RIVER RESTORATION: BENEFITS FOR INTEGRATED CATCHMENT MANAGEMENT

LIFE PROGRAMME OF THE COMMISSION OF THE EUROPEAN COMMUNITIES PRIORITY ACTION A2V

RIVER SKERNE DARLINGTON LANDSCAPE ASSESSMENT

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1.0 INTRODUCTION

This Report has been commissioned by The River Restoration Project (RRP). The river has been selected as one of three demonstration projects, part funded by the LIFE programme of the European Commission, which will be undertaken over a three year period.

The project area covers a section of 2.08 km of river between Haughton Bridge and Skerne Bridge. The character of this section has been radically altered through time due to the influence of industrial and residential development, amenity planting and flood defence works.

The study is designed to provide landscape information and guidance on a number of levels, from the broad scale landscape context and awareness of other environmental initiatives in the area to an understanding of character and quality, with proposals for design and management changes at all levels.

1.1 The Brief

The brief called for both a strategic and detailed landscape assessment of the study area based on the standard methodology developed by the National Rivers Authority (NRA) for this type of work.

Due to the special nature of the project it was not considered appropriate to look at the Skerne catchment area as a whole but to provide a strategic landscape context for the project area.

The detailed assessment required the provision of baseline information on landscape character and quality for project design and post-project appraisal purposes.

1.2 Definition of Purpose

The particular requirements of the Landscape Assessment were to provide a strategic landscape context, to provide baseline data for scheme formulation and subsequent monitoring and to provide detailed inputs to scheme proposals in terms of both design and management. These requirements are described below:

- To describe and classify the landscape of the assessment sections into elements or character areas and undertake an evaluation which identifies individual management needs of each. To judge whether landscape areas/features in the river restoration section should be conserved in their current form or modified.

- Use the landscape information collected for all the sections to make proposals for conservation, enhancement and management of the river restoration section, which recognise conservation and recreation value and the site constraints identified by the design consultants and the River Restoration Project Skerne Working Group.

- Advise on the potential to incorporate the landscape assessment proposals into the design options for the Skerne river restoration stretch with the design consultants and project manager.

- Provide a baseline assessment, to act as a post-project/post-management appraisal document. In addition to assessing river landscape quality the document should define the role that land drainage/flood defence works have played in creating the riparian landscape. In particular the NRA wishes to know where land drainage/flood defence works have changed the landscape for better/worse and to what extent.

- To provide a database of environmental character and quality which can be used in catchment planning, as part of an integrated corridor assessment, in consultations on development proposals and as a medium term performance indicator.

2.0 METHODOLOGY

2.1 Influences

The different influences which have helped to create and shape the landscape were studied. These include the physical effects of geology, geomorphology and soils; ecological influences; the historical impact of human activities; and the changes in land use and land management.

2.2 Landscape Assessment

The process of describing, classifying and evaluating landscapes 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 and assessment of appropriate management strategies.

The assessment was based on the NRA's publication 'River Landscape Assessment: Methods and Procedures' - Conservation Technical Handbook No. 2, April 1993. This was modified in a number of fundamental ways to accord with the specific requirements of the demonstration project.

The broad visual envelope of the river corridor and the various Local Authority initiatives in respect of landscape, recreation and conservation objectives were considered in some depth in order to provide a logical integration with the detailed proposals for modification to the river channel as formulated by the River Restoration Project Skerne Working Group.

The study area boundary generally follows the visual envelope of the river corridor as defined by landform and development edge. However two additions to this have been recognised. The open space immediately to the east of the Main Line Railway running northwards adjacent to the Rockwell housing area and the open space running south between the Keepsafe site and the Devonshire Road housing area.

The macro assessment was reduced in scope to provide a strategic landscape context for the immediate study area rather than the wider catchment area of the River Skerne.

Macro, micro and detailed landscape assessments were undertaken. This involved the completion of detailed survey forms and the taking of panoramic photographs.

Because of the relatively short section of corridor under consideration and the specific purpose of the landscape assessment, it was decided to carry out a more focused survey, using 1:5000 plans for the macro and micro assessments and 1:2500 for the detailed assessment instead of the 1:25000, 1:10000 and 1:5000 suggested respectively in the Handbook.

The 2 km stretch of river was divided into sections. These are either defined by important landmarks or a change in character of the river corridor. In all cases the reaches did not exceed the 500m length suggested in the Handbook.

2.3 Macro Landscape Assessment Field Survey

Viewpoints were selected and a structured survey was undertaken of the key landscape elements:

- dominant landscape elements forming the main influences on landscape character;
- historical, cultural and other special associations which 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.

A field evaluation was then carried out noting the condition of landscape elements, pressures affecting the landscape and priorities for action for:

- land use and settlement;
- tree cover and open space;
- recreation and amenity features, pathway and desire lines;
- other features.

The area was ascribed to the appropriate value class and management strategy.

2.4 Micro Landscape Assessment Field Survey

This assessment was carried out in parallel with the Macro Survey.

The following items were recorded in each of the zones identified:

- a general description of the landscape character within the sample stretch;
- overall impressions of the river banks and margins;
- particular features in the river corridor;

- a visual assessment of water quality;
- an evaluation of quality and the appropriate management strategy.

2.5 Detailed Assessment

This assessment involved making judgements in the form of target notes following the completion of the survey sheets and covered 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 peripheral areas including points covered by the macro assessment.
- actions were assigned to the categories of 'Restoration', 'Conservation', 'Enhancement' and 'Management'.

2.6 Analysis and Reporting

Material gathered in the field was collated, reviewed and analysed.

Each of the six areas has been described in terms of its landscape character highlighting key features.

Evaluation

A professional judgement was made about the value of each area. There are no comparable NRA landscape assessments with which to refer nor do any County landscape assessments exist covering areas within major settlements.

Management strategies for each zone were developed within the 'conservation', 'restoration' and 'enhancement' framework. Design ideas were developed bearing in mind the constraints identified and the detailed input on the immediate river corridor provided by the River Restoration Project Skerne Working Group.

The broad financial implication of these measures was assessed and an indication of the order of cost assigned to each proposal.

2.7 Illustrations (Appendix - Figs. 1-27)

A location plan is included and Ordnance Survey maps plot the development of the river corridor (Figs. 1-5).

Survey and Visual Analysis plans indicate existing conditions and their impacts, although they do not include detailed items such as services because of the restrictions of scale (Figs. 6 and 7).

The Macro Landscape Assessment plan covers the area of study, and character sketches are provided for each section of the reach (Figs. 8-15).

A Micro Landscape Assessment plan indicates the landscape character within the immediate river corridor (Fig. 16).

Detailed Sheets summarise specific targets for each section in terms of notes which are keyed to plans (PP 29-34).

The Landscape Strategy Plan identifies the major opportunities for restoration of the river and its landscape context (Fig. 17).

Photographs (Figs. 18-27) provide an overview of existing conditions and character within each section in November 1994.

3.0 STRATEGIC ASSESSMENT

3.1 Regional Context (Fig. 1)

3.1.1 Darlington is located to the south of the former Durham coalfield, to the west of the Teesside conurbation and to the north and east of the North Yorkshire Moors and Teesdale. Darlington is perhaps best known for its railway heritage and the area of study includes two railway lines, the east coast main line and the Bishop Auckland branch line which crosses the famous Skerne Bridge, featured on the back of the current £5 note.

3.1.2 The area of study occupies a 2.08 km stretch of the River Skerne corridor as it approaches the centre of Darlington. The River Skerne is a minor tributary of the River Tees with a total length of approximately 50 km, starting near Trimdon to the north and joining the Tees 5 km to the south of Darlington. The river traverses relatively flat rural land to the north, skirting the towns of Sedgefield and Newton Aycliffe, until it reaches the edge of the study area at Haughton-le-Skerne. From here through the centre of Darlington the river has been canalised and its course straightened through time. To the south of the town, the river regains its natural appearance and meanders through open country to meet the Tees to the north of Croft-on-Tees.

3.2 Catchment Area and Floodplain

3.2.1 The catchment area of the river measures approximately 25 km long and 10 km wide moving south from Trimdon to Croft-on-Tees. The southern edge of the catchment area runs within 2 km of the area of study.

3.2.2 The 1857 Ordnance Survey map (Fig. 2) shows the river meandering through a floodplain with adjacent pasture land, marsh and pools. A number of springs and streams fed into the wetlands.

3.2.3 Since then the line of the river and its floodplain has been shaped by man in order to maximise adjacent land for industrial and housing sites, ignoring the natural tendency of the river to spread beyond its channel. The result of this was a series of floods which are described in "The Land of Singing Waters" - D. Archer.

3.2.4 The floodplain has been gradually reduced by the widening, deepening and straightening of the channel, as well as the creation of plateaux and embankments to maximise development area. As a consequence of the straightening of the river, a series of pools were left on the course of the old river and these, with a few notable exceptions such as Rockwell Conservation Nature Area, have been progressively drained. The current floodplain is indicated on Fig. 6. It is likely to be slightly narrower than that which existed in the 1940s despite little change to the line of the course, because of flood defence works carried out in the 1960s and 1970s, to the west of Haughton Road Bridge. During this, the last phase of river improvement works, the river was deepened and excavated spoil spread on the floodplain. River improvement works were undertaken to accommodate significant increases in run-off and discharges from adjacent industrial and housing areas both in Darlington and upstream from towns such as Newton Aycliffe and Sedgefield.

3.3 Geology, Geomorphology, Soils, Contamination

3.3.1 The solid geology of the area is of the Permian age consisting of magnesium limestone which is overlaid by mudstone. The study area consists of boulder clay, glacio-fluvial sands and gravels of varied thickness and type. The soils are generally reddish coarse loams which are slowly permeable and liable to seasonal waterlogging. The channel itself is bounded by its own alluvium which appears to be cohesive, providing a stable edge. After flooding, it is reputed that up to 25 cm of silt can be deposited on the banksides (D. Race - Durham County Conservation Trust Bulletin, May 1987).

3.3.2 The reach contains the Rockwell which is a glacial conglomerate, a rocky outcrop below which a spring used to surface, now piped. The site has historic, cultural and geological interest, but is now overshadowed by housing and collects rubbish.

3.3.3 The Geomorphological Evaluation Pre-Project Report by Malcolm Newson, Amanda White and Catherine Padmore provides a detailed fluvial audit. The main conclusions of the report are as follows:

1) Flood defence works including the straightening, widening and deepening of the channel have resulted in a featureless water course.
2) The best guide to the original course and nature of the river can be seen today between the A1M culvert and the Fujitsu factory.
3) A "purely hydraulic design based upon desirable landscaping features and static fish habitat features may be the best approach" in restoring the river.
4) "..... extreme care is necessary in new excavations to avoid unstable materials in the made ground of the modern floodplain."
5) "..... whilst the project reach lacks substrate features capable of producing a diversity of niches (e.g. ripples and pools), this 'task' is at present fulfilled in summer by the macrophytic plants."

3.3.4 Perhaps of equal importance to the restoration proposals is the legacy of pollutants that exist within the corridor. There are no records of the tipping works of the mid C19 which produced the steep embankments. This material, which is believed to be inert slag was moved around to form the extended escarpment to the north of the Henry Williams industrial site towards Dropwell. Material from the Phoenix Tubeman factory in the mid 1980s was tipped to the north of Rockwell and is believed to contain some contaminants. The concern is that new excavations may reveal contaminated material and for this reason a number of trial pits will be required within areas it is planned to excavate.

3.3.5 Heavy metal analysis of bed sample sediments within the Geomorphological Evaluation Pre-Project Report indicates contamination of the river bed with zinc, copper, lead and cadmium. Zinc and copper are of particular concern because they were recorded as exceeding the highest levels of standard guidelines (Interdepartment Committee on the Redevelopment of Contaminated Land - ICRCL and the Dutch guidelines). Zinc and copper are phytotoxins which could seriously inhibit plant growth and therefore measures would need to be included to deal with this material safely, in accordance with current legislation, either on or off-site.

3.3.6 Of further concern is the possible mobility of contaminants and the NRA recommends that the standard leach test be conducted as well as pH tests to check that this does not become a problem.

Cut off drains or trenches may be required to prevent contaminated water entering sensitive areas, such as from the reclaimed Tubeman site to the Rockwell Conservation Area.

3.3.7 Water quality tests are also being carried out as the quality will fundamentally affect the range of flora and fauna species which will develop in the new corridor. Polluted inputs from surface water inputs will require rectification at source which could be a time consuming and costly exercise.

3.4 History (Figs. 2-5)

3.4.1 The River Skerne within the study area has been dramatically altered over the last century by man's activities. The first edition Ordnance Survey map of 1857 shows the river running in a natural channel on a meandering course, traversing flat agricultural land. The 1923 map shows a dramatic change in the area to the west of the main line railway with the expansion of Darlington Forge Ironworks and development of the housing area at Rise Carr. The river has been canalised and its corridor dramatically narrowed by the creation of the industrial plateau and formation of steep embankments. The effect of the housing appears to be less significant. The railway appliance works and Stephenson Locomotive Works to the north-east of the main line also required flat land and a considerable amount of tipped material was also necessary to achieve this. However, the course of the river in this section was only canalised into its present line when the corridor became very much the heart of the town's industrial base between 1923 and 1940.

3.4.2 The last 25 years has seen great changes in the corridor, but with relatively little change to the river itself. The new housing developments along the entire north side of the river is the most significant change. The area to the north-east of the main line, which formerly was liable to flood, was drained in the mid 1970s and the Phoenix Tubeman Works (formerly Stephenson Locomotive Works) was reclaimed in 1984 by Darlington Borough Council. The terraced housing and allotments adjacent to the north bank of the river between the main line and Albert Bridge were cleared in the early 1970s and new housing built. The southern side of the river has also been transformed over recent years. The massive Darlington Forge Works has been replaced by a trading estate, and the council have gradually bought up sections of the embankment and reclaimed it in phases. The industrial land on the plateau to the south-east of the main line was bought by the council in the 1970s, who then reclaimed the embankment. Coupled with further deepening of the channel to the west of Haughton Bridge, a gas main and a main sewer were laid adjacent to the river in the early 1970s. The existing tamed parkland appearance from Haughton Bridge to Rockwell was a response to the new housing and is a result of further clearance and drainage of the mid 1980s.

3.4.3 Durham County Council have recently carried out environmental improvements adjacent to Albert Bridge and Darlington Borough Council have plans for a major project adjacent to Skerne Bridge in order to improve its setting and make it into a tourist attraction, linking it into the Railway Heritage Trail.

3.4.4 The result of these schemes has been a change in attitude towards the river over recent years. The influence of heavy industry has been reduced and the various landscape schemes, in conjunction with the creation of a cleaner environment, have combined to make the corridor into a viable and potentially very attractive public open space.

3.5 Archaeology

3.5.1 There is little information currently available regarding the archaeology of the site, although it is understood that prior to works commencing trial holes will be dug and analysis will take place of sediments and pollen which may provide information about the history of the river, vegetation and man's influence through time.

3.5.2 Skerne Bridge, which carried the Stockton and Darlington railway, is a scheduled Ancient Monument. It was recognised as the first railway bridge on a steam hauled public passenger service and the event commemorated on the £5 note is the opening of the service in 1825.

3.5.3 There are no other listed structures in the area, although Haughton Church to the north of Haughton Bridge, has Saxon origins with Norman additions.

3.6 Land Use

3.6.1 The area of study is understood to be entirely within the ownership of Darlington Borough Council, although within this there are various parcels not registered with the Land Registry. The area is deemed as public open space consisting basically of two areas, a wide area to the east of the railway main line and a narrow corridor to the west.

3.6.2 The northern edge of the area is defined by housing which was built in 1970s and 1980s.

3.6.3 The southern side of the river is edged by industrial and trading estates and a finger of housing built in 1960s towards Haughton Bridge. A car dealer operates adjacent to Haughton Road and backs onto the public open space.

3.6.4 The east coast main line railway bisects the area and the Bishop Auckland branch line marks the downstream limit.

3.6.5 The river supports limited fish populations due to poor water quality, the highly managed water course and obstruction to fish passage by the weir in South Park, Darlington, 2 km downstream. Survey work is programmed for Spring 1995 at three sites within the restoration reach and two control sites outside to determine fish numbers and species composition.

3.7 Designations (Fig. 6)

3.7.1 Skerne Bridge is a scheduled Ancient Monument.

3.7.2 There are no listed buildings within the area, although Haughton Church located adjacent to Haughton Bridge is Grade I listed, and Red Hall immediately to the east is a Grade II listed building.

3.7.3 Haughton Village Conservation Area includes a small area immediately to the west of Haughton Bridge, but it is unlikely that the river restoration proposals will conflict with policies governing this status.

3.7.4 There are no statutory Nature Reserves within the area, but there are three sites with Nature Conservation interest - Skerne Ponds, Rockwell Pastures and St William's Pond. All three are man-shaped reserves and include water bodies and semi-natural vegetation.

3.7.5 There are three public footpaths within the area. The path from Henry Street which runs adjacent to the allotments, past Skerne Ponds and under the Five Arches Bridge and through to Rockwell linking into the housing area at Littlebeck Drive, is the longest route. A bridleway joins this path at Skerne Ponds linking north into the housing area. The two short lengths of paths at the extreme east end of the site include a link between Haughton Road, over Hutton Avenue footbridge, through to housing to the north and a link along the river bank through to Haughton Bridge.

3.7.6 A number of main service pipes and connections exist within the reach such as a gas main, an electricity main and a sewer.

3.8 Structure Plan

3.8.1 The Draft County Structure Plan Review was issued for Public Consultation in April 1994 and the Deposit Plan is due for completion in the winter of 1994. Within this document Policy Nos 57, 64 and 92 are particularly relevant.

3.8.2 Policy 57 states:

> *"The improvement and enhancement of the county's environment should include .....*
>
> *c) Tree planting, particularly in areas deficient in planting and where it assists in the creation of wildlife habitat or community woodlands."*

3.8.3 Policy 64 states:

> *"Nature conservation in the county should be achieved by .....*
>
> *b) Seeking to safeguard sites of nature conservation importance.*
>
> *.....*
>
> *e) Encouraging the creation of new areas of nature conservation interest, particularly in association with appropriate development schemes or on reclaimed sites or redundant land.*

3.8.4 Durham County Council's Nature Conservation Strategy 1993 in addition sets out a number of policies and design guidelines, including "Wetlands and Watercourse" Ref. 5.1.4, page 24. This will be revised to take account of the Draft County Structure Plan and the recently published Department of the Environment's Planning Policy Guidance No. 9, on Nature Conservation, published in October 1994.

