



DRAINAGE & WASTEWATER MANAGEMENT PLAN

Dŵr Cymru Welsh Water

Drainage and Wastewater Management Plan 2024

Executive Summary

November 2023



IN PARTNERSHIP WITH



Drainage and Wastewater Plan Executive Summary

This is our first Drainage and Wastewater Plan (DWMP) for Wales and the neighbouring parts of England which we serve. It builds on our 2050 Vision, Directions from Welsh Government, our Regulators, our Stakeholders, and Customers.

The Context for Cycle 1

At the outset, our intention for our first DWMP was to develop a Management Plan that sets out our strategic direction for wastewater services, in the context of the needs of our customers, and create the methodology and tools to support how we enhance the operation of our wastewater and sewerage assets, whilst ensuring that the services they provide are sustainable. This methodology and these tools can then be further deployed in the development of Cycle 2, following the feedback received on this first non-statutory cycle of the DWMP. We set out to develop a Team Wales approach to proactively create relationships and develop collaborative programmes of work. This approach was underpinned by Welsh Government's aspiration for a collaborative strategic plan for drainage and wastewater systems in Wales.

In framing our plan, we have had regard to: -

- The Welsh Government's Guiding Principles for DWMPs published in 2022 together with their further clarification of their requirements as set out in their letter of 3 August 2023
- Ofwat's Guiding Principles published in 2022
- The action plans of the Better River Quality Taskforce and the supporting report by Stantec
- The Wellbeing of Future Generations Act 2015
- The Environment (Wales) Act 2016
- The Welsh Government's statement "securing greater nature, environmental and community benefits through Sustainable Drainage Systems"
- Water UK DWMP Framework
- The Environment Act 2021 Part 5 Section 79 that requires Drainage and Sewerage Management Plans for both England and Wales.

The Objectives of our Plan

The geography of Wales, with hundreds of discrete catchments with small populations, has meant that our approach to developing the plan has had to be progressive. Our Plan offers a strategic view of the impacts of climate change, growth, and urban creep on our wastewater and drainage system, deriving sewer performance risk assessments particularly with regards to the risk of flooding and pollution. The risk assessment underlying the model also contributes to the prioritisation of storm overflows reflected in the National Environment Programme. It also sets out how we intend to engage with stakeholders to build partnership programmes, essential for future progress, where opportunities arise.

Our DWMP advances from standard assumptions in drainage design about infiltration to catchment specific assessment based on EDM spill data and uses innovative ways to produce strategic planning data to develop our wastewater and drainage services using a cost effective and easily repeatable method. The plan seeks to drive sustainable improvements for customers and the environment and in so doing deliver the requirements of the Wellbeing of Future Generations Act. It also gives us a picture of the scale of investment needed now, and in the future, to maintain and improve the

performance of our wastewater systems, albeit that this can only be taken as indicative for this first cycle given the extent of estimation required based on the results of the priority catchment sample that has been analysed, itself covering only a small area of our geography although a significant part of our population.

In developing our Plan, in accordance with directions from Welsh Government, we have engaged with our customers and other stakeholders, so that their views were considered. This included Regulators, Local Authorities, our Independent Environment Advisory Panel (IEAP) and Independent Challenge Group (ICG), and the Consumer Council for Water - all to seek their views on what they see as the important priorities and choices to consider within the Plan.

Our Plan has two key long-term outcomes, developed from our extensive consultation with stakeholders:

- No customers should experience flooding from sewage inside their homes due to a lack of sewer network capacity.
- Our rivers and coastal waters should only ever receive treated flows from the sewerage system to protect their biodiversity and ecology.

In achieving these we have sought to:

- Identify solutions that are the most sustainable and best value for customers, having regard to the carbon costs of schemes, and wider environmental issues identified through Strategic Environmental and Habitats Regulations Assessments
- Contribute to the achievement of 'Good' ecological status as required by the UK Water Framework Regulations
- Protect habitats and species of international importance as defined by the UK Habitats and Birds Regulations
- Meet our statutory duties for urban flooding and promote water efficiency, biodiversity and net carbon reduction planning.
- Deliver against our national obligation to support continued maintenance of community flood defences.

