

Broadland Rivers Catchment Plan

A strategic plan connecting local communities, organisations and businesses with the management of land and water



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Breydon Water

Foreword

The Broadland Rivers Catchment is the area that feeds water into the Broads. It has a strong farming heritage, internationally important wildlife, excellent angling, inland navigation, stunning landscapes and coast, historic towns and the city of Norwich. It is a thriving tourist destination.

The Broads is low lying and located at the bottom of the catchment, so is affected by what happens upstream as well as by tidal surges from the North Sea.

Tackling issues around water quality, water shortage, flooding and wildlife habitat is important to many individuals and organisations in Norfolk and Suffolk, as is supporting recreation, tourism, agriculture and dependent industries. Improvements within the catchment, particularly over the past 30 years, are due to the dedicated effort of many individuals, groups and organisations. Despite this excellent work, there is much more to be done.

A new, all inclusive approach to planning could result in multiple benefits, help us adapt to climate change and enhance the catchment for future generations. Defra is keen to involve local communities in decision making by sharing evidence, listening to ideas, working out priorities, and carrying out joined up actions that address agreed issues.

The Broads Authority and Norfolk Rivers Trust volunteered to co host the Broadland Catchment Partnership to encourage strategic thinking and help co ordinate joined up and targeted water and land management.

I am delighted that the partnership is involving local people, organisations and businesses in developing and carrying out actions. In a competitive funding environment, I welcome the fact that partners are making the most of existing funding, seeking more innovative sources, and highlighting incentives to encourage best practice across all sectors.

We all have an impact on our catchment and by working together we can take the necessary steps to improve the environment and provide benefits to society and the local economy.

Dr John Packman

Chief Executive, Broads Authority



Introduction

“Our key audience – the people who can really make a difference – are communities, farmers and land managers who live and work in the catchment along with other businesses.” Barry Bendall, The Rivers Trust

About the Broadland Catchment Partnership

Co-hosted by the Broads Authority and Norfolk Rivers Trust, the Broadland Catchment Partnership was formed in 2012. It comprises a range of organisations, groups, businesses and individuals dedicated to working together.

Our aim is to improve our water environment and provide wider benefits for people and nature at a catchment scale – known as a [Catchment Based Approach](#) (CaBA). We have agreed a shared vision for the Broadland Rivers Catchment and produced this plan to work towards it.

About the Broadland Rivers Catchment Plan

Plans alone don't change things, but plans and people do! The Partnership has reviewed the best available evidence relating to the catchment, its key problems and their potential solutions, to inform our actions.

We have liaised with a wide range of interest groups and local experts to agree a direction. Many of these interest groups will be involved, and supported, in carrying out actions. The plan sets out where we want to get to and by when. As a live document, it can be updated as new information becomes available.

Shared vision for the Broadland Rivers Catchment by 2027

- › The precious nature and value of water is widely recognised. The benefits that the catchment provides are understood and those who manage the land to provide these benefits are adequately rewarded.
- › Agriculture and water treatment are sustainable and organisations involved with the management of land and water work together effectively.
- › We have met the challenging targets to improve water quality, water supply and flood protection. Widespread understanding and support of the targets has motivated many people to change their practices to make a positive contribution.
- › Rivers function more naturally and the catchment supports a range of habitats and native species. Local action routinely brings multiple benefits and wildlife dependent on water is thriving and able to move around without impediment.
- › Communities embrace and celebrate waterbodies in their local environment whilst their enthusiasm and knowledge is sought as part of decision-making processes. Recreational use of water has increased in a sustainable way.
- › The common belief is that the water environment is in far better shape than in 2012 and becoming adapted to future climate change.

Goals

To meet the shared vision for the Broadland Rivers Catchment, our goals are to improve:

1. **Land management** to reduce run-off, and soil, nutrient and pesticide loss, and to link habitats and access
2. **Waste water management** to reduce nutrients in watercourses from public and private waste water
3. **Water management** to increase water capture and water efficiency
4. **Flood risk management and sustainable drainage** to reduce and slow run-off and increase aquifer recharge
5. **River and floodplain management** to increase connectivity, reduce fish barriers and control invasive species
6. **Recreation and understanding** to increase sustainable use of, and learning about, water and wetlands
7. **Investment** to increase, combine and attract funding for projects

To achieve our goals we will encourage and promote:

- (i) uptake of cost-effective sustainable measures by individuals
- (ii) targeting of the right measures in the right places for multiple benefits
- (iii) close working between different organisations and groups

By 2027, we want to see:

- Rivers and broads meeting requirements of European legislation and local aspiration
- Nature conservation areas achieving national and European guideline standards
- No raw water supplies regularly at risk of failing drinking water standards

Examples from other catchments show what can be achieved when communities including farmers and other businesses take responsibility and work together for shared benefits and efficient use of funding.

Key messages



Water is vital for drinking, growing crops and supporting industry. Most of us can reduce the amount of water that we waste, saving ourselves money, and benefiting rivers and internationally

important wetlands. We also have the option to increase the amount of rainfall we capture or encourage it to go into the ground – using sustainable drainage systems – to replenish our vital groundwater aquifers.



Rivers and wetlands provide enjoyment for many people whether angling, canoeing, watching wildlife or enjoying picturesque views. Rivers receive our waste water and many have been

modified for flood defence, milling and navigation purposes. There are opportunities in the upper, non tidal areas to restore river reaches and even reconnect the floodplain – using low cost techniques – where no flood risk to property occurs.



Land is essential for food and fuel, but it also provides other services to society including flood protection, freshwater provision, wildlife habitat and recreation. Managing land for

these other services in targeted marginal locations, while supporting sustainable agriculture across the wider landscape, is the key to success.



Catchment facts and figures

The Broadland Rivers Catchment is relatively large at around 3200km² and is mostly rural. It includes around two thirds of Norfolk and part of north Suffolk. The largest settlements include the city of Norwich and the seaside towns of Great Yarmouth and Lowestoft, where major regeneration is planned.

Rivers

The four main rivers (and sub-catchments) are the Bure, Wensum, Yare and Waveney. Water that falls in the catchment percolates into groundwater, or runs, drains or is pumped into the rivers. It ultimately flows through, or under, the Broads area and out to sea at Great Yarmouth or Lowestoft. As the rivers reach the Broads Executive Area – where the land is mostly at or below sea level – they become wide, slow flowing and tidal.

The Broads

The Broads is a member of the national park family and is Britain's largest designated wetland. The area includes over 60 shallow lakes or 'broads' created by medieval peat diggings and flooded by rising sea levels. It is one of Europe's most popular inland waterways.

Water supply and treatment

The groundwater, rivers and broads of the catchment provide sources of public drinking water and support water dependent industries, especially around Norwich.

Private drinking water and agricultural supplies are located throughout the catchment.

Most public sewage treatment works ('water recycling centres') return waste water to rivers, but some discharge to the sea. There are several large industrial waste water systems and many private sewage treatment works, including septic tanks, which discharge to rivers or to ground.

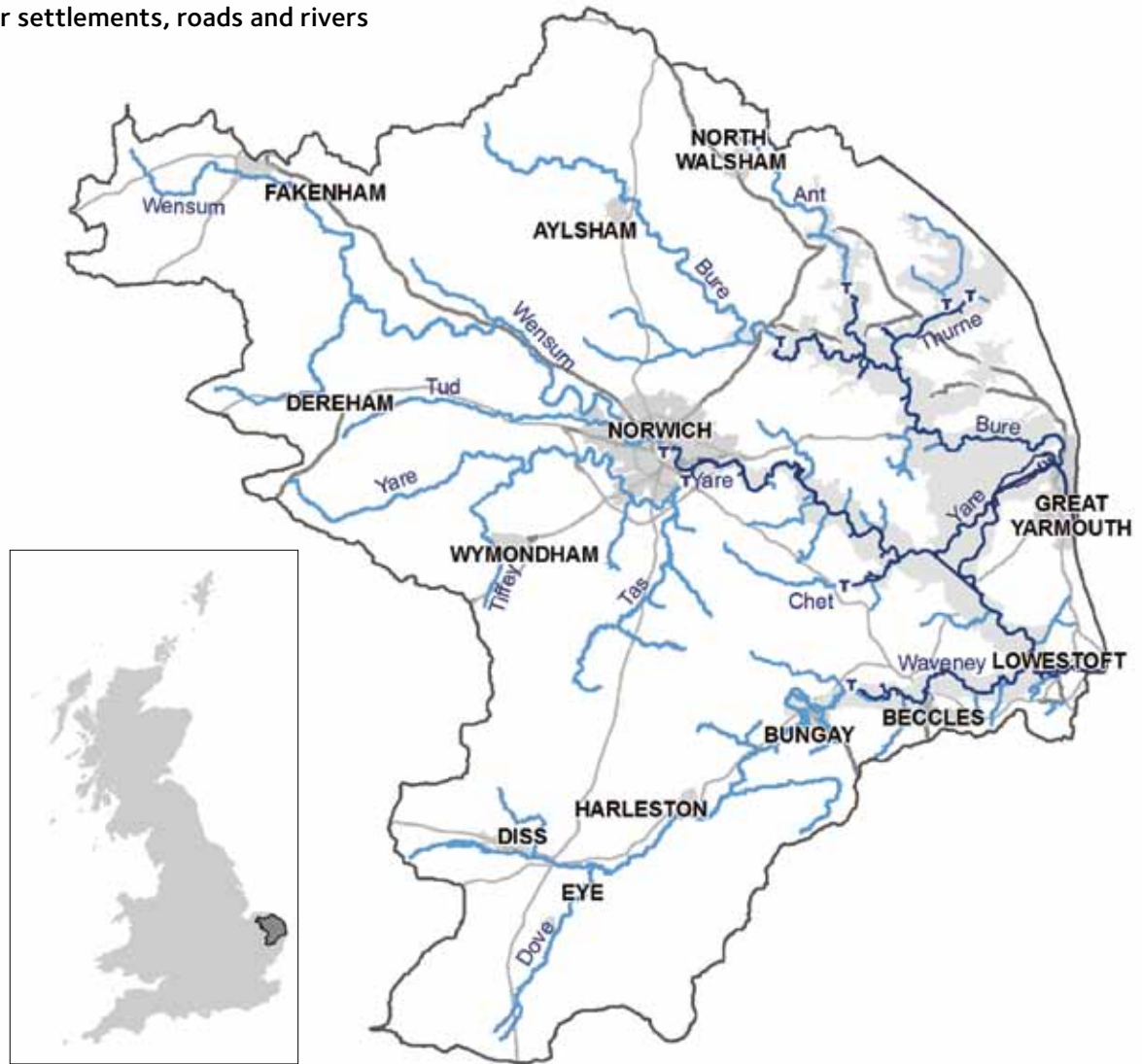
Population and economy

The population of the catchment is around 850,000 permanent residents. Tourism, agriculture, and food and drink processing are essential to the economy. In 2011 there were 7.4 million visitors to the Broads alone, resulting in an estimated visitor spend of £469 million and supporting over 6000 jobs. About 8,500 jobs in the catchment rely on [farming](#). Energy and life sciences are also important components of the local economy.

Recreation

Boating, walking, angling and birdwatching are popular activities throughout the catchment and on the coast. There is excellent inland navigation mainly in the Broads. Angling for coarse fish is particularly popular on tidal rivers, with renowned barbel fishing on the River Wensum and brown trout fishing on the upper Bure and Wensum. Bathing beaches on the Norfolk and Suffolk coast currently meet European guideline standards.