3.9 Local Plan

3.9.1 The Borough of Darlington Local Plan Consultation Draft was produced in March 1994 and the Deposit Plan is now in preparation.

3.9.2 Map 2, included in the document Urban Area Inset, highlights the River Skerne corridor and indicates a proposed recreation route along its entire length throughout the area of study with a number of cycle routes linking into it. The plan also identifies the three areas of nature conservation interest, Haughton Village Conservation Area, and a highway safeguarding area between Skerne Bridge and Albert Bridge, a zone identified for the proposed Cross Town Route.

3.9.3 Within the document there are a number of policies relevant to the River Skerne Restoration Project, but Policy E40 highlights the area specifically. The following proposals are outlined:

- The extension of the riverside footpath and cycleway.
- The introduction of more varied vegetation.
- Improvements to the setting of Skerne Bridge.
- Collaboration with the National Rivers Authority to develop a proposed 'riverside revival' to bring about 'landscape, habitat and access improvements'.

3.9.4 The council is shortly to publish a Strategy for the Green Environment which 'will promote the concept of green corridors and their management for recreation and nature conservation and landscape'. The River Skerne corridor and the two railway lines within the area are identified as existing principal wildlife corridors.

One of the proposals within the Strategy is the preparation of management plans for all areas of nature conservation interest.

3.10 Ecology

3.10.1 The ecology of the area of study can be divided into four areas:

1) The immediate river corridor.
2) Semi-natural wetlands with nature conservation interest.
3) Semi-natural vegetation.
4) Managed parkland with trees.

The river corridor was surveyed in August 1994 (Cowen 1994), in accordance with the National Rivers Authority Technical Handbook No. 1, River Corridor Surveys, 1992.

This detailed survey is divided into 8 No. 500 m reaches. Nearly half the length of the corridor falls outside the 2 km study area but is included in the survey as controls. In each reach the following are described: the physical details of the channel, the land use, bank vegetation, channel vegetation, proposed enhancement works, and a list of species. Each reach is illustrated by a cross section of the channel, a plan identifying aquatic and marginal zone features, and bank and adjacent land uses together with a photograph.

Detailed surveys on birds, fish and invertebrates are understood to be in progress or to be programmed in Spring 1995.

3.10.2 The Immediate River Corridor

The channel is artificially uniform in profile and straight throughout with some stretches retained by banks with walls and gabion protection. The plant species present within the riverine habitat are common species, often at high densities, which indicate the limited range of species and structural diversity of the river channel and peripheral areas. A high percentage cover of macrophytes were found in the channel in August. The artificially steep sided banks reduce the possibility of emergent vegetation being present. The riverside habitat is of variable quality but the presence of closely mown amenity grassland throughout much of the study area reduces the value of these areas. Within many of the areas exhibiting a degree of naturalness, the invasive Himalayan Balsam, *Impatiens glandulifera* is dominant. Various enhancement proposals are discussed later in the report, in the detailed survey section.

3.10.3 Semi-Natural Wetlands with Nature Conservation Interest

Rockwell Conservation Area is located in an area which, prior to the housebuilding and reclamation works in the late 1970s, was subject to waterlogging owing to a number of springs which surface in the area and the regular flooding of the river. The article in Durham County Conservation Trust's Bulletin of May 1987 describes the recent history of the area.

Rockwell was saved from development following a campaign by the Durham and Teesdale Naturalists Field Club in the mid 1970s. In the 1980s, a local naturalist, Dave Race, in conjunction with the Durham County Conservation Trust and other local conservation bodies, persuaded Darlington Borough Council to retain this area of approximately 1.5 hectares as an ecological and educational resource, a vestige of how the floodplain once looked. With funding from the Railside Revival Project, existing ponds were enlargened, new ponds made, indigenous trees planted and wildflowers sown. In conjunction with the adjacent railway embankment, the area provides a wide range of conditions which promote a particularly diverse range of flora and fauna, including Great Crested Newts, 60 species of birds, 16 species of butterfly and a large range of plants including Common Spotted Orchids on the railway embankment, and a wide range of marginal and aquatic plants. Refer to River Corridor Survey Report. Great Crested Newts are a protected species under the Wildlife and Countryside Act and therefore any works must not disturb their habitat.

Skerne Ponds, located to the west of Five Arches Bridge, is a similar but smaller resource than Rockwell. This area was formerly subject to waterlogging due to springs and flooding and is proposed as a future extension to the Rockwell Conservation Area.

St William's Pond is the third site of nature conservation interest within the area and is also believed to contain Great Crested Newts. The pond is surrounded by housing and located approximately 0.5 km from the river. Although a narrow open space connects it with the Skerne, this area is currently a sterile green space, which restricts its value as a potential wildlife link.

Dropwell is the only remaining semi-natural area on the south bank of the river to the west of Five Arches Bridge. This too was the site of a spring. The formerly ecologically rich area has been gradually reduced in size to a clump of blackthorn and some large willows.

3.10.4 Semi-Natural Vegetation

The embankment behind the south bank of the river between the Five Arches Bridge and Albert Bridge is a continuous belt of largely indigenous mature trees and shrubs. As well as being a valuable ecological resource, this corridor provides effective screening of unsightly industrial buildings on the plateau.

A developing belt of trees planted in the 1980s on the industrial embankment to the east of Five Arches Bridge will further extend the importance of this wildlife corridor. There are a number of important areas with semi-natural scrub and wildflower vegetation such as the railway embankments and at Rockwell, and the Square Mile Project Area, an area managed as an education resource by Haughton School.

There are also two significant remnants of ancient hedgerows adjacent to Devonshire Road. These contain a wide range of native species of trees and shrubs - ash, hawthorn, elder, etc.

3.10.5 Managed Parkland

The area adjacent to the river from Haughton Bridge down to the Rockwell Conservation Area is a closely mown parkland landscape devoid of features, with the exception of a few groups of native and non-native trees. In addition to the canalising of the river, the land has been drained, covered with excavations from the deepening works, and subjected to major interference by statutory undertakers when gas pipelines and sewage pipelines were laid in 1970s. In 1984 the area was cleared of remaining vegetation, graded and made into the sterile corridor which exists today.

4.0 MACRO LANDSCAPE ASSESSMENT (Figs. 7-15 and 18-27)

Fig. 7 summarises the major visual elements and zones within the study area including the delineation of the visual envelope. This extends significantly beyond the boundary of the study area in certain areas, such as adjacent to the industrial estate to the east of Five Arches Bridge.

Fig. 8 indicates the broad character areas. Generally the area of study is urban public open space. This has been split between amenity grass, including ornamental planting, and semi-natural vegetation. In addition there is also a small area of degraded industrial space. The areas have been evaluated in terms of quality and management strategy. In some cases the same area covers two sections of the reach.

Fig. 9 provides a key to the character sketches (Figs. 10-15) and the photographs (Figs. 17-27) which provide an overview of existing conditions in each section in November 1994.

The Figures referred to in each Section refer to the relevant character sketch and sheet(s) of photographs.

4.1 Section 1 - Skerne Bridge to Albert Road Bridge (Figs. 10 and 18)

4.1.1 Description and Classification

This relatively short reach of river of 140 m, defined by the two bridges, has a particularly distinctive character largely dominated by its industrial past. The corridor is small and enclosed, and has two different treatments to the bank sides. The left bank is edged by a large concrete retaining wall that includes untidy pipes, metal railing and fencing with a car spare parts yard located behind it. The right bank, in contrast, consists of a steep embankment with semi-natural vegetation. Behind this is a reclaimed flat area which was landscaped by Durham County Council in 1993.

Although there is little movement within the corridor the noise from the road, railway and adjacent industrial retail premises is a major feature. The Skerne Bridge has historic importance although there is no formal access to it and the setting is visually poor.

4.1.2 Evaluation - Grade 3/4 Enhancement

Because of the different characters of this area, the evaluation is split 3/4. Features include the existing vegetation and the man-made structures, the bridges and the retaining wall.

Although the river in this area has lost its original character and has become canalised and downgraded, there is little opportunity for restoration due to the tight constraints of landform and adjacent private ownership. The emphasis should therefore be to carry out a number of enhancement works including better access and planting works.

4.2 Section 2 - Albert Road to the Western Edge of the Allotments (Figs. 11 and 19)

4.2.1 Description and Classification

The character of the corridor upstream from Albert Road is dramatically different from Section One. The river has a soft edge on both sides with a fairly uniform profile and contains a riffle. The corridor is broader and has a medium scale which is well enclosed by a steep embankment on the southern side and the housing edge on the northern side.

Although the industrial premises edge the right bank, these are located on an elevated plateau and are screened behind a densely vegetated embankment containing largely native species and sycamore. Relatively new housing is set back from the river on a gently sloping bank of grass and clumps of trees, which provide a parkland appearance. The two contrasting sides provide variety and are reasonably unified on each side. Apart from the traffic noise on Albert Bridge the area is peaceful with most activity taking place along the footways located at some distance from the river.

4.2.2 Evaluation - Grade 2 Conservation/Restoration

The reach contains a number of strong positive features, namely the existing woodland edge on the left bank and two groups of trees, largely willow, on the right bank. Semi-mature ornamental trees adjacent to the housing edge help to integrate the development into the corridor. The two distinct characters on each side of the riverside combine to create an attractive stretch of corridor which generally should be conserved, although there is potential for both restoration and management works. Restoration proposals are severely limited by changes in level and existing tree cover.

4.3 Section 3 - East Edge of Allotments to Five Arches Bridge (Figs. 12, 20 and 21)

4.3.1 Description and Classification

The corridor follows an even curve over this 340m reach. The section contains a series of different spaces on the right bank with a fairly uniform appearance on the left. The character of the area is therefore fragmented and varied, but generally of an enclosed semi-natural or part-derelict appearance.

On the steep embankment on the left bank, the semi-natural vegetation provides a valuable green edge screening out unsightly buildings. The right bank includes a confined corridor with mature trees adjacent to allotments, a medium sized informal open space where a path links the new housing area to the river, and where two small ponds have been created. Towards the Five Arches Bridge this space narrows down again where a retaining wall supports a large embankment.

4.3.2 Evaluation - Grade 2/3 Conservation/Restoration/Enhancement

The existing semi-natural woodland on the southern bank is a strong feature which should be conserved. On the right bank the tree cover and ponds require management within an area which would benefit from major enhancement works, including major earthworks to remove the confined corridor and provide a better setting for Five Arches Bridge, improving the untidy edges to the corridor and circulation.

Alterations to the river itself are constrained by level changes which include a section of gabion revetment and steep embankments.

4.4 **Section 4 - Five Arches Bridge to Rockwell** (Figs. 13, 22 and 23)

4.4.1 Description and Classification

The river stretches from Five Arches Bridge in a fairly regular curve until it straightens out adjacent to Rockwell. This medium scale area is enclosed by the industrial embankment and new housing around Rockwell. The corridor consists of a complex series of spaces which appear as fragmented units containing both semi-natural and tamed areas.

The left bank consists of a recently planted extension of the semi-natural woodland edge at the bottom of which there is a narrow band of mown grass adjacent to the river. The right bank has three major areas. The railway embankment has fewer trees here and the gantries are particularly dominant features. The embankment includes a range of wildflower species and criss-crossed with desire lines. It also offers a superb vantage point from which to view the conservation area. At the foot of this is the Rockwell Conservation Area, a wetland consisting of two ponds which provide diverse habitats for flora and fauna. A local school manages a small wildflower meadow - "The Square Mile Project".

On the left bank there is a significant area of remnant wetland - Dropwell. Some fine willows and blackthorn exist.

The character adjacent to the housing area changes to managed parkland with mown grass and groups of trees with a well established belt which softens the housing edge.

4.4.2 Evaluation - Grade 2/3 Conservation/Restoration

This diversity of habitat created by the ponds and the railway embankment are its strongest features which should be conserved.

The priorities are to extend these habitats adjacent to and within a new profile river channel. There is also potential to extend the conservation area northwards into Rockwell Pastures and provide a better context for the housing. Improved circulation throughout this area should also be a priority of the works including along the railway embankment.

The works would be constrained by potential damage to the sensitive areas and possible unearthing of contaminated material during excavations.

4.5 Section 5 - Rockwell to Old Hedgerow on the Southern Bank (Figs. 14, 24 and 25)

4.5.1 Description and Classification

Despite being the longest, this section is the most simple. It has a medium scale open space which has a unified feel. The character is one of managed parkland on both sides of the river with few features, the most dominant being the gently sloping graded floodplain. The corridor is well used for informal recreation, largely dog walkers, despite the fact that there are no formalised routes. Industrial buildings dominate the skyline on the left bank, and housing and a belt of trees define the visual envelope on the right bank.

4.5.2 Evaluation - Grade 3 Restoration

The area has been degraded through engineering works to both channel and the bank sides. The few positive characteristics are the few trees that remain, the structure planting adjacent to the industrial area, the groups of trees adjacent to the housing, the old hedgerow and St William's Pond. The relatively wide corridor has only a few constraints and there are opportunities to carry out radical restoration works to the channel, linking it with the ecologically rich Rockwell Conservation Area. In addition the southern edge of the area could be transformed into a continuous ecologically rich corridor by additional planting and seeding within the recently planted area on the industrial edge and new planting within the existing sterile grass corridor, linking St William's Pond to the river. At the same time, improved access and significant planting works should be carried out within the context of a radical shift in management objectives for the area.

4.6 Section 6 - Old Hedgerow Past Hutton Avenue Footbridge to Haughton Road (Figs. 15, 26 and 27)

4.6.1 Description and Classification

The land flattens out towards Haughton Road but the scale remains medium and fairly open with weak edges adjacent to housing, a smallholding and Haughton Road.

The area is managed parkland with a fairly unified appearance. It is well used as a through route for pedestrians and cyclists and for dog walkers. Traffic noise on Haughton Road has a major impact on the area. The dominant elements are the adjacent housing, the road and Hutton Avenue footbridge, all negative factors. The river channel has been subject to various works including an unattractive terrace built in 1970s as part of flood defence measures.

4.6.2 Evaluation - Grade 3/4 Restoration

The character is generally negative with a few positive features, mainly the old hedgerow and a group of trees adjacent to the river by the smallholding. There are immense opportunities for improving the context of the river, particularly by carrying out tree planting, possibly with associated subtle reshaping of the ground. The footbridge and the path network are well used but in need of remedial works.

The existing gas and sewer pipes and the smallholding on the north side of the river provide major constraints to any possible works to the river, although opportunity should be taken where possible to relieve to canalised effect.

4.7 Summary

4.7.1 Tables 1 and 2 below summarise the quantitative analysis of the assessment which forms part of the baseline information. The study area within each section has been measured and the area broadly evaluated in terms of landscape character and of the overall management strategy required.

4.7.2 The evaluation for each section indicated in the text and Fig. 8 shows the value class and management strategy, which can cover more than one category. The tables indicate a breakdown within each category. When a relatively small percentage is recorded in the tables, then this is ignored in terms of the evaluation shown in the text.

4.7.3 The majority of the area within the reach falls into Value Class 3 (69%) and Management Strategy "Restoration" (60%).

MACRO LANDSCAPE ASSESSMENT - SUMMARY TABLES

TABLE 1 - LANDSCAPE CHARACTER

SECTION	VALUE CLASS								
	1		2		3		4		Area of Section (ha)
	Area	%	Area	%	Area	%	Area	%	
1	0	0	0	0	0.3	60	0.2	40	0.5
2	0	0	1.3	60	0.8	40	0	0	2.1
3	0	0	1.5	50	1.5	50	0	0	3.0
4	0	0	2.0	30	4.8	70	0	0	6.8
5	0	0	2.8	25	8.5	75	0	0	11.3
6	0	0	0	0	4.0	80	1.0	20	5.0
TOTALS	0	0	7.6	27	19.9	69	1.2	4	28.7

TABLE 2 - MANAGEMENT STRATEGY

SECTION	MANAGEMENT STRATEGY						
	Conservation		Restoration		Enhancement		Area of Section (ha)
	Area	%	Area	%	Area	%	
1	0	0	0	0	0.5	100	0.5
2	1.7	80	0.4	20	0	0	2.1
3	1.5	50	0.6	20	0.9	30	3.0
4	3.4	50	3.4	50	0	0	6.8
5	3.4	30	7.9	70	0	0	11.3
6	0	0	5.0	100	0	0	5.0
TOTALS	10.0	35	17.3	60	1.4	5	28.7

5.0 MICRO LANDSCAPE ASSESSMENT (Figs. 9-27)

Fig. 16 describes the landscape character within the immediate river corridor. This indicates that the majority of the reach has a suburban open character, although there are significant stretches of semi-natural enclosed and some suburban enclosed areas. The plan also summarises the evaluation of character within each section. The plan indicates that for a significant stretch of the reach, the corresponding left and right banks have dissimilar character.

Fig. 9 provides a key to the character sketches (Figs. 10-15) and the photographs (Figs. 17-27) which cover the major features and provide an overview of existing conditions in each section in November 1994.

No aquatic vegetation and little herbaceous material was visible at the time of the survey in November. Refer to the River Corridor Survey Report undertaken in August for detailed information covering this subject.

The figures referred to in each Section refer to the relevant character sketch and sheet(s) of photographs.

5.1 Section 1 - Skerne Bridge to Albert Bridge (Figs. 10 and 18)

5.1.1 River Channel/Banks

The channel has a largely silty bed with a few boulders. The river flows smoothly along a canalised straight channel which has a large retaining wall on the left side and a steep solid embankment on the right bank.

5.1.2 River Margins

The setting is predominantly urban and includes unattractive industrial premises as well as an historic railway bridge. There are some significant trees at the water level at the foot of the retaining wall and a few on the embankment.

5.1.3 Appearance of Water

The water is discoloured and lifeless with some debris.

5.1.4 Notable/Characteristic Features

The major features are man made - the historic railway bridge, the road, the retaining wall with the unsightly black pipes, the engineered embankment and the predominantly non-native trees.

5.1.5 Landscape Character

The area has a degraded industrial, urban enclosed character on the left bank with semi-natural vegetation enclosing the reclaimed right bank.

5.1.6 Evaluation - Grade 3/4 Restoration/Enhancement

The existing vegetation is the only positive element within the degraded area. Opportunities for channel restoration are restricted by the existing retaining wall and topography to the creation of riffles and pools. Selective macrophyte control, planting and the creation of nesting platforms were suggested in the River Corridor Survey Report.

5.2 Section 2 - Albert Road to the Western Edge of the Allotments (Figs. 11 and 19)

5.2.1 River Channel - Banks

The channel is smooth with generally slow flowing water containing a riffle. The fairly straight course is canalised with sections retained by gabions on both sides.

