UU Bollin Water Quality Updates

2nd May 2023

Davyhulme Wastewater Treatment Works



Water for the North West

United Utilities River Bollin Water Quality Update Agenda

- 1. UU Context and Legislative/Operational Context
- 2. Bollin Focus

AMP7 (2020-2025)

- Wastewater Quality Investment and Investigations
- Better Rivers Better North West
- Partnership Working (including CaBA links)

AMP8 (2025-2030)

• AMP8 WINEP Development

Long Term Planning

• DWMP and Place Based Planning

The context in which we operate



(ip) **56,000** hectares of catchment land

- **当**165 reservoirs
- **1,400** km of aqueducts
- **88** water treatment works
- () **42,000** km of water mains
- **78,000** km of sewers

567 wastewater treatment works

... and over **5,000** skilled employees



What we do impacts each and every person in the North West as they simply get on with life, from making a cup of tea, using the loo, having a shower, the list goes on...

We deliver **1.8 billion litres of fresh, clean drinking water** to over **7 million customers** every day across the North West. We also collect and treat **1,300 million litres of wastewater every day**, so it's safe to go back into the environment

In the next five years, we'll **invest £5.9bn** running, upgrading and future-proofing the region's water infrastructure and services to a blueprint shaped by our customers.

We'll help lift a **quarter of a million people out of water poverty, cut leakage and knock a tenth off water bills** so that by 2025 average bills will be less, in real terms, than 2010. And we'll adapt as we go.

As COVID-19 shows, customer priorities change, which is why we constantly **seek their views through Water Talk**, our 7,700-strong customer panel.

What is the legislative background for Water Company discharges to Rivers and WINEP

- Water company discharges of treated final effluent from wastewater treatment works and intermittent storm discharges (combined sewer overflows, CSOs) are regulated by the Environment Agency (EA) through Environmental Permit Regulations.
- This part of the Regulatory Framework allows water companies to discharge effluent under certain permitted conditions – breaches of these conditions are managed through the EA's compliance frameworks.
- Where improvements to permitted discharges, and discharge quality is required then this is achieved through the Water Industry National Environment Programme (WINEP) and is the programme of works that water companies must deliver to meet their obligations under environmental legislation and UK Government Policy.
- The WINEP is set every 5 years and allows water companies to include these programmes of proposed works in their **Price Review** (Business Plan) submissions to Ofwat (economic regulator).
- United Utilities are currently working with the Environment Agency to finalise the WINEP for the Asset Management Period 2025-2030 (AMP8).



Next AMP8 (2025-2030) WINEP

- UU WINEP currently being developed for AMP8 (2025-30)
- To be submitted to EA 23rd January 2023 for joint review before being included as part of wider Price Review Process (including affordability tests)

Key Themes

WFD Not Achieving 'Good Status'	Storm Overflows (including Env. Act 10 spills)	Nutrients (Phosphorus)	Bathing Waters (Coastal and investigations inland)
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The Wastewater System

Combined sewer system discharge points

- 1. Treated final effluent
- 2. Storm spills at treatment plants
- 3. Combined Sewer Overflows (CSOs)



Stockport WwTW samples



Combined Sewer Overflows (CSOs)

- CSOs act as a pressure relief, allowing rain water, mixed with sewage, to rise inside the sewer and eventually enter a separate pipe which flows into a river or the sea.
- Sewers operate in this way to help prevent the flooding of streets, homes and businesses.
- We understand that storm sewage discharges, no matter how diluted, are an issue for many of our customers – <u>and we agree!</u>
- <u>However</u> it will take many years to change how excess rainfall is managed in the North West.
- Combined public sewers have become a 'catch all' for managing surface water in our communities.
 - 54% of sewers in the North West are Combined vs. national average 33%
 - Annual rainfall 28% higher than England and Wales average
- We want to work with stakeholders, including those at a local scale, to identify opportunities to better manage surface (rain) water to improve the health of rivers in the North West and compliment UU asset based improvements.

Dry Weather



CSOs - operational schematic from RVAH20.gov

Managing the impact of CSO's

- Through United Utilities' Water Quality Programmes (WINEPs) we have invested >£1.2bn up to 2020 to reduce the impact of CSOs on the natural environment
- Improvements at 29 CSOs through a £230m investment programme are currently being delivered.
- Recent investigations, including water quality monitoring and sophisticated modelling are helping to prioritise future CSO investment needs.
- It is expected that the AMP8 WINEP will drive the most significant CSO investment programme United Utilities has seen.

