



Dorset
Area of Outstanding
Natural Beauty

West Dorset Rivers and Coastal Streams Issues Appraisal

Dorset Wild Rivers

24/01/2022



This report was prepared by Dorset Wild Rivers, a partnership of the Dorset Area of Outstanding Natural Beauty, Dorset Wildlife Trust and Farming and Wildlife Advisory Group South West, with the support of the Environment Agency's Water Environment Improvement Fund.

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Introduction

The West Dorset Rivers & Coastal Streams Operational Catchment covers the main rivers and lakes that flow into the English Channel from Dorset. These are, from east to west, The Swan Brook, the River Wey, the River Bride, the River Brit and its tributaries and the River Char and its tributaries. It also includes Little Sea, a freshwater lake on the Studland Peninsula.

The Dorset Area of Outstanding Natural Beauty (AONB), Dorset Wildlife Trust (DWT) and the Farming and Wildlife Advisory Group South West (FWAG) have worked in partnership with the Environment Agency (EA) and the Dorset Strategy Group (DSG), as well as organisations, communities and individuals in the catchment, to identify the main issues affecting the water environment and suggested actions to overcome them, particularly where natural processes can help.

This report sets out the findings of this work on a waterbody-by-waterbody basis. Each of the waterbody descriptions can be read in isolation and used as a starting point for exploring in more detail the issues affecting the water environment and the actions that could be taken to overcome them. The main audience for this work is communities tackling the climate and ecological emergency. We have piloted this community-based approach on the River Asker, and there is a case study on this work later in the report.

The West Dorset Rivers & Coastal Streams Catchment

The West Dorset Rivers & Coastal Streams Catchment is characterised by small rivers that flow directly into the English Channel. It is a largely rural catchment covering 434 km², with 62% used for intensive agricultural and forestry land use, 23% to more extensive semi-natural land use, including 2.3% coastal habitat and 1.6% of freshwater. Urban infrastructure covers the remaining 15%. Despite the predominantly rural feel for the area, there is a significant population within the catchment of 114,178 (2019 Estimate), 47% who live in Weymouth & Portland and a further 24% living in the other principle towns of Bridport, Bournemouth, Chickerell, and Swanage.

The geology is very varied, leading to different characteristics across the catchment. In the west it is largely impermeable clay. In the east it is largely permeable limestone and chalk. See Figure 1 for a map of the geology and main rivers. This varied geology influences how the land is used and the character of the rivers, for instance the River Char in the west responds rapidly to rainfall whereas the Swan Brook in the east is heavily influenced by groundwater aquifers which tend to slow down this rainfall response.

Most of the coastline is designated as a UNESCO world heritage site and the entirety of the catchment, except Weymouth and Portland, lies within the Dorset AONB. International, national and local wildlife designations exist throughout.

