

RIVER IRWELL
CATCHMENT MANAGEMENT PLAN
CONSULTATION REPORT
CHAPTER SEVEN - LOWER IRWELL SUB-CATCHMENT



NRA

*National Rivers Authority
North West Region
September 1994*

IRWELL CATCHMENT MANAGEMENT PLAN

CONSULTATION REPORT

CHAPTER SEVEN - LOWER IRWELL SUB-CATCHMENT

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LOWER IRWELL CONSULTATION REPORT

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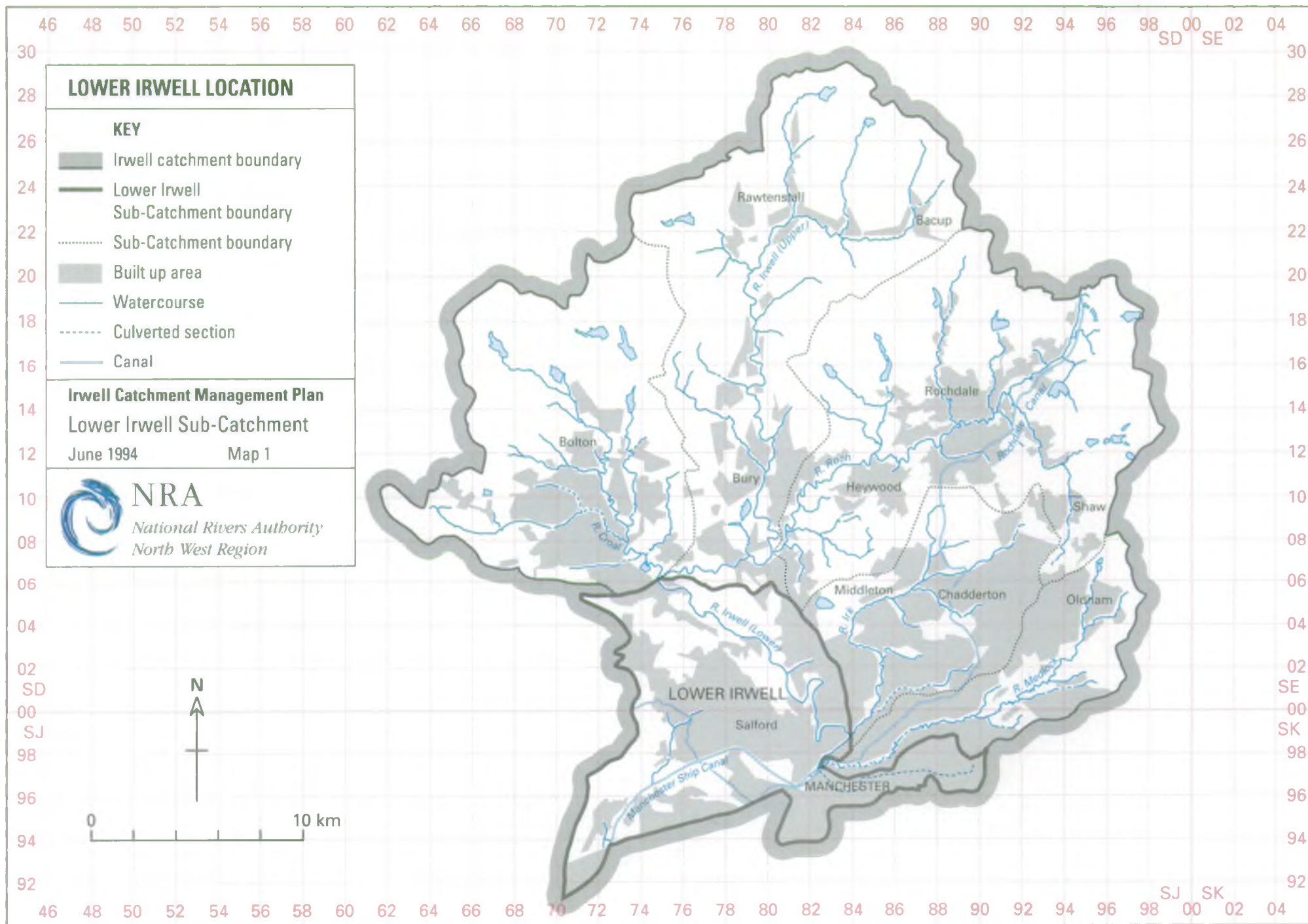
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LOWER IRWELL SUB-CATCHMENT DETAILS (MAP 1)

Area	134 km ²
Population	260,000

MAIN TOWNS AND POPULATIONS

Manchester South	40,000	Kearsley	10,900
Salford	32,000	Old Trafford	10,000
Swinton	15,000	Flixton	9,700
Beswick	11,800	Openshaw	9,600
Eccles	11,800	Urmston	9,500
Prestwich	11,800		

ADMINISTRATIVE DETAILS

District Councils:-

Salford Metropolitan City Council
Manchester Metropolitan City Council (part)
Trafford Metropolitan Borough Council
Bolton Metropolitan Borough Council (part)
Bury Metropolitan Borough Council (part)

NRA:- North West Region - South Area

Water Companies:- North West Water Ltd

Principal Sewage Treatment Works:- Davyhulme
Bolton
Salford
Eccles
Urmston

TOPOGRAPHY

Ground Levels	Min. Level	15 mAOD
	Max. Level	100 mAOD

GEOLOGY

Solid Geology:-

South, North East - predominantly Permo-Triassic Sandstone
North West - Carboniferous Coal Measures

Superficial Geology:-

Variable - Glacial Till (Boulder Clay), Sand and Peat.

Water Resources

Availability:-

Groundwater - Generally site specific
Surface Water - Good availability

FLOOD PROTECTION

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

28.88 km.

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

7

WATER QUALITY

Length of River in National Water Council Class

1993 Assessment

Class 1A (Very Good)
Class 1B (Good)
Class 2 (Fair)

0.0 km.
0.0 km.
0.0 km.

Class 3 (Poor) 29.2 km.
Class 4 (Bad) 20.3 km.

FISHERIES

Length of salmonid fishery:-
cyprinid fishery:-

0 km.
18 km.

CONSERVATION

Number of Sites of Special Scientific Interest (SSSI) in the catchment	0
Number of SSSI's which are associated with the River Corridor and/or wetland habitats	0
Number of Site of Biological Importance (SBI) in the catchment	33
Number of SBI's associated with River Corridor and/or wetland habitats	15

LOWER IRWELL CATCHMENT WITH INFRASTRUCTURE

KEY

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

Irwell Catchment Management Plan

Lower Irwell Sub-Catchment

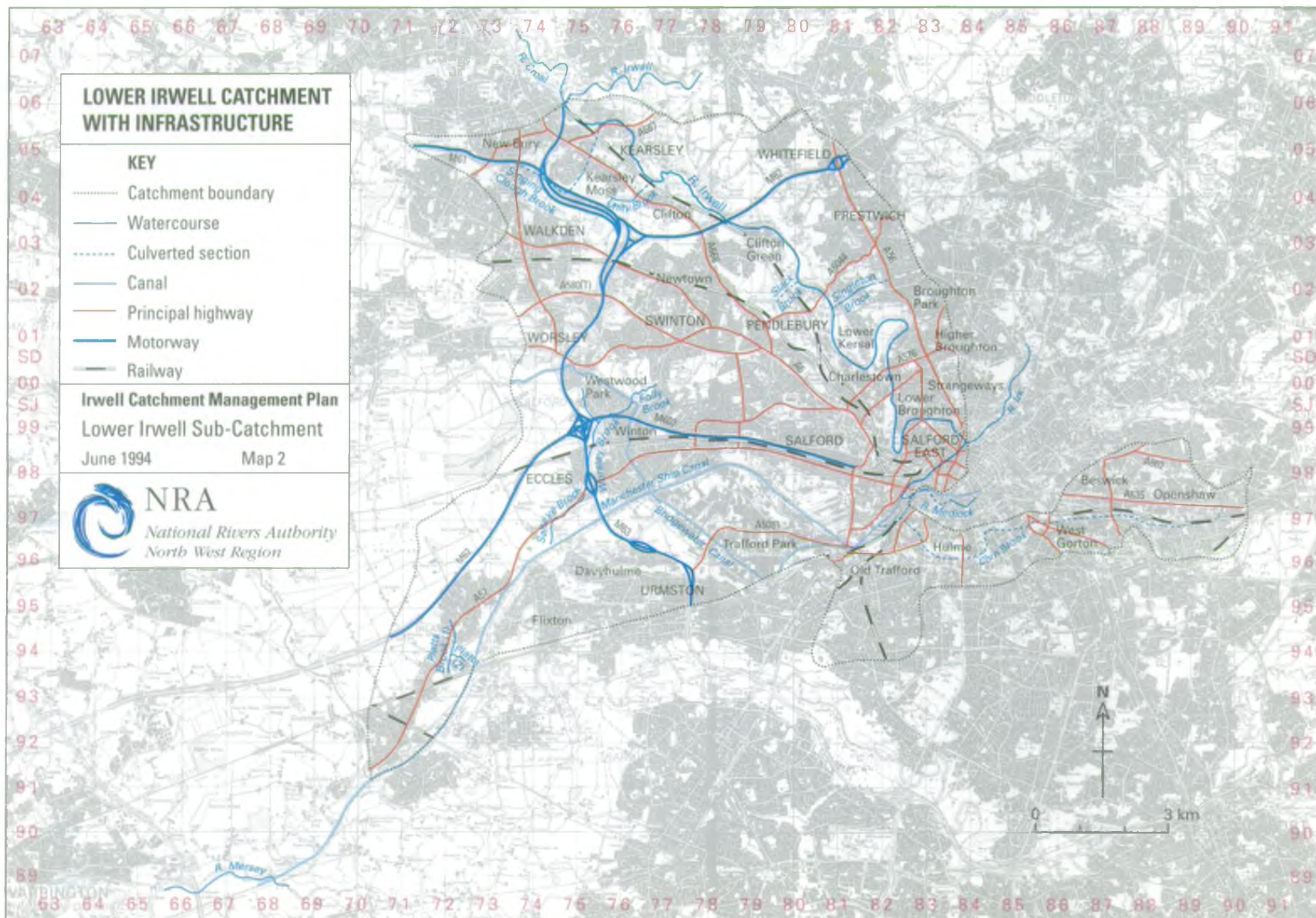
June 1994

Map 2



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1. INTRODUCTION

1.1 CATCHMENT DESCRIPTION (MAP 2)

The Lower Irwell is a heavily urbanised catchment incorporating the south side of Manchester City centre from Openshaw to Old Trafford and the whole of the City of Salford, together with the outlying mainly residential settlements of Prestwich, Walkden, Swinton, Worsley and Urmston. The River Irwell and its tributaries have a profound impact on the form of the catchment from the north to where it joins the Manchester Ship Canal. The River has been responsible in part for the growth and settlement pattern in this part of Salford. It is a catchment with many typical urban problems of inadequate ageing Victorian infrastructure and poverty especially in the eastern half.

The River has also suffered from historical economic changes and lack of investment. The River was seen as a handy place to site waste tips and sewage works. However, the watercourses are still a major source of recreation land, acting like green fingers of open land leading to the urban conurbation.

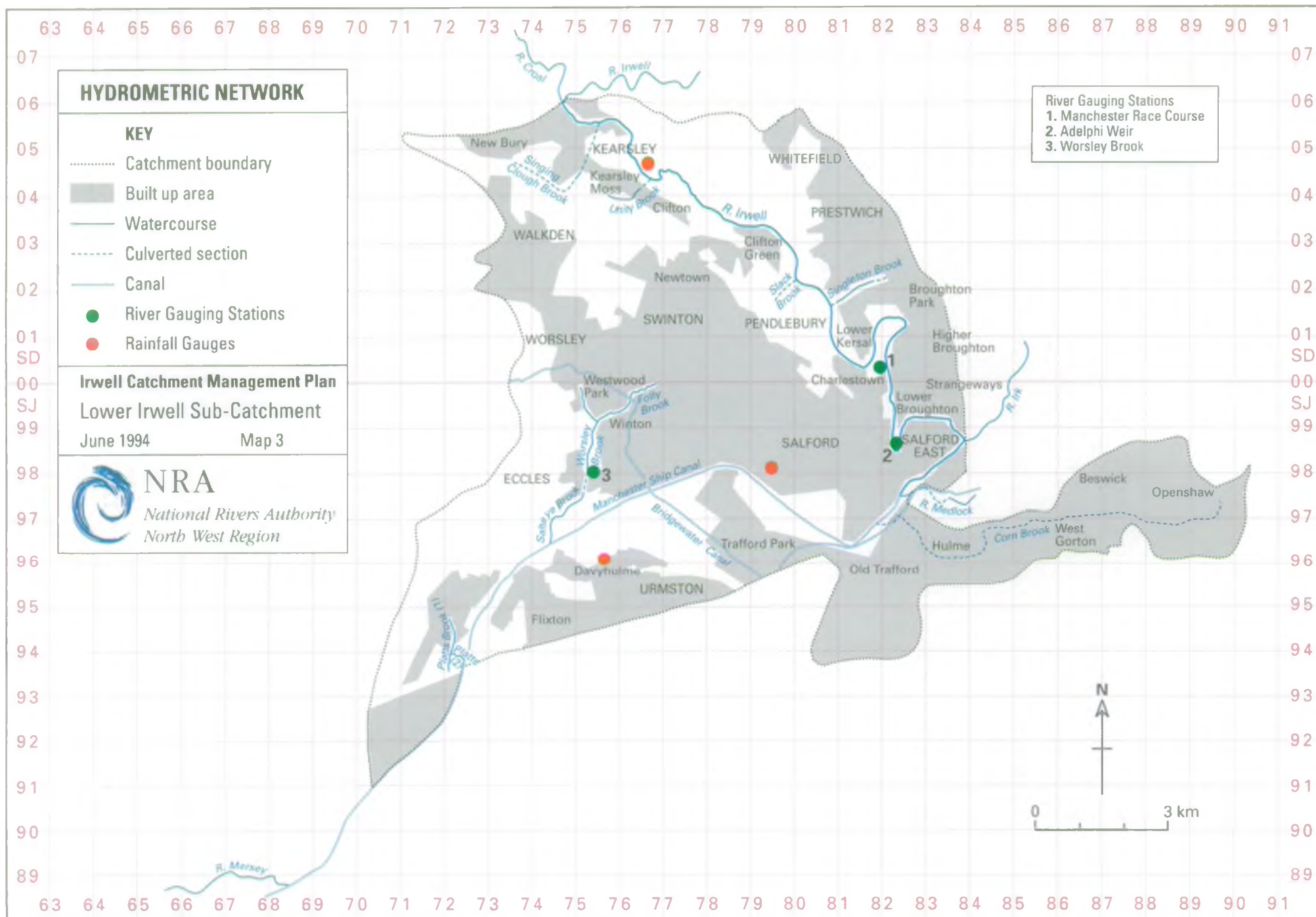
1.2 HYDROLOGY

The Lower Irwell can be regarded as that part of the River Irwell between the confluence of the Upper Irwell and the River Croal down to the River Mersey/Manchester Ship Canal confluence. This area includes several small, mainly culverted streams draining Central Manchester and Salford and also Worsley Brook. The total catchment area is 134 sq. kms. A further 659 sq. kms. contributes to river flows in the catchment from the Upper Irwell and its tributaries. Altitudes within the Lower Irwell catchment vary from around 100m AOD in the north of the catchment to just under 15m AOD near the Mersey confluence. Rainfall varies from just under 1100mm in the highest part of the catchment to under 850mm at its southern end, while potential evaporation is between 540mm in the higher sections to 560mm on the lower ground. The catchment under consideration is one of the most highly urbanised in the authority's area and is probably the most artificially influenced in terms of river flows. It is possible that in times of low flows between 80 - 90% of the river/canal flow is artificial, for example, from reservoirs, sewage works and industrial returns, explaining why, in the past the water quality of this catchment has been so poor.

The actual rainfall recorded for the Lower Irwell Catchment in recent years is:-

YEAR	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
RAINFALL (mm)	904	875	1050	976	1117	992	987	885	1058	1058

The long term average calculated by the Met. Office from this Authority's own records from 1961 to 1990 is 987 mm at Ringley Fold Sewage Treatment Works.



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 Manchester Racecourse and Adelphi Weir on the Irwell and at Eccles on Worsley Brook.

The 95 percentile flow at Adelphi Weir is 503 cumecs. The Minimum and Maximum flows are 320.8 cumecs and 3.21 cumecs respectively with a median flow of 10.37 cumecs at this site. River levels, but not flows, are archived from the Manchester Racecourse and Worsley Brook, Eccles sites.

