

# Detection of Flu, Enterovirus, RSV and Norovirus in Wastewater: 16 November 2023

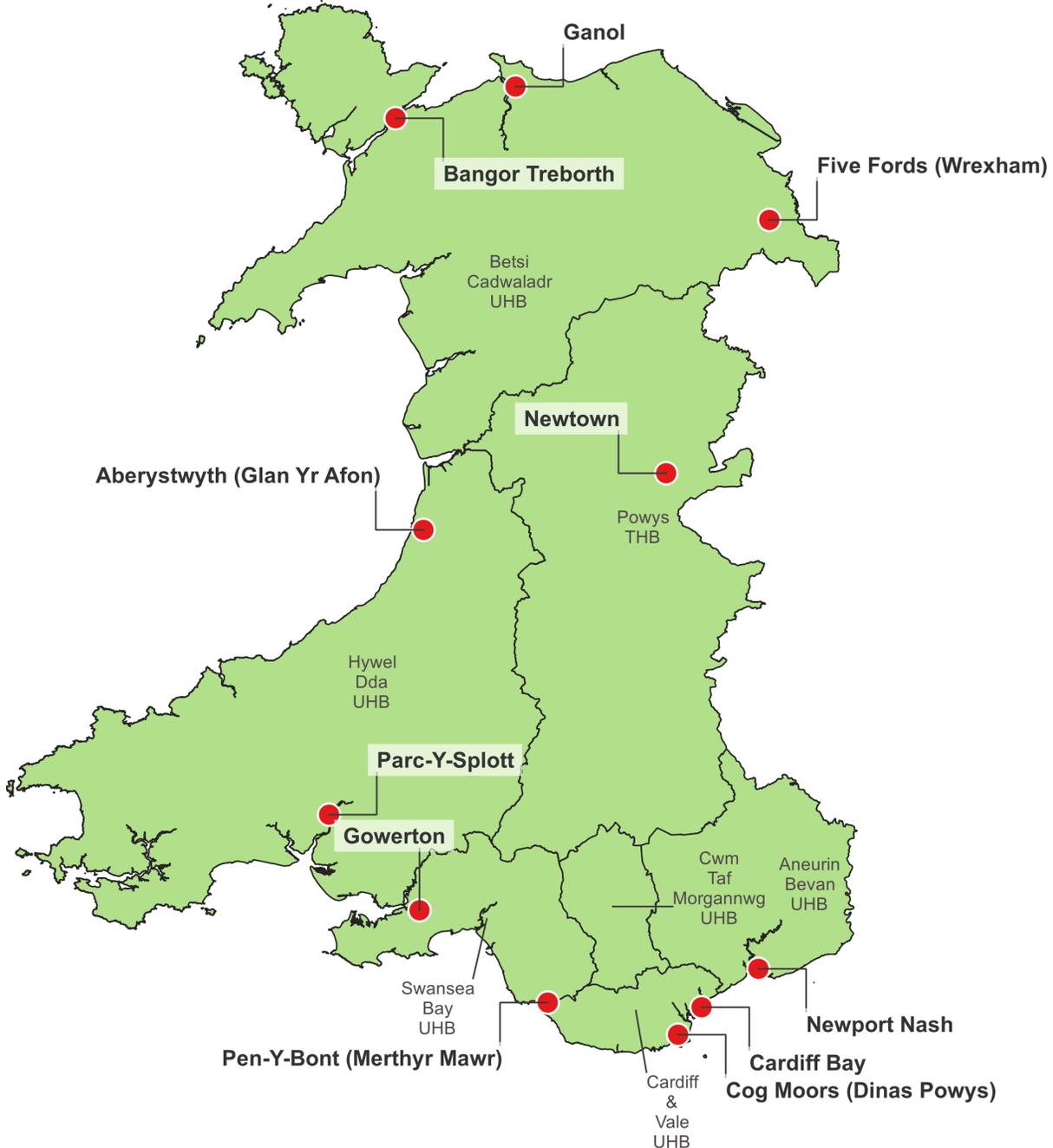
## Samples taken up to and including: 8 November 2023

Wastewater Monitoring in Wales has changed. Based on our substantial experience gained during the recent pandemic and our comprehensive historical dataset, the WEWASH team has developed a new streamlined programme.

This new programme collects samples from 11 different wastewater treatment works three days each week and continues to provide valuable intelligence by measuring levels of SARS-CoV-2 and other viruses in our communities across all Welsh Health Boards. Between October 2021 and July 2023 the original programme sampled 47 different wastewater treatment works across Wales five days each week.

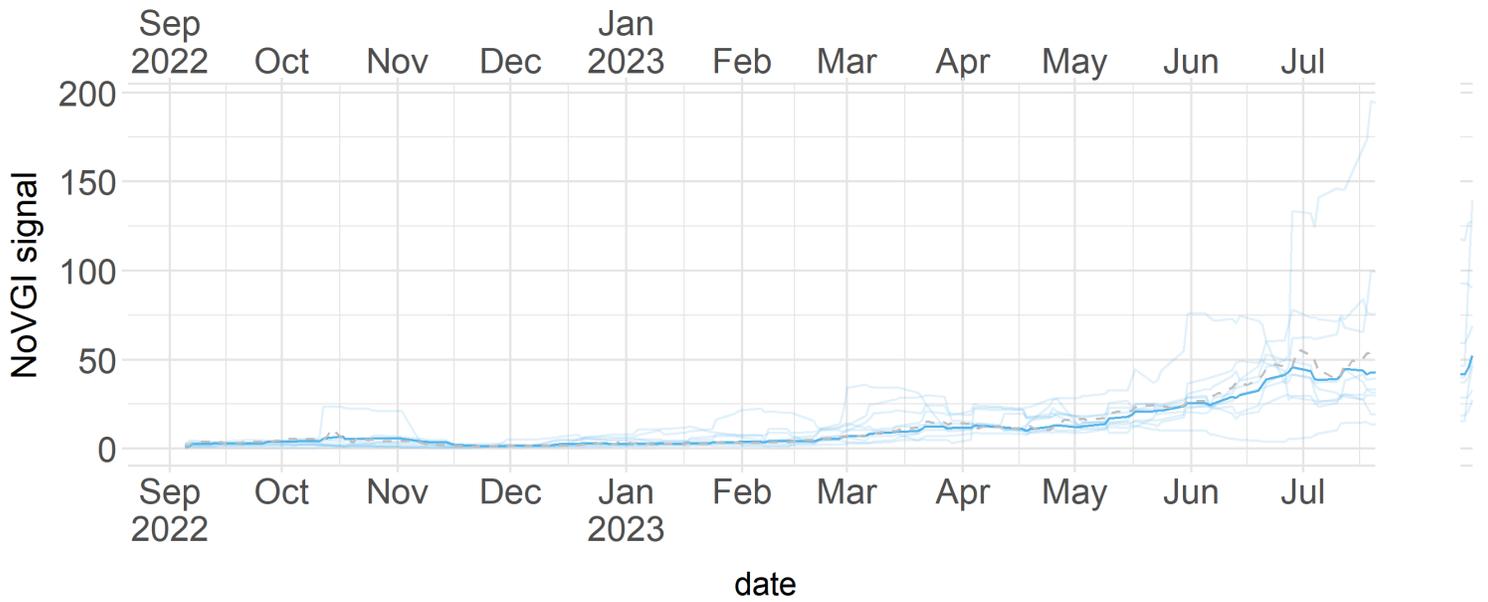
Details of the 11 current sampling sites can be found below in Appendices I and II. Appendix III compares the original and new sampling regimes.