Map 1 Location of the catchment, tidal limits, major settlements, roads and rivers



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Trinity Broads

Land use

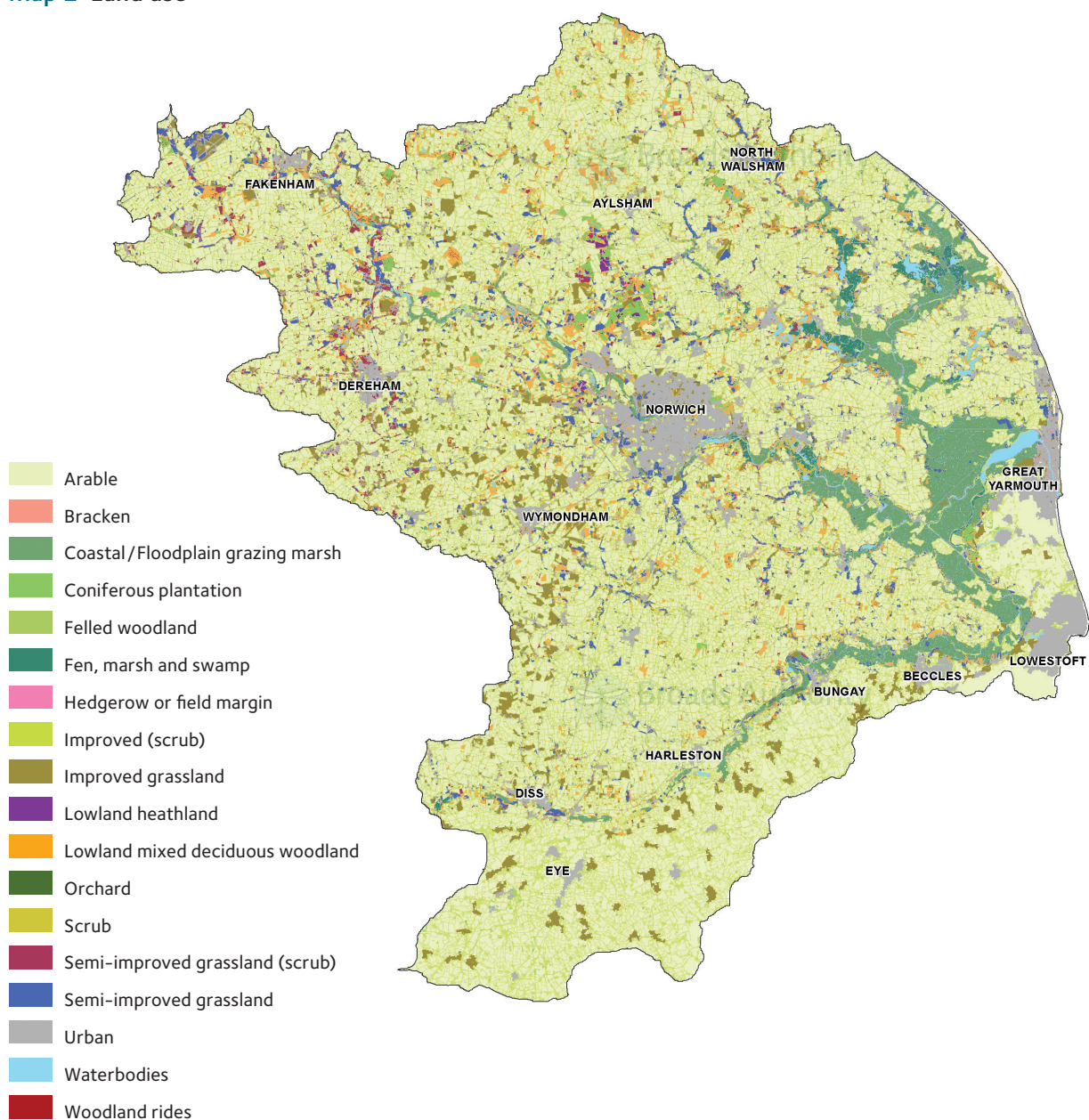
Most land within the catchment (around 80%) is used for arable agriculture, with grazing meadows and semi-natural fens in river valleys and around the broads. There are small, scattered areas of woodland, scrub and heath. Much of the land is high grade and crop yields are high in comparison with the national average. Agriculture and land management make a major contribution to [landscape](#) and tourism within the catchment. There is more intensive livestock production to the south and west.

[Land drainage](#) in the Broads, Norfolk Rivers, and Lower Yare, Waveney and Lothingland areas improves agricultural production over 28,000 hectares of land. Thirty-six pumps and 746km of watercourse are maintained in the Broads area and river valleys.

Flood risk management, including construction and maintenance of embankments, walls and flow regulating structures, reduces flood risk to agricultural land, infrastructure and properties, and over 30,000 people.

Note to Map 2 Based on aerial photography and satellite imagery.

Map 2 Land use



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Wildlife and landscape designations

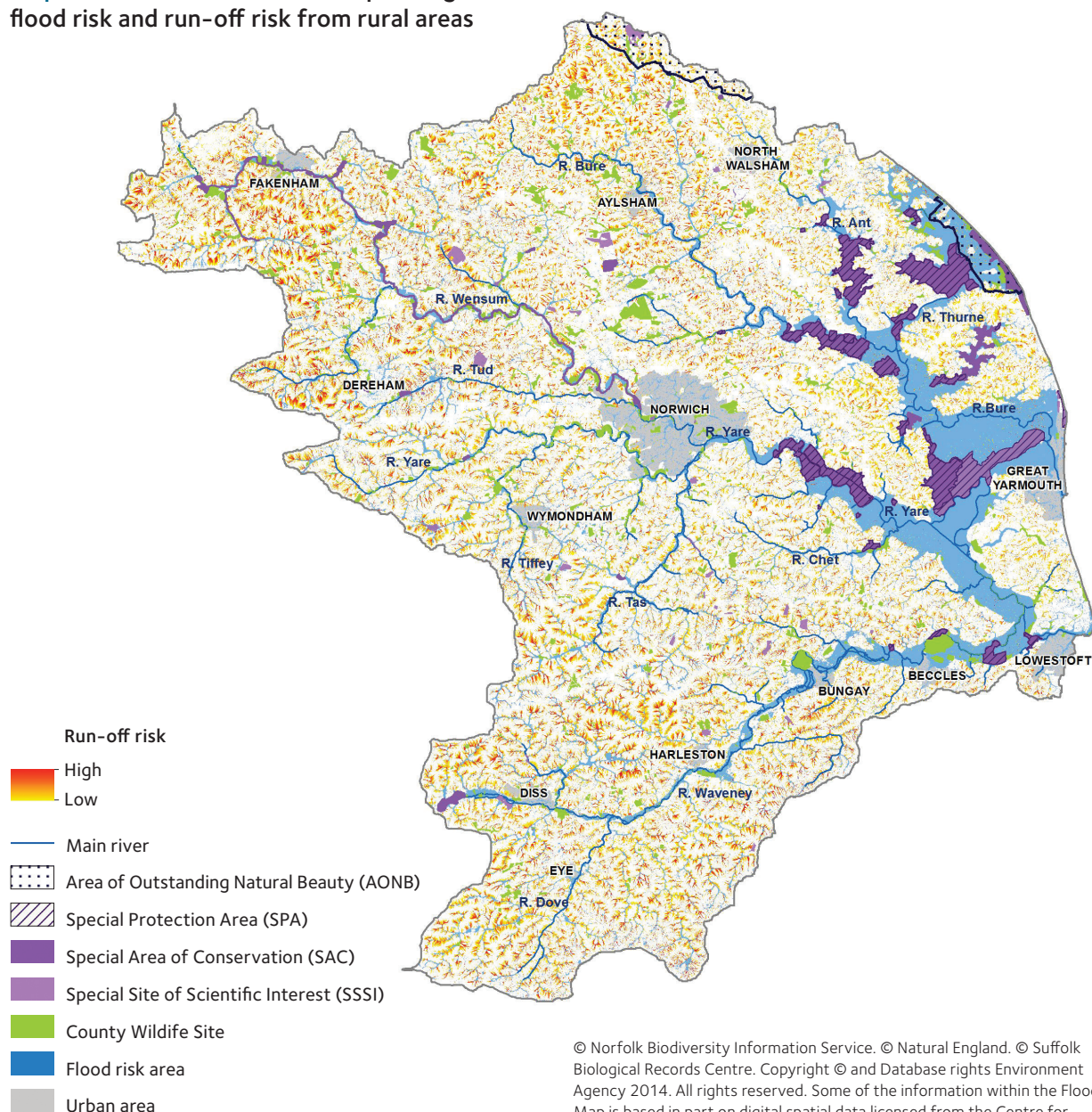
The catchment contains many sites of international nature conservation importance with a range of habitats, supporting a diversity of species, including some that are exceptionally rare.

The Waveney & Little Ouse Valley Fens, the Norfolk Valley Fens, the River Wensum, The Broads and Winterton-Horsey Dunes are all Special Areas of Conservation (SACs) designated for the presence of species and habitats of European significance.

The Broadland and Breydon Water Special Protection Areas (SPAs) and Ramsar sites are designated for internationally important birdlife. There are over 90 Sites of Special Scientific Interest (SSSIs) in the catchment and many County Wildlife Sites and Local Nature Reserves. Small areas are part of the Norfolk Coast Area of Outstanding Natural Beauty (AONB).

Note to Map 3 Run-off risk calculated using a surface water flow accumulation model called SCIMAP. The model uses rainfall, land use and elevation information to predict which rural areas are most likely to experience run-off or potential erosion. Soil type and condition, geology and drainage also affect infiltration, run-off and erosion, and can be used to refine the model.

