



NRA

National Rivers Authority

RIVER LANDSCAPE ASSESSMENT



502.2
NAT

CONSERVATION
TECHNICAL
HANDBOOK

2

Salmonid and Freshwater Fisheries Statistics for England and Wales

1. Fisheries Statistics 1989.
2. Fisheries Statistics 1990.

Fisheries Technical Reports

1. Sea Trout in England and Wales.
2. Analysis of Sea Trout Catch Statistics for England and Wales.
3. Sea Trout Literature Review and Bibliography.
4. The Feasibility of Developing and Utilising Gene Banks for Sea Trout (*Salmo trutta*) Conservation.

Conservation Technical Handbooks

1. River Corridor Surveys.
2. River Landscape Assessment.

RETURN
DATE

4.12.07

Published by:

National Rivers Authority

Rivers House
Waterside Drive
Aztec West
Almondsbury
Bristol
BS12 4UD

Tel: 0454 624400
Fax: 0454 624409

ISBN 1 873160 45 3

© National Rivers Authority 1993

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording, or otherwise without the prior written permission of the National Rivers Authority.



National Rivers Authority

RIVER LANDSCAPE ASSESSMENT

METHODS AND PROCEDURES



**NATIONAL LIBRARY &
INFORMATION SERVICE**

MIDLANDS REGION

Olton Court, 10 Warwick Road
Olton, Solihull B92 7HX

CONSERVATION TECHNICAL HANDBOOK NO. 2

APRIL 1993

ENVIRONMENT AGENCY



084545



CONTENTS

	PAGE
1 INTRODUCTION	5
1.1 Statutory Duties and Obligations	5
1.2 Sustaining and Furthering Conservation	5
1.3 The NRA's Strategic Conservation Objectives	6
2 THE GUIDELINES	7
2.1 Purpose of the Handbook	7
2.2 Definition of Landscape Assessment	7
3 BACKGROUND	8
3.1 The Importance of River Landscapes	8
3.2 General Approaches to Landscape Assessment	8
3.3 Objectivity and Subjectivity	9
3.4 The Products of Landscape Assessment	10
3.5 The Practical Process of Landscape Assessment	10
4 METHOD FOR ASSESSING RIVER LANDSCAPES	12
4.1 Step 1: Defining the Purpose	12
4.1.1 Strategic Assessment	14
4.1.2 Detailed Assessment	14
4.2 Step 2: Desk Study	15
4.2.1 Preparation of Base Maps	15
4.2.2 Assembling Background Information	15
4.2.3 Preparation for Site Survey	16
4.3 Step 3: Field Survey	16
4.3.1 Strategic Assessments	17
(a) Macro Landscape Assessment Field Survey	17
(b) Micro Landscape Assessment Field Survey	20
4.3.2 Field Survey for Detailed Assessment	22
4.4 Step 4: Analysis and Reporting	23
4.4.1 Analysis	23
4.4.2 The Survey Report	25

	PAGE
5 GUIDELINES FOR SURVEY SUPERVISORS	27
5.1 Quality Assurance and Control	27
5.2 Survey Specifications	27
5.3 Timing and Resources for Field Survey	28
5.4 Technical Competence	28
5.5 Resolving Technical Problems	28
6 HEALTH AND SAFETY	29
7 ACCESS	30
8 ACKNOWLEDGEMENTS	31
9 GLOSSARY	32
10 REFERENCES AND FURTHER READING	33
APPENDICES	36
Appendix 1: The NRA's statutory duties to conservation under sections 16(1), 16(2) and 2(2) of the Water Resources Act 1991	36
Appendix 2: Hierachy of landscape types and areas	37
Appendix 3: Example landscape sketches and descriptions	39
Appendix 4: Examples of macro, micro and detailed assessments	41
Appendix 5: NRA Weil's Disease Card	52

FIGURES

Fig 1:	Example survey sheet 1 for macro assessment	18
Fig 2:	Example survey sheet 2 for macro assessment	19
Fig 3:	Example survey sheet for micro assessment	23

TABLES

Table 1:	River landscape assessment - summary of method	13
Table 2:	Levels of assessment appropriate to different uses	12
Table 3:	Preferred map scales for strategic and detailed assessment	15
Table 4:	Sources of background information	16
Table 5:	Practical guidelines for strategic assessment field survey	16
Table 6:	Evaluation and management strategy guidelines	25

1. INTRODUCTION

The National Rivers Authority (NRA) was established in 1989 with statutory duties in relation to pollution control, water resources, flood defence, fisheries, recreation, conservation and navigation. These responsibilities relate to all inland and coastal waters and to land associated with such waters in England and Wales.

The NRA is entrusted with conservation responsibilities in respect of wildlife, landscape and natural beauty, geological and physiographical features, buildings and other objects of archaeological, architectural or historic interest.

1.1 Statutory Duties and Obligations

Section 16 of the Water Resources Act 1991 imposes a duty to further conservation in respect of proposals relating to the NRA's functions, to protect sites of conservation interest and to take account of the effects that any proposals would have on the beauty or amenity of these sites. The expression 'to further' implies a positive obligation toward conservation. Section 2(2) of the Act imposes a general duty to promote conservation to the extent that the NRA considers desirable (Appendix 1).

Practical guidance in respect of the NRA's environmental duties is given in a Code of Practice on Conservation, Access and Recreation under Section 18 of the Water Resources Act 1991. The NRA is also expected to follow the Conservation Guidelines for Drainage Authorities published by MAFF, DOE and The Welsh Office.

1.2 Sustaining and Furthering Conservation

There is a rich variety of landscapes, habitats, wildlife and historical/archaeological features associated with the streams, rivers, ponds, lakes, wetlands, estuaries and coastal waters of England and Wales. This reflects a diverse network of inland watercourses totalling more than 250,000km and a coastline exceeding 4000km in length.

A substantial proportion of the aquatic environment and associated lands has been subjected to a long history of modification. River valley landscapes have been altered, for example, by land drainage, forest clearance and planting, mining, farming, industry and residential development. Consequently, there is a substantial opportunity for the NRA, in fulfilling its duty to further conservation, to contribute to the restoration and enhancement of impoverished river valley landscapes.

1.3 The NRA's Strategic Conservation Objectives

- Assess and monitor the conservation status of inland and coastal waters and associated lands.
- Ensure that the NRA's regulatory, operational and advisory activities take full account of the need to sustain and further conservation.
- Promote conservation to enhance the quality of the aquatic and related environment for the benefit of wildlife and people.

An essential pre-requisite underpinning these objectives is to develop and implement effective standard methods to describe, classify and monitor the conservation resource. A standard, habitat-based River Corridor Survey (RCS) methodology has been developed and appears as NRA Conservation Technical Handbook No.1. This handbook provides a similar framework for a standard methodology dealing specifically with landscape assessment. By highlighting important features which need protecting and identifying opportunities to restore and enhance degraded landscapes, the methodology will assist the NRA to fulfil its statutory duties to further conservation.

2. THE GUIDELINES

2.1 Purpose of the Handbook

This handbook describes, for both surveyors and survey supervisors, the basic technique for a standard landscape assessment of river corridors and their surrounding areas. It provides the framework for a consistent national approach to gathering, recording and analysing information. This framework provides the basis for landscape assessment required by the NRA. However, it is essential that the precise objectives of landscape assessment are clearly identified prior to survey work being undertaken or commissioned so that the relevant level of detail is obtained and analysed. Broad landscape context can be provided by strategic assessment, with more site-specific detail being obtained when necessary. Indeed, in this respect broad background information can be obtained from maps and where applicable, vertical and oblique aerial photographs.

This handbook has been produced on the basis of an R&D project "River Landscape Methodology" (National Rivers Authority, 1992). A glossary of terms used in this handbook appears as Section 9.

2.2 Definition of Landscape Assessment

The term landscape assessment is a broad term which embraces all the various ways of looking at, describing, classifying and evaluating landscape. It is used for a number of purposes, the most important being to identify landscape character and make proposals for its conservation, management and enhancement.

Where the elements which make up a particular landscape occur in a distinct, recognisable and consistent pattern, they give character to the landscape. It is often this character which gives different parts of the country their special sense of place. Variation in landscape character is a particular feature of the British landscape and maintaining this diversity is one of the main aims of landscape conservation and management. Landscape assessment is a practical tool which enables landscape to be described and appropriate proposals for conservation, management and enhancement identified.

3. BACKGROUND

3.1 The Importance of River Landscapes

Rivers and their surroundings make a very important contribution to the character and quality of the landscape in both town and country. River valleys are often a highly distinctive type of landscape, the character of which frequently provides a marked contrast with the surrounding area. Many river valleys are important for recreation, and landscape is a vital component of their overall recreation and conservation value. The importance of river valley landscapes is widely recognised:

- Sites of Special Scientific Interest (SSSIs) may be designated in a river valley with particular geological or geomorphological features;
- river valleys make an extremely important contribution to nearly all National Parks and Areas of Outstanding Natural Beauty (AONBs) such as the Yorkshire Dales, the North Pennines and Dedham Vale;
- a number of river valleys have been designated as Environmentally Sensitive Areas (ESAs), in part because of their landscape character. These include the Test Valley in Hampshire, the Suffolk river valleys, the Pennine Dales, and parts of the Broads;
- special areas of lowland river valley landscape have been recognised for their outstanding environmental qualities, notably the Broads, which has equivalent status to a National Park, and the Somerset Moors and Levels;
- in urban and urban fringe areas, local plans often give special attention to the protection of river valleys from development, and give them special status as green corridors, green wedges or other such designations;
- rivers and associated areas such as wetland meadows have been targeted by Countryside Stewardship, an initiative launched by the Countryside Commission in 1991 with the intention of enhancing and re-creating valued landscapes;
- the Countryside Council for Wales' scheme, Tir Cymen, uses a market-based approach to manage farmland for the benefit of wildlife, archaeology, geology and landscape.

3.2 General Approaches to Landscape Assessment

Understanding landscape character means investigating the different influences which have helped to create and shape our surroundings. These include the physical effects of geology and climate; ecological influences; the historical impact of human activities; and the contemporary changes in land use and land

management. The process of landscape assessment must be able to identify clearly the patterns of landscape character which have been formed by these influences, to describe them meaningfully and to decide what this means for management options in the future.

Landscape assessment within the NRA can contribute to:

- the assessment of the environmental character and quality of rivers;
- the planning, design and environmental assessment of capital works;
- catchment planning and integrated river corridor assessments;
- the identification of opportunities for river landscape enhancement schemes;
- the assessment of planning applications;
- the production of maintenance programmes for rivers, e.g. pollarding willows and bank maintenance.

3.3 Objectivity and Subjectivity

Since the 1970s there have been a number of attempts to develop objective methods, in order to make landscape assessment a more rigorous scientific subject. Such methods usually involve measurement and quantification (quantitative analysis) of the various components which form landscape.

Subjective approaches, on the other hand, rely much more on the judgements and responses of the surveyor (qualitative analysis). They are generally much more descriptive and seek to evoke the aesthetic characteristics of a landscape and the reactions of people to it.

In practice, all landscape assessments require a combination of objectivity and subjectivity. The role of informed, professional judgement plays a major part in landscape assessment. However it is very important that this professional judgement takes place in the context of a systematic and structured approach.

3.4 The Products of Landscape Assessment

Landscape assessment is the process of describing, classifying and evaluating landscapes. This is achieved using three methods:

- **inventory/description:** a factual documentation of the landscape including a description of character, the elements which contribute to this, and their interactions. In order to convey the essential character of landscape, or its sense of place, aesthetic and perceptual factors are included in the description, and this involves subjective judgements;
- **classification:** a division of the study sites into landscape areas which have distinct and recognisable character, and grouping together areas of the same type. This involves a considerable degree of professional judgement;
- **evaluation:** a judgement of the relative value of different areas of landscape, or of different features within them. Where resources allow, it may be helpful for the professional judgements of the assessor to be complemented by independent perceptions and valuation of the landscape. This can involve review of published material about the landscape and, where necessary, assessing local public perceptions.

