

The Wessex area Drainage and wastewater management plan (DWMP)

Appendix A – The DWMP portal and Drainage and wastewater strategies

Wessex Water

May 2023 - Final



Wessex Water

YTL GROUP

1. Introduction

Our [DWMP website](#) and [DWMP portal](#) are available online, so customers, regulators, developers and stakeholders have visibility of our DWMP. The website hosts the DWMP reports and the DWMP portal contains more information, including over 200 drainage strategy summary reports, storm overflow performance data, 17 infiltration reduction summary reports and a regional infiltration reduction report.

The reports we have produced available to download from our [DWMP website](#) are:

- a customer-facing document
- a non-technical summary
- a technical summary
- the plan, including annexes (short technical appendices)
- technical appendices
 - A) the portal and drainage strategies
 - B) customer research
 - C) environmental report
 - D) resilience report
 - E) Board assurance statement
 - F) DWMP data table
 - G) DWMP data table commentary

This technical appendix (A) explains the [DWMP portal](#), which contains a wealth of drainage and wastewater information, including over 200 drainage strategy reports. It shows how to access the drainage and wastewater strategies and other useful DWMP information, like how much risks are in each catchment.

The portal also has an explanation on the left hand pane to most views.

2. The DWMP portal

The DWMP can be accessed from the following address:

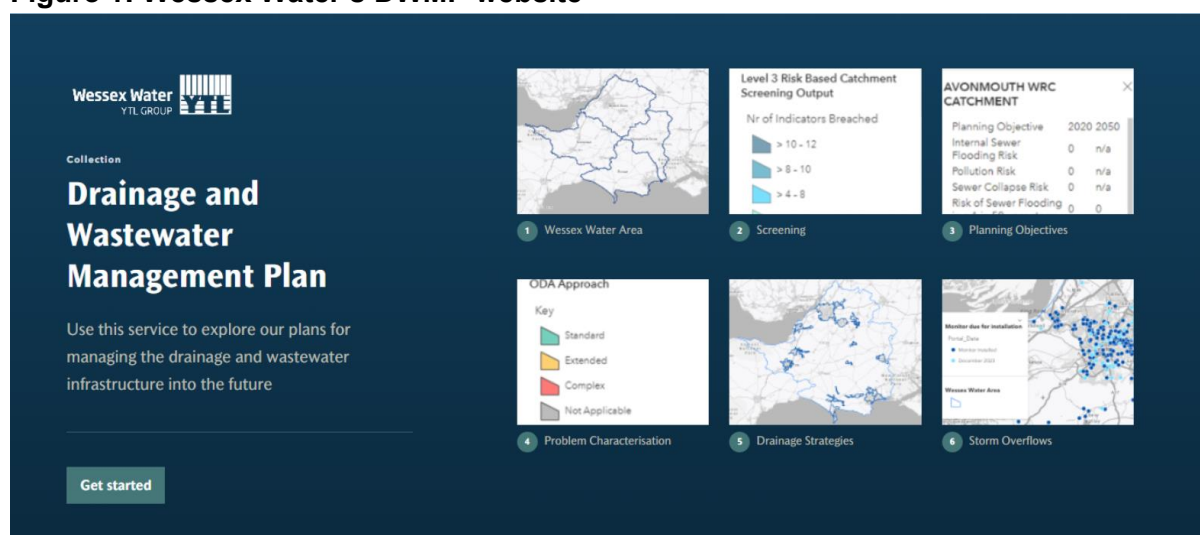
<https://storymaps.arcgis.com/collections/8fa8080a882f41c5b621b34fc64e711a>

Figure 1 shows the portal landing page, which give 6 options of which view to access first:

1. Wessex Water area
2. Screening (risk based catchment screening)
3. Planning objectives
4. Problem characterisation
5. Drainage strategies
6. Storm overflows

Once you select a view, you can then change to other views.

