AtkinsRéalis

Volume 2, Chapter 17 – Water Environment

Manchester City Council

October 2024

FORMER CENTRAL RETAIL PARK – THE PARK

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17. Water Resources and Flood Risk

17.1 Executive summary

The baseline of the surface waterbodies, groundwater bodies and flood risk within the study area was assessed:

- Surface water – there are two canal waterbodies and one river waterbody within the study area. The two canal waterbodies are the Rochdale Canal and Ashton Canal, both are classified as WFD waterbodies. The River Medlock lies within the study area, it is classed as a WFD waterbody and a designated as a Statutory Main River. Historical maps indicate that the route of the former Shooters Brook was culverted through the Site, CCTV survey of the culverted Shooters Brook indicates that there is no structure beneath the Site; instead, it runs in a southernly direction adjacent to the eastern boundary outside of the Site.

- Flood Risk – the Proposed Development is not at risk of flooding from Rochdale Canal, Ashton Canal, and New Islington Marina despite proximity. This is because canals are controlled waterbodies with regulated flows that are continuously maintained by the Canal & River Trust, and there are no historical records of canals flooding within the proximity of the Site. However, in the limited likelihood the Rochdale canal is overtopped, the flood could spread beyond the towpath and into the Site, as there are breaks in the boundary of the fence that separate the canal towpath from the Site.

The ES chapter followed a predominantly qualitative assessment based on DMRB LA 113 (Road Drainage and the Water Environment) and DMRB LA 104 (Environmental Assessment and Monitoring) guidance. As the DMRB LAs provides a suitable framework to use for assessing the potential impacts of the Proposed Development on the water environment.

There has been a variety of embedded mitigation measures which help reduce the impact of the Proposed Development on the water environment. Moreover, the Assessment of Effects (Section 17.7) identifies further mitigation in addition to the embedded mitigation that ensures the Proposed Development does not have a significant impact on the water environment.

The construction and operation of the Proposed Development poses risks to the surface water quality, and flood risk to receptors as detailed in Section 17.7. There are no expected residual effects on the surface water quality, groundwater quantity and quality, and flood risk to the receptors as part of the Proposed Development.

This ES assessment identified that no significant effects are anticipated as a result of the Proposed Development to surface water bodies, groundwater bodies, and flood risk within the study area:

17.2 Introduction

This chapter of the Environment Statement (ES) assesses the likely effects of the Proposed Development on the water environment. The chapter also describes the assessment methodology, the existing baseline conditions, potential impacts and assessment of effects; the mitigation measures required to prevent, reduce, or offset any significant adverse effects, and likely residual effects following the employment of mitigation measures; and the 'Type 2' (Inter-project) cumulative effects associated with the Proposed Development in combination with other developments within 250 m of the Site.

Type 1 cumulative effects 'intra-project effects' which are the combined effects of individual topic impacts on a particular sensitive receptor are considered in Chapter 20: Cumulative Effects.

This chapter is supported by a technical appendix; the Appendix 17.1 – Flood Risk Assessment.

17.3 Competent expert evidence

This Water Resources and Flood Risk Assessment has been undertaken by:

- by a Graduate Environmental Scientist (BSc, Grad CIWEM) with 2 years of experience in flood risk.
- And the review was by a Chartered Scientist (BSc, MRes, CSci, CEnv) who holds full professional membership with the Chartered Institute of Water and Environmental Management. They have over 25 years of knowledge and experience in water environment assessment and have used their knowledge and professional judgement to undertake this assessment.

17.4 Relevant legislation and guidance

17.4.1 National planning policy

Environment Act 1995[1]

The Act instigated the establishment of the Environment Agency, the key regulator for the water environment.

Environment Act 2021[2]

Following the departure of the United Kingdom (UK) from the European Union (EU), this Act was produced to support legislation surrounding water quality, waste, and recycling in addition to species decline and improving the natural environment.

Environmental Protection Act 1990[3]

This Act brings in a system of integrated pollution control for the disposal of wastes to land, water, and air.

Flood and Water Management Act 2010[4]

The key areas covered by this Act include roles and responsibilities for flood and coastal erosion risk management and improving reservoir safety.

Water Act 2003[5] and Water Act 2014[6]

These Acts aim to improve water conservation, protect public health and the environment, and improve the service offered to consumers. The Acts relate to water resources, regulation of the water industry, and other provisions.

[1] Environment Act 1995 (legislation.gov.uk)
[2] Environment Act 2021 (legislation.gov.uk)
[3] Environmental Protection Act 1990 (legislation.gov.uk)
[4] Flood and Water Management Act 2010 (legislation.gov.uk)
[5] Water Act 2003 (legislation.gov.uk)
[6] Water Act 2014 (legislation.gov.uk)

Water Industry Act 1991[7]

This sets out the responsibilities of the Environment Agency in relation to water pollution, resource management, flood defence, fisheries, and navigation in some areas. The Act regulates discharges to controlled waters, namely rivers, estuaries, coastal waters, lakes, and groundwaters.

Water Resources Act 1991 (Amendment) (England and Wales) and Regulations 2009[8]

The Act regulates water resources, water quality and pollution, and flood defence. The Act also sets out standards for Controlled Waters

Catchment Flood Management Plans (CFMPs)[9]

The CFMPs provide a large-scale, strategic planning framework for the integrated management of flood risks to people, property, and the environment in a sustainable manner over the next 50-100 years.

The Water Framework (Standards and Classification) Directions (England and Wales) 2015[10]

These Directions set out the environmental standards to be used for the second cycle of river basin plans.

They transpose Directive 2013/39/EC on environmental quality standards for priority substances and supersede the 2008 version of the directive.