Map 3 Wildlife habitats, landscape designations, flood risk and run-off risk from rural areas

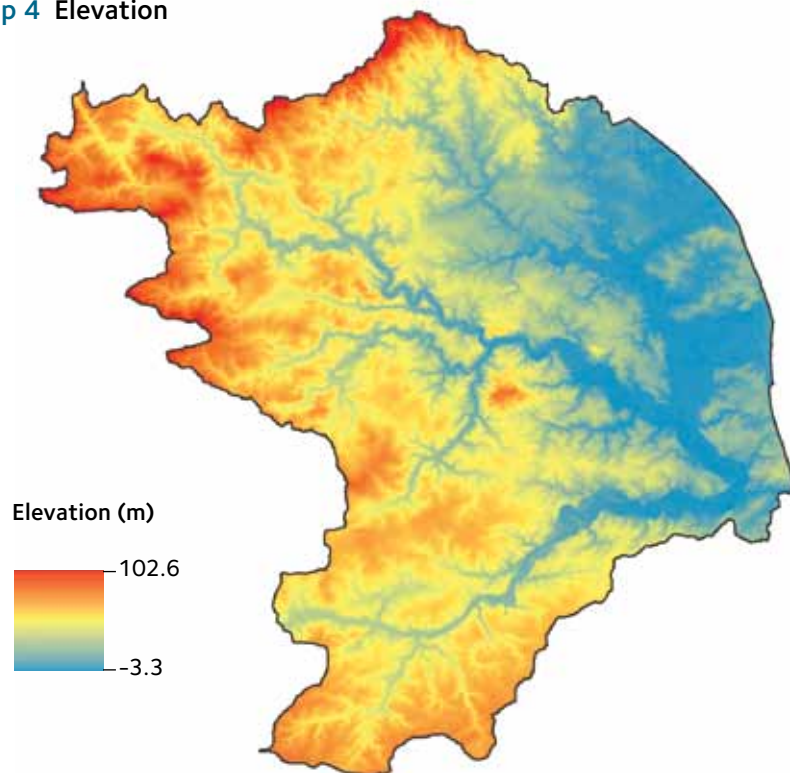


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Elevation and slope

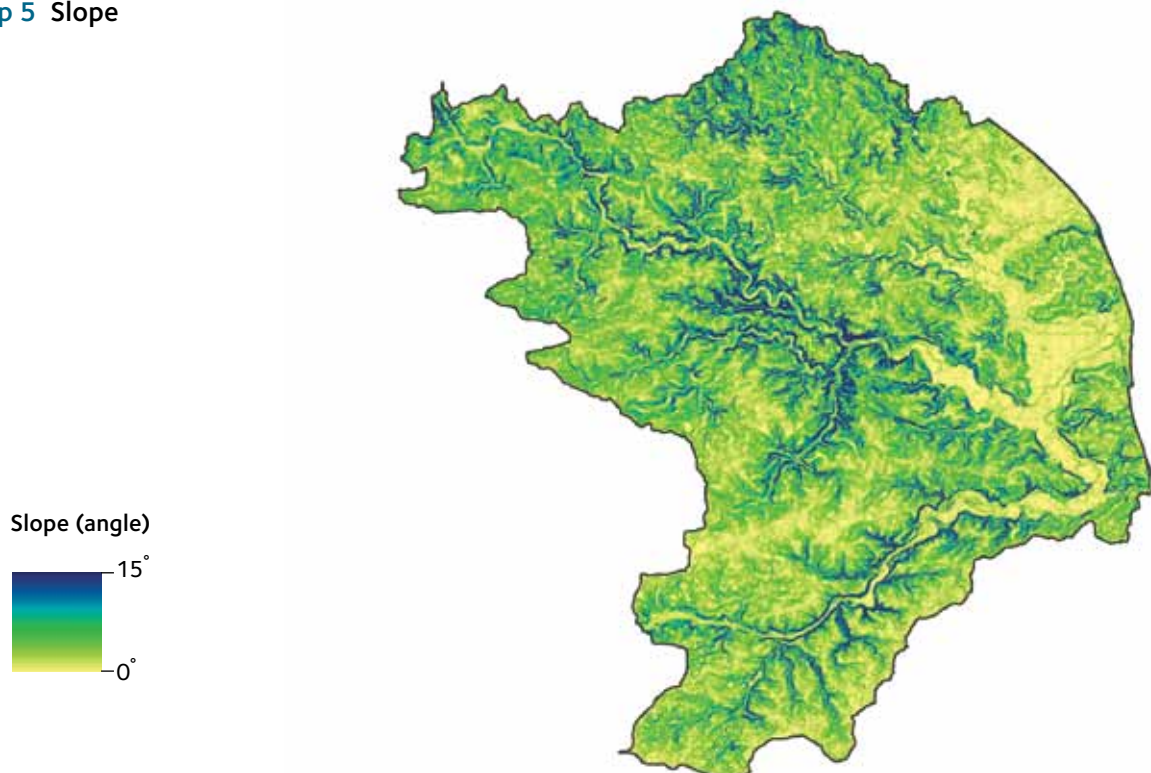
The catchment is low-lying with highest elevations to the north and west and a maximum elevation of around 100m. It is usually gently sloping with steeper slopes generally on the sides of the river valleys to the south and west. Rainfall is relatively low with higher average levels to the west. Heavy rainfall can occur at all times of the year.

Map 4 Elevation



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Map 5 Slope

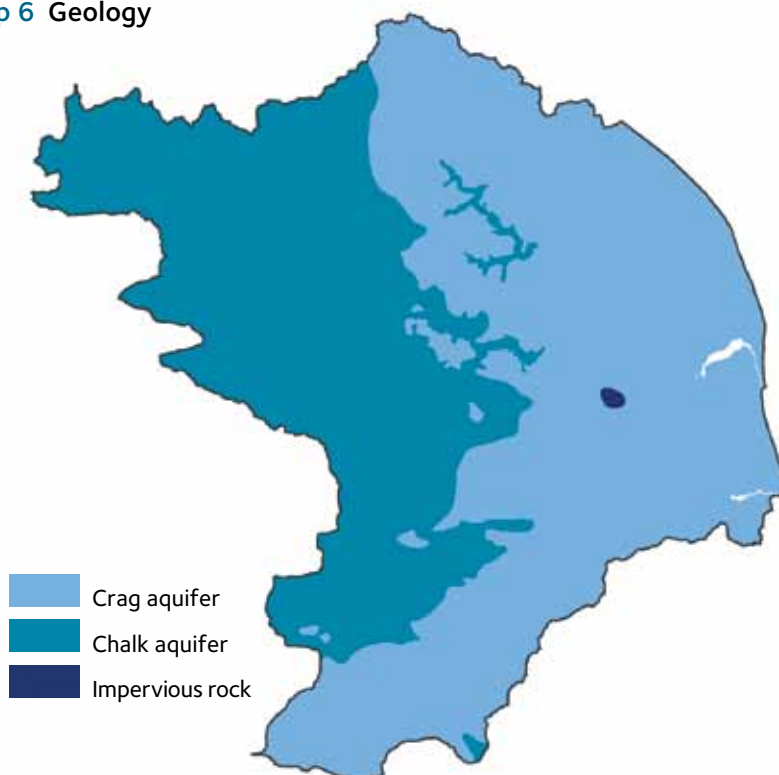


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Geology and soils

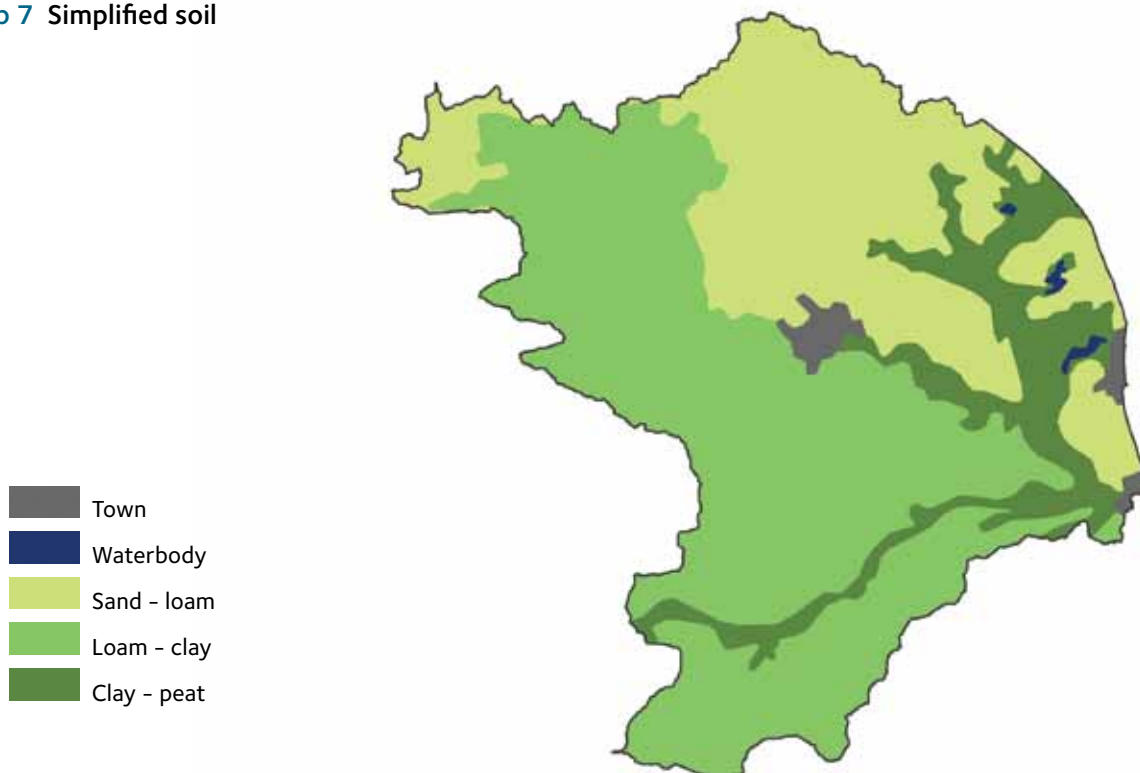
The underlying geology is chalk to the west and crag (gravel, sand and silt mix) to the east. This is largely covered by superficial glacial deposits of sand, silt and clay. Chalk is close to the surface or even exposed in some locations mainly in the north-west. In general terms, peat soils occur around the broads and in the river valleys; finer, sandier soils occur to the north and east; and heavier silt and clay soils are found to the south and west. In reality there is considerable variability in soil type even within individual fields.

Map 6 Geology



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Map 7 Simplified soil



The European Soil Database distribution version 2.0. European Commission
and the European Soil Bureau Network, CD-ROM, EUR 19945 EN, 2004.
© Environment Agency 2014

For more detailed information visit
www.landis.org.uk/soilscapes



Himalayan balsam

What are the problems?

Priority catchment wide issues based around key themes of water quality, water quantity, wildlife habitat and recreation have been agreed with all interest groups. A separate Evidence Review summarises and signposts the best available scientific evidence around causes of the problems and specific solutions. The Evidence Review includes findings from the Wensum Demonstration Test

Catchment, and Environment Agency and water company monitoring and modelling. Findings have been used to inform actions based around the goals and activity areas for this plan. Most issues have a range of causes so certain activity areas can address multiple issues if effective measures are well targeted.

Summary of current catchment issues

- Over 90% of rivers still fail to meet European [Water Framework Directive](#) targets due to factors including physical modification, water quantity, phosphate, dissolved oxygen and fish populations.
- At times, some groundwater and river sources exceed drinking water standards for nitrate and pesticides, resulting in the need for expensive treatment and subsequent greenhouse gas emissions as well as increased water bills.
- Some habitats, especially water and wetland related, protected due to their internationally important bird life or rare and diverse wildlife, still do not meet European [Habitats Directive](#) standards for reasons including excessive nutrients and sediment.
- Some landowners are losing valuable topsoil, nutrients and pesticides due to erosion, run-off or leaching – sometimes linked to soil structure and compaction.
- Water levels in some cases are too high for agriculture or too low for wildlife and amenity, while recent droughts have resulted in a lack of water availability for agriculture, wildlife and public garden use.
- Heavy rainfall running off rural and urban areas causes surface water and river flooding in specific locations. Tidal surges continue to threaten lives, property, farmland, coarse fish populations and important freshwater wildlife habitats.
- Many local farmers feel that proposed new environmental land management agreements are too short-term. Some potential options may lack flexibility to suit individual farm circumstances, especially for the Broads and river valley grazing marshes.
- Some local communities feel that their views and knowledge have been ignored and that there is a lack of opportunity to experience, learn about, or carry out voluntary action to their local waterways.