5.2.2 River Margins

Medium quality new housing, a recently landscaped gap site, and unsightly industrial buildings provide a medium to poor quality urban setting. The section includes amenity tree and shrub planting on the sloping grass area on the right bank, and on the left bank a steep embankment covered with semi-natural woodland.

5.2.3 Appearance of Water

The water is discoloured and lifeless, with no vegetation in evidence.

5.2.4 Notable/Characteristic Features

The most notable features are the trees on the industrial embankment on the large willows on the riverside.

5.2.5 Brief Description and Landscape Character

The area consists of a semi-natural character on the left bank, changing to an urban open parkland appearance on the right bank.

5.2.6 Evaluation - Grade 2/3 Conservation/Restoration

Opportunities for radical restoration works are limited by landform but in channel improvement could include the creation of riffles and pools and on the bank, small wetland areas could be reduced on flatter areas. Tree managements should be implemented by way of selective felling and pruning to increase light levels, and new planting should be carried out to increase diversity.

5.3 Section 3 - East Edge of Allotment to Five Arches Bridge (Figs. 12, 20 and 21)

5.3.1 River Channel/Banks

The channel has a silty, smooth bed with a few boulders. The river flows slowly along a canalised channel which has gabion walls along some of its length and steep banks elsewhere.

5.3.2 River Margins

The setting is low quality urban including allotments, poorly contained housing located on an elevated plateau, and industrial premises. The industrial units are distanced from the corridor by a densely tree covered embankment containing deciduous species. The river is generally lined with trees of a mix of indigenous and exotic species.

5.3.3 Appearance of Water

The water is discoloured and lifeless with some debris.

5.3.4 Notable/Characteristic Features

The notable man-made features include an ugly culvert which has highway type guard railing edging the river, the attractive Five Arches Bridge, a large concrete retaining wall adjacent to a steep embankment, remnants of fencing, and manholes which stand in excess of 1m above ground level. In addition, the tree cover adjacent to the river is particularly strong in this confined corridor and within this there are some exceptional poplars and willows.

5.3.5 Landscape Character

The area has a complex, visually confusing character changing from urban enclosed to semi-natural enclosed and back to urban enclosed on the right bank. The left bank is a contrast to this consisting of an attractive green corridor of semi-natural vegetation.

5.3.6 Evaluation - Grade 3 Restoration

The existing trees and the Five Arches Bridge are positive elements within this degraded section. Opportunities for enhancement of the river channel are restricted by the existing topography and retaining walls, but as in Sections 2 and 3, riffles, pools and the creation of adjacent wetland areas could be incorporated. Selective felling and pruning of trees and new planting should be implemented.

5.4 Section 4 - Five Arches Bridge to Rockwell (Figs. 13, 22 and 23)

5.4.1 River Channel/Banks

The river continues to have a canalised appearance but now follows a sinuous line. The bed is silty with a few pebbles, the banks have a uniform profile with steep sides and the flow is slow.

5.4.2 River Margins

Development is situated some distance from the water course and this consists of large unsightly industrial units on an elevated plateau on the left bank and housing on rising ground on the right bank. The area either side of the channel is complex, containing a range of vegetation including recent tree planting, largely deciduous, on the industrial embankment and adjacent housing, the wetland and the railway embankment of the Rockwell Conservation Area.

5.4.3 Appearance of Water

The water is discoloured and lifeless with little or no debris.

5.4.4 Notable/Characteristic Features

The major man-made features include the Five Arches Bridge, the railway embankment and the ugly electrification gantries. The ecologically rich Rockwell Conservation Area, a clump of willows on the right bank, and the developing tree belts are positive features.

5.4.5 Landscape Character

The character has a predominantly urban open feel which is relieved by the semi-natural vegetation of the Conservation Area.

5.4.6 Evaluation - Grade 3/Restoration

The existing area of nature conservation interest is the most important and sensitive area. Opportunities for restoration to the channel are constrained by the conservation area itself, and an area believed to be contaminated on the left bank. However, reducing the angle of the banksides and the creation of conditions for marginal plants should be explored in conjunction with the formation of a more varied longitudinal section. Priority should be to achieve a relationship between the Conservation Area and river. A boardwalk may be necessary to maintain the riverside path. In addition the control of Himalayan balsam in this area is a priority.

5.5 Section 5 - Rockwell to Old Hedgerow on the Southern Bank (Figs. 14, 24 and 25)

5.5.1 River Channel/Banks

The river follows an almost straight course along a canalised smooth channel. The bed is silty, the flow slow and the river banks have a uniform profile with steep sides.

5.5.2 River Margins

The wide straight floodplain has few trees set in a sterile landscape of mown amenity grass. Large industrial units are located on a distant, elevated plateau and housing on rising ground on the right bank.

5.5.3 Appearance of Water

The lifeless water is discoloured with little evidence of debris.

5.5.4 Notable/Characteristic Features

The most notable features are the engineered channel and its setting. There are also some ugly outfalls. The two large willows represent the only notable positive attributes.

5.5.5 Landscape Character

The reach has an overwhelmingly unnatural, engineered character, lacking in diversity and richness.

5.5.6 Evaluation - Grade 3 Restoration

There are very few positive features and great opportunities for a wide range of state of the art restoration techniques. These could include creating meanders, variations in width and depth of the channel and type of substrate to create a diverse range of vegetation and habitats. In addition tree planting and better improved access along the riverside should be incorporated into a radical redesign of the river and its landscape setting which would include a fundamental change of management of the public open space.

5.6 Section 6 - Old Hedgerow/Hutton Avenue Footbridge to Haughton Road (Figs. 15, 26 and 27)

5.6.1 River Channel/Banks

The river is reasonably straight, running in a canalised channel. The bed is silty, the flow slow and the river banks are uniform and steep. There is also a pronounced terrace on the left bank as a result of flood defence works.

5.6.2 River Margins

Mediocre quality housing provides an unattractive suburban setting. The riverside is largely treeless, set in a context of closely mown grass with the occasional young tree. A smallholding edges a significant length of the right bank.

5.6.3 Appearance of Water

The lifeless water is discoloured and largely free of debris.

5.6.4 Notable/Characteristic Features

The unsightly concrete Hutton Avenue footbridge which supports a black gas pipe, stands out in this featureless reach. The river terracing, some culverts, and a corrugated iron fence add to the poor visual quality. Haughton Road is also a major visual and noise detractor. A clump of trees on the right bank near Haughton Bridge represents the only positive feature.

5.6.5 Landscape Character

The character is one of degraded suburban parkland.

5.6.6 Evaluation - Grade 3 Restoration

There is a lack of positive features and existing services and the smallholding provide significant constraints to any restoration proposals. Opportunity should be taken where possible to create a more natural river profile within these constraints. In addition, planting and a change in management would increase diversity. The Himalayan balsam, as in all sections, requires control.

5.7 Summary

5.7.1 The tables below summarise the quantitative analysis of the assessment which forms part of the baseline information. Each section of the reach has been broadly evaluated in terms of landscape character and of the overall management strategy required. As the corresponding left and right banks have dissimilar characters, the assessment is based on evaluating both sides separately and dividing the figures in half in order to relate it back to the length of the section.

5.7.2 The evaluation for each section indicated in the text and Fig. 16 shows the value class and management strategy, which can cover more than one category. The tables indicate a breakdown within each category. When a relatively small percentage is recorded in the tables, then this is ignored in terms of the evaluation shown in the text.

5.7.3 The majority of the river corridor falls within Value Class 3 (72%) and into Management Strategy "Restoration" (77%).

MICRO LANDSCAPE ASSESSMENT - SUMMARY TABLES

TABLE 1 - LANDSCAPE CHARACTER

SECTION	VALUE CLASS								
	1		2		3		4		Length of Reach
	Length	%	Length	%	Length	%	Length	%	
1	0	0	0	0	70	50	70	50	140
2	0	0	170	50	170	50	0	0	340
3	0	0	120	35	200	59	20	6	340
4	0	0	80	21	300	79	0	0	380
5	0	0	0	0	450	94	30	6	480
6	0	0	40	10	300	75	60	15	400
TOTALS	0	0	410	20	1490	72	180	8	2080

TABLE 2 - MANAGEMENT STRATEGY

SECTION	MANAGEMENT STRATEGY						
	Conservation		Restoration		Enhancement		Length of Reach
	Length	%	Length	%	Length	%	
1	0	0	70	50	70	50	140
2	170	50	170	50	0	0	340
3	120	35	220	65	0	0	340
4	80	21	300	79	0	0	380
5	0	0	480	100	0	0	480
6	30	7	370	93	0	0	400
TOTALS	400	19	1610	77	70	4	2080

6.0 DETAILED LANDSCAPE ASSESSMENT

In order to satisfy the particular requirements of the brief, items within the entire area of study are included within the target notes. The notes therefore summarise the main points from both macro and micro survey work. The target notes are related to adjacent 1:2500 plans.

For ease of reference, the target notes are set out within three categories: river channel, channel margins, and peripheral areas.

The format follows the NRA's Management Strategy classification, abbreviated as follows:-

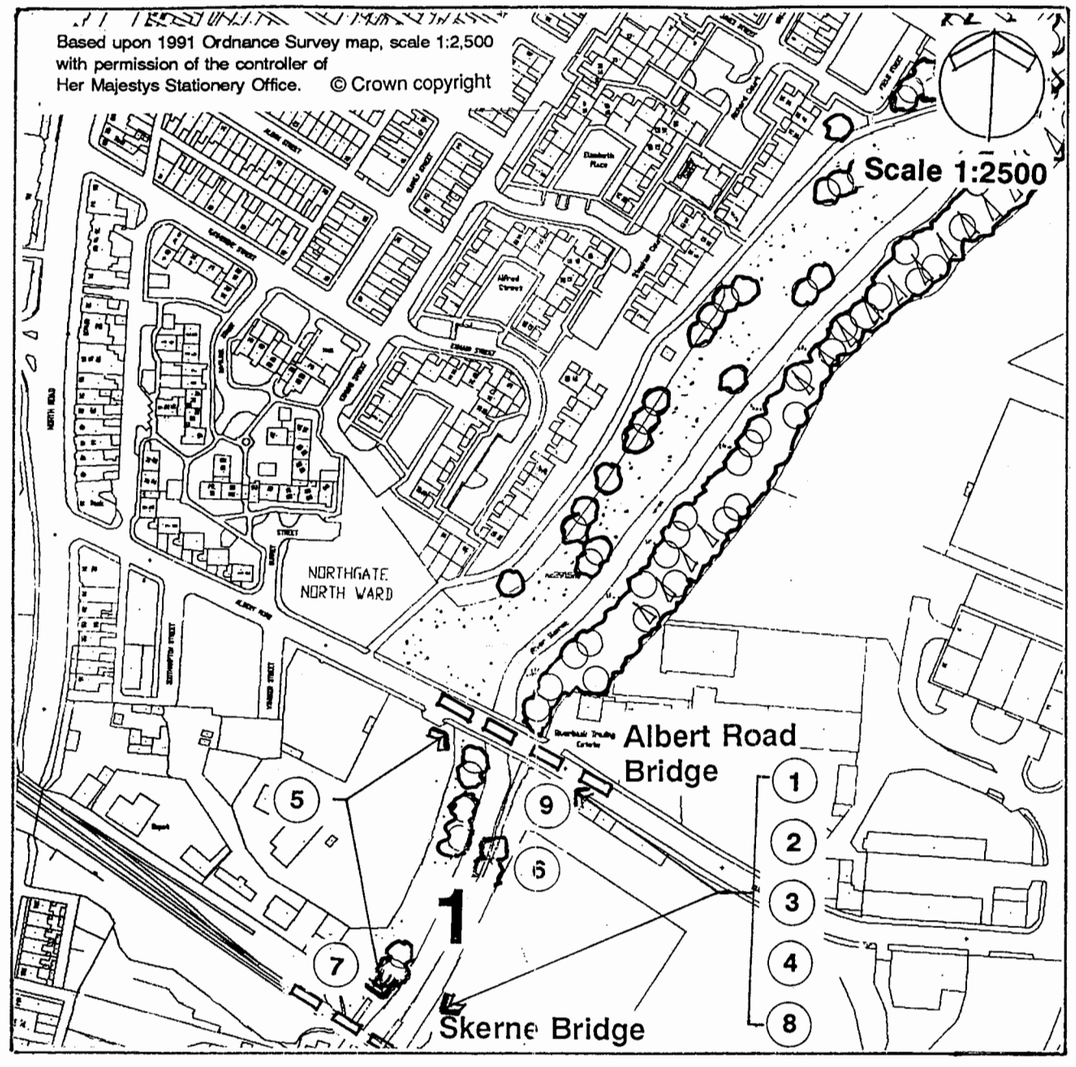
C Conservation
R Restoration
E Enhancement
M Management

An indication of the cost of each item is provided, except for major works which are likely to be funded by other such as Darlington Borough Council - these are marked with *.

A brief description describes the character of the area and its main features.

TARGET NOTES - 6.1
RIVER SKERNE
DETAILED SHEET NO. 1

REF			ACTION/COST	
	River Channel			
1.	Create riffles and pools and reduce angle of bank in canalised channel.		R	£5K
2.	Provide floating nesting boxes adjacent to wall where access is difficult.		E	£1K
3.	Control macrophytes and Himalayan balsam.			£1K
4.	**River Edge** Mass concrete retaining wall 3m above water with unsightly black pipe fixed on it near top. Old railings in poor condition - edge wall. Replace railings and pipe and soften impact of wall with planting including trailing plants.		E	*
	Channel Margins			
5.	**River Side** No path access from road level on Albert Bridge or through it from upstream. Options for access to river are being investigated by DBC.		E	*
6.	**Existing Willows** Have large impact.... conserve.		C	–
	Peripheral Areas			
7.	**Skerne Bridge** Ancient Monument which appears on £5 note with George Stephenson. Unfortunate later additions of blockwork to bridge - restore to original state and improve setting.		R	*
8.	**Fencing** 1.8m high close boarded edging Autoparts Site. Break up section of old path and plant up.		E	*
9.	**Derelict Building** Options for regeneration or partial demolition to be explored.		E	*

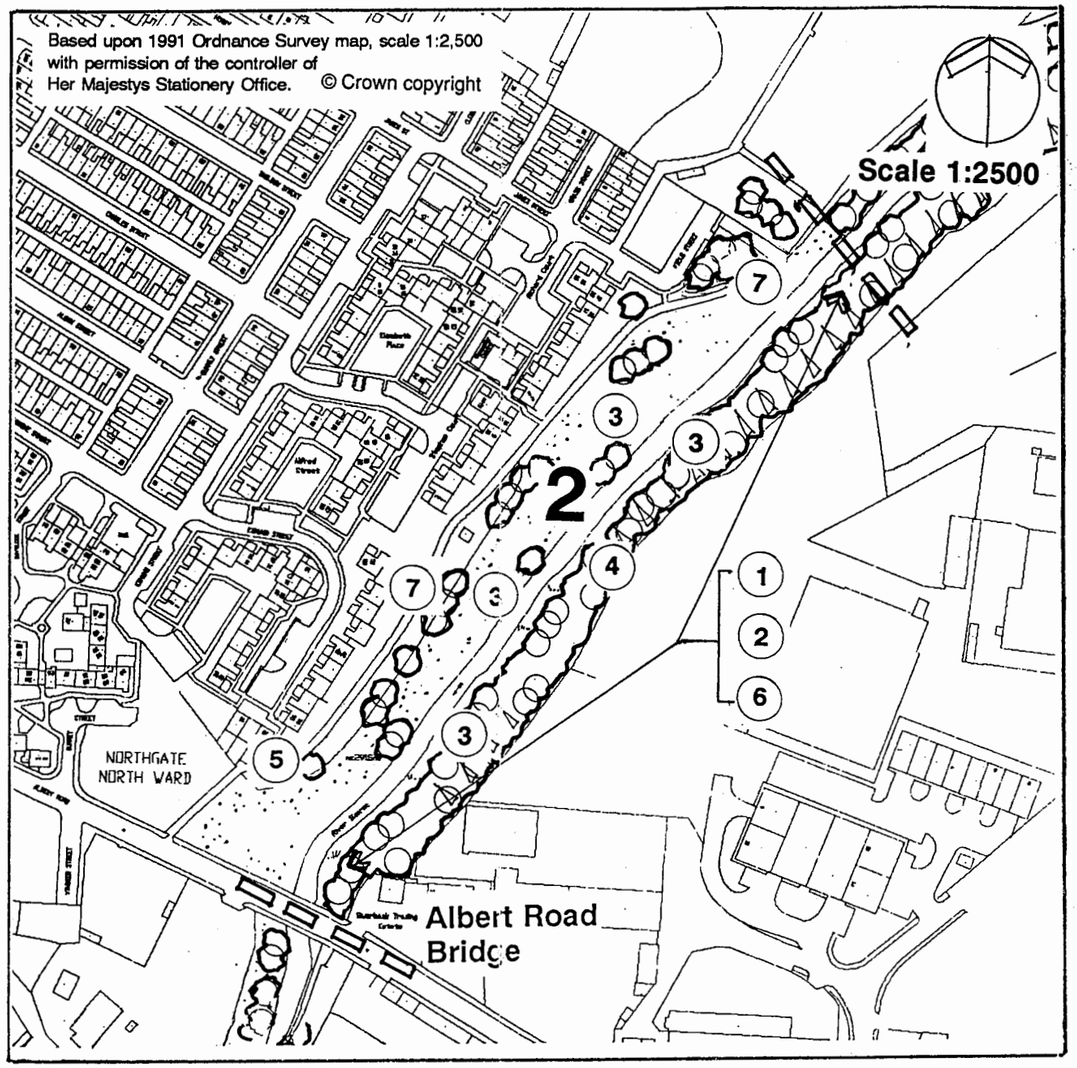


Detailed Survey

This short canalised river between two bridges has two distinct edges. The right bank has a soft edge with engineered slope, probably reclaimed, with largely sycamores and maples thinly spaced. On the railway embankment, birch and ash predominate. The left bank has a large retaining wall with unsightly pipes and metal railings. Adjacent to an old road runs a close boarded fence which screens a car breaker's yard from the riverside. There is evidence of informal use of the right bank which has great potential for enhancement and formalising as part of the current provisions for increased riverside access. There are a few trees, mainly willow, growing at the foot of the retaining wall which significantly improve its appearance. The water flows mostly in a regular, canalised channel. There was little evidence of aquatic vegetation and the water is badly discoloured.

