

Water



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Something in the water

The transformative power of water is vital for healthy, thriving communities, but reform is needed to manage this precious resource for the benefit of all users

History has shown the power water has to transform a society. From the Incas to the Ancient Egyptians, the ability to harness and use clean, plentiful water lays the foundations for healthy, thriving communities. Not only is it fundamental to food production, it is also vital to a wide range of other industries. Yet water is an often overlooked resource.

The regulation of water is a complex picture of local, national and European legislation. Following the UK's departure from the EU, there is an opportunity for substantial policy review as core legislation, such as the Water Framework Directive, is transposed into domestic legislation. But reform is not the only challenge facing UK water users. Globally and nationally, the management of clean water is of growing concern. This issue is predicted to worsen as climate change increases the frequency of severe weather events. Tensions over water quality are coming to the fore as pollution pushes catchments beyond their

limits, forcing compensatory deals to achieve nutrient neutrality to enable development. However, the value of managing water is starting to be recognised and incentivised. In this Spotlight we look in depth at the emerging issues facing the water industry and the users of water across the UK.

FLOOD AND DROUGHT

The weather is a famed topic of conversation in the UK largely as a result of its variability. However, across the country, the impact of too much water is much more common than the impact of not enough.

In Scotland, approximately 5% of homes are at risk of flooding and this increases to one in six homes in England. Flooding causes an estimated £1 billion worth of direct damage annually, as well as contributing to contentious issues such as discharging sewage into rivers to manage flows.

While the threat from flooding is significant,

parts of the south and south east of England will run out of water within the next 20 years. By the 2050s, total UK demand for water is projected to have increased by between 2% and 9%, while the amount of available water is expected to have declined by between 6% and 11%. The Climate Change Committee predicts that the demand for water in England will exceed supply by between 1.1 and 3.1 billion litres a day by the 2050s, between 3-10% of water currently abstracted.

There is a clear case for improved management of this precious resource. Currently, 3 billion litres of water are lost every day through leakage from pipes. In comparison, Defra estimates that agriculture in England abstracts 0.3 billion litres per day, making it responsible for 1% of water usage. The biggest demand for water outside public use is for electricity generation (see *figure 1*), where water is abstracted for use as a coolant and for hydroelectric power generation.



5%

of homes in Scotland at risk of flooding

>9%

predicted increase in UK water demand to 2050

1%

agricultural share of water abstraction

WATER FOR AGRICULTURE

The UK is blessed with abundant “green water” (i.e. rain) to naturally irrigate crops and grass. However, in resource terms, “blue water”, for example water extracted from aquifers, is the primary concern as it competes with industrial and domestic

users. Within agriculture, drinking water for livestock is the biggest form of water usage, followed by irrigation for crops. Potato production accounts for 54% of irrigated water use in England and Wales.

■ *Water in food*: All fresh produce contains “virtual water” (i.e. a tomato is 95% water)

and moving fresh produce across borders enables countries to access water as well as food. When food is imported from water-poor areas in effect water stress is being exported to the location of food production, potentially undermining local water security. For example, the UK’s imports of tomatoes from southern Spain require the amount of blue water equivalent to the domestic consumption of 200,000 people.

