

SW/PPF Quarterly Meeting



Agenda

- 1.Intro from Nick Mills, SW Head of Cleaner Rivers and Seas Taskforce and PPF Chair
Chris Harris
- 2.Re-brief of objectives to new members (Keith Herbert)
- 3.Monitoring update and state of the nation (KH)
- 4.programme update (KH)
 1. Tubogel
 - 2.MH sealing
 - 3.public sealing
- 5.Results (KH)
- 6.Lay-bys (KH)
- 7.Flow restoration update (Alex Saunders, SW Head of Wastewater Networks)
- 8.Groundwater strategy and preparedness (AS)
- 9.RP and trigger level update (AS)
- 10.Treatment updates (AS)
- 11.Water Quality monitoring (Janet Wright)
- 12.AOB



Objectives

Pan Parish Forum. Protect the Environment and stop the disruption.



Seal Everything

Thruxton, Kimpton, Fyfield & East Cholderton

Aim: no tankering from these villages

Scope:

Seal leaky public sewers – 4.5km

Seal public manholes – 134

Seal private drains – 559 properties (~8.4km)

Scan remaining public sewers – 1.9km

Aspiration: completion by Nov '22

Expectation: Seal Thruxton and Kimpton by Nov '22, follow with Fyfield & E Cholderton by Nov '23

Seal Public Defects

Amport & Monxton

Aim: no infiltration into the public network. Learn from “seal everything” villages and monitoring.

Scope:

Seal leaky public sewers – 1.4km

Seal public manholes – 65

Scan remaining public sewers – 3.2km

Monitor impact of upstream work

Plan future private drain sealing if required

Aspiration: sealing completed by Nov '22

Expectation: TBC

Investigate Everything

Weyhill, Abbotts Ann & Little Ann

Aim: understand how much infiltration can occur into the public network. Learn from monitoring and other villages.

Scope:

Scan public sewers – 10.4km

Aspiration: scans completed by Nov '22

Expectation: scans carried out between May '23 and Nov '23 (TBC)

Monitoring

All villages

Aim: Improve understanding local groundwater levels. Improve understanding on where infiltration is entering the network. Improve speed of reactive maintenance. Evidence suitability of sealing technique.

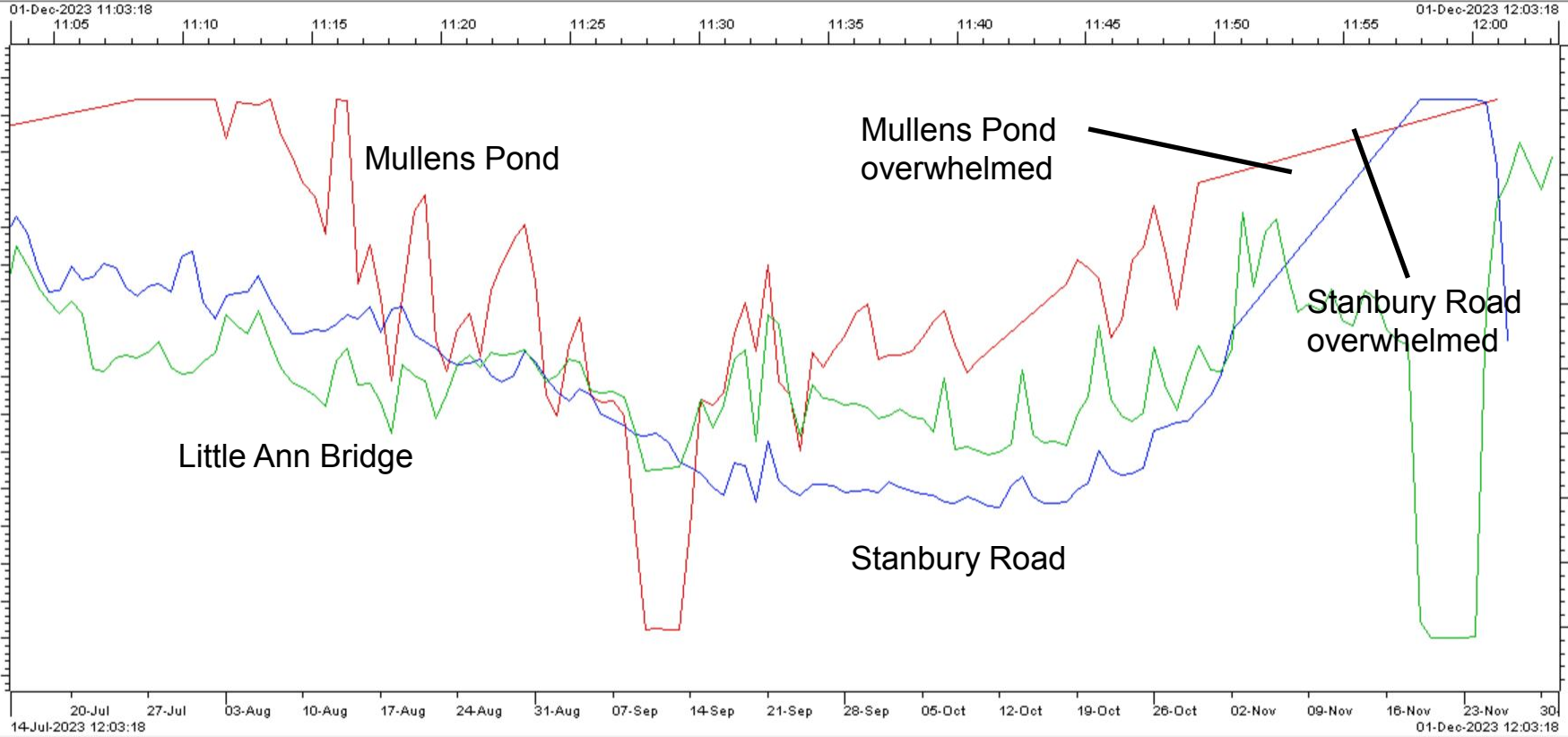
Scope: Observation boreholes and improved groundwater model
Temperature sensing
AMP cycle electro scan programme

Aspiration: Monitoring in place for Nov '22.

Borehole data

Monthly GW levels (m AOD or Above Sea Level)

Week	Amport Rainfall (mm)	Clanville Gate* (101.55 AOD)	Change	High View Kimpton	Change	Stanbury Road (76.63 m AOD)	Change	Mullens Pond (69.35 m AOD)	Change	Monxton (62.52 m AOD)	Change
6/1/23	22.0	81.07	↑	82.71	↑	-	-	-	-	-	-
3/2/23	0.5	85.55	↑	85.30	↑	76.11	↓	69.03	↓	61.80	↑
3/3/23	0.0	85.45	↓	84.88	↓	76.04	↓	68.96	↓	61.68	↓
7/4/23	8.50	86.31	↑	85.75	↓	76.11	↑	69.06	↑	61.74	↑
5/5/23	5.5	86.87	↓	85.88	↑	76.14	↑	69.07	↓	61.81	↑
2/6/23	0.0	86.97	↓	85.50	↓	76.14	↓	69.02	↓	61.75	↓
7/7/23	34.0	85.46	↓	84.00	↓	76.10	↓	68.93	↓	61.60	↓
4/8/23	26.5	84.58	↓	83.50	↓	76.05	↓	68.89	↓	61.57	↓
1/9/23	9.5	83.66	↓	83.83	↑	76.00	↓	68.87	↓	61.56	↑
6/10/23	4.6	82.68	↓	82.73	↓	75.94	↓	-	-	61.65	↑
3/11/23	88.5	84.27	↑	83.85	↑	76.21	↑	-	-	61.94	↑
1/12/23	9.5	86.77	↑	86.00	↑	76.22	↓	-	-	61.92	↓