Figure 1: Wessex Water’s DWMP website

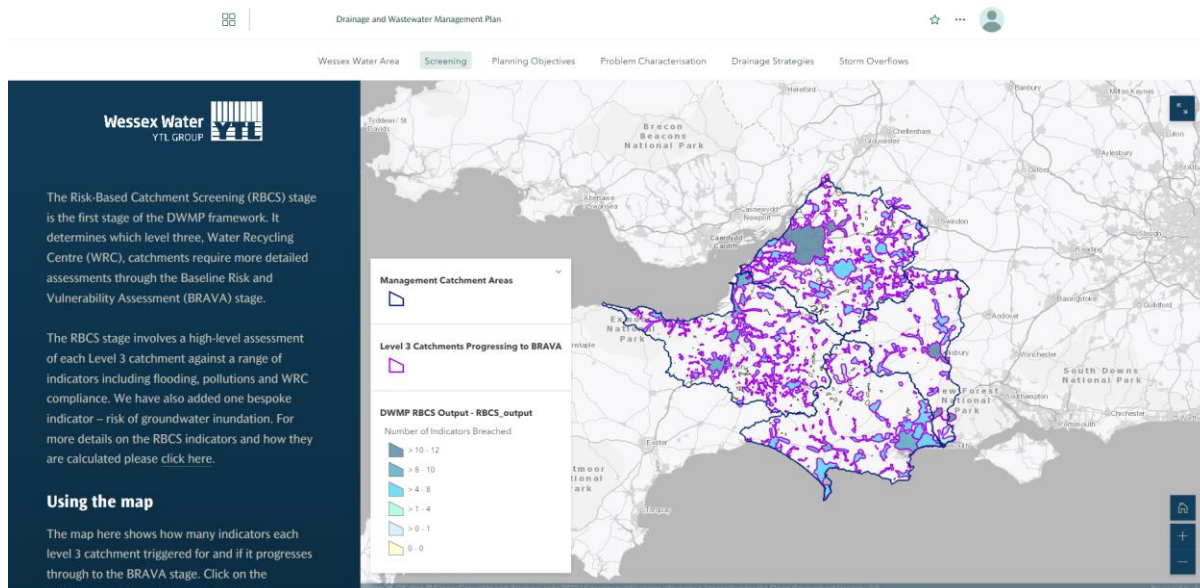


Screening (Risk based catchment screening results)

The 'screening' tab refers to the risk-based catchment screening results. For each of the level 3 (WRC catchment) areas you can see the results of the Risk based catchment screening (RBCS) process including which of the 18 indicators were breached in the catchment. A breach doesn't mean a failure – it just indicates a risk.

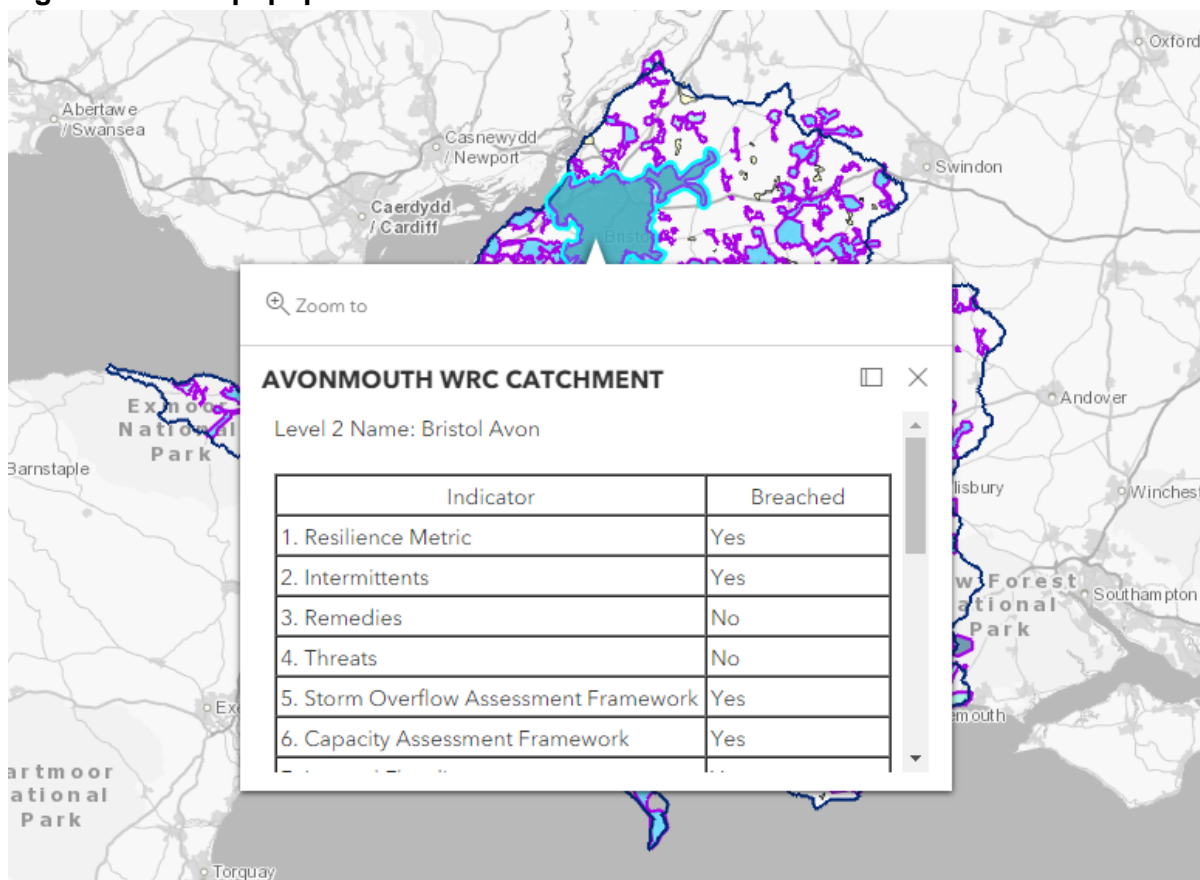
Figure 2 shows an example of the RBCS results on the portal.