Better Rivers: Better North West

Our four-point plan setting out our commitments to:



Make sure the Company's operations progressively reduce impact on River Health

(2)

Be open and transparent about our performance and plans



Make rivers beautiful and support others to improve and care for them



Create more opportunities for everyone to enjoy rivers and waterways

UU Ww Assets, Drainage Areas and Land Holdings Bollin Catchment



The position of the underground apparatus above on this gain is approximate only and is given in accordance with the basil information currently swillable. Unlike Water will not accord lability for any loss or damage caused by the actual position being different from those above. Crown copylight and detectes digite 2017 Ordnance Durvey (00002452)

Macclesfield WwTW and it's upstream network

- Key current permit limits (sanitary determinands):
 - 12mg/l BOD
 - 30mg/l Suspended Solids
 - 3mg/l Ammonia
- Future Permit limits
 - <u>AMP7 (by 2025)</u>: 2mg/l Ammonia, 0.3mg/l Phosphorus
 - <u>AMP8 (2025-2030)</u>: 1mg/l Ammonia + additional storage (to feed into and subject AMP8 WINEP prioritisation)
- Treatment Capacity (Flow to Full Treatment): 61.5 million litres per day
- Storm Tank Capacity: 6,570m3



AMP7 (2020-2025) Wastewater Quality Improvement Schemes

UU WwTW	Standard to be achieved	Regulatory Delivery Date
Alderley Edge	0.3mg/l Phosphorus	22/12/24
	5mg/ Phosphorus	22/12/23
Bowdon WwTW	Flow to Full Treatment Monitoring	31/03/23
	Storm Tank Event Monitoring	31/03/22
Great Warford	1mg/l Phosphorus	22/12/24
High Legh	0.4mg/l Phosphorus 1.5mg/l Ammonia	22/12/24
Knutsford	0.4mg/l Phosphorus Operational need to reduce river bank erosion risk	22/12/24
Moor Pumping Station (Knutsford)	Cessation of storm overflows (to Moor Pond)	31/03/25
	1mg/l Phosphorus Investigate cypermethrin	22/12/24
Mobberley	Flow to Full Treatment Monitoring	31/03/21
	Storm Tank Event Monitoring	31/03/23
Macclesfield	0.3mg/l Phosphorus 2mg/l Ammonia	22/12/24
	Flow to Full Treatment Monitoring	31/03/21
	Storm Tank Event Monitoring	31/03/24
	1mg/l Phosphorus	22/12/24
Wilmslow	Flow to Full Treatment Monitoring	31/03/21
	Storm Tank Event Monitoring	31/03/24

 ><u>£100m</u> investment improving UU wastewater discharges in the Bollin catchment in our current investment period. Key driver nutrient (Phosphorus) removal from WwTWs

Case Study: Macclesfield WwTW AMP7 Improvements

- A £50m water quality improvement scheme at Macclesfield WwTW.
- Tighter ammonia and phosphorus permit limits and providing additional capacity to meet the need of forecast increases in population.
- Solution includes provision of innovative Nuvoda MOB[™] Technology. The MOB[™] process (Mobile Organic Biofilm)





Reasons for not achieving good status (RNAGS) in the Bollin

- Reasons for not achieving good status (RNAGS) data was produced to support the cycle 2 river basin management plans. It contains water body elements that have a classification status of less than 'Good' in 2015 and the reason attributed including the sector deemed to be responsible.
- Included opposite is the RNAG data for the stretch of the Bollin (Source to Dean).



