

RIVER IRWELL  
CATCHMENT MANAGEMENT PLAN  
CONSULTATION REPORT  
CHAPTER THREE - RIVER ROCH SUB-CATCHMENT



NRA

*National Rivers Authority  
North West Region  
September 1994*

National Rivers Authority  
Information Centre  
Head Office  
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**IRWELL CATCHMENT MANAGEMENT PLAN**  
**CONSULTATION REPORT**

**CHAPTER THREE - RIVER ROCH SUB-CATCHMENT**

**Front Cover photograph : River Roch, Gigg Lane, Bury**

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**RIVER ROCH  
CONSULTATION REPORT**

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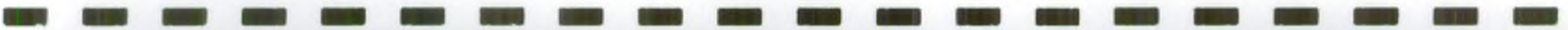
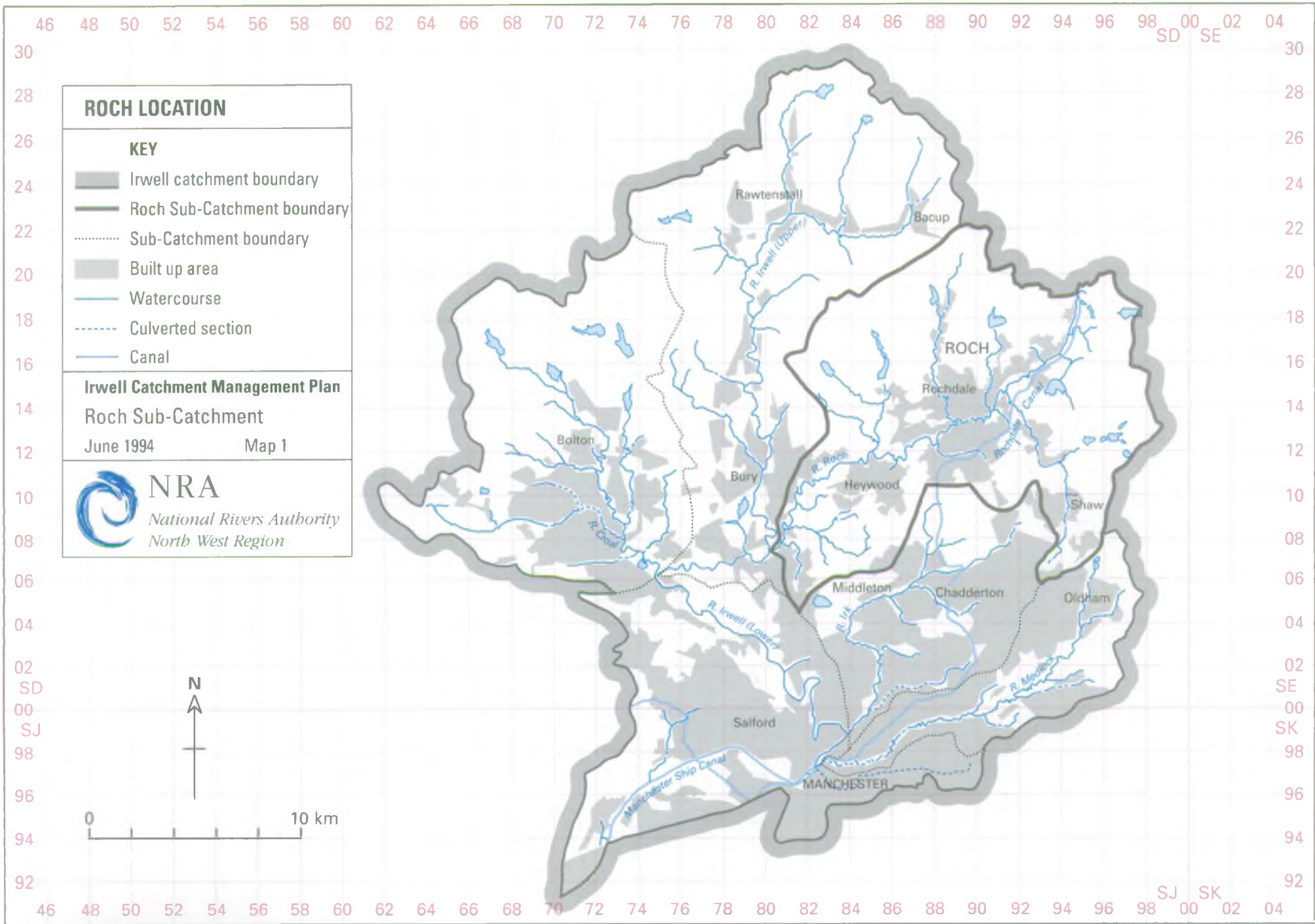
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## RIVER ROCH SUB-CATCHMENT DETAILS (MAP 1)

Area 190 km<sup>2</sup>

Population 181,000

### MAIN TOWNS AND POPULATIONS

Rochdale	94,439
Heywood	30,283
Littleborough	11,693
Milnrow	11,304
Shaw	10,309

### ADMINISTRATIVE DETAILS

#### District Councils:-

Rochdale Metropolitan Borough Council  
Oldham Metropolitan Borough Council (Part)  
Bury Metropolitan Borough Council (Part)  
Rossendale Borough Council (Part)

NRA:- North West Region - South Area

Water Companies:- North West Water Ltd.

Principal Sewage Treatment Works:- Rochdale

### TOPOGRAPHY

Ground Levels	Min. Level	65 mAOD
	Max. Level	470 mAOD

### GEOLOGY

Solid Geology:- Predominantly Carboniferous Millstone Grit and Coal Measures

Superficial Geology:- Variable - Glacial Till (Boulder Clay), Sand and Peat

## **WATER RESOURCES**

### **Availability:-**

Groundwater - Generally site specific  
Surface water - Good availability

## **FLOOD PROTECTION**

Length of Designated Main River:- 102.97 km.  
(maintained by NRA)

Riparian owned debris screens cleaned 7  
by the NRA on a best endeavours basis

## **WATER QUALITY**

### **Length of River in National Water Council Class 1993 Assessment**

Class 1A (Very Good)	8.3 km.	Class 3 (Poor) 26.6 km.
Class 1B (Good)	8.5 km.	Class 4 (Bad) 1.0 km.
Class 2 (Fair)	40.6 km.	

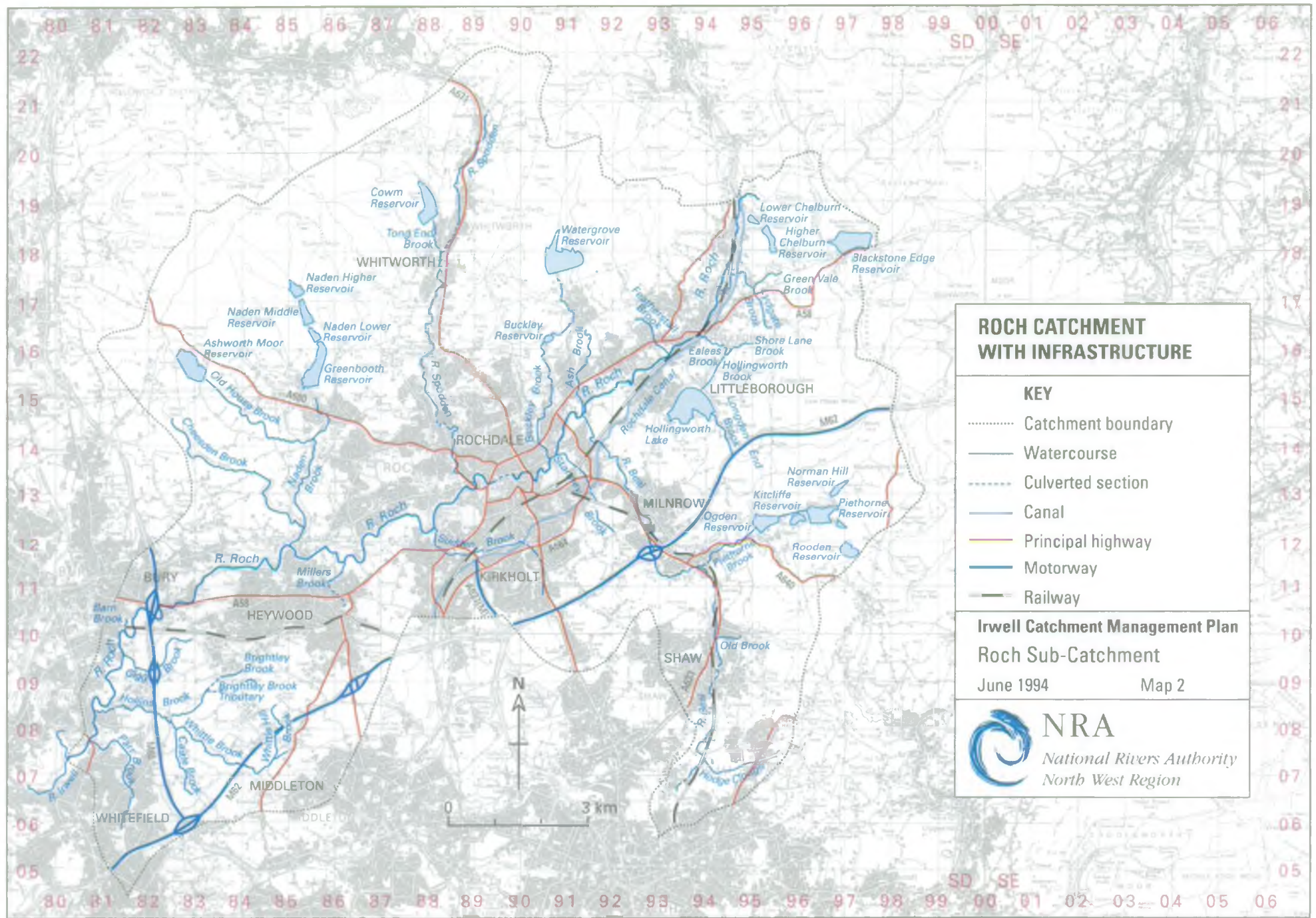
## **FISHERIES**

Length of salmonid fishery:- 17 km.  
cyprinid fishery:- 1.5 km.

## **CONSERVATION**

Number of Sites of Special Scientific Interest (SSSI) in the catchment	0
Number of SSSI's which are associated with the River Corridor and/or wetland habitats	0
Number of Site of Biological Importance (SBI) in the catchment	34
Number of SBI's associated with River Corridor and/or wetland habitats	30





**ROCH CATCHMENT WITH INFRASTRUCTURE**

- KEY**
- ..... Catchment boundary
  - Watercourse
  - - - - - Culverted section
  - Canal
  - Principal highway
  - Motorway
  - Railway

**Irwell Catchment Management Plan**  
**Roch Sub-Catchment**  
 June 1994                      Map 2





# 1. INTRODUCTION

## 1.1 CATCHMENT DESCRIPTION (MAP 2)

The River Roch flows south west from its source near Summit, through Littleborough and Rochdale. Beyond Rochdale town centre the river runs west through a narrow valley to join the River Irwell at Blackford Bridge, north of Whitefield.

## 1.2 HYDROLOGY

The headwaters of the River Roch rise at an altitude of over 400 metres AOD in the Pennines to the north east of Littleborough. Some of the headwaters are intercepted by catchwaters feeding reservoirs on the summit at Blackstone Edge. The headwaters are fairly steep moorland catchments, falling over 200 metres in less than 2 kilometres after which the entire valley, apart from parts of minor tributaries draining the northern side of the basin, are highly developed both industrially and residentially.

Most of the north bank tributaries rise on open moorland and the headwaters have been developed for water supply purposes for the local towns, especially Rochdale, and owe their existence in times of low flow to statutory compensation water discharges.

The rainfall totals range over 1500 mm along the northern flanks of the catchment to just over 1100 mm prior to the Irwell confluence.

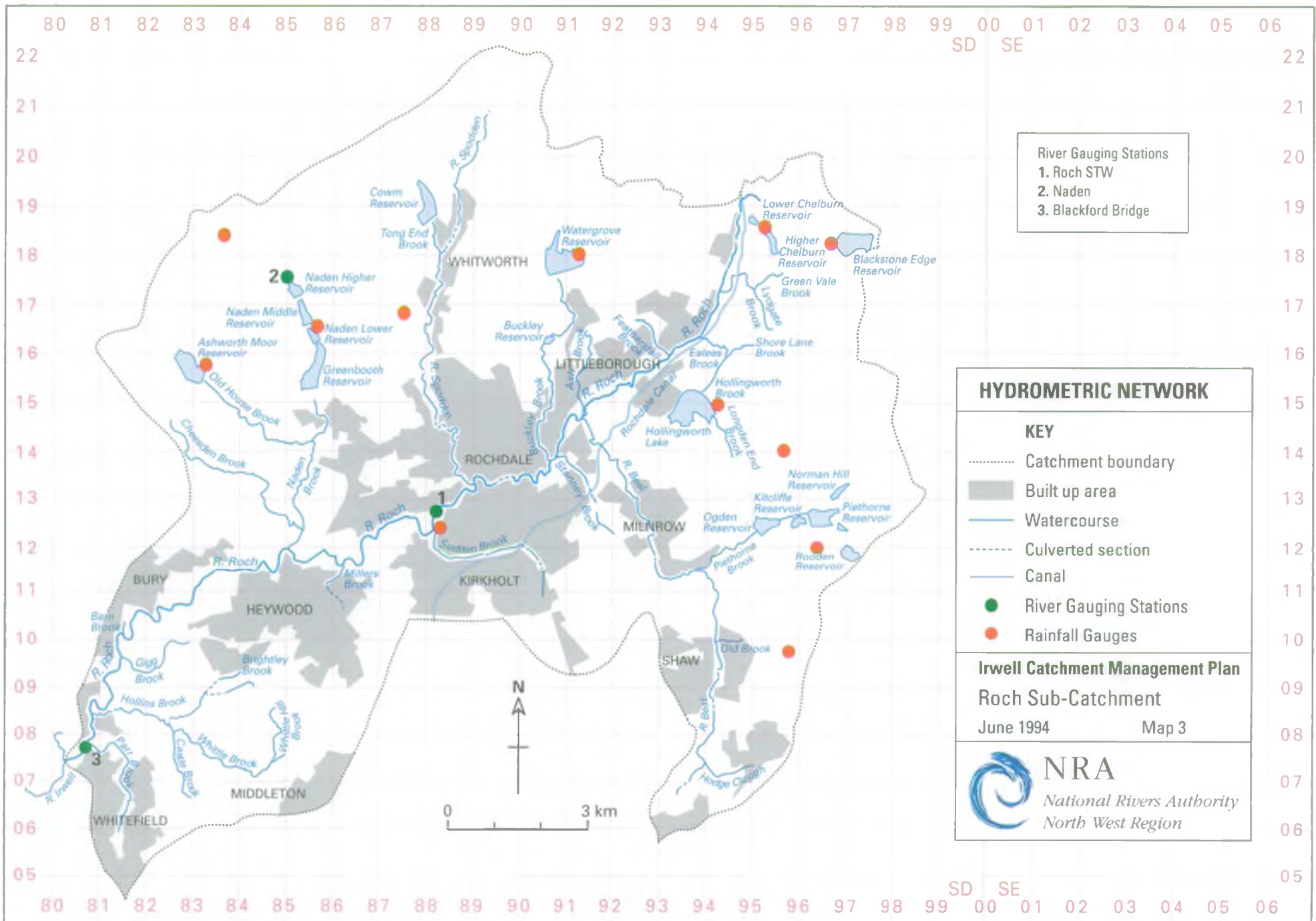
Much of the early (19th century) economic development was bound up with the cotton industry but this has declined over recent years to become more diversified.

The actual rainfall recorded for the River Roch Catchment in recent years is:

YEAR	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
RAINFALL (mm)	1159	1094	1379	1157	1275	1118	1232	1041	1238	1166

The long term average calculated by the Met. Office from this Authority's own records from 1961 to 1990 is 1227mm at Hollingworth Lake, near Littleborough.






River Gauging Stations  
 1. Roch STW  
 2. Naden  
 3. Blackford Bridge

**HYDROMETRIC NETWORK**

**KEY**

- ..... Catchment boundary
- Built up area
- Watercourse
- - - Culverted section
- Canal
- River Gauging Stations
- Rainfall Gauges

**Irwell Catchment Management Plan**  
 Roch Sub-Catchment  
 June 1994                      Map 3

 **NRA**  
 National Rivers Authority  
 North West Region

### 1.3 HYDROMETRIC NETWORK (MAP 3)

Hydrometry is defined as the measurement of water. Hydrometric information is used within the NRA by the Licensing, Groundwater and Hydrology functions to enable them to meet their statutory duties relating to the Management of Water Resources and is also used in flood forecasting and in the design of flood defences. Additionally, Hydrometric information is used to set water quality standards for both rivers and groundwater and to protect and help improve fisheries.

The River Roch catchment is served by three river level monitoring stations and twelve raingauges.

Most of the raingauges are observed by North West Water Limited staff with maintenance carried out by NRA staff annually or when informed of damage by observers.

The main Primary Level Station is at the western end of the catchment at Blackford Bridge and provides a long record. Ding Brook upstream of Naden Higher Reservoir is an ex-Water Authority level measuring site taken over by the NRA. Recently a logger was installed upstream of a purpose built broad crested weir, in the Rochdale Waste Water Treatment Works complex.

At present the NRA is looking for a site in the Littleborough area to install a level monitoring logger to assist with Flood Warning.

The quality of data collected is regularly monitored. Blackford Bridge is visited weekly at present, whilst Naden and Rochdale STW are visited monthly to ensure that the stations are functioning to approved standards.

Over the years there have been many "spot" gauging requests throughout the catchment. These are ad hoc gaugings carried out for specific requests, for example, a pollution incident.

The 95 percentile flow at Blackford Bridge is 1.54 cumecs.

The Minimum and Maximum Daily Mean Flows are 1.07 and 152.7 cumecs respectively with a medium flow of 3.05 cumecs at the same site.



**SUMMARY GEOLOGICAL MAP:  
GEOLOGY AT SURFACE  
(SIMPLIFIED)**

**KEY**

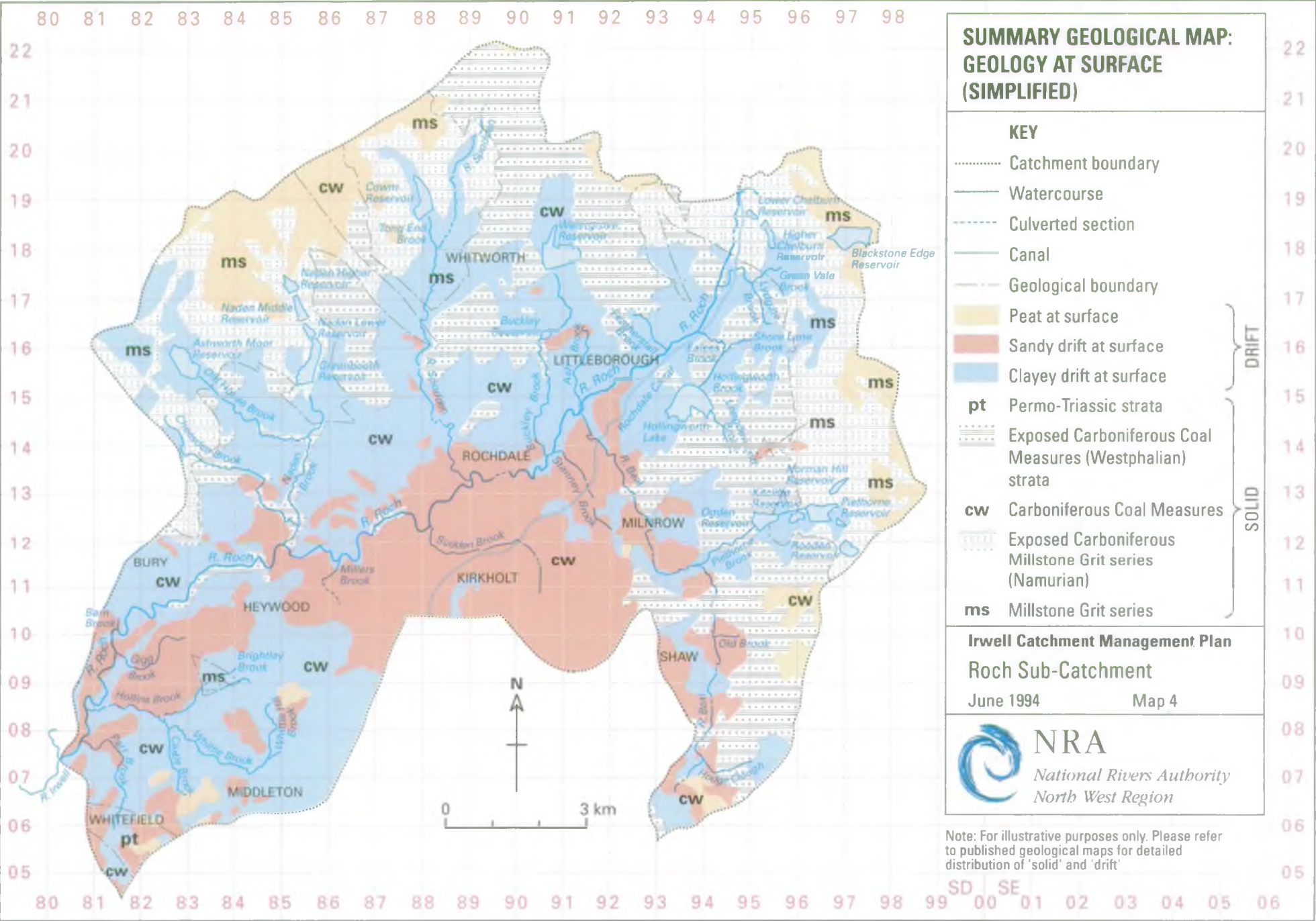
- ..... Catchment boundary
- Watercourse
- - - Culverted section
- Canal
- - - Geological boundary
- Peat at surface
- Sandy drift at surface
- Clayey drift at surface
- pt Permo-Triassic strata
- ▨ Exposed Carboniferous Coal Measures (Westphalian) strata
- ▨ Exposed Carboniferous Millstone Grit series (Namurian)
- cw Carboniferous Coal Measures
- ▨ Exposed Carboniferous Millstone Grit series (Namurian)
- ms Millstone Grit series

DRIFT  
SOLID

**Irwell Catchment Management Plan**  
**Roch Sub-Catchment**  
June 1994                      Map 4



Note: For illustrative purposes only. Please refer to published geological maps for detailed distribution of 'solid' and 'drift'



SD SE

## 1.4 HYDROGEOLOGY (MAP 4)

With the exception of a very small area of Permo-Triassic Sandstones and marls in the extreme south east, the entire catchment is underlain by strata of Carboniferous age. Millstone Grit Series (Namurian) rocks are present in the north west and east whilst younger Coal Measures (Westphalian) strata form the generally lower ground to the south. These both comprise alternating sequences of shales/mudstones, siltstones and sandstones which have been folded and intensely faulted. Thicker coarse grained sandstones occur in the Namurian, whilst shales/mudstones predominate the Westphalian succession. The latter also contain a number of coal seams.

The Carboniferous sandstones tend to act as individual "minor" aquifer units separated by lower permeability shales/mudstones. Groundwater movement is generally by fissure flow. The presence of old coal workings in the Coal Measures can give rise to complex and rapid groundwater flow and can adversely affect groundwater quality.

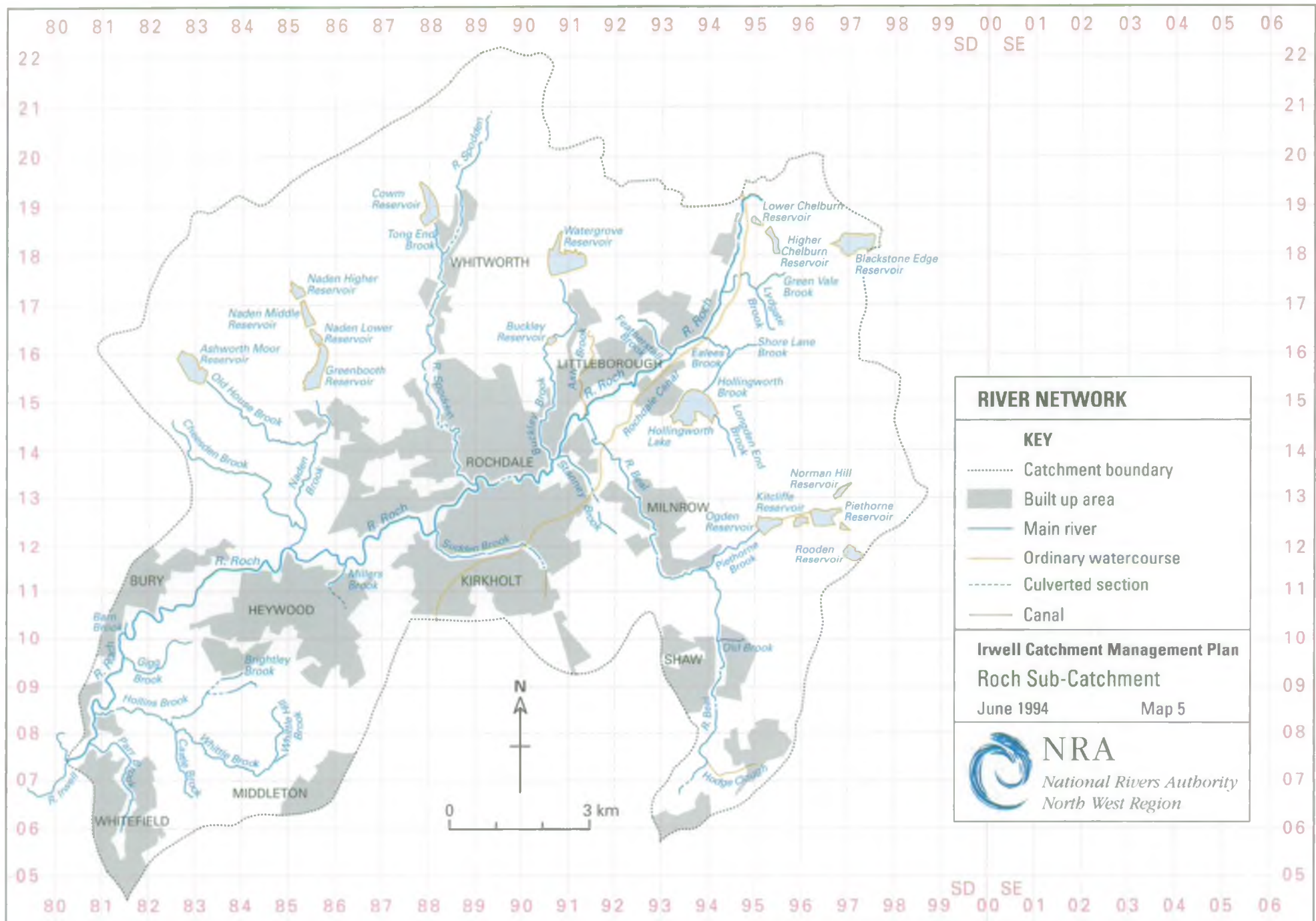
The Permo-Triassic Sandstone forms the northern tip of an extensive major aquifer which extends and thickens southwards below Manchester, down to Stockport and west through to Liverpool.

Much of the area is covered by drift deposits comprising principally low permeability glacial till (boulder clay) and permeable sands and gravels (which may act as aquifers in their own right), for example, south of Rochdale. However, drift cover tends to be absent on the higher ground to the north and east.

Depending on the nature and thickness of the drift deposits, the underlying solid aquifers may be in hydraulic continuity with surface watercourses.







**RIVER NETWORK**

**KEY**

- ..... Catchment boundary
- Built up area
- Main river
- Ordinary watercourse
- - - Culverted section
- Canal

**Irwell Catchment Management Plan**  
**Roch Sub-Catchment**  
 June 1994                      Map 5

 **NRA**  
*National Rivers Authority*  
*North West Region*

## 1.5 FLOOD DEFENCE (MAP 5)

Flood defence is generally concerned with ensuring that flood flows in rivers are conveyed with the least possible impact on people and property. This involves the NRA in maintenance of watercourses, construction of new works, development control and flood warning.

Regular maintenance is carried out where necessary in the River Roch catchment, and includes such items as clearing debris from culverts and bridges, and generally ensuring the maximum flood carrying capacity of the watercourses.

New flood defence schemes are carried out under an agreed programme which covers a ten year period. They must be worthwhile and shown to be value for money, before government and flood defence committee approval is given, and are subject to rigorous financial controls. Generally schemes are carried out to alleviate flooding from watercourses, but may also assist in maintenance activities. Examples of these are:-

- Construction of embankments, retaining walls and flood storage basins to protect against flooding.
- Silt traps, debris screens and access ramps to assist with maintenance activities.

Development Control is carried out in the River Roch catchment to ensure that new development is discouraged in areas at risk from flooding, and is not allowed to increase the risk elsewhere. Any works carried out on watercourses by others are also subject to control by the NRA.

The NRA operates a Regional Flood Warning service which aims to give the public advanced warning of likely flooding so that appropriate precautions can be taken. When necessary, emergency staff are also deployed by the NRA, to clear blockages to culverts and channels, and provide temporary flood defences using sand bags.

## 1.6 WATER QUALITY

The River Roch and its major tributaries are classified with regard to water quality. A comprehensive monitoring programme indicates that significant lengths of the catchment are polluted and of poor aesthetic appearance.

Monitoring is also undertaken with regard to the requirements of certain EC Directives and to discharges to the catchment.

The main sources of pollution in the catchment are discharges from the sewerage networks and contaminated land drainage.

Discharges from the sewerage networks are the responsibility of North West Water Ltd. Expenditure has already been made on improvements but substantial further investment is required.

Ochreous run-off and drainage from an identified contaminated land area affect the catchment. Difficulties in reducing the impact of such run-off can arise in establishing liability and securing the likely substantial funding. Natural acidic run-off has a more localised impact on the headwaters of the catchment.

Effluent from the only significant North West Water Ltd STW in the catchment, at Rochdale, also has a substantial impact.

The effects of trade effluent discharges, run-off from industrial sites and effluents from small sewage treatment plants are more localised.

Run-off via storm drains from streets and commercial and residential properties does have a significant impact on water quality but is normally considered outside the scope of pollution control. However, many storm water drains are contaminated causing widespread localised pollution because domestic foul water is connected to the storm water drainage system rather than the foul water system. Investigation and resolution of such wrong connections can be difficult.

