

RIVER IRWELL
CATCHMENT MANAGEMENT PLAN
CONSULTATION REPORT
CHAPTER SIX - RIVER MEDLOCK SUB-CATCHMENT



NRA

*National Rivers Authority
North West Region
September 1994*



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IRWELL CATCHMENT MANAGEMENT PLAN

CONSULTATION REPORT

CHAPTER SIX - RIVER MEDLOCK SUB-CATCHMENT

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RIVER MEDLOCK
CONSULTATION REPORT

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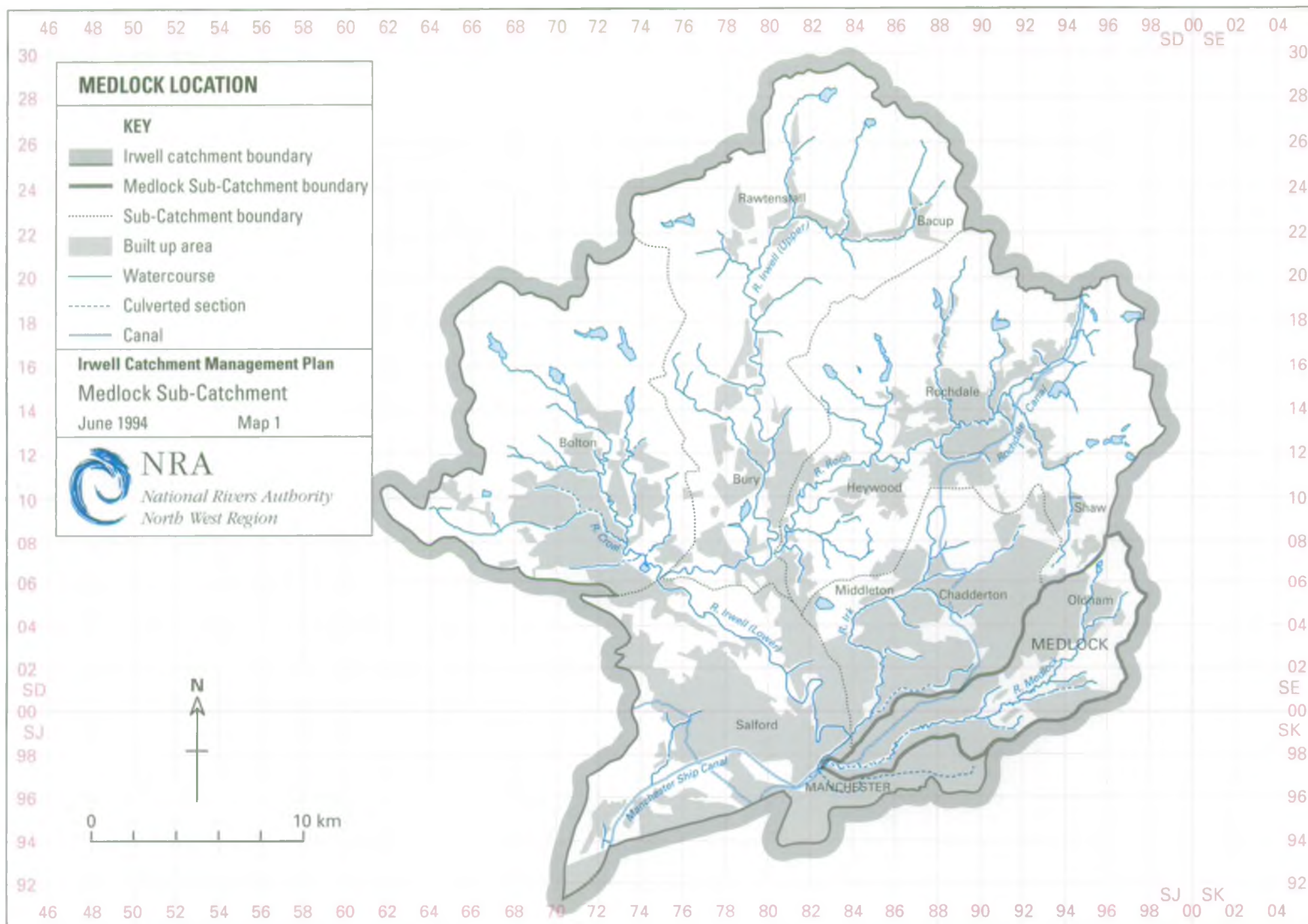
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MEDLOCK SUB-CATCHMENT DETAILS (MAP 1)

Area	57 km ²
Population	100,000

MAIN TOWNS AND POPULATIONS

City of Manchester	434,600
Oldham	85,600
Failsforth	21,000
Ashton under Lyne	8,000
Newton Heath	6,300
Droylsden	5,000

ADMINISTRATIVE DETAILS

District Councils:-

Manchester City Council
Oldham Metropolitan Borough
Tameside Metropolitan Borough

NRA:- North West Region - South Area

Water Companies:- North West Water Ltd.

Principal Sewage Treatment Works:- Failsforth STW

TOPOGRAPHY

Ground Levels	Min. Level	25m. AOD
	Max. Level	379m. AOD

GEOLOGY

Solid Geology:-
South West - Permo-Triassic Sandstone
North East - Carboniferous Coal Measures

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

WATER RESOURCES

Availability:-
 Groundwater - Generally site specific
 Surface Water - Good availability

FLOOD PROTECTION

Length of Designated Main River:- 35.34 km.
 (maintained by NRA)

Riparian owned debris screens cleaned
 by the NRA on a best endeavours basis 8

WATER QUALITY

Length of River in National Water Council Class

1993 Assessment

Class 1A (Very Good)	0.7 km.	Class 3 (Poor)	12.5 km.
Class 1B (Good)	0 km.	Class 4 (Bad)	9.5 km.
Class 2 (Fair)	4.5 km.		

FISHERIES







Length of salmonid fishery:- 0 km.
 cyprinid fishery:- 0 km.

CONSERVATION

Number of Sites of Special Scientific Interest (SSSI) in the catchment	1
Number of SSSI's which are wetland and/or associated with the River Corridor	1
Number of Site of Biological Interest (SBI) in the catchment	15
Number of SBI's associated with River Corridor	15

MEDLOCK CATCHMENT WITH INFRASTRUCTURE

KEY

-  Catchment boundary
-  Watercourse
-  Culverted section
-  Canal
-  Principal highway
-  Motorway
-  Railway

Irwell Catchment Management Plan

Medlock Sub-Catchment

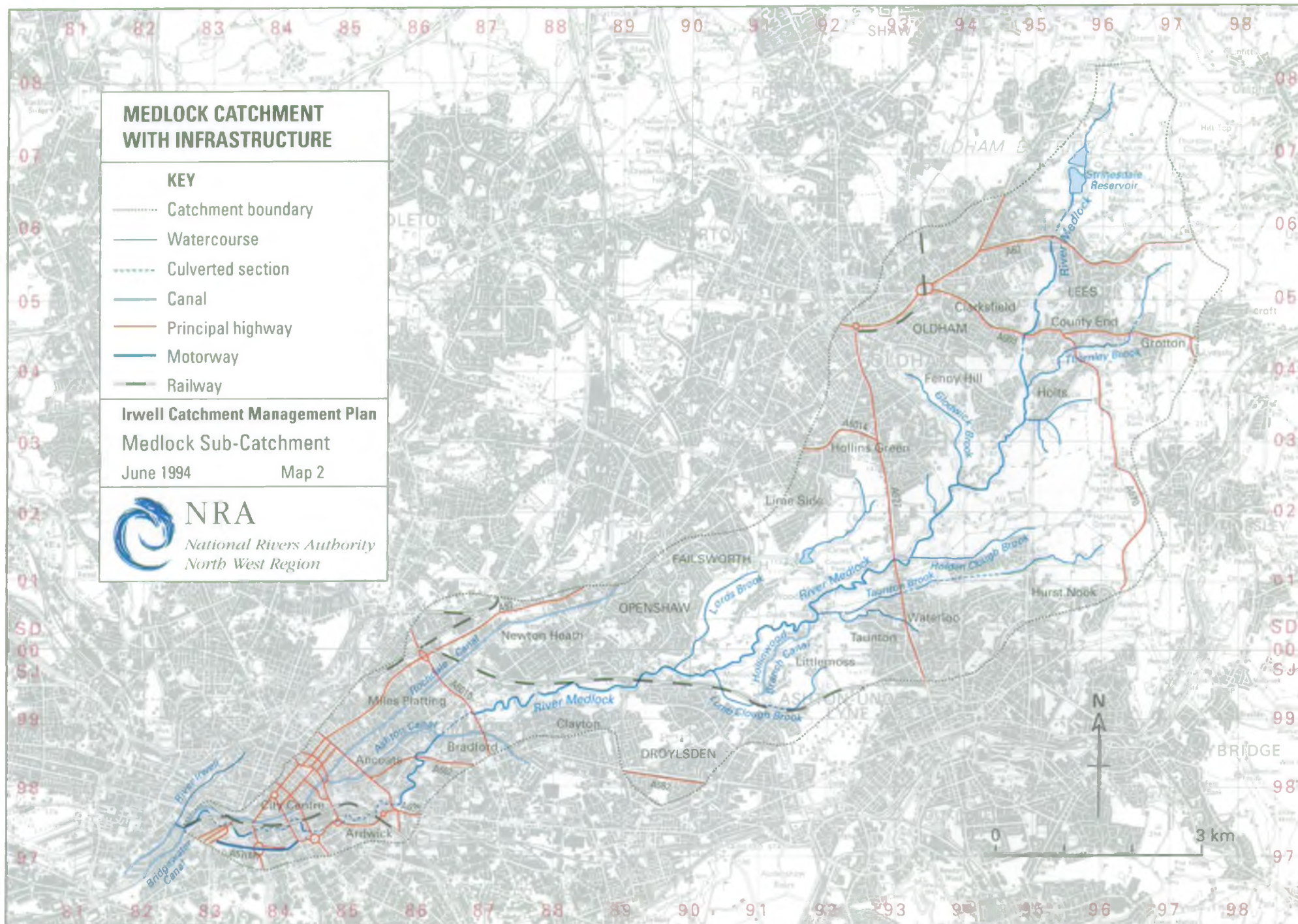
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Map 2



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1. INTRODUCTION

1.1 CATCHMENT DESCRIPTION (MAP 2)

The River Medlock rises on the moors of north east Oldham and is located in the south east of the main Irwell catchment. The Medlock serves as one of the feeder streams for the amenity lakes which have recently been created from the former Upper and Lower Strinesdale Reservoirs. The river and its main tributaries, Thornley (Wood) Brook, Taunton Brook, Lumb Clough Brook and Lords Brook, drain the towns of Oldham (population 85,600), Failsworth (population 21,000) and part of Manchester, (population 434,600).

The Medlock Catchment as a whole covers 57 km² with approximately two thirds being used for residential or industrial purposes with the remainder agricultural and recreational land. The whole catchment is suffering from urban decay although the most serious problems are concentrated in the lower Medlock, near Manchester City Centre.

1.2 HYDROLOGY

The surface water hydrology of the catchment is controlled by the topography and surface geology.

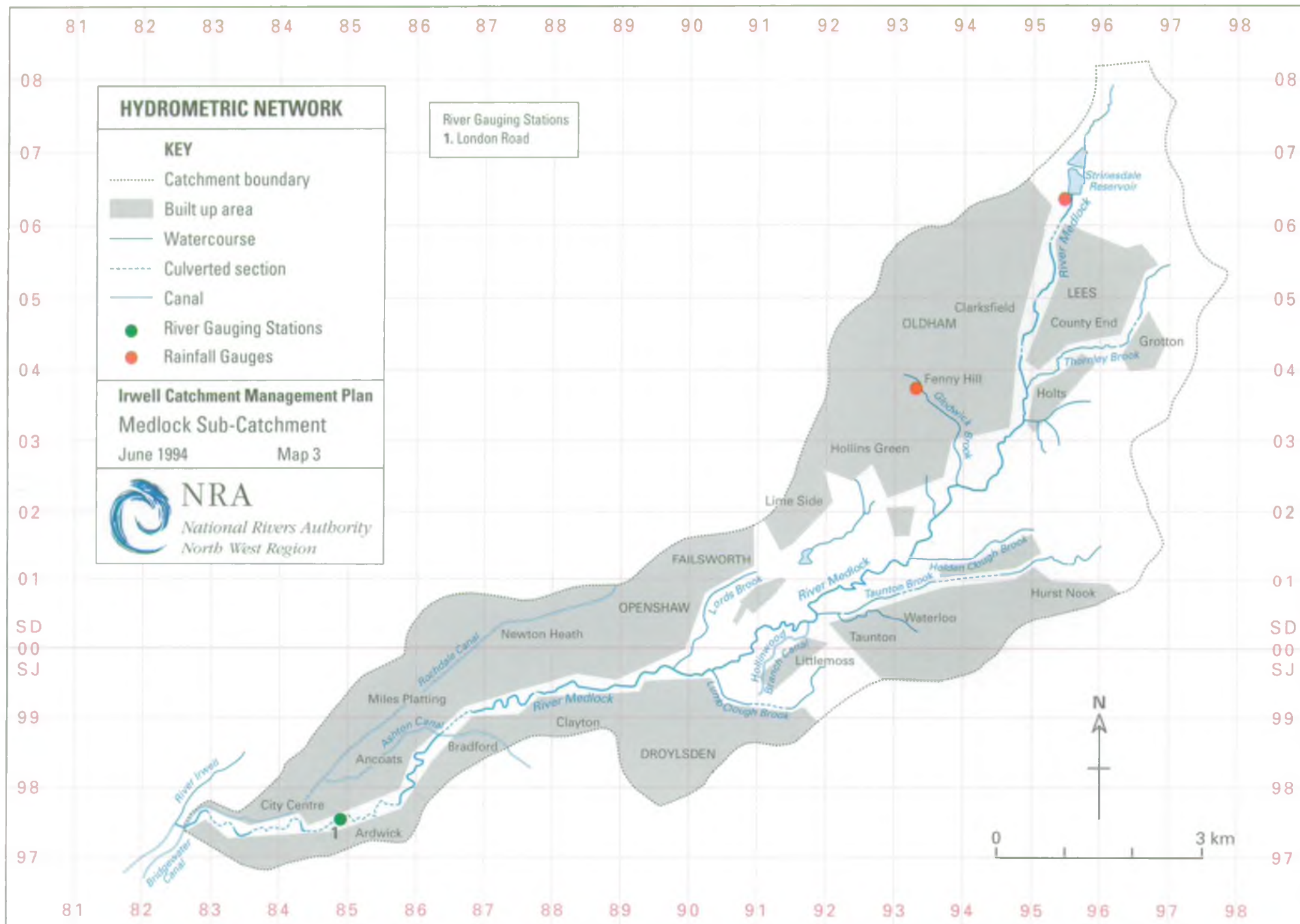
The catchment begins in the lower reaches of the Pennines to the north east of Oldham attaining a height of 379 mAOD and flows over the Carboniferous Coal Measures in a south westerly direction falling to the low lying glacial drift covered industrialised land to its confluence with the River Irwell at about 25 mAOD.

Due to the steepness of the headwaters the catchment is characterised by flashiness in response to rainfall. Annual average rainfall varies from about 1150 mm at the headwaters to under 1000 mm in the lower lying reaches whilst evaporation and transpiration varies between 425 - 450 mm leaving a high effective rainfall in the uplands.

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

YEAR	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
RAINFALL (mm)	1103	952	1222	1091	1153	898	1098	907	1239	1147

The long term average calculated by the Met. Office from this Authority's own records from 1961 to 1990 is 1111 mm at Alexander Park.



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.

River Levels are recorded at London Road in Central Manchester. Once recorded, river levels can be converted to flows and statistics produced.