We recognise that our DWMP has to be designed to be deliverable, and financeable, and to strike the right balance of ambition and affordability. Given that this first cycle is purely indicative of the scale of investment required and not an implementable plan, it will be necessary for these criteria to be applied to the outputs of the second cycle, based on complete catchment modelling and integrating Storm Overflow investment assessed on the basis of ecological harm. Although we have a large geography and a substantial number of discrete wastewater catchments, we have a relatively small customer base, who ultimately pay for the service and improvements through their water bills.

Storm Overflows

In Wales, Government policy towards investment to resolve Storm Overflow discharges is to prioritise based on their impact on the environment so as to achieve the requirements of the Water Framework and Urban Wastewater Treatment Directives, whereas in England, investment is focused on spill frequency reduction.

To support the approach in Wales, we have engaged with the Better River Water Quality Task Force (BRQTF), a multi stakeholder group led by Welsh Government. This group was established "to evaluate the current approach to the management and regulation of overflows in Wales, to set out

detailed plans to drive rapid change and improvement” and to develop a “Storm Overflow Action Plan” for Welsh companies so as to create investment programmes for PR24 prioritising investment based on the environmental impact of SOs in the highest priority / most sensitive water bodies. This is through using the Storm Overflow Assessment Framework (SOAF), including all the elements of water quality impact assessment. Consequently the target for Welsh companies, operating wholly or mainly in Wales, differs from England, and aims to eliminate the adverse ecological impact of any SO by 2040. Our approach goes on to evidence where work is not required, and so construct solutions in accordance with best technical knowledge not entailing excessive cost.¹

How we Developed our Cycle 1 DWMP

In accordance with the Water UK Framework for developing our DWMP, we have undertaken a Baseline Risk and Vulnerability Assessment (BRAVA) for all our wastewater catchments within our operating area. This included the following Planning Objectives:

- The capability of our system to accommodate flows in both dry and extreme weather conditions,
- The impacts of storm discharges on our rivers and coastal waters,
- The extent of pollution likely to occur from escapes from our wastewater system,
- The risk of flooding in severe storm conditions,
- The potential impact of sewer collapses and blockages.

By establishing this information, we were then able to develop an Action Plan for every catchment. Problem Characterisation (the next stage in the Framework) enabled us to identify the highest scoring catchments based on complexity of risks to be addressed as well as future growth. This amounted to 44 catchments which required us to develop detailed solutions to address such risks.

Given that Welsh Government Policy is to tackle storm overflows based on their environmental impact (“harm”), this hydraulic data, which purely measures flow rather than harm, does not provide a basis from which to produce our investment plans for Storm Overflows. Instead, we are carrying out a survey of our SOs to assess their individual impact on the receiving watercourse and are using this data to develop the priority order for tackling SOs that cause the most environmental harm first. We anticipate that we will have completed this SO impact survey in time to incorporate the resulting data into Cycle 2 of the DWMP which will then allow the investment plans for future AMPs to be derived directly from the DWMP as this will then comprise both sewer capacity and storm overflow impact modelling.

A range of approaches to account for climate change have been used to inform the DWMP and the Long Term Delivery Strategy (LTDS) scenarios, these being modelled as sensitivities around the central Welsh Government climate change scenario of UKCP09. We carried out modelling using a range of future scenarios between RCP2.6 and 8.5.

The risks from the BRAVA exercise were analysed in order for us to develop a list of highest priority catchments, for solution options development. Consequently, this first cycle DWMP has concentrated on our 44 highest priority catchments to produce solutions for worst served customers, (those being

¹ Urban Wastewater Treatment Directive (Annex IA) - The design, construction and maintenance of collecting systems shall be undertaken in accordance with the best technical knowledge not entailing excessive costs, notably regarding:

- volume and characteristics of urban waste water,
- prevention of leaks,
- limitation of pollution of receiving waters due to storm water overflows.

at the highest risk of repeat flooding) and other network capacity issues. This derived 219 suites of solutions costing £1.5bn solving, in the most environmental, social and sustainable way, for what the hydraulic models predict to be the resulting incidence of storm overflows and customer flooding in those catchments. Whilst these solutions have been considered for inclusion in the next Investment programme (AMP8) the WG priorities of tackling phosphorous from wastewater treatment works, in particular prioritising work on improving water quality in Wales Special Areas of conservation (SAC) rivers, alongside the prioritisation of SO investment on the basis of environmental harm rather than spill frequency, has meant only a handful of the modelled solutions are included in our proposed PR24 plan, given the need for this plan to be deliverable, affordable, and financeable. The remaining modelled solutions, together with those developed from the modelling of the remaining 790 catchments, will be revisited during the next cycle of the DWMP which will also contain environmental harm data for the SO population as the basis for SO investment prioritisation.

