

MANCHESTER CITY COUNCIL

REPORT FOR INFORMATION

COMMITTEE: Physical Environment Overview and Scrutiny Committee

DATE: 6th March 2007

SUBJECT: Water quality in Manchester's rivers.

REPORT OF: Strategic Director, Neighbourhood Services

PURPOSE OF REPORT

To investigate how the water quality in local waterways is maintained and consider how the City Council can contribute to improving the quality of water.

RECOMMENDATIONS

That Members note the report.

FINANCIAL CONSEQUENCES FOR THE REVENUE BUDGET

None at present

FINANCIAL CONSEQUENCES FOR THE CAPITAL BUDGET

None at present

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BACKGROUND DOCUMENTS

Reports to the Physical Environment Overview and Scrutiny Committee:

- a) Waterways Strategy for Manchester October 2003
- b) Progress Report on the Waterways Strategy 8th March 2005

WARDS AFFECTED

All

IMPLICATIONS FOR KEY COUNCIL POLICIES

Anti Poverty	Equal Opportunities	Environment	Employment
No	No	Yes	Yes

1 Introduction

- 1.1 There have been significant improvements in river and canal water quality over the past 20 years. The majority of rivers in the city are generally of average to good quality, however there is room for improvement.
- 1.2 In recent years the potential of rivers to cause significant risk to life and damage to property through flooding has also come into sharp relief highlighting the need to manage river corridors and river networks in a more holistic way.
- 1.3 The EU Freshwater Fisheries Directive (FFD) was introduced in 1978 to improve the quality of rivers, and to set water quality standards to ensure that from source to sea, rivers are capable of supporting fish. Improvements made to the watercourses as a result of the Directive have increased the presence of fish in the city; for example there are now Salmon in the River Mersey.
- 1.4 The EC Water Framework Directive (WFD) is the most significant piece of water legislation of the past 30 years. The core environmental objectives of the WFD are to prevent deterioration of aquatic ecosystems and to restore polluted surface waters and groundwater to “good” ecological and chemical status by 2015. The Environment Agency is the authority charged with implementation of the Directive in England and Wales.
- 1.5 The main problems with water quality in Manchester occur upstream of the city boundaries. These include effluent emissions from wastewater treatment works (WwTW) and other water industry and industrial emissions. As such, partnership work with other authorities, United Utilities and the Environment Agency is key to improving Manchester’s water quality.
- 1.6 The five main sources of water pollution from within Manchester are urban diffuse pollution (run-off from roads, buildings and the built environment), storm outflows and other water industry emissions (e.g. where combined sewers emit to watercourses during intense rainfall), debris (both from littering/fly tipping and vegetation) and contaminated land, (where groundwater water leaches through contaminated land into watercourses, particularly culverted ones). Appendix 1 provides a summary of river quality across the city, as assessed by the Environment Agency. Given the urban location of the waterways, and the industrialised areas they pass through, a standard of ‘D’ could be considered average for this type of watercourse in the UK.

2 Manchester's Watercourses: a performance summary

- 2.1 The Environment Agency currently uses an A (very good) to F (bad) rating system for watercourses, based on a combined assessment of the rivers' biological (ability to support life) and chemical quality (organic chemical content and oxygen demand), the presence of nutrients (e.g. fertilizer, sewage) and aesthetic quality (litter, sheen/scum/foam, odour and colour). A watercourse that scores A-D (very good to fair) is classed as acceptable, which means that it has low levels of organic pollution, adequate levels of oxygen; and is capable of supporting a variety of invertebrates. 80% of Manchester's watercourses fall into this category. Implementation of the WFD is likely to result in changes to the current assessment method, but a revised method has yet to be developed. A summary of issues and actions for Manchester's main waterways is provided below. A table showing the performance of all Manchester's waterways is available in Appendix 1.
- 2.2 **River Irwell (E)**
The main impacts on water quality for the Irwell arise from industrial discharge and discharges from waste water treatment works (WwTW) at Rossendale, Bury and Bolton. Rochdale WwTW also discharges into the River Irwell via a major tributary, the River Roch.
- Works carried out under Asset Management Plan 4 (AMP4) at these wastewater treatment works to meet the requirements of the Urban Wastewater Treatment Directive (introduced in 1991) and the Freshwater Fisheries Directive together with improvements to the industrial discharge are expected to result in a major improvement in the water quality of the River Irwell as it enters Manchester.
- 2.3 **River Irk (D)**
Both Royton and Oldham sewage works impact on the Irk. United Utilities will be investing at these works to meet tighter ammonia standards, which should result in further improvements in water quality.
- 2.4 **River Medlock (C)**
The River Medlock is much improved since 1990. The main impact on the Medlock comes from Failsworth Sewage Works and the Agency has now set tighter ammonia standards to meet the requirements of the FFD.
- 2.5 **Moston Brook (F)**
The brook is affected by discharges of storm sewage during wet weather via unsatisfactory sewer overflows and by discharges from contaminated land. A number of the unsatisfactory sewer overflows which were programmed to be addressed in AMP 3 (2000-2005) are yet to be delivered. Further action is being taken by the Environment Agency in relation to this, as detailed in section 4.2.