Description and classification of landscape into character areas may be the main product of an assessment. However, in most cases some form of evaluation will be required, including guidelines identifying the individual management needs of each landscape area. Such guidelines will be based on judgements as to whether a particular landscape should be conserved in its current form or modified in some way. This type of evaluation will be required for strategic planning purposes.

3.5 The Practical Process of Landscape Assessment

Landscape assessment comprises a number of steps, including (a) definition of purpose, (b) desk study, (c) field survey and (d) analysis and reporting. These steps provide one or more of the products described in 3.4. The process allows:

- **general familiarisation** with the survey area, through preliminary visits and desk study; and
- **structured survey**, undertaken by formal observations at sample points.

Both are equally important but the structured survey ensures consistent and thorough examination of the landscape.

Recording and presenting information from structured field survey work is important. Methods should include:

- **map annotation**, to record where different features are in relation to each other and their significance, and aspects of visual analysis such as view lines, eye-catching features, edges, dead ground and boundaries between areas of different character;
- **check-lists**, to record the presence or absence of a variety of landscape elements, their conspicuousness and whether they make a positive or negative contribution to the landscape. More subjective, judgemental factors can be recorded, for example, by a checklist of descriptive adjectives of aesthetic characteristics;
- **written descriptions**, to provide an overall impression of the landscape - to paint a word picture. These are difficult to do well because capturing the essence of place in words is not easy. Descriptions should incorporate information about the landscape elements present, the contribution they make, the aesthetic characteristics of the landscape and the way the surveyor perceives the landscape as a whole;
- **annotated sketches**, to convey information about the way different aspects of a landscape interact when viewed at ground level. Annotation ensures that a record is made of the way the surveyor perceives the landscape;
- **photographs**, to provide a particularly valuable supplementary record. They provide a quick way of recording a landscape and, while they do not interpret the scene, they provide a basis for subsequent drawings to illustrate the character of the landscape.

4. METHOD FOR ASSESSING RIVER LANDSCAPES

The landscape assessment process is divided into four steps.

Step 1 Defining the purpose

Step 2 Desk study

Step 3 Field survey (strategic and/or detailed according to purpose)

Step 4 Analysis and reporting

This process can be used for a wide range of applications which require different levels of detail and extent of landscape assessment. Those of a more strategic nature require a broader level of assessment, often over a wider area beyond the river itself. Localised and site specific issues require a more detailed level of assessment. Table 1 summarises the methodology.

4.1 STEP 1: DEFINING THE PURPOSE

A fundamental prerequisite before undertaking or commissioning landscape assessment is to select the level of assessment appropriate to the objective of the study (Table 2).

TABLE 2: Levels of assessment appropriate to different uses

Strategic Assessment	Detailed Assessment
<ul style="list-style-type: none">● Environmental character and quality● Integrated river corridor assessments● Catchment planning● Consultation on development	<ul style="list-style-type: none">● Planning, design and assessment of capital schemes● Enhancement schemes● Third parties' river schemes● Maintenance programmes

As a general rule, a detailed assessment should only be carried out where there has already been a strategic assessment to provide a broader context. Strategic assessment can be carried out alone and does not need to be followed up by detailed assessment unless there is a specific reason for doing so. However, if necessary, both can be carried out at the same time.

TABLE 1: River landscape assessment - summary of method

STEP 1 DEFINE PURPOSE	
Strategic Assessment Typical Uses <ul style="list-style-type: none"> ● Environmental character and quality ● Catchment planning 	Detailed Assessment Typical Uses <ul style="list-style-type: none"> ● Planning, design assessment of capital schemes ● Maintenance programmes
STEP 2 DESK STUDY	
<ul style="list-style-type: none"> ● -Prepare base maps ● Collect and review background information, e.g: 	
Strategic Assessment <ul style="list-style-type: none"> - Aerial photographs - Geological maps 	Detailed Assessment <ul style="list-style-type: none"> - Aerial photographs - Ecological surveys
STEP 3 FIELD STUDY	
Macro Assessment <ul style="list-style-type: none"> ● Fill in character assessment sheets (approx every 1.5-2km) ● Fill in evaluation sheets ● Draw visual boundary from river ● Note particular landscape features ● Sketch landscape or take photographs Micro Assessment <ul style="list-style-type: none"> ● Walk river as far as possible ● Fill in micro survey sheets (approx every 1km or point of change) ● Note particular landscape features ● Write description and decide strategy ● Sketch landscape or take photographs 	Detailed Assessment <ul style="list-style-type: none"> ● Walk defined stretch(es) ● Write target notes relating to management strategy, i.e: <ul style="list-style-type: none"> - features to conserve - opportunities for enhancement - presence or absence of landscape features
STEP 4 ANALYSIS AND REPORTING	
Strategic Assessment <ul style="list-style-type: none"> ● Description and classification of landscape areas ● Evaluation of relative value of areas ● Survey report including: <ul style="list-style-type: none"> - macro survey plans - micro survey plans - landscape descriptions - photographs/sketches - overall management strategy 	Detailed Assessment <ul style="list-style-type: none"> ● Survey report including: <ul style="list-style-type: none"> - plans with target notes marked - target note sheets - evaluation of reaches

4.1.1 Strategic Assessment

Strategic assessment provides broad information about the variation in the character and quality of river landscapes based on two scales:

- (i) **macro river landscape:** the wider landscape of the river valley, defined by the limits of views from the river, or the visual envelope. Depending on the nature of the river valley, its geology, landform, landcover, land use history and settlement pattern, this wider area may include a number of different landscape types of varying character. These need to be identified and described;
- (ii) **micro river landscape:** the landscape of the river itself, created by the river channel and its immediate banks. The micro river landscape depends on the form and character of the channel, the nature of the river bank profile, bankside vegetation, land-use and other features associated with the river.

The two scales of landscape are closely related but they are likely to vary independently. For example, there may be a stretch of micro river landscape of strong, positive character and high quality which passes through a wider valley where the macro landscape is degraded.

4.1.2 Detailed Assessment

Detailed landscape assessment concentrates on a smaller area defined by a specific purpose of work. It may be a particular stretch of river where maintenance work is to be carried out or which is to be the subject of a major flood alleviation, enhancement or other scheme where environmental effects must be assessed.

Specific information to be collected at this level might include:

- important features to be conserved
- opportunities to enhance existing features
- areas of high sensitivity
- areas of low sensitivity able to accept change without undue detriment.

4.2 STEP 2: DESK STUDY

Once the purpose of the assessment is known, an appropriate study area should be defined and essential background information gathered as part of a desk study.

4.2.1 Preparation of Base Maps

Ordnance Survey maps should be used to provide convenient sheets for field work. Relevant map scales are indicated in Table 3. NB Ordnance Survey copyright should be observed at all times.

Table 3: Preferred map scales for strategic and detailed assessment

STRATEGIC ASSESSMENT	DETAILED ASSESSMENT
1:25,000 Ordnance Survey Pathfinder series	1:10,000, 1:2,500 or other appropriate scale

4.2.2 Assembling Background Information

To help describe the landscape, relevant background information which is easily available should be collected and reviewed. Potentially useful material is listed in Table 4 but the list is not exhaustive, nor will all this information be available. If the survey is to cover very large areas a more restricted review of material will be necessary, in which case only the items marked with an asterisk are essential. The information can be collected and analysed using various techniques, particularly overlay analysis whereby different sets of information can be used to identify patterns and combinations of landscape elements and features that characterise the area.

Table 4: Sources of background information

STRATEGIC ASSESSMENT	DETAILED ASSESSMENT
Aerial photographs* Landscape designations/constraints* Structure and local plans* Soil and drift geology maps* Floodplain maps Main river maps Historical maps, e.g. first edition OS Regional and county assessments Archaeological information	Aerial photographs* Ecological surveys Capital programme details Maintenance programme details
* denotes essential sources	

4.2.3 Preparation for Site Survey

On the basis of Ordnance Survey and other information, the study area marked on the survey map should be annotated to identify:

- (i) the anticipated extent of the visual envelope or floodplain (whichever is greater) of the valley from the river bank;
- (ii) where possible, the extent of landscape areas of potentially distinct character;
- (iii) the potential location of viewpoints from which surveys can be carried out.

Wherever possible, use available information and personal knowledge to describe the study area in a wider regional context. Indicate the broad regional landscape types in which the rivers are located, and the range of other comparable rivers.

4.3 STEP 3: FIELD SURVEY

TABLE 5: Practical guidelines for strategic assessment field survey

Timing:	-	Avoid short days and bad weather in winter. All other seasons are suitable, but note seasonal changes affecting the landscape.								
	-	Avoid poor visibility and very wet or stormy weather.								
Equipment:	-	1:25,000 OS Pathfinder maps, cut and pasted to cover convenient 10km stretches.								
	-	Macro Assessment sheets.								
	-	Micro Assessment sheets.								
	-	A3 clipboard: plastic-backed and folding to A4.								
	-	A5 note pad or similar.								
	-	Pencils and eraser.								
	-	Camera and colour film (slide and print if possible).								
	-	Binoculars.								
Organisation:	-	Where possible work in a team of two, with complementary technical skills.								
	-	Tasks can be allocated thus:								
		<table><tr><td>Person 1:</td><td>Person 2:</td></tr><tr><td>Driving</td><td>Map reading</td></tr><tr><td>Record sheets</td><td>Mapping landscapes</td></tr><tr><td>Landscape descriptions</td><td>Photographs</td></tr></table>	Person 1:	Person 2:	Driving	Map reading	Record sheets	Mapping landscapes	Landscape descriptions	Photographs
Person 1:	Person 2:									
Driving	Map reading									
Record sheets	Mapping landscapes									
Landscape descriptions	Photographs									

4.3.1 STRATEGIC ASSESSMENTS

Strategic assessments should include the river channel and banks (**micro landscape**), plus the wider river landscape (**macro landscape**).

For strategic assessments it is likely that catchments as a whole will be the targets for assessment. If so, the study area should be divided into manageable blocks, e.g. 10km stretches. Table 5 provides practical guidelines for undertaking strategic assessment field survey.

(a) Macro Landscape Assessment Field Survey

First, an overall impression of the river valley landscape, its extent and variation within it should be obtained, for example by driving around the survey area. Chosen Viewpoints which give comprehensive coverage of each of the different character areas that occur can be confirmed or amended as necessary. These can be near the river itself or elsewhere in the wider river valley.

At selected viewpoints the following structured survey procedures should be carried out:

- (i) Complete a character assessment form (Figure 1 overleaf), amending this wherever appropriate to suit the particular circumstances. This allows quick and easy recording of:
 - dominant landscape elements likely to be the main influences on landscape character;
 - historical, cultural and other special associations which may also influence landscape character;
 - a brief description encapsulating the essential character of the landscape;
 - first impressions of the aesthetic and perceptual characteristics of the landscape.