TARGET NOTES - 6.2
RIVER SKERNE
DETAILED SHEET NO. 2

REF		ACTION/COST	
	Channel		
1.	Create riffles and pools and reduce angle of banksides to create wetland areas.	**R**	**£5K**
	Channel Margins		
2.	Control Himalayan balsam	**M**	**£1K**
3.	**Large Willows.** Important features but require some pruning.	**M**	**£1K**
4.	Planting on left bank has opportunities for increasing native species and wildlife. Consider selective felling of sycamore and pruning of other trees to increase diversity of understorey.	**R**	**£2K**
	Peripheral Areas		
5.	**Circulation.** Segregated footway/cycleway edging, public open space and housing. Opportunity for extending route the other side of Albert Road either down embankment and under bridge or across road and then down to river.	**E**	*
6.	**Circulation.** There is opportunity for providing an informal path along the left bank.	**R**	**£12K**
7.	**Ornamental Trees**. Groups adjacent to housing require thinning and raising of crowns to allow views under canopies.	**M**	**£1K**

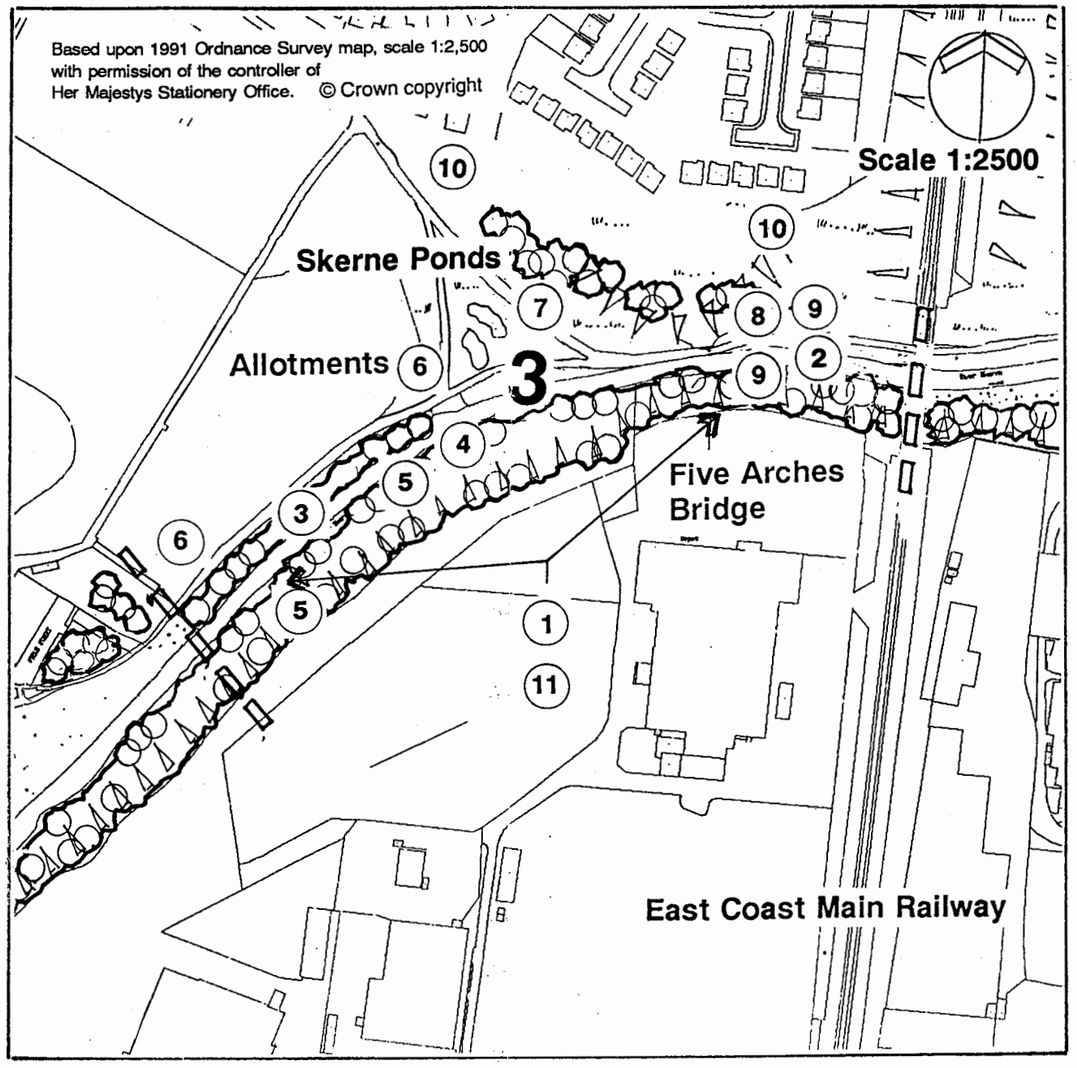


Detailed Survey

The right bank has a gentle slope with housing defining the visual envelope. This fronts onto a public open space which is largely mown grass with groups of mainly exotic trees and shrubs. Significant groups of trees, largely willow, are located on the bankside. The left bank has a steeply sloping embankment leading to an industrial plateau which consists of semi-natural planting. There is no formal river edge path although opportunity exists to provide a route from the top of the right bank along the river and under Albert Road Bridge, avoiding the crossing of a busy road and informal path on the left bank. The river has a smooth canalised channel and the water is discoloured.

TARGET NOTES - 6.3
RIVER SKERNE
DETAILED SHEET NO. 3

REF		ACTION/COST	
	Channel		
1.	Create riffles and pools and reduce angle of banksides to create wetland areas.	R	£5K
2.	**Concrete Gabion Wall.** If the radical earth reshaping option is carried out then there would be opportunity for softening the river bank and removing the canalised effect.	E	£10K
	Channel Margins		
3.	**Sycamores**. Selective fell and prune to create clear view corridor. Opportunities exist to replant the bankside with a greater range of indigenous tree and shrub species.	M	£2K
4.	**Culvert** Located at radial point on river at major pathway junction commanding views up and down stream. Consider enhancement through new railings, surfacing and seats.	E	£15K
5.	**Poplar and Willows** Some pruning is required to these large and ageing trees. New planting required to ensure continuity.	M	£1K
	Peripheral Areas		
6.	**Allotments**. New allotment fencing requires softening with planting particularly where the path runs along the edge and to reduce the impact of the allotments from views from the riverside path from the east.	E	5K
7.	**Skerne Ponds.** Upgrade nature conservation interest area through minor improvements.	R	£2K
8.	**Concrete Retaining Wall.** Two improvement options:-		
	a. Removal of wall, major earthworks and planting. This would also provide a better setting for Five Arches Bridge.	E	*
	b. Reduce impact through use of trailing/climbing plants on top of wall.	E	£2K
9.	**Manholes.** Several large manholes stand above surrounding ground level. Reduce their impact by raising levels on north side and by screening those on south side by planting.	E	£5K
10.	Rationalise footpaths and reinforce native/naturalised planting helping to screen housing and exploit views from the plateau.	E	*
11.	**Circulation.** There is opportunity for providing an informal path along the left bank.	E	£12K

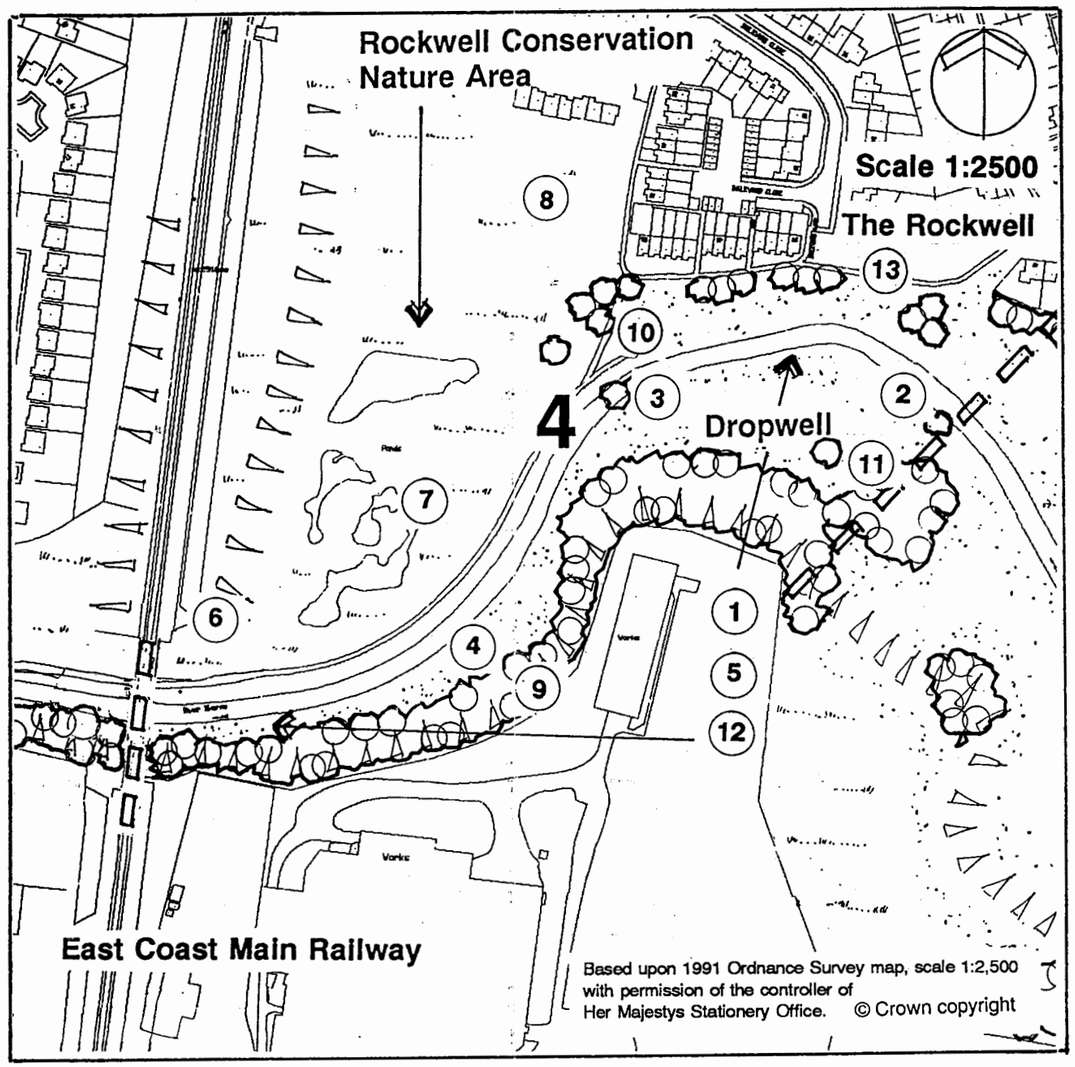


Detailed Survey

This section contains a series of different spaces on the right bank with a fairly uniform appearance on the left bank. On the right bank, the path runs on an elevated route adjacent to allotments in a tight corridor dropping down to the culvert where the space opens to an informal area before tightening as the path approaches Five Arches Bridge owing to a major embankment and retaining wall. The left bank has semi-naturalised planting on a steep embankment leading to an industrial plateau. The river has a uniform profile with a canalised edge.

TARGET NOTES - 6.4
RIVER SKERNE
DETAILED SHEET NO 4

REF		ACTION/COST	
	Channel		
1.	Create riffles and pools and reduce angle of banksides to create wetland areas.	R	£5K
	Channel Margins		
2.	**Willow.** Prune as necessary and conserve this important tree.	C	-
3.	**Clump of Willows.** Conserve and prune these trees which could provide an attractive setting for the new footbridge.	C	£1K
4.	**Narrow Area of Mown Grass.** This seems inappropriate and should be restored to a more natural riverbank profile which would encourage more wildlife and provide links across to the nature reserve. Investigate possible contamination.	R	£20K
5.	Control Himalayan balsam.	R	£1K
	Peripheral Areas		
6.	**Railway Embankment.** Formalise path system and discourage other access, particularly in relation to Main Line Railway and wildflowers. Recognise views over nature reserve area and augment through appropriate planting which should reduce the impact of the gantries.	E	*
7.	**Rockwell Conservation Nature Area.** Ecologically rich resource. Improved management would assist its objectives by the control of non-native species.	M	£1K
8.	**Rockwell Pastures and Housing Edge** Improved access to riverside path and planting along housing edge and new wildflower meadow are proposed by Darlington B.C. Opportunity should be taken to tie The Pastures, the railway embankment, the Conservation Area, the Square Mile Project and the river into an ecologically rich wildlife corridor.	E	*
9.	**Industrial Embankment.** Provide additional planting particularly towards the top in order to screen adjacent unsightly industrial building, supplementing the establishing vegetation.	E	£10K
10.	**Existing Riverside Path.** Extend bound gravel path as part of new path network.	E	*
11.	**Dropwell.** A valuable area of remnant wetland with some fine willows and blackthorn. Conserve and integrate into restoration proposals.	C	-
12.	**Circulation.** There is opportunity for providing an informal path along the left bank and new footbridge to provide a circular walk.	E	£20K
13.	**Rockwell.** Enhance the context of the site of geological interest and include interpretation.	R	£2K

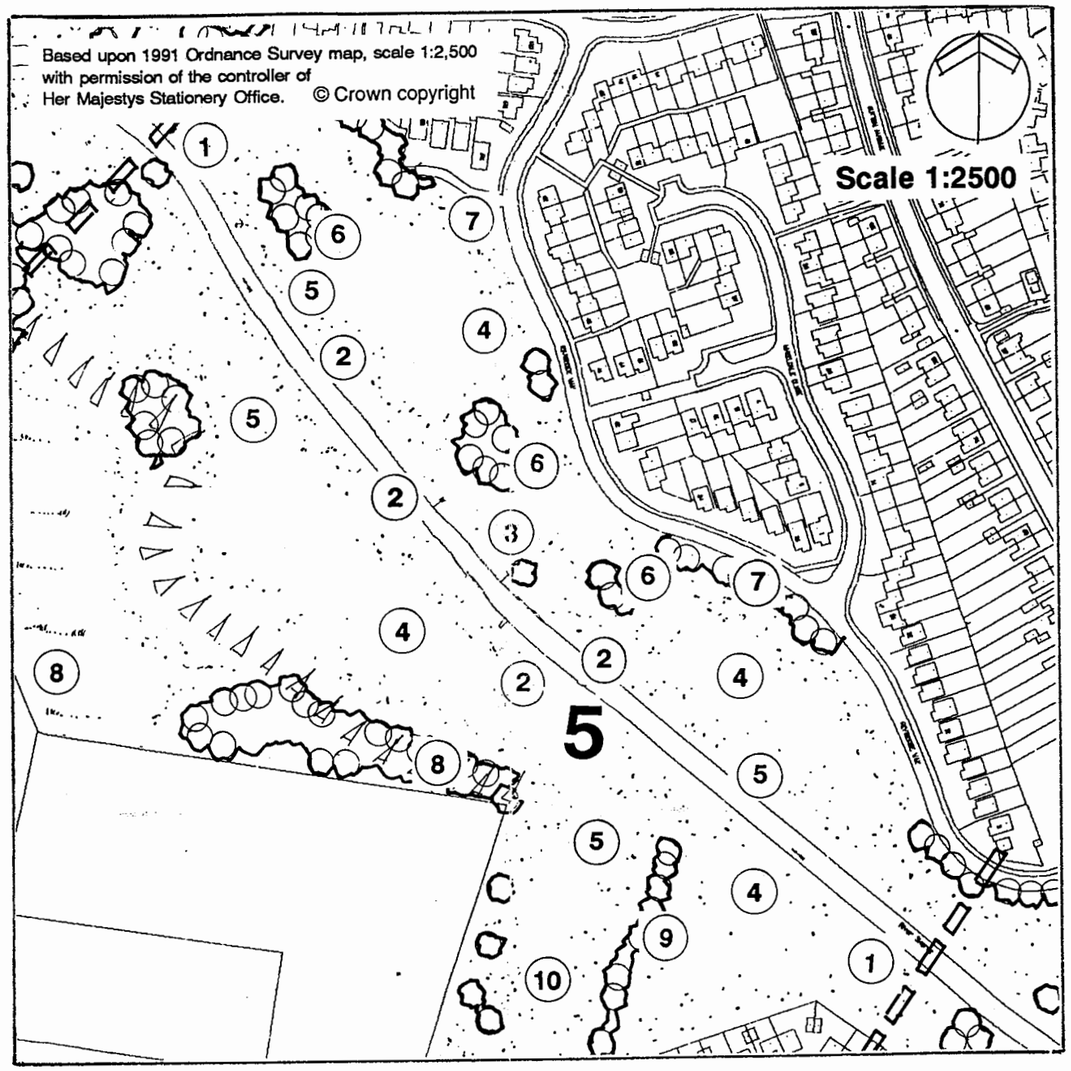


Detailed Survey

The right bank has three major areas. Adjacent to housing there is a belt of trees and mown grass down to the river. Downstream is the Nature Conservation Area which contains a series of pools and rising from this is the railway embankment which provides spectacular views of the river corridor. The left bank consists of a steeply sloping embankment leading to an industrial plateau and contains a flat mown grass edge adjacent to the river. Although the river curves it is canalised with little evidence of marginal vegetation. There may be scope for restoration of the left bank to reunite it visually and ecologically with the right bank.

