Current state of the Upper river Ivel

Baldock & Villages Community Forum

23rd March 2026

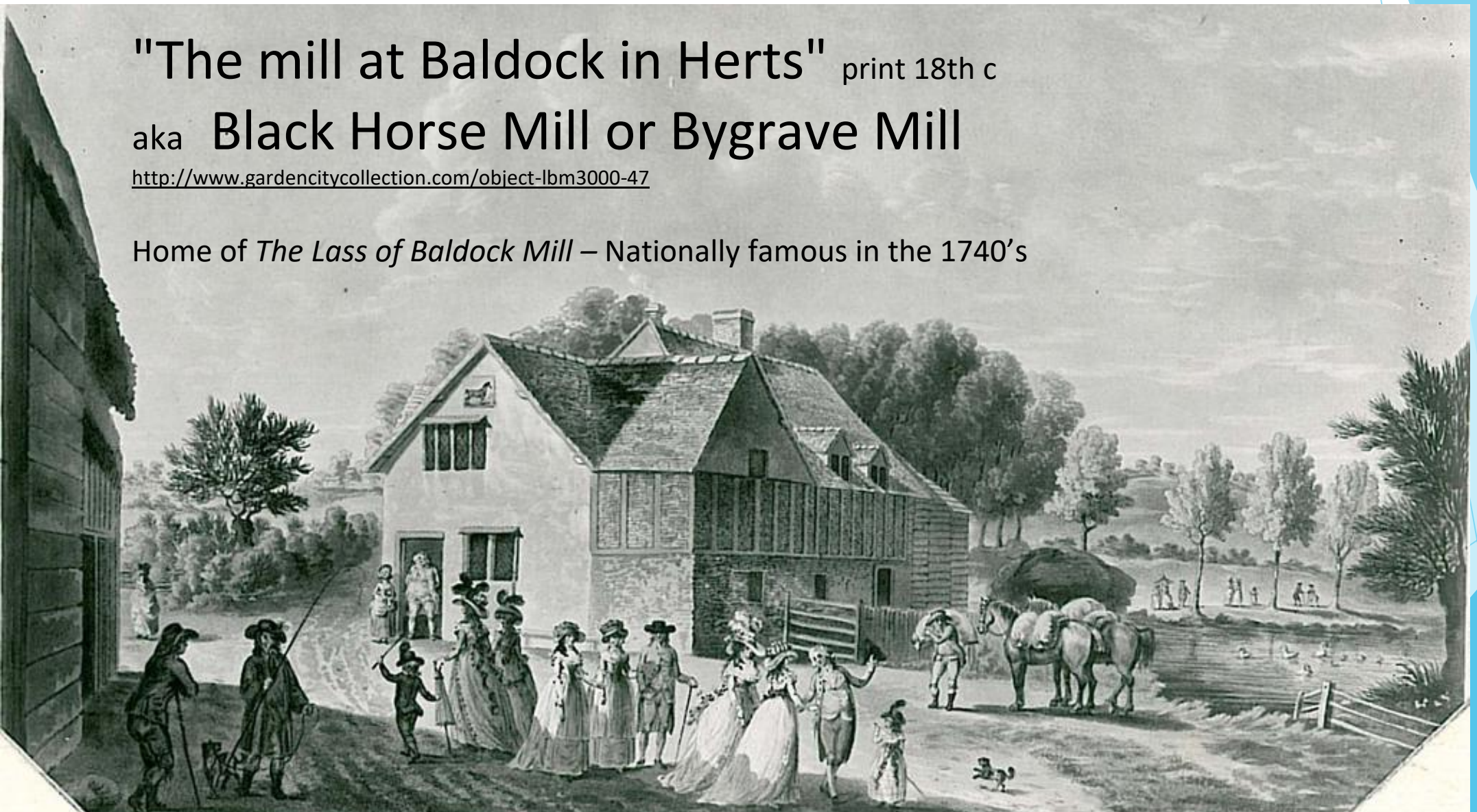
Richard Meredith-Hardy, Chairman, revIvel

- At Blackhorse Mill the river Ivel was dry for 41 of 77 months (53%):
- Sep – Dec 2016
- Apr – Dec 2017
- Aug – Dec 2018
- Jan - Dec 2019
- Aug – Dec 2020
- Jul – Dec 2022