Figure 2: RBCS results



Clicking on a level 3 (WRC) catchment area brings up a pop-up box to show which of the 18 indicators were 'breached' during the RBCS stage, as shown in Figure 3. This does not mean failure, but there is a risk.

Figure 3: RBCS popup results



Planning objectives (BRAVA results)

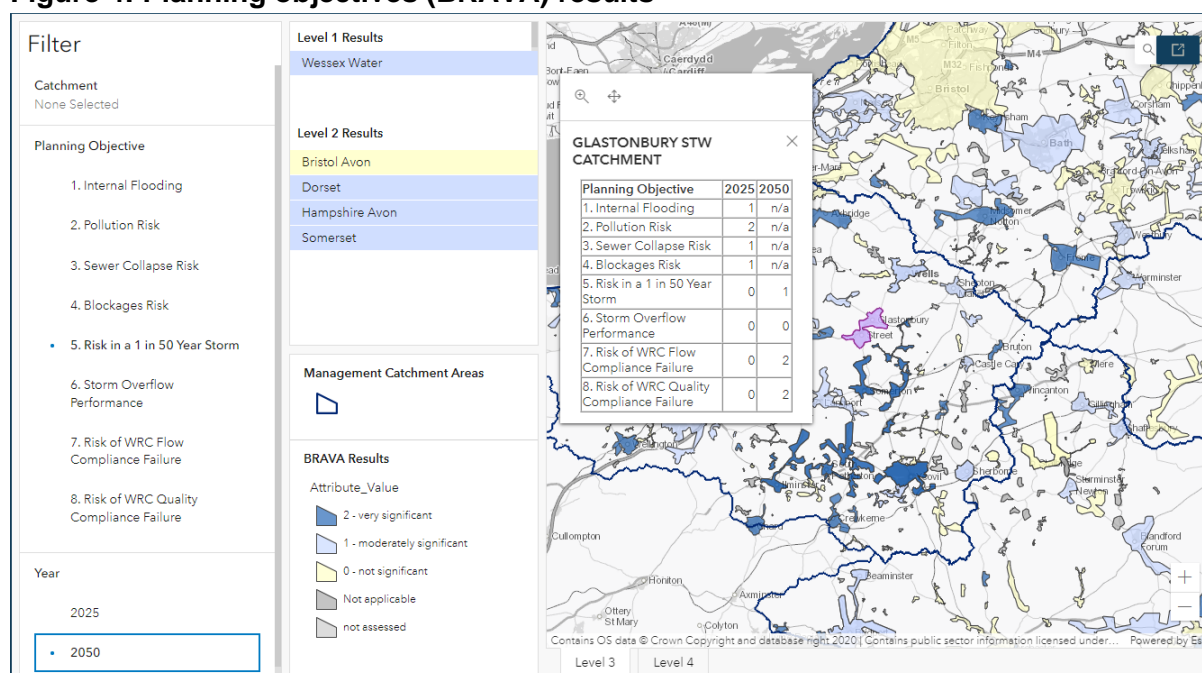
The Baseline risk and vulnerability assessment (BRAVA) stage of the DWMP assessed the level of risk for each level 3 WRC catchment that progress through the RBCS screening stage. Each of these level 3 catchments, were assessed whether the catchment contained risks for the 12 planning objectives, now and in some cases in the future.

Figure 4 shows an example of the portal which contains the details of the BRAVA results on the Planning objectives tab.

The filter pane on the left, allows you to select which planning objective results to view on the map. Some allow you to also select either the baseline position or the future position, so you can see regionally how risks increase over time.

Again clicking on a catchment brings up a pop-up box with each planning objective risks now or in the future for the selected level 3 WRC catchment.

