

BROAD SHEET



Climate change and flood risk

Twenty years ago, the Authority held an international climate change conference at the University of East Anglia. Global climate models had predicted warmer, wetter winters in the UK with around a 20% increase in rainfall, hotter drier summers and an increase in extreme weather events. Last year, we experienced the type of weather that is likely to become more frequent in the future.

This knowledge offers no comfort to the households and businesses affected by flooding in this region, where around 2,000 acres of land had a prolonged period under water.

Some of the many contributory factors included: intense periods of above average rainfall on already saturated ground; a 1.5m-2m storm surge; an extended period of high tides causing 'tidal locking' (e.g. in the Thurne catchment) where water was unable to flow out of Great Yarmouth; North Sea storms preventing water leaving the catchment, and water pumped off the land, into rivers that were often already full.

High tides and storms also led to rapid erosion of the coastline, notably at Hemsby where people lost their homes.

We do not have a statutory role in relation to flooding and defer to Environment Agency (EA) experts. Long term flood risk is however a critical issue for the future of the Broads; hence we work in partnership with the EA and others within the Broadland Futures Initiative.

The EA advises that dredging would have to take place on a huge scale to have any significant impact upon flooding. However, during tidal surges it would have the negative effect of allowing more saline water into the system.

Dredging a tidal river replaces the silt with sea water, which may slightly increase the flow, but it would not reduce the flooding levels. Even if the necessary financial resources were provided, our understanding is that it would be undesirable.

Our dredging programme maintains adequate navigable depths within the channels, as specified in the Waterways Management Strategy.

For example in 2019, we concluded a three-year dredging project to bring the stretch of the lower Bure, between Stokesby and Great Yarmouth up to the standard required.

Around 26,000m³ of accumulated sediment was dredged from shoals to achieve a depth of at least 2m below Mean Low Water across the navigable channel. Additionally, a small shoal that builds up at Bure Mouth is targeted at least every other year.

The EA will assess whether additional dredging in specific locations could have a beneficial impact. In the long term we need to plan for how the Broads, its businesses and local people can adapt to the changing climate.



The costs of waterway maintenance

The rapidly rising costs of steel, wood, aggregate and fuel have had a significant impact on the costs of repairing and maintaining moorings, dredging and patrolling. The Authority is facing higher insurance costs, legal and audit fees.

Following consultation with the Navigation Committee, the Broads Authority Board had difficult choices to make when deciding on the level of navigation charges for 2024/25.

Members voted to increase navigation charges by 8.5% in order to retain the additional Ranger patrols introduced in 2020.

We are cutting expenditure wherever possible, e.g. reducing our office space at Yare House by 60%.

In 2016 the Board decided to make tolls fairer to small boats, with larger boats bearing a higher proportion of the costs of maintaining the waterways. As most private boats on the Broads are relatively small, this year 37% of owners will be paying less than an extra £10 per year.

For example, in some cases, smaller boats are charged less than they were in 2012/13. A 5m² motorboat paid £97.44 in 2012/13 and will pay £92.35 in 2024/5.

The increase for 2024/5 will mean a small unpowered sailing dinghy will be an extra £4.40 and a small motorboat

will pay £7.25 more than last year. An 11m² sailing boat will pay an additional £9.68 and a popular-sized private motorboat of 38m² an extra £55.10.

The cost of maintaining the waterways continues to outstrip inflation and is exacerbated by climate change, for example with the increased growth of water plants.

We take the view that Government funding should provide more financial support to the Broads Authority. You can read the case for the Funding the Waterways of the Broads National Park on our website.

We recognise that as a result of the cost of living crisis some of our private owners may be struggling to pay their annual toll. If this is the case, please contact our tolls team on 01603 756080.

Further information on funding: www.broads-authority.gov.uk/data/assets/pdf_file/0018/502506/Funding-the-Waterways-of-the-Broads-National-Park.pdf

Boat Safety Scheme news

After Calor Gas published a decision in January (2023) to discontinue its small capacity LPG cylinders from 1st February 2023, Calor Gas has informed the Boat Safety Scheme (BSS) that it will continue to exchange and refill serviceable 3.9kg propane and 4.5kg butane cylinders for the immediate future.

