



Wastewater-based genomic epidemiology for SARS-CoV-2 surveillance in South Africa

19 April 2024

Sample collection dates up to 12 April 2024
(Epidemiological week 15)

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Division of the National Health Laboratory Service

Summary: SARS-CoV-2 transmission and genomics based on evaluation of wastewater at sentinel sites across RSA

Wastewater levels

Epidemiological weeks 48 (2023) –15 (2024)

- From weeks 48-13 the cumulative SARS-CoV-2 levels measured at wastewater treatment works (WWTW) **has remained around one log genome copies/ml of wastewater**. This has followed on from the increases observed in weeks 31-41, when the cumulative SARS-CoV-2 levels in wastewater at sentinel sites in South Africa showed increases to levels above 2 log (100) genome copies/ml of wastewater, up from below one log copy/ml in epidemiological week 22 (first week in June 2023). **From week 45, levels measured below 2 log genome copies/ml of wastewater.**
- In weeks 1-6 lower levels were observed nationally, with an increase seen in week 7 and a subsequent decrease in week 8. **Levels increase to moderate in Epi week 10. Levels increased to high (above 2 log (100) genome copies/ml) in Epi week 14 and decreased to moderate in Epi week 15.**
- Correlation with syndromic surveillance for influenza-like illness (ILI) and severe acute respiratory infection findings (SARI) is required to determine the clinical and public health significance of ongoing transmission.
<https://www.nicd.ac.za/diseases-a-z-index/disease-index-covid-19/surveillance-reports/weekly-respiratory-pathogens-surveillance-report-week/>

Wastewater genomics

Epidemiological weeks 48 (2023) – 15 (2024)

- **Omicron lineage BA.2.86.X, and JN.1.X sub-lineages** were the dominant lineages circulating in wastewater samples between January 2024 – March 2024 (Epiweek 1-10)
- In clinical samples, **BA.2.86** was also the dominant lineage circulating throughout November 2023 and January 2024, followed by **XBB.1.5***, **XBB.1.19*** and **JN.1***.
- The **Omicron lineage BA.2.86, JN.1* and Recombinant lineages** are circulating in KwaZulu-Natal in eThekweni (in the catchments of Northern and Central WWTWs). In Gauteng, in the City of Johannesburg (in catchments of Northern and Goudkoppies WWTWs), in Ekurhuleni (in the catchments of Olifantsfontein, Vlakplaats, and Hartebeesfontein WWTWs), and the City of Tshwane (in the catchment of Daspoort WWTP) **BA.2.86.X and JN.1.X** are the dominantly circulating. It is also circulating in Eastern Cape in Buffalo City (in the catchment of Mdantsane WWTW), in Western Cape, in the City of Cape Town (in the catchment of Borches Quarry WWTW), Free State, in Mangaung (catchments Bloemspruit and Sterkwater WWTWs) and North West (Boitekong). In Limpopo (Musina) and Mpumalanga (Kingstonvale) **BA.2.86.X** lineage was the main lineage detected.

Interpretation: Ongoing transmission of SARS-CoV-2 due to Omicron lineages including the new BA.2.86 and JN.1* lineages.

Wastewater-based Epidemiology for COVID-19

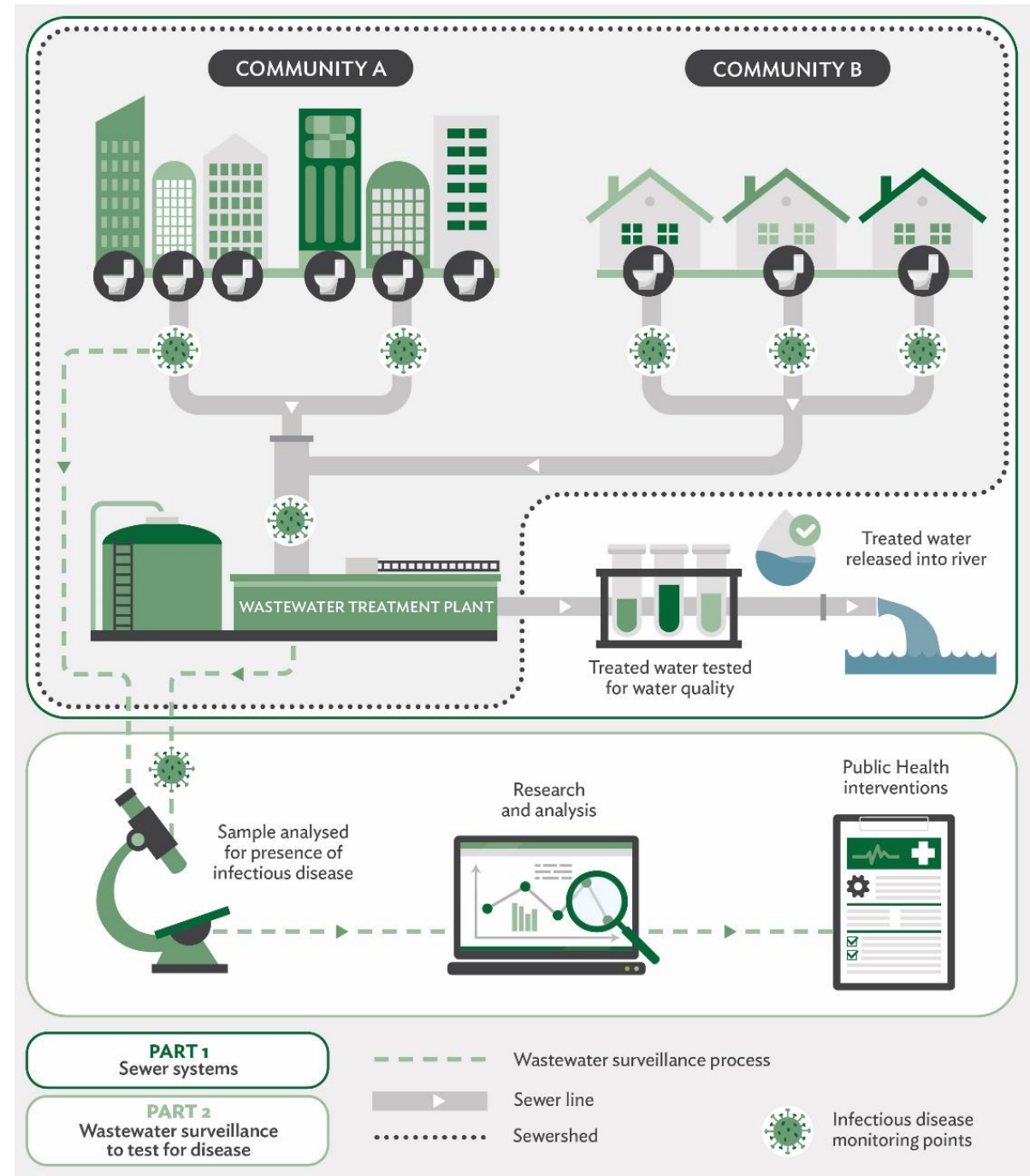
How is wastewater tested for SARS-CoV-2?

For a full description of this process, see the photo essay developed in collaboration with the Gauteng City Region Observatory <https://www.gcro.ac.za/outputs/photo-essays/detail/photo-essay-sewersheds-what-can-wastewater-tell-us-about-community-health/>

For a technical description and analysis of wastewater levels and results see

<https://pubmed.ncbi.nlm.nih.gov/37506905/>
<https://www.medrxiv.org/content/10.1101/2022.12.15.22283506v1> (accepted by Nature Communications, publication pending)

SARS-CoV-2 is not transmitted by faeco-oral route. Wastewater with SARS-CoV-2 is not infectious



Wastewater-based Epidemiology for COVID-19

What does wastewater testing for SARS-CoV-2 mean?

Left vertical axis:

Number of lab confirmed cases in *the metro or district where the water treatment plant is located*

Bars:

Number of lab confirmed clinical cases in specimens submitted to NICD from persons in the metro/subdistrict where the plant is located

Horizontal axis:

Epidemiological weeks from 2021 to 2023

Coloured lines:

Changes in wastewater SARS-CoV-2 results over time for different treatment facilities

Coloured squares:

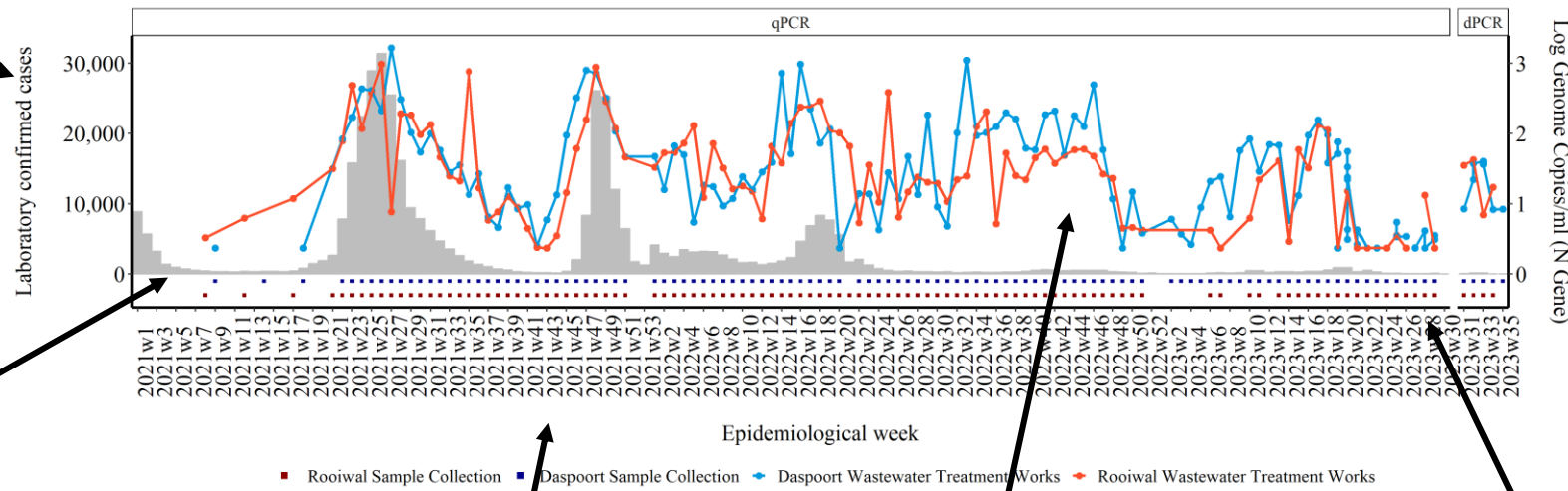
Epi weeks during which samples were collected

Facets:

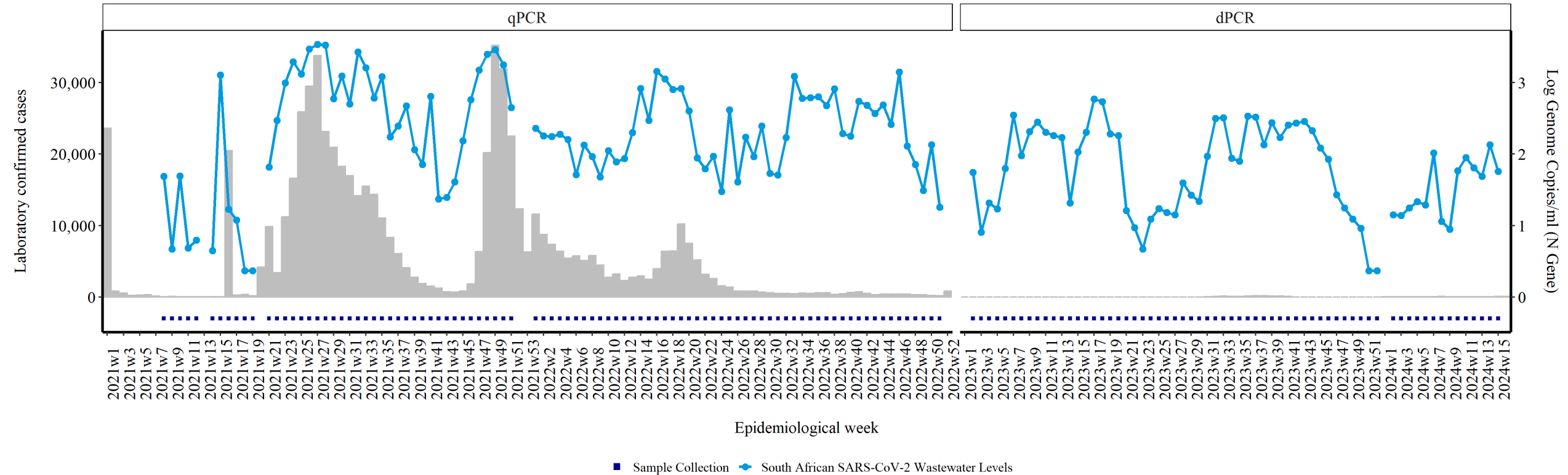
Indicates the platform used to test samples

Right vertical axis:

Log (ie 10 to the power x) copies of SARS-CoV-2 genome per ml of wastewater. So $\log 2=10^2=100$ copies per millilitre, $\log 3=10^3=1000$ copies per millilitre



South Africa at a glance: Summed total of clinical and genome copies

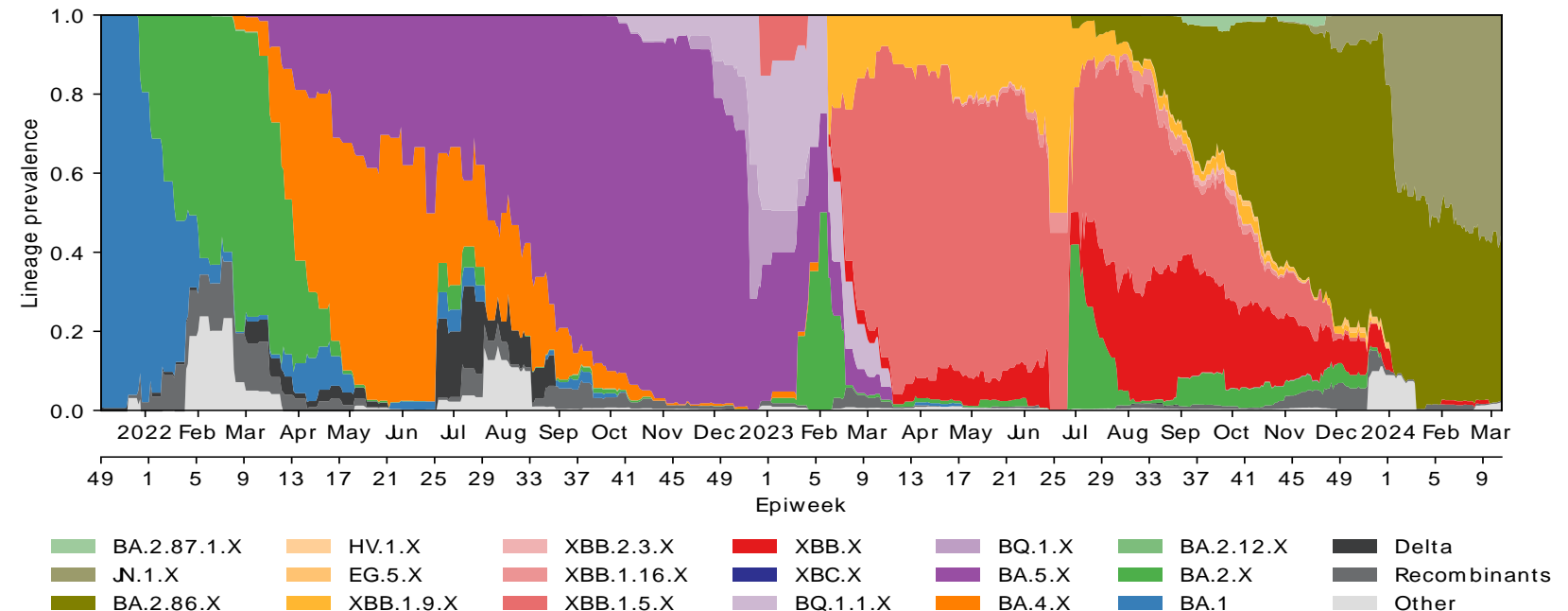


Changes in levels of SARS-Cov-2 in log-transformed genome copies/ml (right vertical axis, line graph) in in-flowing untreated wastewater from plants tested by NICD, compared with laboratory-confirmed cases from [Tshwane, Johannesburg, Ekurhuleni, eThekweni, Mangaung, Nelson Mandela, Buffalo City, City of Cape Town, Vhembe, Ehlanzeni and Bonjanala Platinum](#) (left vertical axis, grey bars), by epidemiological week, 2021-2023. Coloured dots below the horizontal axis signify if a sample was collected. SARS-CoV-2 wastewater level data points are only joined if samples on sequential weeks register positive values. The top bar indicates when the change from qPCR to dPCR occurred for SARS-CoV-2 testing.

