

Pollution Incident Reduction Plan 2023 performance update



Introduction

2023 review: progress towards our zero pollutions ambition



Our Purpose is to bring environmental and social prosperity to the region we serve through our commitment to Love Every Drop. Central to this ambition is addressing and improving our pollutions performance, which has been a major focus for us throughout 2023, as we delivered our Pollution Impact Reduction Plan (PIRP) 2023-25 strategy.

In 2023, we undertook more targeted pollution interventions than in any other year. We embarked on industry-leading technological solutions, such as Ovarro and Syrinix – alongside our Dynamic Sewer Visualisation; enhanced programmes for many aspects of our routine planned preventative maintenance; reflected on and scrutinised our ways of working; and continued the journey with our people as part of our cultural shift to Zero Pollutions mindset and Get River Positive.

As detailed in this one-year update, we have been working intensely to reduce pollutions and we're encouraged to see green shoots of recovery from our work and investments. We've seen improvements on lead measures, especially on networks, alongside the lowest level of sewer blockages in five years, the highest asset availability on pumping stations, the lowest levels of sludge stocks and best-ever performance on Mixed Liquor Suspended Solids (MLSS) control.

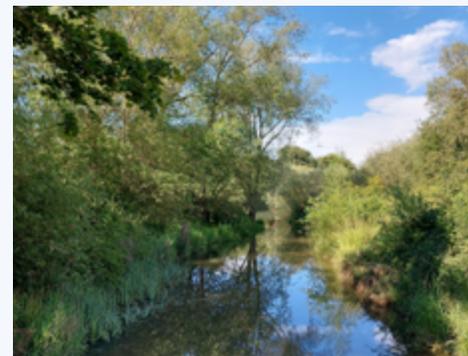
In our 2023-25 PIRP, we noted that the expected overall improvements would take time – recognising many activities have a cumulative benefit. While we're making good progress, as evidenced in our underlying performance (see highlights on page 6), we acknowledge there is much more to be done. That's why, with the support from our shareholders, we've built in many more workstreams this year, or gone further than we originally planned. For a full account of our activities and progress to date see pages 22-27.

We are disappointed to report an increase in total pollutions this year, up to 307 compared to 258 in 2022. For serious pollutions, we had zero Category 1 pollutions and 11 Category 2 pollutions, which is a stabilisation on our 2022 figures.

I know I speak for everybody across Anglian Water when I say that this result is not where we want to be. My colleagues share my resolve to turn our performance around. As a result of this year's performance, we anticipate a two-star Environmental Performance Assessment (EPA) rating.

We undertake our plans against a backdrop of climate change, which is bringing more extremes of weather to our region. In particular, Storm Babet in October 2023 brought with it a number of operational impacts that contributed significantly to our overall performance. Babet was notable, as it kickstarted the recharging of aquifers and flows into watercourses and led to cases of hydraulic overloading, as natural water entered into our sewers through a range of routes. Hydraulic overloading accounted for 25% of pollutions in 2023, while in the 2024 year to date, it has already attributed to 48% of pollutions (2022: 16%). With the wet weather continuing well into 2024, we are still dealing with the effects in the current performance period, which will also be realised in next year's results.

The issues we face when driving down pollutions are multi-faceted and challenging. They can't be solved in isolation. That's why we've gone further, broadening our partnerships with other agencies and taking a catchment-based approach to tackle problem areas in our region. This work, while complex and time consuming, is making headway, which is heartening to see (see page 15 for more).



2023 has been a year of hard-won progress. To go further and faster, our shareholders are supporting our efforts by investing £100 million, specifically to tackle spills and pollutions in 2025, which is a sign of their confidence in our plans. This comes at no cost to our customers. Although progress will take time, this boost will be invaluable – read more on page 14.

Finally, we've heard loud and clear from our customers, communities, passionate river groups and our regulators, that we need to take action faster, to address storm overflows and improve our pollution record.

We want our customers to know that we're investing in the right solutions, which are proving successful and will have the most benefit for the environment, both now and in the future. This is evident in our spills performance too, where this year we achieved a spill average of 22 per Event Duration Monitor (EDM), versus a sector average of 33. And we remain on track for our 2025 spill-average target of 20 per EDM and continue to remove storm overflow permits from our system. To put this in context, in 2019 (an equally wet year) we had average of 35 spills per overflow. Progress against our goals can be found in our recently published [River Health Report 2024](#).

When it comes to pollutions, we agree no number other than zero will do. We're working tirelessly towards achieving this goal.

Emily Timmins
Director of Water Recycling

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1 A review of our pollutions performance in 2023

2023 progress and outcomes

Since publishing our 2023-25 PIRP in 2023:

We've implemented 37 programmes of intervention across the business, with an additional 29 new or extended interventions planned from the £100m investment from our shareholders (see page 14).

Five of our activities are using exploratory, industry-leading new technologies that are harnessing the power of data.

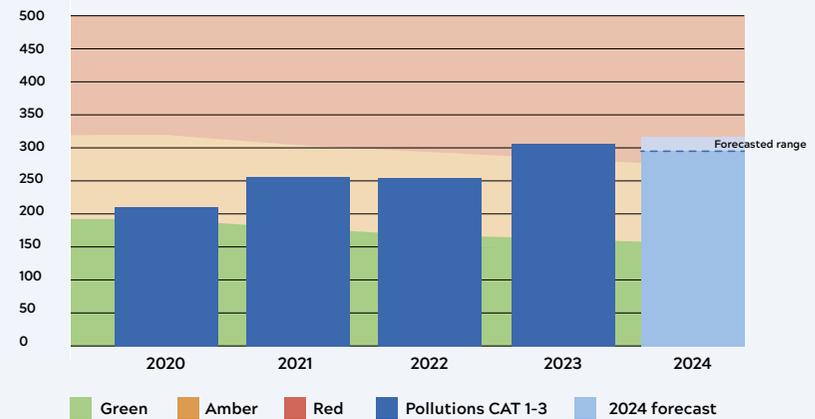
In 2023 we had zero Category 1 pollutions and 11 Category 2 pollutions. Total pollutions increased from 258 in 2022 to 307 in 2023. We recognise that, despite significant time and effort across the business, our overall performance did not meet the levels we aspire to and that our customers rightly expect of us. We remain committed to turning performance around and, as outlined on pages 22-27, we have a comprehensive plan in place to achieve this.

	2020	2021	2022	2023
Category 1	0	1	0	0
Category 2	11 (1 water)	13	11 (2 water)	11
Category 3	200	244	246	296
Total pollutions*	210	258	255	307
Self-reporting	73%	69%	73%	89%
Star rating	3	2	2	n/a**

* Serious water pollutions are excluded from the total pollutions measure, which includes wastewater incidents only.

** At the time of publication, we await the results of the EPA announcement and anticipate a two-star rating.

Environmental Performance Assessment glidepath



We expect 2 stars in the Environment Agency's Environmental Performance Assessment (EPA) rating for our 2023 pollutions performance. Given the extraordinary response from across the business to tackle and reduce pollutions, we are disappointed with this result.

However, as set out in this update, the many changes we are implementing are making an impact, which will contribute to a turnaround in our results in the medium and long term.

Our performance glidepath and expected range on total pollutions in 2024 is shown above. Due to the extreme wet weather already experienced in early 2024 (resulting in widespread flooding – including of our assets – and increasing instances of hydraulic overload), we are forecasting that the number of total pollutions will remain stubbornly similar to 2023. Our plans for the coming year, including £100m in additional investment to address pollutions and storm spills, will be critical in addressing our performance – see page 14 for more.



Performance in context

Key highlights

Installed approximately **22,000** monitors across 11,000km of high-risk sewers, increasing proactive blockage prediction by 271%.

Best AMP7 performance

on blockage numbers – 14% less compared to 2022.

Over-and-above delivery (15%)

of our sewer jetting and wet well cleaning programme (helping us reduce blockages).



Reaching an all-time low

for sludge stock levels and MLSS control.



Highest asset availability

on pumping stations.

98.44% treatment works compliance



Around **1,633 tonnes** of fats, oils and greases (FOGs) diverted from our sewer network through our partnership with Environmental Compliance and Services (ECAS).



Achieved 100% rollout

of Event Duration Monitors across our storm overflows, ahead of the timeline set by the Government.

Spills performance average of 22

– versus sector average 33 and we remain on track for our 2025 target of 20.



Continued to increase our network capacity in anticipation of population growth and climate change, delivering eight storm storage capacity schemes through WINEP, totalling **4,343m³ of storage.**

We know we need to do more in areas where performance has not met the levels expected. These areas include:

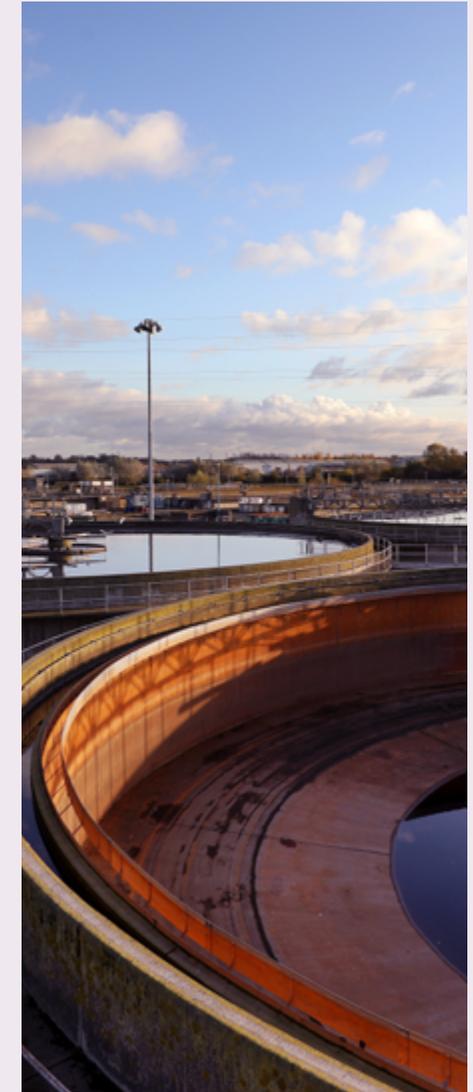
Addressing the ongoing challenge of burst events on **rising mains** (see page 18).