The WEWASH consortium includes Bangor University, Cardiff University, Dŵr Cymru Welsh Water and Public Health Wales.

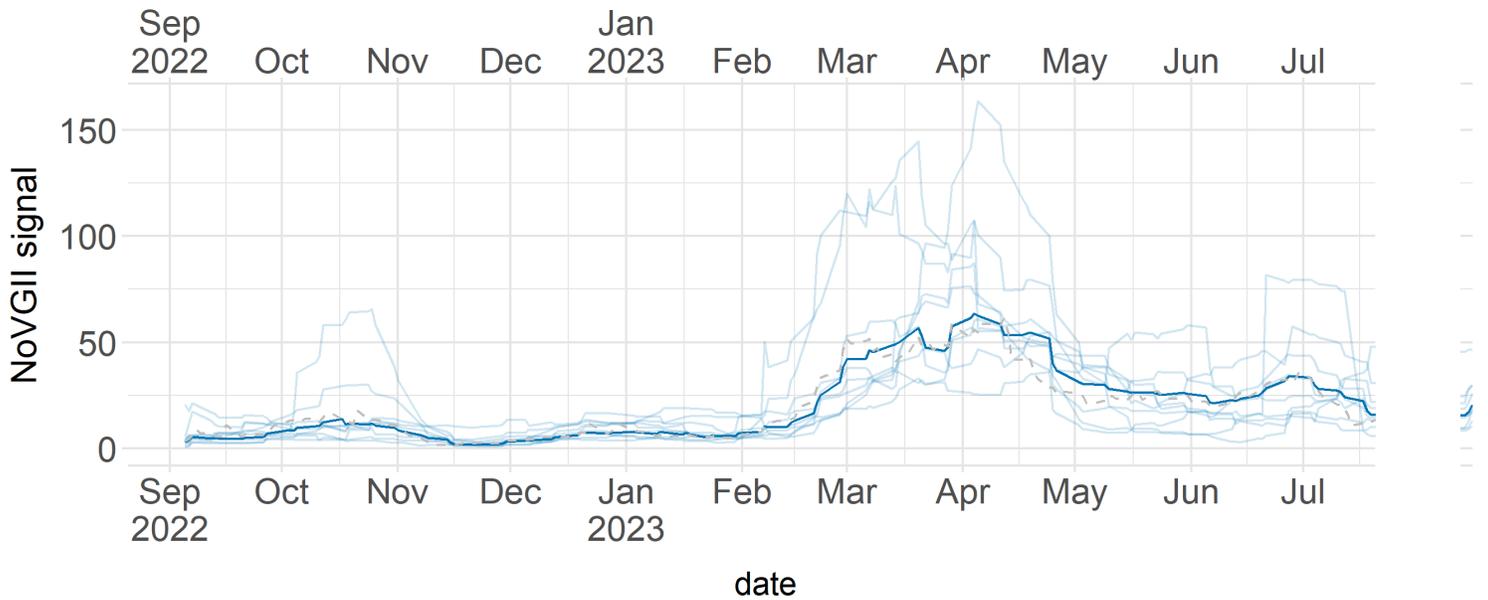


**Figure 1.** Map of the 11 wastewater treatment plants (WwTPs) monitored by the wastewater monitoring programme, along with their respective health boards.