TARGET NOTES - 6.5
RIVER SKERNE
DETAILED SHEET NO. 5

REF		ACTION/COST	
	River Channel		
1.	This long straight canalised section of the river offers most opportunity for restoration techniques - meanders, variations in width and depth and substrates. Improvements should attempt to link area with the Conservation Area to the west and Dropwell to the east.	R	£50K
	River Margin		
2.	**Culverts.** A number of small culverts discharge into the river along this stretch. These could be set back from the bankside and screened with landform and planting.	E	£5K
3.	**White Willow.** This is the only riverside tree in this section. It is an excellent specimen requiring conservation.	C	-
	Peripheral Areas		
4.	**Mown Grass.** Large featureless areas of closely mown grass dominate both sides of the river. Opportunity to radically change this open space, particularly on the south side, by complementary planting and seeding works and by a change in management to enrich flora and achieve conservation of objectives.	R	£10K
5.	**Circulation.** There are no surfaced paths despite the area being well used. Extension of the path network is essential, particularly on the north side of the river by a lower key approach may still be appropriate on the south side. A second footbridge would enable a circuit to be walked.	E	*
6.	**Tree Clumps.** Mixed species, mainly willow and poplar with hawthorn understorey. These provide punctuation and should be conserved and extended by new planting related to the river restoration.	R	£1K
7.	**Housing Edge.** The interface with the housing area consists of an attractive combination of a strong landscape buffer strip and grass. The trees in the strip require thinning.	M	£1K
8.	**Industrial Edge.** The industrial buildings still dominate the skyline despite an establishing tree belt. Opportunity should be taken to reinforce this edge by way of additional planting, possibly in conjunction with spoil form excavated areas.	E	£10K
9.	**Old Hedgerow.** This includes a wide range of species and helps to screen views of the untidy industrial and housing edges. Improve integration as part of wider planting programme.	E	£1K
10.	**Mown Grass.** Appears sterile and incurs high maintenance costs. Opportunities for radical rethink to include recreation of woodland habitats and improve access.	R	£10K

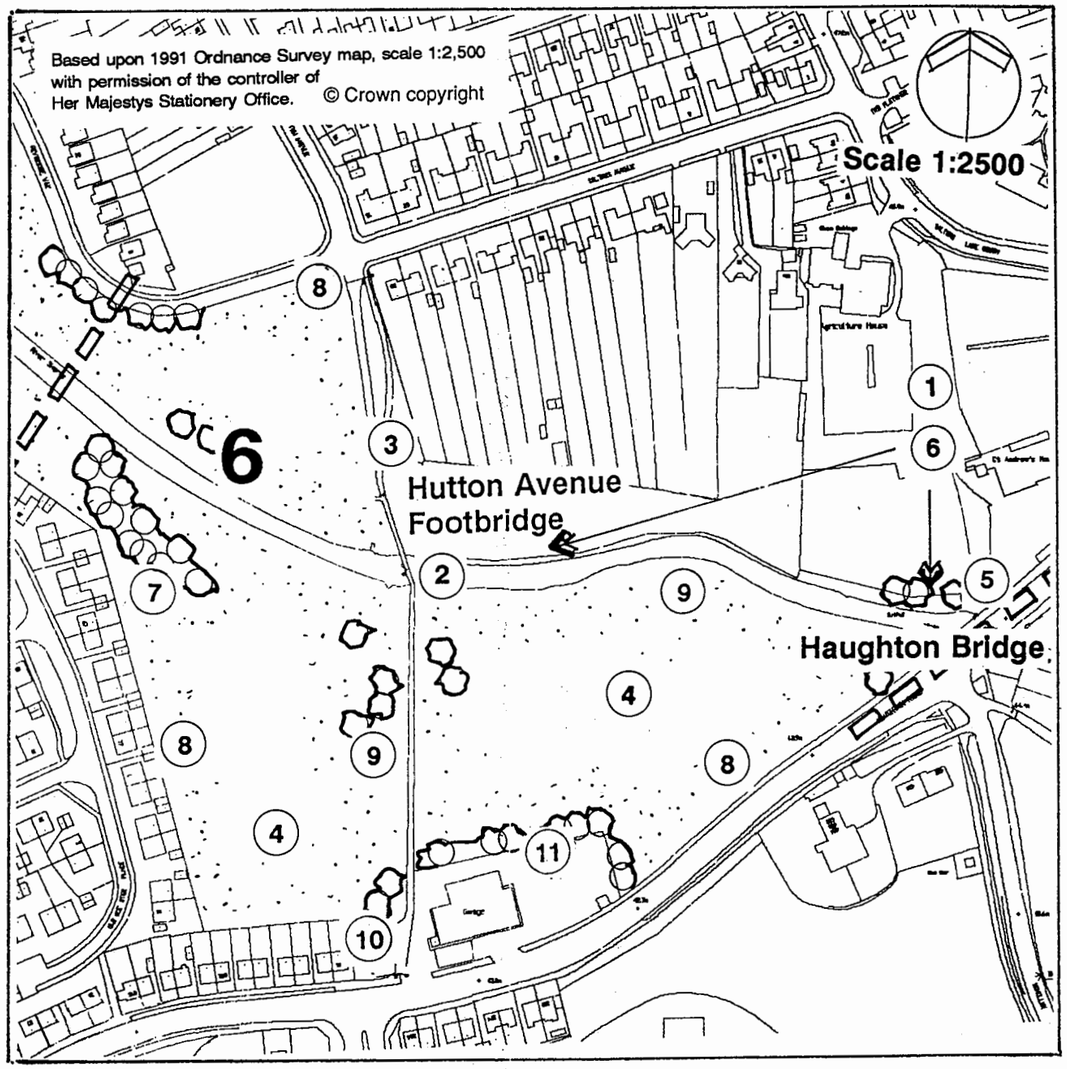


Detailed Survey

The river within this section has been dramatically straightened and canalised and has little evidence of marginal plant life. Both banks have large flat expanses of featureless mown grass. There are no formalised paths despite both sides being well used by walkers and cyclists. The visual envelope of the right bank is defined by housing which as a well established tree belt in places and the left bank is defined by the industrial plateau where large buildings dominate the skyline. This section offers considerable opportunity for river restoration and these proposals should be linked with a radical redesign of the corridor in terms of access and planting.

TARGET NOTES - 6.6
RIVER SKERNE
DETAILED SHEET NO. 6
REF

			ACTION/COSTS	
		River Channel		
1.	The river is canalised with engineering embankments especially upstream. Modifications to the channel are possible but within the constraints of existing services and land ownership.		**R**	**£20K**
		River Margin		
2.	**Hutton Avenue Footbridge.** The bridge is well used for informal recreation and en route to work. It is a dilapidated concrete structure with chain link wire additions. The black gas pipe is particularly unattractive but an integral part of the structure. The structure requires a facelift in sympathy with the new image of the river, including new surfacing and railings etc.		**E**	**£20K**
3.	**Corrugated Iron Fence.** The fence borders a small paddock. Ideally it should be replaced. The planting of a hedge would be beneficial.		**E**	**£1K**
4.	**Grass Areas.** The large flat grass areas contain a scattering of small ornamental trees, some of which have been vandalised. A change in approach is required involving larger areas of a more naturalistic style of planting, particularly adjacent to the river.		**R**	**£5K**
5.	**Willows.** Conserve group on the right bank adjacent to Haughton Bridge.		**C**	**-**
6.	Control Himalayan balsam.		**R**	**£1K**
		Peripheral Areas		
7.	**Hedgerow.** Conserve this, the only significant planting in the section, helping to contain untidy back gardens.		**R**	**£1K**
8.	**Housing and Haughton Road Edges.** Both sides of the river have housing forming the visual envelope without the benefit of trees to soften its impact. Heavy traffic impacts on enjoyment of riverside. Achieve better relationships by a combination of mounding using excavations from the river works, and planting on a large scale. These measures could be compatible with flood defence measures.		**E**	**£20K**
9.	**Circulation.** The existing paths require resurfacing and new routes laid to accommodate major desire lines, e.g. to the bus stop.		**E**	*****
10.	**Entrance from Haughton Road.** This unwelcoming space requires the removal of dilapidated fencing and more attractive planting. In addition signage and the addition of seats would raise profile of corridor.		**E**	**£10K**
11.	**Citroen Garage.** The garage is well screened from the river on account of mixed ornamental planting to the rear of the property.		**C**	**-**



Detailed Survey

The section has been subject to flood defence work and has a pronounced terrace on one side of the left bank. There is little evidence of marginal vegetation and no riverside trees. The left bank consists of a large area of gang mowed grass with occasional small trees. The housing and road edges are weak and impart a poor visual quality to this section. The right bank is largely in private ownership. Opportunities for river corridor restoration are severely limited by existing gas pipe and private ownership.

7.0 RIVER RESTORATION WORKING GROUP PROPOSALS

The landscape assessment identified Area 5 and to a lesser extent Areas 4 and 6 as having most potential for modification to the river corridor and development of comprehensive restoration proposals.

It also highlighted the need to view these proposals in terms of their wider visual context and the recreation and management strategy of the Local Authority.

Two basic restoration options have been developed.

7.1 Design Ideas

The principal aim is to bring about an improvement in visual amenity and a more natural environment without compromising flood defences or general open space usage, in a way which integrates positively with the surrounding landscape.

A number of design ideas have been generated to support this basic aim. They are to:-

- restore sections of meandering channel;
- restoration of both channel and floodplain habitats with the reinstatement of a more natural flooding regime;
- provide a diversity of in-channel and bankside through differing sections and treatments;
- provide shoals on inside bends;
- introduction of riffles and pools;
- control rampant exotic species and introduce marginal vegetation;
- introduce bankside trees;
- establish and extend areas of woodland/scrub habitat outwith the immediate river corridor;
- alter management regimes to develop a more natural appearance;
- rationalise and improve outfalls along with improvement to water quality;
- improve public access and provide new pathways and bridge;
- remove or mitigate the impact of industrial structures;
- maximise the use of excavated material to screen out low quality edges;
- develop ideas for community development and ownership;
- develop ideas for interpretation and explanation of project aims and progress to the public.

7.2 Constraints and Further Site Investigation

- Topography
  Landform in particular imposes major limitations on the restoration opportunities of the river corridor, particularly in Areas 1 to 3 inclusive.

- Land Use
  The pattern of essentially residential and industrial development defines the limits of the open space and requires that the status quo is maintained in certain areas, e.g. significant areas of mown grass for general recreation, ball games, etc. The public perception exercise and the work of the Community Liaison Officer will provide information on how local people currently use the space and their aspirations for it and should help reconcile potential conflicts between providing informal recreation and an ecologically rich environment.

- Services
  Underground services, particularly drainage and the gas main which runs through Areas 5 and 6 limit the scope of river corridor alterations in these areas. Precise location of services, both in vertical and horizontal planes, and their degree of constraint need to be determined.

- Contaminants
  Samples of river silt and adjacent soils have shown levels of contamination, particularly with the river silt which will require careful excavation and placement of excavated material.

  Much of the periphery of the river corridor is the product of tipped material from various industrial processes over time. Inspection of historical records and site investigation is essential where major modification to landform is contemplated.

- Flooding
  It is important that the propensity of the area to flooding, already a problem in relation to some housing areas, is not increased as a result of any proposals. Hydraulic modelling of options is critical to ensure this. It is also important that the main paths of the new circulation system are not prone to flooding.

- Notable Landscape and Architectural Features
  Notable landscape features, trees and semi-natural vegetation should be conserved. The setting of the existing railway bridges should ideally be enhanced and certainly not detract from their architecture.

- Ecology
  Areas of existing nature conservation importance such as habitats for the Great Crested Newt provide constraints due to their sensitivity to change. "No go areas" should be identified and limitations of working imposed on contractors in specific areas at certain times of the year. Further research work due to occur in the spring may result in the need to impose further constraints in this respect.

- Topsoil
  It is expected that the topsoil within the corridor to be deep and fertile. This is a constraint as it will encourage the growth of a restricted range of vigorous species. The topsoil could be turned into an asset by stripping off areas and selling it off, and ploughing the profits back into the Project.

- Financial
  Although the immediate project funding is limited the Local Authority has a keen interest in the area and a rolling programme of improvements. Whilst accepting short term financial constraints the proposals spell out a vision for change which might be realised as part of a rolling programme over several years, perhaps with additional funds from the NRA and other existing financial contributors to the Project.

- Time
  The tight timescale of the River Restoration Project requires the scheme design to be frozen by 31 January 1995, and prior to this options need to be tested and a public consultation exercise carried out.

7.3 Opportunities for Change in Adjacent Areas (Fig. 17)

Figure 17 Landscape Strategy identifies the major constraints within the study area and identifies opportunities for radical changes to the river and its landscape context.

Darlington Borough Council's policy objectives in terms of improved riverside access, increased recreation provision and commitment to nature conservation related to management techniques mean that there is considerable scope for change within the overall study area.

The major opportunities may be summarised as follows:

- Restoration of the River Channel and Channel Margins
  To restore the channel to approaching its original state and a little like the existing reach near the Fujitsu Factory and the A1(M) Culvert (Grid Ref. NZ 280216-288214). The river here is narrower, shallower with riffles and gently sloping banksides. It follows a meandering course through a semi-natural floodplain and has groups of large riverside trees.

- Restoration of a More Natural Environment
  To alter significant areas of sterile, closely mown amenity grassland to encompass a wider range of habitats and extend the conservation value of the Rockwell Conservation Nature Area across the river to embrace much of the area south of the restored river corridor.

- Circulation
  To increase the options for informal recreation through increased provision of footpaths and a new bridge across the river, the location of which will be determined following public consultation.

- Visual & General Amenity
  To introduce additional carefully selected areas of mass tree and shrub planting to help screen low quality and skyline development such as industrial buildings and the railway embankment and to reduce the input of traffic along Haughton Road.

- To improve the appearance and immediate environment of key areas and features:

  Skerne Bridge
  Outfall sewer at Area 3
  Embankment and retaining wall at Area 3
  Railway embankment adjacent to Rockwell Conservation Nature Area
  Hutton Avenue footbridge
  Introduction of a well designed new footbridge

7.4 Opportunities for Further Research

- Interpretation
  The increased public access, wide ranging changes sought and the educational potential of the area indicate the need for high quality interpretation material. This could cover some of the fascinating history of the area in addition to providing an understanding of the conservation value of the area and the experimental nature of some of the work. The incorporation of high quality informative signage should be an integral element of the restoration proposals.

- Future Management and Maintenance
  The future management of the corridor requires detailed discussion between interested parties before the scheme design is frozen. Important factors that need to be addressed are budget and definition of responsibilities. Public perception of the restored river will be shaped by a number of issues, including effective management in terms of publicly accepted objectives. Community involvement and the promotion of a sense of ownership will be critical to the long term success of the project. Detailed consideration is required to reduce maintenance costs and facilitate operations. The development of a management plan for the corridor is recommended to identify the maintenance work involved, approximate costs and responsibilities.

- Archaeology
  Trial pits and analysis may provide information on the history of the river, vegetation and man's activities through time.

- Environmental Monitoring
  As this is a demonstration project, detailed monitoring is required throughout the duration of the three year scheme in order to plot the success of the scheme.

8.0 SUMMARY AND CONCLUSIONS

8.1 The process of industrialisation that has occurred along the river has brought about a radical change to the river corridor and its associated ecology. Both have been greatly simplified. The intimate pattern of meanders as shown on the 1857 Ordnance Survey plan has been largely straightened and canalised. The associated meadows and waterside vegetation have also disappeared to be replaced by tipped industrial waste, now largely recolonised, large areas of mown grass and a number of rank areas of invasive exotic species such as Himalayan balsam.

The process of intensive industrialisation of the C19 and early C20 was replaced in the 1950s onwards with housing development to the north and at the south east corner of the study area.

The 1980s and 90s saw an increased emphasis on recreation and amenity issues and a change in perception of the value of natural and semi-natural habitats, conservation and green issues generally.

Against this backdrop the current demonstration project undertaken jointly with the River Restoration Project provides an excellent vehicle for developing appropriate restoration techniques and increasing the recreation and conservation potential of the area in a way which complements the policy objectives of the Local Authority.

The Local Authority has a central role in ensuring the success of the proposals as the major landowner and manager with its own agenda of policy initiatives and funds for environmental improvement works.

Acceptance by the wider community is also fundamental to the long term success of the project. The public perception survey and subsequent public meeting are of great importance in trying to develop ideas which will be valued.

8.2 The established pattern of surrounding land use and the limitations imposed by landform, particularly to the west of Five Arches Bridge are significant constraints in themselves. In addition the gas main and drainage runs restrict the options for channel restoration in Areas 5 and 6.

Proposals have also to recognise the potential conflicts of some objectives such as reconciling increased public access with nature conservation.

8.3 The major opportunities for restoration and enhancement lie upstream of Five Arches Bridge. The River Restoration Project Working Group's detailed proposals for channel restoration will take place in Area 5. These will be complemented by new access and management regimes which have the potential to extend the area of real nature conservation value from the Rockwell Nature Reserve eastward to housing in the southern portion of the site fronting Devonshire Drive.

In addition, an increased range of habitats can be provided with some areas eventually dominated by woodland while others remain as scrub and wetland with marginal planting together with significant areas of traditionally mown grassland for general amenity purposes. Improved public access through new pathways and a further river crossing will greatly enhance the recreation potential of the area.

8.4 New management regimes are required to underpin the restoration works and proposals to diversify habitats and produce areas of greater conservation value. It is recommended that a Management Group should be set up involving the main participants from the Riverside Restoration Project Working Group but also some of the knowledgeable and well motivated people from within the local community and local schools. Post project monitoring, covering a variety of subjects from the development of ecology to public perception, should be addressed by the Group.

8.5 This assessment has sought to provide a landscape context within which change should take place and provide a broad vision which can only be developed over a number of years in addition to more detailed guidance on specific proposals.

The essential baseline information on a character and quality will allow for monitoring of proposals and an assessment of their success in relation to the stated objectives of the Riverside Restoration Project.

9.0 ACKNOWLEDGEMENTS

9.1 Because of the short time period of the study the consultation process was limited largely to members of the River Restoration Project Skerne Working Group which includes the following:

Liz Chalk	SWG Chairman	NRA
Jeremy Biggs	SWG Deputy Chairman	Pond Action
Chris Spray	SWG Recreation & Cons.	Northumbrian Water plc
Peter Roberts	SWG Planning - Local Plans	Darlington BC
Marion Silk	SWG Secretariat	NRA
John Irwin	SWG Consultant Engineer	Sir Wm Halcrow & Ptnrs
Malcolm Newson	SPB/RRPB Geomorphology	Newcastle University
Richard Vivash	SPB/RRPB Gen. Manager	RRP
Martin Janes	SPB/RRPB Proj. Co-ord.	RRP/Silsoe College
Nigel Holmes	RRPB Chairman	
Jim Gordon	Head of Engineering & Agency Management	Darlington BC
Alan Snape	Principal Engineer	Northumbrian Water plc
Brian Syms	Operations Manager	Northumbrian Water plc
Maureen Fordham	Public Perception Consultant	Middlesex University
Karen Fisher	Hydraulic Modelling	HR Wallingford
Olivia Mellors	Project Officer	NRA
Anne Sansom	Ecologist - Conservation	NRA
Deidre Murphy	Community Liaison Officer	NRA
David Clarke	Flood Defence Engineer	NRA

9.2 In addition to this, Ray Sunman, Projects and Administration Manager, Department of Development Services at Darlington Borough Council has provided information about the history of the study area and the Borough's proposals for it.

9.3 Others who have been consulted include Richard Copas of NRA Thames Region, Ian Hodge of NRA Flood Defence, Mike Hartman of the Durham County Design and Conservation Team, Julie Stubbs, Countryside Section of Durham County Council, Cliff Evans of Durham Wildlife Trust, Keith Buchanan, Regional Officer of the Countryside Commission, and Miss Gillan Wilson, a local resident who has supplied useful information about the ecology of the site.

