



Dŵr Cymru
Welsh Water

WSH63-PE00 – Protecting and Improving the Environment

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1. Protecting and Improving the Environment

This document puts Welsh Water's plans to protect and improve the environment into their overarching context and shows how diverse inputs have culminated in the mix of schemes we are prioritising in AMP8.

A key priority of Welsh Government is to protect and improve waterbodies so that current and future generations can benefit from a prosperous, resilient and healthy Wales. In recent years, the narrative surrounding water companies and their impact on the environment (particularly relating to water quality and pollution) has been one of public scrutiny and concern. Public outrage over discharges from the wastewater network has led to a reactive approach by regulators and government, placing mandates and more stringent requirements on water companies to safeguard environmental interests and public health.

Alongside this, while 44% of Welsh rivers and 40% of all Welsh waterbodies achieve 'Good Ecological Status', there are tighter targets on high priority waters. Our 9 rivers that are designated as Special Areas of Conservation are subject to these tighter targets and only 39% achieve them. Additional obligations have been placed on Welsh Water to support improvements in these key protected habitats. Furthermore, water companies in Wales have commitments to achieve Net Zero and to maintain and enhance biodiversity in response to the climate and nature emergencies declared by Welsh Government.

Welsh Water, alongside environmental regulators, is on a continuing journey to reshape and readdress its strategies and deliverables to meet the changing environmental landscape. We are engaged in constant dialogue with regulators to align our proposed intervention programmes with regulatory requirements and priorities so that we remain compliant with evolving regulations and are well-positioned to address emerging challenges.

One prominent theme involves numerous projects under the National Environment Programmes (WINEP in England and NEP in Wales) where enhanced funding is required due to evolving legislation and shifting targets. Formerly acceptable standards no longer suffice in some areas, prompting the need for upgrades and enhanced measures to meet new requirements. The principles of these legislative and regulatory drivers are echoed by the expectations of our stakeholders and customers and constitute a powerful mandate to protect and improve the environment, realised through very specific targets and standards. It could easily appear that compliance with WINEP and NEP is the full story of how we intend to carry out our duties, but this document is intended to outline a much broader picture.

Although some of the proposed investments to address the issues and risks identified by our Drainage and Wastewater Management Plan (DWMP) have been re-prioritised from AMP8 to AMP9, it is the increased understanding from the work on the DWMP that enables us to make this risk-based decision to defer with confidence and to assure our customers, regulators and wider stakeholders that we are pursuing a best-value and low-regrets approach to our long-term ambitions for the environment.

A significant component of our environmental strategy revolves around the Storm Overflow (SO) Programme, which encompasses both base and enhancement investment designed to meet new standards and requirements and the implementation of new or tighter Phosphorus permit limits under both the Water Environment (Water Framework Directive) (England and Wales) Regulations 2017 and The Conservation of Habitats and Species Regulations 2017.

Many of the schemes proposed in our plan to meet the challenges of delivering high-quality tap water and a reliable and secure water supply will also provide benefits to the environment and the community. This document focuses on spheres of Welsh Water's activity that have not been portrayed in the companion documents WSH51-CW00 - Safe and High-Quality Tap Water, and WSH56-RS00 - A Reliable Water Supply for the Short and Long Term.

2. Listening to Our Customers and Stakeholders

2.1 Customer Views

A good understanding of customer needs and priorities has been a core consideration in formulating our PR24 Business Plan. The results of our structured programme of customer engagement and research are presented in a supporting document to this submission: WSH30-Customer-engagement-and-research.

Customer consultation has also been an essential step in the development of our DWMP (see Section 3.2). Overall, there is a clear picture that there has been a shift in societal attitudes towards environmental issues. More frequent media coverage of environmental challenges, such as water pollution, climate change, and ecological degradation, have increased public awareness and concern.