Working with others to address flooding and pollutions caused by **hydraulic overload** (see page 15).

Going further on **blockage prevention and detection**, which despite the headway made this year, continues to account for 27% of total pollutions.

Addressing **asset health**, particularly at Water Recycling Centres (WRCs) and pumping stations, with resilience interventions to guard against electrical, mechanical or communication failures. This year electrical issues were responsible for two serious pollutions incidents.

Further enhancing our **organisational skills, competencies and behaviours.** The majority of serious pollutions taking place at our WRCs were due to the persistence and extent of the incidents. We are addressing this going forward (see page 19).



2023: a year of extreme wet weather

Between October 2023 and March 2024, England experienced its wettest period on record, with 10 consecutive named storms hitting the UK – five of which directly impacted the East of England. Heavy rainfall, coupled with high groundwater levels, caused widespread catchment flooding.

Although these difficult conditions affected the entire Anglian Water region, some areas experienced this more acutely. For example, there were 24 pollution incidents attributed to hydraulic overload in Norfolk alone. While widespread flooding of the Norfolk Broads and high groundwater levels on the North Norfolk coastline led to some communities suffering with a loss of facilities for extended periods.

During Storm Babet in October 2023, we saw more than 200% of the 1991-2020 historic average of rainfall for the time of year. Our sewerage network and pumping stations were inundated with water and unable to cope with the

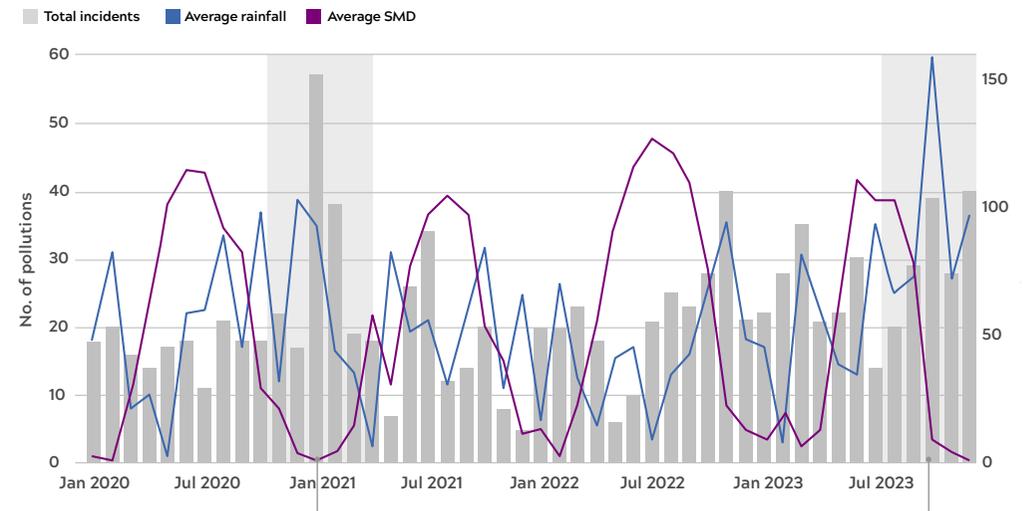
volume, despite operating to maximum capacity and as designed. Furthermore, a small number of our sites were entirely submerged with water and temporarily inoperable, even in locations with flood defences. For example, the image above shows Anwick Water Recycling Centre in October, which was overcome by fluvial flooding, despite Environment Agency flood defences and Anglian Water flood resilience. As a result, the site was inoperable due to loss of power (and water within site components). Although extreme weather was the cause, this event was classed as a serious pollution (Category 2) incident and included in our overall figures.



Anwick Water Recycling Centre under water. Image credit: Paul Barham, Maintenance Support Technician

Extreme weather has always impacted how our assets function, with different patterns causing different challenges. For example, drought conditions lead to increased risk of water main bursts (as seen in 2022), while this year's prolonged rain has meant we've had to contend with additional spills and flooding. For this reason, it's not always practicable to compare results year on year to understand if the work we are undertaking is having an impact. A more accurate comparison for this year's performance is the wet winter experienced in 2021, as shown on the graph to the right.

Monthly CAT 1-3 WR pollution causes compared to average rainfall and soil moisture deficit (SMD)



Similar, less-extreme pattern of low SMD and high rainfall, observed in early 2021.

Divergence of SMD and rainfall, creating challenging operational circumstances in the last quarter of the year.

It shows that low soil moisture deficit (due to higher levels of water in the soil) combined with heavy rainfall resulted in higher pollution incidents in 2021, however this was not the case in 2023 despite similar conditions.

Operational resilience in the face of extreme weather

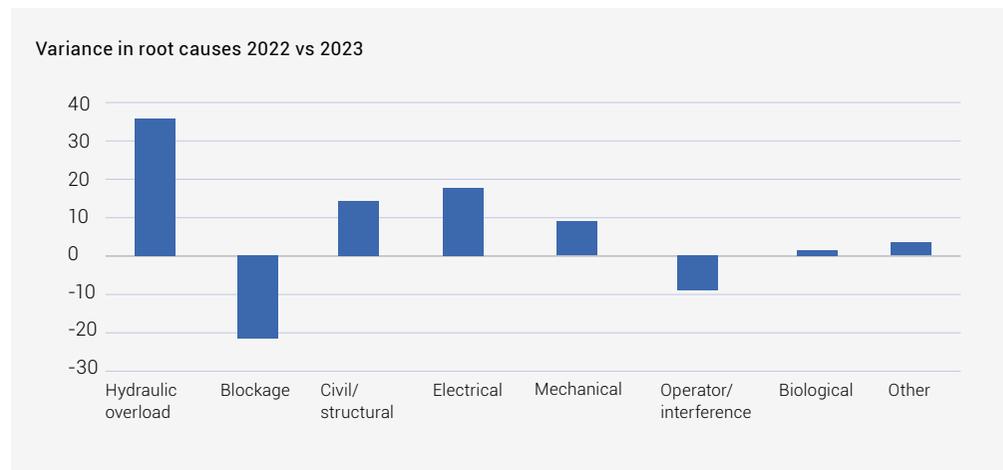
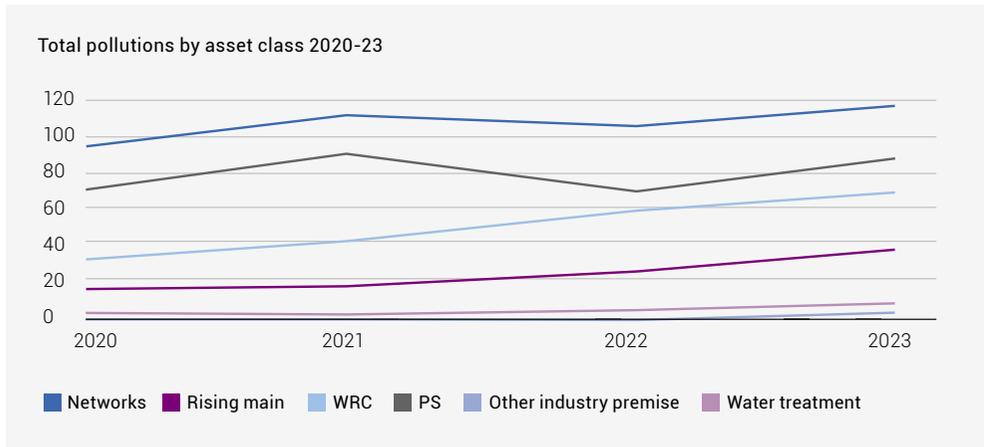
The challenging conditions in 2023 are comparable to early 2021, where we also saw an increase in pollution events due to the combination of high groundwater and heavy rainfall. The lessons learned in the previous period enabled us to be better prepared. As a result, we returned to our operational baseline more quickly. As evidence of this, we've had no serious incidents on our networks since late October 2023* – the start of the wettest period, which lasted well into March 2024. This demonstrates our investments into asset monitoring are working, despite our networks being inundated with additional demand. Importantly, our investments are moving us from a reactive response position to a predictive one.

These improvements, despite the weather, are down to the vast amount of work taking place on the Water Recycling side of the business – including improvements across our operations and processes and the investment in new technologies – which is giving us much better sight of our performance. While our plans are being implemented at pace, we are realistic that it will take time to translate these into results. However, had we not undertaken this extensive programme of work, our total pollution and serious pollution numbers would have been far higher. That's why we're going further and faster to tackle this work – see page 14 for more.

*at the time of publication.

Total pollutions

As noted, this year we have seen an increase in total pollution events, from 258 in 2022, to 307 in 2023. While we are frustrated to see an increase in total pollutions in the short term, greater insights from monitoring and the extreme wet weather have had an impact on results.



This year has seen a sizeable change in hydraulic overload (up 9%), while blockages have decreased by 14%. Hydraulic overload puts a strain on our assets, particularly pumping stations, where they are working continuously instead of intermittently, with the diurnal variations based on behaviours of when people are using water. This, in turn, can increase the risk of failure and reduce asset lifespan. All other categories have remained broadly static with minor increases. To read about our plans on addressing hydraulic overload see pages 15 and 22.

