



## **Appendix - Wye Abstraction Licensing Strategy**

### **A Catchment approach for sustainable management of Water Resources in the Wye (England)**

December 2021

**We are the Environment Agency. We protect and improve the environment.**

**We help people and wildlife adapt to climate change and reduce its impacts, including flooding, drought, sea level rise and coastal erosion.**

**We improve the quality of our water, land and air by tackling pollution. We work with businesses to help them comply with environmental regulations. A healthy and diverse environment enhances people's lives and contributes to economic growth.**

**We can't do this alone. We work as part of the Defra group (Department for Environment, Food & Rural Affairs), with the rest of government, local councils, businesses, civil society groups and local communities to create a better place for people and wildlife.**

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# 1. About the appendix

## 1.1 Overview

This appendix sets out the Environment Agency's approach to sustainable management of water in the English part of the Wye.

Our aim is to manage water resources in the Wye catchment to:

- remain resilient in dry weather
- improve access to water
- protect the designated site status of the River Wye

We intend to better understand the challenges around abstraction demand. Where possible we will identify opportunities for wider environmental benefits. This document is for:

- people who want to abstract water
- stakeholders with an interest in water management

## 1.2. Collaborative and sustainable water management

Throughout England, our long term goal is to develop a stronger catchment focus for water resources. We are working with abstractors and catchment groups to:

- develop local solutions to existing pressures
- prepare for the future

Catchment groups may include a variety of different partnership groups such as:

- abstractor groups
- local catchment partnerships
- priority catchment groups
- environmental groups

In several [priority catchments](#) across England we have explored:

- modern and innovative ways of improving access to water
- alternative ways to achieving sustainable abstraction

The English part of the Wye catchment was selected as a [priority catchment](#) in the [Defra water abstraction plan \(2017\)](#). This plan sets out how the government will reform the way we manage water abstraction in England, to protect the environment and improve access to water.

Background information on the priority catchment project is available in section 2 catchment overview. Further details of the work in this catchment, both current and future plans, are provided in section 3 managing the catchment together.

Information on the water resource availability across the whole of the Wye catchment and Natural Resources Wales and the Environment Agency's joint strategy to manage this can be found in the main [Wye Abstraction Licensing Strategy](#).

The Abstraction Licensing Strategy and this appendix are a tool to make informed decisions on the choices abstractors make about their use of water. We want this priority catchment initiative to help abstractors to:

- plan their water use and become more resilient in the face of climate change
- explore the opportunities offered by the priority catchments

## 2. Catchment overview

The English part of the Wye catchment falls predominately within the county of Herefordshire. A small part is in Gloucestershire. It includes the main towns of Leominster, Hereford and Ross on Wye. More details for a wider understanding of the catchment can be found in the main [Wye Abstraction Licensing Strategy](#).

### 2.1 Landscape and land use

The catchment covers an area of approximately 1800 km<sup>2</sup>. The mid to lower reaches of the Wye catchment are characterised by productive agricultural land in the flatter river plains.

The area incorporates the:

- Wye Valley Area of Outstanding Natural Beauty (AONB) from Hereford to Chepstow
- Site of Special Scientific Interest (SSSI)
- Special Areas of Conservation (SAC) designations which cover the River Wye and parts of the River Lugg

The catchment is important for nature conservation and recreation and is a significant attraction for the large numbers of tourists that visit the area.

The River Wye forms the border between England and Wales near Hay on Wye and in the lower reaches below Monmouth.

- population: 173,000 (estimated from ONS 2019 mid-year local authority estimates)
- 2,436 farms covering 185,495 hectares of farm land (Defra farm statistics)

Land use statistics based upon LCM2019 © NERC (UKCEH) 2020:

Land Use Type	Proportion of catchment (%)
Permanent grassland	40.7%
Arable	37.9%
Urban	5.4%
Forested	15.3%
Other	0.7%



The River Wye seen from the Symonds Yat Rock viewpoint in Herefordshire. Photograph courtesy of Dougal Ziegler, Environment Agency.