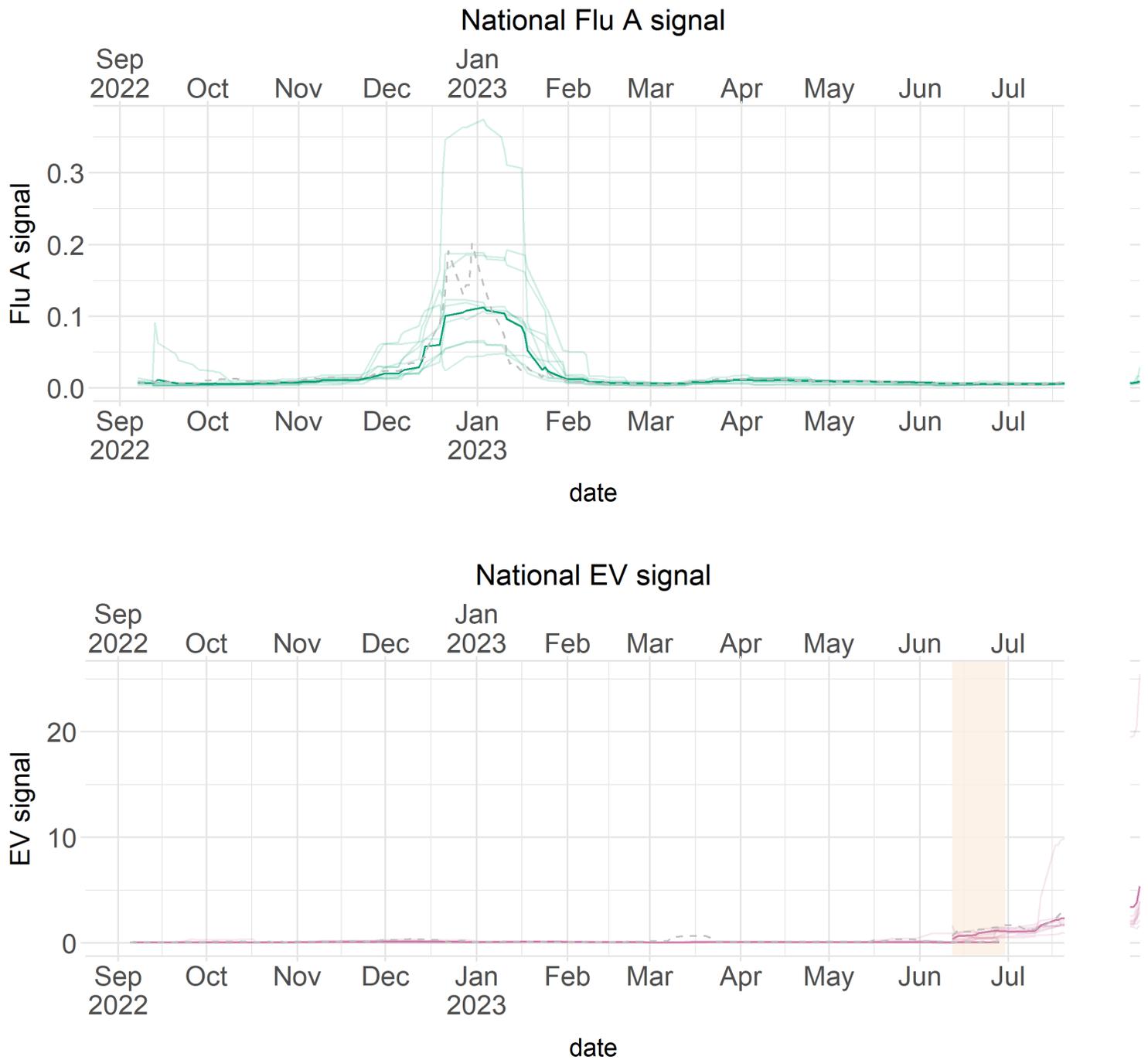
### National NoVGI signal



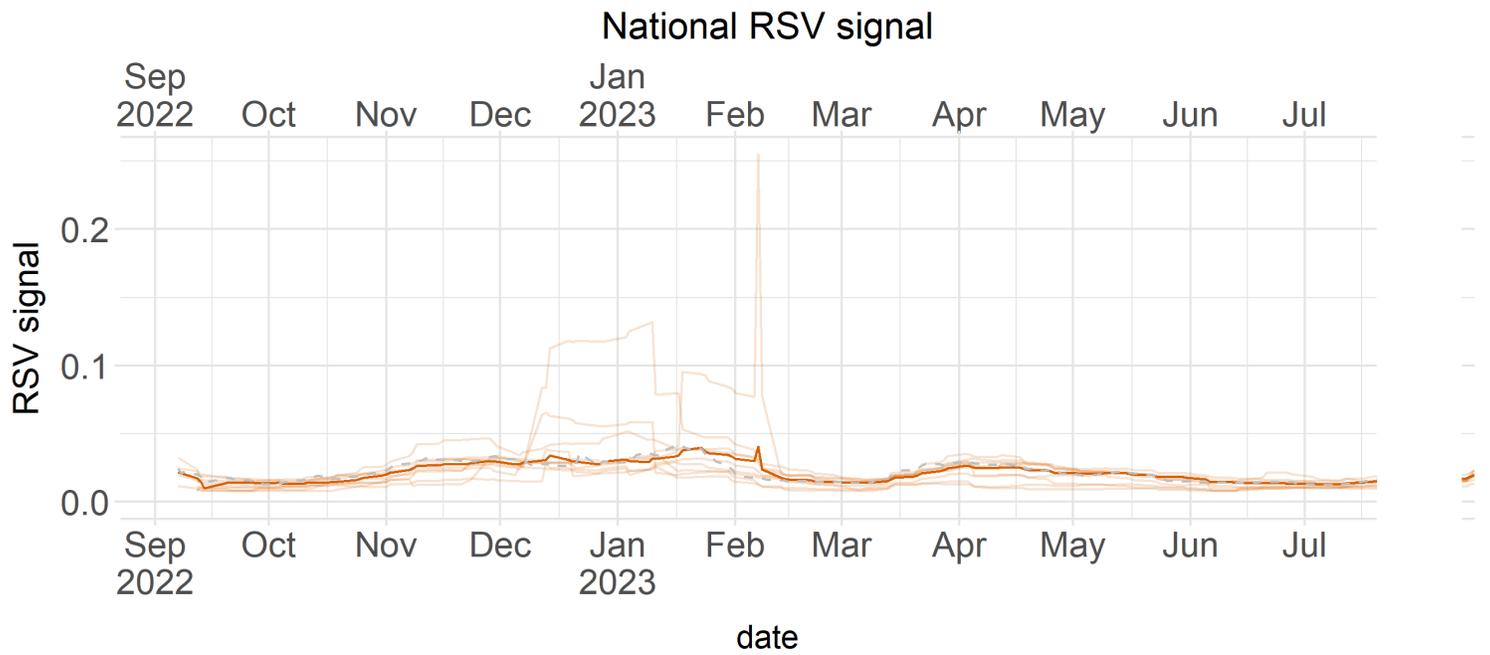
### National NoVGII signal



**Figure 2.** Levels of norovirus (NoVGI & NoVGII) identified at national (bold line) and regional (faint line) levels across 11 WwTPs three days a week covered by the Programme since 5th September 2022. National levels based on historical data from 47 WwTPs and 5 days a week (taken until 21st July 2023) is also shown (grey dashed line). Signal is given as a daily rate of gene copies per 100,000 people (gc/day per 100k) and is a 10 day rolling average.

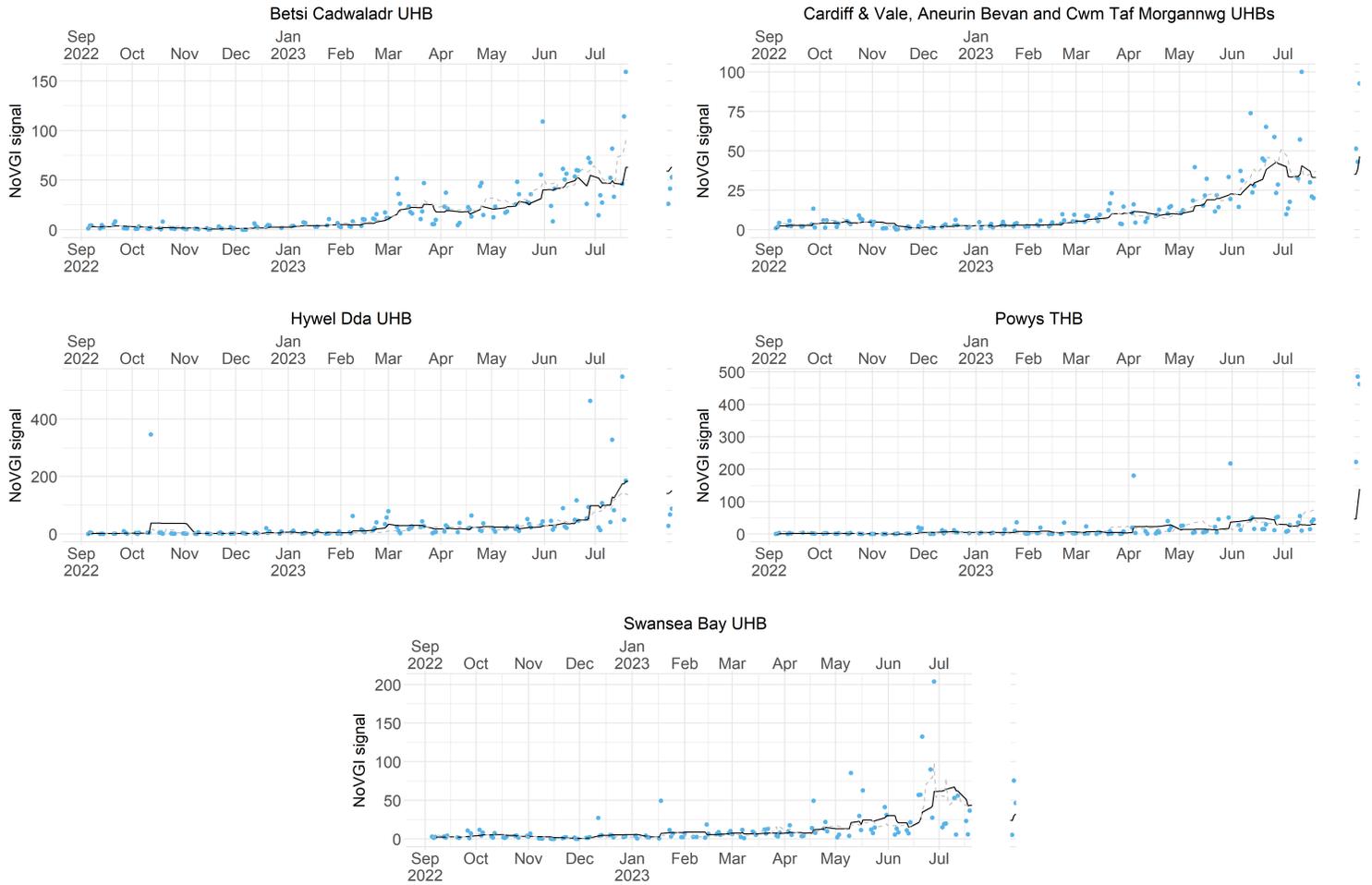


**Figure 3.** Levels of flu (flu-A) and enterovirus (EV1 & EV2) identified at national (bold line) and regional (faint line) levels across 11 WwTPs three days a week covered by the Programme since 5th September 2022. National levels based on historical data from 47 WwTPs and 5 days a week (taken until 21st July 2023) is also shown (grey dashed line). Signal is given as a daily rate of gene copies per 100,000 people (gc/day per 100k) and is a 10 day rolling average. The beige block represents a period where two enterovirus markers were being used (EV1 and EV2). Before this period, EV1 was used exclusively, after this period, and currently, EV2 is being used exclusively. **The signal for EV is based on limited successful samples**, and so caution should be exercised when interpreting it. Please check site level plots for greater detail.