Greater visibility than ever before = higher recorded numbers

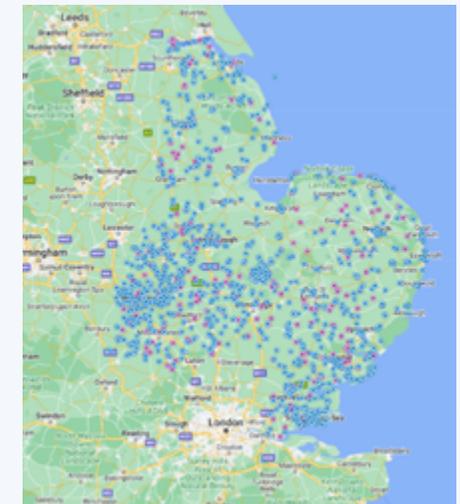
Thanks to our ongoing investment into monitoring across our network, greater understanding and use of data and embedding of many of our initial PIRP plans into business as usual, we are now better sighted on our network and are using this data to spot and prevent potential anomalies before they become an issue. This means that discharges from our assets, which we may previously have been unaware of, are now being detected and reported, increasing our overall total pollutions figure, with no change to impact on the environment. This improved visibility is a new opportunity for us to intervene early in these previously unmonitored areas. While in the short term this is impacting our total and serious pollutions figures, we expect to see change in the medium term.

What's more, we're scrutinising ourselves more than ever on how we can go further and faster to meet the standards our customers and stakeholders rightly expect of us.



Weather and storm overflows

As expected, we also saw an increase in the number of storm spills as a result of the named storms. The vast majority of storm spills do not lead to impact to the environment and less than 2% of pollutions were caused by combined sewer overflows in 2023. In addition, we achieved 100% coverage of Event Duration Monitors (EDMs) on the storm overflows across our region in 2023 – equating to 1,432 monitors. The data from our EDMs enables us to be as open and transparent as possible and feeds into our interactive, real-time map, which went live in April 2024. Our [map](#) shows where our storm overflow monitors are located, how often they spill and the length of time they have been spilling.



Reducing blockages from FOGs using hyper-local targeting

Over the past year in Bletchley, Milton Keynes, there have been two serious pollutions, 32 flooding incidents and 103 blockages. There are 229 Food Serving Establishments (FSEs) in Bletchley, some of which are contributing to the problem by allowing fats, oils, grease and food debris to escape into the local sewer network. Through our partnership with ECAS, we are working with 60 (26%) FSEs in this area, encouraging positive behaviour change. As a result of our proactive work, we have reduced blockages in the area by 40%.

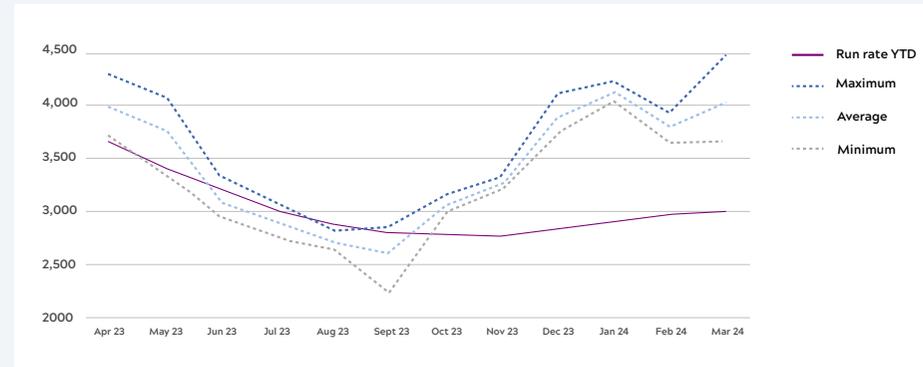


Driving down blockages

The reduction in blockages this year is a key example of how our interventions are making progress.

Following a wet weather spell in early 2021, we renewed our focus on measuring performance and root causes, to be better prepared for the impact on our assets in the future. Reducing the causes of blockages was one of our main priorities.

As a result of our efforts, our 2023 total pollution data shows a 14% reduction in pollutions caused by blockages, compared to 2022 levels. In a typical year, blockages account for over a third of pollution events and in 2022 this was even higher, at 43%. Blockages on our foul sewer network have reduced to their lowest levels in five years and we have seen a year-on-year reduction of more than 10%. We believe we're starting to see the decline in overall blockages filter through to a decline in blockages as the root cause of pollutions.



Our total blockage run rate in comparison to the three-year average and maximum and minimum thresholds

Reducing blockages is underpinned by our substantial data and analytics programme. We operate 76,000km of sewer pipes in our region. Our Network Risk Tool enables us to visualise and manage high-risk areas across our sewer network. This informs our Dynamic Sewer Visualisation (DSV) programme, where we are installing monitors across our highest-risk sewers, to help us detect that a blockage is forming, so we can clear it before it causes an impact.

We now have approximately 22,000 monitors installed across 11,000km of our highest-risk sewers. Our monitors are moving us towards a 'prevent and investigate' approach. Using predictive analytics, our DSV monitors have continued to self-learn on our network, informing our blockage-reduction activity. Coupled with additional sewer and wet well cleansing work on our foul sewers and pumping stations, we were able to detect and clear 462 blockages that were building up. Overall, our proactive blockage prediction increased by 271% in 2023.

In the year ahead, we will spend approximately £22 million on continuing this work on tackling blockages, gaining further insight and data on our network by installing a further 8,000 sewer monitors and undertaking more public sewer cleaning and improvements in the top 100 highest-risk areas. This will help us target thousands of blockages caused by wrongly disposed of fats, oils, greases and other unflushables, giving us early warning of problems before they arise.

However, with 76,000km of sewer pipes in our region, the work we are undertaking will take time to translate into sustainable results. Our programme of cleaning sewers is an ongoing project and, while the monitors we are installing will help us to predict and prevent any blockages, the need to keep the pipes clear to prevent pollutions will never go away.

Our programme to clear blockages is supported by our 'Keep it Clear' campaign, which educates the public on their role in keeping sewers clear. We clear over 40,000 blockages every single year, caused by wrongly flushed items, as well as a build-up of fats, oils and greases. This equates to one blockage every five minutes – of which 80% are avoidable.

To prevent blockages at source, we work with environmental compliance experts – ECAS – to identify Food Serving Establishments (FSEs) that can cause blockages by disposing of cooking fats down the drain. This year, to date, an estimated 1,633 tonnes of fat, oil and grease was diverted from sewers as a result of our outreach work.

Serious pollutions

We have seen a stabilisation in the number of all serious pollution incidents in 2023 (11 in total), compared to 2022 (also 11).

While it is positive to see a stabilisation, we firmly believe zero is the only acceptable number and continue our plans to achieve this.

One incident was directly related to extreme weather from Storm Babet. However, as noted previously, from late October there were a further four named storms for the remainder of 2023, none of which resulted in a serious pollution incident.

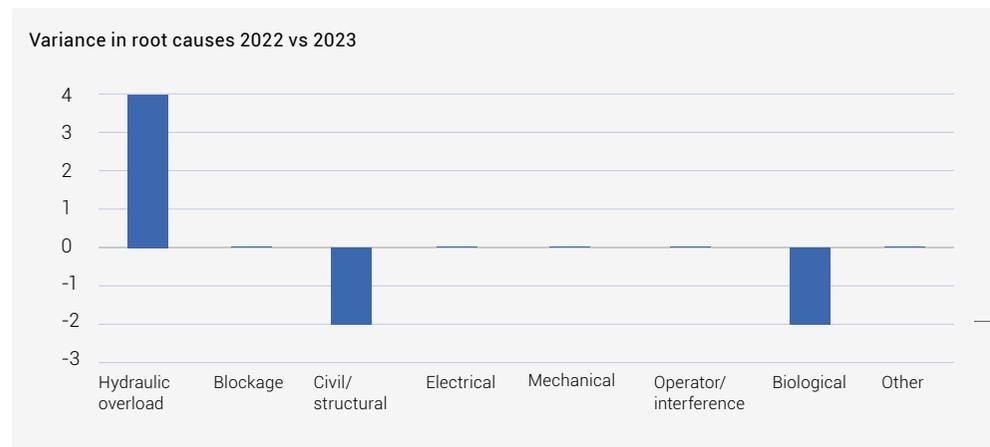
This year 10 out of the 11 serious pollutions were self-reported (91%). One event was not self-reported due to an alarm fault. The alarm in question has since been upgraded under our ongoing capital maintenance programme, along with new dynamic sewer visualisation sensors in the area, to support greater understanding of network capacity.

Serious pollutions root causes

In 2023 we have seen a shift from typical root causes and asset types. For example, only one serious pollution was linked to sludge management, which historically has been the leading cause of pollutions related to Water Recycling Centres (WRC).

We applied the lessons learned in the previous comparable period in 2021, to enable us to be better prepared and return to our operational baseline more quickly. Our renewed focus on measuring performance, root cause analysis and learning culture are fast tracking our progress.

Despite increasing demands on our routine tankering resource to respond to higher than usual volumes of emergency works, in 2023, we did not see a detrimental impact on our sludge management. The PIRP activity undertaken – such as our sludge base plan review and review of action limit standards – has optimised sludge removal, improved visibility and understanding of risk on our sites, driving preventative action.



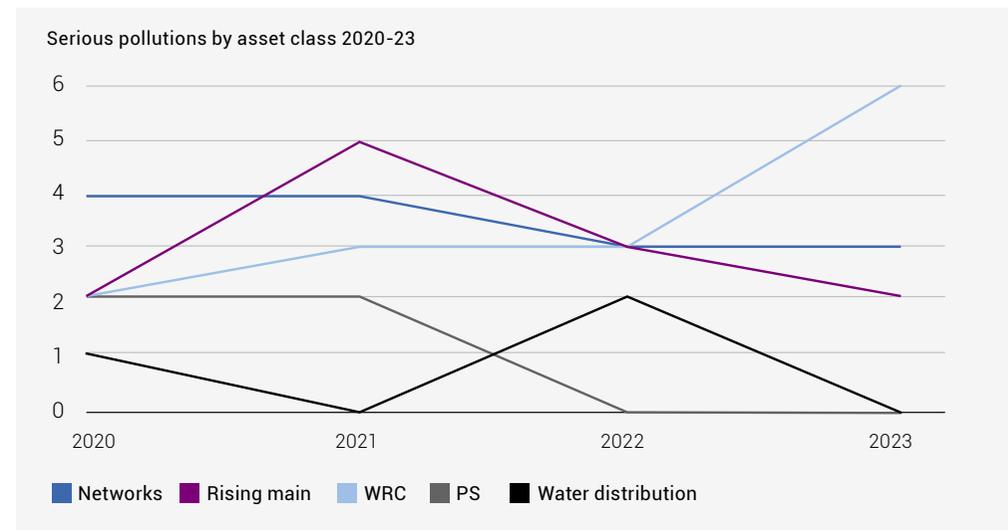
Serious pollutions by asset class

This year, the majority of incidents taking place at our WRCs were categorised as serious, due to persistence and extent. Our focus going forward, is to double down on efforts to proactively identify and respond to issues.

