

Arun Flood Forum

February 26 2024



Our role and responsibility

- It's our responsibility to ensure our customers can continue to use their wastewater services.
- Our priority is to keep our sewers flowing and manage the flows they are built to carry, such as waste from toilets, sinks, showers and washing machines, as well as rainwater from roofs and driveways.
- The part we play is around the wastewater function of what we do. Our job – when it comes to preventing flooding – is to manage those sewers so the contents continue to flow through them.



Surface water flooding

- Lead local flood authorities (county councils or unitary authorities) manage the risk of surface water flooding

Private drainage (surface water)

- These pipes are the responsibility of the home owner

Highway drainage

- The local highway authority (county councils or unitary authorities) is responsible for highways drainage, and gullies, on the roads they maintain
- Highways England is responsible for highways drainage on trunk roads and motorways

River and coastal flooding

- The Environment Agency manages flood risk from main rivers and the sea and also monitors the quality of watercourses
- The local lead flood authority (county councils or unitary authorities) manage flood risk from ordinary watercourses
- Internal Drainage Boards manage water levels of ordinary watercourses in areas known as internal drainage districts
- Waterside property owners have certain legal rights and responsibilities to maintain watercourses (including drainage ditches) which run through or adjacent to their land or property

Groundwater flooding

- Lead local flood authorities (county councils or unitary authorities) manage the risk of groundwater flooding

Private drainage (foul)

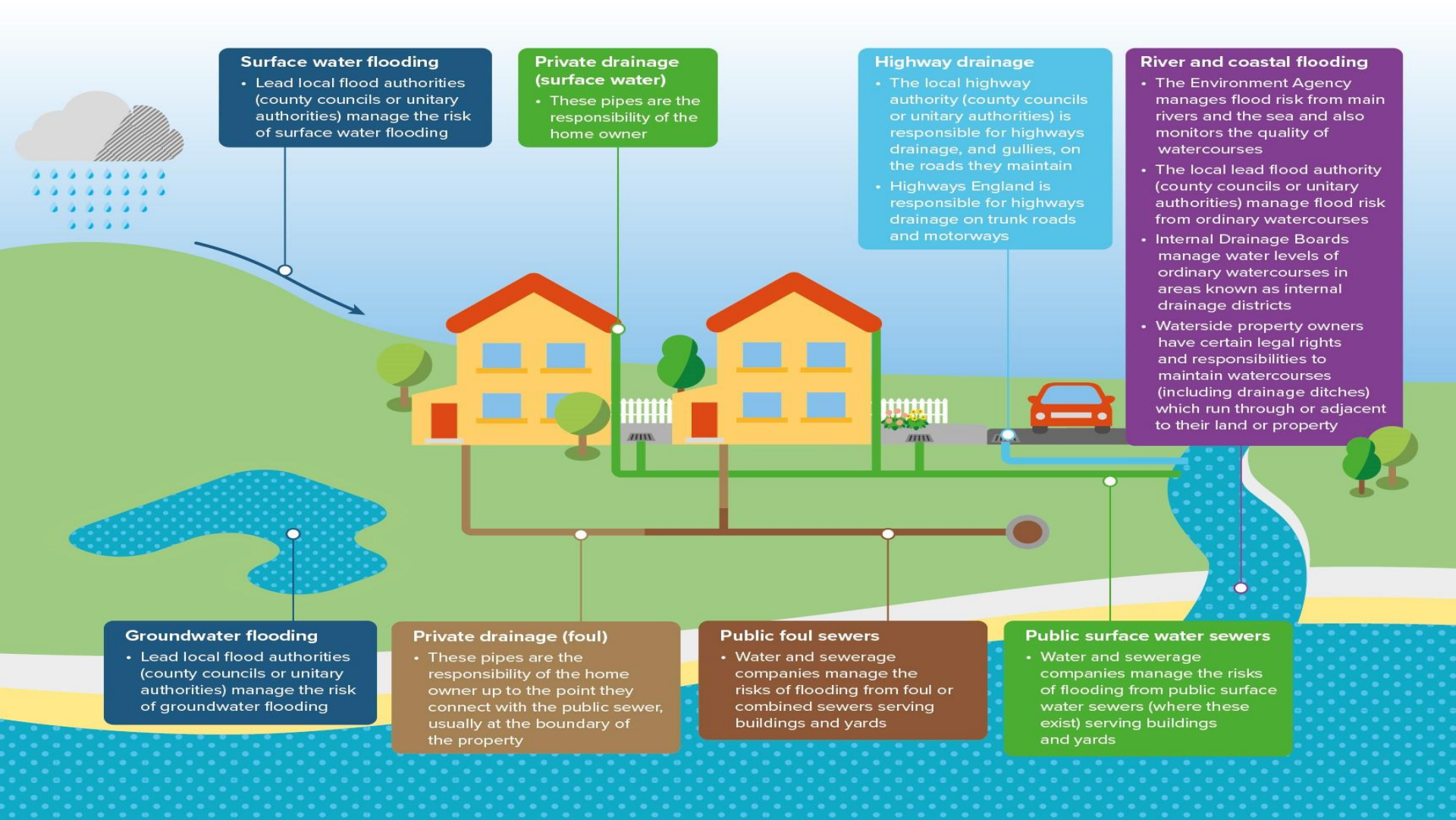
- These pipes are the responsibility of the home owner up to the point they connect with the public sewer, usually at the boundary of the property