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
-  Exposed Permo-Triassic strata
- pt** Permo-Triassic strata
-  Exposed Carboniferous Coal Measures (Westphalian) strata
- cw** Carboniferous coal measures

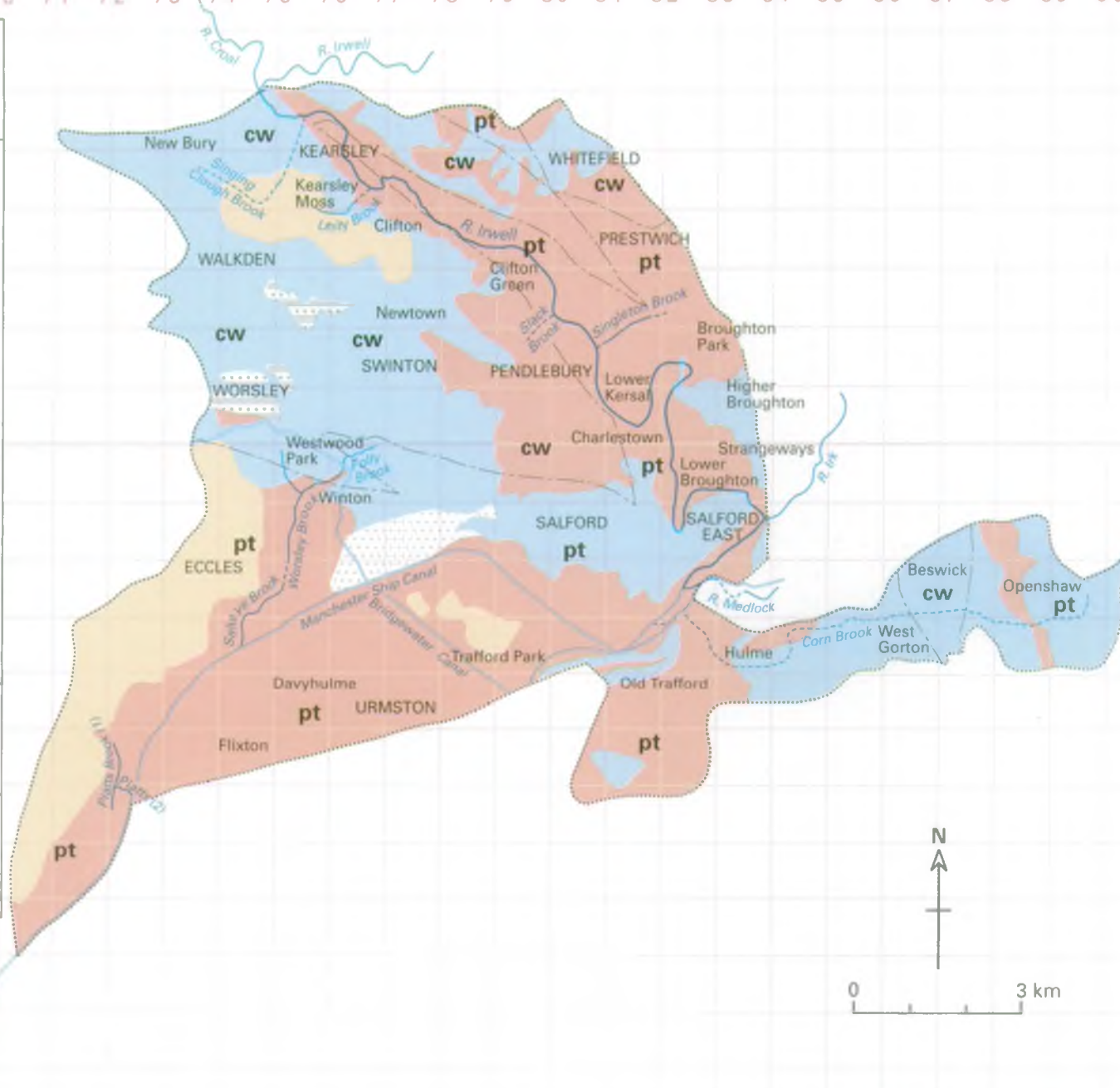
Irwell Catchment Management Plan
Lower Irwell Sub-Catchment
June 1994 Map 4



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



0 3 km

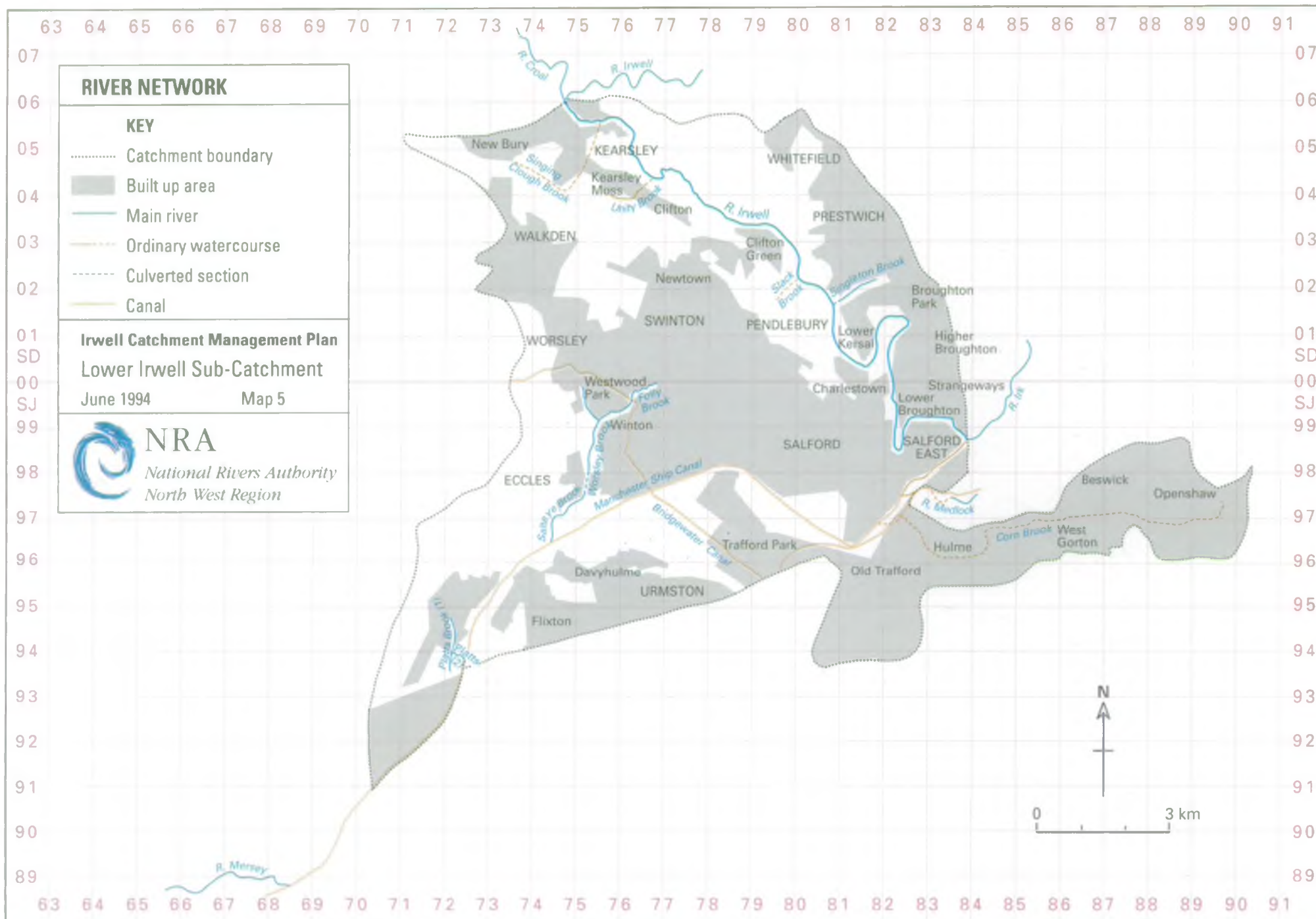
1.4 HYDROGEOLOGY (MAP 4)

The solid geology within the Lower Irwell catchment is complex. The southern and eastern parts of the catchment are underlain by the major Permo-Triassic sandstone aquifer which extends southwards beyond Stockport and westwards through to Liverpool. 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 north-western part of the catchment is underlain by Carboniferous Coal Measures (Westphalian) strata. They comprise of alternating shales/mudstones, siltstones, sandstones and coal seams which have been intensely faulted. The sandstones tend to act as individual "minor" aquifer units separated by lower permeability shales/mudstones. Groundwater movement is generally by fissure flow. The presence of old coal workings 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 drift deposits, principally glacial till (boulder clay). These have been incised by an extensive belt of fluvio-glacial sand and gravel which flank the Irwell and Mersey. The permeable sands and gravels may act as minor aquifers in their own right and are likely to be in hydraulic continuity with surface watercourses.

Peat deposits have developed on the low ground of Chat Moss, Kearsley Moss as well as in Trafford Park.



1.5 FLOOD DEFENCE (MAP 5)

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

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

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

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

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

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

1.6 WATER QUALITY

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

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

The main sources of pollution in the catchment are discharges from the major sewage treatment works at Bolton, Salford, Eccles and Davyhulme and the sewerage networks feeding them. Davyhulme STW is the largest sewage treatment works within the North West Region. These discharges are the responsibility of North West Water Limited. Significant expenditure will be required for improvements.

There are a relatively large number of trade effluent discharges direct to river within the catchment. These are generally of small volumes of process or cooling water or of site drainage. Discharges from Robert Fletcher Ltd. and Magnesium Elektron Ltd. do have significant impact.

The Rivers Croal, Irk and Medlock are major tributaries and these catchments together with the Upper Irwell have a substantial influence on the Lower Irwell Catchment.

Run-off from motorways and industrial sites, ochreous land drainage and run-off from identified contaminated land areas have a more localised 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. Investigation and resolution of such wrong connections can be difficult.

2. CATCHMENT USES AND ACTIVITIES

2.1 FLOOD DEFENCE

2.1.1 General

This use deals with the provision of effective flood defence for people and property against flooding from rivers and watercourses. Normally flooding is a result of extreme climatic condition, 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 are detailed in Section 3.1 of Chapter One River Irwell Introduction document

2.1.2 Local Perspective

The Lower Irwell Catchment runs from its confluence with the River Croal south of Bolton, through Salford and Manchester, to the "main river" limit at its confluence with the River Irk.

Singleton Brook is a small tributary which rises at Sedgley Park and flows in a westerly direction to its confluence with the River Irwell. The brook is culverted for much of its length.

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 Lower Irwell Catchment to safeguard the existing standards of flood protection, particularly in the heavily urbanised areas of Salford and Manchester. The work includes clearing debris blockages from channels, culverts, bridges and trash screens, and also desilting and dredging using mechanical plant.

The NRA clears numerous culvert debris screens within the Lower Irwell 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 Catchment is located totally within the former Greater Manchester County Council. It is centred on Salford Metropolitan City Council (MCC) and includes parts of Manchester MCC, Trafford Metropolitan Borough Council (MBC), Bolton MBC and Bury MBC.

The Greater Manchester Structure Plan First Alteration 1986 forms the Strategic Planning framework for these Districts and Cities, until the adoption of their respective Unitary Development Plans (UDP's). Each Local Planning Authority had progressed beyond the Deposit stage of UDP preparation (March 1994). Salford, Manchester and Bolton are awaiting Inspector Reports following their Public Inquiries. Trafford is currently holding their Public Inquiry and the Bury Public Inquiry is earmarked for October 1994.

The main UDP emphasis within the Catchment is centred on:

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

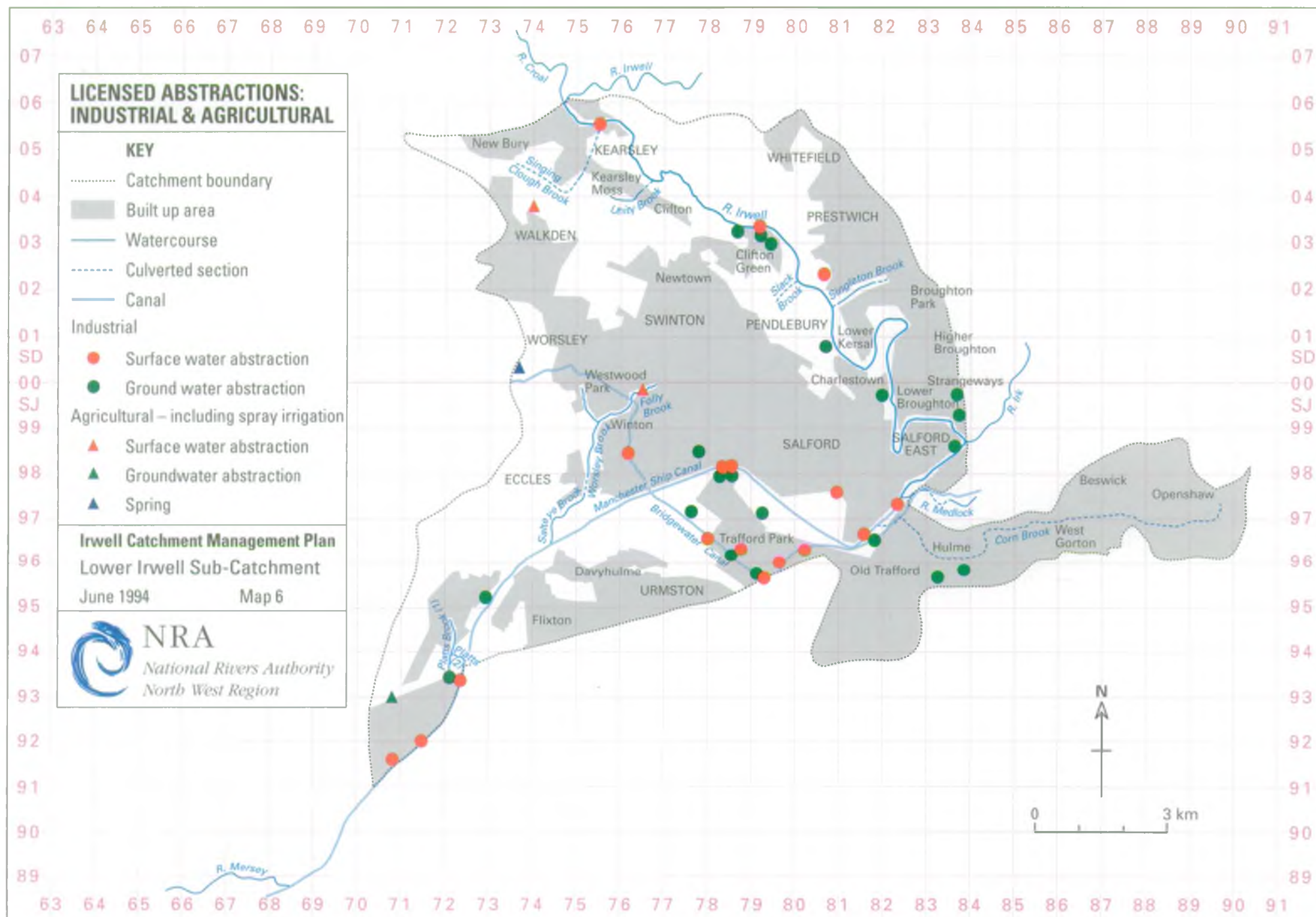
The well-established Greater Manchester Green Belt Policy boundary has strictly limited outward growth of the Catchment's main urban areas and there is a strong planning policy tradition in this area for protecting the open character of river valleys.

The Croal/Irwell Valley local plan has been of prime importance, in the past 10 years, in helping to bring about improvements, especially in the northern half of the Catchment from Kearsley through the Irwell into the heart of Salford. The Plan has placed a strong commitment on the protection of open land in the river valleys as a primary way to achieve environmental improvements such as land reclamation, informal recreation and public access and protection of areas of ecological importance.

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 INDUSTRIAL AND AGRICULTURAL ABSTRACTIONS (MAP 6)

2.3.1 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 an abstraction licence.

2.3.2 Local Perspective

Industrial

There are 37 licensed abstractions in the Lower Irwell Catchment for industrial purposes. The total licensed quantity from these sources is 67390.6 ML/y which is 99.9% of the total licensed abstraction within the catchment. Of this total 60243.6 ML/y (89%) is from surface water sources and 7147.0 ML/y (11%) is from groundwater sources. Of the total surface water licensed for industrial use, 55656.6 ML/y (92%) is from the Manchester Ship Canal and the Bridgewater Canal, there being very little use of the natural surface water resources within the catchment. The majority of abstraction also takes place in the Trafford Park area.

General Agriculture

There are only two licensed abstractions for agricultural purposes within the Lower Irwell Catchment. One abstraction is from Blackleach Reservoir at Walkden and is gravity fed to a farm at Worsley and the other is a spring source for use at Worsley Hall Nurseries. These abstractions only represent 0.02% of the total licensed abstraction within the catchment.

Spray Irrigation

There are only two licensed abstractions for spray irrigation purposes within the catchment. One of these relates to irrigation at Worsley Golf Club and the other to a garden nursery at Cadishead. These licences only represent 0.06% of the total licensed abstraction within the catchment.

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 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.

2.3.4 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.

2.3.5 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 RESOURCE USAGE

2.4.1 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.

	Available Resources in average Year Jan-Dec	Licensed or Committed Abstraction	Actual Average Abstraction 1992
Surface Water	No Data	17.3 Ml/d (191.4 Ml/d)	4.4 Ml/d (35.7 Ml/d)
Groundwater	No Data	26.0 Ml/d	8.8 Ml/d

N.B. Figures in brackets include canal abstractions, but it should be noted that canals will import water from, and export water to other catchments.