In 2023, there were three serious incidents at a single WRC site in Norfolk, two of which were caused by additional hydraulic loading on the site (a result of the extreme wet weather impacting operational conditions), while the third was due to a fire, which prevented the normal operation of the site. We have since implemented a significant improvement plan for the WRC, which has stabilised performance.

Rising main serious pollutions have reduced by one in 2023 compared with 2022, with technologies such as Ovarro and Syrinix facilitating faster response times from our teams. This improvement, while positive, is not in line with our expectations. We have allocated funds from the £100m investment from our shareholders, to further address the challenges related to rising mains. See page 24 to read more about our approach.

Serious pollutions from total networks (sewer and water mains and sewage pumping stations) continue to decline, as do serious pollutions from our water network. In 2023, the main driver of serious pollutions was from our water recycling network.



Self-reporting

We've achieved a significant improvement in 2023 for self-reporting – 16% more on average, compared with 2022.

One of the core reasons for this is due to our enhanced alarm approach, which has driven the simplification, removal and reprioritisation of alarms. This has enabled our handlers to have greater visibility and understanding of risks. Supporting this, we've focused on telemetered assets as 'controllables' and we are starting to have more visibility of our network assets with our DSV programme.

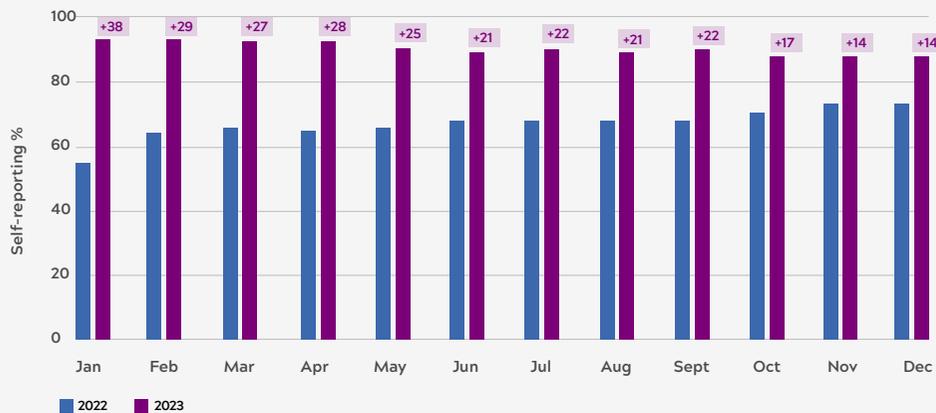


We've undertaken a number of activities throughout the year that are now 'business as usual' to get us in this position, including:

- Undertaking an asset deep dive, removing alarms that were simply 'noise' and not adding value, reviewing the priority of other alarms to elicit the right response and increasing the simplicity of how the alarms present to our skilled alarm handlers. These changes have led to a 60% increase in adherence to our response-attendance time.
- Sharing alarm response and performance data more broadly across teams, to increase shared accountability.
- Streamlining the ability to make adjustments to telemetry directly within the department and amend alarm prioritisation.
- Creating alarm handling compliance dashboards and the ability to identify repetitive alarms, to allow more timely interventions.

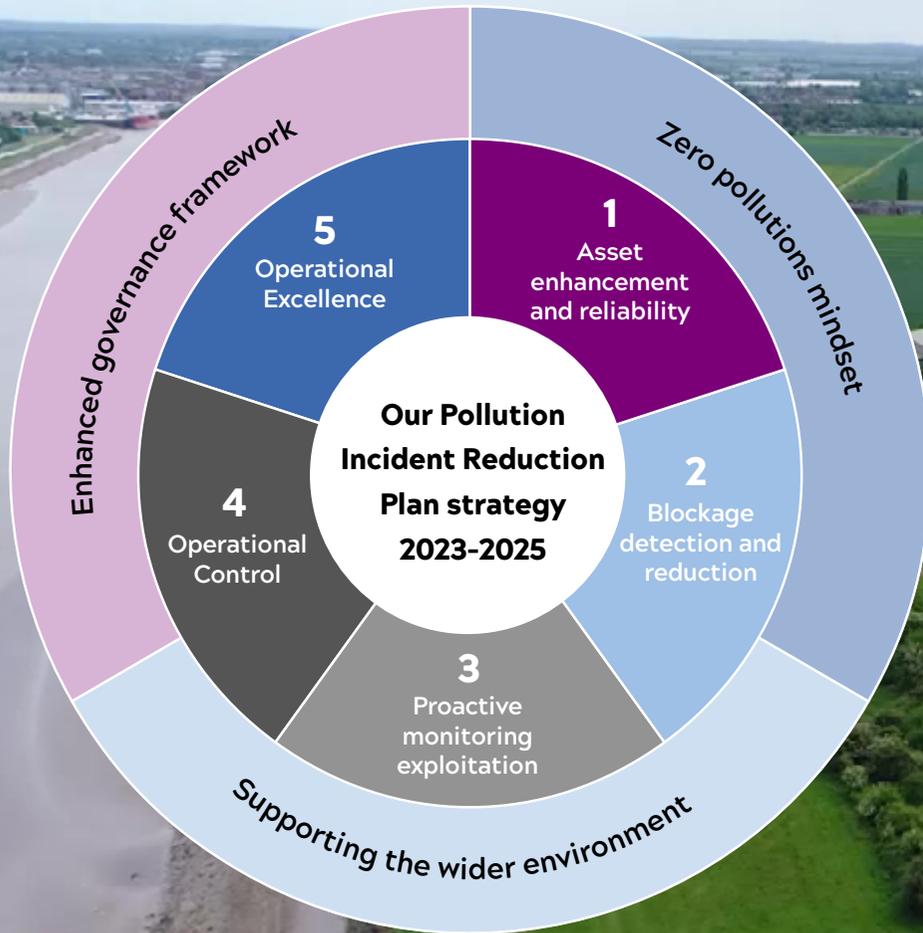


Self-reporting in 2023 and 2022 by month



Our Pollution Incident Reduction Plan strategy

We are clear in our ambition to reduce pollutions. In the short term, we want to return to our previous pollution run-rate. In the longer term, we intend to eradicate pollution incidents in our region.



We are focusing on five core areas:

- 1 **Enhancing the assets we have,** assessing where improvements can be made and rolling out targeted maintenance and resilience programmes to ensure the entire asset base is reliable.
- 2 **Bolstering our blockage detection,** to help identify potential problems before they happen, to reduce this primary cause of pollutions.
- 3 **Ensuring the proactive monitoring** we have embedded as business as usual is delivering maximum value; helping us to make informed decisions, alongside implementing new monitoring technologies to further support our efforts.
- 4 **Delivering consistent operational control standards** and procedures, to ensure we remain focused on robust continuous improvement.
- 5 **Improving operational excellence,** identifying areas we can improve and making changes as a result.

These core areas are supported by:

- **Zero pollutions mindset:** Developing the skills and knowledge of our people, so we adopt a 'zero pollutions mindset' right across the business.
- **Enhanced governance framework:** Putting additional processes and governance in place, as part of our focus on operational control and assurance.
- **Supporting the wider environment:** Continuing to take action to support our region's environment through our wider investment activities.



2 Our pollution improvement plans going forward

Emily Timmins, Director of Water Recycling:

"Our mission is to safeguard our customers and the environment and I can see our lead metrics changing. We know changes in systems and processes alone won't move the dial – we need to invest more in our asset base. Our £100 million investment goes right to the heart of capital maintenance on our base assets. I couldn't be more proud that we've been backed by our shareholders. It shows a huge amount of trust."

£100m in additional investment to drive down pollutions



We remain determined to reach our ambition of zero pollutions and, as outlined in this report, we have been working to achieve this in line with our PIRP strategy. We are encouraged to see lead measures already showing improvements, but know we have more to do.

Our shareholders are also committed to our zero pollutions goal and in June 2024 we announced an additional £100 million of support from them, specifically to tackle pollutions over the coming year.

This capital, funded entirely by our shareholders – not by customers, will be utilised across the East of England and a range of areas. Specific examples of how the £100 million will be invested, include:



Central to our investment activities is significantly improving the volume of monitoring across our network. This is supporting our efforts to proactively identify and prevent pollutions before they occur and will see us install: more than 8,000 additional DSV monitors; 810 pressure sensors on rising mains (Syrinx); 185 monitors on rotating assets at WRCs; and 18 ammonia monitors on WRCs that may discharge into sensitive watercourses.

We know that we need to take action faster, to improve our pollution record. Our climate continues to change, as we saw last winter. So, we can expect more extremes of weather, meaning the challenge we're facing – in this region especially – is going to get even bigger. Our Drainage and Wastewater Management Plan (DWMP) suggests that by the start of AMP9 (2031/32), there could be 146 additional pollution incidents caused by increased rainfall, urban creep and growth, if our investment levels remain the same as they have for AMP7.

We want our customers and stakeholders to know that we're investing in the right solutions, which are proving successful and will have the most benefit for the environment now and in the future.



£32 million
on asset health interventions for pumping stations and WRCs, including 656 resilience interventions, to guard against electrical, mechanical or communications failures.