Figure 4: Planning objectives (BRAVA) results

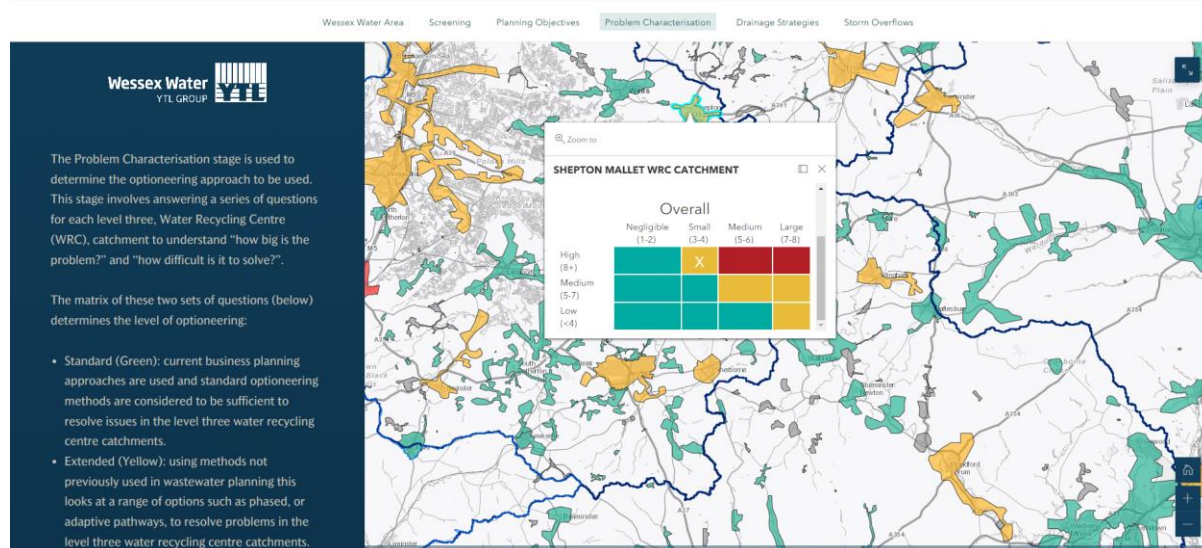


Problem characterisation results

The problem characterisation stage asks, “how big is the problem?” and “how difficult is the problem to solve?” for each of the level 3 catchments assessed as having risk in BRAVA. The results are plotted on a matrix and decides what level of optioneering is require for each catchment; standards, extended or complex.

Figure 5 shows an example containing the details of the problem characterisation results. Again results are available at level 3 WRC catchment level.

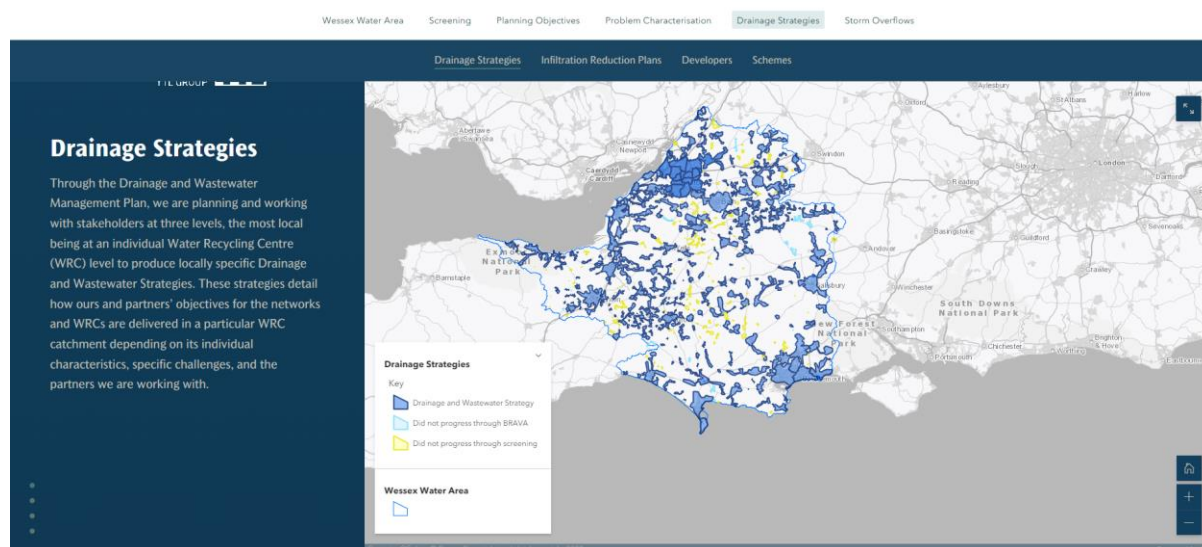
Figure 5: Problem characterisation results



Drainage and wastewater strategies (level 3 reports)

The drainage and wastewater 'strategies' tab contains over 200 drainage strategy summary reports. They give background information for each reported catchment, including development likelihood. The strategies summarise what we are doing in the short, medium and long term in each level 3 catchment reported. Figure 6 shows the drainage strategies tab on the portal.

Figure 6: Wessex Water’s DWMP portal showing local Drainage Strategies



Infiltration reduction plans

The infiltration reduction tab on the portal allows you to click on a catchment (dark blue) to see the infiltration reduction plan summary in that catchment, as shown in Figure 7 and Figure 8. If there isn't a local report, then the regional report also briefly details how much sewer inspection and sealing has been undertaken and when we are next planning on going more work. Scroll down the information pane and click on the link highlighted below to access the regional report.

