Wensum Catchment Partnership

Welcome to the October newsletter from the Wensum Catchment Partnership!

The Wensum Catchment Partnership aims to improve the health of the Wensum catchment through monitoring water quality, availability and ecological data to provide evidence to decide how and where to prioritise catchment-scale restoration and other interventions.

The Wensum Catchment Partnership (WCP) formed in 2019 as a sub-catchment of the Broads Catchment Partnership, under the catchment-based approach. Bringing members together under the WCP has established a more joined up and coordinated approach, with organisations working in partnership.

Our current structure and membership can be seen below. We are keen for new members and groups to get in contact if interested in taking part in this worthwhile work.

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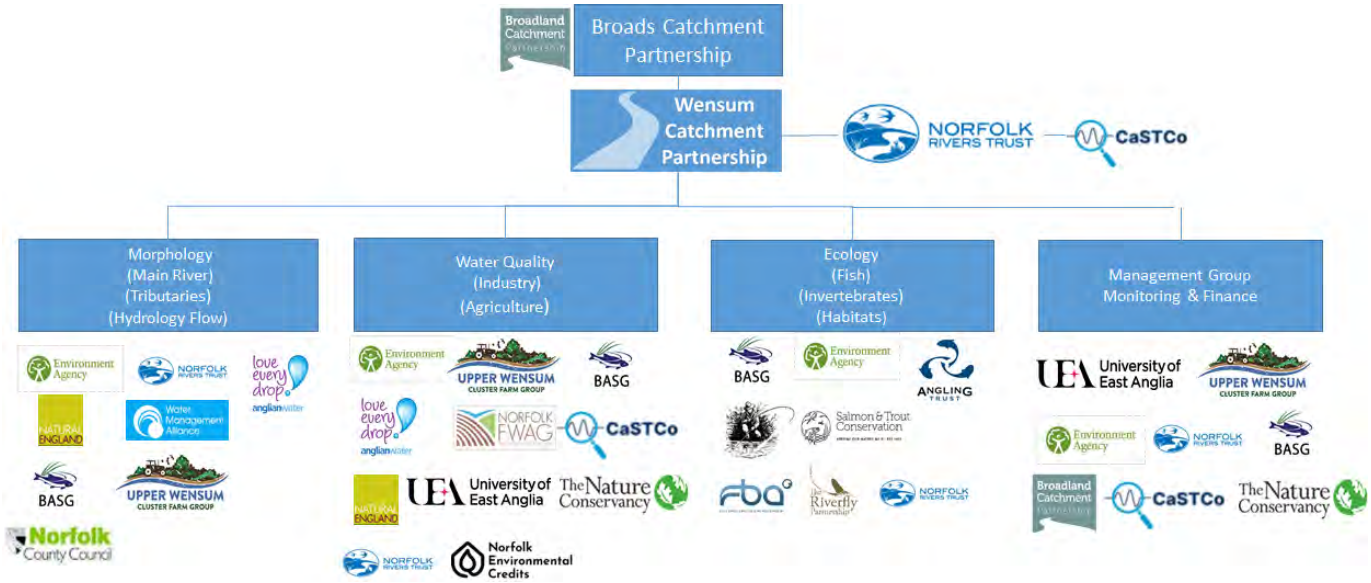


CALUM CONTINUES LOOKING FOR A NEEDLE IN A HAYSTACK

Taking informed actions to sustain healthy Roach Densities

PhD student from Nottingham University is finalising his thesis based in the Wensum Catchment, on the relationship between contaminants in fish and mammal tissue and the linkages to chemicals and pesticides. After 3 years of studies over 1000 samples have been collected and frozen for analysis using the latest scientific research. The results will be published in November 2023. Further PhD studies will be undertaken by the UEA School of Environment Science from 2024, building on the work from Calum. Nottingham University PhD's has been partly funded through a grant from the Broads Catchment Partnership.

Concerns raised by the initial pathology report by the pathologist at the University of Stirling led the Environment Agency to undertake their own pathology and examination of Wensum roach. However in contrast to the initial reports their results found no evidence of poor pathology in these fish.
It seems strange that fish caught both in Sept 2021 and May 2022 showed signs of poor health, as reported by independent scientists. The annual EA survey undertaking in Sept 2022 at the same location showed the lowest ever density of roach, but the fish weren't health checked.
Yet the results of a survey and sample undertaken in Feb 2023 found that the fish sampled were healthy. One has to question whether the roach all subsequently died and were then have been replaced by fish from upstream.

WENSUM FISHERY RECOVERYPLAN

Taking informed actions to sustain healthy roach densities

The Ecology group has long discussed the issues relating to roach stocks in the Wensum.

We have agreed a plan (right) that has a number of milestones to ensure any future stocks can sustain themselves. The current density for roach following the EA electro fishing survey last Sept showed an average of 1.4 roach per 100m2. Well below the national average, with one of the lowest reaches been between Swanton Morley falls and North Elmham.

We are working with the EA to introduce fry refuges in this area to enable fry recovery and discussing this with the respective landowners, to ensure a long term sustainable solution can be created.

The team at Wensum Anglers Conservation Association (WACA) undertook some studies this spring on whether roach actually spawned in the river. This identified 3 areas of roach aggregations around possible spawning material.