## **2. CATCHMENT USES AND ACTIVITIES**

### **2.1 FLOOD DEFENCE**

#### **2.1.1 General**

This use deals with the provision of effective flood defence for people and property against flooding from rivers and watercourses. Normally flooding is a result of extreme climatic conditions, such as very heavy or prolonged rainfall. Flood events are described in terms of the frequency at which, on average, a certain severity of flood is exceeded. This frequency is usually expressed as a return period in years, e.g. 1 in 50 years.

The effectiveness of flood defences can be measured in terms of the return period up to which they prevent flooding. The target standard for flood defences should be dictated by the type of land use. For instance, urban areas will require more effective defences than say pasture land.

The NRA's duties and powers relating to Flood Defence are detailed in Section 3.1 of Chapter One River Irwell Introduction document.

#### **2.1.2 Local Perspective**

The River Roch is the largest and most complex of the Irwell Sub-Catchments flowing from its source on Chelburn Moor through the towns of Littleborough, Rochdale and Heywood to its confluence with the River Irwell. It is fed along its length by two rivers, the River Beal and the River Spodden, and a large number of "main river" tributaries, the major ones being Hollins Brook, Sudden Brook and Buckley Brook.

Along its length the River Roch bears a legacy of the Industrial Revolution, much of the development along its banks being centralised around the old mill building locations and the former workers residential properties. As a result of this there are many river access crossings and several areas of development have occurred over the rivers in this catchment. This is especially evident in the centre of Rochdale where a significant length of the River Roch has been culverted during re-development. A major length of this occurs in the town centre where during re-development around 1932 five varying sections of bridge were inter-connected. This formed, at the time, the widest river crossing in Europe and today forms the main thoroughfare in Rochdale.

The River Spodden from its confluence with the River Roch up through Shawclough bears similar characteristics to the River Roch flowing through heavily urbanised areas with several river crossings. Beyond Shawclough, upstream development is localised alongside the river banks.

From its source at Royton Moss, the River Beal flows north through Shaw, Newhey and Milnrow to its confluence with the River Roch, being joined along route by Old Brook at Shaw and Piethorne Brook at Newhey. Through Shaw and Milnrow the banks of the River Beal are heavily built-up with both industrial and residential buildings, the remaining reach flowing through open countryside.

Hollins Brook is fed by Castle, Whittle, Whittle Hill and Brightly Brooks. All of these flow in steep sided valleys through open countryside, as does Naden Brook, which is fed by Cheesden and Old House Brooks.

Sudden Brook flows from Kirkholt to its confluence with the River Roch in Rochdale, its entire length passing through heavily urbanised areas and a significant amount being culverted under roads and buildings.

Buckley Brook flows from Watergrove Reservoir to the River Roch, the lower reach passing through a heavily urbanised area, whilst the remainder runs mainly through open countryside.

Regular, planned inspections of "main river" channels and structures are carried out in order to programme any necessary maintenance works. Such works are carried out in the Roch Catchment to safeguard the existing standards of flood protection, particularly in the heavily urbanised area of Rochdale. The work includes clearing debris blockages from channels, culverts, bridges and trash screens; and also de-silting and dredging using mechanical plant.

The NRA clears a number of culvert debris screens within the Roch Catchment, at a general frequency of at least once per week. Such screens prevent large items of debris becoming trapped in culverts and subsequently causing flooding and structural problems.

### **2.1.3 Flood Warning**

The NRA provides information and advice to the Police and Local Authorities for the purpose of giving them sufficiently advanced warnings of likely flooding in known flood risk areas. Forecasts of high river levels are based on rainfall and river level data collected from outstations by the Regional Telemetry System.

### **2.1.4 Objectives**

Flood Defence objectives are detailed in Chapter One, River Irwell Introduction document, Section 3.1.

### **2.1.5 Environmental Requirements**

Environmental Requirements relating to Flood Defence are detailed in Chapter One, River Irwell Introduction document, Section 3.

## 2.2 DEVELOPMENT

### 2.2.1 General

The relationship between NRA activities and the land use planning system is dealt with in Section 2.3 of Chapter One, River Irwell Introduction document.

### 2.2.2 Local Perspective

The Catchment is within the South Area of the NRA (North West Region). Any new development may be of concern to the NRA, as proposals may have an impact on all our duties and responsibilities. It is imperative that the NRA has an effective and efficient input in the development of the catchment to ensure developments are implemented with our interests fully taken into account.

### 2.2.3 Local Planning Policy

The majority of the catchment is within Rochdale MBC with parts of the northern area within Rossendale B.C., westerly parts in Bury MBC and the southern area around Shaw in Oldham MBC.

The Structure Plan for Lancashire and Greater Manchester forms the strategic planning framework for the Catchment. The Rochdale UDP Deposit consultation stage has recently ended (July 1994). Bury MBC are awaiting their Public Inquiry (October 1994) and Oldham and Rossendale have progressed beyond the Public Inquiry stage and are preparing to adopt their Development Plans. Adoption of these plans will supersede their previous plans and the Greater Manchester Structure Plan will be revoked.

The main LPA objectives for future development in the Catchment include:

- Protecting and improving the environment.
- Securing growth and development of the local economy
- Promotion of urban regeneration.

The well-established Green Belt policy boundary has strictly limited outward growth of the Catchment's main urban areas.

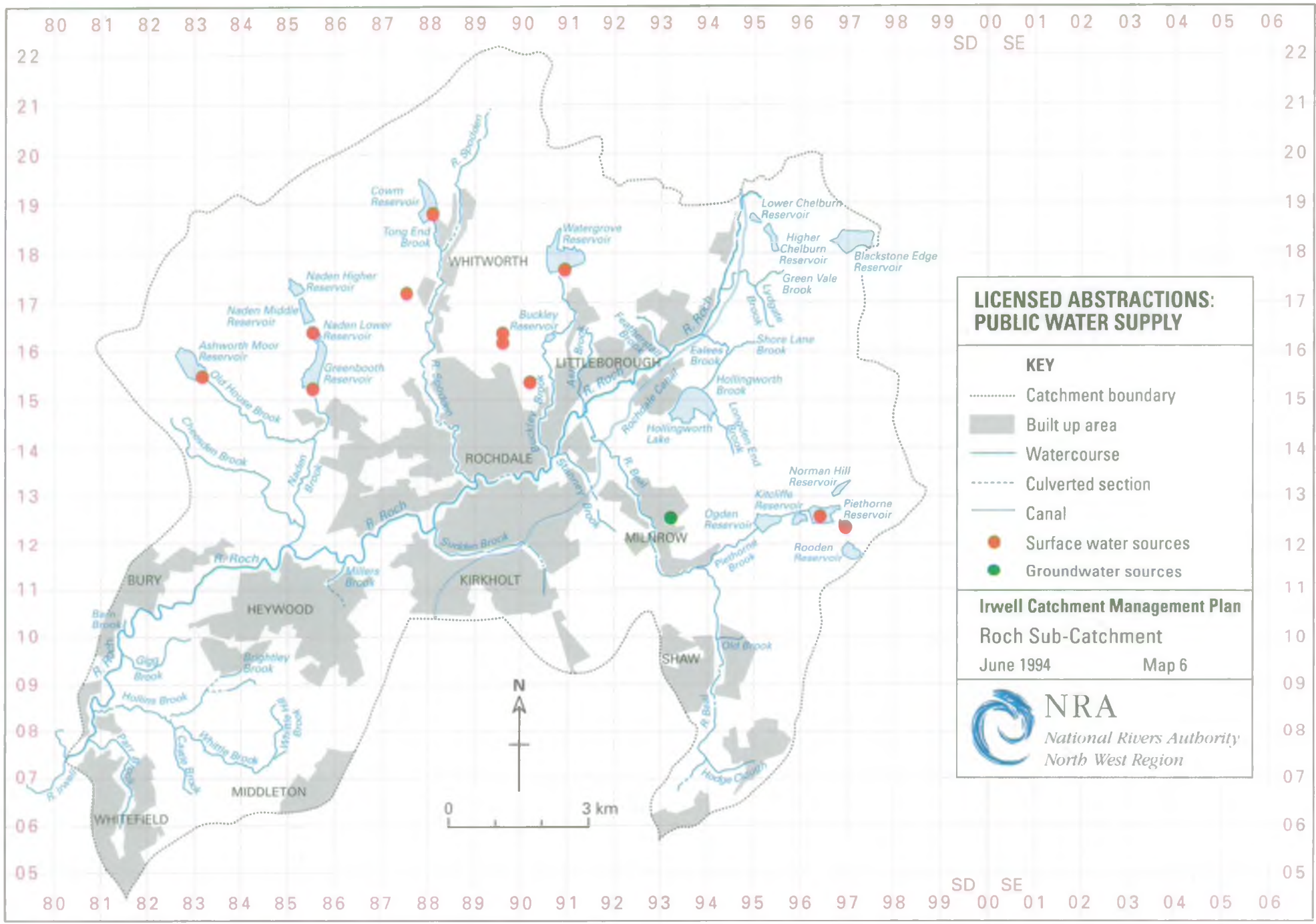
#### 2.2.4 Future Development in the Catchment

The watercourses within the Catchment have been noted for their landscape, wildlife, open land and recreational importance through the preparation of the Development Plans. This will continue to be encouraged by the NRA up to adoption of the Plans and will be used as recommendations in the determination of planning applications. The CMP must support the overall economic and environmental improvements and seek to reduce adverse environmental conditions new development may cause.

The NRA through the planning system will seek to discourage development in areas at risk from flooding, achieve water quality improvements and promote the conservation of the water environment. The main targets of the NRA's policy directions to be pursued through the planning system are detailed in Section 2.7 of Chapter One, River Irwell Introduction document.








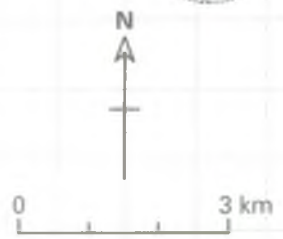
**LICENSED ABSTRACTIONS:  
PUBLIC WATER SUPPLY**

**KEY**

- ..... Catchment boundary
- Built up area
- Watercourse
- - - - Culverted section
- Canal
- Surface water sources
- Groundwater sources

**Irwell Catchment Management Plan**  
**Roch Sub-Catchment**  
 June 1994                      Map 6

 **NRA**  
*National Rivers Authority*  
*North West Region*



## 2.3 POTABLE (DRINKING) WATER SUPPLY (MAP 6)

### 2.3.1 General

This use relates to the abstraction of water for potable supply use. The principle abstractor is the statutory water company (NWW Limited) though there are small domestic abstractions, particularly in the upper part of the catchment, which are exempt from licensing requirements.

Groundwater may be abstracted from water bearing strata (termed aquifers) via wells or boreholes, or naturally discharge via springs.

### 2.3.2 Local Perspective

There are four major abstraction licences covering reservoir systems in the River Roch catchment. These licences cover the Rooden, Hanging Leeds, Piethorn, Kitcliffe, Ogden, Norman Hill system; the Watergrove, Brown House Wham, Hamer Pasture, Buckley Wood system; the Ashworth Moor, Naden Greenbooth system; and the Spring Mill, Cowm system, although Cowm reservoir is no longer used for potable supply purposes.

The total authorised licensed quantity from these sources is 29,300 Ml/y which is 63% of the total licensed abstraction in the catchment and 74% of the total licensed surface water.

These reservoir systems are also subject to compensation water requirements under the provisions contained in local Water Acts which were inherited in the formation of the regional Water Authorities in 1974. Unusually, Blackstone Edge reservoir, which impounds a tributary of the River Roch, discharges compensation water to the Yorkshire Water Authority area.

There is only one licensed groundwater source in the catchment which abstracts from coal measures for potable supply purposes and is licensed for 3982 Ml/y. This licence however accounts for 62% of all licensed groundwater within the catchment.

The minor aquifers formed by the sandstone units of the Carboniferous Millstone Grit Series have also been exploited to provide private domestic and agricultural water supplies, particularly in rural areas remote from the mains system. The sandstones may also give rise to seeping discharges to surface waters. The availability of groundwater from these minor aquifers is very site specific, depending on the local hydrogeology and topography.

**CATCHMENT USES AND ACTIVITIES  
POTABLE (DRINKING) WATER SUPPLY**

These private supplies will be subject to water quality monitoring and the local Environmental Health Department should keep registers of all such supplies. These supplies are outside the direct control of the NRA.

### **2.3.3 Supply Objectives and Standards**

The NRA has yet to establish formal policy with regard to supply objectives but the following will be, and in many cases are already being actively pursued:

- To manage water resources to safeguard private water supplies.
- To manage surface water resources to meet future demand.
- To set minimum residual flows (MRF's) and minimum control levels (MCL's) where applicable, to protect environmental river needs.
- To ensure compliance with existing MRF's and MCL's through monitoring and enforcement policy.
- To conserve, augment and/or redistribute, and to ensure the proper use of water resources, where appropriate, to meet potable water demands to appropriate standards of reliability.
- To encourage efficient water use, including leakage reduction.
- To carry out a review of compensation water requirements to ensure the best utilisation of resources for various users.
- To set minimum residual flows (MRF's) and minimum control levels (MCL's) where applicable, to protect environmental river needs.
- To ensure compliance with existing MRF's and MCL's through monitoring and enforcement policy.
- To ensure the best utilisation of water resources in the catchment.
- To monitor water quality at the appropriate abstraction point to ensure compliance with EC Directive 75/440/EC.
- To maintain and where necessary improve water quality in accordance with existing river quality objectives and Statutory Water Quality Objectives (SWQO's) established.

In dealing with new applications involving groundwater abstractions, the following objectives will be pursued:

- To manage water resources to safeguard private water supplies.

**CATCHMENT USES AND ACTIVITIES  
POTABLE (DRINKING) WATER SUPPLY**

- To manage groundwater resources where possible to meet future demand.
- To protect aquifers from over commitment and ensure groundwater abstraction does not have an unacceptable effect on surface waters and related environmental interests.
- To ensure the best utilisation of water resources in the catchment.
- To conserve, augment and/or redistribute, and to ensure the proper use of water resources where appropriate to meet potable water demands to appropriate standards of reliability.
- To encourage efficient water use including leakage reductions.
- To implement groundwater protection policies.

#### **2.3.4 Customer Supply Requirements**

##### **Water Quantity**

- To expect availability of resources within the terms specified in the licence.
- To expect no derogation of supplies when issuing new licences.

##### **Water Quality**

- To expect compliance with relevant standards set in EC Directive 75/440/EC (surface water Abstracted for Drinking water).

##### **Groundwater Quality**

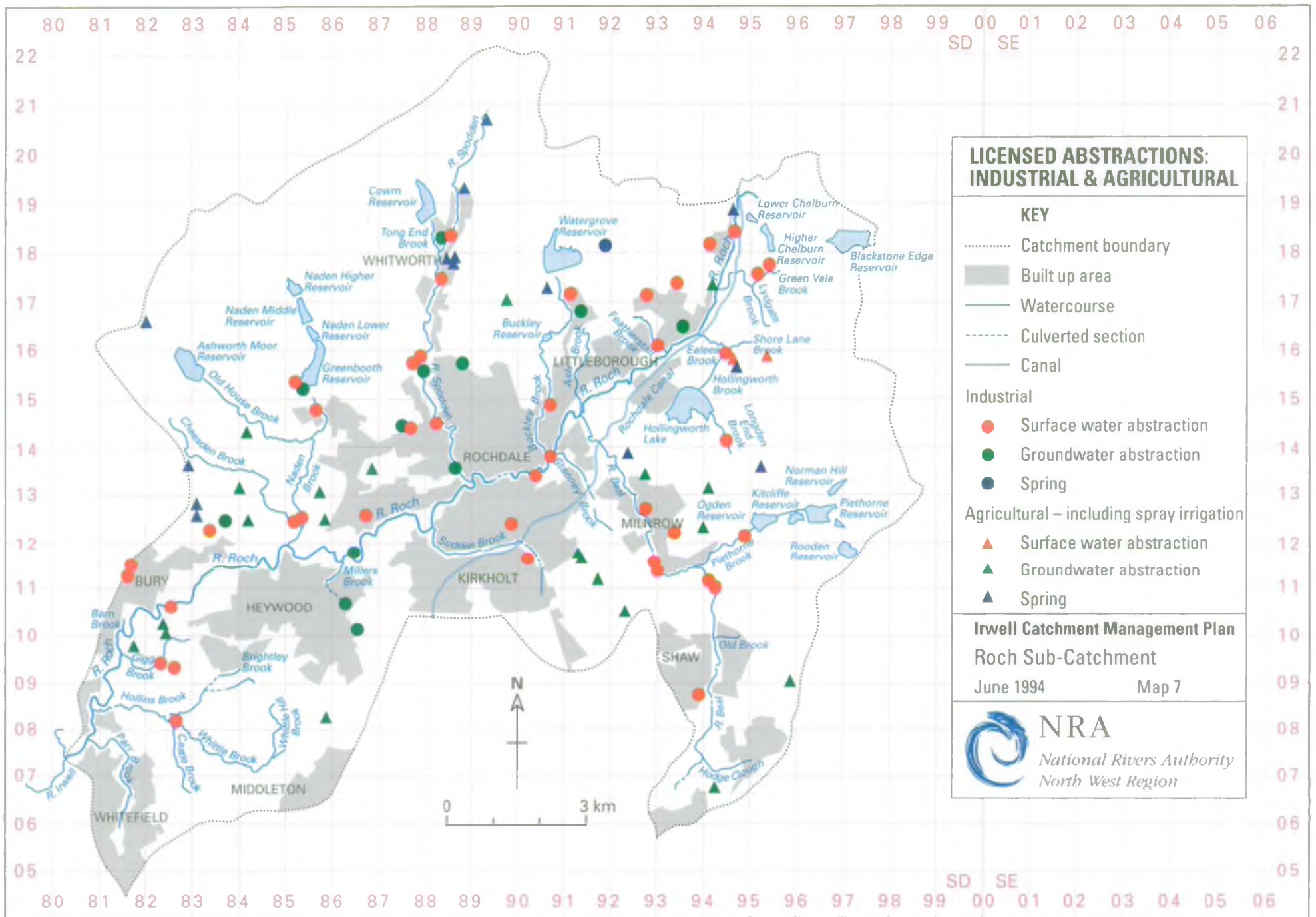
The major Permo-Triassic Sandstone Aquifer contains high quality groundwater. However, it will have been prone to contamination from past and present land usage, particularly in urban areas where low permeability drift cover is absent.

Groundwater associated with Carboniferous Coal Measures sandstones are typically high in iron. This can also be acute in groundwaters contained in old mine workings. In addition, mine waters often have elevated levels of chloride and sulphide. Similarly, elevated levels of iron may be present in the Millstone Grit Series sandstones, for example, in Central Manchester.

#### **2.3.5 Environmental Requirements**

Ensure flows do not fall below an ecologically acceptable level, so that there is no adverse impact on aquatic flora and fauna, natural geomorphology and adjacent habitats.





**LICENSED ABSTRACTIONS:  
INDUSTRIAL & AGRICULTURAL**

**KEY**

- ..... Catchment boundary
- Built up area
- Watercourse
- - - - - Culverted section
- Canal
- Industrial**
- Surface water abstraction
- Groundwater abstraction
- Spring
- Agricultural – including spray irrigation**
- ▲ Surface water abstraction
- ▲ Groundwater abstraction
- ▲ Spring

**Irwell Catchment Management Plan**  
**Roch Sub-Catchment**  
 June 1994                      Map 7



## 2.4 INDUSTRIAL AND AGRICULTURAL ABSTRACTIONS (MAP 7)

### 2.4.1 General

This use relates to the abstraction of water from ground and surface water for industrial and agricultural use including spray irrigation. The majority of such abstractions will require an abstraction licence.

### 2.4.2 Local Perspective

#### Industrial

There are 55 licensed abstractions within the River Roch Catchment for industrial purposes. The total licensed quantity from these sources is 11,667.7 Ml/y which is 25% of the total licensed abstraction within the catchment. Of this industrial use 9316.8 Ml/y (79.9%) is from surface water sources and 2350.9 Ml/y (20.1%) is from groundwater sources.

Several major companies within the catchment rely on the rivers and stream within the catchment for their various processes of manufacture, principally paper making and textile production (including bleaching and dyeing).

#### General Agriculture

There are 35 licensed abstractions for this purpose totalling 119 Ml/y which is 0.26% of the total licensed abstraction in the catchment. All these abstractions are from groundwater sources in the form of boreholes, wells and springs. These licences represent 1.8% of the total licensed groundwater within the catchment. There are also sources, particularly in the upper reaches of the catchment which are used for general agricultural purposes and are exempt from licensing requirements.

#### Spray Irrigation

There are six licensed abstractions for spray irrigation purposes within the catchment. Four of these are for golf course irrigation and two are for agricultural spray irrigation. Of these licences, two are from surface water sources and the other four from groundwater sources. The total licensed quantity is 17.3 Ml/y which is only 0.04% of the total licensed quantity in the catchment.

### 2.4.3 Supply Objectives and Standards

The NRA has yet to establish formal policy with regard to supply objectives, but the following will be , and in many cases are already being, actively pursued:

- To manage water resources to safeguard direct industrial abstractions.

**CATCHMENT USES AND ACTIVITIES  
INDUSTRIAL AND AGRICULTURAL ABSTRACTIONS**

- To manage water resources where possible to meet reasonable industrial demand.
- To set minimum residual flows (MRF's) and minimum control levels (MCL's) where applicable, to protect environmental river needs.
- To ensure compliance with existing MRF's and MCL's through monitoring and enforcement policy.
- To protect aquifers from over commitment and ensure that groundwater abstraction does not have an unacceptable effect on environmental waters.
- To ensure the best utilisation of water resources in the catchment.
- To conserve, augment and/or redistribute, and to ensure the proper use of water resources, where appropriate to meet industrial water demands to appropriate standards of service.
- To encourage efficient water use, including leakage reduction.
- To ensure compliance with licence conditions through monitoring and enforcement policy.
- To implement groundwater protection policies.

**2.4.4 Customer Requirements**

**Water Quantity**

- To expect availability of resources within the terms specified in the licence.
- To expect no derogation of supplies when issuing new licences.

**Water Quality**

- To expect maintenance and improvement of water quality in accordance with relevant water quality objectives.

**2.4.5 Environmental Requirements**

Ensure flows do not fall below an ecologically acceptable level, so that there is no adverse impact on aquatic flora and fauna, natural geomorphology and adjacent habitats.



## 2.5 RESOURCE USAGE

### 2.5.1 General

This section summarises that total licensed and actual abstraction within the catchment compared with the available resource. Licensed and current actual usage have been assessed for the catchment.

The available resource is derived from the average annual rainfall for the period 1961-1990 less the average annual evaporation for the catchment. This provides an estimate of the total surface water resource available but is not derived from a detailed assessment of run-off, groundwater recharge or any time elements.

These totals are compared with the total annual licensed abstraction and the actual average consumptive use in 1992. The purpose of the comparison is to illustrate the scale of water resource development within the catchment.

	<b>AVAILABLE RESOURCES IN AVERAGE YEAR JAN - DEC</b>	<b>LICENSED OR COMMITTED ABSTRACTION</b>	<b>ACTUAL AVERAGE ABSTRACTION 1992</b>
<b>SURFACE</b>	391 MI/d	153 MI/d	65 MI/d
<b>GROUNDWATER</b>	No data	22 MI/d	7 MI/d

**N.B.** These figures include canal abstractions within the catchment but it should be noted that canals will import water from, and export water to other catchments.

### 2.5.2 Local Perspective

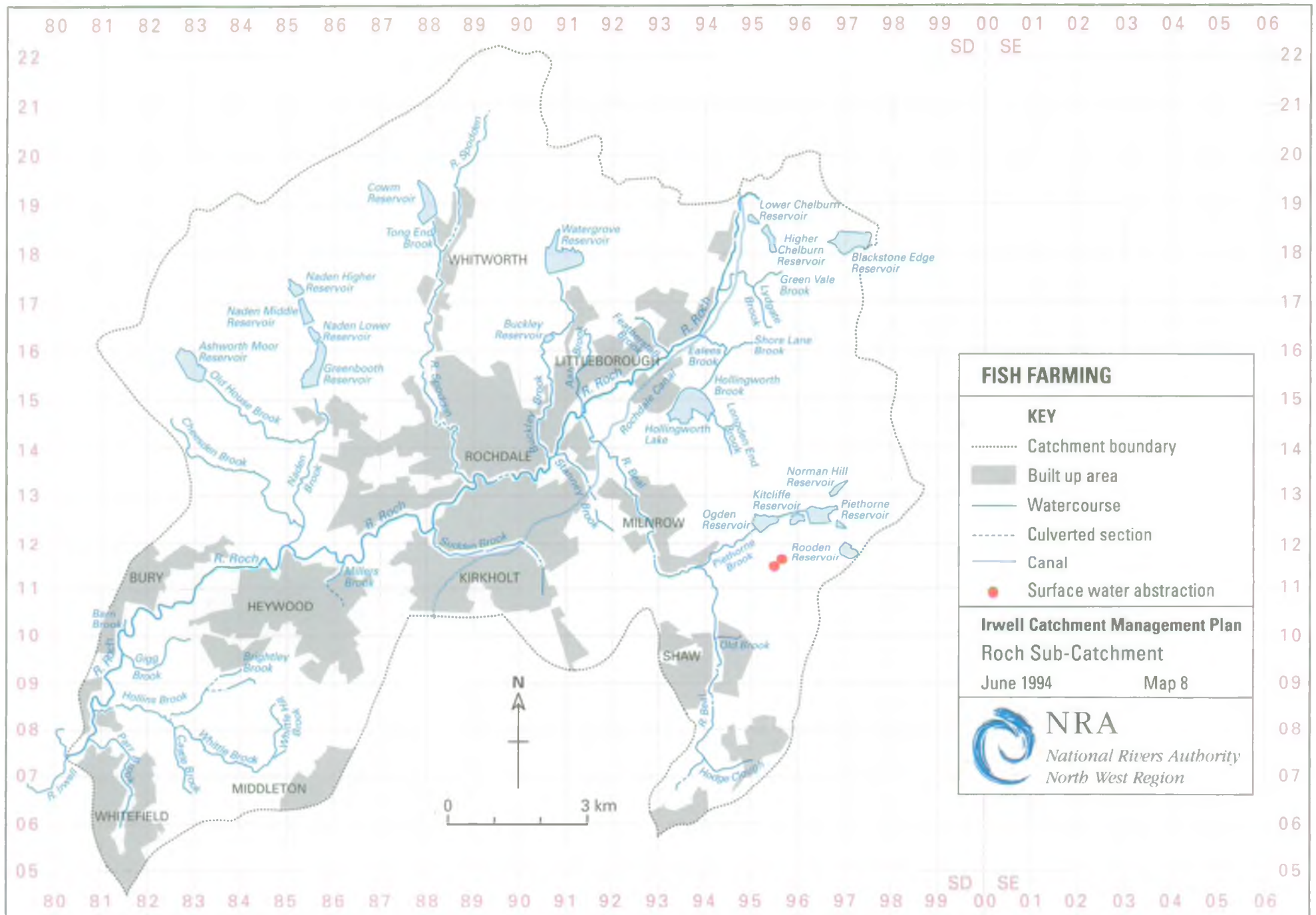
#### **Surface Water:**

Water resources availability in the River Roch Catchment is more than adequate to meet any existing demand and future development. Any problems that may arise will be on a site specific basis on the minor tributaries.

#### **Groundwater:**

In volume terms, the main licensed groundwater abstractions within the catchment are from the Carboniferous Coal Measures for industrial and commercial use (both potable and non-potable). Elsewhere there may be scope for additional abstractions, but this would need to be assessed on an individual basis.






**FISH FARMING**

**KEY**

- ..... Catchment boundary
- Built up area
- Watercourse
- - - - Culverted section
- Canal
- Surface water abstraction

**Irwell Catchment Management Plan**  
**Roch Sub-Catchment**  
 June 1994                      Map 8

 **NRA**  
*National Rivers Authority*  
*North West Region*

## 2.6 FISH FARMING (MAP 8)

### 2.6.1 General

This use relates to the operation of artificially created bodies of water for the commercial rearing of fish for either agricultural purposes or restocking purposes.

The majority of fish farms simply divert a licensed proportion of river flows through fish ponds. Concerns can arise from fish farming due to organic matter. In addition, escapes of fish can disrupt fisheries.

### 2.6.2 Local Perspective

There are two licensed abstractions for this purpose within the River Roch Catchment both relating to Willenhall Fish Farm at Ogden. Total licensed quantity is 331 million gallons per year.