Indicative investment required by Cycle 1

Based purely on the methodology we have had to adopt for this first DWMP cycle, and recognising the extent of extrapolation and assumption that has been necessary from the detailed work in the 44 priority catchments, our plan indicates that investment in the region of £13bn will be required to enable the drainage system to handle the projected flows within the central climate change scenario adopted by Welsh Government without causing customer flooding and storm overflows only operating in very exceptional circumstances. This drops to £11.6bn with overflows operating around 10 times a year. Included in those sums is £5.5bn which is associated with eliminating the risk of sewer flooding on homes and businesses. At the current level of investment in AMP 7 this would not be achieved until after 2100. To achieve these outcomes sooner, by 2075 for example, we need to increase our environmental performance enhancement investment over the next 25 years from circa £1bn per AMP to circa £2bn per AMP and maintain this level of investment thereafter. In AMP8 we are proposing to invest £1.16bn on such enhancement.

Given the impact on bills of such investment and the societal impact of the engineering associated with such proposals, between now and finalising our second cycle DWMP we will need to continue with important consultation with customers, government bodies and other stakeholders. This engagement will then determine what outcomes and engineering standards should be used as they will be critical to setting the direction, pace and costs of delivery going forward, as well as the pace of progress to ensure that our future plans are deliverable, affordable, and financeable. We will continue to seek to use nature-based solutions and “green infrastructure” to manage flows within our network and to also reduce the impact on the environment if the network cannot contain all the flow. Such outcomes and standards will ultimately be a matter for Welsh Government and will need the support of multiple stakeholders in their delivery, particularly Local Authorities.

With such a transformation required to both reduce flooding but also the operation of storm overflows in one of the wettest parts of the UK, this has to be developed across multiple 5-year investment cycles. Indeed, with so many of the sewers in Wales being combined foul and surface water, work will be required in every community, urban and rural, large and small. We will prioritise this based on tackling the places where our operations are having the greatest impact on the environment, following Welsh Government Policy.

Informing Future Investment

Given the extent of the required future investment indicated by this first cycle we will seek to initiate discussions with Government, Regulators and stakeholders so that by the completion of cycle 2 in

2028, we will have developed the programme of work that is affordable, deliverable and financeable to form a long-term integrated sewerage and drainage investment programme covering the whole of our operational area. In our PR24 submission, the Long-Term Delivery Strategy (LTDS) sets out an estimate of the scale of future investment, particularly around SOs and network improvements to contain flows, that may be able to be contained within such a programme to meet those criteria. The completion of the SOAF assessments, improved model coverage in our DWMP, and feedback from the range of “grey” and “blue-green” solutions we are delivering in early AMP8, together with the adoption of innovative approaches and interaction with other stakeholders, in particular local authorities, to reduce flow entering the drainage system will allow us to refine further the cost estimates in the current LTDS for the future investment cycles.

As part of our engagement with customers during the consultation period, we explored the potential impact on affordability and customer bills. Customers were provided a range of scenarios and provided feedback on these. Generally, customers advocated an incremental rise in bills to avoid any sudden increases, supporting our long term programme. We have since reflected this feedback in the profile of the indicative investment in our Plan alongside the outputs of our work on the Company’s LTDS. Welsh Government’s draft report from Stantec has also provided useful validation of our cost estimates.

Meeting our Regulator’s expectations

Welsh Government direction is to use the DWMP as a catalyst to start collaborative work with Local Authorities (LA’s) to look for where overlaps exist between on the one hand the need to improve the sewer network and on the other to better manage surface waters given LA’s obligations as Lead Local Flood Authorities and the work they do to manage their network of highway drains and culverts. These overlaps provide opportunities to work in partnership to improve the resilience of local communities and the environment.