- ✓ Define the area of focus
- ✓ Define current density
- o Understand the current health concerns
- o PhD Analysis
- ✓ EA Labs findings
- ✓ Scope future Scientific Studies
- ✓ WACA Roach Spawning report from 2023
- o Define the cause of these concerns
- o Understand pathology variances
- o Statutory bodies policy on stocking
- o What needs to be done to enable this
- o Define and improve the habitat
- o Reach agreement with Landowners
- o Define monitoring plan
- o Reach agreement on stocking protocol

Wensum Roach

Wensum Chub

WHAT'S THAT IN OUR RIVER

Using Invertebrates to inform on river health - River fly

Most UK rivers now have some form of invertebrate assessment through sampling, adopting a process called Riverfly. Riverfly uses a scoring metric to rank the health of a river in terms of invertebrates. This is known as the Anglers Riverfly Monitoring Initiative (ARMI) and all results are uploaded into its database. Thresholds against these are set by the EA when the scores breach a given value, which gives an indication that an environmental incident has occurred. The Fisheries Biological Association who manage the overall Riverfly system have agreed that Norfolk needs its own ability to train and provide accreditation to volunteers. This will really help the WCP to deliver Riverfly monitoring at scale.

WCP established this in April, and now have 3 accredited trainers and another 9 volunteers, and developed a delivery structure as below

ARMI hub coordinator(s)

Dan Hoare & David Harper

- Maintains/expands monitoring groups
- Contact at catchment/regional level
- Coordinates training and on-going support, incl. funding

ARMI group coordinator

Jeremy Hadaway& Dennis Willis

- Contact for the group, statutory agency and Riverfly Partnership
- Maintains monitoring activity and ensures data sharing
- Verifies online data submissions

Ecology Contact

John Findlay at EA

- Liaison with the group coordinator
- Site registration & trigger levels
- Training support
- Ensures statutory response to incidents

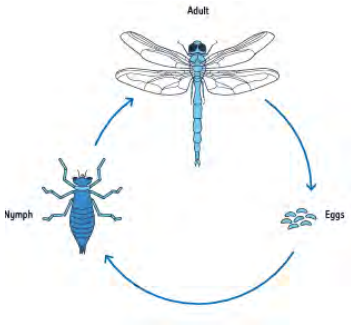
Riverfly Partnership ARMI Coordinator

Trine at Riverflies Partnership

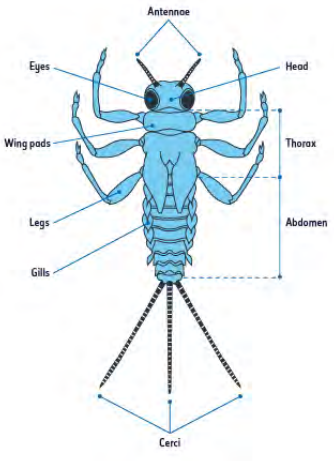
- Support, ongoing training & communication

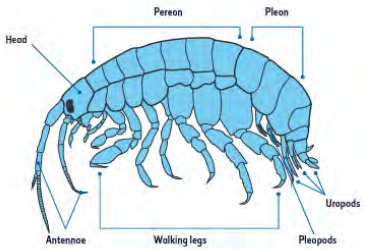
Actual ARMI scoring from Swanton Morley

Counting a sample a kick sample from Swanton Morley



You may already recognise some freshwater invertebrates by their adults, such as beetles, flies and dragonflies. But did you know many of these groups have a secret life hidden underwater where they mature from eggs, through several larval stages and then emerge as adults.





If you interested to explore this interesting aspect of nature, please contact Jeremy Haddaway:

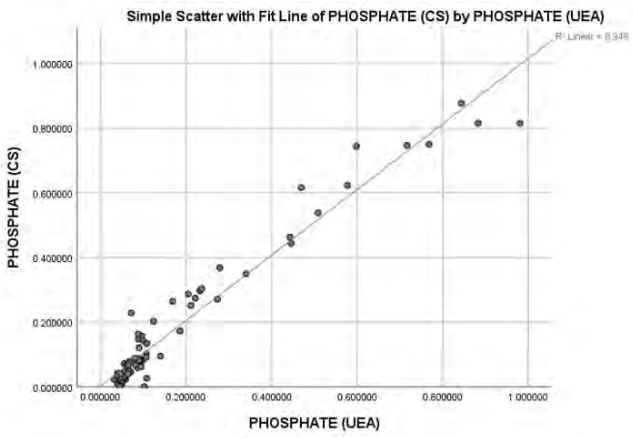
Contact Jeremy Haddaway
jeremyhadaway@gmail.com

WATER QUALITY VOLUNTEERS

Citizen Scientists monitor the Wernsum

Report on the Data Validation

In June, we embarked on a four week study into the accuracy of data collection methods and results. The phosphate, ammonia, and nitrate data collected by the citizen scientists (CS) was compared to the results, from the same samples, derived by the University of East Anglia (UEA) and the Environment Agency (EA) labs. Tolu Akanimodo, a masters student on a work placement at Norfolk Rivers Trust, has run comparative analysis tests on the data to determine how reliable our data is. The graph below shows that the CS phosphate test results, using Hanna checkers, correlates very well with both the UEA and EA lab results. We can confidently say our phosphate testing is accurate and reliable.



However the same cannot be stated for Ammonia which in the four week period was at very low concentrations, which made comparable analysis difficult and will be reassessed under improved flows.