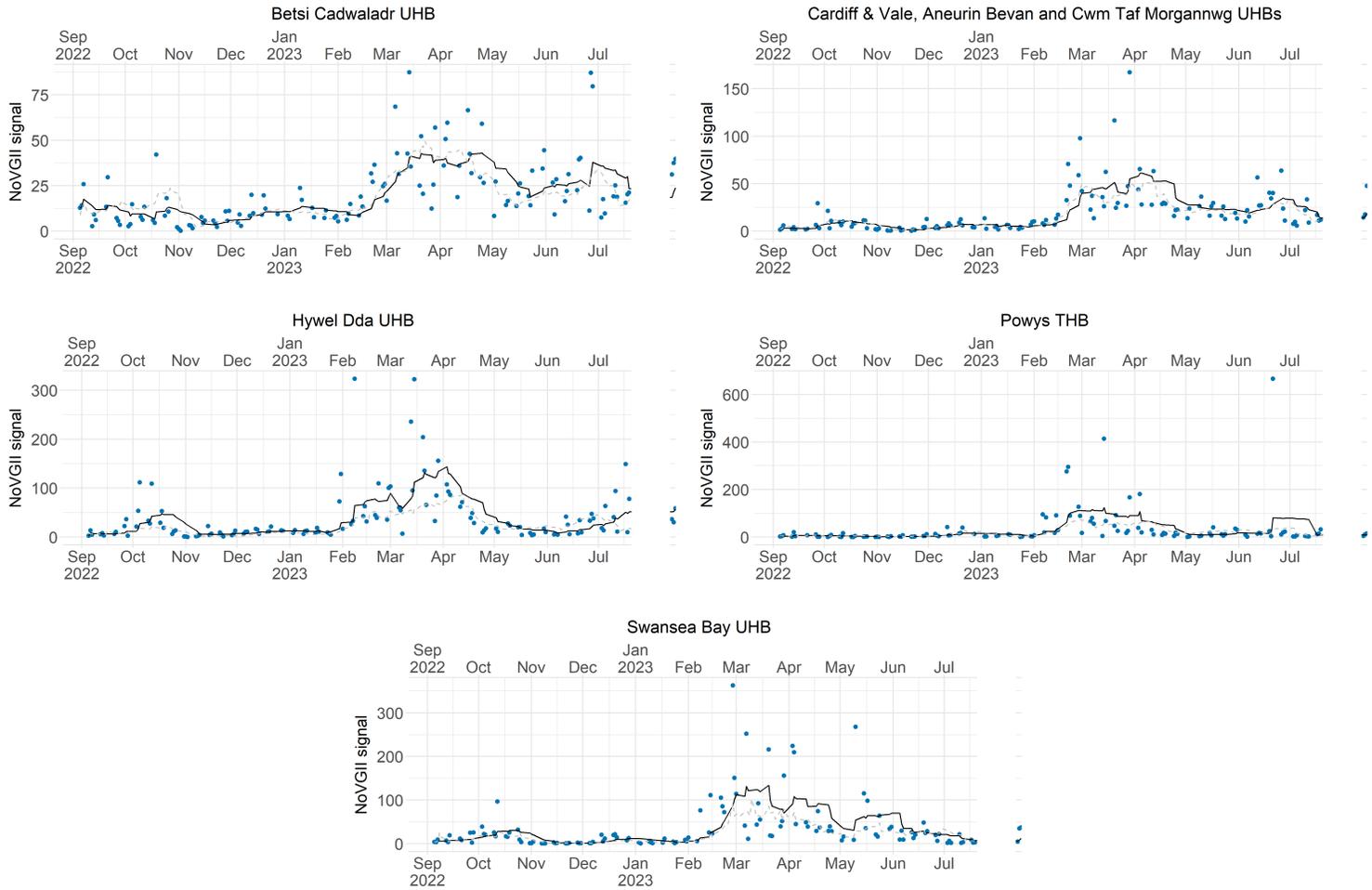
**Figure 4.** Levels of Respiratory Syncytial Virus (RSV) identified at national (bold line) and regional (faint line) levels across 11 WwTPs three days a week covered by the Programme since 5th September 2022. National levels based on historical data from 47 WwTPs and 5 days a week (taken until 21st July 2023) is also shown (grey dashed line). Signal is given as a daily rate of gene copies per 100,000 people (gc/day per 100k) and is a 10 day rolling average. **The signal for RSV is based on limited successful samples**, and so caution should be exercised when interpreting it. Please check site level plots for greater detail.

## Health Board Summary - Norovirus (NoVG1)



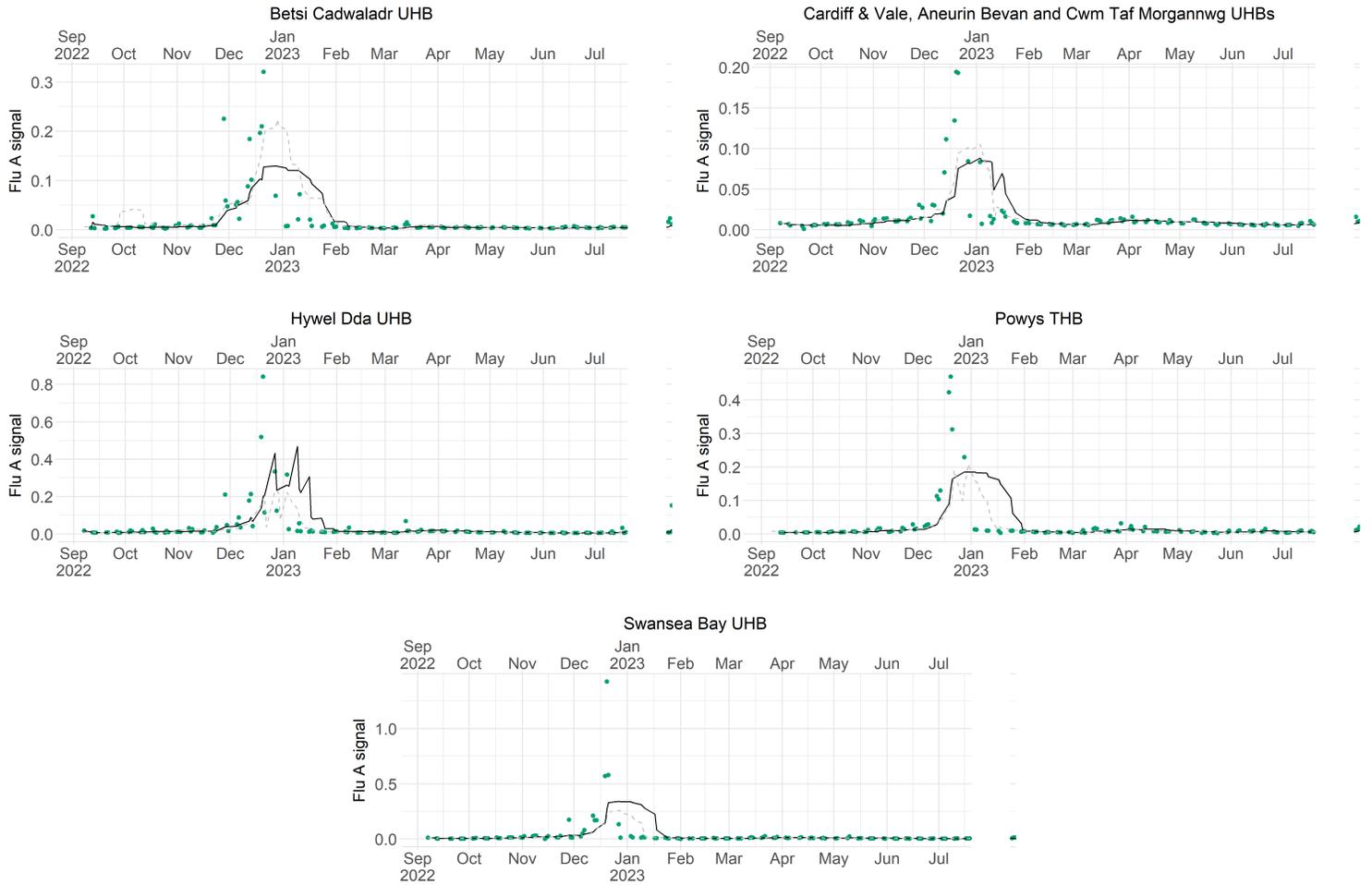
**Figure 5.** Levels of norovirus genogroup I (NoVG1) identified at five monitored health boards across 11 WwTPs three days a week covered by the Programme since 5th September 2022 (black line). Health board levels based on historical data from 47 WwTPs and 5 days a week (taken until 21st July 2023) is also shown (grey dashed line). Signal is given as a daily rate of gene copies per 100,000 people (gc/day per 100k) and is a 10 day rolling average.

