Eskom

Dr Patience Gwaze
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Date: 17 October 2024
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Dear Dr Gwaze,

AUGUST 2024 MONTHLY PROGRESS REPORT ON THE POSTPONEMENT OF MINIMUM EMISSION STANDARD CONDITIONS FOR KUSILE POWER STATION: REF: LSA223027

ESKOM WAS ISSUED A MINIMUM EMISSION STANDARDS (MES) POSTPONEMENT IN RESPECT OF KUSILE'S SO_2 LEVELS BY THE DFFE ON 5 JUNE 2023. THE VARIED ATMOSPHERIC EMISSION LICENCE (AEL) WAS ISSUED BY THE NKANGALA DISTRICT MUNICIPALITY ON 13 JUNE 2023. BOTH THE MES APPROVAL AND THE AEL ALLOW ESKOM TO OPERATE THE TEMPORARY STACKS WITHOUT FGD. THE APPROVALS ARE ISSUED SUBJECT TO SEVERAL CONDITIONS, INCLUDING THAT ESKOM IMPLEMENT MEASURES TO MINIMISE THE IMPACT ON HUMAN HEALTH.

This letter provides an update on key issues, including specific reporting requirements identified by the authorities in the various approvals for the Kusile temporary stacks project. Monitoring and mitigation is being implemented as far as practical in line with the programme in the Kusile Power Station Temporary Stack Monitoring Framework approved by the authorities on 18 September 2023.

As an initial point, I would like to confirm that no exceedances of the stack or ambient trigger level conditions were recorded during August 2024.

1. **Progress of repairs of permanent stacks for the duration of the operation of the temporary stacks.**
    I. The target date for the recovery of the west stack of 31 March 2025 is under severe risk due to the damage to the internal liner damage.

Risks:

I. Inclement weather conditions could potentially hamper construction progress.
II. Potential safety incidents and work stoppages due to gas leaks.
III. Potential temporary stack (Flue 2) movement due to wind/vortex/turbulences
IV. Slurry build-up is more resistant to high pressure water cleaning than anticipated, alternative methods are being explored
V. Chimney liner damage is greater than originally anticipated

The Permanent Stack recovery progress report is attached **(Annexures A).**

2. Temporary Stack Emission Monitoring

Continuous Emission Monitoring (CEMS):

I. Unit 1, 2 and 3 CEMS are installed and commissioned.
II. Unit 1 is operated with unity curve for PM and Unit 3 is operating on spot curve for PM, due to monitor replaced and Unit 2 PM is also operating with a spot check due to a failed correlation test. Correlation tests for Unit 2 and 3 were completed on 07/08/2024 and 17/08/2024 respectively. Correlation test for Unit 1 will be planned and dates will be reported in the future reporting. Unit 2 emissions are currently being retrofitted and also correlation curves are being implemented.
III. All units are operating with valid parallel curves.

Stack Performance:

I. The Kusile Monthly Emission report for August 2024, which includes emission data for Units 1,2, 3 and 4 is attached **(Annexure B**).
II. **Based on the available data information, Kusile Unit 1, 2 and 3 operated in compliance with the AEL emission limits for PM, NOx or SO_2** during August 2024.

3. Health Screening for the increased SO_2 emission and associated health impacts

I. Communication system is developed to enable communication with the health ambassadors in the various receptor areas.
II. The SMS facility is in place for Eskom to communicate with the communities regarding matters pertaining to their health and the SO2 emissions.
III. The Toll-free number has been finalised. The community is guided through pre-loaded voice messaging regarding possible health concerns that they might be experiencing at that particular time and further guides them on which health facility nearest to them, can assist them, in case of emergency. It also enables them to leave a voice message if their concerns are not addressed on the pre-loaded voice recordings.
IV. Engagement with GHB Farms and Topigs will be conducted once the date had been agreed upon.

4. Occupational Health and Hygiene status

4.1. Continuous SO_2 Perimeter Monitoring:

I. Weekly monitoring of the plant's perimeter for SO_2 surges were conducted throughout August 2024.

II. SO_2 levels along the perimeter remained below detection levels, meeting the statutory requirement of 0.5 ppm OEL-STEL/C.

4.2. Conclusion:

Our continuous SO2 perimeter monitoring indicated compliance with regulatory limits with no ongoing issues. We will continue to monitor and investigate any anomalies to ensure the safety and well-being of both our workers and the surrounding community.

5. Stakeholder Engagement Plan and Status

Stakeholders	Method of engagement	Involvement	Status
Employees	• Awareness sessions Leadership briefings (GM's address) Employee engagements	• Once a month • Every Friday Monthly	Complete
Local Municipalities • Emalahleni • Victor Khanye • Bronkhorstspruit	Face-to-face meeting	Once a quarter	Meeting was held on the 9th of July 2024, follow up meeting planned for November 2024 with the surrounding farms
Media • Emalahleni FM • Witbank News	• Advert • Print	When required	Eskom media desk to publish

6. Ambient Air Quality Monitoring

I. In order to better assess compliance with national ambient air quality standards, identify potential sources of pollution, protect public health and the environment and establish a baseline for future mitigation measures Eskom has installed additional ambient air quality monitoring stations at Balmoral and Wilge. The existing air quality monitoring stations (Kendal, Phola and Chicken Farm) will complement the additional monitoring sites to reduce uncertainties and improve the understanding of air quality issues in the area.

II. The Balmoral and Wilge monitoring stations are equipped to monitor ambient concentrations of sulphur dioxide (SO_2) continuously. In addition, meteorological parameters of wind velocity, wind direction and ambient temperature, humidity, ambient pressure and rainfall, amongst others, are also recorded.

III. The following parameters, Ozone (O3) and fine particulate matter of particulate size <10µm and particulate size <2.5µm in diameter (PM10 and PM2.5) will be monitored as when the spare equipment's becomes available.

IV. The data for this reporting period (01 – 31 August 2024) were analysed for ambient SO2 and NO2 as monitored at Balmoral, Chicken Farm, Phola and Wilge air quality monitoring stations. The Particulate Matter (PM10 and PM2.5) data were further analysed for Chicken Farm and Phola.

V. Full dynamic calibration audits are carried out on the gas analysers (SO_2, NO_2 and O_3 analysers) quarterly and particulate matter analysers are calibrated every six months. All calibration results and certificates are filed in the laboratory for assessment purposes. Inter-laboratory calibrations are routinely carried out with other accredited laboratories, to enhance quality control.

VI. There were no exceedances of the NO2 hourly limit of 106 ppb recorded at the monitoring stations during the August 2024 monitoring period.

VII. There were two (2) exceedances of SO2 10-minutes limit of 191 ppb at Wilge and four (4) exceedances at Phola recorded during the monitoring period. There were exceedances of SO2 hourly limit of 134 ppb at Phola and Wilge monitoring sites. The was one (1) exceedance of SO2 daily limit of 48ppb recorded at Chicken Farm.

VIII. There were nine (9) exceedances of the PM2.5 daily limit of 40 µg/m3 at Phola, and ten (10) exceedances of the PM2.5 daily limit of 40 µg/m3the Chicken Farm monitoring station. There were twenty (20) exceedances of PM10 daily limit of 75 µg/m3 at Phola air quality monitoring station and twenty-one (21) exceedances of PM10 daily limit of 75 µg/m3 recorded at Chicken Farm air quality monitoring station.

IX. There were no events that triggered the notification of stakeholders in terms of the agreed AEGL recorded in August 2024.

Table 1 Highest SO_2 concentrations recorded (in ppb)

Monitoring Stations	10-min average	Date	Hourly average	Date	Daily average	Date
Balmoral	140.4	28/08/2024 10:40	105.1	28/08/2024 11:00	17.9	19/08/2024
Chicken Farm	170.9	25/08/2024 10:40	103.3	21/08/2024 11:00	48.1	20/08/2024
Phola	234.4	14/08/2024 09:10	173.9	10/08/2024 09:00	30.9	15/08/2024
Wilge	204.8	10/08/2024 08:40	145.9	10/08/2024 09:00	27.5	05/08/2024

X. Good representative percentage data was recovered for all the parameters monitored during the monitoring period under review at all the monitoring stations.

XI. The raw monitoring data, downloaded at 1-minute averages, is available in real-time to the DFFE-managed South African Air Quality Information System (SAAQIS) since the 14th of December 2023 for all Eskom air quality monitoring sites.

XII. The detailed August 2024 Kusile ambient monitoring report is attached (**Annexure C).**

7. Poultry Health Monitoring

I. A service provider had been appointed for Kendal Poultry monitoring per the condition of environmental authorisation (record of decision) and the MES approval. Execution of the monitoring was on hold due to the outbreak of Avian Influenza.

II. Kendal Poultry informed Eskom that their properties had been sold to Seriti Mining, therefore monitoring will not continue.

III. Eskom is engaging the department (DFFE) on this issue to seek way-forward on the condition in the MES approval.

8. Animal Health Monitoring

I. Eskom has reached an agreement with Topigs and GHB farms regarding animal/pig health monitoring continues since March 2024.

II. Monitoring is carried out according to prescribed protocol and draft reports are being finalized from May to September 2024 and will be incorporated in the next reporting.

MONTHLY PROGRESS REPORTS ON THE POSTPONEMENT OF MINIMUM EMISSION STANDARD CONDITIONS FOR KUSILE POWER STATION: REF: LSA223027

9. Emergency preparedness and response

I. There has been no incidence of exceedance that required emergency response from Kusile Power Station, however the Emergency Response Team (ERT) remain on high alert.
II. The ERT is in regular communication with Emalahleni Local Municipality Emergency Services as per the Mutual Aid Agreement.
III. Emalahleni Local Municipality Emergency Services representatives in Disaster Management, Fire and Emergency Services, and Environment were added in Kusile Power Station Distribution List for regular updates.
IV. All other Service Level Agreement (SLA's) with relevant stakeholder (Kendal Power Station) remain in force for duration of the temporal stack.

In conclusion, I believe the above illustrates that Eskom is committed to complying with the conditions of the approvals granted with respect to the Kusile temporary stacks. Eskom is implementing measures to ensure that it understands its impact and can limit its operations' environmental and health impact. Further, where full implementation of the conditions is not yet completed, Eskom is working with relevant stakeholders with focus to ensure the remaining issues are resolved as soon as possible.

I hope the above is in order. Please contact our team if you require any further information.

Yours sincerely

Christopher Nani
ACTING GENERAL MANAGER (KUSILE POWER STATION)
DATE: 22/10/2024

List of annexures

Annexure A: Kusile West Chimney Recovery Project
Annexure B: Kusile Monthly Emission Report – August 2024
Annexure C: Kusile Ambient Air Quality Report – August 2024
Annexure D: Draft Animal Health Monitoring report - September 2024

Eskom

Dr P. Gwaze
National Air Quality Officer
Department of Forestry, Fisheries and Environment
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0001

Date: 18 October 2024

Enquiries: S Mahlangu
Tel: 013 699 7097

Monthly Progress Report for Kusile Power Station West Stack Recovery September and October 2024:

	Status	Start Date	End Date
Clean vertical flue unit 2 (Work Stopped)	50%	3 September 24	15 Nov 24
Fabricate new Lobster for K1	100%	7 June 2024	04 October
Assembly of new Lobster	40%	23 August	30 December 24
Fabricate new 55 m platform (Done)	100%	7 June 2024	1st Delivery 20 September
Removal of Flue 3 Liner	0%	2 Nov 2024	19 Nov 2024
Removal of Flue 2 Liner	0%	17 Oct 2024	28 Nov 2024
Installation of circular platform unit 3	0%	16 2024 Oct	1 Nov 2024
Installation of circular platform unit 2	0%	2 Dec 2024	24 Dec 2024

NOTES

West Stack:

- The target date for the recovery of the west stack of 31 March 2025 is under severe risk due to the damage to the internal liner damage.

Risks:

- The slurry build-up removed during the cleaning process is totally different from original samples taken, posing a risk with the cleaning process progress. Cleaning process changed to manual hand cleaning.
- Flue lining blocks found to be cracked / damaged underneath the slurry build-up. Significant replacement is required.
- The Original Equipment Manufacturer (OEM) based on the final assessment is recommending a full liner replacement in all 3 flues.

Remedial action under review due to time lost and recovery program is being developed. Dates indicated above are the need by dates to support the 31 March 2025. It is to be noted that the commitment remains that no unit will be operated without FGD post 31 March 2025.

Trust, you find the above in order.

Kind Regards,

……..
Zandi Shange
General Manager - Kusile Power Station Project

Eskom

Ms Nompumelelo Simelane
Nkangala District Municipality
PO Box 437
Middleburg
1050

Date:

September 2024

Enquiries: Lesiba Kgobe
Tel: +27 13 699 7817

Ref: *Kusile Power Station AEL (17/4/AEL/MP311/12/01)*

Dear Ms. Simelane

KUSILE POWER STATION'S MONTHLY EMISSIONS REPORT FOR AUGUST 2024

This serves as the monthly report required in terms of Section 7.6 in Kusile Power Station's Atmospheric Emission License: 17/4/AEL/MP311/12/01. The emissions are for the month of August 2024.

Hoping the above will meet your satisfaction.

Yours sincerely

Christopher Nani
ACTING GENERAL MANAGER
DATE: 30/09/2024

Generation Division – Coal New Build Unit
Management Department (Kusile Power Station)
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1. KUSILE POWER STATION MONTHLY EMISSIONS REPORT: Atmospheric Emission License 17/4/AEL/MP311/12/01

2. Raw Materials and Products

	Raw Material Type	Units	Max Permitted Consumption Rate	Consumption Rate Aug-2024
Raw Materials and Products	Coal	Tons	*1 818 083*	*698 575*
	Fuel Oil	Tons	*5 533*	*3309.99*
	Limestone	Tons	*72 917*	*13184*
Production Rates	**Product / By-Product Name**	**Units**	**Max Production Capacity Permitted**	**Indicative Production Rate Aug-2024**
	Energy	GWh	*3 321.216*	*1 394.87*
	Ash	Tons	*796 300*	*219 981.16*
	Gypsum	Tons	*155 100*	*7 383.00*
	RE PM	kg/MWh	*not specified*	*0.07*
	RE SOx	kg/MWh	*not specified*	*4.51*

3. Energy source characteristics

Fuel Characteristic	Units	Stipulated Range	Monthly Average Content
Coal Sulphur	%	*1.3*	*0.67*
Ash in Coal	%	*38*	*31.49*
Fuel Oil Sulphur	%	*3.5*	*0.67*

4. Emissions Limits (mg/Nm³)

Associated Unit/Stack	PM	SO_2	NOx
North	*50*	*3500*	*750*
South	*50*	*1000*	*750*

5. Abatement Technology (%)

Associated Unit/Stack	Technology Type	Efficiency Aug-2024	Utilisation Aug - 2024	Technology Type	Efficiency Aug-2024	Utilisation Aug- 2024
Unit 1	*FFP*	*99.93%*	*100%*	*FGD*	*Out of service*	*Out of service*
Unit 2	*FFP*	*99.97%*	*100%*	*FGD*	*Out of service*	*Out of service*
Unit 3	*FFP*	*99.93%*	*100%*	*FGD*	*Out of service*	*Out of service*
Unit 4	*FFP*	*99.99%*	*100%*	*FGD*	*99.95%*	*100%*

Note: Both the FFP and FGD does not have bypass mode operation, hence plant 100% Utilised.

6. Monitoring reliability (%)

Associated Unit/Stack	PM	SO_2	NO
Unit 1	*100.0*	*100.0*	*100.0*
Unit 2	*100.0*	*100.0*	*100.0*
Unit 3	*100.0*	*99.0*	*98.8*
Unit 4	*100.0*	*53.4*	*96.1*

Unit 4: From the 1th until the 15th of August 2024 Unit 4 the SO2 monitor was faulty, the monitor was fixed on the 15th of August 2024 and verification done.

