Mogden Sewage Treatment Works

Residents Liaison Meeting

29 July 2021

Agenda:

- Welcome and introductions
- Review of previous minutes and actions
- Discharge in the DNR (update)
- Investment update
- Complaint's update
- Mosquito update
- Biodiversity update
- AOB

Discharge in the DNR

Incident Summary

January 2021

- At around 5pm on 28 January, an increased amount of grit and silt began to enter Mogden STW. Despite efforts to clear this grit, it continued to build up and by the morning of 29 January, the inlet screens became completely blocked.

- This led to a back-up of wastewater, at around 11:50am on 29 January, which discharged into the Duke of Northumberland River from a breach in a culvert. This caused the river level to rise until it broke its banks, leading to external and internal flooding downstream.

- The incident was caused by an unprecedented amount of grit entering Mogden STW. In total it is estimated 10-12 tonnes of grit was cleared from the East Side Inlet Works area of the site.

- The build up of grit occurred before the grit removal system in the inlet works and therefore was not linked to any issues with the grit removal system.

- The source of the grit was unable to be identified, a sample was not able to be collected due to high flows. Local authorities were contacted to identify works going on in the catchment but no resurfacing works were identified. Our Streetworks teams will be actively monitoring works going forward.

Actions

- A clean up of the affected areas took place following the incident in February and March. A clean up of the Duke of Northumberland River was completed by specialist contractors and 59 bags and 10 bulk bags or rubbish was cleared, 20% sewerage waste and 80% general litter.

- We will continue to monitor the Duke of Northumberland River to check if there have been any longer-term impacts from the discharge into the watercourse

- An initial invertebrate survey was conducted in March 2021 and results are now available.

- In summer 2021 a specialist environmental contractor will carry out a fish survey and a further invertebrate survey will be carried out in autumn 2021.

Event Learning

- We have re-sealed the culvert and our Asset Management team is currently reviewing a long-term solution
- We'll conduct modelling to identify the likely spill point if levels in the incoming sewer reach the same height again.
- There was initial confusion over the location of the discharge as it was believed to be the River Crane and not the Duke of Northumberland River. There will be increased use of the 'What3Words' app across Operations to help identify discharge locations.
- A review of Event Management procedures has also been undertaken to ensure future incidents are escalated appropriately.
- We have engaged with the Environment Agency and have emergency contact details if Kids Mill Sluice Gate needs to be opened in an emergency in the future. An internal briefing note will be produced explaining how the gate works and why it is important to notify the Environment Agency if we ever had a significant discharge to the Duke of Northumberland River

Mogden STW Resilience

Investment Update July 2021

Contents

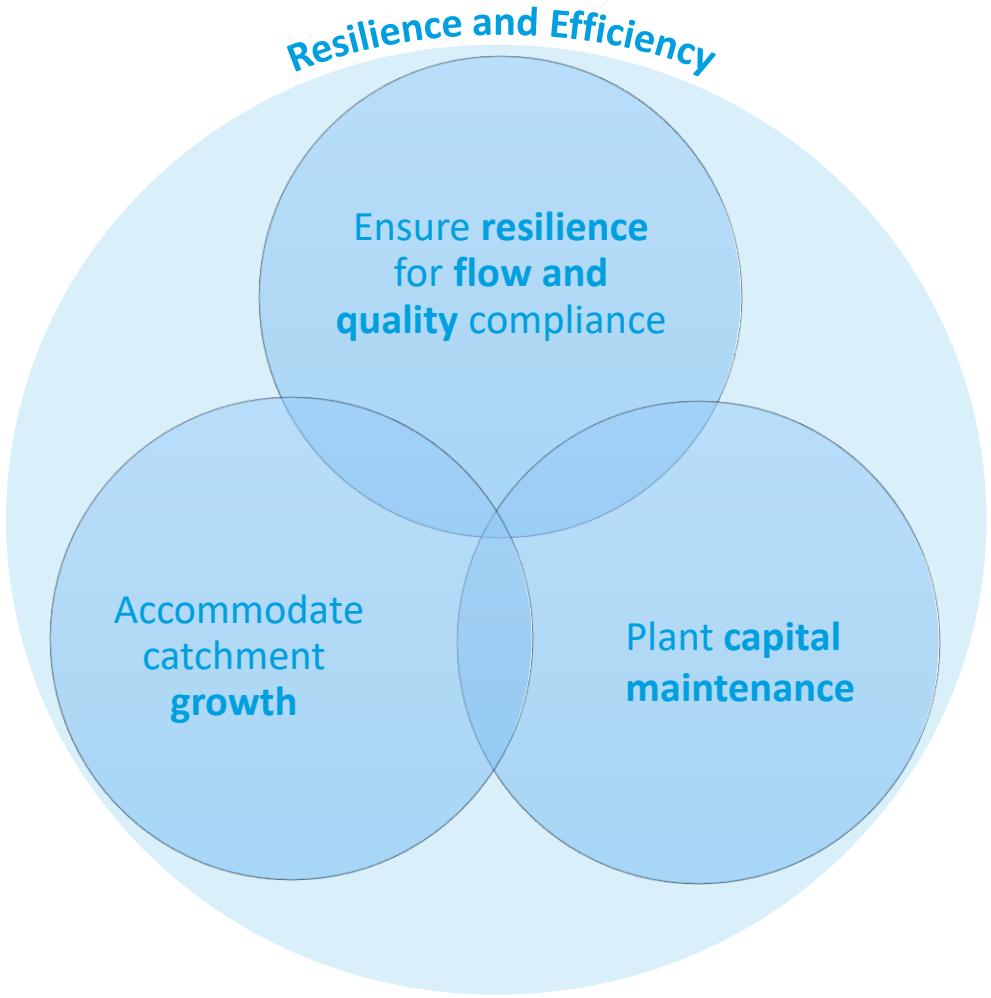
Mogden STW Resilience Update

- Background
- Project Drivers
- Project scope and benefits
- Impact of the works
- Timeline
- Next steps

Background

- We are investing over **£120m** at Mogden over the **next four years**
- The **main contractor** has now been **appointed**
- The project will address the **flow to full treatment reliability** challenges and carry out critical plant **capital maintenance**
- There is expected to be an **odour benefit** through improved activated sludge plant performance and replacing digester roofs
- The improvements will provide more **energy efficient plant** and contribute to our **carbon reduction aims**
- We are progressing with an **extensive maintenance plan** over the next **18 months**

Project drivers



Project scope and benefits (major items)

Improve capacity and resilience to Battery C with new blowers, pipework and remodelled tanks

Benefits: flow and quality, improved plant efficiency

Digester refurbishments

Benefit: resilience and potential odour improvement.