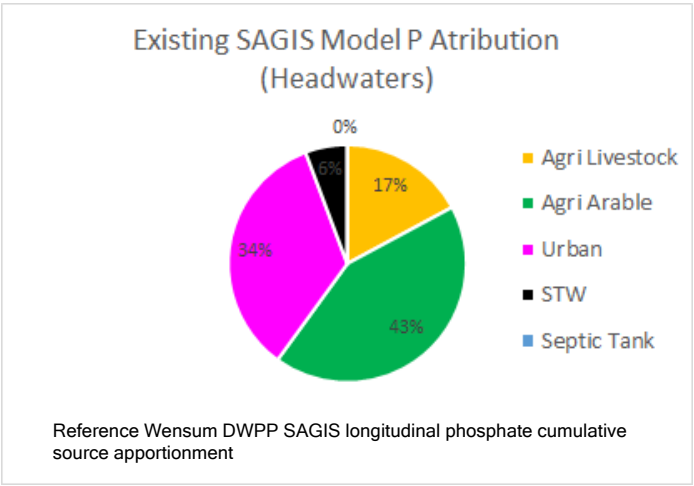
Nitrate was sampled using basic test strips and there was little correlation between CS and laboratory results for this nutrient. We are currently exploring what other available technology could be used to better monitor nitrate levels at a reasonable cost.

Get in Touch:
Project Delivery – Steve Lane:
Steve.Lane@theriverstrust.org

Volunteer Coordinator - Elle Claiborn:
elle@norfolkriverstrust.org

So what have we learnt from all this effort?

In the headwaters, the 'Source Apportionment-GIS' model created by the EA and NE apportions responsibility according to the 'polluter pays principle' and attributes much of the phosphate pollution to agriculture. However, SAGIS is a catchment-scale estimate and does not give tributary, stretch or dyke specific estimates.

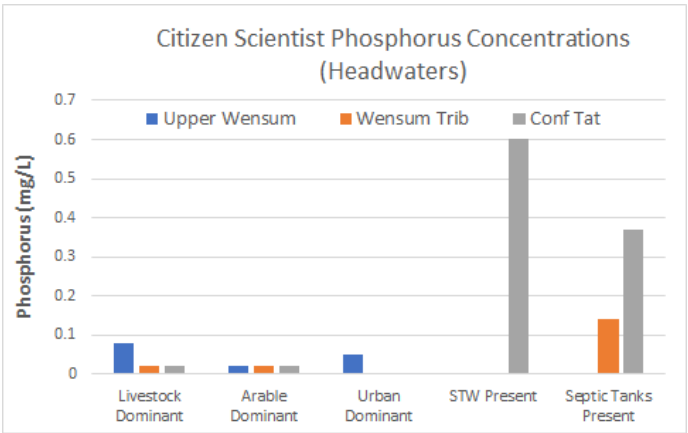


Reference Wensum DWPP SAGIS longitudinal phosphate cumulative source apportionment

Our Citizen Science monitoring is providing us with much greater detail on the likely causes of phosphorus pollution and initial results indicate that septic tanks and sewage treatment works pose a much greater threat to water quality in the upper catchment than previously thought.

Future work will look at creating tributary-specific source apportionment estimated for the Upper Wensum on which we can reliably target interventions to improve water quality.

This requires additional flow measurement data to determine and apportion the actual P load in terms of kg/day.



DEALING WITH YOUR WASTE

Nutrient Neutrality Dealing with Your Waste

Many homes in rural Norfolk are not connected to the main sewerage and instead rely on septic tanks and package treatment plants to manage water waste. Many of these are outdated and poorly maintained and can be a threat to water quality in smaller tributaries of the Wensum.

Citizen scientists have monitored the headwaters (Tat and Wensum) for over a year, and they have evidence to show that non-mains sewerage effluent is one of the primary causes of raised phosphate levels. High P levels breach Natural England's SSSI chalk stream targets and contribute to the declining state of the river

How do we resolve this and could improvements be linked to the current Nutrient Neutrality rules?

In March 2022, Natural England issued advice to 74 planning authorities that operate in catchments of Special Areas of Conservation that are currently failing phosphorous / nitrogen targets. In essence, that advice states that new development should only be granted permission where mitigation is put in place to offset any additional nitrogen or phosphorous emissions that arise from sewage and/or urban runoff generated.

Since this "Nutrient Neutrality" policy was implemented there has been much debate about how to mitigate the impacts of new developments to allow stalled planning applications to be approved. Now, nearly 2-years on, it appears progress is being made, with many new, approved solutions coming forward.

One of the most straightforward and cost-effective options is replacing septic tanks and Package Treatment Plants (PTPs) with advanced PTPs that remove nutrients through biological treatment.

While the sale of credits to fund septic tank upgrades would not, in itself, reduce the overall load of phosphate to the SSSI, it does offer a route to generate investment to clean up sensitive headwaters while not undermining the overall obligation to achieve the SSSI favorable condition

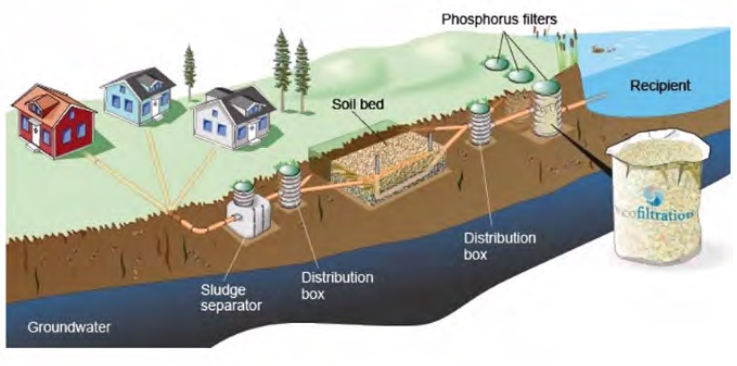
But what are the benefits for homeowners?