7. Emissions Performance

Table 7.1: Monthly tonnages for the month of Aug - 2024

Associated Unit/Stack	PM	SO_2	NO_x
Unit 1	30.1	1 980	545
Unit 2	15.5	1 311	251
Unit 3	44.4	2 897	854
Unit 4	1.0	107	852
SUM	91.1	6 294	2 503

Table 7.2: Operating days in compliance to PM AEL Limit - Aug 2024

Associated Unit/Stack	Normal	Grace	Section 30	Contravention	Total Exceedance	Average PM (mg/Nm³)
Unit 1	22	0	0	0	0	18.4
Unit 2	30	0	0	0	0	15.1
Unit 3	27	0	0	0	0	26.0
Unit 4	31	0	0	0	0	0.5
SUM	**110**	**0**	**0**	**0**	**0**	

Table 7.3: Operating days in compliance to SO_2 AEL Limit – Aug 2024

Associated Unit/Stack	Normal	Grace	Section 30	Contravention	Total Exceedance	Average SO_2 (mg/Nm³)
Unit 1	23	0	0	0	0	1 145.4
Unit 2	31	0	0	0	0	1 239.7
Unit 3	28	0	0	0	0	1 661.6
Unit 4	31	0	0	0	0	54.7
SUM	**113**	**0**	**0**	**0**	**0**	

Table 7.4: Operating days in compliance to NOx AEL Limit - Aug 2024

Associated Unit/Stack	Normal	Grace	Section 30	Contravention	Total Exceedance	Average NOx (mg/Nm³)
Unit 1	23	0	0	0	0	315.0
Unit 2	31	0	0	0	0	238.9
Unit 3	28	0	0	0	0	484.3
Unit 4	31	0	0	0	0	447.1
SUM	**113**	**0**	**0**	**0**	**0**	

Note: NOx emissions is measured as NO in PPM. Final NOx value is expressed as total NO_2

Table 7.5: Legend Description

Condition	Colour	Description
Normal		Emissions below Emission Limit Value (ELV)
Grace		Emissions above the ELV during grace period
Section 30		Emissions above ELV during a NEMA S30 incident
Contravention		Emissions above ELV but outside grace or S30 incident conditions

Figure 1: Kusile Unit 1 PM Emissions - August 2024

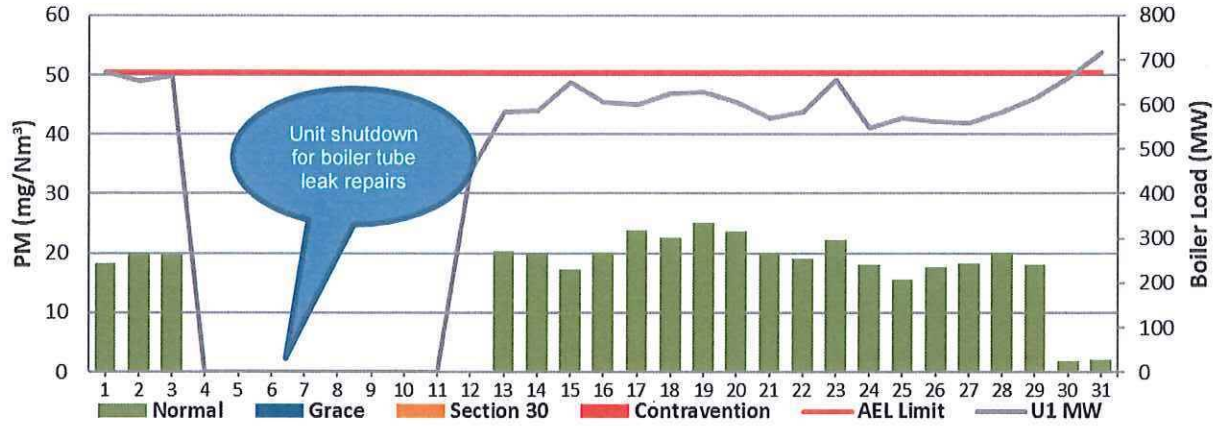


Figure 2: Kusile Unit 2 PM Emissions - August 2024

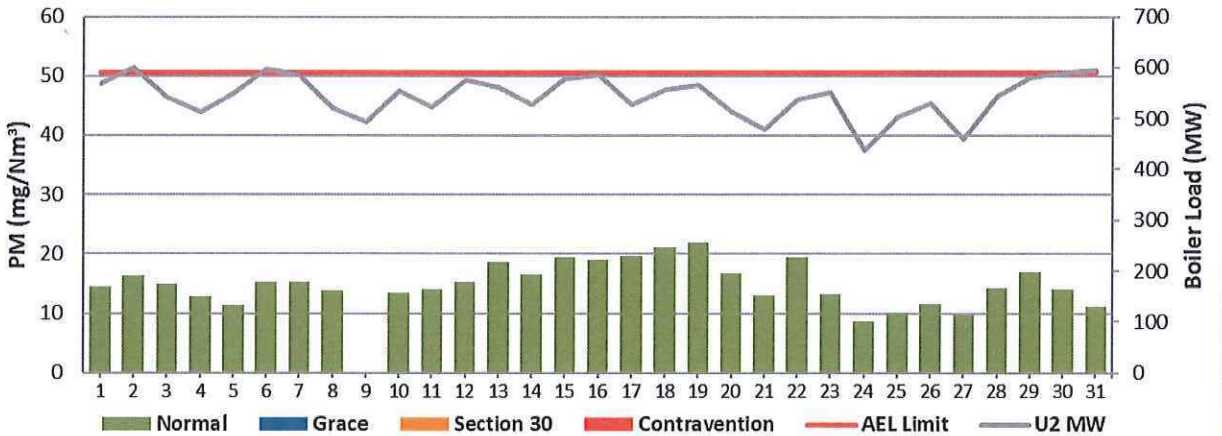
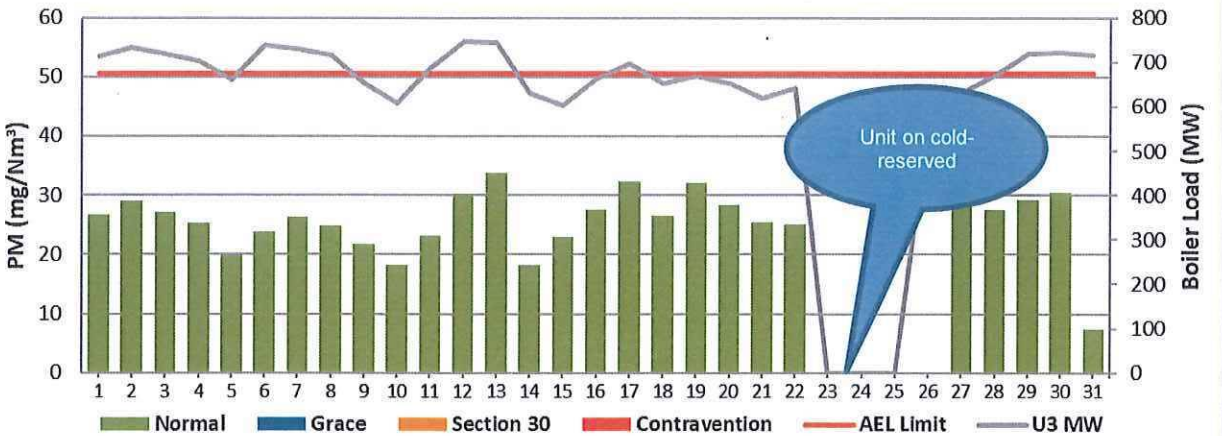


Figure 3: Kusile Unit 3 PM Emissions - August 2024



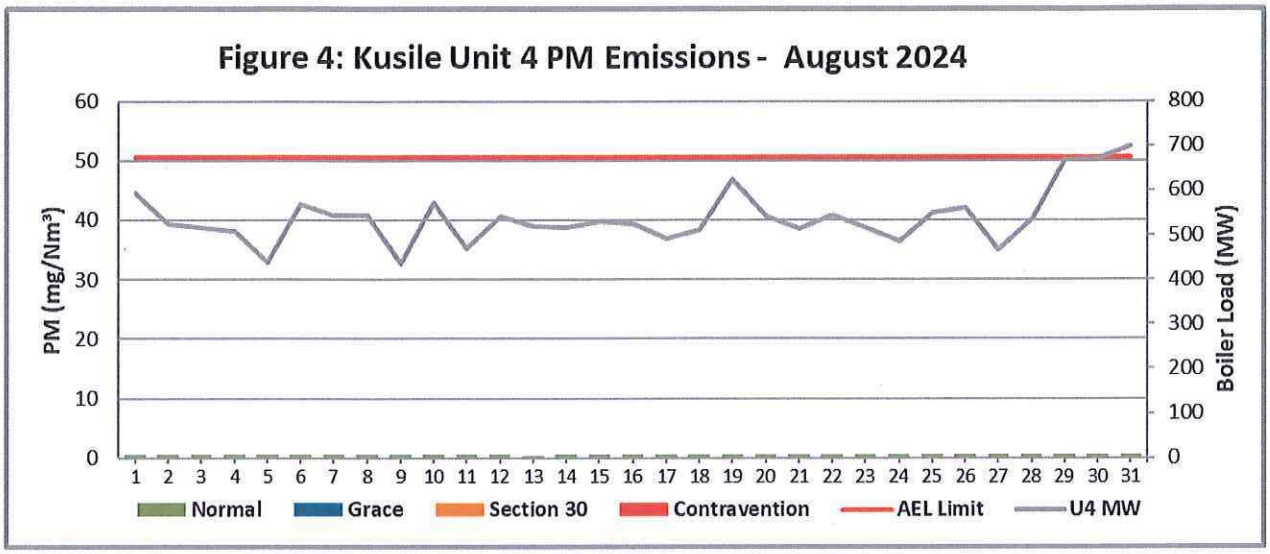


Figure 4: Kusile Unit 4 PM Emissions - August 2024
PM (mg/Nm³)
Boiler Load (MW)
Normal
Grace
Section 30
Contravention
AEL Limit
U4 MW

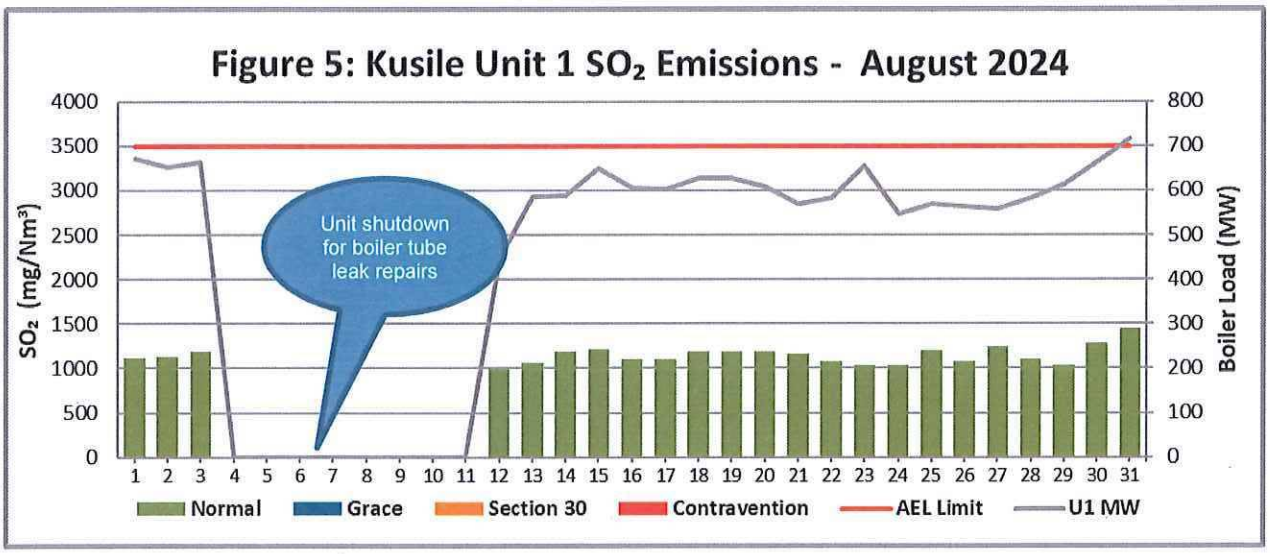


Figure 5: Kusile Unit 1 SO₂ Emissions - August 2024
SO₂ (mg/Nm³)
Boiler Load (MW)
Unit shutdown for boiler tube leak repairs
Normal
Grace
Section 30
Contravention
AEL Limit
U1 MW

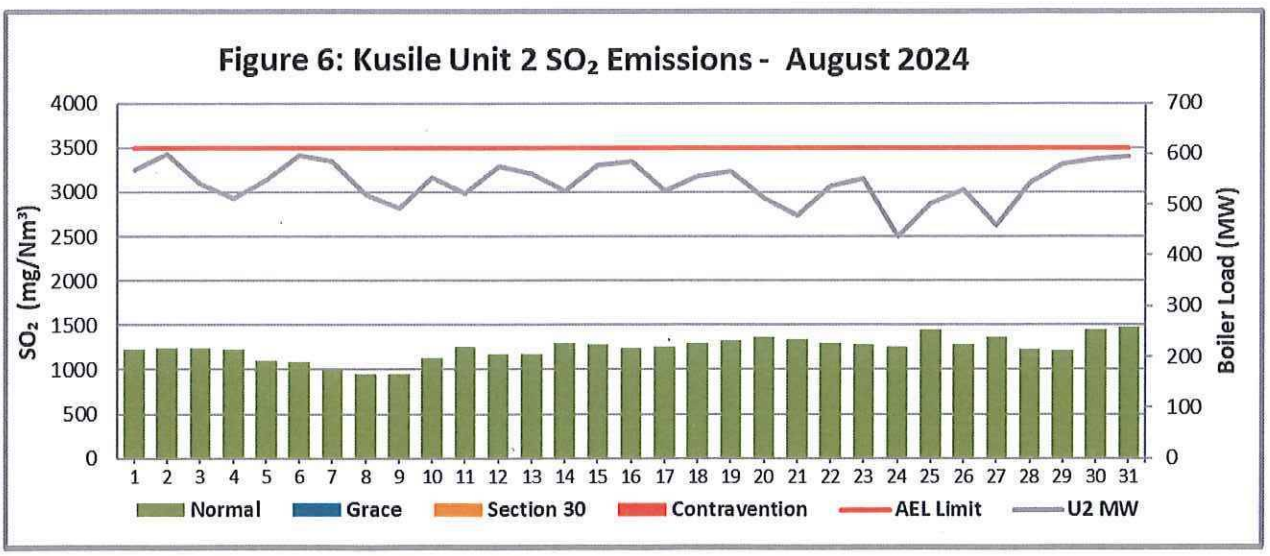
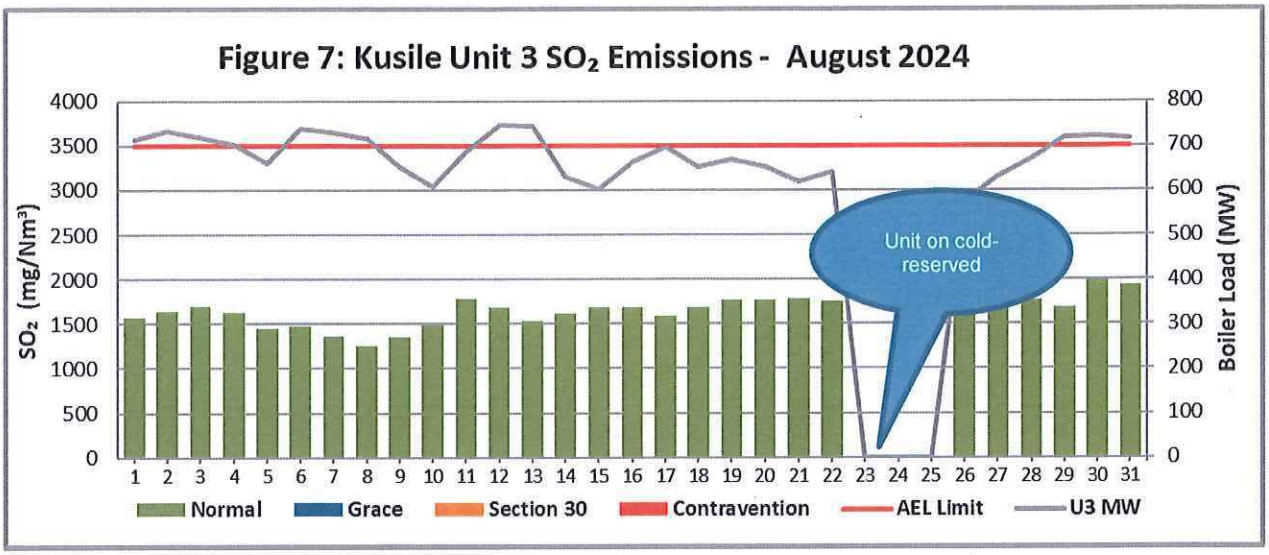
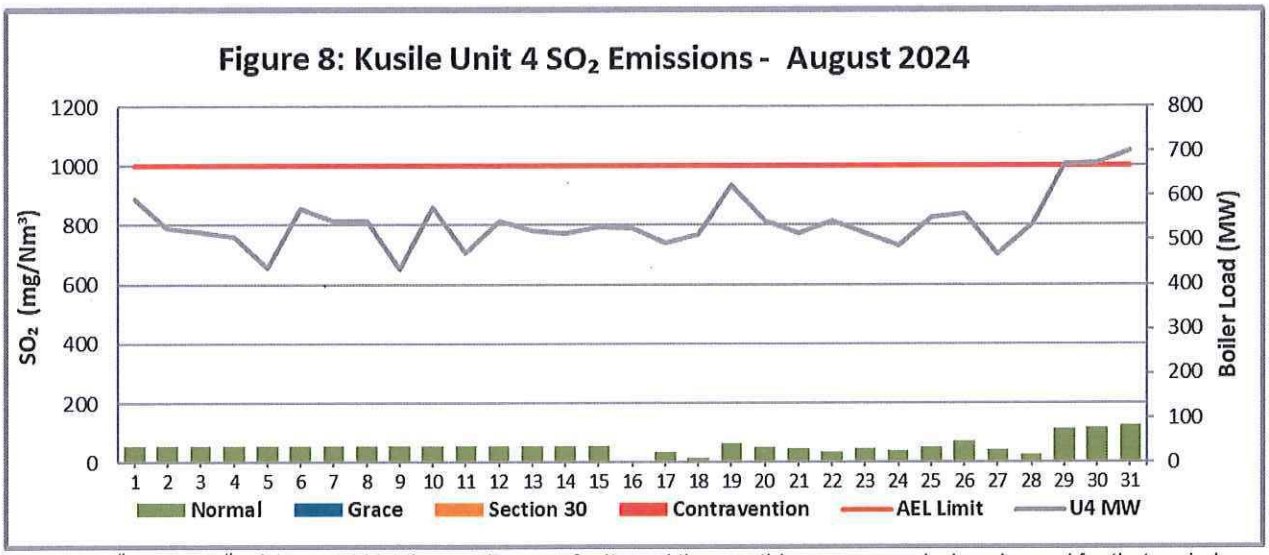


Figure 6: Kusile Unit 2 SO₂ Emissions - August 2024
SO₂ (mg/Nm³)
Boiler Load (MW)
Normal
Grace
Section 30
Contravention
AEL Limit
U2 MW





From the 1th to the 15th of August 2024 the monitor was faulty and the monthly average emissions is used for that period.