Inlet work plant refurbishment/ replacement

Benefit: flow and quality by improving performance of downstream plant

Improve final settlement tank flow throughput

Benefit: flow and quality

Biogas system improvements and new biomethane gas to grid plant

Benefit: reduction in emissions and carbon

There is also a site wide extensive maintenance programme that has started

Extensive maintenance plan

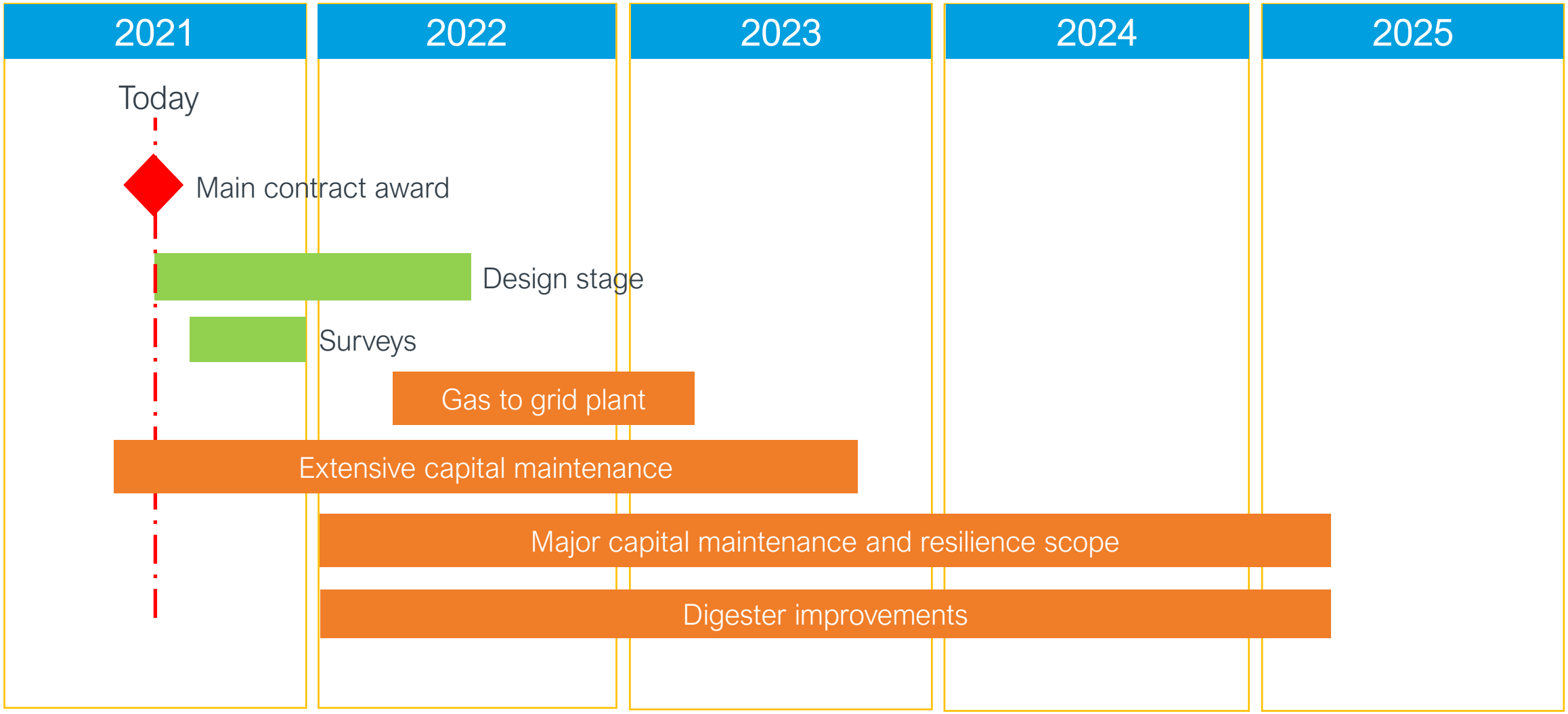
- In addition to the major scope items we are **investing £10m** over the next **18 months** on an extensive maintenance plan
- This will focus on **ensuring the basic operation** of the plant is working well and contributes to the overall driver of **reliably achieving flow to full treatment**
- The works will be coordinated as part of the major project on site
- Some examples of the scope of the maintenance plan include:
  - A programme of cleaning out the primary settlement tanks
  - Cleaning out and re-doming the diffusers in the aeration lanes
  - Maintenance of critical areas of the pasteurisation plant

Impact during construction and after completion

Impact	During construction	After completion
Noise and vibration	Not anticipated to be above normal site operations. Limited excavation/piling	No change
Dust or mud	Minimal due to limited civil construction, but will be controlled as required	None
Odour	No impact expected because tanks will be cleaned before work is carried out – as per current site operations	Small improvement expected (digester roofs)
Visual	Off site impact mainly from cranes lifting plant where working closer to site boundary	No change outside of the site boundary. New blowers will be seen from the public footpath
Traffic	During construction approx. 30 staff vehicles, 10 LGVs and 25 HGVs per day	No material change
Emissions	Small number of construction vehicles so emissions negligible	Small reduction due to gas to grid (instead of burning gas in engines)
Biodiversity loss	Limited to providing new blowers on grassed area	Project will offset the small biodiversity loss

All works will be subject to an approved Construction and Environmental Management Plan

Project Timeline



Next steps

- Agree the detailed programme with the main contractor
- Progress with site surveys and design of the works
- Continue with the extensive maintenance plant
- Prepare for main construction activity early next year, potentially with some enabling work before end of the year
- Provide more information, closer to the construction phase, on the timing and further detail of the construction activity

Customer communication & engagement

Complaints Process

1 Call our 24-hour hotline

Last September, we changed our priority number to a 24-hour hotline.

You can now call us any time, day or night, on 0800 009 3984. We'll take details of your complaint and pass them immediately to our site operations team for investigation.

We'll update you within 24 hours.