First and foremost, nutrient neutrality investment could offer an opportunity to upgrade an inefficient septic tank at little cost and, given the scale of offsets produced, there should be scope to fund ongoing maintenance for a number of years. This would put homeowners in a good position to comply with government 'General Binding Rules" for septic tanks and small sewage discharges. 'Refer to 'https://www.gov.uk/guidance/general-binding-rules-small-sewage-discharge-to-the-ground'

What is the partnership doing

As a partnership we are exploring ways of raising awareness and ensuring compliance with General Binding Rules. We are looking to learn from initiatives in the Lake District where leaflets and information campaigns and community maintenance programs for septic tanks have been organised, under its "call of nature" initiative.

We are also working with Norfolk Environmental Credits and Water Resources East's Norfolk Water Strategy Programme to understand how we might access nutrient neutrality funding to create a programme of septic tank replacements in the most sensitive headwaters.



Typical example of a modern advanced effluent packaged treatment plant and optional phosphorus filter, which could be either chemical or by natural woodland filtration.

ANGLIAN WATER ON THE WENSUM

Making choices on investment in our River

There has been great media coverage nationally on the need to protect our rivers from waste effluent, including agriculture runoff. Whilst the Wensum isn't subjected to the torrid images seen on some rivers, being designated a SSSI and a Special Area of Conservation (SAC) means the river is protected by tighter standards. The WCP is keen to demonstrate that higher water quality standards can be achieved, initially in the headwaters.

Anglian Water (AWS), as a member of the WCP have shared their investment plans for the next 5 years, (AMP 8: 2025-2030). The plan for AMP 8 include investments in Swanton Morley, Bylaugh & Fakenham works to reduce phosphate and nitrates entering the river. They also have a long list of storm overflow outfalls to investigate and will develop potential solutions to reduce pollution.

WCP continue to support AWS to reach SSSI targets in the headwaters based on citizen science, AWS and EA monitoring. We hope that further phosphate reductions will be approved under AMP 8 for Sculthorpe STW which appears to be a key source of phosphate pollution. Whether the statutory regulators agree is to be seen. But losing this investment means means at least a 7-10 years delay in meeting the SSSI targets.

On a more positive front, the AWS £100 million program of additional storm water storage across the East of England helps capture and redirect more than 72.5 million litres of excess water to help protect the environment during heavy rainfall. The program now forms part of the water company's Get River Positive initiative which was launched by AWS and Severn Trent earlier this year.

One such investment was in the works at Fakenham, completed last year.

A typical set of storm tanks as installed at Fakenham.

At Fakenham, this has since shown a marked reduction in the number of occasions that this storm overflow was pumped into the Wensum from 1442 hrs in 2021. However as seen in image below taken by Tim Ellis on the 6th May 2022 some discharges are still happening

Because large proportions of the sewer network take surface water combined with wastewater, it means that rainwater ends up flowing through pipes to nearby water recycling centres where it is cleaned and returned to the environment. If this network becomes overwhelmed during heavy rainfall, that water can be released into nearby watercourses, to protect homes and businesses from flooding.

As part of Get River Positive, AWS has committed to greatly reducing how often this happens, protecting the region's rivers and seas.

These are all significant infrastructure investments which need to keep pace with demands and technology.

The key issue remains who pays for this and is there the political will to invoke change

KEEPING THE FLOW

A strategic look on how our water is managed and the process of Environmental Recovery by our chair Kelvin Allen

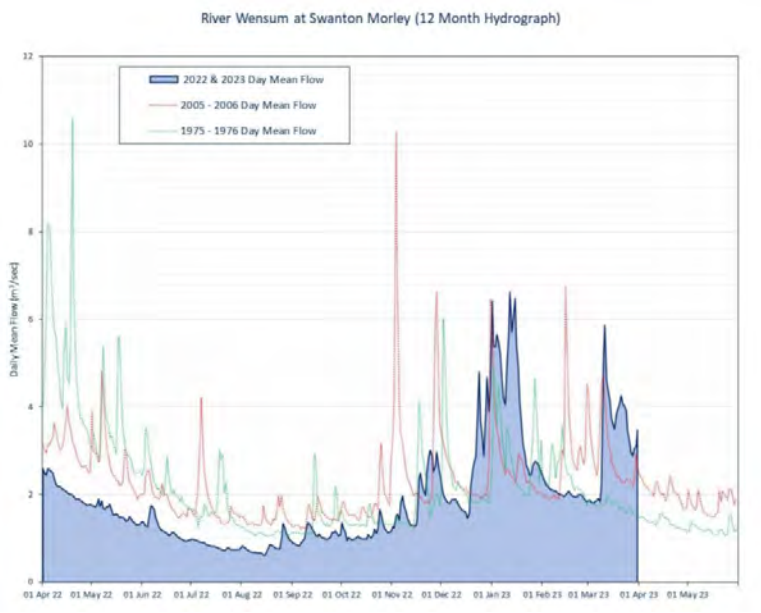
As explained in the last March publication, the UK has a complex regulatory framework which surrounds our Rivers and the water within them. We have explored the current WINEP which runs from 2020 to 2025 and now had exposure to the next AMP8 investment program for the Wensum along with the wider Water Resource Management Plan from Anglia Water.

