in a straight line, although the channel itself measures 10.5 kilometres. Between these points the river falls from about 100m AOD to 75m AOD at Wark, flowing over Coal Measures Sandstone strata which are covered in a variable thickness of glacial drift, fluvioglacial materials and river alluvium.

4.3 The historic settlements of Bellingham and Wark lie at the northern and southern extremes of the study stretch. Between the villages, the landscape is rural in character, often remote, and of high quality throughout. The river channel is impressively broad and the extremes of flow are moderated by controls at Kielder Reservoir. However, flows fluctuate more with the natural rise and fall of the tributaries below the point where the Rede joins the North Tyne.

Ecological Assessment

4.4 The River North Tyne had already been the subject of a river corridor ecological survey. Twenty two 500 metre sections, numbered 35-77, covered the stretch of river selected for this study. The general ecological character of this length of the river is described below.

4.5 Throughout its length the river channel exceeds 20m width and channel material is dominated by sandstone cobbles. Channel bedrock exposures are rare and confined to the most narrow and incised central sector of the study area, where there is a sequence of low waterfalls over gently dipping outcrops. Water quality is high and clear throughout the study area, with very little turbidity.

4.6 Natural divisions of the river ecology within the study length are not easily made because channel width, materials and bank vegetation character (generally open with a scatter of deciduous trees) are relatively uniform. Adjacent land use is more varied, dominated by improved and semi-improved grassland in the northern and southern sectors, and by coniferous and deciduous woodland in the centre where valley-side slopes are steepest. This three part division of the area is also reflected in the relative balance of pool, slack and riffle habitats within the channel. The ecological character of these is described on the following pages.

4.7 The assessments of ecological conservation value and sensitivity to disturbance for the 500 metre sections are summarised graphically on **FIGURE 7**. The river corridor is generally of high quality throughout the survey area, with 70% of bank sectors being rated of high conservation value. There is no clear pattern of value classes. The river channel index does not, however, correlate closely with adjacent bank values. Only 27% of sectors are rated as very high or high quality. No sector is of low quality. Ecological sensitivity ratings are either high or medium for all sectors. Much of the river supports important wildlife, including otter, kingfisher, goosander, common sandpiper and dipper, all of which are very sensitive to disturbance.

4.8 Aerial photographic coverage of this area could not be found. However, land use mapping and other field observations suggest that the following major changes have taken place within the last two decades:

(i) conversion of most semi-natural grassland to semi-improved and improved status by drainage and reseeding. This has occurred throughout the pasture grasslands south of Bellingham and north of Wark.

(ii) intensification of grazing with some degeneration in riverside fencing, allowing sheep on to the right bank south of Bellingham. This has prevented regeneration of an old thin woodland fringe.

(iii) felling of deciduous woodland on the right bank at Leehall Banks with no sign of replanting.

(iv) increased housing adjacent to flood plain close to Bellingham on the left bank.

The first three changes have led to a local impoverishment of ecology in the river corridor. The fourth has not involved much habitat loss close to the river but points to population expansion and the risk of increased local disturbance by informal riverside recreation. Flooding has also had an effect. In the winter of 1989-90 a water depth at least 2.5 metres above the river bed scoured reed beds and removed dead material which had previously given cover for wildlife.

Zone 1 : Bellingham Bridge to Countesspark Wood

This zone is approximately 4km long. the river channel is dominated by eight pools which vary in length from 150m to 500m, and which total some 50% of the channel area. Slacks (9) and riffles (7) tend to be shorter and each type comprises about 25% of the channel area. There is one sizeable island at Bridgeford (NY850823) with earth cover and tree growth.

The slow flow rates in the pools allows an aquatic flora to grow, with occasional patches of Water Milfoil (*Myriophyllum sp.*) Spike-Rush (*Eleocharis sp.*), Water Horsetail (*Equisetum fluviatile*), Star-Wort (*Callitriche sp.*). and Flote-Grass (*Glyceria fluitans*). All are largely confined to the channel margin which also supports extensive patches of Reed Canary-Grass (*Phalaris arundinacea*) and, more rarely, Common Reed (*Phragmites australis*). Fish numbers are probably high and otter, mink and heron have been observed in several locations. Dipper are recorded from riffle sectors, suggesting good invertebrate numbers.

The river bank is largely of earth and often wide, with a gentle slope - all good features for wildlife. Management for fishing is thought to be significant and this results in a dominant open vegetation of thick grassland with a scatter of broadleaved trees in which Alder (*Alnus glutinosa*) is dominant. Badger setts are recorded in a few locations. Banks vary enough in slope and height to provide resting and play areas for Otter, though tree cover is infrequent and exposed tree roots (for Otter), perches (for Kingfisher) and Alder nesting sites (for Goosander) are all rather low in quantity.

The adjacent habitat is dominated by floodplain alluvium which has been converted to sheep and cattle pasture, comprising a mix of improved and semi-improved neutral grassland. There is a little acidic grassland, heath and damp woodland. Amenity grassland is common close to Bellingham.

The wildlife recorded as present along this part of the river corridor is quite diverse, despite the open nature of the river bank and agricultural hinterland. Otter have been recorded adjacent to Bellingham and are the most important feature of the fauna. Bank form and vegetation are sufficiently varied to give moderate and high conservation value to the banks for all of the sector, but channel uniformity restricts high value of the river channel itself to the island at Bridgeford and the confluence with the River Rede. The area must be considered sensitive to recreational impacts due to the presence of Otter and other species which could be reduced by disturbance (notably Sand Martin, Common Sandpiper, Goosander, Dipper and probably Kingfisher).

Zone 2 : Countesspark Wood to the Green

This sector is approximately 3.3km in length and occupies the narrowest and most incised portion of the study stretch. It probably has the steepest channel gradient, with nine riffles (including a short rapid sector and waterfalls) occupying 60% of the channel area. Slacks (8) cover 30% of the channel area but pools (2) occupy only 10%. There is one small island with a sparse shrub cover, plus a few small ephemeral shingle banks.

Contd...

Contd...

No aquatic macrophyte flora has developed, because of the high water velocities. The lengthy riffle sectors probably support diverse invertebrate populations and both Dipper and Common Sandpiper are recorded in this sector. Banks and the immediate channel edge frequently have a high cover of Reed Canary-Grass (*Phalaris arundinacea*) to provide cover for birds. The banks are made of earth, are generally high (>2m) but relatively gentle in slope and wide (>5m). As elsewhere, bank vegetation is generally thick grassland with a scatter of broadleaved trees. In places especially close to fishing stances, there has been recent tree clearance to allow clear air for casting.

The adjacent habitat is either steep valley-side slopes (with earth and rock cliffs in a few places) or a thin restricted zone of floodplain alluvium. Most slopes on the left bank carry mature coniferous woodland with a reasonable groundflora. These areas offer shelter and cover to deer which are provided with grain feeding bins. The right bank has a higher cover of broadleaved woodland, some of which has been recently felled and restocked with conifers. All alluvium is converted to pasture, mainly of improved grassland.

The incised channel and the diverse adjacent habitat mosaic provide a good wildlife interest with medium to high bank conservation value. The restricted length of pool sectors probably means less incidence of Otter, though Mink is recorded. There are lengths of overhanging Alder trees which probably provide perches for Kingfisher and nesting sites for Goosander. Most of the length must be considered sensitive to recreational development, especially close to the river bank where Goosander, Common Sand Piper, Dipper and probably Kingfisher are likely to be disturbed. Current levels of fishing do not seem to have a major impact, though bank management has probably reduced useful wildlife habitat.

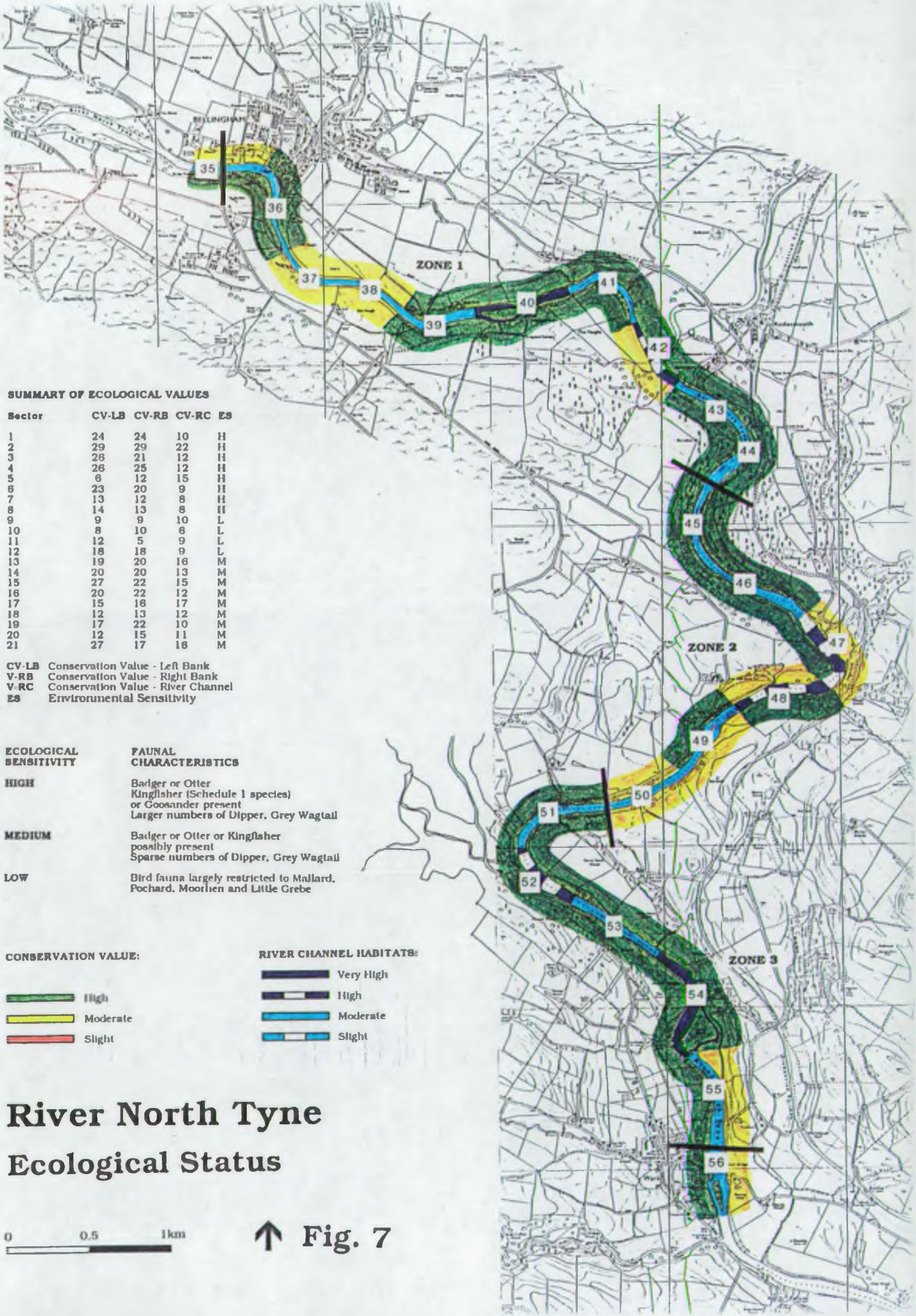
Zone 3 : The Green to Wark Bridge

This 3.1km length shows a good balance between pool (4, 25% channel area), slack (5, 40% channel area) and riffle (6, 35% channel area) sectors. The largest island in the study area is located at Gold Island which supports many mature trees. It is probably very important for wildlife.