South Africa at a glance: Circulating variants as determined by Freyja deconvolution of sequence data

Inferred variants in wastewater samples from South African wastewater treatment plants by month, between April 2021- March 2024

- SARS-CoV-2 variants in wastewater as determined by the 'Freyja' tool (Scripps Institute)
 - Allows determination of variants in each wastewater sample
- Results from sequencing data ending in epi week 9 (March 2024)
 - Omicron lineages BA.2.86.X and JN.1.X were circulating from December to March, with Recombinants and XBB.X sub-lineages circulating at low proportion.

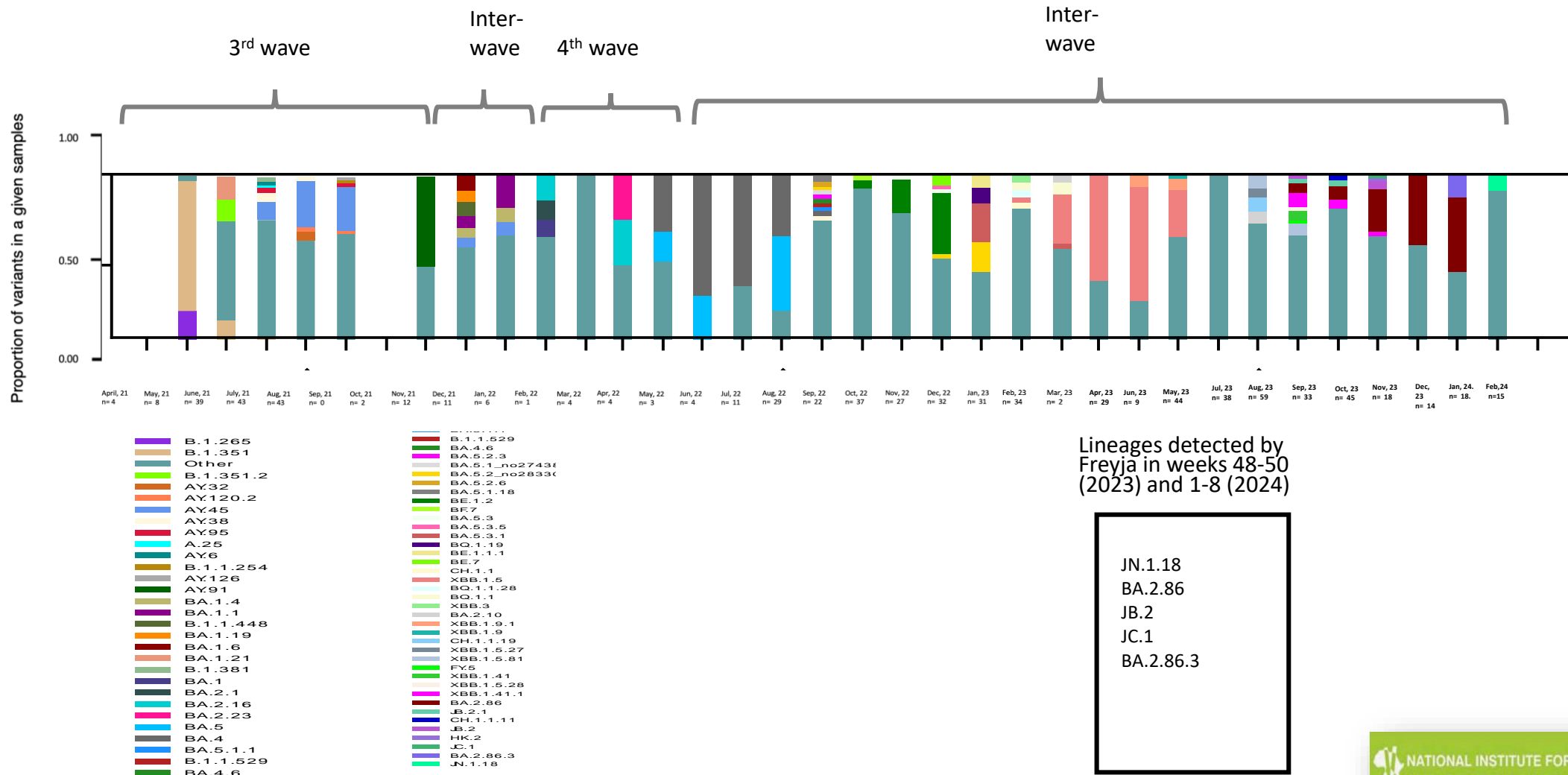


April, 21 n=4 May, 21 n=8 June, 21 n=39 July, 21 n=43 Aug, 21 n=43 Sep, 21 n=0 Oct, 21 n=2 Nov, 21 n=12 Dec, 21 n=11 Jan, 22 n=6 Feb, 22 n=1 Mar, 22 n=4 Apr, 22 n=4 May, 22 n=3 Jun, 22 n=4 Jul, 22 n=11 Aug, 22 n=29 Sep, 22 n=22 Oct, 22 n=37 Nov, 22 n=27 Dec, 22 n=32 Jan, 23 n=31 Apr, 23 n=29 May, 23 n=44 Jun, 23 n=9 Jul, 23 n=38 Aug, 23 n=59 Sep, 23 n=33 Oct, 23 n=45 Nov, 23 n=18 Dec, 23 n=14 Jan, 24 n=18 Feb, 24 n=15 Mar, 24 n=20

South Africa at a glance: Circulating lineages as determined by Freyja deconvolution of sequence data

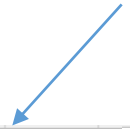
- Results from sequencing data ending in epi week 9 (March 2024)

- Omicron lineages BA.2.86 and JN.1 were circulating from January to March with BA.2.86 dominance.
- Omicron XBB sub-lineages were in circulation throughout.
- The predominant lineage circulating in clinical samples in the recent week is BA.2.86 and JN.1 sublineages.



Spike mutational profile of samples from sites across South Africa and VOCs/VOIs processed in weeks 6 - 10, 2024

Deletion (-)



Site Name	Epi Week	p19	p20	p21	p22	p23	p24	p25	p26	p27	p50	p83	p142	p143	p144	p157	p158	p180	p181	p182	p183	p184	p185	p211	p213	p214	p215	p216	p245	
DaspoortWastewaterTreatmentWorks	6	I	T	T	T	-	-	Q	Q	S	L	V							G	K	Q	G	N	I	G	R	D	F	N	
Groenkloof	6	I	T	T	T	-	-	Q	Q	S	L	V							G	K	Q	G	N	I	G	R	D	F	N	
GoudkoppiesWastewaterTreatmentWorks	7	I	T	T	T	-	-	Q	Q	S	L	V				S	G	E	G	K	Q	G	N	I	G	R	D	F	N	
BorchedsQuarryWastewaterTreatmentWorks	7	I	T	T	T	-	-	Q	Q	S	L	V				S	G	E	G	K	Q	G	N	I	G	R	D	F	N	
BrickfieldPre-treatmentWorks	7	I	T	T	T	-	-	Q	Q	S	L	V				S	G	E	G	K	Q	G	N	I	G	R	D	F	N	
DaspoortWastewaterTreatmentWorks	7	I	T	T	T	-	-	Q	Q	S	L	V				S	G	E	G	K	Q	G	N	I	G	R	D	F	N	
BorchedsQuarryWastewaterTreatmentWorks	8	I	T	T	T	-	-	Q	Q	S	L	V				S	G	E	G	K	Q	G	N	I	G	R	D	F	N	
DaspoortWastewaterTreatmentWorks	8	I	T	T	T	-	-	Q	Q	S	L	V				S	G	E	G	K	Q	G	N	I	G	R	D	F	N	
Groenkloof	9	I	T	T	T	-	-	Q	Q	S	L	V				S	G	E	G	K	Q	G	N	I	G	R	D	F	N	
NorthernWastewaterTreatmentWorks(GP)	9	I	T	T	T	-	-	Q	Q	S	L	V				S	G	E	G	K	Q	G	N	I	G	R	D	F	N	
CentralWastewaterTreatmentWorks(KZN)	9	I	T	T	T	-	-	Q	Q	S	L	V				S	G	E	G	K	Q	G	N	I	G	R	D	F	N	
NorthernWastewaterTreatmentWorks(KZN)	9	I	T	T	T	-	-	Q	Q	S	L	V				S	G	E	G	K	Q	G	N	I	G	R	D	F	N	
BloemspruitWastewaterTreatmentWorks	9	I	T	T	T	-	-	Q	Q	S	L	V				S	G	E	G	K	Q	G	N	I	G	R	D	F	N	
ZandvleitWastewaterTreatmentWorks	9	I	T	T	T	-	-	Q	Q	S	L	V				S	G	E	G	K	Q	G	N	I	G	R	D	F	N	
MusinaWWTW(intown)	9	I	T	T	T	-	-	Q	Q	S	L	V				S	G	E	G	K	Q	G	N	I	G	R	D	F	N	
DaspoortWastewaterTreatmentWorks	9	I	T	T	T	-	-	Q	Q	S	L	V				S	G	E	G	K	Q	G	N	I	G	R	D	F	N	
GoudkoppiesWastewaterTreatmentWorks	10	I	T	T	T	-	-	Q	Q	S	L	V				S	G	E	G	K	Q	G	N	I	G	R	D	F	N	
NorthernWastewaterTreatmentWorks(KZN)	10	I	T	T	T	-	-	Q	Q	S	L	V				S	G	E	G	K	Q	G	N	I	G	R	D	F	N	
CentralWastewaterTreatmentWorks(KZN)	10	I	T	T	T	-	-	Q	Q	S	L	V				S	G	E	G	K	Q	G	N	I	G	R	D	F	N	
DaspoortWastewaterTreatmentWorks	10	I	T	T	T	-	-	Q	Q	S	L	V				S	G	E	G	K	Q	G	N	I	G	R	D	F	N	
NorthernWastewaterTreatmentWorks(GP)	10	I	T	T	T	-	-	Q	Q	S	L	V				S	G	E	G	K	Q	G	N	I	G	R	D	F	N	
ZandvleitWastewaterTreatmentWorks	10	I	T	T	T	-	-	Q	Q	S	L	V				S	G	E	G	K	Q	G	N	I	G	R	D	F	N	
SterkwaterWastewaterTreatmentWorks	10	T	T	R	T	-	-	Q	Q	S	L	V				S	G	E	G	K	Q	G	N	I	G	R	D	F	N	
Midstream	10	I	T	T	T	-	-	Q	Q	S	L	V				S	G	E	G	K	Q	G	N	I	G	R	D	F	N	
RooiwalWastewaterTreatmentWorks	10	I	T	T	T	-	-	Q	Q	S	L	V				S	G	E	G	K	Q	G	N	I	G	R	D	F	N	
Boitekong	10	I	T	T	T	-	-	-	-	S	L	A				S	G	E	G	K	Q	G	N	I	G	R	D	F	N	
Variants																														
BA.2		I								S	L	A																		
XBB.1.5		I								S	L	A																		
XBB.1.16		I								S	L	A						V			E	E	E	E						
XBB.1.9.1		I								S	L	A									E	E	E	E						
XBB.1.9.2		I								S	L	A									E	E	E	E						
XBB.2.3		I								S	L	A									E	E	E	E						
EG.5		I								S	L	A									E	E	E	E						
EG.5.1		I								S	L	A									E	E	E	E						
BA.2.86		I		T			S				L	A				S	G				E	E	E						N	
JN.1		I		T			S				L	A			S	G					E	E	E						N	

a. combination of mutations associated with lineage BA.2.86, JN.1 and XBB sublineages have been found in sites across all South African provinces during Epi weeks 6-10

Spike mutational profile of samples from sites across South Africa and VOCs/VOIs processed in weeks 42 - 46, 2023