The Wensum is at the heart of the Norfolk Water Strategy supplying 46ml/day (46 Million Litres) into the AWS treatment works in Heigham Norwich. It was presumed that the investigations into ground water abstractions within the Wensum catchment would lead to some planned reductions and therefore environmental recovery by 2030 in the Wensum through placing constraints on time limited licenses. Sadly this appears not to be the case with none of the 8 abstraction points carried forward into planned reduced abstractions, following a set of option appraisals undertaking between 2020 and 2023. This can only mean significant demand reductions, or more challenges to the river and potential environmental harm.

The Anglia Water Resource Management Plan WRMP24 is quite specific that Norwich will require additional water supply by 2034, indeed it states that a reduction in Wensum abstraction from 46 ml/day down to 33 ml/day will be needed to meet its environment needs by 2034. In the revised WRMP24 plan, this now includes a set of adaptive investments by 2030 to bring in additional water to support this from outside the catchment.

In terms of river flow, the last formal assessment of river flow and its effect on Ranunculus macrophyte habitat (the target species under the SAC), was undertaken in 2010 using data from 1970 to 2005. Natural England has not conducted a macrophyte surveys since 2017. This needs to be addressed and carried out soon to assess the status of this habitat and flow levels.

If you would like to get more involved in this complex green world of water management, a new training scheme jointly run by AWS and Blueprint for water is about to open. Please get in touch.



The graph above is from the Environment Agency drought report Apr 2023. It clearly demonstrates changes in Wensum flow rates over the past 50 years. These flows reflect just how much water is abstracted by man out of the aquifer and thereby not reaching the river and resultant flows. Yes there remains peaks, which reflects our climate changing with more heavy storms. But the underlying average is less water and lower flows.

Finally, there seem to be multiple plans from different agencies and organisations which have not been consolidated in the light of new information, including climate change, water availability and morphological restoration plans.

The WCP plan to bring partners together to consolidate the strategic plans for the Wensum, as its water is vital for us all. What do we actually want the river restored into?

Elsing mill taken in the 1970's

Plenty of water in the river, with open channels.

Elsing mill taken this year 2023.

Looks a completely different river, narrow channel and bur reeded. You can just make out the mill in the background.

WENDLING BECKEXEMPLAR PROJECT (WBEP)

2000 Acres of land in transition…..from intensive arable to nature recovery, habitat creation& regenerative farming

The UK is in the process of establishing new policies and rules for biodiversity, substituting for those that applied under European Union policy and legislation. Following a two-year transition period, the Environment Bill willl make biodiversity net gain (BNG) mandatory for most housing and infrastructure developments, including mining. Developers subject to this requirement will need to provide a plan to deliver BNG with their applications for consent, based on the mitigation hierarchy and a prescribed habitat-based metric.

Above a typical peice of chalk stream restoration

WBEP is working in partnership with Natural England as a Biodiversity Net Gain pilot

For local developers and planning authorities, the Wendling Beck Environment Project provides an opportunity to meet Biodiversity Net Gain (BNG) requirements through the purchase of biodiversity units and is one of Natural England's BNG Credit Scheme pilots.

The BNG baseline surveys and habitat delivery have been scrutinised by Natural England experts, so investors can feel confident that units are fully compliant with this emerging policy. 300 + Units have already been delivered and banked.

WBEP has completed high-resolution baselines for both above and below ground carbon .

As the landscape changes, we will be working to continually track and monitor the carbon that the land is sequestering. This includes a collaboration with Rewilding Britain to better understand how different habitats sequester carbon, along with pioneering research on soil carbon – led by the University of East Anglia (UEA).

There will also be a huge reduction in carbon due to the change of farming systems and the reduction in fossil fuels, agro-chemicals and synthetic fertilisers.

Above a wetland creation along Wendling Beck

For more information contact Glenn Anderson glenn@dillingtonhall.com

RIVER MANAGEMENT

The long term vision for the River

For those of us that are fortunate enough to own land that the Wensum, or one of its many tributaries, runs through, there are some things that you can do, and not do, that will help us Improve the wonderful and rare chalk river. We need to keep the water clean and plentiful, but if the river does not have the habitat diversity present, it will not be able to support the amazing diversity of plants and animals that have been described in the newsletter above. In short, we need to embrace the diversity in form and function that a naturally functioning chalk river needs.

In the past, many of our rivers have been managed for land drainage and flood protection, and this is still a very important requirement of a working catchment, especially in some areas, but how we undertake these important activities is important. There are some amazing examples of how sensitive river restoration and management can be achieved on the Wensum that have been in place for many years as a result of the River Wensum Strategy and some very forward thinking landowners. One such project is the restoration of the relic channel at Great Ryburgh, and there are many more examples throught the catchment.

The work to continue this physical enhancement continues each year, with a more recent example on the Billingford drain with thanks to the landowner and IDB as shown above.

With such amazing projects being supported by generous landowners, we are starting to make a difference. One thing that we need to ensure is that we don't take one step forward and two back, so we need to ensure that everyone is aware of the importance of these types of projects, and equally aware that insensitive river and drain management can take us in the wrong ecological direction.

In the past river management has often worked against natural processes. However, in recent years a growing body of scientific evidence has proved that a more naturally functioning river system will often afford greater flood protection to people and property while providing significant benefits to wildlife, water quality and the landscape as well as reducing the cost to the public purse of managing our rivers.

River management can be vital to maintain land drainage for food production and to reduce flood risk but this must be undertaken in an environmentally sensitive way. The sustainable management of our rivers and floodplains is vital if we are to maintain and restore wetland habitats and legally protected species to help address the biodiversity and climate change crises we face.