Figure 7: Example of how to view the infiltration reduction plans

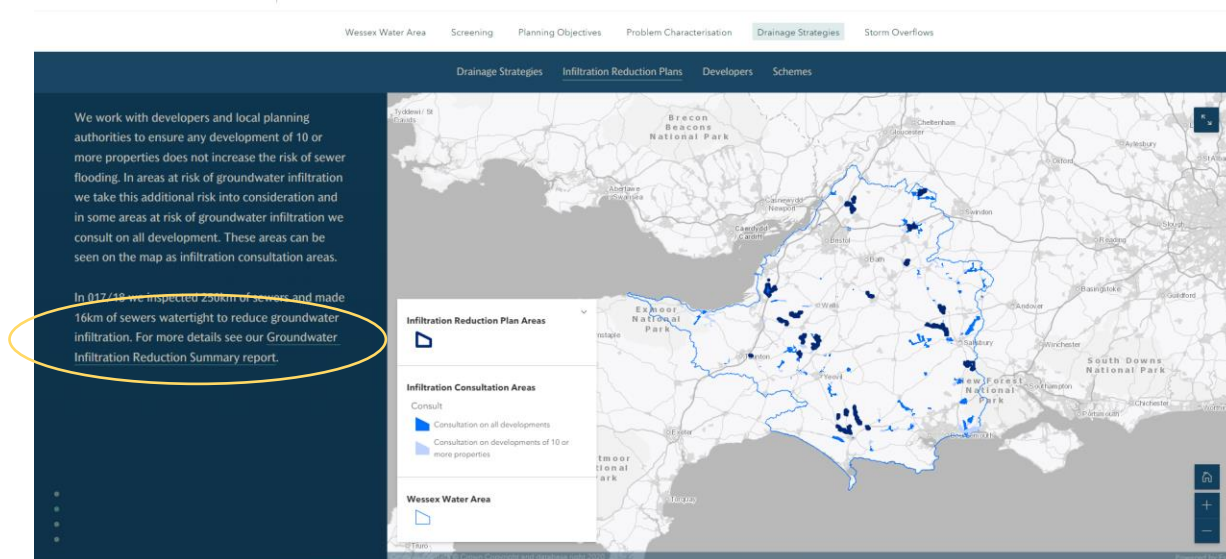
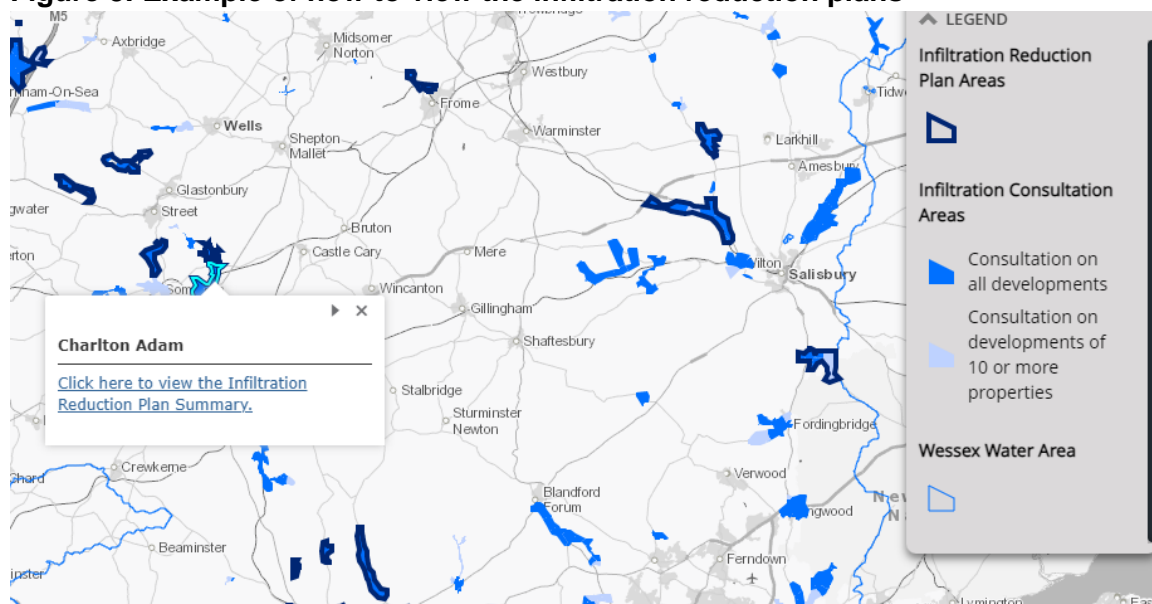


Figure 8: Example of how to view the infiltration reduction plans



Storm overflow performance

The portal also contains other useful information like storm overflow historical performance, as shown in Figure 9. This data is also available in a downloadable excel file containing the historical performance of storm overflow where available. See the highlighted link in Figure 9.