Site Name	Epi Wk	p263	p264	p332	p333	p334	p335	p336	p337	p338	p339	p340	p341	p342	p343	p344	p345	p346	p347	p368	p369	p370	p371	p372	p373	p374	p375	p376	p417	p418	p437	p438	p439	p440	p460	p484	p485	p486		
DaspoortWastewaterTreatmentWorks	6	A	D																																					
Groenkloof	6	A	D	V	T	N	L	C	P	F	H	E	V	F	N	A	T	T	F	L	Y	N	F	A	P	F	F	A												
GoudkoppiesWastewaterTreatmentWorks	7	A	D	V	T	N	L	C	P	F	H	E	V	F	N	A	T	R	F	L	Y	N	F	A	P	F	F	A												
BorchedsQuarryWastewaterTreatmentWorks	7	A	D	V	T	N	L	C	P	F	H	E	V	F	N	A	T	T	F	L	Y	N	S	A	P	F	F	A												
BrickfieldPre-treatmentWorks	7	A	D	V	T	N	L	C	P	F	H	E	V	F	N	A	T	T	F	L	Y	N	F	A	P	F	F	A												
DaspoortWastewaterTreatmentWorks	8	A	D	V	T	N	L	C	P	F	H	E	V	F	N	A	T	T	F	L	Y	N	F	A	P	F	F	A												
DaspoortWastewaterTreatmentWorks	8	A	D	V	T	N	L	C	P	F	H	E	V	F	N	A	T	T	F	L	Y	N	F	A	P	F	F	A												
Groenkloof	9	A	D	V	T	N	L	C	P	F	H	E	V	F	N	A	T	T	F	L	Y	N	F	A	P	F	F	A												
NorthernWastewaterTreatmentWorks(GP)	9	A	D	V	T	N	L	C	P	F	H	E	V	F	N	A	T	T	F	L	Y	N	F	A	P	F	F	A												
CentralWastewaterTreatmentWorks(KZN)	9	A	D	V	T	N	L	C	P	F	H	E	V	F	N	A	T	R	F	L	Y	N	F	A	P	F	F	A												
NorthernWastewaterTreatmentWorks(KZN)	9	A	D	V	T	N	L	C	P	F	H	E	V	F	N	A	T	R	F	L	Y	N	F	A	P	F	F	A												
BloemsprietWastewaterTreatmentWorks	9	A	D	V	T	N	L	C	P	F	H	E	V	F	N	A	T	R	F	L	Y	N	F	A	P	F	F	A												
ZandvleiWastewaterTreatmentWorks	9	A	D	V	T	N	L	C	P	F	H	E	V	F	N	A	T	T	F	L	Y	N	F	A	P	F	F	A												
MusinaWWTW(intown)	9	A	D	V	T	N	L	C	P	F	H	E	V	F	N	A	T	R	F	L	Y	N	F	A	P	F	F	A												
DaspoortWastewaterTreatmentWorks	9	A	D	V	T	N	L	C	P	F	H	E	V	F	N	A	T	T	F	L	Y	N	F	A	P	F	F	A												
GoudkoppiesWastewaterTreatmentWorks	10	A	D	V	T	N	L	C	P	F	H	E	V	F	N	A	T	T	F	L	Y	N	F	A	P	F	F	A												
NorthernWastewaterTreatmentWorks(KZN)	10	A	D	V	T	N	L	C	P	F	H	E	V	F	N	A	T	R	F	L	Y	N	F	A	P	F	F	A												
CentralWastewaterTreatmentWorks(KZN)	10	A	D	V	T	N	L	C	P	F	H	E	V	F	N	A	T	R	F	L	Y	N	F	A	P	F	F	A												
DaspoortWastewaterTreatmentWorks	10	A	D	V	T	N	L	C	P	F	H	E	V	F	N	A	T	R	F	L	Y	N	F	A	P	F	F	A												
NorthernWastewaterTreatmentWorks(GP)	10	A	D	V	T	N	L	C	P	F	H	E	V	F	N	A	T	T	F	L	Y	N	F	A	P	F	F	A												
ZandvleiWastewaterTreatmentWorks	10	A	D	V	T	N	L	C	P	F	H	E	V	F	N	A	T	T	F	L	Y	N	F	A	P	F	F	A												
SterkwaterWastewaterTreatmentWorks	10	A	D	V	T	N	L	C	P	F	H	E	V	F	N	A	T	T	F	L	Y	N	S	S	S	F	S	T												
Midstream	10	A	D	V	T	N	L	C	P	F	D	E	V	F	N	A	T	R	F	L	Y	N	S	S	S	F	S	T												
RooiwalWastewaterTreatmentWorks	10	A	D	V	T	N	L	C	P	F	H	E	V	F	N	A	T	R	F	L	Y	N	F	A	P	F	F	A												
Boitekong	10	A	D	V	T	N	L	C	P	F	H	E	V	F	N	A	T	T	F	L	Y	N	F	A	P	F	F	A												
Boitekong	10	A	D	V	T	N	L	C	P	F	H	E	V	F	N	A	T	T	F	L	Y	N	F	A	P	F	F	A												
Variants																																								
BA.2																																								
XBB.1.5																																								
XBB.1.16																																								
XBB.1.9.1																																								
XBB.1.9.2																																								
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EG.5																																								
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a. combination of mutations associated with lineage BA.2.86, JN.1 and XBB sublineages have been found in sites across all South African provinces during Epi weeks 6-10

Spike mutational profile of samples from sites across South Africa and VOCs/VOIs processed in weeks 42 - 46, 2023

Site Name	Epi Week	p570	p571	p572	p573	p610	p611	p612	p613	p614	p615	p616	p617	p650	p651	p652	p653	p654	p655	p678	p679	p680	p681	p760	p761	p762	p763	p764	p765	p795	p796	p797	p798	p824	p938	p939	p940	p941	p942	p954	p955
DaspoortWastewaterTreatmentWorks	6	V	D	T	T					G	V	N	C	L	I	G	A	E	Y	T	K	S	R	C	T	Q	L	K	R	K	Y	F	G	N	L	F	S	T	A	H	N
Groenkloof	6	V	D	T	T					G	V	N	C	L	I	G	A	E	Y	T	K	S	R	C	T	Q	L	K	R	K	Y	F	G	N	L	F	S	T	A	H	N
GoudkoppiesWastewaterTreatmentWorks	7	V	D	T	T	V	L	Y	Q	G	V	N	C	L	I	G	A	E	Y	T	K	S	R	C	T	Q	L	K	R	K	Y	F	G	N	L	F	S	T	A	H	N
BorchedsQuarryWastewaterTreatmentWorks	7	V	D	T	T	V	L	Y	Q	G	V	N	C	L	I	G	A	E	Y	T	K	S	R	C	T	Q	L	K	R	K	Y	F	G	N	L	F	S	T	A	H	N
BrickfieldPre-treatmentWorks	7	V	D	T	T	V	L	Y	Q	G	V	N	C	L	I	G	A	E	Y	T	K	S	R	C	T	Q	L	K	R	K	Y	F	G	N	L	F	S	T	A	H	N
DaspoortWastewaterTreatmentWorks	7	V	D	T	T	V	L	Y	Q	G	V	N	C	L	I	G	A	E	Y	T	K	S	R	C	T	Q	L	K	R	K	Y	F	G	N	L	F	S	T	A	H	N
BorchedsQuarryWastewaterTreatmentWorks	8	V	D	T	T	V	L	Y	Q	G	V	N	C	L	I	G	A	E	Y	T	K	S	R	C	T	Q	L	K	R	K	Y	F	G	N	L	F	S	T	A	H	N
DaspoortWastewaterTreatmentWorks	8	V	D	T	T	V	L	Y	Q	G	V	N	C	L	I	G	A	E	Y	T	K	S	R	C	T	Q	L	K	R	K	Y	F	G	N	L	F	S	T	A	H	N
Groenkloof	9	V	D	T	T	V	L	Y	Q	G	V	N	C	L	I	G	A	E	Y	T	K	S	R	C	T	Q	L	K	R	K	Y	F	G	N	L	F	S	T	A	H	N
NorthernWastewaterTreatmentWorks(GP)	9	V	D	T	T	V	L	Y	Q	G	V	N	C	L	I	G	A	E	Y	T	K	S	R	C	T	Q	L	K	R	K	Y	F	G	N	L	F	S	T	A	H	N
CentralWastewaterTreatmentWorks(KZN)	9	V	D	T	T	V	L	Y	Q	G	V	N	C	L	I	G	A	E	Y	T	K	S	R	C	T	Q	L	K	R	K	Y	F	G	N	L	F	S	T	A	H	N
NorthernWastewaterTreatmentWorks(KZN)	9	V	D	T	T	V	L	Y	Q	G	V	N	C	L	I	G	A	E	Y	T	K	S	R	C	T	Q	L	K	R	K	Y	F	G	N	L	F	S	T	A	H	N
BloemspruitWastewaterTreatmentWorks	9	V	D	T	T	V	L	Y	Q	G	V	N	C	L	I	G	A	E	Y	T	K	S	R	C	T	Q	L	K	R	K	Y	F	G	N	L	F	S	T	A	H	N
ZandvleiWastewaterTreatmentWorks	9	V	D	T	T	V	L	Y	Q	G	V	N	C	L	I	G	A	E	Y	T	K	S	R	C	T	Q	L	K	R	K	Y	F	G	N	L	F	S	T	A	H	N
MusinaWWTW(intown)	9	V	D	T	T	V	L	Y	Q	G	V	N	C	L	I	G	A	E	Y	T	K	S	R	C	T	Q	L	K	R	K	Y	F	G	N	L	F	S	T	A	H	N
DaspoortWastewaterTreatmentWorks	9	V	D	T	T	V	L	Y	Q	G	V	N	C	L	I	G	A	E	Y	T	K	S	R	C	T	Q	L	K	R	K	Y	F	G	N	L	F	S	T	A	H	N
GoudkoppiesWastewaterTreatmentWorks	10	V	D	T	T	V	L	Y	Q	G	V	N	C	L	I	G	A	E	Y	T	K	S	R	C	T	Q	L	K	R	K	Y	F	G	N	L	F	S	T	A	H	N
NorthernWastewaterTreatmentWorks(KZN)	10	V	D	T	T	V	L	Y	Q	G	V	N	C	L	I	G	A	E	Y	T	K	S	R	C	T	Q	L	K	R	K	Y	F	G	N	L	F	S	T	A	H	N
CentralWastewaterTreatmentWorks(KZN)	10	V	D	T	T	V	L	Y	Q	G	V	N	C	L	I	G	A	E	Y	T	K	S	R	C	T	Q	L	K	R	K	Y	F	G	N	L	F	S	T	A	H	N
DaspoortWastewaterTreatmentWorks	10	V	D	T	T	V	L	Y	Q	G	V	N	C	L	I	G	A	E	Y	T	K	S	R	C	T	Q	L	K	R	K	Y	F	G	N	L	F	S	T	A	H	N
NorthernWastewaterTreatmentWorks(GP)	10	V	D	T	T	V	L	Y	Q	G	V	N	C	L	I	G	A	E	Y	T	K	S	R	C	T	Q	L	K	R	K	Y	F	G	N	L	F	S	T	A	H	N
ZandvleiWastewaterTreatmentWorks	10	V	D	T	T	V	L	Y	Q	G	V	N	C	L	I	G	A	E	Y	T	K	S	R	C	T	Q	L	K	R	K	Y	F	G	N	L	F	S	T	A	H	N
SterkwaterWastewaterTreatmentWorks	10	A	D	T	I	V	L	Y	R	G	A	N	C	L	I	G	A	E	H	T	N	S	R	C	T	Q	L	N	R	K	D	F	G	N	L	S	S	T	A	Q	N
Midstream	10	V	D	T	T	V	L	Y	Q	G	V	N	C	L	I	G	A	E	Y	T	K	S	R	C	T	Q	L	K	R	K	Y	F	G	N	L	F	S	T	A	H	N
RooiwalWastewaterTreatmentWorks	10	V	D	T	T	V	L	Y	Q	G	V	N	C	L	I	G	A	E	Y	T	K	S	R	C	T	Q	L	K	R	K	Y	F	G	N	L	F	S	T	A	H	N
Boitekong	10	V	D	T	T	V	L	Y	Q	G	V	N	C	L	I	G	A	E	Y	T	K	S	R	C	T	Q	L	K	R	K	Y	F	G	N	L	F	S	T	A	H	N
Variants																																									
BA.2										G									Y		K		H				K		Y										H		
XBB.1.5										G									Y		K		H				K		Y											H	
XBB.1.16										G									Y		K		H				K		Y											H	
XBB.1.9.1										G									Y		K		H				K		Y											H	
XBB.1.9.2										G									Y		K		H				K		Y											H	
XBB.2.3										G									Y		K		H				K		Y											H	
EG.5										G									Y		K		H				K		Y											H	
EG.5.1										G									Y		K		H				K		Y											H	
BA.2.86		V								G									Y		K		R				K		Y											H	
JN.1		V								G									Y		K		R				K		Y											H	

a. combination of mutations associated with lineage BA.2.86, JN.1 and XBB sublineages have been found in sites across all South African provinces during Epi weeks 6-10

Amino acid mutations and frequency – Spike protein

XBB* is a recombinant of BA.2.10.1 and BA.2.75 that is characterised by one or more of the following mutations in the spike protein: V83A, Y144-, H146Q, Q183E, V213E, G252V, G339H, R346T, L368I, V445P, G446S, N460K, F486S, F490S

List of variants and sub-lineages of interest and concern
<https://www.who.int/en/activities/tracking-SARS-CoV-2-variants>

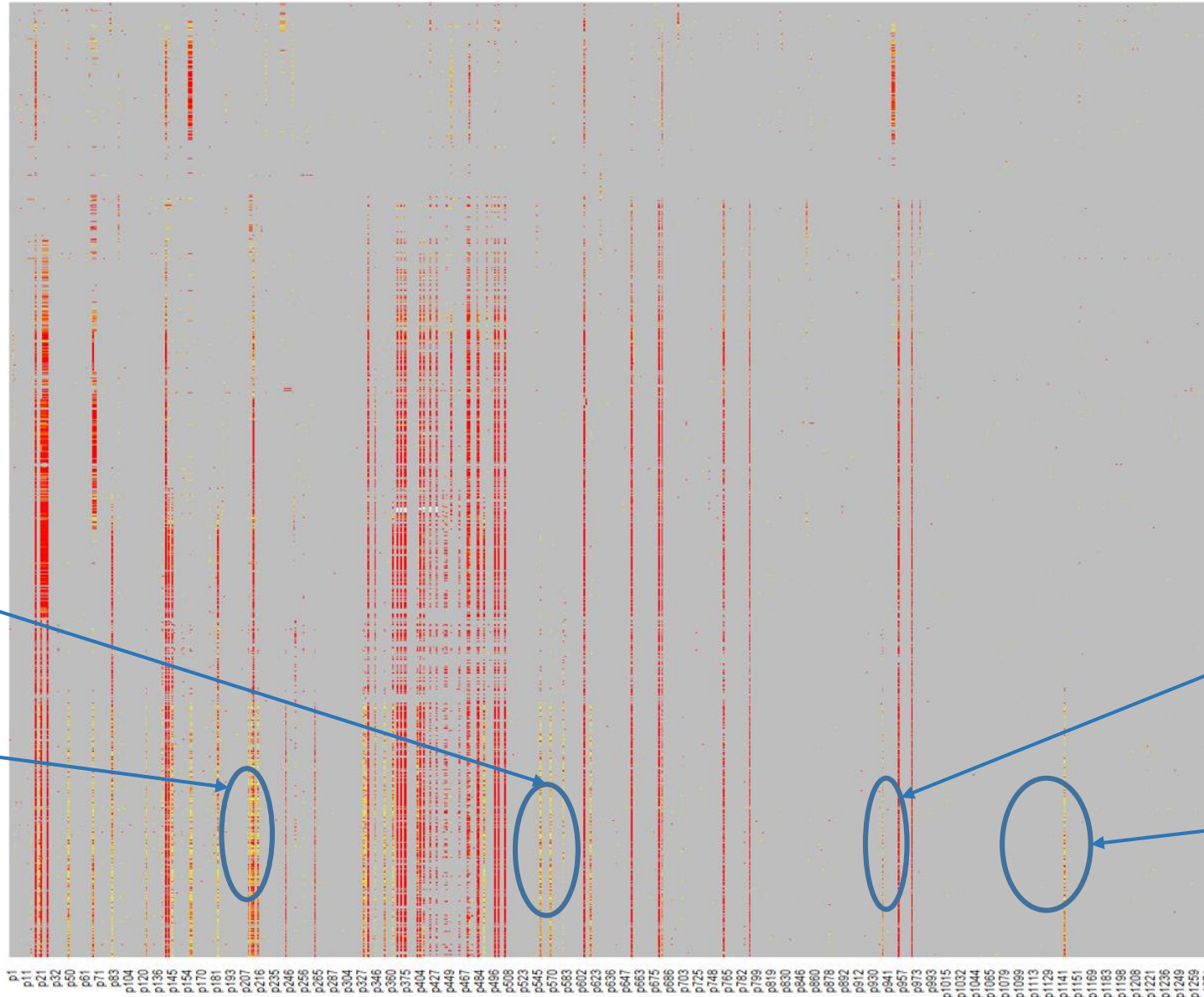
BA.2.86 is a highly mutated sub-lineage of BA.2, recently circulating in Denmark, Israel and the United States of America and is characterised by one or more of the following mutations in the spike protein: R21T, S50L, H69-, V70-, V127F, F157S, R158G, N211-, L212I, V213G, L216F, H245N, A264D, I332V, K356T, R403K, V445H, N450D, L452W, N481K, V483-, E484K, E554K, A570V, P621S, 1670V, P681R, S939F, P1143L, Ins16:MPLF*