### 2.6.3 Objectives and Standards

The NRA has yet to establish formal policy with regard to supply objectives but the following will be, and in many cases are already being, actively pursued:

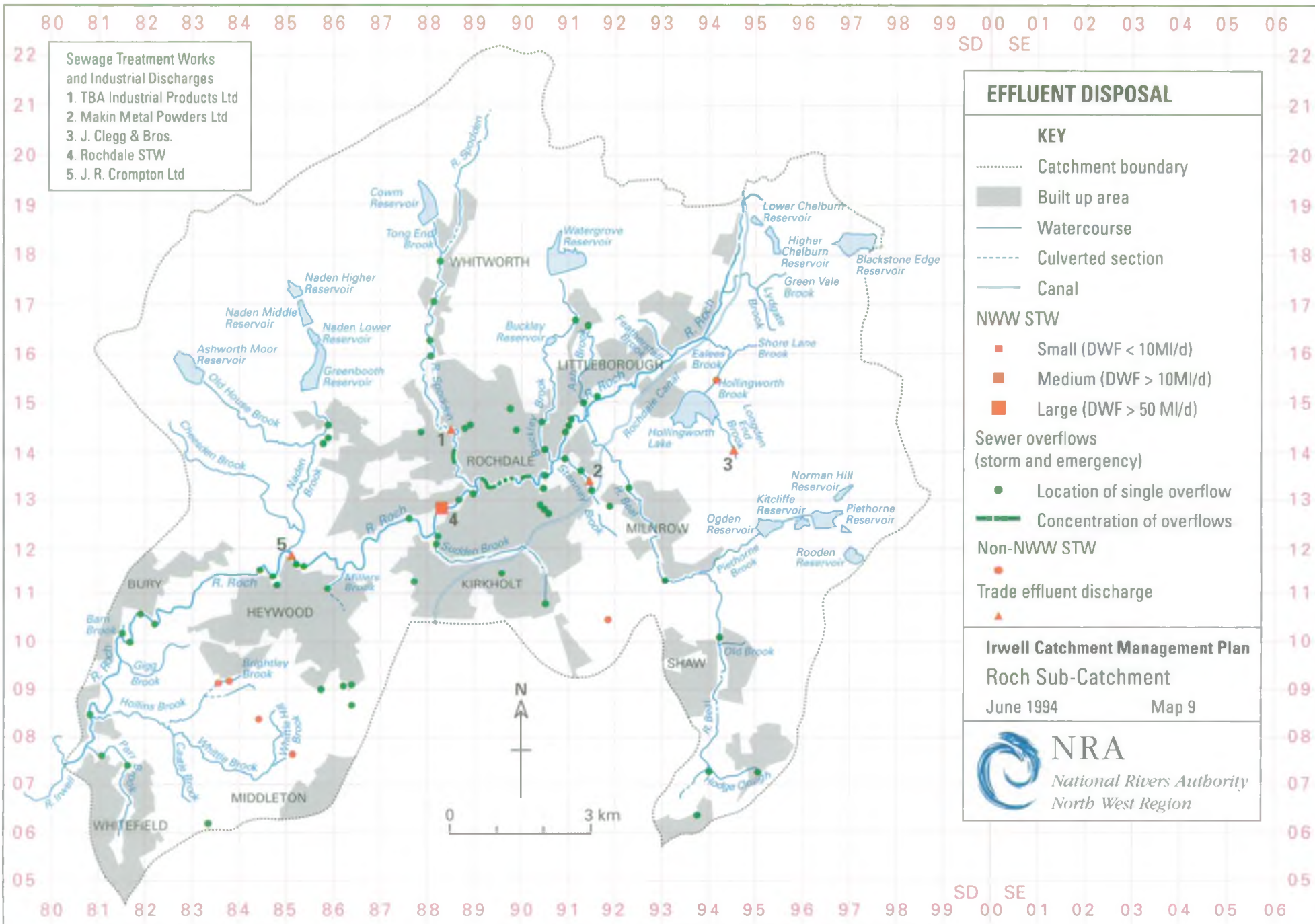
- To manage water resources to permit the operation of fish farms without detriment to other users.
- To set minimum residual flows (MRF's) and minimum control levels (MCL's) where applicable to protect environmental river needs.
- To ensure compliance with existing MRF's and MCL's through monitoring and enforcement policy.
- To ensure the best utilisation of water resources in the catchment.

### 2.6.4 Customer Requirements

#### Water Quantity

- To maintain river flows such that other uses are not compromised.
- To expect availability of resources within the terms specified within the licence.
- To expect no derogation of supplies when issuing new licences.





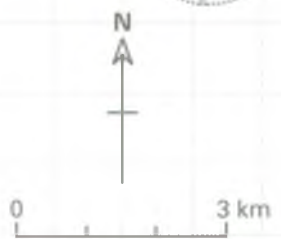
Sewage Treatment Works and Industrial Discharges

1. TBA Industrial Products Ltd
2. Makin Metal Powders Ltd
3. J. Clegg & Bros.
4. Rochdale STW
5. J. R. Crompton Ltd

### EFFLUENT DISPOSAL

- KEY**
- ..... Catchment boundary
  - Built up area
  - Watercourse
  - - - - Culverted section
  - Canal
- NWW STW**
- Small (DWF < 10MI/d)
  - Medium (DWF > 10MI/d)
  - Large (DWF > 50 MI/d)
- Sewer overflows (storm and emergency)**
- Location of single overflow
  - Concentration of overflows
- Non-NWW STW**
- Trade effluent discharge

**Irwell Catchment Management Plan**  
**Roch Sub-Catchment**  
 June 1994                      Map 9



## 2.7 EFFLUENT DISPOSAL (MAP 9)

### 2.7.1 General

This use principally relates to the disposal of domestic and industrial effluents to the river system. Dependent on nature effluents may be discharged continuously or intermittently.

#### Continuous Effluents

Continuous discharges are of fully treated effluent from sewage treatment works and trade effluent treatment plants.

The more significant sewage treatment works are almost exclusively operated by water companies, in this case North West Water Limited. Such sewage works may receive both domestic and industrial waste. Houses and other premises remote from the established sewerage network may use an individual sewage treatment plant with discharge to watercourse as an alternative to septic tank or cess pit as a means of disposal of foul drainage.

Industrial concerns may also opt to treat their trade waste at their own treatment facility with discharge to watercourse.

The quality of such continuous effluents is controlled by consents issued by the NRA. In the past this has been the case for all types of continuous effluents. However, discharges from certain prescribed industrial processes are now authorised by HMIP under Integrated Pollution Control (IPC).

#### Intermittent Effluents

The most significant category of intermittent effluent is that from storm overflows on the sewerage network. Sewage effluent may also be discharged intermittently from the sewerage network in the event of emergency at pumping stations. Both these types of discharge are the responsibility of North West Water Ltd. and the circumstances in which they are permitted to occur are controlled in consents issued by the NRA.

Another category of intermittent effluent is the surface water run-off from urban areas.

### 2.7.2 Local Perspective

#### Continuous Effluents

There is one North West Water Ltd STW within the Roch catchment at Rochdale. It has a dry weather flow of 54.1 Ml/d. North West Water Limited also operate small plants at Lydgate and Doctor Fold.

There are also a number of small sewage treatment plants operated by others.

There are four industrial discharges direct to river. They are textile trade effluent from J. Clegg & Bros, cooling water from Makin Metal Powders Ltd., cooling water, process water and boiler blowdown from Turner Brothers Asbestos (TBA) Industrial Products Ltd and trade effluent from paper manufacture from J.R. Crompton Ltd. The total consented volume for these industrial discharges is relatively small compared with the NWW Ltd. STW.

The locations of these discharges are shown on Map 9.

#### **Intermittent Effluents**

There are over 70 identified storm and emergency sewer overflows within the Roch catchment. Their locations are shown in Map 9.

Surface run-off from the significant urban areas within the catchment is clearly a major intermittent effluent.

#### **2.7.3 Environmental Objectives**

- To control continuous and intermittent discharges in such a way as to permit achievement of the water quality objectives for the catchment.

#### **2.7.4 Environmental Requirements**

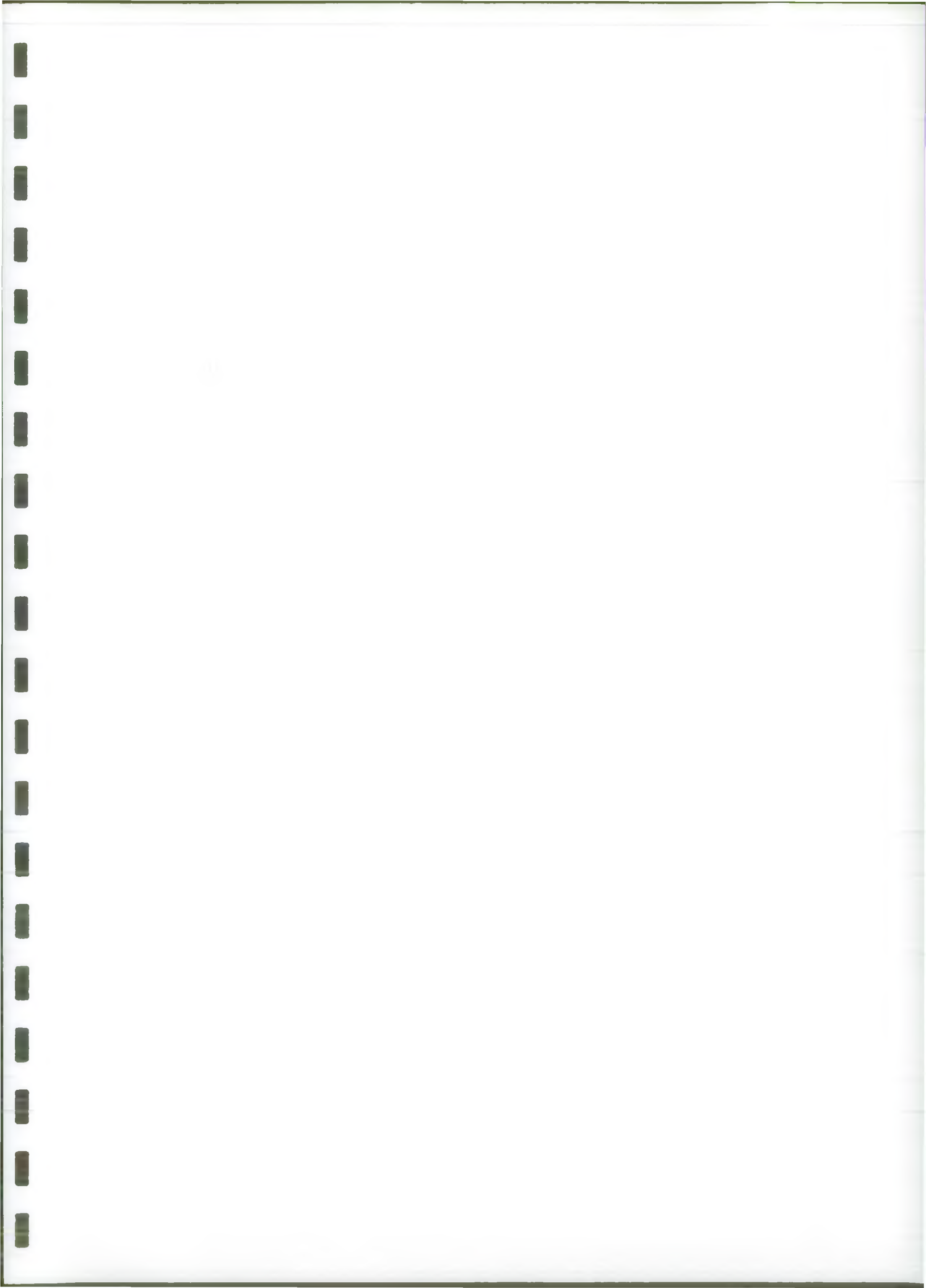
##### **Water Quality:**

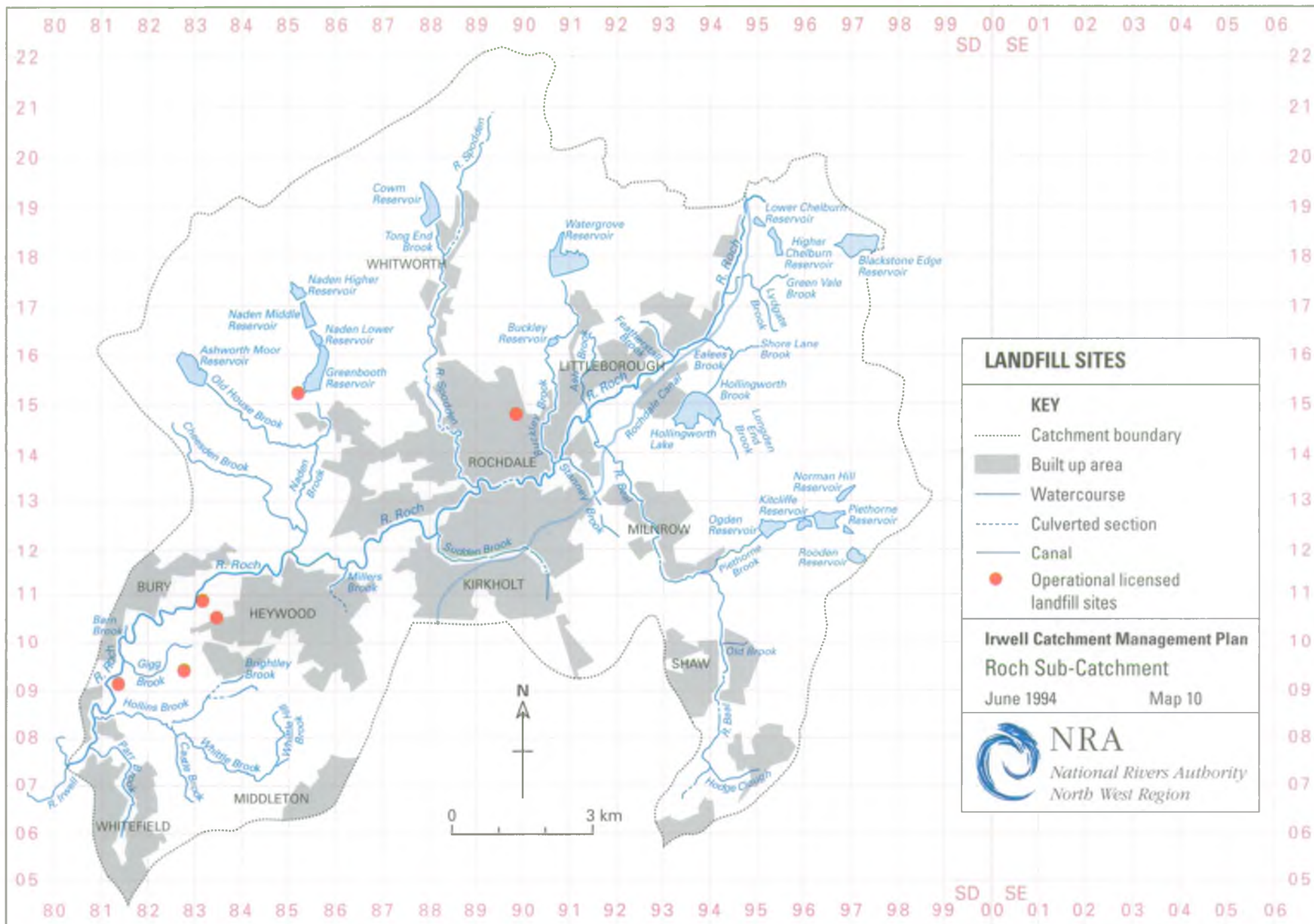
- No deterioration in water quality upstream of discharges that would increase their impact

##### **Water Quantity:**

- No significant diminution in flows upstream of discharges that would increase their impact.







## 2.8 LANDFILL SITES (MAP 10)

### 2.8.1 General

The NRA is a statutory consultee on Waste Disposal matters. It is also a statutory consultee of Planning Authorities under the Town and Country Planning Acts. A valid planning permission is the means by which aftercare provisions, including surface water drainage and flood protection measures where appropriate, on closed landfill sites can be regulated. The Waste Disposal Licence relates to the operational phase of any site.

It is recognised that a wide range of waste disposal operations require a Waste Disposal Licence. These include scrap yards, transfer stations, incinerators, waste storage etc. Often the greatest threat to groundwater quality is posed by landfill activities.

### 2.8.2 Local Perspective

Each site is considered on an individual basis, the location of a site must not pose an unacceptable risk to water resources.

A waste disposal licence for a site must specify engineering measures to be taken so as to minimise the potential for any leachate generated to escape. In addition, a monitoring regime designed to confirm the integrity of the containment structure must be specified.

### 2.8.3 Objectives

- To ensure landfill activity does not compromise water quality or water resources and proceeds in accordance with advice given in the Groundwater Protection Policy.
- To safeguard existing standards of flood protection to land and property downstream of surface water discharge points from landfill sites.

### 2.8.4 Environmental Requirements

#### Water Quality:

- Compliance with EC Directives on dangerous substances discharged to groundwaters.
- Implementation of the NRA Groundwater Protection Policy.
- Prevention of pollution of controlled waters.

**CATCHMENT USES AND ACTIVITIES  
LANDFILL SITES**

- Appropriate monitoring of effects on surface and groundwaters.
- No deterioration in groundwater or surface water quality.

**Water Quantity:**

- No detriment to the availability of water resources.
- Minimise loss of unsaturated zone cover of aquifers.

**Physical Features:**

- Minimise the occurrence of slipping.
- Maintenance of the integrity of the river channel adjacent to extraction sites.
- Restoration of all sites to an acceptable environmental standard taking into account the opportunities for conservation, recreation and amenity.
- Any necessary flood defence works should be carried out in an environmentally sensitive manner.
- Safeguard sites of conservation and landscape value associated with the water environment from inappropriate mineral extraction.

## 2.9 MINERAL EXTRACTION

### 2.9.1 General

Mineral extraction can affect both groundwater quality and quantity. It can restrict recharge to an aquifer and divert flow. In addition, purification which occurs as water percolates through the unsaturated zone cannot occur if that zone is has been removed by excavation. Subsequent use of mineral extraction sites for landfill also proposes a significant threat to groundwater quality.

### 2.9.2 Local Perspective

Mineral workings are difficult to quantify within the River Roch Catchment. Underground workings for coal are both numerous and extensive. Other minerals may also have been worked underground locally, albeit on a small scale. Many such workings are not recorded.

Surface mineral workings are likely to be widespread, and also largely unrecorded. The most common types are clay or marl pits, sand and gravel pits, hard rock (sandstone) quarries at outcrop areas and occasional shale pits. Many, if not most of such old workings may have long since been filled in often with waste from a variety of sources.

### 2.9.3 Objectives and Standards

Wherever possible water resources must be preserved and protected. Mineral workings must be operated under the guidance given within the NRA's "Policy and Practice for the Protection of Groundwater".

### 2.9.4 Environmental Requirements

#### Water Quality:

- No deterioration of groundwater or surface water quality.

#### Water Quantity

- Minimise loss of unsaturated zone cover to aquifers.
- No detriment to the availability of water resources.

**Physical Features**

- Minimise the occurrence of slipping.
- Maintenance of the integrity of the river channel adjacent to extraction sites.
- Restoration of all sites to an acceptable environmental standard taking into account the opportunities for conservation, recreation and amenity.
- Safeguard sites of conservation and landscape value associated with the water environment from inappropriate mineral extraction.

## 2.10 GROUNDWATER PROTECTION

### 2.10.1 General

Groundwater is a vital natural resource and under particular threat from the effects of human activity. Once polluted, groundwater is often difficult and very expensive to remediate. Therefore, preventing groundwater contamination is a major objective of the NRA.

The Authority's "Policy and Practice for the Protection of Groundwater" sets out a national framework for the protection of both groundwater resources in general and sources (abstractions) in particular from the potential polluting effects of mans activities.

The policy classifies groundwater vulnerability according to the nature of the overlying soil cover, the presence and nature of any drift cover, the nature of the strata and the depth to the water table.

It considers groundwater resources in terms of major, minor and non-aquifer, depending on their ability to yield water and support groundwater abstractions. However, it emphasises the need to protect all groundwater, whether or not currently developed. The policy uses the concept of protection zones around sources of supply (wells, springs and boreholes) based on either distance or time of travel.

The first phase of groundwater protection zone delineation has now been completed for 86 North West Water Limited, public supply sources within the Region. The timetable for completion of zoning around the other public supply, industrial and other licence sources in the North West has yet to be determined.

### 2.10.2 Local Perspective

There is only one groundwater source used for public water supply within the Roch Catchment. This is not programmed for protection zone definition in the foreseeable future.

It should be borne in mind that many private groundwater sources, both licensed and unlicensed are used for potable purposes. These are usually in areas remote from the mains water distribution system, and associated with minor aquifers, for example, the Carboniferous Sandstones.

**CATCHMENT USES AND ACTIVITIES  
GROUNDWATER PROTECTION**

When available the source protection zone maps will be held in the NRA Regional Head Office at Richard Fairclough House, Warrington. The definition of zones is based on a wide range of variables and incorporates subjective judgement. In view of the need for frequent updating and amendment of these zones their general issue is not considered to be appropriate. Groundwater vulnerability maps intended to provide a simplified interpretation of the vulnerability and source protection across the catchment area and which take account of known hydrogeological conditions and variations will be produced in due course. The National Policy document contains a series of Policy Statements setting out the NRA's approach to dealing with various types of development/land use activity, depending on the groundwater vulnerability.

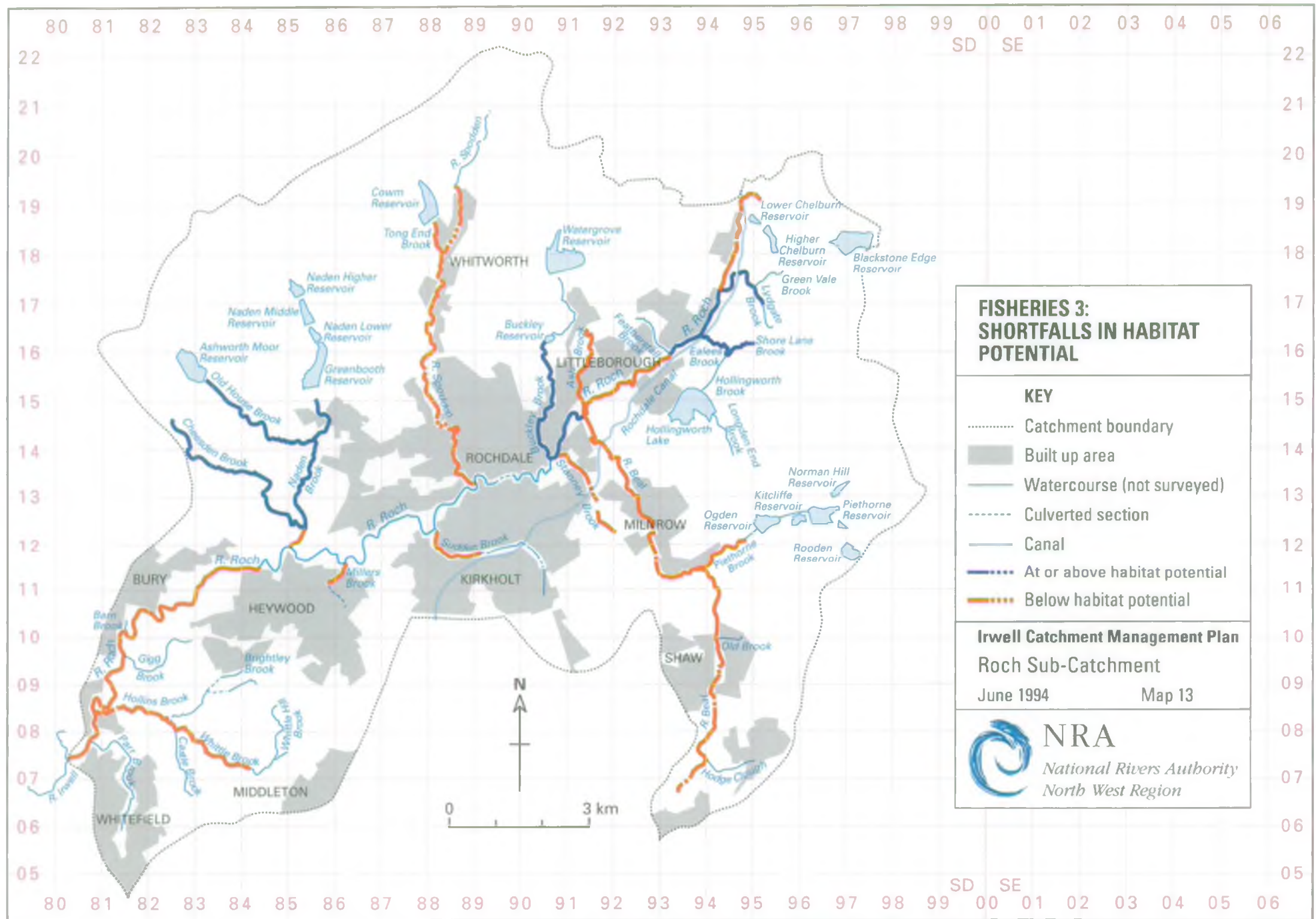
These activities include:

- Groundwater abstraction
- Waste disposal of land.
- Disposal of slurries and sludge to land.
- Physical disturbance of aquifers.
- Contaminated land.
- Diffuse pollution

The underlying philosophy is, "Prevention is Better than Cure".







**FISHERIES 3:  
SHORTFALLS IN HABITAT  
POTENTIAL**

**KEY**

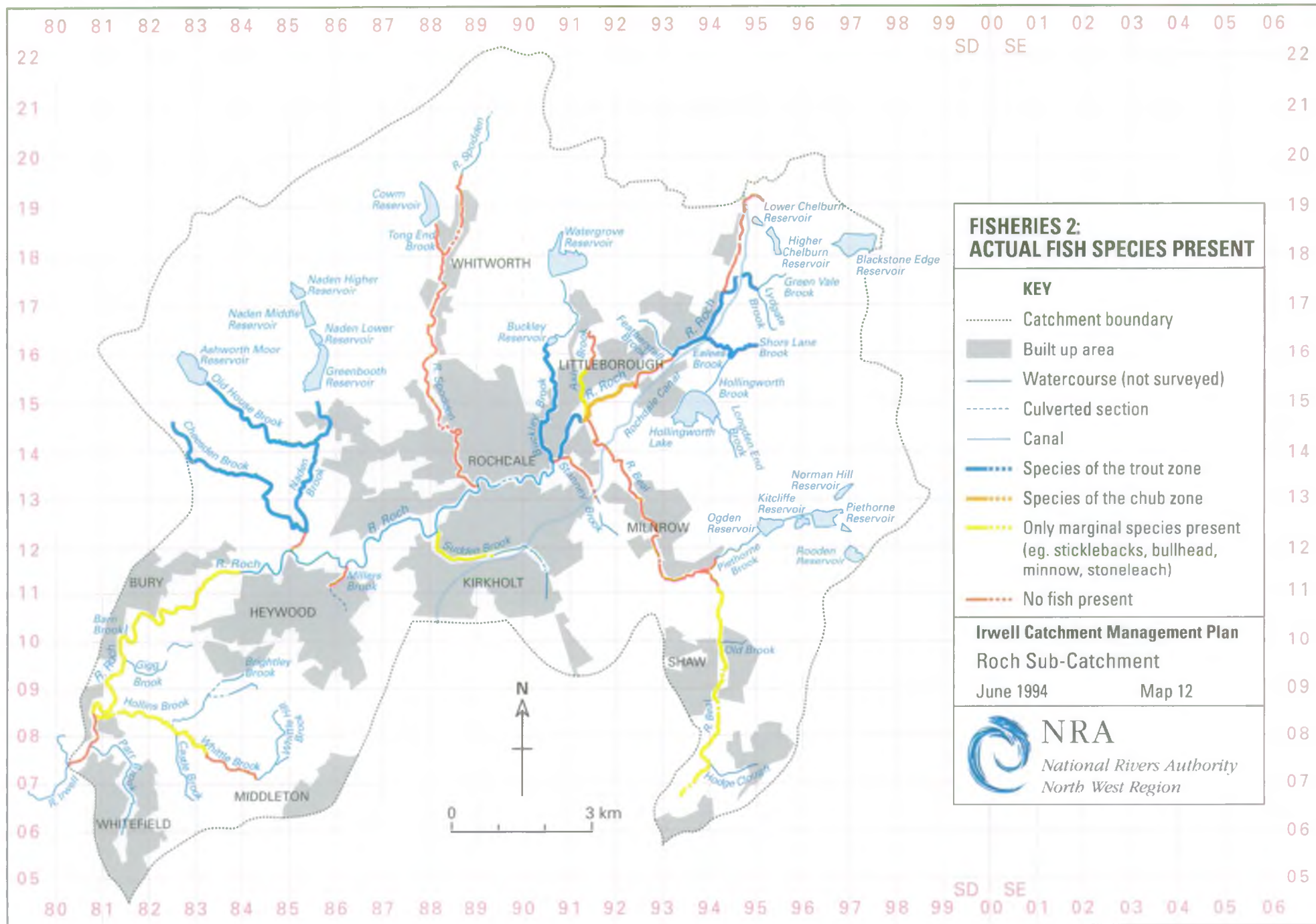
- ..... Catchment boundary
- Built up area
- Watercourse (not surveyed)
- - - - - Culverted section
- Canal
- At or above habitat potential
- - - - - Below habitat potential

**Irwell Catchment Management Plan  
Roch Sub-Catchment**

June 1994                      Map 13








**FISHERIES 2:  
ACTUAL FISH SPECIES PRESENT**

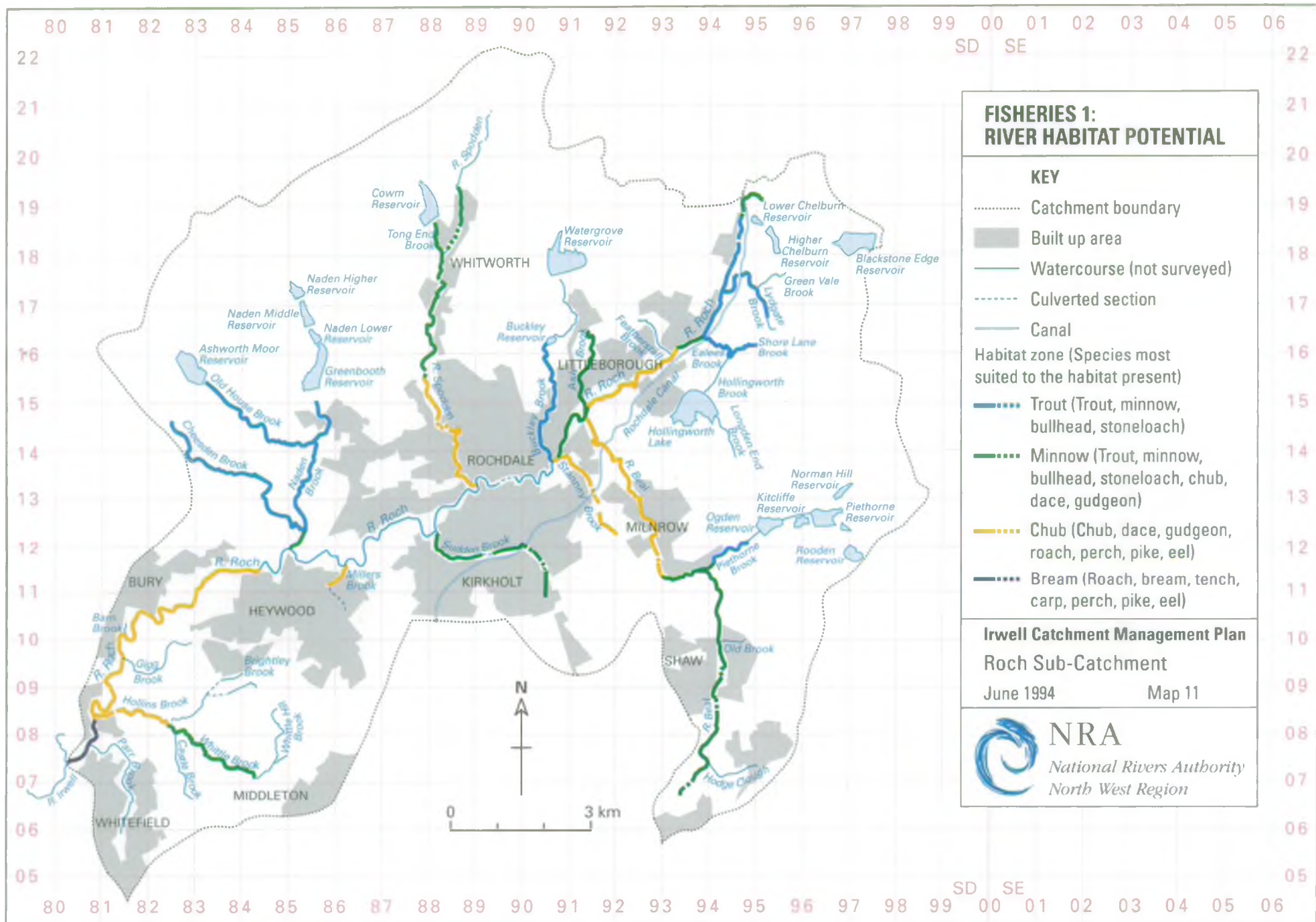
**KEY**

- ..... Catchment boundary
- Built up area
- Watercourse (not surveyed)
- - - - - Culverted section
- Canal
- Species of the trout zone
- Species of the chub zone
- Only marginal species present (eg. sticklebacks, bullhead, minnow, stoneleach)
- No fish present

**Irwell Catchment Management Plan**  
**Roch Sub-Catchment**  
 June 1994                      Map 12

 **NRA**  
*National Rivers Authority*  
*North West Region*





## 2.11 FISHERIES (MAPS 11, 12 & 13)

### 2.11.1 General

The use covers Game Fisheries, that is, the maintenance of breeding populations of salmonid fish species, namely brown trout in this catchment, and Coarse Fisheries, that is, the maintenance of breeding populations of coarse fish species.