## Health Board Summary - Norovirus (NoVGII)



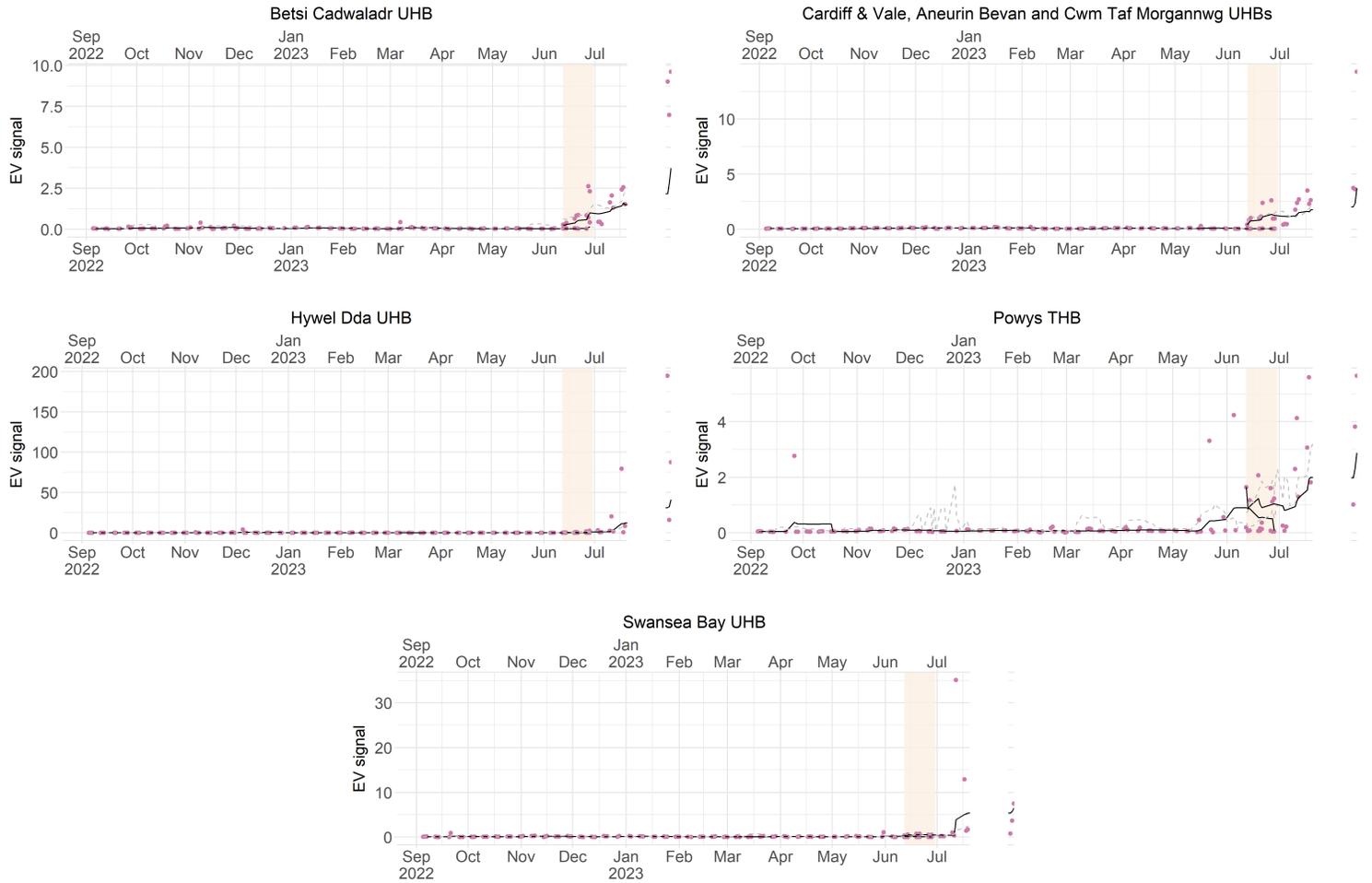
**Figure 6.** Levels of norovirus genogroup II (NoVGII) identified at five monitored health boards across 11 WwTPs three days a week covered by the Programme since 5th September 2022 (black line). Health board levels based on historical data from 47 WwTPs and 5 days a week (taken until 21st July 2023) is also shown (grey dashed line). Signal is given as a daily rate of gene copies per 100,000 people (gc/day per 100k) and is a 10 day rolling average.