This will give those affected boat owners some time and an opportunity to plan for alternative arrangements – either LPG cylinders from alternative suppliers or introducing safe and well-fitted adjustments to their gas system by competent marine gas installers.

How to store LPG to comply with BSS requirements

LPG is 'heavier' than air and if it leaks out of the gas system, it can flow down into the cabin or engine space and create an explosive vapour cloud. So in broad terms, your storage needs to ensure that if there was a leak, then it won't enter the interior of the boat and will be safely directed overboard.

Find out more on the Boating Safety Scheme website:

www.boatsafetyscheme.org/



Photo by Julian Claxton



Mooring upgrades 2023/24

River Ant

Neatishead – 84m re-piled in steel, new mooring posts, capping and walings, and a new accessible path installed.

Five mooring posts replaced and ladders repaired at Gay Staithe and Sutton Staithe Two.

Horning Marshes – 137m timber piling / quay heading replaced and handrail repaired.

How Hill – Path repaired and mooring posts replaced.

Capping repaired or replaced at Neatishead, Irstead Staithe, and Dilham, where waling was replaced.

Ludham Bridge

– Gauge boards replaced.

Wayford Bridge – Two mooring posts replaced and ladders repaired. Gauge boards replaced.

Sutton Staithe One – Fender and mooring post replaced.

River Bure

Ranworth – Two new water points installed, capping and mooring posts repaired.

Safety ladders repaired at Ranworth and Womack Dyke and St. Benet's Abbey.

Womack Island – Capping repaired.

Wroxham Island – 65m of capping replaced and end barriers renewed.

South Walsham – Slipway repaired.

Acle Bridge – Gauge boards repaired and signage renewed.

Great Yarmouth – Five new gauge board panels installed on the Lower Bure.

Stokesby – Mooring post replaced.

St. Benet's Abbey

– Two fenders replaced.

River Thurne

Martham Bank – 70m of capping replaced, and surfacing topped up.

Repps Bank

– New noticeboard installed.

Somerton – Mooring topped up with topsoil.

Potter Heigham Staithe – 35m of capping and some waling replaced.

River Yare

Five mooring posts replaced at Commissioners Cut and 20m of capping replaced here and at Rockland Staithe.

River Waveney

Piling return, capping and an end barrier were replaced at North Cove and Herringfleet and an end barrier replaced at Worlingham.

St Olaves – Mooring timber repaired.

Electric charging posts

Repaired at: Reedham Quay, Ranworth Quay, Hoveton St John, Bramerton, Burgh Castle, Hardley Mill and Rockland moorings.

Mowing

Monthly cuts took place at each mooring (approx. 8 times).

Mooring posts

Posts were either fixed or replaced at: Somerton, Martham Bank, Potter Heigham Dinghy Park and Potter Heigham Bridge Green, Boundary Farm, Neatishead, Sutton Staithe, Beccles South Bank, Somerleyton, Bramerton, Rockland Staithe, Repps Bank and Cockshoot.

During February our workboat Shoveler with its onboard crane will be visiting moorings around the Broads' system to top up and repair various mooring paths in time for Easter.

Planned moorings refurbishments for next year 2024/25

Potter Heigham Repps Bank – 145m mooring refurbishment.

Potter Heigham de-masting mooring – 37m re-piling / quay heading replacement.

Womack Island

– Re-piling and path work.



A Ranger's year in numbers

Last year the Ranger Team:

- Spent 1,426 days patrolling the rivers.
- Completed 121 days of visitor site maintenance.
- Spent 50 days removing obstructions from the river, cleaning signs, and maintaining moorings.

- Given advice (verbal warnings) 5,505 times for speed and safe navigation.
- Issued 399 written warnings.

Of more than 90 reported incidents investigated by the team, three have been successfully prosecuted for overstaying and no insurance and a number of further cases are currently awaiting court dates.