Aquatic macrophytes are only developed in one pool system, with Canadian Pondweed (*Elodea sp.*) and Star-Wort (*Callitriche sp.*). Dipper and Common Sandpiper are recorded in sectors with lengthy riffles, suggesting good invertebrate numbers. Otter are not recorded but may be present, though Mink are noted.

Banks are of earth, high (>2m), with gentle slopes and reasonable width (>5m), offering good habitats for wildlife. An extensive floodbank (on the right-bank) is located north of Gold Island. The dominant vegetation is thick grassland, with a scatter of deciduous trees (especially Alder). The rather low tree cover suggests management to maximise clear fishing space. Habitats adjacent to the banks are mainly open, comprising pasture (improved and semi-natural grassland) on floodplain alluvium. There is a sizeable area of parkland with scattered trees, plus some damp woodland and one small but interesting sedge fen dominated by *Carex acutiformis*.

Conservation interest is medium to high throughout the unit, despite the open nature of the banks. The balance of channel habitats is probably very important, supporting Otter, Goosander, Common Sandpiper, Dipper, Heron, and probably Kingfisher. Most of these species are sensitive to disturbance by recreation.



SUMMARY OF ECOLOGICAL VALUES

Sector	CV-LB	CV-RB	CV-RC	ES
1	24	24	10	H
2	29	29	22	H
3	26	21	12	H
4	26	25	12	H
5	6	12	15	H
6	23	20	9	H
7	13	12	8	H
8	14	13	8	H
9	9	9	10	L
10	8	10	6	L
11	12	5	9	L
12	18	18	9	L
13	19	20	16	M
14	20	20	13	M
15	27	22	15	M
16	20	22	12	M
17	15	16	17	M
18	12	13	12	M
19	17	22	10	M
20	12	15	11	M
21	27	17	16	M

CV-LB Conservation Value - Left Bank
V-RB Conservation Value - Right Bank
V-RC Conservation Value - River Channel
ES Environmental Sensitivity

ECOLOGICAL SENSITIVITY	FAUNAL CHARACTERISTICS
HIGH	Badger or Otter Kingfisher (Schedule 1 species) or Goosander present Larger numbers of Dipper, Grey Wagtail
MEDIUM	Badger or Otter or Kingfisher possibly present Sparse numbers of Dipper, Grey Wagtail
LOW	Bird fauna largely restricted to Mallard, Pochard, Moorhen and Little Grebe

CONSERVATION VALUE:

- High
- Moderate
- Slight

RIVER CHANNEL HABITATS:

- Very High
- High
- Moderate
- Slight

River North Tyne

Ecological Status

0 0.5 1km

Fig. 7

Landscape Assessment

4.9 The River North Tyne between Bellingham and Wark passes through the upland landscape of the Northumbrian fells, just outside the Northumbria National Park. It is a landscape of wide open rolling moors and pastures, with stone walls and relatively few trees other than the shelterbelts which are such a features of much of upland Northumbria, woodlands in valleys, and trees around settlements and farms.

4.10 Arthur Wainright, writing on the Pennine Way which crosses the valley of the North Tyne at Bellingham, describes the view of the valley from Ealingham Rigg, as follows:

> "..... at last Bellingham is in view, nestling snugly in the wide valley of the River North Tyne with a background of rolling moors. To the west stretch the vast Kielder forests. The prospect is wide, revealing in detail a landscape not before seen on the journey."

4.11 Bellingham, though small, is popular with visitors because of its position on the Pennine Way and as a destination for drivers touring the area. The waterfall of Hareshaw Linn on a tributary of the North Tyne is a particular attraction, and guidebooks also mention the tranquil walk along the banks of the North Tyne itself.

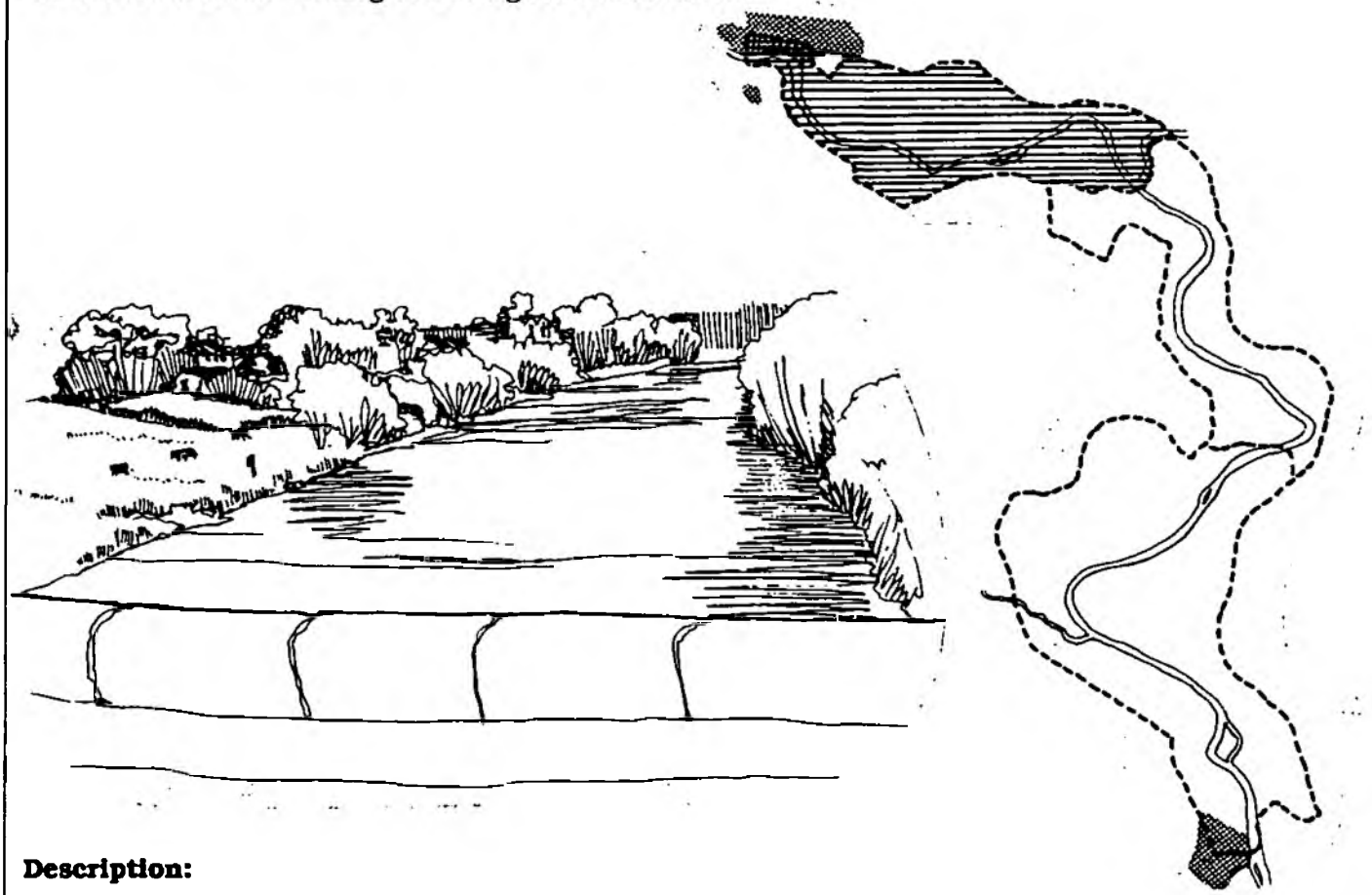
4.12 The main landscape features of the study stretch of the river are shown on **FIGURE 8**. Upland grassland is the predominant land use, though woodland is particularly significant in the central section. Views into the valley from roads are not common and much of the valley has an undiscovered, secret character. The stone bridges at Bellingham and Wark are particularly notable features. Three landscape character areas have been defined. They are also shown on **FIGURE 8** and described briefly in the following pages.

Landscape Value and Sensitivity

4.13 **FIGURE 9** summarises our assessments of landscape value and sensitivity based on the 500 metre sectors defined in the ecological survey. The pattern clearly reflects the overall high landscape value of this stretch, and variations are only in the degree of quality, or are due to specific detractors in the landscape. The landscape sensitivity values indicate that the more urban or populated sectors exhibit some problems, relative to the largely undisturbed although modified landscape between. The detractors are often small scale, and relate to recent human disturbance or occupation. For example around the 'back door' of Bellingham, where service yards piled with scrap metal and materials detract from the riverside walks.

RIVER NORTH TYNE: LANDSCAPE ASSESSMENT

Character Area 1: Bellingham Bridge to Redesmouth



Description:

Landform: The open moorland above the North Tyne gives way to improved farmland on the lower slopes. The village of Bellingham is sited on a gently sloping shelf above the river. To the south, the land rises more steeply up to the moorland beyond.

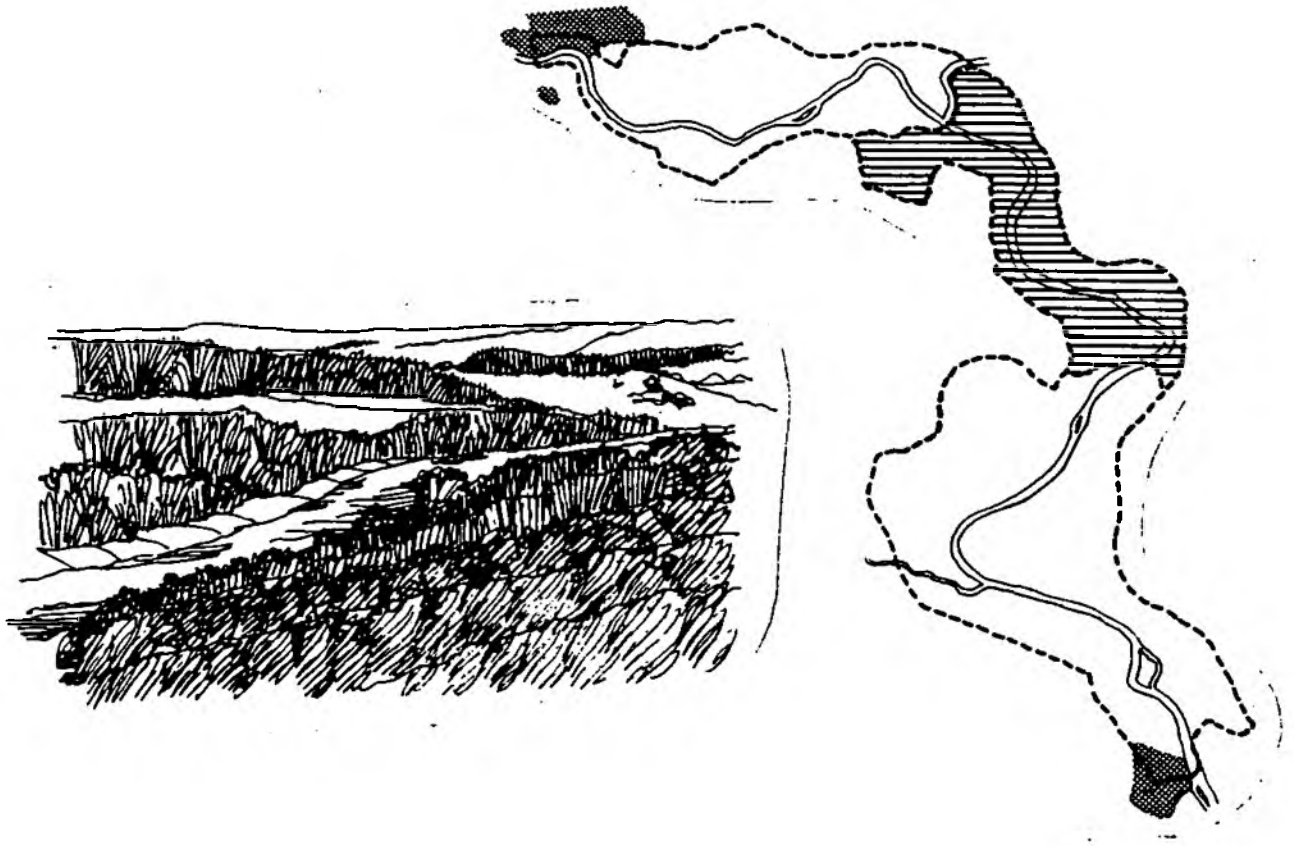
River Form: The river flows broad and smooth throughout this section; maintained by the outfall from Kielder Reservoir. There are notable fishing pools for example at the bungalow near Boat Farm.