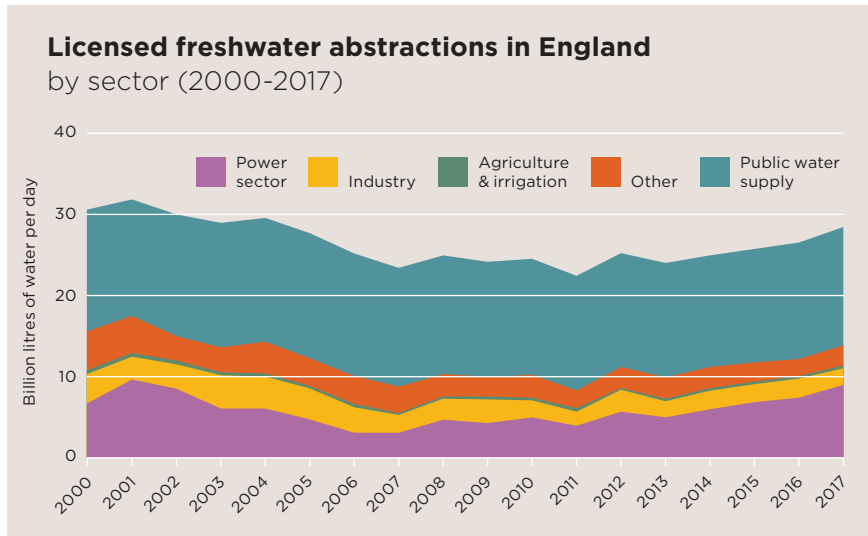


figure 1

Source The Environment Agency

THE POLICY FRAMEWORK

No one owns water. Unlike land or built property, water simply moves through the system in ways that impose costs or create opportunities for those who can manage it while it is under their control. It is for this reason that water occupies a niche position in the regulatory framework, with different bodies controlling potable water, sewage, abstraction, agriculture, rivers and drainage systems. Each is subject to a wide range of policy levers typically aimed at managing water quality and quantity. The government summarises these with an overarching objective: to ensure clean and plentiful water. The graphic below captures some of the current regulatory framework and how this may be changing in the years ahead.



THE VIEW FROM SCOTLAND

66% of Scotland’s overall water environment is already in good condition, in comparison to the European average of 40%. In 2021 the Scottish government announced a comprehensive plan to increase this to 81% by 2027. The integrated River Basin Management Plan approach brings together a wide range of stakeholders at catchment level to plan and implement effective interventions in rural and urban areas.

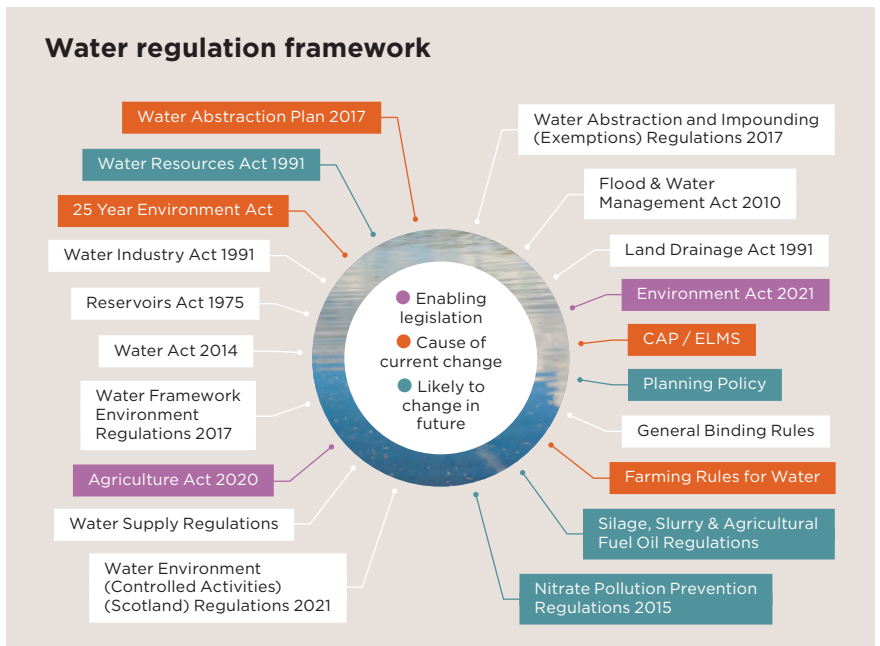


figure 2

“No one owns water. Unlike land or built property, water simply moves through the system in ways that impose costs or create opportunities for those who can manage it while it is under their control”

£5.2bn

committed spend on flood defences in England

64%

abstraction licences held by farming

£1k

approximate increase in land values per acre from reservoir construction



Catchment and abstraction

Flood management, water storage and irrigation are key factors in ensuring that there is neither too much nor too little water available for users at any one time

TOO MUCH

Set out in the government's 10-point plan for a green industrial revolution is a commitment to spend up to £5.2 billion over six years on flood defences in England, which would include using nature-based solutions to increase flood resilience. Flood management is a devolved issue and is not the responsibility of one single body, but many of the stakeholders involved, from local authorities to water companies, have made pledges to reach net zero carbon in their operations. Part of this challenge will require investment in "green" infrastructure over carbon-intensive hard engineering flood defence systems.

One such method is using catchment scale management to control water, such as re-meandering rivers and tree planting. These interventions can impact occupiers upstream to the benefit of downstream residents.