Public foul sewers

- Water and sewerage companies manage the risks of flooding from foul or combined sewers serving buildings and yards

Public surface water sewers

- Water and sewerage companies manage the risks of flooding from public surface water sewers (where these exist) serving buildings and yards



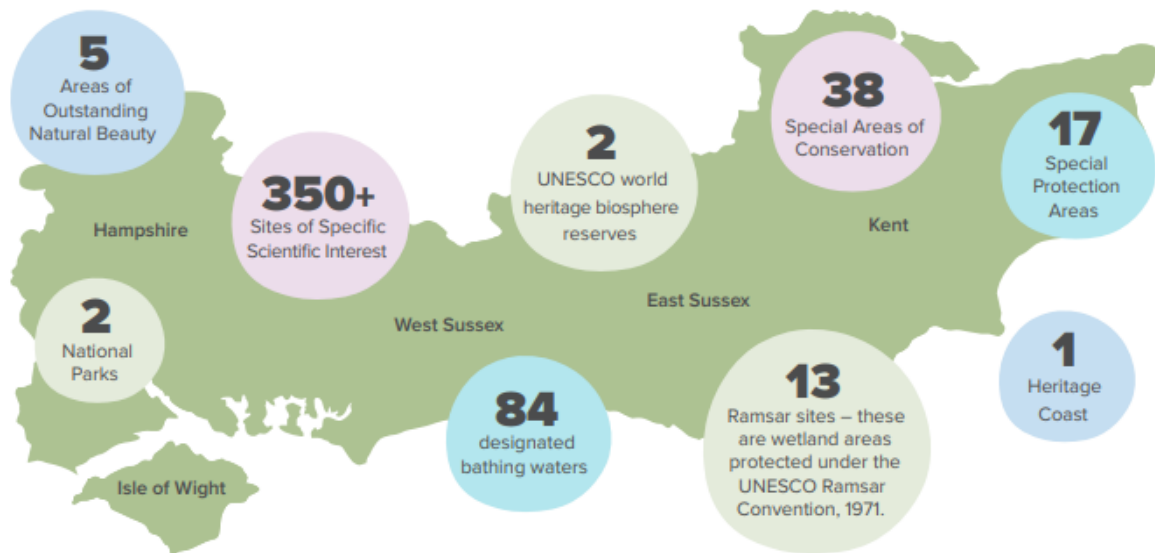
Our region and challenges

- Densely populated with unique water environments and more than 700 miles of coastline
- Our region is water stressed, scarcity is becoming more severe as our climate changes and population grows

19-25% population growth expected by 2050.

£12 billion per year* in tourism revenue relied on by coastal and inland communities across our region.