As a landowner if you undertake river maintenance work it is essential that you carry it out in an environmentally sensitive manner.

Under the Environmental Permitting (England and Wales) Regulations 2016 you must get permission from the Environment Agency to do work in or around a main river watercourse. For works to ordinary watercourses you should contact the Internal Drainage Board or Lead Local Flood Authority. You may also require permission from Natural England to undertake works on the SSSI/ SAC.

You must find out which permissions and licences you need to maintain, repair, build or remove anything in or around a watercourse. This includes:

- changing the banks
- removing material from the bed
- creating or changing a mooring, mill, fence, dam, weir, bridge or culvert.

Further advice is available via the Partnerships and Strategic Overview (PSO) team before undertaking any work to a watercourse. Contact: PSO.EastAnglia@environment-agency.gov.uk

STRATEGIC APPROACH REVIEW

The long term vision for the River

The original River Wensum Restoration Strategy identified that one of the most significant issues for the Wensum achieving its ecological potential is the impounding effect of the numerous water mills. Approximately 67% of the river's length is affected by this slowing backwater effect. These mills can cause silt and sediment to drop out of the water which then builds up behind each structure for a considerable distance, smothering the bed and vegetation. The mills can also prevent the movement of aquatic wildlife, causing populations to become fragmented and less resilient to disease and the effects of climate change. Additionally, the engineering work which created the mills has left the river channel over deep and over wide in places, creating an unsuitable environment for chalk stream aquatic plants such as stream water crowfoot.

Image
Lyng Mill

By reducing the backwater effect the aim is to create a freer flowing, naturalised channel and the intension is to manage the drop in head around the mills over a greater distance by re-profiling the river bed. This is not the only measure that will be implemented. To ensure we continue to follow 'slow the flow' principles we will take advantage of opportunities to re-connect the river channel to the floodplain, reintroduce or re-connect meanders, introduce woody material and undertake riparian tree planting.

As part of the River Wensum Strategy, we need to be sure that works to reduce the influence of the mills on the chalk stream features will not significantly impact the volume of water within the channel by reducing the water level or enabling water to flow downstream quicker. For this reason, we are in the process of engaging specialist consultants such as geomorphologists, modellers and ecologists to help us re-visit the original strategy and ensure it is still fit for purpose in light of more recent research and understanding. The strategy will still aim to reduce the impounding effect of the mills (not remove these historic structures or their setting in the valley bottom) and will explore how this can be achieved whilst taking in to account the other demands placed on the river.

OUR STRUCTURE & PEOPLE

Our governance, structure and people

Partnership Chair	Kelvin Allen
Morphology Group Chair	Rory Sanderson
Water Quality Group Chair	Richard Cooper
Ecology Group Chair	Kelvin Allen
Management Group Chair	Sarah Gelpke

Management Team

Sarah Gelpke	NRT
Kelvin Allen	BASG
Jonah Tosney	NRT
Steve Lane	CaSTCo
Elle Claiborn	CaSTCo
John Findlay	EA
Richard Cooper	UEA
Rory Sanderson	EA

Back in 2019 and prior to that, many of the initiatives in place on the Wensum tended to be disjointed and siloed in nature. Clearly bringing it together under CaBA the Wensum Catchment Partnership has established a more joined up and coordinated approach, with organisations working in partnership. Time will only tell if together we can deliver the needs of the river.

As we write this its sadly goodbye to Sarah Gelpke, who has decided to leave Norfolk for a new venture in Cornwall. Sarah has been inspirational in developing the partnership, post COVID and will be a challenge to replace. Best wishes for your future endeavors Sarah.

KEEPING YOU INFORMED

Monitoring and Management

Back in 2019 another vision was to have a dashboard of measures that replicated the status across the catchment ecology. We have come a long way since then and today have almost all the metrics defined and measured at a reasonable compartment scale and dashboard.