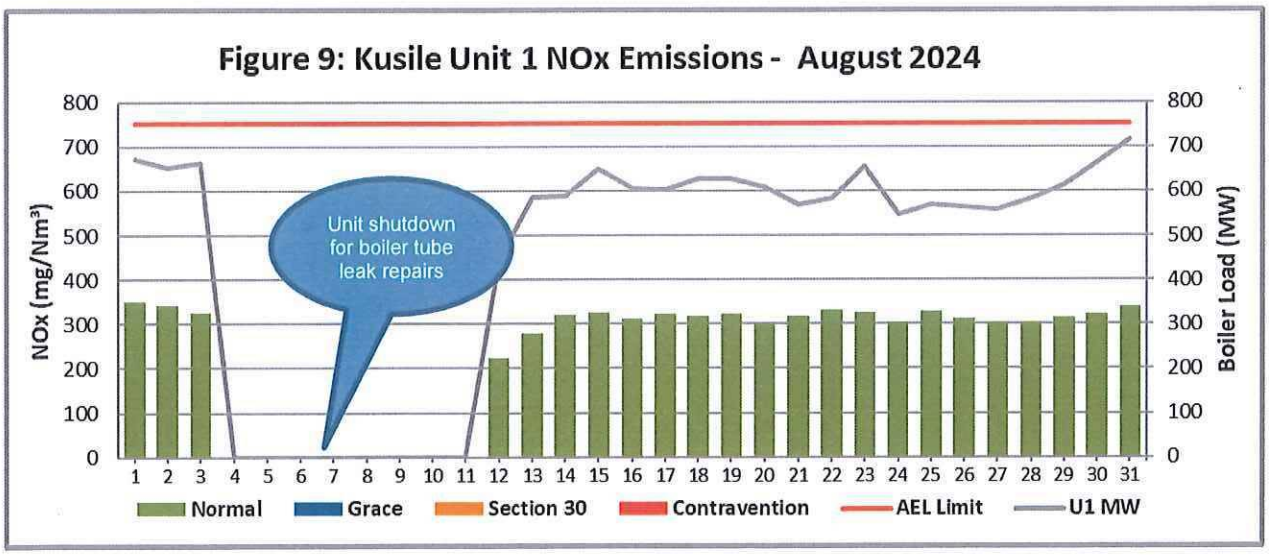


Figure 10: Kusile Unit 2 NOx Emissions - August 2024

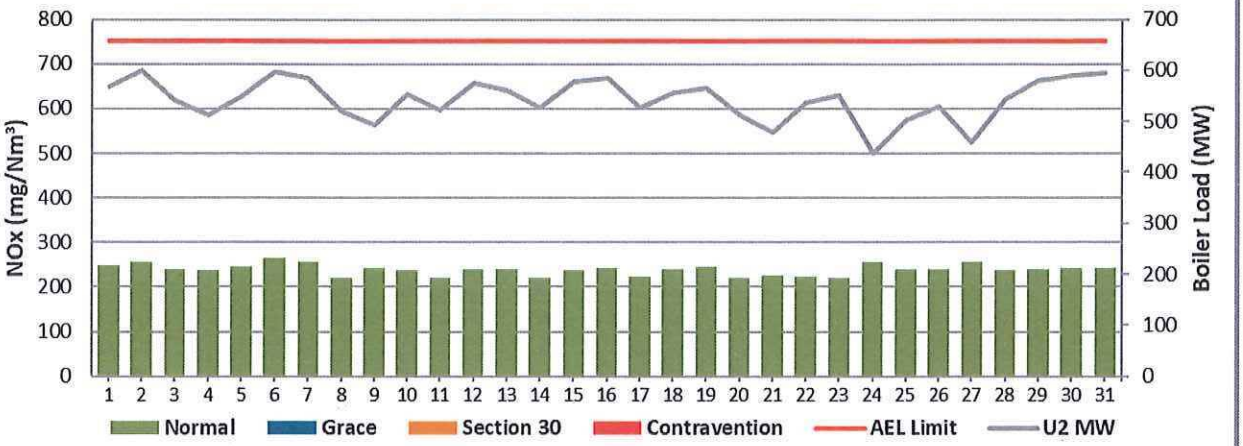


Figure 11: Kusile Unit 3 NOx Emissions - August 2024

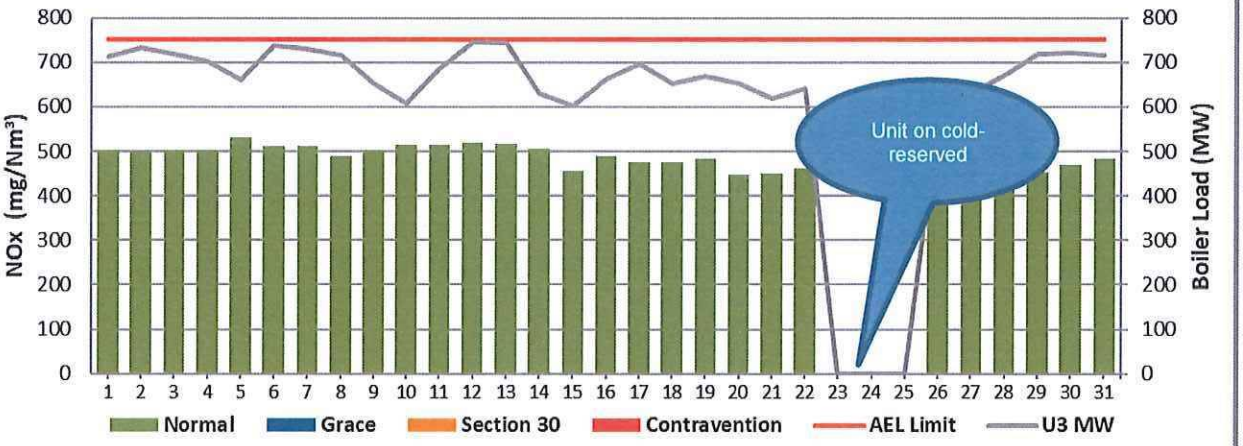
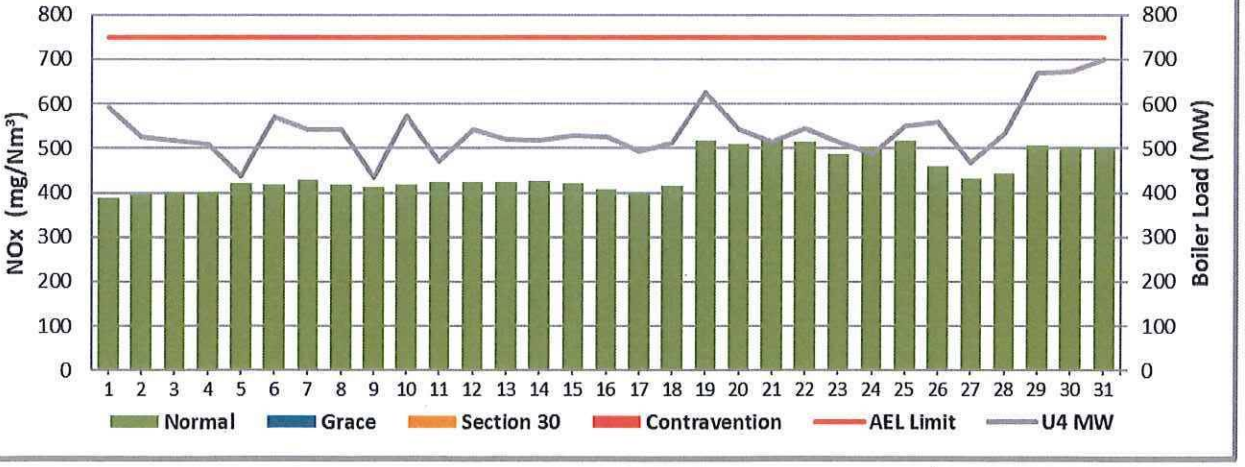


Figure 12: Kusile Unit 4 NOx Emissions - August 2024



8. Correlation and Parallel test status

Unit 1:

- Unit 1 is operating with unity curve for PM. PM correlation test is invalid due to the monitor that was replaced, and the full correlation tests is planned for 28/09/2024 to 02/10/2024.
- The unit is operating with a valid parallel curve.

Unit 2:

- Unit 2 is operating with spot check. Correlation tests completed on 07/08/2024. Correlation tests draft report received, under review and verification.
- The unit is operating with a valid parallel curve.

Unit 3

- Unit 3 is operating with spot check test curve. PM correlation test is invalid due to the monitor that was replaced, a new correlation tests completed on 17/08/2024. Correlation tests draft report received, under review and verification.

Unit 4:

- Unit 4 is operated with valid correlation and parallel curves.

9. Shut down and Light up information

Unit No. 1	*Event 1*	
Breaker Open (BO)	5:40 am	2024/08/03
Draught Group (DG) Shut Down (SD)	8:15 am	2024/08/04
BO to DG SD (duration)	01:02:35	DD:HH:MM
Fires in time	5:25 am	2024/08/11
Synch. to Grid (or BC)	2:05 am	2024/08/12
Fires in to BC (duration)	00:20:40	DD:HH:MM
Emissions below limit from BC (end date)	not > limit	not > limit
Emissions below limit from BC (duration)	n/a	DD:HH:MM

KUSILE POWER STATION'S MONTHLY EMISSIONS REPORT FOR AUGUST 2024 - 17/4/AEL/MP311/12/01

Unit No. 2	*Event 1*	
Breaker Open (BO)	3:00 pm	2024/08/08
Draught Group (DG) Shut Down (SD)	DG did not trip or SD	DG did not trip or SD
BO to DG SD (duration)	n/a	DD:HH:MM
Fires in time	1:05 pm	2024/08/09
Synch. to Grid (or BC)	4:20 pm	2024/08/09
Fires in to BC (duration)	00:03:15	DD:HH:MM
Emissions below limit from BC (end date)	not > limit	not > limit
Emissions below limit from BC (duration)	n/a	DD:HH:MM

Unit No. 3	*Event 1*		*Event 2*		*Event 3*	
Breaker Open (BO)	6:50 am	2024/08/10	4:05 pm	2024/08/14	10:30 pm	2024/08/22
Draught Group (DG) Shut Down (SD)	DG did not trip or SD	DG did not trip or SD	4:05 pm	2024/08/14	9:05 am	2024/08/23
BO to DG SD (duration)	n/a	DD:HH:MM	00:00:00	DD:HH:MM	00:10:35	DD:HH:MM
Fires in time	1:40 pm	2024/08/10	4:30 pm	2024/08/14	2:40 am	2024/08/26
Synch. to Grid (or BC)	1:40 pm	2024/08/10	9:25 pm	2024/08/14	3:40 am	2024/08/26
Fires in to BC (duration)	00:00:00	DD:HH:MM	00:04:55	DD:HH:MM	00:01:00	DD:HH:MM
Emissions below limit from BC (end date)	not > limit	not > limit	not > limit	not > limit	not > limit	not > limit
Emissions below limit from BC (duration)	n/a	DD:HH:MM	n/a	DD:HH:MM	n/a	DD:HH:MM

Unit No. 4	*Event 1*		*Event 2*	
Breaker Open (BO)	9:35 pm	2024/08/08	12:05 pm	2024/08/12
Draught Group (DG) Shut Down (SD)	DG did not trip or SD	DG did not trip or SD	DG did not trip or SD	DG did not trip or SD
BO to DG SD (duration)	n/a	DD:HH:MM	n/a	DD:HH:MM
Fires in time	11:40 am	2024/08/09	1:00 pm	2024/08/12
Synch. to Grid (or BC)	3:05 pm	2024/08/09	2:10 pm	2024/08/12
Fires in to BC (duration)	00:03:25	DD:HH:MM	00:01:10	DD:HH:MM
Emissions below limit from BC (end date)	not > limit	not > limit	not > limit	not > limit
Emissions below limit from BC (duration)	n/a	DD:HH:MM	n/a	DD:HH:MM

11.Complaints

No complaints reported for the month of August 2024

Date and time complaint was received	Complaint received	Source code name	Root cause analysis	Calculation of impact/emissions associated with incidents and dispersion modelling of pollutants where applicable.	Measures implemented or to be implemented to prevent recurrence	Date by which measures will be implemented
No complaints reported for the month of August 2024						

Kusile Ambient Air Quality Monitoring

AUGUST 2024

1. INTRODUCTION

At the request of Environmental Management, Research, Testing and Development Department (RT&D) air quality team initiated an additional ambient air quality monitoring site at Balmoral and Wilge, in the vicinity of Kusile power station. The objective is to assess compliance with national ambient air quality standards, identify potential sources of pollution, protect public health and the environment and establish a baseline for future mitigation measures to enable Eskom to operate temporary stacks at the Kusile power stations at emission levels above the levels authorised in the station's Atmospheric Emission Licence (AEL). The existing air quality monitoring stations (Phola and Chicken Farm) will complement the additional monitoring stations to reduce uncertainties, as each monitoring station has an objective linked to a power station of interest.

The commissioning of Ogies air quality monitoring station has been delayed due to procurement issues, however Kusile Power station, Research, Testing and Development and Generation Environmental Management (GEM) are working tirelessly to resolve it and a new date will be communicated to the Department of Fisheries, Forestry and Environment.

The Balmoral and Wilge monitoring stations are currently equipped to continuously monitor ambient concentrations of sulphur dioxide (SO_2) and nitrogen dioxide (NO_2). In addition, meteorological parameters of wind velocity, wind direction and ambient temperature, humidity, ambient pressure and rainfall, amongst others are also recorded.

The following parameters, Ozone (O_3) and fine particulate matter of particulate size <10µm and particulate size <2.5µm in diameter (PM_{10} and $PM_{2.5}$) will be monitored as when the spare equipment's becomes available.

The data for this reporting period (01 – 31 August 2024) were analysed for ambient SO_2 and NO_2 as monitored at Balmoral, Chicken Farm, Phola and Wilge air quality monitoring stations. The Particulate Matter (PM_{10} and $PM_{2.5}$) data were further analysed for Chicken Farm and Phola.

This report focuses on the results of the ambient air quality monitoring stations; results from stack monitoring, fugitive dust and animal health are addressed in other reports.

2. DATA ACQUISITION AND QUALITY CONTROL

Each monitoring station is visited every two weeks by trained technicians for routine service. Zero and span checks are carried out on each analyser during routine services and any discrepancies are logged and used during data verification at Eskom RT&D Sustainability Department.

Full dynamic calibration audits are carried out on the gas analysers (SO_2, NO_2 and O_3 analysers) quarterly and particulate matter analysers are calibrated every six months. All calibration results and certificates are filed in the laboratory for assessment purposes. Inter-laboratory calibrations are routinely carried out with other accredited laboratories, to enhance quality control.

Data at the monitoring stations are logged directly using dedicated CR-1000 Campbell Scientific data loggers. Permanent data records of all calculated 10-minutes mean values of all parameters monitored, together with minimum and maximum values, are stored on the logging device. These are derived from 10-second scans and are also logged and saved in 1-minute intervals. The raw 1-minute average data is also transferred live to the South African

Ambient Air Quality Information System (SAAQIS) server since the 14th of December 2023 daily however due to system challenges the transfer stopped. In the event that the data is not available on the SAAQIS portal the stakeholders are advised to contact Eskom air quality monitoring team at RT&D. Recorded data are downloaded remotely from the site through communicators that are connected to the Eskom network and transferred onto a central computer for verification and validation.

3. MONITORING STATION LOCATIONS

Figure 1 below indicates the locations of the air quality monitoring stations in relation to the Kusile power station. The new monitoring stations, Balmoral and Wilge, are denoted by green icons and the pre-existing monitoring stations, Chicken Farm and Phola, by yellow icons.