Black Horse Mill race 31 Aug 2019

Affinity water: *We operate in a region of environmental importance, featuring rare chalk streams which support a unique ecology.*

- Revivel established in 2019 with the ambition: *For the restoration of sufficient flow in the upper River Ivel to sustain Brown Trout all year round.*



"The mill at Baldock in Herts" print 18th c

aka Black Horse Mill or Bygrave Mill

http://www.gardencitycollection.com/object-lbm3000-47

Home of *The Lass of Baldock Mill* – Nationally famous in the 1740's

Environment Agency: *English chalk streams are one of the most precious and beautiful things in the natural world. They are known for their clear waters, rich wildlife and for providing a beautiful place for people to enjoy.*

Historic flows in the Ivel

RevIvel collected historical evidence change to the Ivel, including:

- Royal Commission into Metropolitan Water Supplies 1893.
- Ancient water mills at Blackhorse Mill & Norton Mill and substantial water cress beds meant that Ivel Springs must have flowed perennially with at least 5 Ml/d.
- Radwell Mill and Stotfold Mill needed a minimum flow of 14 Ml/d to operate.
- Important trout fishery at Norton and Radwell.

An estimate of mill water requirements is shown in Table 2[8]:

Mill specifications

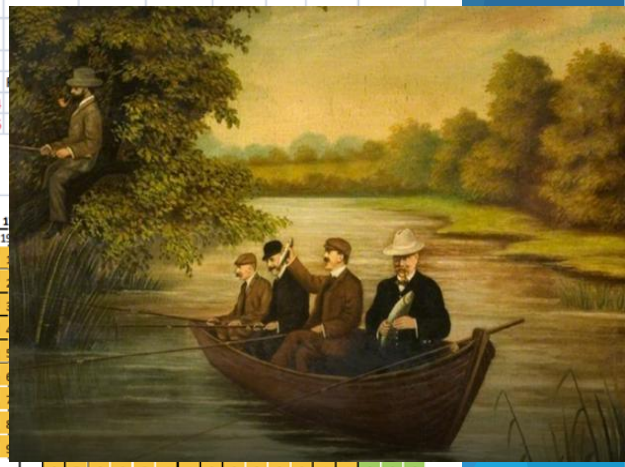
	AMSL	Segment m	Dist m from Ivel Springs	Mill wheel Fall m	Mill wheel width m	Mill pond Area m2	Mill pond Depth m	Mill pond Usable Vol Ml	Working flow No of stones	Working flow l/sec	Working flow Ml/d	Working flow Power (HP)
Ivel Springs	59		0	0								
Blackhorse Mill		550	550	1.05	2.2	812	0.6	0.49				
Norton Mill		600	1150	2.59	2.6	4469	0.3	1.34				
Radwell Mill		1250	2400	2.59	4.3	20230	0.34	6.88	2	400	34.6	13.6
Stotfold Mill (Randalls)		1251	3651	2.8	4.4	4600	0.38	1.75	2	400	34.6	13.6
Taylor's Mill		1719	5370	1	2	10055	0.6	6.03	2	400	34.6	13.6
Astwick Bridge	38	347	6201									
Fall m	21			15.43								

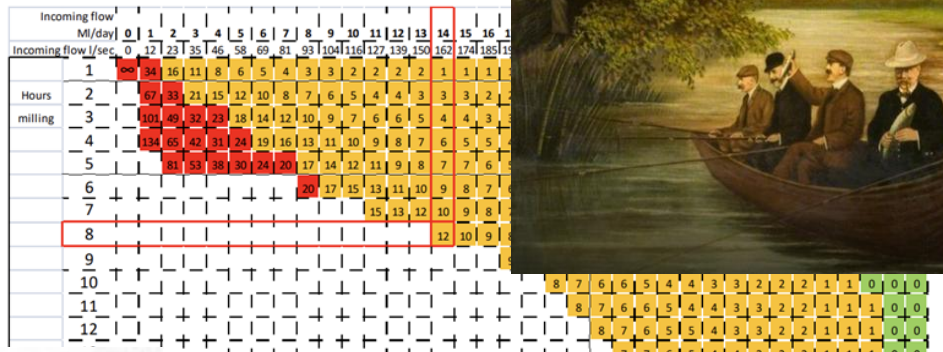
Stotfold Mill empirical

Figures in red supplied by Ray Kilby, miller.

