

Weekly Report for Flu, Enterovirus, RSV, Norovirus and SARS-CoV-2 in Wastewater: 29 November 2023

Samples taken up to and including: 22 November 2023

Background

Samples are collected from 11 different wastewater treatment works three days each week and this provides valuable insights into the level of SARS-CoV-2 and other viruses in our communities across all Welsh Health Boards.

Guidance

In this report, Cardiff & Vale, Aneurin Bevan, Cwm Taf Morgannwg and Swansea Bay University Health Boards are grouped together. Signal for all markers is given as a daily rate of gene copies per 100,000 people (gc/day per 100k). **The signal for enterovirus and RSV in the national and health board plots can be based on limited successful samples**, and so caution should be exercised when interpreting it. Please check site level plots for greater detail. For plots showing enterovirus signal, the beige block represents a period where two enterovirus assays were being used (EV1 and EV2), with two lines being displayed. Currently, only the EV2 assay is being used as it provides better sensitivity.

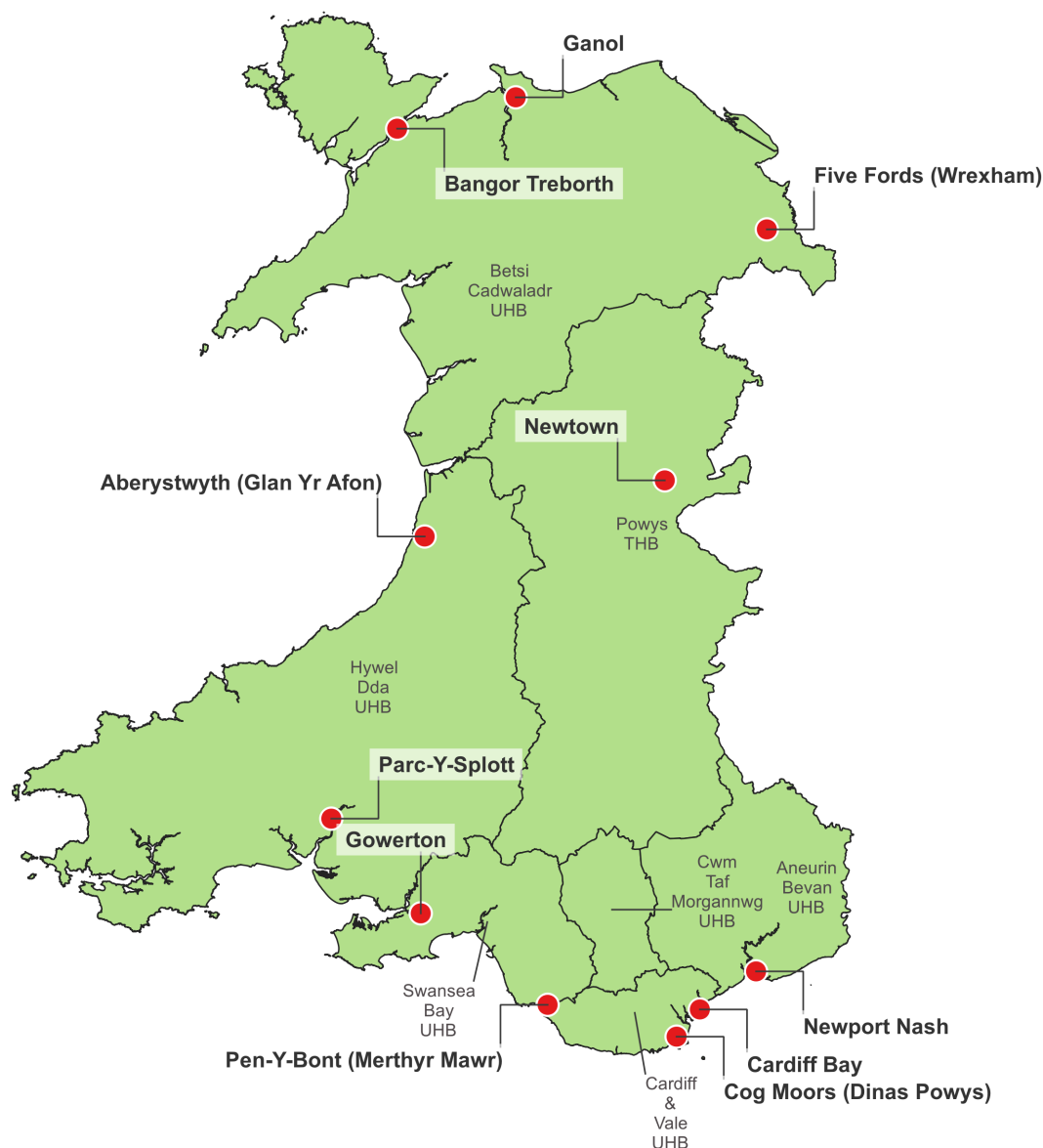


Figure 1. Map showing the 11 wastewater treatment plants (WwTPs) monitored by the programme, along with their respective health boards.

SARS-CoV-2 National Summary

SARS-CoV-2 levels

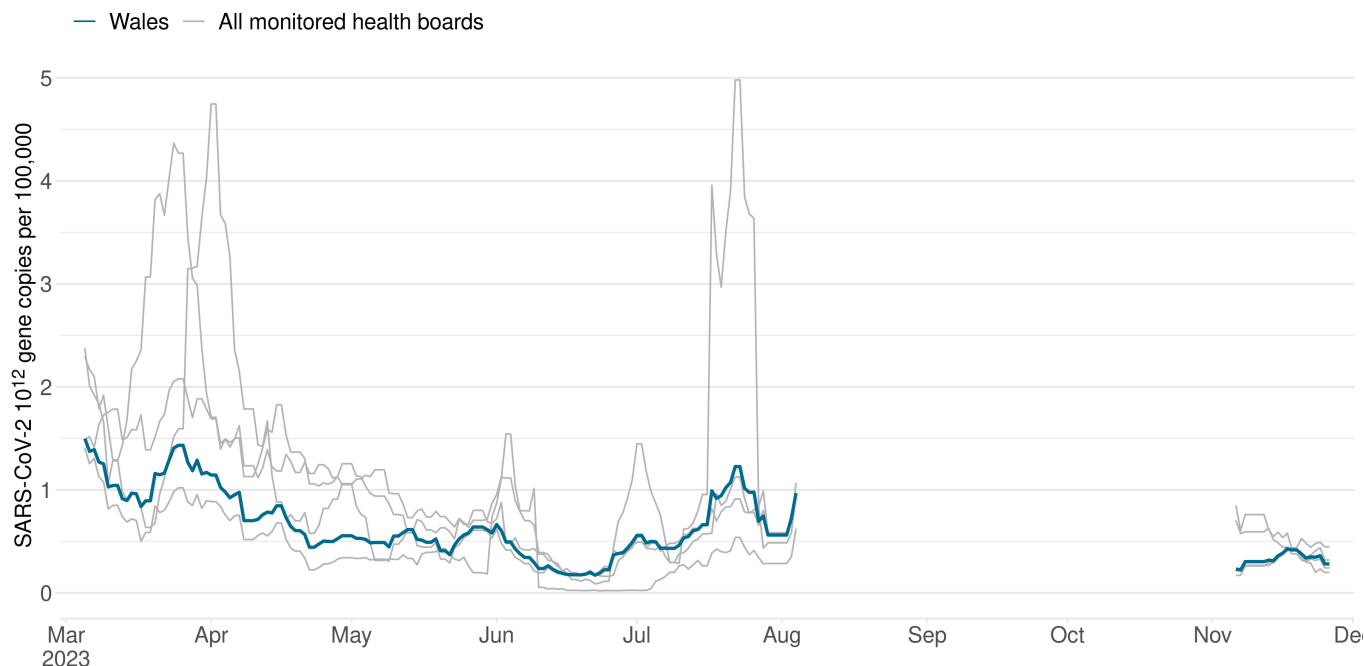


Figure 2. Level of SARS-CoV-2 given as a 10 day rolling mean at the national (blue line) and health board (grey lines) level.