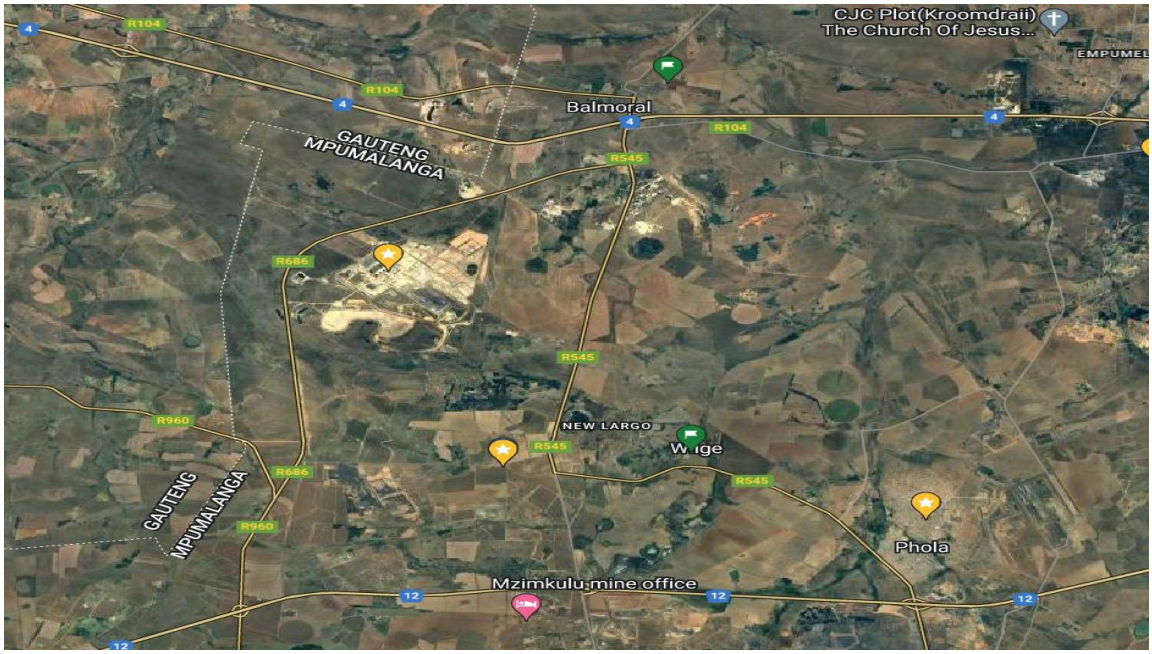


Figure 1: Air Quality Monitoring stations in relation to Kusile power station

4. MONITORING RESULTS AND DISCUSSIONS

The data is statistically analysed to assess the diurnal and monthly variations of the air pollutants, as well as to evaluate it against the current national ambient air quality standards for SO_2, NO_2, O_3, $PM_{2.5}$ and PM_{10}.

4.1. DATA RECOVERY

The SANAS guideline figure of 90% data availability per parameter monitored is used as a standard for representative data capture. This describes the required completeness of data set for the reporting of averages and is based on standard arithmetic calculations. The completeness calculations for data sets exclude zero and span data and times where service and/or maintenance is being conducted on the instruments in question. Station availability is reported as a measure of the percentage of time that electrical power was available to the monitoring station.

Table 1: Percentage data recovery per parameter monitored in August 2024

Stations name	SO_2	NO_2	O_3	$PM_{2.5}$	PM_{10}	WSP	WDR	Station Availability
Balmoral (BL)	99.5	10.9	NM	NM	NM	99.7	99.7	99.7
Chicken Farm (CF)	98.7	98.7	98.9	89.4	71.8	100	99.9	99.5
Phola (PO)	99.5	99.5	99.5	99.7	99.7	99.7	99.7	99.7
Wilge (WL)	99.7	99.7	NM	NM	NM	99.9	99.9	99.9

NM – not monitored.

Good representative percentage data was recovered for most of parameters monitored during the monitoring period under review at all the monitoring stations. Balmoral monitoring station reported low data for nitrogen dioxide (NO_2) because it was installed on the 28th of August.

4.2. METEOROLOGICAL OBSERVATIONS

The distributions of wind direction and wind speed for daytime and night-time hours for the reporting period are summarised on polar diagrams. The centre of the wind rose depicts the position of the air quality monitoring site. The positions of the spokes in the polar diagram represent directions from which the wind was blowing. The length of the segment indicates the percentage of the time the wind blew from that direction and the speed in the various categories are denoted by colours and width.

4.2.1. BALMORAL AIR QUALITY MONITORING STATION

The wind at Balmoral monitoring station was coming from the north, north-east to north-north-westerly directions during the day and from the southerly-south-east, west-south-west and westerly-north-westerly directions during the night time. The monitoring station is north-east of Kusile power station.

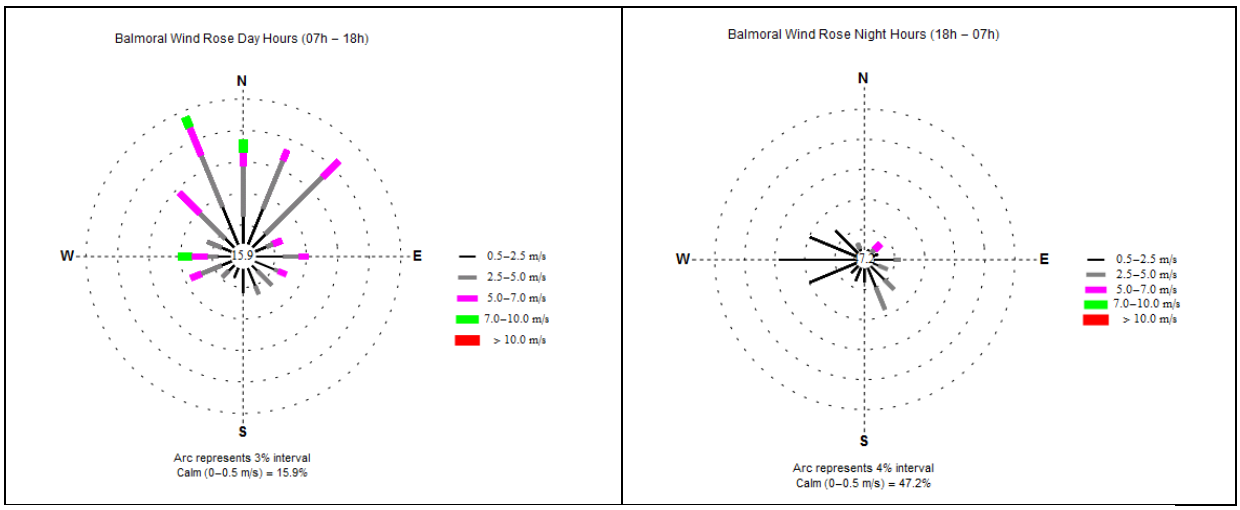


Figure 2: Wind profiles at Balmoral monitoring station

4.2.2. CHICKEN FARM AIR QUALITY MONITORING STATION

The dominant wind directions at Chicken Farm monitoring station during the day were west-north-west, north-west and north-north-west. During the night, the dominant wind directions were north, north-east, south-south-east and north-west. The monitoring station is south of Kusile power station.

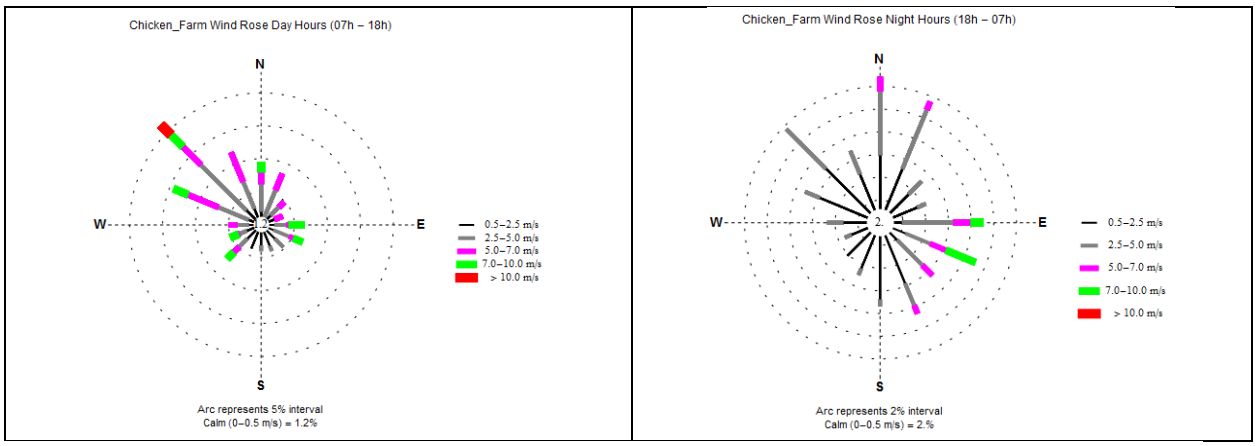


Figure 3: Wind profiles at Chicken Farm monitoring station

4.2.3. PHOLA AIR QUALITY MONITORING STATION

The dominant wind directions at Phola monitoring station during the day were west, west-north-west and north-west. During the night, the dominant wind directions were north, east-north-east, south-south-east and north-west. The monitoring station is south-east of Kusile power station.

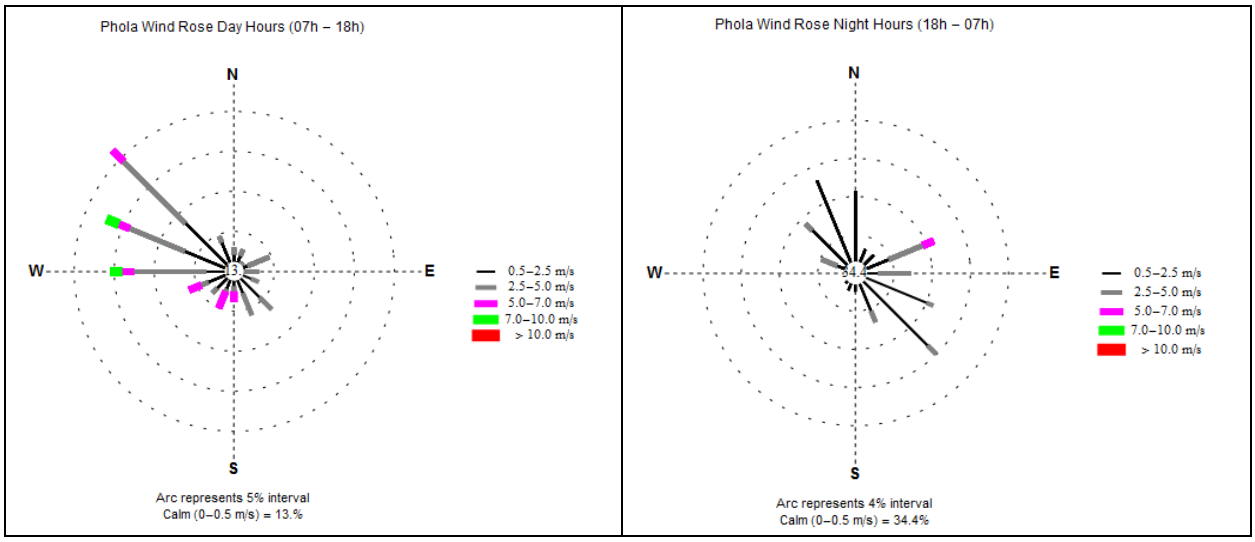


Figure 4: Wind profiles at Phola monitoring station.

4.2.4. WILGE AIR QUALITY MONITORING STATION

The wind at Wilge monitoring station was coming from the north, north-east to north-north-east and north-north-west directions during the day. The dominant wind sectors during the night are north to east-north-east, south-south-east and west-south-west. The monitoring station is south-east of Kusile power station.

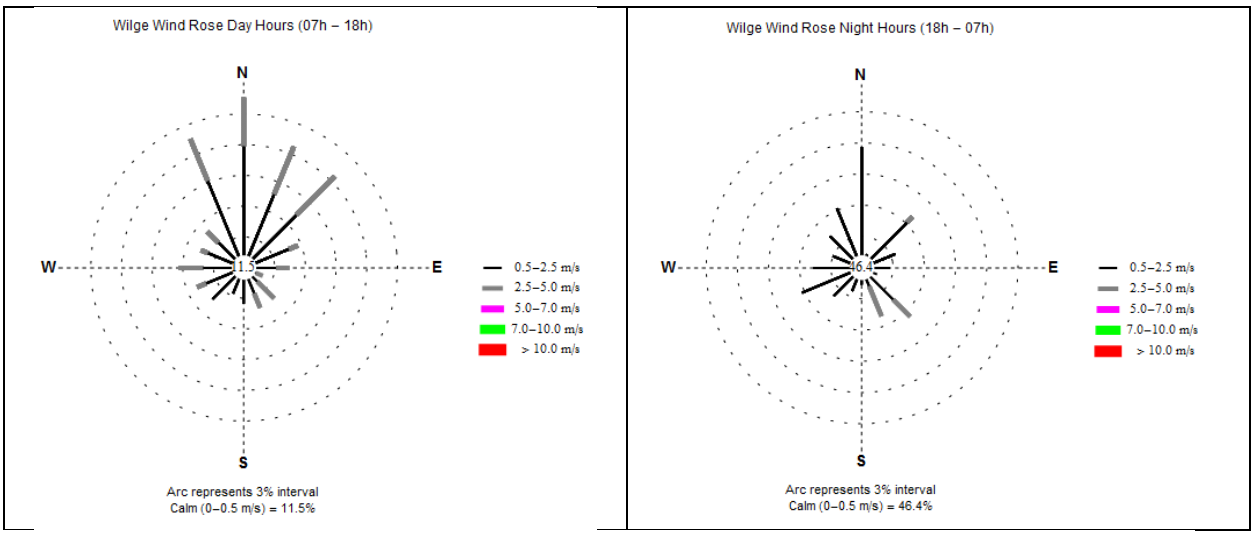


Figure 5: Wind profiles at Wilge monitoring station.

4.3. EXCEEDANCES OF THE NATIONAL AMBIENT AIR QUALITY LIMITS

Table 2: National Ambient Air Quality Standards

Pollutant	Unit	Period	Limit	Number of annual exceedances allowed	Source
Carbon Monoxide	Ppm	1hr	26.	88.	DFFE
Carbon Monoxide	Ppm	8hr	8.7	11.	DFFE
(PM_{10}) by Beta gauge	µg/m^3	24hr	75.	4.	DFFE
(PM_{10}) by Beta gauge	µg/m^3	1year	40.	0.	DFFE
($PM_{2.5}$) by Beta gauge	µg/m^3	24hr	40	4	DFFE
($PM_{2.5}$) by Beta gauge	µg/m^3	1year	20	0	DFFE
Nitrogen dioxide	Ppb	1year	21.	0.	DFFE
Nitrogen dioxide	Ppb	1hr	106.	88.	DFFE
Ozone	Ppb	8hr	61.	11.	DFFE
Sulphur dioxide	Ppb	1hr	134.	88.	DFFE
Sulphur dioxide	Ppb	10min	191.	526.	DFFE
Sulphur dioxide	Ppb	24hr	48.	4.	DFFE
Sulphur dioxide	Ppb	1year	19.	0.	DFFE

The National Department of Forestry, Fisheries and the Environment (DFFE) has set the South African Ambient Air Quality Standards for the criteria pollutants as illustrated in Table 2.

Table 3: Highest SO_2 concentration recorded (in ppb).

Monitoring Stations	10-min average	Date	Hourly average	Date	Daily average	Date
Balmoral	140.4	28/08/2024 10:40	105.1	28/08/2024 11:00	17.9	19/08/2024
Chicken Farm	170.9	25/08/2024 10:40	103.3	21/08/2024 11:00	48.1	20/08/2024
Phola	234.4	14/08/2024 09:10	173.9	10/08/2024 09:00	30.9	15/08/2024
Wilge	204.8	10/08/2024 08:40	145.9	10/08/2024 09:00	27.5	05/08/2024

There were two (2) exceedances of SO_2 10-minutes limit of 191 ppb at Wilge and four (4) exceedances at Phola recorded during the monitoring period. There were exceedances of SO_2 hourly limit of 134 ppb at Phola and Wilge monitoring sites. The was one (1) exceedance of SO_2 daily limit of 48ppb recorded at Chicken Farm. The highest SO_2 concentrations recorded at the monitoring stations are indicated in Table 3 and figures 6 to 9 below.