The Environment Agency (EA) in England

has been advocating for payments to land managers to store water and assist with flood mitigation and says it is making progress with plans to factor this into Environmental Land Management (ELM). The first round of the Landscape Recovery scheme, under ELM, focuses on restoring streams and rivers to improve flood mitigation, working directly with farmers and land managers to develop projects that are financially viable and deliverable. However, this scheme targets larger landscapes and there is no guarantee similar opportunities will be available to smaller farmers.

TOO LITTLE

While farming is only responsible for approximately 1% of abstracted water usage, agriculture holds approximately 64% of abstraction licences, demonstrating how exposed the industry is to changes in access.

The government's 2017 Water Abstraction Plan sets out how it will reform abstraction management in England to protect the environment and improve access to water, contributing to the government's 25 Year Environment Plan. There are three main elements to the plan: addressing unsustainable abstraction; building a stronger catchment focus; and modernising the abstraction service.

Much of the reform is already underway. More farmers are now required to seek a licence, including those using trickle irrigation. The reforms will end time-limited and seasonal licences, moving to timeless environmental permits that are subject to reviews, so abstraction can occur all year round during high flows within daily or annual limits. Farmers will benefit from the ability to merge abstraction licences so they have more flexibility over where the water is used and also become able to buy water rights from other licence holders.

👉 Net zero strategies will require investment in "green" infrastructure over carbon-intensive hard engineering flood defence systems 👈

“ Savills agents report that constructing a reservoir on irrigable land can add £1,000 per acre on to land values ”

CASE STUDY

THE TWEED FORUM – SCOTTISH BORDERS

Formed in 1991, the Forum promotes the sustainable use of the Tweed catchment through holistic and integrated management and planning, underpinned by the Tweed Catchment Management Plan. The plan creates a single management framework for the interacting and interdependent ecosystem services found in a 5,000km² river catchment, allowing the integration of different administrative, planning and regulatory bodies in an attempt to manage the multiple demands on the catchment. It has developed into an award-winning, cross-border environmental partnership of 25 public and private sector organisations. A range of projects have been delivered from small-scale tree planting to river restoration initiatives working with stakeholders to achieve community-wide benefits, including cleaner water, increased resilience to flooding, enhancement of fish stocks, capture and storage of carbon and increased tourism in the area.

WELSH APPROACH

To control water on land being developed, Sustainable Urban Drainage Systems (SuDS) are used to mimic natural drainage to reduce the impact of surface run-off. Since 2018 in Wales, development of one house or more requires SuDS designed in accordance with statutory standards. In England SuDS are only required for “major developments” of at least 10 dwellings.



WATER NEUTRALITY

In some local planning authority (LPA) areas, such as those in the Sussex North Water Supply Zone, the concept of “water neutrality” has emerged. Here, Natural England considers water abstraction to have a negative impact on wildlife and one way of preventing any further negative

impact is to ensure all new development is water neutral, i.e. it does not increase the volume of water abstracted for public water supplies.

The focus is on both the water industry (via updated Water Resource Management Strategies) and LPAs, to produce up-to-date local plans with appropriate mitigation, to ensure that LPAs can meet their housing targets.

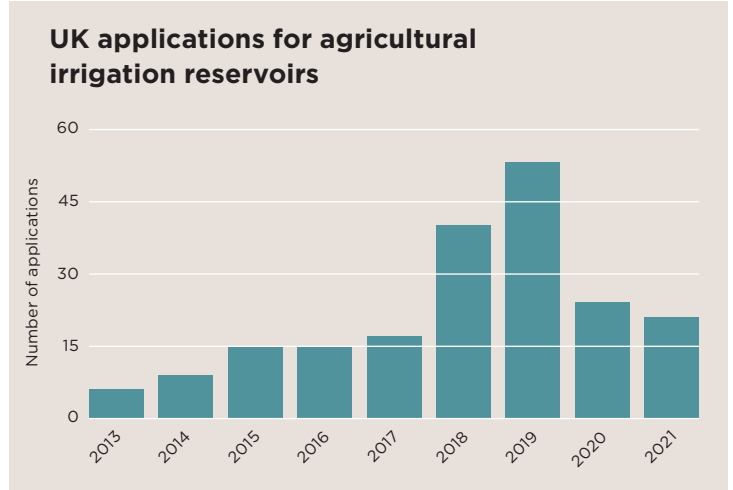


figure 3

Source Savills Research

Irrigation reservoir creation

Government grants are an important catalyst

Abstraction reform means more farmers are turning to reservoirs to support farm water needs. Building a reservoir can be a long and complicated process. First, it is necessary to determine how to fill the reservoir, with the most common methods being via rainwater harvesting or by abstracting water. To abstract less than 20m³ a day, an abstraction licence is not required, but anything more needs approval from the Environment Agency. It is recommended to involve them early as flow monitoring may be required to ascertain whether there is sufficient water available.