The 95 percentile flow at London Road, Central Manchester is 0.291 cumecs. The Minimum and Maximum Daily Mean Flows are 0.138 and 42.003 cumecs respectively with a median flow of 0.641 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

cw Carboniferous Coal Measures

DRIFT

SOLID

Irwell Catchment Management Plan Medlock Sub-Catchment

June 1994

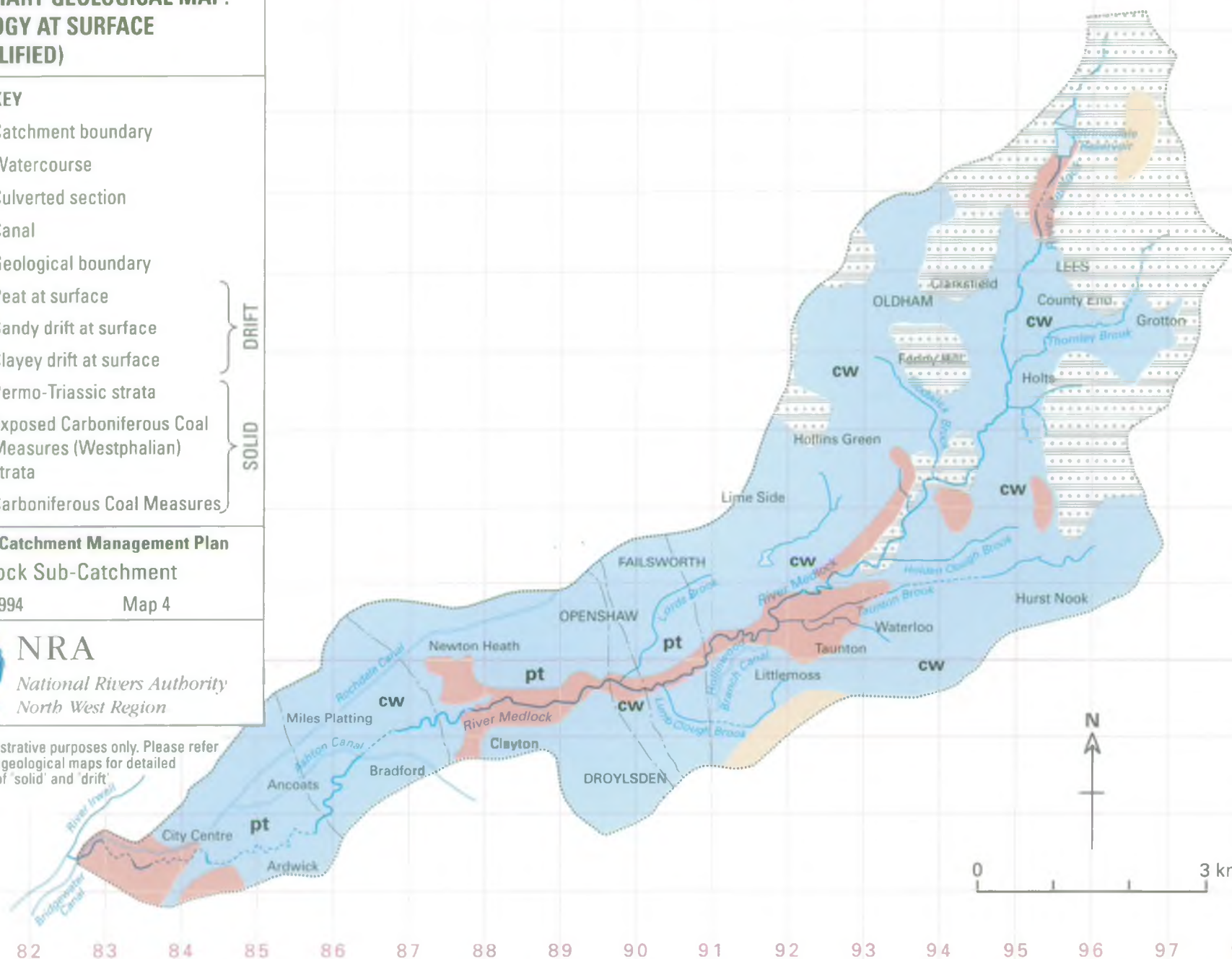
Map 4



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



1.4 HYDROGEOLOGY (MAP 4)

The solid geology within the River Medlock Catchment is complex. The western half of the catchment is underlain by the major Permo-Triassic sandstone aquifer which extends from beneath Manchester City Centre to the south and west. The sandstones usually contain high quality groundwater. Because of their geographical extent and high permeability the sandstones are used for water supply both within and beyond the surface water catchment boundary, albeit mainly for industrial purposes in the Manchester area.

The eastern part of the District is underlain by Carboniferous Coal Measures (Westphalian) strata. They comprise alternating shales/mudstones, siltstones, sandstones and coal seams, which have been folded and faulted. The sandstones tend to act as individual "minor" aquifer units separated by lower permeability shales/mudstones. Groundwater movement is generally by fissure flow. Fissures being natural cracks in the rocks along which water may percolate. The presence of old coal-workings throughout the Coal Measures can give rise to complex and rapid groundwater flow and can adversely affect groundwater quality.

Much of the area is covered by superficial or drift deposits, principally glacial till (boulder clay). However, this tends to be absent on the higher ground in the east. Locally, the drift deposits may include permeable sands and gravels which may act as aquifers in their own right.

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

1.5 FLOOD DEFENCE

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 Medlock Catchment, and includes such items as clearing debris from debris screens, 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 Medlock Catchment in an attempt to ensure that new development is not 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 debris screens, culverts and channels, and provide temporary flood defences using sand bags.

1.6 WATER QUALITY

The River Medlock 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 an EC Directive and to discharges to the catchment.

The main sources of pollution in the catchment are discharges from Failsworth Sewage Treatment Works and the sewerage networks feeding this and sewage works outside the catchment. These discharges are the responsibility of North West Water Ltd. Significant expenditure has already been made on improvements and there is a further very substantial requirement.

Leachate from an old waste tip site has had a marked effect on the catchment in the past.

Drainage from farming operations can have a significant impact.

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.

The culverted sections of the River Medlock and its tributaries towards the bottom of the catchment are widely affected by sewer overflows and wrong connections. Investigations in such situations are particularly difficult.

RIVER NETWORK

KEY

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

Irwell Catchment Management Plan

Medlock Sub-Catchment

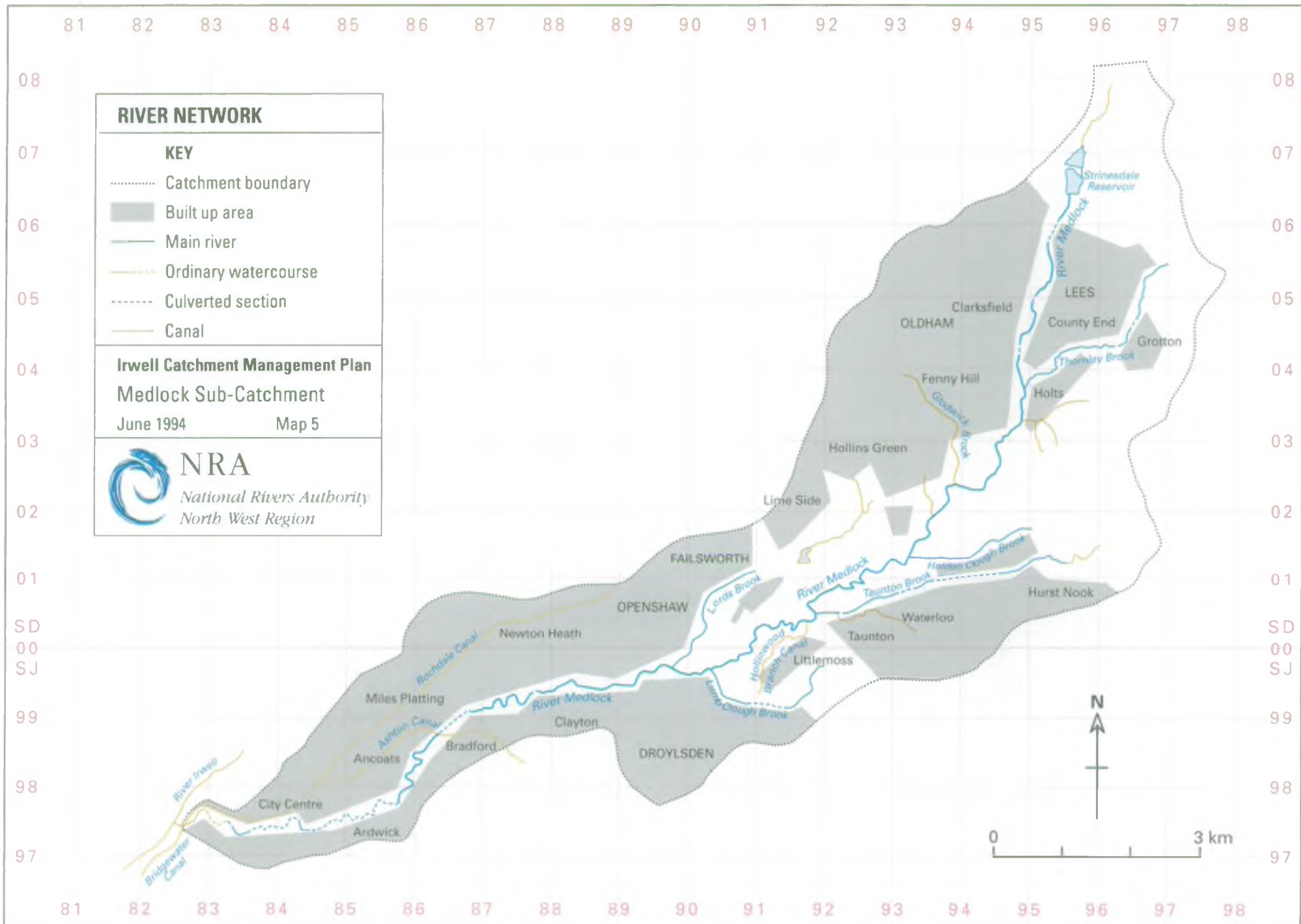
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Map 5



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2. CATCHMENT USES AND ACTIVITIES

2.1 FLOOD DEFENCE (MAP 5)

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, for example, 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 as detailed in Section 3.1 of Chapter One, River Irwell Introduction document.

2.1.2 Local Perspective

The River Medlock between Pinmill Brow and its confluence with the River Irwell is a legacy from the Industrial Revolution. This length is predominantly in culvert and/or tunnel through Manchester City Centre, and where it runs in open channel, the river banks are formed by high retaining walls or by the walls of buildings.

Over the past five years, maintenance activities on this length of City Centre river have consisted mainly of the removal of large amounts of debris from culverts and open channels. This problem is often exacerbated by dilapidated channel walls collapsing into the river, with hard-core then being carried downstream and often deposited inside culverts or where access to the river with heavy plant is difficult or impossible.

The Central Manchester Development Corporation are attempting to attract European Community funding to re-generate the River Medlock corridor through the City Centre. This initiative would have a flood defence benefit and consequently the NRA are assessing what contribution, if any, could be made if the project were to proceed. These proposals could also have a significant impact on NRA maintenance operations.

The Manchester Ship Canal Company have a major role to play in the provision of flood defence to the City Centre. They own and operate sluices known as the Medlock Cloughs at Chester Road. It is here that the River Medlock enters a long tunnel under the Bridgewater Canal, before joining the River Irwell downstream of Hulme Lock. The sluices enable flood water to be diverted into the canal and returned to the River Medlock downstream of the tunnel.

At Pinmill Brow a crude debris screen exists which is designed to intercept larger items of floating debris. During high river flows, this debris is carried over the top of the screen and continues downstream towards the Medlock Cloughs, at Chester Road. At this point the Manchester Ship Canal Company remove the debris to avoid a blockage of the Medlock Tunnel.

Upstream of Pinmill Brow, the River Medlock generally runs in open channel until it reaches the Bradford Gas Works, where it runs in culvert beneath part of the site, which is now disused. This site was proposed as the location of the main stadium as part of Manchester's Olympic Bid for the year 2000.

Further upstream, past the Gas Works site, the River Medlock becomes more rural in character. A particular point of historical interest here is the brick lined section of channel, built by "prisoners of war", where the River Medlock runs through the Philips Park cemetery. Maintenance works have been carried out in the past on this length of river which included repairs to the brick lined channel.

The River Medlock valley continues upstream through Clayton Vale, Medlock Vale, Daisy Nook and Park Bridge before reaching the head of designated "main river" at the former Strinesdale Reservoirs.

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 Medlock Catchment to safeguard the existing standards of flood protection, particularly in the heavily urbanised area of Manchester. 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 Medlock 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 3.1.1.

2.1.5 Environmental Requirements

Environmental Requirements relating to Flood Defence are detailed in Chapter One, River Irwell Introduction document, Section 3.1.

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 Medlock is located within the former County of Greater Manchester. The majority of the catchment is contained within the administrative Local Planning Authority (LPA) of Oldham Metropolitan Borough Council (MBC) with the southern and western parts falling within parts of Tameside MBC and Manchester City Council respectively.

At the strategic planning level, Guidance was issued for Greater Manchester by the Secretary of State for the Environment in 1989. This set out the guiding principles for future development in the conurbation. A summary of this Guidance, relevant to the catchment, is set out below:

- Incorporation of the Greater Manchester Green Belt as defined
- Revitalisation of the sub-regional economy and promote urban regeneration
- Providing recreational opportunities and assist nature conservation

Oldham, Manchester and Tameside LPA's have recently (June 1994) completed Public Inquiries following publication of the Deposit version of their UDP's. Each are now awaiting the production of a Report to be issued by the Inspector who presided over each Inquiry. The Inspector will make recommendations to the LPA's on any matters outstanding.

Presently, the majority of the open land areas in the Catchment are protected by Green Belt Policy. This restricts many forms of urban development. Therefore, major new housing and employment allocations will not be located in the catchment. There are certain exceptions, including development connected with agriculture, forestry and/or other uses appropriate to a rural area. This can include development such as Golf courses, of which there are four within the Catchment and Country Parks, for example, Daisy Nook. The Medlock Valley Local Plan (1984) is concerned with the recreational and physical improvement of the river valley. This has been achieved by controlling built development conserving the open character, landscape and wildlife features of the river valley, whilst, restoring those parts in need of improvement.

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.

2.3 POTABLE (DRINKING) WATER SUPPLY

2.3.1 General

This use relates to the abstraction of water for drinking water supply. There are no major surface water abstractions within the catchment for water supply, although there are many small domestic abstractions particularly in the upper part of the catchment, which are exempt from licensing requirements.

Groundwater may be abstracted from water bearing rocks (termed aquifers) via wells or boreholes or naturally flow through to the surface as springs.

2.3.2 Local Perspective

The upper part of the catchment contains the Strinesdale Reservoirs which were previously used by the statutory water company (North West Water Limited), however, these sources have now been decommissioned for supply purposes.

There are no groundwater abstractions used for public water supply within the Medlock Catchment.

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

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.

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

- 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 reduction.
- To carry out a review of compensation water requirements to ensure the best utilisation of resources for various users.
- 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.
- 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).

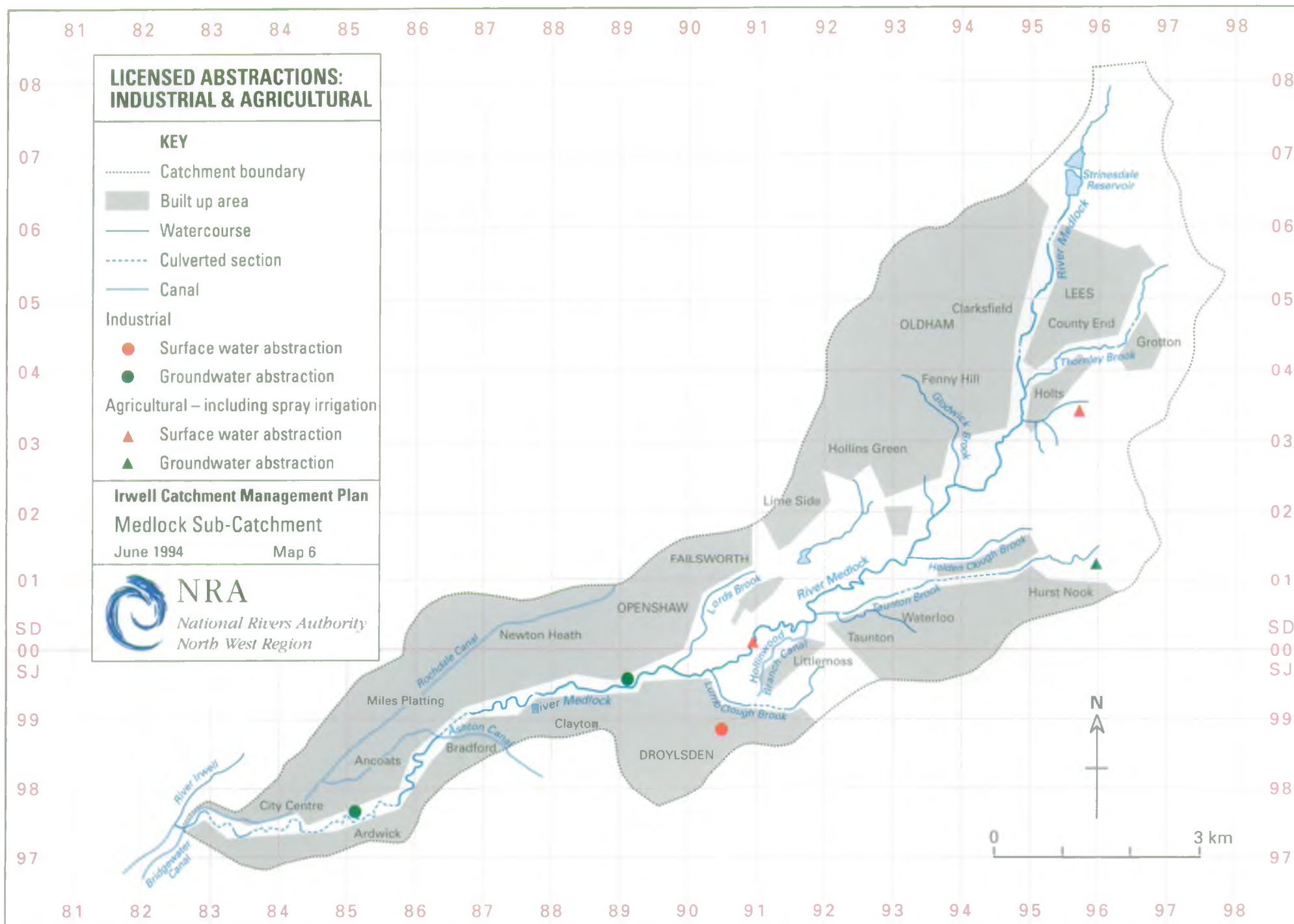
Groundwater Quality:

The major Permo-Triassic sandstone aquifer generally 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, for example, in Central Manchester.

