



FUTURE RIVERS PROGRAMME

Sussex Chalk Network

Understanding Groundwater. Protecting Chalk Streams.

Investigating groundwater quality, pollution pathways and
impacts on Sussex's chalk streams

Ouse & Adur Rivers Trust is a leading environmental charity working to
restore and protect rivers and groundwater systems across Sussex.





Our Vision

Our vision is a rich and diverse water environment that supports wildlife and inspires communities to protect and enhance their local rivers.

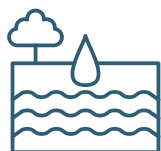
Understanding Sussex's Hidden Chalk Waters

Beneath the South Downs lies a vast chalk aquifer that feeds Sussex's rare chalk streams. These groundwater systems are essential for drinking water, river health and wildlife, yet remain largely unseen and poorly understood.

Emerging pressures from contamination, infrastructure and climate change are raising critical questions about how pollutants move through the aquifer — and how they affect the springs, streams and rivers that depend on it.



Chalk aquifers supply a significant proportion of Sussex's drinking water, sustain spring-fed chalk streams and winterbournes, and underpin freshwater ecosystems across the landscape.



Groundwater Contamination

Emerging contaminants such as PFAS, alongside industrial and wastewater sources, are increasingly detected in groundwater. **Their pathways and long-term impacts remain unclear.**



Road Runoff & Infrastructure

Runoff from major roads such as the A27 may be entering the chalk aquifer. This introduces pollutants into groundwater systems and **affects spring-fed streams.**



Hidden Chalk Streams

Many chalk springs and headwaters remain **undesigned and unmonitored**, despite their importance for biodiversity and downstream river health.



Knowledge Gap

Limited coordinated monitoring restricts our ability to understand how groundwater quality influences rivers and freshwater ecosystems across Sussex.

Linking sources of pollution to impacts at springs and in rivers requires a better understanding of how groundwater moves through the landscape.

Tracing Groundwater Systems Across Sussex

The Sussex Chalk Network brings together monitoring, modelling and targeted investigations to trace how water moves through the chalk aquifer and influences river systems

By linking sources of pollution to pathways through groundwater and impacts at springs and in rivers, the Network is building a comprehensive picture of groundwater quality across Sussex.



Groundwater, springs and rivers are part of a single connected system. Recognising these connections is essential to managing water quantity and quality at a catchment scale.

Inputs

1

Targeted investigations identify PFAS and pollutants associated with industrial areas and major infrastructure such as the A27.



Tracing
pathways



Pathways

2

Monitoring and modelling help us understand how water and pollutants move through the chalk aquifer.



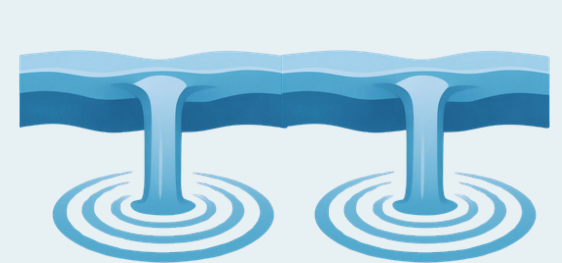
Monitoring
impacts



Outputs & Impacts

3

Spring monitoring links groundwater condition to ecological health in chalk streams and downstream rivers.



Together, these investigations provide the data needed to inform management, guide investment and support long-term protection of Sussex's groundwater and rivers.

Building a Groundwater Monitoring Network

Understanding groundwater systems requires long-term monitoring across springs, streams and groundwater-fed habitats.

The Sussex Chalk Network combines targeted investigations, laboratory analysis and community monitoring to build a shared evidence base across Sussex.



PFAS & Contaminants

Targeted investigations focus on PFAS and contaminants associated with industrial areas, wastewater and major infrastructure.



Spring Monitoring Network

Monitoring chalk springs and headwaters tracks water quality, flow and ecological condition across groundwater-fed systems.



