Stour catchment factsheet

Wessex Water provides water supply and sewage treatment services for the northern portion of the catchment. However, in the southern section of the catchment (south-east of Sturminster Marshall), Bournemouth Water provides water supply services and we provide sewerage services.

Key issues

Sewage treatment

Within the Stour catchment, we operate 51 water recycling centres (WRC, formerly known as sewage treatment works), more than 275 sewage pumping stations (SPS) and over 110 storm overflows (SO).

Nutrients

One of the main issues to affect the Stour catchment is the impact of nutrients on its rivers, catchments and chalk streams. This is primarily from phosphorus, although nitrogen can also have an effect. Phosphorus causes eutrophication (where the nutrients bring about excessive growth of plant life) in rivers and wetlands, and is a particular problem for the streams and rivers in the catchment. Nutrients come from our own sewage assets and from diffuse sources, such as agricultural and urban run-off.

Storm overflows

We operate more than 110 storm overflows in the catchment, many at water recycling centres. They exist because many sewers were laid at a time when drains carried both rainwater and sewage. Our overflows should only operate during periods of intense rainfall, where they act as relief valves to allow excess stormwater to be released to rivers or the sea, to protect properties from flooding and prevent sewage backing up into streets and homes during heavy storm events.

During storms, or during periods of high groundwater, any foul water released from a storm overflow is heavily diluted by large volumes of rainwater. Flows are further diluted by the watercourse as this will also be swollen by the same heavy rain.

Some of these overflows operate for extended periods of time due to groundwater getting into the sewerage system. Because of the underlying geology of the catchment, in wet weather the groundwater table can become very high, and this water can enter and overwhelm both public, and private, sewers. Our video explaining this phenomenon and what can be done can be accessed here.

To combat the risk of groundwater getting into sewers, our infiltration reduction programme monitors our network and renovates or seals affected sewers to prevent groundwater entering.

We aim to eliminate harm from overflows, starting with the ones that have most impact. This is not a simple matter and will require several decades of sustained increased investment – it's estimated that it will cost in excess of £300 billion to eliminate all overflows in England and Wales.

Our programme starts with monitoring and reporting all overflow operations, identifying the ones that will potentially cause environmental or public health harm, addressing those and then progressively working through the others.

Visit our website – www.wessexwater.co.uk/environment/drainage-and-wastewater-management-plan – for further details on:

- storm overflows and our plans for tackling them
- information on how often these assets discharge and for how long
- our infiltration reduction programme.

Water supply and resources

Within the catchment, we operate four water treatment centres (the majority supplying groundwater), one stream support (where we add water to rivers when flows are low) and more than 65 distribution sites (such as storage reservoirs or pumping stations).

Nitrate

Rising nitrate levels in groundwater are of concern for public water supplies. Drinking water regulations place a limit on the level of nitrate in water and we have had to take action to reduce nitrate to avoid breaching regulations, particularly at our major sources in Sturminster Marshall and Shapwick. These are routinely affected by peaks of high nitrate in raw water. We have been working with local farmers to reduce nitrate losses from agricultural land to the aquifer. We must now redouble these efforts to deliver nature based solutions with farmers to avoid the need to build expensive and less sustainable additional treatment processes to remove nitrates.

River flows

The water we supply to our customers comes from the local environment, approximately 75% from boreholes and springs that tap into the chalk and Upper Greensand aquifers of Wiltshire and Dorset. Taking water from the aquifers that feed the chalk streams of the catchment must be done without taking too much, which can leave too little for the streams and rivers to flow and support the wide range of species and habitats for which they are important.

For decades we have sought to balance the need to supply water to our customers without compromising healthy flows in our chalk streams and have taken steps to minimise the impact of our abstractions. In the Stour catchment there have been areas of concern, such as the Shreen and Ashfield Water at Mere and the River Tarrant. We have investigated the impact our abstraction is having on these watercourses and are taking steps to reduce the amount of water being removed.

Stour catchment factsheet

Key investments completed up to 2020

Nutrients

By the end of AMP6 2020 (asset management plan) we had installed phosphorus removal at the following treatment works:

WRC	Permitted phosphorus level (mg/l)	Approximate phosphorus removed (kg/yr)	Approximate cost (£m)
Bourton	1	590	2.6
Buckland Newton	4	40	1.9
Cranborne	2	340	1.6
Gillingham	1	4,000	1.0*
Stourton Caundle	1.5	160	1.5
Sturminster Newton	2	1,400	0.3*

*Apportioned cost, as delivered as part of larger schemes providing growth capacity.