The Anti-Pollution Works Regulations 1999[11]

Where pollution occurs, or is likely to occur, the Environment Agency can serve a work notice under Section 161A of the Water Resources Act 1991 on any person who has caused or knowingly permitted the pollution (or risk of pollution) to controlled waters, requiring them to carry out anti-pollution/preventative works and operations. The Anti-Pollution Works Regulations prescribe the content of anti-pollution works notices. They also prescribe the information to be placed on the pollution control registers maintained by the Environment Agency.

Environmental Damage (Prevention and Remediation) Regulations (England) 2015[12]

The emphasis of these Regulations is on proactively putting in place appropriate measures that prevent and reduce the risk of pollution to the environment.

Flood Risk Regulations 2009[13]

These aim to provide a consistent approach to managing flood risk. The Environment Agency is responsible for managing flood risk from Main Rivers, the sea, and reservoirs. Local Lead Flood Authorities are responsible for local sources of flood risk from surface water, groundwater, and ordinary watercourses.

Water Environment (Water Framework Directive) (England and Wales) Regulations 2017[14]

The 2017 Regulations place a general duty on the Secretary of State, Welsh Ministers, Environment Agency, and Natural Resources Wales to exercise their 'relevant functions' to secure compliance with the Water Framework Directive (WFD) (Regulation 3). Functions under the Planning Act 2008 (as amended) (PA2008) are not 'relevant functions' for this purpose.

However, the Secretary of State, Welsh Ministers, Environment Agency, Natural Resources Wales, and each public body have a specific duty to have regard to the relevant RBMP, and any supplementary plans made under it, in exercising their functions (Regulation 33); this would include functions under the PA2008.

National Flood and Coastal Erosion Risk Management (FCERM) Strategy for England (2020)[15]

This Strategy describes what needs to be done by all risk management authorities involved in flood and coastal erosion risk management for the benefit of people and places.

National Planning Policy Framework (2023)[16]

The National Planning Policy Framework sets out the government's planning policies for England and how these should be applied. This includes requirements for sequential testing and exception testing as part of Flood Risk Assessments (FRAs).

Groundwater (England and Wales) Regulations (2009)[17]

This regulation is in place to protect groundwater, providing rules for the granting by the Environment Agency of a permit.

17.4.2 Regional planning policy

North West river basin district river basin management plan (2016)[18]

This document sets out the current state of the water environment, the pressures Affecting the water environment, environmental objectives for protecting and improving the waters, programme of measures, actions needed to achieve the objectives, and progress since the 2009 plan. It also informs decisions on land-use planning because water and land resources are closely linked.

North West river basin district river basin management plan (RBMP): updated 2022[19]

The North West river basin district river basin management plan describes the challenges that threaten the water environment and how these challenges can be managed.

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[7] Water Industry Act 1991 (legislation.gov.uk)
[8] The Water Resources Act 1991 (Amendment) (England and Wales) Regulations 2009 (legislation.gov.uk)
[9] Catchment flood management plans - GOV.UK (www.gov.uk)
[10] The Water Framework Directive (Standards and Classification) Directions (England and Wales) 2015 (legislation.gov.uk)
[11] The Anti-Pollution Works Regulations 1999 (legislation.gov.uk)
[12] The Environmental Damage (Prevention and Remediation) (England) Regulations 2015 (legislation.gov.uk)
[13] The Flood Risk Regulations 2009 (legislation.gov.uk)
[14] The Water Environment (Water Framework Directive) (England and Wales) Regulations 2017 (legislation.gov.uk)
[15] National Flood and Coastal Erosion Risk Management Strategy for England - GOV.UK (www.gov.uk)
[16] National Planning Policy Framework - GOV.UK (www.gov.uk)
[17] The Groundwater (England and Wales) Regulations 2009 (legislation.gov.uk)
[18] North West river basin district river basin management plan - GOV.UK (www.gov.uk)
[19] North West river basin district river basin management plan: updated 2022 - GOV.UK (www.gov.uk)

North West river basin district flood risk management plan (2023)[20]

This plan focuses on the areas that are designated as being at particular risk of flooding, from either rivers and sea or surface water. This plan also sets out the legislative background.

Places for Everyone Joint Development Plan[21]

The Places for Everyone (PfE) plan provides objectives and guidance policies to help create inclusive and sustainable economic growth across nine boroughs. It reinforces the ambition to bring forward development on brownfield land and provide greater protection of environmental assets whilst also supporting wider strategies around clean air, walking and cycling and underpins the ambition to be a carbon neutral city region by 2038. Specifically, the plan contains a Flood Risk and the Water Environment policy (JP-S4) amongst others that relate to sustainable flood management.

17.4.3 Local planning policy

Local Flood Risk Management Strategy – Manchester City Council[22]

This strategy documents the local flood risk in Manchester, alongside the risk management authorities. Additionally, the Local Flood Risk Management (LFRM) Policies which provide the basis for all local flood risk management actions, are documented within this document. It also sets out the aims and objectives of the local strategy.

Greater Manchester Strategic Flood Risk Management Framework (2019)[23]

The report provides a spatial framework for flood risk management across Greater Manchester. It also recommends key priorities for intervention taking account of previous, existing, and planned interventions.

Manchester City Council Development Plan (Manchester Core Strategy 2012–2027)[24]

The core strategy includes Policy EN 14 which is a flood risk policy. This provides guidelines for the location of developments, design and assessments required in relation to flood risk.

Manchester City, Salford City And Trafford Councils Level 2 Hybrid SFRA (2011)[25]

The Strategic Flood Risk Assessment (SFRA) provides a detailed understanding of flood risk across Manchester, Salford, and Trafford.

Integrated Water Management Plan (2023)[26]

The aim of the Integrated Water Management Plan is to deliver progressive improvements in sustainable water management and enhancement of the natural environment and ensure all future developments and critical infrastructure are resilient to flooding and climate change impacts. This document sets out the ambitions and objectives for achieving this.

Irwell catchment flood management plan[27]

The Irwell catchment flood management plan helps to understand the scale and extent of flooding now and in the future. It also sets out the policies for managing flood risk. This should be used to inform planning and decision-making.