*Source: tourismsoutheast.com



Climate change



Demand for water



Environmental impacts



Population growth

Our PR24 plan delivers a step-change in investment to meet our **short and long-term challenges**

Water quantity

- We could need an **additional 300 million litres per day by 2050**
- We need to significantly **reduce how much we abstract** from Hampshire's chalk streams
- We need to **halve leakage by 2050**
- The **population we serve could grow between 6% and 32%** between 2025 and 2075
- We need to **increase our resilience to a 1 in 500-year** drought – and droughts will become more frequent in the future

Environment

- We need to **remove 80% of phosphorous** entering water by 80% by 2038
- We need to **reduce how much we use stormwater overflows** to protect shellfish and bathing waters
- **Nutrient neutrality** is blocking growth
- We need to **reduce serious pollution incidents** to zero – and improve our pollution performance
- Need to **increase capacity and capabilities** to cope with population growth

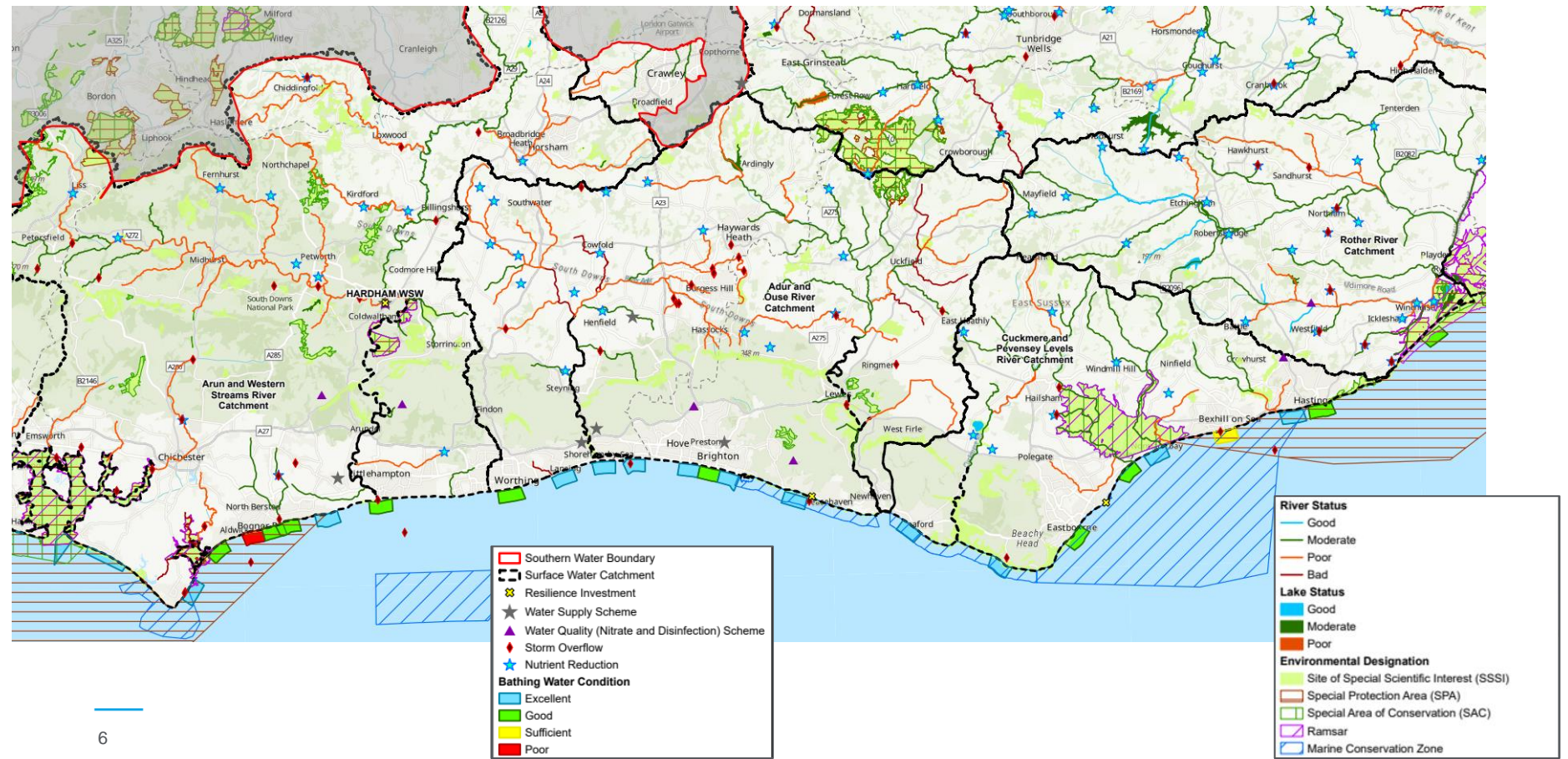
Resilience

- We need to **protect the environment** for future generations
- We need to manage **increase costs** of labour, materials and energy
- Increased borrowing costs and increased political pressure can make the **sector less attractive** to investors
- Climate change means **extreme weather events** will be more severe and more frequent – challenging our day-to-day operations
- **Ageing infrastructure** needs upgrading and replacing