	hp	Flow Ml/h
2 stones @ 60 rpm	14	1.4
2 stones @ 90 rpm (commercial speed)	16	1.6

a) Calculation of water requirement at each mill





he coloured squares are number of hours needed to refill the storage in Radwell mill pond)

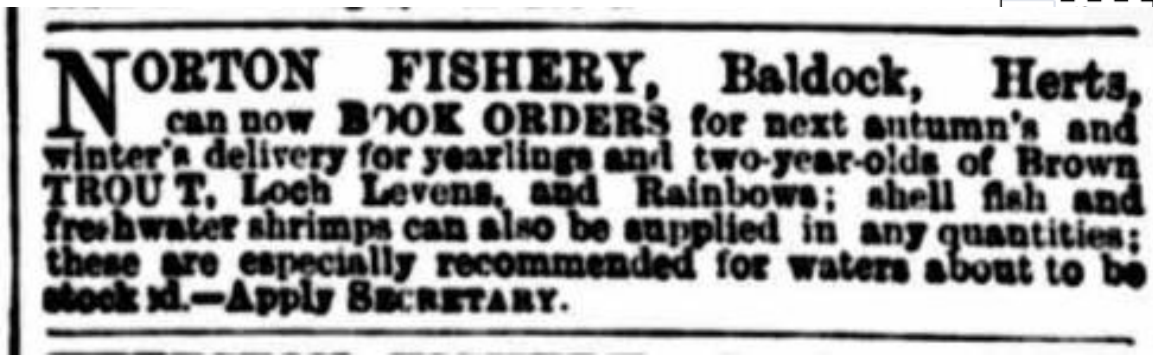
mill

, but mill pond recovery will take more than 1 day, eg at an incoming flow of 1Ml/day the mill pond would take 134
) to recover after 4 hours of milling.

on a daily basis, eg red outline: at an incoming flow of 14Ml/day the mill pond would take ~12 hours to recover after 8
).

ill take less than an hour to recover

Radwell Mill operation using mill pond storage



NORTON FISHERY, Baldock, Herts, can now BOOK ORDERS for next autumn's and winter's delivery for yearlings and two-year-olds of Brown TROUT, Loch Levens, and Rainbows; shell fish and freshwater shrimps can also be supplied in any quantities; these are especially recommended for waters about to be stocked.—Apply SECRETARY.

Science - June 2022 Lawson Report

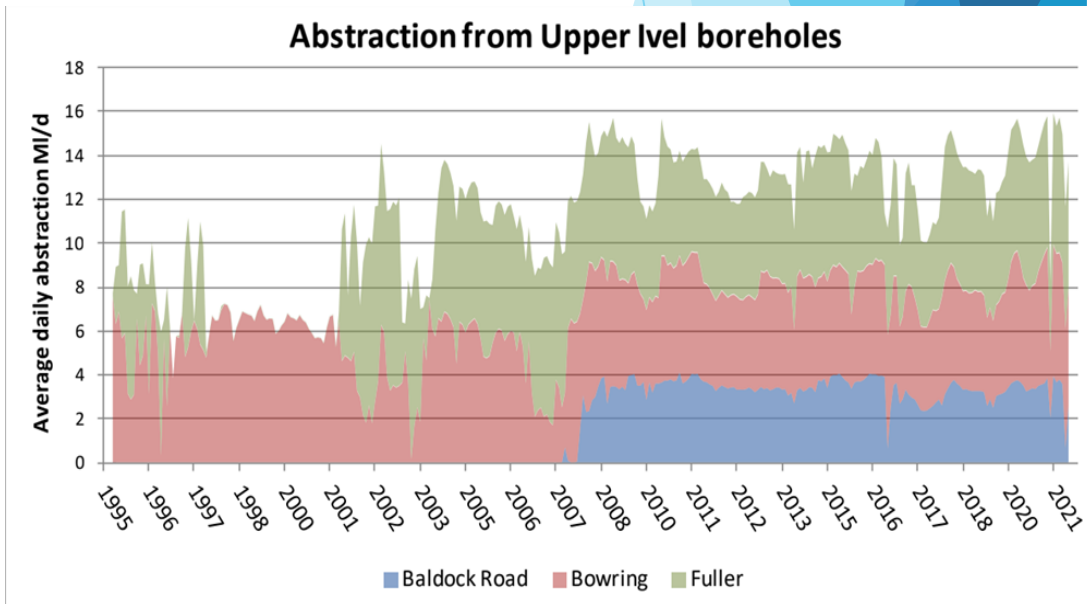
Investigated existing explanations for the dry river

- The Environment Agency's conclusion was mostly based on erroneous data.
- Affinity's explanation was based on some very brief tests done in 2017 which were highly questionable.