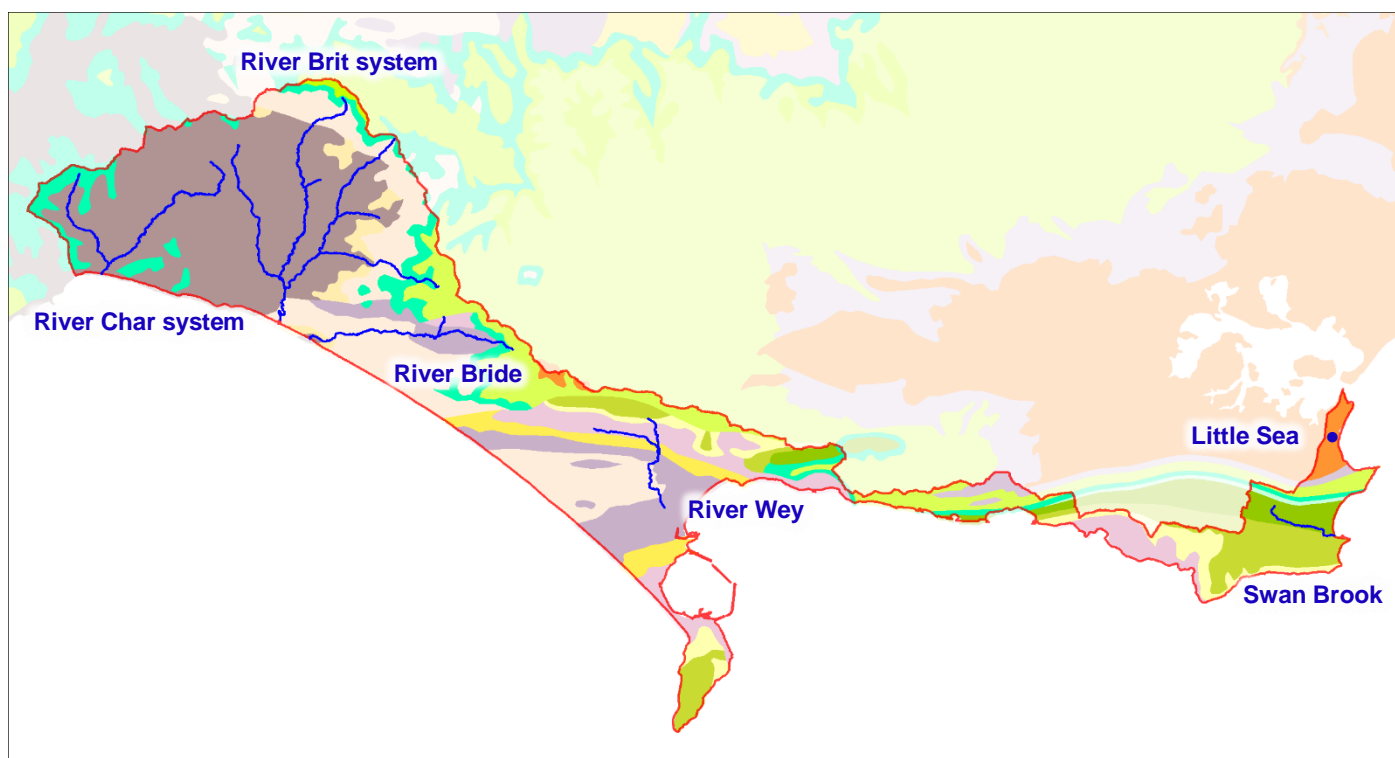







Figure 1: Map of the main rivers and geology of the West Dorset Rivers & Coastal Streams Catchment

Key

	Impermeable, neutral. For example, clay. Laid down 66 – 201 million years ago.
	Permeable, calcareous. For example, chalk & limestone. Laid down 66 – 201 million years ago.
	Permeable, acidic. For example, sands and gravels. Formed 23 – 66 million years ago.
	River / lake
	West Dorset Rivers & Coastal Streams Operational Catchment Boundary

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This map is not definitive and has no legal status.

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The state of the water environment

When planning action to improve the water environment, it is best to tackle it in three parts:

- Issues: the threats faced by the water environment.
- Impact: the impact these threats are having on the water environment.
- Response: what can we do to overcome the issues and impacts, ideally using natural processes.



Issues

The main issues identified by the Environment Agency that are affecting the water environment in the West Dorset Rivers & Coastal Streams Catchment are:

- Pollution from rural areas caused by agriculture
- Physical modifications to the channel
- Pollution from sewage treatment works and other water industry infrastructure
- Invasive species
- Flows

Impact

The EA look at the impact that these issues are having on the water environment, particularly the ecological health and chemical health of the rivers and lakes. By ecological health they mean how far the number of plants and animals in the river differ from those you would expect in a pristine, natural stream. By chemical health they mean the presence or absence of chemicals within the water that could impact human health and wildlife.

The elements they look at are set out in Table 1:

Assessment Class	Category	Description
Ecological	Plants	Whether the number and species of plant in the river are as you would expect
	Insects	Whether the number and species of aquatic insect in the river are as you would expect
	Fish	Whether the number and species of fish in the river are as you would expect
	Water flow	Whether the river flows naturally
	Naturalness of the river	Whether the course of the river and its bed or banks have been altered
	Properties of the water	Whether the pH, dissolved oxygen, ammonia, temperature, phosphate, and biological oxygen demand are as you would expect
	The presence of specific pollutants	For example, copper or zinc
Chemical	The presence of priority substances that impact the environment	For example, lead or nickel
	The presence of other pollutants	For example, DDT
	The presence of priority hazardous substances	For example, polybrominated diphenyl ethers (PBDE) or mercury

Table 1: EA condition assessment elements

The EA use a scale of **High** > **Good** > **Moderate** > **Poor** > **Bad** for their ecological assessment.