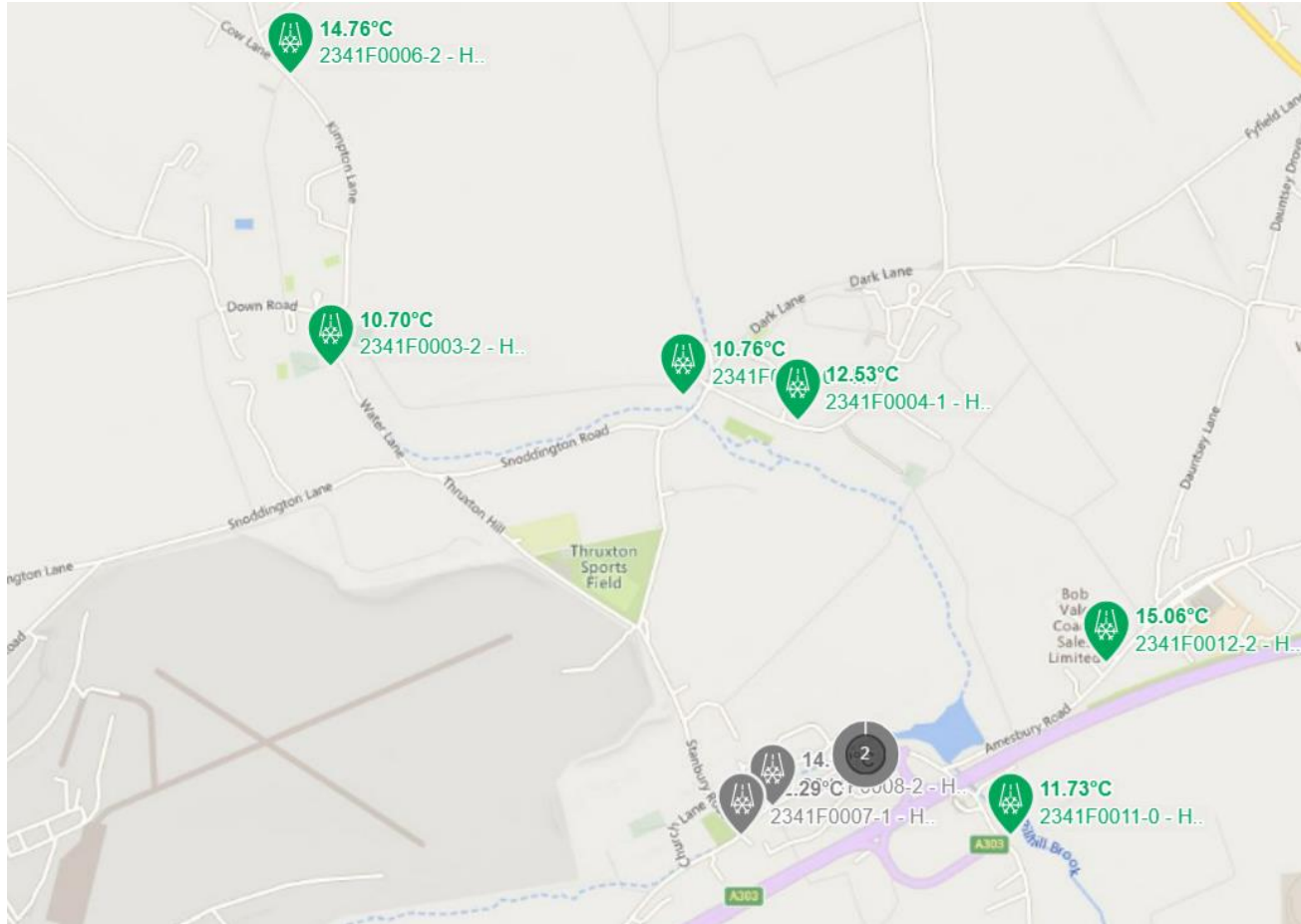


Trend	Server	Stream	Works	Process	Function	Asset	Tag Name	Address	Data Type	Intersect Time	Intersect	Max
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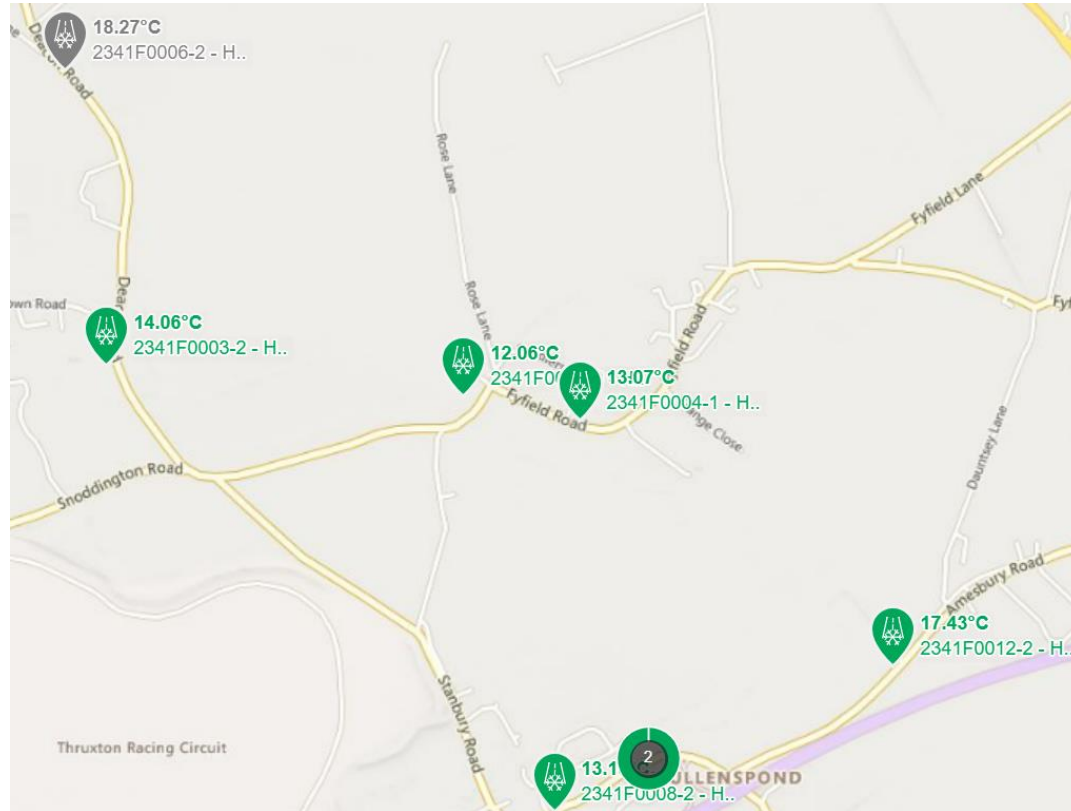
Requests Complete | Default (Global) (Modified) (Modified)