## Health Board Summary - flu (flu A)



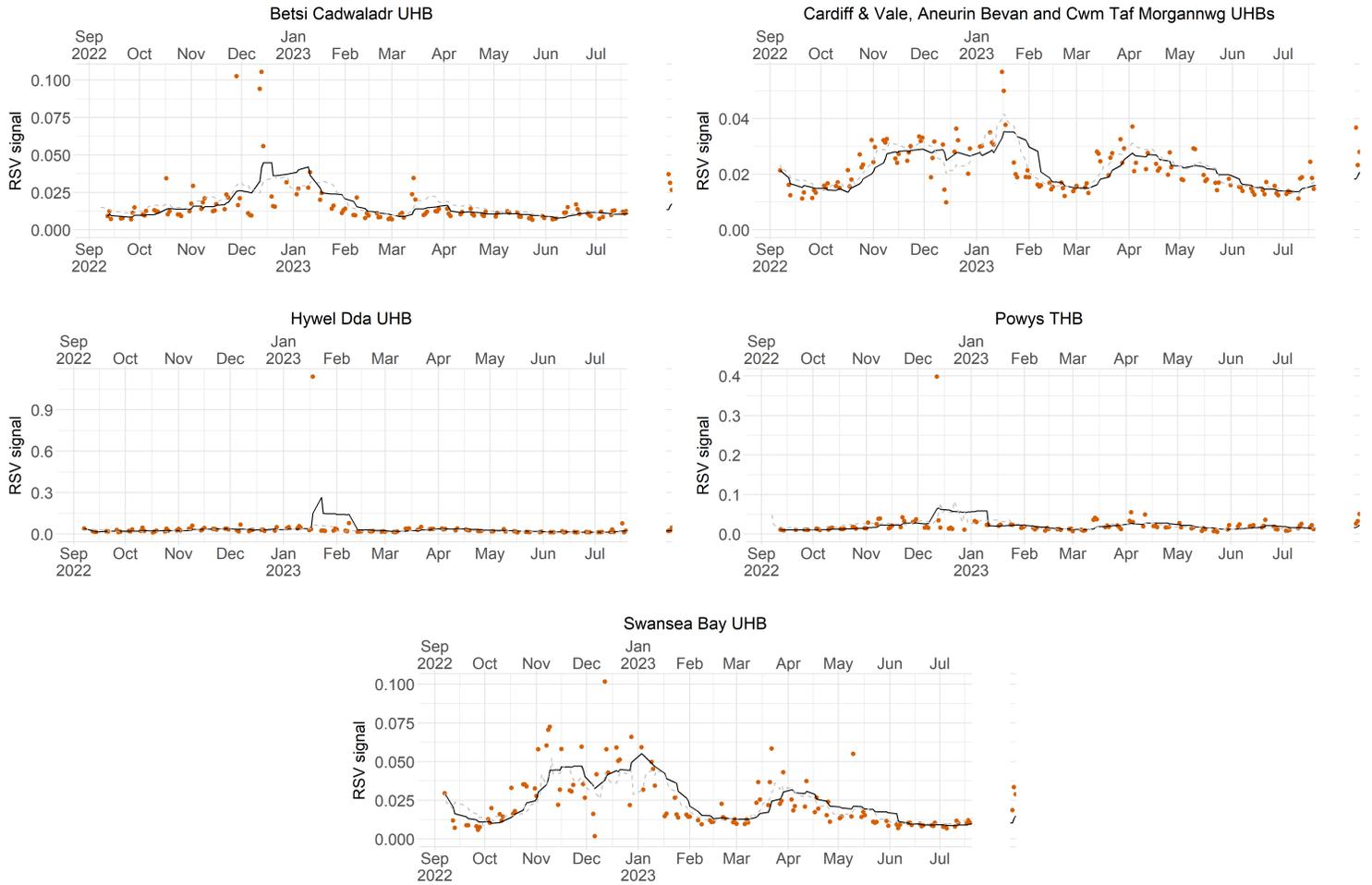
**Figure 7.** Levels of flu (flu-A) identified at five monitored health boards across 11 WwTPs three days a week covered by the Programme since 5th September 2022 (black line). Health board levels based on historical data from 47 WwTPs and 5 days a week (taken until 21st July 2023) is also shown (grey dashed line). Signal is given as a daily rate of gene copies per 100,000 people (gc/day per 100k) and is a 10 day rolling average.

## Health Board Summary - Enterovirus (EV1 & EV2)



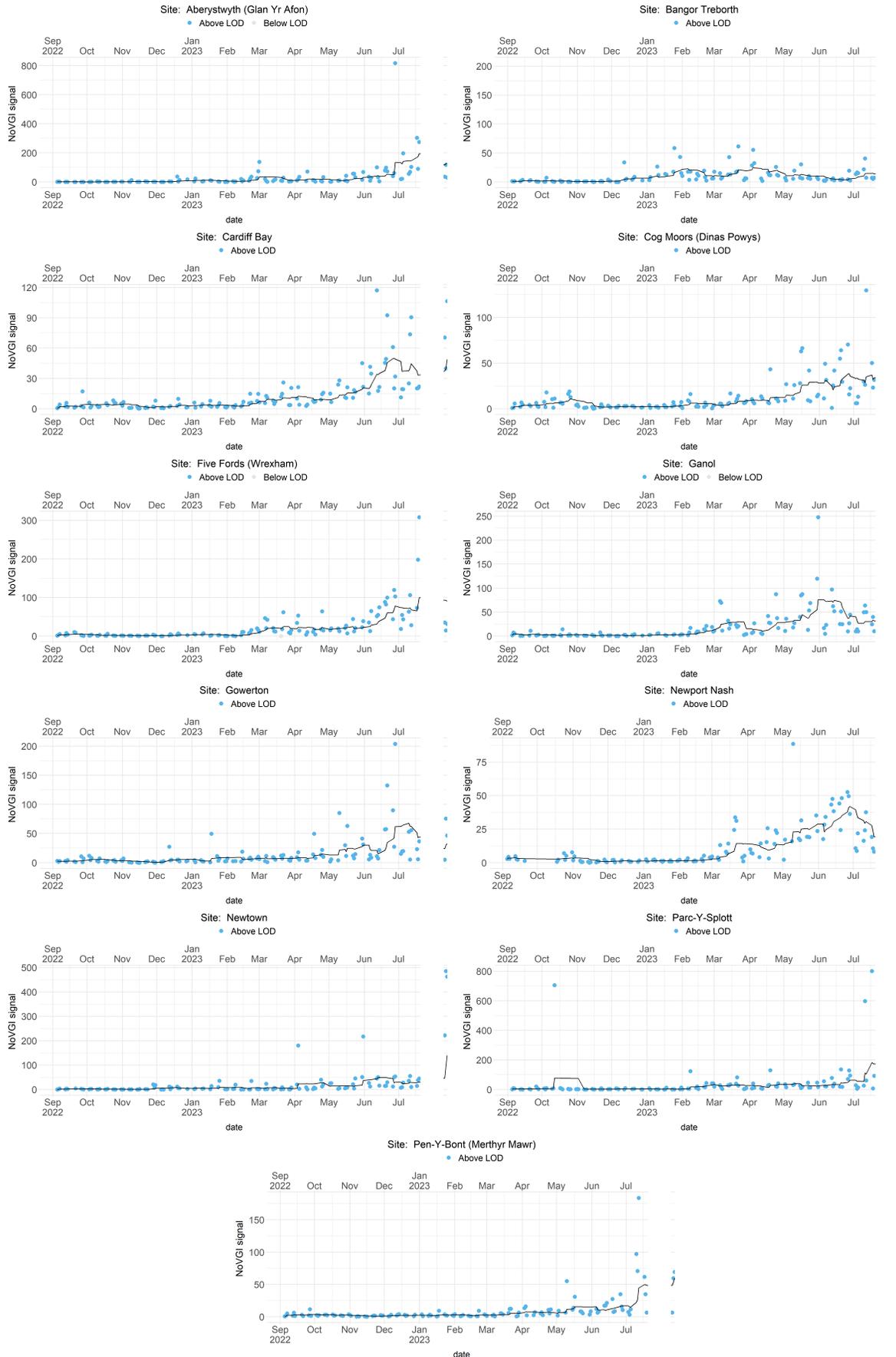
**Figure 8.** Levels of enterovirus (EV1 & EV2) identified at five monitored health boards across 11 WwTPs three days a week covered by the Programme since 5th September 2022 (black line) Health board levels based on historical data from 47 WwTPs and 5 days a week (taken until 21st July 2023) is also shown (grey dashed line). Signal is given as a daily rate of gene copies per 100,000 people (gc/day per 100k) and is a 10 day rolling average. The beige block represents a period where two enterovirus markers were being used (EV1 and EV2). Before this period, EV1 was used exclusively, after this period, and currently, EV2 is being used exclusively. **The signal for EV is based on limited successful samples**, and so caution should be exercised when interpreting it. Please check site level plots for greater detail