Figure 10 shows the functionality that if you zoom in, the view changes and the size of the overflow indicates spill frequency and the colour weather the overflow is influenced by groundwater inundation or just surface water.

Figure 9: Storm overflow performance – regional view

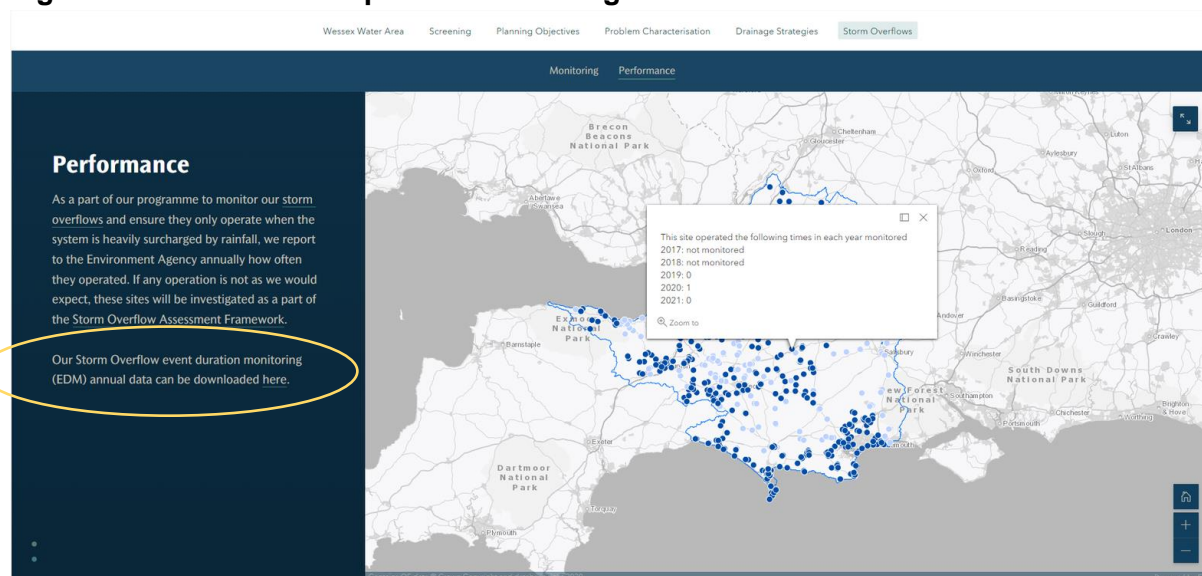
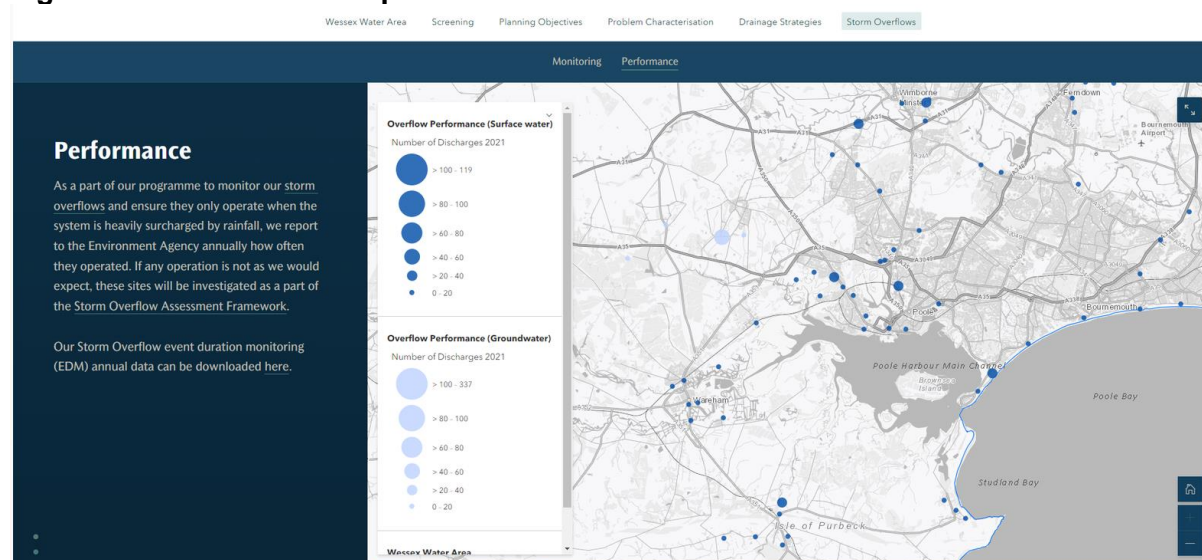


Figure 10: Storm overflow performance – zoomed in view



3. Drainage and wastewater strategies

3.1 Background to drainage strategies

The drainage strategy framework ([here](#)), commissioned by the Environment Agency and Ofwat and published in 2013 and provided good guidance for long term planning. The framework contains six guiding principles for a drainage strategy:



The Floods and Water Act 2010 encouraged a step change in partnership working and although this was not new, we were given the duty to share information with other risk management authorities. We have been doing this and have openly shared reports, advice, our hydraulic computer models and flooding incident data, being careful to comply with data protections rules and licences.