Land Use: Bellingham has developed as an important river crossing point; there is evidence of recent growth in a ribbon fashion east of the village centre. The broad flood plain and lower slopes up to Redesmouth Road are improved sheep pasture. This land use is repeated to the south, except where slopes are wooded.

Key elements:

- broad smooth flowing river
- lush green pasture on lower slopes
- contrasting colours of the moorland above
- woodland on steep slopes
- attractive townscape and buildings of Bellingham
- ribbon development east of the village
- features of Bellingham bridge.

Character Area 2: Countess Park to Devil's Leap



Description:

Landform: The wide flood plain to the north and south of this section is replaced by steep valley sides rising up immediately alongside the river, creating a broad gorge.

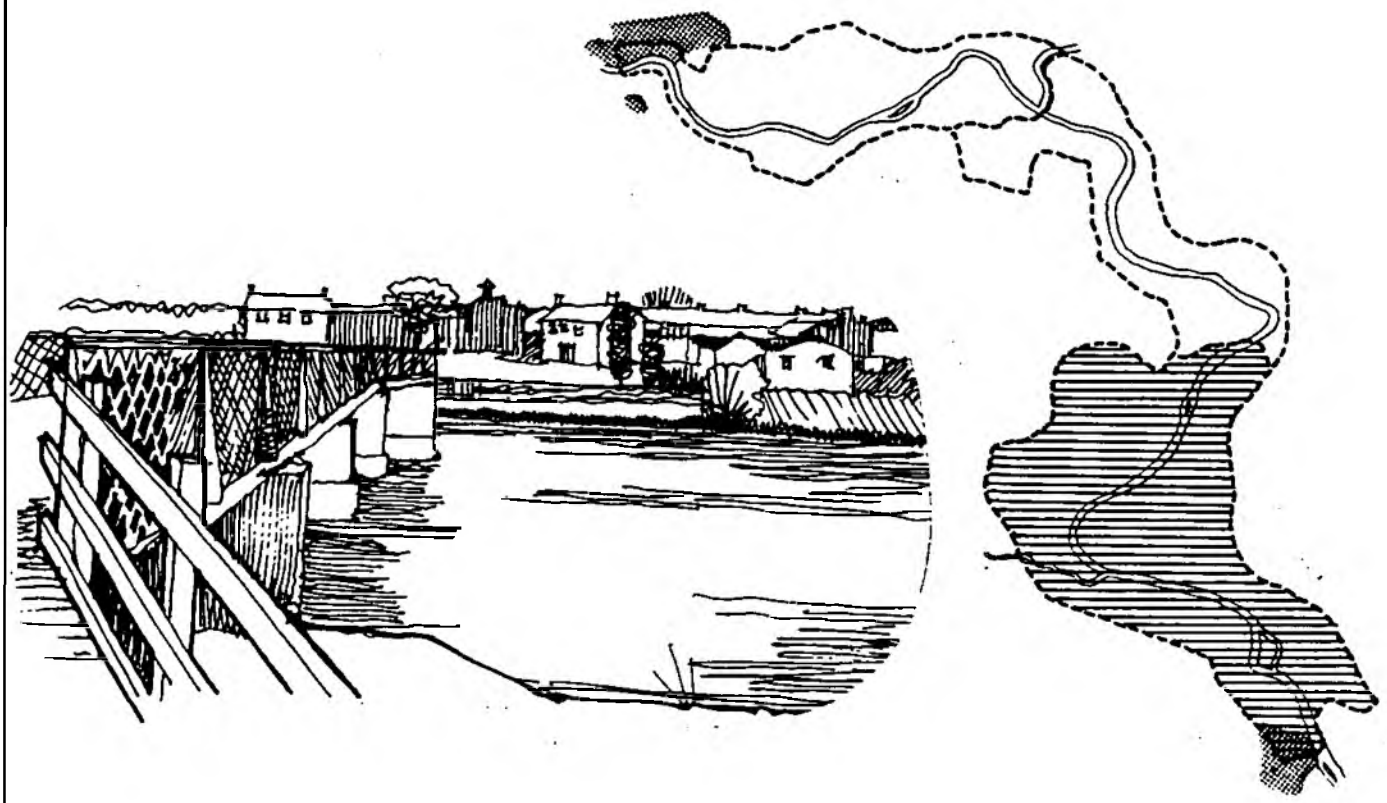
River Form: The river flows in a broad channel, in a series of meanders. Although there are no significant rock outcrops, the river forms a variety of slacks and rapids which make it very attractive in scale and character.

Land Use: The steep slopes to each side of the river are afforested with conifer plantations. On the lower slopes and on the narrow flood plain, broad leaved woodland survives and provides a contrast to the dense forests above. There is limited grazing land on the remainder of the slopes; the entire section appears to be managed by one estate, which gives it a very distinctive landscape character

Key elements:

- broad and varied river channel
- large scale forestry and woodland on the steep valley sides
- attractive riverside walk
- disused railway line providing additional access opportunities
- well managed estate land

Character Area 3: Devil's Leap to Wark Bridge



Description:

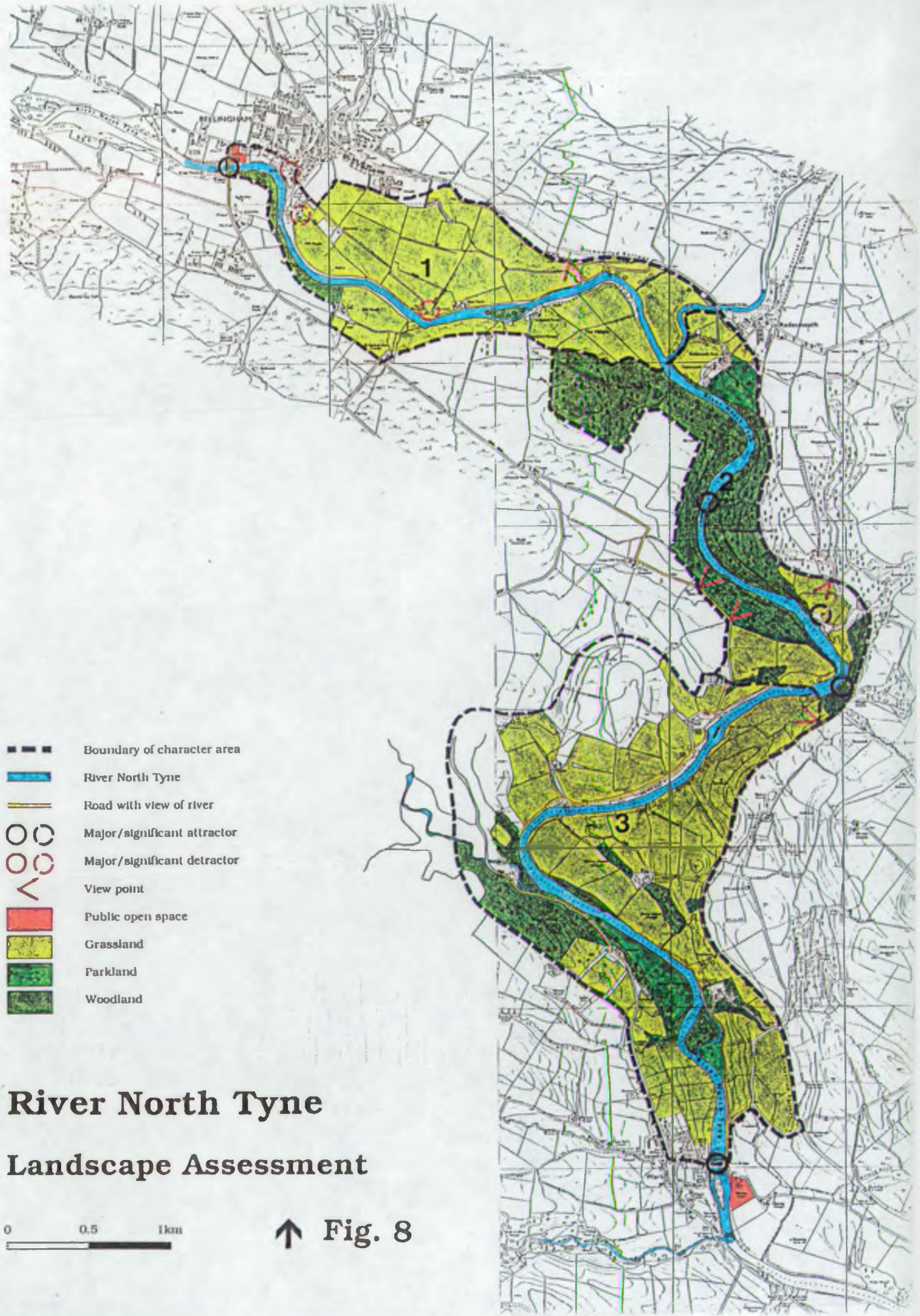
Landform: Devil's Leap is a spectacular rock outcrop which forms a cliff overhanging the river. Beyond this the valley opens out into a broad flood plain to each side of the river channel. The steep slopes beyond the flood plain rise up towards the moorland plateau.

River Form: The river meanders through the broad valley; there are very distinctive islands at Lee Hall and Gold Island, and again just below Wark. This variety of channel form and flow make this stretch particularly attractive.

Land Use: The lush green valley accommodates a variety of land uses; for example Low Carry House is a typical farm sited above the flood plain. There are also a number of historic estates, such as Blindburn and Kirkfield, indicating a long association with farming in the valley. Wark village has developed from its original function as a river crossing point. The village is confined to the western banks of the river, centred around a group of traditional stone buildings.

Key elements:

- broad and varied river channel with islands
- improved grassland to lower slopes
- historic farms and estates
- attractive and historic village of Wark
- feature of Wark bridge.



River North Tyne

Landscape Assessment

↑ Fig. 8

River North Tyne

Landscape Evaluation and Landscape Sensitivity

↑ Fig. 9

Recreation Use and Potential

4.14 **FIGURE 10** illustrates the range of existing recreation opportunities in the study area, which have been mapped using available sources of information together with our own data gathered from field survey and consultations.

The main recreation resources and activities in the area are:

Angling: The North Tyne is the most important river for angling in Northumbria and the study area stretch accounts for 52% of the catches on the whole river. **FIGURE 10** illustrates the location and recorded numbers of catches in 1989.