Citizen Water Rangers

Trained volunteers collect monitoring data through the Water Rangers system, expanding understanding across Sussex.



Following the flow from source to stream



Sources

Industry, roads, and wastewater



Groundwater

Moves through the aquifer



Springs

Groundwater emerges at springs



Streams

Impacts across river systems

The Sussex Chalk Network is developing a long-term monitoring framework to improve knowledge of groundwater systems and support future management across Sussex.



Expanding groundwater monitoring across Sussex



Building long-term datasets for groundwater research



Informing future water management

Informing the Future of Sussex's Chalk Waters

Protecting groundwater systems is essential to sustaining Sussex's rivers, drinking water supplies and freshwater ecosystems.

The Sussex Chalk Network is generating the data needed to support better decision-making, guide future investment and improve the resilience of Sussex's chalk streams and aquifers in a changing climate.



1 Supporting Better Decisions

Providing evidence to inform catchment planning, water management and future environmental investment.



2 Investigating Emerging Contaminants

Improving understanding of PFAS and other emerging contaminants within groundwater-fed systems.



3 Protecting Chalk Streams

Linking groundwater quality to ecological condition in chalk streams and downstream rivers.



4 Building Long-Term Datasets

Developing coordinated monitoring datasets to improve understanding of groundwater systems over time.

**Enabling
&
Delivering**


Catchment
Planning


Water Company
Investment


Water Quality
Investigations


Habitat
Restoration


Climate
Resilience


Chalk Stream
Protection

Groundwater systems remain one of the least monitored and least visible components of Sussex's freshwater environment Building a coordinated evidence base is essential to protecting rivers, aquifers and drinking water supplies in a changing climate.

From Evidence to Action

The Sussex Chalk Network is helping build a clearer picture of how groundwater moves through Sussex's chalk landscape and how it influences springs, winterbournes and chalk streams. But understanding the problem is only the first step.

By combining groundwater monitoring, habitat assessments and catchment investigations, we can identify where action is needed most and develop targeted solutions that improve water quality, restore habitats and strengthen the resilience of chalk stream ecosystems.

A Four Stage Process



1. Investigate

- Monitor groundwater quality
- Identify pollution pathways
- Understand aquifer connections



2. Assess

- Survey chalk streams and springs
- Map habitat condition
- Identify pressures and opportunities



3. Restore

- Improve habitats
- Reduce pollution inputs
- Reconnect natural processes



4. Recover

- Healthier chalk streams
- Improved biodiversity
- Stronger Evidence

Habitat Assessment

We are updating records and assessing habitat condition across Sussex's chalk stream network, helping identify opportunities for restoration and long-term protection.

Identifying Pressures

From road runoff and invasive species to historic channel modifications, assessments help pinpoint the factors affecting stream health and ecological resilience.

Prioritising Action

Evidence gathered through monitoring and surveys allows restoration efforts to be targeted where they can deliver the greatest environmental benefit.

Why it matters

Healthy chalk streams depend on more than clean water. They require functioning habitats, natural river processes and resilient catchments that support wildlife throughout the year. By linking groundwater investigations with habitat assessments, the Sussex Chalk Network is helping provide the evidence needed to guide future restoration across Sussex.

Restoring Chalk Streams Across Sussex

Across Sussex, chalk streams and winterbournes face a range of pressures including historic channel modification, pollution, habitat fragmentation and changing groundwater conditions. The Sussex Chalk Network is helping build the evidence needed to understand these challenges and identify opportunities for restoration across the county's groundwater-fed river systems. By combining habitat surveys, groundwater investigations and local knowledge, we can prioritise action where it will deliver the greatest benefit for rivers, wildlife and communities.

Opportunities Across the Network



Spring Monitoring

Monitoring groundwater-fed springs helps us understand flow, water quality and ecological condition, providing valuable evidence to support restoration.



Habitat Assessment

Field surveys assess habitat quality, channel condition and ecological resilience, helping identify pressures and opportunities for restoration across Sussex's chalk streams.