Furthermore, our regulators often take customer views and public sentiment into account when formulating policies and regulations. As customers become more environmentally conscious, regulatory authorities have responded by introducing measures that encourage or enforce actions to address environmental issues. Regulatory mandates for reducing pollution, enhancing water treatment processes, implementing water conservation measures, or investing in renewable energy and sustainable practices can be assumed to reflect our customers' priorities.

2.2 PR24 Forum Strategic Steers

Our long-term outcomes are collaboratively developed with the PR24 Forum, which is chaired by the Welsh Government and includes all our key regulators as well as benefitting from the input of customers and wider stakeholders.

The 'Strategic Steers' document, issued by the PR24 Forum, outlines strategic directions for companies and Ofwat, as well as addressing challenges and priorities for the water sector. It includes the emphasis on reducing ecological harm from SOs, reducing the impact from wastewater treatment works in SAC sensitive areas, delivering improvements where there is a reason for not achieving good ecological status and achieving zero category 1 and 2 pollution incidents. Section 6 of Business Plan 2025-2030: Stepping up to the challenge puts the company-specific strategic steers for the environment and wastewater into the context of our Plan.

The forum supports the view that the water sector must balance serving people and nature, addressing issues like pollution, storm overflows, phosphates, temperature changes, and flow reductions while acknowledging that ongoing and emerging risks are complex. It is also acknowledged that some outcomes from innovation may require more time than conventional solutions do.

Welsh Water is committed to meeting or beating expectations by:

- adhering to its legal responsibilities for achieving compliance and to even surpass these legal mandates, when endorsed by customers and stakeholders and when it represents value for money
- exploring and optimising collaboration and co-funding avenues with other sectors to synchronise investments and shared ambitions in surface water management, network capacity, addressing SOs, and enhancing asset health
- expediting innovation opportunities, seeking out efficiency opportunities in multi-faceted solutions where these will improve consumer outcomes and enhance environmental benefits
- take concerted actions to confront climate change and nature emergencies during AMP8, focusing on those that yield the most significant environmental enhancements in terms of harm reduction
- prioritise problem-solving at the source, focusing efforts on the most substantial environmental impacts, and giving preference to nature-based solutions.

Within the forum, Natural Resources Wales (NRW) has emphasised the urgency to address climate and nature emergencies now, even if bill increases might be unpopular, to avoid the financial and environmental burden falling on future generations. However, consistent findings from the qualitative stage and other pieces of our customer research indicated that customers do, in fact, consider it fair to introduce bill increases gradually spread over time or to see earlier investment affect their bill if it means that the right investments are being prioritised and the cost is not unduly carried by future generations.

3. Long-Term Ambitions

3.1 Our Long-Term Delivery Strategy (LTDS)

The full LTDS forms part of this business plan submission and can be read in the supporting document, WSH01 Long Term Delivery Strategy.

In our LTDS, a range of key outputs for the environment have been developed associated with our long-term ambitions and covering key areas, including:

- Discharge permit compliance
- Pollution incidents (serious and all)
- Sewer flooding (internal and external)
- River and bathing water quality
- Storm overflows and harm
- Resilience to flooding
- Sewer collapses

Milestones have been identified for each of these towards our 2050 ambitions, and the AMP8 plan forms one of a number of steps in achieving them. The LTDS has been developed taking into consideration a range of scenarios, including both Ofwat's and company-specific scenarios, to ensure that the AMP8 programme contains low-regrets investments in light of all benign and adverse scenarios.

3.2 Our Drainage and Wastewater Management Plan (DWMP)

As a water and sewerage company, Welsh Water is required to produce a Drainage and Wastewater Management Plan (DWMP) covering at least the next 25 years and showing how we will respond to pressures and risks such as climate change and population growth. Our DWMP builds upon our 2050 Vision and feedback from the Welsh Government, regulators, customers, and wider stakeholders.

The DWMP takes a cyclical approach. The aim in the first cycle has been to draft a management plan outlining our wastewater services strategic direction, based on customer needs. This cycle also lays the groundwork for the second cycle, nurturing a Team Wales approach for collaborative efforts, aligned with the Welsh Government's ambition for a unified drainage and wastewater strategy in Wales.