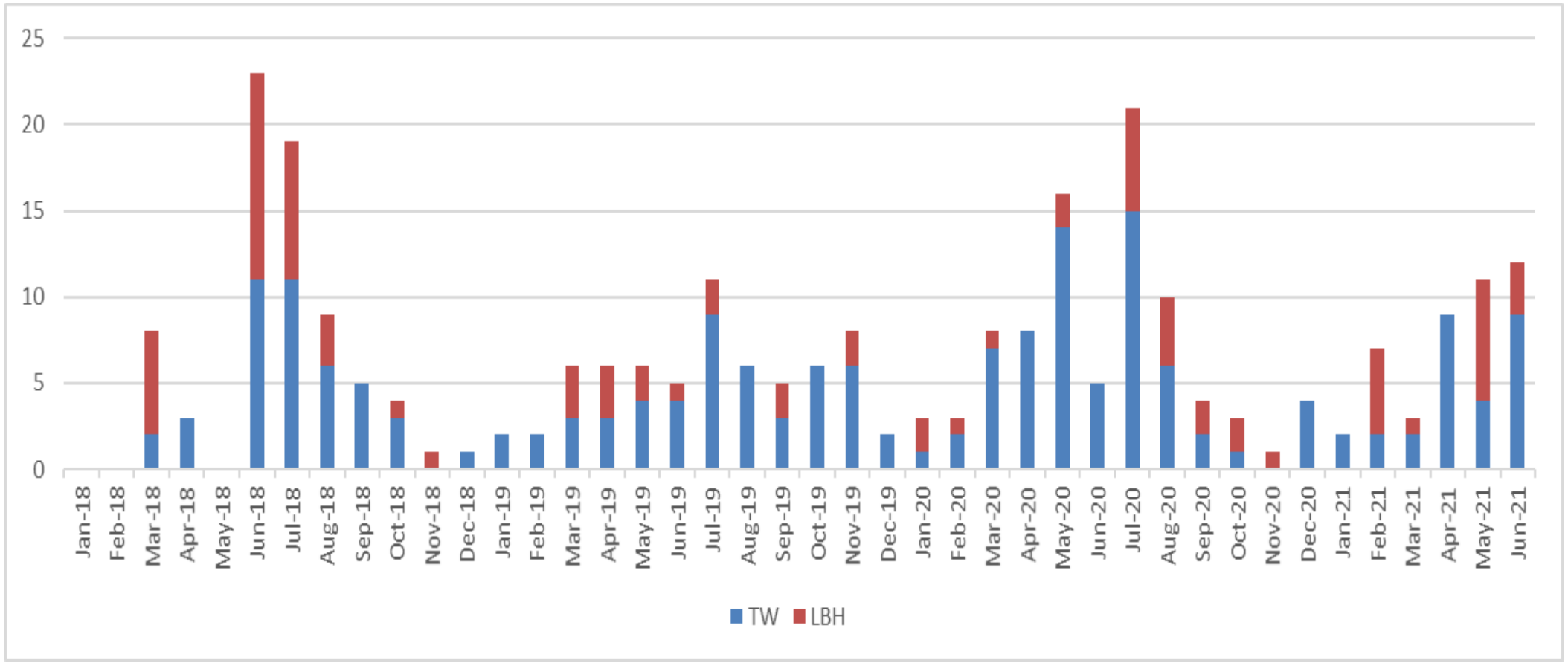
2 Email us

You can reach us at mogden@thameswater.co.uk. We check our emails from Monday to Friday, 8am to 5pm.

We aim to reply within 24 hours of opening your email and always within 10 days.

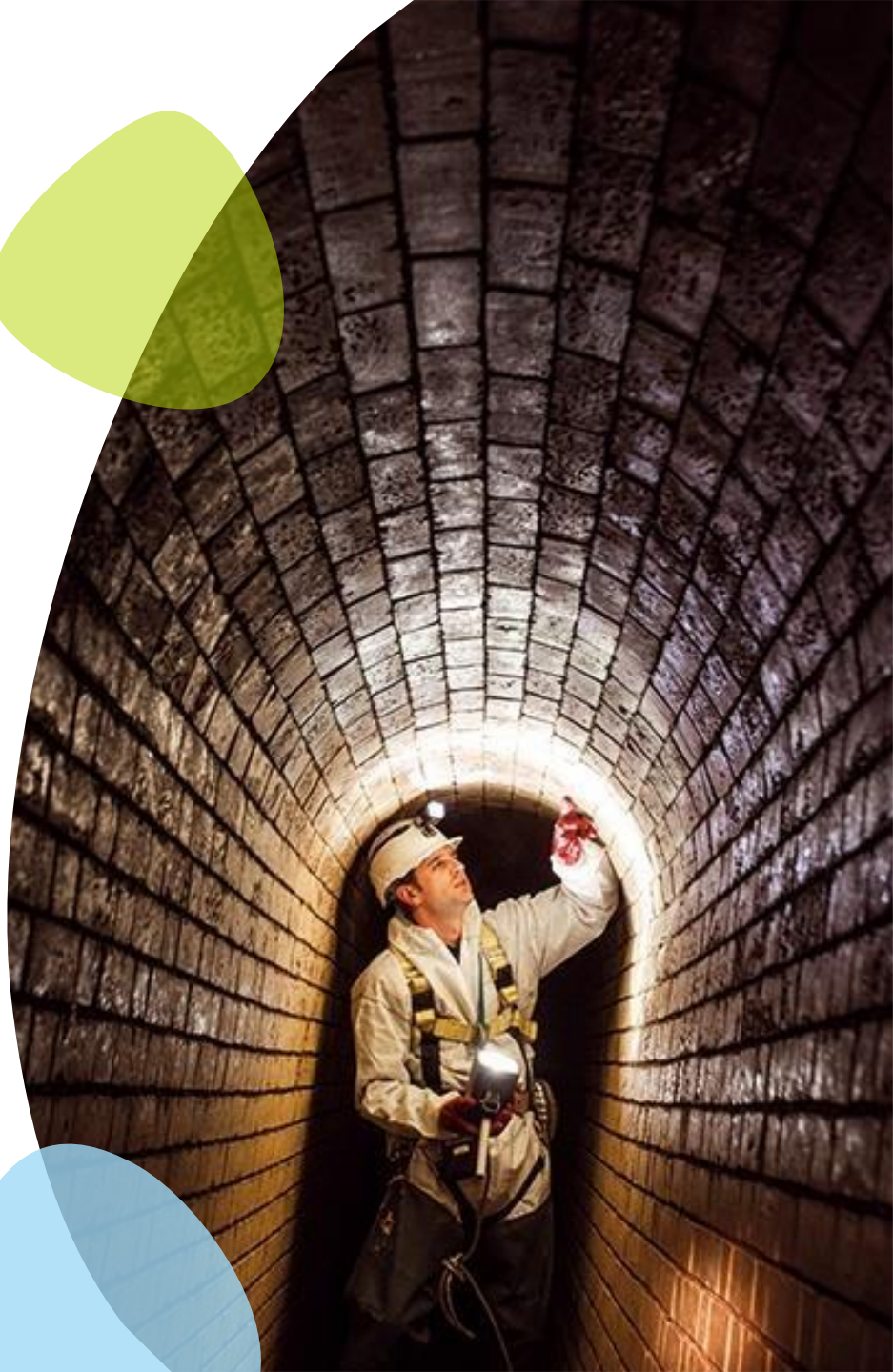
To speed things up and provide a personal service to our customers we want to hear about concerns directly from residents, MP's or Cllr's.