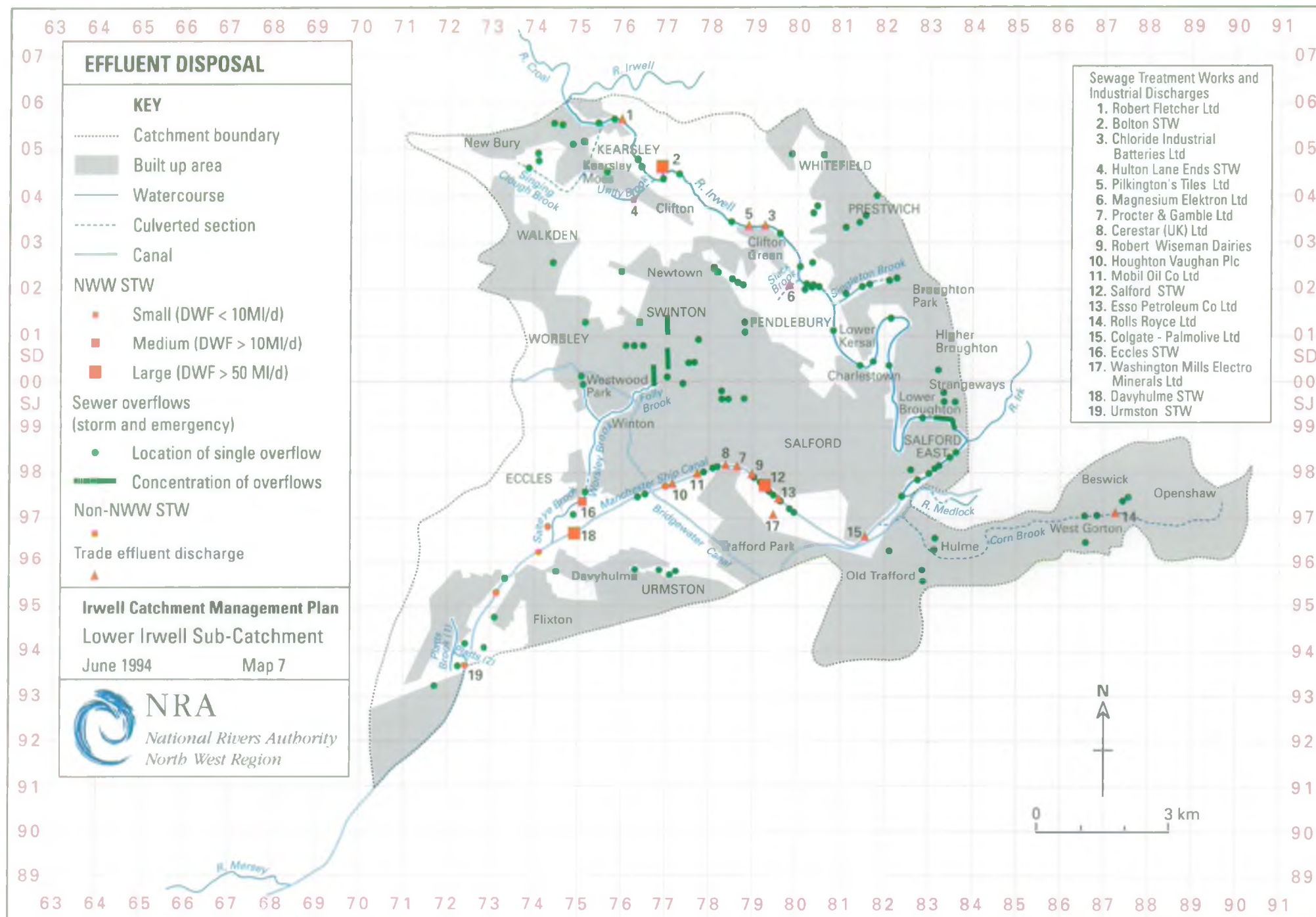
2.4.2 Local Perspective

Surface Water:

Water resources availability in the Lower Irwell 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 Permo-Triassic Sandstone for industrial use. There is an historical problem of contaminated groundwater in the Trafford Park area which will limit future groundwater abstraction. Elsewhere there may be scope for additional abstractions but this would need to be assessed on an individual basis.



2.5 EFFLUENT DISPOSAL (MAP 7)

2.5.1 General

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

Continuous Effluents

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

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

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

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

Intermittent Effluents

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

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

2.5.2 Local Perspective

Continuous Effluents

There are five significant North West Water Ltd STWs. By far the largest is Davyhulme. The dry weather flow is 288.1 ML/d. It is the largest sewage treatment works in the North West Region. The next largest works in the catchment is at Bolton. This has a dry weather flow of 105.0 ML/d. Smaller works are at Salford, Eccles and Urmston with dry weather flows of 60.7, 40.9 and 9.6 ML/d respectively. North West Water Ltd also operate a small plant at Hulton Lane Ends.

There are 13 industrial discharges direct to river. These include process waters, cooling waters and site drainage. The process and cooling waters are of relatively small volumes in comparison with the STW discharges. For most the maximum volumes permitted by the consent is less than 10 ML/d.

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

The locations of these discharges are shown on Map 7.

Intermittent Effluents

There are over 140 identified storm and emergency sewer overflows within the Lower Irwell 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.

2.5.3 Environmental Objectives

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

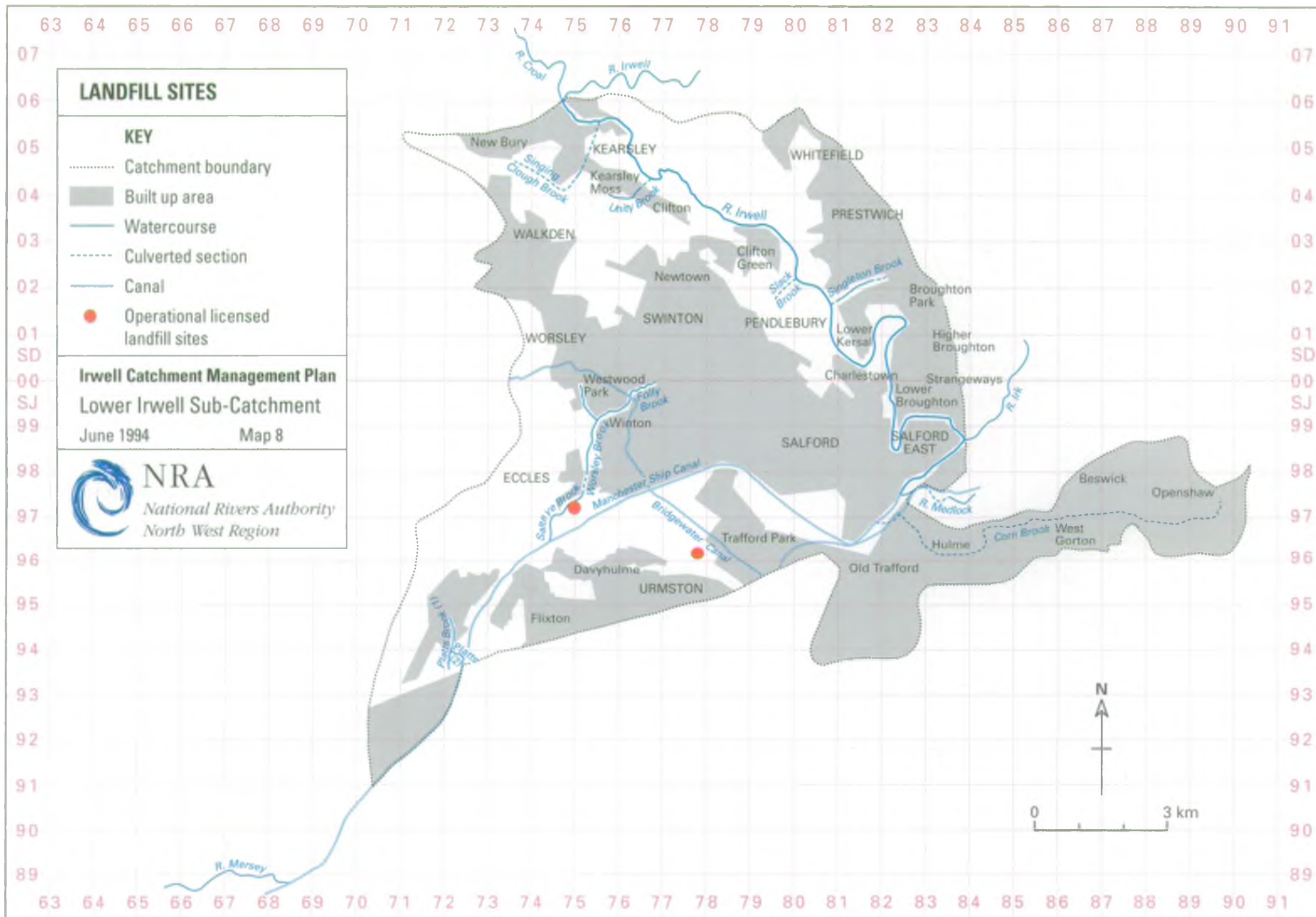
2.5.4 Environmental Requirements

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.



2.6 LANDFILL SITES (MAP 8)

2.6.1 General

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

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

2.6.2 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.

2.6.3 Objectives

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

2.6.4 Environmental Requirements

Water Quality:

- Compliance with EC Directives on dangerous substances discharged to groundwaters
- Implementation of the NRA Groundwater Protection Policy
- Appropriate monitoring of effects on surface and groundwaters

- Prevention of pollution of controlled waters.
- 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.

2.7 MINERAL EXTRACTION

2.7.1 General

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

2.7.2 Local Perspective

Mineral workings are difficult to quantify within the Lower Irwell Catchment. Underground workings for coal are both numerous and extensive in the North West. Many such workings are not recorded.

Surface mineral workings are likely to be relatively localised in view of the predominantly urban nature of the catchment. Where present they will be largely unrecorded. The most common types are clay or marl pits, sand and gravel pits, hard rock (sandstone) quarries at outcrop areas and occasional shale pits. Many, if not most of old such workings have long since been filled in, often with waste from a variety of sources.

2.7.3 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".

2.7.4. 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.

2.8 GROUNDWATER PROTECTION

2.8.1 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.

2.8.2 Local Perspective

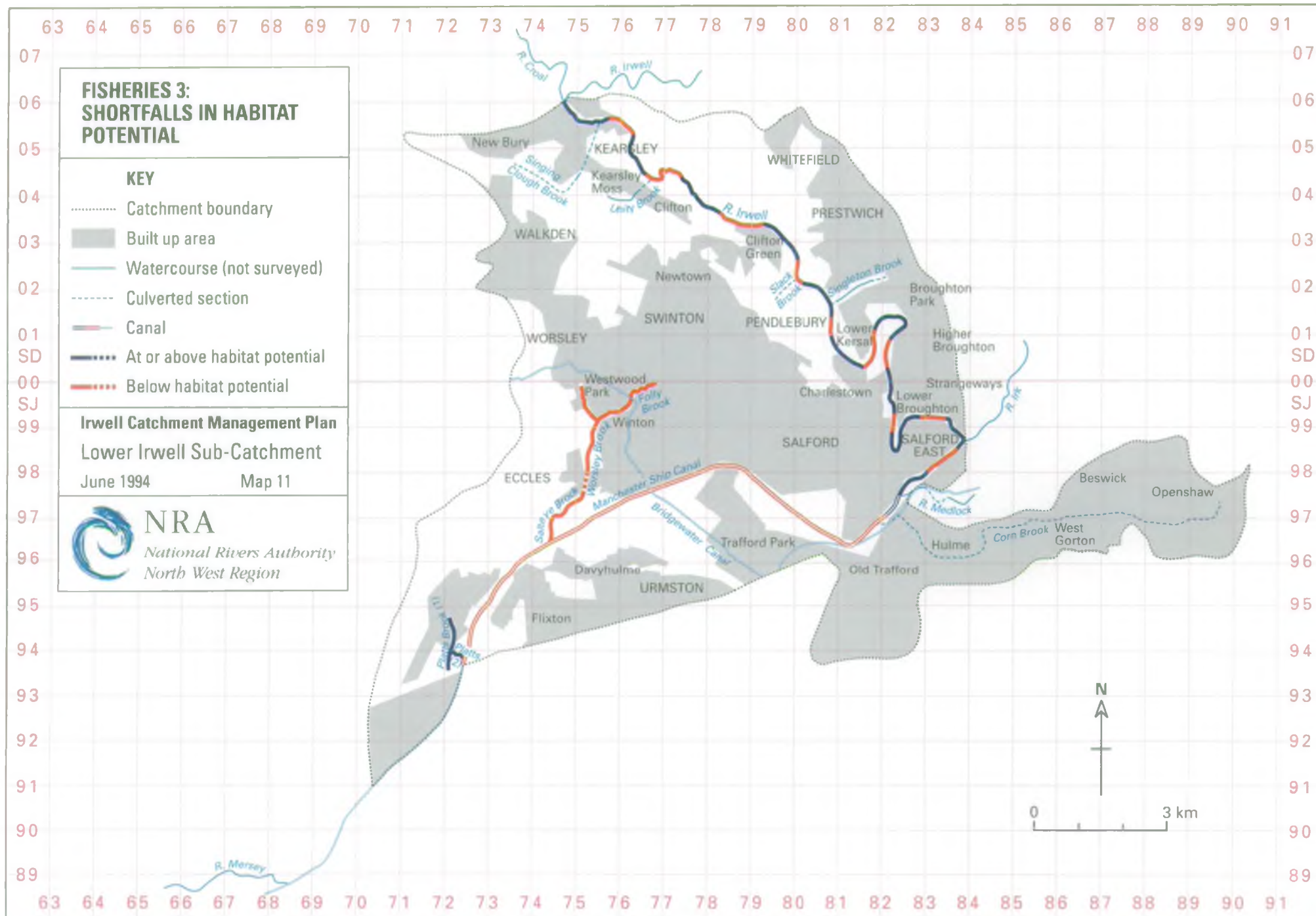
There are no groundwater sources used for public water supply within the Lower Irwell.

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

These activities include:

- Groundwater abstraction
- Waste disposal 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
- Species of the chub zone
- No fish present

Irwell Catchment Management Plan

Lower Irwell Sub-Catchment

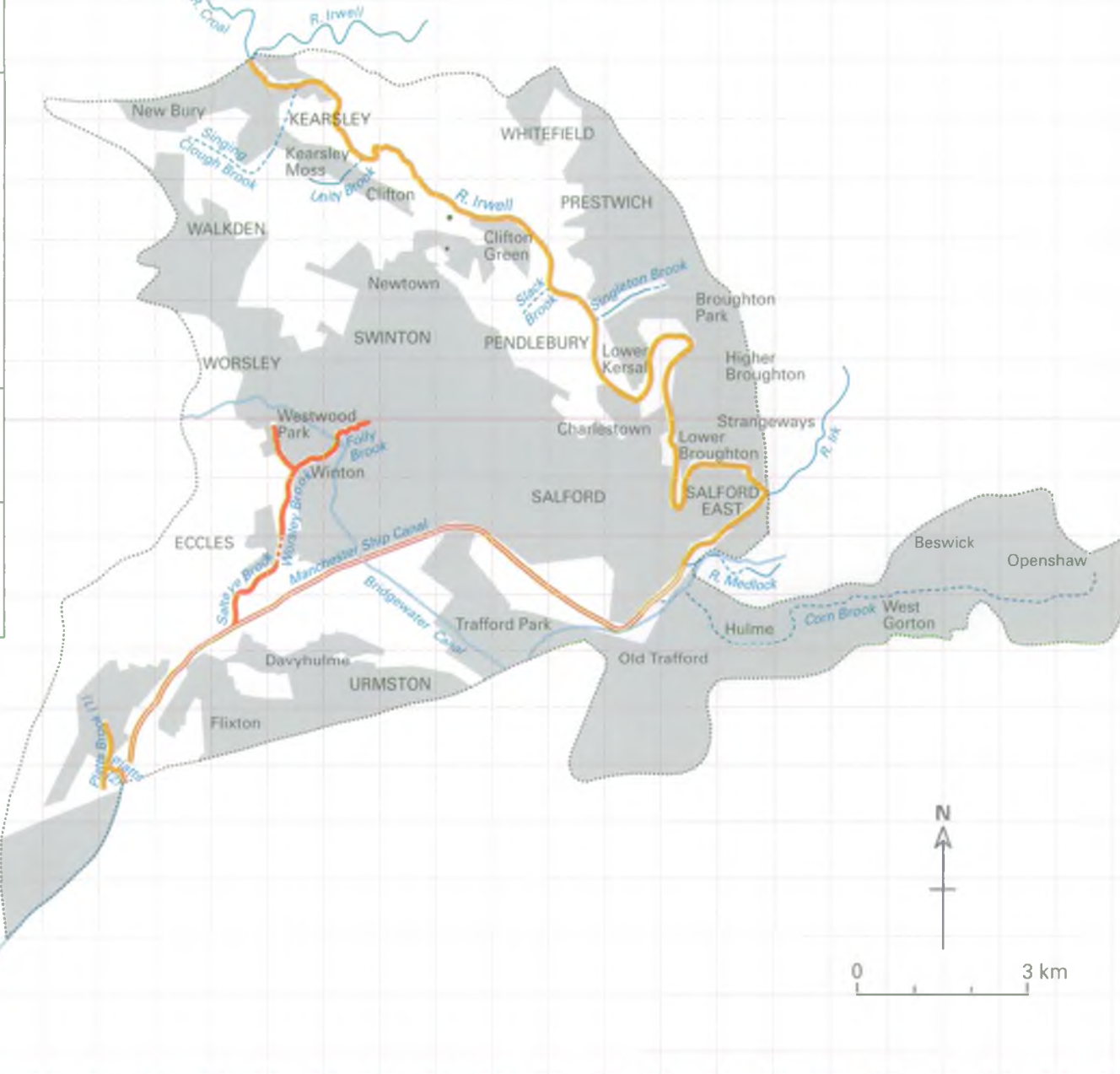
June 1994

Map 10



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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)
- Chub (Chub, dace, gudgeon, roach, perch, pike, eel)
- Bream (Roach, bream, tench, carp, perch, pike, eel)

Irwell Catchment Management Plan
Lower Irwell Sub-Catchment
 June 1994 Map 9



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2.9 FISHERIES (MAPS 9, 10 & 11)

2.9.1 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.

2.9.2 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.

Due to the physical nature of the main river, being large and deep, and also due to access problems, survey work that was carried was limited. For this reason the fisheries information within this catchment has relied on information from bailiffs and angling clubs.

In general the River Irwell itself maintains populations of coarse fish which is consistent with the physical habitats present. However, these have been shown to be susceptible to intermittent pollution events, particularly from storm sewer overflows. The fish species present are dominated by roach. Other species that are present include chub, bream and pike, with the occasional brown trout in the upper reaches. Angling clubs have recorded good catches of coarse fish in the summer months, particularly through Ringley and Radcliffe, but catches around Salford University, although improving, have not fully recovered from the pollution and resulting fish kill of 1992.

No fisheries survey work has been carried out on the Manchester Ship Canal. It is not known conclusively the extent of any fishery that may be present but it is not thought to be exploited by anglers.

The water quality within Saltey Brook has in the past restricted population by fish species, however, the water quality has improved to a level that should sustain coarse fish.

The old course of the River Irwell, Platts Brook, has been developed as an informal fishery.