Water plant cutting update

One of the results of improved water quality and milder winters is that plant growth in our waterways continues to be vigorous.

This season our cutting teams moved around the system as fast as possible to undertake a continuous circuit of work between the main high-growth areas, some of which we visited as many as five times.

Cutting finished in October, and during the season 272 days were spent on plant cutting, which was one of our highest totals ever.

A similar amount of plant material was harvested this year compared to 2022. However, thanks to our new cutter 'Amber' we have been able to work more efficiently and take advantage of having three machines based in different locations, reducing transit time on the rivers.

The locations and times of day we can cut water plants vary depending

on environmental conditions such as water temperature and oxygen levels. These are specified by Natural England, who work with us to ensure that rare water plants such as stoneworts and other plants, invertebrates and fish who use them as habitats and food can thrive.

This is a delicate balancing act between keeping the rivers healthy and creating a clear navigation for boaters through the marked channels in rivers and broads.

Areas we cut this season included the:

Upper Thurne – Hickling Broad, Catfield Dyke, Somerton, Martham, Waxham and Waxham Cut.

River Bure – Horstead, Coltishall, Belaugh, Caen Meadow and Wroxham

River Ant – Wayford, Dilham

River Waveney – Geldeston and Beccles.

Rivers Yare and Wensum – Rockland, Bargate, Thorpe and into Norwich.

Bankside habitats

Scrub clearing involves removing smaller branches which are then cut up in piles to form dense brash, like a hedge along the riverbank. This creates a woody barrier that protects the riverbank vegetation as it grows and larger logs are stacked back into the treeline to create habitat piles. It will eventually rot down, becoming part of the bank and provides great habitat for small birds, mammals, insects and invertebrates. Using this method means that no cut material was required to be removed and transported from the work site.





Tree works

Although trees lining the edges of the rivers can be an attractive sight and provide welcome habitats for our wildlife, areas of dense growth can impede the navigation, particularly on river bends, and reduce the wind for sailing craft.

Rangers and Ecologists completed surveys in 2015 and 2021, mapping out habitats and highlighting areas where trees needed to be removed to improve navigation safety.

In February 2022, we completed our first five-year programme of riverside tree management, focusing on removing overhanging trees on major river bends and other high priority locations for navigation, whilst also retaining suitable wildlife habitats.

We are now in the second year of the next five-year plan, however the winter work of our Rangers (who manage riverside trees) has been greatly impacted by several autumn storms which saw the Broads receive over a 200 percent increase in average rainfall. High water levels led to flooding and waterlogged conditions, reducing the window in which bankside management could

take place before the bird nesting season begins in the spring.

This season's riverside tree management programme ran from October 2023 to February (water level dependent) and included:

Along the Ant, upstream of Barton Turf; the Bure, upstream of Wroxham and three further areas (one near Wroxham Broad); upstream of Salhouse Broad and upstream of St Benet's Abbey.

On the Yare, an area near Postwick viaduct; another near to Surlingham Ferry House and an area next to Rockland Broad.

On the Waveney there were two areas: one near Dunburgh and the other near to our North Cove mooring.

A challenging winter

The following example of riverside tree work along the River Bure, near Wroxham, demonstrates the complexity of our tree-management programme. The site (pictured) is 136m long stretch of carr woodland – wet swampy woodland found in the Broads.

Last October, lengths of overhanging bankside trees were marked for removal by Ecologists, who assessed which trees should be left. Large mature trees, in particular oak and ash, with crevices and dead wood, were retained to enhance the ecosystem for wildlife and 20% of overhanging branches were retained as refuge areas for fish.

They also completed otter surveys along the bank and if any otter holts or couches (where otters sleep and rest) were found, that section of trees would be kept intact.

Riverbanks were impossible to access for over a month because work boats could not clear bridges, but the Ranger team worked around this wherever they could.