£22 million
on blockage prevention, including 8,000 additional sewer monitors, a programme of rehabilitation and risk reduction for more than 2,600 manholes and a supersized CCTV, cleanse and rehabilitation programme for in excess of 250km of pipes.

£22 million
on improving rising mains, including an 104% increase in pressure monitors, implementing satellite technology (see pages 18 and 24), rehabilitating high-risk rising mains and surveying more than 6,500 locations with air valve surveys.

£17 million
on improving system capacity, including infiltration investigations and lining in key locations, plus investing in new tankers and jetties. In addition, new sustainable drainage systems in key hotspot areas, like Southend, will slow surface water from entering the sewer network, helping to prevent flooding and reduce storm spills.

£7 million
on improving capability and insight across our teams, with new roles created (see page 19).

What the £100m will deliver

Addressing the challenge of hydraulic overloading

The challenging wet weather, experienced across the region in 2023, meant that sewers and broader assets were particularly susceptible to hydraulic overload.

Hydraulic overload is when flow in a sewer exceeds capacity and contaminated water 'escapes' from the sewerage network, resulting in flooding and potential pollutions. In these situations, there is often more than one root cause, meaning it's not simple to identify and resolve.

For context, during heavy rain, one roof generates the same volume of water as 100 homes would use in a day. In a small town of 5,000 homes, this is like instantly connecting 500,000 homes to the sewer system. If other parts of the drainage system are not working as they should, this number can multiply rapidly.

Pollutions that are attributed to hydraulic overload often require extensive and complex investigation, a multi-agency approach, as well as significant long-term investment. Building on the existing work we can do, we are collaborating with key stakeholders in hotspot areas, to build resilience. This year, nine multi-agency flooding groups were established. We are also engaging and communicating with local groups and communities on our plans.



We are building a whole catchment approach, which means:

- Stopping the water which shouldn't be in the system getting into the system. We will continue to work with any new connections, developers and planning, to remove surface water and design systems with this in mind.
- Reducing the volume and variability of water, by controlling the routes of excess water into our system, to make it more predictable. Work to remove illegal connections, reduce surface water entering the system, understand the opportunities for nature-based solutions and Sustainable Urban Drainage Systems (SuDS).
- Understanding and visualising the catchment through a clear hydraulic model that gives a good understanding of where the flow issues are from and where growth is occurring.
- Designing and extending the network and treatment, with long-term sustainable facilities that have been designed with a flow in mind and flow variability understood.

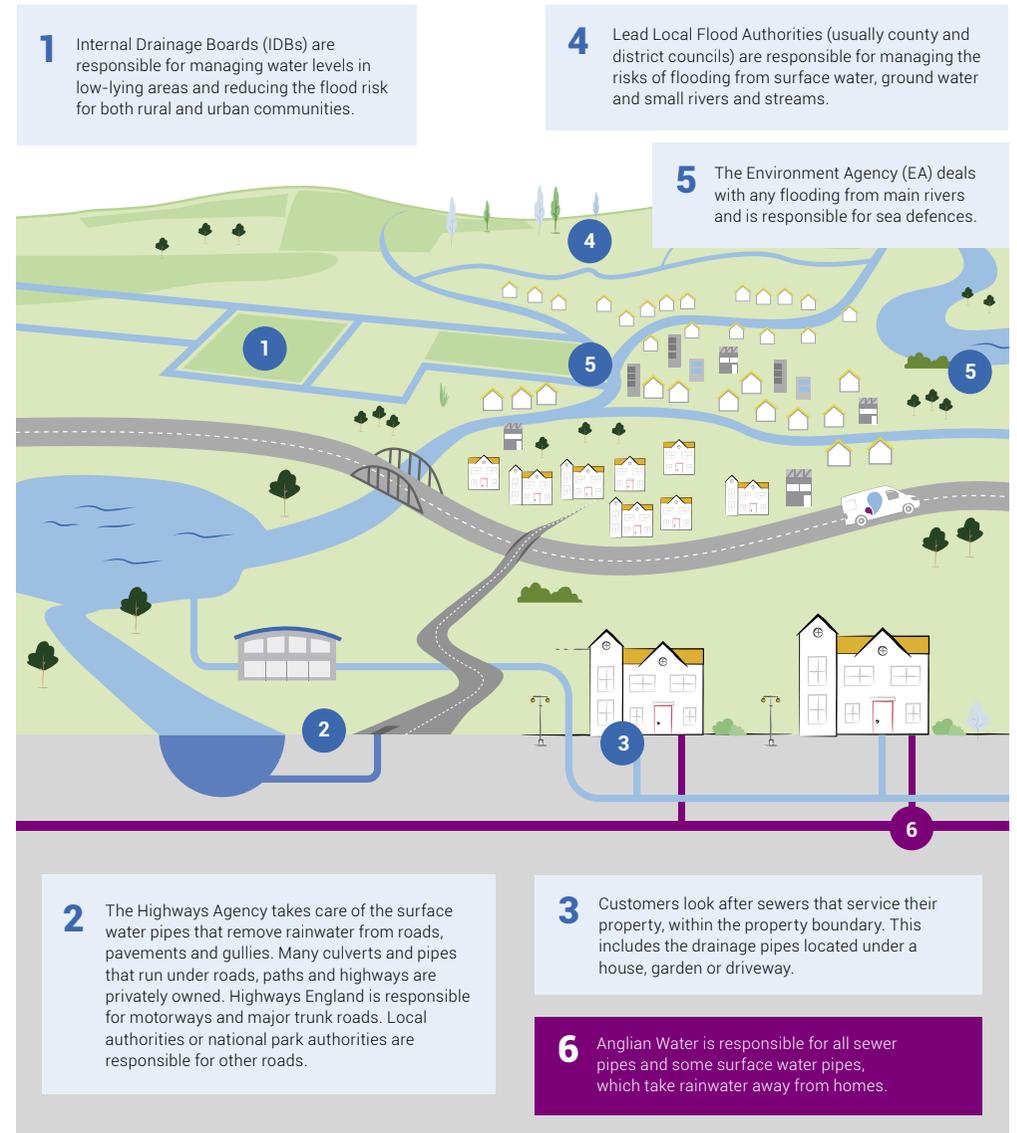
We are already taking action through infiltration reduction plans. We have completed 4,039 metres of sewer-lining work in 13 villages, sealing our assets, to prevent entry of groundwater. We have also completed surface water removal schemes in five villages, mainly through the rectification of misconnections, where either the foul sewer has been incorrectly plumbed into the surface water sewer (or vice versa), causing overloading.

We plan to complete 25 infiltration reduction plans by the end of the AMP.

Tackling the bigger issue: wider water management

Our long-term aspiration is to achieve zero sewage escapes from our network. However, reaching this goal requires a fundamental rethink of how water is managed, specifically around improving our resilience on managing increasing water levels, given the environmental challenges we will continue to face in the years to come.

The multiple parties responsible for drainage



What the £100m will deliver

Pathfinder catchment project: Grimston

These areas are two examples of the work we are doing to address the challenges of hydraulic overload, enabled by the £100m investment. The 'traditional' solutions for both areas cost £150 million and are unlikely to resolve the full problem, requiring a significant rethink. Through extensive investigation, using innovative techniques, modelling and catchment area surveys, it is clear that the root causes in these catchments are complex. By using an expanded toolkit of options, we are trialling a very different approach, to find alternative ways to manage the water in the catchment.

How a catchment-based approach is supporting removal of surface water at Grimston

Grimston, Norfolk has faced significant ground water and flooding issues for many years. Since 2012, we've invested £1.5 million in Grimston to manage infiltration and surface-water inundation. This year's exceptional wet weather saw us experience 10 times more surface water than our sewer capacity was designed for – a result of infiltration and inundation across the network.

Following a full catchment survey (incorporating CCTV, Contributing Area Surveys and a drone survey), we have examined the root causes – from road gullies, highway systems, ditches and level points – to understand the topography of the system. Water is getting into the system where it shouldn't, due to high groundwater levels during wetter weather, alongside surface water from misconnected homes and drains.

Once this water enters our network, it can become contaminated – despite being very dilute. Under these extreme conditions, the Environment Agency permits us to release some of this water into surrounding watercourses to reduce flooding. This has a very minimal environmental impact. However, this year, we decided not to take this course of action, as we believe it was not the right thing to do. Instead, we focused on removing surface water through tankering.

Tankering is a short-term solution to a long-term problem, as it can only remove a small proportion of the excess flow. In addition, tanker movements can be disruptive and noisy for residents and there is a high carbon impact from moving and treating what is effectively predominantly rainwater.

Our investigations found there are a range of issues outside of our direct control that impact flooding in the area, including: surface water connectivity on private properties; poor ditch upkeep under riparian ownerships; field run-off; underutilised drainage ditches; and the catchment being built on soakaway system, which is not appropriate for the area.

Furthermore, the case at Grimston highlights that building a bigger sewer is not the silver bullet for flooding issues. Having a bigger sewer, but less water flowing through it under normal (drier) conditions, would result in issues with septicity, pumping and the water recycling process. The balance is to find solutions that remove the ground and surface water from entering our network in the first place.

We have a number of investments planned for this year, including: installing 30 Sustainable Urban Drainage System (SUDS) pods – which operate similarly to water butts in capturing surface water; relining sewers; sealing

manholes; and more, across the wider catchment. Over the next year, to 2025, we will be spending around £650,000 on this work in the village.

Alongside the Environment Agency, Norfolk County Council and other key stakeholders, we are putting together a collective plan for further improvements. Grimston will be a pathfinder study, with our work an example of our multi-agency response to flooding.



What the £100m will deliver

Pathfinder catchment project: Yaxley and Stilton

Identifying catchment-based solutions to combat flooding in Yaxley

The Windsor Road pumping station serves the Yaxley, Stilton and Norman Cross areas, within the wider Peterborough catchment. Yaxley has a population of 12,000 people and is home to 5,000 commercial and private properties.