Figure 1: Example survey sheet 1 for macro assessment

RIVER LANDSCAPE ASSESSMENT: STRATEGIC LEVEL MACRO RIVER LANDSCAPE: SURVEY SHEET 1 - CHARACTER ASSESSMENT					
Sheet No:		Photo Nos:			
Location:		Date:			
DOMINANT ELEMENTS					
LANDFORM	FARMLAND	WOODLAND	WATER		
FIELD PATTERN	SETTLEMENT	HEDGEROW TREES	OTHER		
CHARACTERISTIC FEATURES					
Land use		Historic features			
Field boundaries		Semi-natural habitats			
BRIEF DESCRIPTION					
AESTHETIC AND PERCEPTUAL CHARACTERISTICS					
					Other
SCALE	Intimate	Small	Medium	Large
ENCLOSURE	Confined	Enclosed	Open	Exposed
VARIETY	Complex	Varied	Simple	Uniform
MOVEMENT	Remote	Vacant	Peaceful	Active
UNITY	Unified	Interrupted	Fragmented	Chaotic
NATURALNESS	Undisturbed	Restrained	Tamed	Disturbed

Figure 2: Example survey sheet 2 for macro assessment

RIVER LANDSCAPE ASSESSMENT: STRATEGIC LEVEL MACRO RIVER LANDSCAPE: SURVEY SHEET 2 - EVALUATION														
River:		Type Description:												
Date:														
Record the condition of landscape elements; pressures affecting the landscape type, and priorities for action.														
LAND USE & SETTLEMENT														
TREE COVER & FIELD PATTERN														
RECREATION & AMENITY														
OTHER FEATURES & COMMENTS														
<table border="1" style="margin: auto; border-collapse: collapse;"> <tr> <td style="padding: 5px;">EVALUATION</td> <td style="padding: 5px; text-align: center;">1</td> <td style="padding: 5px; text-align: center;">2</td> <td style="padding: 5px; text-align: center;">3</td> <td style="padding: 5px; text-align: center;">4</td> </tr> <tr> <td style="padding: 5px;">MANAGEMENT STRATEGY</td> <td style="padding: 5px; text-align: center;">CONSERVATION</td> <td style="padding: 5px; text-align: center;">RESTORATION</td> <td colspan="2" style="padding: 5px; text-align: center;">ENHANCEMENT</td> </tr> </table>					EVALUATION	1	2	3	4	MANAGEMENT STRATEGY	CONSERVATION	RESTORATION	ENHANCEMENT	
EVALUATION	1	2	3	4										
MANAGEMENT STRATEGY	CONSERVATION	RESTORATION	ENHANCEMENT											

(ii) Complete an evaluation form (Figure 2 previous page), amending where necessary. This records the condition of landscape elements, pressures affecting the landscape and priorities for action for:

- land use and settlement;
- tree cover and field pattern;
- recreation and amenity features;
- other features.

In addition, make an overall assessment of the value of each particular landscape area and identify an appropriate potential management strategy. The suggested value classes and management strategies are set out in Table 6 (page 24).

- (iii) Annotate the 1:25,000 map sheet to indicate the boundary of the visual envelope of the river valley as seen from each viewpoint. Define the boundaries between distinct landscape areas on the map;
- (iv) Note particular features on the map such as hedgerow removal, the presence of important or valuable features and the location of particular eyesores or detracting features;
- (v) Draw where appropriate a sketch either as a record of key features or to fully illustrate the character area, and take panoramic photographs at each viewpoint.

(b) Micro Landscape Assessment Field Survey

Accessible stretches of river should be walked. If this is not possible, a number of viewpoints at the river edge which will give views of all the river should be selected. This is best performed in parallel with the macro landscape assessment, as some of the viewpoints will coincide.

The following procedure should be followed.

- (i) Either at regular one kilometre intervals, or where the character of the river corridor changes noticeably, complete a micro survey form (Figure 3). The sheet allows the surveyor to record:
- overall impressions of the river banks and margins;
 - a visual assessment of water quality;
 - particular features in the river corridor;

Figure 3: Example survey sheet for micro assessment

RIVER LANDSCAPE ASSESSMENT: STRATEGIC LEVEL				
SURVEY SHEET FOR 'MICRO' RIVER LANDSCAPE				
Sheet No:	Photo Nos:			
Location:	Date:			
Instructions: For each stretch of river of distinct character, complete a sheet to give an overall impression of the character of that section. Put tick in appropriate boxes where this characteristic is significant, marking the approximate relevant position between the two extremes. Indicate any special or characteristic features present. Write a brief description of landscape character. Assess overall quality and indicate general management strategy.				
RIVER CHANNEL/BANKS				
Rocks/boulder in channel	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Smooth channel bed		
Fast moving water with riffle/waterfalls etc	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Slack or stagnant water		
Full, flowing water	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Low flows		
Variety in channel width/depth	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Regular/canalised channel		
Sinuous, meandering channel	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Linear, straight channel		
Diverse bank vegetation with semi-natural habitats	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Artificial banks		
RIVER MARGINS				
Undeveloped rural setting	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Urban developed setting		
Attractive, historic town or good modern development	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Less attractive development or industrial areas		
Pasture/meadow/grassland adjacent	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Arable land adjacent		
Broadleaved/mixed woodland adjacent	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Coniferous plantation adjacent		
Tree-lined river side	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Tree-less river side		
APPEARANCE OF WATER				
Clearwater/bed visible	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Discoloured/polluted water		
Water free of debris	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Debris and rubbish frequent		
Evidence of fish and other wildlife	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Lifeless water		
Aquatic/emergent vegetation	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Little or no aquatic or vegetation		
NOTABLE/CHARACTERISTIC FEATURES				
(Note type of feature, abundance and comment on any particular aspects, eg characteristic style/vernacular - include bridges, locks, weirs, waterfalls, moorings, jetties, pollarded willows, river related buildings.)				
Feature	Notes/ Comments			
1.				
2.				
3.				
4.				
5.				
6.				
7.				
8.				
BRIEF DESCRIPTION OF LANDSCAPE CHARACTER & COMMENTS				
EVALUATION (Tick as appropriate)				
QUALITY CLASS	1	2	3	4
MANAGEMENT STRATEGY	CONSERVATION	RESTORATION	ENHANCEMENT	

- a general description of the landscape character within the sample stretch;
 - an evaluation of quality and the appropriate management strategy using the same criteria as in the macro assessment;
 - the location and direction of photographs taken.
- (ii) Annotate the 1:25,000 map sheet to indicate the extent of each river landscape area.
- (iii) Where appropriate, sketch the landscape to record key features or to fully illustrate the character area.

4.3.2 FIELD SURVEY FOR DETAILED ASSESSMENTS

The precise method for detailed assessment will be related to the particular purpose for which it is required. This assessment uses a series of target notes which are simply noted as numbered locations on the survey map and then keyed to accompanying text. Detailed assessment can be undertaken in conjunction with the micro survey in the strategic assessment as necessary. The following procedure should be followed.

- (i) Depending on the extent of river to be included, the study area can be divided into 500m reaches. These may be determined from the map in relation to distinctive landmarks, such as roads, bridges or other fixed features. Standard reaches which have been defined for land drainage or river corridor surveys can also be used. Target notes can be separately recorded for individual 500m reaches.
- (ii) The study area should be walked, noting in sequence and making judgements in the form of target notes, the following aspects:
- features which are essential to conserve, both man-made and natural;
 - the presence or absence of features which are characteristic of the macro and micro river landscape areas, as defined in the strategic assessment;
 - opportunities for enhancement, relating separately to the river itself, the river banks, and adjacent riverside. These should be annotated onto the map by means of a reference number.
- (ii) The location of the target notes should be recorded on the 1:10,000 (or larger scale) map and a brief description written separately, keyed to the map by a reference number.

4.4 STEP 4: ANALYSIS AND REPORTING

All field records should be collated, reviewed and analysed. The conclusions must be presented in a consistent form as a survey report. The analysis consists of description and classification, followed by evaluation.

4.4.1 Analysis

(a) Description and Classification

Analysis for the strategic assessment involves in the first instance the production of a description and classification of the full range of both macro and micro river landscape character areas. This requires a clear, generalised written description of each and, where appropriate, a typical sketch illustrating key features. The distinction between 'landscape types' which are generic and 'landscape/character areas' which are geographically specific should be made. Appendix 2 provides a hierarchical explanation of these distinctions.

(b) Evaluation

The second part of assessment is evaluation.

- (i) A professional judgement about the relative value of each character area should be made. Four value classes are defined in Table 6.

When using the value classes reference should be made to assessments of other landscape resources in the Region, e.g. county landscape assessments and other river landscape assessments. It will be necessary to make judgements at the outset about the broad landscape types of the rivers being assessed in order to compare like with like when assessing value classes.

- (ii) An overall management strategy for each landscape character area is required. The decision should reflect the records made of apparent change and vulnerability of the landscape. Alternative strategies are conservation, restoration and enhancement (Table 6). It should be noted that restoration is also a form of enhancement but with emphasis on restoring character rather than on creating new landscape. These are broad generalised management strategies which should be used to indicate the overall needs of whole landscape character areas. This does not mean to say that, for example in an area where the general strategy is enhancement, there will not be some features or areas which need conservation; or that in an area where the strategy is conservation, there may not be some need for restoration. Such decisions are based on detailed assessments.

TABLE 6: Evaluation and management strategy guidelines

VALUE CLASS		CHARACTERISTICS OF LANDSCAPE
1		Very strong, positive character with many valued features which are of great importance and essential to conserve.
2		Strong, positive character though perhaps some evidence of degradation. Should generally be conserved, but may need restoration or management.
3		Some positive character but evidence that this has been generally eroded. These landscapes will benefit from restoration of landscape character but may also have some capacity to accept change.
4		Largely negative in character with few strong positive features, offering significant scope for enhancement and potentially able to accommodate change.
MANAGEMENT STRATEGY		
Conservation		Emphasis on conservation of existing character and on appropriate management of particular features which contribute to this character.
Restoration		Emphasis on restoring landscape character where this is being degraded.
Enhancement		Emphasis on the enhancement of landscapes which have completely lost their former character and are downgraded, derelict or damaged. There may be opportunities to create new types of landscape as a result of enhancement.
The approximate relationship between the two forms of evaluation are:		
Value Class		Management Strategy
1,2		CONSERVATION
2,3		RESTORATION
3,4		ENHANCEMENT

4.4.2 The Survey Report

The assessment, whether strategic or detailed should follow a standard format to ensure consistency. The survey report should be in A4 format and bound in such a way that it may be easily dismantled and photocopied. The report should be arranged as follows:

A contents page

Introduction and location map showing the location of the assessment reaches in a regional context

A very brief, typed summary including an outline of:

- the purpose of the survey
- the general landscape character
- the major features (if appropriate)
- recommendations for conservation, restoration or enhancement.

In all instances consistent descriptions of landscapes should be used.

The main body of the report will vary according to the level of assessment undertaken:

Strategic Assessments should include the following features.

(a) A main text which includes a description and classification comprising:

- a general description of the river in its regional context including historical and geological information and a description of land use;
- a short description of each different landscape area, expanding on information written on the field assessment forms;
- a description of the river corridor, outlining its influence within the river valley. This may include reference to amenity, recreation and wildlife value;
- a location map of the river, indicating the extent of the wider valley landscape, landscape areas identified, at both macro and micro scales, and the location of key features within them.

(b) A series of sketches illustrating the main elements of each landscape area. Appendix 3 provides examples of sketches.

(c) An evaluation.

On the 1:25,000 maps, the assessed value and broad management strategy for each landscape area in the wider river valley and each micro-landscape should be included.

For each landscape area implications of the conclusions in relation to the purpose of the study should be given. These may include:

- **conservation:** landscape areas where conservation should be emphasised and major change or disturbance avoided. Particularly important features should be noted;
- **restoration:** areas where certain change can be accommodated, including potential locations for engineering works or recreational provision. The implications of landscape character for any such change should be noted, by way of design guidance, identification of key features to be protected, and opportunities for improvement;
- **enhancement:** areas of landscape which do not currently have strong character and therefore contain many negative features and provides scope for enhancement. More positive landscape character nearby can help to determine the nature of the enhancement and contribute to the design guidance.

Detailed Assessments should include the following features.

- (a) Maps drawn at an appropriate scale, showing the location of target notes and other annotations. Boundaries of reaches assessed should also be marked. A4 format plans should be used in reports.
- (b) A schedule of accompanying target notes, highlighting features requiring conservation and enhancement works is required. Items should be classified as capital works, management works, and opportunities for interpretation as appropriate.
- (c) If appropriate, it may be helpful to develop design guidance to indicate how restoration and enhancement proposals can be linked to the landscape character.

Appendix 4 illustrates worked examples of macro, micro and detailed assessments.

5. GUIDELINES FOR SURVEY SUPERVISORS

The survey supervisor will in all instances be the appropriate NRA Landscape Architect or Conservation Officer.

5.1 Quality Assurance and Control

Mechanisms and procedures for ensuring high standards are fundamental.

The highest standards of survey and reporting are essential to ensure the most effective collection, analysis and use of landscape assessment information. Quality assurance and control are both the responsibility of the survey supervisor.