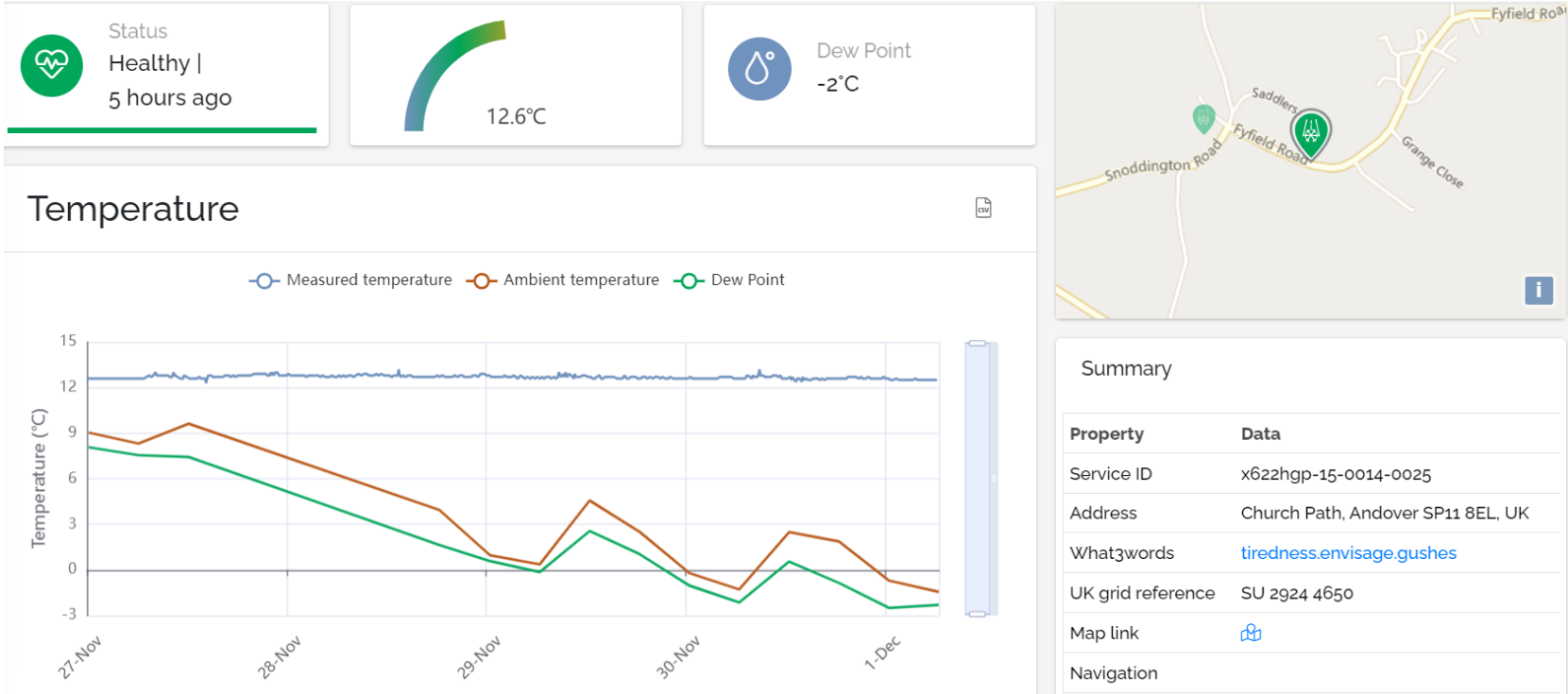
Temperature sensor data 1/12/23



Temperature sensor data 22/9/23



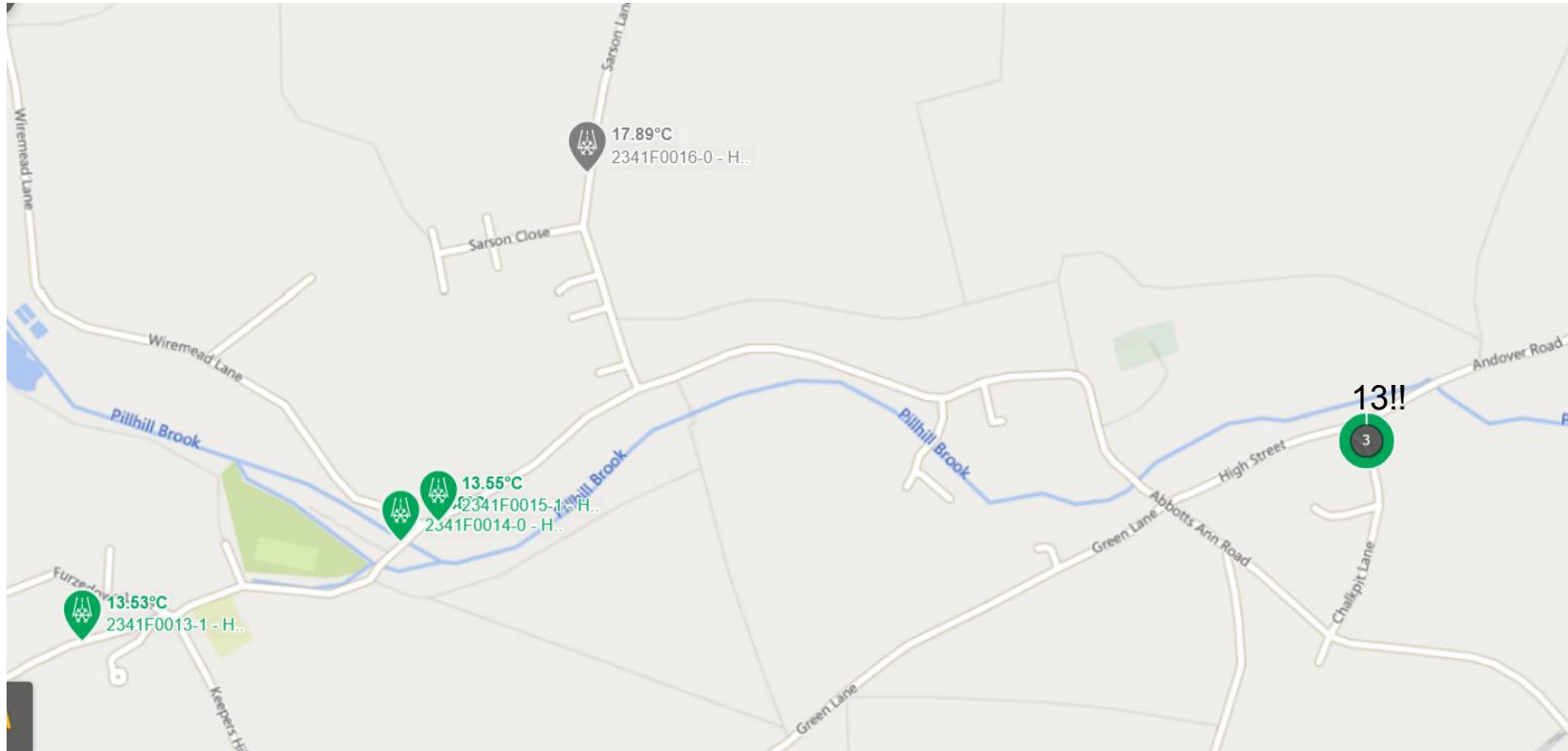
Fyfield sensor 1/12/23