Reason Type	SWMI	Activity	Category	Classification Element	More information
RNAG	Unknown (pending investigation)	Unknown (pending investigation)	Sector under investigation	Benzo(g-h-i)perylene	<u>Details</u>
RNAG	Diffuse source	Urbanisation - urban development	Urban and transport	Phosphate	<u>Details</u>
RNAG	Diffuse source	Poor Livestock Management	Agriculture and rural land management	Phosphate	<u>Details</u>
RNAG	Diffuse source	Urbanisation - urban development	Urban and transport	Macrophytes and Phytobenthos Combined	<u>Details</u>
RNAG	Diffuse source	Poor Livestock Management	Agriculture and rural land management	Macrophytes and Phytobenthos Combined	<u>Details</u>
RNAG	Point source	Sewage discharge (continuous)	Water Industry	Macrophytes and Phytobenthos Combined	<u>Details</u>
RNAG	Point source	Sewage discharge (continuous)	Water Industry	Phosphate	<u>Details</u>
RNAG	Point source	Sewage discharge (intermittent)	Water Industry	Invertebrates	<u>Details</u>
RNAG	Measures delivered to address Reason, awaiting classification	Not applicable	No sector responsible	Polybrominated diphenyl ethers (PBDE)	<u>Details</u>
RNAG	Measures delivered to address Reason, awaiting classification	Not applicable	No sector responsible	Mercury and Its Compounds	<u>Details</u>
RNAG	Physical modification	Other (not in list, must add details in comments)	Water Industry	Mitigation Measures Assessment	Details
RNAG	Suspect data	Not applicable	No sector responsible	Fish	<u>Details</u>
RFD	Monitoring Site Changed (RFD only)	Not applicable	No sector responsible	Phosphate	<u>Details</u>
RNAG	At Risk of Deterioration (RFD only)	Not applicable	No sector responsible	Ammonia (Phys- Chem)	<u>Details</u>

River Water Quality Impacts Overview

Treated Final Effluent from Wastewater Treatment Works (WwTW) Continuous discharges of fully treated final effluent from WwTWs. Permit limits for quality of discharge set by the EA based on river water quality needs.	Intermittent Storm Discharges from Combined Sewer Overflows (CSOs) Permitted discharges of diluted storm sewage (combined foul and surface water) during heavy rainfall events. Necessary 'release valves' to reduce the risk of sewage flooding homes/roads. Can include storage to reduce frequency of discharges and screens to mitigate aesthetic impact.	Surface Water Discharges Unpermitted discharges direct/indirect to watercourse, includes e.g. culverted streams, urban run off (highways, urban development). Pollution risks include urban diffuse pollution, misconnections.	Private Wastewater Networks Discharges from non- water company, private drainage networks served by e.g. private septic tanks. Regulated by EA and subject to e.g. General Binding Rules legislation.	Industry Direct discharges from industrial (including manufacturing) processes/premises to water course. Subject to EA regulation. High risk discharges likely to be permitted.	Rural/Farming Run off through farmland impacted by agricultural management practices including arable and livestock management .
26%	4%		70	0%	

Better Rivers, Better North West

Our four point plan to improve river health and recreation

Ensuring our operations progressively reduce impact to river health



- Aim for no serious pollutions incidents from our assets
- Implement water quality impact monitoring at our overflows no later than 2025
- Deliver £230m in environmental improvements, supporting at least a one third sustainable reduction in the number of spills recorded from our storm overflows by 2025 compared to the 2020 baseline
- Reduce category 1-3 pollution incidents by at least 50% by 2025 against a 2012 baseline
- Recruit over 100 Green Apprentices by 2025

Being open and transparent about our performance and our plans

- Ensure all storm overflows are monitored by 2023
- Aim to provide near real-time data when an overflow operates and make sure this information is easily accessible from 2023
- Work with stakeholders to provide the information people want and need in an annual report on storm overflows from 2022
- In 2022 publish investigations and plans for all overflows that operate frequently
- Provide greater transparency on the link between environmental performance and remuneration
- In 2022, establish an environmental scrutiny committee of external stakeholders to drive greater oversight
- Hold our first Environmental AGM in 2022 to review performance and progress
- Regular hackathons on pollution data to drive innovative solutions

2.

Better River, Better North West

Our four point plan to improve river health and recreation

Making rivers beautiful and supporting others to improve and care for them 3.

Creating more opportunities for everyone to enjoy rivers and waterways

- Plant over 1 million trees by 2030
- 100% of our SSSIs in favourable or recovering status by 2030
- Use our convening powers to help others address their contribution to river health
- Convene a North West Rivers summit in 2022
- In 2022, launch a new partnership to protect watercourse with farmers to incentivise farming practices that reduce impact
- In 2023, launch a Community Fund to support groups to improve our rivers
- From 2023, create a movement of North West citizen scientists to collect data on river health
- Work with partners Rivers Trust, RSPB and local authorities to deliver projects
- Fund local universities and research studies to understand river health
- Catalyse our network of employee volunteers to focus on river health
- Advocate for the removal of the automatic right to connect
- Champion legislation to ban wet wipes that contain plastic and lobby for a ban on all wet wipes that are not 'Fine to Flush'

- In 2030, 95% of customers will be no further than 30 miles from a bathing water
- Play our part in creating and promoting additional inland bathing waters in the North West
- Work with others to create 10 new recreational clubs at our reservoirs for all our customers to enjoy by 2030

4.