Pollution Reduction

Investigating pollution pathways helps identify risks from road runoff, wastewater and land use, supporting targeted actions to protect groundwater and rivers.



Riparian Planting

Trees, hedgerows and bankside vegetation help stabilise soils, reduce pollution pathways, improve habitat diversity and strengthen resilience to climate change.



Wetland Creation

Wetlands slow and filter water, provide valuable wildlife habitat and help reconnect natural hydrological processes within groundwater-fed river systems.



Channel Enhancement

Restoring natural river features can increase habitat diversity, improve ecological function and support healthier, more resilient chalk stream ecosystems.

THE LEWES WINTERBOURNE

From Assessment to Restoration

The Lewes Winterbourne is one of Sussex's most important chalk streams and a flagship restoration project within the Sussex Chalk Network. Flowing from the South Downs into the River Ouse, the Winterbourne is a rare groundwater-fed chalk stream that supports wildlife and contributes to local identity. Recent surveys and habitat assessments have helped build a detailed understanding of the stream's condition, identifying opportunities to improve habitat quality, reduce pollution pressures and restore natural river processes.

KEY FINDINGS

Using detailed condition assessments and walkover investigations, Ouse & Adur Rivers Trust identified several key pressures affecting the Winterbourne:

Channel Modification

Historic culverts, reinforced banks, concrete beds and other structures have reduced habitat diversity and disconnected parts of the stream from natural processes.

Water Quality Pressures

Road runoff, surface water drainage and other pollution pathways influence water quality throughout the catchment.

Habitat Fragmentation

Sections of the stream lack the natural features typically associated with healthy chalk streams, including diverse gravel habitats, pools and riffles.

Invasive Species

Several invasive non-native plant species were recorded along the watercourse, requiring long-term management and community engagement.

A Long-Term Vision

The Winterbourne Action Plan sets out a programme of restoration and enhancement designed to improve resilience, strengthen habitats and reconnect people with one of Sussex's most distinctive chalk streams. The project demonstrates how evidence gathered through monitoring, habitat assessment and groundwater investigations can be translated into practical action on the ground.

Restoration Opportunities



Naturalising Modified Channels

Creating more diverse habitats through gravel redistribution, low-flow channels, pools, riffles and marginal vegetation.



Improving Water Quality

Reducing pollution pathways and investigating opportunities to better manage runoff entering the stream.



Wetlands & Wildlife

Creating wetland habitats, improving ecological connectivity and enhancing biodiversity throughout the catchment.



Community Engagement

Working with local residents, schools and partners to support long-term stewardship of the stream.

Building the Sussex Chalk Network

Protecting groundwater systems requires long-term collaboration between environmental organisations, water companies, infrastructure providers, regulators, researchers and local communities.

The Sussex Chalk Network is developing a regional framework for monitoring and protecting groundwater-fed systems across Sussex.



We are seeking new **partners and funding** to help expand the Sussex Chalk Network and develop a long-term programme to protect Sussex's groundwater and chalk streams.

By improving understanding of groundwater systems today, we can help protect Sussex's rivers, aquifers and freshwater ecosystems for the future.



Strategic Partnerships

Working with water companies, regulators and infrastructure providers to improve understanding of groundwater systems and support future investment.



Expanding the Network

Developing a coordinated long-term monitoring framework across springs, chalk streams and aquifers throughout Sussex.



Community Research

Supporting community interest, citizen science, collaborative research and future restoration planning to protect Sussex's chalk streams and aquifers.



Current Partners

We are proud to work with those who share our commitment to protecting Sussex Groundwater systems





Inspiring & Leading Action
for
Healthy Rivers

This work is made possible by people — from volunteers and communities to partners and supporters across the catchment.

As we continue to scale our work, collaboration remains at the heart of everything we do.

Stay connected, get involved, or find out more:

Visit: www.oart.org

Follow our work and upcoming activities

Get in touch to collaborate or support delivery

Inspiring and Leading Action for Healthy Rivers



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