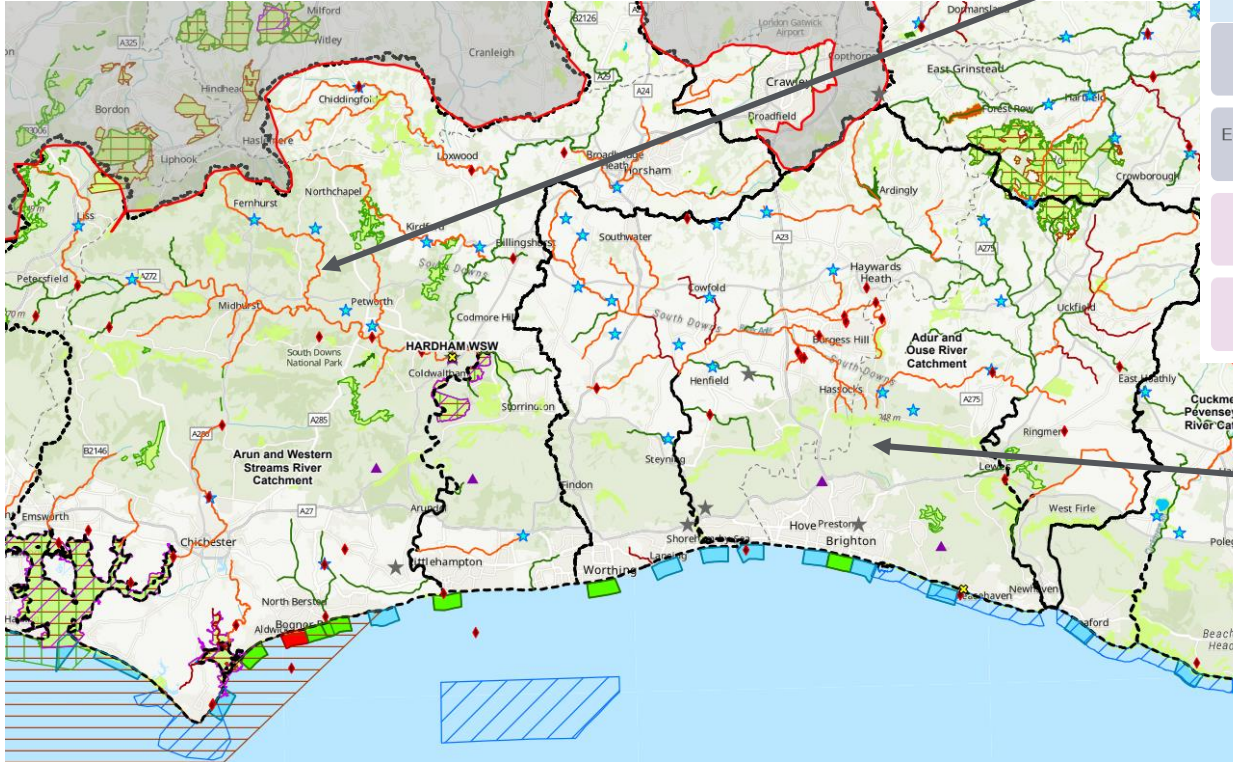
Customers and stakeholders

- We need to keep **bills affordable** while investing in improvements. Cost of living challenges mean this is more important than ever
- The whole sector needs to **improve trust and its reputation**
- Rising expectations are driving regulatory changes and **increasing political pressure** that we need to adapt to
- Changing **expectations for customer service** mean we're expected to do things differently