Manchester City council preliminary flood risk assessment (2011)[28]

This report collates and reviews all available local flood risk information on past and future flood risks.

17.5 Assessment method

17.5.1 Study area and baseline

The study area used to inform this ES chapter takes into consideration all features of the water environment within 1 km of the Site. This is an appropriate radial distance for potential impacts from the Proposed Development to be sufficiently dampened, for example, dilution of pollutants

The location of the study area including the Site and the 1 km buffer in the context of local rivers and canals is shown in Figure 17.1.

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[20] North West river basin district flood risk management plan - GOV.UK (www.gov.uk)
[21] https://www.greatermanchester-ca.gov.uk/media/9578/places-for-everyone-joint-development-plan-document.pdf
[22] Local Flood Risk Management Strategy documents | Manchester City Council
[23] JBA Consulting Report Template 2015 (greatermanchester-ca.gov.uk)
[24] Core Strategy 2012-2027 | Core Strategy 2012-2027 | Manchester City Council
[25] Manchester, Salford and Trafford Strategic Flood Risk Assessment | Strategic Flood Risk Assessment | Manchester City Council
[26] Integrated Water Management Plan (greatermanchester-ca.gov.uk)
[27] Irwell_Catchment_Flood_Management_Plan.pdf (publishing.service.gov.uk)
[28] [ARCHIVED CONTENT] (nationalarchives.gov.uk)

384000 384500 385000 385500 386000 386500

399500 399000 398500 398000 397500

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- Site Boundary
- 1km Buffer
- Ashton Canal and Peak Forest Canal (Lower Section)
- Medlock (Lumb Brook to Irwell)
- Rochdale Canal (Western Section)
- New Islington Marina

Kilometres
0 1 2 3 4

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Metres
0 100 200 300 400

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Client
Manchester City Council

Project
Former Central Retail Park: The Park

Title
Location of the Study Area and Nearby Water Channels

Sheet Size	Original Scale	Designed / Drawn	Checked	Authorised
A3	1:9,000	BT Date 30/07/24	RS Date 30/07/24	LR Date 30/07/24

Drawing Number
Figure 17-1

Rev
02

17.5.2 Impact assessment

The Design Manual for Roads and Bridges (DMRB) provides a suitable framework to use for assessing the potential impacts of the Proposed Development on the water environment. Therefore, this ES chapter will follow a predominantly qualitative assessment based on DMRB LA 113[29] (Road Drainage and the Water Environment) and DMRB LA 104[30] (Environmental Assessment and Monitoring) guidance. The methodology outlined in the guidance uses the following three steps:

- Estimation of the importance of the receptor (Table 17-11)
- Estimation of the magnitude of impact (Table 17-2)
- Assessment of the significance of effect based on receptor importance and impact magnitude (Table 17-3). Within this assessment, receptors with a significance of effect classified as moderate, large, or very large are considered significant.

Table 17-1 - Criteria for estimating the importance of a water environment receptor[31]

Importance	Typical criteria	Typical examples	
Very high	Nationally significant attribute of high importance	Surface water:	Watercourse having a WFD classification shown in a RBMP and Q95 ≥ 1.0 m^3/s. Site protected/ designated under EC or UK legislation (SAC, SPA, SSSI, Ramsar site, salmonid water)/Species protected by EC legislation LA 108.
		Flood risk:	Essential infrastructure or highly vulnerable development.
High	Locally significant attribute of high importance	Surface water:	Watercourse having a WFD classification shown in a RBMP and Q95 < 1.0 m^3/s. Species protected under EC or UK legislation LA 108.
		Flood risk:	More vulnerable development.
Medium	Of moderate quality and rarity	Surface water:	Watercourses not having a WFD classification shown in a RBMP and Q95 > 0.001 m^3/s.
		Flood risk:	Less vulnerable development.
Low	Lower quality	Surface water:	Watercourses not having a WFD classification shown in a RBMP and Q95 ≤ 0.001 m^3/s.
		Flood risk:	Water compatible development.

Table 17-2 - Criteria for assessing the potential magnitude of impact[32]

Importance	Typical criteria	Typical examples	
Major adverse	Results in loss of attribute and/or quality and integrity of the attribute	Surface water:	Loss of regionally important public water supply. Loss or extensive change to a designated nature conservation site. Reduction in waterbody WFD classification.
		Flood risk:	Increase in peak flood level (> 100mm). Changes to the site resulting in an increase in discharge/runoff of >75% with flood/sewerage exceedance potential. Loss of flood storage areas.
Moderate adverse		Surface water:	Partial loss or change to a fishery/designated nature conservation site. Loss in the productivity of a fishery Degradation of regionally important public water supply or loss of major commercial/ industrial/ agricultural supplies.

[29] https://standardsforhighways.co.uk/search/d6388f5f-2694-4986-ac46-b17b62c21727
[30] https://standardsforhighways.co.uk/search/0f6e0b6a-d08e-4673-8691-cab564d4a60a
[31] Table source: Extracted directly from DMRB LA 113 Table 3.70: Estimating the importance of water environment attributes.
[32] Table source: Extracted directly from DMRB LA 113 Table 3.71: Estimating the magnitude of impact on an attribute.