Rangers Keith, Peter and Tobi could finally access the site in November. It is a small, raised bank surrounded by water. The work was hard going and progress slow in cold, waterlogged and muddy conditions. It took two to three people working together using a rope to pull larger tree limbs from the water by hand or using a mechanical winch.

The trees were removed one by one until no obstacles remained in the navigation.



Dredging in the Broads

Dredging is an essential maintenance requirement and takes up around 60% of our operational team's time. Dredging is delivered all year round using specialised plant and equipment. To maintain the required depth for navigation throughout the rivers and broads we rotate our dredging team around different locations, based on underwater survey data.

Planning our dredging programme involves several complex surveys of the waterways each year, before and after dredging takes place. The findings are then interpreted by a computer model to produce detailed information on priority locations and precise volumes of sediment to dredge. This is thanks to high-resolution sonar technology which precisely maps the profile of rivers and Broads, so that sediment which accumulates due to the rivers natural processes of erosion and deposition can be effectively managed.

The target depths to which we carry out dredging is summarised in the Waterways Specification depth maps in the Waterways

Management Strategy: www.broads-authority.gov.uk/about-us/how-we-work/strategy

It is a common misconception that dredging rivers helps to reduce flooding and increases the air draught for vessels under bridges in the Broads. The Broads is a tidal water system, with finely balanced procedures in place for flood defence and land drainage, managed by the Environment Agency and the Broads Internal Drainage Board respectively. Our dredging work is largely for the purpose of navigation only. Removal of sediment plays a minor role compared to the influence of tides and rainfall upon the volume of water within the flood embankments

(which aid flood alleviation along rivers in the lower reaches).

With climate change, sea level and rainfall variability, we are seeing this finely balanced water management system put under increasing pressure.

The options for how to best manage this whole system in the decades to come is being addressed by the Broadland Futures Initiative.

Flood management is the statutory responsibility of the Environment Agency, with whom we work closely. Also, by working with partners such as Rivers Trusts, Internal Drainage Boards and with landowners, we can improve how the entire Broads' catchment area holds and releases water.

Updates on current projects can be found in our Navigation Committee papers.

The Broadland Futures Initiative: www.broads-authority.gov.uk/looking-after/climate-change/broadland-futures-initiative

Dredging update

These are the locations where dredging took place last year and our planned works for 2024.

2023/24 completed works

Oulton Broad – Approx. 12,000m³

Upper Bure – The total predicted volume over both years (23/24 to 24/25) is 20,000m³

Upper Ant – (Wayford Bridge to Barton Broad and some of Stalham Dyke) just under 13,000m³

Haddiscoe Cut – Due to dredge approx. 3,000m³

2024/25 planned works

River Yare (Rockland Broad, Bargate Broad) – 15,000m³

Upper Bure

– Continued from last year

Upper Ant

– Finishing Stalham Dyke – 5,200m³

Catfield Dyke – Just under 4,000m³

Volume vs accuracy

Historic dredging methods were far less targeted than today's techniques. Old-fashioned 'grab buckets' would over-deepen and scrape the riverbed to dredge everything in their path, including riverbed habitats.

Dredging priorities were based on achieving removable volumes but that did not include our moorings, irregular shoals and other restrictions to navigation, especially in the upper reaches.

The focus of dredging today is to ensure waterways users have sufficient water depth for recreational activities.

Our strategy currently targets locations which are important to users to dredge, but these areas can be more challenging and time consuming in terms of access and disposal.

Each winter, a survey boat heads out to scan the bottom of rivers and broads using sonar to produce 'hydrographic' data on the depth of the riverbed and channels, information on shoals and other restrictions to navigation.

The picture we have of underwater conditions is now in much greater detail when compared to years gone by. We use a 'multibeam echo sounder' which scans the riverbed using a wide sweep of sonar signals, similar to how dolphins use sonar to guide themselves through the water. Below is an image of a scanned riverbed. The blue area represents an acceptable depth for navigation, yellow and red areas show a build up of sediment.

What is sediment reuse?