E554K
Mutations in spike protein associated with BA.2.86

V213E,
R346T
Mutations in spike protein associated with XBB* sub-lineages

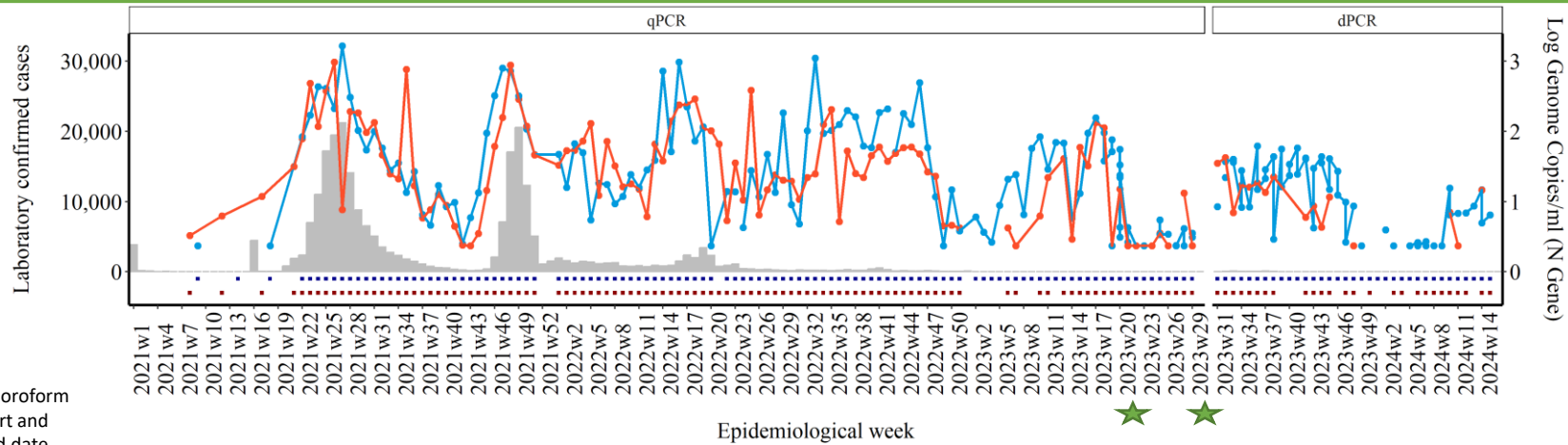
S939F
Spike protein mutation associated with the BA.2.86 lineage

P1143L
Spike protein mutation associated with the BA.2.86 lineage



Heatmap showing patterns of emerging mutations in the spike region of SARS-CoV-2, collected from April, 2021 - November, 2023. Mutations appearing in yellow have a low read frequency, those appearing in orange have a medium read frequency and those appearing in red have a high read frequency. Mutations are included and updated weekly.

Gauteng - Tshwane



★ Chloroform start and end date

■ Rooiwal Sample Collection ■ Daspoort Sample Collection ◆ Daspoort Wastewater Treatment Works ◆ Rooiwal Wastewater Treatment Works
 Wastewater levels of SARS-CoV-2 in log-transformed genome copies/ml (right vertical axis, line graph) and laboratory confirmed cases of SARS-CoV-2 for Tshwane (left vertical axis, grey bars) by epidemiological week. Coloured dots below the horizontal axis signify if a sample was collected. SARS-CoV-2 wastewater level data points are only joined if samples on sequential weeks register positive values. The top bar indicates when the change from qPCR to dPCR occurred for SARS-CoV-2 testing.

SARS-CoV-2 levels and Genomic Results in Epi week 15:

- SARS-CoV-2 levels in Daspoort WWTW decreased to low in Epi week 4, rose to moderate in Epi week 10 and dropped back to low in Epi week 11. Levels remain low in Epi week 13 and increase to moderate in Epi week 14 and decrease to low again in Epi week 15.
- SARS-CoV-2 levels in Rooiwal WWTW have decreased in Epi week 47. Levels remain low in Epi week 11 and increase to moderate in Epi week 14. No new results for Epi week 15 are available.

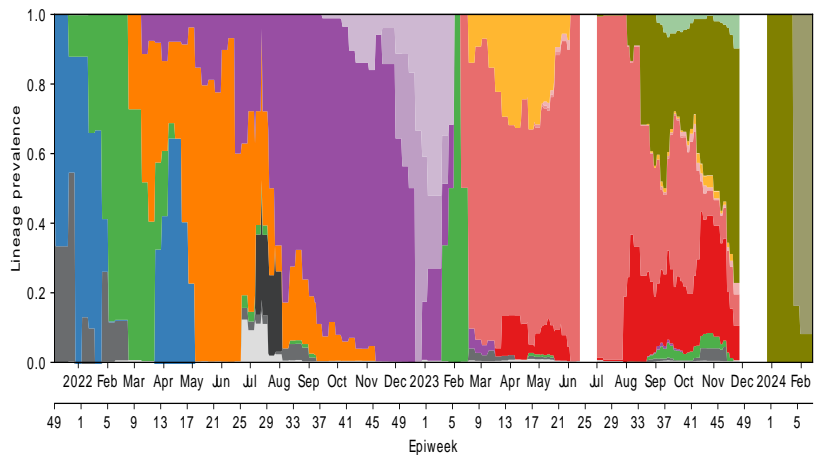
*** Sequencing data ending in Epi week 5 in Daspoort and 46 in Rooiwal.**

- Omicron lineages JN.1.X and BA.2.86.X, XBB.1.19.X and JN.1.X were circulating in Daspoort during Epi week 5.
- BA.2.86.X, XBB.1.5.X, XBB.2.3.X and JN.1.X was also the dominant lineage detected in Rooiwal during Epi week 42-46

SNP Analysis:

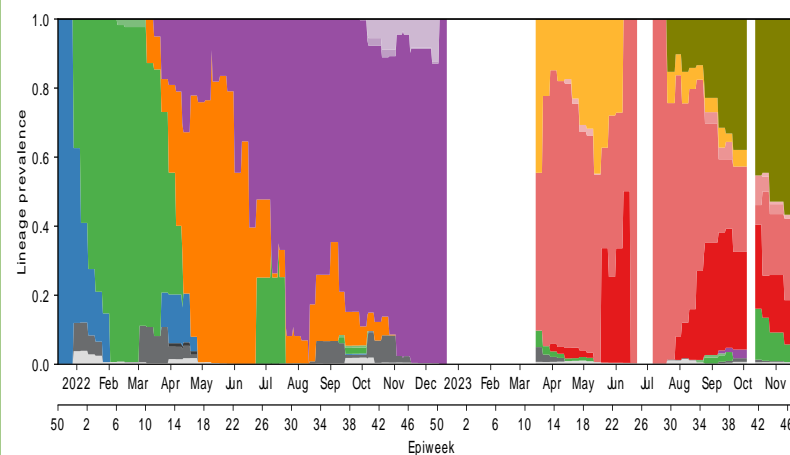
- A combination of mutations (V127F, L212I, V213G, L216F, H245N, A264D, I332V, K356T) associated with lineage BA.2.86 and JN.1 were found in both Daspoort and Rooiwal.

Daspoort Wastewater Treatment Works



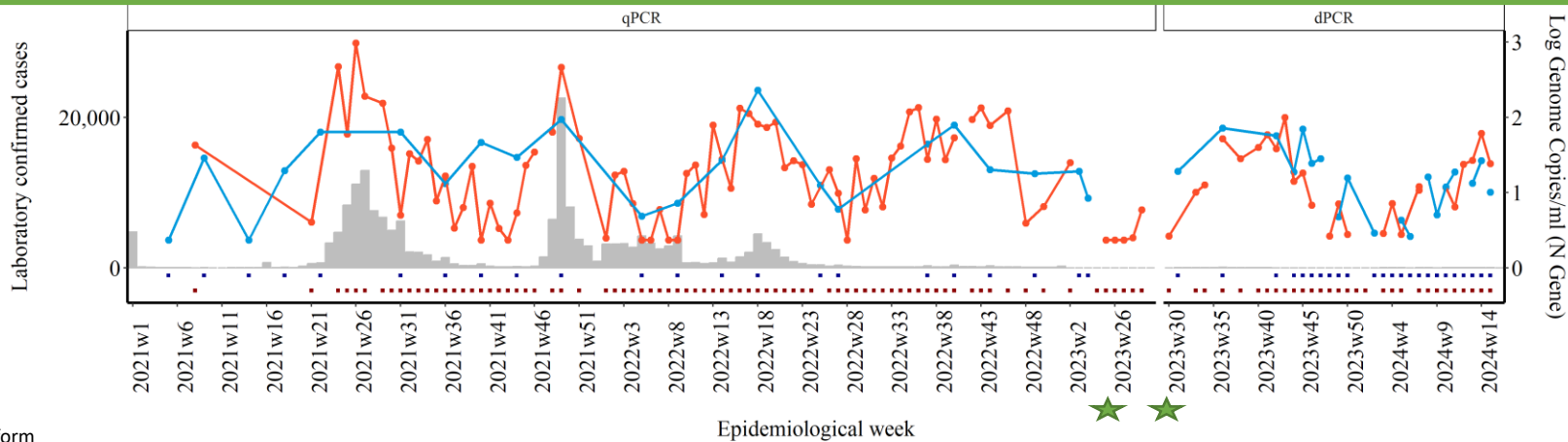
■ BA.2.87.1.X ■ HV.1.X ■ XBB.2.3.X ■ XBB.X ■ BA.5.X ■ BA.2.X ■ Recombinants
■ JN.1.X ■ EG.5.X ■ XBB.1.16.X ■ BQ.1.1.X ■ BA.4.X ■ BA.1 ■ Other
■ BA.2.86.X ■ XBB.1.9.X ■ XBB.1.5.X ■ BQ.1.X ■ BA.2.12.X ■ Delta

Rooiwal Wastewater Treatment Works



■ JN.1.X ■ XBB.2.3.X ■ XBB.X ■ BA.5.X ■ BA.2.12.X ■ BA.1 ■ Recombinants
■ BA.2.86.X ■ XBB.1.16.X ■ BQ.1.1.X ■ BA.4.X ■ BA.2.X ■ Delta ■ Other
■ XBB.1.9.X ■ XBB.1.5.X ■ BQ.1.X

Gauteng - Johannesburg



★ Chloroform start and end date

■ Goudkoppies Sample Collection ● Goudkoppies Wastewater Treatment Works ■ Northern Sample Collection ● Northern Wastewater Treatment Works (GP)

Wastewater levels of SARS-CoV-2 in log-transformed genome copies/ml (right vertical axis, line graph) and laboratory confirmed cases of SARS-CoV-2 for Johannesburg (left vertical axis, grey bars) by epidemiological week. Coloured dots below the horizontal axis signify if a sample was collected. SARS-CoV-2 wastewater level data points are only joined if samples on sequential weeks register positive values. The top bar indicates when the change from qPCR to dPCR occurred for SARS-CoV-2 testing.

SARS-CoV-2 levels and Genomic Results in Epi week 15:

- SARS-CoV-2 levels in Goudkoppies WWTW increased from Epi week 5 to Epi week 7, but levels remain low. Levels increase to moderate in Epi week 12. Levels decreased in Epi week 15 but remain moderate.
- In Northern WWTW, SARS-CoV-2 levels increased to moderate in week 8 from low levels seen in week 6. Levels decreased to low in Epi week 9, followed by an increase to moderate in Epi week 10. Levels remain moderate in Epi week 14. Levels decrease to low in Epi week 15.

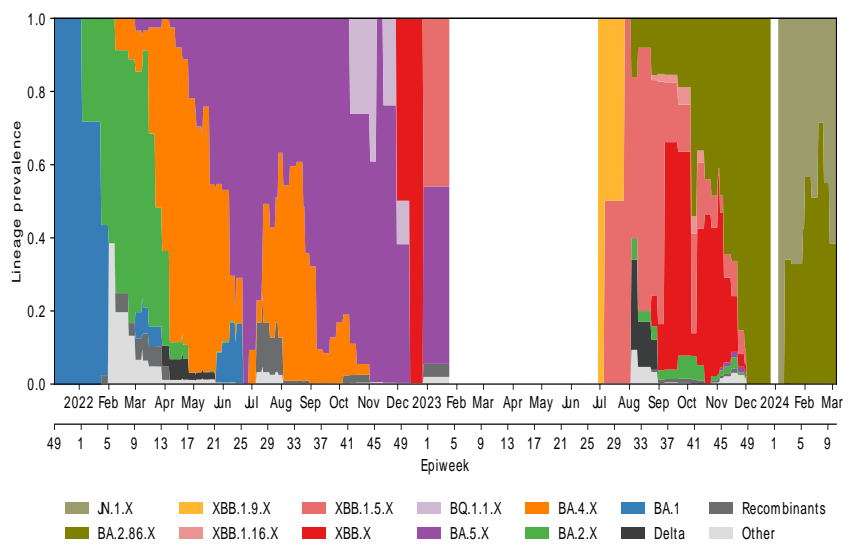
*** Sequencing data ending in Epi week 9 in Goudkoppies and 5 in Northern Wastewater Treatment Works.**

- JN.1.X and BA.2.86.X lineages were dominating during epiweek 1 - 9 in Goudkoppies.
- During Epi week 1 – 5 BA.2.86.X, JN.1.X lineages were circulating in Northern (GP). In Epi week 5, Recombinants were also observed.