At Moston Brook funds have been assigned to a project that aims to identify, and secure funding to address the underlying problems. Led

by MCC, the project will be undertaken in partnership with Oldham MBC to ensure that issues affecting water quality from beyond MCC's boundaries and problems from contaminated land within Manchester are jointly addressed.

2.6 River Mersey (D/E)

Improvements in river quality have contributed to better fish stocks and increased public use of this watercourse. Nevertheless further improvements including the resolution of the aesthetic problems linked to storm sewage discharges are required. In order to address this the Agency has asked United Utilities (UU) to install screens to remove sewage litter from the Mersey, as part of AMP3.

Improvements to Stockport WwTW are due in AMP4. This, together with upstream improvement works, will significantly improve the quality of the River Mersey as it enters Manchester.

2.7 Chorlton Brook (C)

The Chorlton Brook catchment used to be very seriously affected by discharges in wet weather from combined sewer overflows but major capital investment in the last decade has resolved the majority of the problems. Agreement has very recently been agreed with UU on a scheme to improve some of the remaining sewer outlets within the catchment for delivery in AMP4. As the Brook joins the River Mersey this work is considered important for improving the water quality of the Mersey from its current D/E status.

2.8 The River Bollin (C)

The River Bollin receives the discharges from Macclesfield WwTW and Wilmslow WwTW (via the River Dean). Tighter final effluent ammonia standards for Macclesfield WwTW came into effect in April 2005 to ensure compliance with the FFD. These will be achieved by effective use of the existing treatment plant. There will be further water quality improvements from works carried out under AMP4 at Macclesfield WwTW.

2.9 Cotterill Clough (F)

Issues at Cotterill Clough predominantly arise from beyond Manchester's boundaries. As water quality and management at Cotterill Clough may be influenced by airport expansion works, steps to ensure that, where appropriate, water quality issues are resolved as part of any expansion project have been put in place as part of the development of the Airport's Environment Plan.

3 Water Framework Directive (WFD)

- 3.1 The core environmental objectives of the WFD are to prevent deterioration of aquatic ecosystems and to restore polluted surface waters and groundwater to “good” ecological and chemical status by 2015.
- 3.2 In order to achieve this an integrated, holistic approach to the protection, improvement and sustainable use of rivers, lakes, estuaries, coastal waters and groundwater is being established. For the first time disparate issues such as flood risk, biodiversity, water quality, river morphology and others will all be considered holistically under the banner of the WFD.
- 3.3 In order to support this integrated, holistic approach “River Basin Management Plans” (RBMP) are being established for each River Basin District. Greater Manchester, Cheshire, Merseyside, Lancashire and much of Cumbria comprise the North West River Basin District. The first RBMP will be produced in 2009 and the Environment Agency is looking to engage key stakeholders in this work, including MCC. A consultation on the most significant issues is expected in 2007, where MCC will be encouraging a leading edge approach on water quality issues that adversely affect the recreation and biodiversity value of the watercourses and the quality of life of Manchester’s residents.
- 3.4 Section 2.1 describes 80% of Manchester’s rivers as being of “very good” to “fair” quality. It is not clear at this stage what this will translate to under the WFD, in relation to the required “good” chemical and ecological status. Work on defining “good” is ongoing and it is expected that more information on this will become available through the RBMP stakeholder engagement work.