SARS-CoV-2 Variants

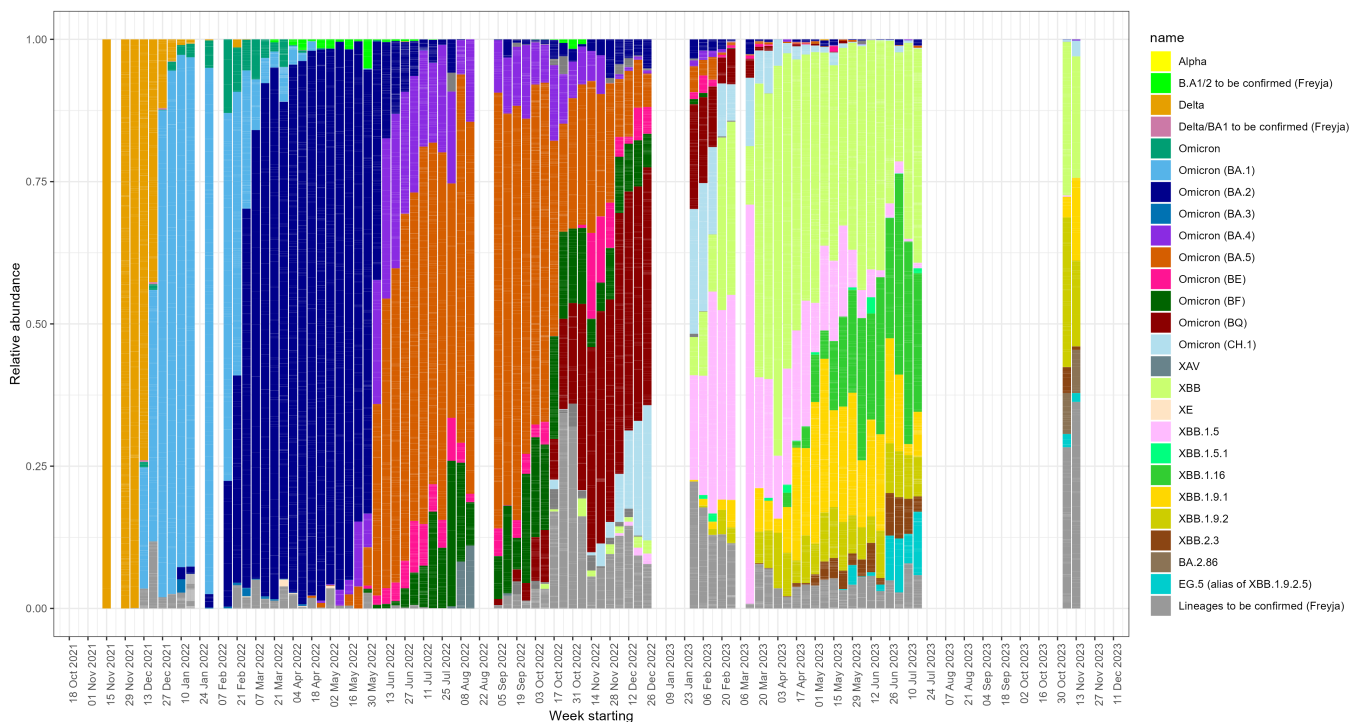


Figure 3. SARS-CoV-2 variants identified at the national level (plotting proportion of sequence reads assigned to each VOC using **Freyja** programme; see figure legend). Limitations of the Freyja tool in reconstructing and quantifying SARS-CoV-2 lineages from wastewater metabarcoding sequencing should be considered.

Health Board Summary

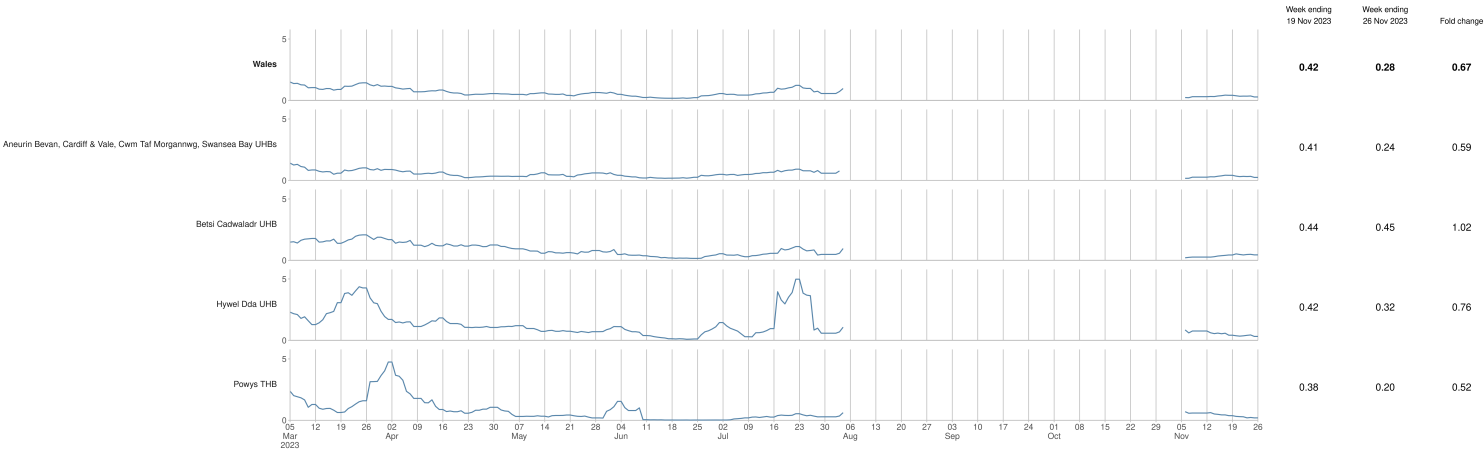


Figure 4. Level of SARS-CoV-2 given as a 10 day rolling mean at the health board level with respective fold changes in signal. Fold change describes the ratio in signal between weeks.

Norovirus genogroup I (NoVGI)

National Summary

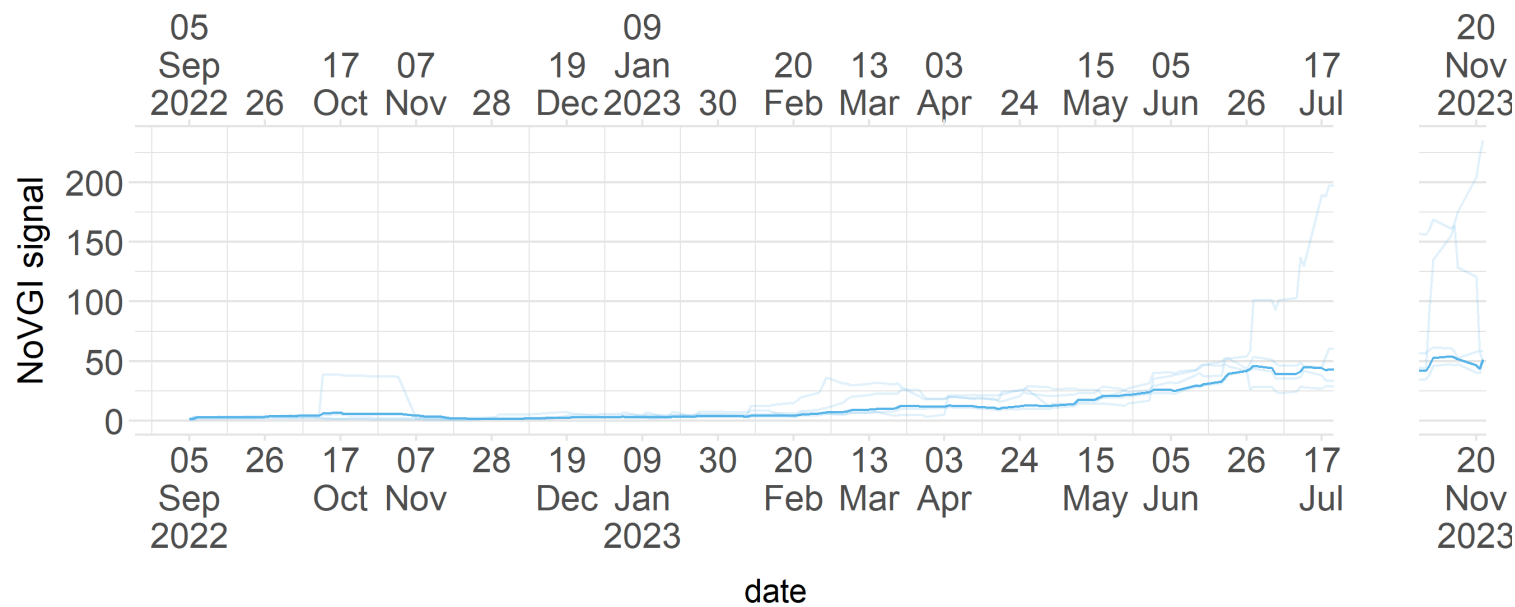


Figure 5. Level of norovirus genogroup I (NoVGI) given as a 10 day rolling mean at the national (bold line) and healthboard (faint lines) level.

Heat Map

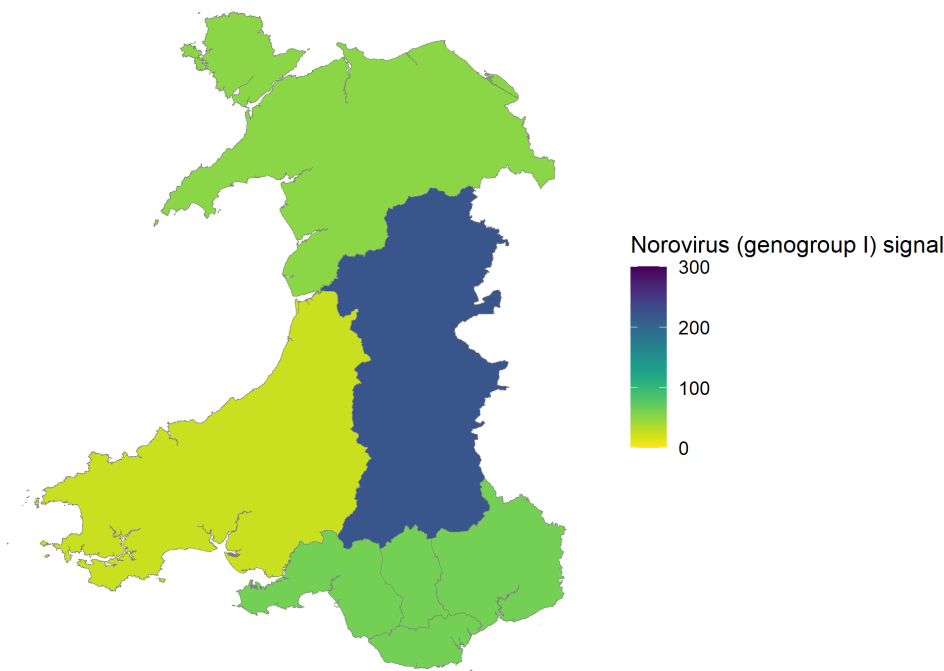


Figure 6. National heat map showing mean norovirus genogroup I gc/day per 100k for each healthboard in the most recent sampling week.