Canoeing: An estimated 200 to 250 canoe passes per year are made on the stretch. At present, this represents a relatively low level of use compared with the river downstream, where the stretch from Chollerford to Hexham is a peak level of use section with 1200-1500 passes per year. A peak day may see about 30 canoeists on the water in the study stretch. It is less challenging than the downstream stretch and is generally used by beginners or by canoeists seeking a different experience after completing the more demanding Hexham to Chollerford section. There are some conflicts between canoeists and anglers, but these are not generally serious.

Climbing: There is a low level of use of Heugh Cliffs by climbers; the short nature of the climb and its relative inaccessibility will probably continue to limit use to acceptable levels.

Walking: The most popular public footpath routes commence at Bellingham. Although the Countess Park woodland route is well defined, its use is limited due to the relative inaccessibility of this part of the valley. The disused railway line from Bellingham via Redesmouth to the outskirts of Wark presents an opportunity for a long distance valley walk which would have the advantage of avoiding potentially adverse disturbance to wildlife at the river edges. The Pennine Way crosses Bellingham bridge on the northern boundary of the study area.

Camping: There are no formal camping facilities in the study area. One landowner to the south of Gold Island appears to encourage caravans and there have been plans for providing camping for touring canoeists, but no formal facilities are offered on the meadow itself. There is a potential conflict with the area of high nature conservation value around Gold Island to the north of the meadow.

4.15 Angling use of the river is of prime importance and has been described as the best salmon fishing in England. In 1983, 29% of salmon, 20% of grisle and 18% of trout caught in the region were taken from the North Tyne. This represents 469 salmon, 104 grisle and 501 trout. Of 417 rod catches recorded in 1989 license returns so far received by the NRA for the North Tyne, 219 (52%) were taken in the study area. There has been a major increase in catches in the Tyne System in recent years. Early in the 1970s less than 100 catches were recorded. By the early 1980s recorded catches had risen to about 300. In 1988 a record 1452 fish were declared, building on record catches for the previous years. This success reflects efforts by the NRA to keep the river stocked. The North Tyne shows a particularly high density of successfully spawned salmon.

4.16 Licenses are now issued by the NRA who sold 1656 in 1988. An annual pass costs more than £40. Most of the anglers are regular users of the river with 43% of anglers returning licenses for 1989 saying that they fished the river more than twenty times per season. A rough average of frequency of visit would be about 27 per angler. Assuming details of anglers not returning the licenses to be proportionately the same as those who do, then it can be calculated that about 45,000 angler-visits are spent on the North Tyne each year, equating to 150-300 per day in the season. Perhaps half of this number may use the study stretch.

4.17 Access to the river is limited, which serves to concentrate anglers at certain spots. This is reflected by the number of catches recorded at different sites along the river corridor. As can be seen from **FIGURE 10**, the majority of fish are taken at the village river banks of Wark and Bellingham and at Redesmouth, accounting for 89% of recorded catches in the study area. This reflects the ease with which these sites can be reached by car and to a lesser extent, the right of access to different sites along the river as well as the fact that some sites are simply better places for catching fish.

4.18 The regulation of water levels flowing out of Kielder may assist angling. However, there are popular misconceptions as to the manner of this regulation and the consequent affect on angling. This has caused some anglers to complain of water levels being maintained at too high a level, whilst others say that the level is maintained at a low level. The regulation of water levels also makes the North Tyne as a whole popular with canoeists because it ensures that the water level does not drop too low.

4.19 The main recreational conflict is between anglers and canoeists. Anglers often feel that canoeists disturb feeding fishes, as well as causing the more obvious physical disturbance to lines. This conflict has been more acute on the Chollerford - Hexham section than on the study stretch and, as a result, the riparian owners representatives and the British Canoe Union have reached an agreement which covers the whole Tyne system. As a result of this canoeists have access to the whole Tyne system but there is decreased canoeing during the months of September and October. In the study stretch, this agreement is adequate for the current level of activity, as angling is limited because of private ownership of much of the banks and because canoeing is less attractive here than elsewhere on the Tyne.

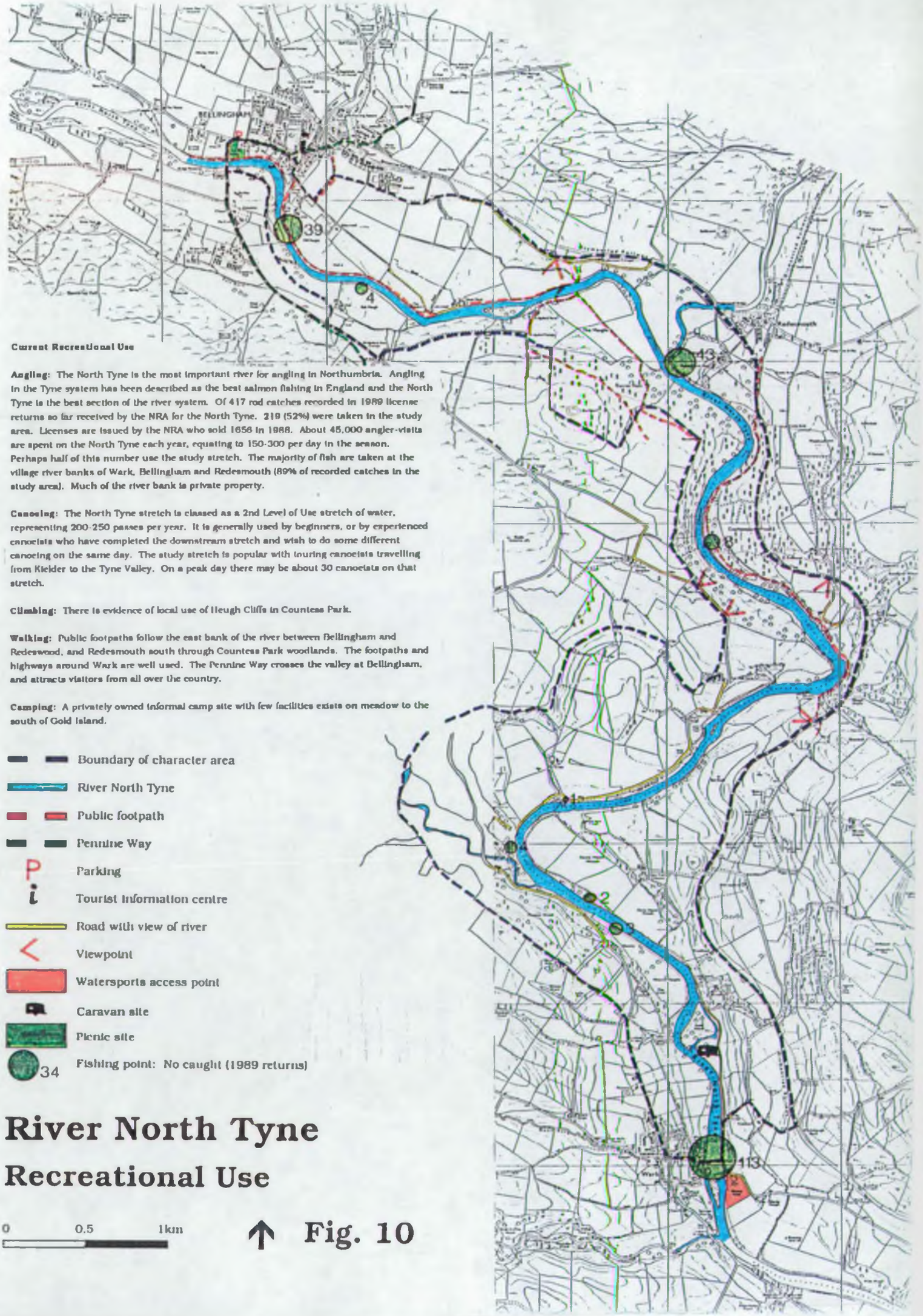
4.20 However, it is important to bear in mind that both activities could increase in future. If the fishing continues to improve, more anglers may be attracted. Canoeing levels could increase for a number of reasons. As use of Kielder is promoted, the increased numbers of visitors may explore further afield, including the study area. Recently published 'River Guides', promoting the North Tyne amongst other rivers, may also have an effect. Indeed, there has been a general increase in Northumberland's popularity as a tourist destination (partly as a result of an overspill from the Lake District), and this may also be reflected in canoeist numbers. Paradoxically, the agreement with the North Tyne riparian owners may also encourage more use since canoeists will feel that they have a right to travel along this river whilst they are excluded elsewhere. If levels of use should increase to a point where the present agreement is no longer effective, then it may be necessary to agree priority days or times so that the two activities are clearly separated.

Interrelationships between interests

4.21 In general high value for nature conservation is paralleled by the high landscape value of much of the river corridor. The main exception to this is at the villages of Wark and Bellingham where landscape value is attributable largely to built structures such as bridges, and the villages themselves. Elsewhere features such as diverse bank form and vegetation, riffles and waterfalls, and the presence of islands in the channel are as important in creating an attractive river landscape as they are in creating good wildlife habitats.

4.22 The landscape quality of the river corridor is a great asset for recreation and tourism, especially for walkers and casual visitors driving in the area, but also in providing an attractive setting for the anglers and canoeists who use the river. There are no conflicts between recreation and landscape at present, but any attempt to make the river valley more accessible and increase numbers could have a detrimental effect because the undiscovered and unspoilt character of the North Tyne is part of its charm.

4.23 Because the river has an apparently high number of important wildlife species, including otter and goosander amongst others, which are highly sensitive to disturbance, the greatest potential for conflict is between recreation and ecological interest. The presence of fish predators, particularly otter and goosander, could mean a conflict of interest with angling.



Current Recreational Use

Angling: The North Tyne is the most important river for angling in Northumbria. Angling in the Tyne system has been described as the best salmon fishing in England and the North Tyne is the best section of the river system. Of 417 rod catches recorded in 1989 license returns so far received by the NRA for the North Tyne, 219 (52%) were taken in the study area. Licenses are issued by the NRA who sold 1656 in 1988. About 45,000 angler-visits are spent on the North Tyne each year, equating to 150-300 per day in the season. Perhaps half of this number use the study stretch. The majority of fish are taken at the village river banks of Wark, Bellingham and Redesmouth (89% of recorded catches in the study area). Much of the river bank is private property.

Canoeing: The North Tyne stretch is classed as a 2nd Level of Use stretch of water, representing 200-250 passes per year. It is generally used by beginners, or by experienced canoeists who have completed the downstream stretch and wish to do some different canoeing on the same day. The study stretch is popular with touring canoeists travelling from Kielder to the Tyne Valley. On a peak day there may be about 30 canoeists on that stretch.

Climbing: There is evidence of local use of Heugh Cliffs in Countess Park.

Walking: Public footpaths follow the east bank of the river between Bellingham and Redeswood, and Redesmouth south through Countess Park woodlands. The footpaths and highways around Wark are well used. The Pennine Way crosses the valley at Bellingham, and attracts visitors from all over the country.

Camping: A privately owned informal camp site with few facilities exists on meadow to the south of Gold Island.

- Boundary of character area
- River North Tyne
- Public footpath
- Pennine Way
- P Parking
- i Tourist information centre
- Road with view of river
- Viewpoint
- Watersports access point
- Caravan site
- Picnic site
- 34 Fishing point: No caught (1989 returns)

River North Tyne
Recreational Use

0 0.5 1km

↑ Fig. 10

though there appears to be none at present. The absence of lengthy riverside walks through the valley, coupled with the fact that most people walk out only a limited distance from Wark and Bellingham, means that much of the valley is little visited and levels of disturbance are low. Any attempts to promote greater levels of use of existing paths, or to improve access, could therefore have a detrimental effect.