Historic, current and future pressures

- Following shortages and rationing during the Second World War, farmers were encouraged by Government and public demand to produce more plentiful and cheaper food. This included the installation of more efficient pumped systems in the low-lying catchment and the removal of hedgerows in many areas to increase land area for arable planting.
- The soils are well suited to growing vegetable crops which, in particular, can require large amounts of fresh water, especially in dry summers.
- There was, and still is, a public need for 'authorities' to provide clean water, and collect and treat waste water that is mostly discharged to rivers. Public demand for water is usually greatest in hot, dry weather.
- Over half of the rivers have been physically modified – often as a result of historic flood defence, land drainage or milling activities. This has provided social and

environmental benefits in many cases but has affected water dependent wildlife habitat and even increased downstream flood risk in some cases.

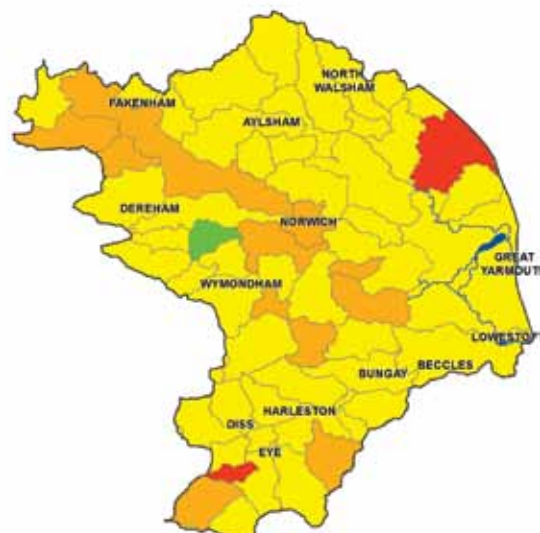
- Unrestricted recreational use has posed a disturbance threat to wildlife such as breeding birds.
- High crop prices, combined with cuts in funding for conservation purposes, are causing some farmers to cease Environmental Stewardship with implications for landscape and nature conservation. The development of anaerobic digestion plants may increase the planting of maize – a high run-off risk crop.
- Climate projections are for an increase in average temperature with drier summers, wetter winters and more intense rainfall.
- Planned development of over 40,000 new homes by 2029, and seasonal population increases through tourism, will also increase the pressure on water availability and water quality.

Some current and future opportunities

- Scientific research and development is producing drought and disease resistant cultivars and nutrient fixing crops. Technological innovations are also providing more efficient watering and harvesting systems. Precision farming reduces nutrient and pesticide use and soil compaction. Lighter weight farm vehicles have also been developed.
- Improved markets for local, less intensively produced food, crafts and fuel could prevent further loss of important grazing marsh and fen habitat. Rush, sedge and reed are harvested from local wetlands. Local beef from the Broads and river valley grazing marshes can potentially command higher prices.
- The [Renewable Heat Incentive](#) for biomass boilers, and the increasing popularity of wood burners, could encourage more woodland planting with potential benefits for wildlife, soil and water resource protection if appropriately located. The catchment is a Forestry Commission 'high priority' for woodland planting. The Woodland Trust promotes tree and hedgerow establishment and provides free trees and advice to communities and landowners.

Map 8 Water Framework Directive Status

Note to map European standards require the undertaking of measures to ensure the entire map is green in colour by 2027*



WFD Ecological Status



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The [Water Framework Directive](#) (WFD) is European legislation to protect and enhance the water environment. The Environment Agency is responsible for ensuring that all waterbodies achieve 'good' ecological and chemical status or potential by 2027*.

*unless 'technically unfeasible' or 'disproportionately costly'



What's happening to solve the problems?

“The Broads is supplied by a vast river network, which is fed by an area over ten times the size of the Broads itself. Protecting this internationally important wetland requires partnerships beyond its boundary.” Andrea Kelly, Broads Authority

Many different organisations are working within specific sectors to improve the catchment and protect their members' interests (the various roles of relevant statutory, member and charitable organisations are summarised at the end of this plan). There are also a number of initiatives in place, (as outlined opposite). The partnership wants to join up all of this work, share resources and involve local businesses and communities in developing, funding and carrying out projects. There will also be substantial investment from many organisations including the Environment Agency, local water companies and the Broads Authority.

River Basin Management Plan

The Anglian River Basin Management Plan published by the Environment Agency outlines work that a range of organisations will undertake within the region, including the Broadland Rivers Catchment, to comply with the Water Framework Directive, based on current status and reasons for failures. A draft plan for the period 2015–2021 will be published in September 2014. ‘Challenges and Choices’ provides a summary of issues, based on Environment Agency monitoring, and possible actions.



A biobed to help limit pesticide pollution in the Waveney sub-catchment.

Water Company Business Plans

Anglian Water is the sole public sewerage provider in the catchment and also provides public drinking water supply to much of the catchment's population. Its [Business Plan](#) (2015–2020) includes actions it will take to maintain and improve these services. Essex & Suffolk Water provides public drinking water supply to parts of Norfolk and Suffolk in the east of the catchment. It is owned by Northumbrian Water and its [Business Plan](#) (2015–2020) contains the actions it will take to maintain and improve this service. Visit: nwplanningforthefuture.co.uk

Broads Plan

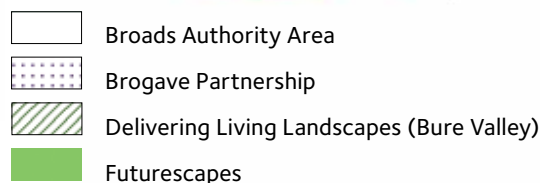
The Broads Plan 2011 is the key strategic management plan for the Broads and is reviewed at least every five years. Climate change, sustainable management, and sustainable use and enjoyment are key themes. It includes actions for a range of organisations, based on partnership working and best use of shared resources. Visit: www.broads-plan.co.uk

Map 9 Boundaries of initiatives



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Map 10 Boundaries of Broads area initiatives



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Some water or wildlife related initiatives

The [Wensum Alliance and Demonstration Test Catchment](#) is part of a UK government project (2010–2017) to provide evidence of how pollution from agriculture can be cost-effectively controlled to improve water quality in rural river catchments. It includes monitoring and trials of different farming methods.

The [Norfolk Anglers Conservation Association](#) campaigns to protect and improve Norfolk's rivers and fisheries especially the River Wensum.

The [River Waveney Trust](#) involves local communities in projects to improve and learn about their river.

The [Norfolk](#) and [Suffolk](#) Water Management Partnerships deliver flood risk management across their counties.

The [Norfolk](#) and [Suffolk](#) Biodiversity Partnerships conserve, enhance and restore biodiversity across their counties.

Some Broads area water or wildlife related initiatives

The [Broads Water Quality Partnership](#) seeks to improve water quality within the Broads.

The [Brograve Partnership](#) aims to address salt ingress in the upper Thurne system due to coastal land drainage.

[Futurescapes](#) is a landscape scale partnership project to improve wildlife habitat in the Broads.

[Delivering Living Landscapes](#) encourages local communities to take part in positive conservation projects and wildlife recording in the Bure Valley.

The [Broads Angling Strategy Group](#) works to improve angling access and protect fish stocks.

Below left and right: A reach of the River Tat, a tributary of the River Wensum, before and after restoration.



1. Land management

Goal **Reduce run-off, and soil, nutrient and pesticide loss, and link habitats and access**

Good Agricultural and Environmental Condition

Farmers who receive single farm payments from the European Union Common Agricultural Policy have to comply with the Good Agricultural and Environmental Condition (GAEC) standards in addition to European and UK legislation. The standards are baseline requirements under 'cross compliance' for farmers to safeguard soil and water, habitats and wildlife, and landscape features. Compliance is regulated by the Rural Payments Agency and the Environment Agency.

Farm advice

Several agronomists and land advisers work across the catchment. Essex & Suffolk Water employs its own catchment advisers who work in partnership to provide whole farm pollution prevention advice and training to farmers upstream of public water supply sources in the Waveney and Bure catchments. Essex & Suffolk Water has taken a lead in promoting best practice infrastructure for farmyard pesticide handling and management. It has funded demonstration 'biobeds' to filter pesticides.

[Catchment Sensitive Farming](#) (CSF) is a partnership between Natural England and the Environment Agency (2007-2014) working across the catchment to reduce water pollution from agriculture. It delivers practical solutions and targeted support, including capital grants, to enable farmers and land managers to take voluntary action to reduce diffuse water pollution from agriculture. Four advisers (one per sub-catchment) are employed to provide face-to-face and group advice. Examples of good practice found in the CSF [case studies](#) include controlling [sediment run-off](#) and [mitigation measures](#) in the Wensum catchment and managing slurry in the [Waveney](#) catchment. CSF is due to cease in its current form in 2015.

The [Campaign for the Farmed Environment](#) (CFE) encourages farmers to protect and enhance the environment, and provides [case studies](#). It has Norfolk and Suffolk representatives who assist farmers in choosing, locating and managing suitable [voluntary measures](#) and environmental stewardship options to protect soil and water, and benefit wildlife.

The Rivers Trust, through its national partnership project with CSF ([PINPOINT](#)), provides training to farm advisers on working with farmers to reduce pollution from

agriculture. It also provides direct farm advice and plans, online best practice information sheets for different farming practices and a template for jointly developing whole farm plans.

The [Norfolk Rivers Trust](#) has experience of working with farmers, landowners and communities to protect soil, water and wildlife. Diffuse Water Pollution Plans have been produced by Natural England and the Environment Agency to protect sites of European importance. These include measures to reduce pollution from highways and road crossings.

Environmental payments

[Environmental Stewardship](#) uses government funding to pay landowners to preserve or improve landscape, wildlife and access based on income forgone. It has provided many benefits for wildlife and recreation, but not always for soil and water resource protection. Historic Higher Level Stewardship targeted the Broads and Norfolk River Valleys from a wildlife and landscape perspective. Areas of the wider catchment have a higher run-off risk, are likely to reduce water quality in downstream conservation priority areas such as the River Wensum and the Broads, and may also increase downstream flood risk. Entry Level Stewardship is more widespread, but in some cases the easiest measures to implement were adopted, rather than the most effective.

Future developments

In line with a new Rural Development Programme for 2015-2020, a [New Environmental Land Management Scheme](#) (NELMS) is being developed, with targeting an overarching theme. Effective measures for protection of soil and water are proposed and are likely to have higher payments than previous schemes to encourage uptake. Capital payments are likely to include equipment for disruption of tramlines and construction of sustainable drainage.

Ecological Focus Areas (EFAs) will be compulsory on five per cent of land receiving single farm payments from 2015 as part of reform of the Common Agricultural Policy. Defra is consulting on measures and these are likely to include hedgerows, grass margins and buffer strips. These are all effective measures with the potential to benefit people and the environment, including wildlife corridors, for minimal loss of agricultural yield if located around watercourses and field boundaries. [Cover crops](#) provide multiple benefits and may also be included.

The best outcomes will result from a combination of well-targeted actions. The provision of high quality

on-farm advice is essential to achieve this. Natural England employs advisers to provide advice to farms with high quality wildlife habitat. For the majority of farms, however, limited independent advice is available. Many farmers have indicated that they would benefit from additional advice from resource protection specialists and agronomists and that longer term environmental agreements are more desirable from a business planning perspective.