## 2.2 Water Resources

The catchment includes the main river Wye from downstream of Hay-on-Wye to its confluence with the Severn Estuary at Chepstow. It also incorporates tributaries of the Wye including:

- Yazor Brook
- River Lugg
- Rudall Brook
- Garren Brook
- Valley Brook.

The main aquifer within the catchment is the Lower Old Red Sandstone, which comprises a mixture of mudstone, siltstone and sandstone rock types. This is a Secondary (minor) aquifer in which groundwater storage and flow is principally within joints and fault-related fracture systems. Although yields may be variable, the strata is hugely important for the thousands of agricultural and domestic abstractions that it supports.

Other aquifers in the catchment include:

- the Carboniferous Limestone (a Principal aquifer) which covers a very small area in the far south of the catchment
- drift deposits located along the valley floors

The lower part of the Wye catchment within Herefordshire has more permeable geology which enables groundwater to provide a contribution to river flow. In the river valleys there are thick sand and gravel deposits which provide both storage for groundwater and contribute baseflows to local watercourses.

There is a large demand in the catchment for water for agricultural use, and hence over 75% of the abstraction licences issued within the catchment are for this purpose. However the smaller number of public supply licences account for the largest proportion of water that is licensed, with the water being abstracted by Severn Trent Water Limited and Dwr Cymru Welsh Water.

# 32 million m<sup>3</sup>

of water abstracted per year (based on 2013-18 average). This quantity of water would fill around 35 Olympic sized swimming pools each day.

- 449 licensed abstractions
- 140 licences with [Hands off Flow \(HoF\)](#) restrictions at 10 gauging stations
- Only 2% of the catchment underlain by principal aquifer

Proportion of different sectors' abstraction based on licensed abstraction quantity:

Abstraction licence sector	Proportion of total licensed quantity (%)	Proportion of total licensed
	Surface and groundwater combined	quantity (%), groundwater only
Public water supply and other potable uses	71%	36%
Agriculture	14%	15%
Industry	9%	49%
Amenity/environmental	less than 1%	0%
Power generation	6%	0%

## 2.3 Climate change

Climate change will likely impact on the quantity and seasonal availability of water resources within a catchment.

The projected climate change impacts on rainfall and river flow for the Region by the 2050s are for:

- rainfall to decrease by 41% in the summer but increase by 29% in the winter
- low flows to be 65% lower but peak river flows to be 40% higher



Climate change projections are estimated using data from UKCP09, consistent with a 4°C rise by 2100. Further details on the assumptions used can be found in the [Environment Agency Climate impacts tool](#).

## 2.4 Environment and sustainability

The English part of the Wye catchment has sites of both national and international status. The Habitats Directive is a major European initiative that aims to protect biodiversity of these sites. We must ensure that any abstraction we permit must not negatively impact on these natural features. More information on protected sites is available in the main [Wye Abstraction Licensing Strategy](#).

We must also ensure that abstraction does not impact on the ecology of all rivers and streams. The Water Environment (Water Framework Directive) (England and Wales) Regulations 2017 (WFD) seeks environmental objectives to protect and enhance the water environment. Our licensing approach ensures that we avoid deterioration in line with WFD. It ensures the sustainable use of water resource for economic and social development. We assess the impacts of new water abstraction applications to make sure that they comply with WFD.

76 designated protected areas (SACs, SPAs, SSSIs, and LNRs)

Licence reductions:

- Restoring Sustainable Abstraction (RSA) programme: 15,000 m<sup>3</sup>/year reduction plus [HoFs](#) added to 31 existing licences
- unused and underused licence project: 297,603 m<sup>3</sup>/year

## 2.5 Partnership working

The English part of the Wye catchment was selected as a priority catchment in the Defra water abstraction plan. In 2019, we met with water users and other partners to:

- discuss the challenges to accessing water
- explore modern and innovative ways of managing water.

These discussions have shaped our work locally. Delays to engagement and trials were inevitable during the Coronavirus pandemic. New ways of working are now allowing engagement activities and some projects to progress.