During heavy rainfall events, the Emergency Overflow at Windsor Road pumping station is triggered, to manage excess water that is coming from a combination of surface water and infiltration. This prevents both the network and pumping station from being overwhelmed, but leads to re-occurring pollution events. To remove excess water throughout the wet period, we deployed a large-scale tankering programme. Over the past 12 months alone, we rolled out 94 tankers.

To understand where extra flow is coming from, we are using a combination of: Dynamic Sewer Visualisation (DSV) monitors; Contributing Area Surveys (CAS), to identify surface water connectivity; and CCTV surveys, to spot infiltration. Dividing the area into 'sub-catchments', we are gathering intelligence to identify reaction to flow during rainfall events, to better understand the water table correlate to levels within the sewer.

To date, we have carried out CCTV surveys for 95% of Stilton and Folksworth villages and 90% of Yaxley. CAS surveys have concluded in Stilton and Folksworth villages and in one third of Yaxley Village sub-catchments.

What's clear in Yaxley, is we cannot fix this issue alone. We need to engage with key agencies across the catchment, to ensure surface water doesn't enter our system. Our risk assessment uses a one-in-30-year climate change scenario, to model spill scenarios that could occur in the future. This identified the need to reduce volumes of water coming into the pumping station by 87 litres per second (l/s). This reduction has to be found in the catchment.

We identified 11,302m² of Highways surface run-off, connected to the Anglian Water foul sewer across the catchment of Stilton and Yaxley. Through our relationship with the local Highways department, we were able to highlight the impact and contribution that the highways drainage system being connected to our sewers is having – both in terms of overloading our foul sewer and its subsequent impact on spills and flooding. Collectively, we were able to divert 1,741m² of surface water run off away from the foul sewer system. The next step is to divert the highways culvert which will see a further removal of 9561m².

The complexity of the catchment, along with the sheer size of the area, has proved challenging – requiring time for thorough investigation, with the remaining surveys expected to conclude in summer 2024, to identify areas for further improvements. We continue to engage with local councils, highways and communities to share findings and best practice.



What the £100m will deliver

Continuing to tackle rising mains

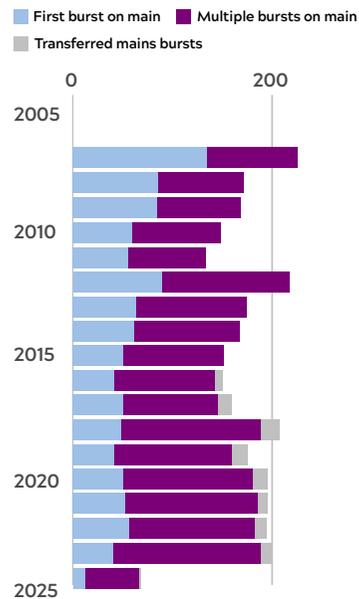
Rising mains continue to be one of the most common root cause of the total pollutions we recorded over the last 12 months and is an area we continue to learn from – and modify our efforts accordingly. This year, there was a small decrease in rising mains contributing to serious pollutions (one less than in 2022), however there was an increase in the number contributing to total pollutions (from 22 in 2022 to 35 in 2023).

The data gathered by new technologies – such as Ovarro and Syrinix – has shown that in 2023, we saw a decrease in the number of new bursts, but a rise in the number of repeat bursts. This insight means we will be focusing our attention on identifying why these mains are more susceptible to failing so we can act accordingly.

From the £100m of support committed from our shareholders, we will be spending approximately a fifth (c.£22m) on taking more steps to reduce pollutions caused by rising mains.

For example, we will be investing over £7m to install a further 860 pressure monitors in 2024, which will take the total number of sites monitored across the region to around 1,700.

Yearly bursts since 2007



Identifying gaps we can improve on

The investment in Syrinix and Ovarro has helped not only to detect that a burst has occurred (to allow for faster containment), but also to reduce the likelihood of a burst occurring in the first place.

The Syrinix system involves pressure monitors being installed on our rising mains, which measure the pressure levels within the sewer. The second system, Ovarro, differs from Syrinix – in that no physical monitors are installed, but algorithms are used on data already collected through our telemetry system. The data from both systems is sent back to our Tactical Operations team, who can analyse it in more detail and send a technician to investigate and mitigate the burst, where required.

We continue to refine the way we interpret the alerts generated from these systems to increase accuracy. The alerts are typically in excess of 70% accurate. Where we've had a burst that the system has not detected, we've undertaken a thorough review to understand why. We have discovered that these alerts are less effective when a burst occurs further away from the pumping station, or when the rising main changes direction by design, or rises again before falling.

We know for these types of rising mains, what we are already doing isn't going to be enough. This has led us to explore other innovative solutions.

We identified an opportunity to adapt technology previously being used by the Water team to identify and fix leaks. Through a partnership between Anglian Water, ASTERRA and SUEZ, a satellite-based Synthetic Aperture Radar solution has saved more than 2 million litres of leakages on potable mains since 2022.

Going even further, the team identified an opportunity to look beyond water network leakage and combine satellite data for target areas that included Anglian Water's vast sewer network. By combining image acquisition and analysis, the team identified an efficiency that could be shared between departments that historically have worked far apart from each other. Even though the technology needed adapting for use on the sewer networks, the team understood the symbiosis between the two and embraced the opportunity and challenge.

In addition to this, we have already started Water Infrastructure Serviceability Performance Assessment (WISPA) modelling, which will investigate the relationship between rates of bursts, materials and environmental factors – such as soil type, rainfall and temperature. The outputs from this work will build on the knowledge we already have around how, across all material types, there is a higher rate of failure in the high-shrink swell soils, particularly in the summer months. All high-risk mains identified from the modelling will then receive dedicated asset monitoring (Syrinix) and care strategies.



People and culture: a key enabler for our plans

In 2023, we introduced our zero pollutions mindset across the business, alongside implementing operational control – an enhancement to our management system, which ensures the effective performance of day-to-day operations into our business-as-usual activities.

In addition we:

- Updated our competency management system .
- Implemented mandatory pollution training and undertook an extensive engagement campaign for teams, to reinforce learnings and ensure pollution awareness is kept at the forefront of day-to-day operations.
- Introduced in-depth root cause analysis through our new Environmental Protection Plan process.

As outlined on page 10, this year we noted a number of serious pollutions at WRCs were classified as such, due to their persistence and extent. To address this,

going forward we are further enhancing our organisational skills, competencies and behaviours. This includes actions such as, revising our organisational design, with smaller operational areas, to drive focus and accountability and using tactical asset health teams to develop proactive insights.

We are also investing in additional new roles, to support our efforts to embed proactive and responsive efforts, such as:

- Environmental Pollution Technicians, who will provide a fast response to incidents, mitigate risk and monitor rivers.
- Expansion of our reactive tankering fleet.
- Additional frontline roles to speed up response times.
- Root cause and assurance roles, to will ensure we learn from events.

These roles will be funded out of the £100m investment.

Wider environmental work

To achieve our ambitions for the environment and to do right by habitats and wildlife, it's vital we work in partnership with other organisations and volunteer groups throughout our region.

Our Get River Positive initiative is demonstrating the power of partnership working and the benefits of using nature to deliver improvements – at both a catchment and landscape level. These projects will act as a springboard as we move into 2024, with many of the projects and partnerships continuing into AMP8.

We know communities across the region want to understand and safeguard watercourses, so we are continuing to build on the citizen science project that we launched in 2023. River monitoring kits are being rolled out to local interest groups and we are engaging with local communities, to improve our rivers and provide accessible information on bathing waters, river water quality monitoring, health and safety and education. We are also funding citizen science bacterial sampling and sharing results. You can read more in our [River Health Report 2024](#).



Always exploring

As an organisation, we pride ourselves on not standing still and always striving to explore and learn more – so much so that this is one of our core values. One way of demonstrating this value is how we have formed collaborative, cross-sector opportunities for sharing good practice, innovative approaches and learnings within the water industry.

Our Director of Water Recycling, Emily Timmins, is the current Chair of the National Pollution Group, which meets monthly and comprises representatives from all water companies and Water UK.

In March 2023, a face-to-face meeting was hosted by Thames Water, aimed at sharing best practices from each of our PIRPs, to come up with a 'Pollution Incident Reduction Manual' for the industry. The meeting was an opportunity to work collaboratively, foster connections and relationships and share knowledge. We continue to be an active participant within the group, with plans to host another event in September 2024, to focus on evidence capture and pollution response.

This collaboration with other water companies has also helped us take huge steps forward with our sewer monitoring programme. While we chose to focus on developing our systems and analytical capability first, then rolling out monitors, other water companies did this in reverse. As a result, we were all able to learn from each other's experiences on elements such as different technologies, deployment and monitor reliability.



Getting ready for AMP8 and beyond

Prior to the publication of this document our regulator, Ofwat, published its draft determination for water companies in AMP8 (2025-2030).

We are pleased that Ofwat has rated our business plan as standard and one of the best plans in the industry, acknowledging our low bill rises. This will deliver massive new infrastructure that customers want and the environment needs, as well as world-class drinking water, all for around £1.57 a day.

Over the coming weeks, we will be reviewing the feedback in detail and continuing discussions with Ofwat as needed. Initial feedback from Ofwat means that our plan has the smallest expenditure difference of all companies' plans, with an allowance of £9.4 billion, £424 million lower than what we proposed.

Our plans

Worth over £9 billion, our AMP8 plan is double that of AMP7. It places huge emphasis on the necessary adaptations to climate change and anticipated population growth in the East of England.

Our plan has proposed a record investment of £4 billion, to enhance the environment. This includes almost £600 million on our Water Industry National Environment Programme (WINEP), £61 million on reducing flood risk and £517 million on storm overflows and full to flow treatment.

In our business plan we proposed that by 2030 we will:

Double our investment in the environment to **£4bn** to enable nature recovery.

Reduce total pollutions by **41%**, and achieve no serious pollutions by 2030.