An Outline River Corridor Strategy

4.24 The main objectives for this stretch of the River North Tyne should be:

(i) to ensure that the high ecological and landscape conservation value is maintained and that there is appropriate management;

(ii) to maintain levels of access and recreational activity which will not cause disturbance of sensitive species of wildlife and will not be intrusive in an unspoilt and undisturbed rural landscape;

(iii) to monitor use of the river for angling and canoeing and ensure that the current agreement minimises conflict between the two activities;

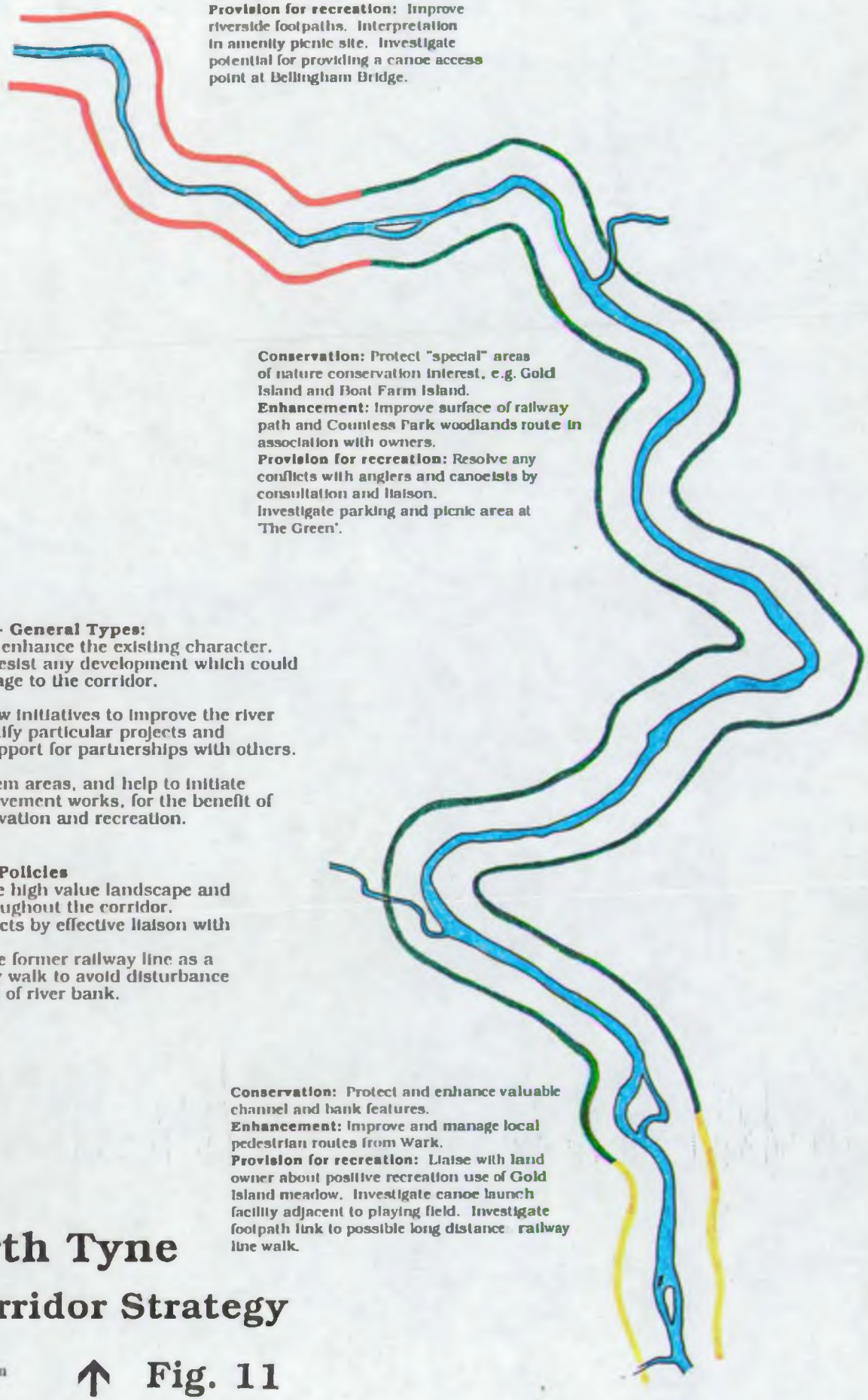
(iv) to make only limited new provision for recreation and ensure that this takes full account of ecological and landscape interest.

4.25 **FIGURE 11** illustrates an outline strategy for the study section of the North Tyne. As on the Wansbeck, the river is zoned into sectors where a similar approach is required, relating closely to the landscape sensitivity zones. Broadly, the zone adjacent to the settlement at Bellingham is identified as having the most scope for improvement, whilst the rural sector beyond and down to Gold Island is seen as an area where conservation is the priority. At Wark village there is scope for local enhancement of the river corridor as this sector is heavily used by the local community.

4.26 General policies relating to the objectives set out above are included. The emphasis is on nodal development at the villages, and possible use of the disused railway line to provide a river valley walk between them without causing undue disturbance to wildlife along the river banks. Specific suggestions for individual sections of the river are set out under the headings of **Conservation, Enhancement and Recreation Provision**.

4.27 In our view this is not a stretch of river where the NRA should give particular priority to action to improve recreation provision. The emphasis should be on conservation, and maintaining a satisfactory balance between angling and canoeing. Positive action, at the two villages or relating to other proposals such as use of the disused railway line as a river valley walk, should only be pursued if levels of recreational activity increase markedly, or if Tynedale District Council or other interested parties make approaches requesting assistance from the NRA.

the high value sections of the river and banks. Monitor and advise on development proposals close to the river. Resist inappropriate development.
Enhancement: Positive management of picnic site for nature conservation. Investigate scope for new planting and screening of unsightly urban development.
Provision for recreation: Improve riverside footpaths. Interpretation in amenity picnic site. Investigate potential for providing a canoe access point at Bellingham Bridge.



Conservation: Protect "special" areas of nature conservation interest, e.g. Gold Island and Boat Farm Island.
Enhancement: Improve surface of railway path and Countess Park woodlands route in association with owners.
Provision for recreation: Resolve any conflicts with anglers and canoeists by consultation and liaison.
Investigate parking and picnic area at 'The Green'.

Policy Areas - General Types:

Conserve and enhance the existing character. Monitor and resist any development which could result in damage to the corridor.

Encourage new initiatives to improve the river corridor, identify particular projects and investigate support for partnerships with others.

Identify problem areas, and help to initiate positive improvement works, for the benefit of nature conservation and recreation.

General River Corridor Policies

-Protect and maintain the high value landscape and ecological interests throughout the corridor.
-Resolve recreation conflicts by effective liaison with recreation groups.
-Investigate the use of the former railway line as a long distance river valley walk to avoid disturbance along sensitive stretches of river bank.

Conservation: Protect and enhance valuable channel and bank features.
Enhancement: Improve and manage local pedestrian routes from Wark.
Provision for recreation: Liaise with land owner about positive recreation use of Gold Island meadow. Investigate canoe launch facility adjacent to playing field. Investigate footpath link to possible long distance railway line walk.

River North Tyne

Outline Corridor Strategy

0 0.5 1km

↑ Fig. 11

5. REVIEW AND GENERAL CONCLUSIONS

5.1 This pilot study was intended to provide guidance on the way in which this type of assessment procedure might be more widely applied. We therefore end this report with a review of the approach and some general conclusions. We concentrate on four main topics.

(i) the survey and assessment methods;
(ii) integration of the findings;
(iii) wider application of the approach;
(iv) achieving practical action.

Survey and Assessment Methods

Ecological Assessment

5.2 The method of surveying the ecological character of the river corridors was tightly prescribed by previous work carried out on the North Tyne, using the NCC/NRA method which has developed over the last decade. This method has the following advantages and disadvantages.

Advantages:

(i) it provides for detailed listing, quantification and rating of many river corridor attributes in a consistent manner.

(ii) re-survey is straight forward and allows change over time to be quantified.

(iii) objective comparison of different parts of a river corridor is possible.

Disadvantages:

(i) lack of emphasis on recording fauna, based on the assumption that the recorded attributes are directly/indirectly related to faunal characteristics, without any quantification of this relationship.

(ii) lack of emphasis on application of the results in measuring conservation value for wildlife.

(iii) surveying at a single period in the year, as in this case, may mean that some important features are missed.

5.3 In this work the approach has been extended to include the conversion of the survey data into a simple numerical index of conservation value, linking the extent of different features to their importance for nature conservation. This has the advantage of producing information which can be simply summarised and presented at a strategic level. As the approach has not been widely tested, and as there is often scepticism about such quantification, even of this very simple sort, there will need to be a review of the approach and of alternatives, leading to further refinement.

5.4 The question of sensitivity also needs further review. In this case, because our brief related to recreation, we were concerned mainly with sensitivity to disturbance. The approach we adopted is fairly crude and relates to the types of corridor dealt with in this study. For other purposes, for example appraisal of drainage or flood protection schemes, sensitivity will be more concerned with the interdependence of ecological

and hydrological conditions, and with potential physical damage. River corridor surveys should probably incorporate assessments of both types of sensitivity and further development of the approach is needed.

5.5 Assessments of this type can be helpful in indicating scope for enhancement of wildlife habitat. This could range from small scale projects, for example to create an increase in nesting sites by altering bridge design, or planting Alder and Birch for Goosander, to large scale habitat creation such as design of urban wetlands to solve urban stormwater problems. This does though require detailed understanding of the habitat requirements of individual species. In north America it is common to produce a detailed model of the habitat requirements of different species. Such a technique, applied in Britain, could allow alternative and more objective ways of assessing conservation value, ecological sensitivity and habitat enhancement potential. It could also help to refine the attributes recorded in river corridor surveys.

Landscape Assessment

5.6 It is important to recognise that, for river landscapes, landscape assessment needs to cover both the 'micro' level of the river itself and its banks, and the 'macro' level of the wider river valley. At the micro level the ecological river corridor survey provides much of the information needed and might usefully be developed further to include more information relating to the nature of the landscape as well as to the ecological character of the river.

5.7 Assessment at the macro level is relatively simple to do. Essential steps are identification of the limits of the river valley landscape, plotting of landscape elements and key features, and identification of any distinctive landscape character areas. Definition of the river valley landscape may have wider value in helping the NRA to define its legitimate area of concern. The river valley landscape, defined usually by the visual envelope, will extend beyond the river corridor itself and sometimes beyond the floodplain, but not as far as the catchment area, which is the focus for NRA interest in some other regions.

5.8 The question of landscape value is always a difficult one and there is no getting away from the need for professional judgement about such matters, though this needs to take full account of any available information about public perceptions and preferences. The factors we have used to judge the relative value of the channel itself, the banks and the wider context undoubtedly need further refinement. They are specific to the types of river tackled in this study and would need modification to apply to other types, such as upland valleys near river sources, large lowland valleys, urban rivers in large cities, and tidal stretches of river. It may also be necessary to develop a more structured approach to applying these factors if the method is to be more generally used. Examination of the full length of one river is likely to be the best way to develop this approach further.

Recreation Use and Potential

5.9 Informal use of river corridors and valleys, for walking, driving, picnicking and general countryside recreation, is likely to be a major recreational activity in rural areas and river valleys near towns. Survey should aim to identify the resources available for such recreation, but we would not generally advocate surveys to assess levels of use since these are time consuming, expensive and fraught with difficulties.

5.10 For specific activities such as canoeing, angling and boating, existing records, and consultations with the Sports Council and groups representing the sports will usually suffice to give a general indication of use, of conflicts and of trends in demand. Only in cases where major development is proposed, or where difficult

problems of conflicting activities must be resolved, are specific surveys of use and demand likely to be justified.