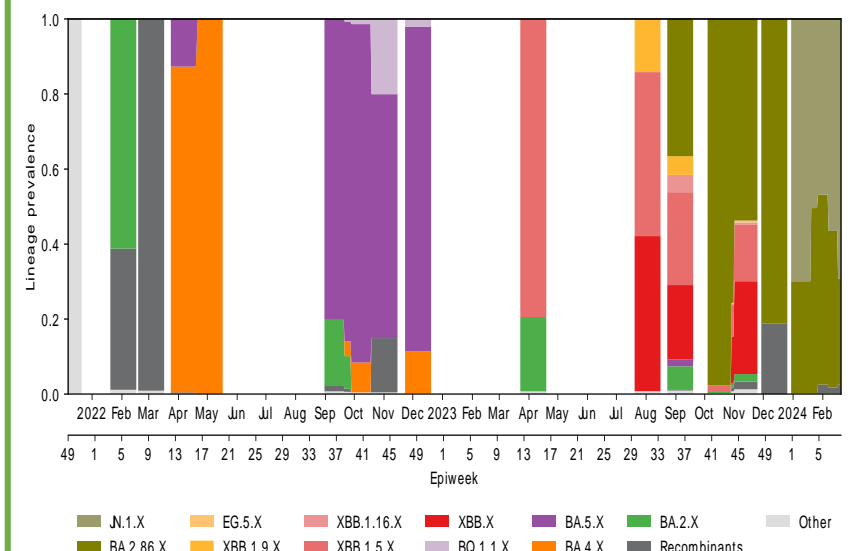
SNP Analysis:

- A combination of mutations (V127F, L212I, V213G, L216F, H245N, A264D, I332V, K356T) associated with lineage BA.2.86 were found in Goudkoppies.
- A combination of mutations (V127F, L212I, V213G, L216F, H245N, A264D, I332V, K356T) associated with lineage BA.2.86 and JN.1 were found in Northern Johannesburg.

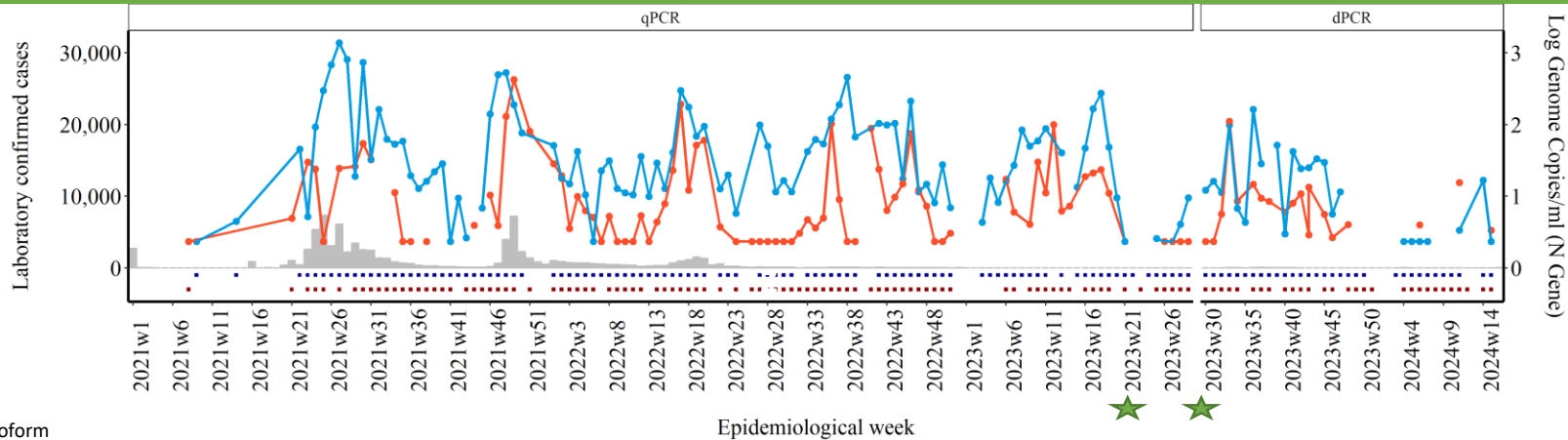
Goudkoppies Wastewater Treatment Works



Northern Wastewater Treatment Works



Gauteng - Ekurhuleni



★ Chloroform start and end date

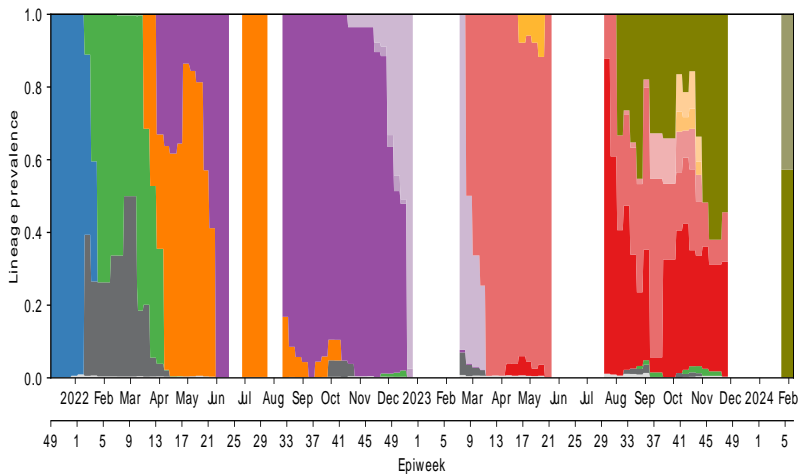
■ ERWAT Vlakplaats Sample Collection ■ ERWAT Vlakplaats Wastewater Treatment Works ■ Hartebeesfontein Sample Collection ■ Hartebeesfontein Waterworks
 Wastewater levels of SARS-CoV-2 in log-transformed genome copies/ml (right vertical axis, line graph) and laboratory confirmed cases of SARS-CoV-2 for Ekurhuleni (left vertical axis, grey bars) by epidemiological week. Coloured dots below the horizontal axis signify if a sample was collected. SARS-CoV-2 wastewater level data points are only joined if samples on sequential weeks register positive values. The top bar indicates when the change from qPCR to dPCR occurred for SARS-CoV-2 testing.

SARS-CoV-2 levels and Genomic Results in Epi week 15:

- The SARS-CoV-2 levels in Hartebeesfontein WWTW decreased in Epi weeks 4 and remain low in Epi week 7. Levels remain low in Epi week 11. Levels increase to moderate in Epi week 14. Levels decrease to low in Epi week 15.
- As of Epi week 43, there was a slight increase in SARS-CoV-2 levels in Vlakplaats WWTW, after a decrease from Epi week 35. Levels remain low in Epi week 6. Levels rise to moderate in Epi week 11. Levels decrease to low in Epi week 15.

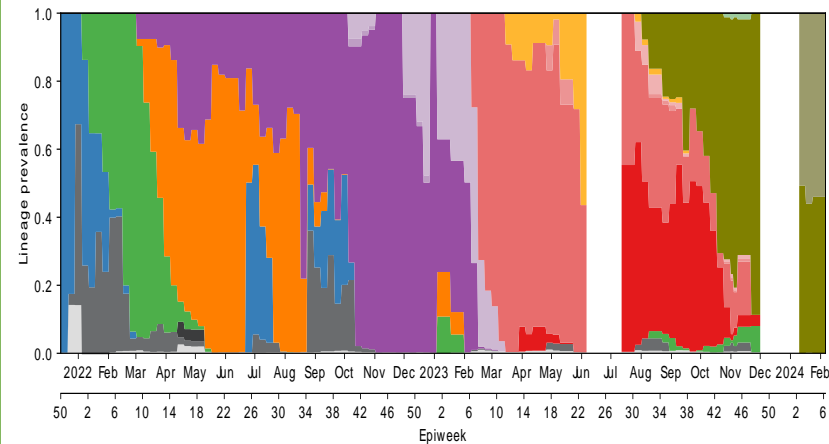
*** Sequencing data ending in Epi week 5 in Vlakplaats and 6 in Hartebeesfontein.**

ERWAT Vlakplaats Wastewater Treatment Works



■ JN.1.X ■ EG.5.X ■ XBB.1.16.X ■ BQ.1.1.X ■ BA.4.X ■ BA.2.X ■ Recombinants
 ■ BA.2.86.X ■ XBB.1.9.X ■ XBB.1.5.X ■ BQ.1.X ■ BA.2.12.X ■ BA.1 ■ Other
 ■ HV.1.X ■ XBB.2.3.X ■ XBB.X ■ BA.5.X

Hartebeesfontein Wastewater Treatment Works



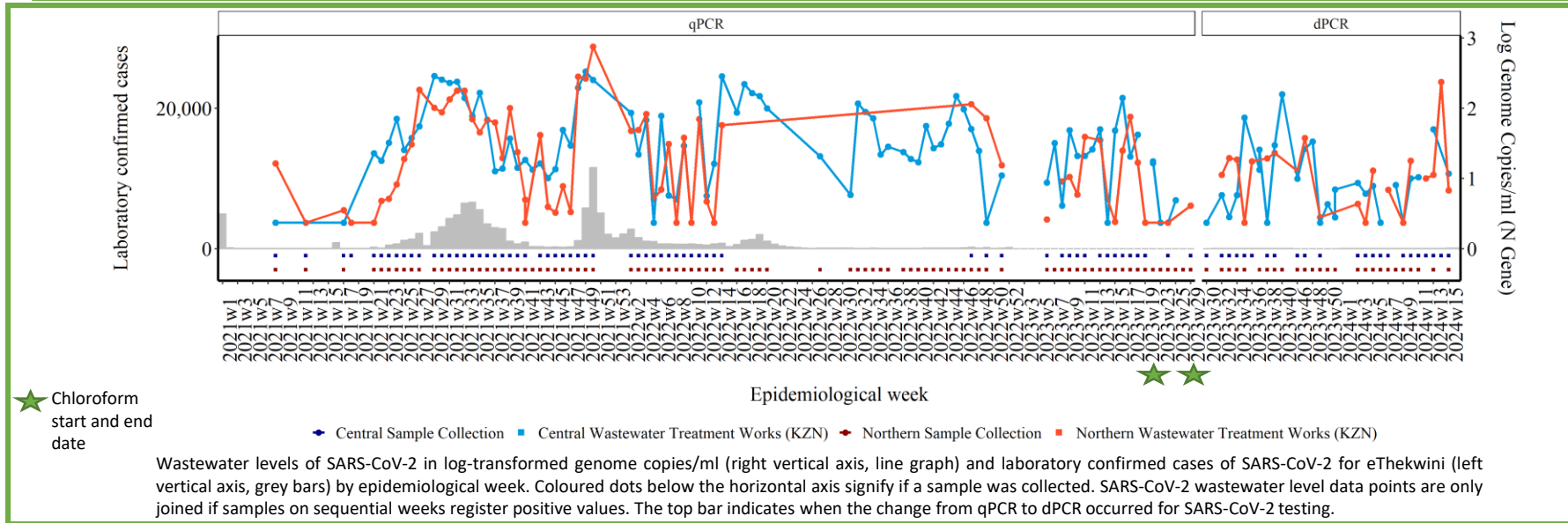
■ BA.2.87.1.X ■ XBB.1.9.X ■ XBB.1.5.X ■ BQ.1.X ■ BA.4.X ■ BA.1 ■ Recombinants
 ■ JN.1.X ■ XBB.2.3.X ■ XBB.X ■ BA.5.X ■ BA.2.X ■ Delta ■ Other
 ■ BA.2.86.X ■ XBB.1.16.X ■ BQ.1.1.X

- Omicron lineages BA.2.86.X and JN.1.X were circulating in Vlakplaats during Epi week 5.
- Lineages BA.2.86 and JN.1.X were predominantly circulating during Epi week 6 at the Hartebeesfontein water treatment plant.

SNP Analysis:

- A combination of mutations (V127F, L212I, V213G, L216F, H245N, A264D, I332V, K356T) associated with lineage BA.2.86 and JN.1 were found in both Ekurhuleni treatment plants.

KwaZulu-Natal - eThekweni



SARS-CoV-2 levels and Genomic Results in Epi week 15:

- SARS-CoV-2 levels in Central WWTW in Epi week 9 decrease from Epi week 8, as levels remain low. Levels increase in Epi week 10 but remain low. Levels increase to moderate in Epi week 13. Levels decreased to low in Epi week 15.
- SARS-CoV-2 levels increased in Epi week 5 in Northern WWTW. Levels decrease in Epi week 7, as remain low in Epi week 9. Levels increase to moderate in Epi week 10 and remain moderate in Epi week 13. Levels increase to high in Epi week 14. Levels decrease to low in Epi week 15.

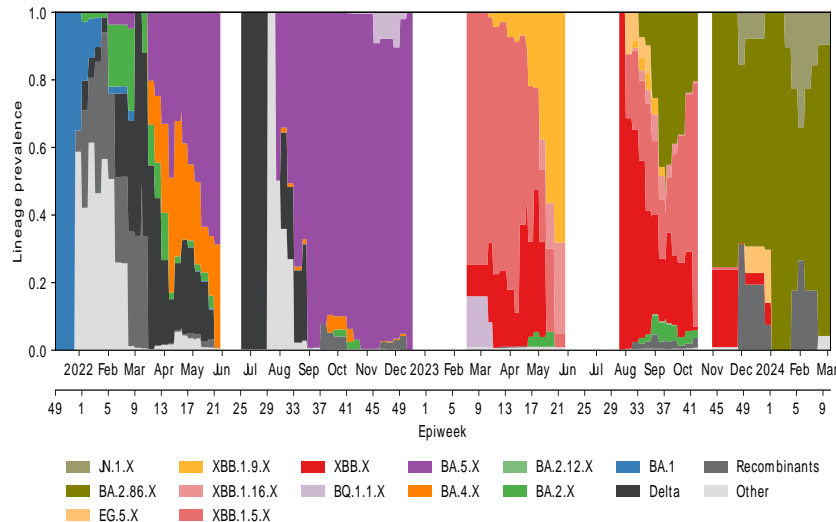
*** Sequencing data ending in Epi week 9 in Central eThekweni and in eThekweni North.**

- During Epiweek 1 - 9 Lineage BA.2.86.X, JN.1.X were dominantly circulating in eThekweni Central. XBB.X, XBB.1.9.X and Recombinants were also circulating in the recent weeks.
- In eThekweni North, BA.2.86.X lineages were dominating. In circulation there were also lineages JN.1.X and Recombinant lineages during Epi week 1 - 9.