Explained the real problem

- Prolonged over abstraction has caused ground water levels to be 6-8m lower than historic norms.
- More that 50% of **recharge** (effective rainfall Oct- March) is abstracted from the Ivel aquifer when best practice for sustainable abstraction in a chalk catchment should be no more than 10%
- Upper Ivel is in "Top 5" most abstracted chalk streams in the World.

Dates	Abstraction/yr (x1000m3)	% licence	Average /day (Ml)
1996-2001	2604	48%	7.13Ml/day
2002-2007	3868	72%	10.6Ml/day
2008-2020	4849	90%	13.28Ml/day



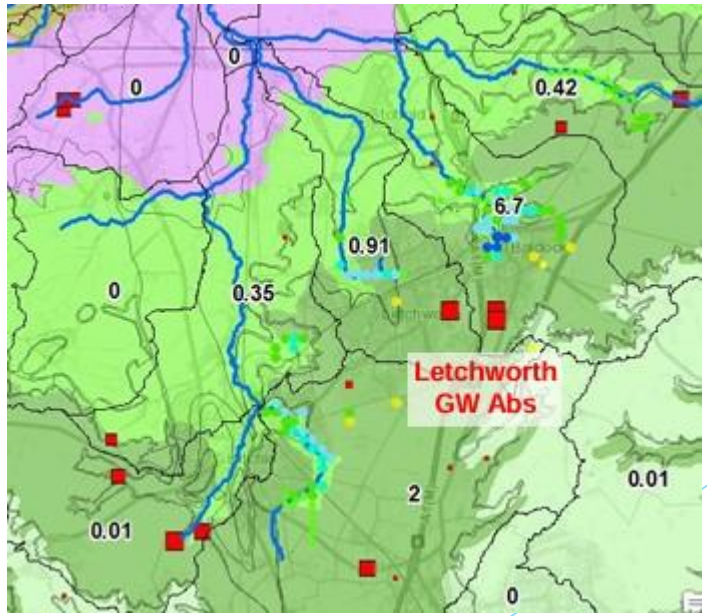
Science - June 2022 Lawson Report

Proposed solution

- ‘Chalk Streams First’ - Let the Springs flow as nature intended and abstract further downstream
- A near-natural flow regime for the Upper Ivel could be achieved quite quickly by:
  - Reduction of use of Baldock boreholes to 2.4 Ml/d for normal continuous supply.
  - Replacement supplies through 12.4 Ml/d of transfer back from Grafham Water using existing infrastructure installed for this very purpose in the 1960s.
  - Possibility to use boreholes to pump water for regulation release into Upper Ivel in severe droughts similar to an existing scheme on the River Thames.

Science – June 2024 WSP report

- Recalibrated EA's model with correct data (1970 to 2020)
- Confirmed Lawson's environmentally minimum flow at Ivel Springs should be 2.5 Ml/d
- Confirmed the Baldock abstractions cause the whole of the upper Ivel to Henlow to be consistently below environmentally minimum flows.
- Confirmed Lawson's recovery estimate for the Ivel if abstraction was reduced to a sustainable 10% of recharge.
- Enhanced Lawson by stating that flow would also improve in the Purwell/Hiz (22%), Pix Brook (9%), Cat Ditch (4%) and the Rhee at Ashwell (2%).



So there is a solution, but what has been done?

From April 2025 Affinity agreed to a "sustainability reduction" to their licence at the Baldock boreholes from 5.391 billion liters to 5.164 billion litres PA, a reduction of 227 million litres or 4.22%

- But due to the geology, this "reduction" would have had operational impact in only 1 year in the last 25 - in 2020 when the winter rainfall was 170% of average!

In 2024-25, as part of their landscaping works at Ivel Springs, Affinity installed an Augmentation scheme to pump water from a new borehole into the springs when over-abstraction stops natural flow.

- The augmentation is limited to 0.54 Ml/d or just 21% of the environmentally acceptable minimum flow of 2.5 Ml/d.
- The science predicts that most of this augmented water will soak into the river bed before it reaches Norton Mill – this was demonstrated even with an augmentation rate of 1 Ml/d when it was In operation last summer & autumn.