Raw drinking water protection

Groundwater Source Protection Zones (SPZs) have been defined around sources used for public drinking water supply. The zones are used to set up pollution prevention measures and to monitor the activities of potential polluters nearby. Drinking Water Protected Areas (DrWPAs) are waterbodies where large quantities of raw water are abstracted for human consumption. Safeguard Zones are areas upstream of 'at risk' DrWPAs, where raw water quality needs to be improved to avoid extra treatment at drinking water treatment works, and where action plans are in place to protect waterbodies.

Note to Map 11

Entry Level Stewardship, Catchment Sensitive Farming advice and Campaign for the Farmed Environment advice throughout the catchment.
Essex & Suffolk Water advice in the Bure and Waveney catchments.

The Waveney and Wensum catchments are Safeguard Zones and there are various candidate groundwater Safeguard Zones across the catchment. Anglian Water and Essex & Suffolk Water carry out monitoring, investigations and modelling to identify high risk areas upstream of their river abstractions. Information is shared with relevant groups including farmers to agree remedial actions.

Partnership actions

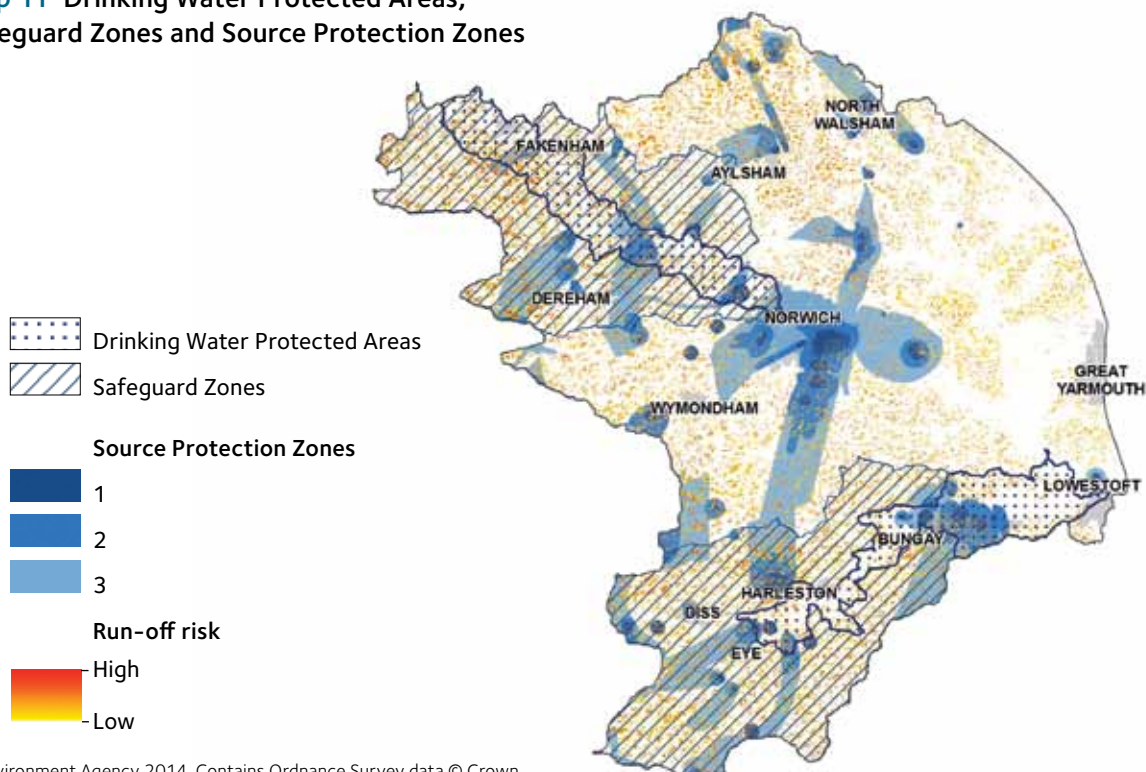
1.1 Seek funding for additional independent advisers to provide face-to-face advice and support to land managers and farmers.

1.2 Through existing advisers and agronomists, make surface water run-off risk maps available to farmers to help locate effective measures and demonstrate this to funders.

1.3 Hold talks with farmers and their advisers to get their views on effective environmental land management measures and how best to incentivise these.

1.4 Agree, with all interest groups, suitable key locations for targeting environmental land management measures to provide multiple benefits.

Map 11 Drinking Water Protected Areas, Safeguard Zones and Source Protection Zones



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2. Waste water management

Goal **Reduce nutrients in watercourses from public and private waste water**

Anglian Water, as the sole public sewerage provider in the catchment, is responsible for the collection, treatment and disposal of sewage to standards set by UK and European law and regulated by the Environment Agency.

The company has invested millions of pounds over the past 25 years in conventional phosphorus removal (iron dosing or ferric stripping) at many sewage treatment works (water recycling centres) in the catchment, in excess of legal requirements in some cases. This has been of great benefit to water quality and protected wetlands, but the treatment is relatively expensive and energy intensive to build and run, which results in relatively high carbon emissions.

The majority of residents in the catchment (those who receive public sewerage services) pay for these benefits to the water environment. Anglian Water surveys suggest that most of their customers are accepting of their water bill, including investment in the environment, but would not want to pay any more than at present. Installation of conventional phosphorus removal at small sewage treatment works would have high costs, potentially increase traffic on rural roads through delivery of raw materials for treatment and lack wider benefits.

A UK Water Industry Research (UKWIR) project is exploring the costs and benefits of different approaches for phosphorus reduction in watercourses including land management options.

Constructed wetlands or reed beds can reduce phosphorus and benefit wildlife, but can require relatively large areas of land. They may be appropriate for small sewage treatment works, where available land is owned

by Anglian Water, or where agreement with landowners for land rental or purchase can be achieved.

Specific adsorbent media, such as steel slag, and seasonal consents need consideration as trials in other catchments suggest that reed beds with media perform best, especially in the summer months. These are the periods when sewage treatment works are potentially providing the majority of flow and higher phosphorus levels in many small streams, so reed beds could be a cost-effective, sustainable solution.

Private sewage treatment works and septic tanks, misconnections and discharge from boats all have a relatively small impact at a catchment scale, but can cause serious localised water quality problems.

Anglian Water's [Keep it Clear](#) campaign discourages people from putting the wrong things down sinks and toilets which lead to serious sewer blockages and sometimes overflows. The campaign has helped reduce sewer blockages by an average of 50% in locations in Peterborough and has been taken to Norwich.

The Environment Agency and Broads Authority have run awareness raising campaigns using advertisements in local press, and production of leaflets distributed via door knocking and parish councils to explain the issue of phosphorus enrichment (eutrophication) and promote the use of environmentally friendly, phosphate free, detergents, identification of [misconnections](#) and best practice through annual emptying of [septic tanks](#).

Activity to date has been targeted around high risk and priority areas where a relatively high proportion of properties are on private sewage treatment works and impacts to waterbodies are apparent.

Reed beds are important wildlife habitats - they provide raw materials for roof thatching, and can help to reduce nutrients in watercourses.



The Broads Authority and Environment Agency have also run awareness raising campaigns for pleasure boaters and advisory leaflets are provided at all boat hire facilities including information on where pump out stations are located. It is unclear to what degree Environment Agency and Broads Authority campaigns regarding these issues have been of benefit, or if such campaigns are a cost-effective use of resources.

There is limited legal requirement to register private sewage treatment works. Working with local rural communities to increase awareness and improve practice is likely to be a cost-effective way to address this issue. This includes making use of established groups and initiatives already funded by partner organisations.

Partnership actions

2.1 Raise awareness of effects of misconnections, washing products, waste disposal and septic tank best practice at community events and on school visits.

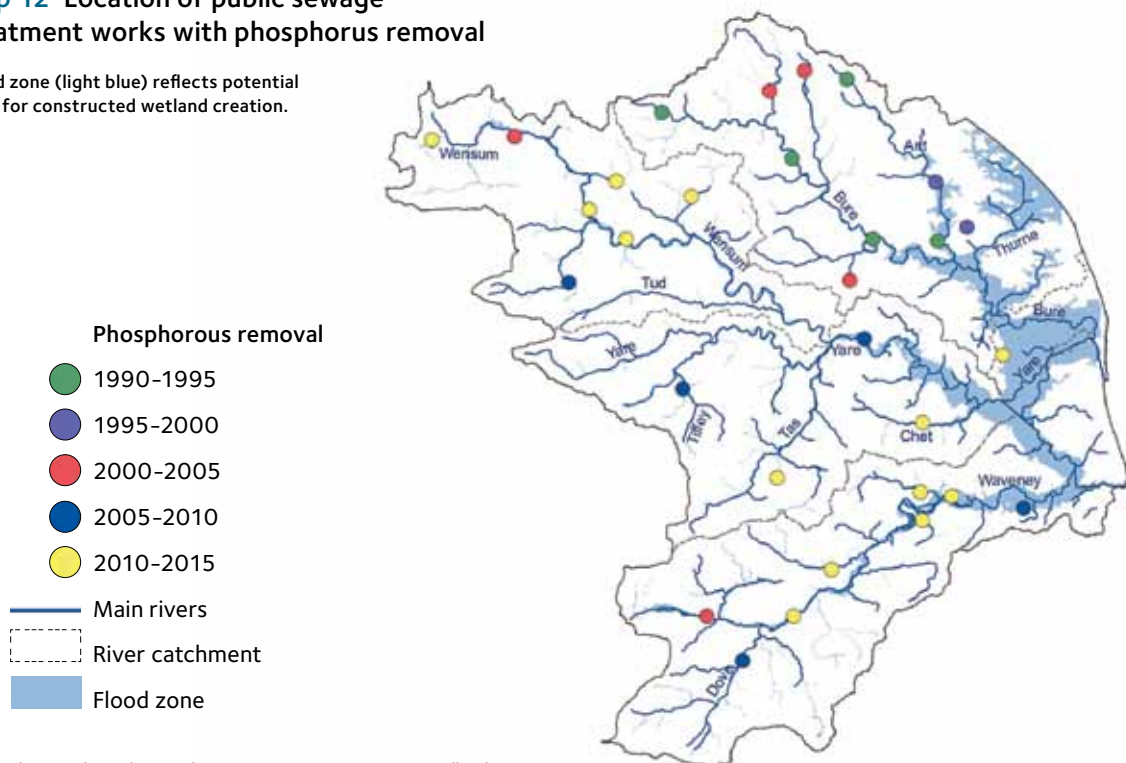
2.2 Explore potential locations for reed beds and constructed wetlands and seek funding for local trials in areas where waterbodies have high phosphorus levels.

Below left and right: Anglian Water public sewage treatment works (water recycling centres), which treat waste water to legally required standards.



Map 12 Location of public sewage treatment works with phosphorus removal

Flood zone (light blue) reflects potential sites for constructed wetland creation.



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3. Water management

Goal Increase water capture and water efficiency

Water abstraction and drought

The [Catchment Abstraction Management Strategy](#) process is used by the Environment Agency to try to ensure sufficient water is available for all users. Abstraction licences limit the daily, seasonal and/or annual volumes of water that can be abstracted. There is no water available at low flow (termed 'Q95') throughout the catchment. The process has identified that if all licences were used in full, at times of low flow, this could cause harm to protected habitats.

The [Restoring Sustainable Abstraction](#) programme provides more detailed low flow investigations around specific sites protected under European legislation and ensures mitigation measures are applied where required. A reform of abstraction licensing by Defra is currently under way.

