

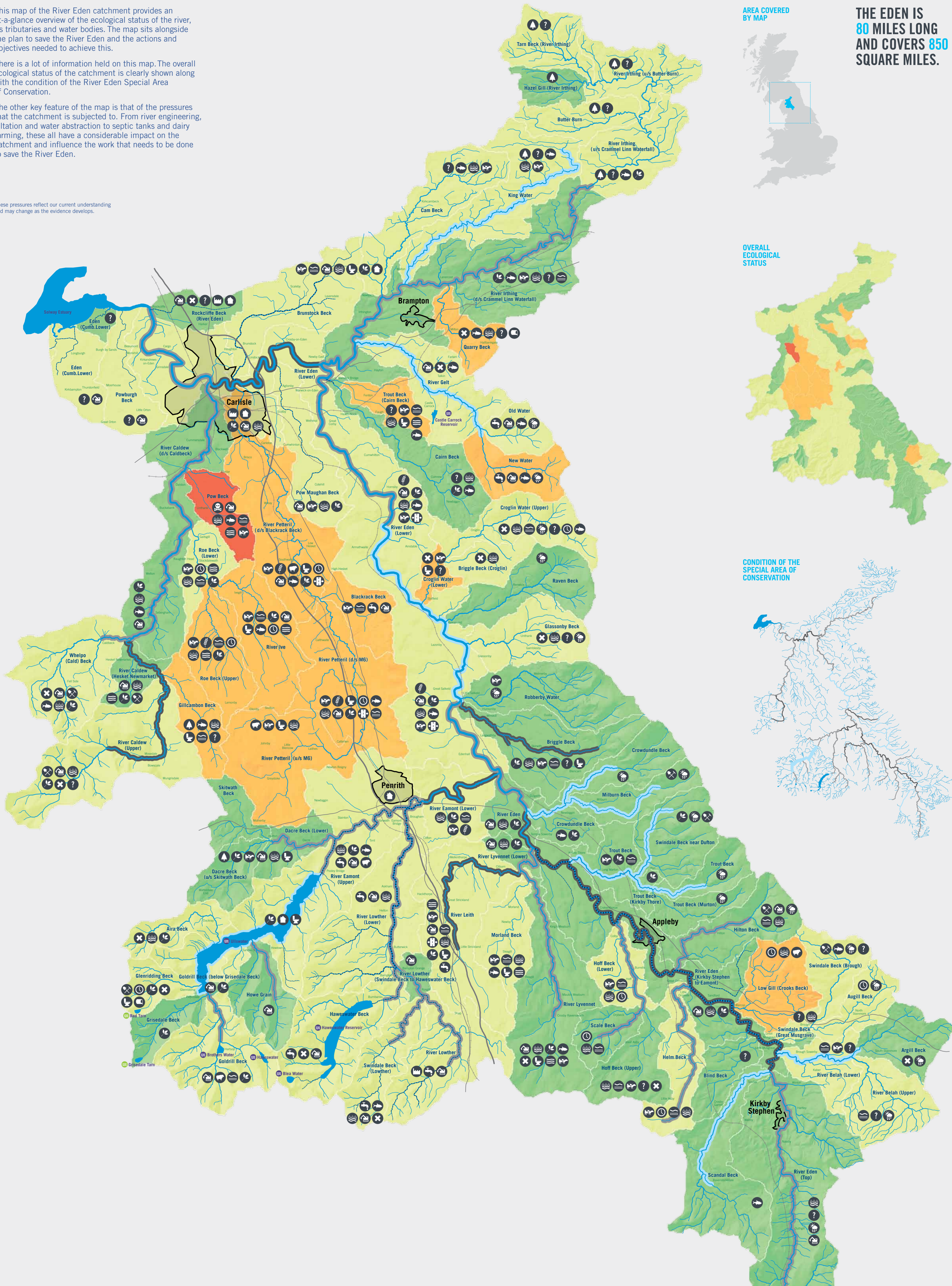
THE EDEN CATCHMENT: NETWORK, STATUS AND PRESSURES

This map of the River Eden catchment provides an at-a-glance overview of the ecological status of the river, its tributaries and water bodies. The map sits alongside the plan to save the River Eden and the actions and objectives needed to achieve this.

There is a lot of information held on this map. The overall ecological status of the catchment is clearly shown along with the condition of the River Eden Special Area of Conservation.

The other key feature of the map is that of the pressures that the catchment is subjected to. From river engineering, siltation and water abstraction to septic tanks and dairy farming, these all have a considerable impact on the catchment and influence the work that needs to be done to save the River Eden.