5.11 On a regional basis it is likely to be helpful to make a broad assessment of the recreational status of different stretches of the main rivers, for example distinguishing urban areas in major cities; rivers adjacent to significant towns likely to be well used by local people; remote rivers used only for angling and/or canoeing; large water areas important for water sports; rivers contributing to important tourist areas. This may be helpful in identifying priority river stretches for action.

Integrated Approaches to River Corridors

5.12 The study has shown that the three interests can be separately assessed and the findings integrated to allow a co-ordinated approach to river corridor management. Though the emphasis was originally on provision for recreation as the main focus of the study, we conclude that such assessments should generally be aimed at preparing **integrated river corridor strategies or plans**. These should be concerned as much with conservation and management of wildlife and landscape, and with opportunities for enhancement, as with providing access and facilities for recreation.

5.13 Surveys of ecology and landscape can provide the essential **environmental database** for river corridor work. They can provide the baseline for integrated strategies, as in this report, or they can provide information by which the environmental effects of different development proposals can be judged. This may include the NRA's own proposals, for example for flood protection or drainage, or schemes for recreation, or development proposals referred to the NRA by the local authorities.

5.14 The survey findings can be presented at three different levels which are useful in different situations:

(i) raw survey information, as produced by the river corridor ecological survey, demonstrated by **APPENDIX 1** and the separate appendix on the River Wansbeck.

(ii) descriptive summaries of different zones of ecological character or landscape character, like those included in the text for both the Wansbeck and the North Tyne.

(iii) simple summaries of value or sensitivity, presented graphically and incorporating a number of different pieces of information about habitats, or landscape characteristics.

5.15 Raw survey information is invaluable in considering the details of individual schemes, for example routing of footpaths, or locating flood defence schemes. Descriptive summaries are helpful in preparing integrated river corridor strategies, or management plans, where the level of details required is not so great as for individual schemes but where the real characteristics of different areas are important. Simple summaries of value or sensitivity are best suited to strategic consideration of, for example, a whole river system or catchment area, since they can be easily presented and compared over wide areas. This is the type of information which is likely to be best suited to computerised databases.

5.16 In the study we identified a number of different zones or sectors, for ecological character, landscape character and recreation potential. Though potentially confusing this is a realistic reflection of the way in which the different interests are expressed in the two river stretches. However, for simple presentation of the more strategic information on values we have used the 500 metre survey sections from the ecological survey. This allows for consistent and comparable presentation of information.

Wider Application of the Approach

5.17 The NRA is, we understand, already committed to carrying out ecological surveys of all main rivers in the region over the next five years. Ideally this workshould be extended to include landscape assessment, at both 'micro' and 'macro' levels in order to produce a full environmental database for all main rivers. It will clearly take time to achieve this but, in the meantime, the assessment method should be applied to individual schemes as they arise, and the findings gradually added to the database.

5.18 We do not think it will be practicable, or necessarily desirable, to carry out the fully integrated assessment, including recreation use and potential, and preparation of integrated proposals, for all the rivers in the region. Rather, we suggest that **the NRA should us its limited resources to 'target' certain areas where a pro-active approach is likely to be most productive.**

5.19 The nature of the two river stretches covered in this study is very different. For the North Tyne the issues centre on the potential for conflict, because of the high ecological value of much of the corridor and the sometimes conflicting needs of anglers and canoeists. Here the NRA's role must be one of resolving or avoiding conflict. This means conserving the high wildlife value of the river by avoiding inappropriate promotion of recreation, and acting as arbitrator in any difficulties which may arise in relation to angling and canoeing.

5.20 For the Wansbeck the issues relate to; the proximity of the river valley to a substantial population, bringing significant recreation pressures; to the role of the river as a resource for tourism, with significant potential for interpretation; to the need to protect the significant areas of high nature conservation and landscape value; and to the potential for enhancement in urban and urban fringe areas. Here the local authority are already actively involved in pursuing the sorts of objectives and policies which we have identified in our outline river corridor strategy. There may therefore be scope for some form of partnership between the NRA and the Borough Council.

5.21 In our view it is **river corridors like the Wansbeck at Morpeth which are likely to offer the greatest scope for the NRA to take a pro-active approach and to prepare integrated river corridor strategies.** This is more likely to be successful if the local authority is interested and supportive. We therefore suggest that the NRA should 'target' significant centres of population which have a close relationship with a main river and where the river is important both for local recreation and as a resource for tourism. They should seek to carry out full surveys and prepare integrated river corridor strategies for stretches of river related to those towns..

5.22 Towns such as Durham, Berwick-on-Tweed, Alnwick, Hexham, Bishop Auckland and Barnard Castle suggest themselves as places of the right type, but the attitudes of, and degree of potential support from, the local authorities will also be an important consideration in selecting target areas. Major urban centres like Newcastle, Sunderland and Teeside are also clearly important but raise a different set of issues and should in our view be considered separately. In other areas it may, at least initially, be better for the NRA to continue to be be reactive, and to rely on

its regional contacts with local authorities, recreation user groups, conservation bodies and land owning representatives, to identify areas where action is needed or particular issues need to be dealt with.

Achieving Practical Action

5.23 It is clear that both the Wansbeck and the North Tyne studies raise planning issues relating to development pressures in the river corridor. At Morpeth there are major development proposals in the town centre, and possibly out of the town at Parish Haugh. In the North Tyne valley there are signs of development spilling into the river corridor on the fringes of Bellingham. Such proposals have implications both for safeguarding the quality of the river corridor environment, and for flood defence and drainage. The NRA have no direct influence over such matters, other than through consultation, but is likely that they are indicative of common problems throughout the region. In our view it may be **appropriate for the NRA to positively promote an appropriate range of policies to be adopted by local authorities**, especially as many districts are currently embarking on the preparation of district wide local plans. Policies should be aimed at:

(i) protecting river corridors from inappropriate development;

(ii) taking opportunities to enhance them;

(iii) ensuring conservation and management of areas of value for landscape and wildlife;

(iv) recognising their importance as linear amenity areas of high recreation and tourism potential.

5.24 Such positive promotion might best take the form of guidance, including sample or model policies and providing the supporting rationale. Since such issues arise throughout England and Wales, such guidance might be issued nationally by the NRA, but given a local emphasis by the region.

5.25 Preparing integrated river corridor strategies is one thing. Actually implementing them is another. Most land in river corridors will be in **private ownership** and the NRA will generally need to find ways of achieving its aims by influencing and assisting owners rather than by direct action. The techniques of **countryside management**, by involvement of a project officer or ranger, are likely to be particularly appropriate. The NRA may wish to contribute to such schemes, where they relate to river corridors and where there are willing local authority partners. This might involve accepting a share of running costs in exchange for a role in the steering of the project, or alternatively support for individual schemes on the ground. The Medway Valley project in Kent is an excellent example of such a scheme in action and **APPENDIX 2** gives further information about its operation. the Castle Morpeth ranger service, which is active along the Wansbeck demonstrates that some suitable management schemes already exist, although this is largely concerned with council owned land at present. Discussions with local authorities, and with agencies such as the Countryside Commission, may indicate the scope for such partnerships.

Summary of Possible Actions

5.26 In our view the main actions which potentially arise from the study can be summarised as follows:

(i) review approach to summarising ecological value;

(ii) review method of indicating ecological sensitivity;

(iii) consider benefits of modelling habitat requirements of different species;

(iv) review ways of amending river corridor ecological survey method to include simple 'micro' level landscape assessment of the river channel and banks;

(v) apply assessment of landscape to full length of one river to provide more comprehensive information on factors influencing landscape value for different types of river landscape;

(vi) undertake to carry out landscape assessments for all main rivers to complement the agreed programme of ecological surveys and thereby to produce a comprehensive environmental database. In the meantime use the assessment methods to judge the impacts of development proposals, recreation schemes or flood protection and drainage schemes as they arise.

(vii) make a broad assessment of the recreational status of the region's main rivers to assist in identifying priority river stretches for action.

(viii) target key stretches of river, of similar character to the Wansbeck at Morpeth, and prepare integrated river corridor strategies;

(ix) issue guidance to planning authorities on policies for river corridors to be included in local or district wide plans;

(x) investigate scope for partnership with local authorities and other agencies or groups, to support countryside management schemes or similar, to secure practical action and appropriate management of important river corridors.