Critical requirements include:

- detailed specifications for surveyors;
- adequate timing and resources for fieldwork;
- well-trained surveyors, to ensure technical competence, consistency of approach and understanding;
- the ability to overcome technical difficulties associated with survey techniques;
- regular checking of the quality of landscape assessment outputs;
- regular comparison of work from different surveyors to ensure consistency of work.

It is important that surveyors are familiar with the methodology.

5.2 Survey Specifications

Full specifications must be established well before a survey begins. These will include the purpose of survey, precise location, timing, and components, including the level of detail required. The contents of the final report, including the format of maps and summary descriptions, must be clearly identified as part of the specifications. The specifications should also include examples of landscape area descriptions to ensure the use of standard terminology.

5.3 Timing and Resources for Field Survey

As broad guidance, resource implications for a landscape assessment survey for each 10km of river valley are as follows:

- (i) strategic assessment, covering both macro and micro river landscapes will take approximately:
 - 3 man-days (1.5 days x team of two) for field survey;
 - 2 man-days for analysis and preparation of maps and reports.
- (ii) detailed assessment related to specific projects or schemes will take approximately:
 - 2 man-days for field survey;
 - 2 man-days to compile target notes and maps.

5.4 Technical Competence

All surveyors should be aware of the rationale behind landscape assessment including the value and potential uses of the information gathered. Consequently, relevant, skilled and experienced landscape surveyors should be used. Appropriate skills include an understanding of the historical development of British landscapes, training in technical drawing, graphic techniques and illustrative sketching and an ability to understand the various facets which make up landscape. Most landscape assessments require a broad range of technical skills, which may cover planning, landscape design, geography, archaeology, ecology and recreation.

5.5 Resolving Technical Problems

Supervisors must ensure that surveyors seek advice at the earliest opportunity in the event of any technical problems regarding survey methodology, or assessing special or unusual features. In the first instance the survey supervisor will be the primary contact who is responsible for seeking advice from the relevant expert(s).

All surveyors should be made fully aware of the offences relating to birds, animals and plants specially protected under Schedules 1, 5 and 8 of the Wildlife and Countryside Act 1981 (as amended).

6. HEALTH AND SAFETY

Being near rivers, streams or any other body of water, either for work or recreation, is potentially dangerous.

The survey supervisor is responsible for making all field staff aware of potential dangers and the procedures in case of accidents.

Safety should be an integral part of any landscape assessment training programme. For example, knowledge about Weil's disease is essential; a waterproof card giving information on Weil's Disease is available from NRA Regional Health and Safety Advisors (Appendix 5).

Every effort should be made to minimise risks in the field by following common-sense behaviour such as:

- wearing a life jacket where necessary
- avoiding steep or unstable banks
- avoiding rivers during spate conditions
- not entering the water if the river-bed is not visible
- working in pairs if river channels need to be crossed
- watching out for hazards, especially in urban rivers, such as broken glass, sharp metal or decomposing waste
- taking care to avoid contact with the water, soil or low vegetation before eating or drinking during field work
- wearing the right clothes for the job and weather conditions
- carrying a basic first-aid kit
- following reporting-in and signing-off procedures, linked to a home base; this is especially important for surveyors working alone

Survey supervisors should ensure that the location of individual surveyors undertaking fieldwork is known and should establish an agreed system of emergency action in case a surveyor does not report in or sign off at the end of the day.

7. ACCESS

Although not always possible, every effort should be made to obtain prior permission for access to private land. Indeed, presume that unless otherwise indicated, riparian land is privately-owned.

If not obtained in advance, surveyors should attempt to obtain permission by approaching nearby houses or farms or asking people working in nearby fields or other appropriate land.

If a surveyor is working without permission and is challenged by an owner or tenant, he or she should:

- provide proof of identity
- apologise for not obtaining prior permission
- describe the work in progress
- explain exactly what the survey involves and how long it will take
- offer the owner, or tenant an extract of the report, when available
- leave the site without fuss if the person becomes aggressive or distressed
- report the incident(s) to the survey supervisor.

SURVEYORS SHOULD AT ALL TIMES BE COURTEOUS AND HELPFUL TO LANDOWNERS, AND MUST ABIDE BY THE COUNTRY CODE.

8. ACKNOWLEDGEMENTS

This handbook is based on R&D Report 274/3/ST, written by Carys Swanwick, Howard Price and Steve Warnock of Land Use Consultants. Constructive comments on the contents and structure were made by Carys Swanwick and, on behalf of the Countryside Commission, Julie Martin. The internal NRA advisory group which developed the handbook comprised David Hickie, Jill Mackley, Richard Copas and Sandy Rowden. The sketches in Appendix 3 and on the front cover were drawn by Chris Bolton.

The Ordnance Survey is acknowledged for permission to reproduce the maps appearing in Appendix 4.

9. GLOSSARY

Strategic Assessment: a landscape assessment carried out to provide information for strategic purposes, such as the establishment of a database about the character and quality of river landscapes, development of comprehensive river corridor assessments and catchment planning.

Detailed Assessment: a landscape assessment carried out to provide information for site specific purposes, such as the planning, design or assessment of capital schemes, preparation of enhancement schemes and development of maintenance programmes. Such assessments will usually be reactive in nature.

Macro River Landscape: the wider landscape of the river valley, defined by the visual envelope of the river or the floodplain (whichever is the greater) or the landscape visible from it. This area will be confined where the valley is incised and steep-sided, but more extensive where it is broad and flat. It may extend beyond the floodplain and up the valley sides to the visual limits of the valley.

Micro River Landscape: the small scale landscape of the river itself created by the river channel and its banks. The nature of this micro river landscape depends on the form and character of the channel, water quality, presence and nature of riverine vegetation, bank profile, bank vegetation, land use and other features associated with the river.

Landscape/Character Area: a distinct, recognisable and consistent pattern of elements which occur in a certain geographic area. (See Appendix 2 for further clarification.)

Landscape Type: a generic term for a landscape with a consistent character. (See Appendix 2 for further clarification.)

Landscape Description: a “word picture” of a particular landscape which describes its character, identifies the characteristic elements which contribute to this, evokes its special ‘sense of place’ and includes both objective and subjective reactions to the landscape.

Landscape Classification: the process of sorting the study area into different types of landscape which have distinct and recognisable character, and grouping together areas of the same type.

Landscape Evaluation: the process of attaching value to a particular landscape, usually by reference to an agreed set of criteria, and in the context of the specific purpose of the assessment.

Objective Methods: those primarily based on the intrinsic qualities of the landscape itself.

Subjective Methods: those which primarily reflect the response of the individual observer.

10. REFERENCES AND FURTHER READING

GENERAL

Countryside Commission (1987). **Landscape Assessment: a Countryside Commission approach.** CCD 18. Countryside Commission, Cheltenham.

Countryside Commission (1988). **A Review of Recent Practice and Research in Landscape Assessment.** CCD 25. Countryside Commission, Cheltenham.

Countryside Commission (1989). **Directory of Areas of Outstanding Natural Beauty.** Countryside Commission, Cheltenham.

Countryside Commission (1991). **Assessment and Conservation of Landscape Character. The Warwickshire Landscapes Project Approach.** CCP 332. Countryside Commission, Cheltenham.

Countryside Commission (1991). **Caring for the Countryside: a policy agenda for England in the Nineties.** CCP 351. Countryside Commission, Cheltenham.

Countryside Commission for Scotland (1992). **Landscape Assessment: principles and practice.** Countryside Commission for Scotland, Edinburgh.

National Rivers Authority (1992). **Methodology for River Landscape Assessment.** Project report 274/3/ST. National Rivers Authority, Bristol.

Ministry of Agriculture Fisheries and Food (1990). **Environmentally Sensitive Areas. Suffolk River Valleys - landscape assessment for monitoring.** MAFF, London.

Stiles, R. et al. (1991). **Environmental Assessment: the treatment of landscape and countryside recreation issues.** CCP 326. Countryside Commission and Countryside Council for Wales, Cheltenham.

SELECTED BOOKS ON RIVER LANDSCAPES

Boon, P.J., Calow, P. & Petts, G.F. (eds.) (1991). **River Conservation and Management.** John Wiley & Sons.

Brunsdon, D., Gardner, R., Goudie, A. & Jones, D. (1989). **Landshapes.** David and Charles.

Lewin, J. (ed.) (1981). **British Rivers.** Allen & Unwin.

Muir, R. (1986). **The National Trust Book of the River.** Webb and Bower.

Petts, G. & Foster, T. (1985). **Rivers and landscape.** Hodder and Stoughton.

Purseglove, J. (1989). **Taming the Flood: a history and natural history of rivers and wetlands.** Oxford University Press.

Richards, K. (ed). (1987). **River Channels - environment and process.** Blackwell.

LANDSCAPE HISTORY OF RIVERS

Countryside Commission. (1987). **Changing River Landscape: a study of river valley landscapes.** CCP 238. Countryside Commission, Cheltenham.

Hall, D. (1982). **The Changing Landscape of the Cambridgeshire Silt Fens.** Landscape History 3.

Hoskins, W.G. (1955). **The Making of the English Landscape.** Hodder and Stoughton.

Penning-Rowsell, E.C. & Gardiner, J.L. (eds.) In press. **River Landscapes: environmental partnerships in practice.** Bellhaven Press, London.

PLANNING OF RIVER LANDSCAPES

Countryside Commission. (1988). **The Water Industry in the Countryside.** CCP 239. Countryside Commission, Cheltenham.

Keller, E.A. (1978). **Urban Streams: sensual blight or amenity?** Journal of Soil and Water Conservation, 32, pp 237 - 242.

TECHNIQUES FOR THE RESTORATION AND CONSERVATION OF RIVER LANDSCAPES

Brookes, A. (1988). **Channelized Rivers: perspectives for environmental management.** John Wiley & Sons.

Gardiner, J.L. (1988). **Environmentally Sound River Engineering: examples from the Thames catchment.** Regulated Rivers: Research and Management 1, pp 171 - 184.

Holmes, N.T.H. (1992). **River Restoration as an Integral Part of River Management in England & Wales.** pp 45-52. Contributions of the Workshop of the Ecological Rehabilitation of Floodplains, Arnhem.

Large, A.R.G & Petts, G.E. (1992). **Restoration of Floodplains: a U.K. perspective.** Contributions of the Workshop of the Ecological Rehabilitation of Floodplains, Arnhem, The Netherlands.

Lewis, G. & Williams, G. (1984). **Rivers and Wildlife Handbook. A guide to practices which further the conservation of wildlife on rivers.** RSPB & RSNC.

Nature Conservancy Council. (1983). **Nature Conservation and River Engineering.** NCC Interpretive Branch, Peterborough.

APPENDIX 1

THE NRA's STATUTORY DUTIES TO CONSERVATION UNDER SECTIONS 16(1), 16(2) AND 2(2) OF THE WATER RESOURCES ACT 1991

General environmental and recreational duties.

16.(1) It shall be the duty of each of the Ministers and of the Authority, in formulating or considering any proposals relating to any functions of the Authority:

(a) so far as may be consistent:

(i) with the purposes of any enactment relating to the functions of the Authority; and

(ii) in the case of the Secretary of State, with his duties under section 2 of the Water Industry Act 1991,

so to exercise any power conferred on him or it with respect to the proposals as to further the conservation and enhancement of natural beauty and the conservation of flora, fauna and geological or physiographical features of special interest;

(b) to have regard to the desirability of protecting and conserving buildings, sites and objects of archaeological, architectural or historic interest; and

(c) to take into account any effect which the proposals would have on the beauty or amenity of any rural or urban area or on any such flora, fauna, features, buildings, sites or objects.

16.(2) Subject to subsection (1) above, it shall be the duty of each of the Ministers and of the Authority, in formulating or considering any proposals relating to the functions of the Authority:

(a) to have regard to the desirability of preserving for the public any freedom of access to areas of woodland, mountains, moor, heath, down, cliff or foreshore and other places of natural beauty;

(b) to have regard to the desirability of maintaining the availability to the public of any facility for visiting or inspecting any building, site or object of archaeological, architectural or historic interest; and

(c) to take into account any effect which the proposals would have on any such freedom of access or on the availability of any such facility.