Once dried, dredged river sediment is often a reusable construction material for riverside projects. Currently the Authority looks to build up sunken flood walls, reprofile reeded fringe (lost to erosion) and in some cases, like at Salhouse Broad and Hickling Broad we reinstate large scale land areas lost to erosion. Dredged river sediment is also a good soil conditioner, helping agricultural land retain moisture and requiring less fertilisers.

However, finding locations to store, dry and reuse sediment is challenging and can result in increased travel time between the dredge site and the reuse locations. Working closely with local landowners is essential. A recent example of working with landowners to secure a sediment reuse site is from the River Bure, between Belaugh and Wroxham (See photo).

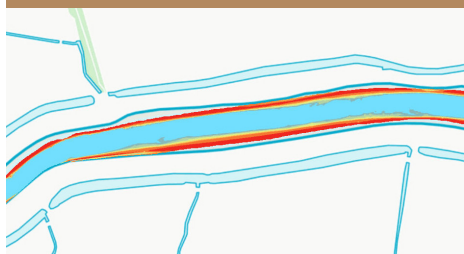
This site was recently filled with 20,000m³ of river sediment, which will eventually be restored to use as agricultural land.

In addition, bankside vegetation provides favourable habitat for several important species, especially the heavily protected water voles,

therefore dredging projects must be carefully designed and often require wildlife licensing to be able to use the bankside areas for sediment deposition, whilst avoiding impacts on protected species.

While our dredging programme provides reasonable depths for safe navigation, it is just one element of our whole-catchment approach to managing the amount of sediment which enters the Broads system.

Sediment entering the Broads is driven by riverbank erosion and local land management, which is why we work across the entire Broads catchment to reduce these inputs into our system.





Get more out of the Broads

Have you seen our social media accounts and our visitor newspaper **Broadcaster**?

From information and advice, water safety, maps, walking routes, to events and much more...

Follow the Broads National Park and the Broads Authority via these links

www.facebook.com/BroadsNationalPark/

www.instagram.com/broadsnationalpark/

twitter.com/BroadsNP

www.facebook.com/BroadsAuthority

twitter.com/BroadsAuth

Broadcaster is available free from our information centres, or you can browse the digital version here:



www.visitthebroads.co.uk/visitor-guides

Battery charger safety warning

An increase in the popularity of electric scooters and E-bikes has led to a rise in accidental fires caused by their batteries being left on charge. While there are no reported incidents of fires such as this on the Broads, we are advising all boaters when leaving your vessel, to ensure that every charging device is unplugged.



New kit in high demand

Last year DEFRA provided the Authority with a capital grant of **£1.115 million (2022/23)** for maintaining biodiversity and habitat restoration.

The equipment has been in high demand and put to good use throughout the entire Broads' system. Here are a few examples of some of the completed works:

Truxor T50 (pictured)

Its first job during the autumn was to clear a stretch of silted water along the Electric Eel boating-trail opposite How Hill. The silt needed to be removed so that it didn't foul the trip boat's keel.

The Truxor was also recently at Horning Marsh Farm clearing sediment and vegetation from the dyke network.

JCB 360 Excavator

Back in August, the Construction Team cleared the dykes at Hall Fen

at Irstead. Routine dyke clearance is vital to conserve open water, retain water flow and to provide habitat for a range of Broads wildlife, including protected species such as the water vole.

The JCB 140X was used to construct lagoon walls at the large sediment lagoon near Wroxham. It also spent time at Postwick, preparing the area to take sediment from upcoming dredging works.

New water plant harvester

This additional vessel has improved the efficiency of our water-plant management program by allowing vessels to move quicker around the Broads system, taking less time to reach the locations where cutting is in high demand.

Broads features on National TV

Rangers Adam and Jess were featured in Channel 5's documentary *Norfolk and Suffolk – Coast and Country*. They gave a great account of their roles and how we look after the Broads.

You can watch it on catch-up (for free) on the Channel 5 player. You just need an account to sign in with.

Watch the show here: www.channel5.com/show/norfolk-and-suffolk-country-coast/season-1/episode-6