Norovirus genogroup II (NoVGII)

National Summary

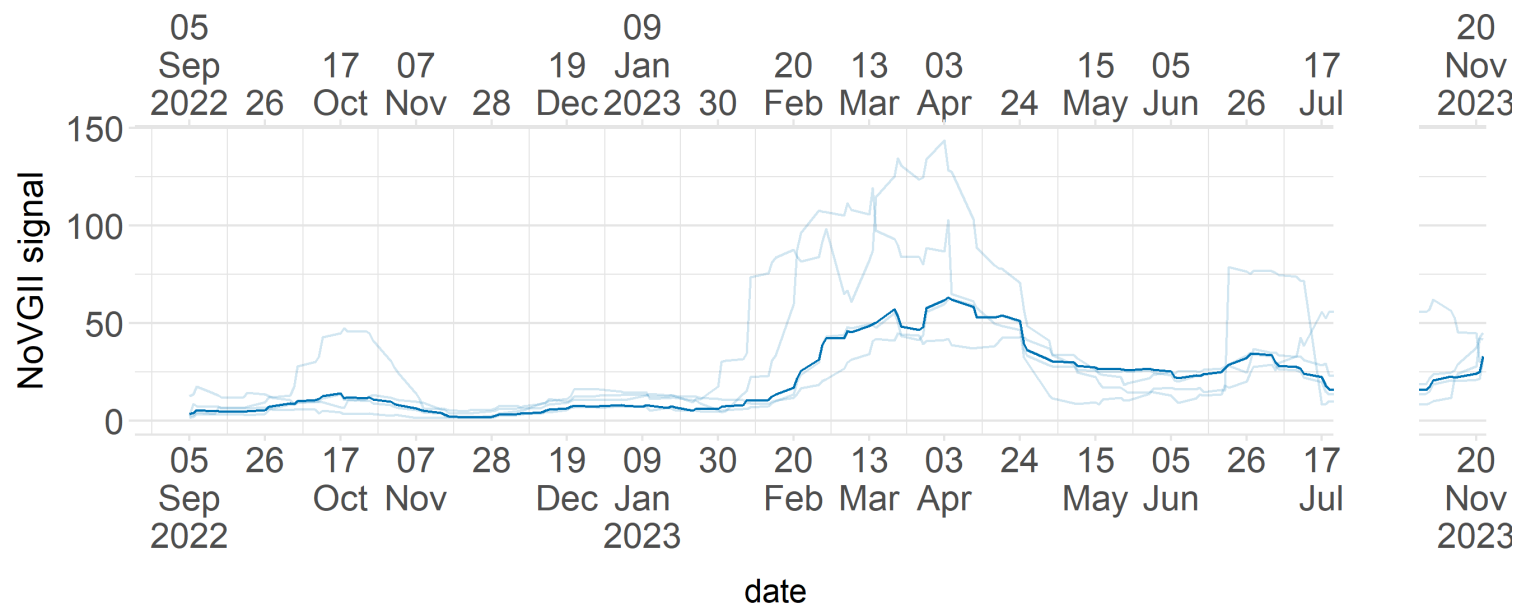


Figure 7. Level of norovirus genogroup II (NoVGII) given as a 10 day rolling mean at the national (bold line) and healthboard (faint lines) level.

Heat Map

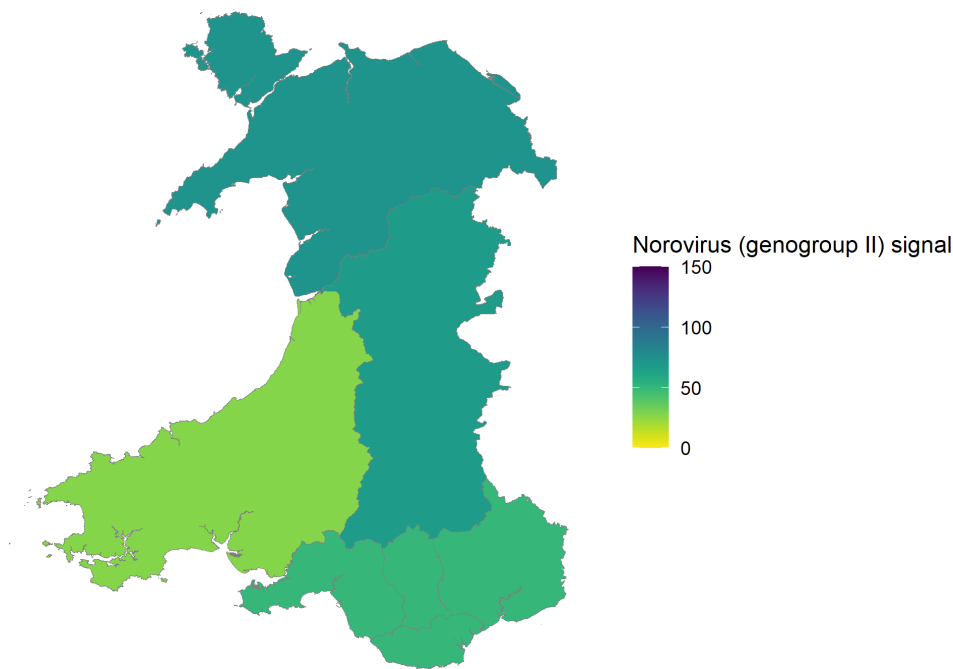


Figure 8. National heat map showing mean norovirus genogroup II gc/day per 100k for each healthboard in the most recent sampling week.

Influenza A (flu-A) virus

National Summary

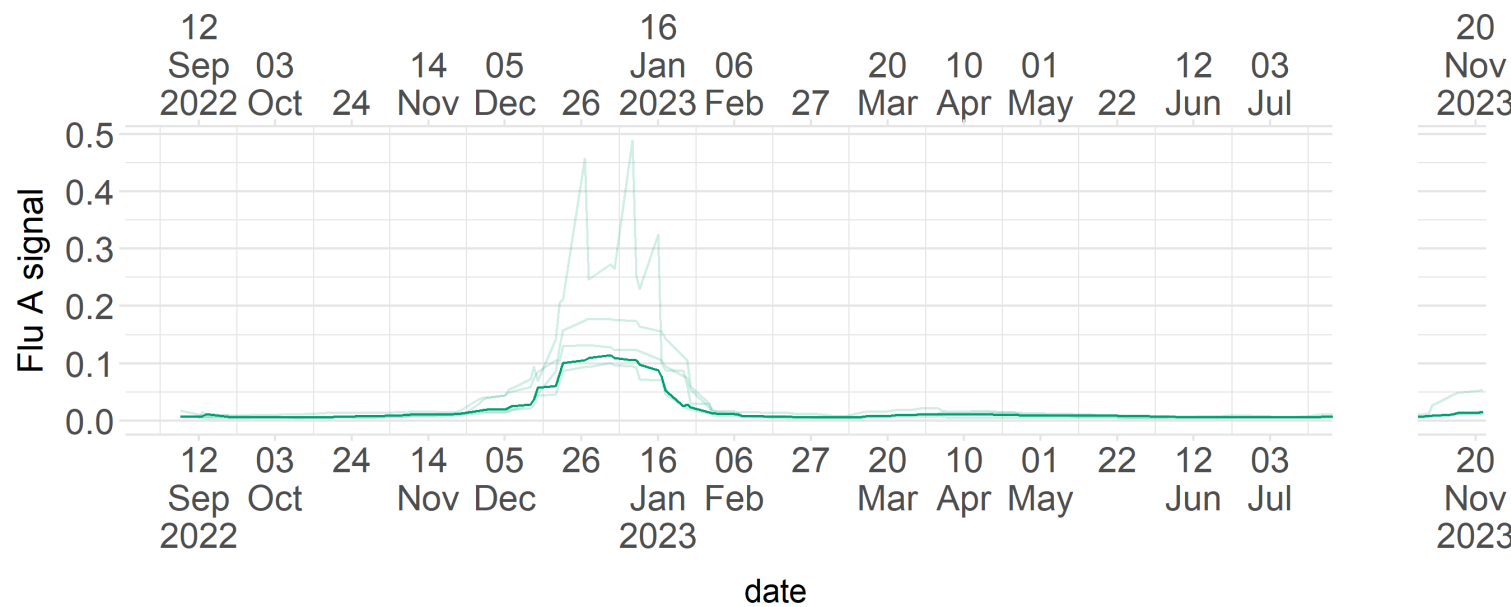


Figure 9. Level of influenza A (flu-A) virus given as a 10 day rolling mean at the national (bold line) and healthboard (faint lines) level.

Heat Map

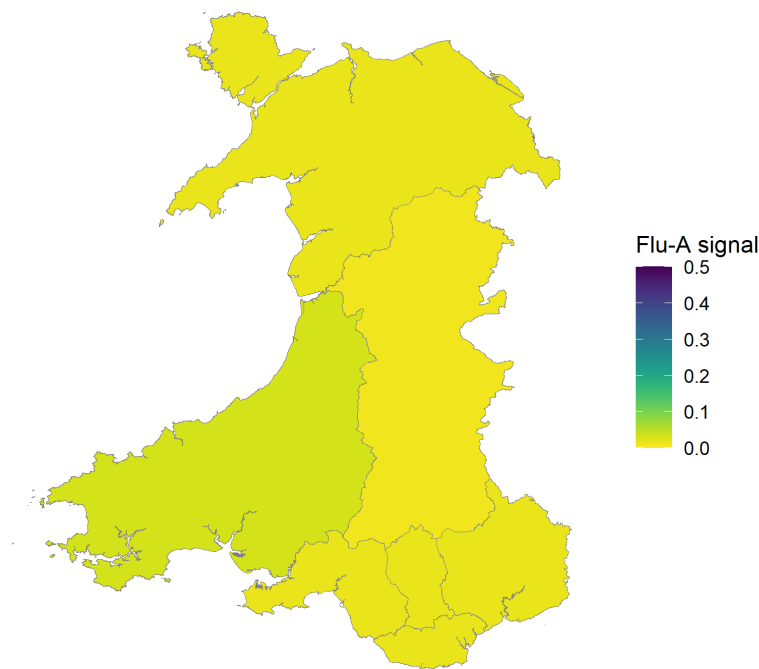


Figure 10. National heat map showing mean influenza A (flu-A) virus gc/day per 100k for each healthboard in the most recent sampling week.