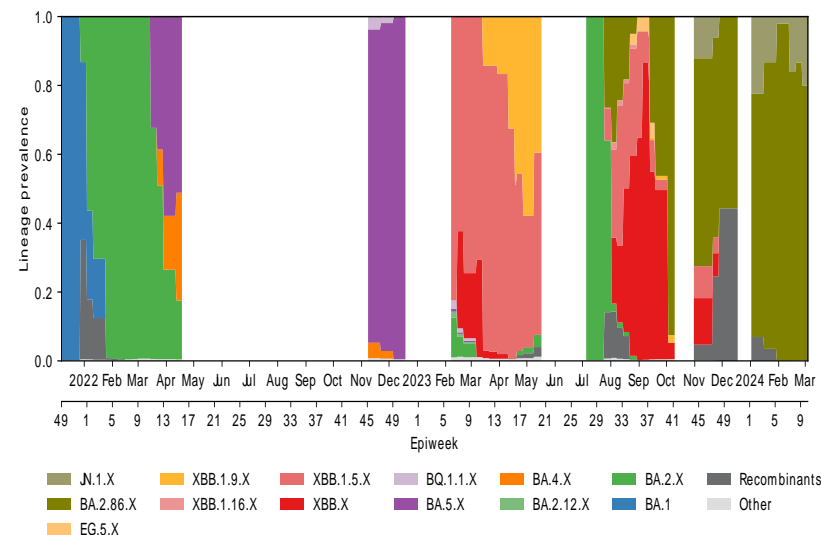
SNP Analysis:

- A combination of mutations (V127F, L212I, V213G, L216F, H245N, A264D, I332V, K356T) associated with lineage BA.2.86 and JN.1 were found in both eThekweni wastewater treatment plants.

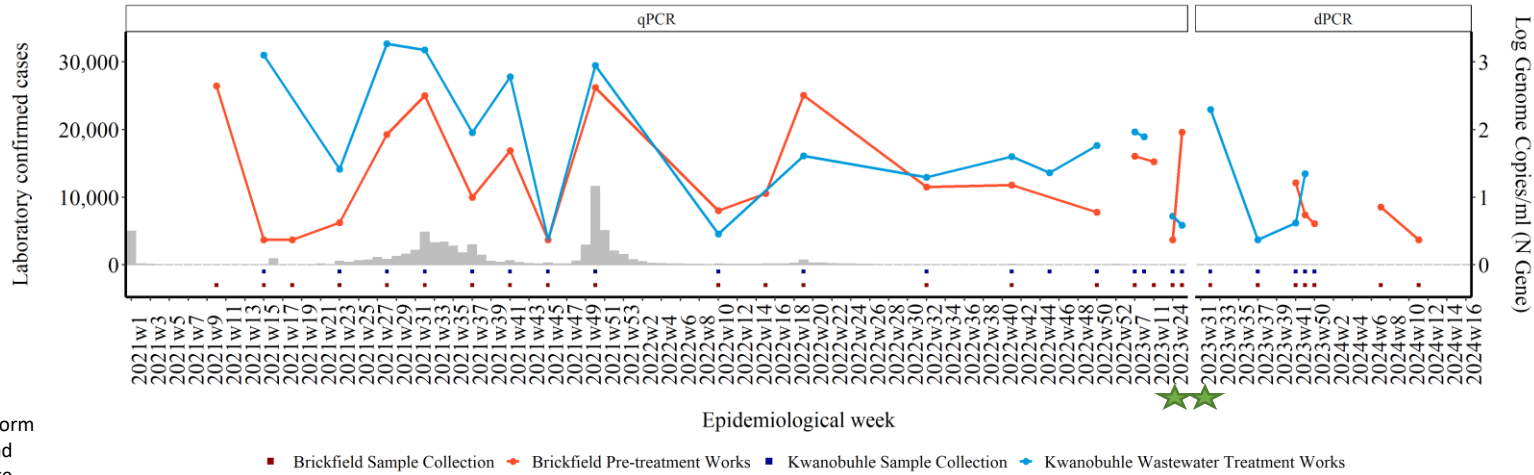
Central Wastewater Treatment Works



Northern Wastewater Treatment Works



Eastern Cape – Nelson Mandela



★ Chloroform start and end date

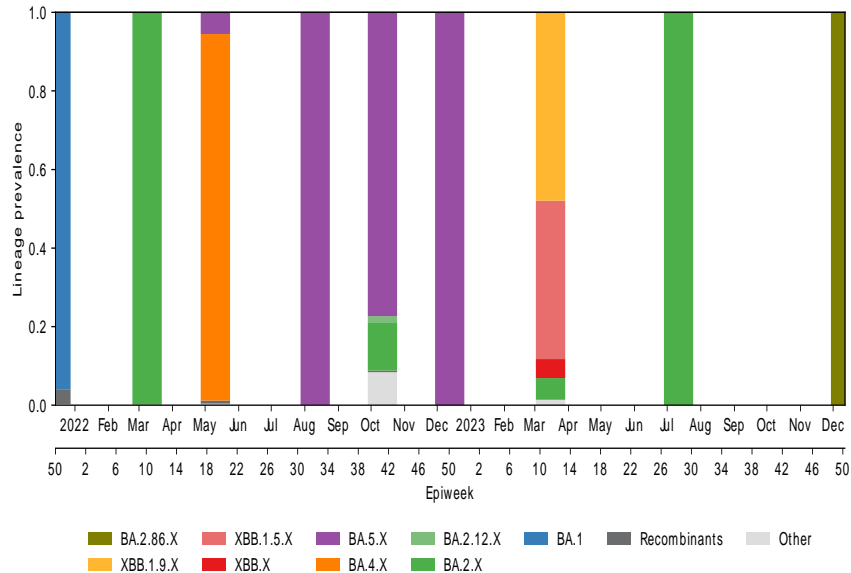
Wastewater levels of SARS-CoV-2 in log-transformed genome copies/ml (right vertical axis, line graph) and laboratory confirmed cases of SARS-CoV-2 for Nelson Mandela Bay (left vertical axis, grey bars) by epidemiological week. Coloured dots below the horizontal axis signify if a sample was collected. SARS-CoV-2 wastewater level data points are only joined if samples on sequential weeks register positive values. The top bar indicates when the change from qPCR to dPCR occurred for SARS-CoV-2 testing.

SARS-CoV-2 levels and Genomic Results in Epi week 15:

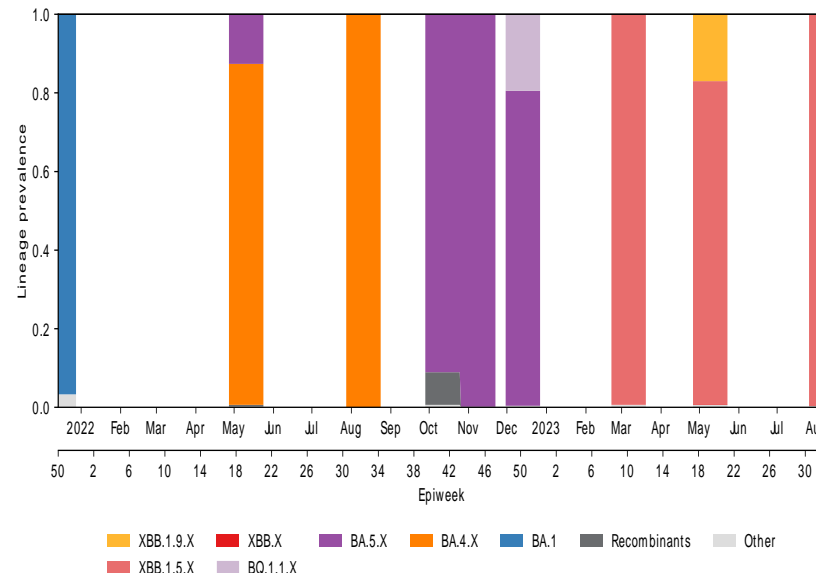
- As of Epi week 46, SARS-CoV-2 levels are moderate after an increase was observed after Epi week 36 in the Kwanobuhle WWTW. No new results are available for Epi week 15.
- SARS-CoV-2 levels decreased from moderate to low from Epi week 43 to Epi week 46 in Brickfield Pre-treatment works. There was a slight increase in level in Epi week 7, but levels remain low. Levels decrease and remain low in Epi week 11. No new results are available for Epi week 15.

*** Sequencing data ending in Epi week 50 in Brickfield and 30 in Kwanobuhle.**

Brickfield Pre-treatment works



Kwanobuhle Wastewater Treatment Works

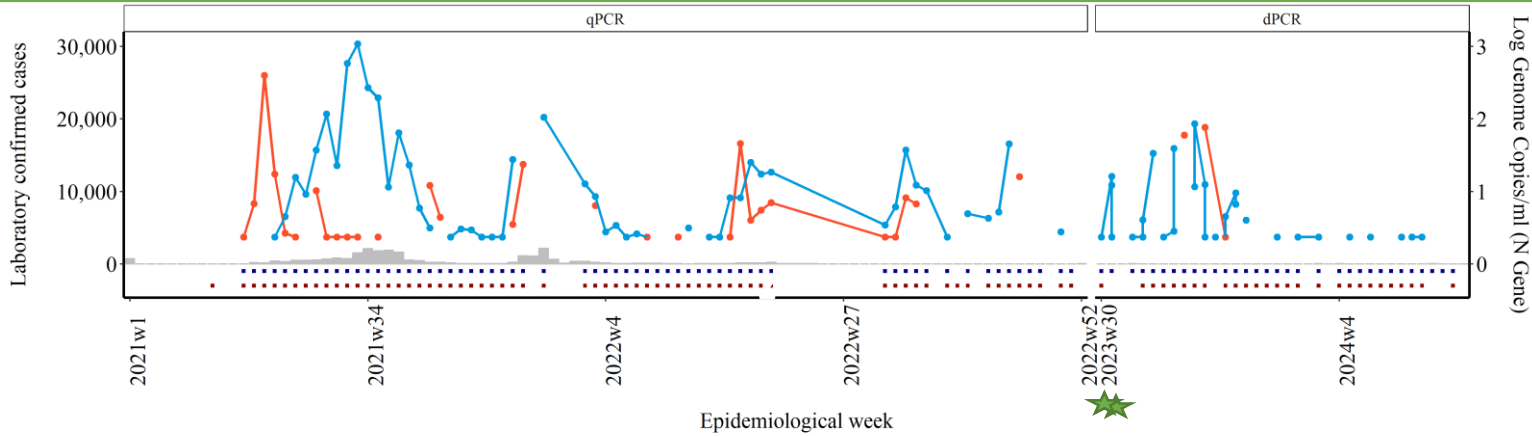


- BA.2.86.X lineage was dominating during Epi week 50 in Mdantsane
- Omicron lineages XBB.1.5.X sub-lineages were circulating in Kwanobuhle during Epi week 30.

SNP Analysis:

- SNP analysis could not be performed as the SARS-CoV-2 sequencing coverage in the Brickfield samples collected during Epi weeks 30-39 were too low for meaningful interpretation.
- A combination of mutations (V127F, L212I, V213G, L216F, H245N, A264D, I332V, K356T) associated with lineage BA.2.86 were found in the Kwanobuhle wastewater treatment plants.

Eastern Cape – Buffalo City



★ Chloroform start and end date

■ East Bank Sample Collection ■ East Bank Wastewater Treatment Works ■ Mdantsane Sample Collection ■ Mdantsane Wastewater Treatment Works

Wastewater levels of SARS-CoV-2 in log-transformed genome copies/ml (right vertical axis, line graph) and laboratory confirmed cases of SARS-CoV-2 for Buffalo City (left vertical axis, grey bars) by epidemiological week. Coloured dots below the horizontal axis signify if a sample was collected. SARS-CoV-2 wastewater level data points are only joined if samples on sequential weeks register positive values. The top bar indicates when the change from qPCR to dPCR occurred for SARS-CoV-2 testing.

SARS-CoV-2 levels and Genomic Results in Epi week 15:

- In Epi week 46, SARS-CoV-2 levels in Mdantsane WWTW decreased and levels are low. Levels in Epi week 12 remain low. No new results for Epi week 15 are available.
- SARS-CoV-2 levels in East Bank WWTW in Epi week 44 remain low after decrease was observed from Epi week 38. No new results for Epi week 15 are available.

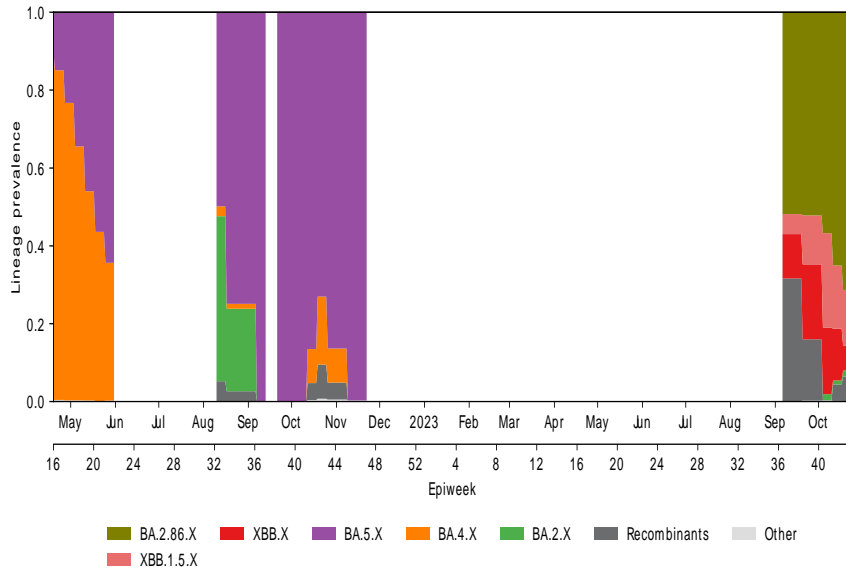
*** Sequencing data ending in Epi week 40 in Eastbank and Epiweek 3 in Mdantsane.**

- Omicron lineages BA.2.86.X, XBB.1.5.X, XBB.X and Recombinants were circulating in Eastbank during Epi week 40.
- Lineage BA.2.86.X was dominating in Mdantsane during Epi week 3.

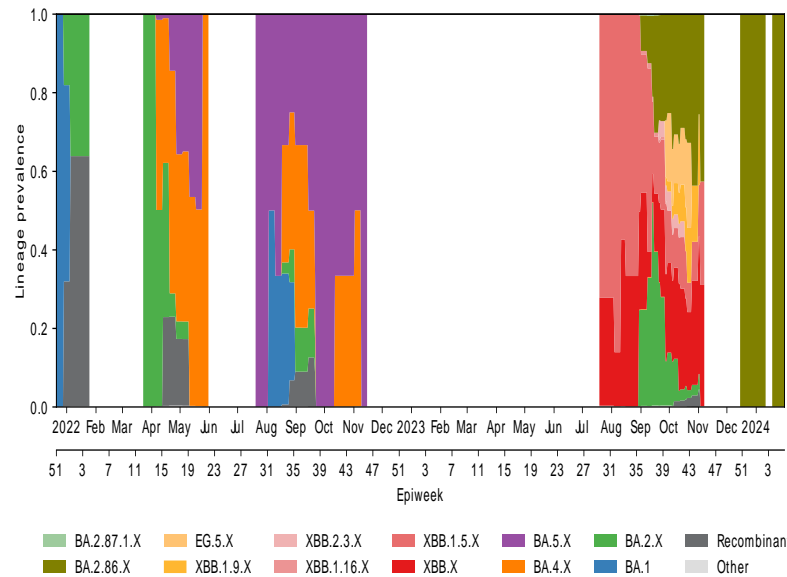
SNP Analysis:

- A combination of mutations (V127F, L212I, V213G, L216F, H245N, A264D, I332V, K356T) associated with lineage BA.2.86 were found in both Eastbank and Mdantsane.