In devising our plan, we considered:

- Welsh Government's 2022 DWMP Guiding Principles and further elucidations dated 3 August 2023
- Ofwat's 2022 Guiding Principles
- Initiatives from the Better River Quality Taskforce and insights from a Stantec report
- The Wellbeing of Future Generations Act 2015 and the Environment (Wales) Act 2016
- Statements on Sustainable Drainage Systems by the Welsh Government
- Water UK DWMP Framework
- The Environment Act 2021 Part 5 Section 79 pertaining to Drainage and Sewerage Management Plans for both England and Wales

Fully considering Wales's geographical challenges, the plan has highlighted the need for greater strategic insight into climate change, growth, and urban creep effects on our wastewater systems, focusing on flooding and pollution risks. In the long term, it aims to foster stakeholder engagement,

offering innovative, cost-effective strategic planning tools for sustainable improvements. These have been instrumental in shaping the longlist of options for the upcoming PR24 investment plan and have underscored our prioritisation in AMP8 of SOs and investigations to support future low-regrets planning.

3.2.1 Cycle 1 DWMP Development

Aligned with the Water UK Framework, we conducted a Baseline Risk and Vulnerability Assessment (BRAVA) for all wastewater catchments, leading to a targeted Action Plan for the highest risk catchments. However, the lack of environmental impact data on SOs highlights the need for further surveys to support more precise investment planning in Cycle 2.

Preliminary estimates suggest an investment of around £13bn to cope with projected flows within the central climate scenario. This investment is crucial to mitigate customer flooding and storm overflow issues, aiming for substantial progress by 2075.

Engagement with stakeholders, government bodies, and customers will continue to refine our investment plans, ensuring they are deliverable, affordable, and financeable. Our focus is also on nature-based solutions and green infrastructure to manage network flows and minimize environmental impact.

3.2.2 Cycle 2 (2024 - 2028)

The upcoming cycle aims to broaden model coverage and boost confidence in our plans. From improving our strategic decision tools and developing smart networks for management planning, we will be positioned to draft a 25-year work programme and predict more accurately the scale of our future investments in wastewater systems. Our plan seeks to initiate collaborative efforts with Local Authorities to support the necessary infrastructure over a 25-year horizon. We intend to align our investment programmes directly with the ecological impact assessments, especially for SOs.

3.3 Efficiency Challenge

As described in WSH50-IP00 Our Approach to Investment Planning, on recommendation from the Executive Team, our Board has set ambitions in our PR24 Plan and Long Term Delivery Strategy in relation both to outcomes and efficiency of expenditure. The target set by the Board on the planned AMP8 CapEx investment in protecting and improving the environment amounts to £130M.

It is important to note that **all the costs mentioned in this document, the data tables and other parts of the PR24 Plan and Long Term Delivery Strategy already reflect the efficiency challenge posed by the Board.** This challenge represents an ambitious **6.1%** efficiency in AMP8 (on top of the efficiencies already identified by the business during the development of the business plan) and ensures best value for customers.

4. Embedded approaches to environmental stewardship

When developing solutions throughout our asset base and operations, we evaluate wider benefits to society using our multi-capitals value framework as outlined in WSH50-IP00 - Our Approach to Investment Planning.

The framework assesses the impact of initiatives on aspects such as biodiversity and carbon impact and is integrated into the routine optimisation efforts that underpin our dedication to environmental stewardship. Consideration of the environmental impact of our operation is therefore a matter of business as usual for Welsh Water.

5. Meeting the Challenges of the WINEP and NEP

While we strive to measure and constantly improve the effect of our activities on the environment (for instance, through the biodiversity and carbon accounting that contributes a decisive component in the cost-benefit analysis of options for the future), the WINEP and NEP introduce an increased focus on active measures to address particular environmental challenges.

Our work on the WINEP and NEP is the culmination of years of collaborative effort, planning, and coordination with the environmental regulators. [WSH50-IP00 - Our Approach to Investment Planning](#) and the associated enhanced investment cases offer a deeper insight into this ongoing process of consultation and collaboration.