Complaints received January 2018 – June 2021



Mosquito Update

Schultmay Ltd



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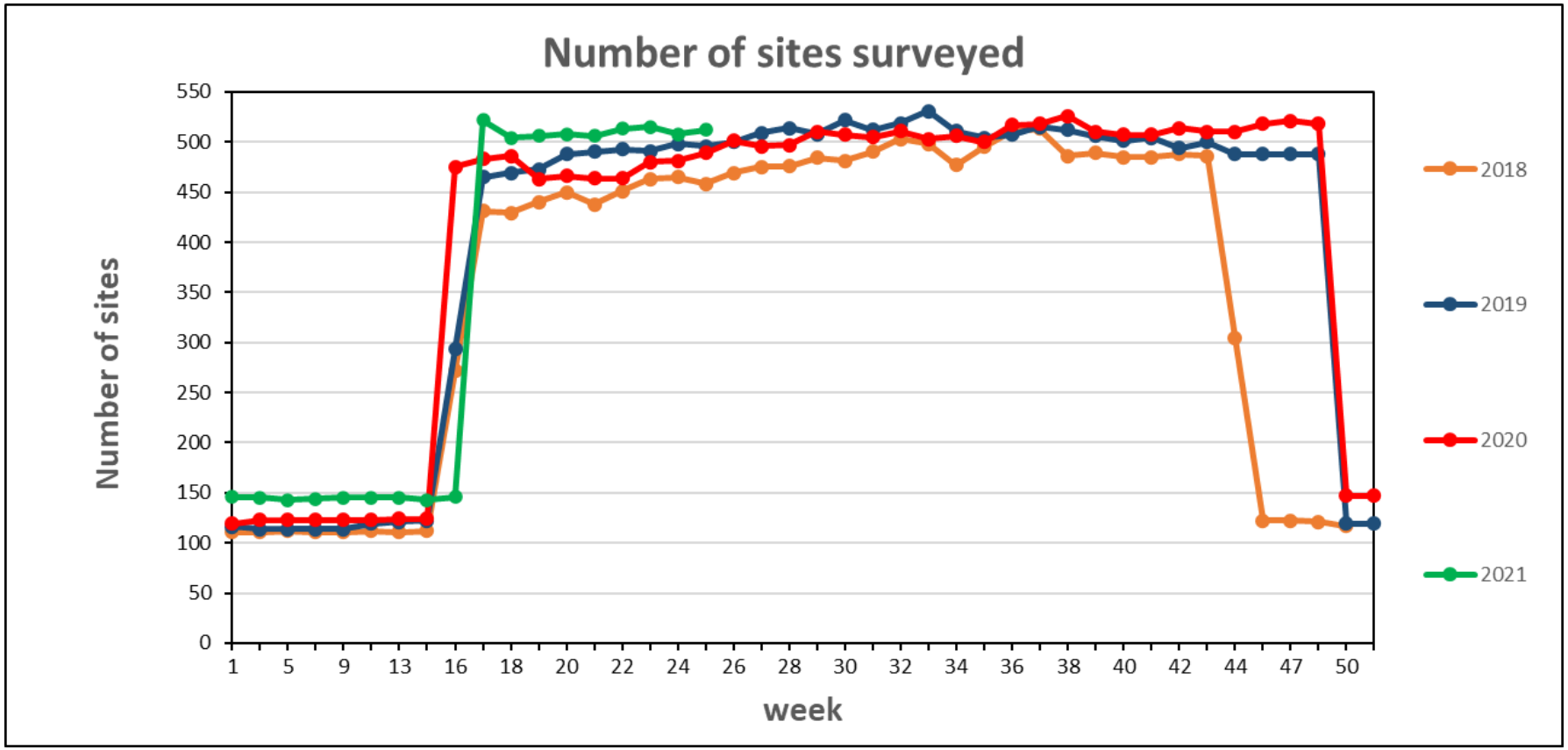

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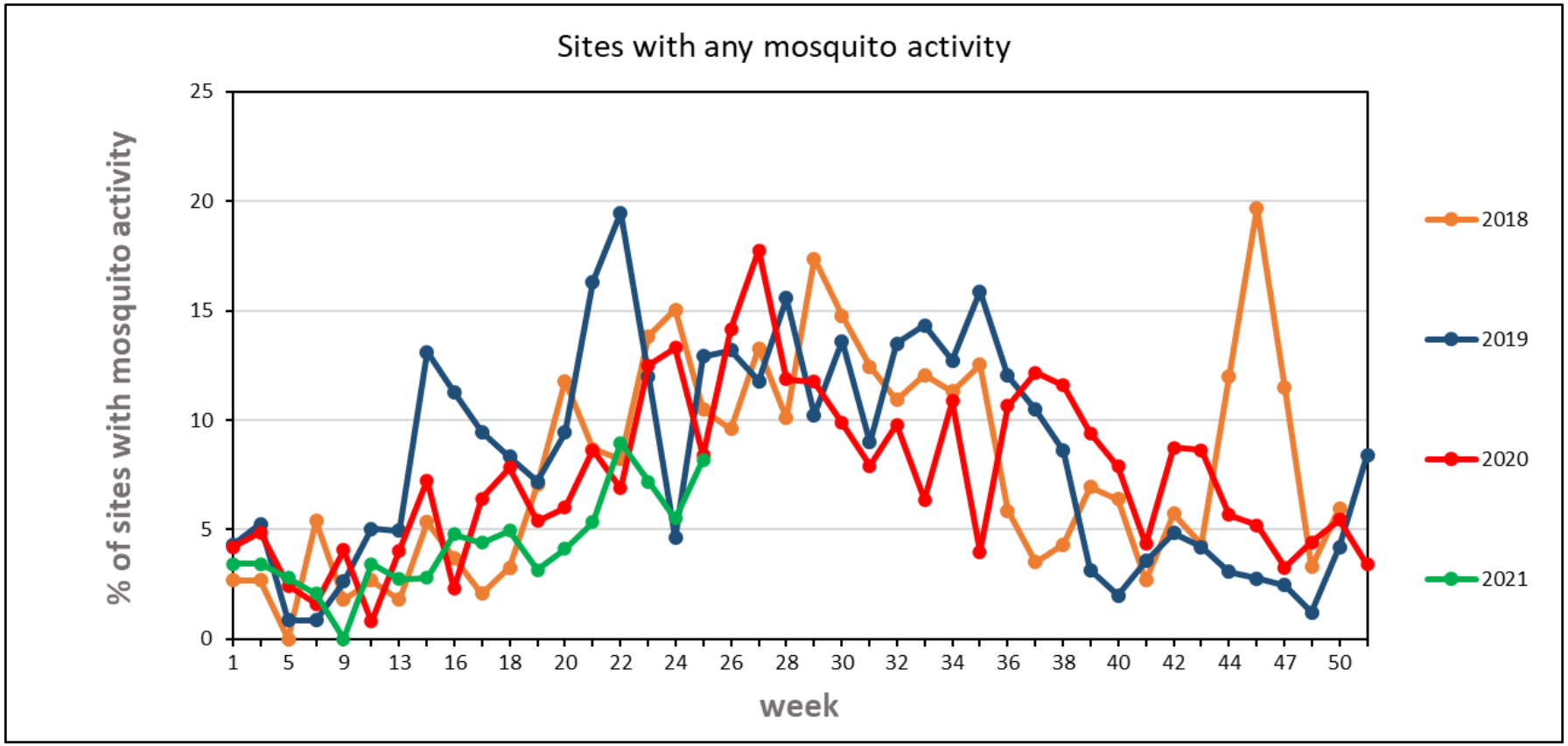