Work with BEACON and the Upper Mersey Catchment Partnership

- United Utilities are active members of the Mersey Rivers Trust hosted Upper Mersey Catchment Partnership and the BEACON (Bollin) subgroup
- Key activity for catchment partnerships to develop catchment action plans across key stakeholders including risk management authorities, eNGOs and local interest groups
- Utilises a Catchment Systems Thinking approach to understanding risks/issues
- Opportunities for group to influence longer term catchment planning activities, including UU water quality investment programmes
- UU support to can include operational support and support through Better Rivers Better North West Programme including links to UU River Champions.
- Opportunity to feedback local partners eyes and ears on the ground



UU/Mersey Rivers Trust Upper Mersey Catchment Walkover August 2022

AMP8 WINEP Development

What is the WINEP?

It is the programme of work water companies in England are required to do to meet their obligations from environmental legislation and UK government policy.

It sets out how the water industry will contribute to improving the natural environment.

Set by Environment Agency, Defra and Ofwat

For 2020 to 2025 the programme includes £5.2 billion of asset improvements, investigations, monitoring and catchment interventions across the UK

For 2020 to 2025 United Utilities are investing ~£830m across the region

~£489m of that is in Irwell and Upper Mersey



Key AMP8 WINEP Drivers

- Storm overflows (Environment Act/Defra storm overflows consultation)
- Nutrients (2037 Phosphorus targets 80% reduction in P from 2020 baseline)
- Water company RNAGS priority Poor/Bad WFD water courses
- Bathing Waters (including inland BW)
- Range of alternative/multi beneficial solutions
- Partnership (PBP, DWMP, CaBA hosts WINEP development meeting June 2022)

Proposed AMP8 Projects in the Bollin

- Driven by outputs from AMP7 Integrated Catchment Modelling (ICM) investigations
 - Reduced spill volumes from Macclesfield WwTW, tighter Ammonia at Macclesfield WwTW, MAC0062 Westminster Road
 - To be prioritised and endorsed through **PR24 processes**
 - Aims to tackle WFD *Reasons for Not Achieving Good Status* (RNAGs) so to be considered as a priority.
 - '10 spills' strategy being developed includes development of adaptive plans for overflows to meet long term (2050) spill frequency targets set by Environment Act and provision of in river monitoring requirements upstream and downstream of UU wastewater discharges.
 - For AMP8 proposed improvements to 9 overflows to meet Environment Act 10 spills driver (see next slide).

Proposed Intermittent (CSO) Discharge to meet 10 spills per annum

Proposed Inland Bathing Water Investgiation

Proposed Continuous Final Effluent Discharge Improvement

Action Description Action Name Proposing a conventional solution at Bowdon WwTW to protect the environment from the effects of intermittent Bowdon WwTW 016940002ST discharges. Water company investigation to determine actions to contribute to improving and maintaining water quality for bathing in the catchment upstream of Carrs Park Carrs Park Proposing a conventional solution at CHANCEL LANE CSO to protect the environment from the effects of CHANCEL LANE CSO MAC0046SO intermittent discharges. Proposing a conventional solution at DUNHAM MASSEY to protect the environment from the effects of DUNHAM MASSEY WwTW 016940003ST intermittent discharges. Proposing a conventional solution at Hale Storm Tanks and PS to protect the environment from the effects of Hale Storm Tanks and WwPS TRA0102ST intermittent discharges. Proposing solution at Macclesfield WwTW to contribute to achieving improvement objectives for WQ or prevent deterioration. (Ammonia, Biochemical Oxygen Demand) MACCLESFIELD WwTW Proposing a conventional solution at Macclesfield WwTW Storm Tank Spill to protect the environment from the MACCLESFIELD WwTW 016910009ST* effects of intermittent discharges. Proposing a hybrid solution at QUARRY BANK MILL CSO to protect the environment from the effects of QUARRY BANK MILL CSO MAC0043SO intermittent discharges. Proposing a conventional solution at Rear of Knowle House to protect the environment from the effects of Rear of Knowle House CSO MAC0048SO intermittent discharges. Proposing a conventional solution at River Bank Close CSO to protect the environment from the effects of **River Bank Close CSO MAC0055SO** intermittent discharges. Proposing a conventional solution at Westminster Road CSO to protect the environment from the effects of Westminster Road CSO MAC0062SO** intermittent discharges. Proposing solution at Bowdon WwTW to water company contribution to achieve improved water quality. (Phosphorus) Bowdon WwTW