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

2.9.3 Environmental Objectives

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

2.9.4 Environmental Requirements

Water Quality:

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

Water Quantity:

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

Physical Features:

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

DESIGNATED SITES OF CONSERVATION IMPORTANCE

KEY

- Catchment boundary
- Built up area
- Watercourse
- - - - - Culverted section
- Canal
- Site of Biological Importance (SBI)
- Site of Local Wildlife Importance highlighted in Phase 1 habitat survey

Irwell Catchment Management Plan

Lower Irwell Sub-Catchment

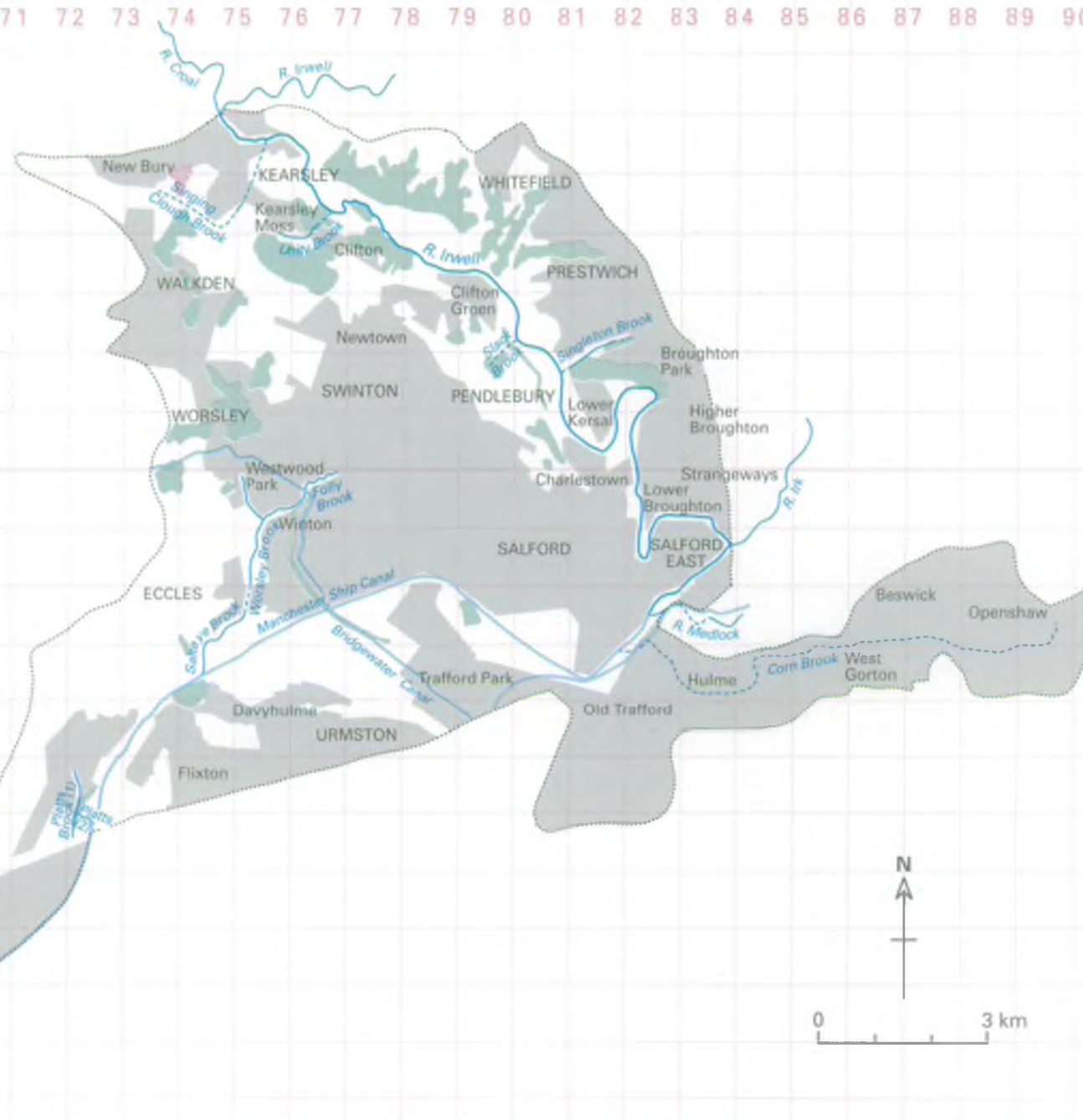
June 1994

Map 12



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2.10 CONSERVATION (MAP 12)

2.10.1 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.

2.10.2 Local Perspective

Most of the Lower Irwell Catchment is heavily urbanised with the river corridors often providing the only substantial areas of open space within the catchment. This has had a major impact on the watercourses that flow through the conurbations. The few green spaces that remain in the urban areas are often associated with watercourses and are very valuable in the local context. Many are designated sites of conservation interest.

For much of its length, the Lower Irwell has been straightened and is constrained within walls or sheet steel piling which restricts habitat diversity. Poor water quality and urban debris impose further restrictions on the diversity.

However, it does have a stony substrate with riffle/pool sections and a variety in flow even within the 'channelised' sections. Scattered bankside trees and shrubs, wooded stretches (for example, Kersal Dale SBI), small pockets of unimproved grassland, adjacent wetland and marsh areas (for example, Oakwood SBI), and scrub patches provide additional habitat diversity and conservation interest within the river corridor.

There is an area of Peat moss land at Clifton Moss, near Swinton, which has been colonised by a very complex mosaic of habitat types including dense scrub, tall herb and marsh, acidic and neutral grassland. There are several small areas of open water associated with localised reedbed, swamp and bog. The site is of botanical, amphibian, invertebrate and ornithological interest.

Kersal Dale is a large area of woodland, acidic and neutral grassland, open water and marsh associated with a large meander of the River Irwell at Kersal. Although heavily used for informal recreation, the size of the site, the range of habitats and plant species and the density of much of the vegetation make it invaluable for wildlife, especially amphibians, invertebrates, birds and small mammals.

Of its tributaries, Unity Brook, Singleton Brook and Slack Brook are of most conservation interest with SBI's in places along their lengths.

The downstream length of Unity Brook lies within a broad-leaved clough woodland with patches of acidic grassland, species-rich marsh, reed mace reedbed, heathland and tall herb/bracken. The corridor is of value to birds, butterflies, moths and damselflies. The alien pest species Himalayan Balsam and Japanese Knotweed are becoming extensive throughout this length.

Slack Brook has steep banks supporting tall herbs, neutral grassland and willow scrub, with large populations of common spotted and marsh orchids. The ground is made up of consolidated power station ash. Low level ledges at the toe of the brook support further marsh orchid populations, rushes, shrubby willows and horsetails. Recent culverting for an access track at the downstream end caused some disturbance. Extensive ochre deposits are present.

The north-west corner of the catchment, which drains to Worsley Brook contains several SBI's. These include wet woodlands, reservoirs, ponds and non-main tributaries. The main-river lengths of Worsley Brook and Folly Brook are not of designated conservation interest, although there are Tree Preservation Orders on several groups of mature bankside trees.

Platt's Brook runs into a part of the old channel of the River Irwell that was isolated by the construction of the Ship Canal. This is an SBI with two substantial areas of open water supporting varied marginal flora, of value to birds and amphibians. The brook links the two waterbodies and flows through willow carr woodland with a swampy field layer.

Corn Brook is culverted throughout its entire length. The number and extent of culverted sections has fragmented the riverine environment and led to the loss of open water and river valley habitats. In some circumstances the NRA may be able to open up culverts as part of a river restoration scheme. The most suitable sites are those that run through uncontaminated green space with scope for the reintroduction of meanders. Corn Brook under the playing fields at Hulme and Openshaw may be a possibility, although it may be too deep and involve the removal of too much spoil.

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 help to restore continuity in the riverine environment.

There is much scope for 'enhancement' or 'restoration' of the river corridors throughout this catchment.

2.10.3 Aquatic Invertebrates

There are six biological sampling points on the Lower Irwell (four of which are on tributaries). There are also two on Worsley Brook and two on Folly Brook. Platts Brook is not routinely sampled.

The aquatic invertebrate communities present in the Lower Irwell are of restricted diversity and include large numbers of pollution tolerant organisms, for example, Asellidae hog lice, Chironomidae midge larvae and Tubificidae worms. An identical situation exists in Slack Brook and Singleton Brook, two of the main tributaries.

The invertebrate communities in Singing Clough Brook and Unity Brook, the remaining two tributaries which are monitored, are particularly poor and consist of only a few individuals from a small number of pollution tolerant taxa, reflecting the poor water quality found there.

The situation in Worsley Brook and Folly Brook is slightly better, however, the Eccles STW discharge does have a significant impact on the invertebrate community in the lower reaches of Worsley and Saltey Brooks.

2.10.4 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.

2.10.5 Environmental Requirements

Water Quality:

- Water quality not to deteriorate to a level such that sites of local conservation value lose their general aquatic interest, for example, Platts Brook.
- Water quality improvement in some sites would enhance an existing conservation value, for example, Unity Brook and Worsley 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.

LANDSCAPE AND HERITAGE

KEY

- Catchment boundary
 - Built up area
 - Watercourse
 - - - Culverted section
 - Canal
 - Conservation Area (Built environment)
 - Parks and Gardens Register Grade II
 - Scheduled Ancient Monument
- Note: Only designated sites near to watercourses drawn on map are shown

Irwell Catchment Management Plan Lower Irwell Sub-Catchment

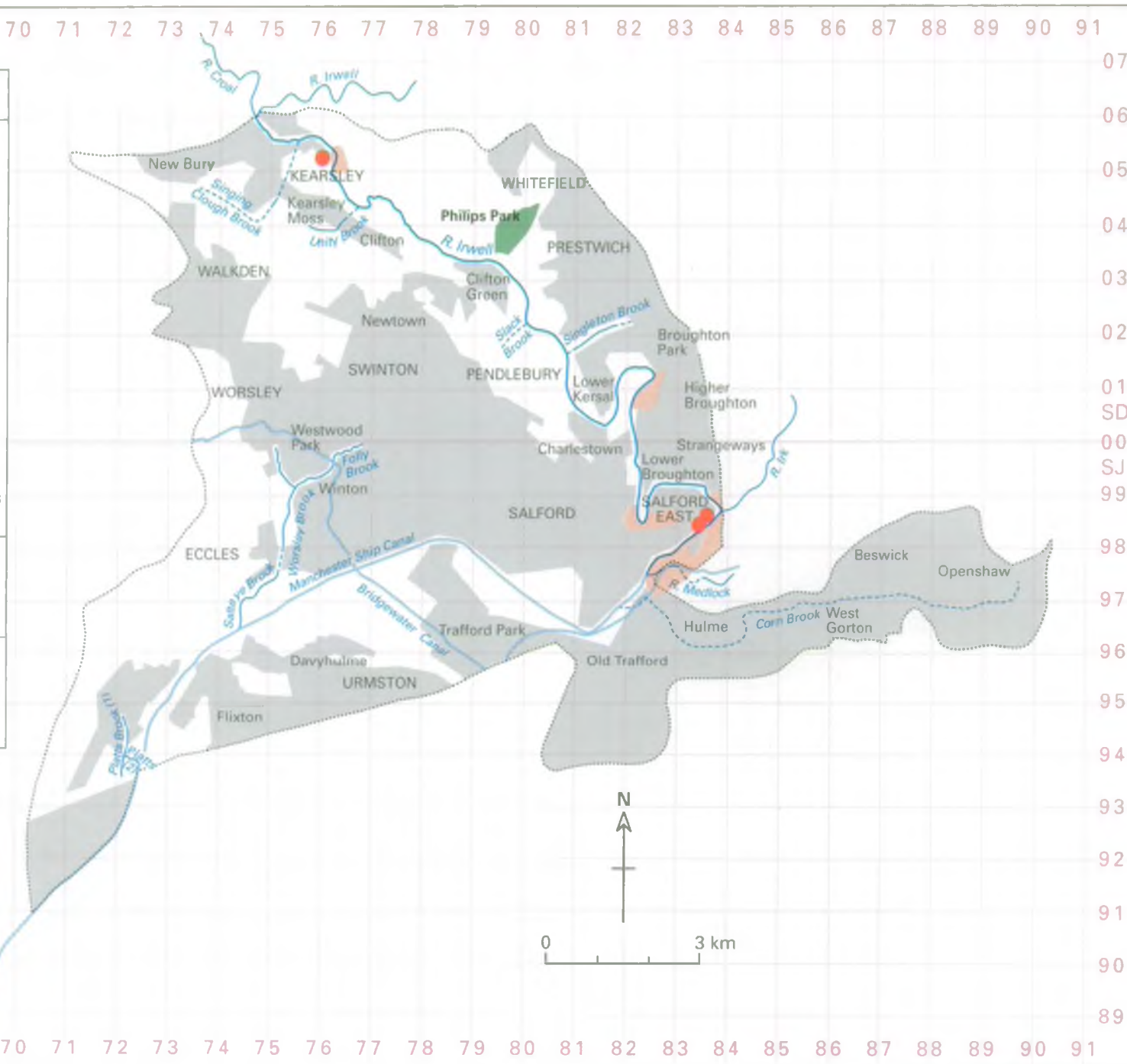
June 1994

Map 13



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2.11 LANDSCAPE AND HERITAGE (MAP 13)

2.11.1 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.

2.11.2 Local Perspective

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

The Lower Irwell is the most developed sub-catchment within the Irwell Catchment area and shows the pressures of past and present land uses.

Of the 29km of "main river" (excluding Corn Brook and Manchester Ship Canal), 86% runs through developed areas. Corn Brook is culverted for approximately 95% of its length, with no major sections through open space.

There are many opportunities for enhancement with the redevelopment of derelict sites.

The open and large scale industrial landscape alongside the Manchester Ship Canal has been highlighted as an area for enhancement by the Red Rose Community Forest team.

A major NRA Flood Defence scheme on the Lower Irwell will undertake works to improve riverside wildlife and amenity value.

In the Lower Irwell area, excluding Corn Brook and Manchester Ship Canal, only 10% of the "main river" length is bounded by woodland on one or both banks. Tree planting should be encouraged where appropriate.

The archaeological interest of the area is complex with many potential sites still undiscovered. The catchment contains three Scheduled Ancient Monument sites.

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

2.11.3 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.

2.11.4 Environmental Requirements

Water Quality:

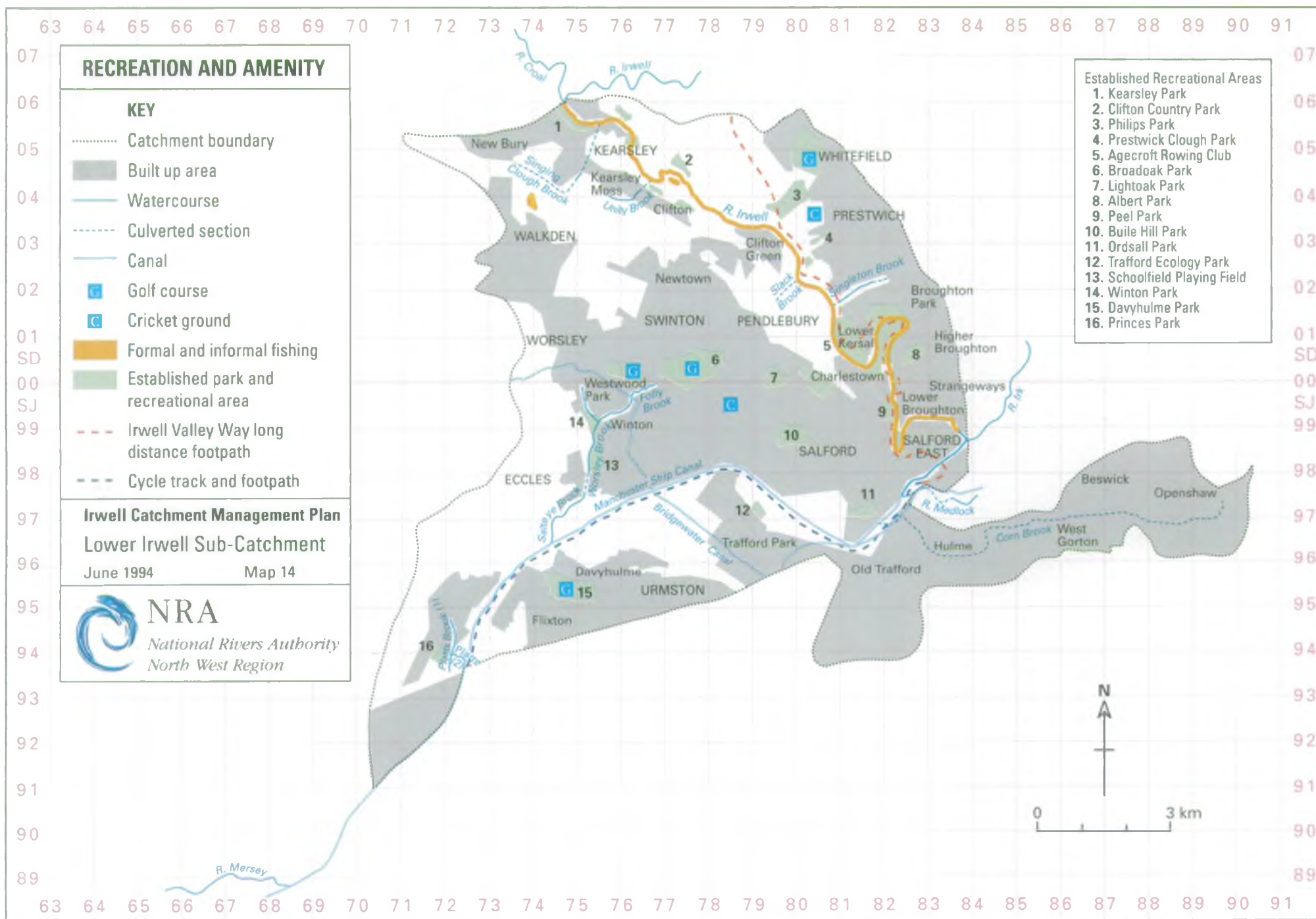
- To be aesthetically acceptable, that is, water to be free from surface films, extraneous floating material, discolouration and unpleasant odours.
- Not to deteriorate to a level such that sensitive heritage sites lose their interest.

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.



2.12 RECREATION AND AMENITY (MAP 14)

2.12.1 General

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

2.12.2 Local Perspective

There are several well established recreational areas, playing fields, public open space, cricket and football grounds adjacent to the lower stretches of the River Irwell and its tributaries which increase the overall amenity value of the watercourses. Many of the larger recreational areas, such as golf courses, are located some distance from the watercourses.