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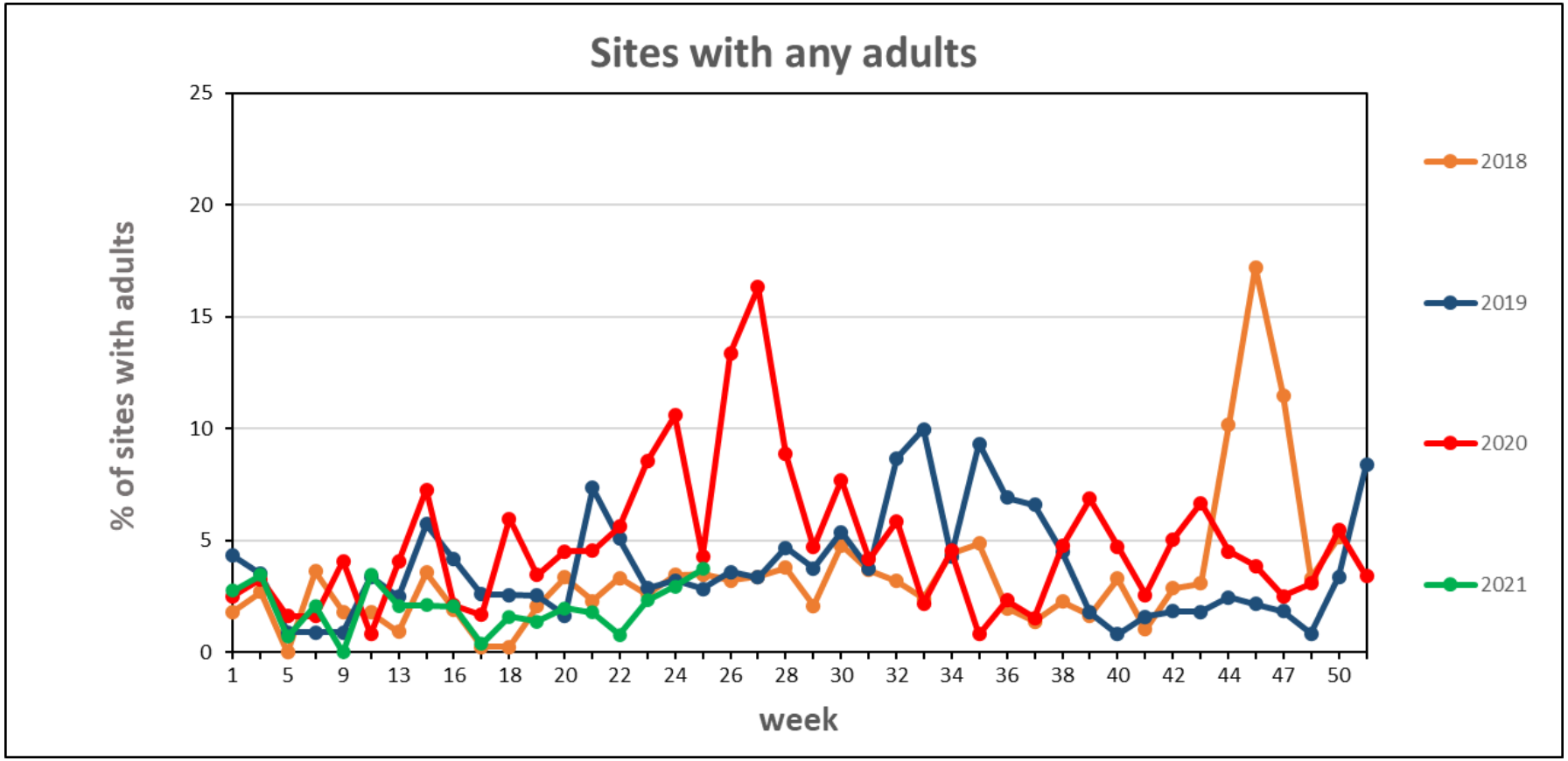