Our Wastewater Plan by area

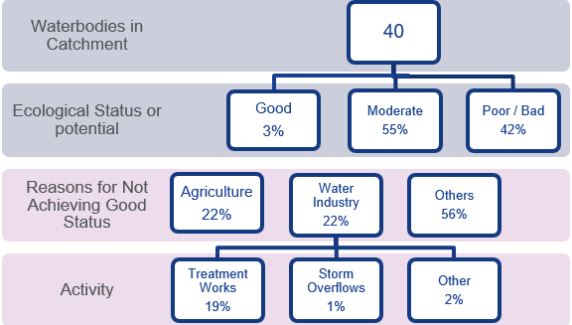


West Sussex enhancements



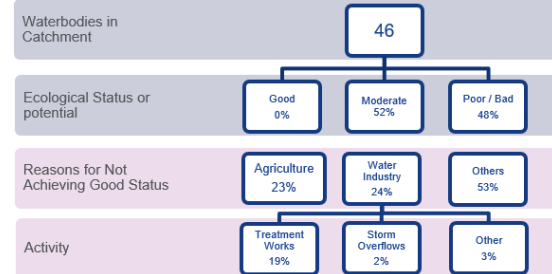
Arun & Western Streams

- Nutrient reduction at 12 sites
- Storm overflows at 26 sites
- Length of river improved 145km
- 60% reduction in storm overflow discharges
- Total environmental investment £300m



Adur & Ouse

- Nutrient reduction at 18 sites
- Storm overflows at 19 sites
- 1 coastal resilience scheme
- Length of river improved 135km
- 32% reduction in storm overflow discharges
- Total environmental investment £160m



Our Clean River and Seas plan for 2025-2030 (subject to regulatory approval)

- **£88.32 million – catchment of Bognor Regis Wastewater Pumping Station** - to tackle too much groundwater getting into the network. Likely to include 36.15 hectares of wetlands and 136.31 km of sewer relining in both public and private pipes
- **£1.22 million – South Terrace, Littlehampton** – to tackle the issue of too much rainwater getting into the system
- **£4.18 million – Bognor rising main** – likely that multiple interventions will be needed
- **£8.67 million – catchment of Lidsey Wastewater Treatment Works** – too much groundwater getting into the system. Likely to include 3.27 hectares of wetlands and 15.71 km of sewer relining
- **£5.8 million – catchment of Littlehampton Wastewater Pumping Station** – likely to include 2.32 hectares of wetlands and 8.76 km sewer relining
- **£1.07 million – Marshall Close, Barnham** – multiple interventions
- **£1.89 million - catchment of Pagham Wastewater Treatment Works** – to tackle too much rainwater getting into the network. Likely to include the removal of c. 1 hectare of impermeable land by installing sustainable drainage systems (SuDS) in the community. Work is already taking place on site within this AMP (2020-2025)



Our Role in providing Infrastructure for New Developments

- We review the cumulative impact of growth over 25 years when producing our Drainage and Wastewater Management Plans
- Statutory Consultee at Local Plan Stage – we provide general advice on sewer capacity for each proposed site.
- Although not a statutory consultee at planning application stage as a general rule we are consulted. We advise on sewer capacity at the proposed connection point. We advise whether there is headroom available for the proposed flows. Where there is not available headroom we recommend a form of words to be used in a planning condition for the site
- We cannot object to development and have to provide a connection to the public sewer when requested, as long as the mode of connection is appropriate.
- A project to create headroom is initiated when planning approval is granted. We then consult with developers to understand their programme and when capacity is required by.
- The creation of headroom is funded through a standard infrastructure charge which all developers pay
- Improvements to WTW are funded through our 5 yearly business plans



Actions across the district



Barnham

Summary of work at Lidsey Wastewater Treatment Works (WTW)

We're upgrading the WTW to achieve two things:

- Provide treatment capacity at the WTW for forecast growth to 2040 (from c. 25,500 PE to c. 36,300 PE)
- Prevent spilling to storm during dry weather

The following scope is being delivered:

- Upgrade existing inlet WPS to pass forward Formula A flows. We are carrying out flow surveys in the catchment to confirm the design capacity of this pumping station.
- Replace the existing inlet works with new, to treat flows based on above.
- Increase the Flow to Full Treatment of the WTW from 129l/s to 275l/s.
- Upgrading wastewater treatment process to treat above (replacing existing treatment process with an Activated Sludge Plant, new tertiary treatment process, increased storm storage capacity).
- Work in the catchment to reduce non-foul flows entering the sewer and arriving at the WTW, to prevent spills to storm during dry weather.
- The above is currently forecast to be delivered by Q3 2027, and the WTW is assessed to have capacity until the end of 2028 according to the development figures given in the council Local Plan.