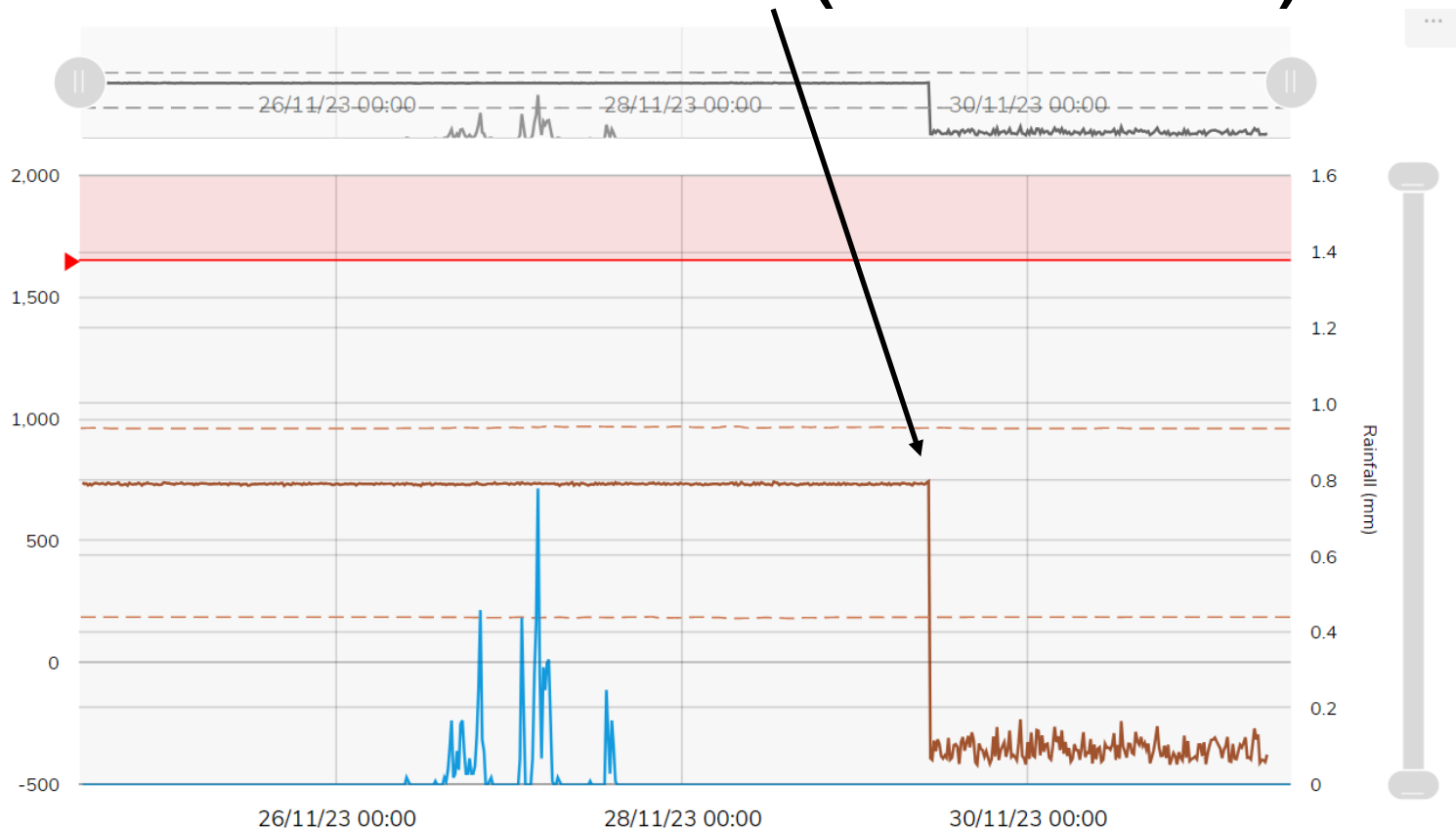
Fyfield sensor 27/10/23



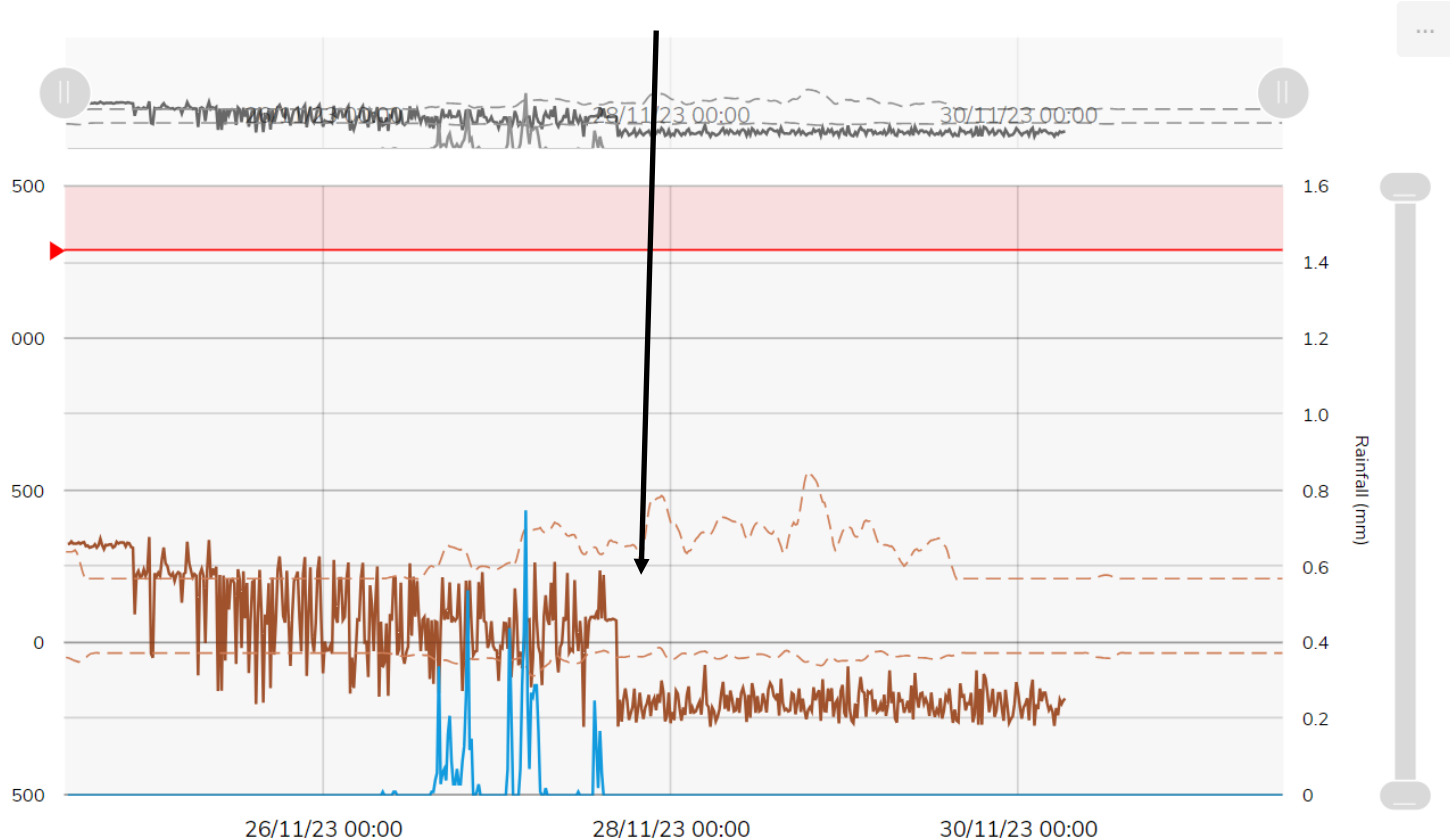
Temperature sensors south

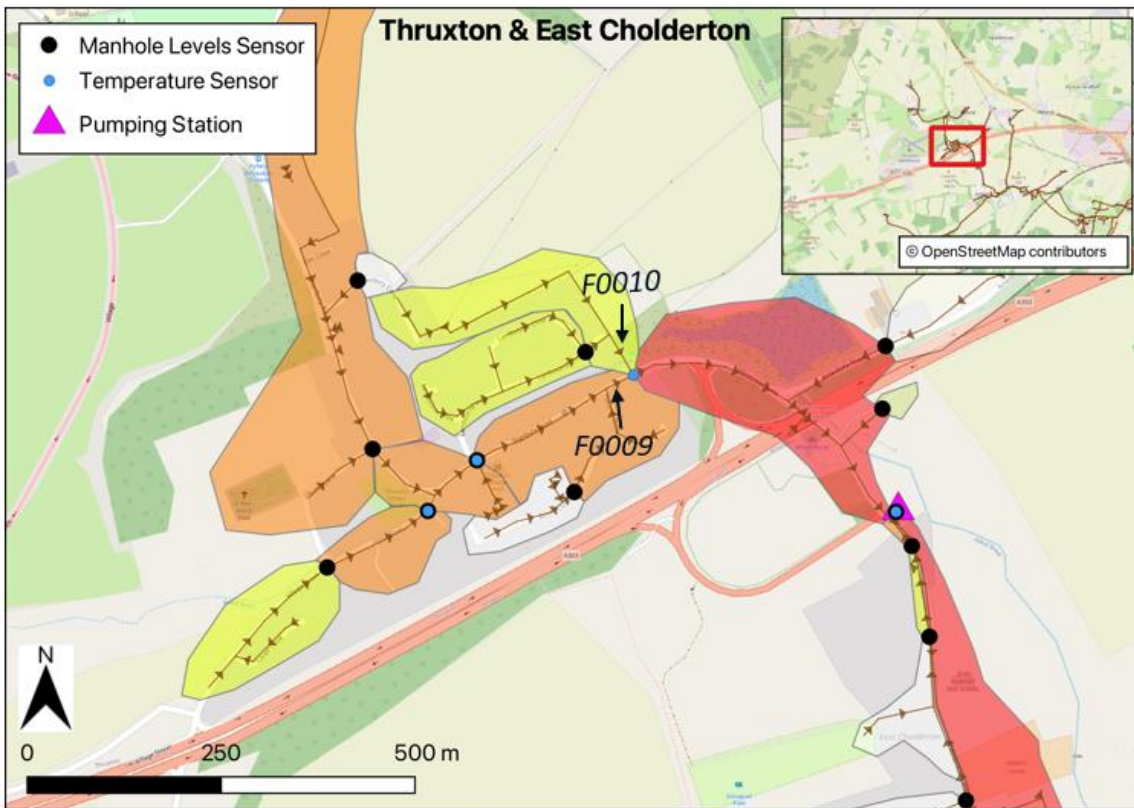


Is this Glenn? (Thruxton)