Most small reservoirs will fall within permitted development rights provided extracted material is retained on farm, meaning that a prior notification form can be completed instead of a full planning application. The Reservoirs Act 1975 (as amended) provides for an annual inspection regime for large above ground reservoirs.

Over the years, the government has supported water retention and storage through a range of grants. Most recently, the Farming Transformation Fund provides grants towards large capital items to help businesses improve productivity, profitability, and environmental sustainability. It includes a Water Management Grant for projects such as securing water supply for crop irrigation through

the construction of a reservoir or changing to a more efficient method of water application. The maximum grant is £500,000 and can cover up to 40% of the project cost. Following the close of the online check, the Rural Payments Agency has said the grant is oversubscribed and applications will be evaluated competitively.

Savills analysis of full planning applications and prior notifications since 2013, (figure 3) shows that government grant support is an important catalyst and leads to a significant increase in the number of irrigation reservoirs constructed. The last round of funding, under the Countryside Productivity Scheme, resulted in a spike in applications with average reservoir construction rate in 2018 and 2019 291% higher than the preceding five year average.

However, the number of applications without grant support remains above average, suggesting that farmers are choosing to make an investment in an asset that will increase the resilience of their business and can increase land values. Savills agents report that constructing a reservoir on irrigable land can add £1,000 per acre to land values, primarily because irrigation opens up opportunities to grow higher value produce such as potatoes and root vegetables. Rental values also increase between 15% and 25%, depending on the type of land.

🦋 Wildlife and Countryside Link has warned that the water quality of rivers in England is the worst in Europe 🦋

The necessary changes to improve water quality

It's a complex issue but policymakers are increasing the pressure on polluters

Managing water quality is wide-ranging and the mechanisms to deliver these practices are equally broad. While top-down regulation has a key role to play, it alone cannot address the breadth and complexity of the issue of water quality. In England, just 16% of waters met the criteria for “good ecological status” in 2020 – no improvement since 2016 and a long way from the government’s ambitions for all rivers to reach good status by 2027. Wildlife and Countryside Link has warned that the water quality of rivers in England is the worst in Europe. In late March 2022, a judicial review to overturn the Welsh government’s decision to designate the whole of Wales as a Nitrate Vulnerable Zone failed. The message is clear that policymakers are ramping up pressure on the polluters.

Defra identifies three main drivers affecting water quality, after physical modification of rivers:

- Agricultural pollution (affecting 40% of water bodies)
- Sewage and wastewater (affecting 36%)
- Run-off from towns, referred to as urban diffuse pollution (affecting 18%)

FARMING AND WATER: CARROT V STICK

At its most broad, water quality on farms is enforced through cross compliance, but since 2018 the Farming Rules for Water built upon

these practices with new rules on managing fertilisers, manures and soils. The whole system of cross compliance is due to be reformed when BPS payments are delinked and new Land Use Standards are introduced in 2024.

Last autumn, the EA received fierce criticism for its stricter interpretation of the Farming Rules for Water, effectively ruling out spreading organic matter after 1 September on grassland and cereals, with limited application permitted on oilseed rape. Following a widespread backlash and in light of record fertiliser prices in 2022, Defra has clarified the rules and their enforcement. Spreading will be allowed if farmers can demonstrate they plan their applications, balancing the need to make sure the regulations are effective to stop diffuse pollution getting into rivers, while giving farmers some flexibility.

With the cost of inorganic ammonium nitrate fertiliser around £800 per tonne (at the time of writing), organic matter such as slurry is important to give soil fertility. Defra has suggested that farmers could respond to fertiliser shortages by using more organic nutrients, such as biosolids, which are a by-product of the wastewater industry. However, given the nitrogen content of composted biosolids is just 11kg per tonne, it would require over 73 million tonnes of biosolids to

substitute for the total amount of nitrogen fertiliser used in England in 2019. England produces just 3 over million tonnes of biosolids a year; increasing the population by a factor of 20 clearly is not a solution.