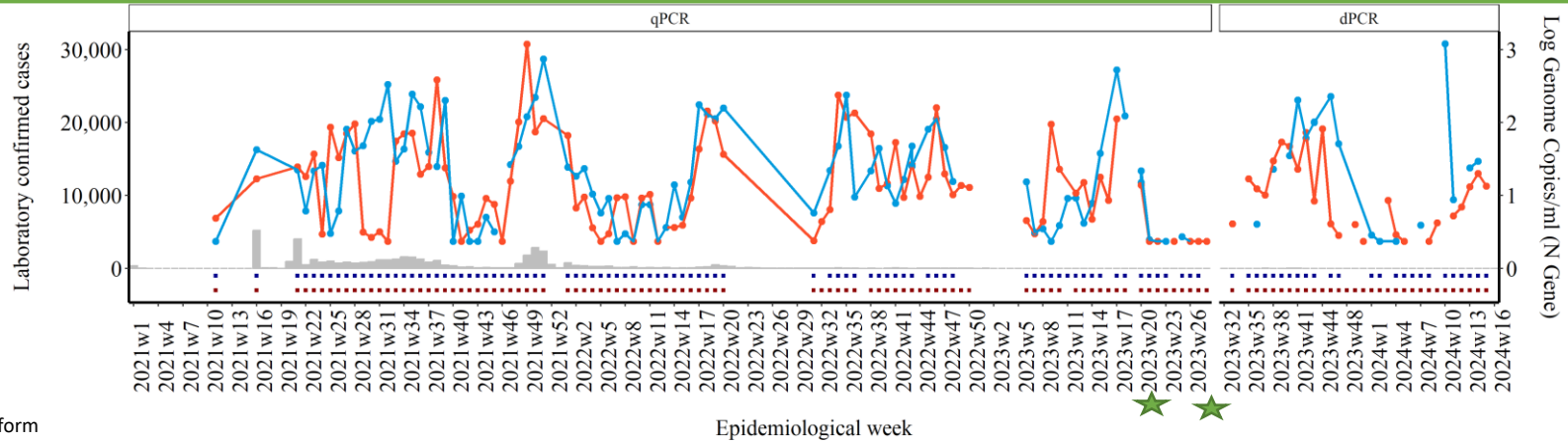
East Bank Wastewater Treatment Works



Mdantsane Wastewater Treatment Works



Free State – Mangaung



★ Chloroform start and end date

■ Bloemspruit Sample Collection ◆ Bloemspruit Wastewater Treatment Works ■ Sterkwater Sample Collection ◆ Sterkwater Wastewater Treatment Works

Wastewater levels of SARS-CoV-2 in log-transformed genome copies/ml (right vertical axis, line graph) and laboratory confirmed cases of SARS-CoV-2 for Mangaung (left vertical axis, grey bars) by epidemiological week. Coloured dots below the horizontal axis signify if a sample was collected. SARS-CoV-2 wastewater level data points are only joined if samples on sequential weeks register positive values. The top bar indicates when the change from qPCR to dPCR occurred for SARS-CoV-2 testing.

SARS-CoV-2 levels and Genomic Results in Epi week 15:

- In Bloemspruit WWTW, a 2-fold increase in SARS-CoV-2 levels were seen in Epi week 44. In Epi week 4 levels decreased and remain low in Epi week 9. Levels increase to moderate in Epi week 13 and remain moderate in Epi week 15.
- A decrease in SARS-CoV-2 levels was seen in Sterkwater WWTW in Epi week 52 and levels remain low in Epi week 4. There is a slight increase in levels in Epi week 7 but levels remain low. Levels in Epi week 10 increase to high (above 3 genome copies/ml). Levels drop to low in Epi week 11 and increase to moderate in Epi week 13 and remain moderate in Epi week 14. No new results for Epi week 15 are available.

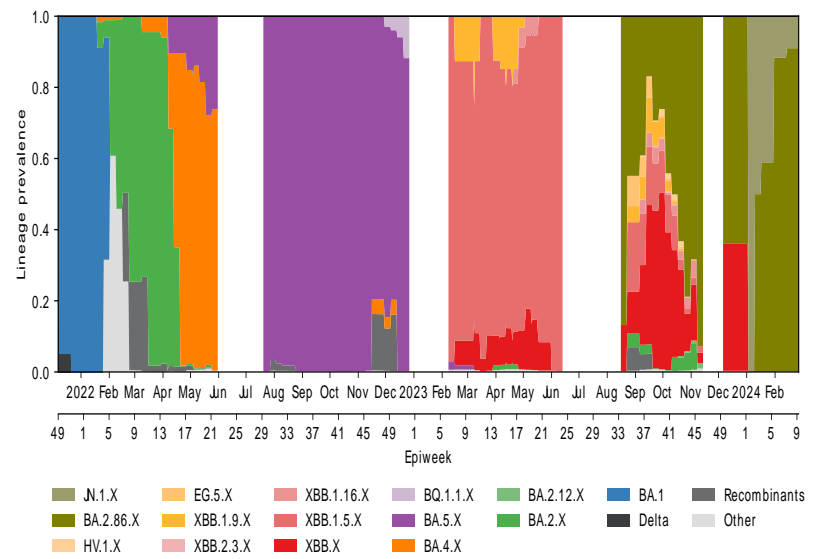
*** Sequencing data ending in Epi week 9 in Bloemspruit and Sterkwater Treatment Works.**

- BA.2.86.X, JN.1.X and XBB.X sub-lineages were the dominant lineage circulating in Bloemspruit during Epi week 1 to 9.
- JN.1.X and BA.2.86.X lineages were predominantly circulating in Epi week 9 in Bloemspruit
- BA.2.86.X (at low proportions) and Other Omicron lineages were circulating in Sterkwater in epiweek 9.

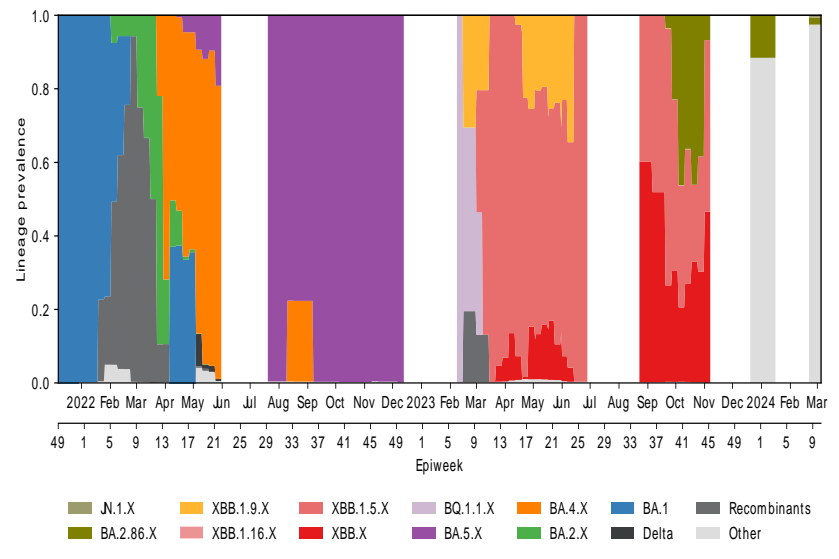
SNP Analysis:

- A combination of mutations (V127F, L212I, V213G, L216F, H245N, A264D, I332V, K356T) associated with lineage BA.2.86 were found in both Bloemspruit and Sterkwater.

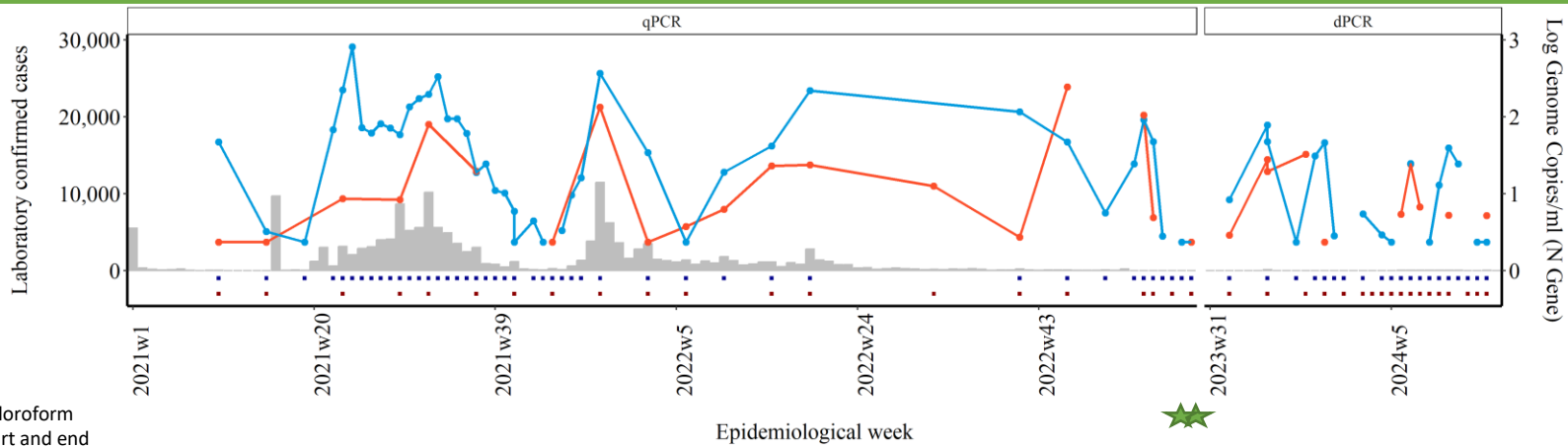
Bloemspruit Wastewater Treatment Works



Sterkwater Wastewater Treatment Works



Western Cape – City of Cape Town



★ Chloroform start and end date

■ Borcheds Quarry Sample Collection
 ◆ Borcheds Quarry Wastewater Treatment Works
 ■ Zandvleit Sample Collection
 ◆ Zandvleit Wastewater Treatment Works

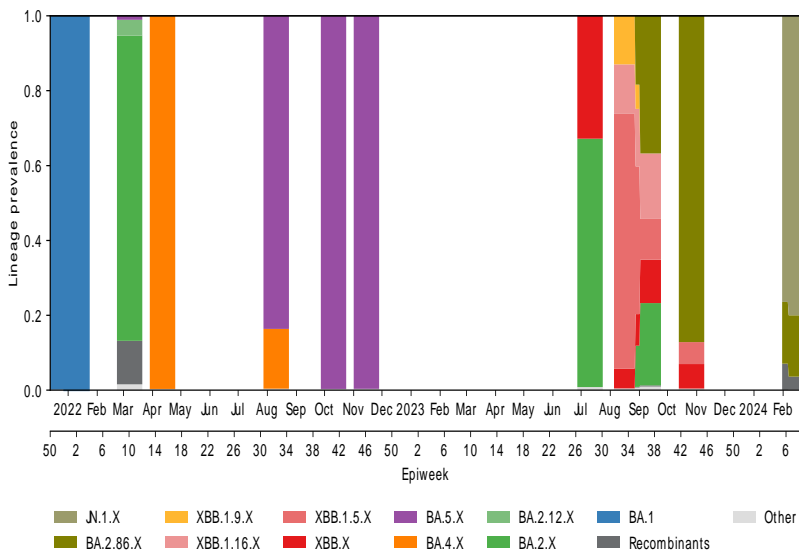
Wastewater levels of SARS-CoV-2 in log-transformed genome copies/ml (right vertical axis, line graph) and laboratory confirmed cases of SARS-CoV-2 for Cape Town (left vertical axis, grey bars) by epidemiological week. Coloured dots below the horizontal axis signify if a sample was collected. SARS-CoV-2 wastewater level data points are only joined if samples on sequential weeks register positive values. The top bar indicates when the change from qPCR to dPCR occurred for SARS-CoV-2 testing.

SARS-CoV-2 levels and Genomic Results in Epi week 15:

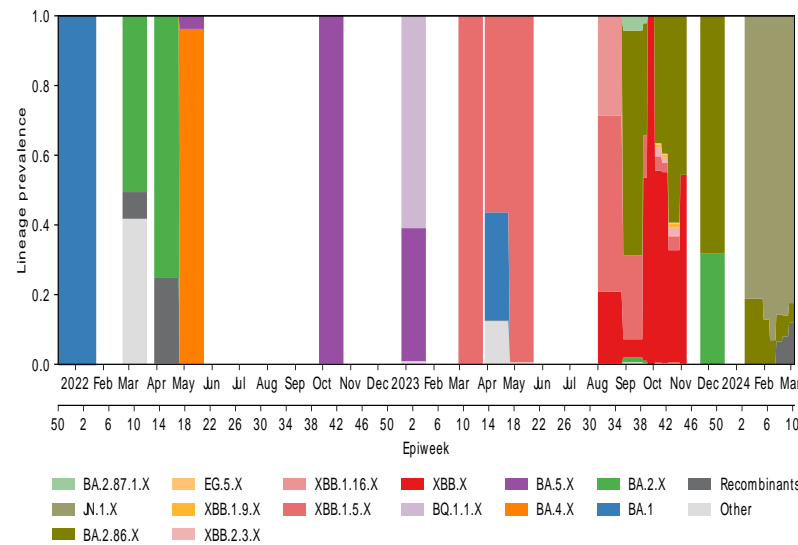
- After a sharp increase in SARS-CoV-2 levels was seen in Epi week 37, a subsequent decrease in SARS-CoV-2 levels in Borcheds Quarry WWTW was seen. Levels are low in Epi week 6 and increase to moderate in Epi week 7. Levels decrease in Epi week 8 to low and remain low in Epi week 15.
- In Epi week 4, SARS-CoV-2 levels were low at Zandvleit WWTW. Levels decrease slightly in Epi week 5. In Epi week 7 levels increase to moderate. Levels drop to low in Epi week 9 and increase to moderate in Epi week 11. Levels remain moderate in Epi week 12 and decrease to low in Epi week 14 and remain low in Epi week 15.