9.4 The plans are based on Ordnance Survey maps provided by Darlington Borough Council - Department of Property Services, and are here reproduced with the permission of the Controller of Her Majesty's Stationery Office.

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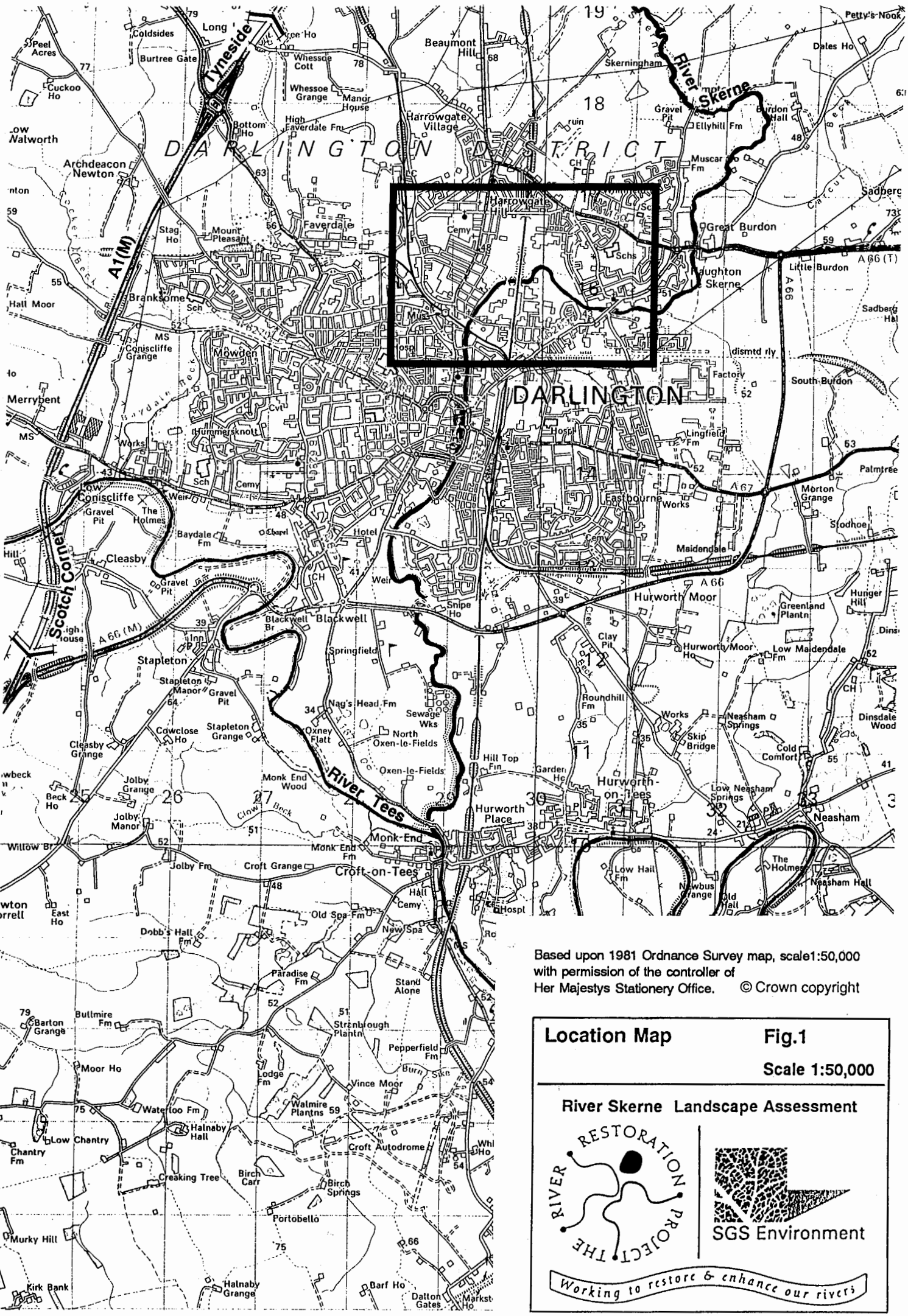
11.0

APPENDIX

ILLUSTRATIONS


DARLINGTON DISTRICT
DARLINGTON
Harrowgate Hill
Faverdale
Great Burdon
Mowden
Branksome
Coniscliffe Grange
Low Coniscliffe
Cleasby
Stapleton
Blackwell
Hurworth Moor
Hurworth-on-Tees
Croft-on-Tees
Monk End
Neasham
Harrowgate Village
Beaumont Hill
Archdeacon Newton
Skerningham
Eastbourne
Maidendale
Low Maidendale
Neasham Springs
Hurworth Place
Croft Autodrome
Halnaby Hall
Pepperfield Fm
Vince Moor
Walmire Plantns
Portobello
Birch Springs
Creaking Tree
Low Chantry
Murky Hill
Kirk Bank
Halnaby Grange
Barf Ho
Dalton Gates
Tyneside
A1(M)
A66 (M)
A66
A67
River Skerne
River Tees
Scotch Corner
Based upon 1981 Ordnance Survey map, scale1:50,000
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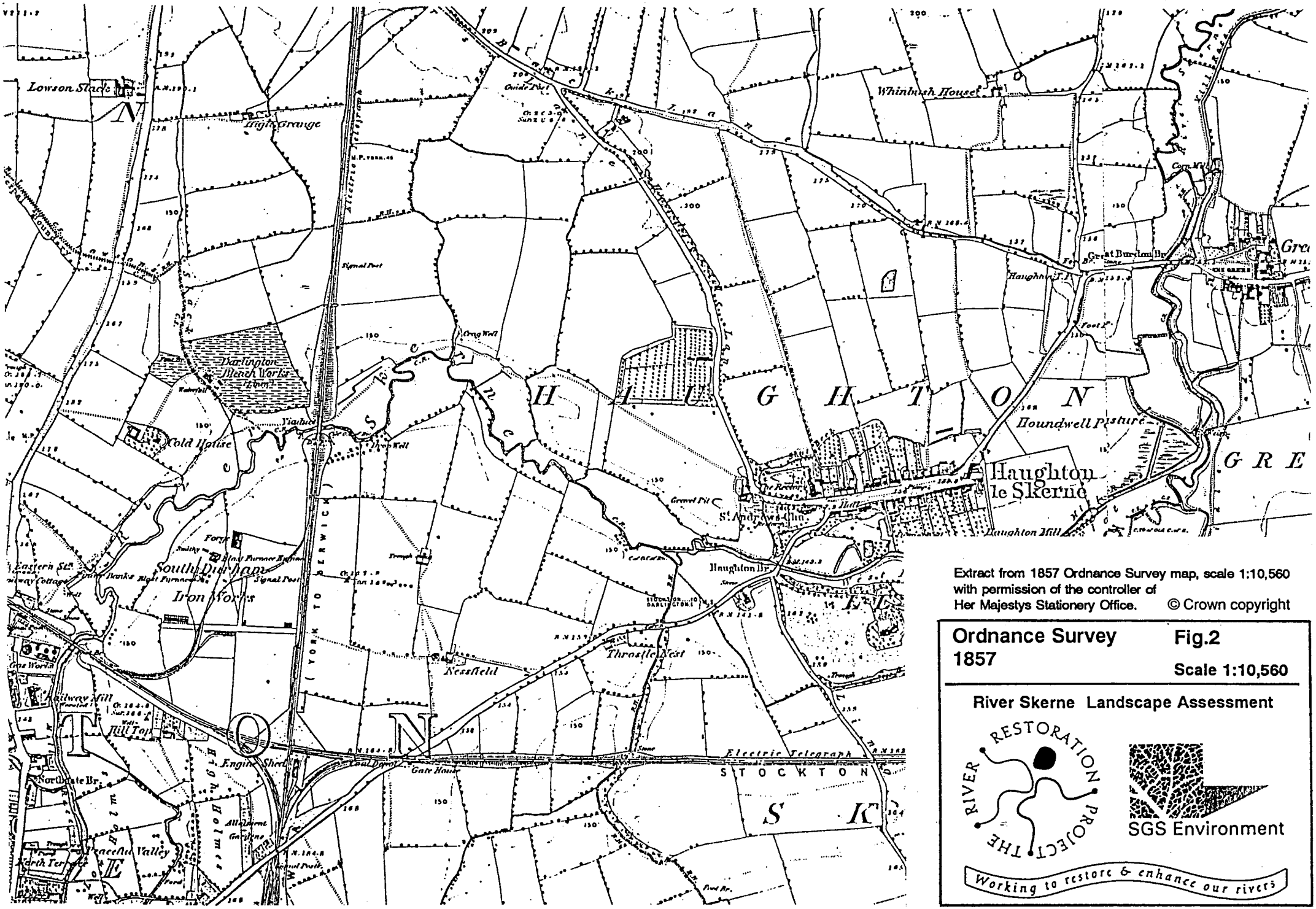
Location Map
Fig.1
Scale 1:50,000
River Skerne Landscape Assessment
THE RIVER RESTORATION PROJECT
SGS Environment
Working to restore & enhance our rivers



Extract from 1857 Ordnance Survey map, scale 1:10,560 with permission of the controller of Her Majestys Stationery Office.

Ordnance Survey 1857 **Fig.2**

Scale 1:10,560

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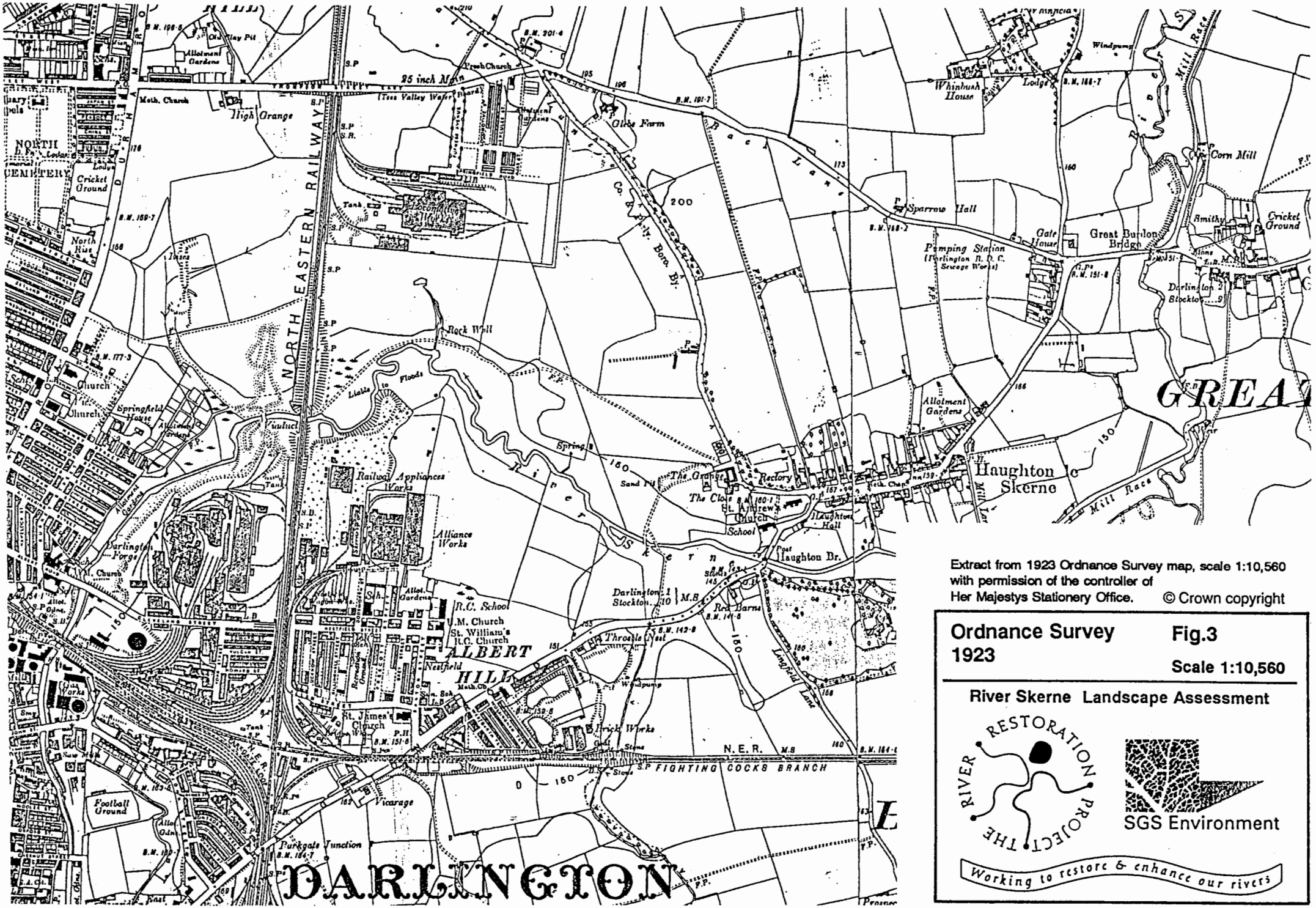

Extract from 1923 Ordnance Survey map, scale 1:10,560 with permission of the controller of Her Majestys Stationery Office.

Ordnance Survey 1923

Fig.3

Scale 1:10,560

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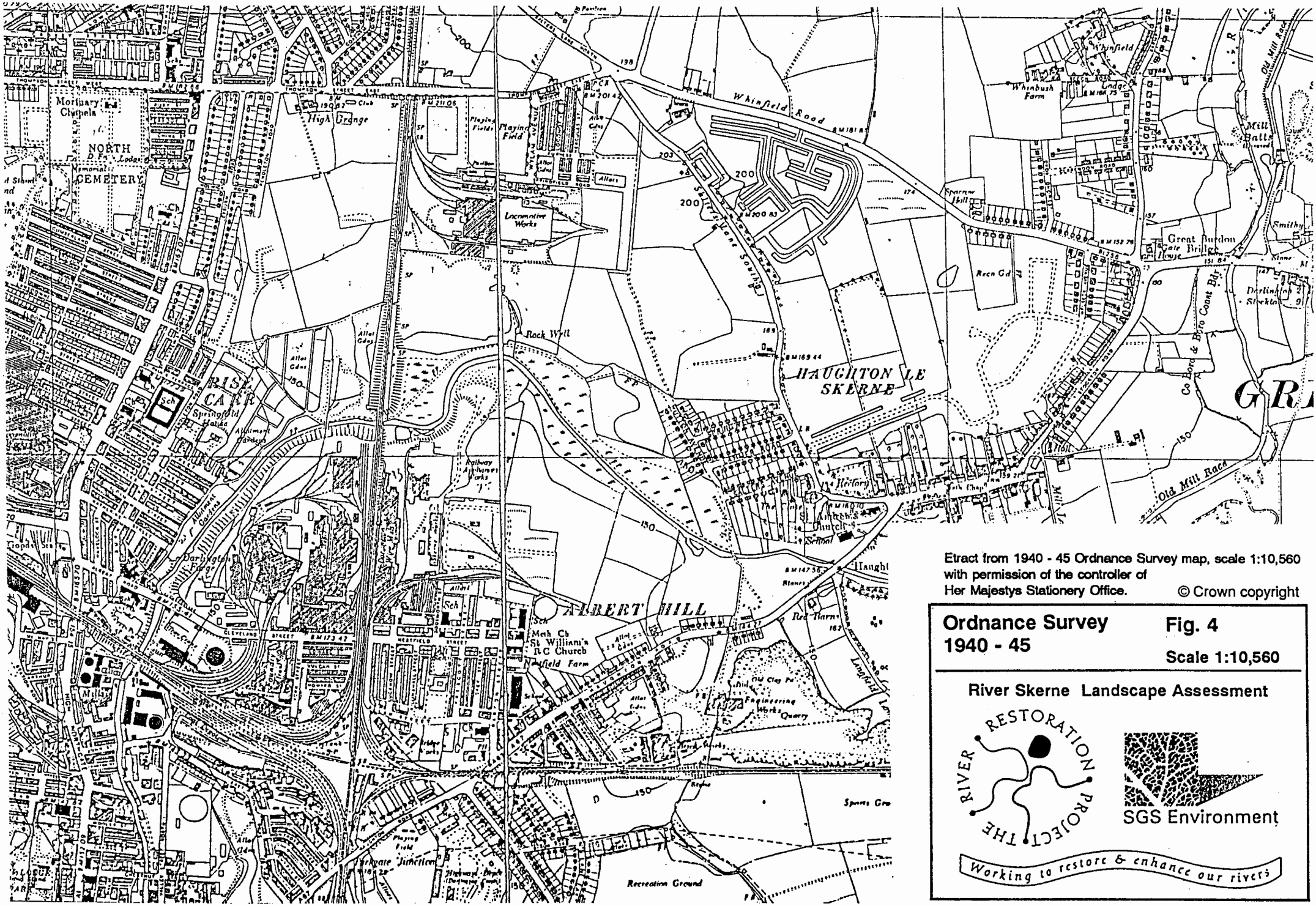

Etract from 1940 - 45 Ordnance Survey map, scale 1:10,560 with permission of the controller of Her Majestys Stationery Office.