Importance	Typical criteria	Typical examples	
	Results in effect on integrity of attribute, or loss of part of attribute		Contribution to reduction in waterbody WFD classification.
		Flood risk:	Increase in peak flood level (> 50 mm). Changes to the site resulting in an increase in discharge/runoff of >50% with flood/sewerage exceedance potential.
Minor adverse	Results in some measurable change in attributes, quality, or vulnerability	Surface water:	Minor effects on water supplies.
		Flood risk:	Increase in peak flood level (> 10 mm). Changes to the site resulting in an increase in discharge/runoff of >25% with flood/sewerage exceedance potential.
Negligible	Results in effect on attribute, but of insufficient magnitude to affect the use or integrity	The proposed project is unlikely to affect the integrity of the water environment.	
		Surface water:	No measurable impact to a surface waterbody.
		Flood risk:	Negligible change to peak flood level (≤ +/- 10 mm).
Minor beneficial	Results in some beneficial effect on attribute or a reduced risk of negative effect occurring	Surface water:	Potential reduction in pollution to a surface waterbody.
		Flood risk:	Creation of flood storage and decrease in peak flood level (> 10 mm).
Moderate beneficial	Results in moderate improvement of attribute quality	Surface water:	Moderate improvement to a fishery/designated nature conservation site. Potential increase in the productivity of a fishery. Contribution to improvement in waterbody WFD classification i.e. Reduced pollution of a receiving waterbody, but insufficient to change the environmental status/ classification, including water quality classification.
		Flood risk:	Creation of flood storage and decrease in peak flood level (> 50 mm). Changes to the site resulting in a decrease in discharge/runoff >50%.
Major beneficial	Results in major improvement of attribute quality	Surface water:	Removal of existing polluting discharge or removing the likelihood of polluting discharges occurring to a watercourse. Significant improvement to a fishery/designated nature conservation site. Improvement in waterbody WFD classification.
		Flood risk:	Creation of flood storage and decrease in peak flood level (> 100 mm). Changes to the site resulting in a decrease in discharge/runoff of >75%.
No change	No loss or alteration of characteristics, features, or elements. No observable impact in either direction.		

Table 17-3 - Significance of effect

Importance	Magnitude of Impact				
	Major	**Moderate**	**Minor**	**Negligible**	**No change**
Very High	Very large	Large/very large	Moderate/large	Slight	Neutral
High	Large/very large	Moderate/large	Slight/moderate	Slight	Neutral
Medium	Moderate/large	Moderate	Slight	Neutral/slight	Neutral
Low	Slight/moderate	Slight	Neutral/slight	Neutral/slight	Neutral
Negligible	Slight	Neutral/slight	Neutral/slight	Neutral	Neutral

17.5.3 Assumptions and limitations

The following assumptions and limitations have been considered within this assessment:

- The data used for this assessment is open-source data, including Groundsure report[33]. The validity of the impact assessment is therefore dependent on the availability, accuracy, and level of detail of the data.
- The Park Drainage Strategy was not available at the time of writing, hence, information of the pre-existing drainage system of the previous site was used in this chapter of the ES.

17.6 Baseline conditions

The following baseline conditions refer to the future anticipated baseline condition following breaking of ground, ground remediation and regrading of the site.

17.6.1 Surface Water

Surface water quality

Surface watercourses within the study area generally flow from northeast to southwest and are located within the North West River Basin District, and the Croal Irwell and Roch Irk Medlock Operational catchments. The study area sits within the North West River Basin Management Plan.

The study area is within Manchester City Centre, where the Proposed Development lies in-between the Rochdale Canal to the northwest and the Ashton Canal to the southeast, both of which are classified as WFD Canal waterbodies:

- Rochdale Canal (western section) (GB71210517)
- Ashton Canal & Peak Forest Canal (lower section) (GB71210219)

The New Islington Marina connects the two canals. Although it is not designated under the WFD, it can be considered in conjunction with the two canals.

The River Medlock, which is classed as a WFD waterbody and designated as a Statutory Main River, also lies within the study area. The Site therefore lies within the following WFD river waterbody catchment:

- Medlock (Lumb Brook to Irwell) (GB112069061152)

Two additional WFD river waterbody catchments lie within the periphery of the study area:

- Irk (Wince to Irwell) (GB112069061131)
- Irwell / Manchester Ship Canal (Irk to confluence with Upper Mersey) (GB112069061452)

Given the urban nature of the study area, no further surface watercourses were identified as part of the baseline assessment.

Prior to the construction of the Rochdale and Ashton Canals, there was a tributary of the River Medlock – the Shooters Brook, which itself was fed by Newton Brook. Historical maps indicate that the route of the former Shooters Brook was culverted through the Site. However, Shooters Brook is now largely considered a 'lost watercourse', with the upstream section of Newton Brook now diverted several kilometres upstream of the Site. A CCTV survey of the culverted Shooters Brook indicates that there is no structure beneath the Site; instead, it runs in a southern direction adjacent to the eastern boundary outside of the Site.

WFD Status – water quality

A summary of water quality parameters for the WFD waterbodies containing the Rochdale Canal (western section) and Ashton Canal & Peak Forest Canal (lower section) is provided in Table 17-5. Both the Rochdale Canal (western section) and the Ashton Canal & Peak Forest Canal (lower section) score high for all physico-chemical quality elements, moderate for supporting elements (surface water) and good for priority substances. However, both canal waterbodies fail for the chemical – priority hazardous substances, specifically mercury and its compounds, and Polybrominated diphenyl ethers (PBDE).

Table 17-6 provides a summary of the water quality parameters for the WFD river waterbody catchment, Medlock (Lumb Brook to Irwell). The Medlock (Lumb Brook to Irwell) has an overall classification of a Moderate classification for physico-chemical quality elements and Poor for biological quality elements and phosphate (a physico-chemical quality element).

Where WFD status is presented in this report (i.e., for surface water and groundwater), it has been colour-coded consistently with categories set out in the 2015 Directions. The colour coding set out in Table 17-4 has been used.