It is important to note that our WINEP and NEP driven programmes in AMP8 are part of a continuum from AMP7 that is already underway. Times change and so do public perspectives. While AMP7 laid the groundwork, the current business plan submission fine-tunes our direction, expands our plans or changes emphasis where necessary to align with evolving expectations and requirements. We continue to work with the EA and NRW to ensure that appropriate and specific measures are included in the requirements set out in the WINEP and NEP, aligned with the fulfilment of our functions.

Our environmental programme in AMP8 under the WINEP and NEP has an enhancement TotEx allocation of £1,025.994M post frontier shift and real price effects, and in 2022/23 price base (see Table 1).

Investment in monitoring and investigations is a component of most of the sub-programmes. This illustrates our intention to improve our understanding of how our network interacts with the environment and its potential ecological impacts so that we are in a better position to optimise our plans for the environment in the future.

Details on how our chosen schemes meet Ofwat's criteria for enhanced investment are presented with supporting detail in the relevant enhanced investment cases.

Table 1: Summary of Investment driven by WINEP and NEP Requirements

Enhancement Investment Case	Further Breakdown, if appropriate	Enhancement TotEx (£m)
WSH53-CW01 - Improving Raw Water Quality in Drinking Water Catchments through Green Solutions		22.85
WSH70-PE01 - Minimising Environmental Harm from Storm Overflows	SO Impact Assessment and Classification	10.969
	SO Improvements	349.186
	SO Enhanced Monitoring	6.073
WSH64-PE02 - Protecting Multiple Adjoining SSSIs near the SECS Main		77.556
WSH68-PE05 - Removing Phosphorus and Sanitary Determinands to Improve River Water Quality	Investigations	2.751
	Phosphorus Removal (WINEP)	32.047
	Phosphorus Removal (NEP)	106.139
	Sanitary Determinands	14.88
WSH69-PE06 - Increasing Wastewater Treatment Capacity and Stormwater Storage for Peak Flows	Flow Passed Forward	92.34
	Storm Tanks	18.467
WSH65-PE09 - Increasing Storage and Treatment Capacity and Disposal Options for Biosolids to Deliver Legal Drivers	Elements driven by WINEP or NEP Only	100.974

Enhancement Investment Case	Further Breakdown, if appropriate	Enhancement TotEx (£m)
WSH71-PE10 - Enhancing the Environment through WINEP and NEP Investigations and Programmes	Bathing Waters and Shellfish Waters	29.444
	Discharges to Ground	26.722
	Biodiversity and conservation; habitat restoration	2.067
	Eels/fish entrainment screens	5.692
	River connectivity (e.g. for fish passage)	5.812
	Monitoring	26.583
	NRW Permit Variations	6.574
	Other WINEP and NEP Investigations and Programmes	23.171
		38.474
WSH66-PE11 - Improving our Frontier Performance on Net Zero Carbon		
	Other NEP related enhancement	27.223
Total:		1,025.944

6. Overcoming Pressing Challenges on Our Assets

6.1 Reducing the Risks of Serious Pollution Incidents

Welsh Water is continuously aiming to avoid any serious pollution incidents and this forms part of both the AMP8 and long-term ambition. A serious pollution incident is based on either a Category 1 or 2 event¹ occurring from either a water or wastewater asset for which the company is responsible.

In 2020/21 Welsh Water had one serious pollution event and in 2021/22 there were three serious pollution events. The PR24 Forum issued a company-specific steer that they expect Welsh Water to prioritise environmental interventions that provide the maximum environmental benefit, to target a 4* EPA assessment and to deliver zero category 1 and 2 pollutions, whilst reducing category 3 pollutions.

Welsh water manages and maintains several large 'rising main' assets (pumped sewers) across its sewer network which present known and significant risks to the environment as a direct result of their structural integrity being weakened to such an extent as to make failure increasingly likely. Many of these assets are now subject to warning letters from NRW.