DEVELOPMENT AND WATER: UNLOCKING OPPORTUNITY

Nitrogen and phosphorus are key nutrients for crop production. However, if high concentrations leach into watercourses these nutrients can cause excess algae to grow, depleting oxygen in the water and damaging other aquatic life.

The concept of “nutrient neutrality” arose in late 2018 concerning the interpretation of the Habitats Directive. Natural England initially issued guidance preventing residential development surrounding the Solent, where river conditions were “unfavourable”, unless the LPA was certain the impact of the nutrients from the wastewater created on site could be mitigated. This guidance has since expanded, initially to 32 local planning authorities and in March 2022, a further 43, (figure 5). Any new development in affected areas which consists of overnight accommodation, including permitted development or even campsites, must demonstrate that it is nutrient neutral until such a time as water treatment infrastructure is upgraded to handle

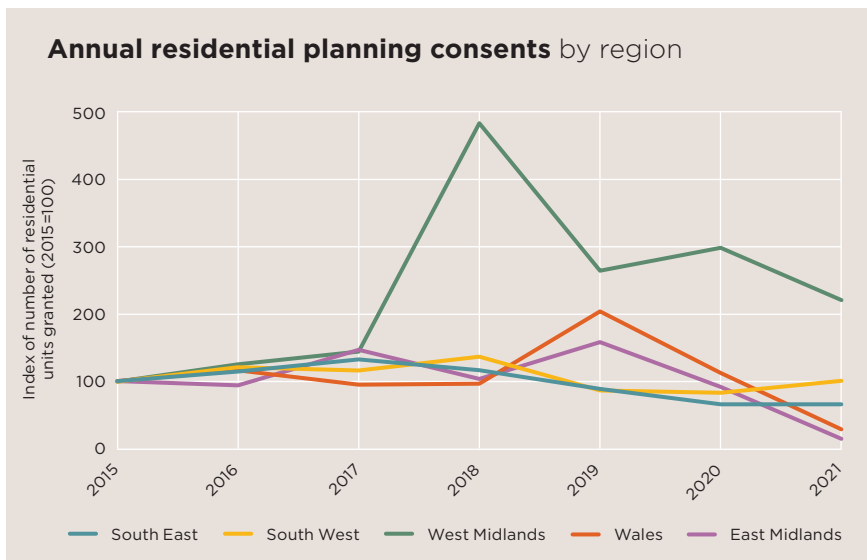


figure 4

Source Savills Research

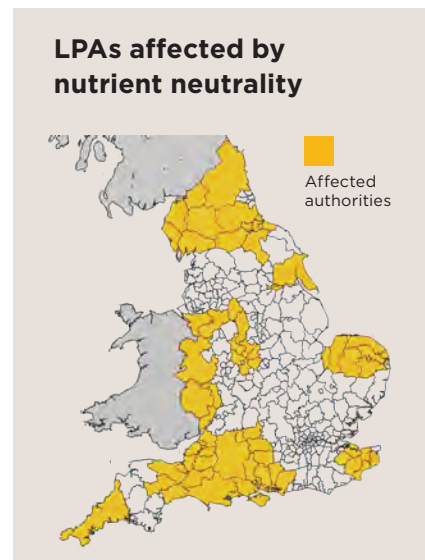


figure 5

Source Savills Research

16%

proportion of English rivers in “good” ecological status

11kg

of nitrogen per tonne of composted biosolids

45,087

total housing need in LPAs impacted by Nutrient Neutrality



more nutrients. This effectively creates a moratorium on all new development that would discharge into a protected water system, but also creates demand for offsets to reduce the amount of nutrients from other sources, such as agriculture.

Of the affected LPAs, 75 sit within England and, for those LPAs where data is available, they have a combined annual housing need of 45,087. Every year these local planning authorities are falling short of this housing delivery target, despite the fact that some of the net additional dwellings are from a pipeline of consented developments before nutrient neutrality took hold.

The fall in housing delivery as a result of nutrient neutrality is exacerbating the misalignment between demand and the speed at which the planning system can deliver new dwellings. The graph illustrates that in the original LPAs affected, the number of consented dwellings fell, (figure 4). This is still evident despite the nutrient neutrality restrictions applying on a catchment level, and not necessarily affecting the entire LPA area. For the eight LPAs surrounding the Solent, the average number of consented dwellings fell 45% when comparing the periods 2015-2017 and 2019-2021.