## Health Board Summary - Respiratory Syncytial Virus (RSV)



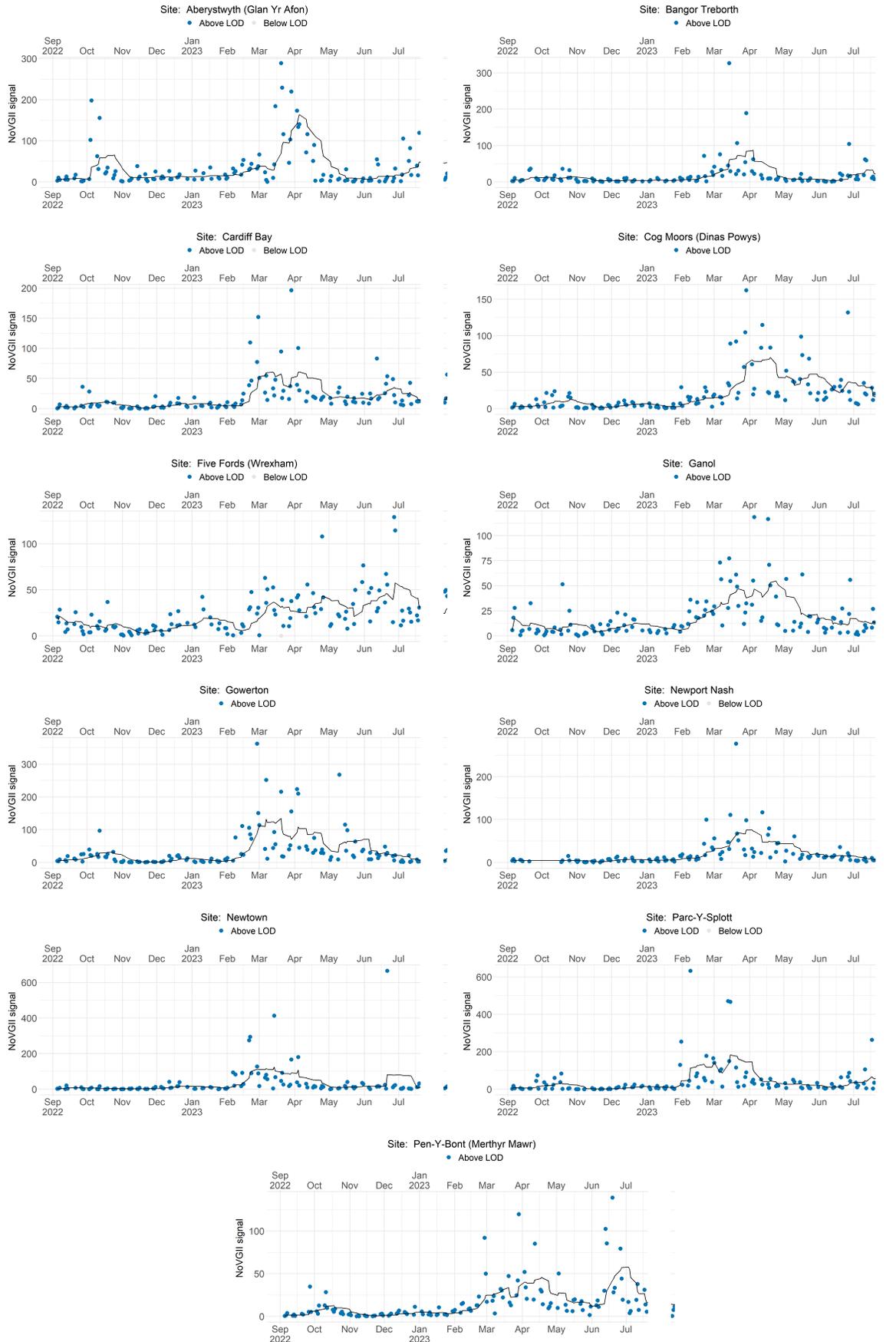
**Figure 9.** Levels of Respiratory Syncytial Virus (RSV) identified at five monitored health boards across 11 WwTPs three days a week covered by the Programme since 5th September 2022 (black line). Health board levels based on historical data from 47 WwTPs and 5 days a week (taken until 21st July 2023) is also shown (grey dashed line). Signal is given as a daily rate of gene copies per 100,000 people (gc/day per 100k) and is a 10 day rolling average. **The signal for RSV is based on limited successful samples**, and so caution should be exercised when interpreting it. Please check site level plots for greater detail

## Site-level Summary - Norovirus (NoVGI)



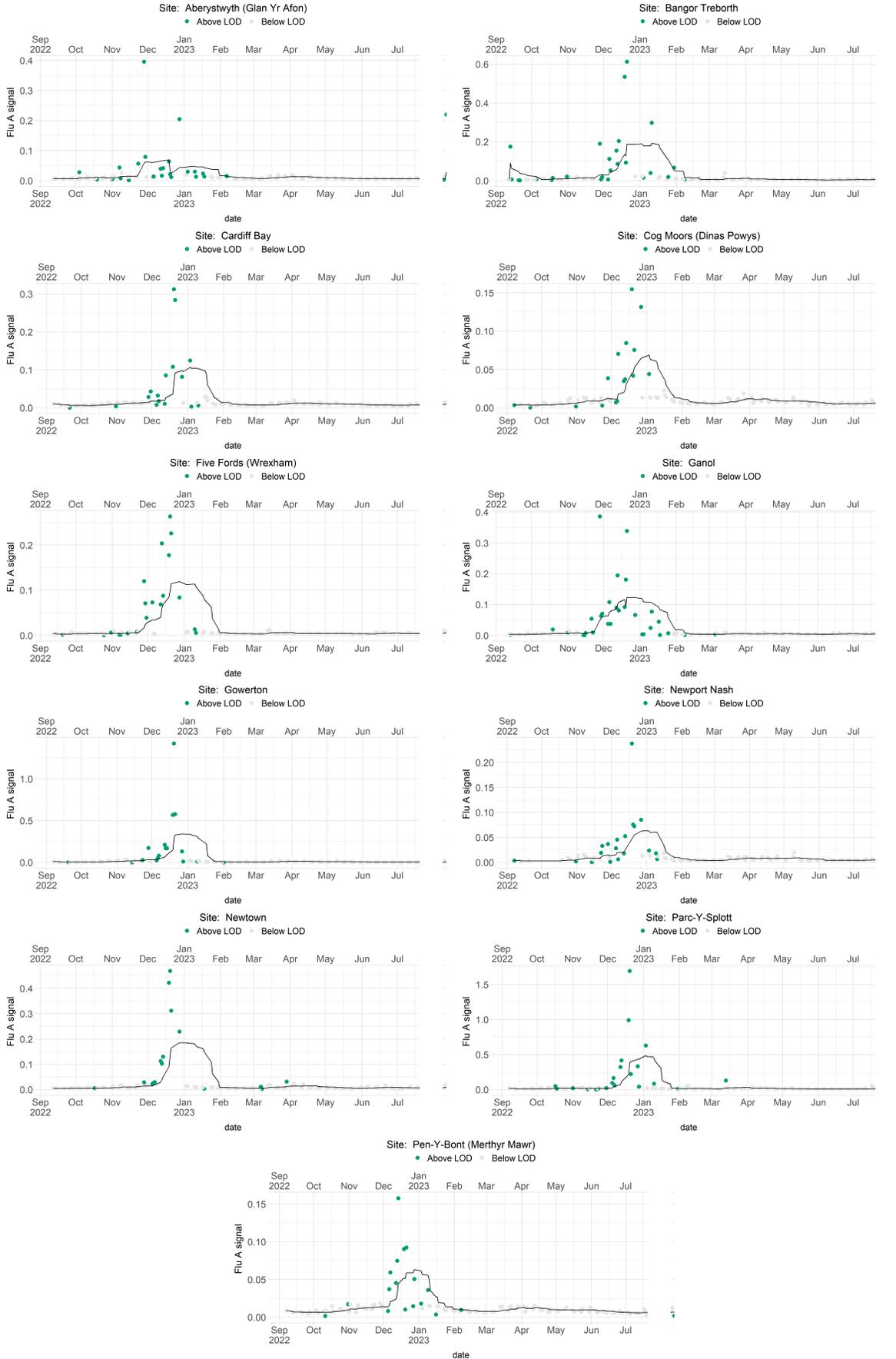
**Figure 10.** Levels of norovirus genogroup I (NoVGI) identified at the site level (across 11 WwTPs covered by the Programme) since 5th September 2022. Signal is given as a daily rate of gene copies per 100,000 people (gc/day per 100k). Each point represents a sample and the line is a 10 day rolling average. There is a break in reporting between 21st July - 6th November 2023.