River flows

Abstractions within two areas in the Stour catchment have been identified as causing concern.

- The Shreen and Ashfield Water at Mere
- The River Tarrant (Stubhampton)

The effect of abstraction at our source in Mere on the Shreen and Ashfield Water was investigated between 2005 and 2008. That study concluded that the effects were minor and the changes in flow of the headwater streams were due to climatic variation. However, in the dry summer of 2011 the Shreen in the centre of Mere dried up and residents expressed their concerns through the Mere Rivers Group and asked what could be done to improve the flows.

In 2013, when groundwater levels fell below a threshold, we used an abstraction incentive mechanism (AIM) to reduce the quantity we take. This works by reducing the export of water from the Mere source to a maximum of 100 million litres per annum (Ml/a) while groundwater levels are below a specified threshold. If we exceed the 100 Ml/a target we must pay a cost per Ml for the excess. Since this work began, we've reduced the volume of water abstracted for export from the local catchment by around 60%.

Our Stubhampton groundwater source is in the upper reach of the River Tarrant Valley and draws water from the underlying chalk aquifer. The Tarrant is a winterbourne stream and the whole river can dry during extended dry weather – periods of no flow which were the subject of residents' concerns for several years.

Between 2015 and 2020 we undertook an investigation into the impact of our abstractions on the River Tarrant which showed that our groundwater abstractions from neighbouring catchments do not affect flows along the river; therefore, any river flow change is due to the abstraction at Stubhampton.

Hydrological modelling suggests that on average, between 1970 and 2016, the use of Stubhampton caused 14 days a year of extra drying along the winterbourne reach, but that the modelled scale of hydrological impact will not adversely affect the ecology of the River Tarrant. So, we are using an AIM approach at Stubhampton during the AMP7 period (2020-2025) to manage abstraction during low flow periods.

In addition to the specific actions noted above, we completed our integrated water supply grid, a £230m scheme delivering 23.5Ml/d abstraction reductions (c7% of water put into supply) and improved resilience for customers' water supplies.

The scheme involved the construction of 200km new trunk mains, 24 refurbished or new pumping stations and 12 new storage reservoirs. This has allowed us to deliver the major reductions in abstractions required in the Hampshire Avon catchment by moving water from other areas of our region.

Stream support at Mere

Stour catchment factsheet

Environmental investment up to 2020

Environmental investigations

- Abstraction incentive mechanism Mere – we trialled a new approach evaluating how financial incentives can work to reduce abstraction in environmentally sensitive areas, such as Mere. This led to the use of AIM (see above).
- Water quality in the Dorset Stour catchment – investigation into the influence of Wessex Water operations on nutrients in the Dorset Stour catchment.
- Hydrology of the middle River Stour – this investigation collected new information to help us understand the effects of our abstraction on the Water Framework Directive status of the River Tarrant, Pimperne Brook and North Winterbourne. This led to the use of AIM at Stubhampton (see above).
- Water quality in the Moors River – this assessed the effect of Wessex Water assets between Verwood and Hurn and Uddens Water on the condition of the Moors River SSSI.

Biodiversity Partners Programme

We have provided support and funding of more than £330,000 to projects working on the Stour, or more widely within its catchment since 1998, including:

- The Dorset Biodiversity Strategy/Biodiversity Project (Dorset Wildlife Trust, 1998-2010)
- Dorset Wild Rivers Project (Dorset Wildlife Trust, 2010 onwards)
- Stour Catchment Stepping Stones project (Dorset Wildlife Trust, 2017)
- Holt Heath Project (Wessex Chalk Stream and Rivers Trust with Dorset Wild Rivers, 2018).

Stour catchment initiative

- We initiated and developed the pilot partnership in 2014, in conjunction with Dorset Wildlife Trust, who continue to co-host the partnership with us.
- We provide more than £75,000 annual funding, including funding and hosting the roles of the catchment partnership co-ordinator and catchment partnership support officer.

Planned investment 2020-2025

In addition to ongoing expenditure on our waste and water supply treatment and network assets, our business plan sets out the following key expenditure.

Nutrients

Figures below are in addition to phosphorus already removed at our WRCs by 2020, which will continue to be removed.