Bridge adjacent to Mitford Castle

Disturbance to banks at Highford water abstraction works

Footbridge adjacent to the Chantry

Wooded slopes up to Mitford Parkland

High Stanners

Impact of new development off Gas House Lane

Lay by near Highford Bridge

Elliot Bridge, Morpeth Town Centre

River near Bothal Mill

River Wansbeck

Fig. 12

View east from Bellingham Bridge

Stretch near Boat Farm

Stretch near Green Ford

The Bungalow pool

Countess Park woodlands

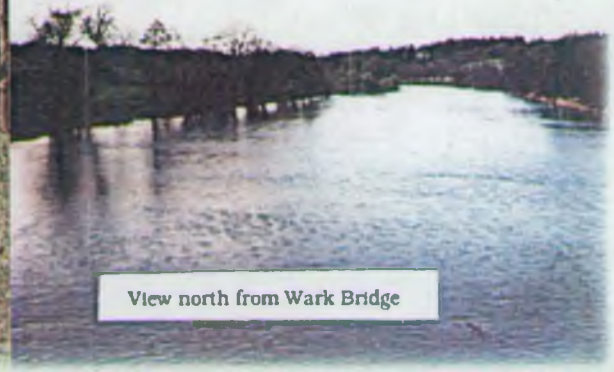
Caravan meadow south of Gold Island

River North Tyne

View south from Redeswood

Lodge in Countess Park

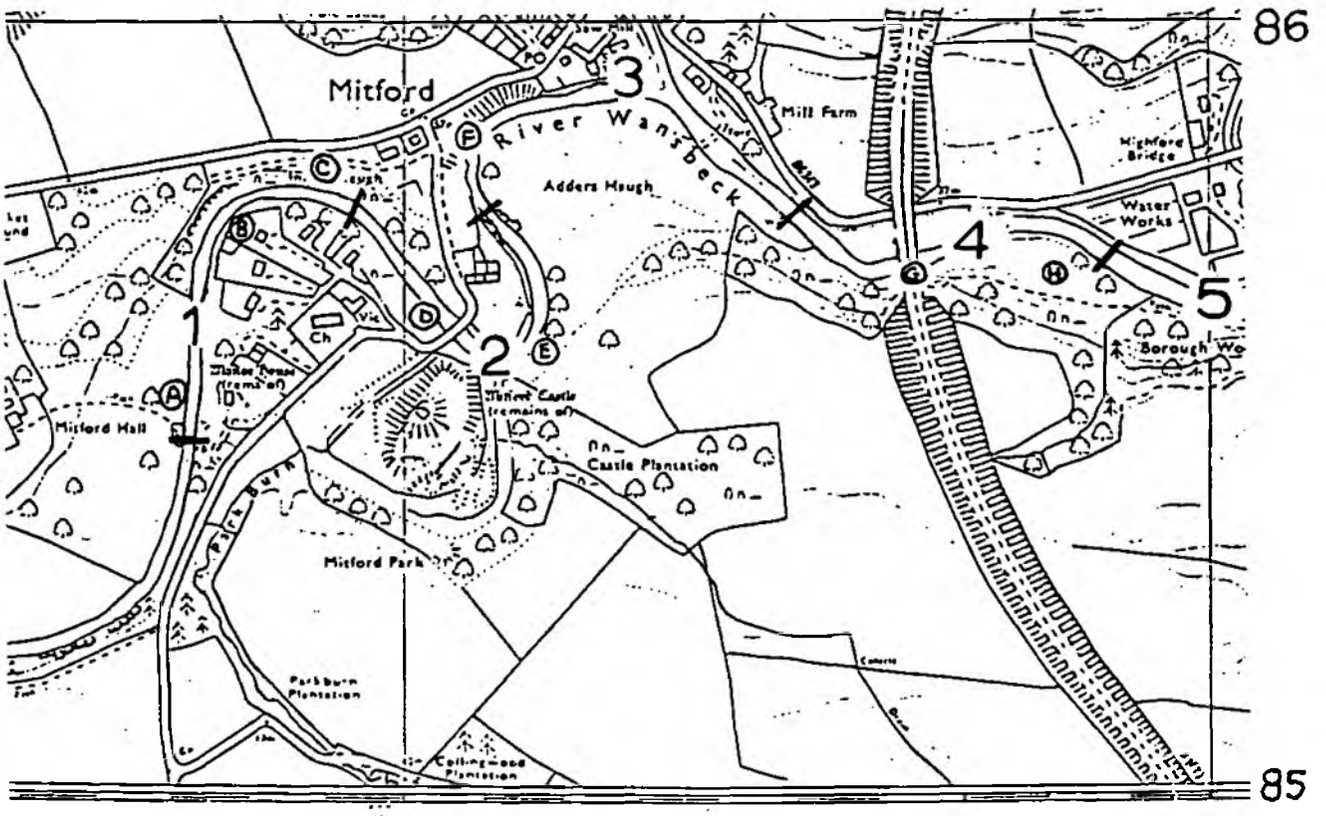
Disused railway path



View north from Wark Bridge

Fig. 13

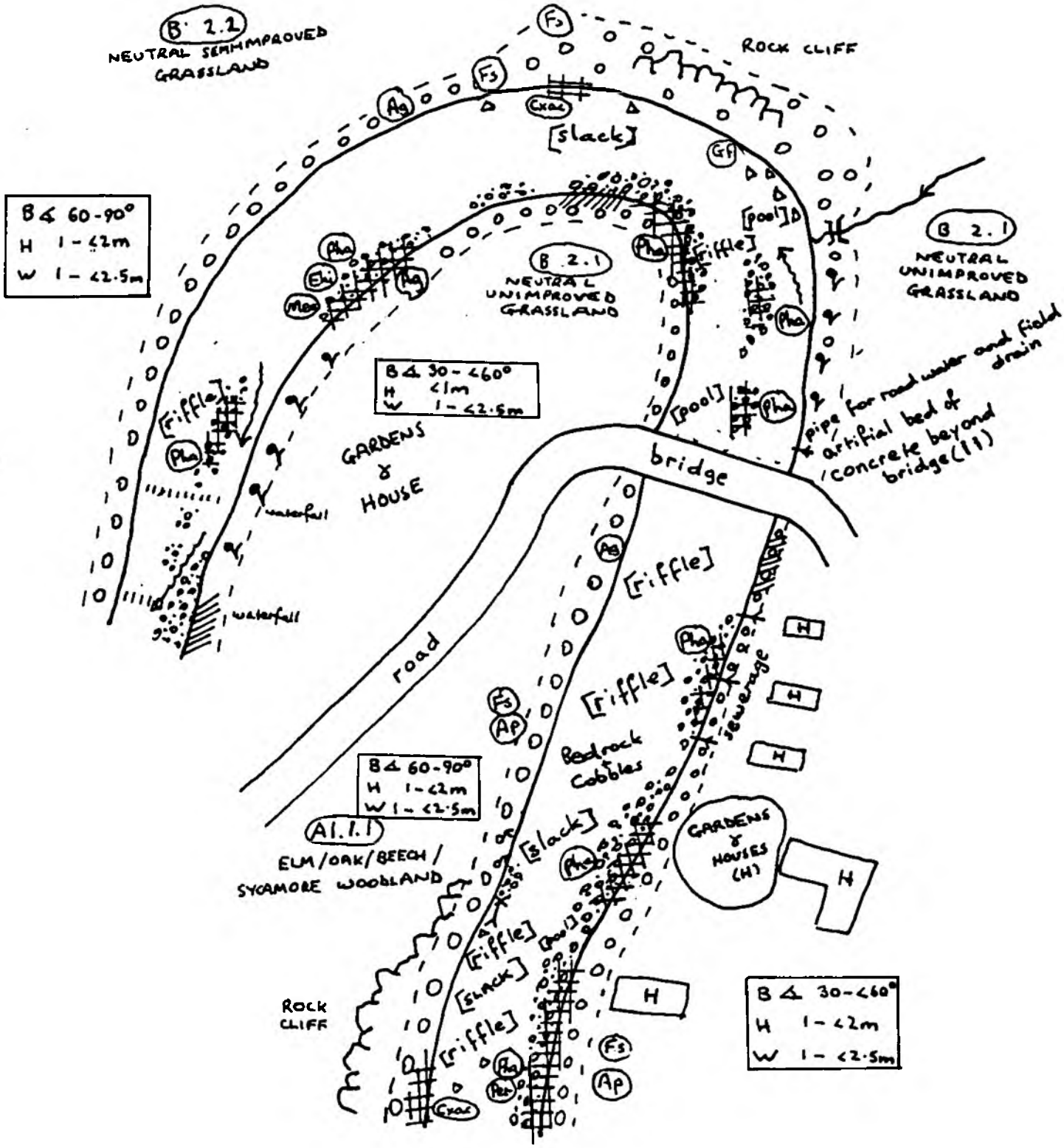
APPENDIX 1



	Limits	Fauna
1	NZ 167854 to 169857	Dipper, Grey Wagtail, Mallard
2	NZ 169857 to 171857	Otter, Mink, Goosander, Mallard, Dipper, Grey Wagtail
3	NZ 171857 to 175857	Dipper, Goosander, Grey Wagtail, Mallard
4	NZ 175857 to 179857	Mallard, Grey Wagtail, Goosander

Target Notes

A	Open, grassed river bank with strong woodland groundflora
B	Garden refuse tipped over fence on to river bank
C	Large numbers of standing and fallen dead elm
D	Builders rubble from new house dumped over bank
E	Tree fringe grazed by sheep, no regeneration
F	Timber poles in river - old fishing platform?
G	Old footpath under A1 in very poor condition
H	Woodland management by removing dead elm, coppicing


B 2.2
NEUTRAL SEMIMPROVED GRASSLAND
ROCK CLIFF
[slack]
B 2.1
NEUTRAL UNIMPROVED GRASSLAND
B ∠ 60-90°
H 1-<2m
W 1-<2.5m
B ∠ 30-<60°
H <1m
W 1-<2.5m
[riffle]
[pool]
GARDENS & HOUSE
waterfall
bridge
pipe for road water and field drain
artificial bed of concrete beyond bridge (11)
road
sewerage
Bedrock Cobbles
A1.1.1
ELM/OAK/BEECH/ SYCAMORE WOODLAND
GARDENS & HOUSES (H)
H
ROCK CLIFF
B ∠ 30-<60°
H 1-<2m
W 1-<2.5m

LEFT BANK	RIGHT BANK	BANK FEATURES		LEFT BANK	RIGHT BANK
		shelf	*5	5	
		solid earth cliff	2		
		soft earth cliff	*5		
		rock cliff	2		
		artificial	-		
		FB flood bank adj.			
		FB flood bank set back			
		levee	-		
		Height <1m	*5	30	10
		1-<2m	2	60	80
		>2m	1	10	10
		Width <1m	1		
		1-<2.5m	2	100	80
		2.5-<5m	3		10
		>5m	*4		10
		Slope <30°	*5	10	20
		30-<60°	1	30	50
		60-<90°	1	60	30
	1	>90°	(*)3		
		mud	1		
		sand	1		
		bare shingle	1	10	15
		vegetated shingle	1	15	15
		earth	1		
		natural cobbles	1		
10	10	natural boulders	1		

BANK VEGETATION				
	Conifer	1-5		
	Oak, Ash, Sycamore	1-5	✓	✓
P	Willow - recent pollard	1-5		
W	Willow old, not pollard	1-5		✓
S	Standard willows	1-5	✓	✓
A	Alder	1-5	✓	✓
	Other trees	1-5		
	Young trees	1-5	✓	
	Thick Scrub/shrubs	3	✓	✓
	Sparse Scrub/shrubs	2	✓	✓
	Reed/Sedge	*4	✓	
	Dense open	2	✓	✓
	Sparse open	1	✓	✓
	Regraded or mown			
	Exposed tree roots	3	✓	✓

ISLANDS			
	Rocky, vegetated	2	
	rocky, + bare	1	
	shingle and rock	2	
	shingle, rock + veg.	3	✓
	earth - maturing	3	
	earth - with trees developed	5	

25	40
✓	✓
✓	✓

RIVER HABITATS				
	bridges/500m	-		1
	weirs/500m	-		
	locks/500m	-		
	inlet/500m	*3		
Depth	<.25m	1		20
	.25-<.5	1		30
	0.5-<1.0	1		40
	>1.0m	1		10
Width	<1	1		
	1-<5	1		
	5-<10	1		20
	10-<20	1		70
	>20	1		10
Substrates				
BR	bed rock	1		60
b	boulders	1		
c	cobbles	1		40
p	pebbles	1		
g	gravel	1		
s	sand	1		
si	silt/mud	1		
cl	clay	1		
	peat	1		
Habitats and Flow				
P	pool	1		5
	slack	1		60
	riffle	1		35
	rapids	1		
	run	1		
	waterfall	1		✓
	protruding rocks	1		✓
Margins				
	shingle & bare	1		
	shingle, vegetated	1		
	mud	1		
	sand	1		

FLORA			
	emergent veg <1m wide	1	
	emergent 1-2m wide	2	
	emergent >2m wide	3	
	total vegetated area		
B	bryophytes		✓
E	emergents		
A	submergent		
F	floating		
	algae		

			LEFT BANK	RIGHT BANK
A.	**WOODLAND & SCRUB**			
1.	Broad-leaved semi-nat.	*5	50	
	plantation	2		
	Coniferous semi-nat.	*5		
	plantation	2		
	Mixed semi-natural	*5		
	plantation	1		
2.	Scrub - dense	M		
	scattered	2		
	Carr - alder	**7		
	willow	**7		
3.	Parkland	-		
4.	Recently felled wood	-		
B.	**GRASSLAND & MARSH**			
1.	Acidic unimproved	*5		
	semi-improved	2		
	Neutral unimproved	**7	20	20
	semi-improved	*3		40
	Calcareous unimproved	*5		
	semi-improved	2		
4.	Improved/reseeded	-		
5.	Marsh/marshy grassland	**7		
C.	**TALL HERB & FERN**			
1.	Bracken	3		
2.	Upland spp. rich veget.	*5		
3.	Other - tall ruderal	3		
	non ruderal	3		
D.	**HEATHLAND**			
1.	Dwarf scrub - dry	*3		
	wet	**7		
3.	lichen/bryophyte	*3		
4.	Montane	*3		
5.	Heath/grassland - dry	*3		
6.	wet	*7		
E.	**MIRE, FLUSH AND SPRING**			
1.	Mires - bog	**7		
	Fen - reed	**7		
	sedge	**7		
	sweet-grass	**7		
	mixed	**7		
2.	Bog flushes	*5		
F.	**SWAMP/INUNDATION**			
1.	Swamp - single sp. dom.	**7		
	Tall mixed assemblage	**7		

RIVER WANSBECK

Km No. SECTOR 2

Date APRIL 1990

Surveyor T. DARGIE

G.	**OPEN WATER**	
1.	Standing - canal +	2
	canal =	3
	ditch	-
	dyke	3
	pond, pool, cut-off	3
	lake	3
	gravel pit	3
	reservoir	1
	marina	-
2.	Running	
	stream < 1m wide	1
	1-5m	1
	5-10m	1
	>10	1
I.	**ROCK**	
1.	cliff	1
	scree	1
	limestone pavement	1
	cave	1
	other	1
2.	artificial/waste	-
J.	**MISCELLANEOUS**	
	arable	-
	amenity grassland	-
	ephemeral/short herb	-
	hedge +	2
	hedge =	*3
	fence on bank	-
	fence set back	-
	wall	
	building	
	caravans	
	fish farm	
	silage clamp	
	sewage works	
	garden	
	slick pile	1
	flood debris	1
	road	
	railway - disused	2
	used	1
	other	

Target Notes

35.