We are beginning to work together across sectors including:

- public water supply
- agriculture

- environment
- flood risk management
- navigation

This will deliver multi-functional outcomes which are good for:

- the environment
- people and business

The area was selected as a priority catchment for a number of reasons including:

- it has high grade agricultural land which often suffers from flooding in winter but has restricted water availability in the summer
- the restrictions are more stringent to protect the ecological status of the Wye
- there is unmet demand for water and potential for water to be shared amongst abstractors
- there is a history of collaboration between catchment stakeholders and an appetite for innovation
- climate change is projected to reduce rainfall in the summer months, when abstraction is at its highest, but lead to heavier rainfall and more frequent flooding in the winter

The [Wye Partnership Group](#) is active in this catchment. They bring together stakeholders from a range of backgrounds to address issues in the catchment.

## 3. Managing the catchment together

### 3.1 Approaches to sustainable water management

We have undertaken a range of initiatives focused on the English side of the Wye catchment. This section outlines options initiated for future approaches to water management in the area, including collaboration and sharing which may be of interest to both new and existing abstractors.

#### **Improving groundwater resources through working with natural processes**

Natural processes help to store water in the ground and slow down the rate at which it enters river systems. Evidence shows that taking action to restore natural processes can help make some catchments more resilient to flood events. We have completed a new study to provide evidence for the benefits of working with natural processes. Suitable actions can also improve resilience to drought.

In the Lugg catchment the study indicated that the following could help, if done in the right places:

- improved land-use and soil management over lower permeability
- upland areas including crop cover, interspersing grasses, hedgerow
- planting and shifting to less intensive agriculture to reduce surface runoff and improve infiltration
- improve upland storage through runoff attenuation features over superficial till and gravels
- improving floodplain reconnection within the lower valley through careful management
- renaturalising drainage ditches to restore floodplain wetlands
- mitigating effects of weir removal on groundwater levels through riverbed regrading

Outputs from the project include maps showing where these actions are most likely to be effective. The next steps are to link the findings of this work with other existing work on the ground. This includes:

- the Environment Agency's Natural Flood Management (NFM) work in the Wye catchment
- the [Herefordshire Wye & Lugg NFM](#) project led by Herefordshire Council

Engagement with landowners is key. Further details are available in the project report. You can view this on the [Priority Catchment Citizen Space](#).

### **Improving Water Availability Alerts to Abstractors**

Abstractors may receive a hands off flow Notification (HoF) informing that they must stop or can resume abstraction.

Throughout England, we will begin to send these alerts by email. Sending emails will be a more timely and efficient way of receiving the alerts. The email alerts can be sent directly to the most appropriate person(s) in the business.

In 2022, we intend to begin the email service in the English part of the Wye catchment. The outcome of this work will shape our future water availability alerts in the Wye and other areas.

### **Water Storage**

Abstractors have told us that there are challenges around the planning and permitting of water storage reservoirs.

The planning process often involves ecological surveys and flood risk assessments which can delay applications and prove to be costly. Locally improvements have been made, and shared learning with other areas will help to streamline this process further. We support and encourage licencing for storage reservoirs which are filled by winter high flows when water is available.

## **Water sharing**

We want to make it easier to share water. Cranfield University in East Anglia have looked at different scenarios for water sharing for an Environment Agency funded partnership project. Water sharing aims to make a more efficient and flexible use of available water. Cranfield have defined water sharing as when two abstractors would like to physically share water but there is no need for the abstraction licences to be altered. If the licence does need to change then this is called water trading.

We are exploring opportunities for water sharing in the English part of the Wye catchment.

## **Water trading**

We want to make it easier to trade water rights. A water rights trade is where a person sells all or part of their water right, as defined by their abstraction licence(s), to another person on a permanent or temporary basis. In the majority of cases a trade will involve a change in abstraction location and/or use. We will need to approve through the issue or variation of abstraction licences.

In licensing trades, as with new abstraction licences, we need to make sure that we don't cause any deterioration in water body status. This is both:

- within the water body / bodies where the trade will take place
- to downstream water bodies

[Help for trading water rights map](#). This helps abstractors to identify potential trades by providing information on:

- nearby licences
- an indication of the potential for a trade

To find out more about licence trading go to our [water management web pages](#).