Groundwaters 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.

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.



2.4 INDUSTRIAL AND AGRICULTURAL ABSTRACTIONS (MAP 6)

2.4.1 General

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

The catchment is essentially urban in character particularly in the lower reaches which extend into Manchester. Therefore, the majority of abstraction taking place within the catchment is industrial. Some industry will also use mains water.

2.4.2 Local Perspective

Industrial

There are only three licensed abstractions for industrial purposes within the Medlock Catchment (excluding canals). These licences account for 98% of the total licensed abstraction in the catchment.

Two of these licences are from borehole sources. These abstractions are from the Collyhurst Sandstone, which because of the small size of the aquifer and the rate of recharge, is now fully committed.

General Agriculture

There are no licensed abstractions for general agricultural purposes in the catchment. However, there will be many sources, particularly in the upper reaches, which will be used for general agricultural purposes and be exempt from licensing requirements.

Spray Irrigation

There are three licensed abstractions for spray irrigation in the catchment, all relating to golf courses. One source of supply is the River Medlock, the second is from an unnamed tributary of the River Medlock and the third is a borehole abstraction. Total licensed quantities are only small and no supply problems are envisaged.

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.
- 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 the 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.

	AVAILABLE RESOURCES IN AVERAGE YEAR JAN - DEC	LICENSED OR COMMITTED ABSTRACTION	ACTUAL AVERAGE ABSTRACTION 1992
Surface	81 MI/d	0.65 MI/d	0.01 MI/d
Groundwater	No data	1.84 MI/d	0.59 MI/d

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

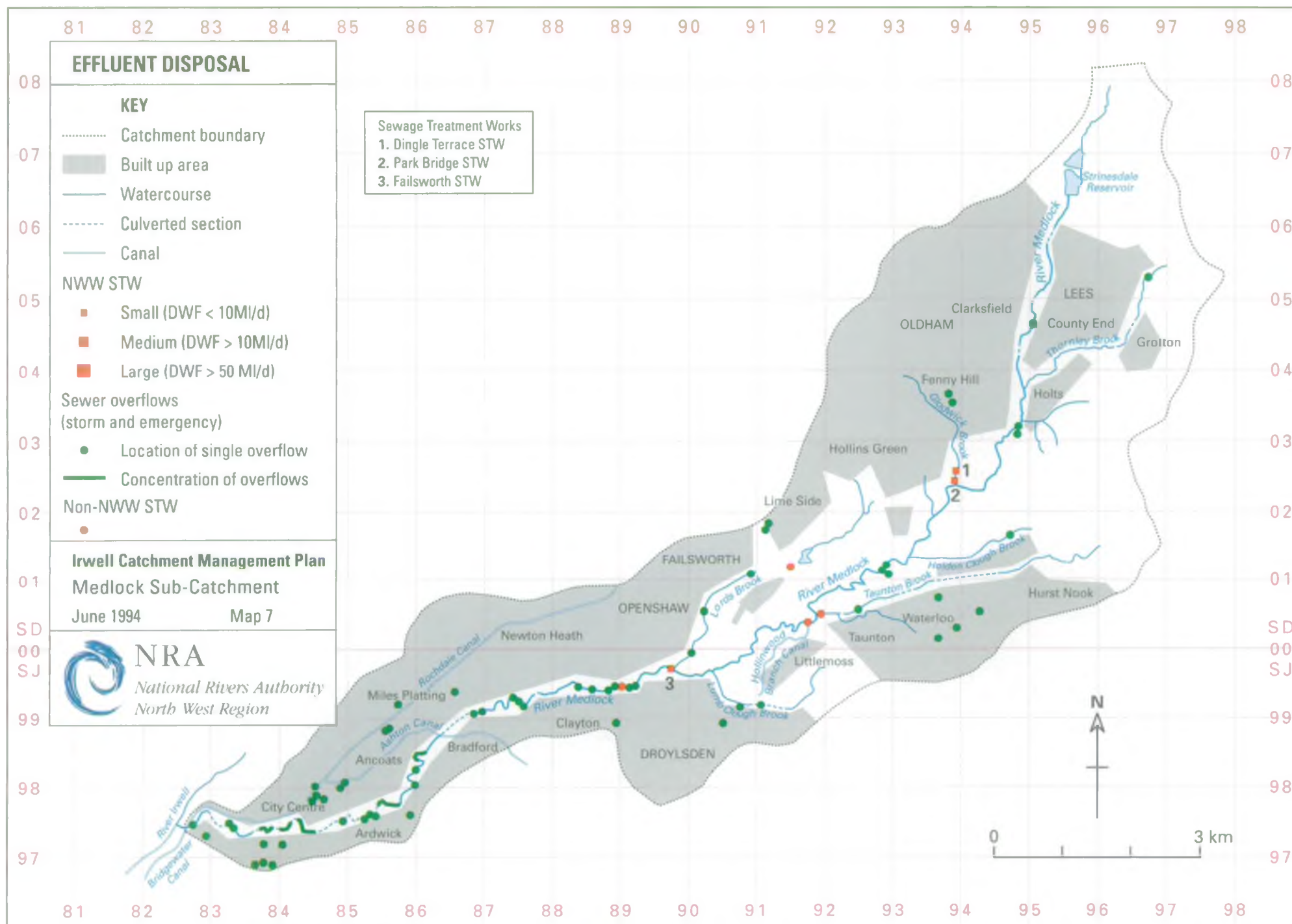
2.5.2 Local Perspective

Surface Water:

Water resources availability in the River Medlock 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 more minor tributaries.

Groundwater:

In volume terms, the main licensed groundwater abstractions within the catchment are from the major Permo-Triassic sandstone aquifer, for industrial and commercial use (both potable and non potable). The groundwater resources in the Clayton area are fully committed to existing industrial abstractions. Elsewhere there may be scope for additional abstractions, but this would need to be assessed on an individual basis.



2.6 EFFLUENT DISPOSAL (MAP 7)

2.6.1 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 area 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 and 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 the water companies, in this area North West Water Limited. 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. 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).

2.6.2 Local Perspective

Continuous Effluents

There is one significant sewage treatment works within the catchment. This is the North West Water Ltd. STW at Failsworth, which has a dry weather flow of 6.6 Ml/d. NWW Ltd. also operate small treatment plants at Dingle Terrace and Park Bridge.

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

There are no industrial discharges direct to river in the Medlock Catchment.

The locations of these discharges are shown on Map 7.

Intermittent Effluents

There are over 90 identified storm and emergency sewer overflows within the Medlock Catchment. Their locations are shown on Map 7.

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

2.6.3 Environmental Objectives

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

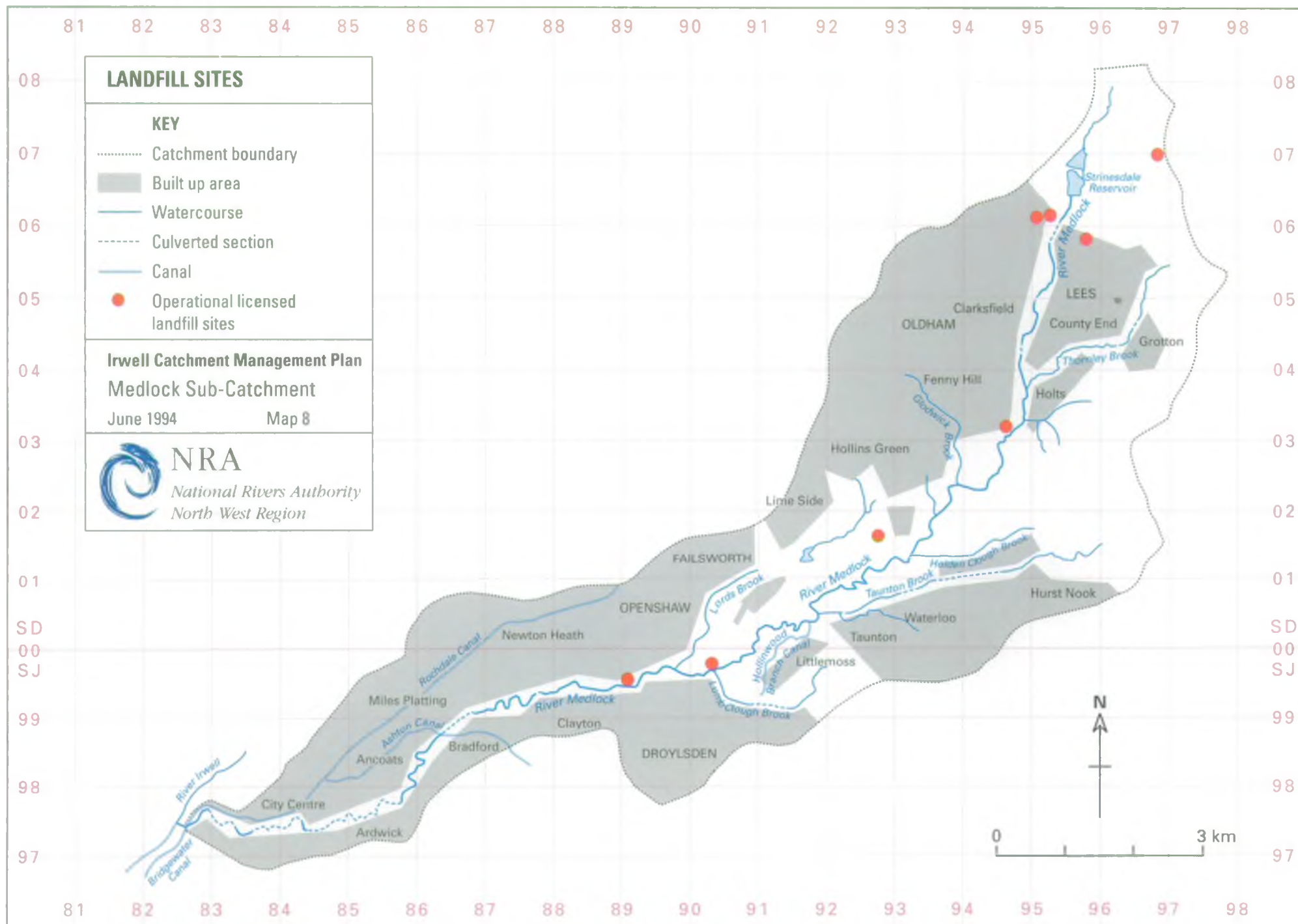
2.6.4 Environmental Requirements

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.



2.7 LANDFILL SITES (MAP 8)

2.7.1 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 management operations require a waste management licence. These include transfer stations, incinerators, waste storage etc. Often the greatest threat to groundwater quality is posed by landfill activities.

2.7.2 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.

2.7.3 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.

2.7.4 Environmental Requirements

Water Quality:

- Compliance with EC Directive on dangerous substances discharged to groundwaters.
- Implementation of the NRA Groundwater Protection Policy.
- Prevention of pollution of controlled waters.
- Appropriate monitoring of effects on surface and groundwater.
- No deterioration of groundwater or surface water quality.

Water Quantity:

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

Physical Features:

- Minimise the occurrence of slipping.
- Maintenance of the integrity of the river channel adjacent to landfill 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 features of the water environment which are of ecological or landscape value.

2.8 MINERAL EXTRACTION

2.8.1 General

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

2.8.2 Local Perspective

Mineral workings are difficult to quantify within the River Medlock 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, 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. Substantial sites of mine waste dumps are to be found on the low-lying ground to the south of Oldham.

2.8.3 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."

2.8.4 Environmental Requirements

Water Quality:

- No deterioration of 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.
- Safeguard features of the water environment which are of ecological or landscape value.

2.9 GROUNDWATER PROTECTION

2.9.1 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.

2.9.2 Local Perspective

There are no groundwater sources used for public water supply within the Medlock Catchment.

Conversely, 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 more remote from the mains water distribution system, and associated with minor aquifers, for example, the Carboniferous Sandstones.

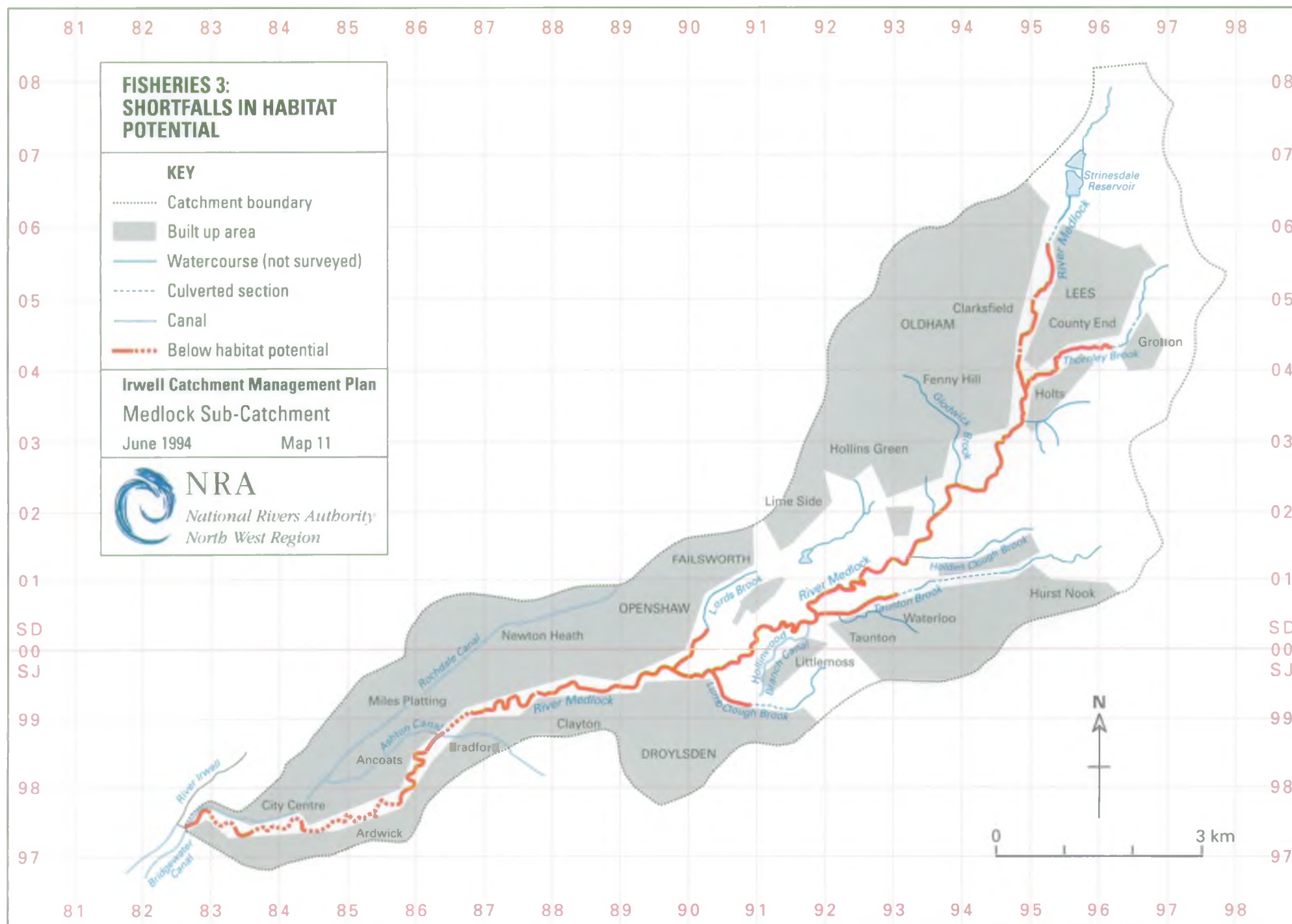
When available, source protection zone maps will be held in the NRA Regional Head Office at Richard Fairclough House, Warrington. The definition of zones is based on a wide range of variables and incorporates subjective judgement. In view of the need for frequent updating and amendment of these zones 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 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.

**CATCHMENT USES AND ACTIVITIES
GROUNDWATER PROTECTION**

These activities include:-

Groundwater abstraction
Waste disposal to 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".