Reduce spills from overflows by **17%**.

Reduce mains repairs by **8%** and climate vulnerable mains by a further **8%**.

Prevent further pollutions through our **sensor network**, supported by AI and machine learning.

Renew **695km** of vulnerable pipes, to futureproof our water mains and sewers against climate impacts.

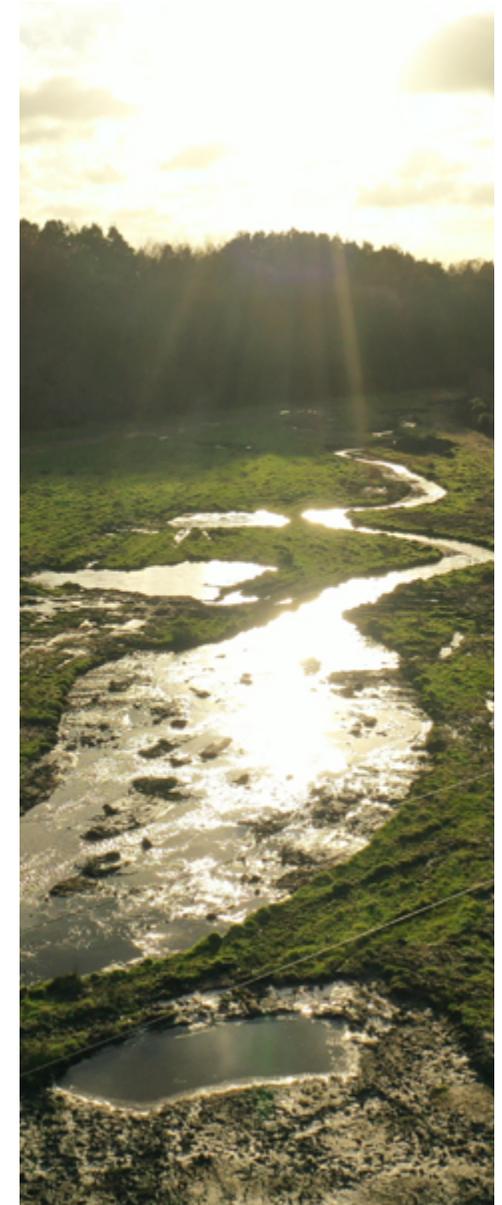
Use nature-based solutions, to create an area **the size of 100 football pitches** of treatment wetlands, along with **52** new Sustainable Urban Drainage Schemes. Of all the nature-based solutions proposed in AMP8, across the whole industry, more than two-thirds will be in the East of England.

Meet Government targets on installation of final effluent and continuous river water quality monitoring, sharing the data transparently, to reduce the risk of pollutions.

Increase capacity of our waste water network by **112 Olympic sized swimming pools**, reducing the risk of pollutions and spills.

Plan for **two new reservoirs**, with our Strategic Pipeline network extended to build further drought resilience and environmental protection.

In addition, we are currently trialling a number of innovations that, if successful, will be rolled-out in AMP8, including using satellite technology to detect bursts and Final Effluent Pod Monitors to provide mobile real time visibility for sites without permanent, continuous final effluent quality monitoring.



3 Delivery against our 2023-25 PIRP commitments



PIRP activity undertaken in 2023 and planned for 2024-25

The below tables summarise the actions we have taken in 2023 to reduce pollutions. Many have now become 'business as usual' activities as they are embedded into everyday operations. Activities that are additional, following the extra £100m investment, are highlighted in blue.

Business as usual

Strategy focus area	Root cause addressed	Work stream	Description	Delivery	Intention for year 5
<div style="display: flex; flex-wrap: wrap; gap: 5px;"> 1 2 3 4 5 </div>	All	All	<p>Ongoing business-as-usual programme of activities for both Water Recycling and Water business streams, to maintain our assets. This includes:</p> <ul style="list-style-type: none"> • Asset maintenance, upgrades or replacements. • Routine maintenance and management. • Planned preventative maintenance. • Data and proactive monitoring of assets. • Revisiting geography and unique topography of the region. <p>This activity is taking place in tandem to the activities outlined in the tables that follow.</p>	Ongoing	Continuing to deliver and in original plan

Networks

Strategy focus area	Root cause addressed	Work stream	Description	Delivery	Intention for year 5
1	Hydraulic Overload	Surface and groundwater management	Investigation work to understand ground and surface water impacts on our assets and our customers. This work will support decision making with other authorities responsible for water management. See more on page 15.	11	New through £100m investment
1	Hydraulic Overload	Emerging infiltration	Investigative work to understand points of entry of surface and groundwater into our assets.	Nine	New through £100m investment
1	Hydraulic Overload	Infiltration reduction plans	We have created 25 investigation and mitigation plans that aim to prevent the entry of water into our foul sewers from rainfall, rivers or groundwater. This helps to prevent hydraulic overload of assets in wet weather.	Delivered 13 out of 25 plans so far	Continuing to deliver and in original plan
2 4	Blockage	Dual manhole surveys and rehabilitation	These manholes provide access to both surface and foul water sewers. As a result of their duality, there is a risk of cross-contamination of sewage into surface water lines in the event of a blockage. Where possible, separating or isolating the foul from the surface reduces this risk.	2,670	New through £100m investment
2 4	Blockage	Sewer Monitors and DSV	We're installing monitors on 11,000km of our highest risk sewer lengths and applying AI technology to help us identify forming blockages early so that we can address them before they cause an escape of sewage.	73% of alerts detect an issue	Extended through £100m. We will be installing an additional 8000 monitors

Networks continued

Strategy focus area	Root cause addressed	Work stream	Description	Delivery	Intention for year 5
2	Blockage	ECAS and Keep it Clear	We're educating food serving establishments, through proactive visits on grease management in kitchens. We're extending these visits to domestic customers, to complement our widespread Keep It Clear campaign.	We have prevented 1633 tonnes of FOG from entering the sewer this financial year	Continuing in year 5 at the same level
2 4	Blockage	Targeted proactive sewer cleansing	In addition to our regular sewer cleansing programme, we've instigated a programme of targeted cleansing, based on analysis of our highest-risk sewer lengths.	Completed 115% of our planned sewer cleansing programme	Continuing in year 5 at the same level
1	Blockage and civil/structural	Public sewer survey work	We are undertaking additional surveys of sewer lengths, to uncover any defects or issues, such as splits or dropped joints, which can lead to escapes or act as snag points for debris.	80km of sewer	New through £100m investment
1	Blockage and civil/structural	Sewer rehabilitation	We are investing in the rehabilitation of sewer lengths that have been identified through our survey work. This activity ranges from patch lining, through to replacement.	2.1km of sewer and 38 manholes	New through £100m investment
1	Blockage and civil/structural	Sewer rehabilitation on complex sewerage assets	We are investing in the rehabilitation of complex sewer lengths that have been identified through our survey work. This activity ranges from patch lining, through to replacement.	Five sites	New through £100m investment
5	Enabler	CCTV vehicles	New vehicles will support us in delivering additional sewer survey work. Equipped with CCTV, the vehicles will allow us to record lengths of sewer and capture images that allow the assessment of the sewer's condition.	Four vehicles	New through £100m investment
2	Blockage	Repeat blockage standards and process	We're building a process to identify individual repeat blockages and to understand and resolve the root cause, to prevent reoccurrence at our foul sewers and pumping stations.	Implemented a repeat blockage procedure	Complete and now business as usual
3	Process improvement	EDM onboarding	We're creating a system to identify the cause of a storm overflow alarm activation. Where a dry day activation occurs, we can dispatch resource to understand if the alarm is genuine and/or resolve the issue.	All dry day spills have been investigated and we have 100% coverage of monitoring	Complete

Rising mains

Strategy focus area	Root cause addressed	Work stream	Description	Delivery	Intention for year 5
4	Civil/Structural	Syrinx	We've already deployed 660 pressure monitors which, with Syrinx technology, can alert us to a burst or abnormal pressure on a rising main that needs further investigation. We're extending this programme and using the outputs to mitigate and prevent future bursts.	28 further monitors installed in 2023, to bring the total to 760. A further 810 monitors will be added.	Extended through £100m
1	Civil/Structural	Air valve survey and rehabilitation	Air valves on our rising mains allow the release of air, to maintain the design pressure parameters within the main. Where air valves are inoperable or faulty, there is an increased risk of a burst. This work will locate, inspect and (as needed) reinstate air valves on key rising main lengths.	4.300 surveys 150 rehabilitated	New through £100m investment
3	Civil/Structural	Future mitigation of rising main failure	Our Syrinx pressure monitors can help us to understand pressure patterns and fluctuations on our rising mains. Negative pressures or significant variation in pressure can increase the risk of a burst. With this information, we can work to smooth out these fluctuations, for example by adjusting the regime of the pumping station, or retrofitting further air valves. We are also carrying out exploratory work to enable us to better detect leaks from rising mains using satellite technology – see page 18 for more.	50 transient reports and exploratory work on leak detection	New through £100m investment
1	Blockage, mechanical, electrical	Rising main rehabilitation	We are investing further in the rehabilitation of rising main lengths, using the information provided by our Syrinx monitors to direct us to the best solution. We will be targeting mains that have a burst history and a high risk of an escape reaching a watercourse or receptor.	27 high risk rising mains	New through £100m investment
4	Blockage, mechanical, electrical	Ovarro enhancement for rising mains	We're using existing telemetry data through the Ovarro system to help detect burst rising mains. The system can self-learn with feedback enabling us to further refine the success rate of the alerts (currently 70%), alongside our own learning of how to use the insight.	70% of alerts detect an issue	Complete and now business as usual