Table 17-4 - WFD classification colour coding

WFD classification	Classification
Ecological Status	High
	Good
	Moderate
	Poor
	Bad
Chemical Status	Fail
	Pass

Table 17-5 - WFD Classification – water quality parameters – canal

Waterbody name	Rochdale Canal (western section)	Ashton Canal & Peak Forest Canal (lower section)
Waterbody ID	GB71210517	GB71210219
National Grid Reference	SD8835507230	SJ9337197048
River Basin District	North West	North West
Management catchment	North West AWB	North West AWB
Operational catchment	Roch Irk Medlock Canals and SWT	Goyt Etherow Tame Canals
A/HMWB	Artificial	Artificial
Classification	2019 Cycle 3	2019 Cycle 3

[33] Groundsure. 2023. Manchester_RLB

Waterbody name	Rochdale Canal (western section)	Ashton Canal & Peak Forest Canal (lower section)
Overall Waterbody	Moderate	Moderate
Ecological	Moderate	Moderate
Physico-chemical quality elements	High	High
Ammonia (Phys-Chem)	High	High
Temperature	High	High
pH	High	High
Supporting elements (Surface Water)	Moderate	Moderate
Mitigation measures assessment	Moderate or less	Moderate or less
Chemical	Fail*	Fail *
Priority hazardous substances	Fail *	Fail *
Benzo(a)pyrene	Good	Good
Dioxins and dioxin-like compounds	Good	Good
Heptachlor and cis-Heptachlor epoxide	Good	Good
Hexabromocyclododecane (HBCDD)	Good	Good
Hexachlorobenzene	Good	Good
Hexachlorobutadiene	Good	Good
Mercury and Its Compounds	Fail	Fail
Perfluorooctane sulphonate (PFOS)	Good	Good
Polybrominated diphenyl ethers (PBDE)	Fail	Fail
Priority substances	Good*	Good*
Fluoranthene	Good	Good
Other Pollutants	Does not require assessment*	Does not require assessment*

* Does not require assessment in 2022

Table 17-6 - WFD Classification – water quality parameters – river

Waterbody name	Medlock (Lumb Brook to Irwell)
Waterbody ID	GB112069061152
National Grid Reference	SD9022900552
River Basin District	North West
Management catchment	Irwell
Operational catchment	Roch Irk Medlock
A/HMWB	Heavily modified

Waterbody name	Medlock (Lumb Brook to Irwell)
Classification	2022 Cycle 3
Overall Waterbody	Moderate
Ecological	Moderate
Biological quality elements	Poor
Fish	Poor
Invertebrates	Moderate
Macrophytes and Phytobenthos Combined	Moderate
Phytobenthos Sub Element	Moderate
Physico-chemical quality elements	Moderate
Ammonia (Phys-Chem)	Good **
Temperature	High ***
pH	High
Dissolved Oxygen	High
Phosphate	Poor
Specific Pollutants	High
Iron	High
Permethrin	High
Triclosan	High
Chemical	Does not require assessment *
Priority hazardous substances	Does not require assessment *
Benzo(a)pyrene	N/A ***
Dioxins and dioxin-like compounds	N/A ***
Heptachlor and cis-Heptachlor epoxide	N/A ***
Hexabromocyclododecane (HBCDD)	N/A ***
Hexachlorobenzene	N/A ***
Hexachlorobutadiene	N/A ***
Mercury and Its Compounds	N/A *
Perfluorooctane sulphonate (PFOS)	N/A *
Polybrominated diphenyl ethers (PBDE)	N/A *
Tributyltin Compounds	N/A ***
Priority substances	Does not require assessment
Fluoranthene	N/A ***
Cypermethrin (Priority)	N/A *
Other Pollutants	Does not require assessment

Waterbody name	Medlock (Lumb Brook to Irwell)
* Fail in 2019 ** High in 2019 *** Good in 2019 **** Moderate in 2019 ***** Poor in 2019	

17.6.2 Surface water abstractions and discharges

There are no Source Protection Zones within the study area.

The Groundsure report indicates no surface water abstractions within 1 km of the Proposed Development.

The Groundsure report identifies five licenced discharges to controlled waters within 500 m of the Proposed Development, all licences have passed the revocation dates, see Table 17-7.

Table 17-7 - Licenced discharges

Location	Address	Details
88m SE	Great Ancoats Street, SSO, Manchester, Greater Manchester	Sewage discharges, final/ treated effluent – water company into Shooters Brook Effective date: 15/09/1993 Revocation date: 15/09/1993
153m SE	Great Ancoats Street, SSO, Manchester, Greater Manchester	Sewage discharges, final/ treated effluent – water company into Shooters Brook Effective date: 15/09/1993 Revocation date: 15/09/1993
284m S	Store Street, Ancoats, Manchester, Greater Manchester	Sewage discharges sewer storm overflow – water company into the River Medlock Effective date: 23/06/1995 Revocation date: 28/11/2022
277m E	SOHO Works Site SWO, Pollard Street, Ancoats, Greater Manchester	Miscellaneous discharges to surface water (Manchester and Ashton Canal) Effective date: 30/09/1985 Revocation date: 01/07/1991
389m SW	Store Street, Ancoats, Manchester, Greater Manchester	Sewage discharges, sewer storm overflow – water company to unknown receiving water Effective date: 01/01/1995 Revocation date: 05/12/2014

17.6.3 Lakes and other surface water features

There are no further lakes or surface water features to those identified above.

17.6.4 Statutory designated sites

There are no Local Nature Reserves (LNRs), National Nature Reserves (NNRs), Ramsar sites, Sites of Special Scientific Interest (SSSIs), Special Areas of Conservation (SACs) or Special Protection Areas (SPAs) located within the study area.

The Rochdale Canal (*Rochdale Canal - Stott's Lane to Ducie Street Basin*) adjacent to the site and the Ashton Canal (*Ashton Canal (West)*) are both designated Sites of Biological Importance (SBI)[34]. Effects to the SBIs are assessed in the Biodiversity chapter (Volume 2, Chapter 8) and are not considered further in this chapter.

Within the study area, there is the River Irk Nitrate Vulnerable Zone (NVZ).

17.6.5 Flood Risk

Flood risk from fluvial

Within the immediate proximity of the Proposed Development area, the Environment Agency Flood Map for Planning shows the Site is located within Flood Zone 1 – low probability of flooding, which represents less than 0.1% (1 in 1000 years) annual probability of flooding from rivers or the sea[35].The Environment Agency Risk of Flooding from Rivers and Sea map shows the Proposed Development does not fall within the flooding from rivers or the sea extent[36].