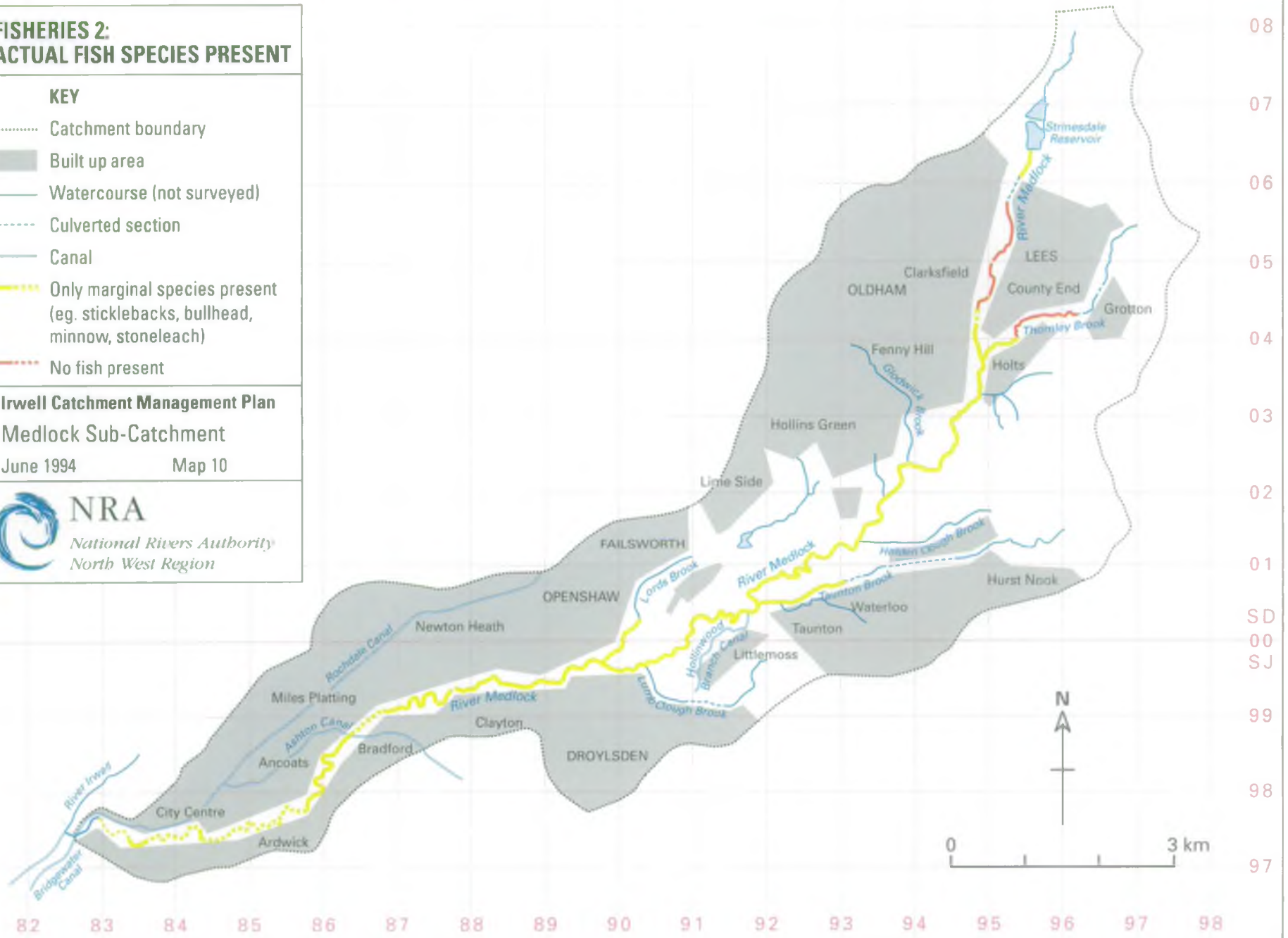


FISHERIES 2: ACTUAL FISH SPECIES PRESENT

KEY

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

Irwell Catchment Management Plan
Medlock Sub-Catchment
 June 1994 Map 10



FISHERIES 1: RIVER HABITAT POTENTIAL

KEY

- Catchment boundary
- Built up area
- Watercourse (not surveyed)
- - - Culverted section
- Canal
- Habitat zone (Species most suited to the habitat present)
- Trout (Trout, minnow, bullhead, stone loach)
- Minnow (Trout, minnow, bullhead, stone loach, chub, dace, gudgeon)
- Chub (Chub, dace, gudgeon, roach, perch, pike, eel)

Irwell Catchment Management Plan Medlock Sub-Catchment

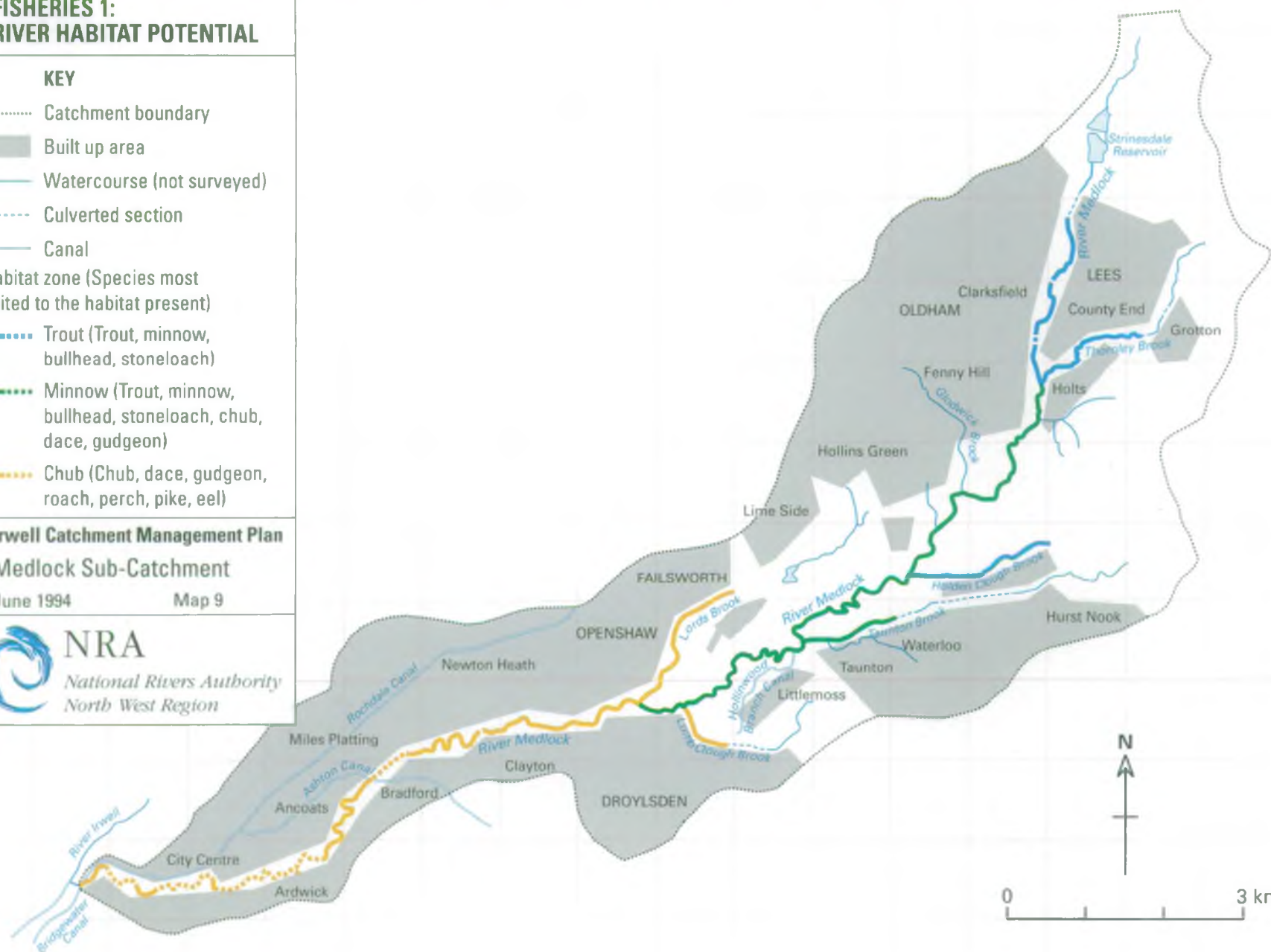
June 1994

Map 9



NRA

National Rivers Authority
North West Region



2.10 FISHERIES (MAPS 9, 10 & 11)

2.10.1 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.

2.10.2 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 (Map 9) indicates the habitat potential or 'expected species' according to Huet's classification of rivers (1952)*. This is compared to a second colour map (Map 10) indicating the actual species present (from the results of the survey), which enables the third map (Map 11), 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 Medlock should, by its physical nature, be a salmonid fishery in its upper reaches and a mixed fishery in its lower reaches. However, due to poor water quality the river currently fails to support a resident fish population in all but small isolated reaches. Steady improvements in this situation are anticipated to continue in the coming years as a result of Pollution Control measures.

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

2.10.3 Environmental Objectives

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

2.10.4 Environmental Requirements

Water Quality:

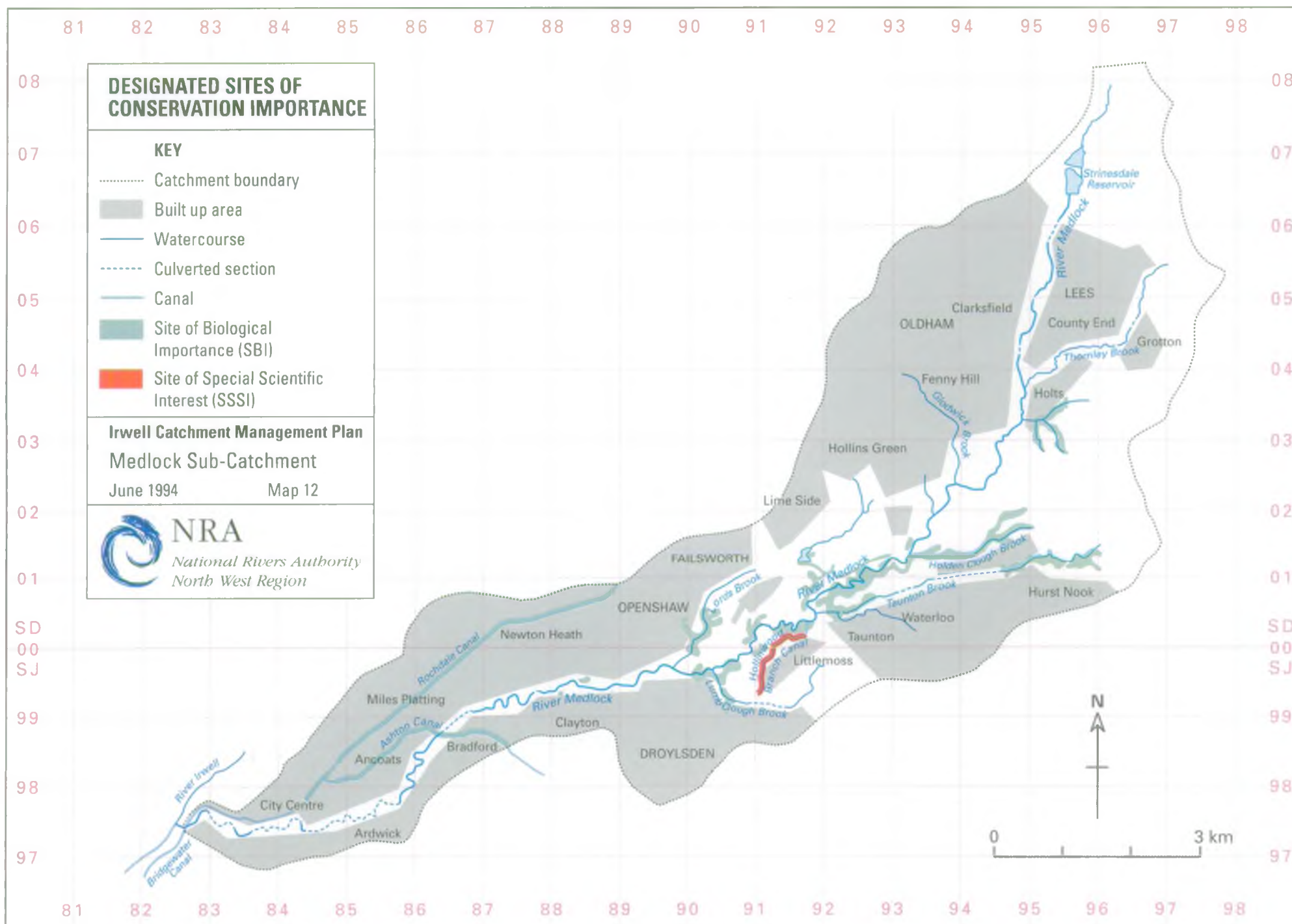
- River stretches suitable for brown trout are to be maintained within the limits for pollutants as specified in the E.C. Fisheries Directive (78/659/EC) for salmonid fish or by future SWQO's whichever is appropriate.
- The remaining river stretches downstream to the demarcation points to be maintained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



2.11 CONSERVATION (MAP 12)

2.11.1 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.

2.11.2 Local Perspective

The Medlock Catchment has contrast in its character, which affects the ecology and conservation interest of its river corridors. The importance of river corridors in this Catchment is highlighted by the fact that all the designated sites of conservation interest are concentrated in the river valleys.

Conservation interest is most restricted through the Manchester City Centre area. At least half the river has been culverted in the past and the rest canalised within high brick walls. Access to the river is very limited and it follows a largely hidden route, although there are isolated waterside rehabilitation schemes, for example, Castlefield Basin area.

Sections of derelict land from Lime Kiln Lane to Bradford Street Gas Works have been developed for amenity and wildlife. However, the river corridor is still disjointed, banks are steep and vandalism is rife. Much of the channel is still walled and views of the river are restricted by excessive tree planting. Through the Philips Park Area the river is confined within a two stage brick channel and although screened by high stone walls and wooded banks, conservation interest in the channel and margins is very limited. Through Clayton Vale the deep, steep sided river valley is more open and the channel is more natural in the middle section, although modified elsewhere.

The river is at its most natural through the Medlock Vale area which includes Daisy Nook and the downstream sections of Lords, Lumb Clough, Holden Clough and Taunton Brooks. The majority of the designated sites of conservation interest are found in this section. The Medlock actively meanders through a wide U-shaped valley and has created a system of river terraces and several marshy ox-bows. Areas of willow scrub, butterbur and diverse grassland grow on the inside bends and much of the valley sides are wooded.

Upstream of the A627 there are some valuable pockets of unimproved acid grassland. The river largely follows its natural course. However, as elsewhere, adjacent land has been strongly influenced by activities such as mining and tipping with extensive planting having taken place on reclaimed areas.

The tributaries have distinct features of geomorphological and ecological interest. The majority are small upland watercourses, actively meandering within narrow valleys. They have a diversity of physical channel and marginal characteristics typical of steep stony rivers and good numbers of overhanging bankside trees and shrubs.

A range of habitats are represented within the river corridors of the tributaries. They are extensively wooded with areas of acidic grassland, neutral grassland, species-rich flushes and small marshy areas. Several tributaries in particular are of high ecological value. These are Holden Clough Brook, Taunton Brook and Rowton Clough Brook, all of which are SBI for all, or most of their lengths.

Holden Clough Brook is the best example of a natural clough woodland in Greater Manchester. It is an attractive meandering watercourse and flows through a number of marshy flushes. Oak trees dominate the woodland over an acidic ground flora with abundant heather. Public access is good. Only one section is culverted where a disused railway line crosses the valley.

Taunton Brook has heavily maintained sections and it has been extensively culverted in its mid-section. Development pressure continues to be a problem near the A627 where a number of new developments are underway.

Sections of the Lords Brook and Lumb Clough Brook corridors have been constrained by development. Development pressures and industrial activity have particularly altered Thornley (Wood) Brook downstream of Springhead. There are culverts, stone-walled sections, developments to the bank top and lots of derelict land now colonised by willow scrub and rough neutral grassland.

Many sections of watercourse would benefit from enhancement to improve their value as wildlife corridors, for example, Lords Brook, Lumb Clough Brook, Thornley and Wood Brook. The downstream stretches of the Medlock, particularly through Central Manchester, would benefit from large scale river rehabilitation.

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 occur throughout the catchment. There are particularly long stretches of culverts along Lumb Clough Brook, Taunton Brook and the Medlock at Lees.

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 reservoirs, ponds and lodges that remain intact within the catchment provide a range of standing water habitats which often support a rich emergent and aquatic flora not found in the faster flowing, and often more polluted, watercourses.

2.11.3 Aquatic Invertebrates

As a whole the catchment contains moderately diverse invertebrate communities often dominated by the Baetidae mayfly, and pollution tolerant Assellidae hog lice, Chironomidae midge larvae, and Tubificidae worms. There is, however, a reduction in diversity and a notable absence of Baetidae mayflies in the lower reaches of the river where it enters Manchester city centre.

2.11.4 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.