High and Good are passes, meaning there is only a slight change from natural conditions, there are no restrictions on the natural use of the river or lake, there is no impact on amenity and that all but the most sensitive wildlife is protected.



Moderate, Poor and Bad are fails, meaning there are more significant deviations from natural conditions that impact the beneficial use of the river or lake, there may be some impact on amenity and wildlife is impacted.

They use a simple **Good** or **Fail** for chemical assessment.

The EA's assessment has resulted in nine of the 11 rivers in the area failing government standards for ecological condition. All rivers have failed due to the chemicals found within them. The results are set out in Table 2.

River / Lake name	Ecological condition	Chemical condition
Little Sea Lake	Moderate	Fail
Swan Brook	Poor	Fail
River Wey	Moderate	Fail
River Bride	Moderate	Fail
River Asker	Poor	Fail
River Mangerton	Good	Fail
Upper River Brit	Moderate	Fail
River Simene	Moderate	Fail
Lower River Brit	Good	Fail
River Char	Moderate	Fail
Monkton Wyld Stream	Moderate	Fail

Table 2: Status of the rivers and lakes in the West Dorset Rivers and Coastal Streams catchment

We look in more detail at the reasons behind the classification in each of the waterbody sections, found later in the report.

Response

There is significant room for improvement in the condition of the rivers and lakes within the West Dorset Rivers & Coastal Stream. By working in partnership with organisations, communities and individuals that have an interest in the water environment, we can make a difference and ensure that the rivers and lakes in the catchment are healthy, resilient, and safe for people and wildlife.

The first step towards achieving this vision is to explore the issues raised by the EA and better establish which of these are important to local people. To help do this, we have undertaken interviews with a selection of organisations and individuals in 2015 and more recently, in 2021. A summary of the issues and impacts raised is set out below along with some suggested actions to help tackle them. These issues and impacts, and our response to them, form the basis of the waterbody sections that follow.



Channel morphology

If a river is given the chance to function naturally, for example by creating meanders and flooding the adjacent land, then it will benefit wildlife and reduce the impact of flooding downstream. We can help this happen by ensuring that there is enough space given to rivers and that the drivers for change, such as large woody debris, have a place. Where there is high flood risk more engineered options may be appropriate. There may also be historical changes, such as mill streams and water meadows, that override the interests of nature. However, where appropriate, rivers should be given the space to operate naturally and we can also give them a helping hand to get those processes going again, by allowing large woody debris to remain in the river and by introducing gravels where they have been dredged out in the past.

Nutrients

Nitrates and phosphate are a requirement of plants to grow, hence they are applied to fields to help farmers achieve higher yields. However, too much can have devastating impacts on river life through a process called eutrophication. Here, excess nutrients lead to excessive growth, and the subsequent decay of plants and algae starves the system of oxygen. Changes to land management and livestock management can be very beneficial to the health of the watercourse. Poorly treated sewage is also a source of phosphate, so septic tanks and sewage treatment works have the potential to be a problem, though this can be overcome by regular maintenance and investment in new technologies that strip phosphate from sewage.

Water quantity

High flows can have devastating impacts on property and farmland. Low flows can concentrate pollutants to the detriment of wildlife, and in some cases human health. We can never remove the risk of flooding, but we can manage the land so that it better controls rainfall, and therefore moderates the impact of flooding. This can be by creating woody debris dams in the headwater, not leaving soils bare after cropping and installing riverside grass buffers. For low flows, it is important to manage abstraction so that it does not impact the natural functioning of the river.

Sediment

Sediment from roads and fields is a problem, because it will smother gravels which are home to many insects and where fish spawn. Sediment also acts as a vector for phosphates, so where you have elevated levels of sediment, you often get the impacts associated with phosphate contamination as well. Sustainably managing soils is the best way to avoid issues long with ensuring that there are no pathways for any soil erosion to easily access rivers, such as farm tracks or poorly managed road gullies.