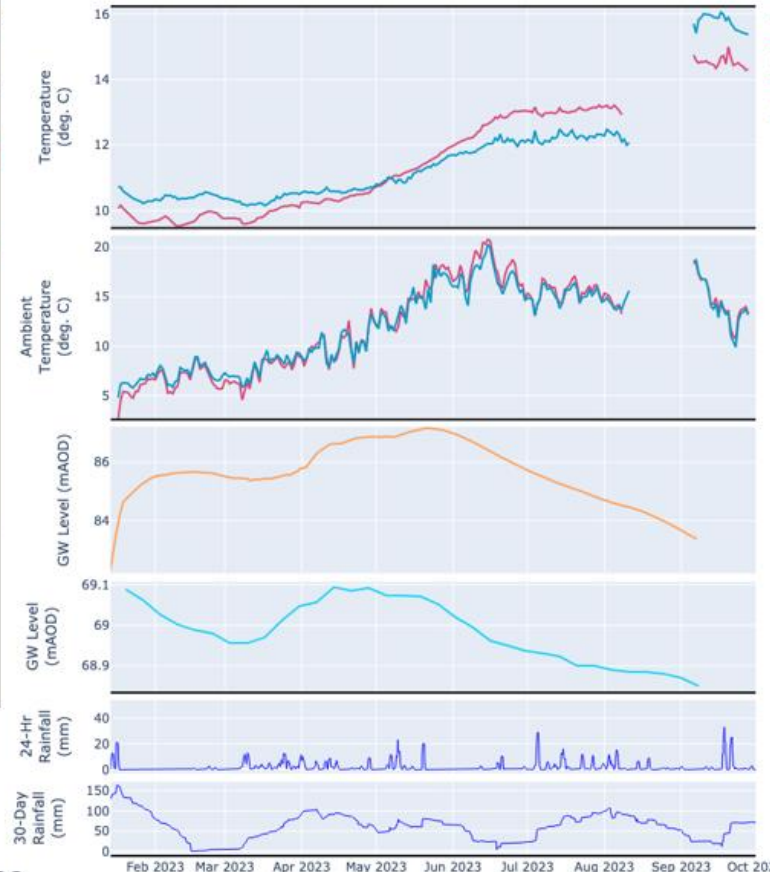


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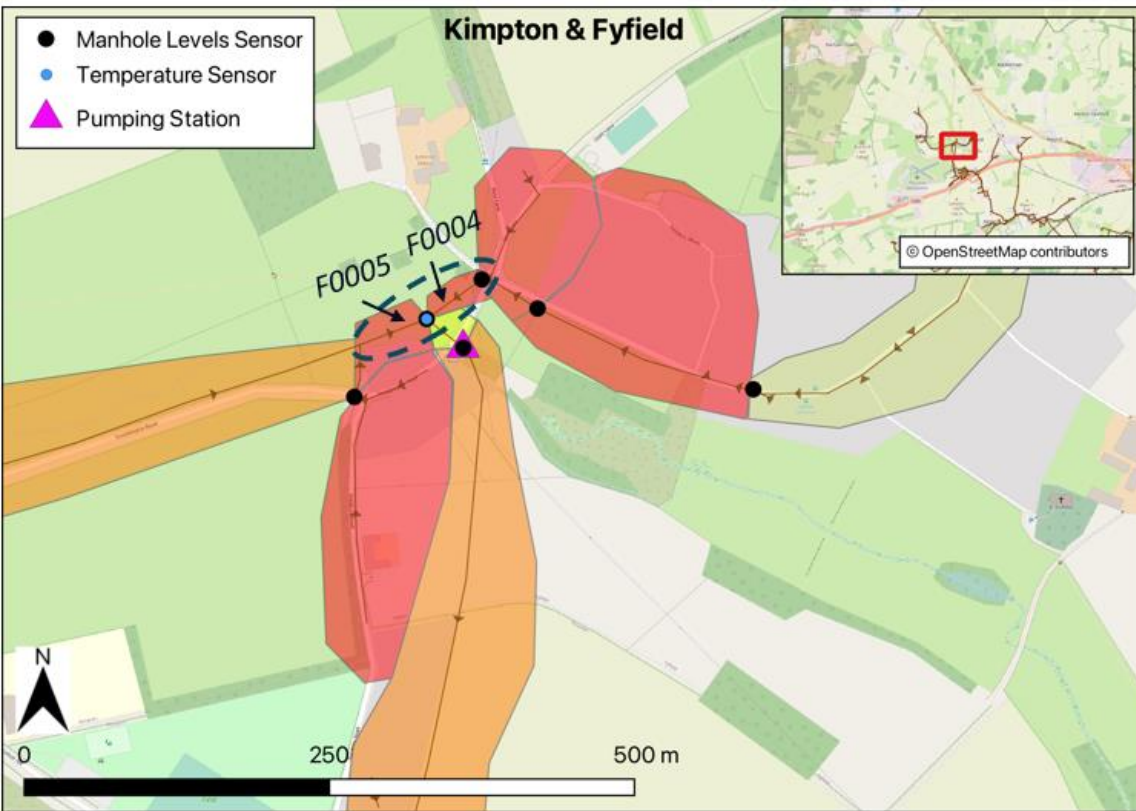




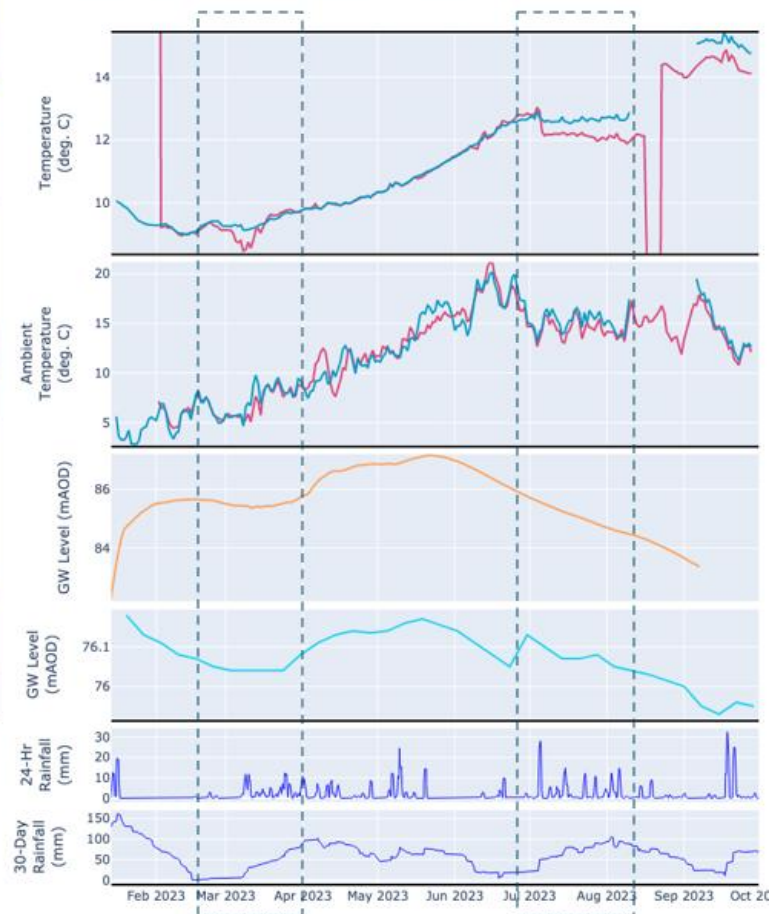
2341F0009-0 & 2341F0010-0 (Thruxton & E. Cholderton)



- F0009 shows larger change in temp. between periods of high/rising and low/falling GW than F0010
- Unclear why F0009 temperature is higher $\sim 1^\circ\text{C}$ higher than F0010 from mid-June

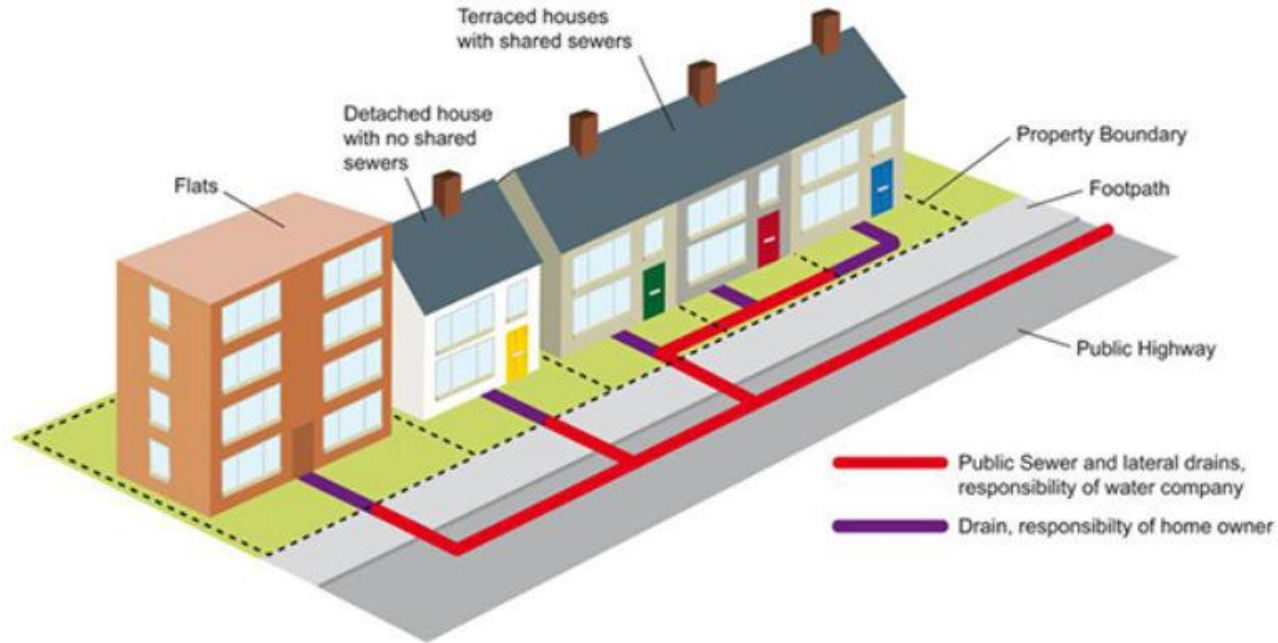


2341F0004-1 & 2341F0005-0 (Kimpton & Fyfield)