Flood risk from surface water

The Environment Agency Risk of Flooding from Surface Water map shows a small area of ‘low’ surface water flood risk which represents 0.1%–1% chance of flooding each year[36].

Flood risk from groundwater

The emergence of groundwater at the surface (and subsequent overland flows) or into subsurface voids as a result of abnormally high groundwater levels is referred to as groundwater flooding. This can have a direct impact on buildings and buried services, as well as an indirect impact by increasing the infiltration of groundwater into sewers and soakaways (reducing their capacity to convey surface water runoff).

Groundwater levels collected from on-site borehole monitoring have shown that groundwater is recorded at shallow depths between 1.04 and 2.97 m bgl. Indicating that there is a potential risk of groundwater flooding at the site.

Flood risk from reservoir

The Environment Agency Risk of Flooding from Reservoir map shows the Proposed Development does not fall within the risk of flooding in the unlikely event of a reservoir failure[36].

[34] Sites of Biological Importance (SBI / LWS) in Greater Manchester - data.gov.uk
[35] Flood map for planning - GOV.UK (flood-map-for-planning.service.gov.uk)
[36] Learn more about this area's flood risk - Check your long term flood risk - GOV.UK (check-long-term-flood-risk.service.gov.uk)

Historical Flooding

The Environment Agency Historic Flood map shows the Proposed Development and the 1 km radius of the Proposed Development has not historically experienced flooding[37].

Other sources

The Proposed Development is not at risk of flooding from either the Rochdale and Ashton Canals, or the New Islington Marina despite its proximity. This is because canals are controlled waterbodies with regulated flows and are continuously maintained by the British Waterways and Canal & River Trust. However, in the limited likelihood that the Rochdale Canal is overtopped, the flood could flow beyond the towpath and into the Site as there are breaks in the boundary of the fence that separate the canal towpath from the Site (see Figure 17-2 and Figure 17-3); but this is unlikely to spread and affect the Proposed Development area. Notwithstanding, in the unlikely event the New Islington Marina is overtopped, the Proposed Development would flood as it extends to the embankment of the New Islington Marina (see Figure 17-4). The Proposed Development is partially located within Breach Zone A of Rochdale and Ashton Canals[38].

17.6.6 Summary of baseline

Table 17-8 - Receptors that may potentially be impacted by the Proposed Development.

Receptor	Importance				
	Surface water quality	**Flood risk**	**Overall importance**	**Screened in/out**	**Justification**
River Medlock	High	Not Applicable	High	In	Surface water from the Proposed Development will discharge into a sewer drainage system southeast of the Site. Located ~530 m southeast to the Site.
Rochdale Canal	Medium	Medium	Medium	In	No mention of the WFD classification within the North West RBMP. The Rochdale Canal is designated SAC within this WFD waterbody, although it is ~5km northeast of the Site. Located ~114 m west to the Site.
Ashton Canal	Medium	Medium	Medium	In	No mention of the WFD classification within the North West RBMP. Located ~70 m east of the Site.
New Islington Marina	Medium	Medium	Medium	In	The Site is directly adjacent to the New Islington Marina.
Third party lands	Not Applicable	High	High	Out	Potential surface water runoff from the Site to adjacent land.
Proposed Development	Not Applicable	Low	Medium	Out	The Proposed Development is a flood risk receptor but will be located in an area of low flood risk.

17.7 Potential impacts

The potential impacts of the Proposed Development on surface water quality, flood risk, and groundwater are outlined below. Following this, an assessment has been undertaken to outline the impacts that could result from the construction and operation of the Proposed Development with the embedded mitigation in place.

The DMRB LA 113 standard is clear that embedded mitigation is included in the best practice design approach and this methodology has been retained as part of this assessment. Embedded mitigation covers the project design principles adopted to avoid or prevent adverse environmental effects, whereas essential mitigation is those measures subsequently required to reduce and if possible offset likely significant adverse environmental impacts, in support of the reported significance of impacts in the environmental assessment. An assessment of the Proposed Development with embedded mitigation is required to identify requirements for essential mitigation.

17.7.1 Potential construction impacts

The following potential impacts have been identified in relation to the Proposed Development during the construction phase.

Surface water quality

- Accidental spillage and release of hydrocarbons and oils from construction vehicles, plant, and equipment
- Mobilisation of fine sediments and soils
- Soil compaction from construction activities and changes in site topography leading to increased surface runoff

Flood risk

- Soil compaction from construction activities and changes in site topography leading to increased surface runoff

[37] Defra Data Services Platform

[38] Manchester Local Flood Risk Management Strategy

17.7.2 Potential operation impacts

Surface water quality

- None predicted and therefore scoped out of further assessment within the Scoping Report

Flood risk

- Changes in site topography and impermeable surface area changing surface water runoff