Invasive species

Invasive species not only displace or predate local wildlife, they can also cause secondary issues. For example, Himalayan balsam is an annual plant that dies back over winter. Where it is dominating, this can leave significant areas of bare spoil that will be very susceptible to soil erosion over the winter. Community monitoring and action to tackle invasive species where they are causing a problem is the best approach.

Conserving and enhancing the water environment

In the following waterbody sections, we go into more detail of the issues and the impacts faced by each of the eleven waterbodies, as well as suggesting some responses that communities could deliver. We also explore the state of the wider environment because this can be both a source of the threats facing the water environment, such as sediment-laden runoff, or a solution to them, such as woodland planting that reduces flood risk. It is also important to consider the environment beyond the river corridor as activity far away from the waterbody can have an effect, if connected by ditches, roads, and other flow pathways.



Each section is broken down into three: Environment, Issues & Impacts, Action. The Environment section describes the geology and soils, as this dictates how water behaves in the sub-catchment and what the land can be used for. It also describes the coverage of both intensive and extensive land use as well as how well the landscape functions for wildlife. It is important to understand this, as improving the functioning of the wider natural environment will benefit the water environment, as set out in the Box 1. The Issues & Impacts section explores in more detail the EA assessment of the waterbody and which issues are important to those that live and work in the area. The Action section highlights any known opportunities to improve the water environment and suggests some actions that can be delivered by communities and will make a difference.

Box 1: Working with Natural Processes

Healthy catchments store and filter water in the landscape and slow the flow of water downstream. However, modern river landscapes are very different from what nature intended. We have lost water storage and filtration in wetlands, created hard surfaces that water can rush off, and changed our river channels so they move water very quickly. Our rivers are less able to cope with the rain we have now and expect in the future, making flooding and pollution more likely to impact communities and the wider environment.

By working with natural processes, we can better protect ourselves from hazards such as flooding and pollution. The term doesn't have a tight definition and is a catch-all for a variety of measures that includes tree planting, riverbank restoration, building small-scale woody dams, reconnecting rivers with their floodplains and storing water temporarily on open land.

An additional benefit of restoring natural processes is that it will also help wildlife thrive. It is because of this that we use as a focus Natural England's objective of having 30% of an area as functioning habitat. If we achieve this by restoring natural processes in the right place, we will not only have thriving plants and animals, but the water environment will also be better protected.

How to use the report

The following sections are self-contained, so you only need to read the ones that are of interest. They are a high-level description and we suggest looking in more detail at the issues and impacts before deciding on a course of action. We can help you to do this. The figures stated within the sections can be improved with more detailed analysis and are used give a flavour at this stage. There is also a lot more information out there that we can use to help shape action on the ground; the location of invasive species, known pollution hotspot locations, where abstraction of drinking water is having an impact on flow, and much more.

We have also worked with the communities along the River Asker since 2018 and have set out what we have achieved in the River Asker Community Project Case Study. This'll help give you an idea of the sort of things that can be achieved with a little time and commitment.

So, have a read, discuss with your community, and get in touch to see if we can work together to make a difference.

- Dorset AONB - Ian Rees: 01305 228235 or ian.rees@dorsetcouncil.gov.uk
- DWT - Amanda Broom: 01305 264620 or abroom@dorsetwildlifetrust.org.uk
- FWAG - Nicola Hopkins: 07484 399028 or nicola.hopkins@fwagsw.org.uk

Further resources

- Dorset AONB: www.dorsetaonb.org.uk



- Dorset Wildlife Trust: www.dorsetwildlifetrust.org.uk
- Farming and Wildlife Advisory Group: www.fwagsw.org.uk
- The Riverfly Partnership: www.riverflies.org
- Wild Trout Trust habitat manuals: www.wildtrout.org
- River Restoration Centre river restoration manual: www.therrc.co.uk
- Westcountry Rivers Trust: www.wrt.org.uk
- Environment Agency catchment data explorer: www.environment.data.gov.uk
- Wessex Water Catchment Partnerships: www.wessexwater.co.uk
- Catchment Based Approach: www.catchmentbasedapproach.org