In AMP8, we will begin a multi-AMP investment to address this. It includes investment to improve the resilience of the South East Coastal Strategy (SECS) wastewater rising main and allow us to reduce environmental impact on the highly sensitive environment through which it passes. This work is part of the NEP agreed with NRW to protect the biodiversity of the area.

Details on how our chosen schemes meet Ofwat's criteria for enhanced investment are presented with supporting detail in the following enhanced investment cases:

- WSH64-PE02 - Protecting Multiple Adjoining SSSIs near the SECS Main
- WSH74-PE03 - Reducing Risks of Serious Pollution Incidents

6.2 Sewer Flooding

For customers, one of the most unpleasant and serious occasional consequences of sewer capacity being surpassed by high volume is sewer flooding on their properties.

Increasing volumes of water are entering the wastewater network and the effects of climate change are already visible, influencing the frequency and intensity of sewer flooding events. Urban expansion, unregulated rainwater entry, and growth of non-permeable areas contribute to the increased volumes of rainfall being directed into our combined sewerage systems.

We are planning to mitigate the risk of sewer flooding and pollution by developing and implementing sustainable urban drainage systems. In the long run, we aim to establish these drainage systems in major urban areas, including Swansea, Cardiff, Newport, Wrexham, and Chester, collaborating with local authorities in the most vulnerable regions.

Our longlisting of solutions for AMP8 has included options for responsible sewer use and reducing sewer use. This is an area where there are opportunities to work with third parties, including Local Authorities, to implement a coherent, co-funded approach. However, working with third parties on schemes that have a significant effect on the landscape, and which are tied to schedules and budgets outside of our control, carries a high risk and uncertainty for which the ultimate liability still lies with Welsh Water.

Details on how our chosen schemes to tackle sewer flooding meet Ofwat's criteria for enhanced investment are presented with supporting detail in the following enhanced investment case:

- WSH67-PE04 - Addressing Disproportionate Risk to Customers from Sewer Flooding

¹ These are the EA classifications. In Wales, classification is different: it is High – Major (1), High - significant (2), low (3), and 'event.

6.3 Providing First-Time Sewerage

Section 101a of the Water Industry Act 1991 places a legal duty of water companies to provide first time sewerage to properties that:

- Consist of more than one habitable property
- Are causing, or likely causing, environmental or amenity harm
- Where the public solution to the issue is less cost than the combined cost of the property owners resolving the issues with the private system

As provision of first-time sewerage is an additional obligation to provide new assets, Welsh Water requires enhanced funding to fulfil this, including the expected cost to carry out the assessments. A number of schemes have been assessed (by a third-party partner) where it has been determined that a legal duty under The Act applies.

The costs for Section 101A are allocated against the following lines in the PR24 data tables

- CWW3b.159 First time sewerage; enhancement capex (totals £10.486M over AMP8).
- CWW3b.160 First time sewerage; enhancement opex (totals £0.427M over AMP8).

6.4 Increasing Capacity for the Impact of Growth at WwTW

Population growth and development in our wastewater catchments increases the demand on our wastewater treatment works (WwTWs) through the increased flow and biological load that is received for treatment. Welsh Water routinely monitors the performance of the treatment process, and the received flow and load, to assess the available headroom capacity available. Where incoming load goes over the threshold of treatment capacity, we need to invest in enhancing the treatment process to increase the available capacity and continue to comply with the discharge permit requirements.

46 WwTWs have been identified as potential candidates requiring additional treatment capacity. Following further investigation, 21 of these WwTWs were identified as priorities requiring investment in AMP8. The remaining sites will continue to be optimised and mitigated from base allowances until further growth requires a step change in capacity in the future.

The costs for WwTW growth are allocated against the following lines in the PR24 data tables

- CWW3b.153 Growth at sewage treatment works (excluding sludge treatment); enhancement capex (totals £71.182M over AMP8)
- CWW3b.154 Growth at sewage treatment works (excluding sludge treatment); enhancement opex (totals £4.242M over AMP8)

One large growth scheme at Monmouth WwTW accounts for £19.418M of the total AMP8 CapEx.