Duty to promote Conservation

2.(2) Without prejudice to its duties under section 16 below, it shall be the duty of the Authority, to such extent as it considers desirable, generally to promote-

(a) the conservation and enhancement of the natural beauty and amenity of inland and coastal waters and of land associated with such waters;

(b) the conservation of flora and fauna which are dependent on an aquatic environment; and

(c) the use of such waters and land for recreational purposes.

APPENDIX 2

HIERARCHY OF LANDSCAPE TYPES AND AREAS

The following hierarchy demonstrates the relationship between the generic and specific description of landscape.

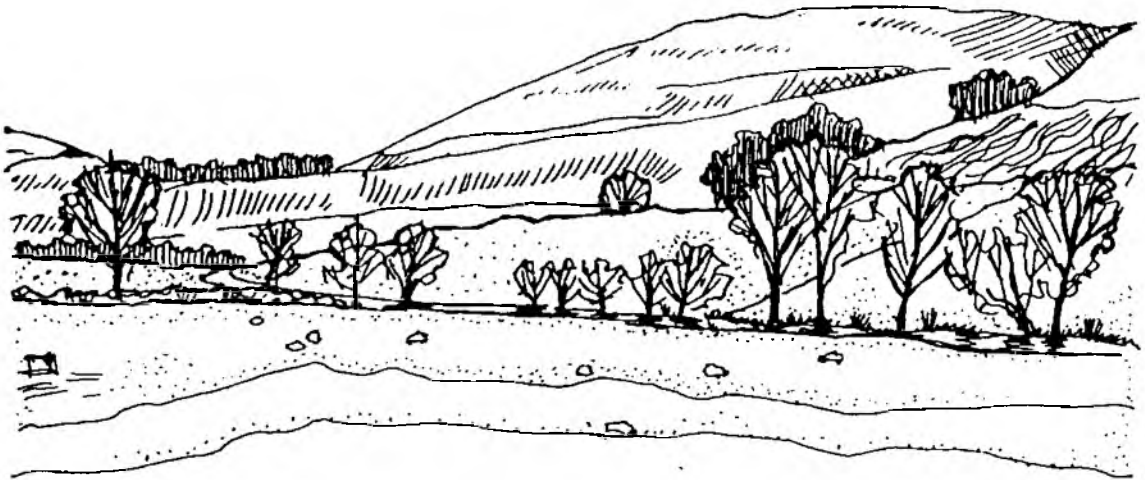
Main Influence	Generic	Specific
Geology	Regional landscape type eg. limestone uplands	Regional character area eg. Cotswolds
Landform	Landscape type eg. scarp landscape	Character area eg. northern Cotswold scarp
Landcover	Local landscape type eg. scarp woodlands	Local character area eg. Birdlip beech woodlands

APPENDIX 3

EXAMPLE LANDSCAPE SKETCHES AND DESCRIPTIONS

The following sketches are examples for describing the landscape areas in a survey.

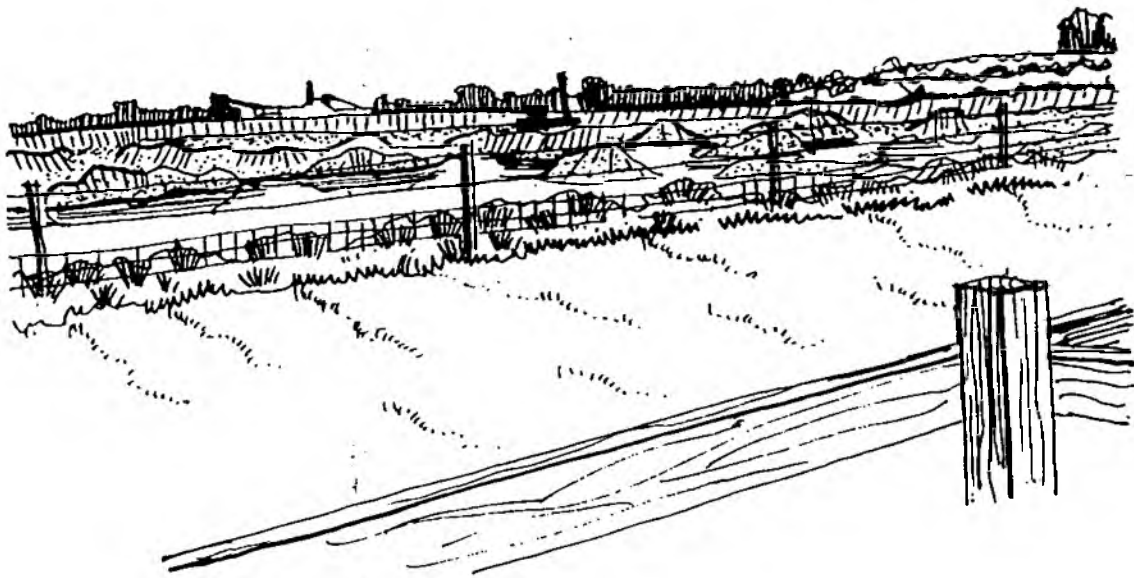
Middle Valley: a small scale, pastoral landscape with a varied broken topography. For the most part there is a strong sense of enclosure created by the close association of landform, field pattern and tree cover. Fringing alders along the river are a particularly strong linear feature. The peaceful rural character of this landscape is emphasised by grazing animals and the sound of fast flowing water.



Open Pasture: extensive pasture or meadow areas with open aspects and an exposed windswept quality. The large regular shaped fields with hedgerow boundaries tend to be associated with dairy farms set back from the river. The elongated remnants of unimproved meadow characteristically border the river creating an open setting for the meandering course of the river stream, with long views to the pylon or wooded hill tops.



Disturbed Landscape: landscape in a state of flux due to temporary mineral extraction. Located on the valley floor, close to the river and contains features such as industrial plant, stockpiles and perimeter mounding. Wet gravel pits and reservoirs create wide, open aspects punctuated by ribbons of colonising vegetation or remnants of pre-existing land use.



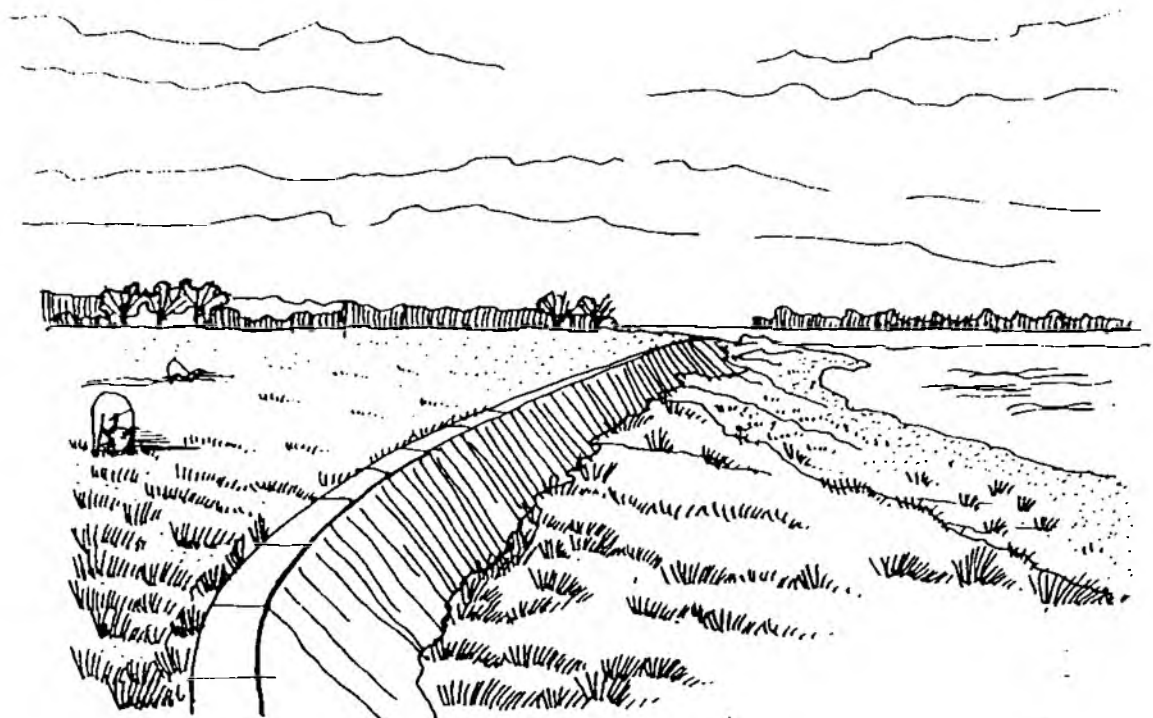
Open Arable: contiguous extensive fields of cultivated land carrying cereal crops or horticultural uses, divided by long lengths of boundary fencing or trimmed hedgerow with occasional mature trees. Tend to be situated on the broad valley floor or on river terraces disguising the more subtle variations in topography. Long open views to the horizon highlight significant features such as pylons, large buildings or wooded slopes or hill tops.

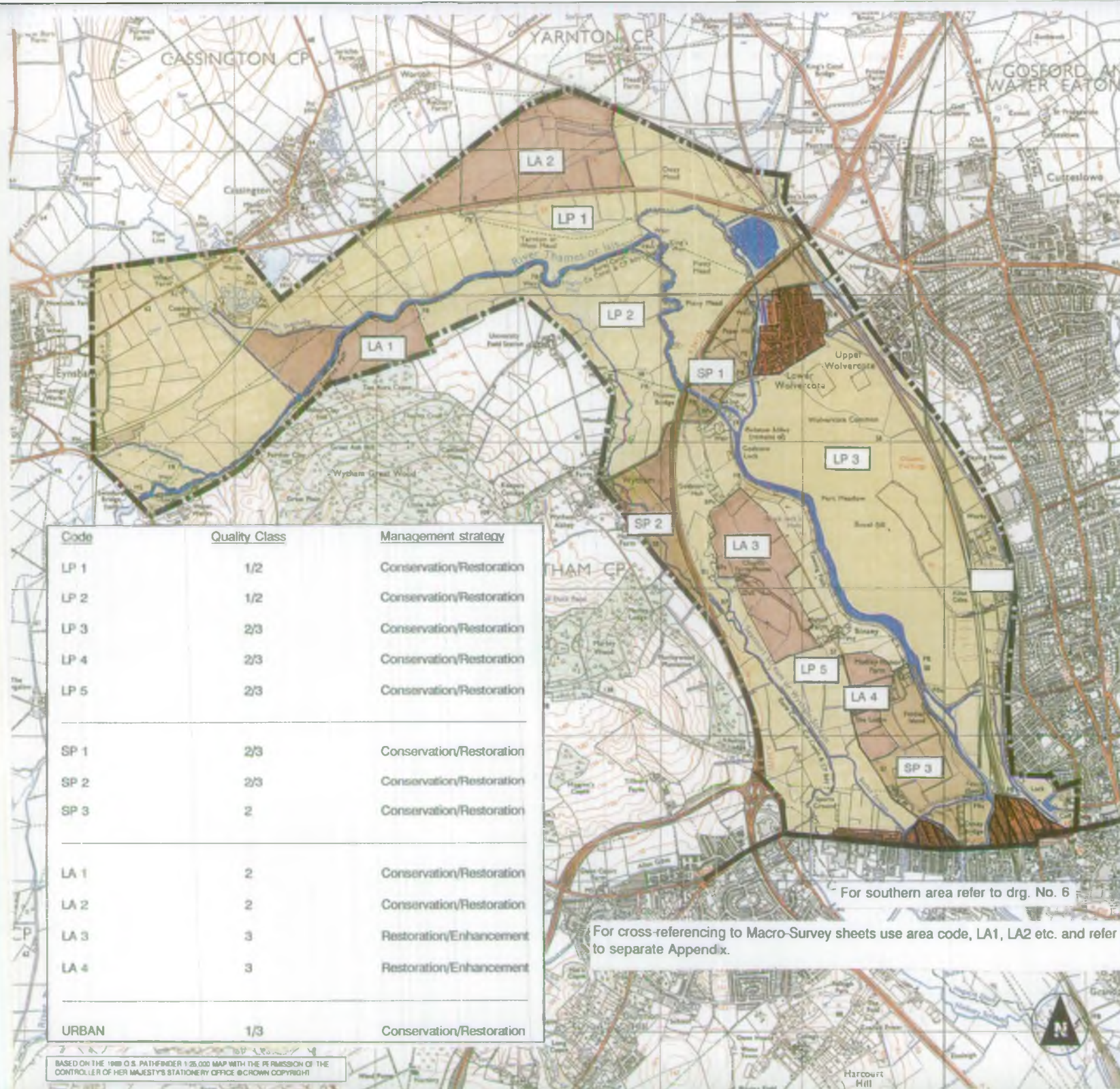


Built up Frontages: characterised by commercial or residential development, promenades, wharves and moorings which address the river in an integrated way. Usually confined to the limited sections of the urban corridor and associated with historic focal points such as bridge crossings and civic or church buildings. Public access and activity provide a lively atmosphere to these landscapes.