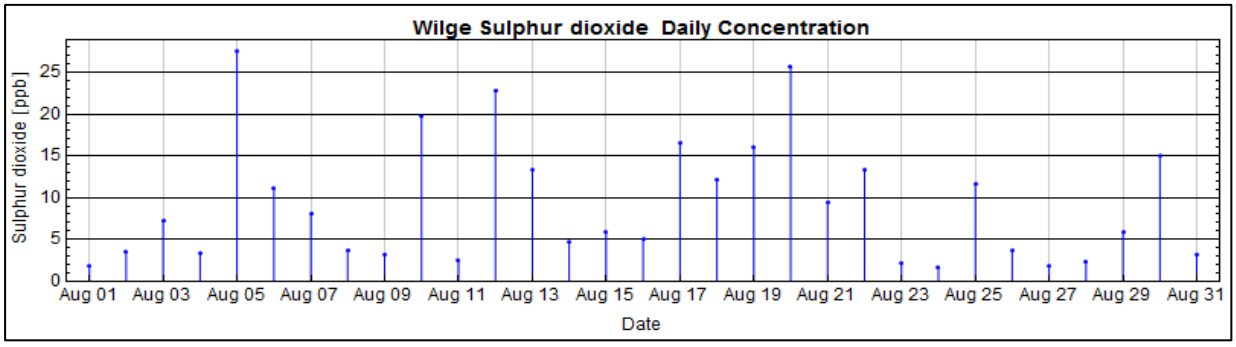


Figure 6: Time series graph for the SO_2 daily mean concentrations at Wilge AQM station

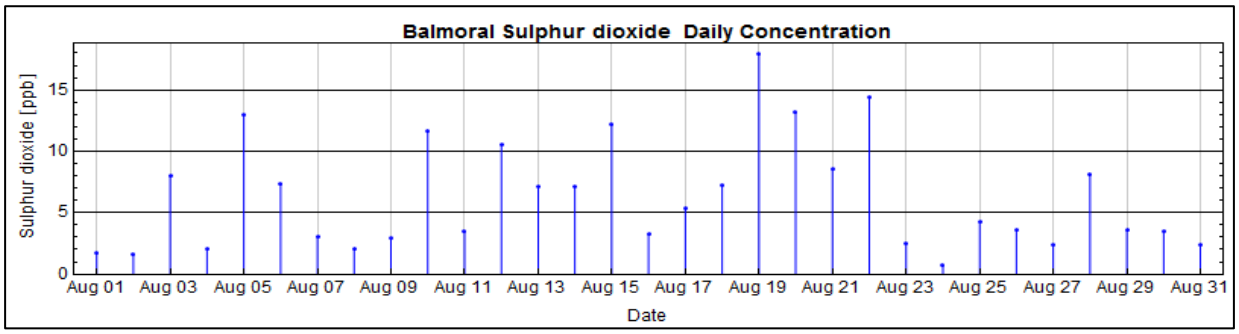


Figure 7: Time series graph for the SO_2 daily mean concentrations at Balmoral AQM station

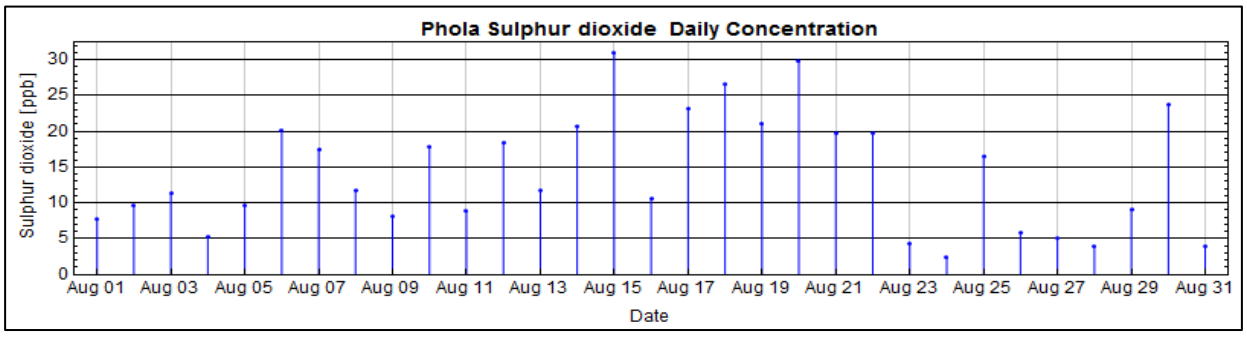


Figure 8: Time series graph for the SO_2 daily mean concentrations at Phola AQM station

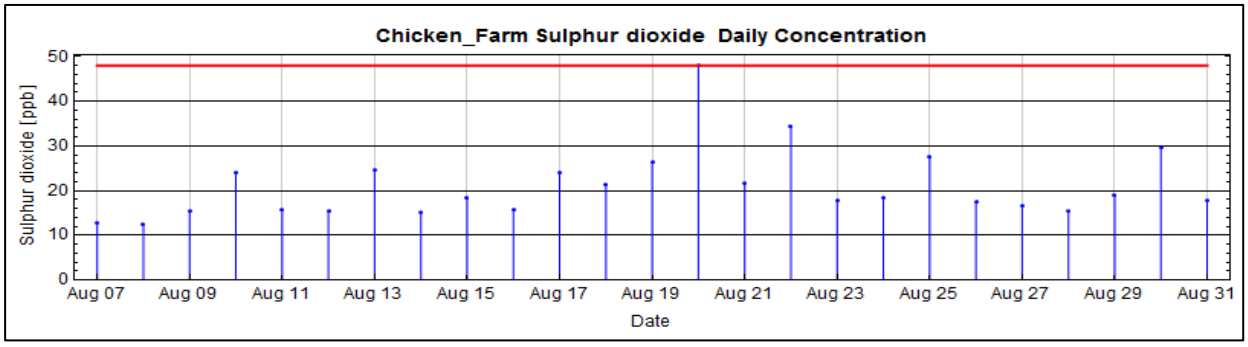


Figure 9: Time series graph for the SO_2 daily mean concentrations at Chicken Farm AQM station

There were no exceedances of the NO_2 hourly limit of 106 ppb recorded at the monitoring stations during the August 2024 monitoring period. There were nine (9) exceedances of the $PM_{2.5}$ daily limit of 40 µg/m^3 at Phola, and ten (10) exceedances of the $PM_{2.5}$ daily limit of 40 µg/m^{3}the Chicken Farm monitoring station. There were twenty (20) exceedances of PM_{10} daily limit of 75 µg/m^3 at Phola air quality monitoring station and twenty-one (21) exceedances of PM_{10} daily limit of 75 µg/m^3 recorded at Chicken Farm air quality monitoring station. See Figure 10 to 13 below.

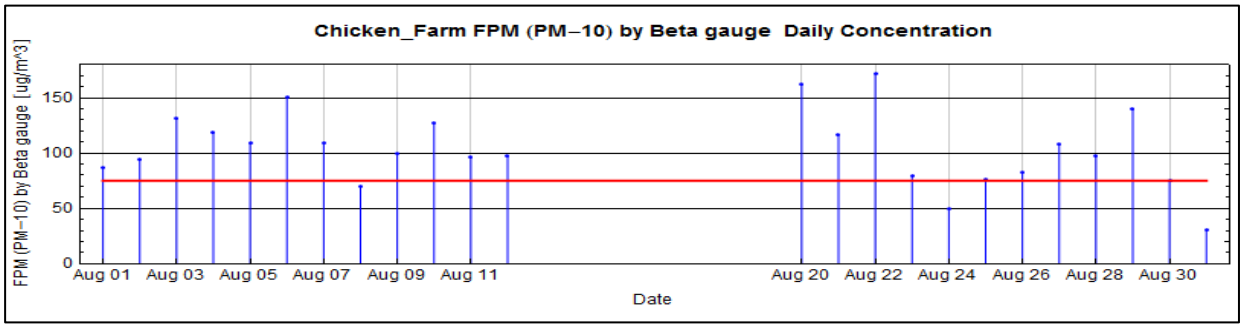


Figure 10: Time series graph for the PM_{10} daily mean concentrations at Chicken Farm AQM station

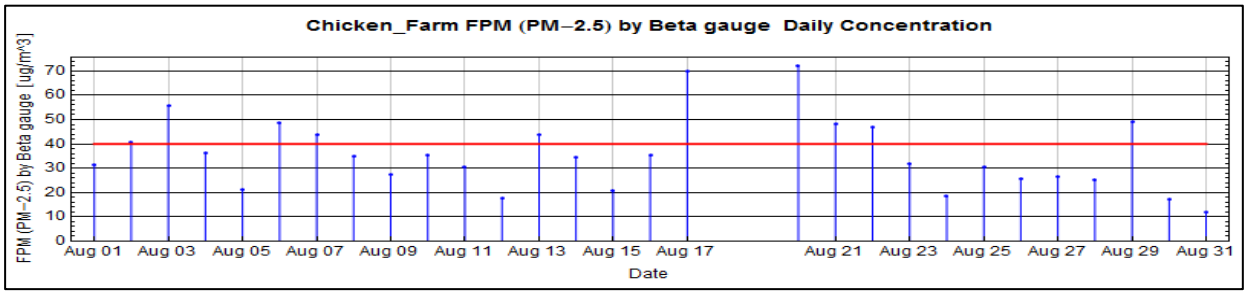


Figure 11: Time series graph for the $PM_{2.5}$ daily mean concentrations at Chicken Farm AQM station

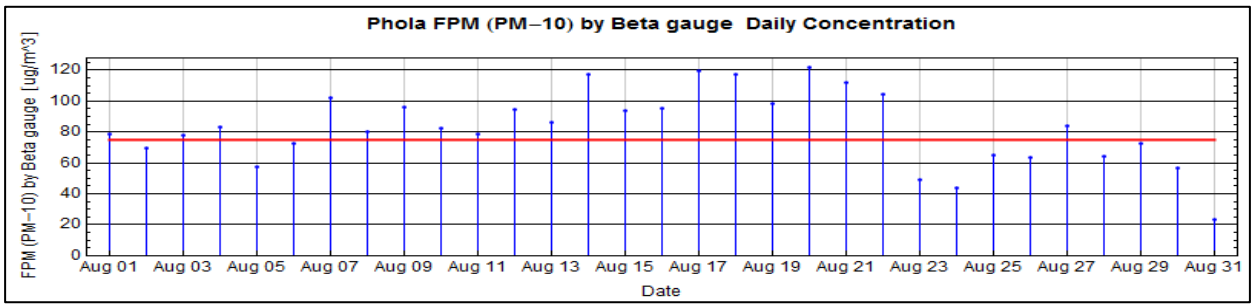


Figure 12: Time series graph for the PM_{10} daily mean concentrations at Phola AQM station

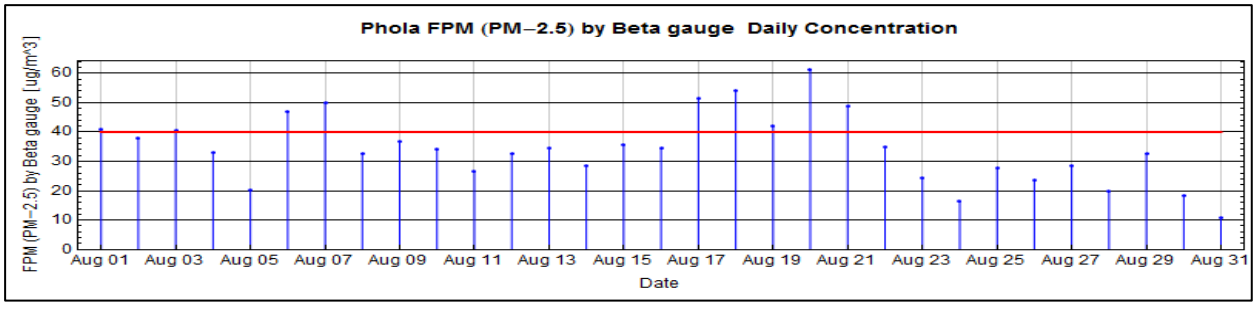


Figure 13: Time series graph for the $PM_{2.5}$ daily mean concentrations at Phola AQM station

Table 4: Exceedances above national ambient air quality limits

PM_{10} Daily Exceedances (Phola)					
Pollutant	**Limit**	**Year**	**Month**	**Day**	**Conc. (µg/m^3)**
$PM_{10.}$	75	2024	August	01	78.9
$PM_{10.}$	75	2024	August	03	77.6
$PM_{10.}$	75	2024	August	04	83.2
$PM_{10.}$	75	2024	August	07	102.3
$PM_{10.}$	75	2024	August	08	80.5
$PM_{10.}$	75	2024	August	09	96.2
$PM_{10.}$	75	2024	August	10	82.4
$PM_{10.}$	75	2024	August	11	78.6
$PM_{10.}$	75	2024	August	12	94.6
$PM_{10.}$	75	2024	August	13	86.4
$PM_{10.}$	75	2024	August	14	117.5
$PM_{10.}$	75	2024	August	15	93.9
$PM_{10.}$	75	2024	August	16	95.5
$PM_{10.}$	75	2024	August	17	119.8
$PM_{10.}$	75	2024	August	18	117.5
$PM_{10.}$	75	2024	August	19	98.4
$PM_{10.}$	75	2024	August	20	121.7
$PM_{10.}$	75	2024	August	21	111.9
$PM_{10.}$	75	2024	August	22	104.2
$PM_{10.}$	75	2024	August	27	84.3
$PM_{2.5}$ Daily Exceedances (Phola)					
$PM_{2.5}$	40	2024	August	01	40.9
$PM_{2.5}$	40	2024	August	03	40.7
$PM_{2.5}$	40	2024	August	06	46.9
$PM_{2.5}$	40	2024	August	07	49.9
$PM_{2.5}$	40	2024	August	17	51.5
$PM_{2.5}$	40	2024	August	18	54.0
$PM_{2.5}$	40	2024	August	19	42.2
$PM_{2.5}$	40	2024	August	20	61.1
$PM_{2.5}$	40	2024	August	21	48.8
PM_{10} Daily Exceedances (Chicken Farm)					
$PM_{10.}$	75	2024	August	01	86.8
$PM_{10.}$	75	2024	August	02	94.8
$PM_{10.}$	75	2024	August	03	131.0
$PM_{10.}$	75	2024	August	04	119.2
$PM_{10.}$	75	2024	August	05	109.5
$PM_{10.}$	75	2024	August	06	150.5
$PM_{10.}$	75	2024	August	07	108.8
$PM_{10.}$	75	2024	August	09	99.6
$PM_{10.}$	75	2024	August	10	126.9
$PM_{10.}$	75	2024	August	11	95.9
$PM_{10.}$	75	2024	August	12	97.1
$PM_{10.}$	75	2024	August	20	161.9
$PM_{10.}$	75	2024	August	21	116.6
$PM_{10.}$	75	2024	August	22	171.5
$PM_{10.}$	75	2024	August	23	79.0
$PM_{10.}$	75	2024	August	25	76.2
$PM_{10.}$	75	2024	August	26	82.7
$PM_{10.}$	75	2024	August	27	108.2
$PM_{10.}$	75	2024	August	28	97.2
$PM_{10.}$	75	2024	August	29	139.9

PM_{10}.	75	2024	August	30	75.6
$PM_{2.5}$ Daily Exceedances (Chicken Farm)					
Pollutant	**Limit**	**Year**	**Month**	**Day**	**Conc. (µg/m^3)**
$PM_{2.5}$	40	2024	August	02	40.8
$PM_{2.5}$	40	2024	August	03	55.6
$PM_{2.5}$	40	2024	August	06	48.6
$PM_{2.5}$	40	2024	August	07	44.0
$PM_{2.5}$	40	2024	August	13	43.8
$PM_{2.5}$	40	2024	August	17	70.0
$PM_{2.5}$	40	2024	August	20	72.0
$PM_{2.5}$	40	2024	August	21	48.3
$PM_{2.5}$	40	2024	August	22	47.1
$PM_{2.5}$	40	2024	August	29	49.0

SO_2 Hourly Exceedances (Phola)								
Pollutant	**Limit**	**Year**	**Month**	**Day**	**WSP**	**WDR**	**Time**	**Conc.**
SO_2	134	2024	August	10	0.48	SSE	09h00	173.95
SO_2	134	2024	August	15	0.53	ENE	11h00	148.58
SO_2 Hourly Exceedances (Wilge)								
Pollutant	**Limit**	**Year**	**Month**	**Day**	**WSP**	**WDR**	**Time**	**Conc.**
SO_2	134	2024	August	05	2.11	WSW	12h00	140.02
SO_2	134	2024	August	10	1.02	S	09h00	145.91

Table 5: Exceedances of the NAAQ Limits per pollutant- August 2024

Averaging Period	Balmoral	Chicken Farm	Phola	Wilge
SO_2 10-min	0	0	4	2
SO_2 Hourly	0	0	2	2
SO_2 Daily	0	1	0	0
NO_2 Hourly	0	0	0	0
O_3 8-hourly	NM	13	9	NM
$PM_{2.5}$ Daily	NM	10	9	NM
PM_{10} Daily	NM	21	20	NM

NM – not monitored.

A summary of all exceedances per pollutant for August 2024 is shown in Table 5.

SO_2 trigger levels or emergency response levels will be based on the United States Acute Exposure Guideline Levels for Hazardous Substances. (AEGL) as amended for South African circumstances. Levels confirmed with the authorities are as follows.

a. AEGL 1 – the cautionary notification level (non-disabling level) - is based on the South African NAAQS limit – for SO_2 this will be 191 ppb over 10-minute for exposure more than 4 hours.

b. AEGL 2 – the warning notification level (disabling level for those with asthma) – is aligned to the US AEGL approach – for SO_2 will be 744 ppb over a 10-minute for exposure up to 8 hours.

c. AEGL – the lethality level – for SO_2, this will be 29 771 ppb over a 10-minute period.