We have allocated named representatives for each Lead Local Flood Authority (LLFA). We aim to attend all the meetings we are invited to, adapting to different LLFAs approaches, to ensure we are as fully engaged as possible. We attend over 100 meetings every year to look for synergies that partnership working can bring.

We are also hosting two catchment partnerships in the Wessex region and attend the other two. These use catchment-based approaches to improve the water environment and provide wider benefits for people and nature at a catchment scale. More details can be found in the DWMP plan.



By continuing our 1D hydraulic computer model building programme, we have reduced uncertainty. This comes through better information from survey work to better understand our assets and modelling future potential scenarios, such as climate change or development implications, to understand the deterioration of flood risk and other implications such as increased overflow operation.

We have almost 100% model coverage of our foul and combined sewers, following best practice for planning. The coverage is significantly lower on surface water systems, but a lot of the assets have been incorporated into the models (but not verified).

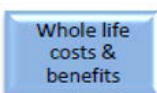
2D modelling is to be required to replicate complex flooding issues, to address the impact of flooding. We have growing number of examples where we are working with LLFAs to deliver 2D models and share the cost in doing so.

Climate change is the biggest uncertainty that can have a significant impact on flood risk and storm overflows operation. However, climate change is already happening. Localised rainfall intensities appear to be increasing and the frequency of significant rainfall events is increasing. If it rains heavily, then flooding is likely to occur. Significant investment requirement has been identified by the DWMP.

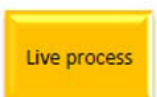


Our customer research (DWMP Appendix B) confirms that flooding from foul and combined sewers has a significantly (7 times) higher impact than flooding from surface water. Therefore, we are prioritising internal flooding in our DWMP. Also frequent flooding is clearly worse than less frequent flooding.

To obtain a fuller picture of flood risk, we need to convert more of our 1D models into 2D models. We have an ongoing programme to develop 2D models for the highest priority catchment for us and our stakeholders.



Our computer models of the sewers are used to assess the theoretical performance of the sewerage network now and in the future. Where significant issues are predicted, then we undertook optioneering to develop solutions as part of the DWMP. Our DWMP reports highlight the totex costs of numerous options investigated to reduce the risk of flooding and reduce storm overflows. The benefits side of the equation (e.g. carbon, social, natural and other capitals) needs some more work, and our corporate tool, Arcadis EDA, will assist with this for the final DWMP.



Our online DWMP portal share our drainage and wastewater strategy summary report to the world, as detailed in this technical appendix. By reviewing these regularly, we are making this a live process. We review the risk based catchment screening annually. We will be completely updating the DWMP every 5 years.



We were the first company to develop and publish our drainage strategies using the concept of a portal, back in 2018. We have built on this ground-breaking innovation, and for our DWMP we are using the latest Esri story maps to allow the drainage and wastewater summaries to be presented along with a wealth of other information related to the DWMP.

We are even showing our WRC performance so that developers in catchment with nutrient neutrality, can see if our works have headroom, or offsetting will be need, before the developments can progress.

3.2 Drainage and wastewater strategies

Our drainage and wastewater strategies are not contained in this report. They are hosted on the portal. The Section 1 above explains where drainage strategies can be found.

The Wessex Water [DWMP website](#) hosts the [DWMP portal](#), that contains over 200 drainage and wastewater strategies and other data and reports.

The drainage and wastewater ‘strategies’ tab contains over 200 drainage strategy summary reports. They give background information for each reported catchment, including development likelihood. The strategies summarise what we are doing in the short, medium and long term in each level 3 catchment reported.

Click of the portal link, enter the 5. Drainage strategies view (or click on the Drainage strategy tab) and you will get a view like Figure 11. Zoom in and click on the catchment you would like to read the drainages and wastewater strategy summary report. The dark blue catchments have drainage and wastewater strategies available. Click on one of these and a pop up with a summary of the catchments population and sewer length will appear (Figure 12) with a link to the report. Click the link and the drainage and wastewater strategy should appear, for you to read. Figure 13 shows the top of one report.