- Similar temperature patterns except for late Feb/early Mar and July onwards (when F0005 temperature drops compared to F0004)

Tubogel – Private lateral sealing









Kimpton		
	Props	Length
Complete	97	795
Unable to Complete	16	160

100%

Fyfield		
	Props	Length
Complete	128	1027
Unable to Complete	18	160

100%

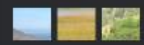
37%

Thrupton		
	Props	Length
Complete	57	439
Unable to Complete	9	64
remaining	112	998

East Cholderton		
	Props	Length
Complete	19	196
Unable to Complete	2	10

100%

Total		
	Props	Length
Complete	301	2457
Unable to Complete	45	394
remaining	112	998



Manhole sealing

26/134

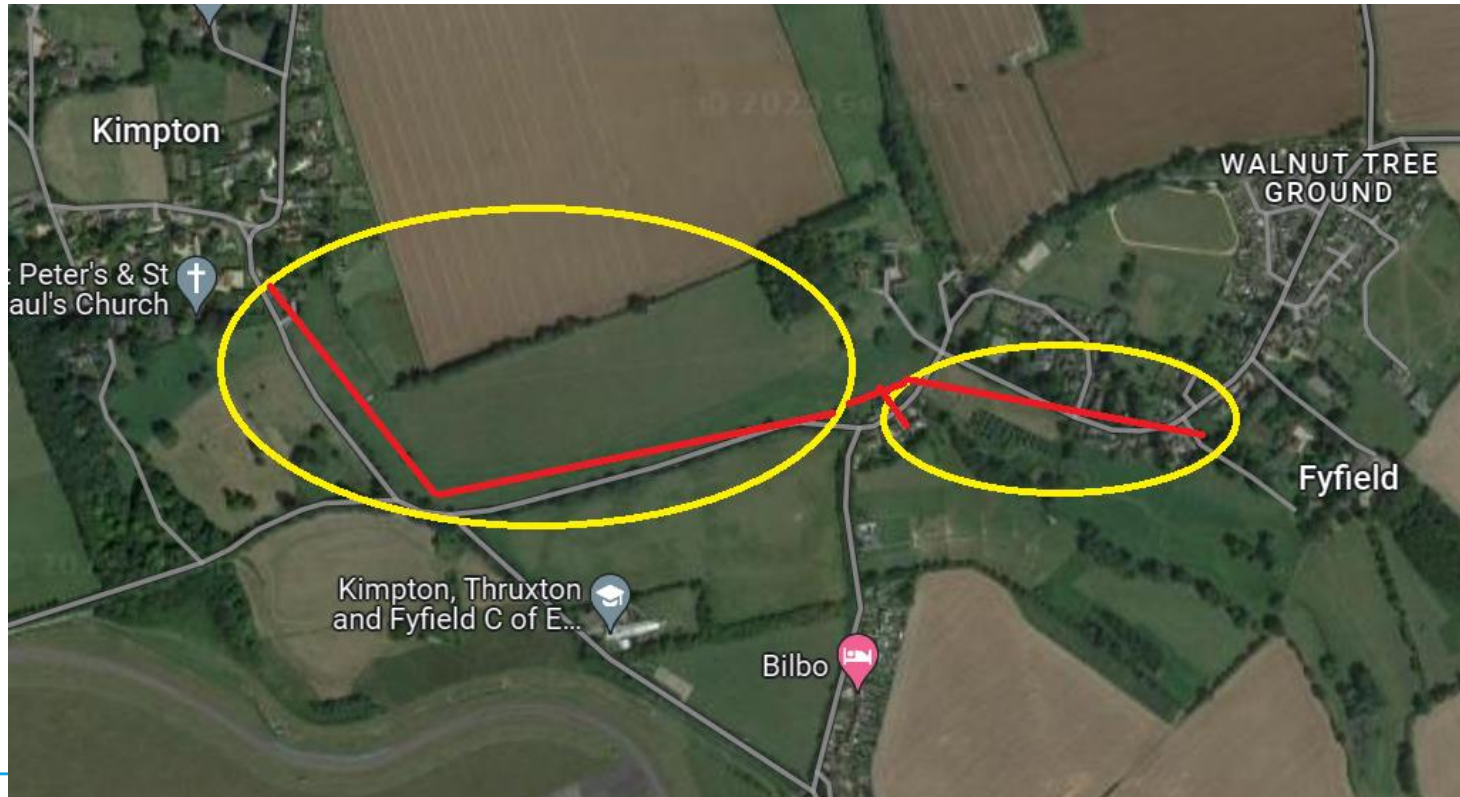


Public sewer sealing works

1300m/4500m

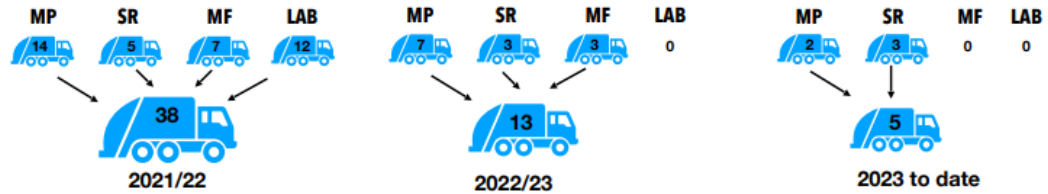


Next steps early 2024



Pan Parish 3 yr Reduction in Tanker Deployment

Results



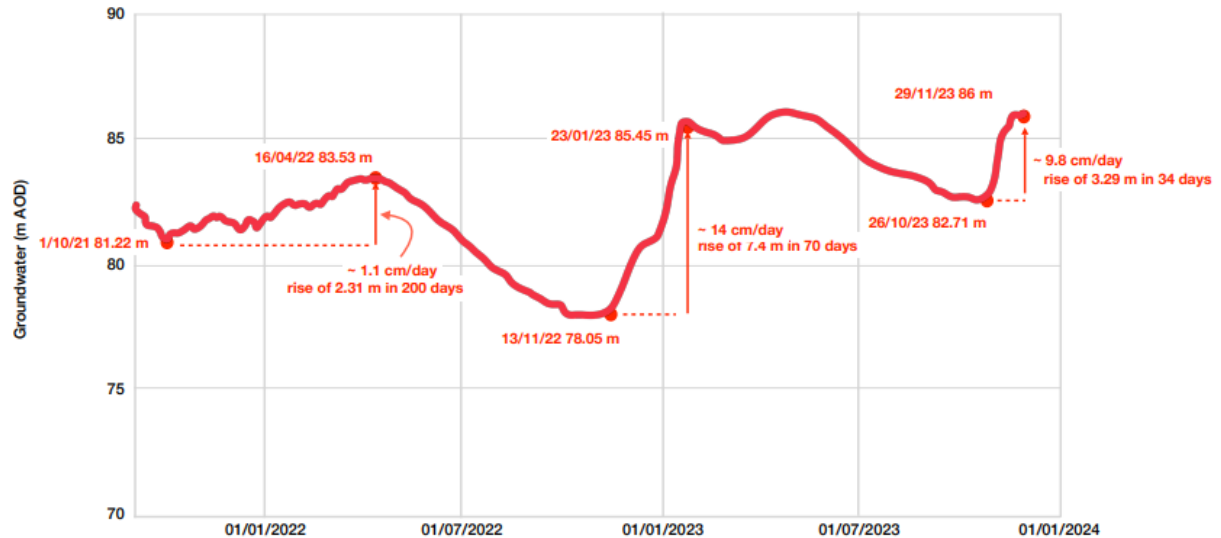
Tankering Sites

MP - Mullens Pond WPS

SR - Stanbury Road WPS

MF - Manor Farm Bell Valve

LAB - Little Ann Bridge WPS



Groundwater levels at High View, Kimpton (107.38 m AOD)



Control Room Visit

Planned for 1/2/24

1 hour 11am start

10 people

Combine with Pathfinder
update



Laybys



Groundwater Treatment

Update

7th Dec 2023



from
**Southern
Water** 

The Southern Water logo consists of three stylized, wavy blue lines of varying lengths, positioned to the right of the text.