Unlocking sites requires housebuilders to pay for mitigation, making these areas less

45%

fall in consented dwellings around the Solent following nutrient neutrality ruling

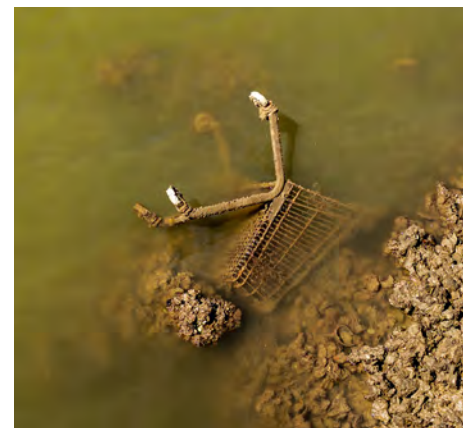
financially viable at a time when competition and lack of supply is causing record growth in values for development land. Until clear guidance is provided to developers and land managers to clarify how to mitigate nutrients and a more uniform approach is taken by LPAs, such as adding the issue as a pre-commencement condition to a planning approval instead of part of a S106 agreement, development in these areas could remain slow and impact the communities that want to live there.

Providing nutrient mitigation, thereby creating “nutrient credits” could present opportunities for landowners in the catchment areas. Mitigation techniques are subject to negotiations with each LPA, but include the creation of wetlands, taking land out of production or the installation of sewage treatment plants on private properties that do not comply with the General Binding Rules covering small sewage discharges.

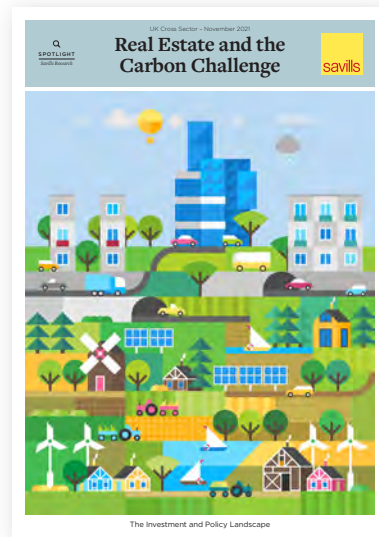
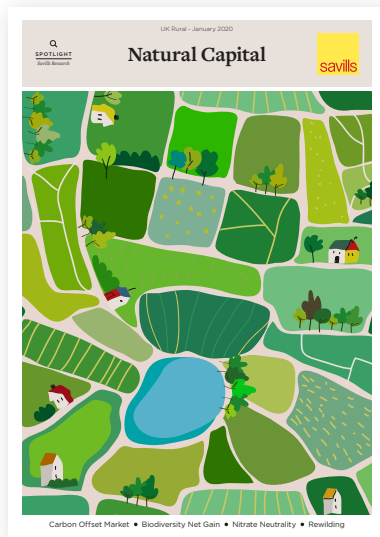
WATER COMPANIES: BATTLING PUBLIC PERCEPTION

It has been widely reported that the sewerage networks frequently discharge untreated and partially treated sewage into streams and rivers. These overflows are intended to prevent sewage backing up into properties and their use is subject to permits granted by the EA. The public health and environmental risks of sewage pollution in rivers has become a major cause of public concern. In response the government strengthened the Environment Act. It has put pressure on water companies and the EA to do more to limit this practice and water companies across the country have said they will rise to the challenge. However, analysis by campaign group Windrush Against Sewage Pollution found improvements had yet to be made at any of the 40 overflows prioritised for spill reduction under the government’s 2018 Storm Overflow Assessment Framework.

Water companies are required to report on carbon emissions, as well as environmental performance, so spending on infrastructure to address such issues needs to balance environmental and economic demands. Green infrastructure could offer a solution: projects can be less carbon-intensive in construction, and even carbon-negative in operation. The water companies collectively own approximately 1% of land in England but are impacted by land management decisions over their total catchment areas. These priorities and pressures are likely to encourage collaboration with land managers and investment in nature-based solutions.



“Defra has suggested that farmers could respond to fertiliser shortages by using more organic nutrients such as biosolids, which are a by-product of the wastewater industry”



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