4 Environment Agency Improvement Plans

- 4.1 The Environment Agency along with other stakeholders plays a significant role in deciding what environmental improvements the water industry should make. The water industry works on five-year investment cycles known as ‘Asset Management Plans’ (AMP), which are overseen by the water industry financial regulator OFWAT.
- 4.2 AMP3 (2000 to 2005)
The Environment Agency is responsible for granting consent for the discharge of materials into watercourses in England and Wales. This includes discharges made by United Utilities. To meet the WFD some of these consents will need to be restricted or removed, particularly for combined sewer storm drains. However, certain aspects of AMP3 drawn up by the Environment Agency are yet to be fully implemented. Unfortunately, United Utilities and the Environment Agency have not

reached agreement on management regimes and suggested improvements on a number of issues relevant to Manchester.

The Environment Agency is seeking to impose a water quality standard and screening regime for certain watercourses and consented emissions to them. However, such requirements have significant capital investment implications for United Utilities. At the end of October 2006 around 18 changes to discharge consents that impact on water quality in Manchester had been appealed by United Utilities. The Planning Inspectorate are determining appeals and to date one appeal (sewer outflow on the Mersey) has been rejected, therefore United Utilities will need to install a drain filter and screen. United Utilities can appeal the Planning Inspectorate decision. The Environment Agency now intend to enter into discussions with United Utilities to determine whether they need to continue with their other appeals.

4.3 AMP4 (2005 to 2010)

This plan requires improvements in the effluent quality of numerous discharges in the river catchments upstream of the MCC boundary. Other improvements have been agreed to reduce the load of ammonia discharged from industrial premises in the Irwell catchment. As a result of these upstream improvements the quality of the rivers flowing through Manchester should improve sufficiently to secure compliance with the FFD. However, further actions in addition to AMP4 are likely to be needed in order to achieve compliance with the Water Framework Directive (WFD).

4.4 The River Irwell between Rossendale Wastewater Treatment Works (WwTW's) and the River Irk has been given a special designation that requires waste water treatment plants to remove nutrients from treated effluent, in order to avoid excessive algae / plant growth that de-oxygenates the water. This means that phosphorus removal facilities will need to be provided by United Utilities no later than December 2008 at Rossendale, Bury, Bolton and Rochdale. This should help to improve the ability of the river to support aquatic life including fish.

4.5 The following improvement schemes will be of benefit to Manchester's water quality, and are due to be delivered between now and 2010:

- Bolton waste water treatment improvements (ammonia removal).
- Stockport waste water treatment improvements (ammonia removal).
- Completion of Combined Sewage Overflows (CSO) schemes to resolve water quality and aesthetic problems (across Greater Manchester).
- Ammonia improvements at an industrial site on the River Irwell upstream of Manchester.
- Improvements in the sewerage network and sewage treatment facilities on the River Tame with knock-on effects of improvements in the quality of the River Mersey.
- Nutrient Removal at Major Wastewater Treatment Works in the Irwell catchment.

5 Manchester City Council Actions

- 5.1 MCC participates in ENMaR (European Network of Municipalities and Rivers) in order to inform our understanding of the implications of the Water Framework Directive on spatial planning.
- 5.2 We are currently working in partnership with local authorities from across Greater Manchester to produce a Strategic Flood Risk Assessment (SFRA) for the area. This approach recognises the interdependencies between ourselves and neighbouring authorities and the holistic approach required in order to adequately appreciate and address flood risk. The GM SFRA will be followed by a more detailed Manchester specific SFRA and will form part of the evidence base for the emerging Local Development Framework.
- 5.2 The new Guide to Development 2 contains a dedicated section on water resources and flood risk and proposes the increased usage of Sustainable Urban Drainage Schemes (SUDS). SUDS consist of a wide range of technologies, equipment and design concepts that help to manage the flow of water through sites into watercourses, minimise mains water use, and, where practicable, reuse rainwater or waste water on site. SUDS measures can range from simple actions (e.g. installing a water butt) to major land use and engineering projects to create new flood plains to help cope with high water levels.

Although SUDS are better known for their role in flood risk management, SUDS also benefit water quality. SUDS such as soakaways, green roofs, greywater recycling or rainwater capture slow the flow of rainwater into watercourses, meaning that less material is washed into them. Anaerobic digestors (sewerage chambers that produce biogas), rainwater capture and greywater recycling divert water and sewerage away from main drains and treatment plants. This reduces the risk of overflow into watercourses and reduces the amount of water that needs to enter wastewater treatment plants. SUDS techniques such as greywater recycling and rainwater capture can also reduce reliance on mains water, helping to reduce waterborne emissions from mains water treatment plants.