## **Water resources communication and engagement work**

The [Wye and Usk Foundation](#) have funding for a project that will highlight water resources issues and initiatives locally. This is supported by funding from the Environment Agency and the Rivers Trust. Using e-news and a section within the Wye and Usk Foundation magazine (which has a distribution list of 24,000), the project will:

- engage and inform the current issues facing water resources in the Wye catchment
- keep land managers up to date with the grant schemes, initiatives, results of new research and farm advice

- contribute to the delivery of water resource objectives set out in catchment plans

### **Future management of water resources**

Future management of water resources will continue to focus on water storage and water sharing. The key to the success will be in a collaborative approach from stakeholders working together across the Wye catchment to take initiatives forward.

More information on work in other catchments can be found in the updated ALS for:

- [Cam and Ely Ouse](#)
- [East Suffolk](#)
- [Witham](#)
- [Idle and Torne](#)

## **4. Related links**

[Wye Abstraction Licensing Strategy](#) -sets out how surface and ground water resources are managed in the Wye catchment

[Herefordshire Wye & Lugg NFM Project](#)- further detail on this project working with landowners and communities led by Herefordshire Council

[Wye Partnership Group](#) –provides information on the Catchment partnership work to protect the Wye

[The Wye and Usk Foundation](#)- provides details about the environmental charity and the work to restore and protect the ecology and fisheries of the Rivers Wye and Usk

[Agriculture and Horticulture Development Board \(AHDB\) website](#) - provides information on effective use of water on livestock farms

[Catchment Based Approach community website](#) - provides further information on the catchment based approach

[UK Centre for Ecology and Hydrology Drought Portal](#) - is an interactive portal presenting information on the latest hydrological situation across the UK

[Environment Agency, how to apply for a water abstraction or impoundment licence web pages](#) - provide all the information needed to go through the application process to get a licence

[Environment Agency manage your water abstraction or impoundment licence online web service](#) - allows abstractors to view and share licence information and submit abstraction returns

[Environment Agency priority catchments website](#) - provides further information about the priority catchment work

[Environment Agency National Framework for Water Resources](#) - explores England's long-term water needs and the importance of planning at the regional scale and link to the catchment scale

[Linking Environment and Farming \(LEAF\) Simply Sustainable Water guide](#) – explains 6 simple steps for managing water quality and industrial use

[National Farmer's Union web pages on Irrigation and water resources](#) – provide useful information

[Natural England's website](#) provides further information on protected sites and species

[Environment Agency and Cranfield University's guide to planning, designing, constructing and commissioning a water storage reservoir](#) – if you are considering an irrigation reservoir

[The UK Irrigation Association and Cranfield University](#) - provide a range of irrigation booklets that tackle key issues

Waste and Resources Action Programme website has [guidance on water efficiency in the food and drink industry](#)

Waster and Resource Action Programme website has a [guide to water saving devices and practices](#)

## **5. Glossary**

### **Abstraction**

Removal of water from a source of supply (surface or groundwater).

### **Abstraction licence**

The authorisation granted by the Environment Agency to allow the removal of water.

### **Catchment**

The area from which precipitation and groundwater will collect and contribute to the flow of a specific river.

### **Catchment based approach**

Partnership working at the river catchment scale to deliver a range of environmental, social and economic benefits while protecting our precious water environments for the benefit of all.

### **Groundwater**

Water that is contained in underground rocks.

### **Hands off flow**

A condition attached to an abstraction licence which states that if flow (in the river) falls below the level specified on the licence, the abstractor will be required to reduce or stop the abstraction.

### **Surface water**

This is a general term used to describe all water features such as rivers, streams, springs, ponds and lakes.

### **Water body**

Units of either surface water or groundwater which we use to assess water availability.

## 6. Contact details for further information

You can call the Environment Agency on 03708 506 506 (calls cost no more than a national rate call to on 01 or 02 number) or email [enquiries@environment-agency.gov.uk](mailto:enquiries@environment-agency.gov.uk).

For local water resources advice contact the West Midlands Integrated Environmental Planning Team. You can either call or email using the details above.

## Would you like to find out more about us or your environment?

### Then call us on

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