Enterovirus *spp.*

National Summary

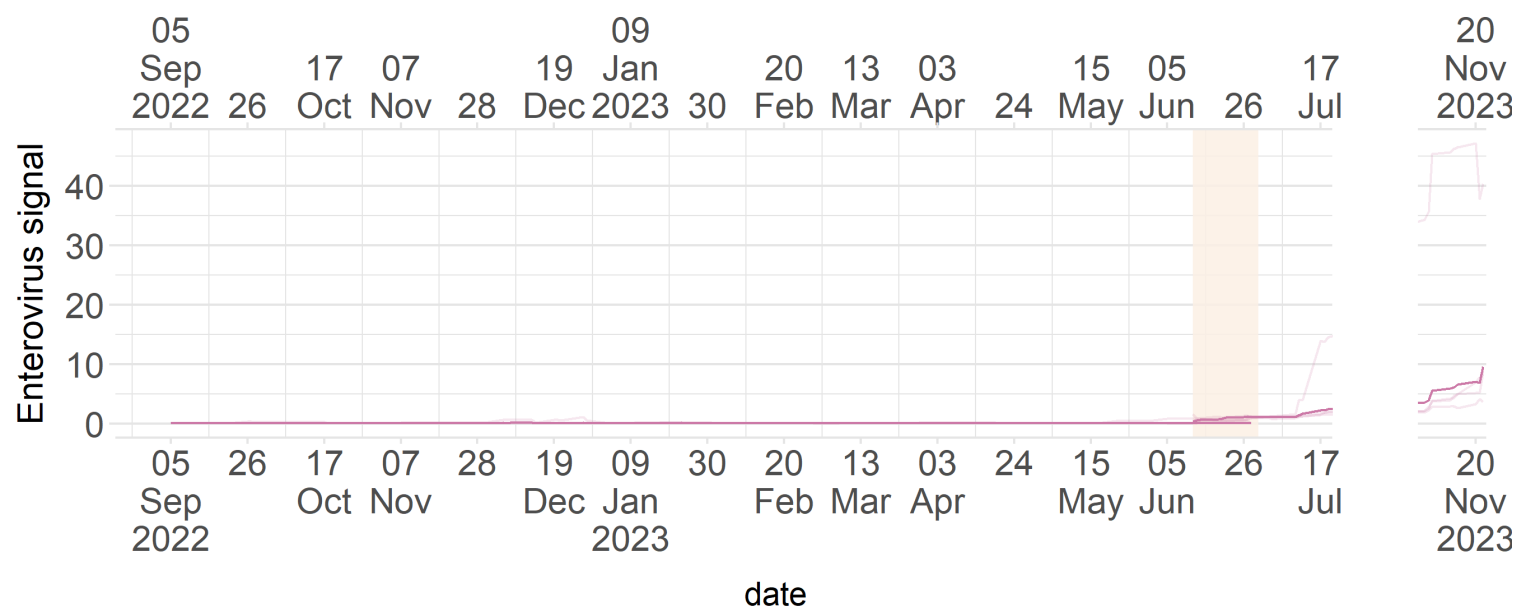


Figure 11. Level of Enterovirus *spp.* (EV1 & EV2) given as a 10 day rolling mean at the national (bold line) and healthboard (faint lines) level.

Heat Map

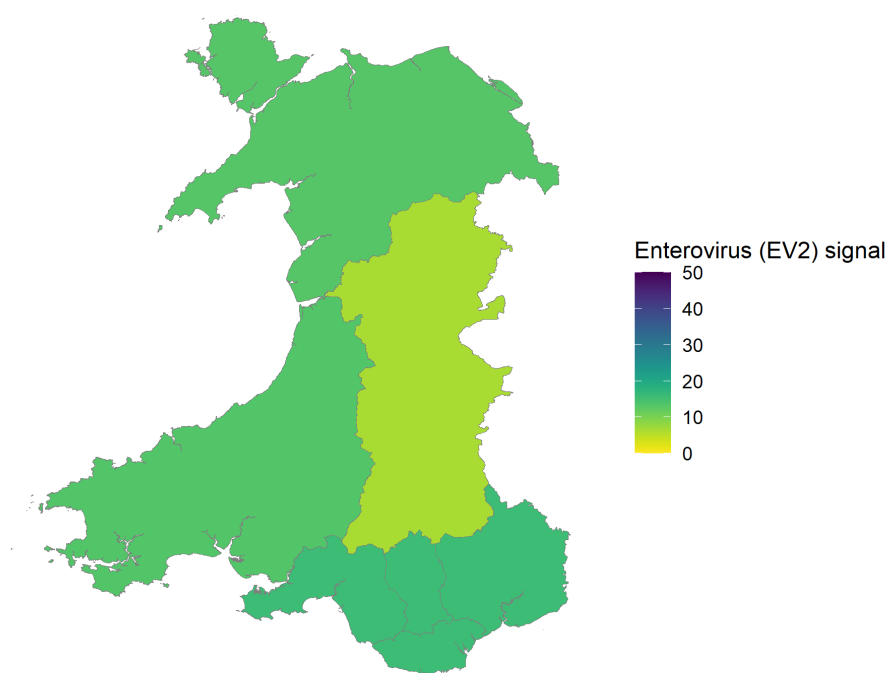


Figure 12. National heat map showing mean Enterovirus *spp.* gc/day per 100k for each healthboard in the most recent sampling week.

Respiratory syncytial virus (RSV)

National Summary

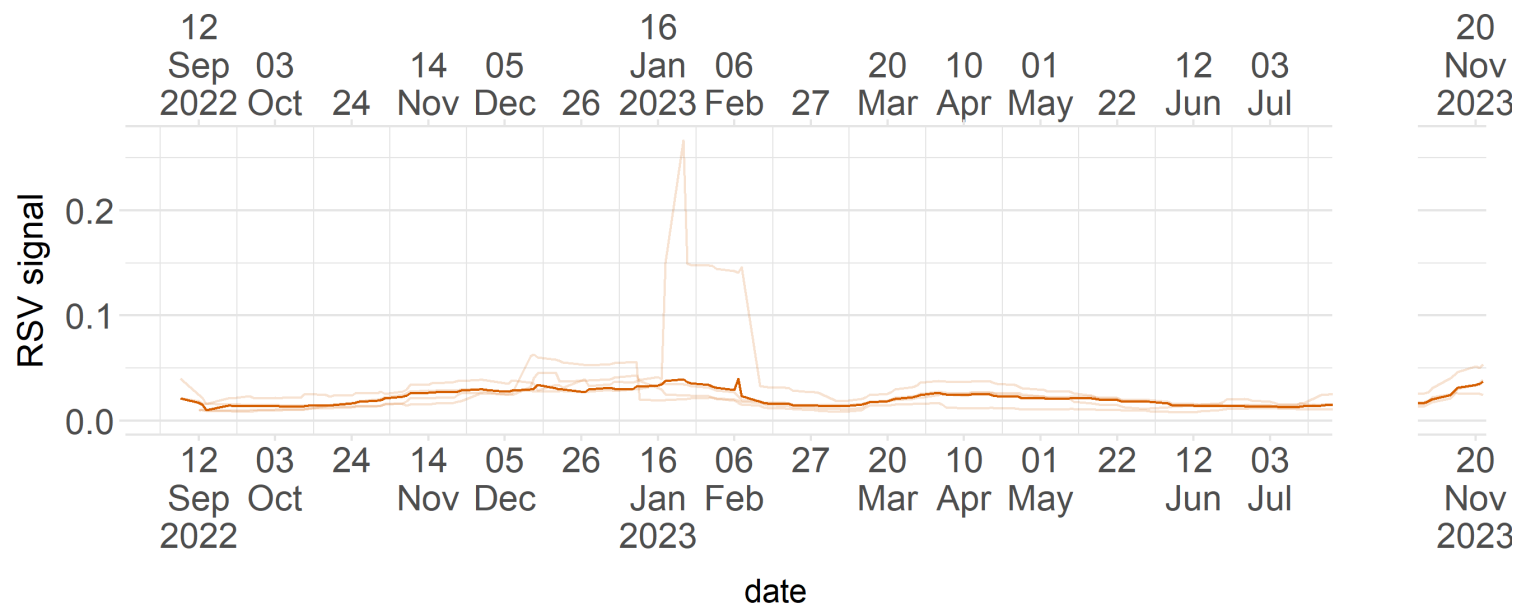


Figure 13. Level of respiratory syncytial virus (RSV) given as a 10 day rolling mean at the national (bold line) and healthboard (faint lines) level.