Examples of SUDS in Manchester include the Civil Justice Centre (greywater recycling), MANCAT Harpurhey 6th Form and Library (rainwater capture), The Birches Training and Resource Centre (green roof). A green roof is currently being designed for Piccadilly Pavilion as part of the Piccadilly Gardens improvement works. A scheme at Selhurst Avenue in East Manchester used permeable, reinforced grass in order to provide a resident parking area, rather than the typical use of impermeable tarmac. A number of schemes with SUDS proposals are currently in the planning system. Examples include a seven storey commercial building on Lever Street in the City Centre, where green and brown roofs are proposed.

- 5.3 Contaminated land is a contributor to water quality problems in Manchester. MCC is leading the GM approach to contaminated land issues. Progress in managing and mitigating the impact of contaminated land has been reported separately to PEOSC. Contaminated land is suspected to be a core contributor to water quality problems faced at Moston Brook, so investigations to identify and secure funds to put in place appropriate remediation activities are an important part of the Moston Brook Project. See section 2.5 for more information on Moston Brook.
- 5.4 Major projects undertaken by the city council now consider the impact on water quality as part of the decision-making process. A screening system is in place for projects being put forward in the Gateway process. Examples of where this approach has started to take effect include the Piccadilly Improvement Plan, where the development of a new borehole will replace mains water use and a green roof will help to filter water and slow its entry rate into surface water drainage systems.
- 5.5 Further information on the numerous bank side improvement projects taking place along Manchester's waterways is available in the Waterways Report that accompanies this one.

Appendix 1 – General Quality Assessment of Manchester Rivers

RIVER	STRETCH	LENGT H	1990	1995	2000	2001	2002	2003	2004	2005	Expected 2010
Mersey	Princess Parkway to Carrington	1.3	E	D	D	D	D	D	D	D	D
Mersey	Stockport WwTW to Princess Parkway	7.6	E	D	D	D	D	E	E	E	D
Irwell (MSC)	Salford University to Salford Docks	1.5	E	E	E	E	E	E	E	E	D
Bollin	Dean to Pedley (Birkin) Bk	1.1	E	D	D	C	D	D	D	C	D
Cotterill Clough	Ringway to River Bollin	1.5	0	F	E	C	C	D	F	F	D
Sinderland (Baguley) Bk	Portway to Fairywell Bk	6.5	0	E	D	C	D	D	D	C	D
Fairywell Bk	Whitecarr Lane to Sinderland Bk	1.1	0	C	B	B	B	C	C	C	C
Corn Bk	Openshaw to MSC	2.8	0	F	C	C	C	C	C	C	C
Medlock	Lords Br to River Irwell	9.6	F	E	E	E	E	E	C	C	C
Irk	Moston Bk to River Irwell	1.7	F	E	E	E	E	D	D	D	D
Irk	Wince Bk to Moston Bk	7.3	F	E	E	E	E	D	D	D	D
Moston Bk	Hale Lane at Failsworth to River Irk	4.7	F	E	F	F	F	F	F	F	F
Chorlton BK	Cringle Bk to Mersey	4.6	D	C	B	B	C	C	C		C
Chorlton Bk	Tan Yard Brow to Cringle Bk	6	0	B	B	B	B	C	C	C	C

Cringle Bk	Heaton Chapel to Platt Bk	3.6	C	B	B	B	B	B	B	B	B
Fallowfield Bk	North Reddish to Chorlton Bk	4.5	0	E	C	C	D	E	E	E	D
Gatley Bk	Heald Green Station to River Mersey	1.6	0	E	D	D	D	D	D	D	D
Bridgewater Canal	Conf Rochdale Canal to Tilting Weir	0.3	0	C	B	B	B	B	B	B	B
Bridgewater Canal	Waters Meeting to Rochdale Canal	0.7	B	B	B	B	B	B	B	B	B
Rochdale Canal	Aston Canal to Knott Mill	1.8	E	B	B	B	B	A	B	A	B
Rochdale Canal	Empress Processing to Ashton Canal	0.3	0	B	B	B	B	C	D	D	C
Rochdale Canal	Summit to Empress Processing	4.6	C	B	B	B	B	C	D	D	C
Ashton Canal	Robertsons to Rochdale Canal	4.8	E	B	C	B	B	B	B	B	B

Key

- A** (Very Good)
- B** (Good),
- C** (Fairly Good),
- D** (Fair),
- E** (Poor),
- F** (Bad)