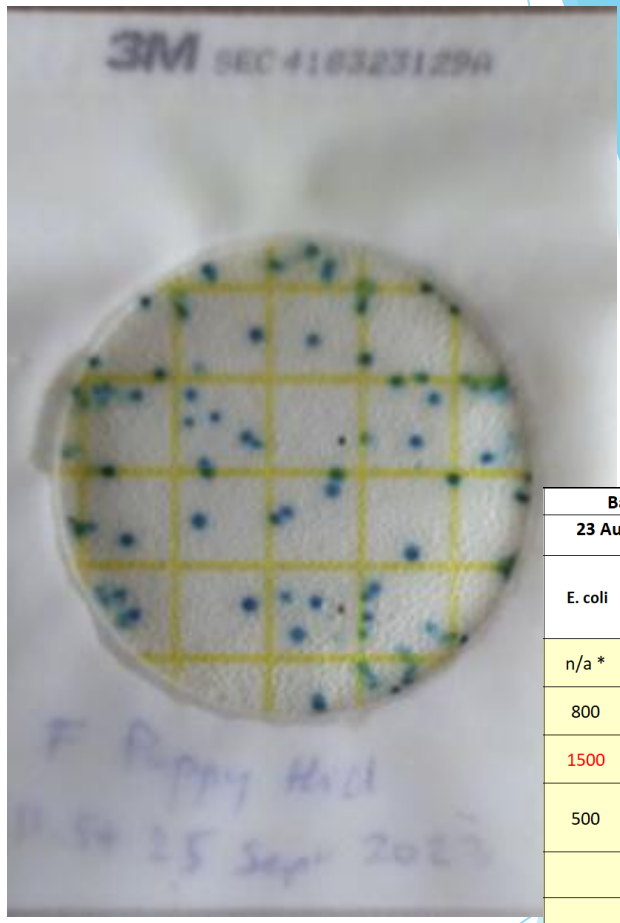
What has been done so far?... Not much

Chris Hinchcliff MP visiting Ivel springs february 2025

What is revIvel doing?

Water quality monitoring

River fly surveys – a good indicator of river health



E. Coli monitoring

Batch 1			Batch 2	
23 August 2023			25 September 2023	
E. coli	Presumptive Enterococci	Code	E. coli	Presumptive Enterococci
n/a *	n/a	1. A	n/a	n/a
800			1000	
1500			900	
500			8400	
			4100	
1300			2400	
2600			6600	
500			1200	
			500	

What is revIvel doing?

- Public engagement
  - Stotfold Steam fair, Baldock festival, River walks, TV Etc
- Growing Baldock Consultation
  - Various consultations & attendance at meetings.
  - Where will the clean water come from?
  - Can the main site really be entirely drained by infiltration?
  - Will Stotfold be flooded by the extra sewage discharge?
- Affinity Water: Wetland and Augmentation at Ivel Springs
  - Various meetings with Affinity & their consultants, and visits to site.
  - Exposed serious sewage ‘mis-connections’ problem.
  - Ongoing monitoring and research on effectiveness of augmentation.

REVIVEL

Growing Baldock

BBC COUNTRYFILE

What is revIvel doing?

- National Highways SUDs lagoon at Norton
  - Full, and pouring road pollution into the river whenever it rains – last dredged in 1995
  - National Highways initially denied it was anything to do with them – revIvel persuaded them otherwise.
  - Work to empty it has started.
- Agricultural pollution from Letchworth farm estate
  - Affinity may fund a SUDs project at Radwell
- Road pollution from Radwell Lane & Nortonbury Lane
  - Herts County Council responsibility. Ongoing.

What is revIvel doing?

- Invasive American mink eradication
  - Close cooperation with the Waterlife Recovery Trust
  - 6 smart traps on the Ivel between Radwell and Henlow
  - One smart trap on Cat Ditch
  - 23 Mink caught since August 2023
  - None caught since September 2024

- Water Vole recovery
  - There were once many voles on the Ivel
  - Some areas of East Anglia have seen a rapid expansion of surviving populations
  - Unfortunately not seen on the Ivel – probably none left
  - Possibility of a re-introduction scheme, but there are issues.

What is revIvel doing? *September 2025 - Installing flow gauge at Radwell*

Watch this short video at https://youtu.be/OnU53DE8iI8

What is revIvel doing?