The [Anglian Water Water Resource Management Plan](#) and [Essex & Suffolk Water Water Resource Management Plan](#) include actions to ensure public water supply and protection of the environment. [The Anglian Water draft Drought Plan](#) and [Essex & Suffolk Water Drought Plan](#) include actions to be taken during periods of water shortage and scarcity. The [Environment Agency Drought Plan](#) for the Anglian River Basin includes measures to ensure protection of the environment.

Water efficiency and leakage

www.waterwise.org.uk provides [key facts](#) on domestic water usage. Anglian Water has a target of ensuring 80% of domestic customers are on a water meter by 2015 and a desire for universal metering within 25 years. Metering is on request and compulsory on change of household ownership. Essex & Suffolk Water has a target of 68% of customers in Norfolk and Suffolk on water meters by 2020 based on customer request.

Both companies have water efficiency teams who run [using water wisely campaigns](#) and provide advice and free products to help people use water more efficiently in the home and garden, and save money by doing so. Essex & Suffolk Water works in partnership with local authorities to deliver savings in their buildings. Some local businesses also work hard to improve efficiency of water use and have been rewarded with financial savings and publicity from [awards](#). Visit: www.sustainablewater.org.uk for more details.

The Broadland Agricultural Water Abstractors Group (BAWAG) is an association of around 180 agricultural and horticultural abstractors. It acts as a forum for discussion on sustainable agricultural water management, and encourages its members to be more involved in water policy and strive for wise and sustainable use of water resources. Farming Futures promotes [innovations in irrigation](#).

Water capture

Water capture using reservoirs and roof rainwater harvesting occurs to a relatively small degree across the catchment. It offers a significant opportunity to increase the availability of water, potentially decrease flood risk and in some cases provide wildlife habitat. Irrigation reservoir construction can take valuable agricultural land out of production and is expensive, but grants of up to 40% of capital costs may be available to farmers via the Rural Development Programme for England (RDPE) 2015–2020. Demand is expected to be high so applications for projects that demonstrate multiple benefits, such as wetland areas for wildlife, are likely to stand more chance of success.

For locations relatively close to rivers, abstraction licences may be available to allow pumping into the reservoir when water is available at time of high flow. This reduces pressure on water resources at times of low flow or low aquifer level and guarantees supply for farm and horticultural business that may previously have had licence constraints at these times.

Water Level Management

[Water Level Management Plans](#) govern land drainage at protected sites with rare and diverse species and habitats. The plans were created around 2000. The Broads Internal Drainage Board has included a review of water level management plans in its grant aid bids to the Environment Agency in 2014.

A water efficient shower head uses less than half the water of a power shower.





The Trinity Broads are used as a reservoir for drinking water for people in Great Yarmouth and local villages. When full these broads hold the same amount of water as 1,196 Olympic-sized swimming pools.

Partnership actions

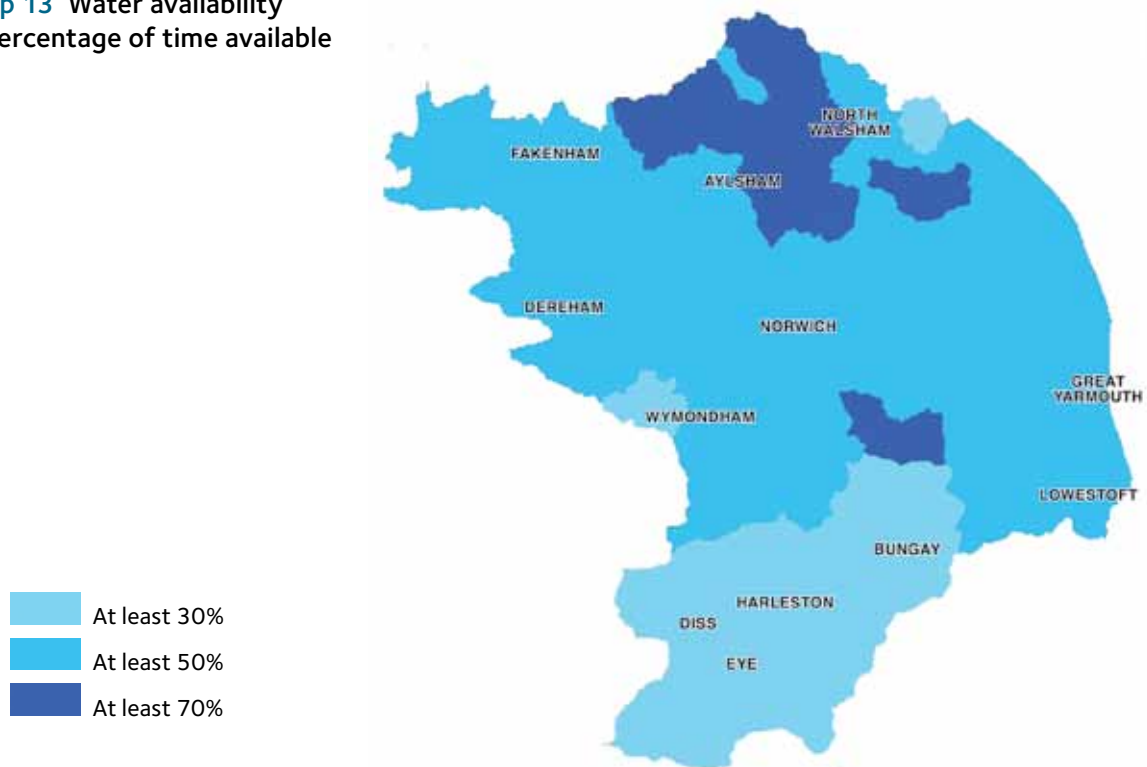
3.1 Raise awareness of water efficiency, water capture and water friendly gardening and promote free water saving packs at community events and on school visits.

3.2 Support the whole farm water management approach by Essex & Suffolk Water in part of the Waveney sub-catchment and promote in other sub-catchments.



Water is essential for crop growers. High demand and periods of shortage make it necessary to use water efficiently.

Map 13 Water availability
- percentage of time available



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Some features of the map are based in part on digital spatial data licensed from the Centre for Ecology and Hydrology © NERC

4. Flood risk management and sustainable drainage

Goal Reduce and slow run-off and increase aquifer recharge

Flood defence engineering and land drainage works continue to protect properties, infrastructure, farmland and wildlife habitat. The [Broadland Flood Alleviation Project](#) has reduced flood risk in the tidal catchment with recreational and wildlife benefits where practical.

Surface water

Norfolk County Council and Suffolk County Council, as Lead Local Flood Authorities, are responsible for co-ordinating the management of [Norfolk](#) and [Suffolk](#) respectively. This involves investigating the causes of flooding from groundwater, surface run-off and ordinary watercourses and drawing up Surface Water Management Plans (SWMPs) to reduce the flood risk and conserve water. Highways and urban areas act as sources and pathways for run-off and sediment. Retro-fitting of urban [Sustainable Drainage Schemes](#) (SuDS) features strongly. These will also become compulsory in large urban developments from October 2014.

Rivers and sea

Managing flood risk from main rivers and the sea is the responsibility of the Environment Agency. The [Broadland Rivers Catchment Flood Management Plan](#) prepared by the Environment Agency in 2009 divided the catchment into distinct sub-areas that have similar physical characteristics, sources of flooding and level of risk. The upper catchment is mainly an area of low to moderate flood risk where existing flood risk management actions can generally be reduced. The plan states: "it may no longer be value for money to focus on continuing current levels of maintenance of existing defences (this policy will tend to be applied where the overall level of risk to people and property is low to moderate) if resources can be used to reduce risk where there are more people at higher risk".

Allowing rivers to interact with their floodplain in non-tidal areas where there is no flood risk to properties (see 5. River channel and floodplain management) can reduce flood risk for downstream settlements. This makes it all the more important not to locate any future development in river floodplains.

Sustainable drainage

Poor soil structure, compaction and drainage of agricultural land along with urban development have increased run-off and reduced infiltration of water in the catchment. Activities to improve soil structure and reduce compaction are under way, not least because this improves crop yields but also to reduce run-off. Some run-off from agricultural land during extreme rainfall events is inevitable and these events are increasing in frequency and magnitude. In areas where this is a known problem, or particularly high potential risk areas, [Sustainable Drainage Systems](#) (SuDS) are useful mitigation measures.

Capital costs of these measures may be eligible for funding under New Environmental Land Management Schemes (NELMS) from 2015. A range of low cost (especially if farm machinery is used) and low technology options are available for rural areas including soakaways, bunds, swales, settlement ponds and ditch barriers.

Installing these measures in marginal areas of fields that are naturally wet and collect water via run-off, or integrating them into ditch systems can reduce or slow run-off and allow settlement of solids and potential pollutants. To encourage water to drain into the ground (aquifer recharge) the drainage systems are best sited along run-off pathways where chalk or gravels are close to the surface, such as the upper Bure, Ant and areas of the Wensum catchment. Sluiced drains with debris dams and/or tree planting could also be effective at slowing the flow to rivers in other areas of the catchment, such as the Waveney and Yare tributaries, where heavier soils and a clay geology mean there is less infiltration.

[Planting trees](#) and hedges in similar wet, marginal, locations can potentially produce similar results, although it is estimated to take several years to become fully functional due to root growth and leaf litter build up. The Woodland Trust promotes the benefits of trees for [livestock](#), soil and [water](#) protection.



Hedgerows and tree planting can intercept, divert and reduce surface water run-off.



Note to Map 14 Surface water flows are regulated well by woodland and rougher land cover types; less so by short grassland and not at all by sealed surfaces or compacted or saturated bare ground. Water regulation is least effective on steep slopes. The map was produced for Joint Nature Conservation Committee (Report 469) using slope and low resolution land use and flood risk information. Currently the information only lends itself to a strategic overview of water regulation within the catchment. Field scale work requires a more detailed map of land use, which could be used by local groups or landowners to look at the impact of their hedges and woodlands and woodland planting opportunities on the regulation of water flow. Note: Brackish water systems were not included in the analysis but no allowance was made for tidal flood risk limiting opportunities in tidal areas.

Partnership actions

- 4.1** Agree key areas of high flood incident and upstream run-off risk, including roads, with landowners, communities, flood and highways authorities and drainage boards.
- 4.2** Seek funding for demonstration projects for rural drainage in high run-off risk areas in each of the Bure, Wensum, Waveney and Yare sub-catchments in association with local communities.



A ditch barrier used for slowing surface water run-off and reducing sediment entering road drains and main watercourses.

Map 14 Water flow regulation



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5. River channel and floodplain management

Goal Increase connectivity of river habitats, reduce fish barriers and control invasive species

Strategic river habitat improvement schemes can improve fish and wildlife habitat, reduce downstream flood risk, increase aquifer recharge, lead to improvements in water quality and help move towards more sustainable river management. Re-meandering and reconnection with the floodplain (where there is no flood risk to property) are particularly effective measures. Historic habitat improvement and restoration work has been largely piecemeal rather than strategic on a catchment scale. An exception to this, the [River Wensum Restoration Strategy](#), has improved river habitat and angling throughout much of this priority chalk river. However, river habitat improvement in the catchment has not always provided additional benefits for other interest groups, such as canoeists.