2.11.5 Environmental Requirements

Water Quality:

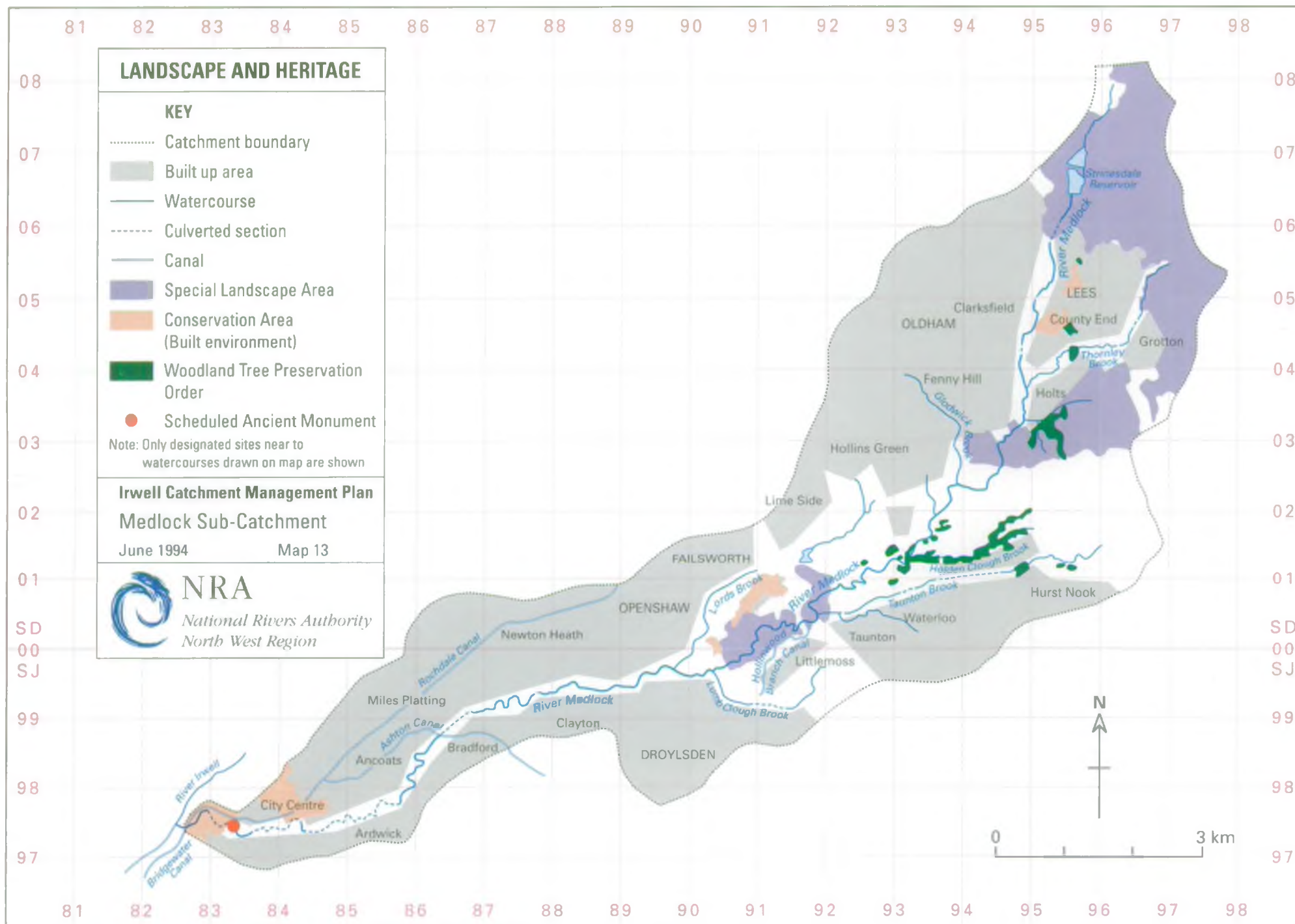
- Water quality not to deteriorate to a level such that sites of high local conservation value lose their general aquatic interest. For example, Holden Clough Brook, Taunton Brook and Rowton Clough Brook
- Water quality improvement in some sites would enhance an existing conservation value, for example, River Medlock (Medlock Vale to Bardsley) and Lumb Clough 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/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.



2.12 LANDSCAPE AND HERITAGE (MAP 13)

2.12.1 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, for example, Areas of Outstanding Natural Beauty, Scheduled Ancient Monuments as well as locally valuable sites.

2.12.2 Local Perspective

Much of the river valley runs through open space which is protected by designation as a Special Landscape Area and/or as part of the Greater Manchester Green Belt, forming a focus for amenity with a well wooded river corridor and the attraction of Daisy Nook Country Park.

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.

The river valley runs through two distinct developed areas, Oldham and Manchester. Of the 35.3 km. of "main river", 40% runs through developed areas.

The greatest opportunities for environmental enhancement through deculverting are in open space north of Nether Lee, Smallshaw sports ground, and the proposed Olympic site at the disused gas works downstream of Philips Park.

Much of east Manchester's open space lies within the Medlock Valley. The draft Local Plan for Manchester (City of Manchester UDP (Deposit Draft), October 1992 Policy numbers E. Manchester EM10, EM11) proposes to reinforce the "green finger" of the valley by upgrading Philips Park and extending the Green Belt closer to the city, to include Clayton Vale a former industrial site. The character of the river valley noticeably changes at Clayton Vale from rural to urban fringe.

A feature of the Medlock Valley is the steep sided wooded cloughs. Development has generally occurred to the very top of these cloughs, however, their inaccessibility has ensured their semi-natural condition is conserved.

The Oldham Unitary Development Plan (UDP) has indicated the need for conservation and promotion of tree planting within the borough, targeting river valleys and the upper reaches of the cloughs. The woodland cover of the borough is only 2%.

Woodland adjacent to the River Medlock extends for approximately 7 km (about 20% of "main river") on one or both banks, concentrated in Daisy Nook Country Park and the adjacent tributaries of Holden Clough Brook and Taunton Brook.

The Medlock Valley contains several conservation areas and listed buildings, in addition there are several riverside mill buildings which are not protected by statute but are important riverside features.

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.

The archaeological interest of the Greater Manchester area is complex with many potential sites still undiscovered. The catchment contains one Scheduled Ancient Monument site, close to the confluence of the Medlock and Irwell.

2.12.3 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.

2.12.4 Environmental Requirements

Water Quality:

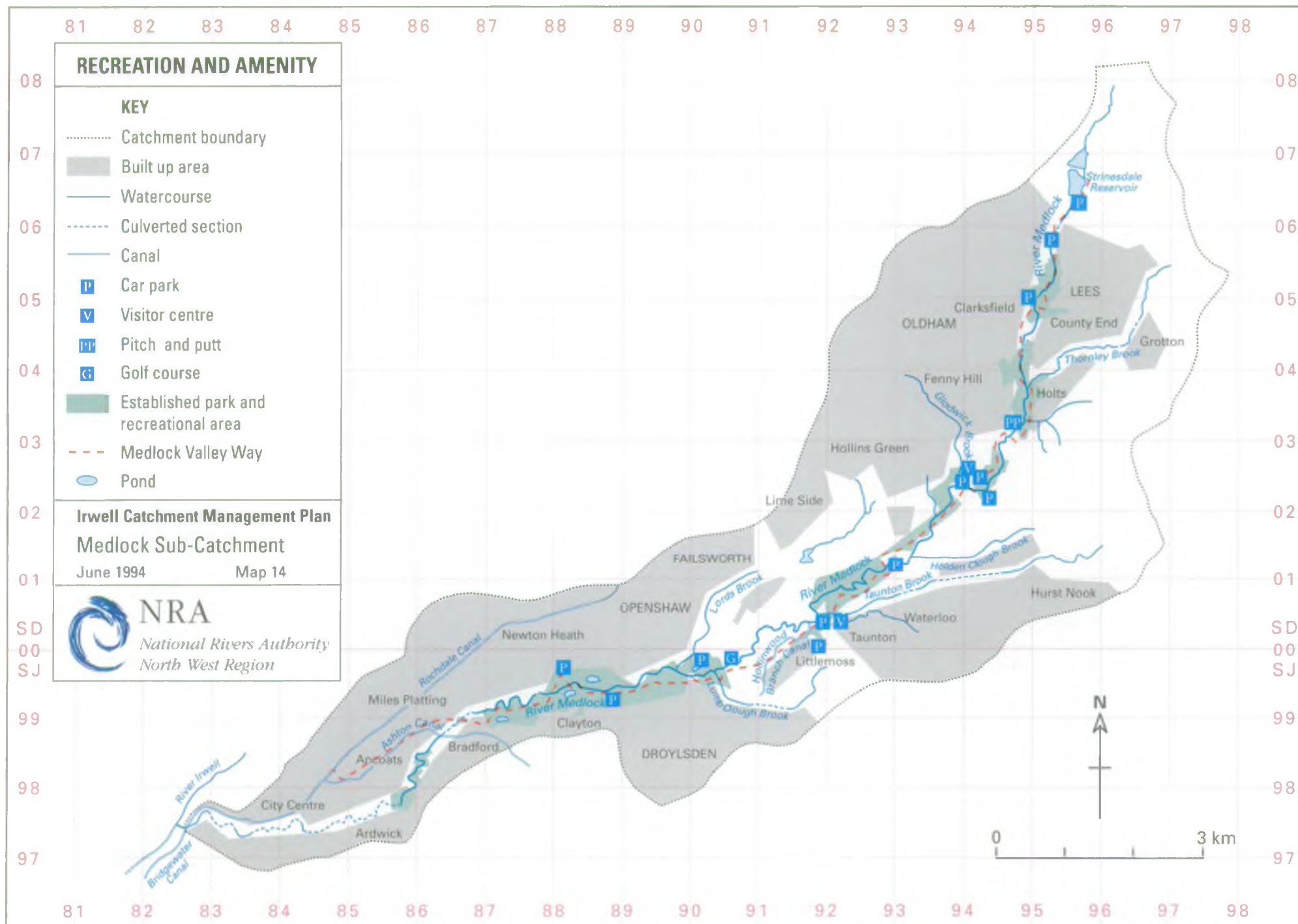
- To be aesthetically acceptable, that is, water to be free from surface films, extraneous floating material, discolouration and unpleasant odours.
- Not to deteriorate to a level such that sensitive heritage sites lose their interest.

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.



2.13 RECREATION AND AMENITY (MAP 14)

2.13.1 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, bird watching.

2.13.2 Local Perspective

The River Medlock will, once the water quality is suitable, possibly provide some good areas for canoeing. There is currently a River Valley Joint Committee for the catchment which, by joint funding by local authorities, runs an active warden service. This warden service manages many sites throughout the catchment and actively promotes amenity and waterside recreational pursuits. There are still waters and canal lengths throughout the valley used for angling, pond dipping, general educational uses and nature reserves.

There is a golf course in the river valley at Daisy Nook. The Medlock Valley Way, a public footpath, runs along the length of the valley.

2.13.3 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.

2.13.4 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.

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.

2.14 ANGLING

2.14.1 General

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

2.14.2 Local Perspective

Currently no angling takes place on the River Medlock or its tributaries. However, there are numerous small still waters and lengths of canal within the catchment area that provide pleasure anglers with good quality coarse fishing.

2.14.3 Objectives

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

2.14.4 Environmental Requirements

Water Quality:

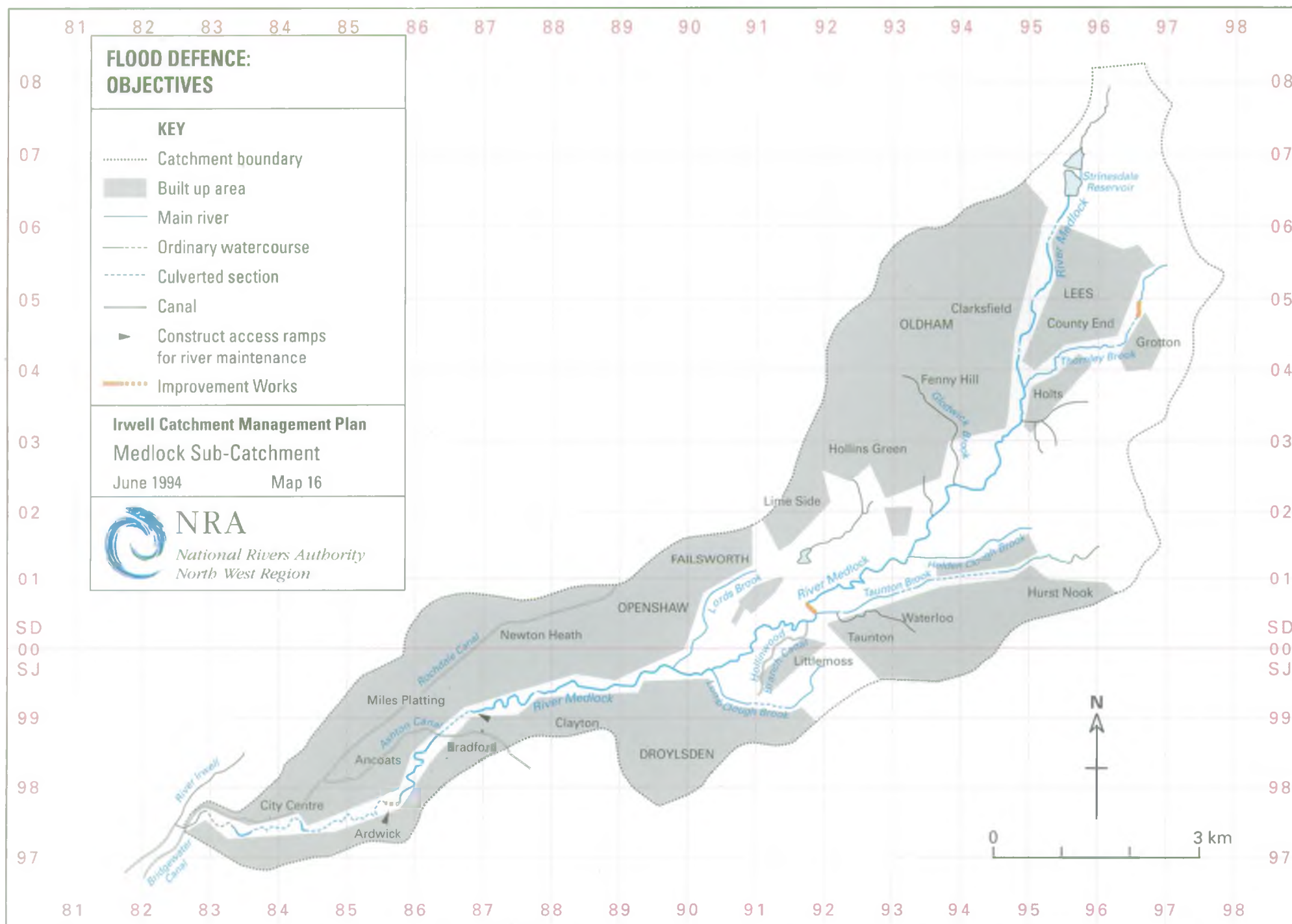
- To be of sufficient quality to comply with the basic amenity use of the water body.
- To be aesthetically acceptable in order to enhance angling, that is, water to be free from surface films, extraneous floating material, stable foam, discolouration and unpleasant odours.
- To comply with appropriate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

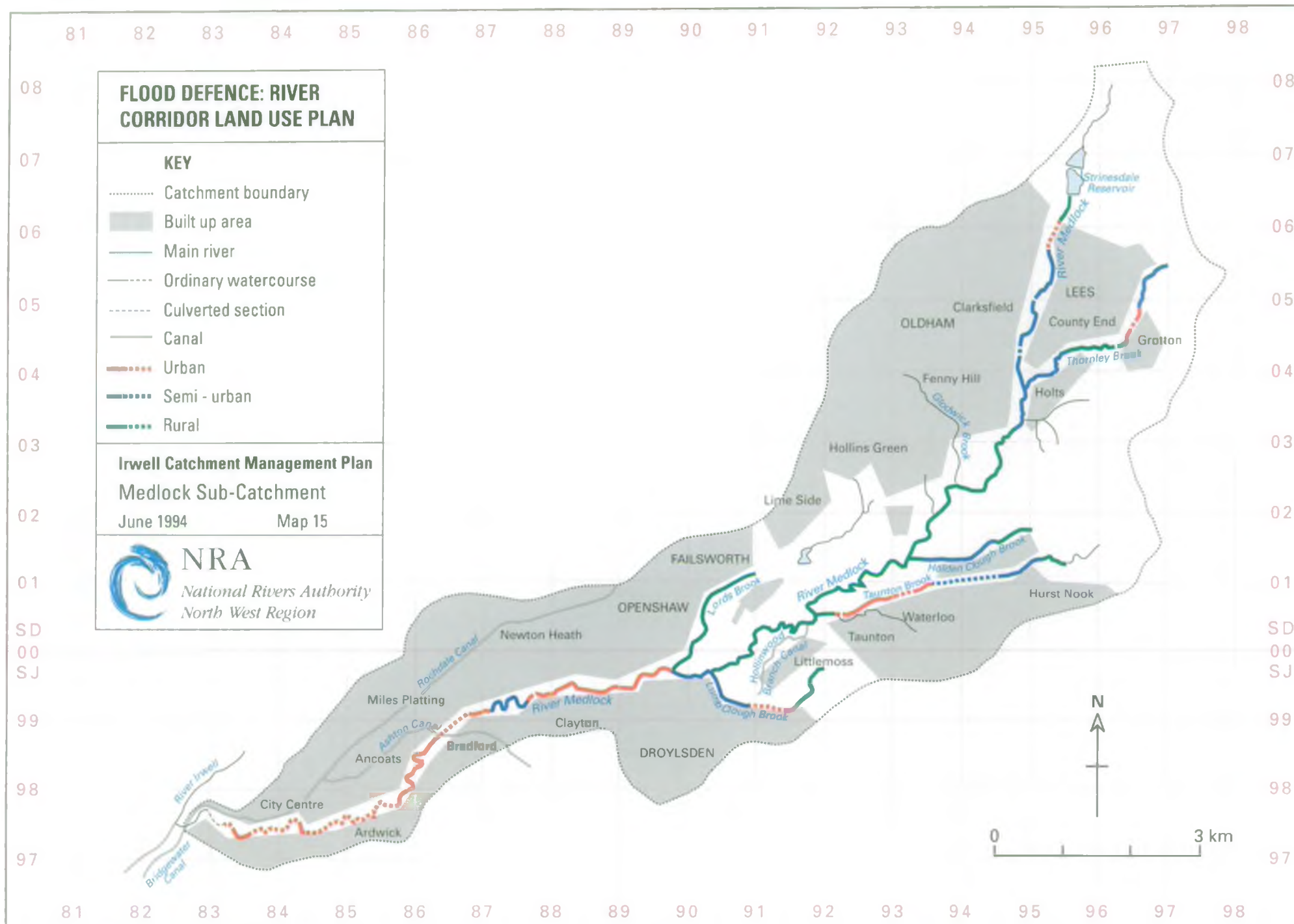
Water Quantity:

- 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 instream and bankside vegetation.