Ordnance Survey 1940 - 45

Fig. 4

Scale 1:10,560

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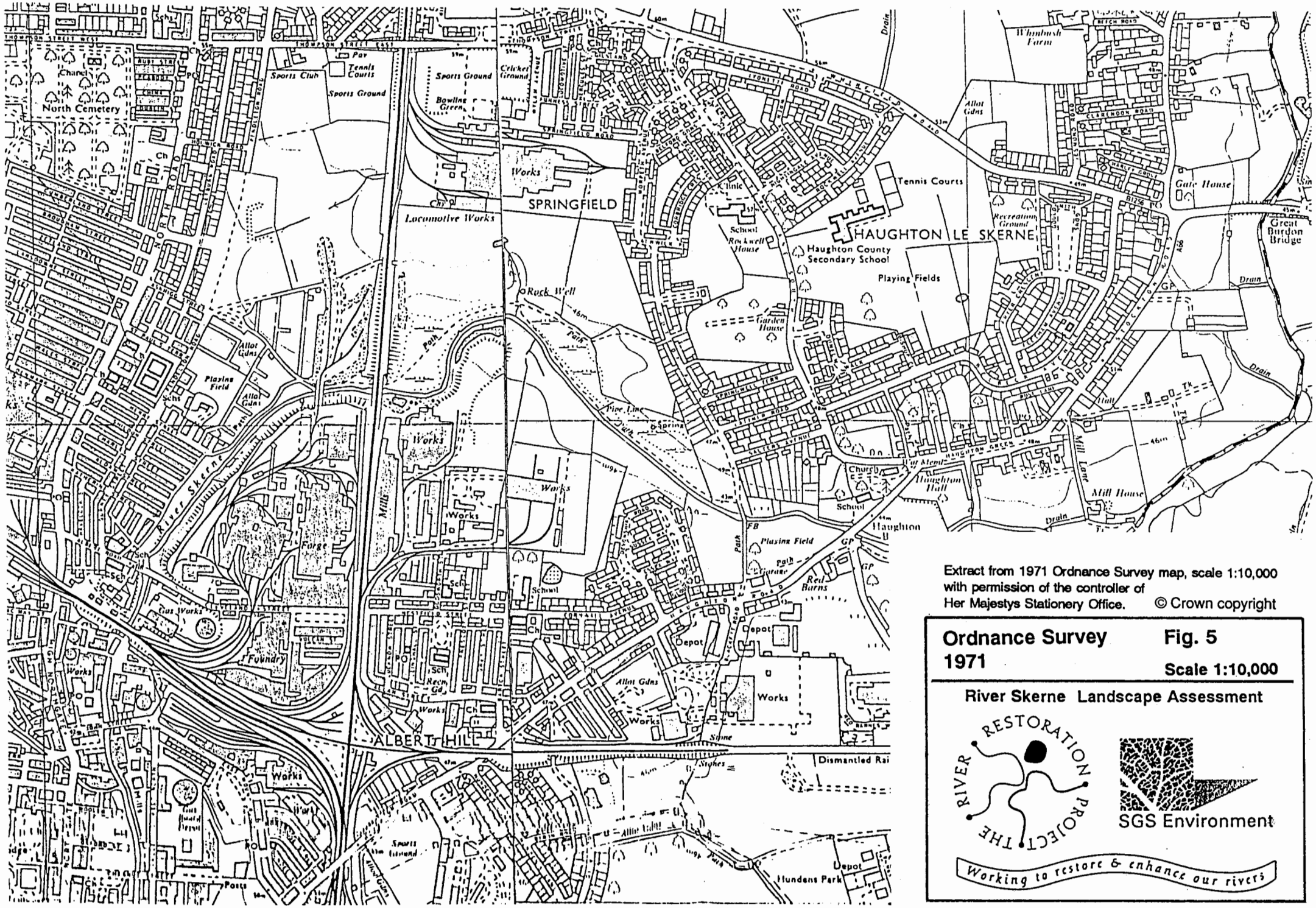

Extract from 1971 Ordnance Survey map, scale 1:10,000 with permission of the controller of Her Majestys Stationery Office. © Crown copyright

Ordnance Survey 1971 — **Fig. 5** — **Scale 1:10,000**

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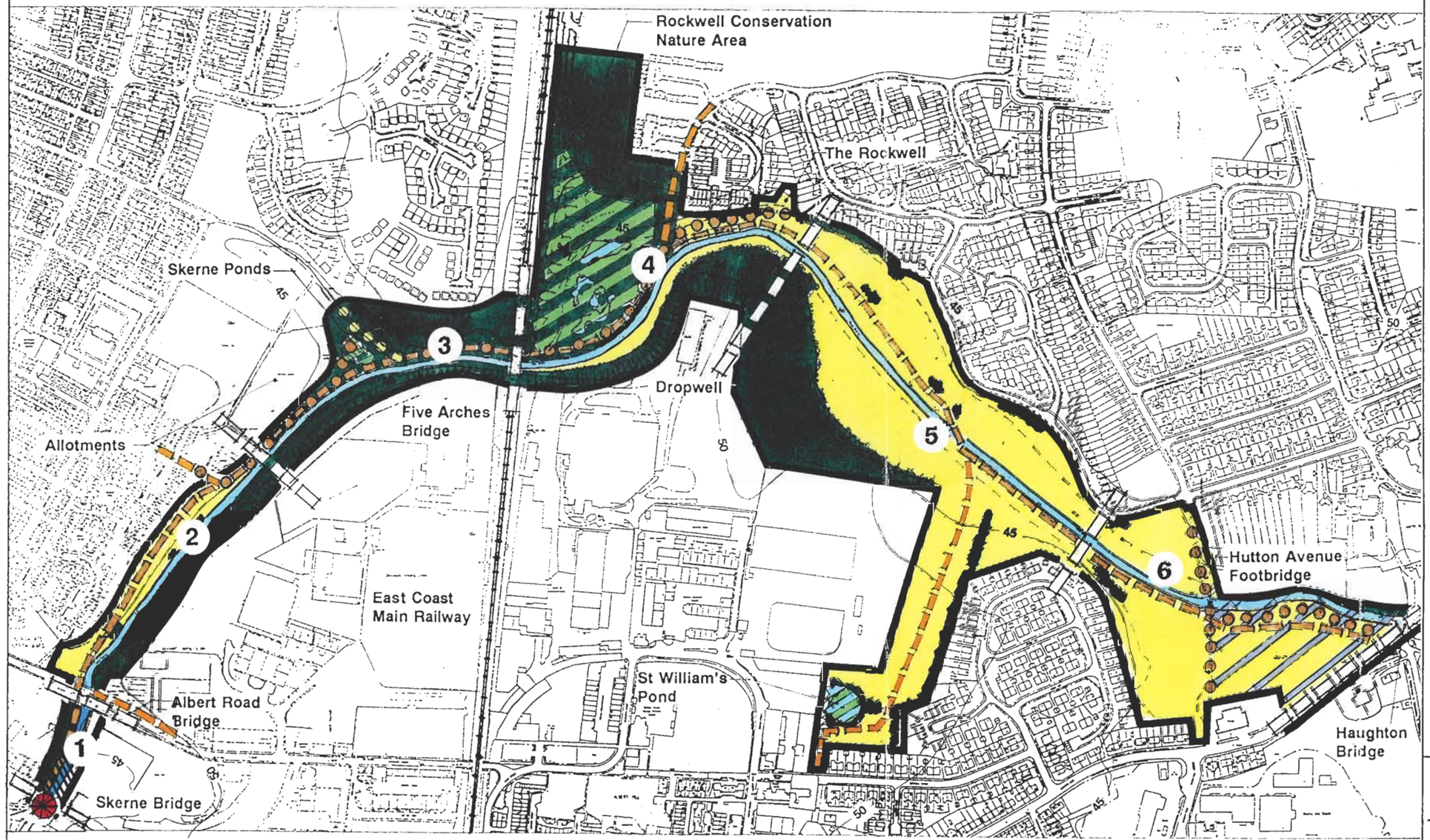

Key

- Study Area
- Extent of Section
- Contours
- Embankment
- Limit of floodplain
- Water
- Semi-natural vegetation
- Amenity grass
- Public footpath
  Public bridleway
- Site of Nature
  Conservation Interest
- Haughton Village
  Conservation Area
- Scheduled Ancient
  Monument
- Proposed recreation route *
  Cycle route network *
- Highway
  safeguarding area *

* Darlington Borough Council
Draft Local Plan

Survey

Fig. 6

Scale 1:5000

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Rockwell Conservation Nature Area

The Rockwell

Skerne Ponds

4

3

Dropwell

Five Arches Bridge

5

Allotments

2

6

Hutton Avenue Footbridge

East Coast Main Railway

St William's Pond

Albert Road Bridge

Haughton Bridge

1

Skerne Bridge

Key

- Study Area
- Extent of Section
- Road
- Railway
- Nature conservation interest area
- Semi-natural vegetation
- Visual enhancer
- Visual detractor
- Low quality margin
- Extent of visual envelope outside Study Area
- Maximum impact of canalised section
- Formal and informal grass

Visual Analysis **Fig. 7**

Scale 1:5000

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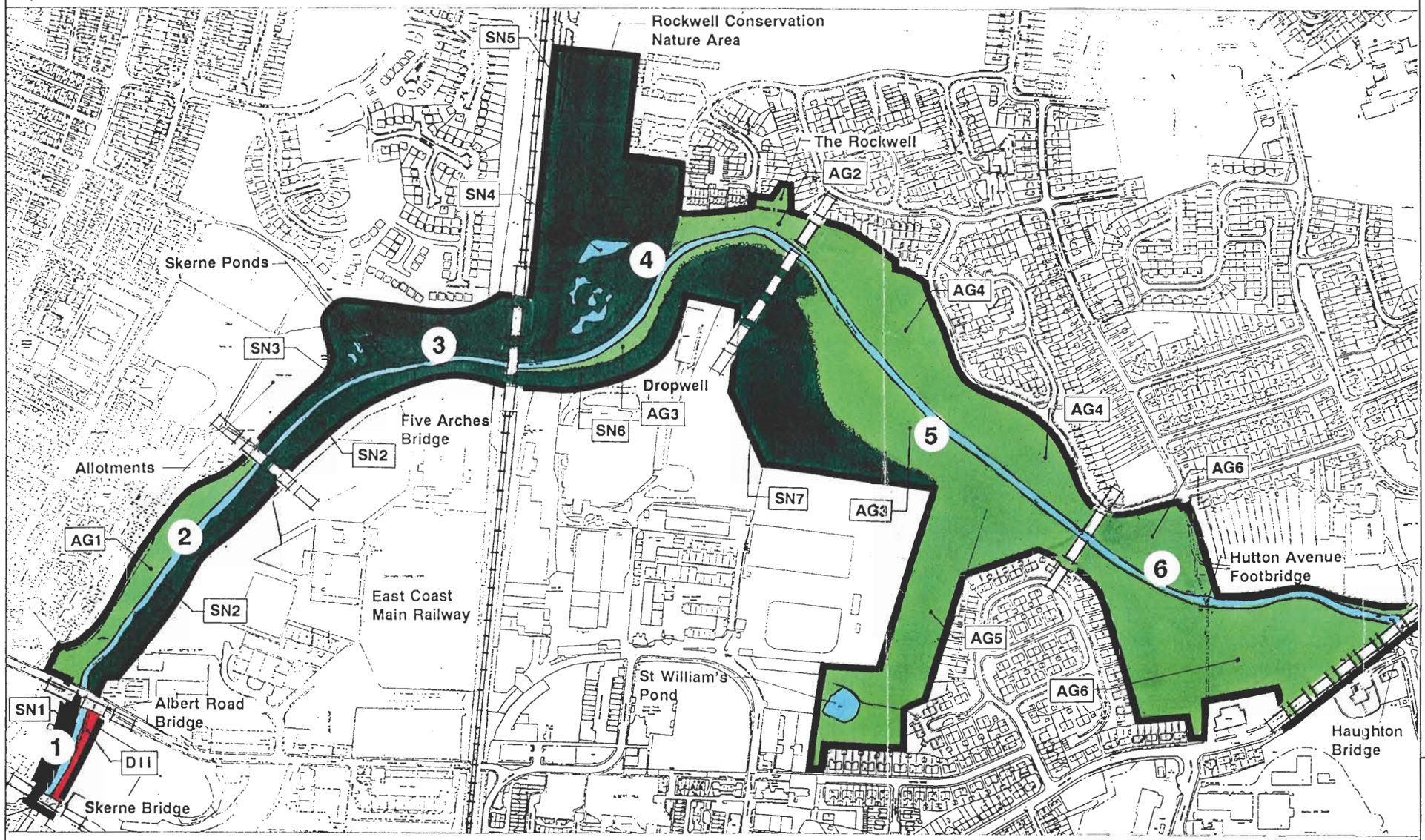

Key

- Study Area
- Extent of Section
- Urban Public Open Space:- Amenity grass and ornamental planting (AG)
- Urban Public Open Space:- Semi-natural vegetation and reclaimed land (SN)
- Degraded Industrial Space:- dominated by man made elements (DI)

Code	Quality Class	Management Strategy
AG1	3	Conservation/Restoration
AG2	2/3	Conservation/Restoration
AG3	3	Restoration
AG4	2/3	Conservation/Restoration
AG5	3	Restoration
AG6	3/4	Restoration
SN1	3	Enhancement
SN2	2	Conservation
SN3	2/3	Conservation/Restoration/ Enhancement
SN4	2	Conservation
SN5	3	Restoration
SN6	2	Conservation
SN7	3	Restoration
DII	4	Enhancement

Macro Survey **Fig. 8**

Scale 1:5000

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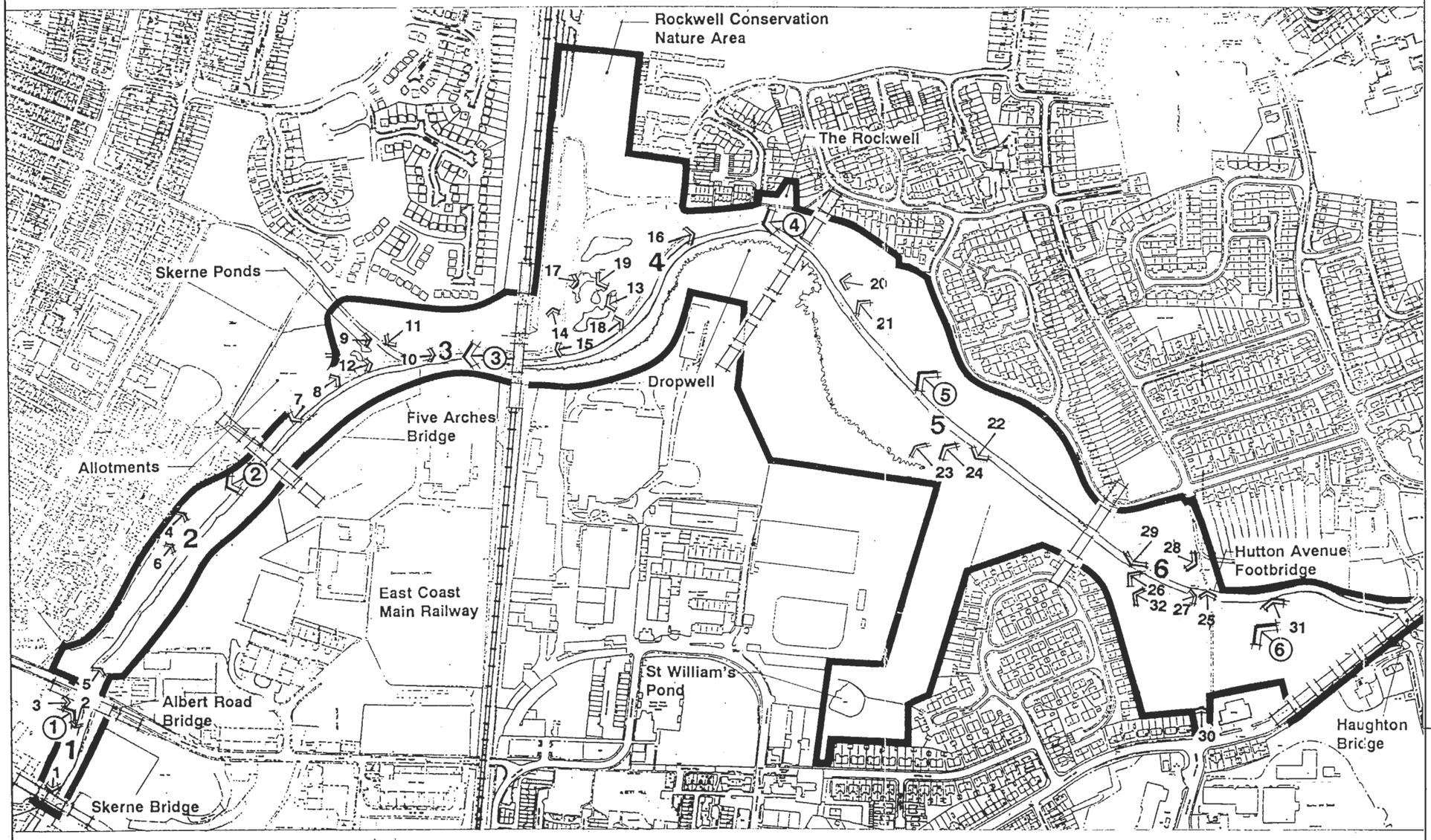

Key

14 — Photograph and Direction

5 — Character Sketch and Direction

Based upon 1991 Ordnance Survey map, scale 1:2,500 with permission of the controller of Her Majestys Stationery Office. © Crown copyright

Key Plan of Character Sketches and Photographs

Fig. 9

Scale 1:5000

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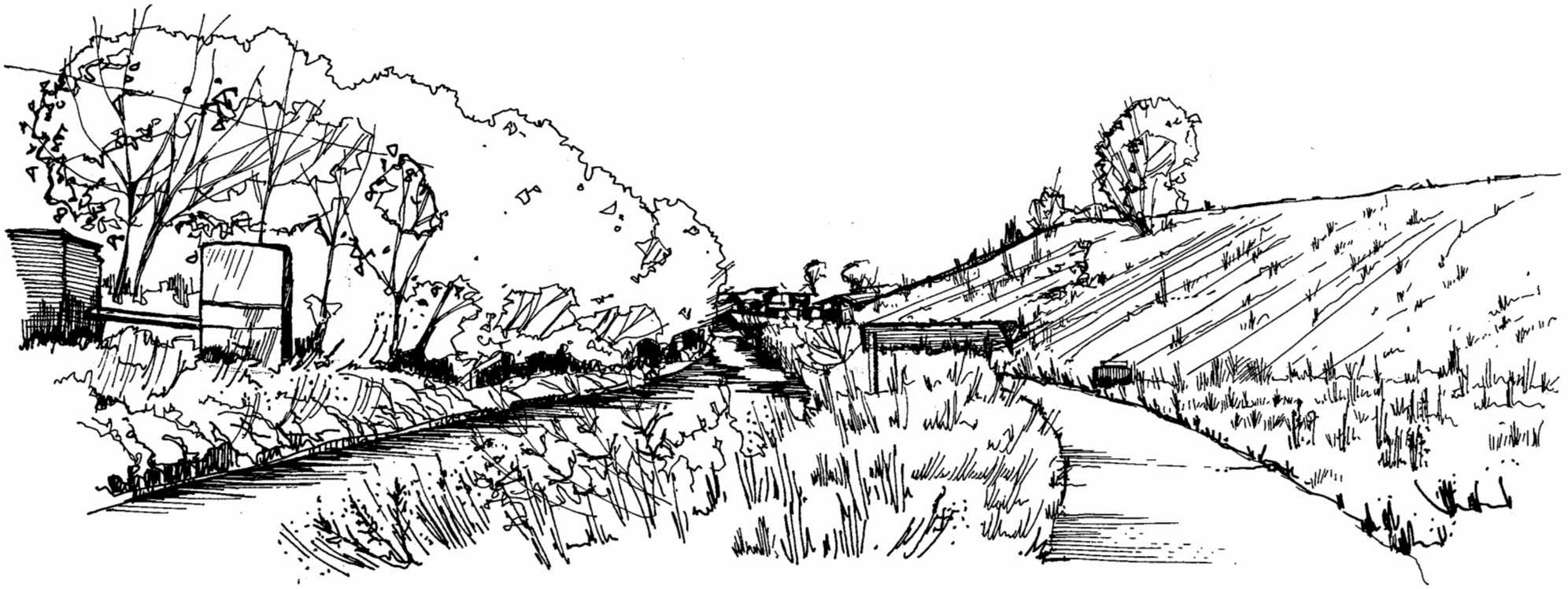
River Skerne
Landscape Assessment