The NRA has duties to maintain, improve and develop fisheries and to further the conservation of fish species. Fish populations are affected by the quality and quantity of water as well as by the availability of suitable physical habitat features. Fish are, therefore, important indicators of the overall health of the river.

### 2.11.2 Local Perspective

The NRA undertake fish population surveys on all rivers within a three year rolling programme. The results of these surveys can be summarised by the use of three coloured maps. The first map indicates the habitat potential or 'expected species' according to Huet's classification of rivers (1952)\*. This is compared to a second colour map indicating the actual species present, (from the results of the survey), which enables the third map, showing the shortfalls in habitat potential, as far as species composition is concerned, to be drawn. The data collected on the fish populations can be used to help classify and establish objectives for the river.

The River Roch Catchment should, by its physical nature, be a salmonid fishery in its upper reaches and a mixed fishery in its lower reaches. However, due to water quality problems, throughout much of the catchment, fish populations are restricted in many reaches.

Native stocks on non-migratory brown trout are well represented in Old House, Naden, Cheesden, Lydgate, Eales and Hey Brooks. The rest of the catchment is characterised by minor coarse fish species, such as stickleback and stone loach, with other coarse fish species present, in some reaches, but not generally well represented.

\* Huet, M. (1952), *Biologie, Profils en Long et en Travers Des Eaux Courantes* Bulletin Francais De Pisciculture 175,41-53.

### 2.11.3 Environmental Objectives

The overall objective is to develop and sustain a natural fish population appropriate to the catchment.

#### 2.11.4 Environmental Requirements

##### Water Quality:

- River stretches suitable for brown trout are to be maintained within the limits for pollutants as specified in the EC Fisheries Directive (78/659/EC) for salmonid fish, or by future SWQO's, whichever is appropriate.
- The remaining river stretches downstream to the demarcation points to be maintained within the limits for pollutants as specified in the same EC Directive but for coarse fish or by future SWQO's, whichever is appropriate.

##### Water Quantity

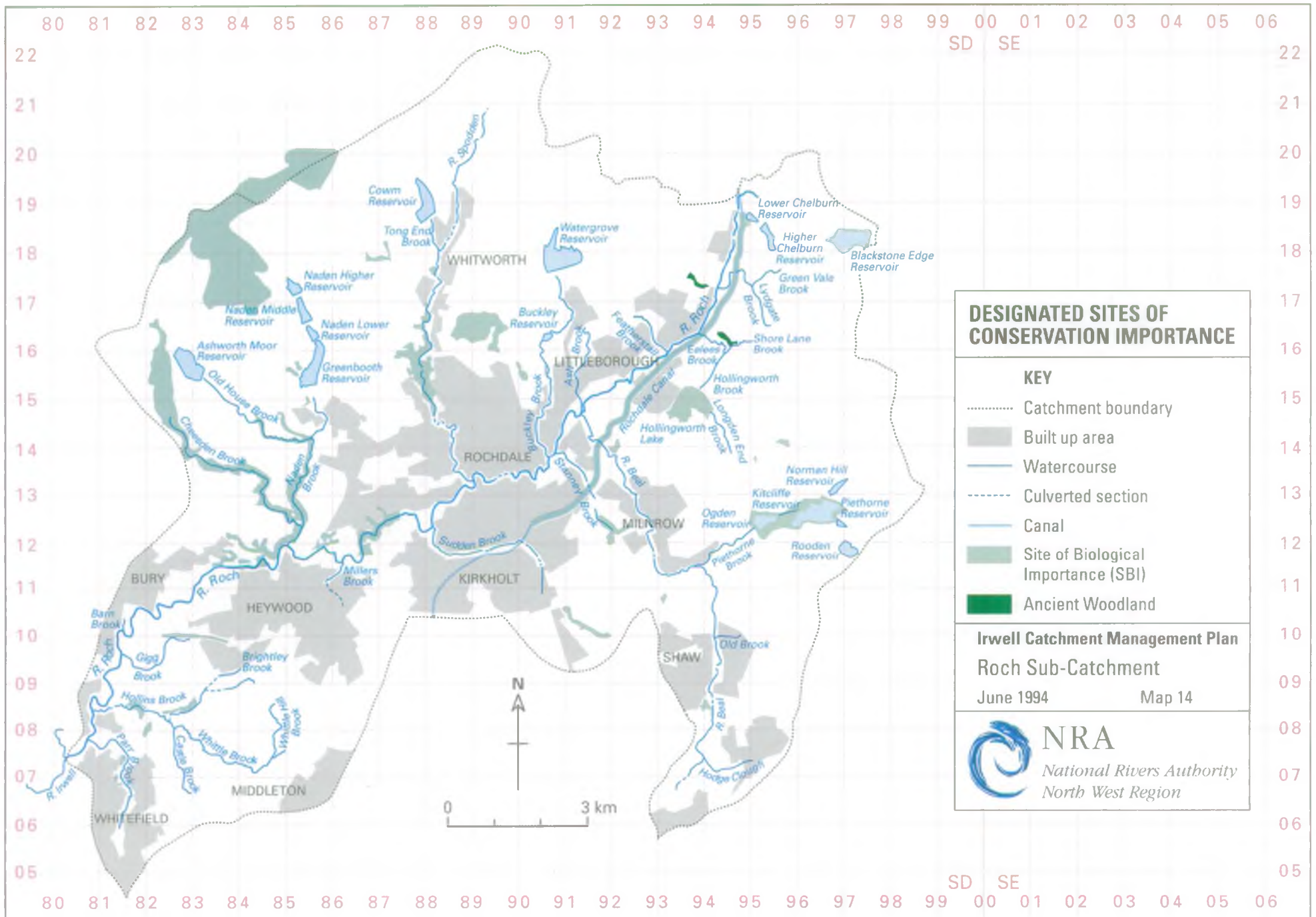
- A variable flow regime where the monthly average reflects the natural flow conditions in the river. The natural mean monthly flow not to decline below the historic monthly Q90 except during drought conditions.

##### Physical Features

- A diversity of natural river features to ensure a variety of habitat to maximise the production of fish populations including riffle/pool sequences and weed beds for feeding, spawning etc.
- The presence of bankside vegetation to provide adequate shade and cover.
- To ensure that river maintenance operations have a minimal deleterious impact on fish populations and enhance river habitat diversity where practical.








**DESIGNATED SITES OF CONSERVATION IMPORTANCE**

**KEY**

- ..... Catchment boundary
- Built up area
- Watercourse
- - - - Culverted section
- Canal
- Site of Biological Importance (SBI)
- Ancient Woodland

**Irwell Catchment Management Plan**  
**Roch Sub-Catchment**  
 June 1994                      Map 14

 **NRA**  
*National Rivers Authority*  
*North West Region*

## 2.12 CONSERVATION (MAP 14)

### 2.12.1 General

This use relates to the conservation and enhancement of wildlife, natural beauty and geomorphological features in the river corridors. Conservation covers both designated sites and the wider countryside associated with rivers and the water environment.

### 2.12.2 Local Perspective

In the rural, upland areas that form a large part of the catchment the watercourses and tributaries are of high conservation value.

There are still substantial semi-rural pockets between conurbations where, apart from occasional old mills, the river corridors are also of conservation value. Good habitats well represented in the catchments river corridors include acidic grassland, species rich neutral grassland, marshes, bogs and flushes and wooded cloughs.

The over-expanding conurbations have had a major impact on the watercourses that flow through them. The river corridors tend to be very constrained. However, the few green spaces that remain in the urban areas are often associated with watercourses and are of great importance in the local context.

Some indication of the conservation value of the catchment is given by the number of sites of biological importance (SBI's) designated by the Greater Manchester Countryside unit for the planning authorities of Greater Manchester.

There are a number of watercourses of particular conservation value in the context of Greater Manchester which require sensitive management.

The Roch itself is of nature conservation value. Between Heywood and Rochdale the wide deep valley is a striking natural feature. The seven tracts of woodland along the steep valley sides are all designated SBIs. Upstream of Rochdale the wide flood plain is characterised by the number of diverse wetland areas. Downstream of Heywood, it is a typical large sluggish urban river. It is particularly constrained through Rochdale where there is a length of culvert and it is also severely channelised through Littleborough.

Of particular conservation interest are Cheesden Brook, Naden Brook and its tributaries, Oldhouse Brook and Fester Clough. They are predominantly rural watercourses that flow through wooded cloughs designated as Grade A SBIs.

Also of value are watercourses such as Lydgate and Castle Brooks. They arise from the sheep grazed moorland above Rochdale. Upstream they flow through steep interlocking spurs of wet acidic grassland which support an excellent marsh flora. Downstream they flow through wooded cloughs.

The Hollins Brook sub-catchment is of conservation value. In particular Whittle Brook is of geomorphological interest. This small rural watercourse meanders across a relatively wide flood plain with numerous oxbows and earth cliffs. The range of habitats within the valley; unimproved acidic grassland slopes with regenerating scrub, diverse neutral pasture, tall low-lying grassland and numerous hedgerows provide an excellent river corridor which buffers the brook from more intensive agriculture, and is the ideal habitat for species such as hare and game birds.

Although it is in a walled channel for much of its length, and constrained by urban developments in Whitworth and Rochdale, the Spodden is of high nature conservation value. This is largely due to its size and variety in the bed as well as its narrow corridor.

Many of the other tributaries and their corridors have features of interest but extensive stretches have been compromised, physically and floristically by urban development and associated activities, such as tipping.

The number and extent of culverted sections has fragmented the riverine environment and led to a loss of open water and river valley habitats. This is partly under the sites of the many old waterpowered mills, which still occur throughout the catchment. There are particularly long stretches of culverts along the River Roch through Rochdale town centre, the River Beal at Milnrow, Parr Brook at Unsworth, the River Spodden at Whitworth and Whittle Brook under the M62.

It is very important to retain such interest as exists even in devalued corridors. There are also a great many opportunities for enhancements.

Redevelopment of a site containing a culvert presents a good opportunity to open up the watercourse to create an attractive water feature. This would remove a barrier to fish and wildlife and restore continuity in the riverine environment.

Opening up culverts as part of river restoration schemes may be possible in certain circumstances. The most suitable sites are those which run through uncontaminated green space with scope for the reintroduction of meanders. Other sites may be too deep and involve removal of too much spoil.

The catchment is rich in old reservoirs and lodges. Most of them have some nature conservation value and are designated as SBIs.

Hollingworth Lake is one of the most valuable sites in Greater Manchester for overwintering wildfowl. Ashworth Moor and Piethorne reservoirs are also of value to ducks and waders. Many of the others, particularly when disused, have great floristic value. The smaller lodges in particular tend to be under intense pressure from development and many have been filled in or dismantled.

The Rochdale Canal is also a very important aquatic ecosystem. It has the best examples of water violet, slender pond weed and floating water plantain in Greater Manchester.

Approximately 16 km of watercourses within the Roch Sub-Catchment have had a full river corridor survey. A number have been visited or had a rapid survey, but it is necessary to produce a more detailed strategic overview using aerial photographs in conjunction with more site visits and surveys.

### 2.12.3 Aquatic Invertebrates

In the main river, invertebrate diversity is limited with communities consisting of large numbers of pollution tolerant taxa including Assellidae hog lice, Chironomidae midge larvae, and Tubificidae worms.

The tributaries present a mixed picture, Stanney Brook stands out as being lifeless due to the presence of copper pollution. Communities in Millers Brook, Sudden Brook and the River Spodden are of limited diversity, however the situation in Hey Brook, Ash Brook and Whittle Brook and the River Beal/Piethorn Brook system is slightly improved with the mayfly Baetidae often present in large numbers. Lydgate Brook and Eales Brook both contain diverse communities in their upper reaches although this diversity decreases, reflecting a deterioration in water quality, as they reach the main river.

In contrast the Oldhouse Brook, Naden Brook, Cheesden Brook system accommodates a highly diverse invertebrate community with a wide variety of species including pollution sensitive stoneflies, mayflies and caddis flies. The value of this part of the catchment is all the more important by virtue of the limited diversity in the surrounding areas.

### 2.12.4 Environmental Objectives

The overall objective is to retain or recreate natural rivers within open, continuous river corridors, which are as wide as possible with a diverse range of habitats and physical features for people and wildlife.

This is to be achieved by:-

- retention of existing features of conservation interest
- actively promoting the enhancement of the river corridor, wherever possible/desirable
- seeking effective mitigation for any loss of conservation features
- safeguarding the special conservation interest for which sites have been designated.

### 2.12.5 Environmental Requirements

#### Water Quality:

- Water quality not to deteriorate to a level such that sites of high local conservation value lose their general aquatic interest, for example, Naden Brook, Cheesden Brook, Old House Brook and Fester Clough.
- Water quality improvement in some sites would enhance an existing conservation value, for example, Whittle Brook.

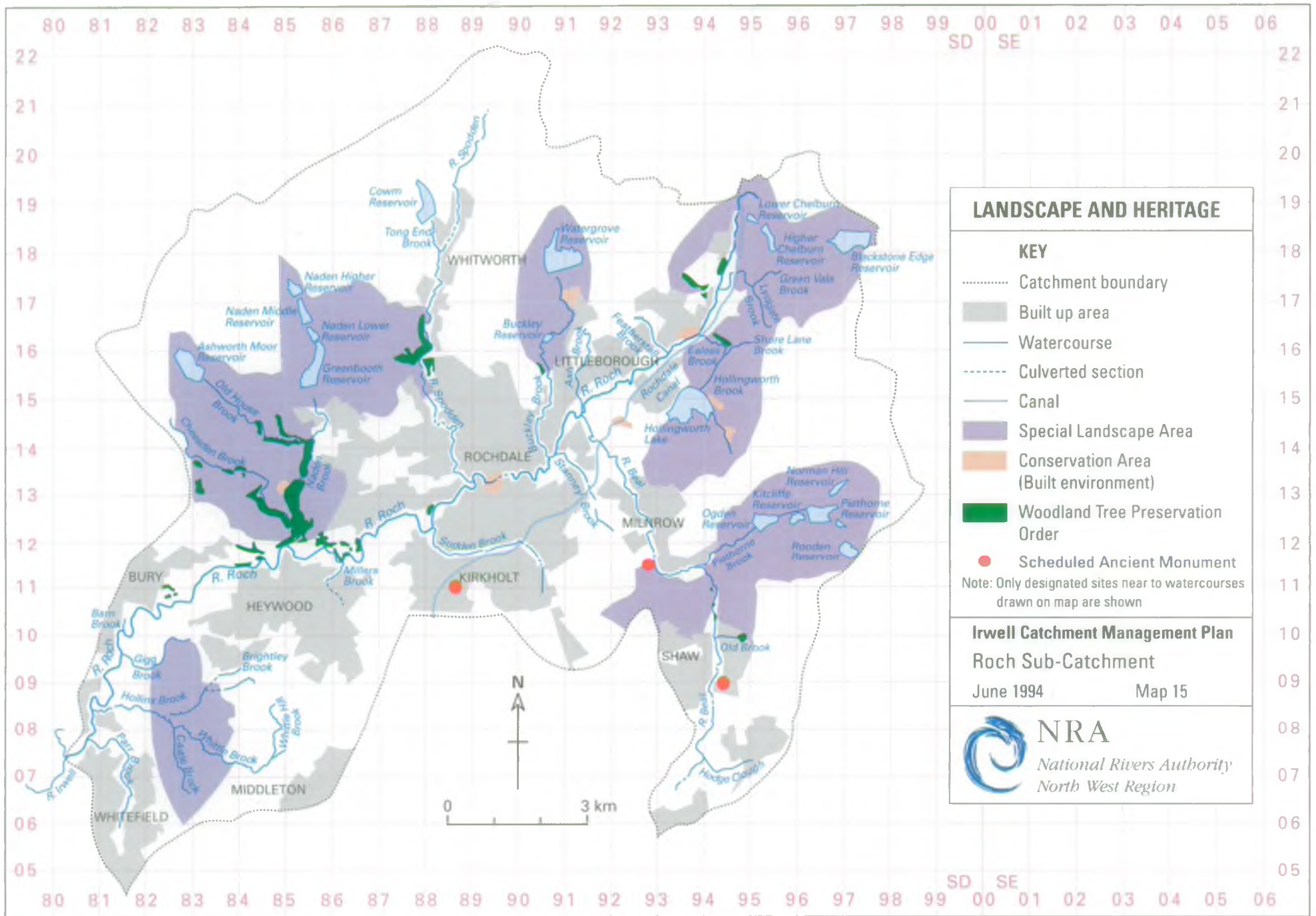
#### Water Quantity:

- A variable flow regime where the monthly average flow reflects the established or natural flow conditions in the river. The mean monthly flow not to decline below the established monthly Q90 except under drought conditions.
- Maintain the hydrological link between the river and its flood plain where appropriate. The water table to be maintained at a high level where possible but particularly where wetlands occur. Spate flows should be allowed to inundate certain wetlands.
- Spate flows to naturally cleanse the river channel.

#### Physical Features:

- The maintenance and enhancement of the diversity of natural river features such as meanders, earth cliffs, areas of erosion/deposition, pool/riffle sequences and the presence of aquatic vegetation and marginal (water's edge) vegetation.
- The maintenance and enhancement of a diversity of river corridor habitats including marsh, ponds, fringe or overhanging vegetation, bankside trees and hedges, species-rich bank vegetation, grassland and woodland. In addition, the conservation of the features which give rise or contribute towards the specific features of the designated conservation areas.
- The channel cross section to be appropriate for the river flow regime.





### LANDSCAPE AND HERITAGE

KEY	
	Catchment boundary
	Built up area
	Watercourse
	Culverted section
	Canal
	Special Landscape Area
	Conservation Area (Built environment)
	Woodland Tree Preservation Order
	Scheduled Ancient Monument

Note: Only designated sites near to watercourses drawn on map are shown

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**Irwell Catchment Management Plan**  
**Roch Sub-Catchment**  
 June 1994                      Map 15

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## 2.13 LANDSCAPE AND HERITAGE (MAP 15)

### 2.13.1 General

The NRA has a statutory duty to promote the conservation and enhancement of natural beauty for inland and coastal waters and for land associated with such waters

There is a statutory duty to have regard to the desirability for protecting and conserving buildings, sites and objects of archaeological, architectural or historic interest

These duties cover nationally designated sites e.g. Areas of Outstanding Natural Beauty, Scheduled Ancient Monuments as well as locally valuable sites.

### 2.13.2 Local Perspective

The Rochdale district comprises the high open moorland and steep wooded valleys of the Pennine foothills in the north, with meadows, woodland and river valleys in the south and west around the major centres of population.

Many of the upper reaches are identified as Special Landscape Areas, also Hollins Brook and its tributaries at the lower end of the sub-catchment.

River character will be influenced by past and present land-use and the extent of channelisation works. Within developed areas the river will generally be physically restrained in terms of bank reinforcement, channel straightening and deepening.

Of the 103 km of main river, 40km. runs through developed areas. The most channelised/culverted sections are the Spodden and Roch as they pass through central Rochdale.

The countryside landscape of the Roch Sub-Catchment is likely to change due to a decline in its mainly agricultural base. This may provide opportunities for river enhancement in terms of establishing a "buffer zone" between the river and adjacent land use.

The Rochdale U.D.P. identifies the borough as having limited woodland coverage. Promotion of woodland planting schemes will be encouraged by the Local Authority, to include river valleys.

In the Roch Sub-Catchment 14.5km. of the main river length is bounded by woodland on one or both banks. The valleys of Cheesden and Naden are particularly well wooded.

The archaeological interest of the Greater Manchester is complex with many potential sites still undiscovered.

The sub-catchment contains three scheduled Ancient Monument sites, two adjacent to main river. Mill buildings and weirs are a typical landscape feature of this area, reflecting Rochdale's importance in the textile industry.

The NRA hope to support riverside regeneration initiatives including renovation of significant or historical buildings especially if they include the provision of riverside walkways and use of local or natural materials.

### 2.13.3 Environmental Objectives

The overall objective is to conserve and enhance the natural beauty of rivers and to conserve their heritage value.

This is to be achieved by:

- retention of existing landscape character and features
- seeking effective mitigation for any loss of landscape quality.
- liaison with Local Planning Authorities and the Countryside Commission to discuss assessment and enhancement of river landscape quality.
- liaison with Local Planning Authorities to ensure that high quality river landscapes are adequately protected across planning authority boundaries.
- supporting initiatives to conserve heritage features.
- liaison with the County Archaeological Unit for all NRA capital and heavy maintenance schemes.

### 2.13.4 Environmental Requirements

#### Water Quality:

- To be aesthetically acceptable, that is, water to be free from surface films, extraneous floating material, discolouration and unpleasant odours.
- Not to deteriorate to a level such that sensitive heritage sites lose their interest.

**CATCHMENT USES AND ACTIVITIES  
LANDSCAPE AND HERITAGE**

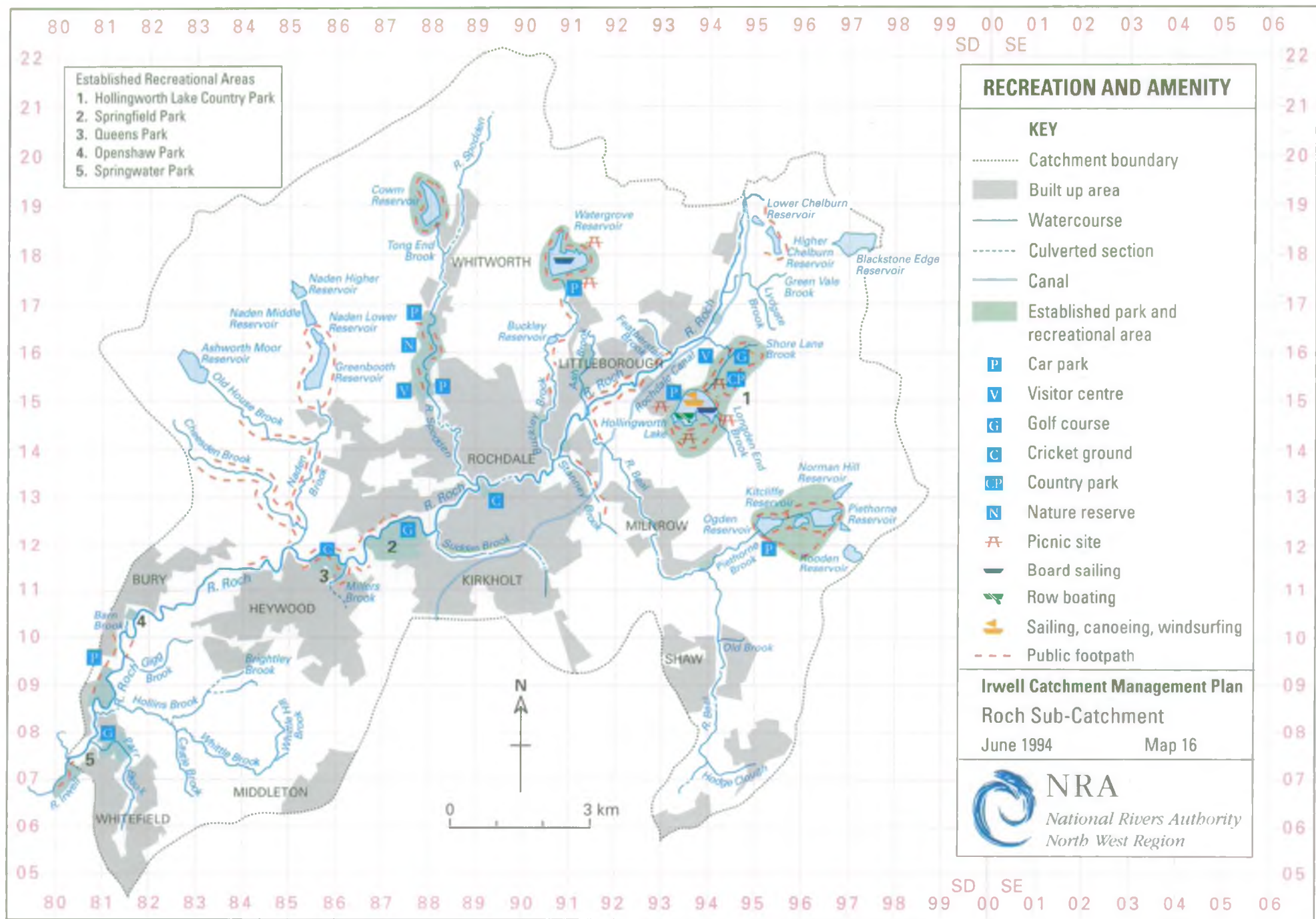
**Water Quantity:**

- A flow regime which reflects the natural or established flow conditions in the river.
- The water table to be maintained so as not to damage sensitive heritage sites.

**Physical Features:**

- To be in keeping with the local landscape character.
- In general to conserve and promote a diversity of natural features within the river valley and along the river corridor.
- Historic features and landscape types to be conserved, with restoration and interpretation as appropriate.





**Established Recreational Areas**  
 1. Hollingworth Lake Country Park  
 2. Springfield Park  
 3. Queens Park  
 4. Openshaw Park  
 5. Springwater Park

**RECREATION AND AMENITY**

**KEY**

- Catchment boundary
- Built up area
- Watercourse
- - - - Culverted section
- Canal
- Established park and recreational area
- P Car park
- V Visitor centre
- G Golf course
- C Cricket ground
- CP Country park
- N Nature reserve
- ⌘ Picnic site
- ⌘ Board sailing
- ⌘ Row boating
- ⌘ Sailing, canoeing, windsurfing
- - - - Public footpath

**Irwell Catchment Management Plan**  
**Roch Sub-Catchment**  
 June 1994                      Map 16

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## **2.14 RECREATION AND AMENITY (MAP 16)**

### **2.14.1 General**

This use deals with those sports such as canoeing, where intimate contact with the water occurs and also general waterside recreation such as walking.

### **2.14.2 Local Perspective**

There are several well established areas of public open space, still waters and parkland sites which offer a wide range of formal and informal recreational amenities.

The reservoirs provide sites of high recreational and amenity value within the catchment, where there are opportunities for sailing, canoeing, windsurfing and many other types of water related recreational activities.

Walking is well catered for, particularly around the reservoirs, by the provision of circular walks. Picnic sites are available at popular locations.

Access to the water courses is possible along several lengths by means of riverside walks.

Many of the recreational sites are managed by a warden service which is involved in actively promoting amenity and recreational pursuits.

### **2.14.3 Environmental Objectives**

- To obtain suitable water quality, water quantity, flow characteristics and physical river conditions, so as to provide a suitable environment for the types of recreational and amenity pursuits required by the local population and visitors to the catchment.

### **2.14.4 Environmental Requirements**

#### **Water Quality**

- Minimum requirement being the protection of the amenity value of the watercourse.
- Water to be free from surface films, unnatural colour, stable foam, extraneous floating material and unpleasant odour.