Flow measurements at Radwell

- Environmentally acceptable minimum flow = **14 Ml/d**
- September 2025 at time of install – **3 Ml/d**
- Today – **23 Ml/d** - but for how long?
- Calculation using Manning equation

$$\text{Flow Rate (Q): } Q = A \cdot v = \frac{k}{n} A R^{2/3} S^{1/2}$$

- Soon will install automatic measuring equipment

What can North Herts Council do?

- The new Local Nature Recovery Strategy (LNRS) classifies the whole of the upper Ivel in Hertfordshire as an area of particular importance for biodiversity and calls for restoration & renaturalization.

Solution: Add water

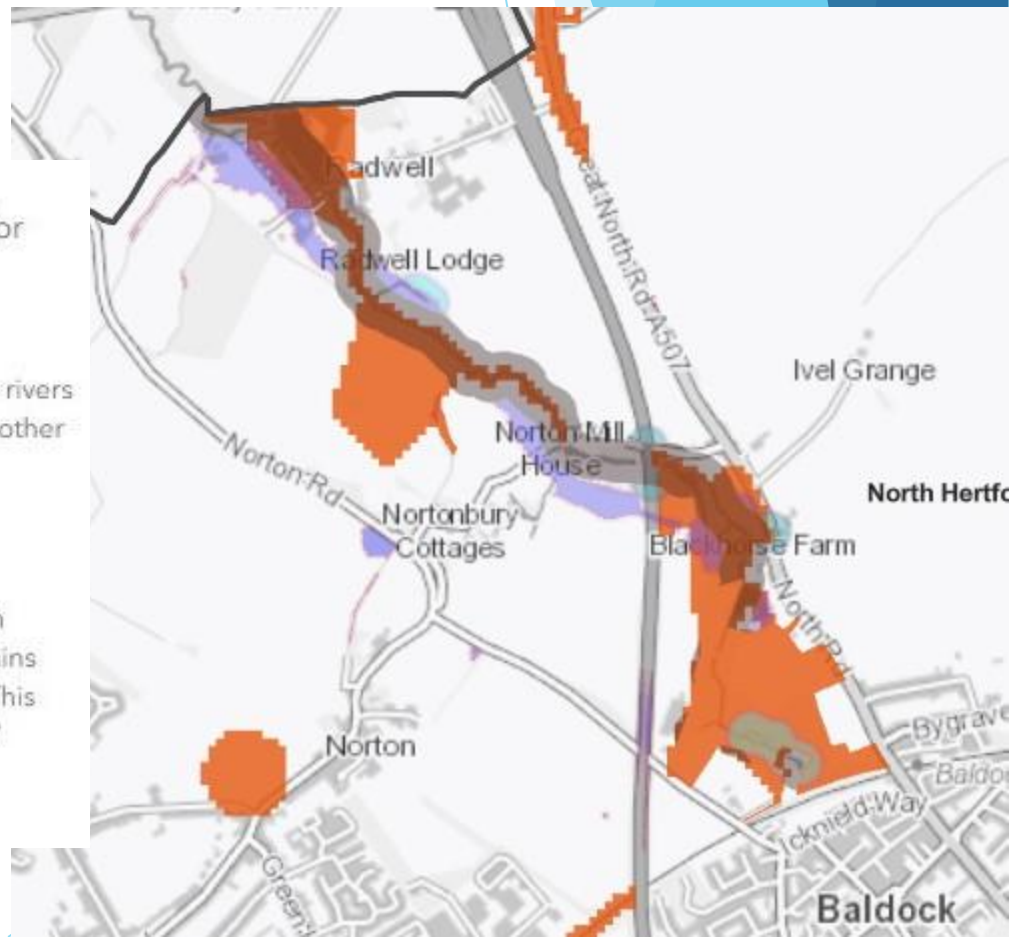
Areas of Particular Importance for Biodiversity (APIBs)

Action 1

Restore and renaturalise Hertfordshire's rivers (incl. chalk streams, winterbournes and other headwaters)

Action 2

Create, restore or enhance diverse high quality wetland habitats within floodplains adjacent to rivers and natural springs. This will benefit wildlife, capture pollutants / sediment and provide natural flood management.



Thank you for listening
Any questions?

www.revivel.org

The Mimram & Rununculous on the Shep