Clifton Country Park is a popular recreational area situated adjacent to the right bank of the River Irwell and provides attractive woodland walks, industrial archaeology, fishing, orienteering, horse riding and cycling facilities.

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

In the downstream areas much of the surrounding land is urbanised with residential development giving a general low amenity value and recreational interest. However, occasional pockets of open space are used for informal recreation.

Besides the availability of short footpaths, public access is well catered for. There is a long distance footpath, approximately 30 miles in length, which follows the river valley known as the Irwell Valley Way and brings the public into close proximity of the water environment. There is also a cycle track and public footpath which follows the Manchester Ship Canal.

Occasional stretches of the river are used for canoeing, and rowing is currently carried out on the river at Agecroft.

Still waters and canal lengths throughout the catchment are used for angling, pond dipping and general educational uses.

2.12.3 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.

2.12.4 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 and 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.

2.13 ANGLING

2.13.1 General

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

2.13.2 Local Perspective

Currently both informal and formal angling is carried out throughout the catchment. There are numerous small still waters and lengths of canal, within the catchment area, that provide pleasure anglers with good quality coarse fishing.

There are several local angling bodies that control fishing along stretches of the river and still waters. Farnworth and District Angling Club have the fishing rights at Blackleach Reservoir, currently under Salford City Council ownership. Both Lord Nelson Angling Club and Broughton Angling Club control fishing at intermittent points along the lower lengths of the River Irwell.

2.13.3 Objectives

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

2.13.4 Environmental Requirements

Water Quality:

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

Water Quantity:

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

Physical Features:

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

FLOOD DEFENCE: OBJECTIVES

KEY

- Catchment boundary
- Built up area
- Main river
- - - Ordinary watercourse
- - - Culverted section
- Canal
- ▶ Construct access ramps for river maintenance
- Improvement works
- ▨ Proposed site for flood basins

Irwell Catchment Management Plan

Lower Irwell Sub-Catchment

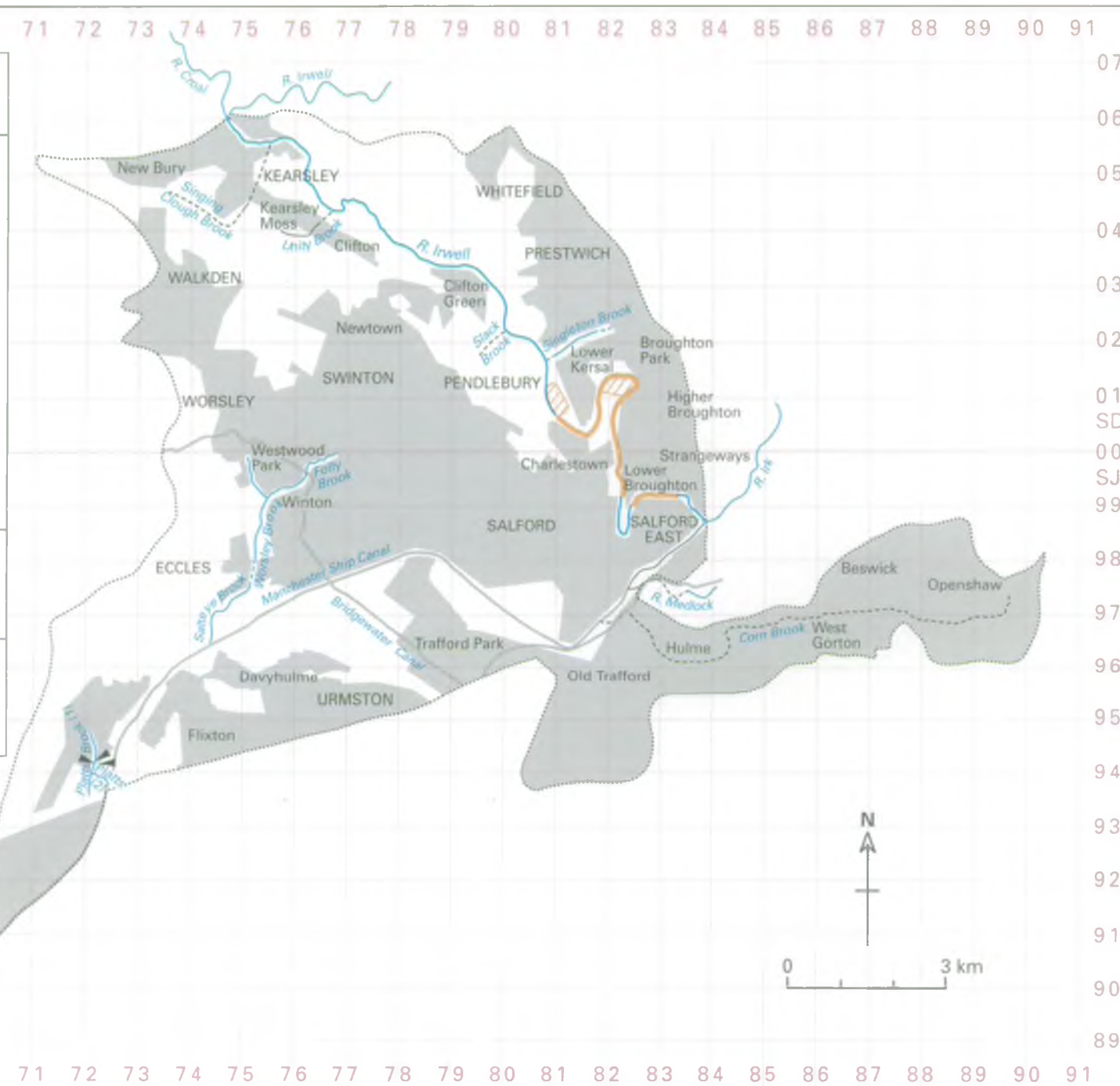
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Map 16



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FLOOD DEFENCE: RIVER CORRIDOR LAND USE PLAN

KEY

- Catchment boundary
- Built up area
- Main river
- - - Ordinary watercourse
- - - Culverted section
- Canal
- Urban
- Semi - urban
- Rural

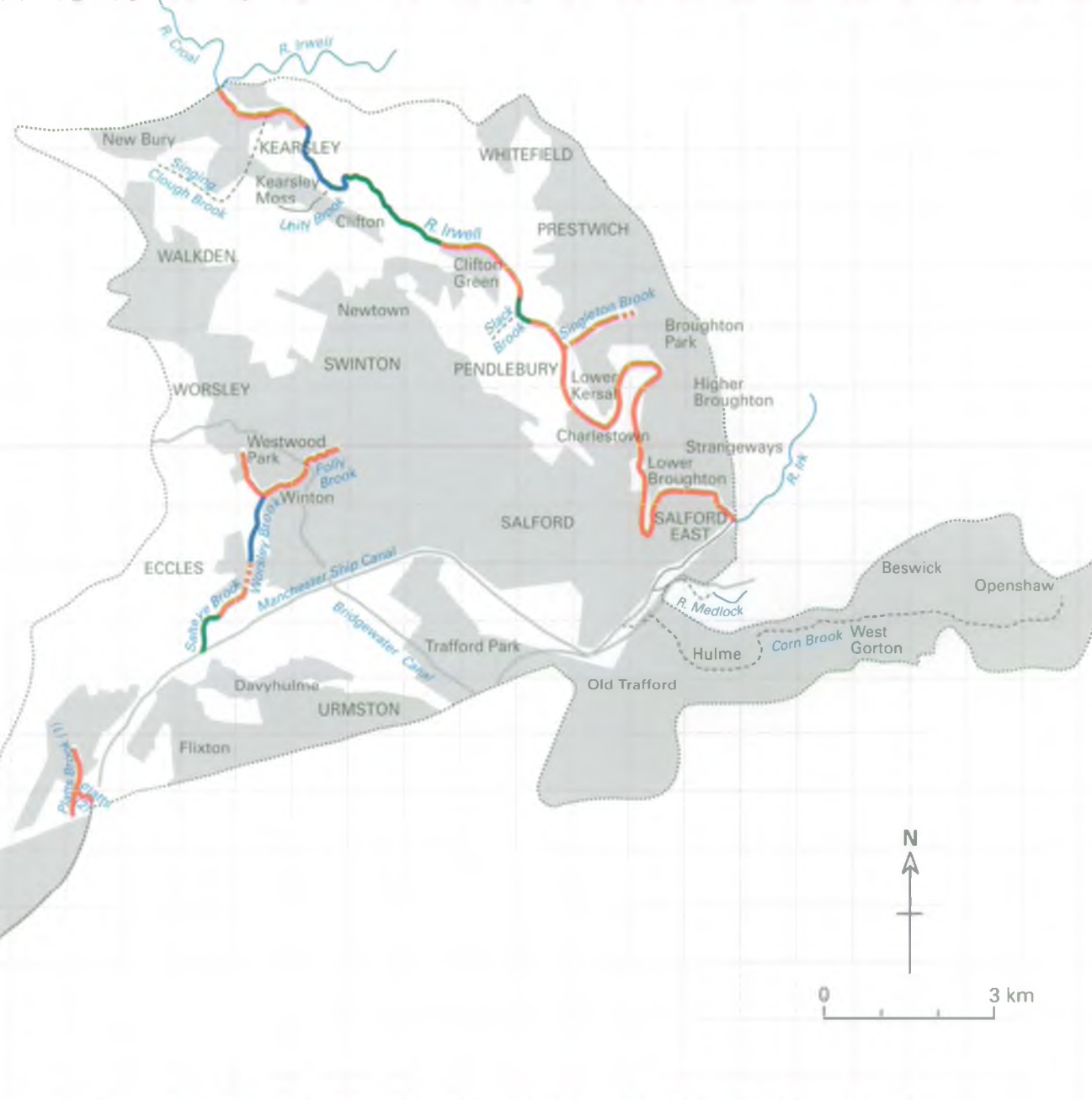
Irwell Catchment Management Plan Lower Irwell Sub-Catchment

June 1994

Map 15



NRA
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North West Region



0 3 km

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 targets for the catchment:

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

3.2 WATER QUANTITY OBJECTIVES

3.2.1 General

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

3.2.2 Objectives

Water Abstraction:

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

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

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

Public Water Supply:

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

Surface Waters:

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

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

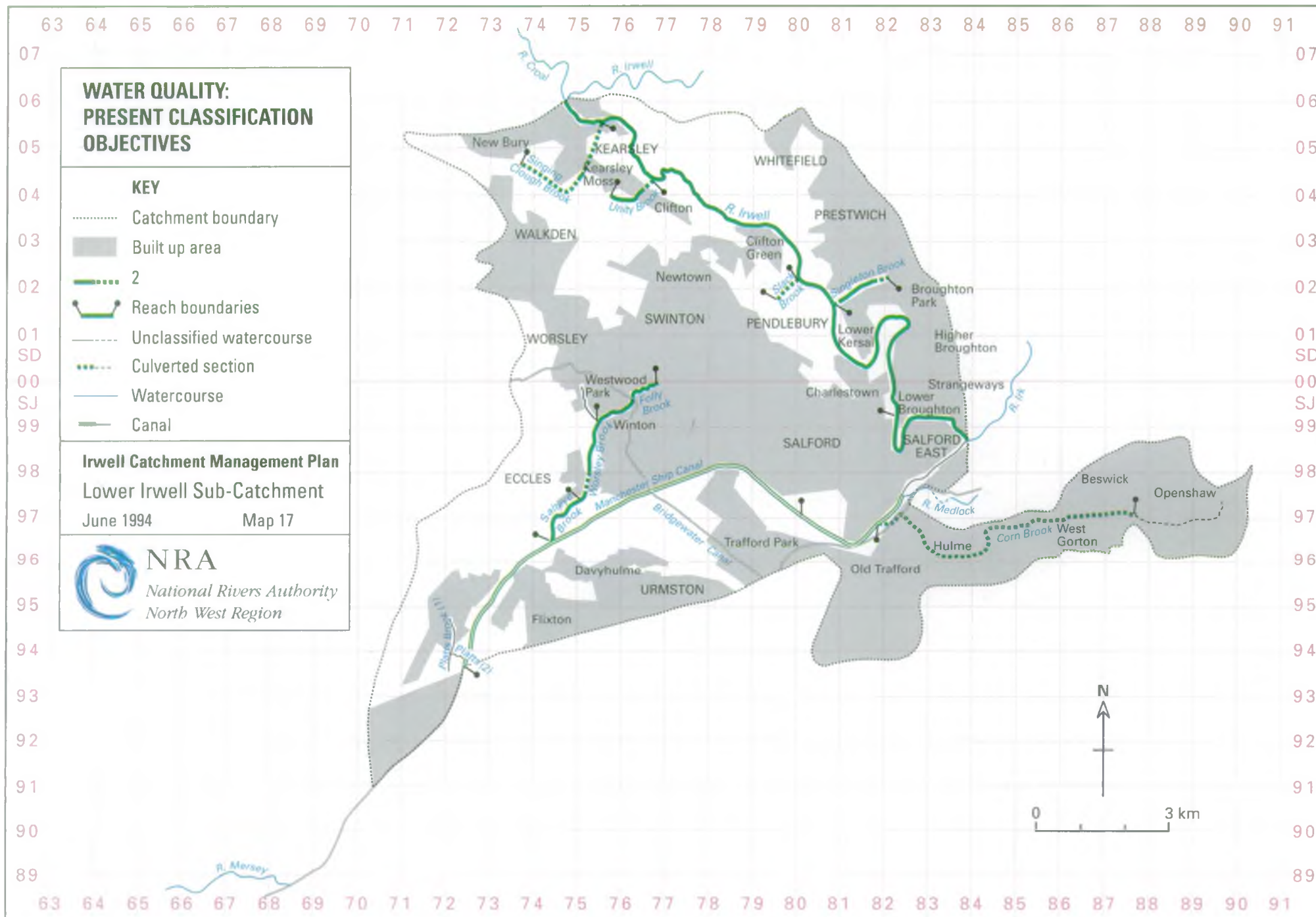
Local Hydrometric Objectives:

The hydrometric information gathered in the Lower Irwell Catchment has two principal uses within the NRA. Firstly, to provide warning of potential flooding downstream in the Irwell floodplain by monitoring levels and rainfall. Secondly, to provide river level information for water quality management for this heavily industrialised catchment.

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

Groundwaters:

In dry/drought summer conditions, spring flow 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 (MAPS 17 & 18)

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

3.3.1 Water Quality Classification

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

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

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

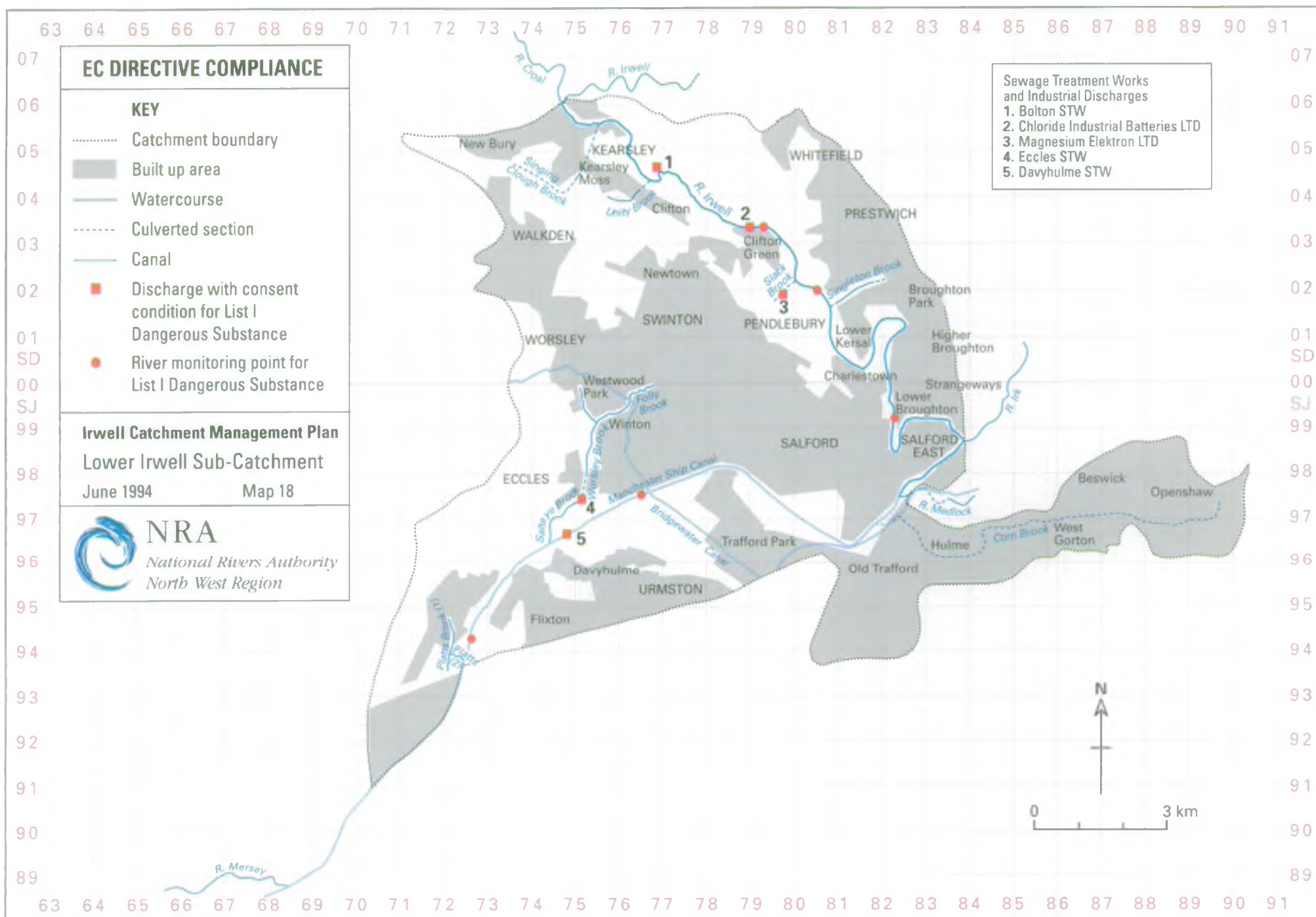
Watercourses are assigned to Class on the basis of the chemical parameters, dissolved oxygen, Biochemical Oxygen Demand (BOD) and ammonia with due regard to the results of monitoring of benthic invertebrate fauna.