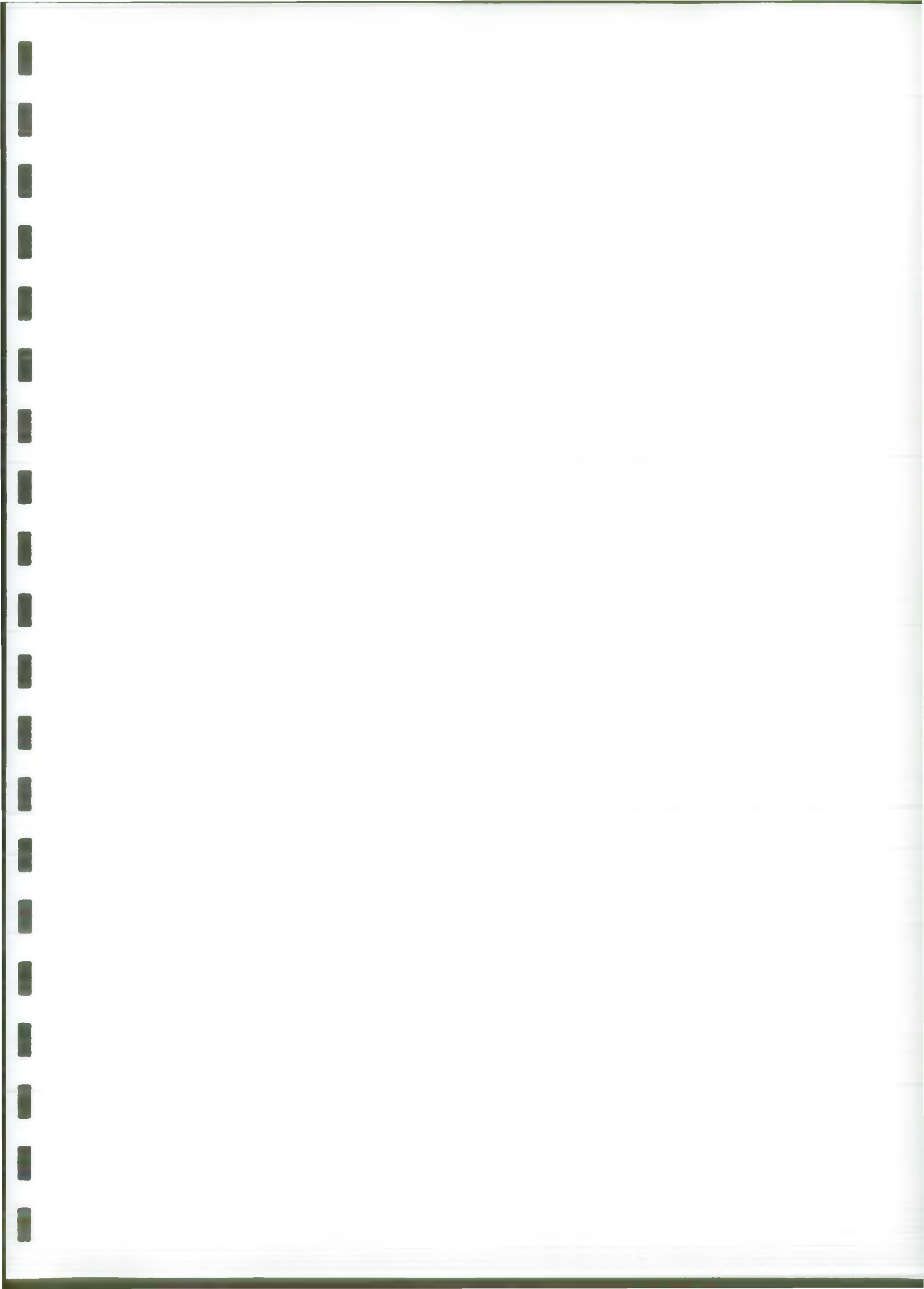
**CATCHMENT USES AND ACTIVITIES  
RECREATION AND AMENITY**

**Water Quantity:**

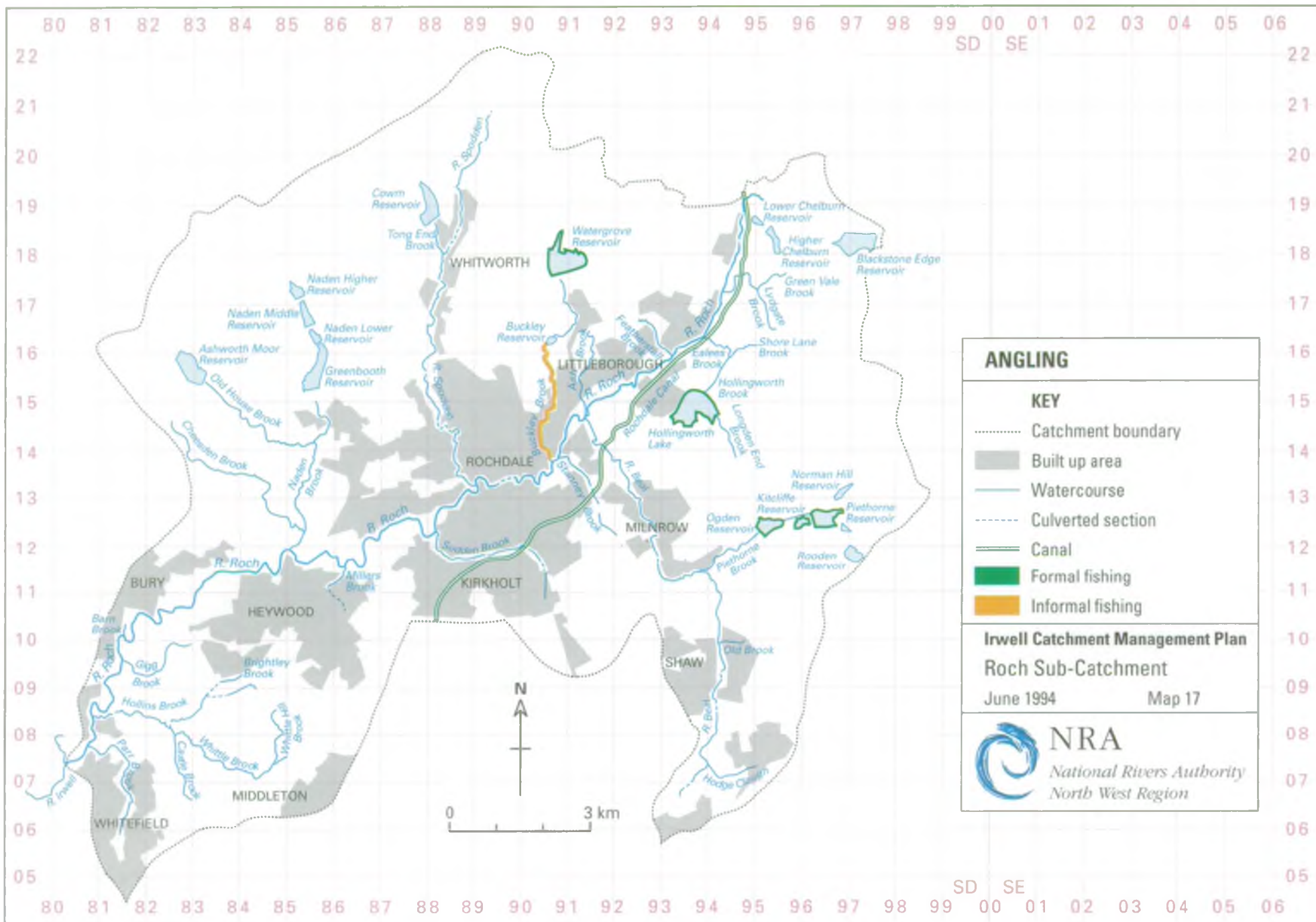
- Basic flow regime including the operation of transfer and augmentation schemes, to minimise detriment to recreation and amenity.

**Physical Features:**

- Maintenance of existing footpaths.
- Maintenance of existing access points.
- Enhancement of available facilities.
- Promotion of increase in available facilities.







## 2.15 ANGLING (MAP 17)

### 2.15.1 General

This use of the river specifically relates to the use of the catchment by pleasure anglers.

### 2.15.2 Local Perspective

There is little angling that takes place in the watercourses within the catchment. Informal fishing is mainly restricted to Buckley Brook (Hey Brook).

Of the main reservoirs in the catchment area angling occurs on only three, Watergrove, Hollingworth and the Piethorne system, which provide the angler with both coarse and trout fishing. The fishing is available to club members and also to the general public.

The Rochdale canal is also a popular coarse fishery and is controlled by several local Angling Clubs.

### 2.15.3 Objectives

- To provide suitable and safe conditions for successful angling within the catchment.

### 2.15.4 Environmental Requirements

#### Water Quality:

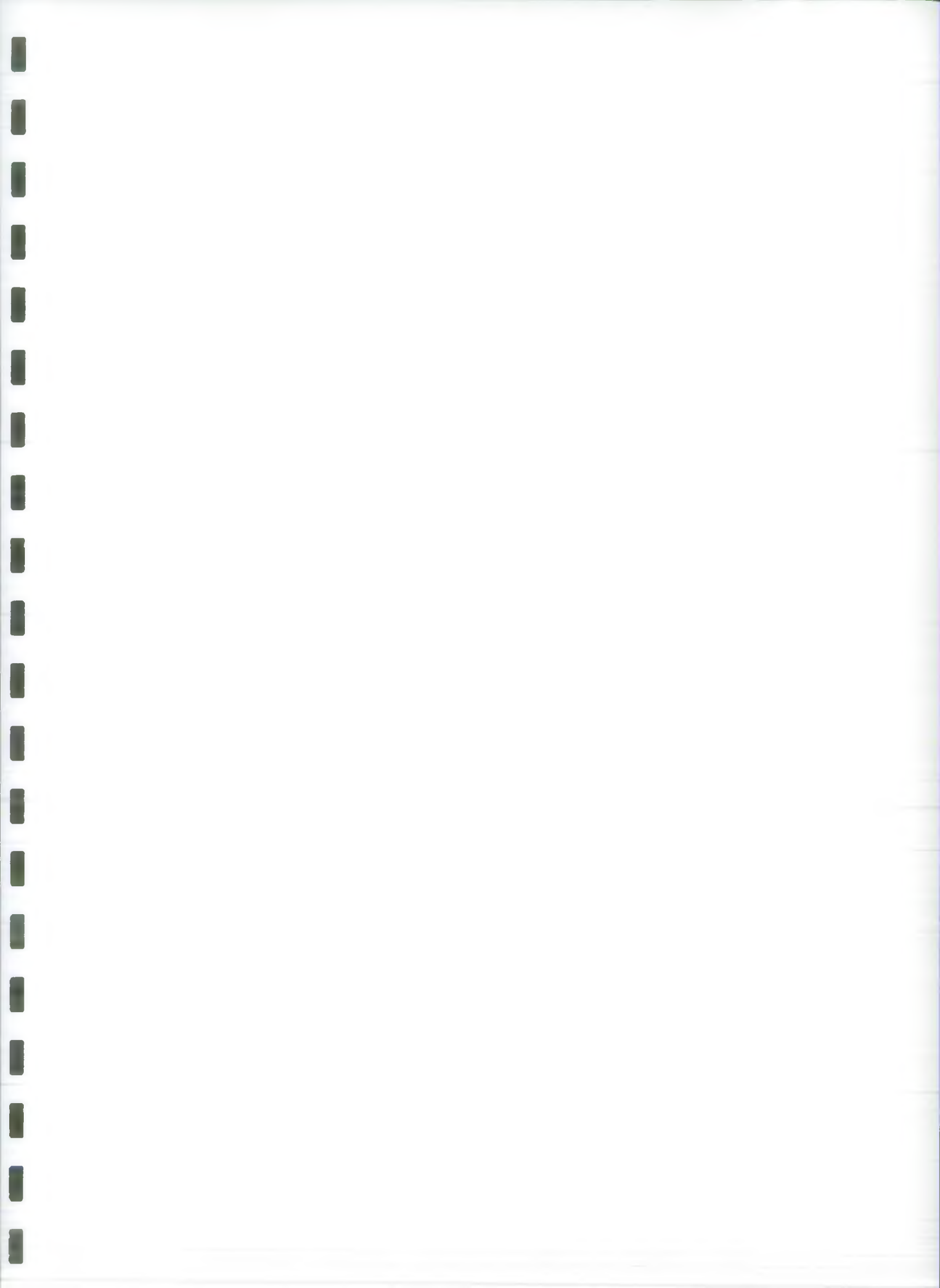
- To be of sufficient quality to comply with the basic amenity use of the water body.
- To be aesthetically acceptable in order to enhance angling, that is, water to be free from surface films, extraneous floating material, stable foam, discolouration and unpleasant odours.
- To comply with appropriate Water Quality Objectives for fisheries.

#### Water Quantity:

- A variable flow regime where the monthly average reflects the natural flow conditions in the river. The natural mean monthly flow not to decline below the historic monthly Q90 except during drought conditions.

#### Physical Features:

- The maintenance of sufficient access points for angling.
- The maintenance of a mixture of open water as well as in stream and bankside vegetation.



### FLOOD DEFENCE: OBJECTIVES

**KEY**

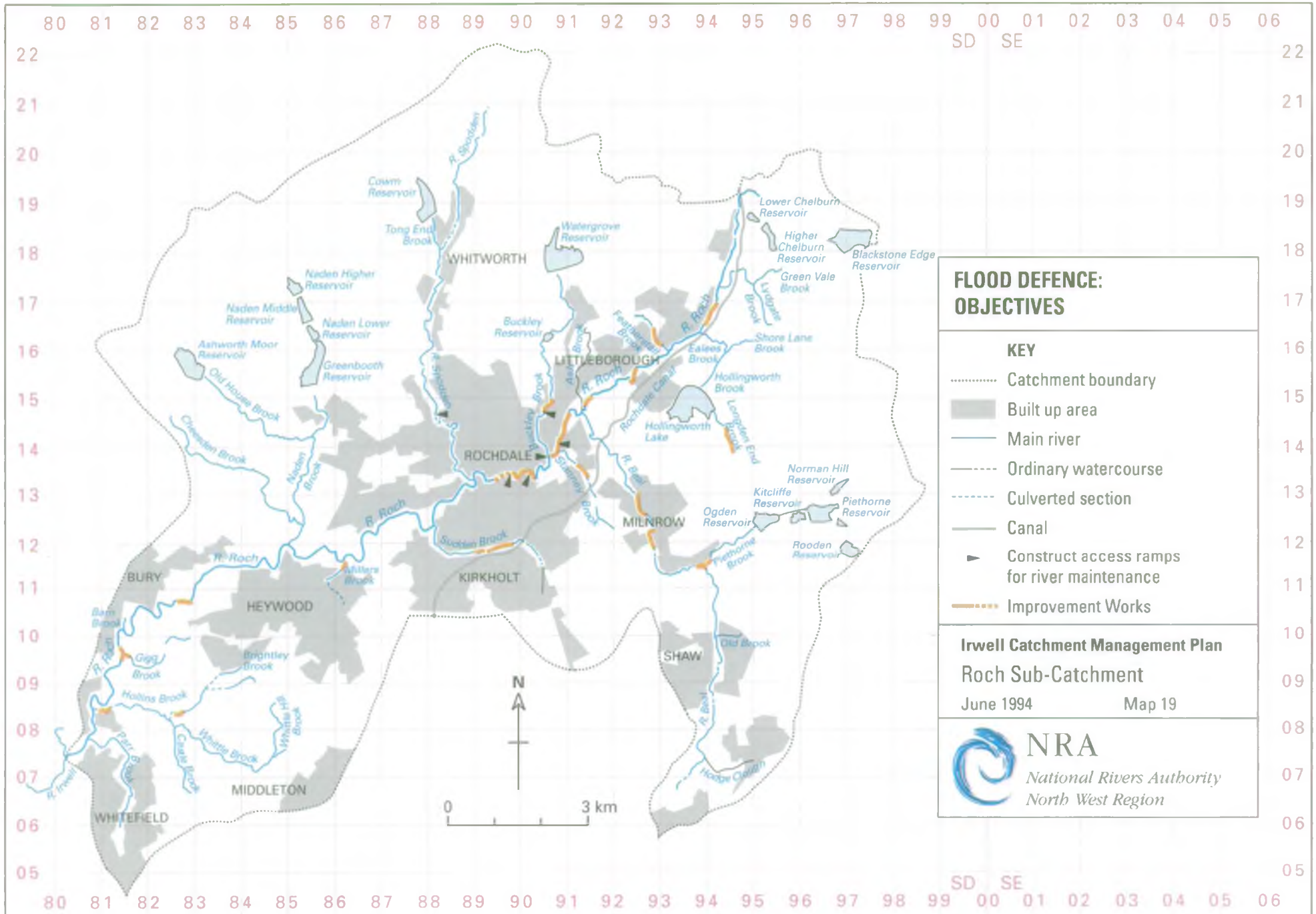
- ..... Catchment boundary
- Built up area
- Main river
- - - Ordinary watercourse
- · - · - Culverted section
- Canal
- ▶ Construct access ramps for river maintenance
- · — Improvement Works

**Irwell Catchment Management Plan**  
**Roch Sub-Catchment**  
 June 1994                      Map 19

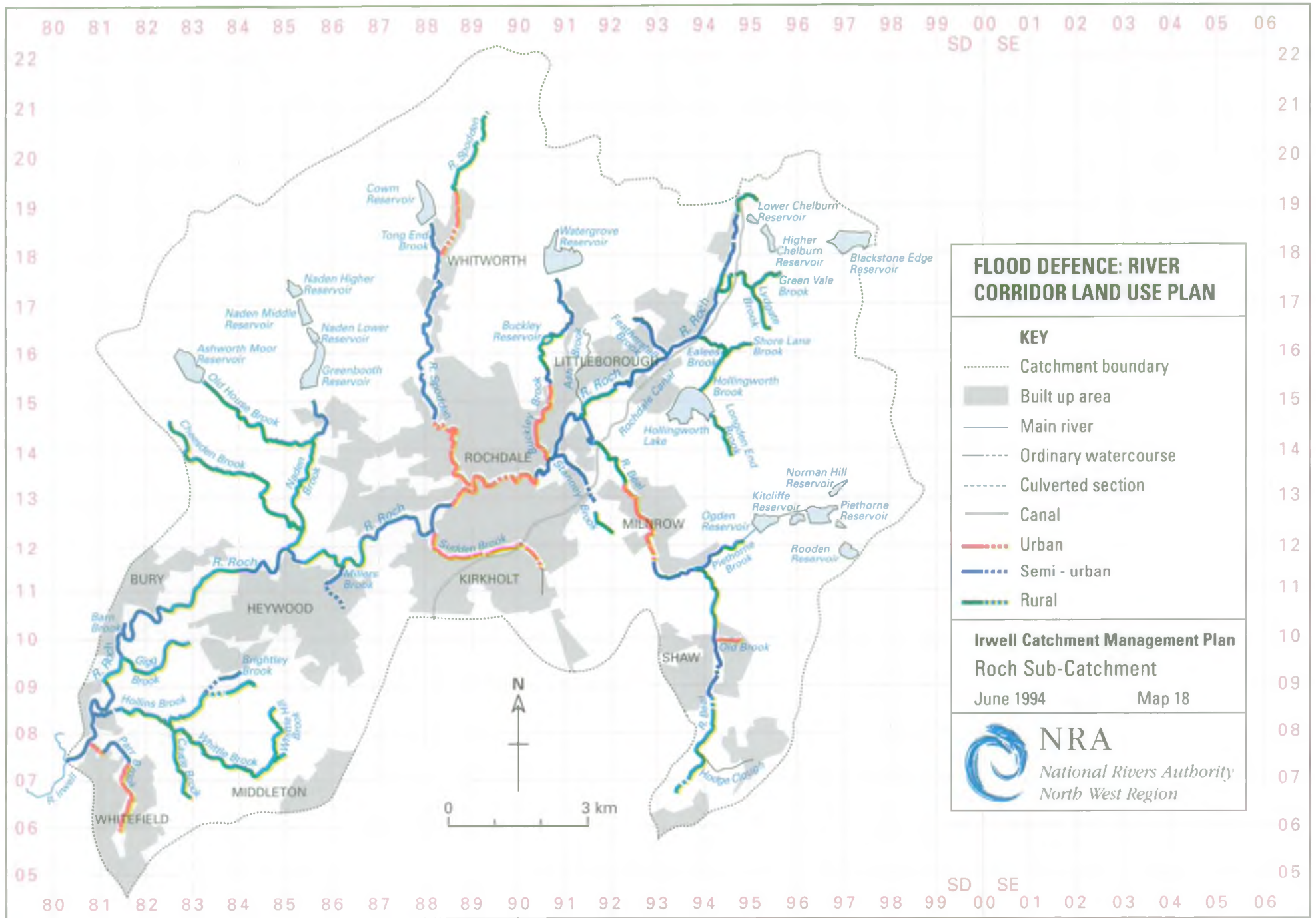


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### 3. CATCHMENT OBJECTIVES

#### 3.1 FLOOD DEFENCE OBJECTIVES (MAPS 18 & 19)

##### 3.1.1 General

The need for Flood Defence works is assessed using a number of criteria, which results in a benefit/cost figure. If the scheme cost is greater than the benefits accrued (which include flood damage, transport disruption, emotional stress, etc.) then it is likely that no scheme can proceed.

Target Standards for flood protection when carrying out maintenance or improvement works, can generally be defined in the following manner (Map 18):-

#### RIVER CORRIDOR LAND USE CLASSIFICATION

Classification	Definition	Target Standard of Protection (Years)
Urban	Medium to High density urban development containing both residential and non-residential property.	25 - 100
Semi-urban	Low density urban developments or rural communities, mixed with agricultural land.	10 - 25
Rural	Predominantly agricultural land, ranging from grass land to arable farming.	1 - 10

The Flood Defence objectives identified on the map are areas where it is considered likely that future works may be carried out (Map 19).

##### 3.1.2 Objectives

In addition to the requirements identified on the map the following general requirements are also considered objectives for the catchment:

- Ensure provision of suitable access for maintenance of the river channel and flood defences.
- Maintenance regime which encourages ecological diversity, whilst maintaining flood defence levels of service.
- Co-operation with others responsible to ensure river corridors are free from rubbish and other imported debris.
- Operation of flood defence structures to ensure protection of all identified uses.

## 3.2 WATER QUANTITY OBJECTIVES

### 3.2.1 General

This section considers the requirements for both meeting existing and future abstraction water demand in the catchment and for minimum residual flows (MRF's) and minimum control levels (MCL's) to protect in-river needs.

### 3.2.2 Objectives

#### Water Abstraction:

The NRA has yet to establish formal policy with regard to supply objectives but the following targets will be considered, and in many cases are already being actively pursued:-

- a) To meet all reasonable demands to the Authority's stated levels of service within quality criteria described in the Authority's Water Quality Objectives.

The use-related levels of service are as follows:-

#### Public Water Supply:

- risk of hosepipes ban restrictions not greater than 1 year in 10
- need for voluntary savings of water not greater than 1 year in 20
- risk of standpipes not greater than 1 year in 100.

#### Spray Irrigation:

- risk of restriction not greater than 1 year in 12.

- b) To set MRF's and MCL's to protect the in-river needs of environmental waters.
- c) To ensure the best utilisation of water resources and the efficient use of water within the catchment.



**Surface Waters:**

In sub-catchments where there is significant water abstraction, minimum flow and level controls are necessary to ensure the resource is not over-committed in dry or drought years at the expense of other water users. Provisionally a general MRF equivalent to the 90 percentile flow (that flow which is exceeded 90% of the time) may be used as a target flow at points on the river. In retained water level reaches MCL's are also set to ensure minimum depths of water.

In some sub-catchments MRF's at specific locations may be required to provide dilution for effluent discharges.

**Local Hydrometric Objectives:**

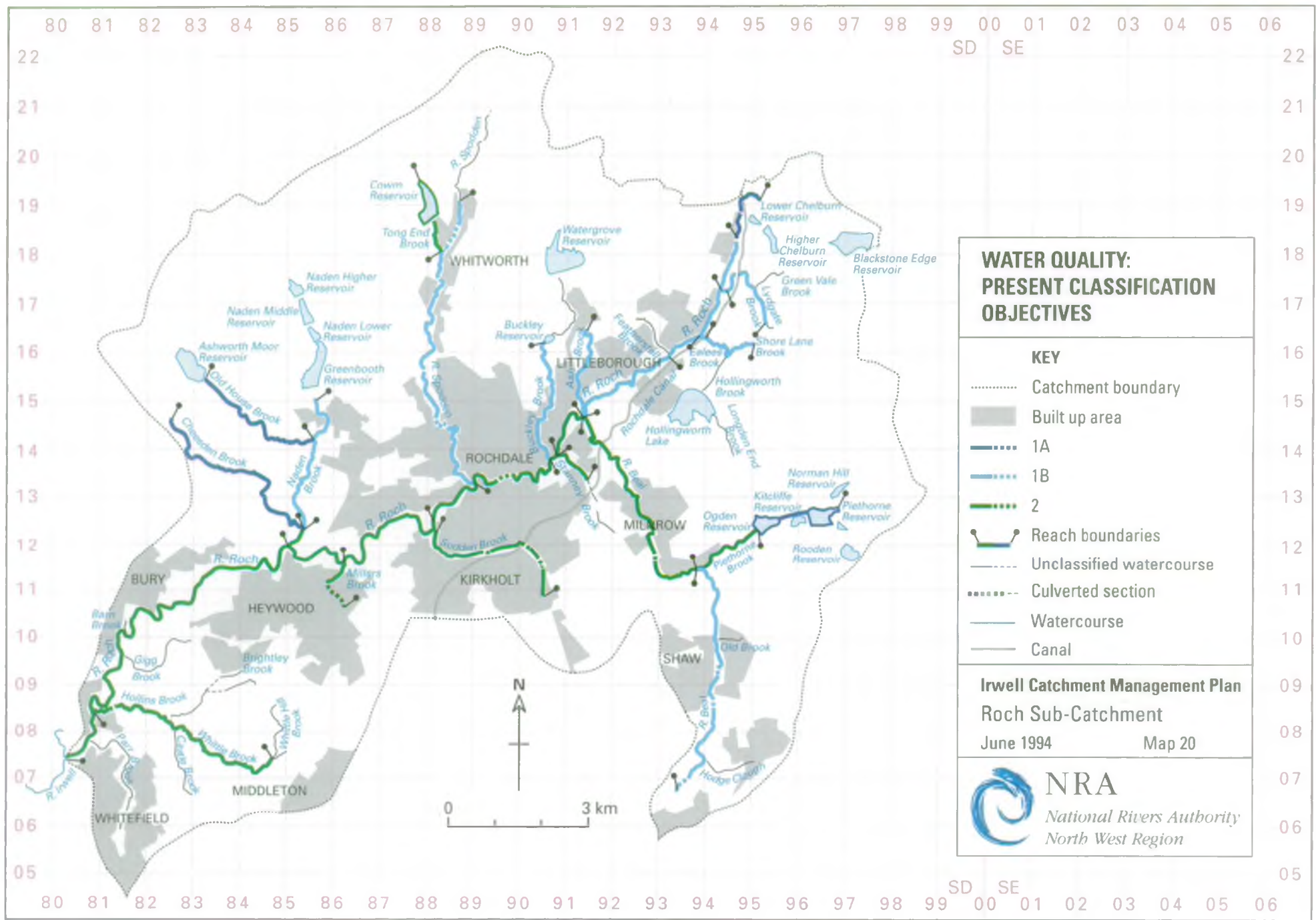
The hydrometric information gathered in the Roch catchment has three principal uses within the NRA. Firstly, to provide warning of potential flooding further flooding downstream in the Irwell flood plain by monitoring levels and rainfall in this upper catchment. Secondly, to provide river level information for proposed flood alleviation schemes. Thirdly, to provide level and flows data for water quality management for this urban and industrialised catchment.

Short term, local needs to provide river levels and rainfall information for specific projects, that is for flood alleviating schemes and for setting floodwarning, water quality and licensing standards.

**Groundwaters:**

In dry/drought summer conditions, springflow discharges from groundwater aquifers to sustain water flows. Areas which require particular protection from any long term groundwater level decline need to be specified. General protection from long term level decline is required over the whole area to protect existing uses and users of groundwater.





### 3.3 WATER QUALITY OBJECTIVES (MAPS 20 & 21)

Objectives relating to water quality can be categorised as relating to domestic UK classification schemes or arising from EC Directives.

#### 3.3.1 Water Quality Classification

a) **Present Water Quality Classification Objectives - National Water Council (NWC) Classification**

The NWC system of water quality classification was established in the 1970's. Inland watercourses are classed as 1A, 1B, 2, 3 or 4 in descending order of quality.

Class 1A and 1B watercourses could support a game fishery other factors being favourable whereas Class 4 waters are so grossly polluted as to be likely to cause nuisance.

Watercourses are assigned to Class on the basis of the chemical parameters, dissolved oxygen, Biochemical Oxygen Demand (BOD) and ammonia with due regard to the results of monitoring of benthic invertebrate fauna.

In 1979 stretches of watercourse throughout England and Wales were defined and targets, Long Term Objectives (LTOs) or River Quality Objectives (RQOs), in terms of the NWC Classification system assigned to them.

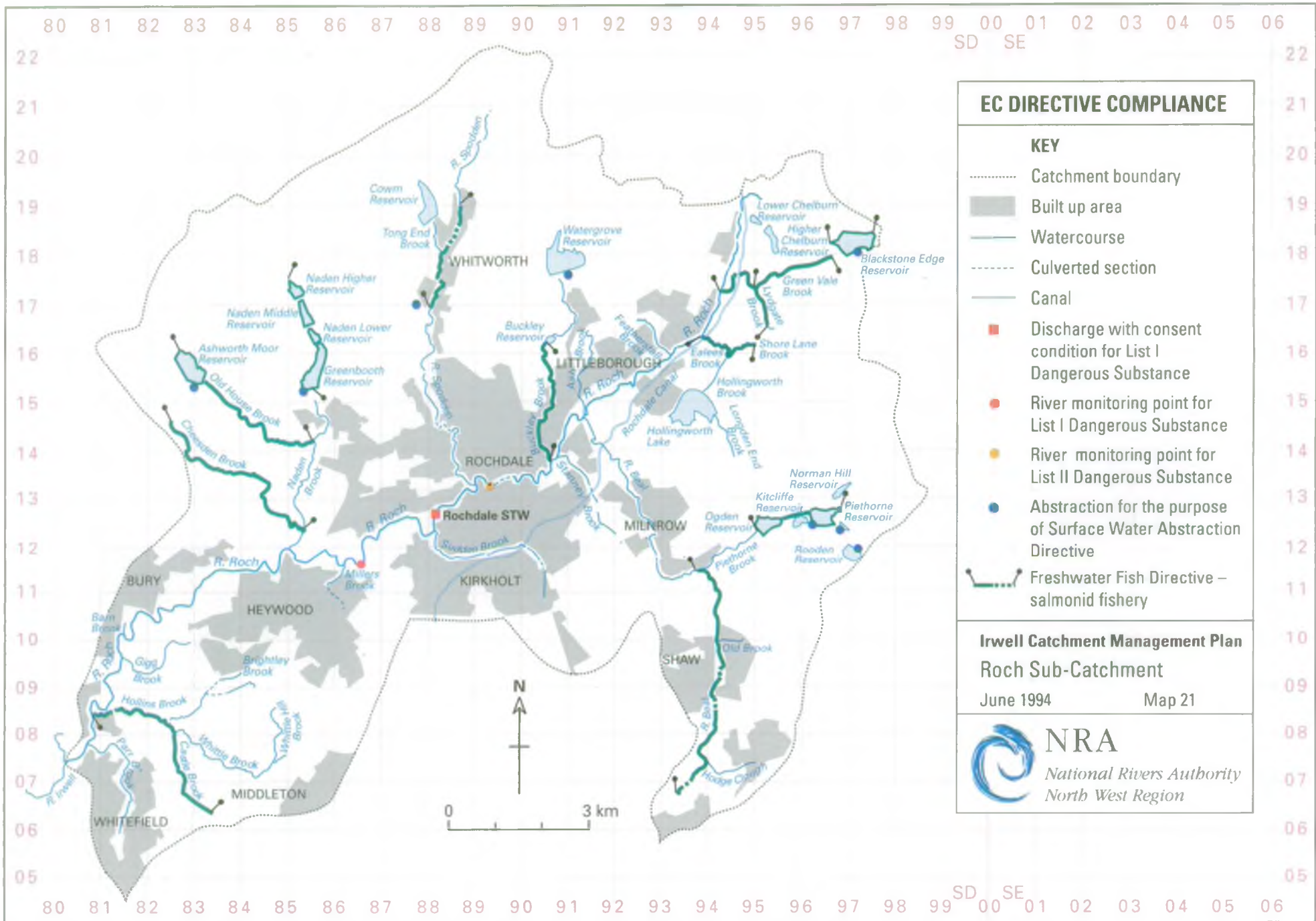
The minimum target assigned was achievement of Class 2 quality which should support a coarse fishery. The target achievement date was 2010 with an emphasis on eliminating Class 4 watercourses by 2000. Incorporated within this is the policy of no deterioration in the quality of controlled surface waters. Some amendments have been made to the stretch definitions since 1979 and these are included for the purposes of this report.