3. CATCHMENT OBJECTIVES

3.1 FLOOD DEFENCE OBJECTIVES (MAPS 15 & 16)

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 15):-

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 16).

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 NRA's stated levels of service within quality criteria described in the NRA's Water Quality Objectives.

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

Public Water Supply:

- risk of hose pipe 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 Minimum Residual Flows (MRF's) and Minimum Control Levels (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 key 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.

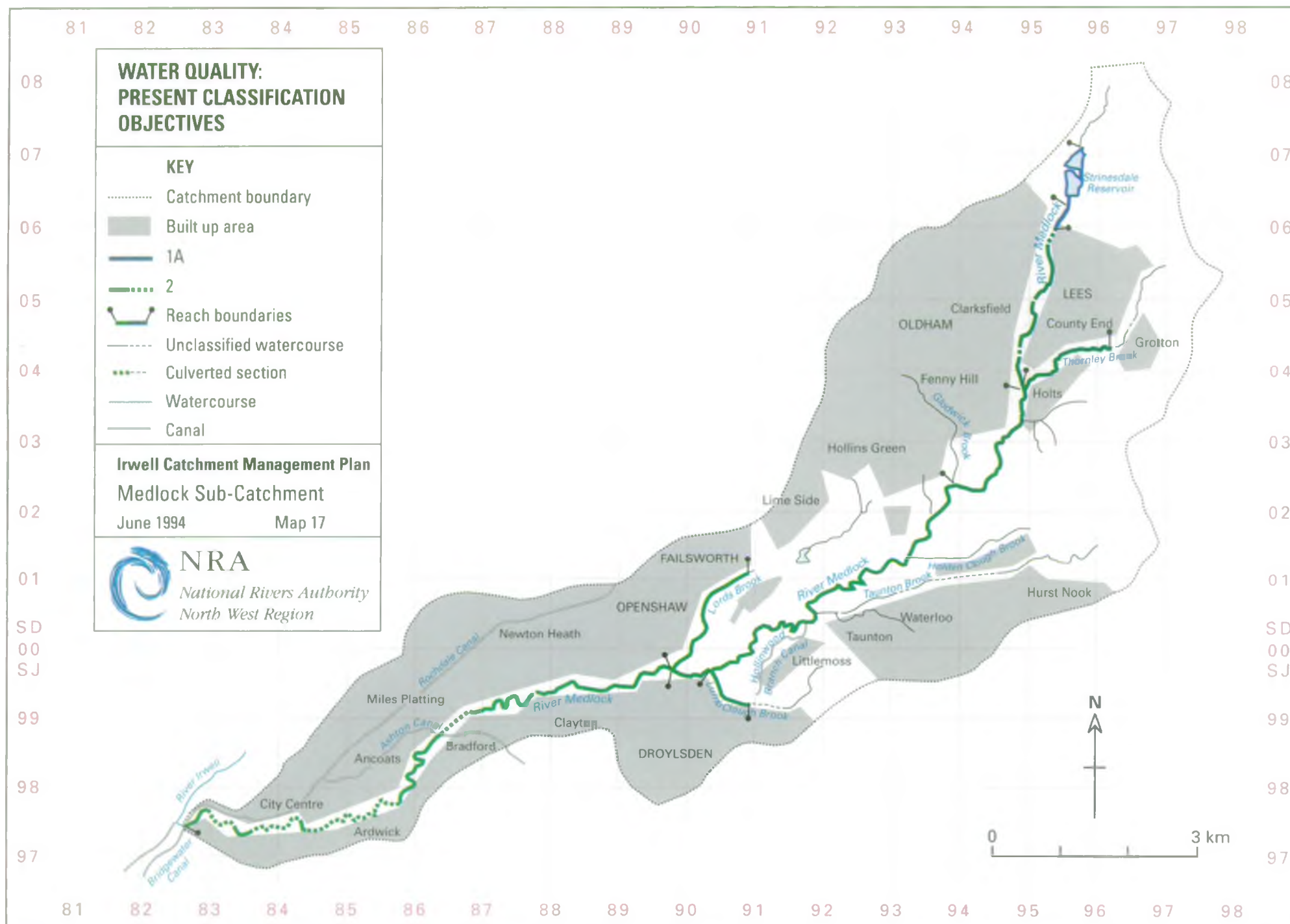
Local Hydrometric Objectives:

The hydrometric information gathered in the Medlock catchment is principally for water quality monitoring purposes for the heavily industrialised catchment.

Short term, local needs are to provide river levels and rainfall information for specific projects - usually for setting water quality standards.

Groundwaters:

In dry/drought summer conditions, springflow discharges from groundwater aquifers to sustain surface 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 (MAP 17)

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 1970s. 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 nine defined classified reaches within the Medlock catchment and they are shown together with their NWC objectives on Map 17.

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.

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

One Directive issued by the EC has direct implications for water quality in the Medlock Catchment.

a) 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 90 overflows have been identified within the Medlock 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.

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
- 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

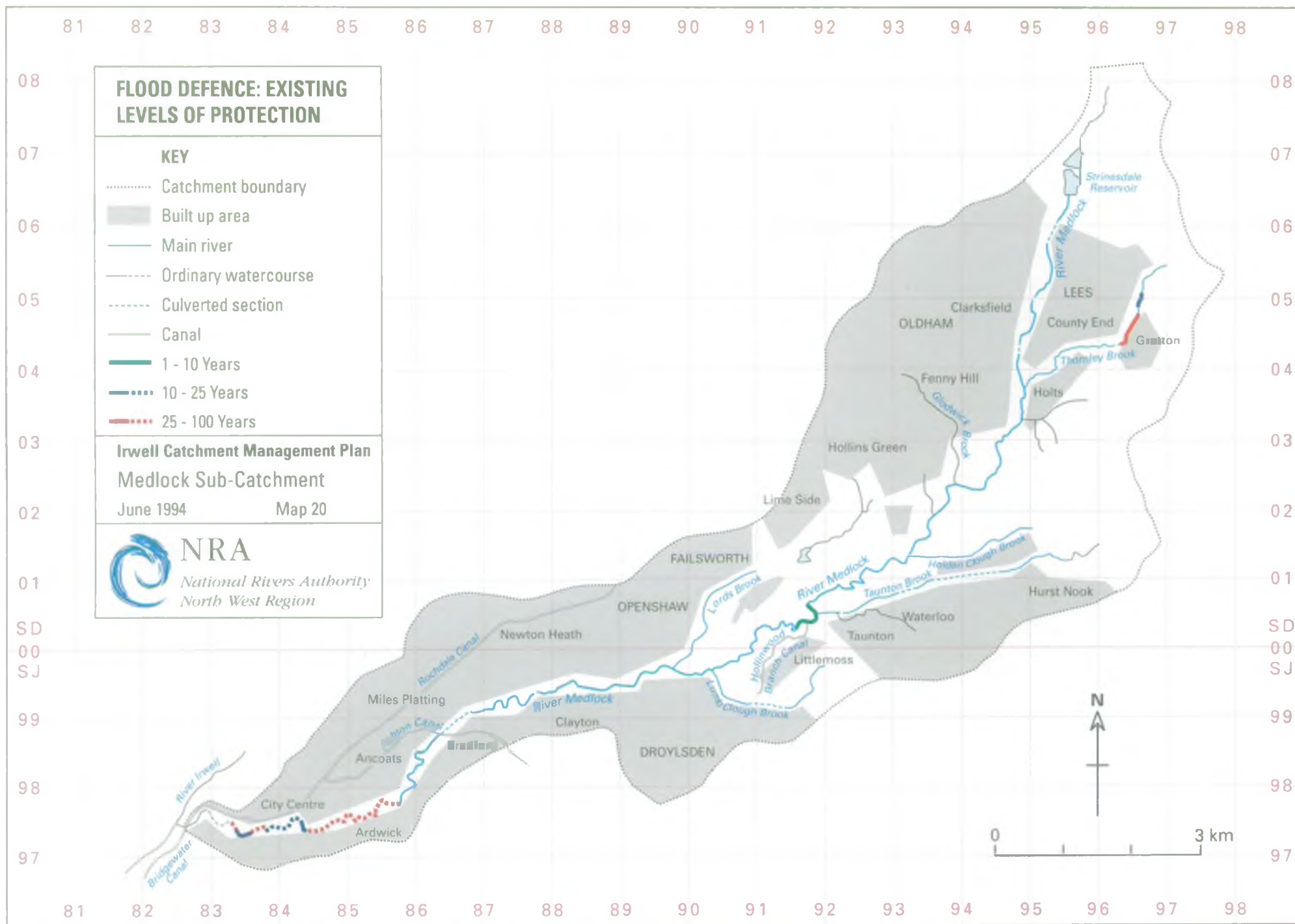
- Further, enhance and promote the natural beauty of the water environment.
- Safeguard those man-made features of the riverine environment that are of archaeological, historic, aesthetic or conservation value. For example, weirs, stone walls, mill races and old industrial buildings.

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: STATE OF THE CATCHMENT

KEY

- Catchment boundary
- Built up area
- Main river
- - - Ordinary watercourse
- - - Culverted section
- Canal
- Weir/W.L. Control structure
- River Gauging Station
- Riparian owned debris screen, cleaned by NRA on a best endeavours basis

Irwell Catchment Management Plan

Medlock Sub-Catchment

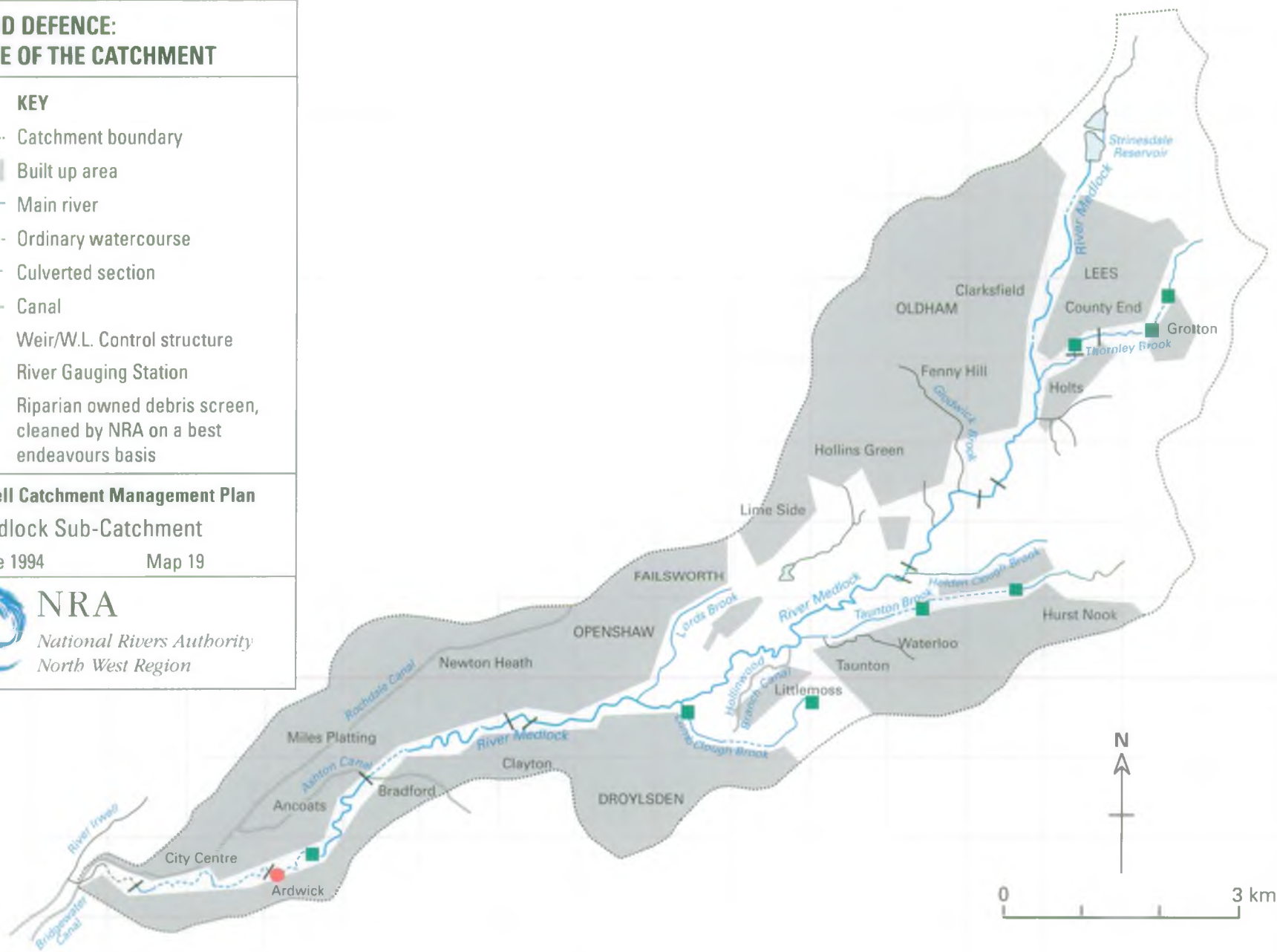
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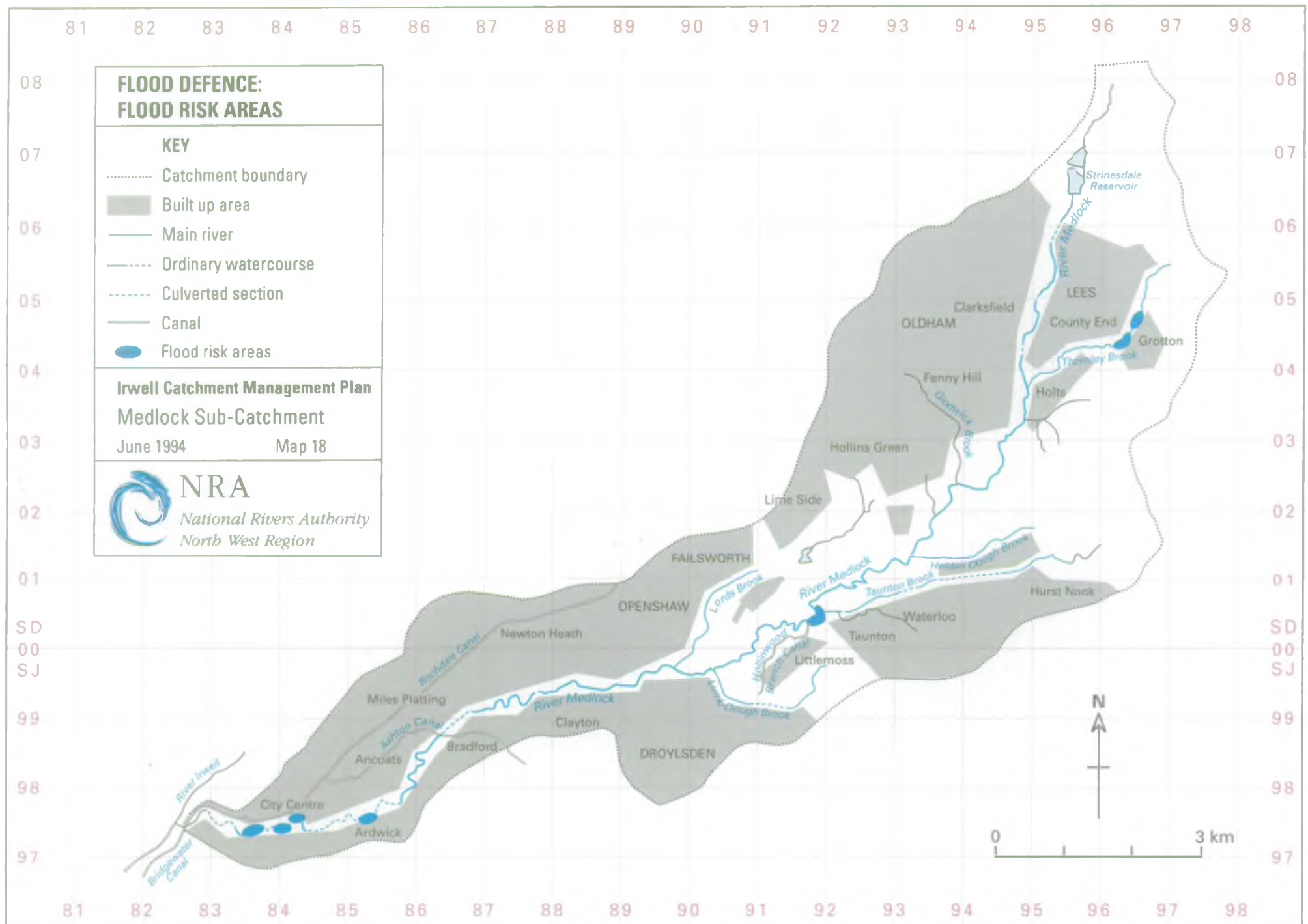
Map 19



NRA

National Rivers Authority
North West Region





4. CURRENT STATE OF THE CATCHMENT (MAPS 18, 19 & 20)

4.1 STATE OF CATCHMENT : FLOOD DEFENCE

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 Map 18 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 objectives.