Figure 11: Wessex Water’s DWMP portal showing local Drainage Strategies

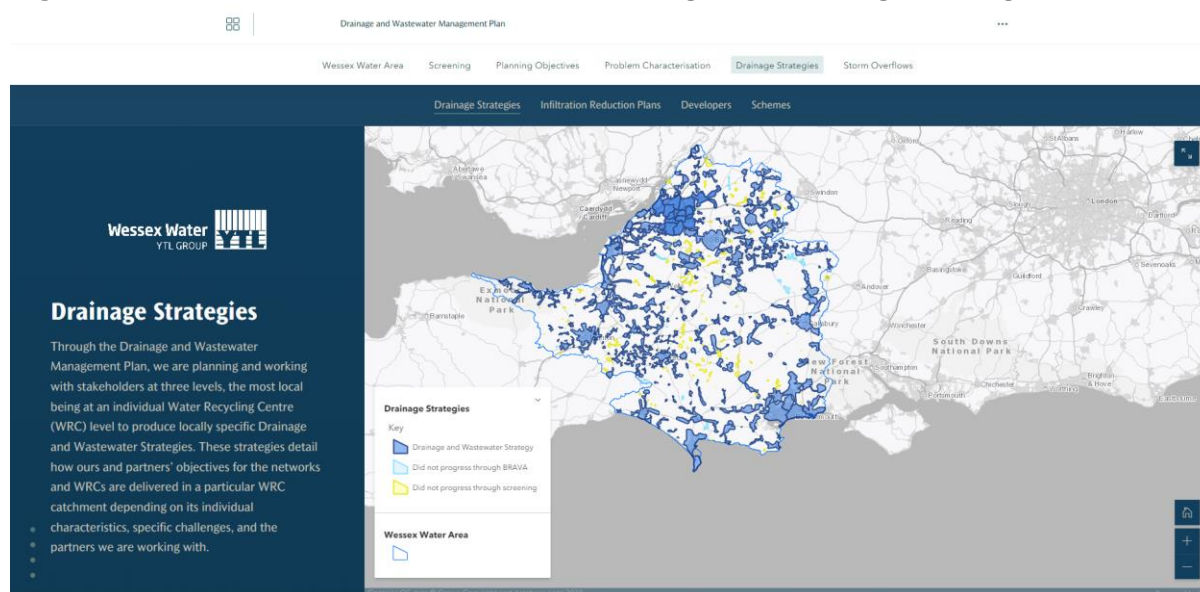


Figure 12: Wessex Water’s DWMP portal showing local Drainage Strategies**Figure 13: Example Drainage and wastewater strategy summary report (part)**

Sherborne Drainage and Wastewater Strategy

This Drainage and Wastewater Strategy covers the area served by Sherborne Water Recycling Centre (WRC), also known as Sewage Treatment Works. This area is a part of the Somerset Management Catchment and Wessex Water’s [Drainage and Wastewater Management Plan](#).

Catchment background

The area

The catchment geology is formed upon sedimentary limestone bedrock at the north giving way to mudstone at the south and has fluvial deposits of sand and gravels are found along the river valley. From the higher ground at the north the landscape falls toward the south-east and the river Yeo, which flows onwards to Yeovil at the west. The mainline railway shares a narrow corridor alongside the river through the town. The A30 highway provides links to nearby towns of Shaftesbury and Yeovil with traffic routes to the A352 onto Dorchester.

Sewer network

This catchment has a predominantly separate sewer system, where wastewater, sewage from homes and businesses, is collected into the foul only sewer and is conveyed to the WRC. Storm water, rainwater collected from roofs and yards, is collected into a separate surface water sewer which conveys the rainwater to the river. However, in some situations the surface water sewer discharges to the foul sewer. In these cases, under heavy storm conditions, sewer capacity can be exceeded and built in safety valves called storm overflows, permitted by the Environment Agency, can operate to prevent sewer flooding.

Water recycling centre

At Sherborne WRC the wastewater received is treated under normal flow condition and are further treated through phosphorus removal to reduce the nutrient load discharged to the river Yeo. Under heavy storm conditions, flows into the WRC can exceed its capacity. These excess flows will first overflow to storm storage. If this storage become full, it in turn discharges to the river as a storm overflow, as permitted by the Environment Agency, having benefitted from screening and a degree of settlement within the storm storage.

Current performance

Sewer capacity

Hydraulic incapacity is when the drainage network cannot convey the runoff from heavy rainfall and can lead to sewer flooding. It can be exacerbated by groundwater or other inflows such as surface water entering the sewer system.

The Sherborne area has a low risk for sewer incapacity and there is minimal risk of high groundwater levels from prolonged rainfall periods affecting the catchment. The catchment has experienced sewer flooding due to hydraulic incapacity in the past three years.

Bristol level 3 catchment (Avonmouth WRC) serves almost 1m customers. To add more detail we have created level 4 drainage strategy reports for 10 sub-catchments in Bristol (Figure 14). You may need to click on the right arrow to see the more local drainage strategy.

Figure 14: Wessex Water’s DWMP portal showing local Drainage Strategies (2)