Heat Map

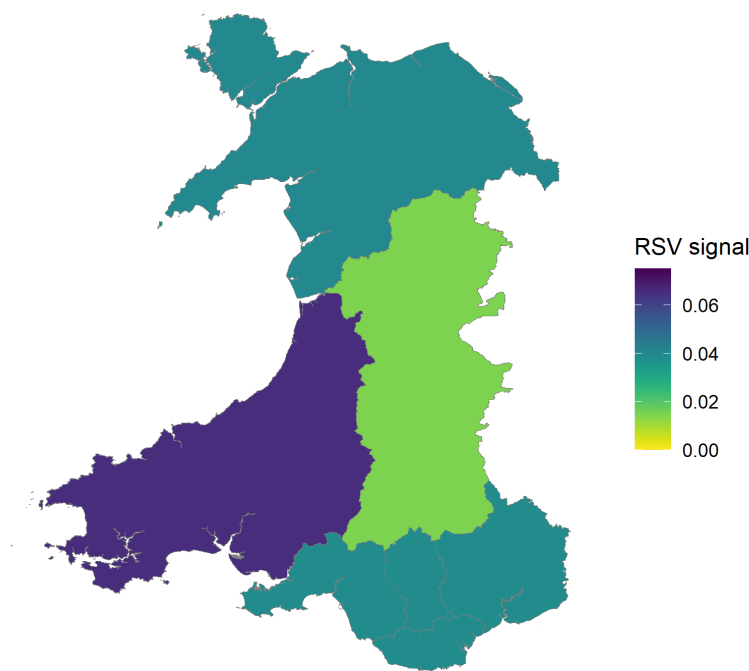


Figure 14. National heat map showing mean Respiratory syncytial virus gc/day per 100k for each healthboard in the most recent sampling week.

Health Board Summaries

Betsi Cadwaladr UHB

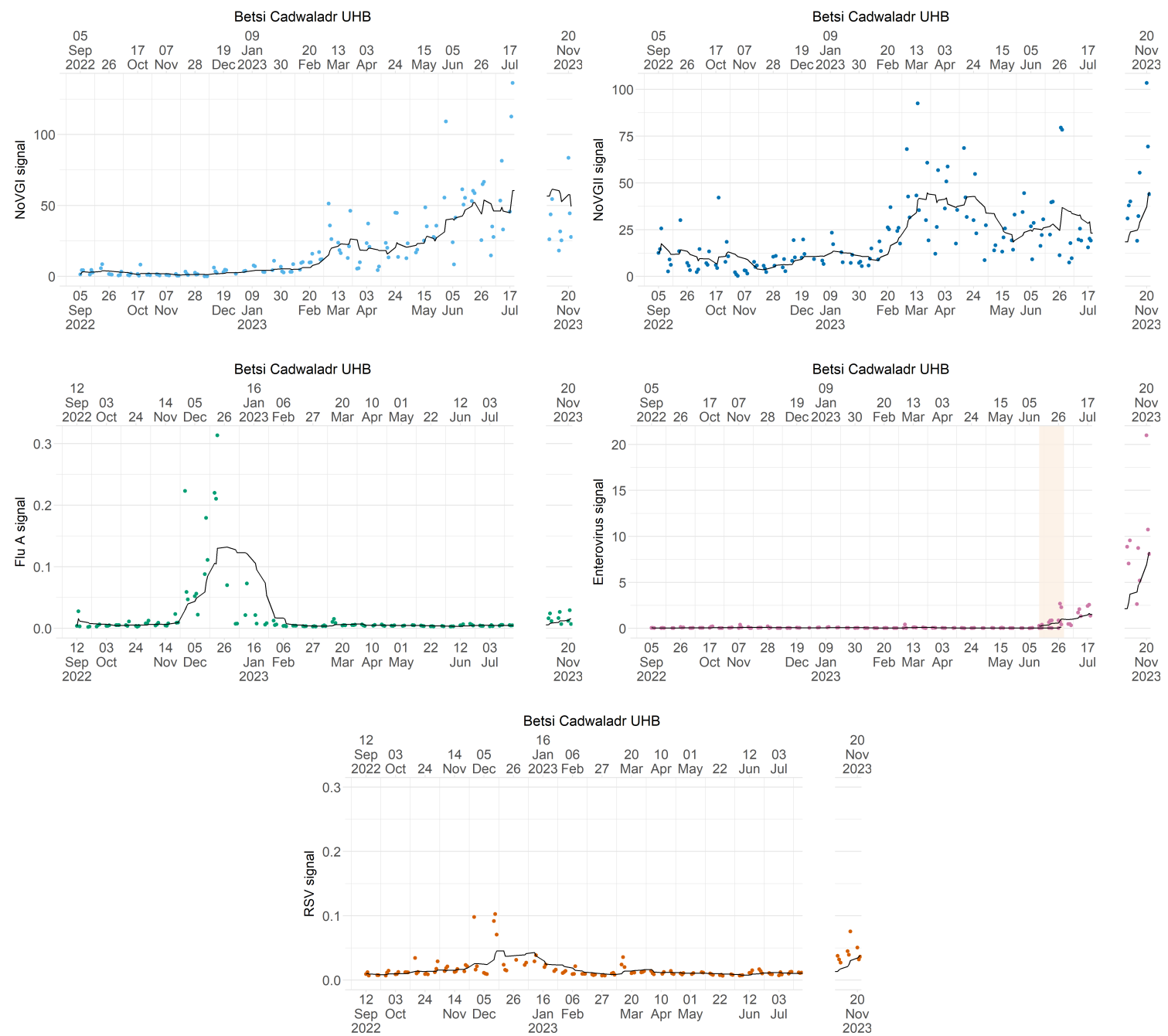


Figure 15. Viral levels (gc/day per 100k) given as a 10 day rolling mean for Betsi Cadwaladr UHB.

Cardiff & Vale, Aneurin Bevan, Cwm Taf Morgannwg and Swansea Bay UHBs

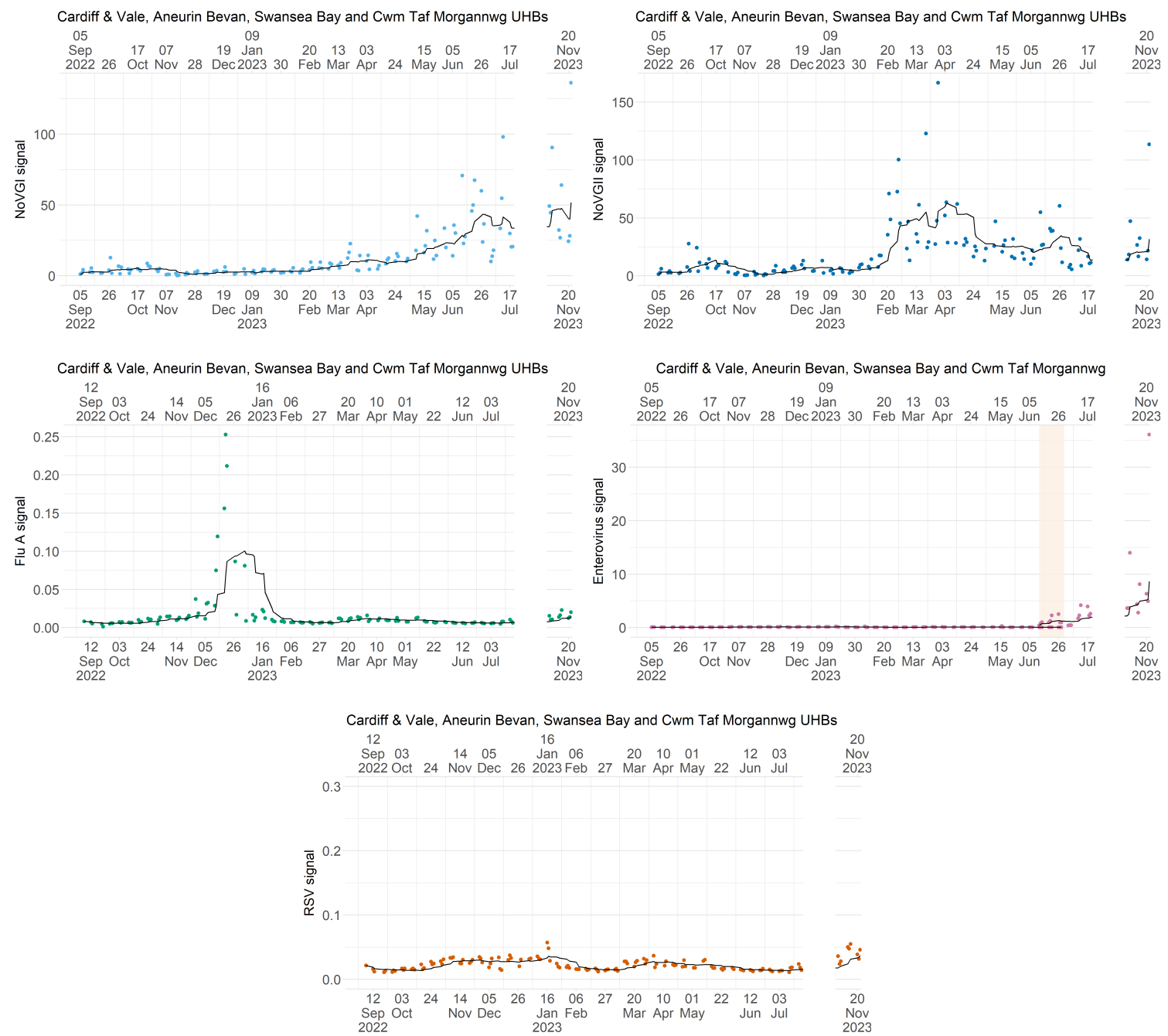


Figure 16. Viral levels (gc/day per 100k) given as a 10 day rolling mean for Cardiff & Vale, Aneurin Bevan, Swansea Bay and Cwm Taf Morgannwg UHBs.

Hywel Dda UHB



Figure 17. Viral levels (gc/day per 100k) given as a 10 day rolling mean for Hywel Dda UHB.