Fish barriers

Over 150 fish barriers have been assessed by the Environment Agency and removal or bypass of some has already occurred. The removal of [Homersfield Sluice](#) on the River Waveney by the Environment Agency is an example of good practice. The redundant operational structure acted as a barrier to fish migration. The construction of a sequence of gravel riffles maintains the upstream water level, with no impact on flood risk. It provides habitat for invertebrates and spawning fish and incorporates provision for canoe access. By removing this redundant operational structure on the main river the costs associated with maintaining and insuring this liability were eliminated and, as such, it was funded as capital works under the Environment Agency flood risk management budget.

Eels have suffered a huge decline in numbers since the 1990s and under the Eel Regulations any water intakes have to be screened and structures made passable. An [Eel Management Plan](#) for the Anglian River Basin District details measures to improve European eel populations.

Targeting and payments

Some river habitat improvement projects could be funded from 2015 under the proposed 'Making Space for Water' option in the New Environmental Land Management Scheme (NELMS). Payment may be available for professional help for design and implementation of

schemes and to re-meander channels; remove, relocate or stop maintenance of flood defence banks; fund soft engineered bank repair or re-profiling and replace infrastructure for interested landowners. Funding may also be available through the Environment Agency flood risk management and Water Framework Directive budgets.

This could be targeted to areas of improved grassland in non-tidal river floodplains (particularly upstream of: Buxton on the Bure; Ellingham on the Waveney; and Norwich on the Yare, Tiffey and Tas, and Wensum tributaries) where landowners are in agreement and adequately rewarded, and proposals are aligned with scheme priorities.

The Broads Internal Drainage Board is making grant aid bids to the Environment Agency for 2014. This is likely to include modelling (with a view to restoration) of some of the smaller watercourses that are tributaries of the River Wensum or River Bure in the mid-Norfolk area.

River maintenance

Maintenance and clearance of natural in-channel and bankside vegetation for land drainage and flood risk management by landowners, drainage boards and the Environment Agency has not always taken account of the needs of wildlife and habitat features. In general, more sympathetic management is now being carried out without compromising flood risk or drainage, to comply with Water Framework Directive ecological standards relating to dykes, ditches and rivers. Natural England and the Association of Drainage Authorities have published [The Drainage Channel Biodiversity Manual](#) (NE121) for integrating wildlife, land drainage and flood risk management.

Reducing maintenance of riverbanks and selective felling of trees, or at least not removing them from the channel in areas of the upper catchment where no flood risk to property occurs, can cause rivers to temporarily enter floodplains and 'slow the flow' during high flow events. The National Trust has worked with local anglers and farmers on its Blickling estate to undertake a two-phase [restoration project](#) (2008 and 2010) on the upper Bure. The majority of suitable locations for similar projects are on private land. Improved stock grazing, angling and thus potential income generation may generate further landowner support.

Non-native invasive species

The Norfolk [Non-Native Species Initiative](#) (NNSI) was launched in 2008 to promote the prevention, control and eradication of invasive, alien species. Partners collate and



An example from the River Wensum Restoration Project – winner of the England River Prize 2014.



Signal crayfish – a non-native invasive species.

monitor data on the distribution and spread of non-native species in the county, help control and eradication projects at high priority sites, and promote awareness of the risks and impacts associated with non-native species. The initiative has also developed an [action plan](#) to address priority species. Invasive species can be reported using the new app 'that's invasive' www.rinse-europe.eu/smartphone-apps. Other projects include water vole protection by mink management, promoting business best practice (e.g. for garden centres and boating), creating family fun packs for the Broads and 'Days of Action' with volunteers.

If you own land or property next to a river, stream or ditch you are a 'riparian landowner'. '[Living on the edge](#)' is a guide to your rights and responsibilities. It has been updated with new information on who to contact for guidance on watercourses.

Partnership actions

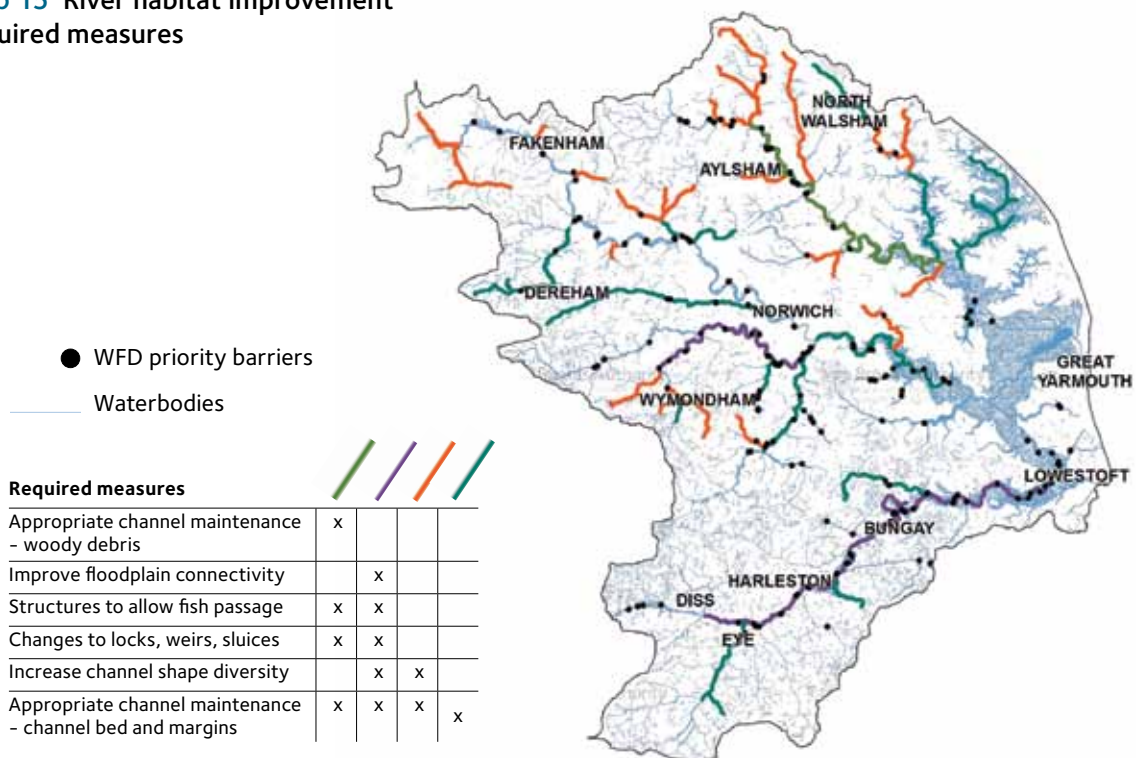
5.1 Agree potential locations, in non-tidal areas, to reconnect river with floodplain, and seek funding for projects.

5.2 Scope potential woody debris installation project on the upper River Bure with relevant farmers and landowners.

5.3 Establish priorities for fish barrier bypass, or removal, and eel projects involving local community action, and seek funding for demonstration schemes.

5.4 Promote workshops for landowners and encourage co-ordinated invasive species control on rivers, including extending 'Check, Clean, Dry' messages beyond the Broads.

Map 15 River habitat improvement required measures



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6. Recreation and understanding

Goal **Increase sustainable use of, and learning about, water and wetlands**

Community involvement and understanding

[Rivercare](#) is a partnership project (2010–2015) between Anglian Water, [Keep Britain Tidy](#) and the Environment Agency. Communities adopt a stretch of their local river and carry out litter picks and biodiversity surveys, and receive information on water efficiency and ‘unflushables’. The project aims to help people improve their river and make the connection between their actions in their homes and the impact this can have on the environment. Diss (Waveney) and Marlpit (Wensum) are examples of local Rivercare groups.

The Norfolk Wildlife Trust ‘[Delivering Living Landscapes](#)’ project (2013– 2016) is working in the Bure Valley Living Landscape area to encourage local communities to take part in conservation projects and wildlife recording.

The River Waveney Trust is based at the River Waveney Study Centre and runs courses about the water environment for members of rivers trusts, agricultural students and local communities. The River Waveney Trust and Wensum Alliance are working on citizen science projects that involve local communities and landowners in monitoring the biological health of their local rivers through the [Riverfly Partnership](#). Wild About the Wensum is held annually at Pensthorpe Natural Park where local communities can learn more about how to protect their local waterways.

The Bure Navigation and Conservation Trust is newly formed and there is also a [Friends of the Tud](#) group concerned with protecting their section of river and improving access. The [South Yare Wildlife Group](#) plays an active part in protecting local river and wildlife reserves including protecting them from invasive species. The [Norfolk Anglers Conservation Association](#) campaigns to protect and improve local rivers and fisheries especially the River Wensum. There are also many [Community Biodiversity Projects and Groups](#) and local angling clubs.

The Broads Authority holds area parish forums in each of the Broads river valleys, providing an opportunity for local communities to find out about work in their area and share local concerns. The Authority also regularly consults the Broads Forum and Broads Local Access Forum. The [Broads Society](#) is committed to the protection and enhancement of the area. It has over 1000 members including many with detailed local knowledge and experience of local conservation, navigation, planning and business.

Academic and applied research

The catchment contains institutes of international recognition including the University of East Anglia, which leads the Wensum Demonstration Test Catchment and has worked for many years on local rivers and the Broads. The Norwich Research Park is one of Europe’s biggest concentrations of researchers in the fields of environment, health and plant science. It includes the John Innes Centre and Institute of Food Research. Easton & Otley College is one of the UK’s leading land based colleges covering agricultural and animal studies. There are opportunities for the partnership to work closely with these institutes and support local applied research.

Recreational access

Public access to the catchment could be better integrated, with more provision for recreation, including canoe access, in river habitat improvement and land management schemes. River crossings and ferries are limited and many footpaths, cycle paths and bridleways are not particularly joined up without the use of highways. However, some landowners do not want to provide additional access across their land and some high conservation priority sites are unlikely to be suitable for access, at least at certain critical times of the year, so as not to disturb rare wildlife and breeding birds.

Farmers are responsible for maintenance of rights of way on their land under cross compliance rules. County councils are responsible for the maintenance of rights of way signs and employ trails officers for management of promoted trails. Programmed maintenance is carried out on these trails and other footpaths if there is a confirmed health and safety risk.

A [Norfolk Rights of Way Improvement Plan](#) and [Suffolk Rights of Way Improvement Plan](#) have been published. Local Access Forums for Norfolk, Suffolk and the Broads are consulted by county and district authorities on recreational access and rights of way. The Broads and Norfolk River Valleys was historically a recognised target area for access provision under Environmental Stewardship.

Farmers were previously eligible for permissive access under Higher Level Stewardship (HLS) if there was a demand to link people with places, particularly circular access routes or links to coastal access routes, or if people’s understanding of the farmed environment would be improved through educational access. Within the New Environmental Land Management Scheme (NELMS) provision of educational access is proposed through merging of the previous multiple options.

The Broads Authority provides promotional material, signs, information boards, parking and facilities for

disabled people in its Executive Area. Its [Integrated Access Strategy](#) is improving recreational access including provision of moorings in areas of high demand. It is working with landowners to establish permissive paths to link existing routes, and with canoeists to improve access arrangements and produce trails and information guides for users.

The Environment Agency, the [Broads Angling Strategy Group](#) (BASG) and other local angling organisations, seek to improve angling access including facilities for anglers with disabilities. They have produced [Angle on the Broads](#). The Environment Agency installs temporary barriers to protect fish populations in boatyards at times of tidal surge and saline incursion. BASG has won an award for its help with the monitoring of salinity (see photo below right).