Compartment	SSSI Unit Number	Reach Number	Section	Length	River Restoration	Fishing Rights	Target Fishery	Invasive Plant Species	Fish Roach Density	Fish Dace Density	Fish Chub Density	Fish Pike Density	Fish Trout Density	Inverts Score	Chem P	Chem A	Chem N	Chem Solids	Flow	Fish Habitats	Fish Passage	Geomorphology Restoration	Macrophytes	NNIS	SAC Desg White Crayfish	SAC Desg Desmoulin's snail	SAC Desg Brook lamprey	SAC Desg Bullhead
			Measure Definition					%	100m2	100m2	100m2	100m2	100m2	RiverFly Score	mg/l	mg/l	mg/l	mg/l	% HOF	Metres	Pass	Percentage	RN_A_TAXA	?				
1	N/A	N/A	Yare - New Mills	4.39																								
2	N/A	N/A	New Mills - Hellesdon Mill	4.23		4.23	Coarse	100	2.4	0.52	2.07	0.17	0.02		0.06	0.04	5.92	5.73	47		50%	0%	14				0.00	0.09
3	54	RWRS 01	Hellesdon Mill - Mount Farm	1.65			Coarse	100	2.4	0.52	2.07	0.17	0.02		0.06	0.04	5.92	5.73	47		75%	0%	14		100%	100%	0.00	0.09
3	54	RWRS 02	Mount Farm - Costessey Mill	3.16	0.72	1.4	Coarse	100	2.4	0.52	2.07	0.17	0.02		0.06	0.04	5.92	5.73	47		50%	23%	14		100%	100%	0.00	0.09
4	54	RWRS 03	Costessey Mill - Taverham Mill	3.91	1.5	1.03	Coarse	100	2.12	2.58	5.98	0.39	0.00		0.06	0.04	5.92	5.73	47		50%	38%	14		100%	100%	0.00	0.09
5	53	RWRS 04	Taverham Mill - Northfields	1.49		0.8		25	2.12	2.58	5.98	0.39	0.00		0.06	0.04	5.92	5.73	47		50%	0%	14		100%	100%	0.07	0.19
5	53	RWRS 05	Northfields - Downstream Ringland	2.56				25	2.12	2.58	5.98	0.39	0.00		0.06	0.04	5.92	5.73	47		50%	0%	14		100%	100%	0.07	0.19
5	53	RWRS 06	Downstream Ringland -Ringland Road	0.23	0.23			25	2.12	2.58	5.98	0.39	0.00	9	0.06	0.04	5.92	5.73	47		100%	100%	14		100%	0%	0.07	0.19
5	53	RWRS 07	Ringland Road - Attlebridge Hall	3.62	0.41			25	2.12	2.58	5.98	0.39	0.00	9	0.06	0.04	5.92	5.73	47		100%	11%	14		100%	0%	0.07	0.19
6	53	RWRS 08	Attlebridge Hall - Morton Bridge	1.25	1.25			100	2.12	2.58	5.98	0.39	0.00		0.06	0.04	5.92	5.73	47	100	100%	100%	14		100%	0%	0.07	0.19
6	53	RWRS 09	Morton Bridge - Slade Plantation	1.11	0.34			100	2.12	2.58	5.98	0.39	0.00		0.06	0.04	5.92	5.73	47		100%	31%			100%	0%	0.07	0.19
6	53	RWRS 10	Slade Plantation - Lenwade Mill	2.94		2.358		100	2.12	2.58	5.98	0.39	0.00	10	0.06	0.04	5.92	5.73	47		100%	0%			100%	0%	0.07	0.19
7	52	RWRS 11	Lenwade Mill - Walsis Hill	2.43		1.458	Coarse	0	0.7	1.97	3.7	0.42	0.03	10	0.06	0.04	6.14	5.65	47		0%	0%			100%	0%	0.42	0.24
7	52	RWRS 12	Walsis Hill - Lyng Mill	2.15	2.15	2.15	Coarse	0	0.7	1.97	3.7	0.42	0.03	9	0.06	0.04	6.14	5.65	47	1800	0%	100%			100%	0%	0.42	0.24
8	52	RWRS 13	Lyng Mill - Elsing Mil	3.74		4.13	Coarse	0	1.91	3.21	2.01	1.49	0	9	0.06	0.04	6.67	5.17	47		0%	0%			100%	0%	0.00	0.00
9	51	RWRS 14	Elsing Mill - Swanton Morley Mill	4.71	0.88	2.08	Coarse	0	1.91	3.21	2.01	1.49	0	13	0.06	0.04	6.67	5.17	47	2200	0%	19%			0%	0%	0.00	0.00
10	51	RWRS 15	Swanton Morley Mill - Riverside Farm	2.52		2.212	Coarse	0	1.02	0.20	0.08	0.59	0.05	13	0.05	0.03	9.09	6.00	99		25%	0%			0%	0%	0.05	0.05
10	51	RWRS 16	Riverside Farm - North Elmham Mill	1.17		0.867	Coarse	0	1.02	0.20	0.08	0.59	0.05	13	0.05	0.03	9.09	6.00	99	500	0%	0%			0%	0%	0.05	0.05
11	50	RWRS 17	North Elmham Mill - Bintree Woods	2.6				0	0.42	0.00	0.00	0.43	0.43	12	0.05	0.03	9.09	6.00	99		0%	0%			100%	0%	1.83	1.75
11	50	RWRS 18	Bintree Woods - Dell View Farm	0.86				0	0.42	0.00	0.00	0.43	0.43	12	0.05	0.03	9.09	6.00	99		100%	0%			100%	0%	1.83	1.75
12	50	RWRS 19	Dell View Farm - Bintry Mill	2.67	2.67	0.405	Coarse	0	0.42	0.00	0.00	0.43	0.43	12	0.05	0.03	9.09	6.00	99		100%	100%			100%	0%	0.00	1.00
13	49	RWRS 20	Bintry Mill - Guist Common	2.01		0.93	Game	100	0.42	0.00	0.00	0.43	0.43	12	0.05	0.03	9.09	6.00	99		100%	0%			100%	100%	1.83	1.75
13	49	RWRS 21	Guist Common - Great Ryburgh Mill	3.31	1.32			100	0.42	0.00	0.00	0.43	0.43	12	0.05	0.03	9.09	6.00	99		25%	40%			100%	100%	1.83	1.75
14	48	RWRS 22	Great Ryburgh Mill - Pensthorpe Wildfowl Park	2.38		0.362	Mixed	25	0.42	0.00	0.00	0.43	0.43	9	0.05	0.03	9.09	6.00	99		25%	0%			100%	100%	1.83	1.75
14	48	RWRS 23	Penshorpe Wildfowl Park - Great Ryburgh Common	1.98	1.98		Mixed	25	0.42	0.00	0.00	0.43	0.43	9	0.05	0.03	9.09	6.00	99		100%	100%			100%	100%	1.83	1.75
14	48	RWRS 24	Great Ryburgh Common	0.18	0.175		Mixed	0	0.42	0.00	0.00	0.43	0.43	9	0.05	0.03	9.09	6.00	99		100%	97%			100%	100%	1.83	1.75