End of recreation ground to near "Cuddy's Well".

Otter haven.

Fauna:- Mink, otter.

36.

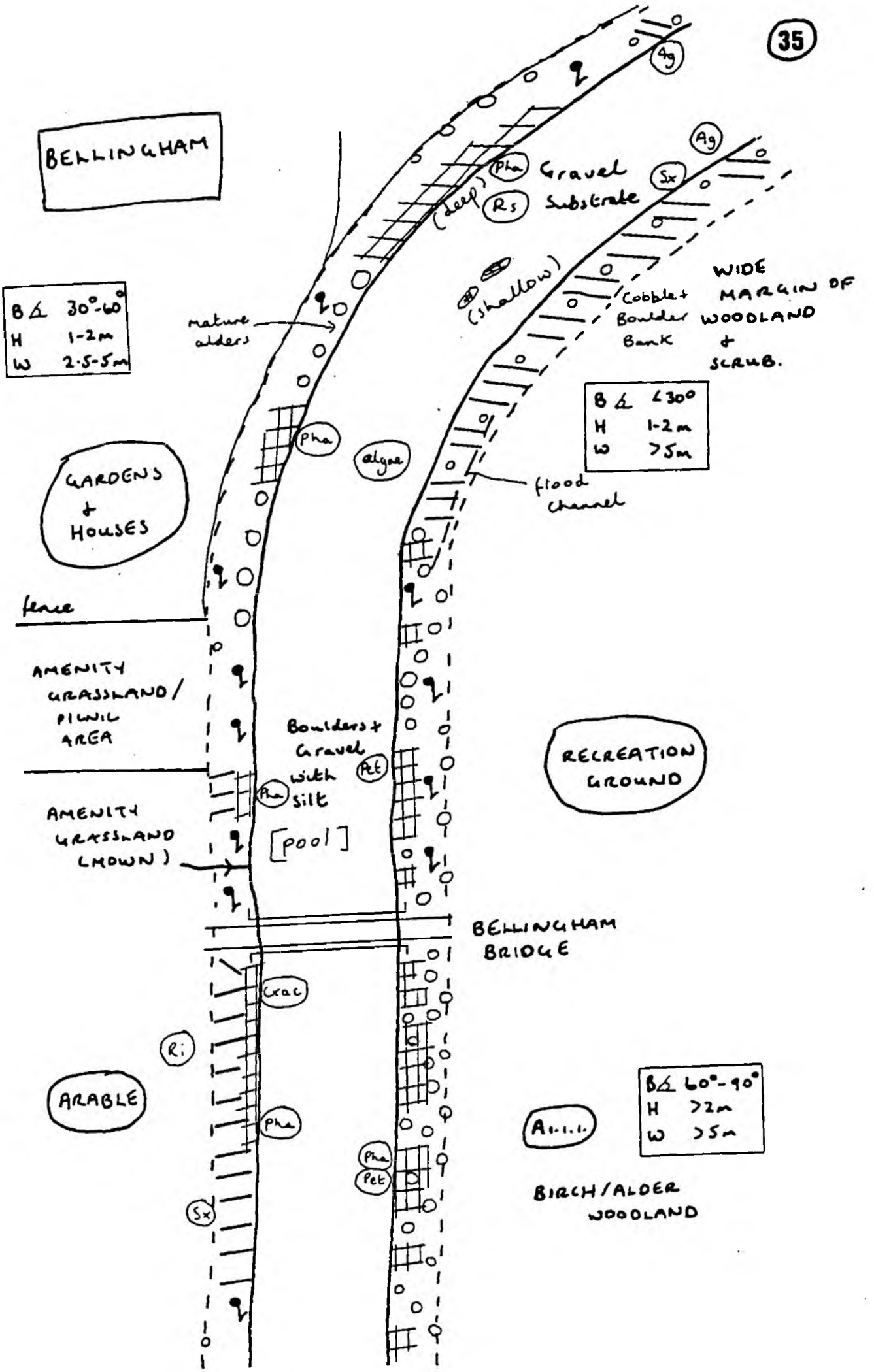
"Cuddy's Well" to fenceline at NY837847.

A. Fly tipping in woodland.

B. Badger sett at edge of woodland.

37.

NY837847 to NY841855.


BELLINGHAM
Ag
Pha
Gravel Substrate
(deep)
Rs
Sx
Ag
(shallow)
WIDE MARGIN OF WOODLAND & SCRUB.
Cobble + Boulder Bank
B ∠ 30°-60°
H 1-2m
W 2.5-5m
mature alders
B ∠ <30°
H 1-2m
W >5m
Pha
algae
flood channel
GARDENS & HOUSES
fence
AMENITY GRASSLAND / PLAY AREA
Boulders + Gravel with silt
Pet
Pha
[pool]
RECREATION GROUND
AMENITY GRASSLAND (MOWN)
BELLINGHAM BRIDGE
Crac
Ri
ARABLE
Pha
Pha
Pet
Sx
A.1.1.1.
B∠ 60°-90°
H >2m
W >5m
BIRCH/ALDER WOODLAND

A. WOODLAND & SCRUB

1. Broad-leaved semi-nat
   plantation
   Coniferous semi-nat.
   plantation
   Mixed semi-natural
   plantation
2. Scrub Dense
   scattered
   Carr-alder
   willow
3. Parkland
4. Recently felled wood

B. GRASSLAND & MARSH

1. Acidic unimproved
   semi-improved
   Neutral unimproved
   semi-improved
   Calcareous unimproved
   semi-improved
4. Improved/reseeded
5. Marsh/marshy grassland

C. TALL HERB & FERN

1. Bracken
2. Upland spp rich veget.
3. Other - tall ruderal
   non ruderal

D. HEATHLAND

1. Dwarf scrub - dry
   wet
3. Lichen/bryophyte
4. Montane
5. Heath/grassland - dry
6. wet

E. MIRE, FLUSH AND SPRING

1. Mires - bog
   Fen - reed
   sedge
   sweet-grass
   mixed
2. Bog flushes

F. SWAMP/INUNDATION

1. Swamp - single sp.dom.
   Tall mixed assemblage

LEFT BANK	RIGHT BANK
	40

RIVER North Tyne

Length No. 35

Date 1987

Surveyor MJD

G. OPEN WATER

1. Standing - canal +
   canal =
   ditch
   dyke
   pond, pool, cut-off
   lake
   gravel pit
   reservoir
   marina
2. Running
   stream<1m wide
   1-5m
   5-10m
   >10

I. ROCK

1. cliff
   scree
   limestone pavement
   cave
   other
2. artificial/waste

J. MISCELLANEOUS

arable	35	
amenity grassland	25	60
ephemeral/short herb		
hedge +		
hedge =		
fence on bank		
fence set back		
wall		
building		
caravans		
fish farm		
silage clamp		
sewage works		
garden	40	
stick pile		
flood debris		
road		
railway disused		
used		
other		

BANK FEATURES	LEFT BANK	RIGHT BANK
shelf		
solid earth cliff		
soft earth cliff		
rock cliff		
artificial		
flood bank adj		
flood bank set back		
levee		
Height <1m		
1-<2m	100	50
>2m		50
Width<1m		
1-2.5m		
2.5-<5	100	
5m		100
Slope<30°		30
30-<60°		40
60-<90°	100	30
>90°		
mud		
sand		
bare shingle		
vegetated shingle		10
earth	95	60
natural cobbles		20
natural boulders	5	10
BANK VEGETATION		
Conifer		
Oak,Ash,Sycamore	1	1
Willow-recent pollard		
Willow old,not pollard		
Standard willows	1	
Alder	2	5
Other trees		1
Young trees	1	2
Thick Scrub/shrubs		
Sparse Scrub/shrubs		40
Reed/Sedge	30	
Dense open	30	35
Sparse open	20	15
Reseeded or mown	10	
Exposed tree roots		
ISLANDS		
Rocky, vegetated		
rocky, + bare		
shingle and rock		
shingle, rock + veg		5
earth - maturing		
earth - with trees		
developed		

RIVER HABITATS	RIVER
bridges/500m	1
weirs/500m	
locks/500m	
inlet/500m	
Depth <.25m	20
.25-<5	30
0.5 - <1.0	30
>1.0m	20
Width<1	
1 - <5	
5 - <10	
10 - <20	
>20	100
Substrates	
bedrock	5
boulders	55
cobbles	30
gravel	
sand	10
silt/mud	
clay	
peat	
Habitats and Flow	
pool	100
slack	
riffle	
rapids	
run	
waterfall	
protruding rocks	
Margins	
shingle ± bare	
shingle, vegetated	
mud	
sand	
FLORA	
emergent veg<1m wide	
emergent 1-2m wide	
emergent >2m wide	
total veget. area	5
bryophytes	50
emergents	
submerged	50
floating	
algae	N/R

Medway River Project
Spnsored by

National Rivers Authority
Southern Region

Kent County Council

Tonbridge & Malling Borough Council

Maidstone Borough Council

Medway River Project
would like to thank the following
for their support in 1989/90

Arnold & Nathan LTD.
East Peckham

ICI Agrochemicals
Yalding

Brymor LTD.
East Peckham

Nature
Conservancy
Council

Courage Limited
Charitable Trust

Southern Water
Services PLC.
Kent Division

APPENDIX D - INCOME & EXPENDITURE

Funding for the Medway River Project for the year ended 31 March 1990 was split into 3 forms; core funding from the five sponsoring authorities, specific project funding agreed with authorities as required and industrial sponsorship or additional grant aid negotiated for the Medway River Project.

INCOME

CORE FUNDING	**£**	
Countryside Commission	13,000	
National Rivers Authority	8,019	
Kent County Council	2,365	
Tonbridge & Malling Borough	2,365	
Maidstone Borough Council	2,365	
TOTAL		**28,114**
SPECIFIC PROJECT FUNDING		
Kent County Council	4,184	
Maidstone Borough Council	3,800	
Tonbridge & Malling Borough Council	5,325	
National Rivers Authority (Environmental Protection)	2,000	
TOTAL		**15,309**
INDUSTRIAL SPONSORSHIP AND GRANT AID		
Nature Conservancy Council	250	
Arnold and Nathan Ltd.	250	
ICI Agro Chemicals	250	
Arnolds Ltd.	130	
Courage (Charitable Trust)	150	
Southern Water Services Limited	500	
Brymoor Ltd	100	
TOTAL		**1,630**
TOTAL INCOME		**45,053**