In 1979 stretches of watercourse throughout England and Wales were defined and targets, Long Term Objectives (LTOs) or River Quality Objectives (RQOs), in terms of the NWC Classification system assigned to them. The minimum target assigned was achievement of Class 2 quality which should support a coarse fishery. The target achievement date was 2010 with an emphasis on eliminating Class 4 watercourses by 2000. Incorporated within this is the policy of no deterioration in the quality of controlled surface waters. Some amendments have been made to the stretch definitions since 1979 and these are included for the purposes of this report.

There are 11 defined classified reaches within the Lower Irwell 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 (Map 18)

Two Directives issued by the EC have implications for water quality in the Lower Irwell Catchment.

a) Directive on Dangerous Substances in Water

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

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

The locations of river monitoring points and of discharges with consent conditions for Dangerous Substances in the Lower Irwell Catchment are shown on Map 18.

b) Directive on Urban Wastewater Treatment

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

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

However, the requirement that collecting systems (the sewerage network) shall be designed, constructed and maintained in accordance with best technical knowledge not entailing excessive costs specifically regarding the limitation of pollution of receiving waters due to storm (and emergency) overflows presents very significant objectives to be met. Over 140 overflows have been identified within the Lower Irwell 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 effect 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

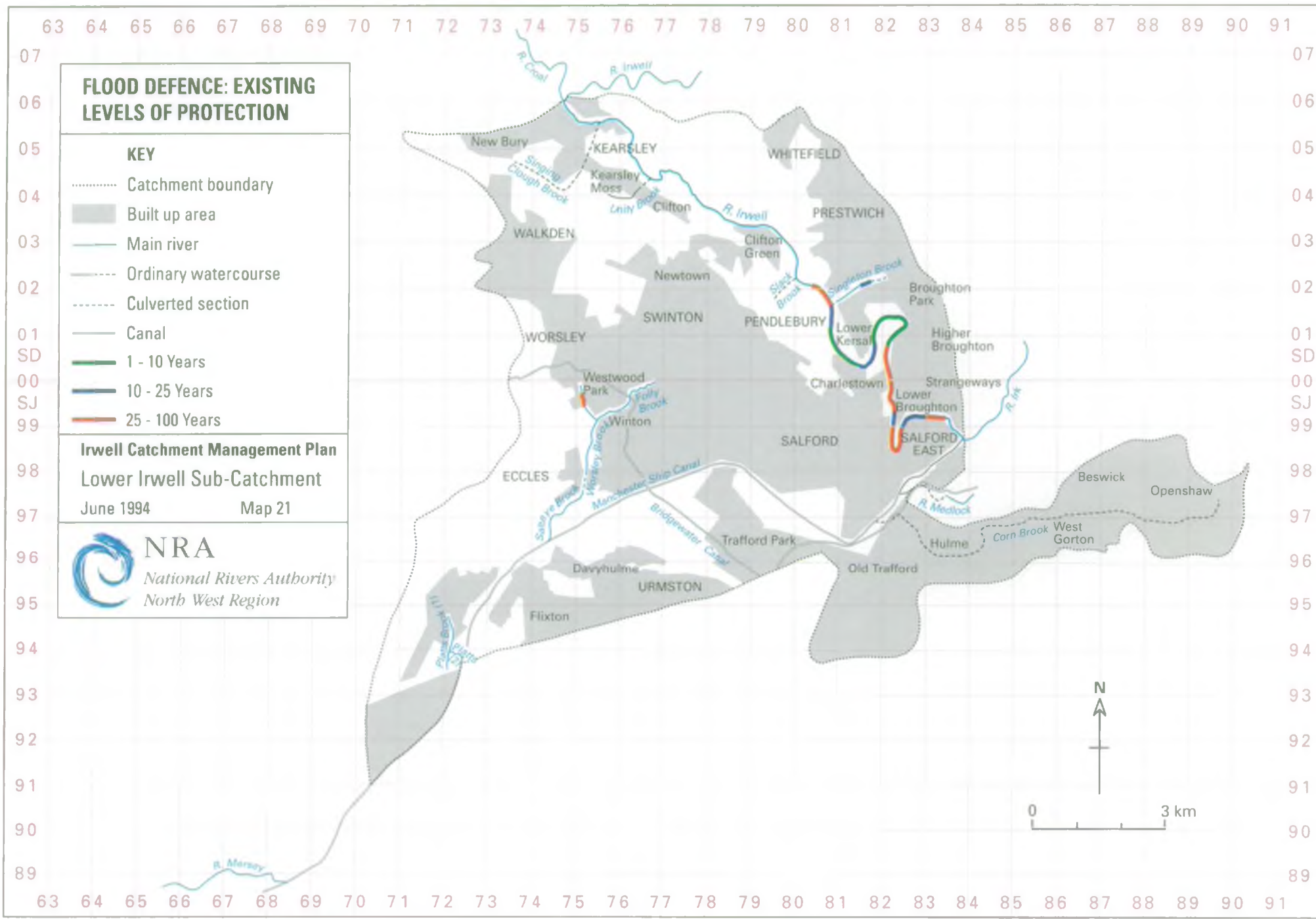
- Further, enhance and promote the natural beauty of the water environment.
- Safeguard those man-made features of the riverine environment that are of archaeological, historic, aesthetic or conservation value. For example, weirs, stone walls, mill races and old industrial buildings.

Recreation and Amenities

- 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

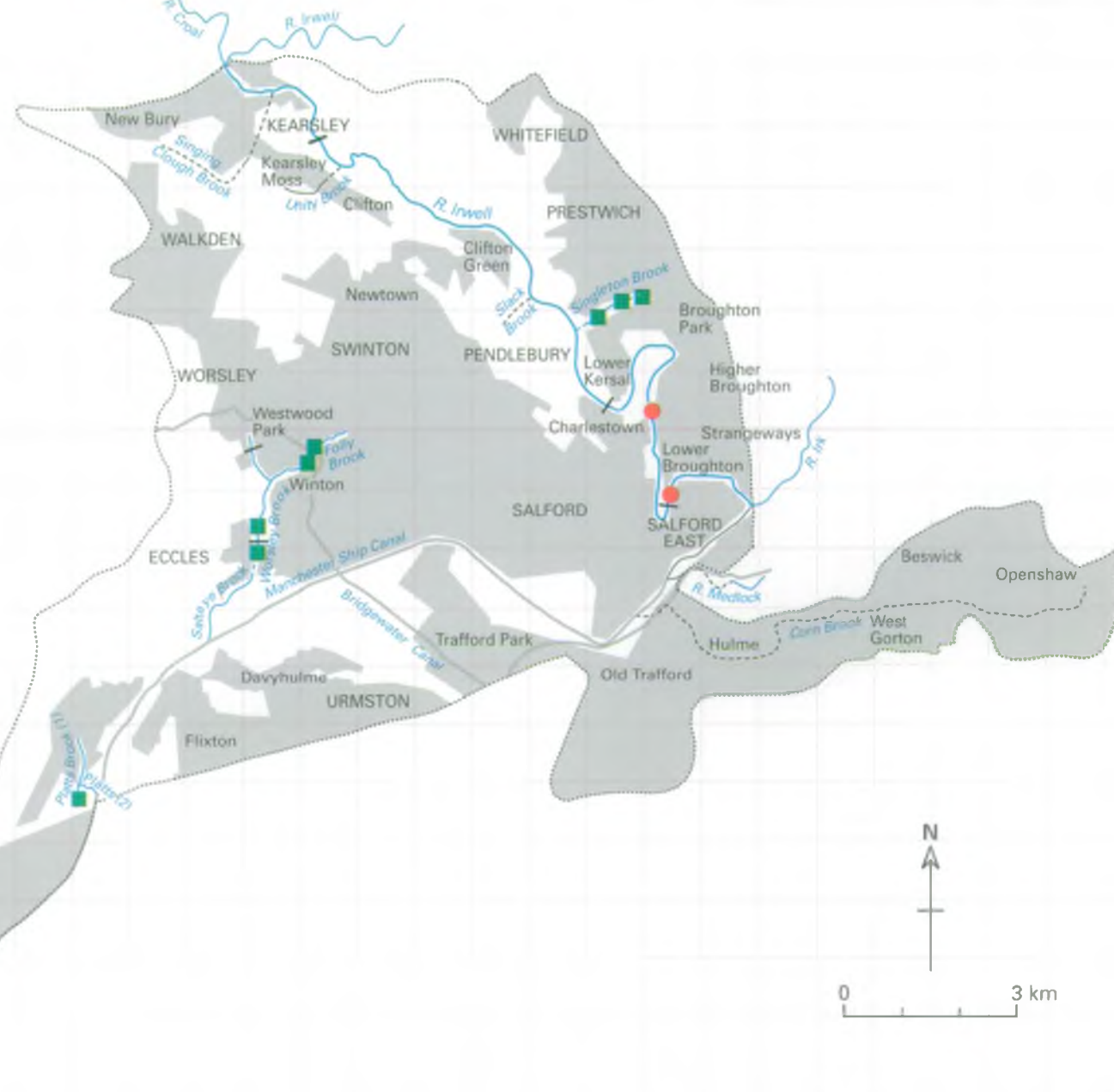
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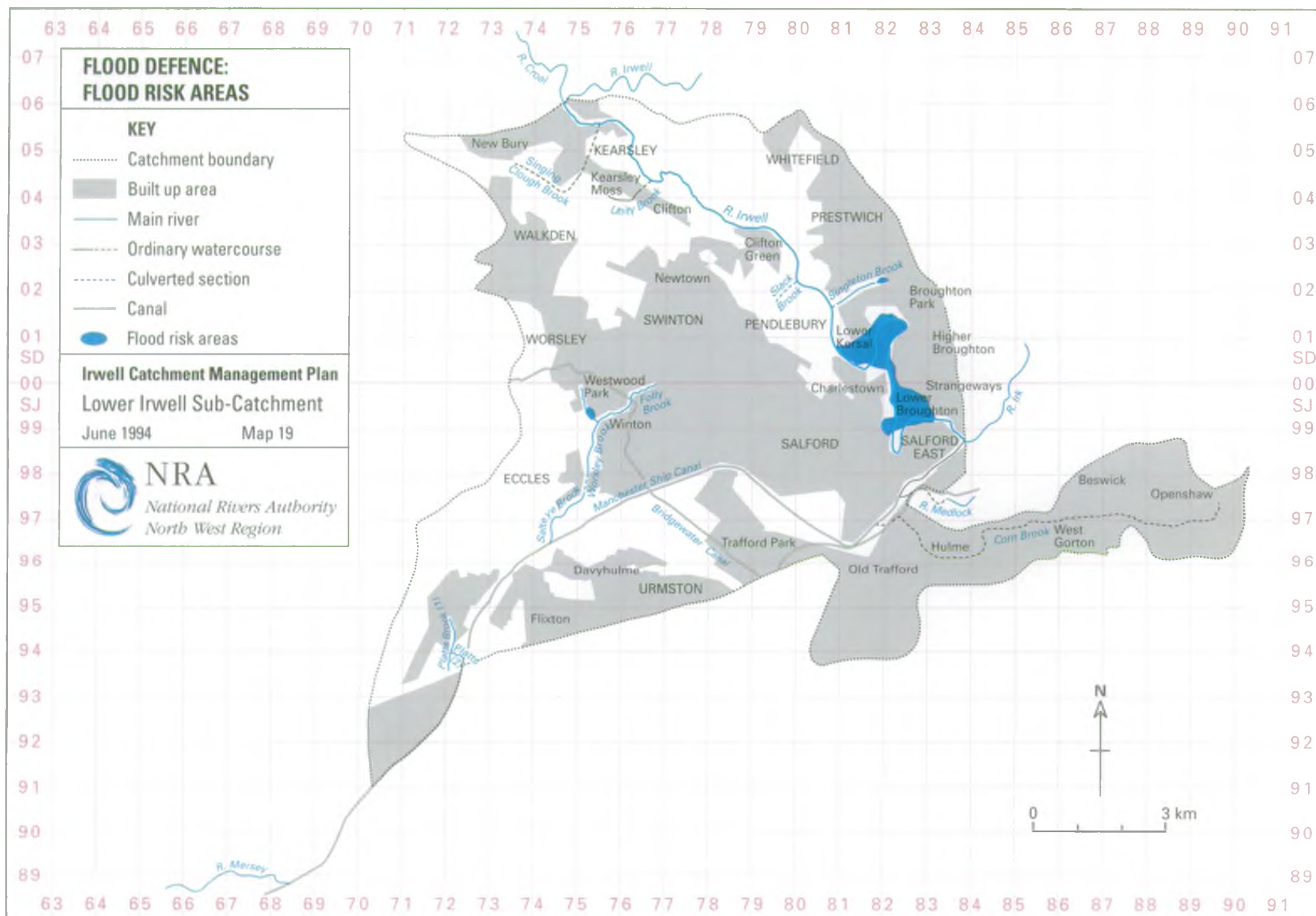
- Catchment boundary
- Built up area
- Main river
- Ordinary watercourse
- - - - - Culverted section
- Canal
- Weir/W.L. Control structure
- River Gauging Station
- Riparian owned debris screen, cleaned by NRA on a best endeavours basis

Irwell Catchment Management Plan
Lower Irwell Sub-Catchment
June 1994 Map 20



NRA
National Rivers Authority
North West Region





4. CURRENT STATE OF CATCHMENT

4.1 STATE OF CATCHMENT : FLOOD DEFENCE (MAPS 19, 20 & 21)

4.1.1 General

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

Having identified the need for, and standard of, future flood defence works required, it is possible 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. Issue CW18 is dealt with in Section 4.3.3 in this document.

b) Site Specific Issues

Issue SS10 Singleton Brook - Prestwich

Risk of flooding to factory units if regular maintenance not carried out. Owners should be encouraged to improve the existing culvert when re-development of the area is carried out.

Issue SS11 River Irwell - Lower Kersal and Lower Broughton, Salford

Flooding problems have been identified on the River Irwell as it passes through Salford. At present the existing level of protection varies between 1 in 40 and 1 in 5 years. A capital scheme is proposed to raise the level of protection up to 1 in 100 years. This will involve channel improvements and construction of two flood storage basins.

Issue SS12 River Irwell - Adelphi Weir, Salford

An existing gauging station at Adelphi Weir is continually being vandalised. It is proposed to replace it with a manhole arrangement.

Issue SS19 Worsley Brook - Alder Forest

A scheme to prevent blockage to the existing culvert beneath Alder Forest Road has been carried out but requires continued maintenance to prevent further flooding risk.

Issue SS21 Folly Brook - Eccles

Regular maintenance required to clear debris from twin culverts beneath Rocky Lane to prevent risk of flooding.

Issue SS22 Folly Brook - Monton

A debris screen fitted to a culvert located at Worsley Golf Club requires regular cleaning to avoid blockages, which could result in flooding to the club house and golf shop.

Issue SS23 Folly Brook - Monton

The inlet to the culvert which passes beneath the Bridgewater Canal, has a dilapidated screen which regularly blocks and may cause flooding to property and parkland. Responsibility for cleaning the screen rests with the riparian owner(s). At present there is a dispute as to ownership.

Issue SS24 Folly Brook - Eccles

Access to Folly Brook as it passes between Parrin Lane and Napier Road is required twice a year to clear debris. Access is however severely restricted due to the proximity of housing.

Issue SS26 Worsley Brook - Eccles

Upstream of the twin culverts which pass beneath the M63, a bank slip to the motorway slip road has occurred, which could possibly cause a blockage to the channel upstream of the culverts and result in flooding.

Issue SS28 Salteye Brook - Eccles

Items of scrap from an adjacent yard are repeatedly deposited on the river banks which could create a flood risk.

Issue SS30 Access Ramps

Access ramps are to be provided at four locations in the catchment. Three ramps are to be situated in Irlam on the banks of Platts Brook, and one ramp adjacent to the culverted section of Salteye Brook as it passes beneath the M63 motorway.

4.2 STATE OF THE CATCHMENT : WATER QUANTITY

4.2.1 General

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

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

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

4.2.2 Local Hydrometric Network

River Level Recording:

In the Lower Irwell Catchment there are three level monitoring stations, two being on the River Irwell itself. At Manchester Racecourse, in north Salford, the station records date from 1941, which measures levels for flood warning management. A further 1.5 miles downstream at Adelphi Weir, north of Salford City centre, the records start from 1935, measuring river levels and flows for water quality management. On Worsley Brook at Eccles records started during 1969, which measures levels for water quality management.

Rainfall Monitoring:

There are three raingauge sites within the Lower Irwell Catchment monitored by the NRA. Two of these sites are tipping bucket sites measuring daily totals and intensities; one site can be interrogated by the Regional Communications System for flood warning purposes. All three sites have standard raingauges recording daily totals only.