There are 26 defined classified reaches within the Roch Catchment and they are shown together with their NWC objectives on Map 20.

b) **Future Water Quality Classification Objectives - Statutory Water Quality Objectives (SWQOs)**

Proposals have been made in recent years for a system of legally binding targets based on the uses to which a watercourse could legitimately be put. These will supersede the NWC Long Term Objective targets. Statutory Water Quality Objectives involve classification systems of water quality required for different types of use and for use in assessing compliance for that use.





**EC DIRECTIVE COMPLIANCE**


**KEY**

- ..... Catchment boundary
- Built up area
- Watercourse
- - - - Culverted section
- Canal
- Discharge with consent condition for List I Dangerous Substance
- River monitoring point for List I Dangerous Substance
- River monitoring point for List II Dangerous Substance
- Abstraction for the purpose of Surface Water Abstraction Directive
- Freshwater Fish Directive – salmonid fishery

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**Irwell Catchment Management Plan**  
**Roch Sub-Catchment**  
 June 1994                      Map 21

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To date only the River Ecosystem classification system has been fully developed. The regulations defining the system received legal status on the 10th May 1994. Objectives under this classification system will be set for stretches of watercourse in the near future. It is possible to relate the NWC Long Term Objective targets to the River Ecosystem classification system. It is envisaged that River Ecosystem objectives will be applied to stretches in a manner that where the water companies are affected no additional expenditure by them will be required over that which would have been required with the previously pertaining NWC Long Term Objective. Otherwise a direct translation will largely apply.

Classification systems for other uses are likely to follow.

### 3.3.2 EC Directives (Map 21)

Four Directives issued by the EC have direct implications for water quality in the Roch Catchment.

#### a) Directive on Dangerous Substances in Water

The Directive provides a framework for measures to control water pollution caused by discharges of certain dangerous substances sub-divided under List I and List II. Member States are required to take steps to eliminate pollution by List I substances and reduce pollution by List II substances.

In the UK Environmental Quality Standards have been established for concentrations of these substances in watercourses. Limits for discharges containing the substances have been set accordingly with regard to the dilution available.

The locations of river monitoring points and of discharges with consent conditions for Dangerous Substances in the Roch Catchment are shown on Map 21.

#### b) Directive on Urban Wastewater Treatment

The Directive specifies requirements for the collection and treatment of industrial and domestic wastewaters at sewage treatment works and for treatment of wastewater from certain sectors of industry prior to direct discharge to watercourse.

The interpretation in the UK will mean that all significant inland STW will almost certainly already comply with all the requirements relating to treatment.

However the requirement that collecting systems (the sewerage network) shall be designed, constructed and maintained in accordance with best technical knowledge not entailing excessive costs specifically regarding the limitation of pollution of receiving waters due to storm (and emergency) overflows presents very significant objectives to be met. Over 70 overflows have been identified within the Roch catchment with regard to this requirement.

With regard to direct discharges from the specified sectors of industry standards for the appropriate level of treatment are currently being developed. It is however unlikely that any of the direct discharges of industrial effluent within the Irwell Catchment will be affected by this requirement.

**c) Directive on Water Quality for Freshwater Fish**

The Directive sets Environmental Quality Standards for stretches of freshwater designated as suitable for either salmonids (salmon and trout) or cyprinids (coarse fish).

There are 13 designated stretches within the Roch Catchment. They are all of salmonid designation and are shown on Map 21.

**d) Directive on Abstraction of Surface Water for Drinking**

Amongst other requirements this Directive specifies standards for the quality of water abstracted for use as drinking water.

Ten abstractions have been identified in the Roch Catchment for the purposes of this Directive and these are shown on Map 21.

### **3.3.3 Groundwater Protection Objectives**

In December, 1992 the NRA issued its Groundwater Protection Policy. Groundwater is a vital natural resource and under particular threat from the effects of human activity. Once polluted, groundwater is often difficult and very expensive to recover. Therefore, preventing groundwater contamination is a major objective of the NRA. The Authority would like this policy to be viewed by all those whose activities may compromise groundwater quality, as a guide to assist and influence future planning strategy decisions. The document outlines the concept of vulnerability, that is the designation of areas of land where certain activities can have an appreciable affect on groundwater quality in an aquifer system and where pollution could quickly enter groundwater. It deals in particular with:-

- waste disposal land



**CATCHMENT OBJECTIVES  
WATER QUALITY**

- disposal of slurries and sludge to land
- physical disturbance of aquifers affecting quality and quantity
- contaminated land
- diffuse pollution and unacceptable activities in high risk areas.

It is important to note that the definition of "controlled water" provided by the Water Resources Act, 1991 included groundwater. Therefore, statutory Quality Objectives for groundwaters will be developed by the NRA in the future.

### 3.4 PHYSICAL FEATURES OBJECTIVES

#### 3.4.1 General

This section considers the general requirements for the physical features of the rivers and associated land of the catchment.

From the uses identified in Section 2 Physical Features Objectives have been defined as follows:

#### 3.4.2 Objectives

##### Development Control

- Retain, recreate and enhance open green corridors along watercourses with a variety of features for people and wildlife. Effective river corridors should be continuous, and as wide as possible, to allow the free movement of wildlife and full enjoyment of their recreational potential.
- There should be no increase in flood risk as a result of development. No development in areas where the existing level of flood protection is considered below the target standard required for the type of development proposed.
- Ensure there are no new obstacles to the potential migration of fish.

##### Potable Water Supply, Agricultural and Industrial Abstraction

- Provide control structures and ensure efficient resource management. Promote winter storage facilities.
- Promote the use of soakaway/recharge drainage systems for proposed development.

##### Mineral Extraction and Landfill Sites

- All sites to be restored to an acceptable environmental standard and the creation of aquatic habitats promoted.
- Safeguard features of the water environment which are of conservation or landscape value.
- Safeguard the unique physical character and natural topography of the river valleys and flood plains.
- Maintain the integrity of the river channel adjacent to extraction sites.

**Fisheries**

- Endeavour to provide and maintain a diversity of natural river features to ensure variety of habitats to maximise the production of future fish populations.
- Maintain bankside vegetation to provide adequate shade and cover.
- Provision of fish passes around weirs and other obstructions to potential fish migration.

**Conservation**

- Promote the conservation and enhancement of healthy rivers with a diversity of natural geomorphological features, such as meanders, with areas of erosion and deposition, earth cliffs, undercut banks, pools, riffles, shoals, bars and islands.
- Protect and enhance the range of wildlife and semi-natural habitats found within the river corridors including flood plain habitats, old channels, marsh, ponds, marginal and overhanging vegetation, bankside trees and hedges, uncultivated buffer strips, species rich grassland and woodland.
- Promote less intensive farming in river corridors through initiatives such as countryside stewardship.

**Landscape and Heritage**

- Further, enhance and promote the natural beauty of the water environment.
- Safeguard those man-made features of the riverine environment that are of archaeological, historic, aesthetic or conservation value, for example weirs, stone walls, mill races and old industrial buildings.

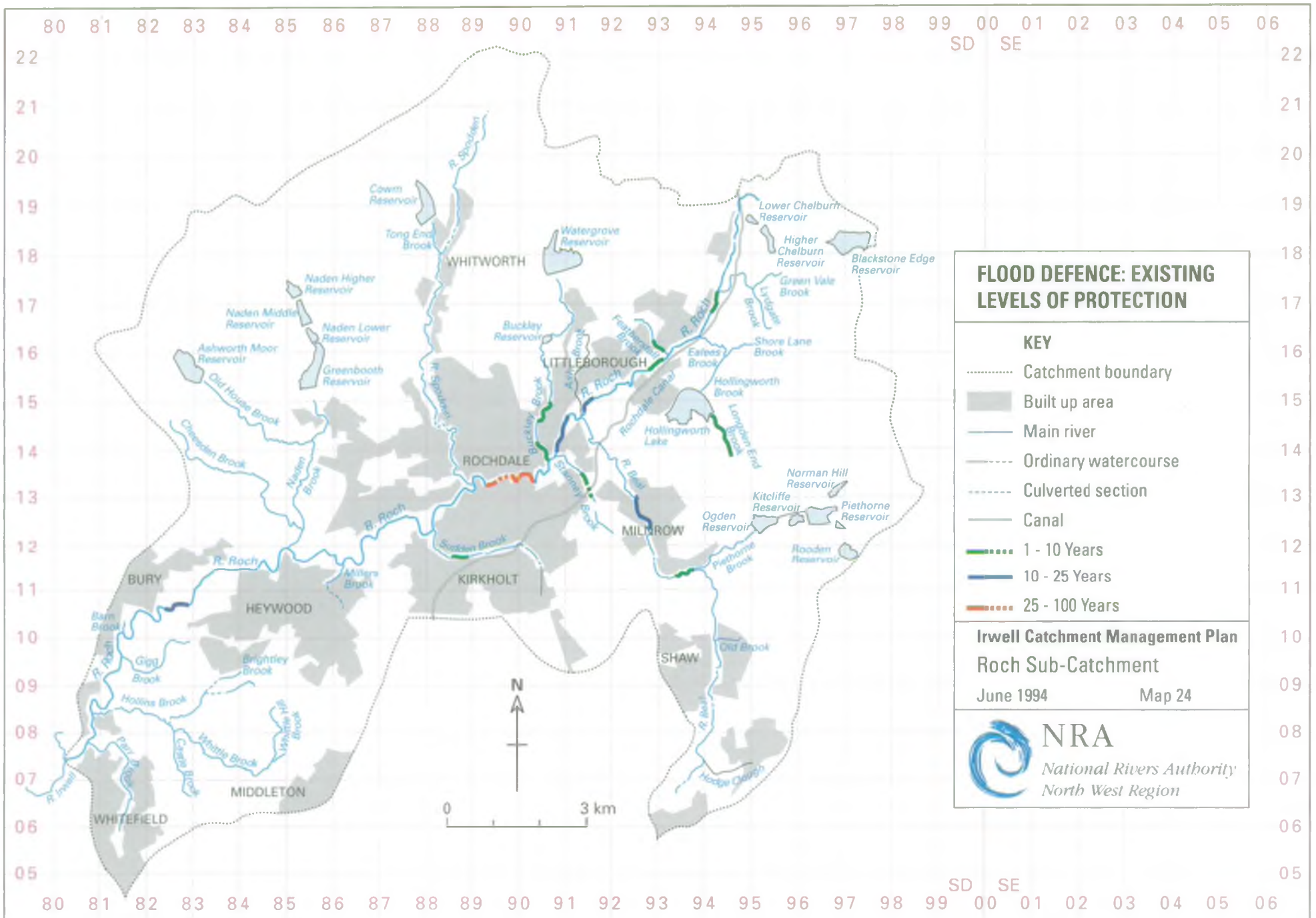
**Recreation and Amenity**

- Promote the potential of open river corridors for informal recreation.
- Promote the creation and linking up of footpaths along and to watercourses.

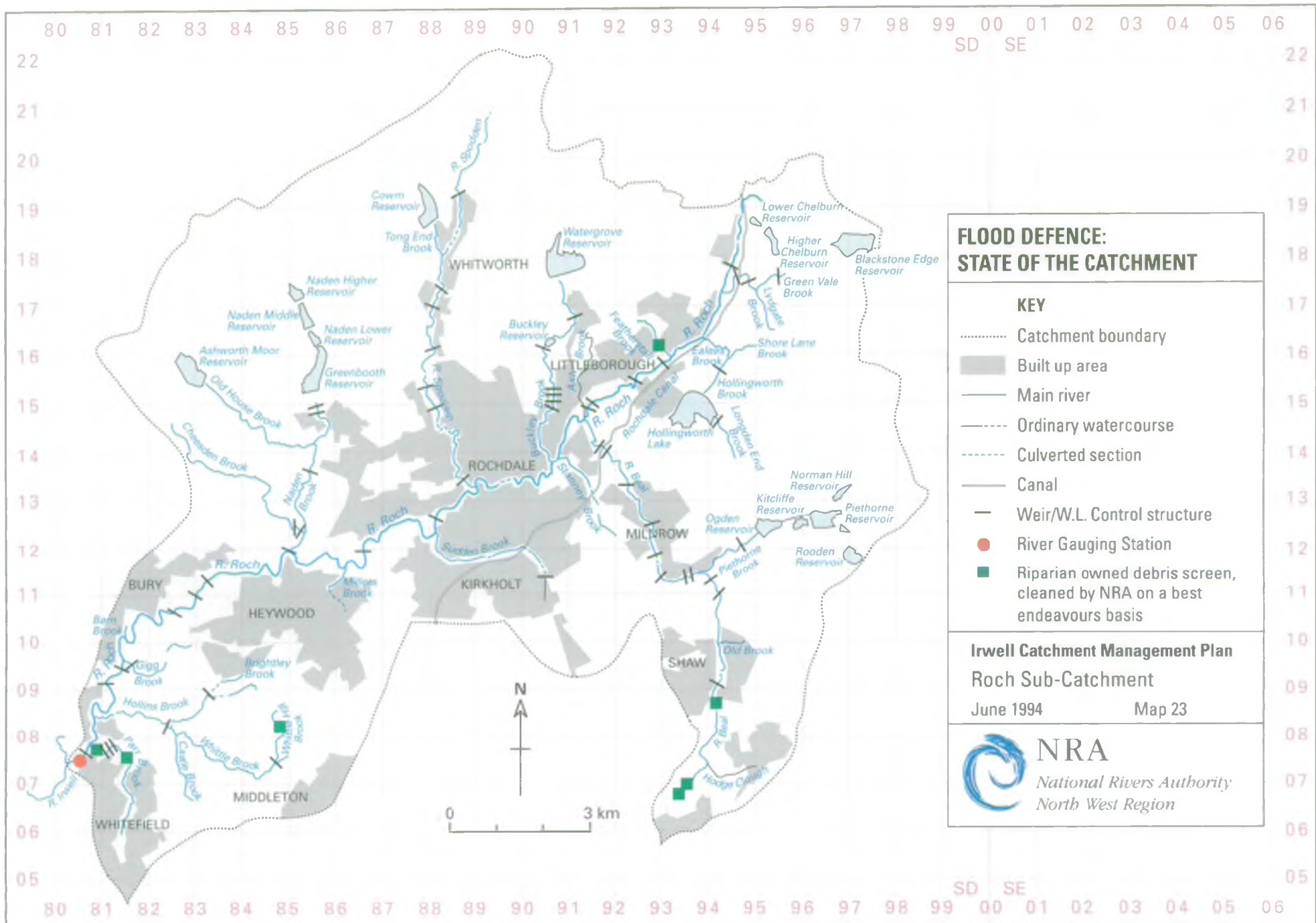
**Angling**

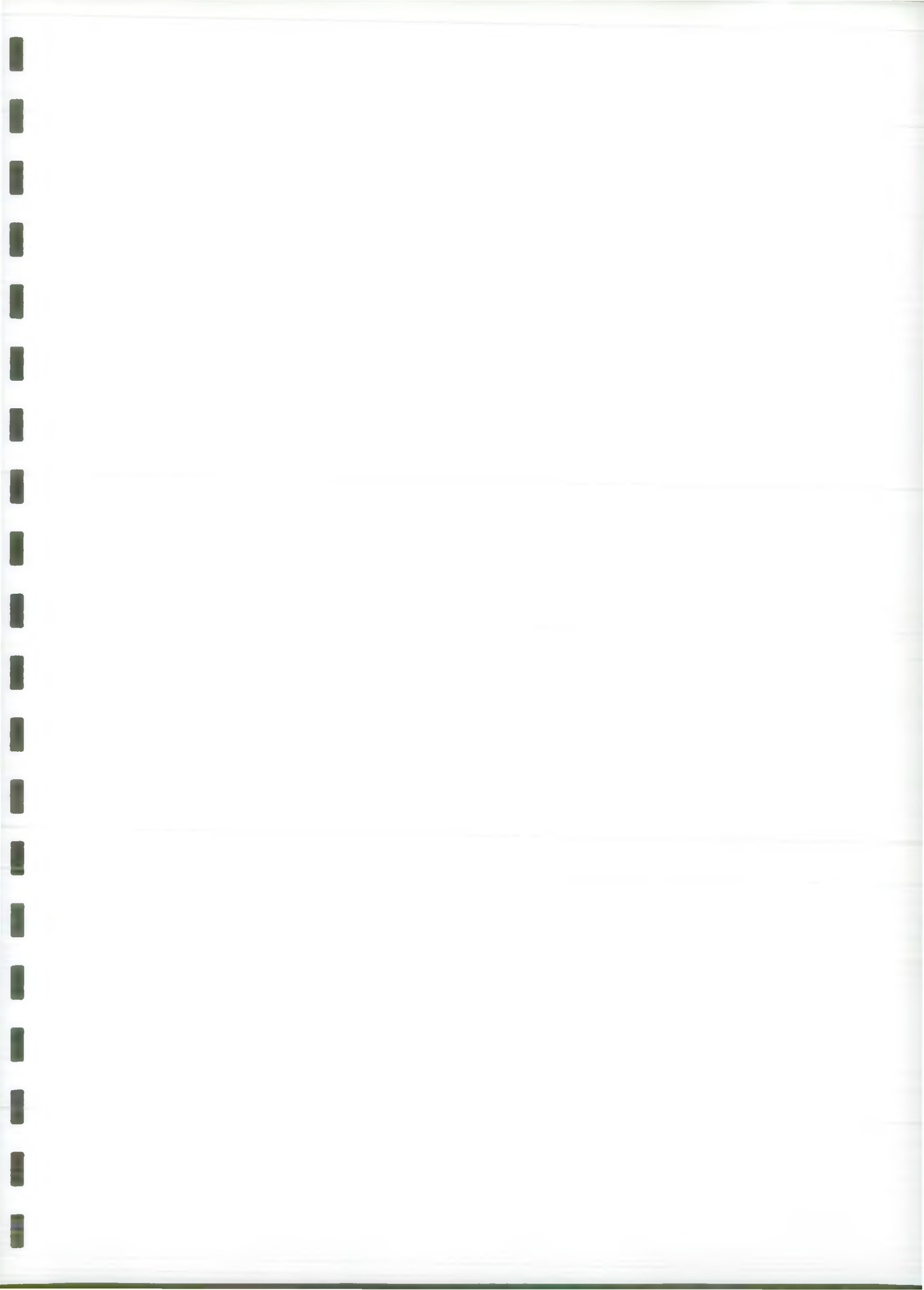
- Endeavour to provide sufficient access and maintain mixture of open water together with instream and drainable habitats.
- Safeguard the variety of still waters in the catchment including the reservoirs, mill lodges and ponds which are also of ecological and historic interest.



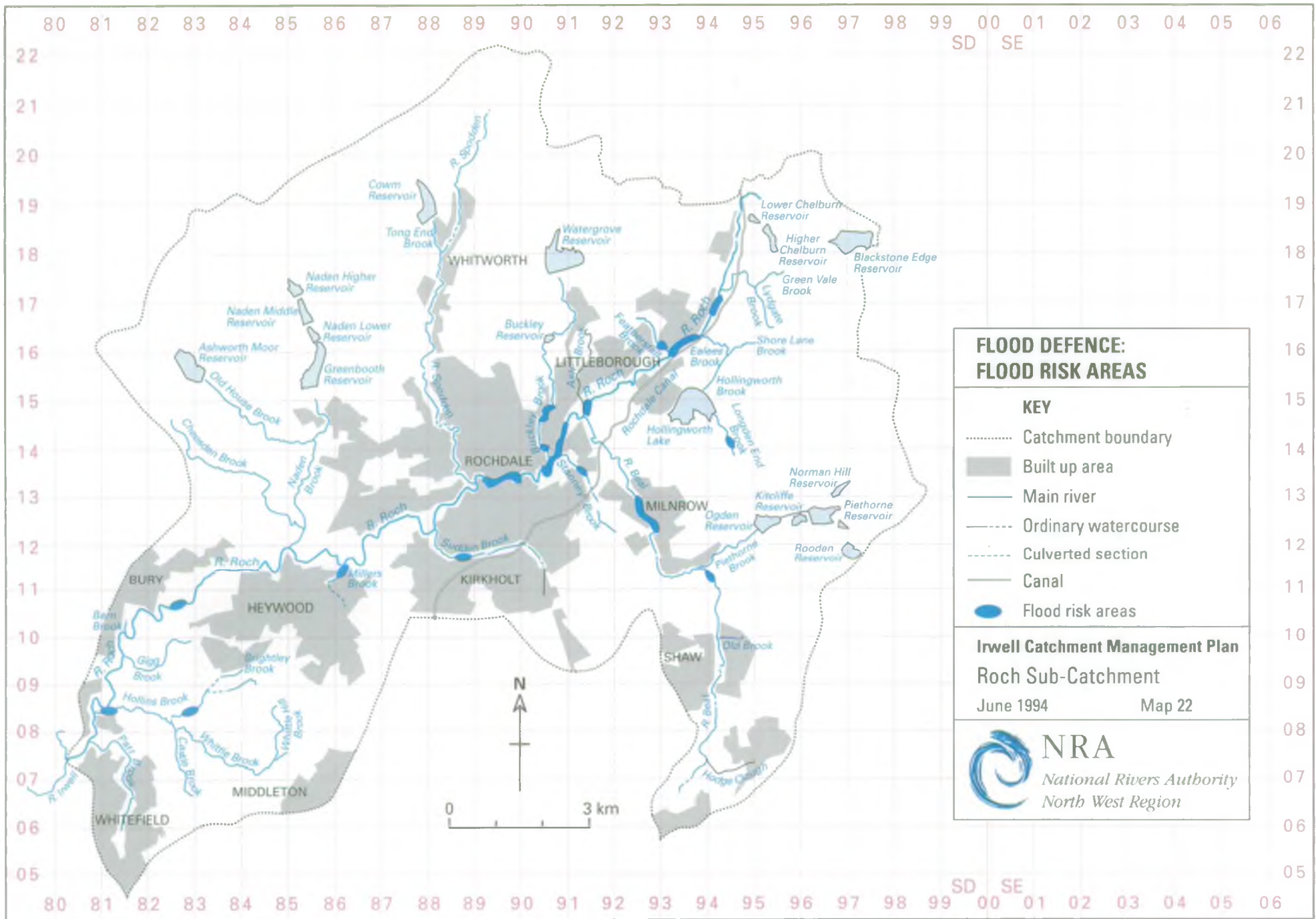













**FLOOD DEFENCE:  
FLOOD RISK AREAS**

**KEY**

- ..... Catchment boundary
- Built up area
- Main river
- - - Ordinary watercourse
- - - Culverted section
- Canal
- Flood risk areas

**Irwell Catchment Management Plan**  
**Roch Sub-Catchment**  
 June 1994                      Map 22

 **NRA**  
*National Rivers Authority*  
*North West Region*

## **4. CURRENT STATE OF CATCHMENT**

### **4.1 STATE OF THE CATCHMENT : FLOOD DEFENCE (MAPS 22, 23 & 24)**

#### **4.1.1 General**

A recent review of all known potential flooding problems in the catchment has been undertaken and the results have been used when compiling the Issues and Options Section, and producing a map showing Flood Risk Areas. This information is the best available at this time, and no guarantee can be given to its accuracy or completeness, due to insufficient data available. The flood risk areas shown may be larger in extent during more extreme events than those considered, therefore putting additional property at risk.

Having identified the need for, and standard of, future flood defence works required, it is possible to assess the condition of the existing flood defences within the catchment against these targets.

#### **4.1.2 Issues Identified**

##### **a) Catchment Wide Issues**

Catchment Wide Issues Nos. 1 - 17 are dealt with in full in Section 4 of Chapter One River Irwell Introduction document. Issues CW18 and CW19 are dealt with in Section 4.2.3 and 4.3.3 respectively of this document.

##### **b) Site Specific Issues (Map 26)**

###### **Issue SS5 River Roch, Littleborough**

There is a history of flooding to industrial units adjacent to the river where it runs parallel to Todmorden Road, due to inadequate channel capacity.

###### **Issue SS8 Longden End Brook, Rakewood**

Due to insufficient capacity of the channel and two culverts, flooding has occurred in the past to road and housing.

###### **Issue SS9 Featherstall Brook, Littleborough**

Flooding occurred to a factory due to the inadequate capacity of the culvert beneath Foxcroft Street.

**Issue SS10 River Roch, Dearnley**

There is a potential risk of flooding to a large quantity of residential and industrial properties in Stubble Mill road and Peel Street due to an inadequate sized culvert.

**Issue SS11 River Roch, Smallbridge**

Industrial and residential properties are at risk from flooding due to inadequate flow capacity of the bridge at Dye House Lane.

**Issue SS13 River Beal, Newhey**

Industrial and residential property was flooded in December 1991 due to insufficient capacity of a factory access bridge.

**Issue SS16 River Beal, Milnrow**

Industrial and residential properties are at risk from flooding due to inadequate culvert capacity.

**Issue SS18 River Roch, Howarth Cross**

Outhouses of the abattoir on Albert Royds Street flooded in December 1991 due to insufficient channel capacity.

**Issue SS19 River Roch, Rochdale**

Flooding occurred in December 1991, to industrial units on Belfield Road due to inadequate channel capacity.

**Issue SS21 River Roch, Rochdale**

Major flooding occurred in December 1991 to Gower Street, Kellet Street and Entwistle Street. Affected were 52 residential properties, 2 retail outlets and 1 industrial unit. Probably due to insufficient channel capacity and restrictive river crossings.

**Issue SS25 Stanney Brook, Newbold**

There is a risk of flooding to industrial units due to insufficient channel capacity between Newbold and the railway.

**Issue SS30 Buckley Brook, Buckley**

During the flood event of January 1992, three industrial units and seven residential properties were flooded on Red Lane due to inadequate channel and culvert capacity.

**Issue SS31 River Roch, Rochdale**

Rochdale town centre may be at risk from flooding due to the inadequate capacity of the town centre bridges.

**Issue SS37 Sudden Brook, Stoneyfield**

Due to inadequate culvert size and insufficient channel capacity there is a risk of flooding to industrial premises on Valley Road.

**Issue SS38 Millers Brook, Heywood**

Insufficient channel capacity at Heywood places the cricket ground at risk of flooding.

**Issue SS42 River Roch, Heap Bridge**

Upstream of Heap Bridge, beside the site of an old refuse tip the river bank is unstable and is being eroded away. This is leading to problems with the road running along the top of the bank, and could lead to flooding problems if the erosion problems are not addressed.

**Issue SS43 River Roch, Bury**

Existing mill buildings at risk from flooding due to insufficient channel capacity.

**Issue SS44 River Roch, Gigg**

At the confluence of Gigg Brook with the River Roch, the weir is in poor structural condition and at risk of collapse.

**Issue SS46 Brightley Brook, Heywood**

The fishery near Captains Farm floods due to insufficient flow capacity.

**Issue SS47 Hollins Brook, Hollins**

Erosion of the river bank at the rear of Alwick Drive places structures at risk and raises the possibility of flooding problems.

**Issue SS50 Access Ramps**

Six access ramps are to be provided at Rochdale, on the River Spodden, River Roch, and Buckley Brook (Hey Brook).

## 4.2 STATE OF THE CATCHMENT : WATER QUANTITY

### 4.2.1 General

Objectives and targets need to be set in relation to meeting existing and future demand for water abstraction in the catchment for potable water supply, industrial and agricultural uses. In addition targets will be set, where appropriate, for minimum residual river flows and minimum control levels to protect other water uses and users within the catchment.

The present conditions in the catchment are assessed by considering the resource usage and river flow/river level conditions.

The current status of the catchment is then obtained by comparison of present conditions with use-related targets.

### 4.2.2 Local Hydrometric Network

#### River Level Recording

In the River Roch Sub-Catchment there are three level monitoring stations. At Rochdale ETW west of Rochdale, at Blackford Bridge north of Whitefield and on Ding Brook at Naden, north west of Rochdale. The records from the Blackford Bridge station date from 1949, which includes both river level and flows for flood warning and water quality management. The records from the Naden station date from 1982. The records at Rochdale ETW station date from 1993 which includes both river levels and flows for water quality management.

Additional river level monitoring is currently underway for a 2 - 4 year period on the River Roch at four sites between Littleborough and Rochdale town centre. These sites will provide information for an NRA flood defence investigation and a flood warning investigation scheme.

#### Rainfall Monitoring

There are 12 raingauge sites within the Roch Sub-Catchment monitored by the NRA. Three of these sites are tipping bucket type raingauges recording daily totals and intensities whilst one of the sites can be interrogated by the Regional Communication System for flood warning purposes. The remaining nine raingauges record daily totals only.

**4.2.3 Issues Identified**

**a) Catchment Wide Issues**

Catchment Wide Issues Nos. 1 - 17 are dealt with in full in Section 4 of Chapter One River Irwell Introduction document. Issue CW19 is dealt with in Section 4.3.3 of this document.