Fig. 10 - Character Sketch - Section 1

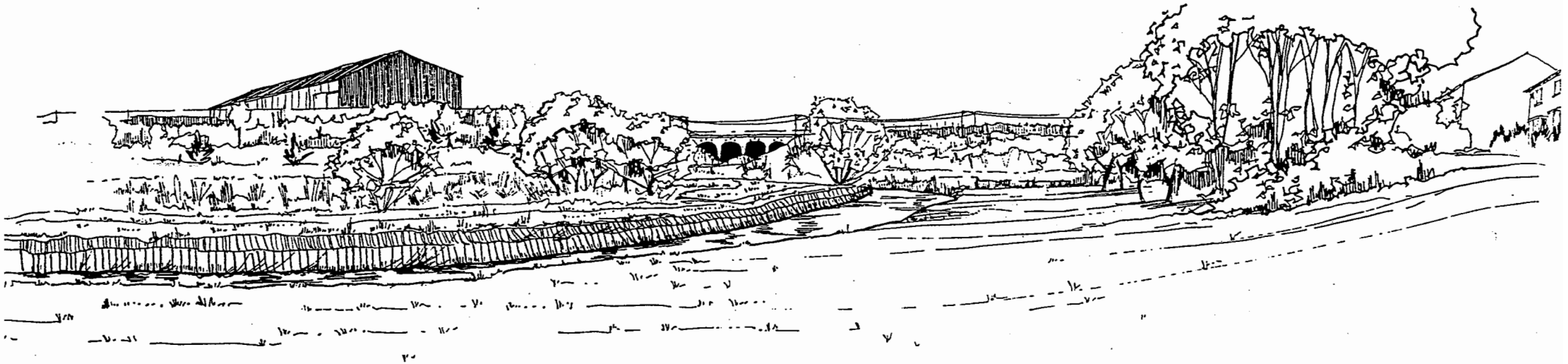
River Skerne
Landscape Assessment

Fig. 11 - Character Sketch - Section 2



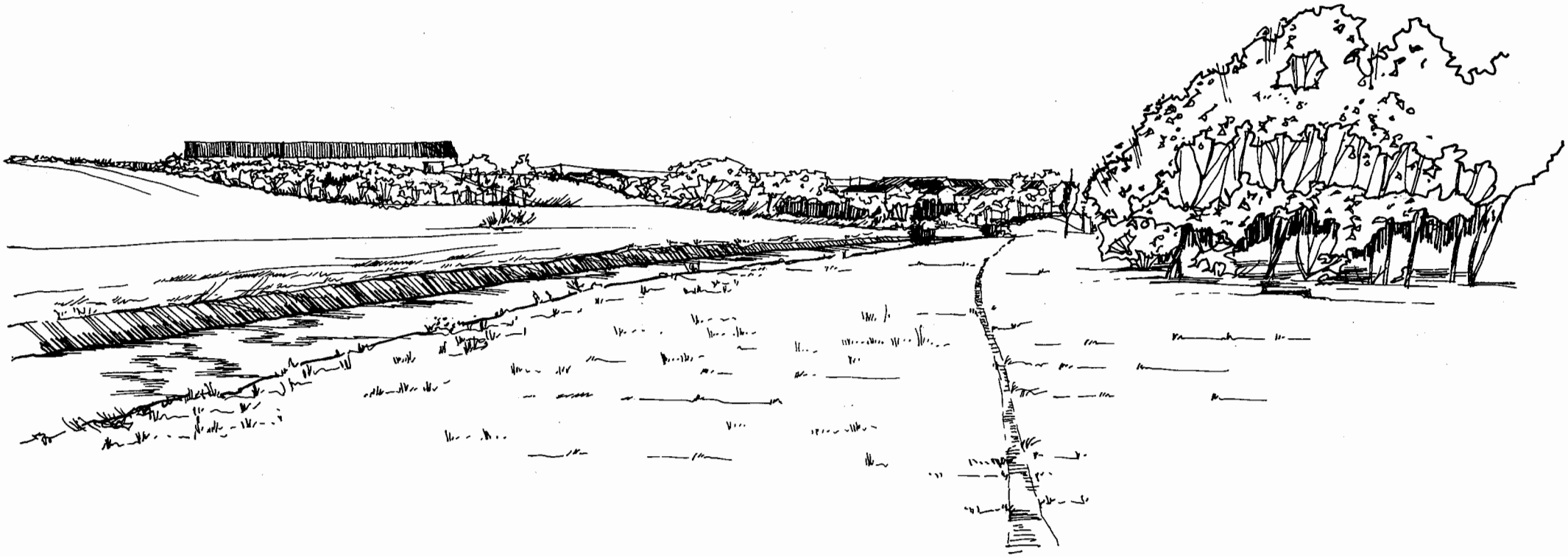
River Skerne
Landscape Assessment

Fig. 12 - Character Sketch - Section 3



River Skerne
Landscape Assessment

Fig. 13 - Character Sketch - Section 4



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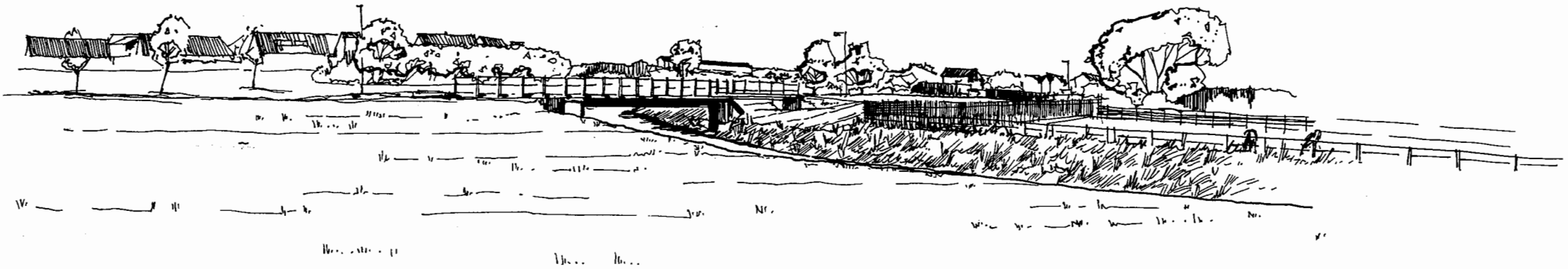
Landscape Assessment

Fig. 14 - Character Sketch - Section 5



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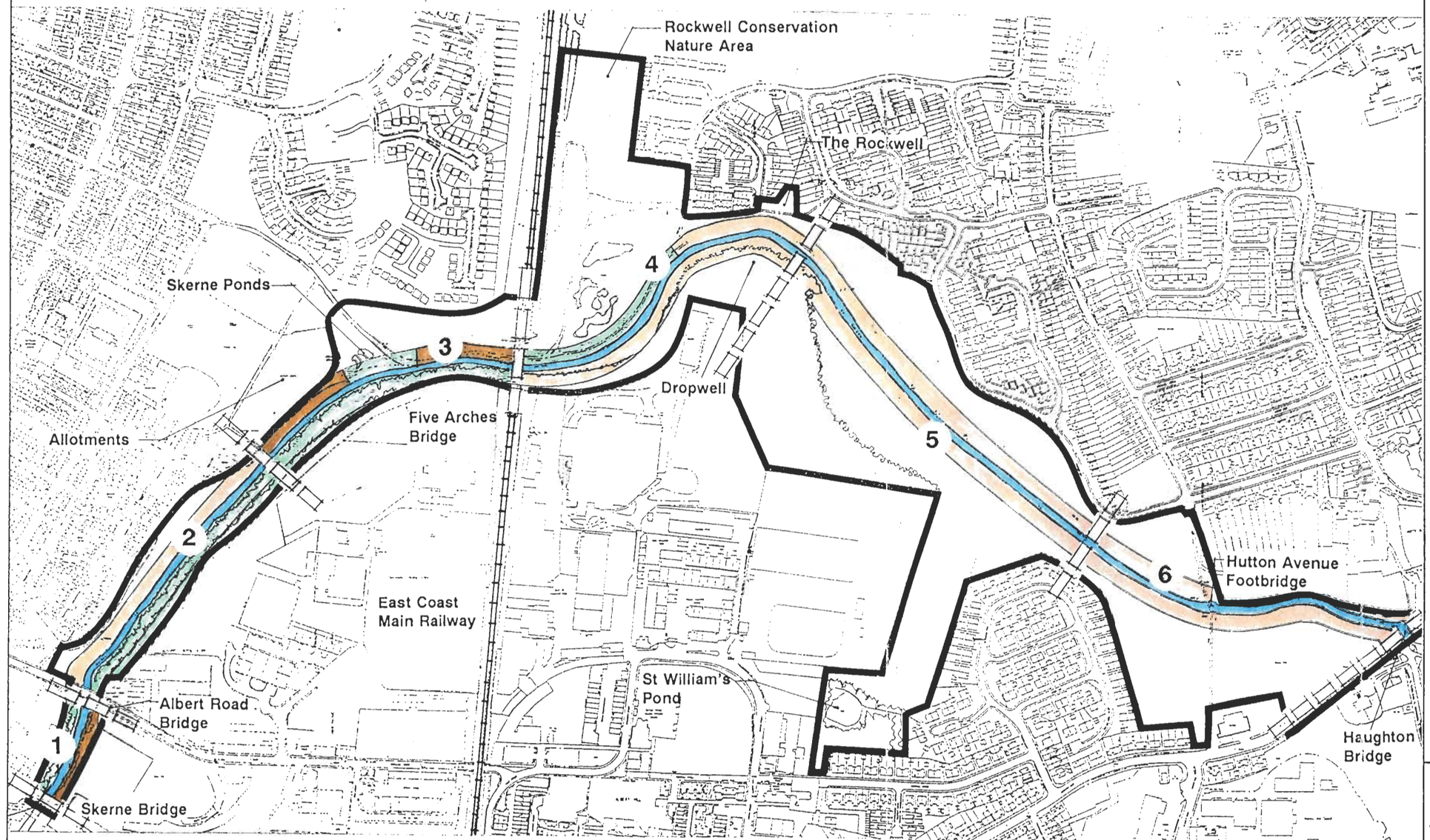
Landscape Assessment

Fig. 15 - Character Sketch - Section 6



Key

- Study Area
- Extent of Section
- Suburban Enclosed. Predominantly enclosed by walls, buildings, structures or fencing
- Suburban Open. Dominance of buildings lessened by wide visual enclosure
- Semi Natural Enclosed. Enclosed by trees or shrubs and vegetated banks

Quality Class	Detailed Sheet No
2/3	2
3	3,4,5,6
3/4	1

Micro Survey **Fig. 16**

Scale 1:5000

River Skerne Landscape Assessment

THE RIVER RESTORATION PROJECT

SGS Environment

Working to restore & enhance our rivers

Rockwell Conservation Nature Area

The Rockwell

Skerne Ponds

Allotments

Five Arches Bridge

Dropwell

East Coast Main Railway

St William's Pond

Albert Road Bridge

Skerne Bridge

Hutton Avenue Footbridge

Haughton Bridge

1

2

3

4

5

6

Key

- Study Area
- Extent of Section
- Existing line of river
- Opportunity for radical change to line of river
- Conserve and enhance semi-natural vegetation
- Conserve and enhance semi-natural woodland
- Opportunity for tree planting
- Retain existing mown amenity grass
- Opportunity for radical management changes to existing grass
- Opportunity for creating significant viewpoint
- Retain and upgrade existing path network
- Opportunity for new formal paths
- Opportunity for new informal paths
- Optional locations for new bridge

Landscape Strategy **Fig. 17**

Scale 1:5000

River Skerne Landscape Assessment

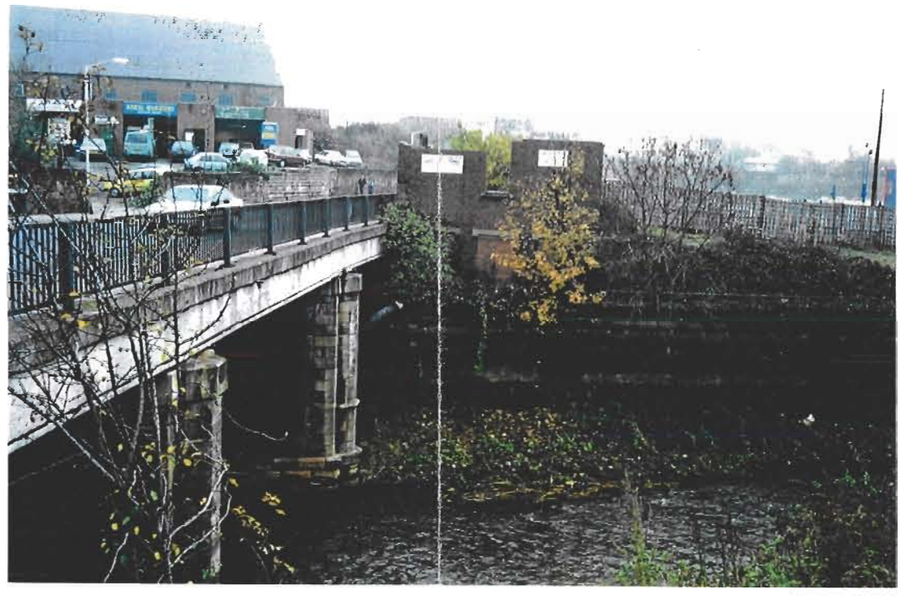
RIVER RESTORATION PROJECT

SGS Environment

Working to restore & enhance our rivers

1

2



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River Skerne
Landscape Assessment

Fig. 18 - Photographs - Section 1

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River Skerne
Landscape Assessment

Fig. 19 - Photographs - Section 2

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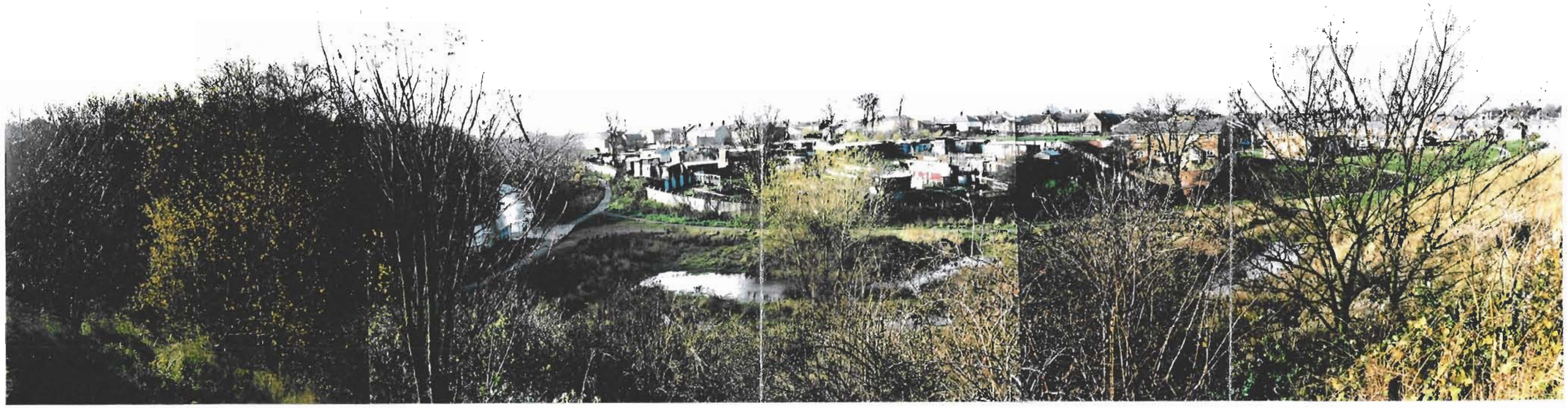
River Skerne
Landscape Assessment
Fig. 20 - Photographs - Section 3



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Landscape Assessment

Fig. 21 - Photographs - Section 3

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Landscape Assessment

Fig. 22 - Photographs - Section 4

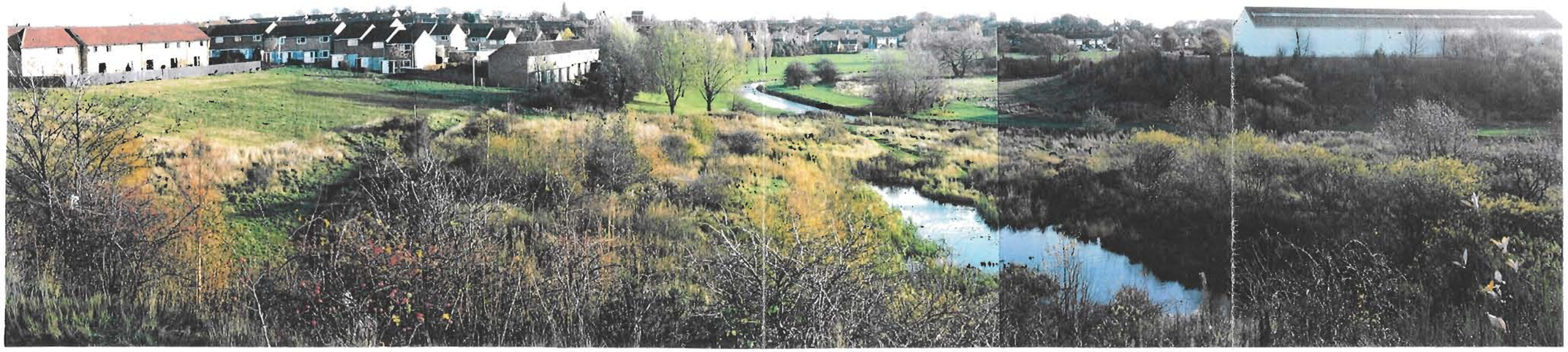

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Fig. 23 - Photographs - Section 4

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Fig. 24 - Photographs - Section 5

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Fig. 25 - Photographs - Section 5

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Fig. 26 - Photographs - Section 6

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Landscape Assessment

Fig. 27 - Photographs - Section 6