Wetland Treatment is still our preferred option but...



Lavant near Chichester, West Sussex

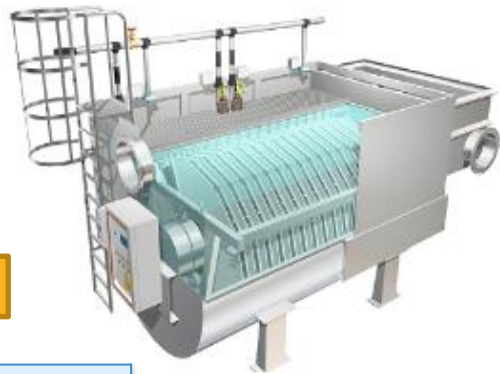
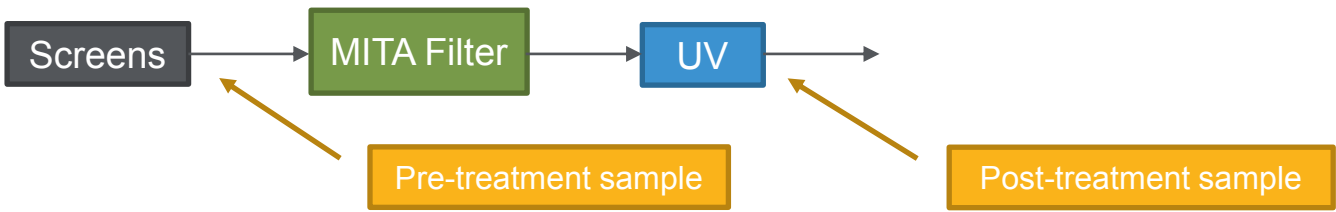
Wetlands have some challenges, in summary

- Permitting route is still uncertain (outside of a treatment works)
- We don't have a storm overflow in the Pan-parish area and a legislative driver
- Land needed to build wetland requires 3rd party agreements
- We would need at least 2 wetlands (Mullens Pond and Stanbury Road) to negate the tankers
- Successes with the sealing and lining is eroding our business case to build the wetland(s)

There may be another way of achieving the same outcome...



Mobile treatment could provide the same performance as a wetland and be operational in the short term. Trial results so far are promising and are comparable with local wastewater treatment works.



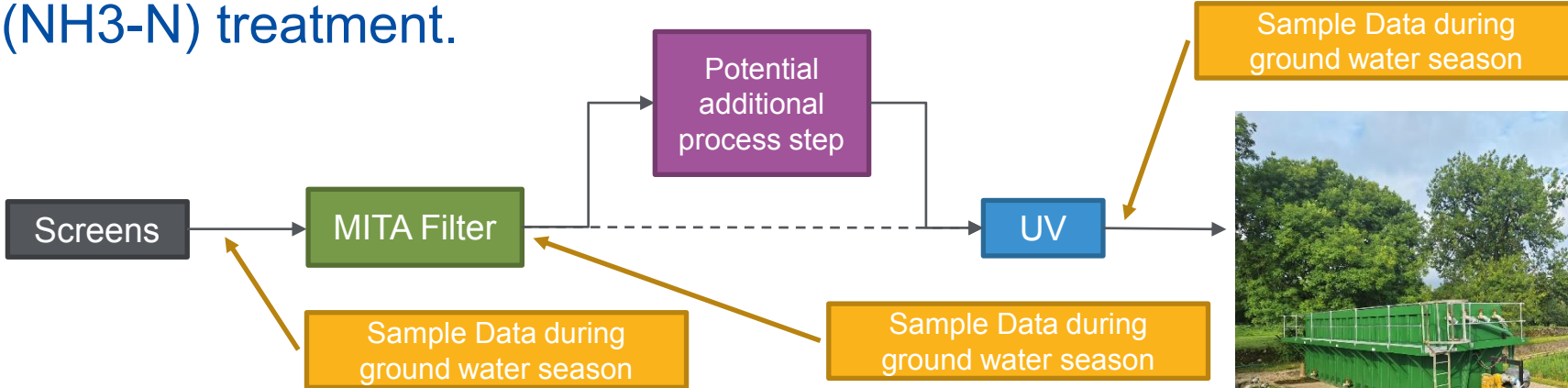
MIITA Filter

Determinand	NH3-N	BOD	COD	pH	P (ORTHO)	SS (105°C)
	mg/l as N	mg/l	mg/l	pH UNITS	mg/l as P	mg/l
Mullen's Pond Pre-treatment sample data *	5.49	32.06	80.03	7.60	0.57	43.63
Mullen's Pond Post-treatment sample data *	5.03	11.96	34.01	7.80	0.61	9.60
Mullen's Pond Post-treatment - estimation during ground water season with dilution factor	0.16	0.39	1.1	7.80	0.02	0.31
Removal efficiency	8%	63%	57%	0%	0%	78%
Compliant with Fullerton Permit **	OK	OK	OK	n/a	OK	OK
Compliant with Barton Stacey Permit **	OK	OK	OK	n/a	OK	OK



* Performance sampling conducted in July not during ground water season ** Permit limits NH3-N 3, BOD 15, COD 125, P 1, SS 20

However, we do need to confirm the performance in ground water season and if required consider an additional process step for ammonia (NH3-N) treatment.



Example from Severn Trent Water

Determinand	NH3-N	BOD	COD	pH	P (ORTHO)	SS (105°C)
	mg/l as N	mg/l	mg/l	pH UNITS	mg/l as P	mg/l
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Options for consideration

Option	Description	Advantages	Disadvantages
No treatment	<ul style="list-style-type: none"> - Continue sealing works - Use tankers to manage excess flows 		No guarantee we will remove the tankers
Mobile treatment	<ul style="list-style-type: none"> - Continue sealing works - Use mobile treatment to manage excess flows 	Tankers removed	
Wetland treatment	<ul style="list-style-type: none"> - Continue sealing works - Use wetland treatment to manage excess flows 	<ul style="list-style-type: none"> Tankers removed Biodiversity benefits 	<ul style="list-style-type: none"> Timescale(s) Cost potentially prohibitive Permitting challenges

Next steps

- Site visit with our Ops Director
- Additional sampling of performance during groundwater season
- If required additional process step to be installed and tested
- Sample results shared with PPF and EA and discussed
- In parallel continue feasibility design for wetland