Powys THB

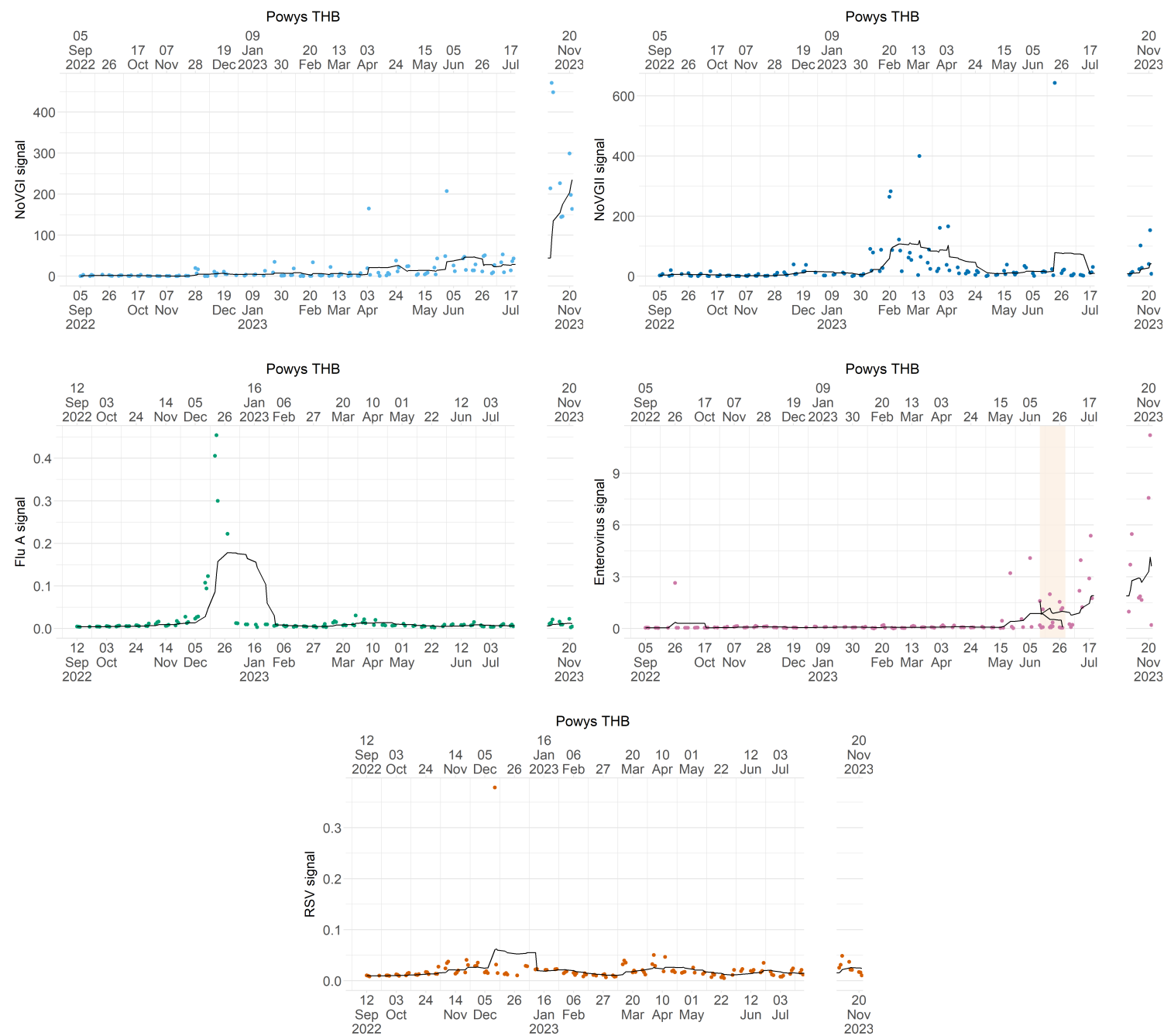


Figure 18. Viral levels (gc/day per 100k) given as a 10 day rolling mean for Powys THB.

Appendices

Appendix 1

Health Board	Sampling Sites	Major City/Town
Aneurin Bevan, Cardiff & Vale, Cwm Taf Morgannwg, Swansea Bay UHBs	Newport Nash	Newport
	Cardiff Bay	Cardiff
	Cog Moors (Dinas Powys)	Barry and Vale of Glamorgan
	Pen-Y-Bont (Merthyr Mawr)	Bridgend
	Gowerton	Swansea
Betsi Cadwaladr UHB	Bangor Treborth	Bangor
	Five Fords (Wrexham)	Wrexham
	Ganol	Llandudno
	Aberystwyth (Glan Yr Afon)	Aberystwyth
Hywel Dda UHB	Parc-Y-Splott	Carmarthen
Powys THB	Newtown	Newtown

Appendix 2: Site-level summaries

SARS-CoV-2

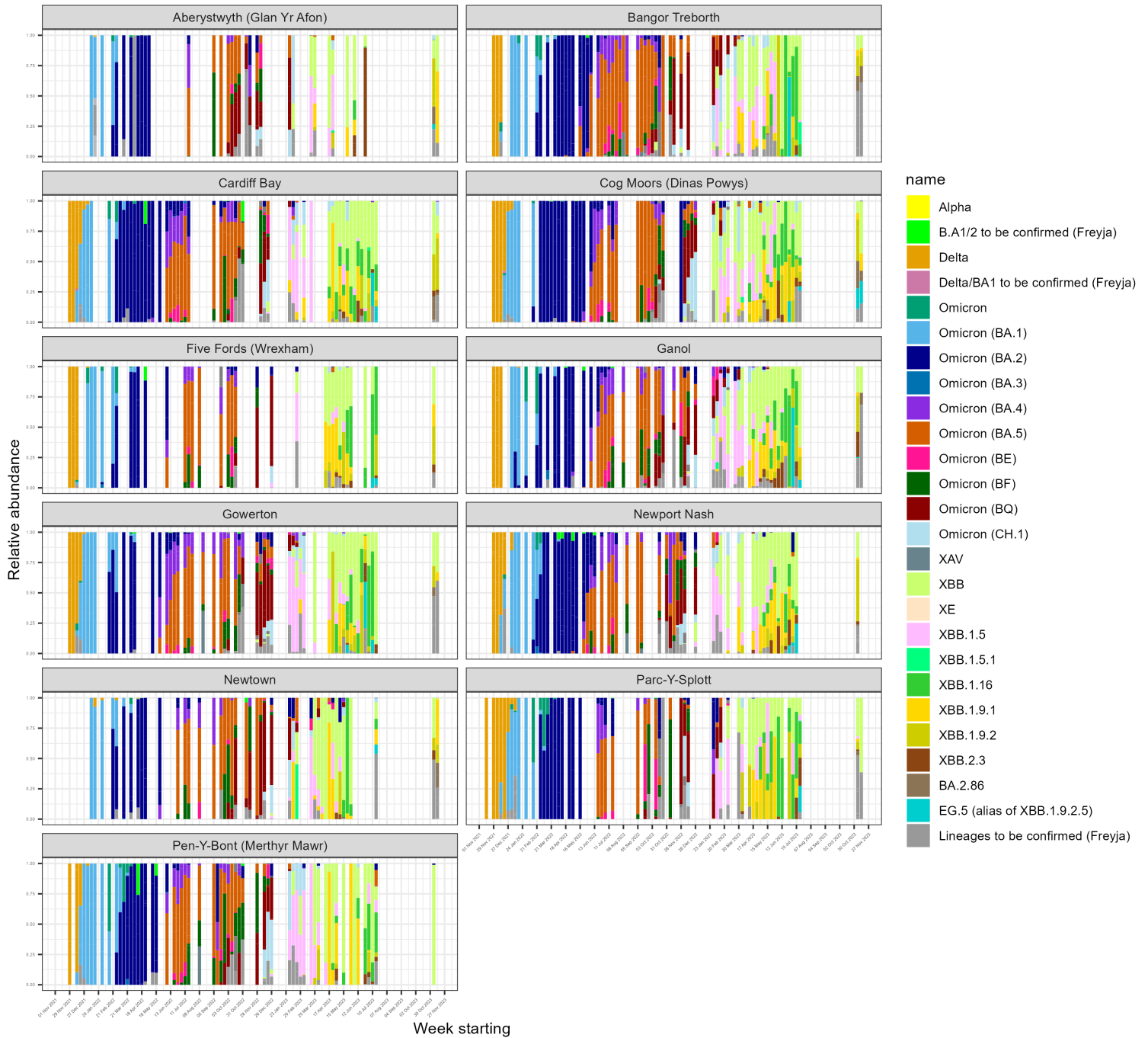


Figure 19. Proportions of SARS-CoV-2 variants identified at the site level (across 11 WwTPs covered by the Programme).