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 4.3.3 of this document.

There are no catchment wide issues identified for Flood Defence in the Medlock Catchment.

b) Site Specific Issues (Map 22)

Issue SS5 Thornley Brook (Wood Brook) - Grotton

The existing culvert under the Grotton Hollow Estate, Grotton is prone to debris blockage, which in the past has caused flooding.

Issue SS6 Thornley Brook, (Wood Brook) - Grotton

Downstream of the culvert at Grotton Hollow Estate the channel is becoming unstable and in the future a major bankslip could occur creating a flood risk.

Issue SS9 River Medlock - Daisy Nook

History of flooding to roads, in the area of Daisy Nook Garden Centre.

Issue SS16 River Medlock - Philips Park

Regular maintenance is required to the red brick lined channel which runs through Philips Park Cemetery, so as to ensure that optimum flood water conveyance is achieved.

This location is also ideal for removal of debris before it reaches culverts downstream, where access is more restricted.

Issue SS17 River Medlock - Lords Brook to River Irwell

At Pinmill Brow in Manchester, there is a debris screen which is ineffective at high flows. The ability to clear debris from the screen in a safe manner is also difficult.

Issue SS20 River Medlock - Central Manchester.

Access for maintenance and the risk of collapse of dilapidated riverside structures is a particular problem on the River Medlock as it passes through Manchester City Centre. There are many walls, which used to form the foundations to multi-storey buildings, the upper storeys having since been demolished.

Issue SS22 Access Ramps

Under the "Urban Channel Access" scheme, it is proposed to provide access ramps at Pinmill Brow in Manchester City Centre and Philips Park. Both locations being on the River Medlock.

4.2 STATE OF 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

There is only one level recording station in the Medlock Catchment and this is situated immediately upstream of the city centre of Manchester, at the lower end of the catchment. This station, at London Road on the Medlock, has records dating back to 1954 and uses a purpose built weir as a control point on the river.

The London Road river gauging site is not an ideal one as it is where the Medlock threads its way between and under buildings in this city location. The site also suffers problems caused by urban debris affecting the gauging results. However, due to the nature and scale of the Medlock Catchment, the information for this one site is considered sufficient.

Rainfall Monitoring

There are currently two raingauges within the Medlock Catchment monitored by the NRA. Both these gauges are at the upstream end of the catchment near Oldham, one at Alexander Park and the other at Strinesdale Reservoir. Both these gauges record daily totals only and their records date back to 1955 and 1975 respectively.

4.2.3 Issues Identified

a) Catchment Wide Issues

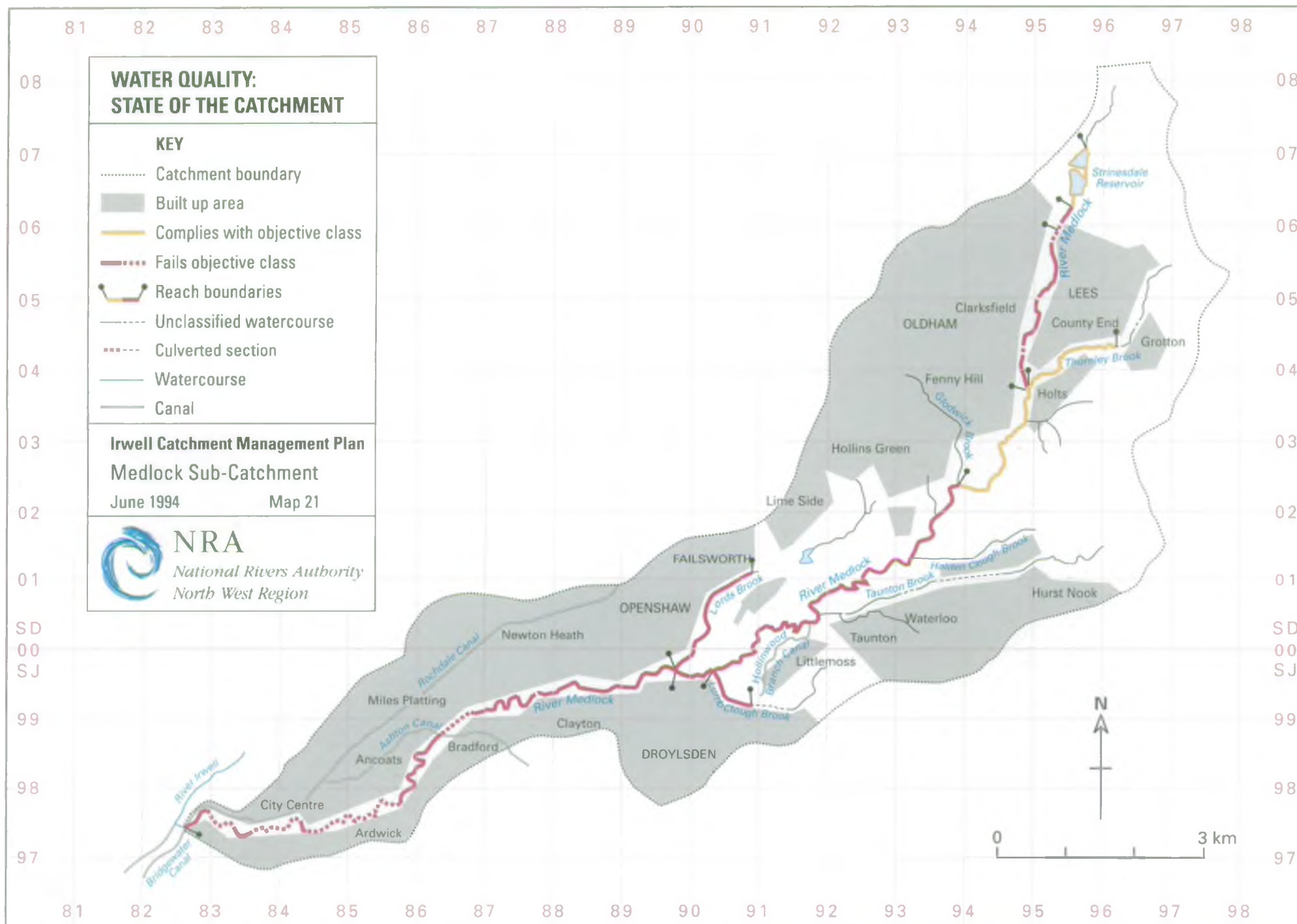
Catchment Wide Issues Nos. 1 - 17 are dealt with in full in Section 4 of Chapter One, River Irwell Introduction document. Issues CW18 and CW19 are dealt with in Section 4.3.3 of this document.

There are no catchment wide Issues identified for Water Quantity in the Medlock Catchment.

b) Site Specific Issues (Map 22)

Issue SS15 Clayton Area

Groundwater within the Collyhurst Sandstone is fully committed and may be inadequate to meet future industrial demands.



4.3 STATE OF THE CATCHMENT : WATER QUALITY (MAP 21)

The routine chemical and biological sampling programme of the NRA is used to assess compliance with the objectives 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 nine reaches in the Medlock Catchment six fail to meet their Long Term Objectives. This is illustrated on Map 21. 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	0.7	1.2
1B	0.0	0.0
2	4.5	26.0
3	12.5	-
4	9.5	-

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 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 Medlock Catchment of the over 90 overflows identified over 60 were highlighted as unsatisfactory with regard to their impact on the receiving watercourse. Their effect is raised under several Issues for this Plan.

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 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.

Issue CW19 Lack of fishery due primarily to poor water quality.

There are very poor quality or no fisheries within the River Medlock Catchment which is due primarily to poor water quality. There is evidence that this situation is expected to improve to the extent that a "pump priming" exercise could be carried out. This will involve the introduction of appropriate fish species, as and when the prevailing water quality allows, and their monitoring. The other option would be to allow the system to colonise naturally. The timescale for this would be excessive because the extent of pollution in the past has left the upper tributaries virtually devoid of fish that could have acted as a reservoir for colonisation.

b) Site Specific Issues (Map 22)

Issue SS2 River Medlock - Strinesdale Reservoir to the A62

Failure to achieve the present water quality classification objective for the classified reach. Data has not previously been collected for all of the required elements for classification. It is likely that the reach does fail to meet the objective and that this is in part due to sources such as urban run-off normally considered outside the scope of pollution control.

Issue SS4 River Medlock - A62 to Thornley (Wood) Brook

The failure of this stretch to meet its present water quality classification objective has been caused due to a combination of organic inputs from sewer overflows, and problems of misconnections, specifically to the Majestic Mill culvert.

Issue SS7 River Medlock - Thornley (Wood)- Brook to Glodwick Brook.

Longstanding unacceptable aesthetic conditions due to sewage debris. Significant impact has been caused as a consequence of high organic inputs being discharged via storm sewer overflows resulting in unacceptable aesthetic conditions within the stretch.

Issue SS8 River Medlock - Glodwick Brook to Lords Brook

Failure to achieve the present water quality classification objective for the classified reach. Problems have previously been due to sewage overflows, and also tip leachate entering Glodwick Brook from Dean Shutt Clough tip. Schemes have taken place to reduce the impact of these, however, there are further unsatisfactory overflows to Taunton Brook, and periodic problems from farm drainage entering tributaries, and the River Medlock itself. Lumb Brook also impacts upon this stretch and is actually identified as a further site specific issue and is dealt with elsewhere in the text.

Issue SS11 Lumb Brook - Railway crossing to the River Medlock

The failure to achieve the classification objective for this reach has been directly attributable to the organic input discharged via unsatisfactory sewer overflows, and also previous discharges from Lumb Lane pumping station, although remedial work has been carried out to rectify problems with the station. Also there is suspected pollution emanating from culverted sections, which have been difficult to identify.

Issue SS12 Lords Brook - Brick Hall Farm to the River Medlock

Failure to achieve the present objective for the classified reach. Problems from numerous sources have the potential to contribute to the failure of this stretch to achieve its water quality objective. These have principally been tip run-off, sewerage problems, domestic mis-connections, and also inputs from a pig farm. Continued housing development has potential for causing water quality deteriorations.

SS13 River Medlock - Lords Brook 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 also as a result of the organic load from Failsworth STW. The water entering the reach from upstream and from Lords Brook also has a significant impact.

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 4.3.3 of this document.

There are no catchment wide issues identified for Physical Features in the Medlock Catchment.

b) Site Specific Issues

Issue SS1 River Medlock - Upper Strinesdale to A669.

There are gaps in the river's green corridor due to lengths of culvert and development to the bank top, which restrict the free movement of species and full enjoyment of its recreational potential.

Issue SS3 Strinesdale Reservoir

If Strinesdale Reservoir is retained exclusively as a conservation area, there is a loss of angling amenity.

Issue SS10 Holden Clough Brook

There is a need to conserve Holden Clough Brook, a key conservation feature of the catchment. It is a site of biological importance for its whole length because it is the best example of a natural clough woodland in Greater Manchester.

Issue SS14 River Medlock - Clayton Vale

The river corridor through Clayton Vale has been extensively modified by tipping. It has been developed for amenity but suffers from severe vandalism, is poorly landscaped and is in need of enhancement and management.

Issue SS16 River Medlock - Philips Park

Through the Philips Park area the Medlock has been constrained within a red brick lined channel. This has severely limited the physical diversity of the channel and created a hostile environment for fish, invertebrates and wildlife.

Issue SS18 River Medlock - downstream of Bradford Gas Works

As well as the deep culvert under the Bradford Street Gas Works itself there is a break in the linear park. This is due to the presence of development and derelict land to the top of the bank between the gas works and Ashton New Road.

**Issue SS19 River Medlock - Limekiln Lane to Ashton New Road,
Central Manchester**

A linear park has been created from derelict land around the Limekiln Lane area. It suffers from vandalism and fly tipping and the river banks are very steep with blanket planting which obscures views of the river.

Issue SS20 River Medlock - Central Manchester

Urban dereliction associated with the watercourse lowers the public's perception of a river's value. This is a particular problem in Central Manchester. It is important to use appropriate local materials for the repair and construction of walls, bridges and other structures associated with watercourses, and incorporate riverside walkways and access.

**Issue SS21 Disjointed Countryside Management and public access
policy along the tributaries**

Although there is a warden service with responsibility for the Medlock itself most of the tributaries do not benefit from management and there is a lack of continuity in footpaths and river corridors. There is no co-ordinated countryside management and public access policy for the whole catchment to bring together the various interests who are restricted to specific sites, areas or disciplines.

SITE SPECIFIC ISSUES LOCATION MAPS

KEY

- Catchment boundary
- Built up area
- Watercourse
- - - Culverted section
- Canal
- SS20 ■ Stretch of appropriate issue
- SS17 ● Location of appropriate issue

Note: SS21 includes all tributaries

Irwell Catchment Management Plan Medlock Sub-Catchment

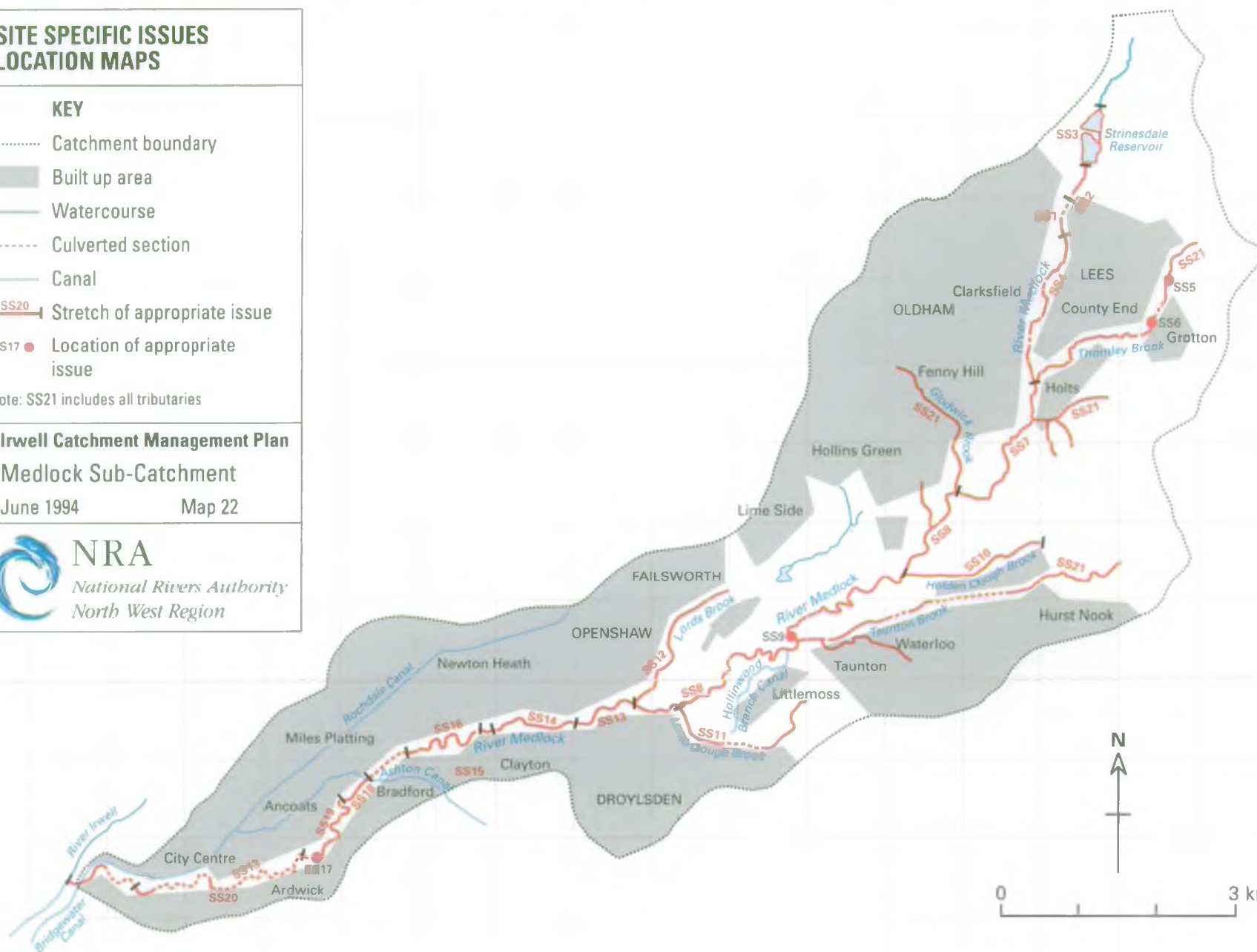
June 1994

Map 22



NRA

National Rivers Authority
North West Region



5. ISSUES AND OPTIONS (MAP 22)

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 1 - 17 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 catchment wide issues which relate specifically to the Upper Irwell Sub-Catchment:

ISSUE NO: CW18		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.