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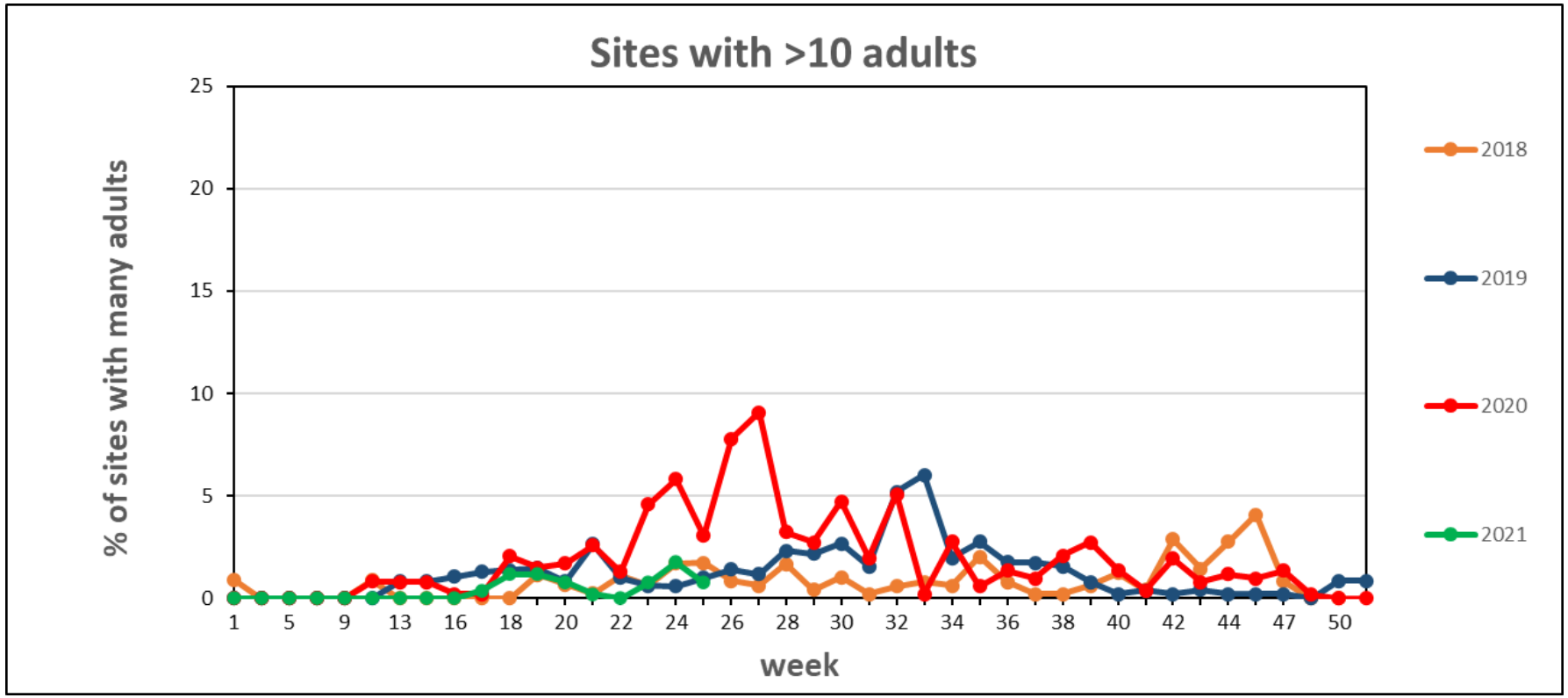

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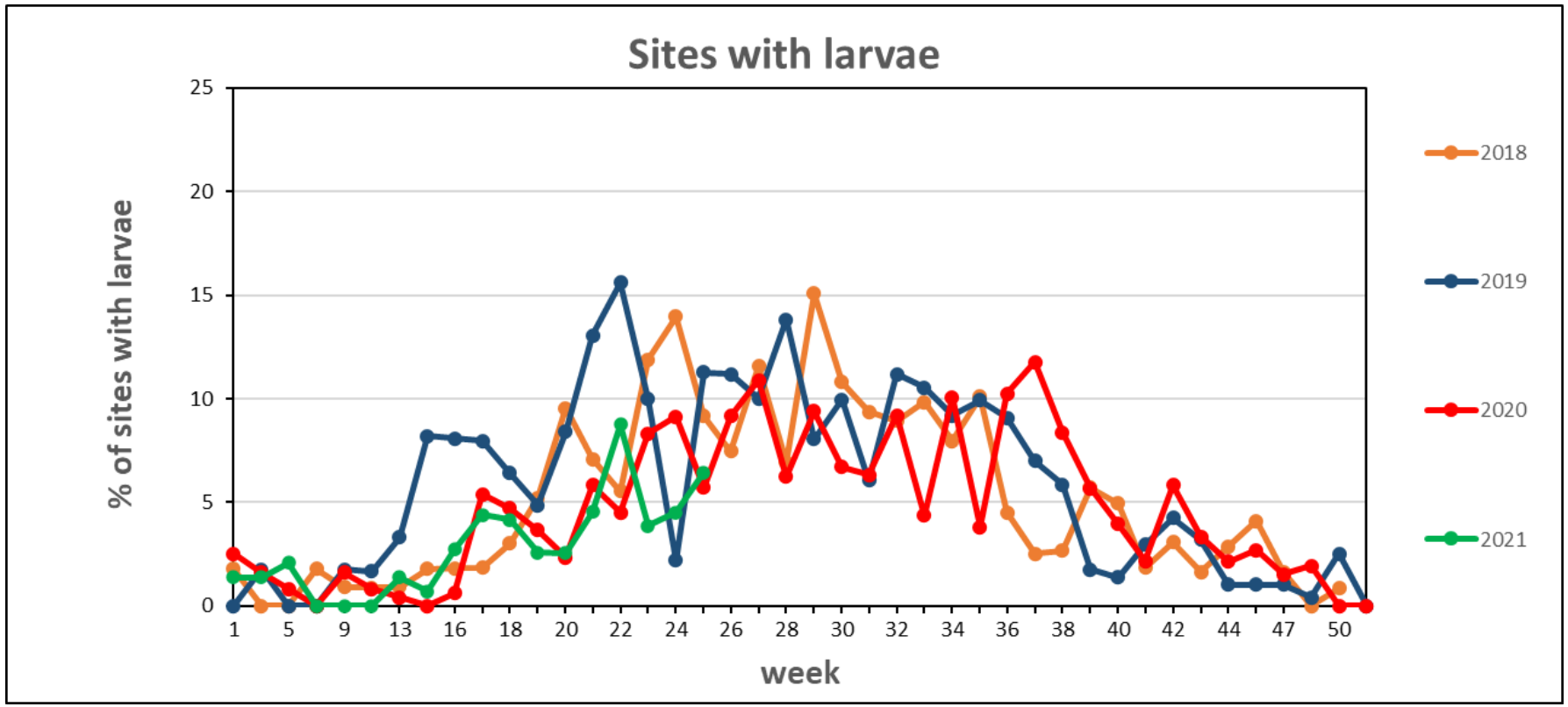


Biodiversity update

Biodiversity update

Duke of Northumberland - Fish baffle installation
(outside Oct – June)
Delayed due to one of contractors self-isolating before works.
Now planned week beginning 20th September 2021.