**Issue CW18 Compensation Water Requirements**

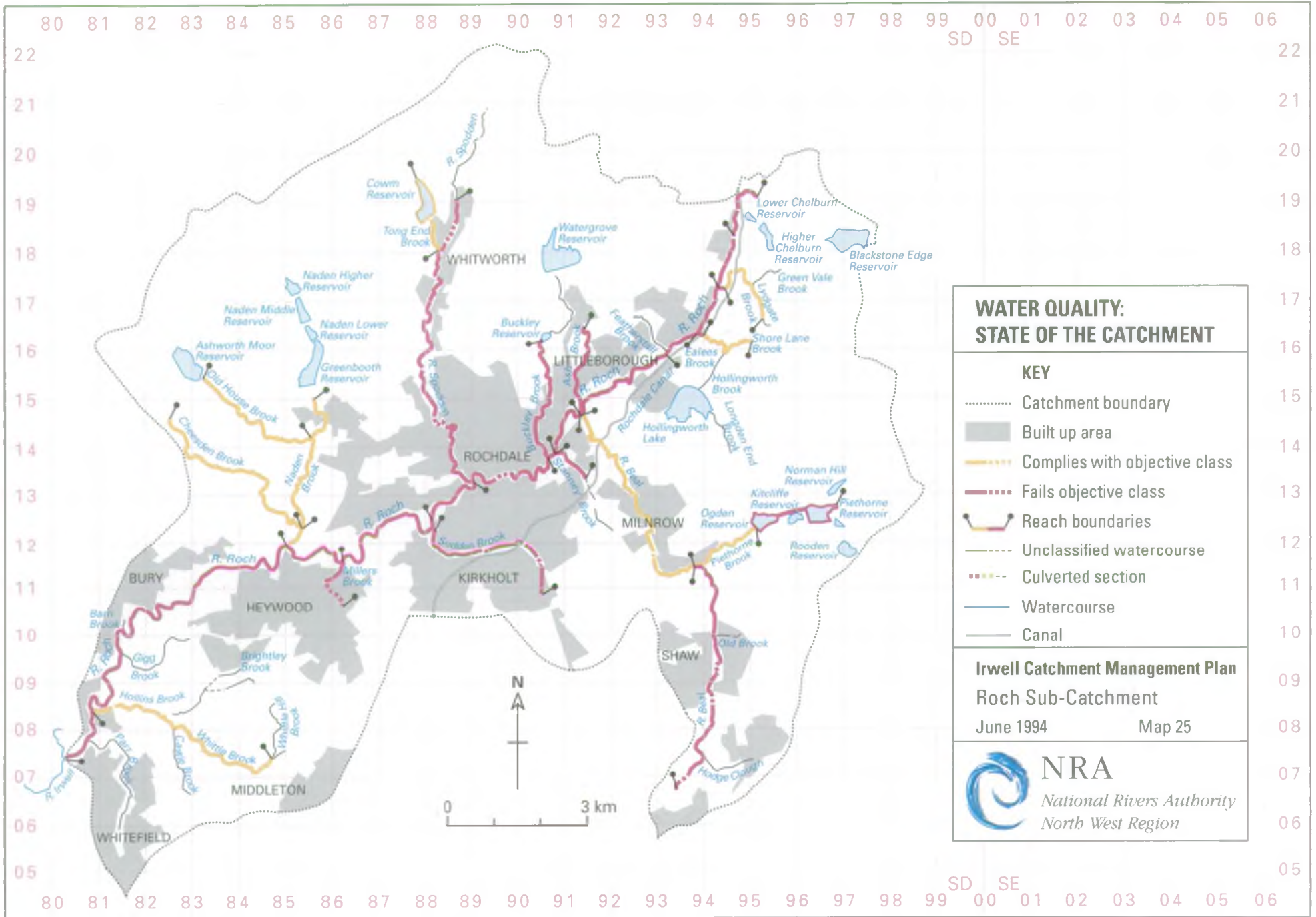
To carry out a review of compensation water requirements and structures to enforce compliance with statutory requirements and to ensure the best utilisation of resources for various users.

**b) Site Specific Issues**

There are no site specific issues concerning Water Quantity for the Roch Sub-Catchment.








**WATER QUALITY:  
STATE OF THE CATCHMENT**

**KEY**

- ..... Catchment boundary
- Built up area
- Complies with objective class
- Fails objective class
- Reach boundaries
- Unclassified watercourse
- Culverted section
- Watercourse
- Canal

**Irwell Catchment Management Plan**  
**Roch Sub-Catchment**  
 June 1994                      Map 25

 **NRA**  
*National Rivers Authority*  
*North West Region*

### 4.3 STATE OF THE CATCHMENT : WATER QUALITY (MAP 25)

The routine chemical and biological sampling programme of the NRA is used to assess compliance with the targets set.

#### 4.3.1 Water Quality Classification

##### a) Present Water Quality Classification Objectives National Water Council (NWC) Classification

This assessment of compliance with the Long Term Objectives is on the basis of the NWC class derived for the calendar year 1993. Of the 26 reaches in the Roch Catchment 16 fail to meet their Long Term Objectives. This is illustrated on Map 25. The implications in terms of lengths of classified watercourse are tabulated below. The reasons for failure are raised as Issues for this plan.

CLASS	1993 NWC	LTO
1A	8.3	11.8
1B	8.5	31.7
2	40.6	41.5
3	26.6	-
4	1.0	-

Lengths in Km

##### b) Future Water Quality Classification Objectives Statutory Water Quality Objectives (SWQOs)

No targets set as yet.

#### 4.3.2 EC Directives

##### a) Directive on Dangerous Substances in Water

###### List I

The most recent reports made to the Department of the Environment on compliance with Environmental Quality Standards for List I substances were on data for the calendar year 1993.

No failures of compliance were reported.

## List II

The most recent reports made to the Department of the Environment on compliance with Environmental Quality Standards for List II substances were on data for the calendar year 1992.

Data for 1992 for copper in the River Roch below Stanney Brook exceeded the Environmental Quality Standard.

### b) Directive on Urban Wastewater Treatment

NRA North West Region undertook an assessment exercise in 1993 of all identified storm and emergency overflows on sewerage networks within the region. Within the Roch Catchment of the over 70 overflows identified over 20 were highlighted as unsatisfactory with regard to their impact on the receiving watercourse. Their effect is raised under many Issues for this plan.

### c) Directive on Water Quality for Freshwater Fish

The most recent reports on compliance made to the Department of the Environment were on the basis of data from the calendar year 1992.

No failures of compliance with Environmental Quality Standards were reported.

### d) Directive on Abstraction of Surface Water for Drinking

No reports on compliance have yet been made to the Department of the Environment.

## 4.3.3 Issues Identified

### a) Catchment Wide Issues

Catchment Wide Issues Nos. 1 - 17 are dealt with in full in Section 4 of Chapter One River Irwell Introduction document. Issue CW18 is dealt with in Section 4.2.3 of this document.

#### Issue CW19 Widespread aesthetic deterioration due to ochre

Many generally localised stretches of watercourse exhibit a characteristic orange bed discolouration. This arises from iron based solids which can be released in minewater and run-off from other areas of disturbed land, for example, waste tips and spoil tips. It can also occur from natural land drainage.

b) **Site Specific Issues (Map 26)**

**Issue SS1 River Roch - Chelburn Reservoir Tributary to Summit**

Failure to achieve the present water quality classification objective for the classified reach. Acidic natural run-off enters this stretch. The objective is possibly unrealistic considering the surrounding environment.

**Issue SS2 River Roch - Summit to Akzo Chemie**

Failure to achieve the present water quality classification objective for the classified reach. Tributaries entering this stretch, namely Lydgate Brook and Eales Brook are perceived as having a marked impact upon this stretch. Each tributary is identified and dealt with separately. The objective may also be unrealistic.

**Issue SS3 Lydgate Brook - ochre stream to the River Roch**

Failure to achieve the present water quality classification objective for the classified reach. Visually there is a high impact due to the presence of ochre emanating from ochreous springs and the benthic fauna is restricted by the ochreous material. The achievement of the objective for this stretch may not be realistic considering the natural environment.

**Issue SS4 Eales Brook - Rochdale Canal crossing to the River Roch**

Failure to achieve the present water quality classification objective for the classified reach. Visually there is a high impact due to the presence of ochre emanating from ochreous springs, and the benthic fauna is restricted by the ochreous material. The achievement of the objective for this stretch may not be realistic considering the natural environment.

**Issue SS6 River Roch - Akzo Chemie to the River Beal**

Failure to achieve the present water quality classification objective for the classified reach. Organic inputs from a sewer overflow and the quality of water entering the reach from upstream and Ash Brook have contributed to the failure of this stretch to meet its objective. In addition contaminated site drainage from the Akzo Chemie site is suspected to be impacting upon the water quality. The current objective may also be unrealistic.

**Issue SS12 Ash Brook - Wardle to the River Roch**

Failure to achieve the present water quality classification objective for this reach has been attributed to the organic input discharged via an unsatisfactory sewer overflow. It is also suspected that the objective for this stretch may be unrealistic.

**Issue SS14 River Beal**

Despite compliance with EC Freshwater Fish Directive water quality standards upstream of Piethorn Brook and achievement of the present water quality classification objective downstream of Piethorn Brook.

**Issue SS15 River Beal - Royton Sidings to Piethorn Brook.**

The failure to achieve the present water quality objective for this reach has been attributed to the organic input discharged via the unsatisfactory sewer overflow at Ripponden Road, discharging to Hodge Clough. It is also suspected that the objective for this stretch may be unrealistic.

**Issue SS17 Piethorn Brook - Head of Piethorn Reservoir to Ogden Reservoir**

Failure to achieve the present water quality classification objective for the classified reach. As yet, not fully identified pollution sources have contributed to the failure of this stretch to meet the objective. Investigations are on-going, but it is suspected that the objective may be unrealistic.

**Issue SS20 River Roch - River Beal to Stanney Brook.**

Failure to achieve the present water quality classification objective for the classified reach. Sewer overflows discharging to the Rivers Roch and Beal previously impacted upon this stretch. However improvement works have been carried out which should see improvements in water quality.

**Issue SS22 River Roch - Stanney Brook to Rochdale STW.**

The failure to achieve the present water quality classification objective for this reach has been attributed to the organic input discharged via numerous unsatisfactory sewer overflows to the River Roch and Moss Brook, as well as the impact of Stanney Brook.

**Issue SS23 River Roch - downstream of Stanney Brook**

Exceedence of EC List II Dangerous Substance EQS for copper. Contaminated land at the Makin Metal Powders Ltd. site has resulted in copper being released to Stanney Brook.

**Issue SS26 Stanney Brook**

Lack of fishery due primarily to poor water quality. This is primarily due to the release of copper from contaminated land at Makin Metal Powders Ltd.

**Issue SS27 Stanney Brook - Newbold to River Roch**

The severe impairment of the invertebrate community in Stanney Brook is a direct result of copper pollution detailed under SS28.

**Issue SS28 Stanney Brook - Newbold to the River Roch**

Contaminated land at the Makin Metal Powders Ltd. site resulting in copper being released to the nearby watercourse, along with organic inputs discharging via unsatisfactory sewer overflows has resulted in the failure of this stretch to meet its objective. Ochreous run-off also has a more localised impact on the visual appearance and possibly invertebrate population of the reach.

**Issue SS29 Hey Brook - Buckley Reservoir to the River Roch.**

The failure to achieve the present water quality classification objective for this reach has been attributed to the organic input discharged from the unsatisfactory sewer overflow at Yorkshire Street. Also there is suspected pollution emanating from culverted sections which has been difficult to identify.

**Issue SS32 River Spodden**

Lack of fishery within the due primarily to poor water quality.

**Issue SS33 River Spodden - Facit Station to the River Roch**

Failure to achieve the present water quality classification objective for the classified reach. The current objective is felt to be unrealistic for this stretch.

**Issue SS34 Cowm Reservoir and Cowm Brook**

Aesthetic deterioration due to discolouration arising from fine solids. This has been caused as a result of the poor quality of the discharge produced by Bardon Roadstone from their quarry.

**Issue SS35 River Roch - Rochdale STW to the River Irwell**

The failure to achieve the present water quality classification objective for this reach has been attributed to the organic input discharged via numerous unsatisfactory sewer overflows and the impact of Sudden and Millers Brook. The organic load within the treated effluent discharged from Rochdale STW is also perceived as significant.

**Issue SS36 Sudden Brook - Balderstone to the River Roch**

The failure to achieve the present water quality classification objective for this reach has been attributed to the organic inputs discharged via unsatisfactory sewer overflows and domestic mis-connections.

**Issue SS39 Millers Brook - Roeacre Lodge to River Roch**

Lack of fishery due primarily to poor water quality.

**Issue SS40 Millers Brook - Roeacre Lodge to the River Roch.**

Failure to achieve the present water quality classification objective for the classified reach. The failure to achieve the present water quality objective for this reach has been attributed to the organic input discharged via the unsatisfactory sewer overflow at John Street. Also there is suspected pollution emanating from culverted sections which has been difficult to identify.

**Issue SS45 Whittle Brook**

Widespread aesthetic deterioration in the catchment due to small sewage treatment plants. There are numerous small sewage treatment plants in the catchment. Performance has been variable and there has been some localised impact.

**Issue SS48 Parr Brook**

Aesthetic Deterioration due to sewage litter. Debris of sewage origin is visible on the bed and banks. It arises from storm overflows. Properly designed overflows can significantly reduce this.

## 4.4 STATE OF THE CATCHMENT : PHYSICAL FEATURES

### 4.4.1 General

The industrial history of the area means that long lengths of river have been re-routed, culverted or restrained within walls and behind weirs. Many of the valleys have been developed or tipped, often to the waters edge. There are large numbers of reservoirs mill lodges and ponds.

A striking range of natural, physical and geomorphological features persist. Substantial sections of river valley remain undeveloped and some areas of flood plain have retained their natural character. Many of the watercourses are actively meandering over a steep stony bed.

Issues that relate to the physical features of the rivers and associated land have been identified.

### 4.4.2 Issues Identified

#### a) Catchment Wide Issues

Catchment Wide Issues Nos. 1 - 17 are dealt with in full in Section 4 of Chapter One River Irwell Introduction document. Issues CW18 and CW19 are dealt with in Section 4.2.3 and 4.3.3 respectively of this document.

#### b) Site Specific Issues (Map 26)

##### **Issue SS7 Proposed road along the Roch Valley above Rochdale**

The road would cut through a wide and diverse river corridor with extensive flood plain habitats.

##### **Issue SS24 Widespread Tipping along the Roch and the Beal**

Tipping, particularly in the Roch and Beal valleys, has led to loss of habitat, topographical and geomorphological diversity, flood plain capacity and potential leachate problems.

##### **Issue SS41 Cheesden Brook, Naden Brook and Old House Brook**

Cheesden Brook, Naden Brook and Old House Brook are key conservation factors of the catchment with pristine habitats and good water quality. They have high ecological value and are sites of biological importance for most of their lengths.

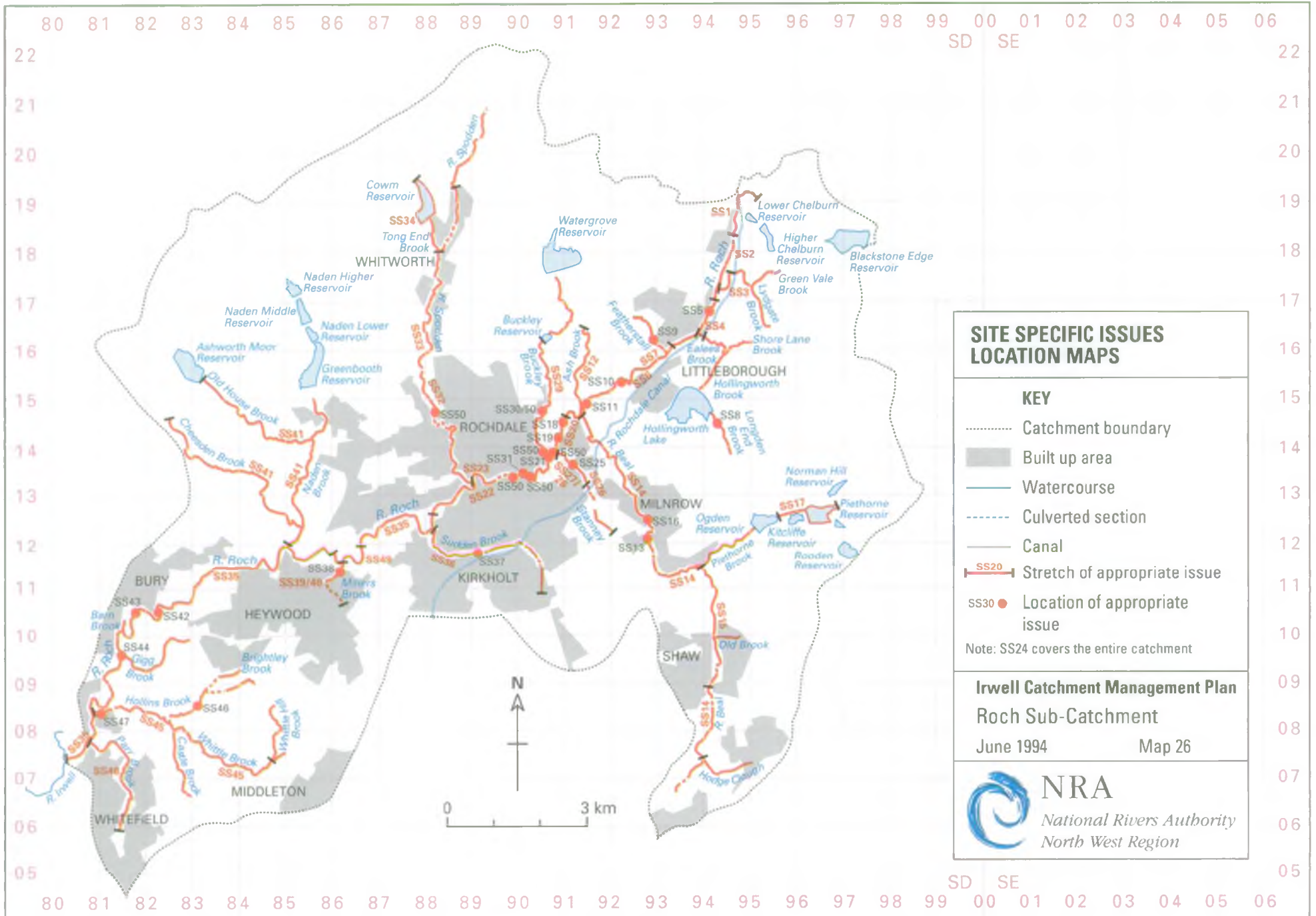


**Issue SS49 Disjointed Countryside Management and Public Access Policy particularly along the tributaries and parts of the Roch, such as between Queens and Mandale Park**

There are gaps in the accessible river corridor along the tributaries and along the Roch, for example, between Queens Park and Mandale Park and through Rochdale town centre. There is no co-ordinated countryside management and public access policy for the whole sub-catchment to bring together the various interests who are restricted to specific sites, areas or disciplines. There is a need to create interconnected public walkways and linear parks and enable a more informed and strategic response to development proposals.

Footpaths should be sited so as to cause minimum potential disturbance. Some sensitive habitats such as wetlands and steep woodlands should be walked around, rather than through. Moreover a path too close to the bank top may be eroded by the river. Eroding earth banks are vital to species such as sandmartins and solitary wasps. A need torevet them would be avoided by siting the footpath further from the bank top.





## **5. ISSUES AND OPTIONS (MAP 26)**

### **5.1 GENERAL**

This section of the plan considers options to address the following issues. The options as presented are the initial thoughts of the North West Region of the NRA and do not constitute policy statements. Comments on the issues and options are invited together with any new ideas/suggestions. They should be considered together with the Catchment Wide Issues for the River Irwell catchment in Section 4, Chapter One River Irwell Introduction document.

Wherever possible the body responsible for carrying out each option has been identified. In some cases this is identified as someone other than the NRA. However, the options as presented are intended as a plan to facilitate improvements to the water environment for the benefit of all users. Obviously this will entail many bodies and individuals working together to fulfil the aims and objectives as detailed in this Catchment Management Plan.

## 5.2 CATCHMENT WIDE ISSUES

Catchment Wide Issues 1 - 17 for the River Irwell catchment are dealt with in Chapter One River Irwell Introduction document (Section 4). There are two additional issues which relate specifically to the River Roch Sub-Catchment.

ISSUE NO: CW18		Compensation water requirements and structures require review.	
OPTIONS	Responsibility	Advantages	Disadvantages
1. Increase or decrease compensation water as necessary.	NRA/NWW Ltd.	<p>Benefits to amenity recreation and angling at reservoirs if compensation water decreased.</p> <p>Benefits to downstream river environment and users if compensation water increased.</p>	<p>Reduce flows for effluent dilution fisheries and downstream river environment.</p> <p>Possible increased operating costs and supply problems for water undertaker.</p>

ISSUE NO: CW19		Widespread aesthetic deterioration due to ochre.	
OPTIONS	Responsibility	Advantages	Disadvantages
1. Reduction in impact of ochreous run-off from spoil tips, waste tips and apparently natural sources.	NRA to pursue means of run-off control or site/ watercourse treatment.	Improvement to aesthetic and amenity value.	Difficult to establish liability/ funding with high risk of failure.

### 5.3 SITE SPECIFIC ISSUES (MAP 26)

<b>ISSUE NO: SS1</b>	<b>River Roch - Chelburn Reservoir Tributary to Summit</b>  <b>Failure to achieve the present water quality classification objective for the classified reach.</b>		
<b>OPTIONS</b>	<b>Responsibility</b>	<b>Advantages</b>	<b>Disadvantages</b>
<ol style="list-style-type: none"> <li>1. Revision of present water quality classification objective to account for the impact of natural acidic run-off which causes the failure.</li>   <li>2. Attempt reduction in the impact of natural acidic run-off.</li> </ol>	<p>NRA</p> <p>NRA to establish means and funding.</p>	<p>Recognition of best achievable class without expenditure on modification of natural systems.</p> <p>Achievement of present water quality classification objective.</p>	<p>Apparent relaxation of water quality standards.</p> <p>Likely high cost in establishing means and operating. Modification of natural system.</p>

ISSUE NO: SS2	<b>River Roch - Summit to Akzo Chemie.</b>  <b>Failure to achieve the present water quality classification objective for the classified reach</b>		
OPTIONS	Responsibility	Advantages	Disadvantages
<p>The main influences on this reach are perceived to be Lydgate Brook and Ealees Brook flowing into it. These tributaries are considered individually in Issues SS3 and SS4 respectively.</p>			
<p>1. Investigation of the impact of Lydgate Brook and Ealees Brook to assess the existence of other significant pollution sources.</p>	<p>NRA</p>	<p>Fuller understanding of pollution sources causing the failure.</p>	
<p>2. Revision of the present water quality classification objective.</p>	<p>NRA</p>	<p>Avoidance of the very significant difficulties in establishing liability and/or funding for dealing with the ochre affecting Lydgate Brook and Ealees Brook and avoidance of expenditure on sources such as urban run-off normally outside the scope of pollution control.</p>	<p>Apparent relaxation of water quality standards.</p>

Achieving the present water quality classification objective for this reach has additional benefits for the downstream classified reach of the River Roch. The downstream reach is considered in Issue SS6.

<b>ISSUE NO: SS3</b>	<b>Lydgate Brook - ochre stream to the River Roch</b>  <b>Failure to achieve the present water quality classification objective for the classified reach.</b>		
<b>OPTIONS</b>	<b>Responsibility</b>	<b>Advantages</b>	<b>Disadvantages</b>
1. Reduction in visual impact of ochreous springs and their restriction of the benthic fauna.  2. Acceptance of ochre as natural occurrence and recognition of derogation from present water quality classification objective.	NRA to investigate means and funding for effecting reduction.  NRA	Achievement of present water quality classification objective.  Improvement to aesthetic and amenity value.  Avoids difficult investigation of means and funding for remedial action with high risk of failure.	Difficulty in establishing means and funding with a high risk of failure.  Apparent relaxation of water quality standards especially since benthic fauna is affected.

Achievement of the present water quality classification objective without derogation (Option 1) has additional benefits for the downstream classified reach of the River Roch. This is considered under Issue SS2.



<b>ISSUE NO: SS4</b>	<b>Eales Brook - Rochdale Canal crossing to the River Roch.</b>  <b>Failure to achieve the present water quality classification objective for the classified reach.</b>		
<b>OPTIONS</b>	<b>Responsibility</b>	<b>Advantages</b>	<b>Disadvantages</b>
1. Reduction in visual impact of ochreous springs and their restriction of the benthic fauna.  2. Acceptance of ochre as natural occurrence, and recognition of derogation from present water quality classification objective.	NRA to investigate means and funding for effecting reduction.  NRA	Achievement of present water quality classification objective.  Improvement to aesthetic and amenity value.  Avoids difficult investigation of means and funding for remedial action with a high risk of failure.	Difficulty in establishing means and funding with a high risk of failure.  Apparent relaxation of water quality standards especially since benthic fauna is affected.

Achievement of the present water quality classification objective without derogation (Option 1) has additional benefits for the downstream classified reach of the River Roch. This is considered under Issue SS2.

<b>ISSUE NO: SS5</b>	<b>River Roch, Littleborough</b> <b>Flooding to industrial units of Todmorden Road due to insufficient channel capacity and restricted flow through bridge.</b>		
<b>OPTIONS</b>	<b>Responsibility</b>	<b>Advantages</b>	<b>Disadvantages</b>
1. Improve channel capacity by raising existing defences.	NRA/Riparian owner	Improves existing level of flood protection.	Scheme Cost. Some visual and environmental impact.
2. Replace existing bridge with new bridge of adequate flow size.	NRA/Riparian owner	Improves existing level of flood protection.	Scheme cost may exceed benefits. Land take
3. Improve channel capacity by dredging.	NRA/Riparian owner	Improves existing level of flood protection.	Scheme cost may exceed benefits. Disruption to natural bed.

<b>ISSUE NO: SS6</b>	<b>River Roch - Akzo Chemie to the River Beal</b>  <b>Failure to achieve the present water quality classification objective for the classified reach.</b>		
<b>OPTIONS</b>	<b>Responsibility</b>	<b>Advantages</b>	<b>Disadvantages</b>
<p>Combination of the following:</p> <ol style="list-style-type: none"> <li>Reduction in the organic and debris load from the unsatisfactory sewer overflow at Oakcliffe Road, Wardle.</li> <li>Further reduction in the contamination of drainage from the Akzo Chemie site.</li> </ol>	<p>As a requirement of the EC Urban Wastewater Treatment Directive.</p> <p>NRA/NWW Ltd to agree to improvements required to achieve satisfactory performance.</p> <p>NWW Ltd to undertake capital works.</p> <p>NRA to monitor water quality and pursue appropriate remedial measures.</p> <p>Akzo Chemie Ltd to undertake appropriate remedial measures.</p>	<p>Possible achievement of present water quality classification objective.</p> <p>Improvement to the aesthetic and amenity value and fishery potential.</p> <p>Possible achievement of the present water quality classification objective.</p> <p>Improvement to the aesthetic and amenity value and fishery potential.</p>	<p>Cost to NWW Ltd and possibly customers.</p> <p>Cost to Akzo Chemie Ltd</p>
<p>Achievement of the present water quality classification objective will also require improvements in the upstream reach and in Ash Brook which flows into this reach. The upstream reach is considered in Issue SS2 and Ash Brook in Issue SS12. A further option is:</p>			
<b>Cont'd.</b>			

<b>ISSUE NO: SS6 Cont'd.</b>	<b>River Roch - Akzo Chemie to the River Beal</b>  <b>Failure to achieve the present water quality classification objective for the classified reach.</b>		
<b>OPTIONS</b>	<b>Responsibility</b>	<b>Advantages</b>	<b>Disadvantages</b>
3. Revision of the present water quality classification objective.	NRA	Achievement of the current objective may require improvements to pollution sources such as urban run-off normally outside the scope of pollution control in addition to improvements under the above options. The latter may still be required to ensure consistent achievement of the revised objective.	Apparent relaxation of water quality standards.

<b>ISSUE NO: SS7</b>	<b>Proposed road along Roch Valley above Rochdale.</b>		
<b>OPTIONS</b>	<b>Responsibility</b>	<b>Advantages</b>	<b>Disadvantages</b>
1. Object to proposal.	NRA/Local Authorities/ Local interest groups	Retention of 'semi rural' green wedge with excellent wetland habitats and extensive flood plain.  No increased risk of flooding.	

<b>ISSUE NO: SS8</b>	<b>Longden End Brook, Rakewood.</b>  <b>Flooding to properties due to insufficient channel and culverts capacity.</b>		
<b>OPTIONS</b>	<b>Responsibility</b>	<b>Advantages</b>	<b>Disadvantages</b>
1. Replace existing upstream culvert with new culvert of adequate size and de-silt culvert downstream.	NRA/Highway Authority	Improves existing level of flood protection.	Scheme cost.
2. Replace both existing culverts with new culverts of adequate size and carry out bank and channel works.	NRA/Riparian owner(s).	Improves existing level of flood protection to a 1 in 50 year standard.	Scheme cost may exceed benefits. Some visual and environmental impact.
3. Replace both existing culverts with new culverts of adequate size.	NRA/Riparian owner(s)	Improves existing level of flood protection.	Scheme cost may exceed benefits. Part of site only achieves 1 in 30 year protection.
4. Construct by-pass channels	NRA/Riparian owner(s)	Improves existing level of flood protection.	Scheme cost may exceed benefits. Land take. Some environmental impact.

<b>ISSUE NO: SS9</b>	<b>Featherstall Brook, Littleborough.</b>  <b>Flooding to industrial units at Foxcroft Street due to insufficient culvert capacity.</b>		
<b>OPTIONS</b>	<b>Responsibility</b>	<b>Advantages</b>	<b>Disadvantages</b>
<ol style="list-style-type: none"> <li>1. Replace existing culvert with new culvert of adequate size.</li> <li>2. Improve channel capacity by raising existing defences.</li> </ol>	<p>NRA/Riparian owner</p> <p>NRA/Riparian owner.</p>	<p>Improves existing level of flood protection.</p> <p>Improves existing level of flood protection.</p>	<p>Scheme cost.</p> <p>Scheme cost. Debris blockage still possible. Some visual and environmental impact.</p>

<b>ISSUE NO: SS10</b>	<b>River Roch, Dearnley.</b>  <b>Risk of flooding to residential and industrial properties in Stubley Mill Road and Peel Street due to insufficient culvert capacity.</b>		
<b>OPTIONS</b>	<b>Responsibility</b>	<b>Advantages</b>	<b>Disadvantages</b>
<ol style="list-style-type: none"> <li>1. Replace existing culvert with new culvert of adequate size.</li> <li>2. Improve channel capacity by raising existing defences.</li> </ol>	<p>NRA/Riparian owner</p> <p>NRA/Riparian owner.</p>	<p>Improves existing level of flood protection.</p> <p>Improves existing level of flood protection.</p>	<p>Scheme cost.</p> <p>Scheme cost. Debris blockage still possible. Some visual and environmental impact.</p>

<b>ISSUE NO: SS11</b>	<b>River Roch, Smallbridge.</b>  <b>Risk of flooding to industrial units due to insufficient capacity of bridge at Dye House Lane.</b>		
<b>OPTIONS</b>	<b>Responsibility</b>	<b>Advantages</b>	<b>Disadvantages</b>
1. Replace existing bridge with new bridge allowing increased flow capacity.  2. Raise flood defences upstream of bridge.	NRA/Riparian owner  NRA/Riparian owner.	Improves existing level of flood protection.  Improves existing level of flood protection.	Scheme cost. Bridge may be of local, historic and architectural value.  Scheme cost. Some visual and environmental impact.