ISSUE NO: CW19		Lack of fishery due primarily to poor water quality.	
OPTIONS	Responsibility	Advantages	Disadvantages
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 incidents.
2. Natural colonisation and monitoring	NRA	Less cost	Time scale may be unrealistic as there are few or no fish in the feeder tributaries.

5.3 SITE SPECIFIC ISSUES (MAP 22)

ISSUE NO: SS1	River Medlock - Upper Strinesdale to A669 Lack of continuity of river corridor downstream of Strinesdale Reservoir.		
OPTIONS	Responsibility	Advantages	Disadvantages
1. Seek opportunities to enhance river corridor.	NRA/Local Authorities/ Medlock Valley Wardens Riparian owner	Increase value of river corridor for wildlife and people to enjoy.	Possible conflicts with developers. Cost implications to landowners.

ISSUE NO: SS2	River Medlock - Strinesdale Reservoir to the A62. Incomplete information indicating failure to achieve the present water quality classification objective for the classified reach.		
OPTIONS	Responsibility	Advantages	Disadvantages
<p>1. Collection of further information.</p> <p>Note - it is likely that collection of further information will confirm the failure to meet the present water quality classification objective by two classes.</p> <p>Achievement of the present water quality classification objective may require improvements to the quality of inputs such as urban run-off normally beyond the scope of pollution control. The reach may still fail to meet a revised objective. As such options may follow to revise the current objective and/or undertake investigation and hence remedial work on pollution sources.</p>	NRA	Understanding of current class and options for revision of present water quality classification objective and/or investigation and remedial work on pollution sources.	

ISSUE NO: SS3	Strinesdale Reservoir. Potential loss of angling amenity if designated as conservation area.		
OPTIONS	Responsibility	Advantages	Disadvantages
1. Retain exclusively as conservation area. 2. Develop as combined fishery and conservation area.	NWW Ltd/ Oldham MBC	Increased amenity value to local people.	Loss of angling amenity

MBC - Metropolitan Borough Council

ISSUE NO: SS4	River Medlock - A62 to Thornley (Wood) Brook Failure to achieve the present water quality classification objective for the classified reach.		
OPTIONS	Responsibility	Advantages	Disadvantages
<p>Combination of the following:</p> <ol style="list-style-type: none"> 1. Full evaluation of the water quality improvements following sewer overflow abandonments. 2. Evaluation of remaining sewer overflow to assess if organic load problem exists in addition to identified debris load problem. Option on reduction could then follow. 3. Evaluation of the improvement in water quality following recent elimination of some mis-connections to the Majestic Mill culvert as assessment for further remedial works. 	<p>NRA</p> <p>NRA/NWW Ltd</p> <p>NRA</p>	<p>Identification of achievement of present water quality classification objective or significance of other sources under evaluation.</p> <p>Understanding of potential cause of failure to achieve the present water quality classification objective.</p> <p>Understanding of potential cause of failure to achieve the present water quality classification objective.</p>	<p>Cost to NWW Ltd</p>

ISSUE NO: SS5	Thornley Brook (Wood Brook) - Grotton Grotton Hollow Estate head of culvert prone to blockages during flood flows.		
OPTIONS	Responsibility	Advantages	Disadvantages
1. Construct a floodwater inlet to carry flow to existing manhole further down culvert length bypassing any blockage.	NRA/Culvert Owners.	Improve existing levels of flood protection.	Possibility of blockage occurring within bypass route.
2. Improve existing debris screen.	NRA/Culvert Owners	Improve existing levels of flood protection.	Continuing maintenance costs of screen clearance.

ISSUE NO: SS6	Thornley Brook (Wood Brook) - Grotton Flood risk due to unstable bank downstream of culvert at Grotton Hollow Estate.		
OPTIONS	Responsibility	Advantages	Disadvantages
1. Provide toe restraint to foot of bank to prevent any further movement.	NRA/Riparian Owner	Avoidance of possible damage to structures at the top of bank.	Cost justification/ no flood protection improvement. Some visual and environmental impact.
2. Divert river route away from toe of left bank.	NRA/Riparian Owner		Some visual and environmental impact.

ISSUE NO: SS7	River Medlock - Thornley (Wood) Brook to Glodwick Brook. Longstanding unacceptable aesthetic conditions due to sewage debris.		
OPTIONS	Responsibility	Advantages	Disadvantages
1. Evaluation of performance of new sewer overflow of modern design constructed in sewerage improvement scheme permitting abandonment of a number of others of older design upstream. An option for further improvement may follow.	NRA		Possible cost to NWW Ltd and customers.

ISSUE NO: SS8 Cont'd.	River Medlock - Glodwick Brook to Lords Brook. Failure to achieve the present water quality classification objective for the classified reach.		
OPTIONS	Responsibility	Advantages	Disadvantages
3. Reduction in the organic and debris load from unsatisfactory sewer overflows discharging to Taunton Brook.	As a requirement of the EC Urban Wastewater Treatment Directive. NRA/NWW Ltd. to agree the improvements required to achieve satisfactory performance. NWW Ltd to undertake capital works.	Achievement of the present water quality classification objective. Improvement to the aesthetic and amenity value and fishery potential.	Cost to NWW Ltd and possibly customers.
4. Continued control of diffuse and discrete farm discharges to the River Medlock and its tributaries.	NRA to continue to monitor water quality, undertake farm inspections and enforce remedial action. Farm operators to undertake remedial works and adopt appropriate practice.	Achievement of the present water quality classification objective. Improvement to the aesthetic and amenity value and fishery potential.	Cost to farm operators.

EC - **European Community**
GMWDA - **Greater Manchester Waste Disposal Authority**

Achievement of the present water quality classification objective also requires improvements to Lumb Brook. Lumb Brook is dealt with under Issue SS11.

Achievement of the present water quality classification objective also has advantages for the downstream reach of the River Medlock from Lords Brook to the River Irwell. The downstream reach is considered in Issue SS13.

ISSUE NO: SS9	River Medlock - Daisy Nook Flooding in area of Daisy Nook Garden Centre.		
OPTIONS	Responsibility	Advantages	Disadvantages
1. Raise level of access bridge to Daisy Nook Garden Centre and raise left bank upstream.	NRA/Garden Centre Owner/ Highway Authority	Increase flow capacity beneath Garden Centre access bridge and improve flood capacity of river upstream of bridge.	Cost justification. Local environmental impact. Benefits limited to garden centre owner and local road users. Some visual and environmental impact.
2. Replace post and rail fencing to access bridge parapet and left bank with solid walling.	NRA/Garden Centre Owner/ Highway Authority	Improve flood capacity of river upstream of bridge.	Cost justification Benefits limited to garden centre owner and local road users. Some visual and environmental impact.

ISSUE NO: SS10	Holden Clough Brook. Protection of status as key conservation feature (Grade A Site of Biological Importance).		
OPTIONS	Responsibility	Advantages	Disadvantages
1. Protect against unsympathetic proposals/ issues.	NRA/GMCU/ Local Authorities/ Riparian Owners.	Protection of wildlife, landscape and amenity feature.	NRA not landowner. Development pressures within area.
2. Gather data on river corridor including biological and fisheries survey.	NRA	Improve knowledge of conservation value of site.	

GMCU - Greater Manchester Countryside Unit

ISSUE NO: SS11	Lumb Brook - Railway crossing to the River Medlock . . Failure to achieve the present water quality classification objective for the classified reach.		
OPTIONS	Responsibility	Advantages	Disadvantages
<p>Combination of the following:</p> <ol style="list-style-type: none"> 1. Reduction in the organic and debris load from unsatisfactory sewer overflows. 2. Evaluation of the impact of Lumb Lane sewage pumping station following recent remedial measures. 3. Evaluation of the impact of recently discovered sewer overflow near the railway crossing. 	<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>NRA to undertake evaluation.</p> <p>NRA to undertake evaluation.</p> <p>NWW Ltd to undertake capital works if required.</p>	<p>Achievement of present water quality classification objective.</p> <p>Improvement to the aesthetic and amenity value and fishery potential of open sections.</p> <p>Understanding of potential cause of failure to achieve the present water quality classification objective.</p> <p>Understanding of potential cause of failure to achieve the present water quality classification objective.</p>	<p>Cost to NWW Ltd and possibly customers.</p> <p>Possible cost to NWW Ltd and customers.</p> <p>Cont'd...</p>

ISSUE NO: SS11 Cont'd.	Lumb Brook - Railway crossing to the River Medlock. Failure to achieve the present water quality classification objective for the classified reach.		
OPTIONS	Responsibility	Advantages	Disadvantages
4. Investigation of further sources of contamination of culverted sections and culverted tributaries.	NRA to undertake and pursue investigations. Responsible parties to undertake investigations and appropriate remedial measures.	Achievement of present water quality classification objective. Improvement to the aesthetic and amenity value and fishery potential of the open sections.	Cost to responsible parties. Likely to include NWW Ltd, Tameside MBC, industrial premises operators and householders.

EC - European Community
 MBC - Metropolitan Borough Council

The achievement of the water quality classification objective for Lumb Brook has further advantages for the classified reach of the River Medlock it flows into. The relevant reach of the River Medlock is dealt with under Issue SS8.

ISSUE NO: SS12	Lords Brook - Brick Hall Farm to the River Medlock. Failure to achieve the present water quality classification objective for the classified reach.		
OPTIONS	Responsibility	Advantages	Disadvantages
<p>Combination of the following:</p> <ol style="list-style-type: none"> Continued prevention of pollution arising from pig farming operations. Evaluation of other potential pollution sources and reduction/elimination of impact as appropriate. Potential sources include an old tip site, sewerage problems and domestic wrong connections. Reduction in the impact of extensive ongoing housing development work. 	<p>NRA to monitor water quality promote good practice and enforce as appropriate.</p> <p>Pig farm operators to undertake good practice.</p> <p>NRA to undertake evaluation and establish liability.</p> <p>Responsible parties to undertake appropriate remedial measures</p> <p>NRA to monitor water quality and enforce prevention of contamination of surface water drains.</p> <p>Developers to undertake good practice.</p>	<p>Achievement of present water quality classification objective.</p> <p>Improvement to the aesthetic and amenity value.</p> <p>Achievement of present water quality classification objective.</p> <p>Improvement to the aesthetic and amenity value.</p> <p>Achievement of present water quality classification objective.</p> <p>Improvement to the aesthetic and amenity value.</p>	<p>Possible cost to pig farm operators.</p> <p>Cost to responsible parties.</p>

Achievement of the present water quality classification objective for Lords Brook has additional advantages for the classified reach of the River Medlock it flows into. The relevant reach is considered under Issue SS13.

ISSUE NO: SS13	River Medlock - Lords Brook to the River Irwell Failure to achieve the present water quality classification objective for the classified reach.		
OPTIONS	Responsibility	Advantages	Disadvantages
<p>Combination of the following:</p> <p>1. Reduction in the organic and debris load from the numerous unsatisfactory sewer overflows to the reach and unclassified tributaries.</p> <p>2. Reduction in the organic load from Failsworth STW.</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 review consent conditions and promote within other regulatory influences expenditure by NWW Ltd.</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>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. Likely traffic disruption to the city centre.</p> <p>Cost to NWW Ltd and possibly customers.</p>

EC - European Community

Achievement of the present water quality classification objective will also require improvements in the River Medlock upstream and to Lords Brook. The upstream reach is considered in Issue SS8 and Lords Brook in Issue SS12.

Achievement of the classification objective has additional advantages for the Lower Irwell sub-catchment. The Lower Irwell sub-catchment is considered in Chapter 7.

ISSUE NO: SS14	River Medlock - Clayton Vale. Poorly landscaped, deep, steep sided valley, severe vandalism. Extensive tipped areas. River corridor extensively modified in places.		
OPTIONS	Responsibility	Advantages	Disadvantages
1. Selective earth movement and landscaping, including some tree clearance/thinning.	Local Authority/ Warden Service	Improve valuable large green space.	Very high costs much of land tipped.
2. Removal of artificial channel features and return channel to more natural state.	No specific responsibility. Could be carried out as joint venture (NRA/MCC/EC) Central Government	Increase value of river corridor for wildlife and people.	Cost and Resource implications.

EC - European Community
MCC - Manchester City Council

ISSUE NO: SS15	Clayton Area. Groundwater within the Collyhurst sandstone is fully committed and may be inadequate to meet future industrial demands.		
OPTIONS	Responsibility	Advantages	Disadvantages
1. Designate as Groundwater Protection zone.	NRA	Protects the aquifer and groundwater quality.	May limit industrial expansion.

ISSUE NO: SS17	River Medlock - Lords Brook to River Irwell Pinmill Brow debris screen - debris bypassing screen at high flows. Difficult to safely clear screen.		
OPTIONS	Responsibility	Advantages	Disadvantages
1. Install automatic debris screen cleaner.	NRA/MSCC/ Riparian Owner	Debris screen will be cleared during flood flows. Improve existing levels of flood protection. Safety of operatives improved due to remote operation. Possible reduction in revenue costs.	Cost justification. Visual impact from security fencing. Likely problems with vandalism. Increased likelihood of blockage. Waste disposal costs.
2. Replace existing debris screen.	NRA/MSCC/ Riparian Owner.	Improve existing levels of flood protection. Screen clearance possible during flood flows.	Cost justification. Increased waste disposal costs.
3. Improve existing debris screen.	NRA/MSCC/ Riparian Owner.	Improve existing levels of flood protection. Screen clearance possible during flood flows.	Cost justification. Increased waste disposal costs.

MSCC- Manchester Ship Canal Company

ISSUE NO: SS18	River Medlock - Downstream Bradford Gas Works Non-continuous 'green corridor' between the Gas Works and Ashton New Road.		
OPTIONS	Responsibility	Advantages	Disadvantages
1. Extend 'Linear Park' through land purchase or planning gain.	Local Authority/ Transport Dept./ NRA	Continuous access along Medlock - recreational use, create wildlife feature.	Cost implications conflict with landowners.

ISSUE NO: SS19	River Medlock - Limekiln Lane to Ashton New Road, Central Manchester. Poorly landscaped, river corridor with partially demolished or vandalised walls and structures. Severe vandalism and litter problems.		
OPTIONS	Responsibility	Advantages	Disadvantages
1. Formalise open landscaped areas with attractive but substantial boundary fence.	Local Authority/ Mersey Basin Campaign/ Wardening Service/ NRA	Alleviate fly tipping and vehicle access.	Cost implications.
2. Repair and finish walls and other structures.	As above.	Improve recreational potential. Counter air of decay and neglect.	Cost implications.
3. Increase regular wardening "presence".	As above.		Cost implications.

ISSUE NO: SS20	River Medlock - Central Manchester Urban Dereliction and access problems in Central Manchester.		
OPTIONS	Responsibility	Advantages	Disadvantages
1. Support riverside regeneration initiatives including renovation of significant or historic industrial buildings, sympathetic enhancement works, debris removal etc.	Local Authority/ CMDC/ Voluntary Sector/Mersey Basin Campaign/ NRA.	Increases value of river as focal point within Central Manchester. Existing level of Flood Protection could be improved.	Cost implications and justifications. Difficult to get consensus of opinion on way forward with different interests being considered.
2. Provide access ramps at suitable locations and support initiatives to promote low level riverside walkways.	NRA/Developers/ CMDC	Improved access for maintenance. Debris build up from dereliction could be removed subject to the integrity of the remaining riverside structures. River borne debris could be more easily removed. Existing level of flood protection could be improved. Attractive setting promotes positive economic regeneration.	Cost justification. Difficulty in obtaining suitable locations for ramps.
3. Persuade riparian owners to repair their structures before collapse, and to reinstate the river channel following collapse.	Landowners/NRA	Debris build up avoided by preventative maintenance. Allow more efficient use of resources. Overall NRA costs reduced. Improve aesthetic appearance.	Staff resources required to trace owners and enforce their legal responsibilities, particularly where businesses are in financial difficulties or residential owners are unable to meet the costs. Owners not always traceable.

CMDC - Central Manchester Development Corporation

ISSUE NO: SS21		Disjointed Countryside Management and public access policy along tributaries.	
OPTIONS	Responsibility	Advantages	Disadvantages
1. Co-ordinate the creation of a comprehensive policy for the whole sub-catchment.	NRA, Countryside, Management services, Medlock Valley Wardens, Oldham, Ashton under Lyne, Borough Councils, Greater Manchester Borough Council.	<p>Improve recreational and wildlife value of river corridors.</p> <p>More strategic and informed development control.</p>	Resource implications.

ISSUE NO: SS22		Access Ramps. Provide access ramps on the River Medlock at Pinmill Brow, Manchester and Philips Park.	
OPTIONS	Responsibility	Advantages	Disadvantages
1. Locations have been identified for the provision of access ramps.	NRA	Improve access for maintenance.	Capital Cost.

National Rivers Authority North West Region

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