WRC	Permitted phosphorus level (mg/l)	Approximate phosphorus removed (kg/yr)	Approximate cost (£m)
Cranborne	1	Additional 110	0.2
Hazelbury Bryan	1.5	500	0.8
Holdenhurst	1	100,000	13.5
Iwerne Minster	1	630	0.9
Kinson	1	19,300	3.9
Marnhull (reed beds)	1	640	2.1
Marnhull Common Lane	1	2,100	2.8
Mere	1	1,300	1.4
Palmersford	1	34,000	4.6
Shaftesbury	1	5,300	1.2
Sturminster Newton	1	Additional 460	0.2
Tarrant Crawford	1	11,000	2.8
Templecombe	1	750	1.4
Wimborne	1	10,200	2.3
Wincanton	1	3,280	1.7

Stour catchment factsheet

Planned investment 2020-2025

Catchment permitting

We will also be using a new approach to reducing nutrients in this catchment which has proved successful in the Bristol Avon one. Traditionally, we would install new treatment processes at each WRC to remove phosphorus. This is not sustainable as they are expensive to construct and consume large amounts of energy and chemicals to operate.

Instead, in AMP7 we will be managing nutrients at a catchment scale with a single permit covering all WRCs across the catchment, spreading the required phosphorus reduction across several sites. Individual WRCs are optimised with tighter permits at sites that either contribute the most phosphorus or are best able to reduce existing contributions.

This reduces the overall phosphorus entering the catchment without having to build additional treatment processes at a larger number of WRCs and delivers the greatest length of river improved by phosphorus reductions at sites throughout the catchment. The development of our catchment permitting approach will continue into AMP8 (2025-30) and result in the removal of an additional 10,000kg per year from 2027.

Catchment nutrient balancing

In parts of the Stour catchment, we will work with farmers to reduce phosphorus losses to water from agricultural land to balance the need to reduce phosphorus discharges from our WRCs. This is a more sustainable and nature-based approach which combines nutrient reduction with other benefits, such as improvements for biodiversity and flooding. This is expected to reduce phosphorus by approximately 2,500kg a year by 2025.

Storm overflow improvements

In addition to the above, we will also be carrying out the following major projects:

- storm storage improvements at Holdenhurst WRC
- flow capacity and storm storage improvements at Bourton WRC
- flow capacity improvements at Shillingstone WRC.

River flows

We will continue our abstraction incentive mechanism (AIM) scheme at Mere to reduce abstractions from this source. And we plan to trial stream support on the Ashfield water and, if successful, this may be extended to the Shreen. We will continue to meet annually with the Mere Rivers Group to discuss the AIM performance and liaise with them regularly to communicate changes to abstraction at the source.

We have introduced our new AIM commitment to reduce abstraction from our Stubhampton source from 2020. The ambitious target we are setting for the AIM at this source is to reduce abstraction when groundwater levels are below a certain threshold (below 79m AOD Ml/d at a specific monitoring point) to 1.09 million litres/day.

This is significantly lower than our recent abstraction from the source and we estimate this will result in abstraction being reduced for around 70% of the time, and an average reduction in abstraction of 192 Ml per annum.

Environmental investigations

- Drought monitoring Stour – monitoring of macroinvertebrate and fish populations, water quality and hydrology to establish environmental baseline conditions against which the effects of any future drought could be measured.
- Moors River and Uddens – investigation of CSO impact to determine whether we need to improve the performance of three storm overflows in the Moors River catchment.
- Crane CSMG – investigation to determine whether we need to improve the performance of our waste water assets on the River Crane to meet water quality targets that protect Sites of Special Scientific Interest.
- Stubhampton AIM – flow and ecological monitoring to quantify the environmental benefit of abstraction reductions at Stubhampton through AIM.
- Yarde Lane stream support – changes to our abstraction licence to enable a more environmentally beneficial flow regime to be used.
- Bournemouth Boscombe Pier bathing water ambition investigation – identifying the improvements required to our assets to achieve Excellent status at Bournemouth Boscombe Pier bathing water.
- Sixpenny Handley WRC groundwater nitrogen investigation – water quality monitoring and modelling to determine the effect of this WRC on nitrate concentrations in groundwater in the context of catchment influences and to determine whether treatment improvements are required.

Biodiversity and partnership funding

Wessex Water Foundation's Partners Programme is providing a further five years' funding for the Dorset Wild Rivers project with Dorset Wildlife Trust, FWAG SW & Dorset AONB – £100,000 total funding from our Partners Programme 2020-2025.

We will continue to support the Stour catchment initiative – £75,000 per year.

In addition, the following projects will be undertaken across the Wessex Water region but are likely to include sites within the catchment:

- maximising opportunities for birds at our water recycling centres
- priority habitat restoration and recreation.