## Site-level Summary - Norovirus (NoVGII)



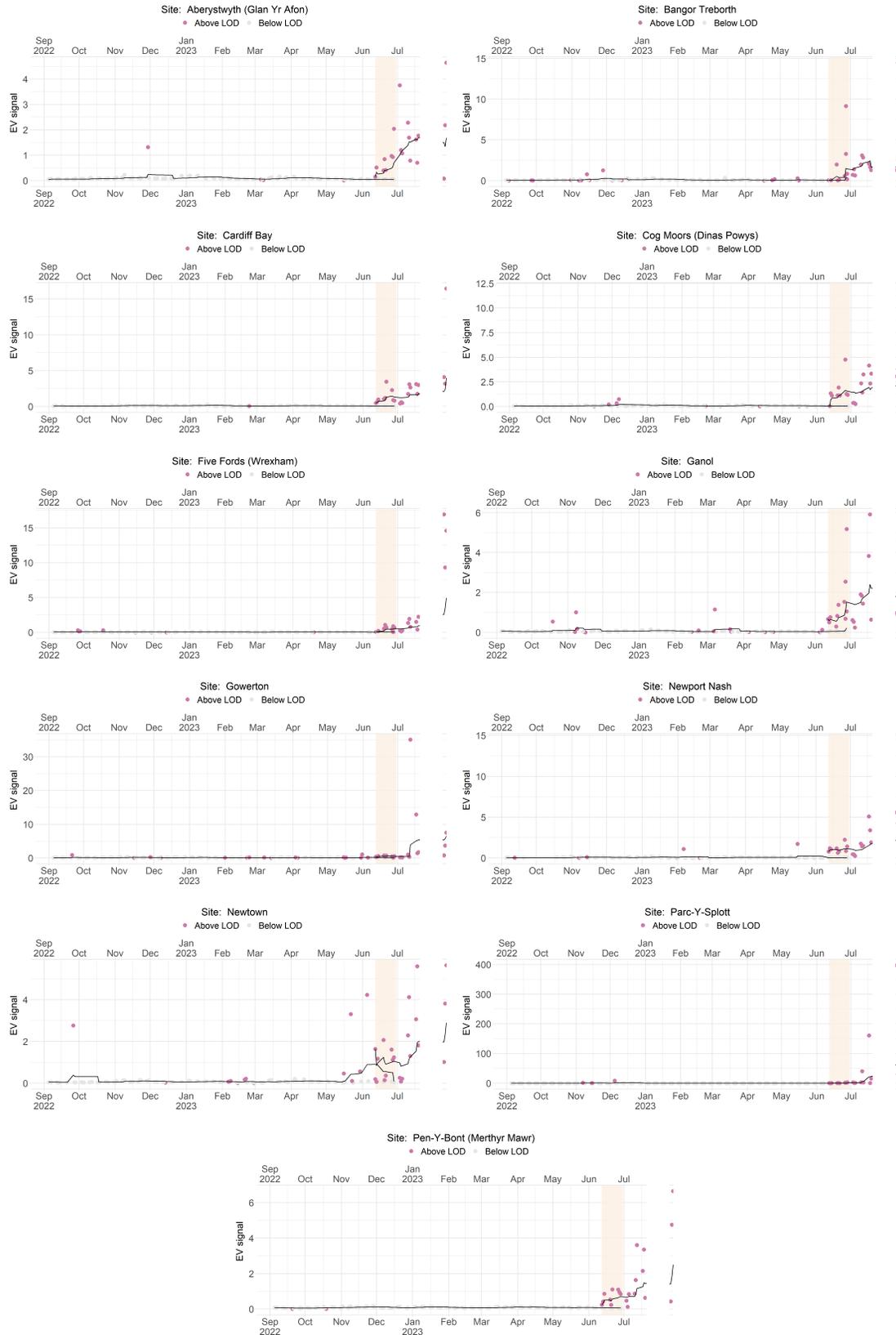
**Figure 11.** Levels of norovirus genogroup II (NoVGII) identified at the site level (across 11 WwTPs covered by the Programme) since 5th September 2022. Signal is given as a daily rate of gene copies per 100,000 people (gc/day per 100k). Each point represents a sample and the line is a 10 day rolling average. There is a break in reporting between 21st July - 6th November 2023.

## Site-level Summary - flu (flu-A)



**Figure 12.** Levels of flu (flu-A) identified at the site level (across 11 WwTPs covered by the Programme) since 5th September 2022. Signal is given as a daily rate of gene copies per 100,000 people (gc/day per 100k). Each point represents a sample and the line is a 10 day rolling average. There is a break in reporting between 21st July - 6th November 2023.

## Site-level Summary - Enterovirus (EV1 & EV2)



**Figure 13.** Levels of enterovirus (EV1 & EV2) identified at the site level (across 11 WwTPs) since 5th September 2022. Signal is given as a daily rate of gene copies per 100,000 people (gc/day per 100k). Each point represents a sample and the line is a 10 day rolling average. The beige block represents a period where two enterovirus markers were being used (EV1 and EV2). There is a break in reporting between 21st July - 6th November 2023.

## Site-level Summary - Respiratory Syncytial Virus (RSV)



**Figure 14.** Levels of Respiratory Syncytial Virus (RSV) identified at the site level (across 11 WwTPs covered by the Programme) since 5th September 2022. Signal is given as a daily rate of gene copies per 100,000 people (gc/day per 100k). Each point represents a sample and the line is a 10 day rolling average. There is a break in reporting between 21st July - 6th November 2023.