

# Restoring soil structure for climate adaptation

## Results of changes implemented to the 'Little Stour' site by Kent County Council



### UNDERSTANDING THE CATCHMENT

On Shelvin Farm and Denne Hill Farm in the Little Stour catchment, Kent County Council developed the Interreg 2 Seas PROWATER site 'Little Stour' to demonstrate how the region can adapt to the consequences of climate change through Ecosystem-based Adaptation.

The Little Stour (and Nailbourne) are an example of the globally rare chalk streams found in the South East of England. The streams rise from the East Kent Chalk block, a chalk dominated landscape with steep hills often topped by clay soils, and dry valleys. Soils are a mix of well drained, thin chalk soils, especially on slopes; and heavier soils on hilltops or in valleys. Preferential recharge pathways can develop where the acidic clay meets the alkaline chalk, creating solution features that rapidly allow rainfall to reach the groundwater body.

By implementing Ecosystem-based Adaptation measures, we want to make Kent County and its groundwater resources more resistant to the consequences of climate change. Ecosystem-based Adaptation (EbA), a Nature-based approach to climate change adaptation, harnesses ecosystem services to increase resilience and reduce the vulnerability of human communities and natural systems to the effects of climate change. These EbA measures can be integrated into adapted agriculture, forestry and environmental management.

### IDENTIFYING & ENGAGING STAKEHOLDERS

The basic idea behind the 'Payment for Ecosystem Services' (PES) financing model is that investments made by 'buyers' in climate change adaptation measures, result in the targeted provision of ecosystem services provided by the 'sellers'.

The main beneficiaries that are potential buyers in PES schemes are water companies (and their customers) who directly benefit from a more resilient water supply and reduction of pollution in the groundwater body. The dominant type of seller in the catchment is mainly agricultural. Denne Hill Farm is owned and managed by the same family, while many other farms, especially larger arable farms, are managed by contract farmers who do not own the land. The landowner at Denne Hill is also a contract farmer for a number of other farms in the area. In some cases, land is owned by the wildlife trust or government bodies such as the forestry commission.

A number of organisations act as a form of broker in the catchment, mainly offering environmental/agricultural advice. In PROWATER, the South East Rivers Trust together with the Kentish Stour Countryside Partnership brokered an agreement between landowners and funders, which included water company and public funding. Partners such as Natural England were crucial in making contact with farmers.



### PRIORITISING LOCATIONS FOR CLIMATE ADAPTATION MEASURES

Slopes with thin soils on chalk are particularly suitable to focus on enhancing recharge to the aquifer. Most of the catchment is productive arable land, with some pasture and woodland, and a small proportion of natural grasslands. These are often particularly well suited to less productive areas including slopes, and so can play a key role in protecting water resources by enhancing infiltration and reducing runoff without significantly increasing demand for water.

Shelvin Farm is a stud farm in the Little Stour catchment, breeding and selling horses. More diverse herbal species were introduced in the pasture and grazing regimes were changed to a rotational grazing pattern with more horses in smaller fields for a shorter period of time. Denne Hill Farm is a mainly arable farm and a LEAF demonstration farm. It uses Integrated Pest Management approaches and has changed to a minimum till practice. Cover crops were implemented with different rooting depths. The diversified rooting depths are expected to improve the infiltration capacity of the soil, to promote groundwater recharge.

### MONITORING & EVALUATION

Different indicators are monitored to estimate the impact of EbA on the targeted ecosystem services, i.e. increased water infiltration to the aquifer. Monitoring has proved challenging due to the weather across the years being very different. Additionally, the siting of loggers had to be adjusted. Additional evaluation options are modelling impacts (challenging given the nature of the change), or evaluating based on a scoring system (e.g. using the Biodiversity Metric 3.1 to assess change in habitat value, and the associated ecosystem services).



The red circles indicate the location two of the three sub-sites on the water system map. The map suggests the sites have a natural potential as infiltration (brown) and temporary wet (green) areas. However, in this agricultural field the focus was put on soil restoration to promote infiltration, rather than temporary wet nature.

FOR MORE INFORMATION: • [www.pro-water.eu/output-library](http://www.pro-water.eu/output-library)  
• <https://www.pro-water.eu/little-stour-uk>

### A cross-border cooperation

From November 2017 to March 2023, 10 partners from Flanders, the Netherlands and the United Kingdom work together on PROWATER. The project has a budget of more than 5.5 million euros. In each country, water production companies, governments and research institutes as well as land managers are involved in order to achieve a supported vision for Ecosystem-based Adaptation (EbA).

The project PROWATER receives 3.315.974 € through the Interreg 2 Seas fund, co-funded by the European Regional Development Fund (ERDF), to work on climate change adaptation and to increase resilience against droughts and extreme precipitation based on ecosystem services.