<b>ISSUE NO: SS12</b>	<b>Ash Brook - Wardle to the River Roch.</b>  <b>Failure to achieve the present water quality classification objective for the classified reach.</b>		
<b>OPTIONS</b>	<b>Responsibility</b>	<b>Advantages</b>	<b>Disadvantages</b>
<p>1. Reduction in the organic and debris load from the unsatisfactory sewer overflow at Dye House Lane.</p> <p>2. Revision of present water quality classification objective.</p>	<p>As a requirement of the EC Urban Wastewater Treatment Directive. NRA/NWW Ltd to agree the improvements required for satisfactory performance.</p> <p>NWW Ltd to undertake capital works.</p> <p>NRA</p>	<p>Possible achievement of present water quality classification objective.</p> <p>Improvement to aesthetic and amenity value and fishery potential.</p> <p>Current objective may not be achieved following realisation of Option 1 due to the impact of inputs normally outside the scope of pollution control, such as urban run-off. A revision would provide an achievable target.</p>	<p>Cost to NWW Ltd and possibly customers.</p> <p>Apparent relaxation of water quality standards.</p>

**EC - European Community**

Achievement of the present water quality classification objective under Option 1 has additional benefits for the classified reach of the River Roch into which Ash Brook flows. This reach of the River Roch is considered under Issue SS6.



<b>ISSUE NO: SS13</b>	<b>River Beal, Newhey</b>  <b>Risk of flooding to residential and industrial property due to insufficient flow capacity of factory access bridge.</b>		
<b>OPTIONS</b>	<b>Responsibility</b>	<b>Advantages</b>	<b>Disadvantages</b>
1. Replace existing bridge with new bridge of adequate flow size.  2. Improve channel capacity by raising existing defences.	NRA/Riparian owner  NRA/Riparian owner.	Improve existing level of flood protection.  Improve existing level of flood protection.	Scheme cost.  Scheme cost. Some visual and environmental impact.

<b>ISSUE NO: SS14</b>	<b>River Beal</b>  <b>Lack of Fishery. Despite compliance with EC Freshwater Fish Directive WQ standards upstream of Piethorn Brook and achievement of the present WQ classification objective downstream of Piethorn Brook.</b>		
<b>OPTIONS</b>	<b>Responsibility</b>	<b>Advantages</b>	<b>Disadvantages</b>
1. Stocking of appropriate fish species and monitoring of fish populations.  2. Natural colonisation and monitoring	NRA  NRA	Development of Fisheries.  Less Cost	Possible loss of stocks due to intermittent or sporadic pollution.  Timescale may be unrealistic if there are very few fish in feeder tributaries.

**EC**        -        **European Community**  
**WQ**        -        **Water Quality**

<b>ISSUE NO: SS15</b>	<b>River Beal - Royton Sidings to Piethorn Brook</b>  <b>Failure to achieve the present water quality classification objective for the classified reach.</b>		
<b>OPTIONS</b>	<b>Responsibility</b>	<b>Advantages</b>	<b>Disadvantages</b>
<p>1. Reduction in the organic and debris load from the unsatisfactory sewer overflow at Ripponden Road discharging to Hodge Clough.</p> <p>2. Revision of the present water quality classification objective.</p>	<p>As a requirement of the EC Urban Wastewater Treatment Directive.</p> <p>NRA/NWW Ltd have already agreed the improvements required to achieve satisfactory performance.</p> <p>NWW Ltd to undertake capital works.</p> <p>NRA</p>	<p>Possible achievement of present water quality classification objective.</p> <p>Improvement to the aesthetic and amenity value and fishery potential.</p> <p>Current objective may not be achieved by Option 1 because of sources such as urban run-off normally outside the scope of pollution control.</p>	<p>Cost to NWW Ltd and possibly customers.</p> <p>Apparent relaxation of water quality standards.</p>

**EC - European Community**

<b>ISSUE NO: SS16</b>	<b>River Beal, Milnrow</b>  <b>Risk of flooding to residential and industrial property due to insufficient culvert capacity.</b>		
<b>OPTIONS</b>	<b>Responsibility</b>	<b>Advantages</b>	<b>Disadvantages</b>
<ol style="list-style-type: none"> <li>1. Replace existing culvert with new culvert of adequate size.</li> <li>2. Provide localised flood storage areas.</li> </ol>	<p>NRA/Riparian owner</p> <p>NRA/Riparian owner.</p>	<p>Improves existing level of flood protection.</p> <p>Improves existing level of flood protection. A wetland complex could be a valuable new habitat.</p>	<p>Scheme cost.</p> <p>Scheme cost. Debris blockage still possible. Land take. Some existing wet areas and grassland of high value. Extent of contaminated land.</p>

<p><b>ISSUE NO: SS17</b></p>	<p><b>Piethorn Brook - Head of Piethorn Reservoir to Ogden Reservoir.</b></p> <p><b>Failure to achieve the present water quality classification objective for the classified reach.</b></p>		
<p><b>OPTIONS</b></p>	<p><b>Responsibility</b></p>	<p><b>Advantages</b></p>	<p><b>Disadvantages</b></p>
<p>1. Full investigation and evaluation of pollution sources and appropriate remedial action. The failure to achieve the objective was revealed in 1992 with routine collection of further information than previously.</p> <p>2. Revision of present water quality classification objective.</p>	<p>NRA to undertake investigation.</p> <p>Responsible parties to undertake remedial action.</p> <p>NRA</p>	<p>Possible achievement of present water quality classification objective.</p> <p>Recognition of achievable objective. Improvements under Option 1 may still be required.</p>	<p>Cost to responsible parties.</p> <p>Apparent relaxation of water quality standards.</p>

<b>ISSUE NO: SS18</b>	<b>River Roch, Howarth Cross.</b> <b>Flooding to abattoir due to insufficient channel capacity.</b>		
<b>OPTIONS</b>	<b>Responsibility</b>	<b>Advantages</b>	<b>Disadvantages</b>
1. Provide localised flood storage areas.	NRA/Riparian owner	Improves existing level of flood protection. Existing wetland on right bank near abattoir could be enlarged/extended.	Scheme cost. Land take. Wetland on both sides of flood plain of existing value.
2. Improve channel capacity by raising existing defences.	NRA/Riparian owner.	Improves existing level of flood protection.	Scheme cost. Some visual and environmental impact.

<b>ISSUE NO: SS19</b>	<b>River Roch, Rochdale</b> <b>Flooding to industrial units on Belfield Road due to insufficient channel capacity.</b>		
<b>OPTIONS</b>	<b>Responsibility</b>	<b>Advantages</b>	<b>Disadvantages</b>
1. Provide localised flood storage areas.	NRA/Riparian owner	Improves existing level of flood protection. Existing wet areas downstream of Belfield Road could be enhanced	Scheme cost. Land take Existing habitats are of some value.
2. Improve channel capacity by raising existing defences.	NRA/Riparian owner.	Improves existing level of flood protection.	Scheme cost. Some visual and environmental impact.

<b>ISSUE NO: SS20</b>	<b>River Roch - River Beal to Stanney Brook</b>  <b>Failure to achieve the present water quality classification objective for the classified reach.</b>		
<b>OPTIONS</b>	<b>Responsibility</b>	<b>Advantages</b>	<b>Disadvantages</b>
1. Full evaluation of improvements in water quality following improvements to sewer overflows discharging to the River Roch and River Beal.	NRA	May already be achieving present water quality classification objective.	

<b>ISSUE NO: SS21</b>	<b>River Roch, Rochdale</b>  <b>Major flooding to industrial and residential properties in Gower Street, Kellet Street and Entwistle Street due to insufficient capacity of structures and channel.</b>		
<b>OPTIONS</b>	<b>Responsibility</b>	<b>Advantages</b>	<b>Disadvantages</b>
1. Provide localised flood storage areas.  2. Improve channel capacity by raising existing defences.  3. Remove redundant structures to improve flow capacity.  4. Replace existing structures with new structures of adequate capacity.	NRA/Riparian owner  NRA/Riparian owner.  NRA/Riparian owner  NRA/Riparian owner	Improves existing level of flood protection.  A wetland complex could be a valuable new habitat.  Improves existing level of flood protection.  Improves existing level of flood protection.  Improves existing level of flood protection.	Scheme cost. Land take. Existing habitat may be of conservation value.  Scheme cost. Some visual and environmental impact.  Scheme cost.  Scheme cost



<b>ISSUE NO: SS22</b>	<b>River Roch - Stanney Brook to Rochdale STW</b>  <b>Failure to achieve the present water quality classification objective for the classified reach.</b>		
<b>OPTIONS</b>	<b>Responsibility</b>	<b>Advantages</b>	<b>Disadvantages</b>
1. Reduction in the organic and debris load from a number of unsatisfactory sewer overflows discharging to the River Roch and Milnrow Road CSO discharging to Moss Brook.	As a requirement of the EC Urban Wastewater Treatment Directive.  NRA/NWW Ltd to agree improvements required to achieve satisfactory performance.  NWW Ltd to undertake capital works.	Achievement of the present water quality classification objective.  Improvements to the aesthetic and amenity value and fishery potential.	Cost to NWW Ltd and possibly customers.

**CSO**        -        **Combined Sewer Overflow**  
**EC**         -        **European Community**

Achievement of the present water quality classification objective will also require improvements to the quality of Stanney Brook. Stanney Brook is considered under Issues SS23 and SS28.

Achievement of the present water quality classification objective will have additional advantages for the downstream reach of the River Roch. The downstream reach is considered under Issue SS35.

<b>ISSUE NO: SS23</b>	<b>River Roch - downstream of Stanney Brook</b> <b>Exceedence of EC List II Dangerous Substances Environmental Quality Standard for copper.</b>		
<b>OPTIONS</b>	<b>Responsibility</b>	<b>Advantages</b>	<b>Disadvantages</b>
1. Reduction in release of copper from Makin Metal Powders Ltd contaminated land area.	NRA to monitor and enforce.  Makin Metal Powders Ltd to undertake remedial measures.	Compliance with EQS in the River Roch.	Cost to Makin Metal Powders Ltd and possibly customers.

**EQS - Environmental Quality Standard**

There are additional benefits of reduction of copper levels below the EQS for the present water quality classification of both Stanney Brook and the classified reach of the River Roch that it flows into.

Stanney Brook water quality classification is considered under Issue SS28 and the relevant reach of the River Roch under Issue SS22.

<b>ISSUE NO: SS24</b>	<b>Widespread tipping along River Roch and Beal</b>		
<b>OPTIONS</b>	<b>Responsibility</b>	<b>Advantages</b>	<b>Disadvantages</b>
1. Object to further tipping in flood plain or river valley.	NRA/Local Authority/ Waste Regulation authorities.	Retention of good habitats and natural topography  Risk of flooding not increased.  Risk of contaminated leachate reduced.	

<b>ISSUE NO: SS25</b>	<b>Stanney Brook, Newbold</b> <b>Risk of flooding to industrial units due to insufficient channel capacity.</b>		
<b>OPTIONS</b>	<b>Responsibility</b>	<b>Advantages</b>	<b>Disadvantages</b>
1. Provide localised flood storage areas.	NRA/Riparian owner	Improves existing level of flood protection. A wetland complex could be a valuable new habitat.	Scheme cost. Land take. Existing habitat may be of conservation value.
2. Improve channel capacity by raising existing defences.	NRA/Riparian owner.	Improves existing level of flood protection.	Scheme cost. Some visual and environmental impact.

<b>ISSUE NO: SS26</b>	<b>Stanney Brook</b> <b>Lack of fishery due primarily to poor water quality.</b>		
<b>OPTIONS</b>	<b>Responsibility</b>	<b>Advantages</b>	<b>Disadvantages</b>
1. Stocking of appropriate fish species as and when prevailing water quality allows, and monitoring of fish populations.	NRA	Development of Fisheries.	Possible loss of stocks due to intermittent or sporadic pollution.
2. Natural colonisation and monitoring	NRA	Less Cost	Timescale may be unrealistic if there are very few fish in feeder tributaries.

<b>ISSUE NO: SS27</b>	<b>Stanney Brook - Newbold to River Roch</b> <b>Aquatic invertebrate community severely impaired.</b>		
<b>OPTIONS</b>	<b>Responsibility</b>	<b>Advantages</b>	<b>Disadvantages</b>
1. Improvement in water quality.	NRA/NWW Site owners	Improvement of aquatic ecosystem	Cost

ISSUE NO: SS28	<b>Stanney Brook - Newbold to the River Roch</b> <b>Failure to achieve the present water quality classification objective for the classified reach.</b>		
OPTIONS	Responsibility	Advantages	Disadvantages
1. Reduction in release of copper from contaminated land at Makin Metal Powders Ltd.	NRA to monitor copper levels and enforce reductions.  Makin Metal Powders Ltd to undertake remedial action.	Achievement of present water quality classification objective.  Improvement to aesthetic and amenity value and fishery potential.	Cost to Makin Metal Powders Ltd. and possibly customers.
2. Reduction in organic and debris load from unsatisfactory sewer overflows.	As a requirement of the EC Urban Wastewater Treatment Directive. NRA/ NWW Ltd to agree improvements required for satisfactory performance.  NWW Ltd to undertake capital works.	Achievement of present water quality classification objective.  Improvement to the aesthetic and amenity value and fishery potential.	Cost to NWW Ltd and possibly customers.
3. Reduction in the visual impact and possible influence on benthic fauna of ochreous springs.	NRA to establish means and funding for remedial measures.	Achievement of present water quality classification objective.  Improvement to the aesthetic and amenity value.	Difficulty of establishing means and funding with high risk of failure.

**EC - European Community**

Achievement of the present water quality classification objective for Stanney Brook has additional benefits for the classified reach of the River Roch which Stanney Brook flows into. The relevant reach of the River Roch is considered under Issue SS22. Option 1 also has benefit in compliance with the EC Dangerous Substances Directive. This benefit is considered under Issue SS23.

<p><b>ISSUE NO: SS29</b></p>	<p><b>Hey Brook - Buckley Reservoir to the River Roch.</b></p> <p><b>Failure to achieve the present water quality classification objective for the classified reach.</b></p>		
<p><b>OPTIONS</b></p>	<p><b>Responsibility</b></p>	<p><b>Advantages</b></p>	<p><b>Disadvantages</b></p>
<p>1. Reduction in organic load from unsatisfactory sewer overflow at Yorkshire Street.</p>	<p>As a requirement of the EC Urban Wastewater Treatment Directive.</p> <p>NRA/NWW Ltd to agree improvements required to achieve satisfactory performance.</p> <p>NWW Ltd to undertake capital works.</p>	<p>Achievement of the present water quality classification objective.</p> <p>Improvement to the aesthetic and amenity value and fishery potential.</p>	<p>Cost to NWW Ltd and possibly customers.</p>
<p>2. Continued investigation of pollution sources arising in culverted sections.</p>	<p>NRA to continue to undertake and pursue investigations.</p> <p>Responsible parties to undertake investigations and appropriate remedial measures.</p>	<p>Achievement of the present water quality classification objective.</p> <p>Improvement to the aesthetic and amenity value and fishery potential.</p>	<p>Cost to responsible parties - likely to include NWW Ltd, Rochdale MBC, industrial premises operators and householders.</p>

EC - European Community  
MBC - Metropolitan Borough Council

<b>ISSUE NO: SS30</b>	<b>Buckley Brook, Buckley</b> <b>Flooding to industrial and residential properties due to insufficient capacity of channel and culvert.</b>		
<b>OPTIONS</b>	<b>Responsibility</b>	<b>Advantages</b>	<b>Disadvantages</b>
1. Improve channel capacity by raising existing defences.	NRA/Riparian owner	Improves existing level of flood protection.	Scheme cost. Some visual and environmental impact.
2. Replace existing culvert with new culvert of adequate size.	NRA/Riparian owner.	Improves existing level of flood protection.	Scheme cost.

<b>ISSUE NO: SS31</b>	<b>River Roch, Rochdale</b> <b>Risk of flooding due to insufficient capacity of bridge structures in town centre.</b>		
<b>OPTIONS</b>	<b>Responsibility</b>	<b>Advantages</b>	<b>Disadvantages</b>
1. Replace existing structures with new structures of adequate capacity.	NRA/ Rochdale MBC	Improves existing level of flood protection.	Scheme cost.
2. Provide localised flood storage areas.	NRA/ Rochdale MBC	Improves existing level of flood protection. A wetland complex could be a valuable new habitat.	Scheme cost. Land take. Existing habitat may be of conservation value.
3. Improve channel capacity by raising existing defences.	NRA/ Rochdale MBC	Improves existing level of flood protection	Scheme cost. Some visual and environmental impact.

**MBC - Metropolitan Borough Council**

<b>ISSUE NO: SS32</b>	<b>River Spodden</b> <b>Lack of fishery due primarily to poor water quality.</b>		
<b>OPTIONS</b>	<b>Responsibility</b>	<b>Advantages</b>	<b>Disadvantages</b>
1. Stocking of appropriate fish species as and when prevailing water quality allows, and monitoring of fish populations.  2. Natural colonisation and monitoring	NRA  NRA	Development of Fisheries.  Less Cost	Possible loss of stocks due to intermittent or sporadic pollution.  Timescale may be unrealistic if there are very few fish in feeder tributaries.

<b>ISSUE NO: SS33</b>	<b>River Spodden - Facit Station to the River Roch.</b> <b>Failure to achieve present water quality classification objective for the classified reach.</b>		
<b>OPTIONS</b>	<b>Responsibility</b>	<b>Advantages</b>	<b>Disadvantages</b>
1. Revision of present water quality classification objective.	NRA	Recognition of best achievable class without expenditure on inputs normally outside the scope of pollution control such as urban run-off.	Apparent relaxation of water quality standards.



<b>ISSUE NO: SS34</b>	<b>Cowm Reservoir and Cowm Brook</b>  <b>Periodic aesthetic deterioration due to discolouration arising from fine solids.</b>		
<b>OPTIONS</b>	<b>Responsibility</b>	<b>Advantages</b>	<b>Disadvantages</b>
1. Maintenance of consistent quality of Bardon Roadstone quarry discharge.	NRA to continue to monitor water quality and enforce improvement.  Bardon Roadstone to undertake operational and drainage measures.	Improvement to aesthetic and amenity value.	Possible cost to Bardon Roadstone.

<b>ISSUE NO: SS35</b>	<b>River Roch - Rochdale STW to the River Irwell.</b> <b>Failure to achieve the present water quality classification objective for the classified reach.</b>		
<b>OPTIONS</b>	<b>Responsibility</b>	<b>Advantages</b>	<b>Disadvantages</b>
<p>Combinations of the following:</p> <ol style="list-style-type: none"> <li>Reduction in the organic and debris load from unsatisfactory sewer overflows.</li> <li>Evaluation of the impact of the organic load from Rochdale STW and reduction as appropriate.</li> </ol>	<p>As a requirement of the EC Urban Wastewater Treatment Directive.</p> <p>NRA/NWW Ltd to agree improvements required to achieve satisfactory performance.</p> <p>NWW Ltd to undertake capital works.</p> <p>NRA to assess the impact and review consent and promote capital expenditure by NWW Ltd amongst other regulatory influences as appropriate.</p> <p>NWW Ltd to undertake capital works as appropriate.</p>	<p>Achievement of the present water quality classification objective.</p> <p>Improvement to the aesthetic and amenity value and fishery potential.</p> <p>Achievement of the present water quality classification objective.</p> <p>Improvement to the aesthetic and amenity value and fishery potential.</p>	<p>Cost to NWW Ltd and possibly customers.</p> <p>Possible cost to NWW Ltd and customers.</p> <p>Cont'd.</p>

<b>ISSUE NO: SS35 Cont'd.</b>	<b>River Roch - Rochdale STW to the River Irwell.</b>  <b>Failure to achieve the present water quality classification objective for the classified reach.</b>
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- EC** - **European Community**
- STW** - **Sewage Treatment Works**

Achievement of the present water quality classification objective will also require improvements in the upstream reach of the River Roch and in Sudden Brook and Millers Brook. The upstream classified reach is considered in Issue SS22, Sudden Brook in Issue SS36 and Millers Brook in Issue SS40.

The achievement of the present water quality classification objective for this reach of the River Roch will have additional benefits for the River Irwell downstream of their confluence. This is considered in Chapter 2 relating to the Upper Irwell sub-catchment.

<b>ISSUE NO: SS36</b>	<b>Sudden Brook - Balderstone to the River Roch.</b>  <b>Failure to achieve the present water quality classification objective for the classified reach.</b>		
<b>OPTIONS</b>	<b>Responsibility</b>	<b>Advantages</b>	<b>Disadvantages</b>
<p>1. Reduction in the organic load from unsatisfactory sewer overflows.</p> <p>2. Elimination of organic load from domestic foul wastes wrongly connected to surface water drains.</p>	<p>As a requirement of the EC Urban Wastewater Treatment Directive.</p> <p>NRA/NWW Ltd to agree improvements required for satisfactory performance.</p> <p>NWW Ltd to undertake capital works.</p> <p>NWW Ltd/ Rochdale MBC to undertake investigations.</p> <p>NWW Ltd/ individual householders to undertake remedial measures.</p>	<p>Achievement of present water quality classification objective.</p> <p>Improvement to aesthetic and amenity value and fishery potential.</p> <p>Achievement of the present water quality classification objective.</p> <p>Improvement to aesthetic and amenity value and fishery potential.</p>	<p>Cost to NWW Ltd and possibly customers.</p> <p>Cost to NWW Ltd (and possibly customers)/ Rochdale MBC</p> <p>Cost to NWW Ltd (and possibly customers)/ individual householders.</p>

EC - European Community  
MBC - Metropolitan Borough Council

Achievement of the present water quality classification objective for Sudden Brook has benefits for the classified reach of the River Roch into which it flows. The relevant reach of the River Roch is considered under Issue SS35.

<b>ISSUE NO: SS37</b>	<b>Sudden Brook, Stoneyfield.</b>  <b>Risk of flooding to industrial properties on Valley Road due to insufficient culvert and channel capacity.</b>		
<b>OPTIONS</b>	<b>Responsibility</b>	<b>Advantages</b>	<b>Disadvantages</b>
1. Improve channel capacity by raising existing defences.  2. Replace existing culvert with new culvert of adequate size.	NRA/Riparian owner  NRA/Riparian owner.	Improves existing level of flood protection.  Improves existing level of flood protection.	Scheme cost. Some visual and environmental impact.  Scheme cost.

<b>ISSUE NO: SS38</b>	<b>Millers Brook, Heywood</b>  <b>Risk of flooding to cricket ground due to insufficient capacity of channel.</b>		
<b>OPTIONS</b>	<b>Responsibility</b>	<b>Advantages</b>	<b>Disadvantages</b>
1. Improve channel capacity by raising existing defences.	NRA/Riparian owner	Improves existing level of flood protection.	Scheme cost. Some visual and environmental impact.

<b>ISSUE NO: SS39</b>	<b>Millers Brook - Roeacre Lodge to River Roch</b> <b>Lack of fishery due primarily to poor water quality.</b>		
<b>OPTIONS</b>	<b>Responsibility</b>	<b>Advantages</b>	<b>Disadvantages</b>
1. Stocking of appropriate fish species as and when prevailing water quality allows, and monitoring of fish populations.  2. Natural colonisation and monitoring	NRA  NRA	Development of Fisheries.  Less Cost	Possible loss of stocks due to intermittent or sporadic pollution.  Timescale may be unrealistic if there are very few fish in feeder tributaries.

<b>ISSUE NO: SS40</b>	<b>Millers Brook - Roeacre Lodge to the River Roch.</b>  <b>Failure to achieve the present water quality classification objective for the classified reach.</b>		
<b>OPTIONS</b>	<b>Responsibility</b>	<b>Advantages</b>	<b>Disadvantages</b>
<p>1. Reduction in the organic and debris load from the unsatisfactory sewer overflow at John Street.</p> <p>2. Continued investigation of pollution sources arising in culverted sections.</p>	<p>As a requirement of the EC Urban Wastewater Treatment Directive.</p> <p>NRA/NWW Ltd to agree improvements required to achieve satisfactory performance.</p> <p>NWW Ltd to undertake capital works.</p> <p>NRA to continue to undertake and pursue investigations.</p> <p>Responsible parties to undertake investigations and appropriate remedial measures.</p>	<p>Achievement of present water quality classification objective.</p> <p>Improvement to aesthetic and amenity value and fishery potential.</p> <p>Achievement of present water quality classification objective.</p> <p>Improvement to aesthetic and amenity value and fishery potential.</p>	<p>Cost to NWW Ltd and possibly customers.</p> <p>Cost to responsible parties. Likely to include NWW Ltd, Rochdale MBC industrial premises operators and householders.</p>

EC - European Community  
MBC - Metropolitan Borough Council

Achievement of the present water quality classification objective has additional advantages for the classified reach of the River Roch it flows into. This reach of the River Roch is considered under Issue SS35.

<b>ISSUE NO: SS41</b>	<b>Cheesden Brook, Naden Brook and Old House Brook.</b> <b>Rivers and river corridors of highest ecological value within catchment.</b>		
<b>OPTIONS</b>	<b>Responsibility</b>	<b>Advantages</b>	<b>Disadvantages</b>
1. Object to any development of potentially polluting activities.	NRA/Local Authorities	Protection of most pristine watercourses within Roch Sub Catchment	

<b>ISSUE NO: SS42</b>	<b>River Roch, Heap Bridge.</b> <b>Large bankslip upstream of Heap Bridge.</b>		
<b>OPTIONS</b>	<b>Responsibility</b>	<b>Advantages</b>	<b>Disadvantages</b>
1. Remove debris from river and reinstate bank and roadway. Provide structural support to banking.	NRA/Riparian owner	Erosion of bank will be arrested and existing flood protection will be maintained.	Scheme cost.

<b>ISSUE NO: SS43</b>	<b>River Roch, Bury</b> <b>Risk of flooding to industrial properties due to insufficient capacity of channel.</b>		
<b>OPTIONS</b>	<b>Responsibility</b>	<b>Advantages</b>	<b>Disadvantages</b>
1. Improve channel capacity by raising existing defences.	NRA/Riparian owner	Improves existing level of flood protection.	Scheme cost. Some visual and environmental impact.



<b>ISSUE NO: SS44</b>	<b>River Roch, Gigg</b> <b>Weir at confluence with Gigg Brook at site of demolished mill is in poor structural condition.</b>		
<b>OPTIONS</b>	<b>Responsibility</b>	<b>Advantages</b>	<b>Disadvantages</b>
1. Replace weir.	NRA/Riparian owner	Maintains present river regime and existing bed levels.	Scheme cost.
2. Remove weir.	NRA/Riparian owner.	Reduced maintenance costs and removes dilapidated structure.	Scheme cost. Channel instability. Possible increase in scour and erosion.
3. Repair weir	NRA/Riparian owner	Maintains present river regime and existing bed levels.	Scheme cost

<b>ISSUE NO: SS45</b>	<b>Whittle Brook</b> <b>Widespread aesthetic deterioration in the catchment due to small sewage treatment plants.</b>		
<b>OPTIONS</b>	<b>Responsibility</b>	<b>Advantages</b>	<b>Disadvantages</b>
1. Sustained improved performance of small sewage treatment plants.	NRA to monitor water quality and enforce discharge standards.  Small sewage treatment plant operators to undertake appropriate regular maintenance.	Improvement to aesthetic and amenity value.	Cost to small sewage treatment plant operators.

<b>ISSUE NO: SS46</b>	<b>Brightley Brook, Heywood</b> Flooding occurs to fishery due to insufficient flow capacity.		
<b>OPTIONS</b>	<b>Responsibility</b>	<b>Advantages</b>	<b>Disadvantages</b>
1. Provide localised flood storage area.	NRA/Riparian owner	Improves existing level of flood protection.  A wetland complex could be a valuable new habitat.	Scheme cost. Existing habitat may be of conservation value.
2. Enlarge fishery reservoir for additional storage.	NRA/Riparian owner.	Improves existing level of flood protection.	Scheme cost.

<b>ISSUE NO: SS47</b>	<b>Hollins Brook, Hollins</b> Erosion of river banks occurring to rear of 26-28 Alnwick Drive.		
<b>OPTIONS</b>	<b>Responsibility</b>	<b>Advantages</b>	<b>Disadvantages</b>
1. Install structural toe to prevent further erosion.	NRA/Riparian owner	Improves stability of existing bank.	Scheme cost. Some visual and environmental impact.

<b>ISSUE NO: SS48</b>	<b>Parr Brook</b> <b>Aesthetic deterioration due to sewage debris</b>		
<b>OPTIONS</b>	<b>Responsibility</b>	<b>Advantages</b>	<b>Disadvantages</b>
1. Reduction in debris load from unsatisfactory sewer overflows.	As a requirement of the EC Urban Wastewater Treatment Directive.  NRA/NWW Ltd to agree improvement required for satisfactory performance NWW Ltd to undertake capital works.	Improvement to aesthetic and amenity value.	Cost to NWW Ltd and possibly customers.

**EC - European Community**

<b>ISSUE NO: SS49</b>	<b>Disjointed countryside Management and public access policy particularly along the tributaries and parts of the Roch, such as between Queens Park and Mandale Park.</b>		
<b>OPTIONS</b>	<b>Responsibility</b>	<b>Advantages</b>	<b>Disadvantages</b>
1. Co-ordinate the creation of a comprehensive policy for the whole sub-catchment.	NRA Rochdale MBC, Bury MBC, Rights of Way Officers, Countryside Management services, Groundwork Trust.	Improve recreational and wildlife value of river corridors.  More strategic and informed development control.	Resource implications.

**MBC - Metropolitan Borough Council**

<b>ISSUE NO: SS50</b>	<b>Rochdale - Access Ramps</b>  <b>Six access ramps are to be provided at Rochdale on the River Spodden, River Roch, Hey Brook and Buckley Brook.</b>		
<b>OPTIONS</b>	<b>Responsibility</b>	<b>Advantages</b>	<b>Disadvantages</b>
1. Locations have been identified for the provision of access ramps.	NRA	Reduced cost of maintenance due to improved access.	Scheme cost.

***National Rivers Authority North West Region***

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