4.2.3 Issues Identified

a) Catchment Wide Issues

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

There are no catchment wide issues relating to Water Quantity in the Lower Irwell Catchment.

b) Site Specific Issues

Issue SS12 River Irwell - Adelphi Weir, Salford

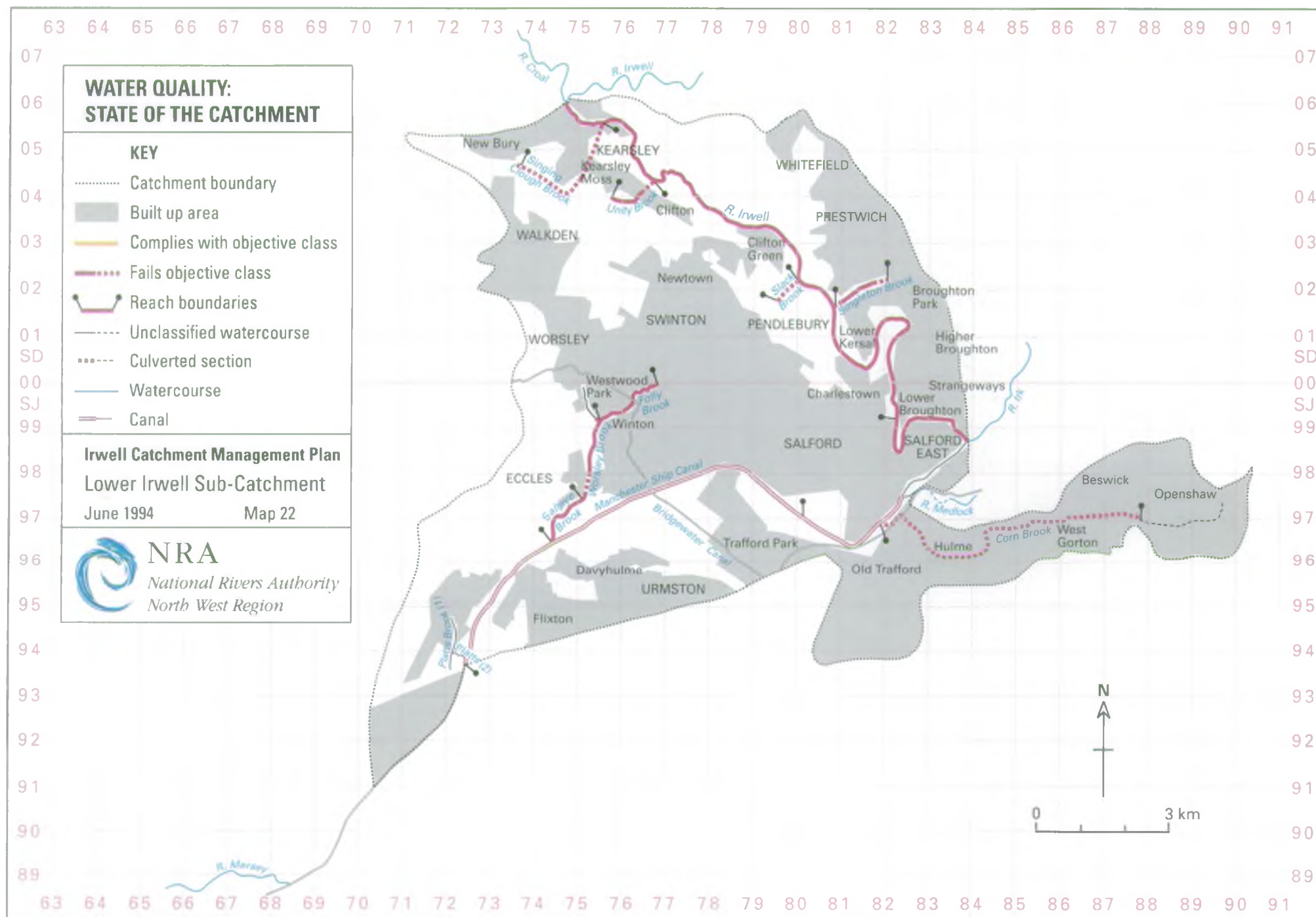
The River Gauging Station at this site has been repeatedly vandalised in recent times.

Issue SS16 Trafford Park Groundwater Quality

In the past, heavy industrial abstraction has been concentrated in Trafford Park resulting in low water levels and associated salinity problems. The decline of heavy industry in the area over recent years has reduced abstraction and allowed some recovery in water levels. However, resources are effectively fully committed in this area and significant increases in abstraction would not be permitted in Trafford Park.

Issue SS27 Worsley Brook - River Gauging Station

Stilling Basin design has resulted in two fatalities of children in the last 15 years due to unseen depth. Fencing has been repeatedly vandalised allowing access to the water despite the best efforts of the NRA and Salford City Council.



4.3 STATE OF THE CATCHMENT : WATER QUALITY (MAP 22)

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

4.3.1 Water Quality Classification

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

This assessment of compliance with the Long Term Objectives is on the basis of the NWC class derived for the calendar year 1993. Of the 11 reaches in the Lower Irwell Catchment all 11 fail to meet their Long Term Objectives. This is illustrated on Map 22. 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	0.0	0.0
1B	0.0	0.0
2	0.0	49.5
3	29.2	-
4	20.3	-

Lengths in Km

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

No targets set as yet.

4.3.2 EC Directives

a) Directive on Dangerous Substances in Water

List I

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

No failures of compliance were reported.

List II

There are no monitoring points for List II substances in the Lower Irwell Catchment.

b) Directive on Urban Wastewater Treatment

NRA North West Region undertook an assessment exercise in 1993 of all identified storm and emergency overflows on sewerage networks within the region. Within the Lower Irwell Catchment of the over 140 overflows identified more than 70 were highlighted as unsatisfactory with regard to their impact on the receiving watercourse. Their effect is raised under many 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 Poor Fishery within the Lower Irwell Catchment

This is due primarily to prevailing poor water quality, and intermittent pollution events.

b) Site Specific Issues

Issue SS1 River Irwell - River Croal confluence to Salford University

Failure to achieve the present water quality classification objective for the classified reach. The tributaries, the River Croal and Slack Brook, as well as the upstream River Irwell have substantial impact on this reach. The final effluent from Bolton STW, numerous unsatisfactory sewer overflows and the trade effluent discharged from the Robert Fletcher Ltd premises are also significant in terms of the organic load.

Issue SS2 Singing Clough Brook - Worsley Road to the River Irwell.

The failure to achieve the present water quality classification objective for this reach has been attributable to the organic input discharged via a number of unsatisfactory sewer overflows. Also having a moderate impact on the water quality within this stretch is contaminated wet weather run-off and wrongly connected trade effluent from industrial units in the Walkden area. It is also felt that both motorway drainage and ochreous run-off are affecting the water quality of this stretch.

Issue SS3 Singing Clough Brook and Unity Brook

Aquatic invertebrate community severely impaired. Singing Clough Brook suffers primarily from the presence of ochreous deposits and, until recently, a number of foul water discharges. This coupled with the fact that it is culverted for most of its length has resulted in the severely impaired invertebrate fauna.

Unity Brook suffers from motorway run-off, in particular the presence of oil, and on occasions has been classed as lifeless.

Issue SS4 Unity Brook - Moss Lane to the River Irwell

Failure to achieve the present water quality classification objective for the classified reach. This stretch is significantly affected by motorway run-off. Also impacting upon this stretch is what appears to be naturally ochreous run-off and oil contamination from an as yet not fully defined source.

Issue SS5 River Irwell - downstream of Bolton STW

Aesthetic deterioration due to foam. Foam is caused by chemicals persisting through treatment at Bolton STW.

Issue SS7 Prestwich Clough Brook

Aesthetic deterioration of due to discolouration and deposited debris arising from storm sewage discharges. This tributary has been significantly affected by the excessive organic and debris inputs discharged via a number of unsatisfactory sewer overflows.

Issue SS8 Slack Brook - Lumns Lane to the River Irwell.

The failure to achieve the objective for this reach has been attributable to the organic input discharged via unsatisfactory sewer overflows many of which are located on unclassified tributaries, and also high organic inputs within tip leachate, which has emanated from the Carrington Lane tip site. The trade effluent produced by Magnesium Elektron Ltd., has very significant impact on the lower part of the reach.

Issue SS9 Singleton Brook - A56 to the River Irwell.

The failure to achieve the objective for this reach has been attributable to the organic input discharged via unsatisfactory sewer overflows, and also as a consequence of what appears to be naturally occurring ochreous run-off.

Issue SS13 River Irwell/Manchester Ship Canal - Salford University to Salford Docks

The failure to achieve the objective for this reach has been attributable to the organic input discharged via numerous unsatisfactory sewer overflows, and the impact of tributaries, the River Irk and the River Medlock and the River Irwell upstream.

Issue SS14 Corn Brook - Openshaw to the Manchester Ship Canal

Failure to achieve the present water quality classification objective for the classified reach. This stretch appears to have been seriously affected by severe organic pollution, of as yet unknown origin. The failure to achieve the objective for this reach has also been attributed to the organic input discharged via unsatisfactory sewer overflows.

Issue SS15 Manchester Ship Canal - Salford Docks to the River Mersey.

The failure to achieve the objective for this reach has been attributable to the organic input discharged within the final treated effluent of Davyhulme STW, and numerous unsatisfactory sewer overflows. The upstream River Irwell also has a significant impact. Salford STW is perceived to have some, possibly significant influence.

Issue SS17 Manchester Ship Canal - downstream of Davyhulme STW

Aesthetic deterioration due to colour and foam. Chemicals causing colour and foam persist through the treatment process at Davyhulme STW.

Issue SS18 Kempnough Brook - upstream of Old Warke Dam

Occasional aesthetic deterioration due to oil.

Kempnough Brook is affected as a consequence of spillages, and/or leakages at industrial sites finding their way into the watercourse.

Issue SS20 Folly Brook - former Swinton STW to Worsley Brook

The failure to achieve the objective for this reach has been attributable to the organic input discharged via unsatisfactory sewer overflows, entering Folly Brook itself, and also unclassified tributaries, especially Deans Brook. Also having a moderate impact on the water quality within this stretch has been drainage from industrial premises. Domestic misconnections also lead to discharges of organic material to this particular stretch of water.

Issue SS25 Worsley Brook - Folly Brook to Eccles STW.

The failure to achieve the objective for this reach has been attributed to the organic load from unsatisfactory sewer overflows and to the tributary Folly Brook.

Issue SS29 Worsley Brook - Eccles STW to the Manchester Ship Canal

The failure to achieve the objective for this reach has been attributable to the organic input discharged within the final treated effluent of Eccles STW and unsatisfactory sewer overflows. The upstream reach also has a major impact upon this reach.

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 diverted, culverted or restrained within walls and behind weirs. Many of the valleys have been tipped, often to the waters edge. Few reservoirs, mill lodges and ponds remain.

A range of natural, physical and geomorphological features persist. Some sections of river valley remain undeveloped and a few areas of flood plain have retained their natural character. Some 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. Issue CW18 is dealt with in Section 4.3.3 of this document.

There are no catchment wide issues relating to Physical Features in the Lower Irwell Catchment.

b) Site Specific Issues

Issue SS6 Clifton Valley

Urban dereliction associated with watercourses lowers the public's perception of a river's value. This is a particular problem in Clifton Valley. The LIVIA project aims to improve the local landscape and employment opportunities. It is a partnership between the City Action Team, the City of Salford and other public agencies, together with private sector concerns including representatives of the businesses in the Valley, with the Groundwork Trust as operating agency.

Issue SS11 River Irwell - Lower Kersal and Lower Broughton, Salford.

External consultants have been employed to prepare a full Environmental Statement for the proposed Flood Alleviation Scheme on this length of the River Irwell. Through this the NRA seeks to minimise environmental impacts by retaining features of interest or mitigating for unavoidable loss.

Flood storage areas can often be creatively landscaped to create valuable new wetland habitats. They can include reed beds, shallow scrapes for wading birds, areas of open water, rough grassland and scrub. It is important, however, that they do not adversely affect a habitat of existing high value.

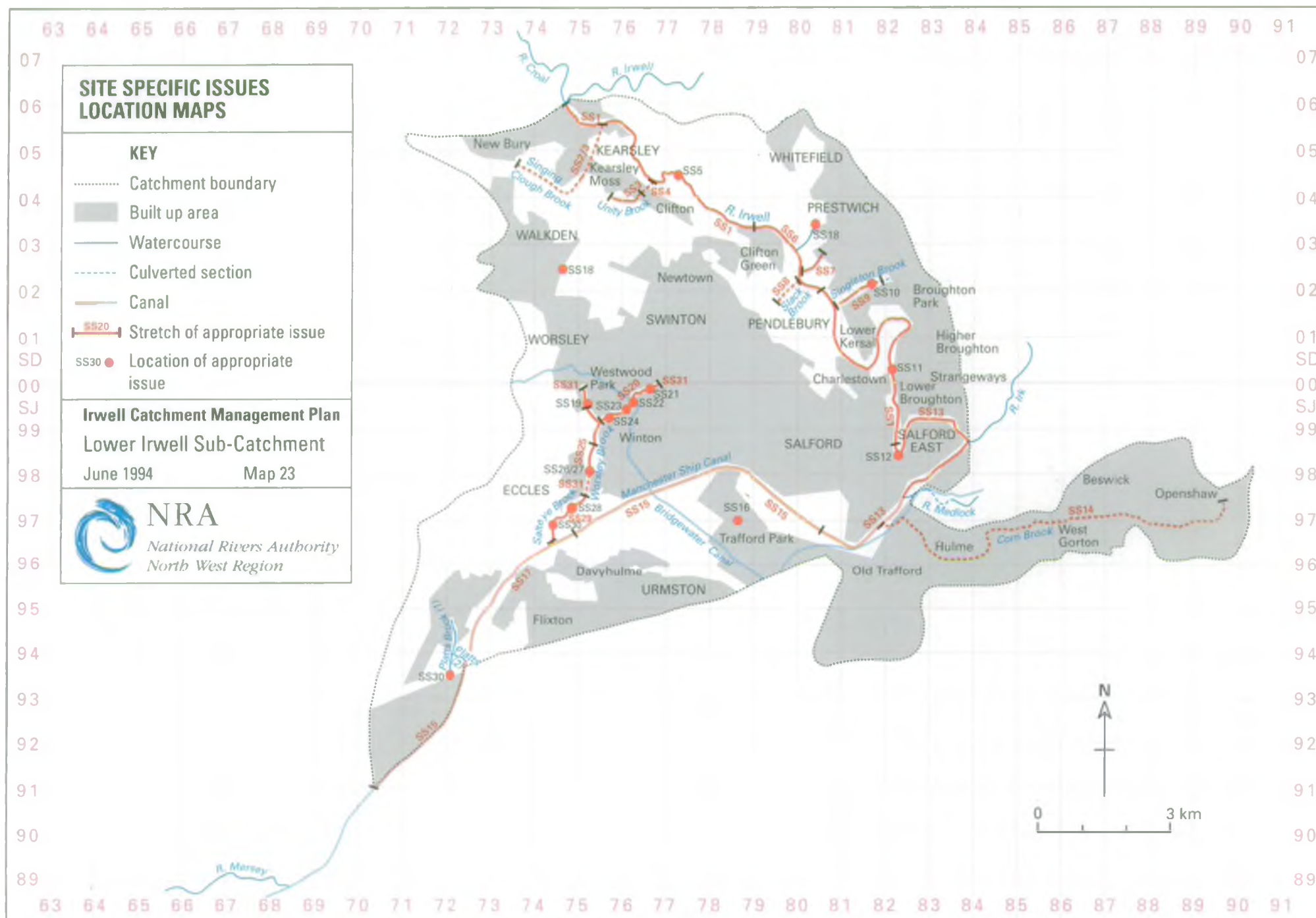
Issue SS14 Corn Brook - Openshaw to the Manchester Ship Canal

The number and extent of culverted sections, especially along Corn Brook, has fragmented the riverine environment and led to the loss of aquatic and river valley habitats. It also makes it extremely difficult to locate pollution problems.

Issue SS31 Disjointed countryside management and public access policy on Manchester Ship Canal tributaries.

Although there is an Irwell Valley warden service and a river valley project committee for the Lower Irwell itself, the tributaries and those of the Manchester Ship Canal are not included. There is no co-ordinated policy regarding countryside management and public access to bring together the various interests who are restricted to specific sites, areas or disciplines. There is a need to create interconnected public walkways and linear parks and enable a more informed and strategic response to development proposals.

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



5. ISSUES AND OPTIONS (MAP 23)

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 Chapter One River Irwell Introduction document (Section 4).

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). This is an additional Catchment Wide issue which relates specifically to the Lower Irwell Sub-Catchment.

ISSUE NO: CW18		Poor fisheries 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.
2. Natural colonisation and monitoring		NRA	Less Cost	Timescale may be unrealistic if there are very few fish in feeder tributaries.

5.3 SITE SPECIFIC ISSUES (MAP 23)

ISSUE NO: SS1	River Irwell - River Croal confluence to Salford University. Failure to achieve the present water quality classification objective for the classified reach.		
OPTIONS	Responsibility	Advantages	Disadvantages
Combination of the following: 1. Evaluation of the need for reduction in organic load from Bolton STW. 2. Reduction in organic and debris load from unsatisfactory sewer overflows.	NRA to undertake evaluation and promote within other regulatory influences capital expenditure by NWW Ltd as appropriate. NWW Ltd to undertake capital works.	Achievement of present water quality classification objective. Improvement to aesthetic and amenity value and fishery potential.	Cost to NWW Ltd and possibly customers.
	As a requirement of the EC Urban Wastewater Treatment Directive NRA/ NWW Ltd to agree improvements required to achieve satisfactory performance. NWW Ltd to undertake capital works	Achievement of present water quality classification objective. Improvement of amenity value and fishery potential. Reduction in debris load would result in a specific benefit in aesthetic quality.	Cost to NWW Ltd and possibly customers. Cont'd.

ISSUE NO: SS1 Cont'd.	River Irwell - River Croal confluence to Salford University. Failure to achieve the present water quality classification objective for the classified reach.		
OPTIONS	Responsibility	Advantages	Disadvantages
3. Evaluation of the need for reduction in organic load in the trade effluent discharge from Robert Fletcher Ltd	NRA to undertake evaluation. Robert Fletcher Ltd to undertake capital works.	Achievement of present water quality classification objective. Improvement to amenity and aesthetic value and fishery potential.	Possible cost to Robert Fletcher Ltd and possibly customers.

EC - European Community

Achievement of the present water quality classification objective also requires improvements in the River Irwell upstream of the reach, the River Croal Sub-Catchment and Slack Brook. The Upper Irwell Sub-Catchment is considered in Chapter 2 and the River Croal Sub-Catchment in Chapter 4. Slack Brook is considered under Issue SS8 of this Chapter.

Achievement of the present water quality classification objective for this reach has additional advantages for the downstream reach of the River Irwell. The downstream reach is considered under Issue SS13.