WATER & ECOLOGY ECOLOGICAL ASSESSMENT REPORT: DUKE OF NORTHUMBERLAND'S RIVER

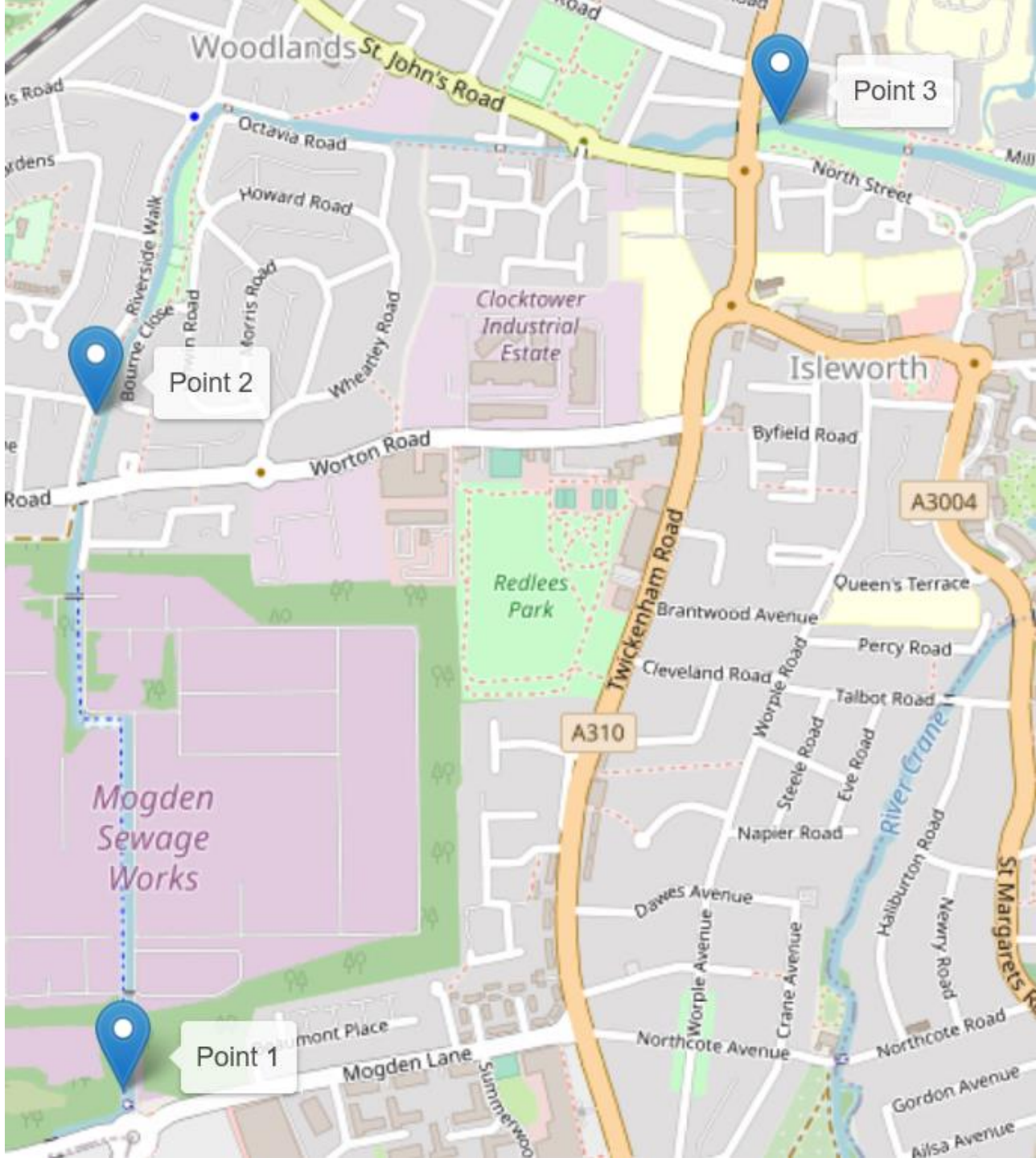
Results of the Spring Invertebrate Survey

Survey Design

The survey programme was designed to sample invertebrates upstream and downstream of the point of ingress (POI hereafter). The upstream sample acts as a control site and the comparison of data will determine the potential effect of the incident on the ecology of the river. A third downstream site was planned for the invertebrate survey to increase data collection and provide robustness to the assessment.

Standard Environment Agency (EA) techniques for both survey types, three-minute kick sampling for invertebrates were to be used for the assessment.

The spring and autumn invertebrate surveys will allow for RICT analysis at the end of the project.



Survey Methodology

RICT Analysis

Diversity and abundance of invertebrates used to create a score for each site.

This scoring system was developed as a method of assessing the biological quality of running waters such as rivers and streams.

The method assigns a score to each taxon ranging from 1 to 10 depending on their capacity to tolerate pollution and their dissolved oxygen requirements.

Those most tolerant to pollution have a low score (1), whilst those least tolerant have a high score (10).

The sum of the taxa scores from a sample provides the overall score and a corresponding category interpretation of ecological river health.

Table 1: Invertebrate scoring

Family	Common name	BMWP	US	DS1	DS2
Ancylidae	Mud snails	6	3		
Asellidae	Limpets	6		1	
Baetidae	Freshwater hoglice	3	6	3	3
Caenidae	Small mayflies	4	1	4	2
Calopterygidae	Small squaregill mayflies	7	122	165	12
Chironomidae	Demoiselle damselflies	8	2	3	1
Coenagrionidae	Biting midges	-	1		
Crangonyctidae	Midge larvae	2	263	391	49
Dikerogammarus	Pond damselflies	6		1	
Dixidae	Freshwater shrimp	6		1	4
Elmidae	Killer shrimp	-		3	
Ephemeridae	Meniscus midges	-			1
Erpobdellidae	Riffle beetles	5		5	1
Erpobdellidae	Common burrower mayflies	10	4	5	5
Gammaridae	Jawless leeches	3		1	
Glossosomatidae	Freshwater shrimp	6	1	23	3
Hydrobiidae	Jawless leeches	3			1
Hydropsychidae	Green sedges	7		4	
Hydroptilidae	Mud snails	3	16	5	1
Hydroptilidae	Netspinning caddisflies	5		11	1
Leptoceridae	Microcaddisflies	6	8	62	
Leptoceridae	Long-horned Caddisflies	10	1	16	
Limnephilidae	Northern caddisflies	7	2	12	2
Lymnaeidae	Pond snails	3	1	1	
Oligochaeta	Worms	1	3	15	2
Pediciidae	Craneflies	5		1	
Planorbidae	Ramshorn snails	3		1	
Polycentropodidae	Tube maker caddisflies	7	2	2	
Psychomyiidae	Trumpet-net Caddisflies	8	5	7	
Sphaeriidae	Pea mussels	3	4	19	

Interim Survey Results

The BMWP score derived from the spring survey classified the upstream, or control site, as 'Good' with a score of 94 (Table 2). The downstream site, DS1, had a BMWP score of 128 and therefore classed as 'Very good' with the second downstream site, DS2, scoring the lowest with 64 – 'Moderate'.