There were no events that triggered the notification of stakeholders in terms of the agreed AEGL recorded in August 2024.

Table 6: Number of exceedances recorded from November 2023 to August 2024

SITES	CF	PO	BL	WL	Allowed No. of Exceedances (November 2023 to August 2024)
PM_{10} (Daily)	82	83	NM	NM	**4**
$PM_{2.5}$ (Daily)	88	71	NM	NM	**4**
NO_2 (hourly)	0	0	NM	0	**88**
SO_2 (Hourly	0	4	1	9	**88**
SO_2 (Daily)	1	0	0	0	**4**
O_3 (8h moving)	368	91	NM	NM	**11**
SO_2 (10 minute)	0	8	3	10	**526**

NM – not monitored.

Chicken Farm air quality monitoring station is in non-compliance with national ambient air quality limits of $PM_{2.5}$ daily limit of 40 µg/m³, PM_{10} daily limit of 75 µg/m³ and O_3 8 hourly limit of 61 ppb. The sources that have an impact on Chicken farm are Eva high Steel and Vanadium in the north-east, Phola Township in the east-south-east, Klipspruit Colliery in the south-east and Kusile Power station in the north to north-west sectors.

The monitoring of particulate matter ($PM_{2.5}$) at Chicken Farm was started with the temporary stack project in November 2023. Phola air quality monitoring station site is in non-compliance with national ambient air quality limits of $PM_{2.5}$ daily limit of 40 µg/m³, PM_{10} daily limit of 75 µg/m³ and O_3 8 hourly limit of 61 ppb.

Both Phola and Chicken Farm are characterised by elevated levels of air pollutants, particularly particulate matter (PM_{10} and $PM_{2.5}$ and Ozone (O_3) with exceedances observed at the monitoring stations. These general trends of increasing both PM_{10} and $PM_{2.5}$ might be due low levels activities (burning of coal) for both cooking and heating from low income areas during the winter months in Phola.

5. DFFE AND SAAQIS REPORTING

The raw monitoring data, downloaded at 1-minute averages is available in real-time to the DFFE-managed South African Air Quality Information System (SAAQIS) since the 14th of December 2023 for all Eskom air quality monitoring stations daily however due to system challenges the transfer stopped. In the event that the data is not available on the SAAQIS portal the stakeholders are advised to contact Eskom air quality monitoring team at RT&D.

6. CONCLUSIONS

There were no exceedances of the NO_2 hourly limit of 106 ppb recorded at the monitoring stations during the August 2024 monitoring period.

There were two (2) exceedances of SO_2 10-minutes limit of 191 ppb at Wilge and four (4) exceedances at Phola recorded during the monitoring period. There were exceedances of SO_2 hourly limit of 134 ppb at Phola and Wilge monitoring sites. The was one (1) exceedance of SO_2 daily limit of 48ppb recorded at Chicken Farm.

There were nine (9) exceedances of the $PM_{2.5}$ daily limit of 40 µg/m^3 at Phola, and ten (10) exceedances of the $PM_{2.5}$ daily limit of 40 µg/m^{3}the Chicken Farm monitoring station. There were twenty (20) exceedances of PM_{10} daily limit of 75 µg/m^3 at Phola air quality monitoring station and twenty-one (21) exceedances of PM_{10} daily limit of 75 µg/m^3 recorded at Chicken Farm air quality monitoring station.

Both Chicken Farm air quality monitoring station and Phola sites are in non-compliance with national ambient air quality limits of $PM_{2.5}$ daily limit of 40 µg/m³, PM_{10} daily limit of 75 µg/m³ and O_3 8 hourly limit of 61 ppb.

There were no events that triggered the notification of stakeholders in terms of the agreed AEGL recorded in August 2024.

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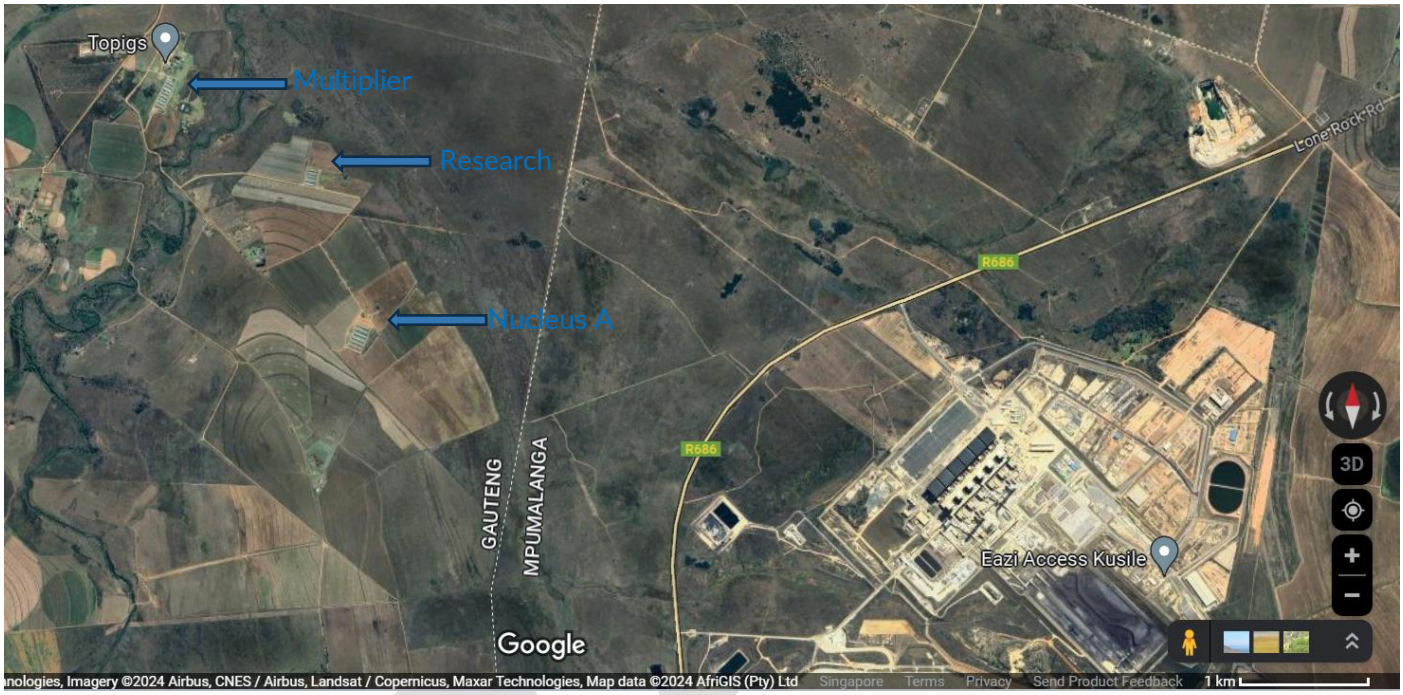
Animal Health Monitoring Summary Report September 2024



Rietfontein (Control Piggery in Mpumalanga province near Villiers):

During a clinical assessment of 30 pigs all animals were found to be clinically normal, exhibiting expected parameters. Laboratory analyses showed a decrease in anaemic suckling piglets, but an increase in those with low haemoglobin levels compared to prior assessments. All Amyloid A results were normal, and most haematological parameters were within normal ranges; however, one sow exhibited mild neutrophilia (increased neutrophil count), indicating potential subclinical infection, while another had mild lymphocytopenia (lowered lymphocyte count), suggesting a possible immune challenge. Nasal swab tests for Glaesserella parasuis returned two positive results, but no clinical signs of Glässer's disease were observed. Overall, the findings indicate healthy animals with some underlying issues that may require monitoring.

Nucleus A:

The clinical assessment revealed that all animals were clinically normal, with the exception of three animals with neck abscesses. Haemoglobin analysis indicated a positive trend, with only 3.3% of piglets classified as anaemic and 60.0% having low levels, suggesting a reduction in anaemia cases. All Amyloid A levels were normal, although one sow showed mild lymphocytopenia (lowered lymphocyte count), which may suggest a low-level immune challenge. Additionally, three PCR tests for Glaesserella parasuis were positive; however, no clinical signs of Glässer's disease were observed, and other laboratory results indicated no active infection.

Multiplier:

In the recent clinical assessment, all examined piglets, gilts, and sows were found to be clinically normal, with the exception of one sow that had a neck abscess. Laboratory analyses revealed that 80% of piglets exhibited low haemoglobin levels, indicating a potential risk of anaemia that requires further monitoring. Amyloid A levels remained normal across all samples. Haematology results were generally within normal parameters, but one sow showed neutrophilia (increased neutrophil count) and mild lymphocytopenia (lowered lymphocyte count), which may suggest a subclinical infection. Additionally, a single positive nasal swab for Glaesserella parasuis was detected, though no clinical signs of Glässer's disease were present. Overall, while the majority of animals are healthy, there are some concerns that warrant closer observation.

Research:

The clinical assessment revealed that all examined piglets, gilts, and sows were clinically normal. Haemoglobin levels in suckling piglets showed slight improvement, with 36.7% classified as normal and 63.3% remaining low, indicating a slight positive shift. Amyloid A results were all within normal limits, suggesting no significant inflammatory responses. Most haematology results were also normal, except for one gilt exhibiting neutropenia (lowered neutrophil count), potentially indicating an underlying immune

challenge. Additionally, nasal swabs tested negative for Glaesserella parasuis, with no signs of Glässer's disease noted during examinations. Overall, the findings suggest stable health in the examined animals.

GHB Spitskop:

In the clinical assessment all animals were found to be clinically healthy, with the exception of one gilt and one sow that presented with neck abscesses. Haemoglobin results indicated that a significant proportion of suckling piglets had low haemoglobin levels, raising concerns due to the decrease in normal readings. Most haematology results were also normal, except for one gilt exhibiting neutrophilia (increased neutrophil count), potentially indicating a subclinical infection. Nasal swab tests for Glaesserella parasuis revealed six positive, three negative, and one weak positive result, however, no clinical signs of Glässer's disease were observed, and other laboratory results indicated no active infection in these animals. Overall, the findings underscore the need for ongoing monitoring of the herd's health.

Discussion:

In comparing the health assessments of Rietfontein with those from Nucleus A, Multiplier, Research, and GHB Spitskop, Rietfontein (the control piggery) exhibited overall healthy animals with some underlying concerns. All pigs were clinically normal, with a notable decrease in anaemic suckling piglets; however, there was an increase in those with low haemoglobin levels. Positive trends were observed at Nucleus A, where only 3.3% of piglets were anaemic, while Multiplier reported that 80% of piglets had low haemoglobin levels, indicating a potential risk for anaemia. Research unit showed a slight improvement in haemoglobin levels, with 36.7% classified as normal. While Rietfontein had two positive nasal swabs for Glaesserella parasuis without clinical signs, Nucleus A found three positives, and GHB Spitskop reported six positives, indicating a higher prevalence of this pathogen, though none showed signs of Glässer's disease. Rietfontein had one case of mild neutrophilia and one of lymphocytopenia, mirroring similar findings in the other units where neutrophilia and lymphocytopenia were present, suggesting potential subclinical infections or immune challenges.

cs vet
Veterinary Consultancy

Topigs SA Rietfontein Health Monitoring Report 2024-09-09

Assessment and Sampling date: 2024-09-09

Clinical Assessment:

Clinical examination of 30 pigs (10 sows, 10 suckling piglets, 10 replacement gilts)

Clinical assessments will be scored as follows:

- Habitus:
  - 0 – normal
  - 1 – listless
- Respiratory rate:
  - 0 – normal
  - 1 – slightly elevated
  - 2 – moderately elevated
  - 3 – clearly elevated, distinct abdominal breathing
- Nasal Discharge:
  - 0 – absent
  - 1 – present
- Coughing:
  - 0 – normal
  - 1 – mild
  - 2 – moderate
  - 3 – severe
- Sneezing:
  - 0 – absent
  - 1 – present
- Rectal temperature:
  - 0 – normal
  - 1 – elevated (above 40°C)

Number	Piglet/Gilt/Sow	Habitus	Respiratory rate	Nasal Discharge	Coughing	Sneezing	Rectal temp	Comment
1	Piglet	0	0	0	0	0	0	Clinically Normal
2	Piglet	0	0	0	0	0	0	Clinically Normal
3	Piglet	0	0	0	0	0	0	Clinically Normal
4	Piglet	0	0	0	0	0	0	Clinically Normal
5	Piglet	0	0	0	0	0	0	Clinically Normal
6	Piglet	0	0	0	0	0	0	Clinically Normal
7	Piglet	0	0	0	0	0	0	Clinically Normal
8	Piglet	0	0	0	0	0	0	Clinically Normal
9	Piglet	0	0	0	0	0	0	Clinically Normal

10	Piglet	0	0	0	0	0	0	Clinically Normal
11	Gilt	0	0	0	0	0	0	Clinically Normal
12	Gilt	0	0	0	0	0	0	Clinically Normal
13	Gilt	0	0	0	0	0	0	Clinically Normal
14	Gilt	0	0	0	0	0	0	Clinically Normal
15	Gilt	0	0	0	0	0	0	Clinically Normal
16	Gilt	0	0	0	0	0	0	Clinically Normal
17	Gilt	0	0	0	0	0	0	Clinically Normal
18	Gilt	0	0	0	0	0	0	Clinically Normal
19	Gilt	0	0	0	0	0	0	Clinically Normal
20	Gilt	0	0	0	0	0	0	Clinically Normal
21	Sow	0	0	0	0	0	0	Clinically Normal
22	Sow	0	0	0	0	0	0	Clinically Normal
23	Sow	0	0	0	0	0	0	Clinically Normal
24	Sow	0	0	0	0	0	0	Clinically Normal
25	Sow	0	0	0	0	0	0	Clinically Normal
26	Sow	0	0	0	0	0	0	Clinically Normal
27	Sow	0	0	0	0	0	0	Clinically Normal
28	Sow	0	0	0	0	0	0	Clinically Normal
29	Sow	0	0	0	0	0	0	Clinically Normal
30	Sow	0	0	0	0	0	0	Clinically Normal

Remarks:

All animals that were examined during the clinical assessment were found clinically normal and within the expected clinical parameters of a healthy pig.

Laboratory analysis:

Haemoglobin*:

% Anaemic	10,0%
% Low	70,0%
% Normal	20,0%

Number	Hb result (g/dL)	Interpretation
1	5,3	Anaemic
2	8,9	Anaemic
3	8,9	Anaemic
4	9,1	Low
5	9,8	Low
6	9,9	Low
7	9,9	Low
8	10	Low
9	10,1	Low

10	10,2	Low
11	10,2	Low
12	10,2	Low
13	10,3	Low
14	10,4	Low
15	10,7	Low
16	10,8	Low
17	11,1	Low
18	11,2	Low
19	11,3	Low
20	11,3	Low
21	11,3	Low
22	11,6	Low
23	11,7	Low
24	11,7	Low
25	12	Normal
26	12,1	Normal
27	12,2	Normal
28	12,5	Normal
29	13	Normal
30	13,4	Normal

Remarks

Haemoglobin samples collected from suckling piglets via the caudal auricular vein prior to weaning showed a reduction in the percentage of anaemic piglets; however, the percentage of piglets in the low haemoglobin category has increased compared to the previous visit.

Amyloid A:

Number	Gilt/Sow	Result	Interpretation
1	Gilt	11,6	Normal
2	Gilt	11	Normal
3	Gilt	<3	Normal
4	Gilt	3,1	Normal
5	Gilt	<3	Normal
6	Gilt	<3	Normal
7	Gilt	9,2	Normal
8	Gilt	<3	Normal
9	Gilt	<3	Normal
10	Gilt	<3	Normal
11	Sow	<3	Normal
12	Sow	<3	Normal
13	Sow	<3	Normal
14	Sow	<3	Normal
15	Sow	<3	Normal

16	Sow	<3	Normal
17	Sow	5,3	Normal
18	Sow	<3	Normal
19	Sow	<3	Normal
20	Sow	<3	Normal

Remarks:

All Amyloid A test results are below the cutoff reference range (<42,7 mg/L) for pigs. No significant increase in Amyloid A levels is seen and results are therefore interpreted as normal.

Full blood counts:

Number	Gilt/Sow	Hb	Result	Interpretation
1	Gilt	Normal	Haematology results within normal parameters	Haematology normal
2	Gilt	Normal	Haematology results within normal parameters	Haematology normal
3	Gilt	Normal	Haematology results within normal parameters	Haematology normal
4	Gilt	Normal	Haematology results within normal parameters	Haematology normal
5	Gilt	Normal	Haematology results within normal parameters	Haematology normal
6	Gilt	Normal	Haematology results within normal parameters	Haematology normal
7	Gilt	Normal	Haematology results within normal parameters	Haematology normal
8	Gilt	Normal	Haematology results within normal parameters	Haematology normal
9	Gilt	Normal	Haematology results within normal parameters	Haematology normal
10	Gilt	Normal	Haematology results within normal parameters	Haematology normal
11	Sow	Normal	Haematology results within normal parameters	Haematology normal
12	Sow	Normal	Haematology results within normal parameters	Haematology normal
13	Sow	Normal	Haematology results within normal parameters	Haematology normal
14	Sow	Normal	Haematology results within normal parameters	Haematology normal
15	Sow	Normal	Haematology results within normal parameters	Haematology normal
16	Sow	Normal	Haematology results within normal parameters	Haematology normal
17	Sow	Normal	Mild Neutrophilia	Slightly increased neutrophil count
18	Sow	Normal	Haematology results within normal parameters	Haematology normal
19	Sow	Normal	Mild Lymphocytopenia	Lowered Lymphocyte count
20	Sow	Normal	Haematology results within normal parameters	Haematology normal

Remarks

Overall, most of the gilts and sows tested have normal haematological parameters.
Sow 17 has a mild neutrophilia (slightly increased neutrophil count), which could indicate a possible subclinical infection.
Sow 19 has a mild lymphocytopenia (lowered lymphocyte count), which could suggest a subclinical infection or an immune challenge.