These pressures reflect our current understanding and may change as the evidence develops.



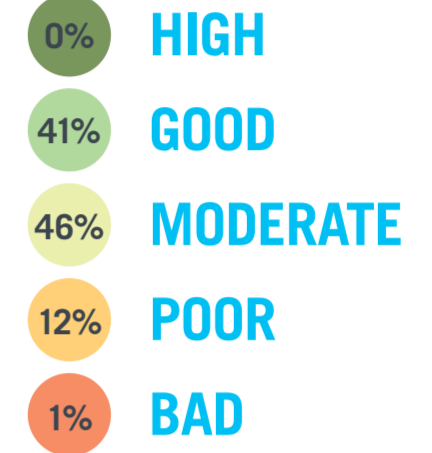
AREA COVERED BY MAP

THE EDEN IS 80 MILES LONG AND COVERS 850 SQUARE MILES.

OVERALL ECOLOGICAL STATUS

CONDITION OF THE SPECIAL AREA OF CONSERVATION

KEY OVERALL ECOLOGICAL STATUS



PRESSURES

- ARABLE FARMING
- DAIRY/BEEF FARMING
- SHEEP FARMING
- ROAD RUN-OFF
- RIVER ENGINEERING
- SEWAGE DISCHARGE
- UNSEWERED WASTE
- INDUSTRIAL DISCHARGE
- CONTAMINATED LAND
- LOW FLOWS
- WATER ABSTRACTION
- FORESTRY
- INVASIVE SPECIES
- SILTATION
- RECOVERING FROM HISTORICAL POLLUTION
- POOR RIVER CORRIDOR HABITAT
- HISTORIC MINING ACTIVITY
- BARRIERS TO FISH PASSAGE
- SUSPECT CLASSIFICATION DATA INCORRECT
- LACK OF KNOWLEDGE (UNCERTAIN)
- DEVELOPMENT PRESSURE
- CLIMATE SENSITIVE

STILLWATERS

- STILLWATERS IN GOOD STATUS
- STILLWATERS IN MODERATE STATUS

SPECIAL AREA OF CONSERVATION CONDITION ASSESSMENT

- FAVOURABLE
- UNFAVOURABLE RECOVERING
- UNFAVOURABLE NO CHANGE

GENERAL FEATURES

- RIVER (THICKNESS OF LINE RELATES TO RIVER SIZE)
- HEAVILY MODIFIED OR ARTIFICIAL RIVER
- MAJOR ROADS
- RAIL
- TOWNS AND CITIES
- VILLAGES
- WATERBODY NAMES (u/s = UPSTREAM, d/s = DOWNSTREAM)

CASE STUDIES: WHAT IS ALREADY BEING DONE

SHAP WASTEWATER TREATMENT WORKS (WWTW) PHOSPHOROUS REDUCTION PROJECT

Reducing discharges from Shap WWTW final effluent and stormwater to address long-standing water quality issues along the River Leith.

Shap WWTW was originally constructed in the 1960s and has been regularly upgraded over the years. The Habitats Directive Review raised concerns about long-standing water quality issues along the River Leith – part of the network of streams and rivers that feed into the River Eden Special Area of Conservation – and failures against the River Quality Objective. Final effluent and stormwater discharges from the WWTW were identified as the main contributors to these failures. To meet the Habitats Directive requirements a major investment programme was needed to meet stringent final effluent limits for Biological Oxygen Demand, Ammonia, and Phosphorous. United Utilities also reduced storm flow entering the watercourse via a combination of increasing flow to the WWTW, and providing further storm storage capacity. The new, state-of-the-art Shap WWTW was built at the headwaters of the River Leith and is set to meet water quality targets and help create a better habitat for local wildlife.

LEAD UNITED UTILITIES
PARTNERS ENVIRONMENT AGENCY, NMI (CONSTRUCTION PARTNERS)
INVESTMENT £13.5 MILLION

THACKA BECK FLOOD ALLEVIATION SCHEME

Construction of a large flood storage reservoir and the restoration, replacement and cleaning of the stone arch culvert under Penrith town centre.