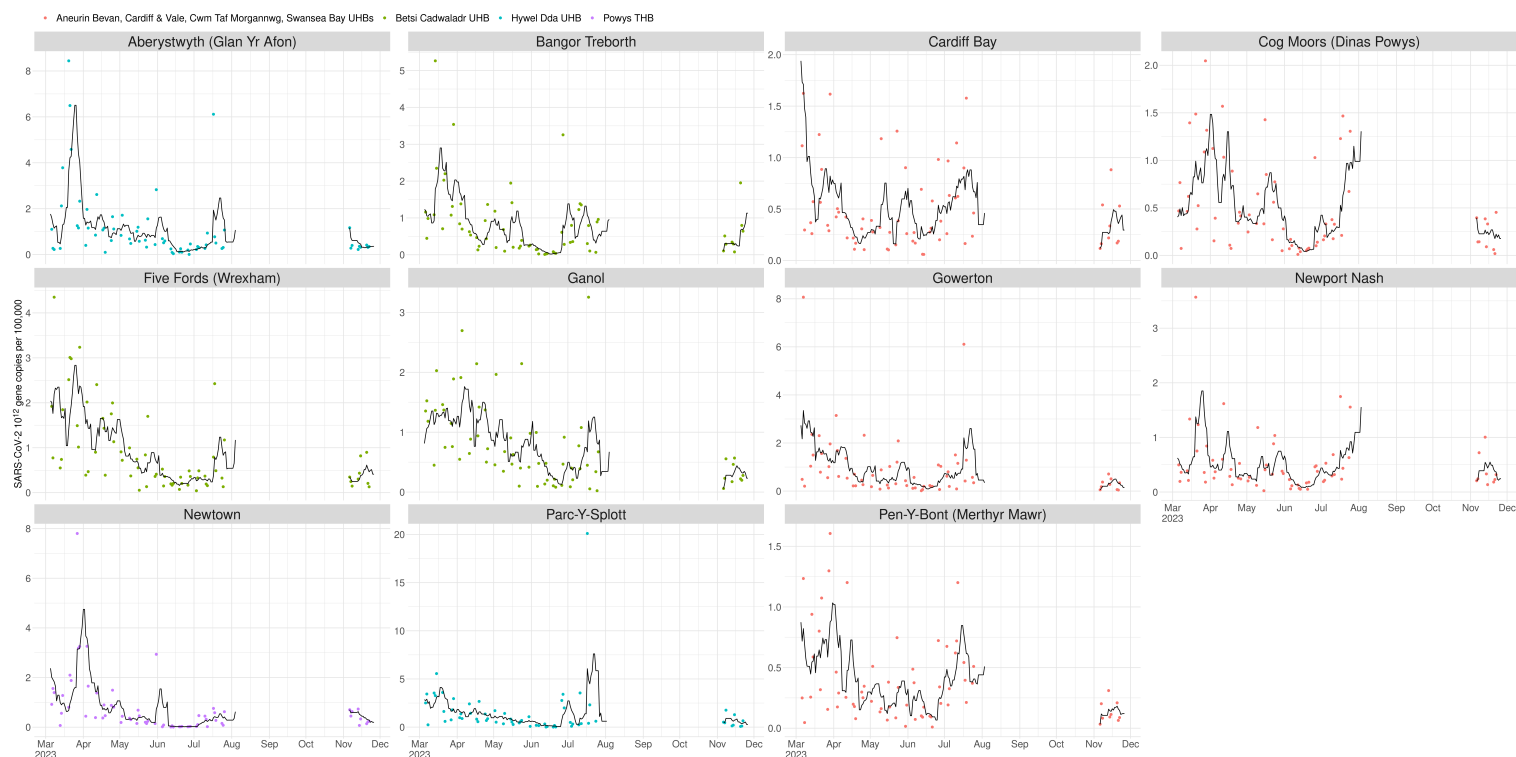


Figure 20. Levels of SARS-CoV-2 identified at the site level (across 11 WwTPs covered by the Programme). Each point represents a sample and the line is a 10 day rolling average.

Norovirus genogroup I

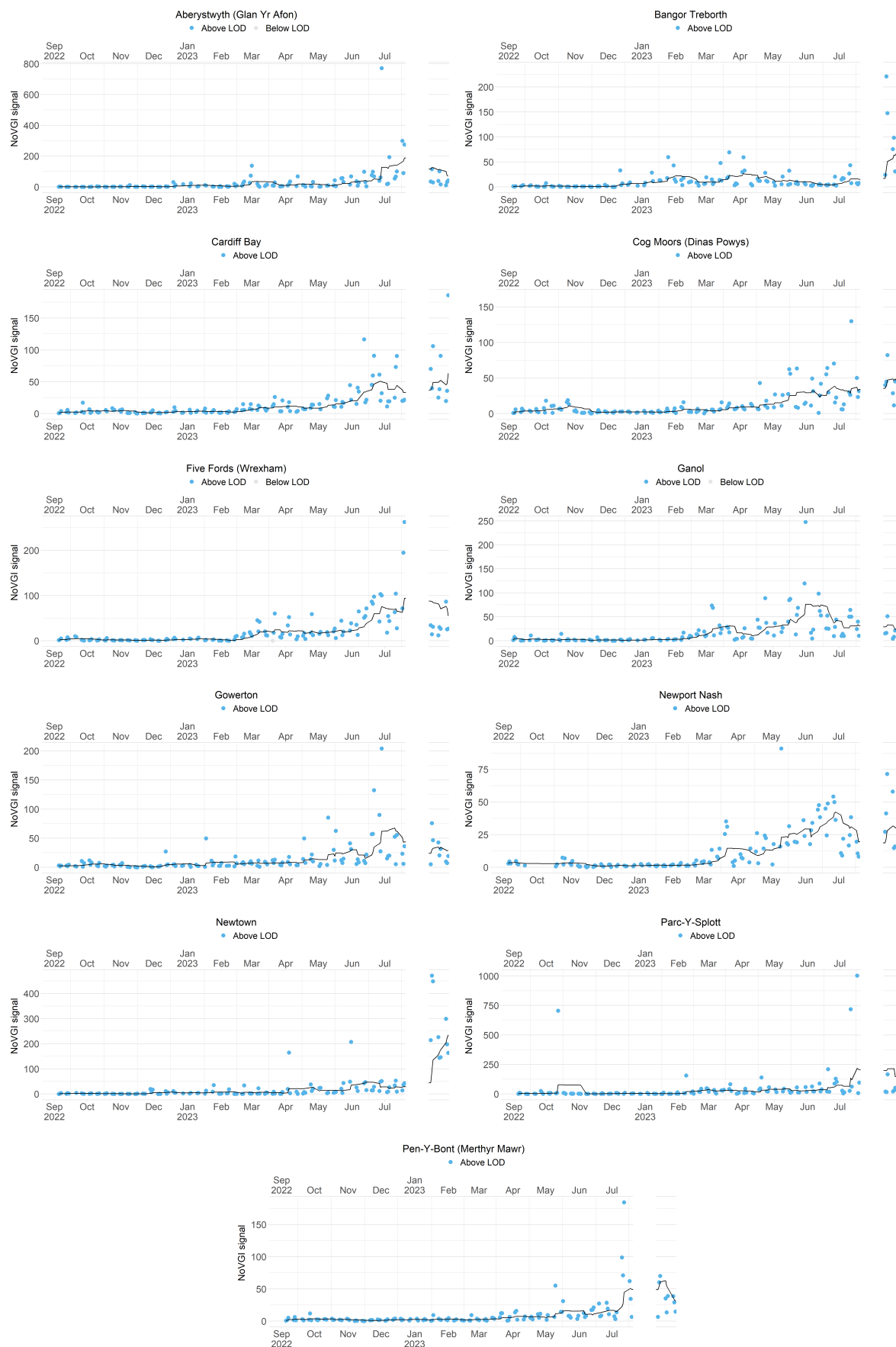


Figure 21. Levels of norovirus genogroup I (NoVG1) identified at the site level (across 11 WwTPs covered by the Programme). Each point represents a sample and the line is a 10 day rolling average.

Norovirus genogroup II

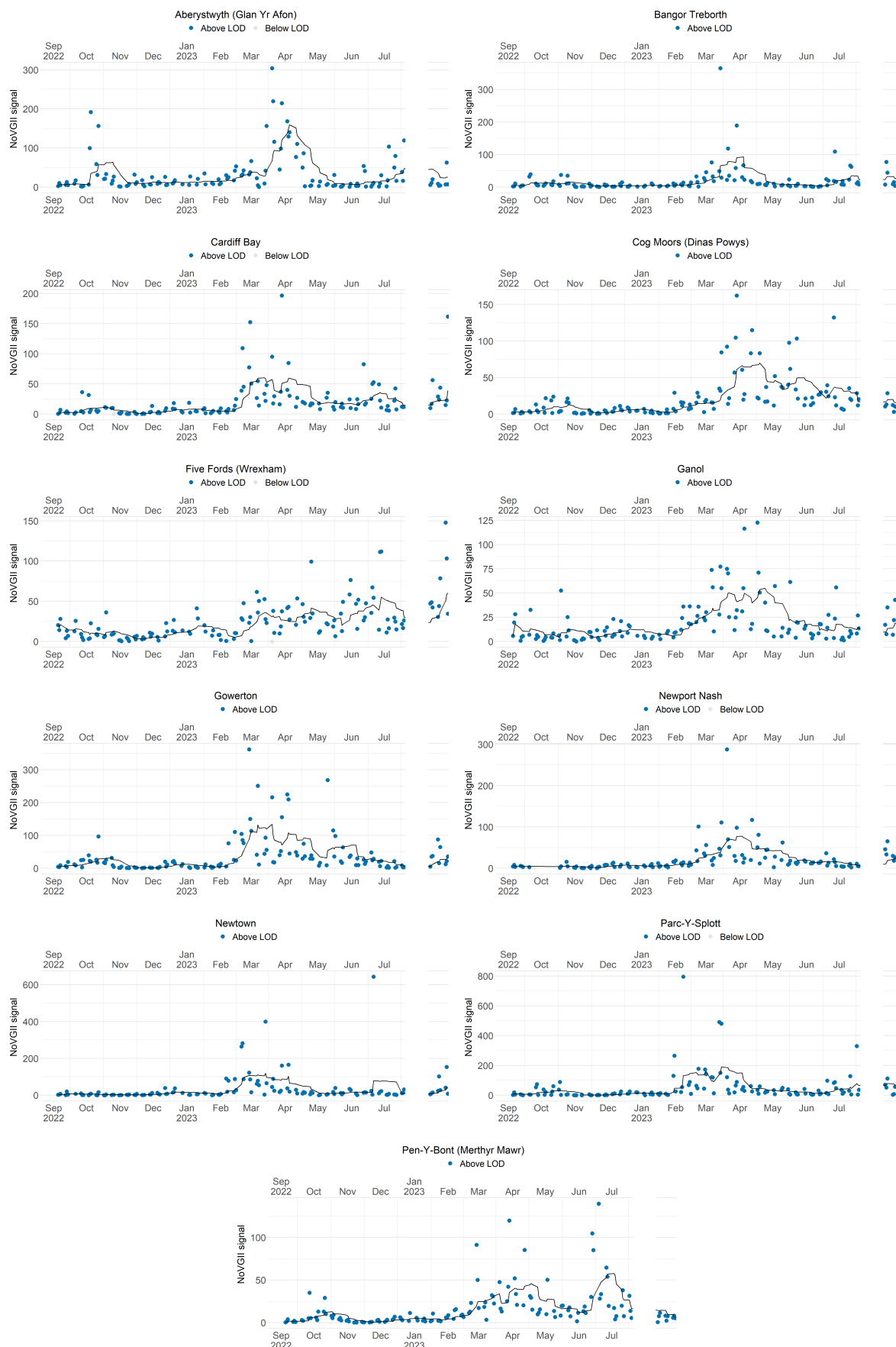


Figure 22. Levels of norovirus genogroup II (NoVGII) identified at the site level (across 11 WwTPs covered by the Programme). Each point represents a sample and the line is a 10 day rolling average.