Grazing Marsh: a flat, open, mainly pastoral landscape closely associated with the river estuary. It is a quiet secluded landscape with wide views to surrounding rolling farmland. Field boundaries, defined by ancient, mixed hedgerows and ditches are a characteristic feature creating a semblance of enclosure in an otherwise large scale, expansive landscape where the sky is an important visual element.





KEY



Pastoral small scale SP



Pastoral large scale LP



Arable large scale LA



Urban
1) Residential
2) Commercial/Industrial



Study Area

Code	Quality Class	Management strategy
LP 1	1/2	Conservation/Restoration
LP 2	1/2	Conservation/Restoration
LP 3	2/3	Conservation/Restoration
LP 4	2/3	Conservation/Restoration
LP 5	2/3	Conservation/Restoration
SP 1	2/3	Conservation/Restoration
SP 2	2/3	Conservation/Restoration
SP 3	2	Conservation/Restoration
LA 1	2	Conservation/Restoration
LA 2	2	Conservation/Restoration
LA 3	3	Restoration/Enhancement
LA 4	3	Restoration/Enhancement
URBAN	1/3	Conservation/Restoration

For southern area refer to drg. No. 6

For cross-referencing to Macro-Survey sheets use area code, LA1, LA2 etc. and refer to separate Appendix.

NRA OXFORD STRUCTURES

LANDSCAPE ASSESSMENT

MACRO SURVEY 1:25,000

Landscape Character Areas

Drg. No. 5

Rendel + Branch July 1992

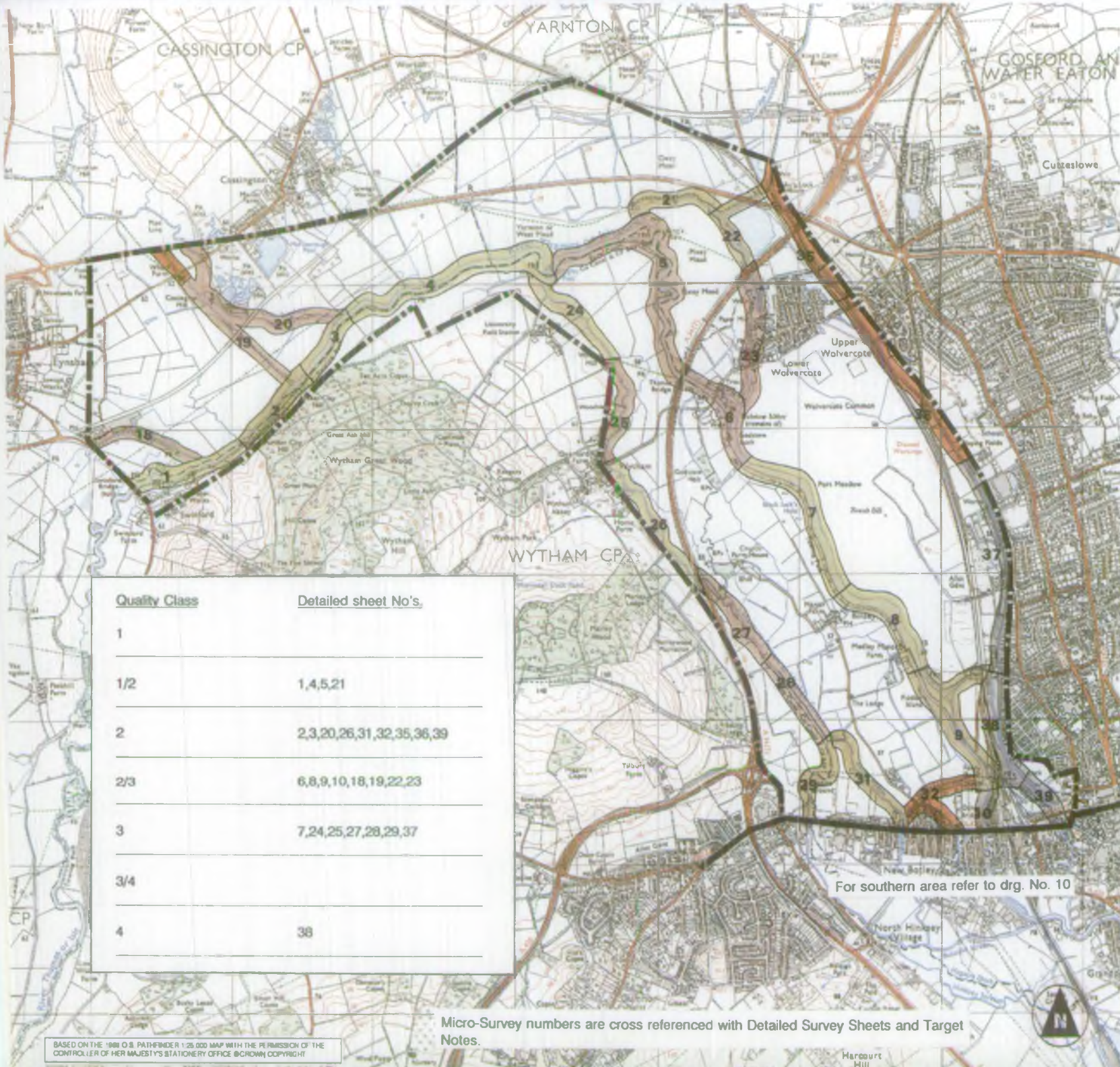


NRA

National Rivers Authority
Thames Region

APPENDIX 4

EXAMPLES OF MACRO, MICRO AND DETAILED ASSESSMENTS



KEY



NATURAL ENCLOSED

Characterised by enclosing trees, large shrubs or high vegetated banks well above eyelevel.



NATURAL OPEN

At least one bank of the channel is open with few or no elements interrupting views.



NATURAL INTERMITTENT

Intermittent enclosure from trees, large shrubs or vegetated banks.



URBAN ENCLOSED

Predominantly enclosed by walls, buildings, structures or fences.

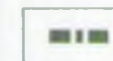


URBAN OPEN

Dominance of buildings lessened by wide visual enclosure.



Position of river assessment sheet



Study area

Quality Class

Detailed sheet No's

1	
1/2	1,4,5,21
2	2,3,20,26,31,32,35,36,39
2/3	6,8,9,10,18,19,22,23
3	7,24,25,27,28,29,37
3/4	
4	38

For southern area refer to drg. No. 10

Micro-Survey numbers are cross referenced with Detailed Survey Sheets and Target Notes.

NRA OXFORD STRUCTURES

LANDSCAPE ASSESSMENT

MICRO SURVEY 1:25,000

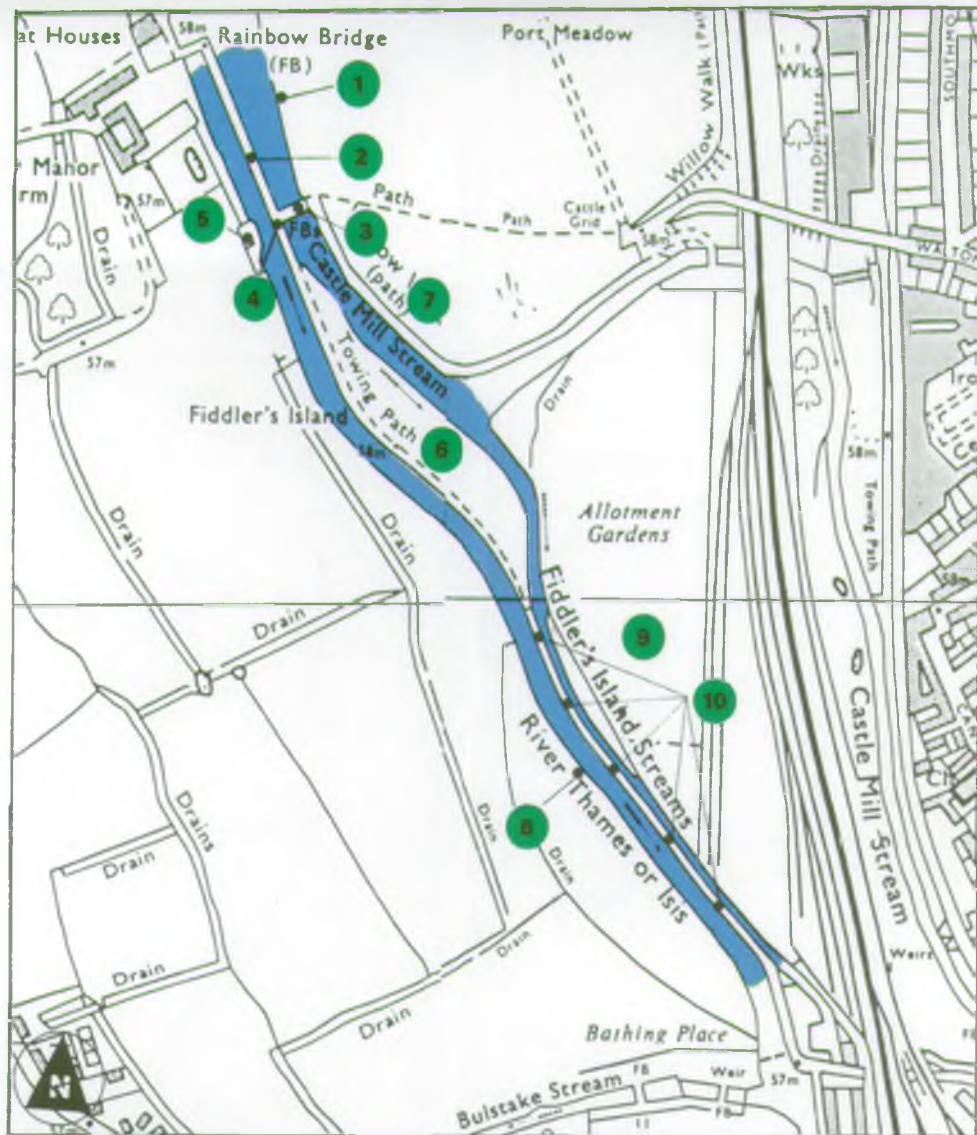
CHANNEL ASSESSMENT

Drg. No. 9



National Rivers Authority
Thames Region

REF		ACTION
1	Boathouse marina This covers a large area. The east bank is eroded and needs to be reinstated and stabilised. Planting groups of willow could reduce mooring.	M
2	Island walk A narrow path which includes some very large trees. It is bordered by the Thames and Castle Mill stream. The trees are healthy old specimens and should be conserved. Boats are mooring only on the east side. A wooden fence separates the boatyard from the footpath and this needs to be repaired.	C
3	Footbridge over Castle Mill stream A wooden sleeper bridge with metal railings. The structure is intrusive and should be repainted in a more sympathetic colour.	E
4	Footbridge This is a concrete bridge with wooden railings that are in need of repainting with a preservative; otherwise the bridge is in good condition and should be conserved.	C
5	Private House An unsightly backyard facing the river. Screen planting on the east bank would improve the view.	E
6	There are new willow plantations along most of this stretch separating the Thames from Castle Mill stream. These appear to be healthy and could be pollarded in due course if this was the intended effect.	M
7	Pollarded willow walk The willows along this section of Castle Mill stream have recently been pollarded and are in good condition. In some areas they have cattle protection. Conserve this planting.	C
8	Very old pollards These stretch for approximately 1km along the east bank of the Thames. They were obviously pollarded some time ago and are in urgent need of re-pollarding to (1) improve their vigour and reduce likelihood of storm damage; (2) to reinstate the original appearance of this riverbank.	M



DETAILED SURVEY

The uncanalised section of the river along Port Meadow is slow flowing with grassy banks, whereas the canalised, fast flowing west section has a good range of vegetation consisting of trees, shrubs and herbage. The most significant vegetation is the long stretch of old crack willows along the west bank. In this part the river bottom is visible and fish easily seen; however there is little sign of emergent aquatics. Fiddler's Island and its bridges, particularly Rainbow Bridge, are the most notable features.