*Subject to Water Company Price Review Process (PR24)

**Included in accelerated AMP8 WINEP – project now commencing!

Proposed AMP Projects in the Bollin*

Long Term Planning: DWMP

- Our 25-year Drainage and Wastewater Management Plan (DWMP) is being developed to set out our long-term approach for sustainable drainage and wastewater management across the North West
- The DWMP assesses the effects of future pressures on our wastewater systems over the short, medium and long term, and what can be done to address these issues in **partnership** with others where possible.
- The DWMP will influence our **future business plans** to make sure that we are doing the right thing for the region both now and in the long term.
- The DWMP looks at three key areas: **flooding, environment and wastewater** treatment to help us understand how a growing population and more extreme weather might impact our wastewater services
- Our Draft DWMP consultation is now live and can be accessed at the links below
 - <u>https://www.unitedutilities.com/corporate/about-us/our-future-plans/Our-long-term-plans/</u>





Long Term Planning: Place Based Plan

River Dean/ Bollin:

a Place Based Planning Approach

Aim: co-create a long term place based strategy with catchment stakeholders which has a focus on the water environment and includes natural and social benefits

Drivers in the River Dean and River Bollin

Cheshire East

Mersey Rivers Trust



United Utilities

Erosion and sedimentation	Physical modifications (weirs)	Flooding	INNS	Agricultural activity	Inland bathing water at Carrs Brook which is a popular visitor spot near Styal	Other focus areas to be determined
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Process stages for Co-Creation

Endorsement	Stakeholder plan and issues	Develop SMART objectives	Governance and funding	7/	Options development and
Core catchment partners are consulted on places which they believe will benefit from co- creating a long term plan based on catchment knowledge, drivers and evidence	Wider stakeholder list is generated by partners and key information about the water environment in the place is captured	Objectives have a long term horizon (25 years) and are underpinned by data and evidence to monitor progress	Agree the governance structure that will oversee the collaborative delivery and monitoring of the strategy and create a menu of funding options to enable interventions	De C incl	evelop options and associated costs and benefits that will contribute to the objectives. Treate an adaptive plan which ludes interventions and trigger points

Water UK 21st Century Rivers report – actions by others to improve river health

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Consumers

- Do not flush wet wipes and other items down the toilet and stick to the three 'Ps' of pee, poo and paper
- Think about the products you use and how dispose (phosphate)

Community Groups

- Support citizen science projects
- Champion key messages about actions required by all parties

House builders and developers

- Embed water management in new housing design and embrace SuDS
- Ensure drainage systems are not misconnected

Highways

 Reduce surface water run-off from road networks and consider how this can be treated

Farmers

- Adopt sustainable farming practices to reduce nutrient run off from fields into watercourses
- Reduce slurry run-off from fields

Septic tank owners

Ensure these are well maintained and do not leak into nearby water courses

Environment Agency

 Full river model coverage of the region

Local Authorities

- Use the planning system to increase the update of SuDS
- Enforce current planning guidelines in relation to covering over garden
- Reduce discharges from its drainage assets

Government

- Remove the automatic right to connect surface water into combined systems and ensure development adheres to the SUDS hierarchy
- Legislation to ban wet wipes that contain plastic and lobby for a ban on all wet wipes that are not 'Fine to Flush
- Direct regulators to include new requirement on storm overflows to be included in Water Industry National Environment Plan (WINEP)

Useful Links

United Utilities Storm Overflow Information

https://www.unitedutilities.com/corporate/responsibility/environment/reducing-pollution/stormoverflows/

Better Rivers, Better North West Information

https://www.unitedutilities.com/corporate/responsibility/environment/reducing-pollution/stormoverflows/our-commitments-to-river-health/

United Utilities Draft Drainage and Wastewater Management Plans <u>https://www.unitedutilities.com/corporate/about-us/our-future-plans/Our-long-term-plans/</u>

Catchment Data Explorer for Bollin (Source to Dean) Water Body <u>https://environment.data.gov.uk/catchment-planning/WaterBody/GB112069061320?cycle=2</u>

BEACON (Bollin Environmental and Conservation) & Upper Mersey Catchment Partnership <u>https://www.merseyrivers.org/index.php/projects/beacon</u> <u>https://catchmentbasedapproach.org/get-involved/upper-mersey/</u>



Water for the North West