Questions

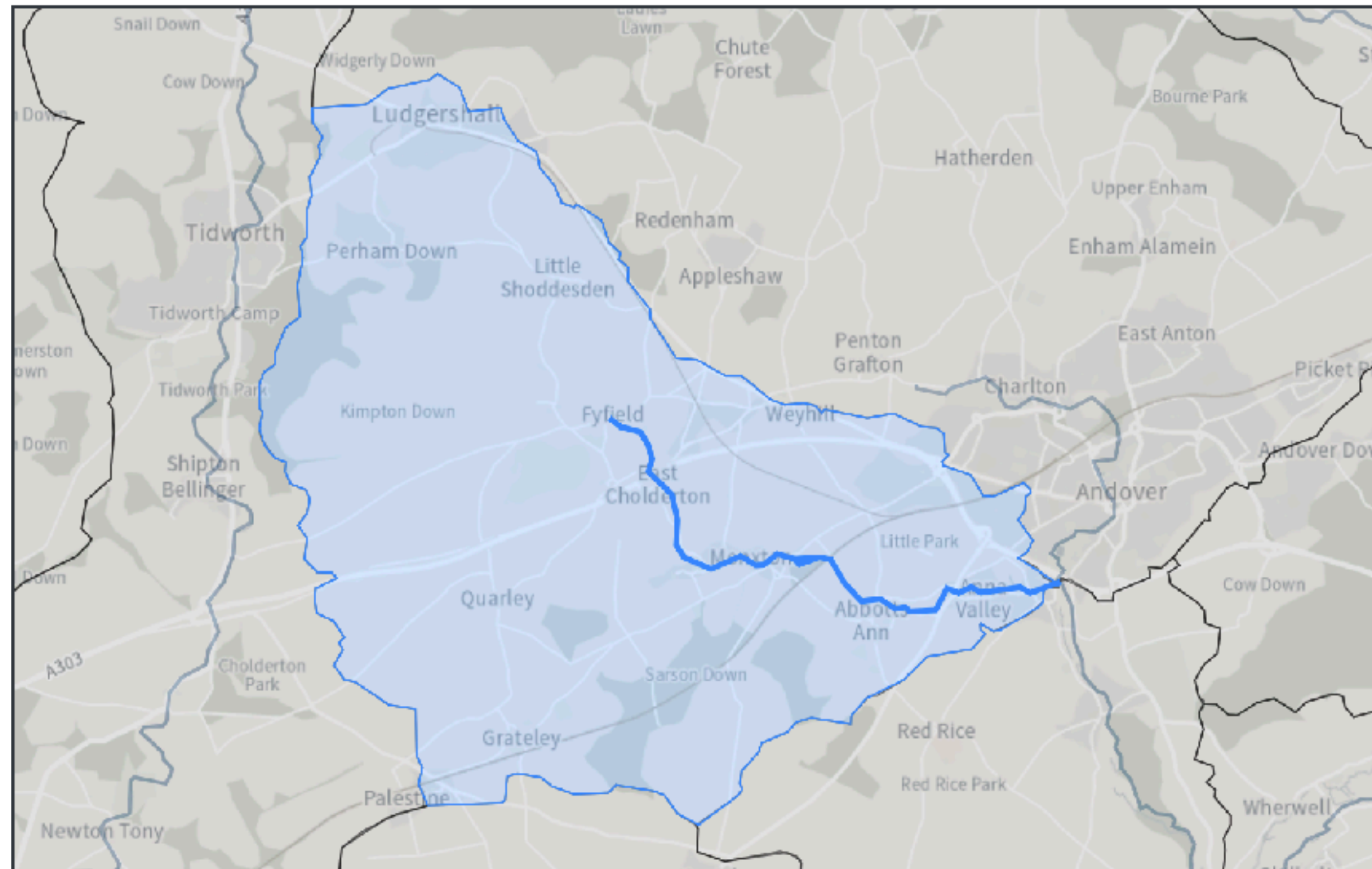
Pillhill Brook Catchment

Water Quality Monitoring



Catchment Summary

- Pillhill Brook is 9.879 km long covering an area of 69.913 km² ¹



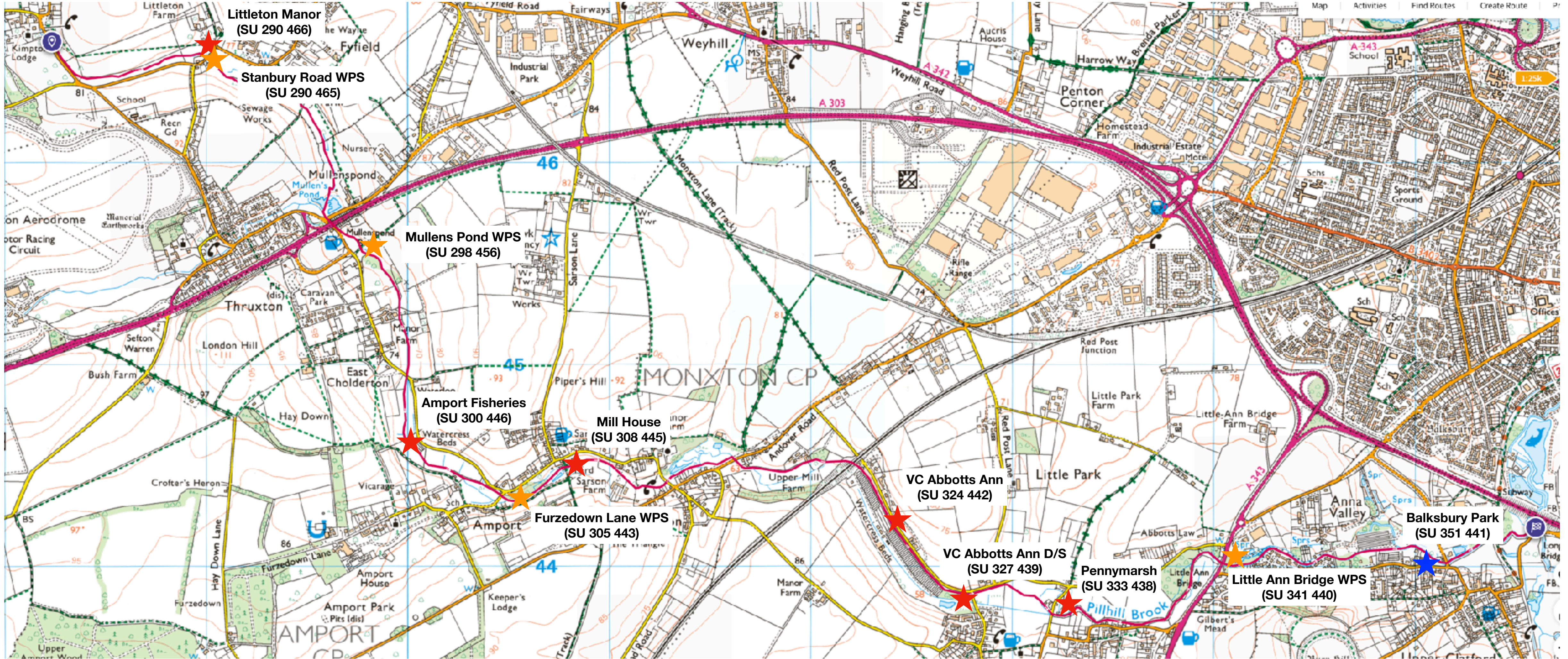
Pillhill Brook catchment area

1. [EA Catchment data Explorer](#)

Existing Water Quality Monitoring

- **Monthly Angler's Riverfly Invertebrate Monitoring (ARMI) surveys**
 - * 7 volunteers trained & kitted out by Watercress & Winterbournes (W&W)
 - * with access to wider W&W volunteer network
 - * monitoring 6 sites along the brook
 - * 25 more volunteers being trained in January at Upper Clatford
- **Biannual SmartRivers deep dive led by W&W**
 - * Top site in autumn 2022 - Bawksbury Park, Upper Clatford
 - * highest riverfly diversity (32 species)
- **[Good Ecological classification \(2022\)](#) by the EA**
- **A good start**

Key Sites along Pillhill Brook



- ★ Registered ARMI Site
- ★ Southern Water Water Pumping Stations
- ★ SmartRivers Site - future Upper Clatford ARMI site?

What More?

- **Monthly Water Quality Monitoring Network (WQMN) sampling**

- * led by the Angling Trust who have put together a yellow box
- * everything needed for a 2 year sampling programme
- * cost £210 incl. VAT - incredibly good value
- * simple & free App epicollect5 used to capture results

- **W&W funding 1 box per catchment**

- **So far**

- * 1 ARMI volunteer trained - Janet Wright
- * Angling Trust running courses thru Test & Itchen Association
- * supporting training videos & documentation excellent

- **To sample more sites we will need**

- * more boxes &/or reagents
- * additional reagent packs (25 x phosphate, nitrate & ammonia) £85 each



Angling Trust WQMN Yellow Box



epicollect5

Proposal

- **Angling Trust recommend sampling every 2 km**
 - * simply that's 6 sites along the Pillhill Brook
 - * we already do ARMI surveys at 6 locations with more planned
- **Simply not practical to share 1 yellow box along ~ 10 km of the brook**
- **Proposal is to:**
 - * sample in parallel with ARMI monitoring as volunteers already in the river
 - * purchase additional 2 yellow boxes @ £210 each to be held by nominated ARMI volunteers
 - * purchase additional 5 sets of reagent @ £85 each
 - * cost could be amortised across the Parishes the Pill flows through - $£845 \div 7 = \sim £121$ each ?
 - * other funding?
 - * Janet Wright happy to coordinate training and sampling logistics