In line with Welsh Government’s aspirations, we set out to develop a long-term planning framework and methodology which could be utilised to determine what ourselves, local authorities and other stakeholders needed to provide to support the wastewater and drainage infrastructure required over a 25-year horizon. Whilst we recognise Ofwat’s direction to develop a Plan which would directly inform our PR24 programme this has not been possible given that, as stated earlier, the DWMP is based on hydraulic modelling to derive required treatment capacity whereas, in Wales, the SO investment programme is prioritised on the basis of ecological harm caused by SOs to receiving watercourses, rather than flow. We will seek to address this as part of the development of our next DWMP by 2028 by when we are planning to be able to incorporate the results of the SO harm assessment into the DWMP catchment models. For English companies a plan to limit high spilling storm overflows means understanding, and then tackling, flows that are derived from the DWMP hydraulic modelling, hence providing a direct link between the DWMP and the AMP8 enhancement plan.

A Consents Plan, which takes into account environmental impact and receiving water course quality data for both continuous discharges (wastewater treatment works) and intermittent discharges (SO’s), has been added to the Flooding, Drainage, and Sewer plans and, for the next cycle of the DWMP, this will include our approach to investment for Storm Overflows.

Notwithstanding the above and in light of the strategic direction provided by our Regulators, and subject to the limitations implicit in this being at this stage an indicative plan given the need to extrapolate the results of modelling a limited catchment sample and the unavailability of

comprehensive SOAF data across our Storm Overflow population, it is our view that our final Plan meets Ofwat's Guiding Principles (published 2022) in so far as;

1. Our Plan is *comprehensive, evidence-based and transparent*, aligning with other strategic and policy planning tools and complies with the Water UK DWMP Framework.
2. Seeks to *deliver resilient systems that meet operational pressures, as well as minimising system failures*. Our Plan incorporates both operational activity and the protection of our operating assets from extreme events, in particular flooding. The plan shows how climate change will reduce resilience over time if we do not start to address this challenge.
3. *Considers the impacts of drainage systems on the immediate and wider environmental outcomes*, and develops solutions which fully consider environmental net gain and enhancement.
4. *Our Plan is collaborative*, placing emphasis on the benefits of partnership working and sits alongside the ongoing work we undertake on matters such as Storm Overflows, Phosphorous and Flood & Coastal Erosion Management.
5. *Shows leadership* to the water sector in Wales on our approach to managing our wastewater systems over the 25 year period, whilst also demonstrating collaboration across other strategic planning frameworks such as the Water Resources Management Plan.
6. *Improves customer outcomes and awareness* of our future plans and investment, which is underpinned by the engagement and customer research outputs

Cycle 2 Approach

Cycle 2, which we will develop over 2024 to 2028 with an aim to reach publication in 2028, will focus on widening model coverage and developing greater confidence in our plans. By complementing and enhancing our Planning Objectives established in Cycle 1, our aspiration is to deliver a Plan for a 25-year programme of work, which will inform the scale our future investment in our wastewater systems. Funding for this further development of our DWMP is built into our PR24 submission and we will seek to achieve this by:

- Enhancing our Strategic Decision Tools, such as developing our Integrated Catchment Modelling approach. This will include forecasting of Wastewater Treatment Works capability, Sewerage Pumping Stations and network capacity, river water quality, and risk management of 3rd party assets. We will also update to the latest climate change scenarios.
- Developing Smart Networks for Management Planning, which will provide recorded information on sewage flow and sewer water quality. This will assist in our future forecasting of the risks and impacts as we strive to upgrade our networks to meet customer and regulator expectations.
- Embedding the principles of sustainable management of our natural resources into our planning process by using sustainable approaches to surface water management, such as the SUDS hierarchy.
- Supporting the delivery of Nature Based Solutions, such as wetlands, to improve discharges from wastewater treatment works and SO's.

- Enhancing (through increased co-ordination) our collaborative working with other stakeholders, with the aspiration to create and develop a National Drainage and Environment Programme, supported by Welsh Government.
- Continuing to work collaboratively with colleagues across the industry to enhance best-practice approaches to the development of Business and Management Planning.

By continuing to develop and enhance our Drainage and Wastewater Management Plan in our next cycle, we will deliver a Plan which provides definitive evidence of the need to continue to invest in our wastewater systems, ensuring that all our stakeholders and customers remain well informed of progress, as well as supportive of the policy positions underpinning our investments. This will mean the PR29 process will, to a greater extent than PR24, be shaped by the outputs from the DWMP.