14	48	RWRS 25	Great Ryburgh Common - Fakenham Mill	1.96		1.914	Mixed	25	0.42	0.00	0.00	0.43	0.43	9	0.05	0.03	9.09	6.00	99		25%	0%			100%	100%	1.83	1.75
15	47	RWRS 26	Fakenham Mill - Hempton	0.46		0.46		100						12	0.05	0.03	9.09	6.00	74		25%	0%	9		100%	100%	0.00	0.00
15	47	RWRS 27	Hempton - Sculthorpe Moor	1.72	1.72	1.72	Mixed	0						12	0.05	0.03	9.09	6.00	74		0%	100%	9		100%	100%	0.00	0.00
15	47	RWRS 28	Sculthorpe Moor - Sculthorpe Mill	1.25	0.405		Mixed	0						11	0.05	0.03	9.44	4.8	74		50%	32%	9		100%	100%	0.00	0.00
16	47	RWRS 29	Sculthorpe Mill - South Mill Farm	2.63	0.85		Mixed	0						11	0.05	0.04	7.8	4.84	74		50%	32%			100%	100%	0.00	0.00
17	47	RWRS 30	South Mill Farm - River Tat confluence	0.67	0.65			0						13	0.05	0.04	7.8	4.84	74		100%	97%	5		100%	100%	0.00	5.00
17	46	RWRS 31	Tat confluence	0.48				0						13	0.05	0.04	7.8	4.84	74		100%	0%	5		100%	0%	0.00	5.00
17	46	RWRS 33	Tatterford Common - Helhoughton Common	0.72				0						12	0.05	0.04	5.00	5.29	74		100%	0%	5		100%	0%	0.00	8.00
17	45	RWRS 34	Helhoughton Common - Brickkiln Plantation	1.57	1.57			0						13	0.05	0.04	5.00	5.29	74		100%	100%	5		0%	0%	0.00	8.00
18	45	RWRS 35	Brickkiln Plantation - West Raynham	0.71	0.71			0						15	0.05	0.03	5.00	5.29	74		100%	100%	5		0%	0%	0.00	8.00
18	45	RWRS 36	West Raynham - South Raynham Bridge	1.41	1.41			0						11	0.05	0.03	5.00	5.29	74		100%	100%	5		0%	0%	0.00	8.00
18	45	RWRS 37	South Raynham Bridge - Normans Burrow Wood	0.72	0.72			0						4	0.05	0.03	5.00	5.29	74		100%	100%			0%	0%	0.00	8.00
18	45	RWRS 38	Normans Burrow Wood - Pear Tree Corner	0.85	0.85			100						12	0.14	0.46	40.00	5.29	74		100%	100%			0%	0%	0.00	8.00
19	46	RWRS 32	Tat Tatterford Common	3.28	2.19			0	0.00	0.00	0	0.00	3.28	9	0.12	0.11	5.00	4.84	74		100%	67%			100%	0%	0.00	5.00
20		RWRS Tat	River Tat Coxford - Sculthorpe	3.25				0	0.00	0.00	0	0.00	5.33	2	0.11	0.11	5.00	3			100%	0%					0.00	5.00
20A		RWRS Tat	River Tat East Rudham	3.53				0						7	0.34	0.02	20.00	3			100%	0%						
21		RWRS	Langor Drain	1.98				0							0.08	0.09	5.00	5			100%	0%						
22		RWRS	Guist Drain	2.01				0							0.2	0.05	6.00	4.8			100%	0%						
23		RWRS	Foulsham Drain	12.4	3			25							0.2	0.05	6.00	4.8			100%	24%						
24		RWRS	Blackwater Drain	10.8				25							0.3	0.085	5.00	8.00			100%	0%						
25		RWRS	Blackwater Drain Trib	5.93				25							0.2	0.085	5.00	8.00			100%	0%						
26		RWRS	Kerdiston Drain	5.06				25							0.2	0.085	5.00	8.00			100%	0%						
27		RWRS	Swannington Drain	5				25							0.04	0.03	5.00	6.00			100%	0%						
28		RWRS	Wendling Beck - Dillington - Worthing	6.90				0						12	0.01	0.04	5.00	9.00			100%	0%						
29		RWRS	Wendling Beck - Grt Farnsham - Dillington	10.00				100							0.11	0.11	8.50	9.00			100%	0%						
30		RWRS	River Tud - Source - Hockering	13.5				25	0.75	2.10	1	0.00	8		0.55	0.16	8.00	8.00			100%	0%						
31		RWRS	River Tud - Hockering - New Costessey	10.7				25	0.75	2.10	1	0.00	8	10	0.2	0.08	6.00	8.00			100%	0%						

Collaborative Monitoring Plan

Tracking and Engagement

CaSTCo

CaSTCo is continuing to work with the Wensum Catchment Partnership to develop and refine a Collaborative Monitoring Plan (CMP) for the Wensum Catchment. The principle aim for the CMP is for all partner organisations engaged in the Wensum to set out and collaboratively agree what monitoring is needed within the Wensum catchment to answer key questions about the health of the river.

Citizen scientists are playing an increasingly important role in helping to monitor the river at a scale and frequency that resource-limited statutory agencies cannot deliver alone. In turn this is helping to provide detailed, lab-comparable data on potential sources of nutrient pollution in the Wensum's headwaters.

Catchment partners are now working together with CaSTCo to explore how this data can be integrated into decision-making and planning a range of interventions to improve the health of the river. Work is also underway to explore the potential role of citizen science in unlocking defined nutrient neutrality options for the Wensum.

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