Riverfly monitoring day on the River Waveney.



Partnership actions

6.1 Raise awareness of riparian owner responsibilities, river care, canoe trails and angling opportunities at community events and on school visits.

6.2 Co-ordinate volunteer catchment walkover surveys of tributaries and compare findings with run-off and habitat models.

6.3 Populate website and promote information sharing to include mapping, projects, events and activities at a sub-catchment scale.

6.4 Raise awareness of catchment processes and the water cycle at community events and on school visits.



Map 16 Recreational access



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7. Investment

Goal **Increase, combine and attract new funding for projects**

Catchment Restoration Fund

The [Catchment Restoration Fund](#) was founded by Defra in 2012. It was set up to support projects from charities and non-governmental organisations that:

- restored natural features in and around watercourses
- reduced the impact of man-made structures on wildlife in watercourses
- reduced the impact of pollution arising from rural and urban land use

The fund is now closed but similar funding may become available in the future and would be suitable for relevant actions seeking officer or project funding.

Rural Development Programme for England

The Rural Development Programme for England provides money for projects to improve agriculture, the environment and rural life. Funding goes to schemes to improve businesses or promote environmentally friendly ways of managing land.

You may be able to apply for funding if you are:

- a farmer or grower
- a rural business owner
- living in a rural community
- managing land or woodland

Some funding also goes to Local Action Groups (LAGs). These are run by volunteers who represent the public, private and voluntary sectors in their communities. LAGs are responsible for setting strategies for their areas and funding local projects.

Contact your nearest Local Action Group to:

- find out what projects are going on in your area
- suggest a local project
- find out if you could get funding for a project or business

Visit: rdpenetwork.defra.gov.uk for more information.

Horizon 2020

[Horizon 2020](#) is the biggest EU Research and Innovation programme ever with nearly €80 billion of funding available over seven years (2014-2020) – in addition



Beef cattle on a river valley grazing marsh.



Reed cutting on the Broads.

to the private investment that this money will attract. Funding is available for partnership projects that address the sustainable management of water and also climate change adaptation. Small and medium enterprises are encouraged to apply with European partners.

Other funding sources are available and will also be explored.

New Anglia is the Local Enterprise Partnership. It works with businesses and public sector partners to help grow jobs in Norfolk and Suffolk. It has been chosen by government to lead on the development of the green economy, as the Green Economy Pathfinder.

Wild Anglia is the Local Nature Partnership for Norfolk and Suffolk. It aims to embed nature into economic growth strategies and work closely with New Anglia.

Partnership action

7.1 Seek funding opportunities around sustainable catchment management and climate change adaptation, with European partners where necessary.



Barton Broad

Summary and future developments

Problems arise due to the physical geography, land use, weather and climate of the catchment, and the complex way in which water services are provided and regulated; food is produced, subsidised, and traded; planning and development decisions are made; and the environment and society are protected and provided for.

Management of land and water has evolved in a piecemeal fashion over centuries and occurs in specific sectors with regional, county or district boundaries that do not reflect the natural boundaries of a catchment. In some circumstances the planning of improvements to the water environment has failed to make use of the knowledge of those who live and work in the catchment.

Facing up to uncomfortable facts and evidence around causes of issues, accepting there will always be some uncertainty, and ensuring that solutions are not to the detriment of any interest groups, can assist progress.

For the financial year 2014/15 the Broadland Rivers Catchment Plan focusses on making the most of

existing community initiatives, and water company and government payment mechanisms. Actions have been divided into seven key areas to reflect agreed goals. The focus is on addressing issues and providing benefits across these areas, working together, and inspiring action by individuals and groups at a local level. The partnership will also explore options for alternative sources of funding for improvement projects over a medium term timescale (two to 10 years).

To sustain long term solutions, some institutional change may be required. Linking elements of the Rural Development Programme, flood risk management and Environmental Stewardship funding around hydrological boundaries, with the potential for a locally administered catchment fund, is a long term aspiration. This could be supported by government and/or private contributions and administered by an independent broker such as an environmental or rivers trust.

By working together we can take the necessary steps to improve the environment and provide benefits to society and the local economy.



Broadland Rivers Catchment Plan – Action summary

Goals	Partnership action summary for 2014
1. Land management Reduce run-off, and soil, nutrient and pesticide loss, and link habitats and access	<p>1.1 Seek funding for additional independent advisers to provide face-to-face advice and support to land managers and farmers.</p> <p>1.2 Through existing advisers and agronomists, make surface water run-off risk maps available to farmers to help locate effective measures and demonstrate this to funders.</p> <p>1.3 Hold talks with farmers and their advisers to get their views on effective environmental land management measures and how best to incentivise these.</p> <p>1.4 Agree, with all interest groups, suitable key locations for targeting environmental land management measures to provide multiple benefits.</p>
2. Waste water management Reduce nutrients in watercourses from public and private waste water	<p>2.1 Raise awareness of effects of misconnections, washing products, waste disposal and septic tank best practice at community events and on school visits.</p> <p>2.2 Explore potential locations for reed beds and constructed wetlands and seek funding for local trials in areas where waterbodies have high phosphorus levels.</p>
3. Water management Increase water capture and water efficiency	<p>3.1 Raise awareness of water efficiency, water capture and water friendly gardening and promote free water saving packs at community events and on school visits.</p> <p>3.2 Support the whole farm water management approach by Essex & Suffolk Water in part of the Waveney sub-catchment and promote in other sub-catchments.</p>
4. Flood risk management and sustainable drainage Reduce and slow run-off and increase aquifer recharge	<p>4.1 Agree key areas of high flood incident and upstream run-off risk, including roads, with landowners, communities, flood and highways authorities and drainage boards.</p> <p>4.2 Seek funding for demonstration projects for rural drainage in high run-off risk areas in each of the Bure, Wensum, Waveney and Yare sub-catchments in association with local communities.</p>
5. River channel and floodplain management Increase connectivity of river habitats, reduce fish barriers and control invasive species	<p>5.1 Agree potential locations, in non-tidal areas, to reconnect river with floodplain, and seek funding for projects.</p> <p>5.2 Scope potential woody debris installation project on the upper River Bure with relevant farmers and landowners.</p> <p>5.3 Establish priorities for fish barrier bypass, or removal, and eel projects involving local community action, and seek funding for demonstration schemes.</p> <p>5.4 Promote workshops for landowners and encourage co-ordinated invasive species control on rivers, including extending 'Check, Clean, Dry' messages beyond the Broads.</p>
6. Recreation and understanding Increase sustainable use of, and learning about, water and wetlands	<p>6.1 Raise awareness of riparian owner responsibilities, river care, canoe trails and angling opportunities at community events and on school visits.</p> <p>6.2 Co-ordinate volunteer catchment walkover surveys of tributaries and compare findings with run-off and habitat models.</p> <p>6.3 Populate website and promote information sharing to include mapping, projects, events and activities at a sub-catchment scale.</p> <p>6.4 Raise awareness of catchment processes and the water cycle at community events and on school visits.</p>
7. Investment Increase, combine and attract new funding for projects	<p>7.1 Seek funding opportunities around sustainable catchment management and climate change adaptation, with European partners where necessary.</p>

The Broadland Catchment Partnership will co-ordinate these actions with partner organisations involved in delivery. The extent of involvement will vary depending on the specific action in question and in line with partners' own plans, work programmes, statutory duties or members' interests.

Support from any local organisation, group, business or individual is encouraged and welcomed.

What will organisations do?

Responsibilities of organisations with statutory duties working in the catchment in relation to the environment

Anglian Water Provision of water supply to much of the catchment and sewerage services throughout the catchment to legal standards.

Broads Authority Conservation, navigation, recreation, and planning and development in the Broads Executive Area.

Environment Agency Protection and enhancement of the water environment to European legal standards including river works, pollution prevention and water resource regulation, and managing flood risk from rivers and the sea.

Essex & Suffolk Water Provision of water supply to legal standards in parts of the south and east of the catchment.

Internal Drainage Boards Management of water levels to reduce flood risk to agricultural land, properties and infrastructure in special areas including the Broads and Norfolk Rivers (both part of the Water Management Alliance); and Waveney, Lower Yare & Lothingland.

Natural England Protection of the Environment (Habitats Directive) including planning and development advice, managing Environmental Stewardship agreements, and notifying, assessing and protecting designated areas.

Norfolk County Council Management of Norfolk surface water flood risk, biodiversity, county farms, coast and trails.

Suffolk County Council Management of Suffolk surface water flood risk, biodiversity, county farms, coast and trails.

Broadland, Great Yarmouth, Mid Suffolk, North Norfolk, South Norfolk, West Norfolk and Waveney The district councils covering planning and local services, together with Norwich City and town and parish councils.

Actions of charities and member organisations working in the catchment in relation to the environment

Broadland Agricultural Water Abstractors Group Promotion of sustainable use of water resources, advice on water policy and water management.

Campaign for the Farmed Environment Encouraging farmers to protect and enhance the environment.

Country Land and Business Association Defending interests of owners of land, property and businesses in rural areas.

Farm Conservation Provision of independent environmental and conservation advice to farmers and landowners in East Anglia.

Game & Wildlife Conservation Trust Game and wildlife management research including advice and lobbying.

National Farmers' Union Championing farming and provision of professional representation and services to members.

National Trust Management of estates around Blickling and Horsey, river restoration and environmental education.

Norfolk Rivers Trust Conservation and restoration of Norfolk's rivers and wetland habitats.

Norfolk Wildlife Trust Protection and enhancement of Norfolk's wildlife and wild places including reserves, and public education.

River Waveney Trust Involving local communities in improving and learning about their river.

RSPB Conservation of wild birds and their habitats, managing reserves, education, advice and lobbying.

Suffolk FWAG Provision of independent environmental and conservation advice to farmers and landowners in East Anglia.

Suffolk Wildlife Trust Protection and enhancement of Suffolk's wildlife and wild places including reserves, and public education.

The Rivers Trust Promotion of sustainable, holistic and integrated catchment management through engagement.

Woodland Trust Protecting, creating and restoring native woodland in the UK with the help of communities.

What can you do?

All business owners Visit www.carbontrust.com to see how you can save water and save money or receive grants. Tourism businesses can invest via www.lovethebroads.org.uk or join in with Green Tourism. www.green-tourism.com

Farm businesses Contact your local Catchment Sensitive Farming officer and Campaign for the Farmed Environment co-ordinator for advice on how to protect soil and water resources, improve wildlife and save money. Visit www.farmingfutures.org.uk for **suggested actions** to achieve business and environmental benefits in relation to climate change. Visit www.leafuk.org for **six simple steps** for managing water quality and use on your land.

Community Join or establish a local **Rivercare** group. Get in touch with your local rivers trust: Norfolk Rivers Trust or River Waveney Trust. Contact your local wildlife trust: Norfolk Wildlife Trust or Suffolk Wildlife Trust. Visit: www.savewatersavemoney.co.uk and www.rhs.org.uk/science

Educational resources

www.wrt.org.uk/documents/edupack_english_high.pdf

www.ukrivers.net/education.html

Have you made the connection?

If you feel you can contribute to the partnership in any way or would like further information please contact:

admin@broadlandcatchmentpartnership.org.uk

www.broadlandcatchmentpartnership.org.uk

(where you can find an online pdf version of the plan with links to supporting documents, plans and organisations)