Nasal Swabs (Glässer's disease)

Number	Animal	Test	Pathogen tested for	Result
1	Gilt	PCR	Glaesserella parasuis	Negative
2	Gilt	PCR	Glaesserella parasuis	Negative
3	Gilt	PCR	Glaesserella parasuis	Negative
4	Gilt	PCR	Glaesserella parasuis	Negative
5	Gilt	PCR	Glaesserella parasuis	Positive
6	Gilt	PCR	Glaesserella parasuis	Positive
7	Gilt	PCR	Glaesserella parasuis	Negative
8	Gilt	PCR	Glaesserella parasuis	Negative
9	Gilt	PCR	Glaesserella parasuis	Negative
10	Gilt	PCR	Glaesserella parasuis	Negative

Remarks:

Two positive PCR results were detected**.** Glaesserella parasuis is a commensal bacterium in the pig's respiratory tract, and in the absence of clinical disease, its presence does not necessarily indicate a problem. No clinical signs of Glässer's disease were observed during the clinical examination of the gilts listed in the table above.

Conclusion

Overall, the clinical assessment of the piglets, gilts, and sows indicated that all animals were clinically normal with no respiratory issues or signs of disease. Haemoglobin analyses revealed a reduction in the percentage of anaemic suckling piglets, although there was an increase in those with low haemoglobin levels compared to previous visits. Additionally, while the majority of sows exhibited normal haematological parameters, the observed mild neutrophilia in one sow and mild lymphocytopenia in another suggest potential underlying infection or immune challenges.

cs vet
Veterinary Consultancy

Topigs SA Dalplaas Health Monitoring Report 2024-09-16

Assessment and Sampling date: 2024-09-16

Nucleus A

Clinical Assessment:

Clinical examination of 30 pigs (10 sows, 10 suckling piglets, 10 replacement gilts)

Clinical assessments will be scored as follows:

- Habitus:
  - 0 – normal
  - 1 – listless
- Respiratory rate:
  - 0 – normal
  - 1 – slightly elevated
  - 2 – moderately elevated
  - 3 – clearly elevated, distinct abdominal breathing
- Nasal Discharge:
  - 0 – absent
  - 1 – present
- Coughing:
  - 0 – normal
  - 1 – mild
  - 2 – moderate
  - 3 – severe
- Sneezing:
  - 0 – absent
  - 1 – present
- Rectal temperature:
  - 0 – normal
  - 1 – elevated (above 40°C)

Number	Piglet/Gilt/Sow	Habitus	Respiratory rate	Nasal Discharge	Coughing	Sneezing	Rectal temp	Comment
1	Piglet	0	0	0	0	0	0	Clinically Normal
2	Piglet	0	0	0	0	0	0	Clinically Normal
3	Piglet	0	0	0	0	0	0	Clinically Normal
4	Piglet	0	0	0	0	0	0	Clinically Normal
5	Piglet	0	0	0	0	0	0	Clinically Normal
6	Piglet	0	0	0	0	0	0	Clinically Normal
7	Piglet	0	0	0	0	0	0	Clinically Normal
8	Piglet	0	0	0	0	0	0	Clinically Normal

9	Piglet	0	0	0	0	0	0	Clinically Normal
10	Piglet	0	0	0	0	0	0	Clinically Normal
11	Gilt	0	0	0	0	0	0	Clinically Normal. Abscess on the neck
12	Gilt	0	0	0	0	0	0	Clinically Normal
13	Gilt	0	0	0	0	0	0	Clinically Normal
14	Gilt	0	0	0	0	0	0	Clinically Normal
15	Gilt	0	0	0	0	0	0	Clinically Normal
16	Gilt	0	0	0	0	0	0	Clinically Normal
17	Gilt	0	0	0	0	0	0	Clinically Normal
18	Gilt	0	0	0	0	0	0	Clinically Normal
19	Gilt	0	0	0	0	0	0	Clinically Normal
20	Gilt	0	0	0	0	0	0	Clinically Normal
21	Sow	0	0	0	0	0	0	Clinically Normal
22	Sow	0	0	0	0	0	0	Clinically Normal. Abscess on the neck
23	Sow	0	0	0	0	0	0	Clinically Normal. Abscess on the neck
24	Sow	0	0	0	0	0	0	Clinically Normal
25	Sow	0	0	0	0	0	0	Clinically Normal
26	Sow	0	0	0	0	0	0	Clinically Normal
27	Sow	0	0	0	0	0	0	Clinically Normal
28	Sow	0	0	0	0	0	0	Clinically Normal
29	Sow	0	0	0	0	0	0	Clinically Normal
30	Sow	0	0	0	0	0	0	Clinically Normal

Remarks:

All the animals that were examined during the clinical assessment were found to be clinically normal and within the expected clinical parameters of a healthy pig. Three animals had an abscess on the neck but were found otherwise healthy.

Laboratory analysis:

Haemoglobin (Hb):

% Anaemic	3,3%
% Low	60,0%
% Normal	36,7%

Number	Hb result (g/dL)	Interpretation
1	8,1	Anaemic
2	9,9	Low
3	10,8	Low
4	10,8	Low
5	11,0	Low
6	11,0	Low
7	11,1	Low

8	11,1	Low
9	11,2	Low
10	11,3	Low
11	11,4	Low
12	11,4	Low
13	11,6	Low
14	11,7	Low
15	11,8	Low
16	11,8	Low
17	11,9	Low
18	11,9	Low
19	11,9	Low
20	12,0	Normal
21	12,2	Normal
22	12,2	Normal
23	12,3	Normal
24	12,3	Normal
25	12,3	Normal
26	12,3	Normal
27	12,6	Normal
28	12,7	Normal
29	13,0	Normal
30	13,0	Normal

Remarks

The haemoglobin analysis for suckling piglets at Nucleus A showed a positive shift in results. Currently, only 3.3% of piglets are classified as anaemic, while 60.0% have low levels, and 36.7% fall within the normal range. Although there is still a lot of room for improvement, this indicates a definite reduction in anaemia cases.

Amyloid A:

Number	Sow/Gilt	Result (mg/L)	Interpretation
1	Gilt	<3	Normal
2	Gilt	<3	Normal
3	Gilt	<3	Normal
4	Gilt	3,20	Normal
5	Gilt	<3	Normal
6	Gilt	<3	Normal
7	Gilt	<3	Normal
8	Gilt	<3	Normal
9	Gilt	<3	Normal
10	Gilt	<3	Normal
11	Sow	<3	Normal
12	Sow	<3	Normal
13	Sow	<3	Normal
14	Sow	3,10	Normal

15	Sow	<3	Normal
16	Sow	<3	Normal
17	Sow	3,70	Normal
18	Sow	<3	Normal
19	Sow	3,20	Normal
20	Sow	<3	Normal

Remarks:

All Amyloid A test results are below the cutoff reference range (<42,7mg/L) for pigs. No significant increase in Amyloid A levels is seen and results are therefore interpreted as normal.

Full blood counts:

Number	Gilt/Sow	Hb	Result	Interpretation
1	Gilt	Normal	Haematology results within normal parameters	Haematology normal
2	Gilt	Normal	Haematology results within normal parameters	Haematology normal
3	Gilt	Normal	Haematology results within normal parameters	Haematology normal
4	Gilt	Normal	Haematology results within normal parameters	Haematology normal
5	Gilt	Normal	Haematology results within normal parameters	Haematology normal
6	Gilt	Normal	Haematology results within normal parameters	Haematology normal
7	Gilt	Normal	Haematology results within normal parameters	Haematology normal
8	Gilt	Normal	Haematology results within normal parameters	Haematology normal
9	Gilt	Normal	Haematology results within normal parameters	Haematology normal
10	Gilt	Normal	Haematology results within normal parameters	Haematology normal
11	Sow	Normal	Haematology results within normal parameters	Haematology normal
12	Sow	Normal	Haematology results within normal parameters	Haematology normal
13	Sow	Normal	Haematology results within normal parameters	Haematology normal
14	Sow	Normal	Haematology results within normal parameters	Haematology normal
15	Sow	Normal	Mild Lymphocytopenia	Lowered Lymphocyte count
16	Sow	Normal	Haematology results within normal parameters	Haematology normal
17	Sow	Normal	Haematology results within normal parameters	Haematology normal
18	Sow	Normal	Haematology results within normal parameters	Haematology normal
19	Sow	Normal	Haematology results within normal parameters	Haematology normal
20	Sow	Normal	Haematology results within normal parameters	Haematology normal

Remarks

One sow exhibited a lowered lymphocyte count (lymphocytopenia), which could indicate a low-level immune challenge or subclinical infection. All other sows and gilts displayed haematology results within normal parameters, suggesting no significant health concerns at this time.

Nasal Swabs (Glässer's disease)

Number	Animal	Test	Pathogen tested for	Result
1	Gilt	PCR	Glaesserella parasuis	Negative
2	Gilt	PCR	Glaesserella parasuis	Negative

3	Gilt	PCR	Glaesserella parasuis	Positive
4	Gilt	PCR	Glaesserella parasuis	Negative
5	Gilt	PCR	Glaesserella parasuis	Negative
6	Gilt	PCR	Glaesserella parasuis	Positive
7	Gilt	PCR	Glaesserella parasuis	Negative
8	Gilt	PCR	Glaesserella parasuis	Negative
9	Gilt	PCR	Glaesserella parasuis	Positive
10	Gilt	PCR	Glaesserella parasuis	Negative

Remarks:

Three strong positive PCR results for Glaesserella parasuis were detected. As Glaesserella parasuis is a commensal bacterium in the pig's respiratory tract, its presence does not necessarily indicate a problem in the absence of clinical symptoms. During the clinical examination of the gilts, no signs of Glässer's disease were observed. Additionally, other laboratory results suggest that there is no active infection.

Conclusion

The clinical assessment of the piglets, gilts, and sows indicated that all animals were clinically normal, with only minor concerns regarding three neck abscesses. Haemoglobin analysis showed a positive trend, with only 3.3% of piglets classified as anaemic, suggesting a reduction in anaemia cases. Amyloid A levels were normal, although one sow exhibited mild lymphocytopenia, indicating a possible low-level immune challenge. Additionally, three positive PCR tests for Glaesserella parasuis were noted, but no clinical signs of Glässer's disease were observed.

Multiplier

Clinical Assessment:

Number	Piglet/Gilt/Sow	Habitus	Respiratory rate	Nasal Discharge	Coughing	Sneezing	Rectal temp	Comment
1	Piglet	0	0	0	0	0	0	Clinically Normal
2	Piglet	0	0	0	0	0	0	Clinically Normal
3	Piglet	0	0	0	0	0	0	Clinically Normal
4	Piglet	0	0	0	0	0	0	Clinically Normal
5	Piglet	0	0	0	0	0	0	Clinically Normal
6	Piglet	0	0	0	0	0	0	Clinically Normal
7	Piglet	0	0	0	0	0	0	Clinically Normal
8	Piglet	0	0	0	0	0	0	Clinically Normal
9	Piglet	0	0	0	0	0	0	Clinically Normal
10	Piglet	0	0	0	0	0	0	Clinically Normal
11	Gilt	0	0	0	0	0	0	Clinically Normal
12	Gilt	0	0	0	0	0	0	Clinically Normal
13	Gilt	0	0	0	0	0	0	Clinically Normal
14	Gilt	0	0	0	0	0	0	Clinically Normal
15	Gilt	0	0	0	0	0	0	Clinically Normal
16	Gilt	0	0	0	0	0	0	Clinically Normal
17	Gilt	0	0	0	0	0	0	Clinically Normal
18	Gilt	0	0	0	0	0	0	Clinically Normal

19	Gilt	0	0	0	0	0	0	Clinically Normal
20	Gilt	0	0	0	0	0	0	Clinically Normal
21	Sow	0	0	0	0	0	0	Clinically Normal
22	Sow	0	0	0	0	0	0	Clinically Normal. Abscess on the neck
23	Sow	0	0	0	0	0	0	Clinically Normal
24	Sow	0	0	0	0	0	0	Clinically Normal
25	Sow	0	0	0	0	0	0	Clinically Normal
26	Sow	0	0	0	0	0	0	Clinically Normal
27	Sow	0	0	0	0	0	0	Clinically Normal
28	Sow	0	0	0	0	0	0	Clinically Normal
29	Sow	0	0	0	0	0	0	Clinically Normal
30	Sow	0	0	0	0	0	0	Clinically Normal

Remarks:

All the animals that were examined during the clinical assessment were found to be clinically normal and within the expected clinical parameters of a healthy pig. One sow had an abscess on the neck but was found otherwise healthy.

Laboratory analysis:

Haemoglobin (Hb):

% Anaemic	0%
% Low	80,0%
% Normal	20,0%

Number	Hb result (g/dL)	Interpretation
1	9,3	Low
2	9,5	Low
3	9,5	Low
4	10,0	Low
5	10,1	Low
6	10,3	Low
7	10,3	Low
8	10,6	Low
9	10,8	Low
10	10,8	Low
11	10,8	Low
12	10,8	Low
13	10,9	Low
14	11,0	Low
15	11,1	Low
16	11,1	Low
17	11,2	Low

18	11,3	Low
19	11,3	Low
20	11,3	Low
21	11,5	Low
22	11,7	Low
23	11,9	Low
24	11,9	Low
25	12,2	Normal
26	12,2	Normal
27	12,3	Normal
28	12,4	Normal
29	12,7	Normal
30	13,8	Normal

Remarks

The current haemoglobin analysis indicates a negative trend in the haemoglobin test results compared to the findings on the previous report. While 20% of piglets exhibited normal haemoglobin levels, a significant 80% are classified as having low haemoglobin, indicating a potential risk of anaemia. This shift suggests that, while anaemia is not currently widespread, there is a growing prevalence of low haemoglobin levels that warrants further investigation and monitoring.

Amyloid A:

Number	Sow/Gilt	Result (mg/L)	Interpretation
1	Gilt	<3	Normal
2	Gilt	4,70	Normal
3	Gilt	<3	Normal
4	Gilt	<3	Normal
5	Gilt	<3	Normal
6	Gilt	<3	Normal
7	Gilt	4,00	Normal
8	Gilt	<3	Normal
9	Gilt	<3	Normal
10	Gilt	<3	Normal
11	Sow	<3	Normal
12	Sow	<3	Normal
13	Sow	<3	Normal
14	Sow	<3	Normal
15	Sow	<3	Normal
16	Sow	<3	Normal
17	Sow	<3	Normal
18	Sow	<3	Normal
19	Sow	<3	Normal
20	Sow	<3	Normal

Remarks:

All Amyloid A test results are below the cutoff reference range (<42,7mg/L) for pigs. No significant increase in Amyloid A levels is seen and results are therefore interpreted as normal.

Full blood counts:

Number	Gilt/Sow	Hb	Result	Interpretation
1	Gilt	Normal	Haematology results within normal parameters	Haematology normal
2	Gilt	Normal	Haematology results within normal parameters	Haematology normal
3	Gilt	Normal	Haematology results within normal parameters	Haematology normal
4	Gilt	Normal	Haematology results within normal parameters	Haematology normal
5	Gilt	Normal	Haematology results within normal parameters	Haematology normal
6	Gilt	Normal	Haematology results within normal parameters	Haematology normal
7	Gilt	Normal	Haematology results within normal parameters	Haematology normal
8	Gilt	Normal	Haematology results within normal parameters	Haematology normal
9	Gilt	Normal	Haematology results within normal parameters	Haematology normal
10	Gilt	Normal	Haematology results within normal parameters	Haematology normal
11	Sow	Normal	Haematology results within normal parameters	Haematology normal
12	Sow	Normal	Haematology results within normal parameters	Haematology normal
13	Sow	Normal	Haematology results within normal parameters	Haematology normal
14	Sow	Normal	Haematology results within normal parameters	Haematology normal
15	Sow	Normal	Haematology results within normal parameters	Haematology normal
16	Sow	Normal	Haematology results within normal parameters	Haematology normal
17	Sow	Normal	Haematology results within normal parameters	Haematology normal
18	Sow	Normal	Haematology results within normal parameters	Haematology normal
19	Sow	Normal	Haematology results within normal parameters	Haematology normal
20	Sow	Normal	Neutrophilia and mild lymphocytopenia	Increased neutrophil count and slightly decreased lymphocyte count

Remarks

All gilts and sows except for one are showing haematology results within normal parameters, indicating a healthy blood profile. However, the presence of neutrophilia (increased neutrophil count) and mild lymphocytopenia (slightly decreased lymphocyte count) in one sow may suggest underlying subclinical infection or a reduced immune response.