Thacka Beck flows through the town of Penrith, a town that has suffered three separate flood events in the last 12 years, and each event has caused considerable damage to residential and commercial properties. The Flood Alleviation Scheme has delivered several environmental achievements including improved flood protection; contribution to the Agency's 'Creating a Better Place', 'Million Ponds' and Biodiversity Action Plan targets; reconstruction of listed walls and gateways; restoration of 450m of river channel; planting of native woodland trees and shrubs; and the installation of bat roosts and bird boxes. A range of wetland habitats have also been created, including five permanently wet ponds, four seasonally wet scrapes, three small reedbeds and wet grassland. The creation of this mosaic of habitats has improved the area for many species, including lapwing, which are included on the red list due to a decline in breeding over the last 25 years.

LEAD ENVIRONMENT AGENCY
PARTNERS CUMBRIA WILDLIFE TRUST, EDEN RIVERS TRUST, EDEN DISTRICT COUNCIL
INVESTMENT £5.7 MILLION

ENVIRONMENTAL STEWARDSHIP SCHEME, GELTSDALE FARM

Incentivising land management changes to deliver ecosystem benefits.

The eastern tributaries of the River Eden rise along the spine of the North Pennine Moors – a Special Protection Area and Special Area of Conservation under EU Directives, and a WFD Natura Protected Area. Geltsdale Farm is part of the RSPB reserve within the North Pennine Moors. Key habitats and species include blanket bog, wet heath, golden plover, merlin and hen harrier. In addition, two headwater tributaries of the River Eden SAC and Natura Protected Area flow through the reserve. On Geltsdale Farm the HLS scheme is delivering conservation requirements and ecosystem benefits including restoration of blanket bog for biodiversity; carbon sequestration; water quality; and water storage improvements; a shift to extensive cattle grazing to allow natural regeneration of scrub for black grouse habitat; to shade headwater tributaries; and to reduce poaching, bank erosion and sediment from steep valley sides, as well as improving heathland habitats. Grip blocking of the blanket bog is carried out by a partnership led by the North Pennines AONB.

LEAD NATURAL ENGLAND
PARTNERS RSPB, NORTH PENNINES AREA OF OUTSTANDING NATURAL BEAUTY (AONB) PARTNERSHIP, WEIR FAMILY TRUST
INVESTMENT £134K ANNUALLY HIGHER LEVEL STEWARDSHIP (HLS) AGREEMENT

RIVER EDEN DEMONSTRATION TEST CATCHMENTS

Cost effectively reducing the impact of agricultural diffuse pollution on ecological function, while maintaining food security.

The overarching objective of the River Eden Demonstration Test Catchment (DTC) is to provide evidence to test the hypothesis that it is possible to cost effectively reduce the impact of agricultural diffuse water pollution on ecological function while maintaining food security through the implementation of multi on-farm measures. This will be achieved by detecting shifts in baseline trends of the most ecologically significant pollutants resulting from targeted on-farm mitigation measures at field to farm scales and assessing their effects on ecosystem function and food security. The project is providing research to help Defra develop policies on water quality in relation to agriculture. EdenDTC will provide information on measures to improve the effectiveness of Environmental Stewardship for resource protection; improve the delivery of resources through schemes like Catchment Sensitive Farming; and help understand how to optimise them to reduce diffuse pollution.

LEAD LANCASTER UNIVERSITY
PARTNERS EDEN RIVERS TRUST, NEWCASTLE UNIVERSITY, DURHAM UNIVERSITY, NEWTON RIGGS COLLEGE
ASPIRANT BRITAIN UNIVERSITY OF CUMBRIA, CENTRE FOR ECOLOGY AND HYDROLOGY, ABERYSTWYTH UNIVERSITY, BRITISH GEOLOGICAL SURVEY, DEFRA, ENVIRONMENT AGENCY, NATURAL ENGLAND
INVESTMENT £1,999,931

CLIBURN FIRST TIME RURAL SEWERAGE SCHEME

Removal of private septic tank discharges to address long-standing water quality issues along the River Leith.

Cliburn First Time Rural Sewerage project was driven by the need to remove pollution caused by private septic tank discharges to a local ditch. The ditch discharges to the River Leith, which in turn is part of the network of streams and rivers that feed into the River Eden Special Area of Conservation. The 'Habitats Directive Review' raised concerns about the long-standing water quality issues along the River Leith and failures against the River Quality Objective. In total 58 properties were added to the public sewerage network thus removing the septic tank discharge and the associated pollution issue. The project is providing research to help Defra develop policies on water quality in relation to agriculture. The flows from the septic tank have been transferred to Penrith wastewater treatment works (WWTW) for treatment, which meets stringent numeric consent limits. Through the transfer of sewerage from a private septic tank to Penrith WWTW, the receiving watercourses of the River Leith will meet water quality targets and become a better habitat for local wildlife.