Lidsey Group 3 scheme

- For group 3 we are completing a number of surveys in Lidsey with a focus of finding the major areas of infiltration, these include electroscan, flow surveys and asset surveys.
- Our current goal is to complete design by end of AMP7 (2025) for the wider catchment.
- Unfortunately Lidsey is an area with multiple historic issues which have to be solved in tandem with growth, this makes potential options large and not something that can be solved over night



Infiltration Reduction Plan

- Due to geology and soil type, high groundwater and sustained rainfall can cause issues with drainage as these flows can enter the system through poorly jointed pipes or from submerged manhole covers and drainage gullies.
- Due to the impact groundwater has on the sewer system performance we have an Infiltration Reduction Plan approved by the EA. The plan explains our approach to addressing infiltration into the sewers and the occasional need for operational methods to maintain service to customers such as tankering flows and overpumping.
- The issues are across a wide area and with many kilometres of public and private drainage affected.
- Our plan is to systematically target parts of the sewerage system to survey and then act on any points of ingress identified
- We believe the system as a whole to be further compromised by the land drainage in the area which may contribute to a higher groundwater table and increased surface flooding which affects the wastewater system.
- As well as a sewer sealing programme we believe a multi-stakeholder approach to address the holistic system would be required to increase resilience to high groundwater and prolonged rainfall.



Shripney

Shripney Village – Group 1 Flooding Scheme

What has been done

- WPS Upgrade to increase Passforward rate to 15l/s from 8. This has since reduced.
- Thorough cleaning and inspection of Shripney Village WPS to determine why 15 l/s was not maintained (22.02.24) – Awaiting Outcome
- Installed a Flow Monitor to understand rate and volume of flow incoming from Saltbox Development.

What is planned – Completion by end of Nov

- ElectroScan Surveys w/c 11th March to detect groundwater infiltration and Subsequent re-lining (if required)
- Manhole surveys and sealing
- Connectivity survey to identify residential connections and mitigation (Water Butts)
- Enforcing the S106 agreed flows from Saltbox (5 l/s) and ‘Foul-only’ (e.g. saltbox) if required
- Installing a Snorkel on RM air valve



Summary: Other areas in Arun

- **South Terrace – Littlehampton.** Following internal property flooding we are working with Arun DC and WSCC to better understand the flows in the system, how the systems interact and flood mechanism. This includes building and verifying against a flow survey a hydraulic model of the surface water system. This is in progress and we will continue to work with other stakeholders to identify alterations to drainage that might be necessary to reduce flood risk.
- Regular meetings have been held with residents and Nick Gibb(MP) since the internal flooding of approx. 20 basement flats in Oct 2021 and a series of measures through flood mitigation have been installed to increase protection levels from future flooding..
- These measures on the s24 sewer serving South Terrace include removal of some roof drainage , installation of three pumped Anti Flood Devices (AFDs) on each lateral joining to the main, gravity AFDs and the installation of flood barriers at the front of all properties to prevent overland flooding and bow waves from the road washing into the basements.
- The Flood Mitigation is approx. 95% completed and should be completed in the next few weeks.
- There has also been extensive CCTV and investigations into the foul sewers searching for anything that could have attributed to the flooding (nothing found). Also investigations into the performance of the three pump stations , South Terrace, Foreshore & Sea Road all of which were found to have operated to design with no failures.



- **Limmer Lane, Bognor.** We meet with the Summerley Estate Management Company and partner organisations (Arun DC, WSCC) to understand how the systems interact, root cause of flooding and opportunities to reduce flood risk. Modelling currently ongoing but this problem is complex including surface water connections to foul system, land drainage, poor soakaway potential.
- **Elmer Sands.** Historically this area suffered from flooding and restricted toilet use due to a combination of factors. Improvements were made 15 years ago to address poor land drainage, separate surface water from foul, address infiltration to the sewers and improve the resilience of the wastewater pumping station. As far as we are aware this was successful for a number of years but it appears that this problem has returned and a multi-agency review is required to understand what has changed.