Water Recycling Centres

Strategy focus area	Root cause addressed	Work stream	Description	Delivery	Intention for year 5
5	Process improvement	Mobile equipment and assets	We have invested in mobile equipment and assets that can be deployed temporarily to support sites with performance issues, to prevent them from becoming non-compliant and discharging above permitted limits.	18 assets available for deployment. Further to be added.	Extended in £100m
5	Process improvement	Action limit standards	We are reviewing and enhancing the operational controls and measures we have for our water recycling centres to ensure sharp focus, visibility and appropriate standardisation, to optimise the performance of our sites as part of a continuous improvement approach.	All action limit standards have been reviewed	Complete and now business as usual
1	Electrical	Power resilience	Enhanced visits to generators and increased testing on load of generators on WRCs.	All fixed generators now have planned work to carry out on load testing	Complete and now business as usual
3	Biological	Condition based monitoring equipment	Root cause analysis has shown that a significant number of pollutions are caused by failure or rotating assets (screw pumps and rotors). Condition based monitoring will allow us to understand the condition of the assets and repair or replace them prior to failure, preventing a pollution from occurring.	185 monitors at estimated 54 sites	New through £100m investment
3	Biological	Installation of further ammonia monitors on WRCs	We're installing further ammonia monitoring on our sites with an ammonia consent less than 5mg/l. Tighter consents are typically on our sites that discharge into more sensitive watercourses. This monitoring will enable early intervention where there is a deviation in the quality of final effluent, to help protect water quality.	18 monitors	New through £100m investment

Water Recycling Centres continued

Strategy focus area	Root cause addressed	Work stream	Description	Delivery	Intention for year 5
3	Biological	FE Pod Monitors	We have been exploring the opportunity to utilise mobile monitoring, to give us real-time visibility of the performance of high-risk sites, without permanent, continuous final effluent quality monitoring. We're testing eight types of probes across five sites and if successful, will expand this.	Three rigs already deployed. An additional 16 will be installed.	Extended with £100m
3	Biological	Sludge tank level monitors	Similar to our sludge blanket detection, our sludge tank level monitors provide another crucial control point. We are committing resource to complete an end-to-end review of these assets to ensure they record accurately, to prevent spills from these assets and maximise storage.	100 monitors have been installed on site and installation of a further 500 is underway	Ongoing
5	Biological	Sludge base plan review	We are fundamentally changing how we forecast and collect sludge from our Water Recycling Centres. As well as adjustments to our plan to enable better forecasting, our teams will be able to order and track the timings of sludge removed from their sites, to maximise the biological treatment capacity and improve the quality of the effluent returned to the watercourse.	Additional resilience demonstrated through the winter period	Ongoing
5	Biological	Sludge dry solids programme	This is another activity as part of our sludge management focus. We need to thicken sludge on our sites to ensure optimal removal, storage and transportation. This programme puts significant focus on the thickness of this sludge, measured in 'dry solids', as part of our operational control process.	Proof of concept trial has been completed at a single works	Ongoing
3	Biological	Info-Tiles	We're exploring the opportunity to provide early warning of biofilter performance issues, using data we already collect through our telemetry system. If the concept works, we will consider how it can be applied across 100 of our sites.	Proof of concept trial underway with 80 sites, but not producing expected results. Further changes being made to the granularity of data to enhance effectiveness with a further assessment due in three months.	The activity has not yielded the benefit we expected and will not progress beyond the proof of concept stage.
1	Biological	WRC audit programme	As part of our 'plan do check review' approach, we are focussing additional proactive-assurance activity on our high risk WRCs through our expert process science team, to provide complete rigour and confidence in our permit compliance and management system.	All activities have been completed	Complete and now business as usual
1	Electrical, biological	Improvement works on named sites	A additional final settlement tank at Ingoldmells WRC, an inlet power upgrade and inlet screw pumps at Cotton Valley WRC, work on the transformer at Whitlingham WRC and replacement of a Programme Logical Controller at Lowestoft WRC.	Four major assets	New through £100m investment
1	Blockage, electrical, mechanical, civil/structural, biological	General WRC/STC asset health interventions (creation, refurbishment or replacement of assets)	We are investing in identified environmental risks across water recycling centres and sludge treatment centres. These aim to tackle multiple root causes and increase resilience on these sites.	10+ interventions	New through £100m investment
2	Blockage	Inlet blockage alarms	We're continually improving the algorithms we add to our telemetry data to flag potential blockages at our site inlets.	68% of alerts detect an issue	Complete and now business as usual

Pumping stations

Strategy focus area	Root cause addressed	Work stream	Description	Delivery	Intention for year 5
1	Blockage, civil/ structural, mechanical, electrical	Proactive pumping station resilience risks	We are investing proactively in pumping stations, to improve their resilience to possible failures. For example, installing brown out timers and auto pump reset systems that will return power and normal pump operation, following power fluctuations, without the need for attendance.	656	New through £100m investment
1	Blockage, civil/ structural, mechanical, electrical	Rectification of known risks on pumping stations	We are investing in sites that our data and our teams have identified as at risk of causing harm to the environment, should a failure occur. These investments will tackle multiple root causes and reduce the risk of future failure.	37	New through £100m investment
4	Blockage	Wet well cleanse enhancement	We're spending £4.8m on the cleaning of pumping station wet wells, to help prevent pumps clogging with unflushables and fats, oils and greases.	We have completed 114% of the programme (4456 cleans)	Ongoing in year five, at the same level
5	Process improvement	Assets out standard	We're improving visibility of assets that are offline for repair or replacement and driving to reduce the time these assets take to be brought back into service. This helps ensure that we have resilience across our asset base.	Equipment offline 'update mate' app has gone live with approximately 79% uptake	Ongoing in year five
4	Blockage, electrical, civil/ structural	Pumping Station Ovarro enhancement	We're already using data through Ovarro to identify rising main bursts. This technology can also be applied to pumping stations, to detect abnormalities in performance. We're looking to hone the success rate of these alerts, to get ahead of potential emerging performance issues. Using Ovarro means we'll have 100% of coverage of our telemetered pumping stations.	62% of alerts detect an issue	Complete and now business as usual

Clean water networks

Strategy focus area	Root cause addressed	Work stream	Description	Delivery	Intention for year 5
1	Operational	Mobile Mitigation	We're bolstering our response to water pollutions, by improving our field teams' access to mitigation equipment.	Pollution vans/trailers accessible to all areas for use in mitigation of potable water incidents	Complete and now business as usual
5	Operational	Standby Resource	We're implementing specialist standby resource across the region, to manage and mitigate pollutions caused by potable water.	Standby resource implemented for potable water pollution events	Complete and now business as usual
3	Civil/structural	Pressure Monitoring	Pressure management to reduce burst risk and swifter response to minimise pollution impact.	90% coverage of the water network asset base with pressure monitoring	Complete and now business as usual
5	Civil/structural	Asset Risk Models	Development of our asset risk models, which increase our understanding of assets most at risk, particularly from the effects of climate change.	Potable Water Risk Monitoring dashboard has been created	Complete and now business as usual

Cross business

Strategy focus area	Root cause addressed	Work stream	Description	Delivery	Intention for year 5
2	Operational	Tanker and jetter resource	The supply of tanker and jetter vehicle resource, to support our additional activity to survey, clean and rehabilitate sewer lengths.	28 vehicles	New through £100m investment
4	Operational	Respond to data	We're helping our expert teams develop the skills and mindset to look for performance issues and pre-empt asset failure. This is part of our shift from a reactive to preventative approach.	Ongoing work to train and move mindsets from reactive to proactive	Ongoing
5	Operational	Zero pollutions mindset	We've always had a passion for protecting the environment, but our zero pollutions mindset takes this further and ensures that consideration for the environment is woven into everything we do.	Ongoing work – retain new company culture on pollutions	Ongoing
5	Operational/ process improvement	Environmental technicians and support managers	We are employing environmental technicians to support our frontline teams in the assessment of impact, in the event of a pollution. The samples, photographs and information they collate will support our assessment of the severity and ensure that the correct mitigation and controls are able to be deployed.	24 staff	New through £100m investment
5	Process improvement	Dedicated triage resource staff	We are recruiting additional team members to support the upfront triage of work to assess pollution risk.	Three staff	New through £100m investment
4	Process improvement	Enhanced root cause resource	We will appoint dedicated roles, to support with asset owner root cause analysis and facilitate root cause sessions for more complex/systemic issues and wider catchment-based issues. These roles will ensure timely and high-quality root cause analysis, supporting remedial actions and reduction of future risk.	Two staff	New through £100m investment
4	Process improvement	Enhanced alarm approach	We're continuing work on our alarm estate, to enhance what is presented to our alarm handlers and ensure the correct priority is against each alarm. We've already made great progress in moving towards being compliant with the industry standard (EEMUA).	Completion of some phases of this programme to simplify, reprioritise and reduce noisy alarms	Ongoing
5	Process improvement	Improved root cause analysis process	We're extending and improving the depth of our root cause analysis, to better understand where we should prioritise investment and resource to drive down pollutions.	New Environmental Protection Plan process rolled out.	Complete and now business as usual
5	Biological	Enhanced TankR application	We've created an app, which helps our teams prioritise and understand availability of tankering resource across our business. We're refining and rolling out its use across the tanker fleet.	TankR app rolled out to relevant teams and in use	Complete
5	Electrical, civil/ structural	Maintenance review	We're reviewing the way we carry out maintenance activities across the business. We're looking at condition-based maintenance rather than frequency-based maintenance. We believe this will help us to spend more time and effort on the assets requiring most attention.	Maintenance review complete with jobs completed per month up by 10%.	Complete and now business as usual
5	Hydraulic	Flow control standard	We are developing and building on our current flow control standards – the way in which we test and verify that flow is being correctly measured through our treatment sites. This is an important assurance activity for our customers and regulators alike.	Flow control standards established and embedded	Complete and now business as usual
4	Assurance	Operational control	We're giving all levels of our business visibility of how they are performing against our key objectives and encouraging discussion that enables us to remove barriers, raise risks and action great ideas. We're restoring autonomy and accountability to those who have the power to make a difference, through our operational control structure.	Operational Control performance cells now business as usual	Complete and now business as usual



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