National Rivers Authority
Thames Region

NRA LANDSCAPE ASSESSMENT

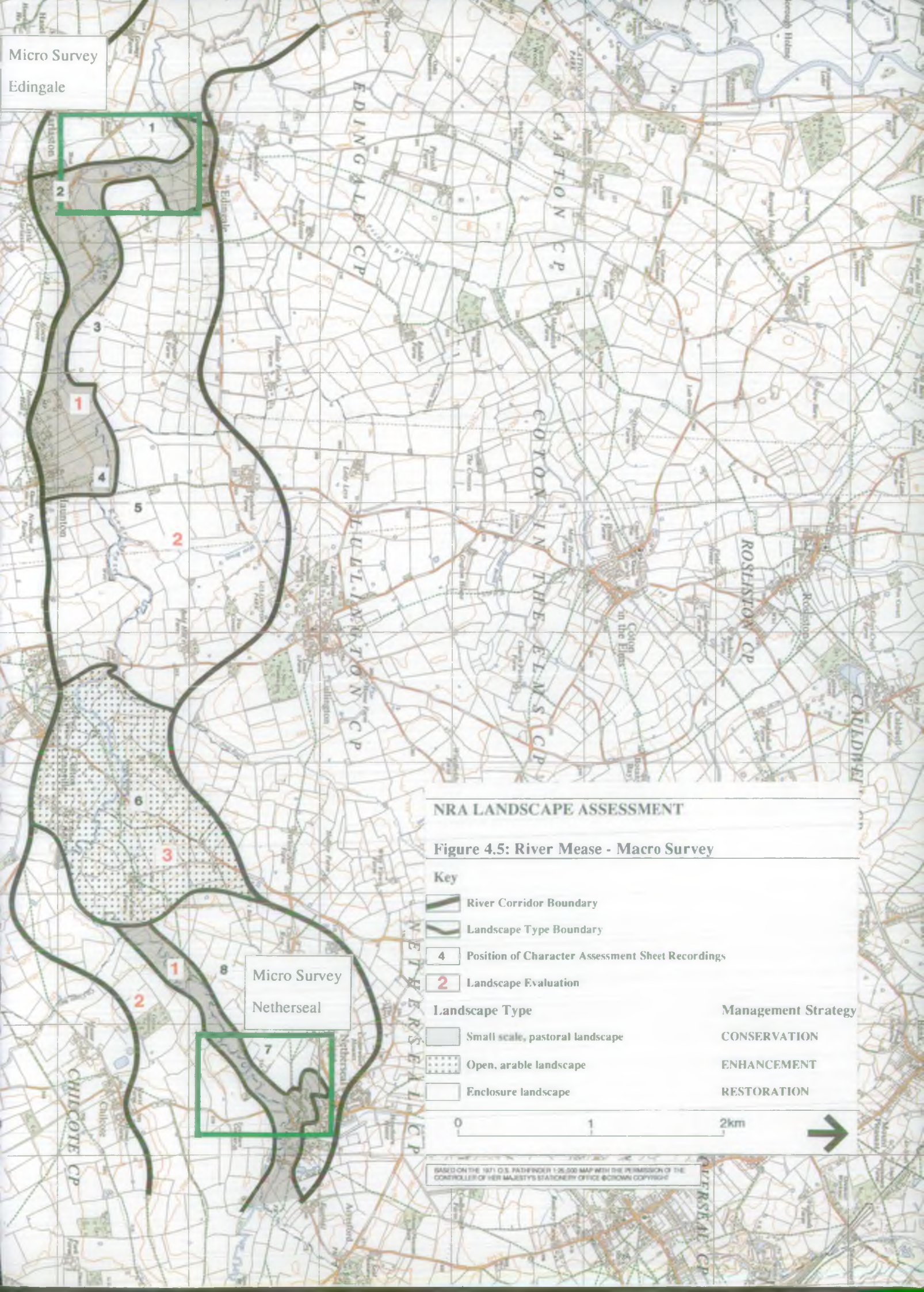
OXFORD STRUCTURES PROJECT

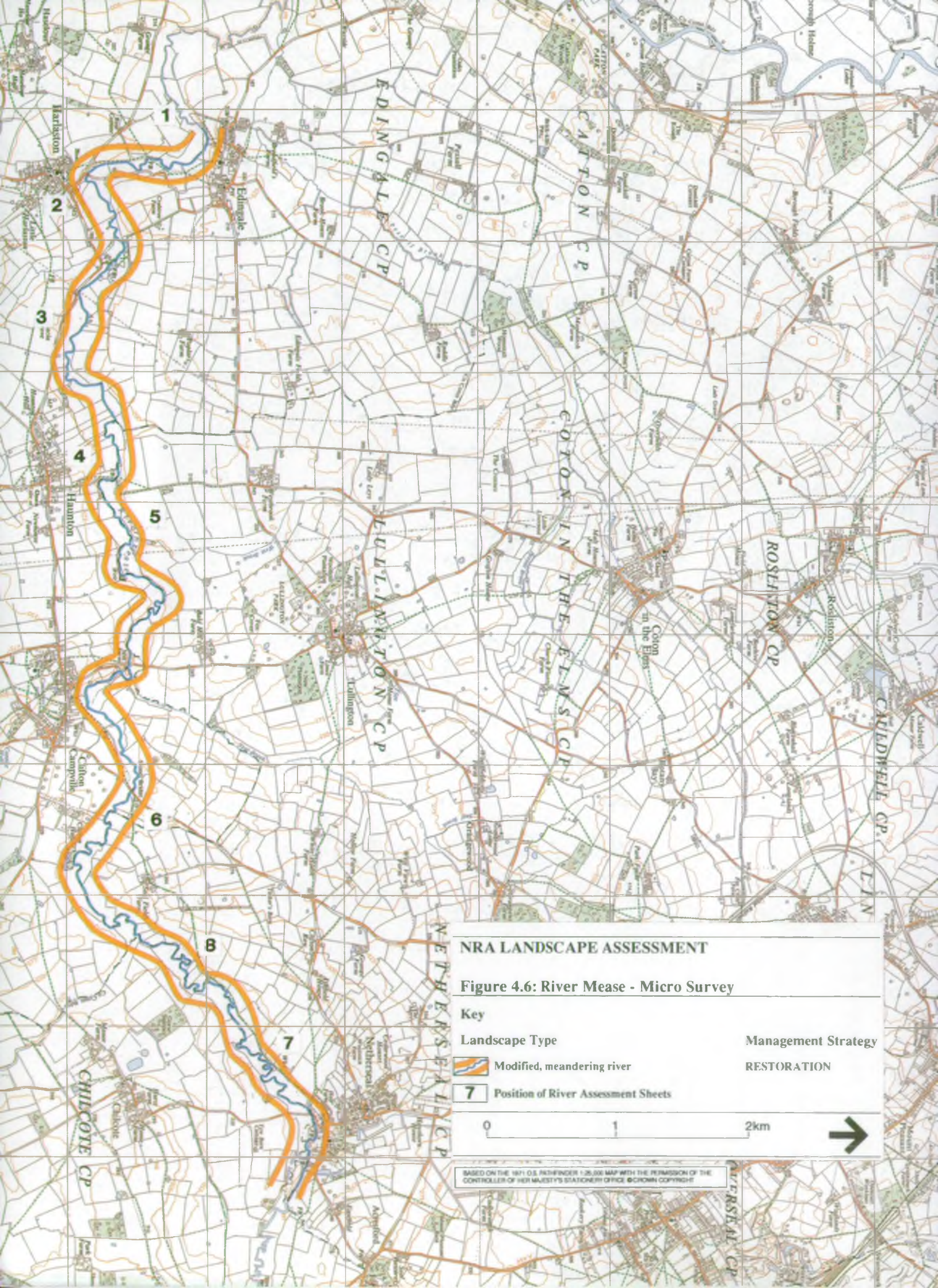
DETAILED SURVEY

1:5000

RIVER THAMES

Detailed Sheet No.9






NRA LANDSCAPE ASSESSMENT

Figure 4.6: River Mease - Micro Survey

Key

Landscape Type

 Modified, meandering river

 Position of River Assessment Sheets

Management Strategy

RESTORATION

0 1 2km



BASED ON THE 1871 O.S. PATHFINDER 1:25,000 MAP WITH THE PERMISSION OF THE CONTROLLER OF HER MAJESTY'S STATIONERY OFFICE © CROWN COPYRIGHT

NRA LANDSCAPE ASSESSMENT

RIVER MEASE - DETAILED SURVEY - TARGET NOTES Edingale

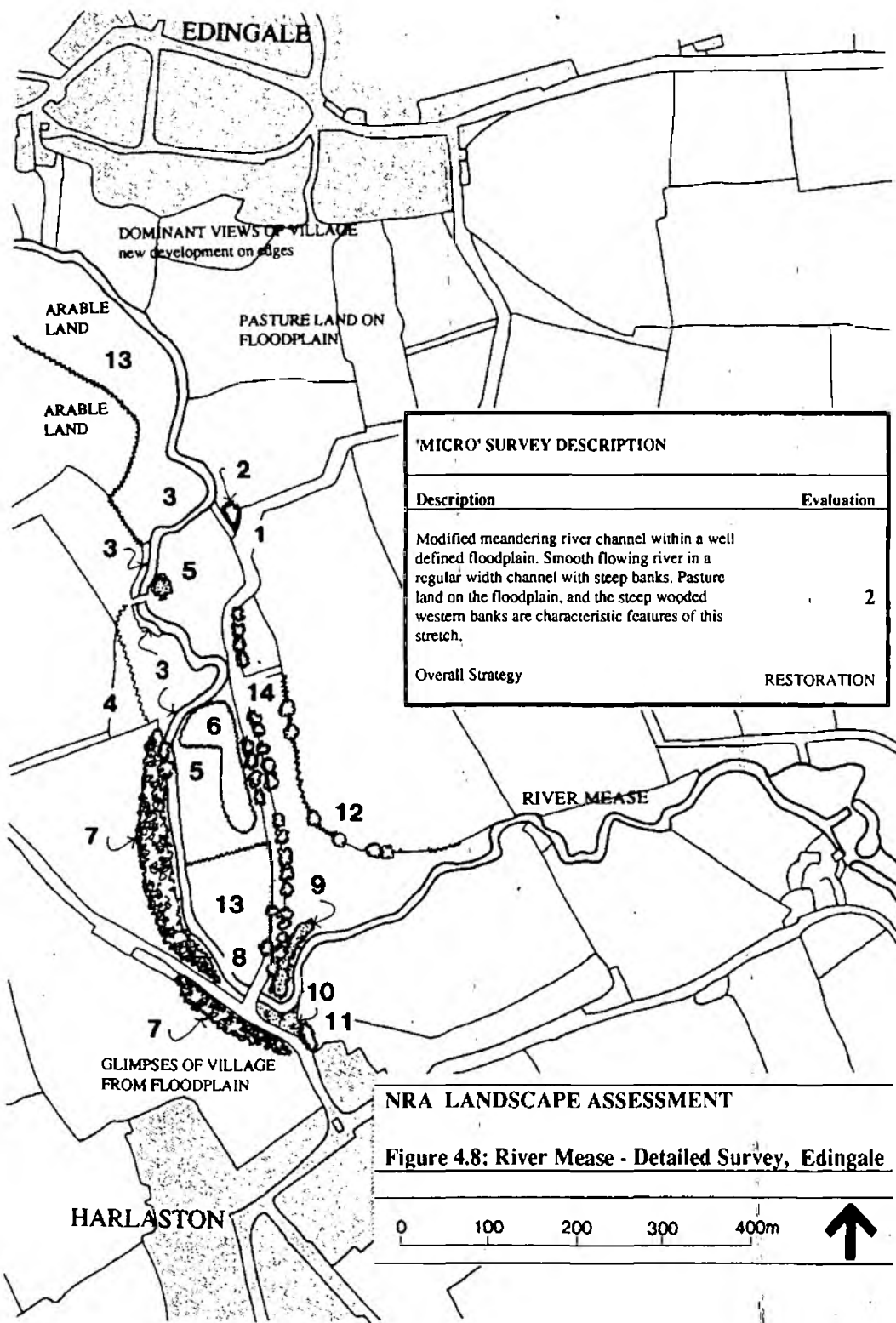
Item	Target notes	Action	Potential for NRA Action
1.	Improve lay-by and stile for access	C	
2.	Manage and improve copse	M	
3.	Opportunity to diversify channel edge vegetation	M	•
4.	Reinstate hedgelinc and allow field to return to grazing	CM	
5.	Maintain pollards	M	•
6.	(Inappropriate new planting on floodplain - poor design and siting)	I	
7.	Management of scrub for species diversification. Improve the footpath route	CM	
8.	(Conserve excellent bridge feature)	CONSERVE	
9.	Continue to manage willow pollards	M	•
10.	Opportunity to create wetland by reducing levels	C	•
11.	Replace boundary conifers with shrubs	M	
12.	Gappy hedge - replant including trees	C	
13.	Improve access to fishing and playing field. Manage hedgerows to regenerate growth	CM	
14.	(Conserve roadside ash trees - positive feature)	CONSERVE	