Notable high scoring (10) invertebrates, common burrower mayflies (Ephemeridae), were present in all three samples. With long-horned caddisflies (Leproceridae) present in the upstream sample and the DS1 samples. In addition to these high scoring invertebrates, the invasive non-native (INNS) killer shrimp (Dikerogammarus), was also present in the DS1 sample. The Centre for Ecology and Hydrology (CEH) have been informed of its presence.

Table 2: Invertebrate analysis results

Biotic Index	Upstream	Downstream 1	Downstream 2
BMWP (TL1)	94	128	64
NTAXA (TL1)	17	24	13
ASPT (TL1)	5.53	5.3	4.92
WHPT (TL2)	89.1	125.2	72.7
NTAXA (TL2)	18	25	15
ASPT (TL2)	4.95	5.01	4.85

Table 3: BMWP classification categories

BMWP Score	Category
0 – 10	Very poor
11 – 40	Poor
41 – 70	Moderate
71 – 100	Good
> 100	Very Good

Table 4: Water quality results

Parameter	Upstream	Downstream 1	Downstream 2
pH	8.16	8.25	8.33
Temperature (°C)	11.9	12.3	12.3
Alkalinity	215	215	215
Dissolved oxygen (%)	106.0	121.1	135.4
Dissolved oxygen (mg l^{-1})		13.03	14.54
NH_3 (mg l^{-1})	0.01	0.02	0.02
NH_4+ (mg l^{-1})	0.48	0.47	0.48
Conductivity (SPC)	804	801	798
Total Dissolved Solids (µ cm)	520	520	520

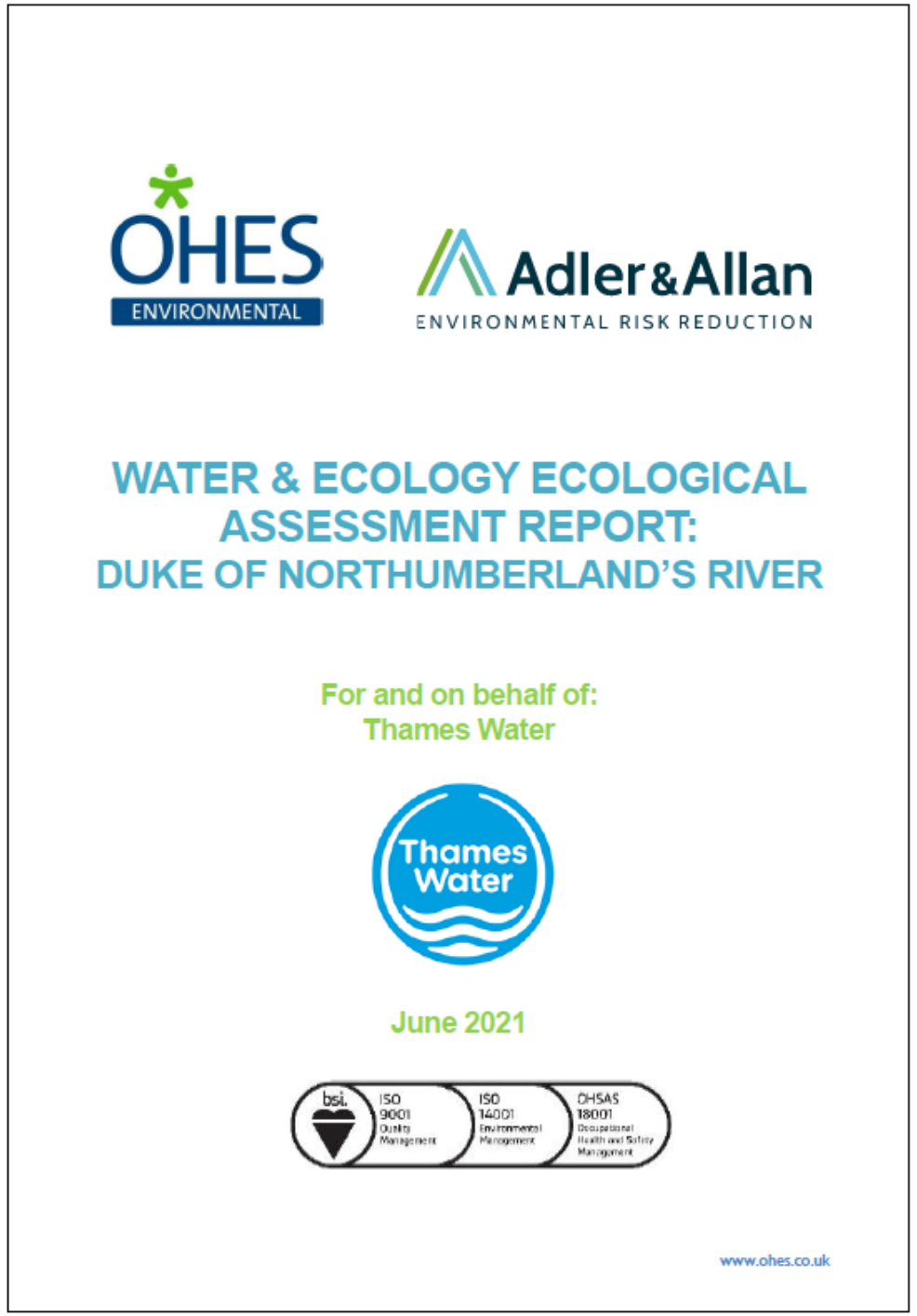
Summary and Next Steps

On the evidence of this initial survey there appears to have not been a significant effect on the aquatic community from the incident. The differences between the sites are more likely influenced on the habitat variables present, notable surface water flow and substrate type.

An autumn invertebrate survey will be completed to provide more substantive assessment of any longer term impact of the pollution.

Fish Survey was due to take place W/c 19 July but postponed due to hot weather (survey would be putting additional stress on the fish population).

Copies of report available on request.



AOB

Thank you