17.8 Assessment of effects

Table 17-9 Construction phase impact assessment

Receptor	Sensitivity	Impact	Mitigation	Residual impact magnitude	Residual effect	Effect significance
Rochdale Canal	Medium	Accidental spillage and release of hydrocarbons and oils from construction vehicles, plant, and equipment	Best practice pollution prevention measures	Negligible	During the construction stage of the Proposed Development, there is potential for accidental spillage from the operation of vehicles, refuelling, and oil/fuel storage tanks can risk contaminating surface water runoff with hydrocarbons, oil, and other chemicals that can migrate and pollute nearby watercourses and/or groundwater. The implementation of best practice mitigation measures will ensure that impacts are negligible resulting in neutral effects.	Neutral adverse effect Not significant
Ashton Canal	Medium	Accidental spillage and release of hydrocarbons and oils from construction vehicles, plant, and equipment	Best practice pollution prevention measures	Negligible	During the construction stage of the Proposed Development, there is potential for accidental spillage from the operation of vehicles, refuelling, and oil/fuel storage tanks can risk contaminating surface water runoff with hydrocarbons, oil, and other chemicals that can migrate and pollute nearby watercourses and/or groundwater. The implementation of best practice mitigation measures will ensure that impacts are negligible resulting in neutral effects.	Neutral adverse effect Not significant
Medlock (Lumb Brook to Irwell) WFD river waterbody catchment	High	Accidental spillage and release of hydrocarbons and oils from construction vehicles, plant, and equipment	Best practice pollution prevention measures	Negligible	During the construction stage of the Proposed Development, there is potential for accidental spillage from the operation of vehicles, refuelling, and oil/fuel storage tanks can risk contaminating surface water runoff with hydrocarbons, oil, and other chemicals that can migrate and pollute nearby watercourses and/or groundwater. The implementation of best practice mitigation measures will ensure that impacts are negligible resulting in neutral effects.	Slight adverse effect Not significant
New Islington Marina	Medium	Accidental spillage and release of hydrocarbons and oils from construction vehicles, plant, and equipment	Best practice pollution prevention measures	Negligible	During the construction stage of the Proposed Development, there is potential for accidental spillage from the operation of vehicles, refuelling, and oil/fuel storage tanks can risk contaminating surface water runoff with hydrocarbons, oil, and other chemicals that can migrate and pollute nearby watercourses and/or groundwater. The implementation of best practice mitigation measures should ensure that impacts are negligible resulting in neutral effects.	Neutral adverse effect Not significant
Rochdale Canal	Medium	Mobilisation of fine sediments and soils	Drainage Management Plan Flood risk management during construction	Negligible	Runoff from construction compounds commonly contains high levels of suspended solids. Runoff with high sediment load can have direct adverse impacts on adjacent watercourses including smothering aquatic flora and increasing water turbidity which reduces overall vegetation growth, and reducing volume capacity which increases the risk of out-of-bank flow. The Drainage Management Plan will include details for managing silt and sediment laden runoff in accordance with Environment Agency and CIRIA guidance.	Neutral adverse effect Not significant
Ashton Canal	Medium	Mobilisation of fine sediments and soils	Drainage Management Plan Flood risk management during construction	Negligible	Runoff from construction compounds commonly contains high levels of suspended solids. Runoff with high sediment load can have direct adverse impacts on adjacent watercourses including smothering aquatic flora and increasing water turbidity which reduces overall vegetation growth, and reducing volume capacity which increases the risk of out-of-bank flow. The Drainage Management Plan will include details for managing silt and sediment laden runoff in accordance with Environment Agency and CIRIA guidance.	Neutral adverse effect Not significant
Medlock (Lumb Brook to Irwell) WFD river waterbody catchment	High	Mobilisation of fine sediments and soils	Drainage Management Plan Flood risk management during construction	Negligible	Runoff from construction compounds commonly contains high levels of suspended solids. Runoff with high sediment load can have direct adverse impacts on adjacent watercourses including smothering aquatic flora and increasing water turbidity which reduces overall vegetation growth, and reducing volume capacity which increases the risk of out-of-bank flow. The Drainage Management Plan will include details for managing silt and sediment laden runoff in accordance with Environment Agency and CIRIA guidance.	Slight adverse effect Not significant

New Islington Marina	Medium	Mobilisation of fine sediments and soils	Drainage Management Plan Flood risk management during construction	Negligible	Runoff from construction compounds commonly contains high levels of suspended solids. Runoff with high sediment load can have direct adverse impacts on adjacent watercourses including smothering aquatic flora and increasing water turbidity which reduces overall vegetation growth, and reducing volume capacity which increases the risk of out-of-bank flow. The Drainage Management Plan will include details for managing silt and sediment laden runoff in accordance with Environment Agency and CIRIA guidance.	Neutral adverse effect Not significant
Third party Lands	Low	Soil compaction from construction activities and changes in site topography leading to increased surface runoff	Drainage Management Plan	Negligible	During the construction stage, the operation of machinery/vehicles may result in soil compaction that reduces infiltration capacity. This could result in increased surface ponding which could lead to localised surface flooding and increase surface water runoff to third party lands. As the Site is currently hard standing with limited infiltration, surface water runoff rates are unlikely to change. The Drainage Management Plan will include measures to ensure that flood risk is not increased during construction.	Neutral adverse effect Not significant

Table 17-10 Operational phase impact assessment

Receptor	Sensitivity	Impact	Mitigation	Residual impact magnitude	Residual effect	Effect significance
Third party Lands	High	Changes in site topography and impermeable surface area changing surface water runoff	Adoption of SuDS in the design Flood risk management during operation	Negligible	The increased elevation of the ground of the Proposed Development area may increase overland runoff to nearby watercourses and the surrounding areas, hence, increasing the risk of flooding. When taking into account the embedded mitigation from the Drainage Management Plan, which ensures there is no increase in surface water runoff from the Proposed Development to Third Party Lands, and proposed SuDS features and permeable nature of the Park, the impact becomes negligible.	Slight adverse effect Not significant

17.9 Additional mitigation and enhancement measures

17.9.1 Construction phase

Best practice pollution prevention measures

Potential impacts from construction can be mitigated through best practice measures which are associated with good site practice and preparation of robust method statements. Mitigation measures which will be implemented to mitigate any potential impacts to the water environment during construction of the Scheme will include adhering to Guidance such as Guidance on Pollution Prevention (GPPs) and CIRIA C715 Environmental good practice. Although now withdrawn by the Environment Agency, their Pollution Prevention Guidelines still detail good practice advice for undertaking works which may have the potential to result in water pollution. In general terms, by following these guidelines, significant impacts to the water environment will be avoided.