LEAD UNITED UTILITIES
PARTNERS ENVIRONMENT AGENCY, BALFOUR BEATTY (CONSTRUCTION PARTNERS)
INVESTMENT TOTAL PROJECT COST £5.1M

EVIDENCE AND MEASURES – RIVER PETTERIL PROJECT

Improving the chemical and ecological status of the four waterbodies that form the River Petteril catchment.

The Evidence and Measures project was undertaken to identify the problems that have led to the poor status of the catchment, and then identify what could be done to improve and resolve those problems. Pollution was identified as one of the major causes, arising from various sources such as farms, roads, inadequate sewage systems and domestic septic tanks – this has caused problems for the flora and fauna and water quality of the river. The River Petteril project aims to address these to make sure that future generations are able to utilise and appreciate this natural resource. The project has concentrated on working with farmers to address key pollution concerns, such as improving drainage and guttering around farmyards and buildings and putting roofs over manure stores. Thousands of trees have also been planted along the river to stabilise banks and allow more wildlife to flourish, together with several kilometres of river bank that have also been fenced to prevent livestock access to the river.

PARTNERS ENVIRONMENT AGENCY, EDEN RIVERS TRUST
INVESTMENT £720,000

CATCHMENT SENSITIVE FARMING

Catchment Sensitive Farming (CSF) Capital Grants have helped farmers address clean and dirty water separation, manure and field management.

Two grants from CSF, together with investments from landlords and tenants and a Higher Level Stewardship scheme, have helped to make significant changes to an intensive dairy farm close to the River Leith to deal with diffuse pollution issues. With the modern buildings cut into a slope, field surface water was running off across dirty yards, putting pressure on the slurry store and giving nutrients a pathway to the river. In addition, farmyard manure was topped beside a hard track, which was also the main access route for cattle. This meant that, with heavy rain, liquid manure flowed back down the track and through the yard. By installing drains, fencing and improvements to the yard, manure is contained and cattle make proper use of the track. Below the farm buildings, steep fields down to the River Leith have been planted with trees as part of an HLS scheme and a field has been earmarked for river restoration within an area of highly straightened channel.

LEAD NATURAL ENGLAND, ENVIRONMENT AGENCY
PARTNER DEFRA'S HIGHER LEVEL STEWARDSHIP
INVESTMENT £18,000+

RIVER RESTORATION DEMONSTRATION PROJECT

Delivering morphology targets for the River Eden Special Area of Conservation.

Modifications to rivers are made for a variety of reasons including, flood defence, past industrial uses, land drainage and water supply. The impact of modifications mean that the River Eden Special Area of Conservation does not meet its conservation requirements under the EU Habitats Directive or the WFD requirements for the Natura Protected Area. The River Restoration Strategy is undertaking demonstration projects to show how river sections can be re-naturalised, including re-meandering straightened sections, increasing in-channel habitat and flow diversity and allowing natural sedimentary processes to occur. The demonstration projects are working with land managers to look at how to deliver this type of work on private farmland – the environmental effects will be monitored and the projects will show to other land managers how river re-naturalisation can work within a farm business. Hopefully, the project will increase understanding among river managers and users and lead to more sustainable river management in the future.

PARTNERS ENVIRONMENT AGENCY, NATURAL ENGLAND, EDEN RIVERS TRUST
INVESTMENT £1.4 MILLION PROPOSED

RENWICK FELL PLANTATION

Establishment of native broadleaf woodland on two ghyll systems near Harrogate, to address water quality issues and improve black grouse populations.

This exciting project has come about with close co-operation between the land owner, Natural England (NE) and the Forestry Commission (FC). The ghyll systems will be fenced off from livestock and planted under the Forestry Commission's England Woodland Grant Scheme (EWGS) using species that would naturally occur on the site, such as birch, rowan, willow, and alder. A good amount of hawthorn is included also to provide cover and food for local black grouse populations. Fencing the area off from livestock also gives native vegetation the chance to re-establish itself. In June 2012 the neighbouring land suffered some huge ghyll landslips. Planting the ghyll sides will help bind the soil with tree root systems and prevent further soil erosion from future storm events, erosion that could have a hugely negative impact on the ecology of the land and water systems downstream.

LEAD FORESTRY COMMISSION
PARTNER NATURAL ENGLAND
INVESTMENT £126,853

Developed by Eden Rivers Trust office@edenrivers.org.uk www.edenriverstrust.org.uk



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