6.5 Avoiding a High-Consequence Event at Laugharne WwTW

In the very specific case of Laugharne WwTW, there is an imminent risk of a collapsing cliff damaging or destroying the function of the works, which would affect or even curtail treatment for a population equivalent (PE) that has recently grown in excess of 2,000 due to growth and tourism. Not only is there a risk to the integrity of the works but it will have to comply with tightened standards that apply to WwTWs serving a PE over 2,000 under the Urban Wastewater Treatment (England and Wales) Regulations 1994 (UWWTR). The preferred solution to address the risk to the resilience of this asset would also address this new requirement. Discussions are ongoing with NRW regarding its inclusion within the NEP under the PR24 UWWTR Driver W_U_IMP1 but it is not currently included in our business plan submission under a NEP driver.

Details on how the chosen scheme meets Ofwat's criteria for enhanced investment are presented with supporting detail in the following enhanced investment case:

- WSH72-PE07 - Avoiding a High-Consequence Event at Laugharne Wastewater Treatment Works

6.6 Controlling Odour

The main goal of this investment is to notably enhance odour management around the Swansea WwTW, responding to an Environmental Management Plan (EMP) issued by Swansea Council, mandating a substantial reduction in odour emissions — a level unattainable by the existing odour control unit. The existing unit, installed in 1997, is outdated and undersized for its current need, failing to meet the current performance requirements, leading to numerous customer complaints and necessitating multiple refurbishments and upgrades. Hence, a full replacement of the odour control unit and ducting is the chosen solution.

Swansea Bay WwTW, largely located underground in South Wales, lacks odour control to modern standards, violating the EMP and causing complaints from local residents. The number of odour complaints has risen with the encroachment of residential and university developments and is likely to keep rising, with more developments planned. A detailed Odournet report has studied the odour concentrations, emission sources, and dispersion patterns around the site, recommending a 2-stage wet scrubbing process with carbon polishing to lower the odour concentrations to acceptable levels, fulfilling the local authority criteria for highly offensive odours. This solution has been thoroughly assessed and is considered the most suitable to manage risks and meet the business needs.

Details on how the chosen scheme meets Ofwat's criteria for enhanced investment are presented with supporting detail in the following enhanced investment case:

- WSH73-PE08 – Reducing Levels of Odour in the Environment

7. Conclusion

With the Welsh government declaring a nature emergency in 2021, the water sector faces a critical crossroads. If business as usual continues, some of our rivers could experience alarming reductions in water levels by 2050. Furthermore, the quality of rivers, lakes, estuaries, and wetlands will face intensified pressures from pollution. Public expectations regarding local environments have also risen along with an increased interest in outdoor swimming and riverside leisure.

We therefore have a decisive position when it comes to safeguarding and enriching the environment and, thereby, enhancing the well-being of the communities they serve. Welsh Water also has a part to play in taking concrete actions to combat climate change, support nature recovery, reduce greenhouse gas emissions, and transition toward a more sustainable future in alignment with broader UK and international climate goals.

Welsh Water's need and desire to protect and improve the environment is in step with wider public opinion and the priorities of the Government in Wales and England as well as our customers' interests. There is little disagreement about its importance. That being said, many objectives are conflicting. Pertinently, the need to act now can conflict with the desire to move away from traditional carbon-intensive solutions towards greener and/or more collaborative solutions that are not yet proven or are time-intensive to develop.

Furthermore, as the environment is a complex system, an intervention on one aspect can have knock-on effects on another, such as when the environment is improved for the benefit of those who will enjoy it for leisure activities the increased human activity can affect the protection of wildlife habitats.

Decisions are typically difficult, and this is why Welsh Water is committed to consulting and working collaboratively with relevant stakeholders to benefit from a rich pool of ideas, representative of all interests on what will deliver "Best Value" in the economic, social and environmental context.