Nasal Swabs (Glässer's disease)

Number	Test	Pathogen tested for	Result
1	PCR	Glaesserella parasuis	Negative
2	PCR	Glaesserella parasuis	Negative
3	PCR	Glaesserella parasuis	Negative
4	PCR	Glaesserella parasuis	Negative
5	PCR	Glaesserella parasuis	Negative
6	PCR	Glaesserella parasuis	Negative

7	PCR	Glaesserella parasuis	Negative
8	PCR	Glaesserella parasuis	Negative
9	PCR	Glaesserella parasuis	Negative
10	PCR	Glaesserella parasuis	Positive

Remarks:

One positive result was detected via PCR. This is an improvement from the previous report. Glaesserella parasuis is a commensal bacterium in the pig's respiratory tract, and its presence does not necessarily indicate a problem in the absence of clinical disease. No clinical signs of Glässer's disease were observed during the clinical examination of the gilts listed in the table above.

Conclusion

The clinical assessment found all examined piglets, gilts, and sows to be clinically normal, except for one sow with a neck abscess. Haemoglobin analyses indicated that 80% of piglets had low haemoglobin levels, suggesting a potential risk of anaemia requiring further monitoring. While Amyloid A levels were normal and haematology results were mostly within the expected parameters, one sow exhibited neutrophilia and mild lymphocytopenia, potentially indicating a subclinical infection. Additionally, a single positive nasal swab result for Glaesserella parasuis was noted, which does not necessarily indicate disease as no clinical signs were observed.

Research

Clinical Assessment:

Number	Piglet/Gilt/Sow	Habitus	Respiratory rate	Nasal Discharge	Coughing	Sneezing	Rectal temp	Comment
1	Piglet	0	0	0	0	0	0	Clinically Normal
2	Piglet	0	0	0	0	0	0	Clinically Normal
3	Piglet	0	0	0	0	0	0	Clinically Normal
4	Piglet	0	0	0	0	0	0	Clinically Normal
5	Piglet	0	0	0	0	0	0	Clinically Normal
6	Piglet	0	0	0	0	0	0	Clinically Normal
7	Piglet	0	0	0	0	0	0	Clinically Normal
8	Piglet	0	0	0	0	0	0	Clinically Normal
9	Piglet	0	0	0	0	0	0	Clinically Normal
10	Piglet	0	0	0	0	0	0	Clinically Normal
11	Gilt	0	0	0	0	0	0	Clinically Normal
12	Gilt	0	0	0	0	0	0	Clinically Normal
13	Gilt	0	0	0	0	0	0	Clinically Normal
14	Gilt	0	0	0	0	0	0	Clinically Normal
15	Gilt	0	0	0	0	0	0	Clinically Normal
16	Gilt	0	0	0	0	0	0	Clinically Normal
17	Gilt	0	0	0	0	0	0	Clinically Normal
18	Gilt	0	0	0	0	0	0	Clinically Normal
19	Gilt	0	0	0	0	0	0	Clinically Normal

20	Gilt	0	0	0	0	0	0	Clinically Normal
21	Sow	0	0	0	0	0	0	Clinically Normal
22	Sow	0	0	0	0	0	0	Clinically Normal
23	Sow	0	0	0	0	0	0	Clinically Normal
24	Sow	0	0	0	0	0	0	Clinically Normal
25	Sow	0	0	0	0	0	0	Clinically Normal
26	Sow	0	0	0	0	0	0	Clinically Normal
27	Sow	0	0	0	0	0	0	Clinically Normal
28	Sow	0	0	0	0	0	0	Clinically Normal
29	Sow	0	0	0	0	0	0	Clinically Normal
30	Sow	0	0	0	0	0	0	Clinically Normal

Remarks:

All animals that were examined during the clinical assessment were found clinically normal and within the expected clinical parameters of a healthy pig.

Laboratory analysis:

Haemoglobin (Hb):

% Anaemic	0,0%
% Low	63,3%
% Normal	36,7%

Number	Hb result (g/dL)	Interpretation
1	9,5	Low
2	9,8	Low
3	9,9	Low
4	10,2	Low
5	10,4	Low
6	10,5	Low
7	10,6	Low
8	10,7	Low
9	10,8	Low
10	10,9	Low
11	10,9	Low
12	11,2	Low
13	11,3	Low
14	11,3	Low
15	11,4	Low
16	11,4	Low
17	11,5	Low
18	11,7	Low
19	11,7	Low
20	12,0	Normal

21	12,1	Normal
22	12,1	Normal
23	12,1	Normal
24	12,2	Normal
25	12,3	Normal
26	12,6	Normal
27	12,7	Normal
28	12,8	Normal
29	13,0	Normal
30	13,5	Normal

Remarks

Haemoglobin samples collected from suckling piglets via the caudal auricular vein prior to weaning indicate a slight positive shift in the results compared to previous reports. The percentage of normal levels has increased to 36.7%, while the percentage of low levels has decreased to 63.3% and no anaemic piglets were detected.

Amyloid A:

Number	Sow/Gilt	Result (mg/L)	Interpretation
1	Gilt	<3	Normal
2	Gilt	<3	Normal
3	Gilt	<3	Normal
4	Gilt	<3	Normal
5	Gilt	<3	Normal
6	Gilt	<3	Normal
7	Gilt	<3	Normal
8	Gilt	<3	Normal
9	Gilt	<3	Normal
10	Gilt	<3	Normal
11	Sow	<3	Normal
12	Sow	<3	Normal
13	Sow	<3	Normal
14	Sow	<3	Normal
15	Sow	<3	Normal
16	Sow	<3	Normal
17	Sow	<3	Normal
18	Sow	<3	Normal
19	Sow	<3	Normal
20	Sow	<3	Normal

Remarks:

All Amyloid A test results for sows and gilts are below the cutoff reference range of 42.7 mg/L, indicating no significant inflammatory or chronic disease processes.

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Full blood counts:

Number	Gilt/Sow	Hb	Result	Interpretation
1	Gilt	Normal	Haematology results within normal parameters	Haematology normal
2	Gilt	Normal	Haematology results within normal parameters	Haematology normal
3	Gilt	Normal	Haematology results within normal parameters	Haematology normal
4	Gilt	Normal	Haematology results within normal parameters	Haematology normal
5	Gilt	Normal	Haematology results within normal parameters	Haematology normal
6	Gilt	Normal	Neutropenia	Lowered neutrophil count
7	Gilt	Normal	Haematology results within normal parameters	Haematology normal
8	Gilt	Normal	Haematology results within normal parameters	Haematology normal
9	Gilt	Normal	Haematology results within normal parameters	Haematology normal
10	Gilt	Normal	Haematology results within normal parameters	Haematology normal
11	Sow	Normal	Haematology results within normal parameters	Haematology normal
12	Sow	Normal	Haematology results within normal parameters	Haematology normal
13	Sow	Normal	Haematology results within normal parameters	Haematology normal
14	Sow	Normal	Haematology results within normal parameters	Haematology normal
15	Sow	Normal	Haematology results within normal parameters	Haematology normal
16	Sow	Normal	Haematology results within normal parameters	Haematology normal
17	Sow	Normal	Haematology results within normal parameters	Haematology normal
18	Sow	Normal	Haematology results within normal parameters	Haematology normal
19	Sow	Normal	Haematology results within normal parameters	Haematology normal
20	Sow	Normal	Haematology results within normal parameters	Haematology normal

Remarks

Most animals demonstrate normal haematology results, with values consistently falling within the expected parameters, indicating stable overall blood health. However, one gilt exhibits neutropenia, characterized by a lowered neutrophil count, which could suggest an underlying immune challenge or response.

Nasal Swabs (Glässer's disease)

Number	Test	Pathogen tested for	Result
1	PCR	Glaesserella parasuis	Negative
2	PCR	Glaesserella parasuis	Negative
3	PCR	Glaesserella parasuis	Negative
4	PCR	Glaesserella parasuis	Negative
5	PCR	Glaesserella parasuis	Negative
6	PCR	Glaesserella parasuis	Negative
7	PCR	Glaesserella parasuis	Negative
8	PCR	Glaesserella parasuis	Negative
9	PCR	Glaesserella parasuis	Negative
10	PCR	Glaesserella parasuis	Negative

Remarks:

All samples tested negative for Glässer's disease on PCR additionally no signs of Glässer's disease were observed during the clinical examination of the gilts.

Conclusion

The clinical assessment found all examined piglets, gilts, and sows to be clinically normal. While haemoglobin levels among suckling piglets have slightly improved, with 36.7% in the normal category, 63.3% remain in the low category. Amyloid A results are normal, indicating no significant inflammatory processes, and most haematology results are within expected limits, although one gilt shows neutropenia, which could suggest an underlying immune challenge.

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GHB Spitskop Health Monitoring Report 2024-09-11

Assessment and Sampling date: 2024-09-11

Clinical Assessment:

Clinical examination of 30 pigs (10 sows, 10 suckling piglets, 10 replacement gilts)

Clinical assessments will be scored as follows:

- Habitus:
  - 0 – normal
  - 1 – listless
- Respiratory rate:
  - 0 – normal
  - 1 – slightly elevated
  - 2 – moderately elevated
  - 3 – clearly elevated, distinct abdominal breathing
- Nasal Discharge:
  - 0 – absent
  - 1 – present
- Coughing:
  - 0 – normal
  - 1 – mild
  - 2 – moderate
  - 3 – severe
- Sneezing:
  - 0 – absent
  - 1 – present
- Rectal temperature:
  - 0 – normal
  - 1 – elevated (above 40°C)

Number	Piglet/Gilt/Sow	Habitus	Respiratory rate	Nasal Discharge	Coughing	Sneezing	Rectal temp	Comment
1	Piglet	0	0	0	0	0	0	Clinically Normal
2	Piglet	0	0	0	0	0	0	Clinically Normal
3	Piglet	0	0	0	0	0	0	Clinically Normal
4	Piglet	0	0	0	0	0	0	Clinically Normal
5	Piglet	0	0	0	0	0	0	Clinically Normal
6	Piglet	0	0	0	0	0	0	Clinically Normal
7	Piglet	0	0	0	0	0	0	Clinically Normal
8	Piglet	0	0	0	0	0	0	Clinically Normal

9	Piglet	0	0	0	0	0	0	Clinically Normal
10	Piglet	0	0	0	0	0	0	Clinically Normal
11	Gilt	0	0	0	0	0	0	Clinically Normal
12	Gilt	0	0	0	0	0	0	Clinically Normal
13	Gilt	0	0	0	0	0	0	Clinically Normal
14	Gilt	0	0	0	0	0	0	Clinically Normal
15	Gilt	0	0	0	0	0	0	Clinically Normal
16	Gilt	0	0	0	0	0	0	Clinically Normal
17	Gilt	0	0	0	0	0	0	Clinically Normal, Abscess on the neck
18	Gilt	0	0	0	0	0	0	Clinically Normal
19	Gilt	0	0	0	0	0	0	Clinically Normal
20	Gilt	0	0	0	0	0	0	Clinically Normal
21	Sow	0	0	0	0	0	0	Clinically Normal
22	Sow	0	0	0	0	0	0	Clinically Normal
23	Sow	0	0	0	0	0	0	Clinically Normal
24	Sow	0	0	0	0	0	0	Clinically Normal
25	Sow	0	0	0	0	0	0	Clinically Normal
26	Sow	0	0	0	0	0	0	Clinically Normal
27	Sow	0	0	0	0	0	0	Clinically Normal, Abscess on the neck
28	Sow	0	0	0	0	0	0	Clinically Normal
29	Sow	0	0	0	0	0	0	Clinically Normal
30	Sow	0	0	0	0	0	0	Clinically Normal

Remarks:

All animals examined during the clinical assessment were found to be clinically healthy. However, one sow and one gilt had an abscess on the neck but were otherwise clinically normal.

Laboratory analysis:

Haemoglobin:

% Anaemic	3,3%
% Low	90,0%
% Normal	6,7%

Number	Hb result (g/dL)	Interpretation
1	8,2	Anaemic
2	9,0	Low
3	9,1	Low
4	9,1	Low
5	9,1	Low
6	9,4	Low
7	9,4	Low
8	9,5	Low

9	9,6	Low
10	10,0	Low
11	10,0	Low
12	10,0	Low
13	10,2	Low
14	10,4	Low
15	10,5	Low
16	10,6	Low
17	10,6	Low
18	10,8	Low
19	10,8	Low
20	10,9	Low
21	11,0	Low
22	11,0	Low
23	11,0	Low
24	11,0	Low
25	11,3	Low
26	11,4	Low
27	11,9	Low
28	11,9	Low
29	12,1	Normal
30	12,5	Normal

Remarks

Haemoglobin samples collected from suckling piglets via the caudal auricular vein prior to weaning indicate a decrease in the number of piglets in the anaemic and normal categories, accompanied by an increase in the percentage of piglets classified as low. It is concerning that the percentage of piglets in the normal category has diminished.

Amyloid A:

Number	Sow/Gilt	Result (mg/L)	Interpretation
1	Gilt	<3	Normal
2	Gilt	<3	Normal
3	Gilt	<3	Normal
4	Gilt	<3	Normal
5	Gilt	<3	Normal
6	Gilt	<3	Normal
7	Gilt	<3	Normal
8	Gilt	<3	Normal
9	Gilt	<3	Normal
10	Gilt	<3	Normal
11	Sow	<3	Normal
12	Sow	<3	Normal
13	Sow	<3	Normal
14	Sow	<3	Normal

15	Sow	3,90	Normal
16	Sow	6,40	Normal
17	Sow	<3	Normal
18	Sow	<3	Normal
19	Sow	<3	Normal
20	Sow	<3	Normal

Remarks:

All Amyloid A test results are below the cutoff reference range(<42,7mg/L) for pigs.

Full blood counts:

Number	Gilt/Sow	Hb	Result	Interpretation
1	Gilt	Normal	Haematology results within normal parameters	Haematology normal
2	Gilt	Normal	Haematology results within normal parameters	Haematology normal
3	Gilt	Normal	Haematology results within normal parameters	Haematology normal
4	Gilt	Normal	Haematology results within normal parameters	Haematology normal
5	Gilt	Normal	Haematology results within normal parameters	Haematology normal
6	Gilt	Normal	Haematology results within normal parameters	Haematology normal
7	Gilt	Normal	Haematology results within normal parameters	Haematology normal
8	Gilt	Normal	Haematology results within normal parameters	Haematology normal
9	Gilt	Normal	Neutrophilia	Increased neutrophil count
10	Gilt	Normal	Haematology results within normal parameters	Haematology normal
11	Sow	Normal	Haematology results within normal parameters	Haematology normal
12	Sow	Normal	Haematology results within normal parameters	Haematology normal
13	Sow	Normal	Haematology results within normal parameters	Haematology normal
14	Sow	Normal	Haematology results within normal parameters	Haematology normal
15	Sow	Normal	Haematology results within normal parameters	Haematology normal
16	Sow	Normal	Haematology results within normal parameters	Haematology normal
17	Sow	Normal	Haematology results within normal parameters	Haematology normal
18	Sow	Normal	Haematology results within normal parameters	Haematology normal
19	Sow	Normal	Haematology results within normal parameters	Haematology normal
20	Sow	Normal	Haematology results within normal parameters	Haematology normal

Remarks

Overall, the full blood counts for gilts and sows are within normal parameters, with the exception of an increased neutrophil count in one gilt, suggesting a possible subclinical infection. The gilt was otherwise normal upon clinical examination

Nasal Swabs (Glässer's disease)

Number	Test	Pathogen tested for	Result
1	PCR	Glaesserella parasuis	Positive
2	PCR	Glaesserella parasuis	Negative
3	PCR	Glaesserella parasuis	Positive

4	PCR	Glaesserella parasuis	Negative
5	PCR	Glaesserella parasuis	Weak Positive
6	PCR	Glaesserella parasuis	Negative
7	PCR	Glaesserella parasuis	Positive
8	PCR	Glaesserella parasuis	Positive
9	PCR	Glaesserella parasuis	Positive
10	PCR	Glaesserella parasuis	Positive

Remarks:

Out of the ten nasal swabs tested for *Glaesserella parasuis*, six returned positive results, three were negative, and one was weakly positive. While *Glaesserella parasuis* is typically a commensal organism in the respiratory tracts of pigs, the recurrent positive results may suggest the potential for subclinical infection in the tested animals. Importantly, despite these positive PCR findings, no clinical signs of Glässer's disease were observed during the examination.

Conclusion

The clinical evaluation indicated that all animals assessed were clinically healthy, except for one gilt and one sow that had abscesses on their necks. Haemoglobin results revealed a notable number of piglets showing low haemoglobin levels, alongside a reduction in normal readings. The nasal swab tests for Glaesserella parasuis produced a combination of positive and negative results, suggesting the potential for subclinical infection despite the lack of clinical signs.