** Sequencing data ending in Epi week 6 in Borcheds Quarry and Epi week 10 in Zandvleit.*

Borcheds Quarry Wastewater Treatment Works



Zandvleit Wastewater Treatment Works

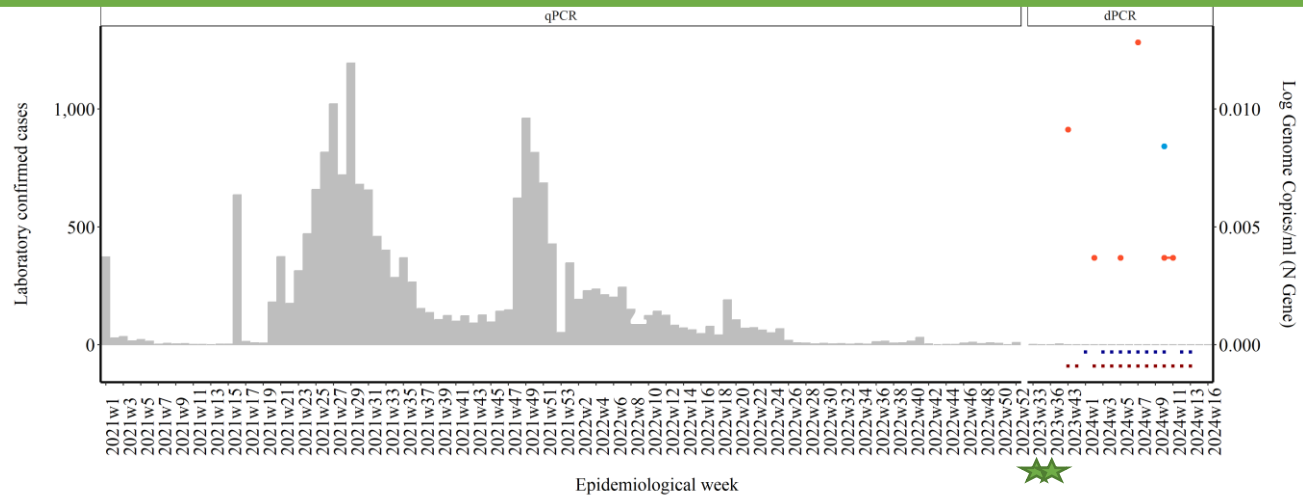


- During Epi week 6, JN.1.X sub-lineages were dominantly circulating in Borcheds. BA.2.86.X and Recombinants were also detected.
- During Epi week 2 - 6, lineages BA.2.86.X and JN.1.X were circulating in Zandvleit, with JN.1.X sub-lineages being dominant.
- In epi week 10 BA.2.86.X, JN.1.X and Recombinants lineages were circulating in Zandvleit, with JN.1.X lineages at highest proportion

SNP Analysis:

- A combination of mutations (V127F, L212I, V213G, L216F, H245N, A264D, I332V, K356T) associated with lineage BA.2.86 and JN.1 were found in both Borcheds Quarry and Zandvleit.

North West – Bojanala Platinum



★ Chloroform start and end date

Wastewater levels of SARS-CoV-2 in log-transformed genome copies/ml (right vertical axis, line graph) and laboratory confirmed cases of SARS-CoV-2 for Bojanala Platinum (left vertical axis, grey bars) by epidemiological week. Coloured dots below the horizontal axis signify if a sample was collected. SARS-CoV-2 wastewater level data points are only joined if samples on sequential weeks register positive values. The top bar indicates when the change from qPCR to dPCR occurred for SARS-CoV-2 testing.

* SARS-CoV-2 wastewater sample collection and testing at Rustenburg WWTW began in Epi week 43, 2023.

* SARS-CoV-2 wastewater sample collection and testing at Boitekong began in Epi week 1, 2024.

SARS-CoV-2 levels and Genomic Results in Epi week 15:

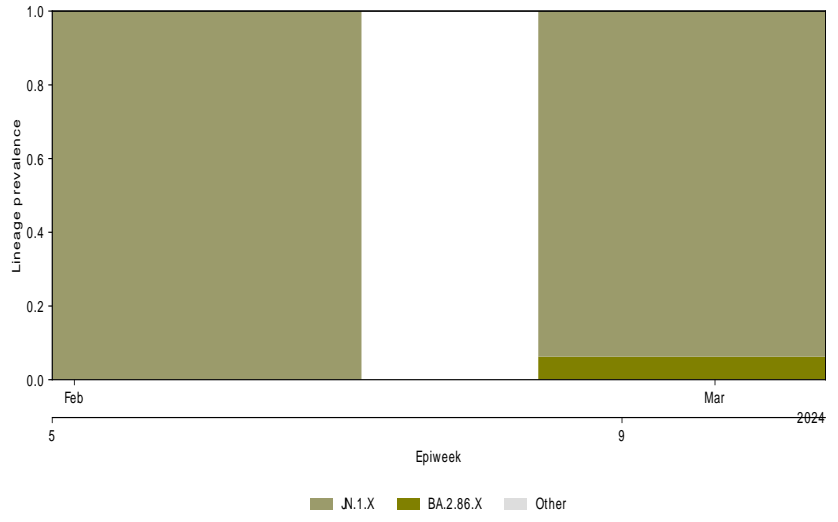
- At Rustenburg WWTW levels from Epi week 43 remain below 0.015 log genome copies/ml and remain low up until Epi week 11, 2024. No new results available for Epi week 15.
- At Boitekong wastewater results for SARS-CoV-2 were low in Epi week 10, 2024. No new results available for Epi week 15.

* Sequencing data ending in Epi week 9 in Boitekong

SARS-CoV-2 levels and Genomic Results in Epi week 13:

- At Boitekong, JN.1.X sub-lineages were dominantly circulating in Epi week 5 and 9. In Epi week 9, BA.2.86.X was also circulating at low proportions.

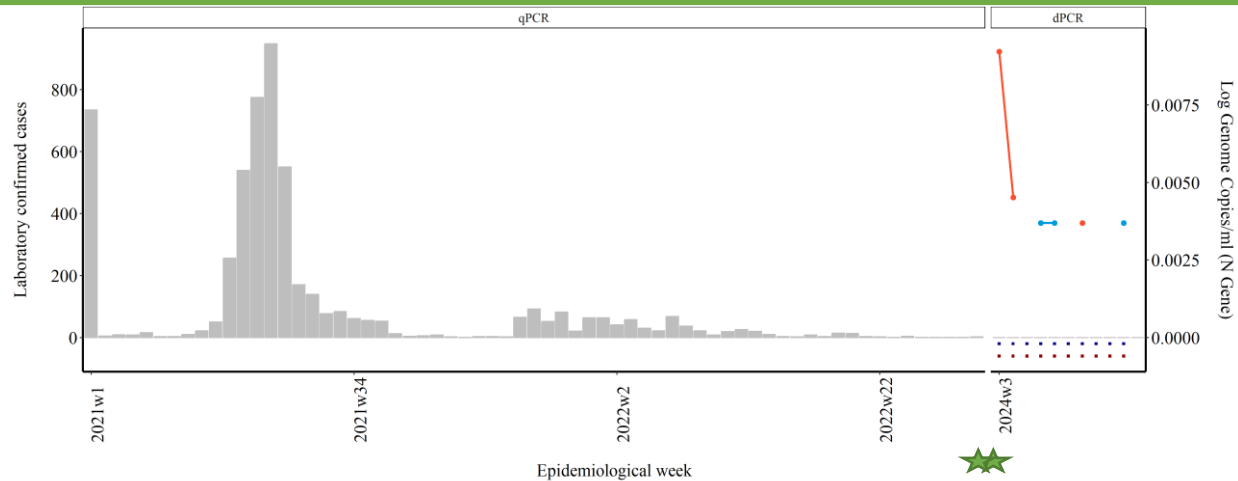
Boitekong



Rustenburg

*No sequencing data currently available

Limpopo – Vhembe



★ Chloroform start and end date

Wastewater levels of SARS-CoV-2 in log-transformed genome copies/ml (right vertical axis, line graph) and laboratory confirmed cases of SARS-CoV-2 for Vhembe (left vertical axis, grey bars) by epidemiological week. Coloured dots below the horizontal axis signify if a sample was collected. SARS-CoV-2 wastewater level data points are only joined if samples on sequential weeks register positive values. The top bar indicates when the change from qPCR to dPCR occurred for SARS-CoV-2 testing.

*** SARS-CoV-2 wastewater sample collection and testing at Musina WWTW began in Epi week 3, 2024.**

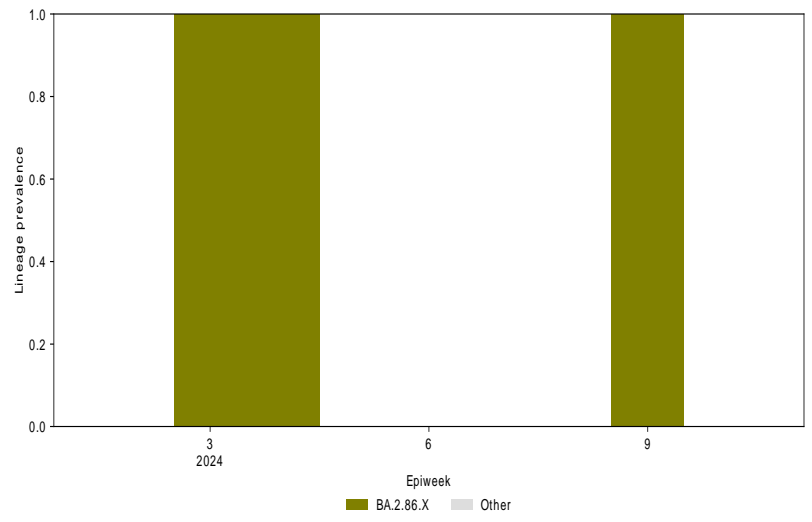
*** SARS-CoV-2 wastewater sample collection and testing at Nancefield began in Epi week 3, 2024.**

SARS-CoV-2 levels and Genomic Results in Epi week 15:

- At Musina WWTW levels from Epi week 3 remain below 0.01 log genome copies/ml and remain low up until Epi week 4, 2024. Levels remain low in Epi week 9. No new results for Epi week 15 are available.
- At Nancefield levels were low in Epi weeks 6 and 7, below 0.005 log genome copies/ml. They remain low in Epi week 12. No new results for Epi week 15 are available.

*** Sequencing data ending in Epiweek 13 in Musina**

Musina



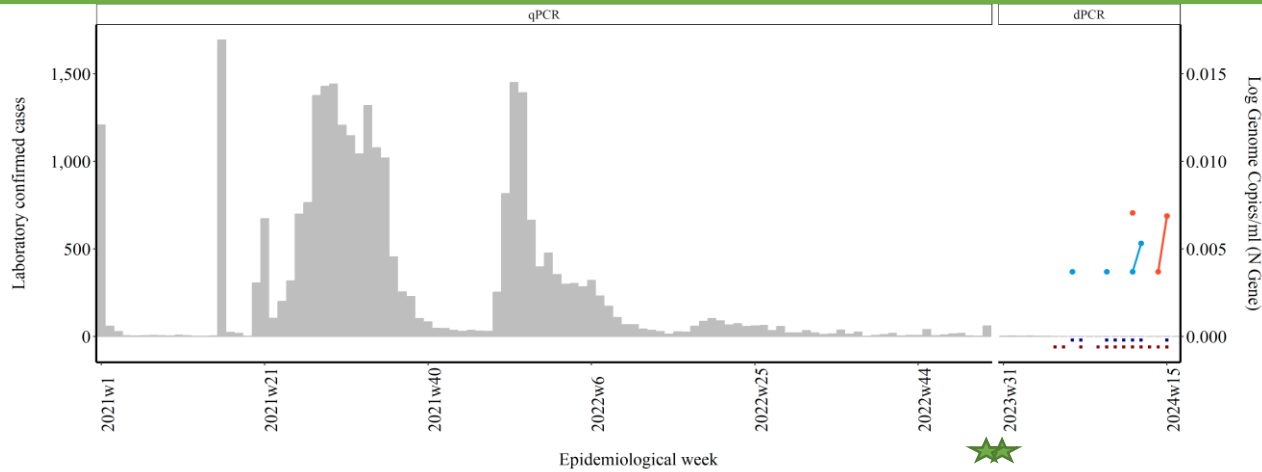
Nancefield

***No sequencing data currently available**

SARS-CoV-2 levels and Genomic Results in Epi week 13:

- Sequencing in Musina began in Epiweek 3, and BA.2.86.X sub-lineages were found to be the main circulating lineages. In Epi week 9 BA.2.86.X sub-lineages were still the dominant lineages detected in Musina WWTW

Mpumalanga – Ehlanzeni



★ Chloroform start and end date

Wastewater levels of SARS-CoV-2 in log-transformed genome copies/ml (right vertical axis, line graph) and laboratory confirmed cases of SARS-CoV-2 for Ehlanzeni (left vertical axis, grey bars) by epidemiological week. Coloured dots below the horizontal axis signify if a sample was collected. SARS-CoV-2 wastewater level data points are only joined if samples on sequential weeks register positive values. The top bar indicates when the change from qPCR to dPCR occurred for SARS-CoV-2 testing.

*** SARS-CoV-2 wastewater sample collection and testing at Komatipoort WWTW began in Epi week 2, 2024.**

*** SARS-CoV-2 wastewater sample collection and testing at Kingstonvale began in Epi week 4, 2024.**

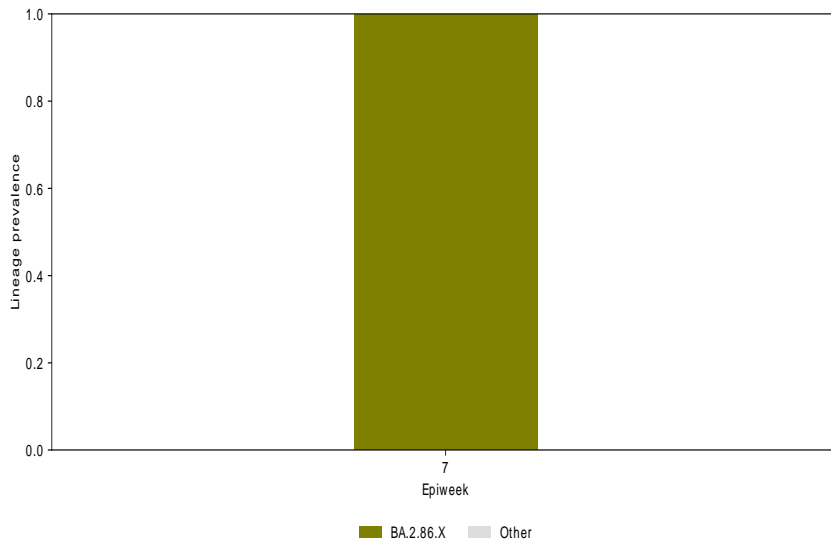
SARS-CoV-2 levels and Genomic Results in Epi week 15:

- At Komatipoort samples collected between Epi week 2 and Epi week 10 results were negative for SARS-CoV-2. Levels were low in Epi week 11 and remain low in Epi week 15.
- At Kingstonvale SARS-CoV-2 levels remain below 0.01 log genome copies/ml from Epi week 4 to Epi week 8. Levels remain low in Epi week 12. No new results for Epi week 15 are available.

*** Sequencing data ending in Epi week 13 in Kingstonvale**

- No lineages detected in Kingstonvale during Epiweek 2 – 6 due to low coverage and negative results. In Epiweek 7, BA.2.86.X was detected.

Kingstonvale



Komatipoort

***No sequencing data currently available**

COLLABORATORS



FUNDERS



TEAM