Drainage Management Plan

A Drainage Management Plan (DMP) will be produced by the Principal Contractor prior to construction. It will include details of how increased surface water runoff from new areas of hardstanding will be managed to ensure no increase in flood risk. The DMP will also include details of how the construction compounds will safely manage surface water flows in line with Environment Agency PPG and CIRIA guidance.

Flood risk management during construction

The majority of the earthworks doe the Site are being undertaken by the Phase 1 development. The earthworks for the remainder of the Site (the dog-leg parallel to Great Ancoats Street and within Cotton Field Park) should not be stored within the surface water flood extent, where surface water ponding may potentially occur during high storm events. This reduces the incidence of surface water runoff with a high sediment load being washed to the surrounding study area.

17.9.2 Operational phase

Adoption of SuDS in the design

Implementing measures to prevent adverse effects on adjacent water bodies and drainage systems through the inclusion of Sustainable Drainage Systems (SuDS). These work by mimicking natural drainage regimes to reduce surface water flooding and improve water quality. They also work to slow down and hold back water runoff, allowing natural processes to break down pollutants.

Flood risk management during operation

Pluvial / Surface Water Flooding:

The NPPF requires new developments to neither exacerbate flood risk due to reduction of the current flood storage capacity at the Site or increase runoff from the Proposed Development. Any surface water flood risk should be managed by directing overland flow away from the infrastructure and assets, then contained/conveyed within the Proposed Development or a drainage system that is appropriately designed to ensure there is no increased off-site overland flow.

A Drainage Strategy has been completed for the Proposed Development, which demonstrates how additional surface water runoff associated with the Proposed Development will be managed.

In accordance with the Flood and Water Management Act 2010: Schedule 3, the LLFA can make it a requirement for new developments in England to incorporate SuDS, not merely recommend it. The Manchester City Council (the LLFA) should hence consider whether to incorporate SuDS as a result of the Proposed Development.

Flooding from Sewers:

All new surface water runoff collection and conveyance systems that service the Proposed Development will be designed and installed in accordance with current guidance and regulations. Therefore, the risks of failure of the new onsite drainage systems are not considered significant and no mitigation is required.

Flooding from other sources:

Any residual flooding from canal failure will be managed within the landscaped areas or through the drainage strategy which is proposed as part of the planning application.

The Proposed Development is not at risk of inundation in the unlikely event of a reservoir failure, coinciding with elevated river levels. Due to regular inspection, survey, and maintenance by the operating authorities and the extremely good safety record of no reservoir failure incidents resulting in the loss of life in the UK since 1925 – no mitigating action is deemed necessary.

17.10 Cumulative effects

This planning application has sight of the prospective Phase 2 development adjacent to the east of the Proposed Development as disclosed within the Strategic Regeneration Framework (SRF) 2023. It is understood that this will comprise a commercial development with opportunities for ancillary ground floors to provide active frontages. The buildings will be of heights between 6-16 storeys and vehicular access will be available via Old Mill Street. It is assumed the Proposed Development will have been constructed prior to the construction of the Phase 2 development and therefore no cumulative effects are anticipated during the construction phases as these will not overlap. In relation to the operational phase of the Proposed Development, no significant effects have been anticipated within this assessment and therefore it is unlikely to contribute towards any significant cumulative operational effects in combination with the Phase 2 development. Therefore, the Proposed Development is not expected to result in adverse cumulative effects in combination with those of the Phase 2 development during its construction nor its operation.

There are no other anticipated future developments to consider within this assessment of inter-cumulative effects as all applications within the planning portal as the time of assessment are expected to already be constructed prior to the Proposed Development. However, it is advised that should concurrent construction projects occur that regular liaison is carried out between the environment manager/engineer, or the site manager ensure mitigation measures remain appropriate.

Intra-cumulative effects of the Proposed Development are considered in Volume 2, Chapter 20 of this ES.

17.11 Summary and conclusions

This assessment identified that no significant effects are anticipated as a result of the Proposed Development to surface water bodies, groundwater bodies, and flood risk within the study area:

- Surface water – it is likely that there will be no significant effects from the Proposed Developments on surface water quality, for any of the receptors once the mitigation has been put in place.
- Flood Risk – there is no risk of increased flooding associated the Proposed Development to its surrounding receptors.

17.12 Glossary and acronyms

Table 17-11 – Glossary and acronyms

Term	Definition
CCTV	Closed-Circuit Television
CMP	Construction Management Plan
CFMP	Catchment Flood Management Plan
CIRIA	Construction Industry Research and Information
DMRB	Design Manual for Roads and Bridges
EA	Environment Agency
EEP	Environmental Emergency Plan
EQS	Environmental Quality Standard
ES	Environment Statement
EU	European Union
FCERM	Flood and Coastal Erosion Management
FRA	Flood Risk Assessment
GPP	Guidance for Pollution Prevention
HBCDD	Hexabromocyclododecane
HMWB	Heavily Modified Water Body
ID	Identification
INNS	Invasive Non-Native Species
LFRM	Local Flood Risk Management
LLFA	Local Lead Flood Authority
LNRs	Local Nature Reserves
m AOD	Meters above ordnance datum
NNRs	National Nature Reserves
NVZ	Nitrate Vulnerable Zone
OSNGR	Ordnance Survey National Grid Reference
PA2008	Planning Act 2008
PBDE	Polybrominated diphenyl ethers
PFOS	Perfluorooctane sulphonate
pH	Potential of hydrogen
PPG	Pollution Prevention Guidelines
Q	Volume rate of flow (i.e. discharge)
RBMP	River Basin Management Plan
RLB	Red line boundary
SAC	Special Areas of Conservation
SBI	Sites of Biological importance
SFRA	Strategic Flood Risk Assessment
SRF	Strategic Regeneration Framework
SoS	Secretary of State
SPA	Special Protection Area
SSSI	Sites of Special Scientific Interest
SuDS	Sustainable Drainage Systems
UK	United Kingdom
WFD	Water Framework Directive
WQ	Water Quality

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