ISSUE NO: SS2	<p>Singing Clough Brook - Worsley Road to the River Irwell.</p> <p>Failure to achieve the present water quality classification objective for the classified reach.</p>		
OPTIONS	Responsibility	Advantages	Disadvantages
<p>Combination of the following:</p> <p>1. Reduction in organic and debris load from unsatisfactory sewer overflows.</p> <p>2. Improvement of operation of industrial units in Walkden to reduce contamination of wet weather run-off, occurrence of spillages and trade effluent wrong connections.</p> <p>3. Improvement of the quality of motorway run-off by retrospective development of treatment systems.</p>	<p>As a requirement of the EC Urban Wastewater Treatment Directive.</p> <p>NRA/ NWW Ltd to agree improvements required to achieve satisfactory performance.</p> <p>NWW Ltd to undertake capital works.</p>	<p>Achievement of present water quality classification objective.</p> <p>Improvement to amenity value of limited open stretch.</p>	<p>Cost to NWW Ltd and possibly customers.</p>
	<p>NRA to continue to monitor.</p> <p>NWW Ltd/Bolton MBC/ City of Salford Council to continue to undertake investigations.</p>	<p>Achievement of present water quality classification objective.</p> <p>Improvement to amenity value of limited open stretch.</p>	<p>Cost to NWW Ltd/ Bolton MBC and City of Salford Council.</p>
	<p>NRA to establish requirements Department of Transport to fund.</p>	<p>Achievement of present water quality classification objective.</p> <p>Improvement to amenity value of limited open stretch.</p>	<p>Cost to Department of Transport.</p> <p>Cont'd.</p>

ISSUE NO: SS2 Cont'd.	<p>Singing Clough Brook - Worsley Road to the River Irwell.</p> <p>Failure to achieve the present water quality classification objective for the classified reach.</p>		
OPTIONS	Responsibility	Advantages	Disadvantages
4. Reduction in impact of ochreous run-off from unknown sources.	NRA to pursue means of run-off control or site/ watercourse treatment.	Achievement of present water quality classification objective. Improvement to amenity value of limited open stretch.	Difficult to establish liability/funding with high risk of failure.

EC - European Community
MBC - Metropolitan Borough Council

ISSUE NO: SS3	<p>a) Singing Clough Brook b) Unity Brook</p> <p>Aquatic invertebrate community severely impaired.</p>		
OPTIONS	Responsibility	Advantages	Disadvantages
1. Improvement in water quality.	NRA/NWW Ltd/ Site owners.	Improvements of aquatic ecosystem.	Cost.

ISSUE NO: SS4	Unity Brook - Moss Lane 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> <ol style="list-style-type: none"> 1. Improvement of the quality of motorway run-off by retrospective development of treatment systems. 2. Reduction in frequency of occurrence of oil contamination from as yet undefined specific source via motorway drainage. 3. Reduction in impact of ochreous run-off from apparently natural sources. 	<p>NRA to establish requirement. DOT to fund.</p> <p>NRA/DOT to undertake extensive investigatory work to establish source and enforce improvement.</p> <p>NRA to pursue means of run-off control or site/ watercourse treatment.</p>	<p>Achievement of present water quality classification objective. Improvement to aesthetic and amenity value and fishery potential.</p> <p>Achievement of present water quality classification objective. Improvement to aesthetic and amenity value and fishery potential.</p> <p>Achievement of present water quality classification objective. Improvement to aesthetic and amenity value and fishery potential.</p>	<p>Cost to DOT.</p> <p>Difficulty of investigations with intermittent nature of discharge.</p> <p>Difficult to establish liability/ funding with high risk of failure.</p>

DOT - Department of Transport

ISSUE NO: SS5	River Irwell - downstream of Bolton STW Aesthetic deterioration due to foam.		
OPTIONS	Responsibility	Advantages	Disadvantages
1. Reduction in the impact of foam causing/ promoting agents in Bolton STW final effluent.	NRA to monitor and pursue reduction. NWW Ltd to provide appropriate additional treatment at STW and/or pursue trade effluent control.	Improvement to aesthetic and amenity value.	Cost to NWW Ltd and/or trade effluent dischargers.

STW - Sewage Treatment Works

ISSUE NO: SS6	Clifton Valley Degraded, old Industrial landscape.		
OPTIONS	Responsibility	Advantages	Disadvantages
1. Support the work of the LIVIA project.	NRA/LIVIA project/ Groundwork Trust/Local Authority.	Improve amenity value of Irwell through Clifton.	Resources.

LIVIA - Lower Irwell Valley Integrated Action

ISSUE NO: SS7	Prestwich Clough Brook Aesthetic deterioration due to discolouration and deposited debris arising from storm sewage discharges.		
OPTIONS	Responsibility	Advantages	Disadvantages
1. Reduction in the organic and debris load from unsatisfactory sewer overflows.	<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>	Improvement to the aesthetic and amenity value.	Cost to NWW Ltd and possibly customers.

EC - European Community

ISSUE NO: SS8	Slack Brook - Lumns Lane to the River Irwell. Failure to achieve the present water quality classification objective for the classified reach.		
OPTIONS	Responsibility	Advantages	Disadvantages
Combination of the following: 1. Reduction in organic and debris load from unsatisfactory sewer overflows mainly located on unclassified tributaries. 2. Reduction in organic load of tip leachate from Carrington Lane tip site. 3. Improvement of the quality of the trade effluent discharge from Magnesium Elektron Ltd.	As a requirement of the EC Urban Wastewater treatment Directive. NRA/ NWW Ltd to agree improvements required to achieve satisfactory performance. NWW Ltd to undertake capital works. NRA to continue to monitor water quality and enforce improvements. GMWDA to undertake necessary remedial measures NRA to review consent conditions. Magnesium Elektron Ltd to undertake capital works.	Achievement of present water quality classification objective. Improvement to aesthetic and amenity value. Achievement of present water quality classification objective. Improvement to aesthetic and amenity value. Achievement of present water quality classification objective. Improvement to aesthetic and amenity value.	Cost to NWW Ltd and possibly customers. Cost to GMWDA Cost to Magnesium Elektron Ltd and possibly customers.

GMWDA - Greater Manchester Waste Disposal Authority

Achievement of the present water quality classification objective for Slack Brook has additional advantages for the classified reach of the River Irwell into which it flows. The relevant reach is considered under Issue SS1.

ISSUE NO: SS9	Singleton Brook - A56 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> <ol style="list-style-type: none"> Reduction in the organic and debris load from unsatisfactory sewer overflows. Reduction in the impact of ochre from apparently natural source. 	<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 pursue means of run-off control or site/ watercourse treatment.</p>	<p>Achievement of the present water quality classification objective.</p> <p>Improvement to the aesthetic and amenity value and fishery potential.</p> <p>Achievement of the present water quality classification objective.</p> <p>Improvement to the aesthetic and amenity value and fishery potential.</p>	<p>Cost to NWW Ltd and possibly customers.</p> <p>Difficulty in establishing liability/ funding with high risk of failure.</p>

EC - European Community

ISSUE NO: SS10	Singleton Brook - Prestwich Risk of flooding to factory units.		
OPTIONS	Responsibility	Advantages	Disadvantages
1. Construct diversion channel.	NRA	Improves existing level of flood protection.	Scheme cost. Some environmental impact.
2. Maintenance of existing culverts and apply development control policy.	NRA/Local Authority/ Developers	Maintains existing level of flood protection.	Maintenance costs. Increased development costs.

ISSUE NO: SS11	River Irwell - Lower Kersal and Lower Broughton, Salford. Flooding to large areas of Salford, including industrial and domestic properties.		
OPTIONS	Responsibility	Advantages	Disadvantages
1. Provide flood storage basins. Improve channel capacity by raising existing defences.	NRA	Provides 1:100 year level of flood protection.	Large scheme costs. Some visual and environmental impact.
2. Improve channel capacity by raising existing defences.	NRA	Improves existing level of flood protection. Lower works cost.	Will only provide a 1:40 year level of flood protection. Some visual and environmental impact.

ISSUE NO: SS12	River Irwell - Adelphi Weir, Salford. Refurbishing of gauging station.		
OPTIONS	Responsibility	Advantages	Disadvantages
1. Maintain existing structure.	NRA	Least cost option.	Ongoing maintenance costs. Continued risk of station becoming inoperative.
2. Replace with manhole structure.	NRA	Reduce risk of vandalism	Scheme costs.

ISSUE NO: SS13	River Irwell/Manchester Ship Canal - Salford University to Salford Docks. Failure to achieve the present water quality classification objective for the classified reach.		
OPTIONS	Responsibility	Advantages	Disadvantages
1. Reduction of the organic and debris load from unsatisfactory sewer overflows	As a requirement of the EC Urban Wastewater Treatment Directive. NRA/ NWW Ltd to agree improvements required to achieve satisfactory performance. NWW Ltd to undertake capital works	Achievement of present water quality classification objective. Improvement to amenity value and fishery potential. Reduction in the debris load would result in a specific benefit in aesthetic quality.	Cost to NWW Ltd and possibly customers

EC - European Community

Achievement of the present water quality classification objective also requires improvements to the River Irwell upstream and the River Irk and River Medlock Sub-Catchments. The upstream reach of the River Irwell is considered in Issue SS1 and the Irk and Medlock Sub-Catchments in Chapters 5 and 6 respectively.

Achievement of the present water quality classification objective has additional advantages for the downstream reach of the River Irwell. This is considered in Issue SS15.

ISSUE NO: SS14	Corn Brook - Openshaw to the Manchester Ship Canal. 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. Elimination of occurrence of periodic severe organic pollution of unknown specific origin. 2. Reduction in the organic and debris load from unsatisfactory sewer overflows. 	<p>NRA to pursue investigation of source.</p> <p>Other agencies to participate in investigatory work.</p> <p>Industrial site owners to undertake capital works.</p> <p>As a requirement of the EC Urban Wastewater Treatment Directive.</p> <p>NRA/ NWW Ltd to agree improvements required to achieve satisfactory performance.</p> <p>NWW Ltd to undertake capital works.</p>	<p>Achievement of present water quality classification objective.</p> <p>Improvement to limited amenity and aesthetic value.</p> <p>Achievement of present water quality classification objective.</p> <p>Improvement to limited amenity and aesthetic value.</p>	<p>Cost to other agencies of investigation of intermittent source to culverted watercourse.</p> <p>Cost to industrial site owners of remedial measures.</p> <p>Cost to NWW Ltd and possibly customers</p>

EC - European Community

ISSUE NO: SS15	Manchester Ship Canal - Salford Docks to the River Mersey 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"> Reduction in the organic load from Davyhulme STW. Evaluation of organic load from Salford STW and reduction as appropriate. 	<p>NRA to review consent conditions and promote within other regulatory influences capital expenditure by NWW Ltd.</p> <p>NWW Ltd to undertake capital works.</p> <p>NRA to undertake evaluation and promote within other regulatory influences, capital expenditure by NWW Ltd as appropriate.</p> <p>NWW Ltd to undertake capital works as appropriate.</p>	<p>Achievement of the present water quality classification objective.</p> <p>Improvement to aesthetic and amenity value and fishery potential.</p> <p>Achievement of present water quality classification objective.</p> <p>Improvement of amenity and aesthetic value and fishery potential.</p>	<p>Cost to NWW Ltd and possibly customers.</p> <p>Possible cost to NWW Ltd and customers.</p> <p>Cont'd.</p>

ISSUE NO: SS15 Cont'd.	Manchester Ship Canal - Salford Docks to the River Mersey Failure to achieve the present water quality classification objective for the classified reach.		
OPTIONS	Responsibility	Advantages	Disadvantages
3. Reduction in organic and debris load from unsatisfactory sewer overflows.	<p>As a requirement of the EC Urban Wastewater Treatment Directive.</p> <p>NRA/ NWW Ltd to agree improvements required to achieve satisfactory performance.</p> <p>NWW Ltd to undertake capital works.</p>	<p>Achievement of present water quality classification objective.</p> <p>Improvement of amenity and fishery value.</p> <p>Reduction in debris load would result in a specific benefit in aesthetic quality.</p>	Cost to NWW Ltd and possibly customers.

EC - European Community

Achievement of the present water quality classification objective also requires improvements to the upstream reach of the River Irwell. This is considered under Issue SS13.

ISSUE NO: SS16	Trafford Park Groundwater Quality Saline groundwater due to historic over-abstraction.		
OPTIONS	Responsibility	Advantages	Disadvantages
1. No significant increase in abstraction to be permitted from groundwater sources.	NRA	Benefits to groundwater quality and existing abstractors.	May limit industrial and commercial regeneration. Cost of alternative source.

ISSUE NO: SS17	Manchester Ship Canal - downstream of Davyhulme STW. Aesthetic deterioration due to colour and foam.		
OPTIONS	Responsibility	Advantages	Disadvantages
1. Reduction in colour and foam associated with Davyhulme STW final effluent.	NRA to monitor and pursue reduction. NWW Ltd to achieve reduction by trade effluent control and/or treatment at STW.	Improvement to aesthetic and amenity value.	Cost to NWW Ltd and/or trade effluent dischargers.

STW - Sewage Treatment Works

ISSUE NO: SS18	Kempnough Brook - upstream of Old Warke Dam. Occasional aesthetic deterioration due to oil.		
OPTIONS	Responsibility	Advantages	Disadvantages
1. Reduction in frequency of occurrence of spillages and contamination of hardstanding on industrial estates.	NRA/NWW Ltd/ City of Salford Council to undertake inspections and investigations.	Improvement of aesthetic and amenity value and safeguard Worsley Woods SBI.	Cost to NWW Ltd and City of Salford Council.

SBI - Site of Biological Importance

ISSUE NO: SS19	Worsley Brook - Alder Forest On-going maintenance to silt trap and culvert.		
OPTIONS	Responsibility	Advantages	Disadvantages
1. Replace existing culvert with new culvert of adequate size.	NRA/Riparian Owner	Improves existing level of flood protection.	High scheme cost exceeds benefits of scheme.
2. Continued maintenance.	NRA	Maintains existing level of flood protection.	Debris blockage still possible.

ISSUE NO: SS20	Folly Brook - former Swinton STW to Worsley Brook. 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 unsatisfactory sewer overflows to Folly Brook and its unclassified tributaries especially Deans Brook</p> <p>2. Reduction in the impact of drainage from industrial sites.</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/NWW Ltd to undertake inspection and investigation work to identify risk sites.</p> <p>Industrial site owners to undertake remedial 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.</p> <p>Cost to NWW Ltd Cost to industrial site owners.</p> <p>Cont'd.</p>

ISSUE NO: SS22	Folly Brook - Monton Risk of flooding to Worsley Golf Club		
OPTIONS	Responsibility	Advantages	Disadvantages
1. Replace existing culvert with new culvert of adequate size.	NRA/Riparian Owner.	Improves existing level of flood protection.	Scheme cost may exceed benefits.
2. Continued maintenance of debris screen.	NRA	Maintains existing level of flood protection.	Debris blockage still possible.

ISSUE NO: SS23	Folly Brook - Monton Risk of flooding to property and park land.		
OPTIONS	Responsibility	Advantages	Disadvantages
1. Install replacement debris screen.	Riparian Owner(s)	Improves existing level of flood protection.	Scheme cost. Some visual and environmental impact.

ISSUE NO: SS24	Folly Brook - Eccles Access problems between Parrin Lane and Napier Road.		
OPTIONS	Responsibility	Advantages	Disadvantages
1. Continue present maintenance operations with restricted access.	NRA	Maintains existing level of flood protection.	High recurring maintenance costs.
2. Construct access ramp for maintenance.	NRA	Improves existing level of flood protection. Reduces maintenance costs.	High scheme cost. Difficulty in locating suitable site.

ISSUE NO: SS25	Worsley Brook - Folly Brook confluence to Eccles STW. Failure to achieve the present water quality classification objective for the classified reach		
OPTIONS	Responsibility	Advantages	Disadvantages
1. Reduction in the organic and debris load from unsatisfactory sewer overflows.	As a requirement of the EC Urban Wastewater Treatment Directive. NRA/NWW Ltd to agree improvements required to achieve satisfactory performance. NWW Ltd to undertake capital works.	Achievement of the present water quality classification objective. Improvement of the aesthetic and amenity value and fishery potential.	Cost to NWW Ltd and possibly customers.

EC - European Community

Achievement of the present water quality classification objective for this classified reach of Worsley Brook also requires improvements to Folly Brook. Folly Brook is considered under Issue SS20.

Achievement of the present water quality classification objective for this classified reach has additional advantages for the downstream reach of Worsley Brook. The downstream reach is considered in Issue SS29.

ISSUE NO: SS26	Worsley Brook - Eccles Bank slip adjacent to M63		
OPTIONS	Responsibility	Advantages	Disadvantages
1. Highlight problem to DOT and City of Salford Council.	NRA/DOT/City of Salford/	Improves existing level of flood protection.	Difficulty in getting parties responsible to carry out the required works.

DOT - Department of Transport

ISSUE NO: SS27	Worsley Brook - River Gauging Station Fatalities due to access problems caused by vandalism. Poor station record due to design.		
OPTIONS	Responsibility	Advantages	Disadvantages
1. Replace by low bed control or "V" notch.	NRA	Safety improvements Improved data.	Capital costs

ISSUE NO: SS28	Salteye Brook - Eccles Debris on river bank		
OPTIONS	Responsibility	Advantages	Disadvantages
1. 'Serve notice' to owner of scrap yard to remove debris.	NRA/Riparian owner	Improves existing level of flood protection.	
2. NRA removes debris and re-charge owners.	NRA	Improves existing level of flood protection.	

ISSUE NO: SS30	Access Ramps Platts Brook, Irlam and Salteye Brook, Eccles		
OPTIONS	Responsibility	Advantages	Disadvantages
1. Locations have been identified for the provision of access ramps.	NRA	Reduced cost of maintenance due to improved access.	Scheme cost

ISSUE NO: SS31	Disjointed countryside management and public access policy on Manchester Ship Canal tributaries		
OPTIONS	Responsibility	Advantages	Disadvantages
1. Co-ordinate the creation of a comprehensive policy for the whole sub catchment.	NRA Rights of Way Officers of Bury MBC & City of Salford Council, Countryside Management services, Groundwork Trust, Croal Irwell Valley Project Committee.	Improve recreational and wildlife value of river corridors. More strategic and informed development control.	Resource implications.

MBC - Metropolitan Borough Council

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