KEY

C Enhancement task (capital)

M Enhancement task (management)

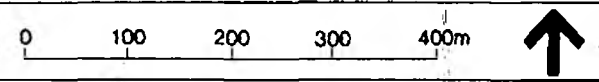
I Enhancement task (interpretation)



'MICRO' SURVEY DESCRIPTION	
Description	Evaluation
Modified meandering river channel within a well defined floodplain. Smooth flowing river in a regular width channel with steep banks. Pasture land on the floodplain, and the steep wooded western banks are characteristic features of this stretch.	2
Overall Strategy	RESTORATION

NRA LANDSCAPE ASSESSMENT

Figure 4.8: River Mease - Detailed Survey, Edingale



NRA LANDSCAPE ASSESSMENT

RIVER MEASE - DETAILED SURVEY - TARGET NOTES Netherseal

Item	Target notes	Action	Potential for NRA Action
1.	(Floodplain meadow changed to garden use)		
2.	(Arable fields encroach onto floodplain)		
3.	Enhancement potential - re paint bridge - re surface fishermans lay-by and provide bin - replace railing, barriers and bridge parapet	C C C	*
4.	Footpath signed - but path needs reinstatement	C	*
5.	New tennis courts - screening required	C	
6.	Opportunity to plant small new woodland	C	*
7.	Pollard riverside willows	M	*
8.	Conserve trackway with wide grassy verges	CONSERVE	
9.	Hedgerow adjacent to river needs new planting and hedgerow trees	C	*
10.	Create marsh in remnant meander	C	*
11.	Sewage works - enhancement potential: - replace fence with a hedgerow - tree planting on verge - tree planting in clumps in compound	C C C	
12.	Create fishermen's car park and recreation site with new planting	C	*
13.	(Conserve pollarded willows)	CONSERVE	
14.	Willows require pollarding	M	*
15.	Re establish hedgerow boundary	C	
16.	Create new copse	C	

KEY

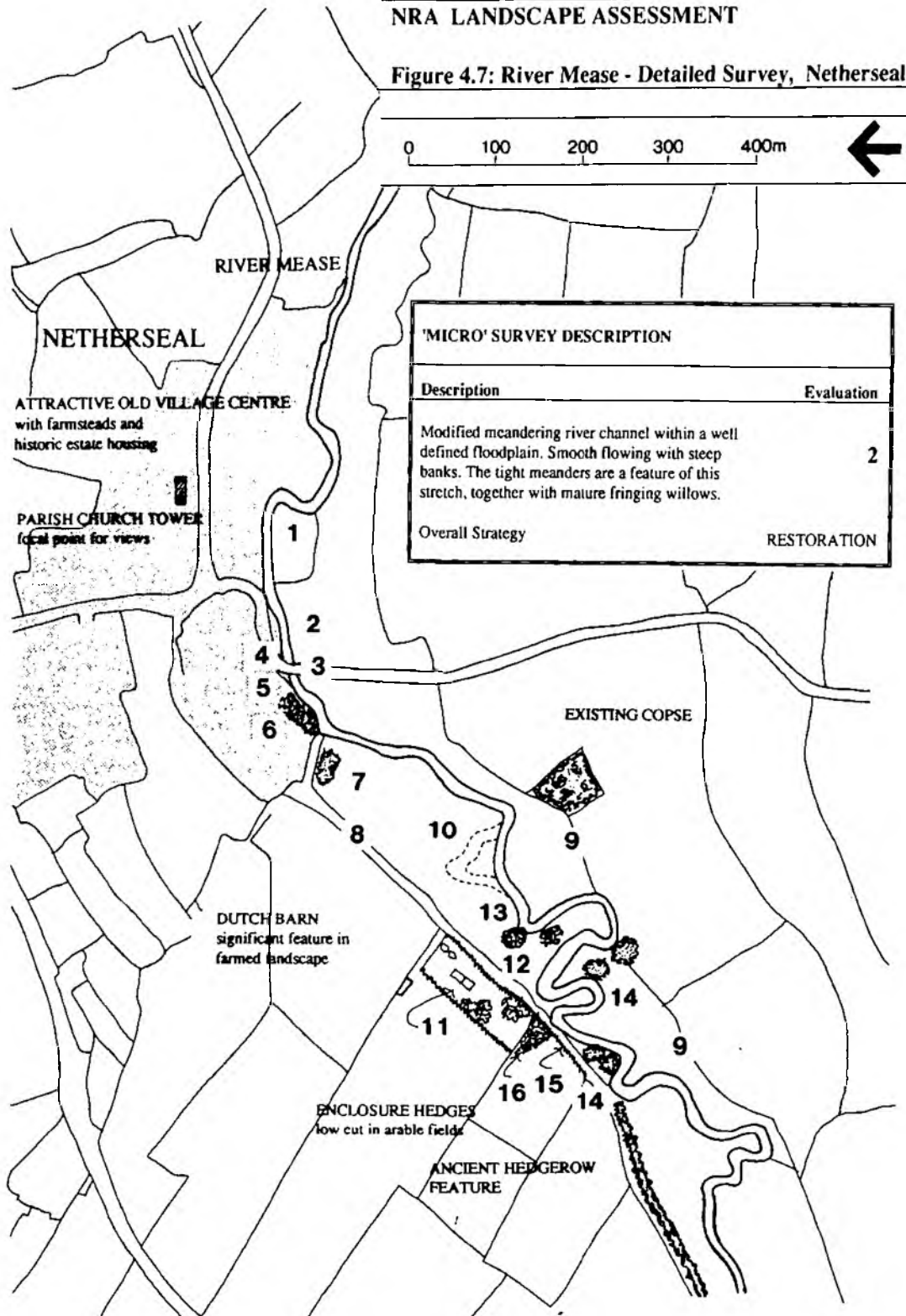
C Enhancement task (capital)

M Enhancement task (management)

I Enhancement task (interpretation)

NRA LANDSCAPE ASSESSMENT

Figure 4.7: River Mease - Detailed Survey, Netherseal



APPENDIX 5

NRA WEIL'S DISEASE CARD



NRA

National Rivers Authority

LEPTOSPIROSIS (WEIL'S DISEASE)

**Instructions to persons working
in contact with rivers or other
water sources**

**THIS CARD IS FOR
YOUR PROTECTION**

Whenever you go to your Doctor or
to a Hospital on account of illness
show this card and make sure that
those attending you know of
your occupation.

INSTRUCTIONS TO CARD HOLDERS

1. As infection may enter through breaks in the skin ensure that any cut, scratch or abrasion is thoroughly cleansed and covered with a waterproof plaster.
2. Avoid rubbing your eyes, nose and mouth during work.
3. Clean protective clothing, footwear and equipment etc. after use.
4. After work and particularly before taking food or drink wash hands thoroughly.
5. Report all accidents and/or injuries however slight.
6. Keep this card with you at all times.

MEDICAL INFORMATION

The holder of this card is engaged in work which may bring them into contact with water which may contain *Leptospira*.

None of the symptoms of early Leptospirosis or Weil's disease are pathognomonic and diagnosis is based on laboratory investigations. Should you suspect the holder may have been infected please arrange for the appropriate tests. The infection may resemble influenza in the early stages.

HEAD OFFICE

Rivers House
Waterside Drive
Aztec West
Almondsbury
Bristol
BS12 4UD
Tel: (0454) 624400
Fax: (0454) 624409

LONDON OFFICE

30-34 Albert Embankment
London SE1 7TL
Tel: (071) 8200101
Fax: (071) 8201603

ANGLIAN REGION

Kingfisher House
Goldhay Way
Orton Goldhay
Peterborough PE2 5ZR
Tel: (0733) 371811
Fax: (0733) 231840

NORTHUMBRIA / YORKSHIRE REGION

21 Park Square South
Leeds LS1 2QG
Tel: (0532) 440191
Fax: (0532) 461889

Gosforth Office
Eldon House
Regent Centre
Gosforth
Newcastle Upon Tyne
NE3 3UD
Tel: (091) 2130266
Fax: (091) 2845069

NORTH WEST REGION

Richard Fairclough House
Knutsford Road
Warrington WA4 1HG
Tel: (0925) 53999
Fax: (0925) 415961

SEVERN-TRENT REGION

Sapphire East
550 Streetsbrook Road
Solihull B91 1QT
Tel: (021) 7112324
Fax: (021) 7225824

SOUTHERN REGION

Guildbourne House
Chatsworth Road
Worthing
West Sussex BN11 1LD
Tel: (0903) 820692
Fax: (0903) 821832

SOUTH WEST REGION

Manley House
Kestrel Way
Exeter EX2 7LQ
Tel: (0392) 444000
Fax: (0392) 444238

THAMES REGION

Kings Meadow House
Kings Meadow Road
Reading RG1 8DQ
Tel: (0734) 535000
Fax: (0734) 500388

WELSH REGION

Rivers House/Plas-yr-Afon
St Mellons Business Park
St Mellons
Cardiff CF3 0LT
Tel: (0222) 770088
Fax: (0222) 798555

WESSEX REGION

Rivers House
East Quay
Bridgwater
Somerset TA6 4YS
Tel: (0278) 457333
Fax: (0278) 452985

Further copies of this document
are obtainable from:

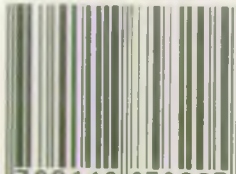
**National Rivers Authority,
Distribution Centre
Washington
Newcastle Upon Tyne X,
NE85 4ET**

at a price of £6.00 per copy
(inclusive of postage
and packing).

Please include cheque or
postal order payment, made
payable to the
National Rivers Authority.

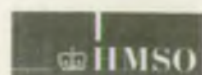


ISBN 0-11-885820-3



9 780118 858205

Distributed by



£6 net