Influenza A (flu-A) virus

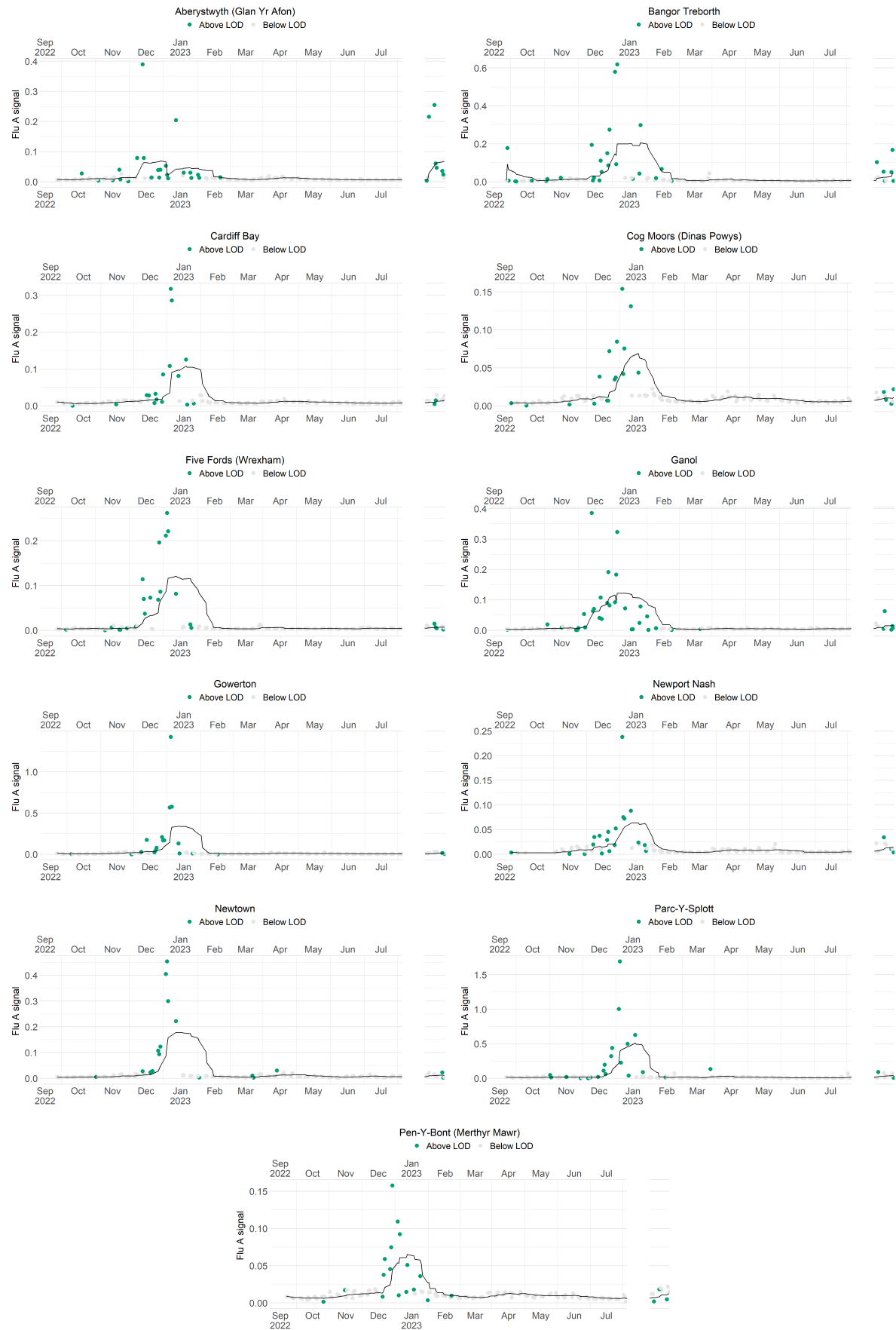


Figure 23. Levels of influenza A (flu-A) virus identified at the site level (across 11 WwTPs covered by the Programme). Each point represents a sample and the line is a 10 day rolling average.

Enterovirus spp.

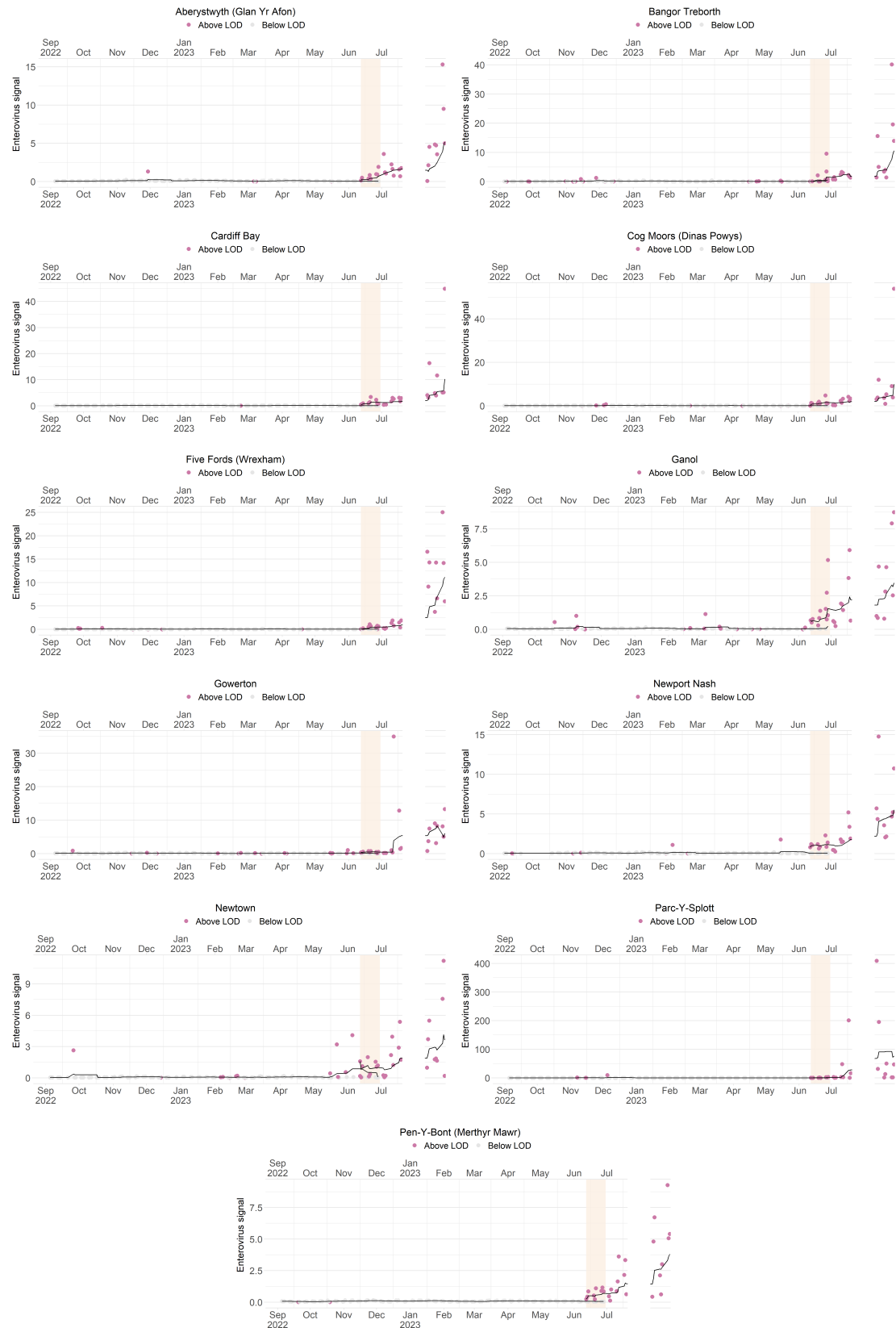


Figure 24. Levels of enterovirus (EV1 & EV2) identified at the site level (across 11 WwTPs covered by the Programme). Each point represents a sample and the line is a 10 day rolling average.

Respiratory syncytial virus (RSV)



Figure 25. Levels of Respiratory Syncytial Virus (RSV) identified at the site level (across 11 WwTPs covered by the Programme). Each point represents a sample and the line is a 10 day rolling average.