



Generation

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DUVHA POWER STATION

Atmospheric Emission License 17/4/AEL/MP312/11/07

GENERAL MANAGER

2022/12/15

DATE

DUVHA POWER STATION MONTHLY EMISSIONS REPORT
 Atmospheric Emission License 17/4/AEL/MP312/11/07

1 RAW MATERIALS AND PRODUCTS

Raw Materials and Products	Raw Material Type	Units	Maximum Permitted Consumption Rate	Consumption Rate Apr-2022
	Coal	Tons	1 400 000	427 039.03
	Fuel Oil	Tons	5 000	2765.62
Production Rates	Product / By-Product Name	Units	Maximum Production Capacity Permitted	Production Rate Apr-2022
	Energy	GWh	3600	775.62
	Ash	Tons	not specified	113 677.79

2 ENERGY SOURCE CHARACTERISTICS

Coal Characteristic	Units	Stipulated Range	Monthly Average Content
Sulphur Content	%	0.6 TO >1.2	0.90
Ash Content	%	27 TO 30	26.62

3 EMISSION LIMITS (mg/Nm³)

Associated Unit/Stack	PM	SO _x	NO _x
Unit 1	100	3500	1100
Unit 2	100	3500	1100
Unit 3	100	3500	1100
Unit 4	100	3500	1100
Unit 5	100	3500	1100
Unit 6	100	3500	1100

4 ABATEMET TECHNOLOGY (%)

Associated Unit/Stack	Technology Type	Efficiency Apr-2022	Technology Type	SO ₃ Utilization Apr-2022
Unit 1	FFP	99.9%	n/a	n/a
Unit 4	ESP + SO ₃	99.5%	SO ₃	98.6%
Unit 5	ESP + SO ₃	99.4%	SO ₃	90.3%
Unit 6	ESP + SO ₃	99.7%	SO ₃	99.4%

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

5 MONITOR RELIABILITY (%)

Associated Unit/Stack	PM	SO ₂	NO
Unit 1	100.0	75.0	75.0
Unit 4	99.6	87.9	87.9
Unit 5	99.6	87.8	87.8
Unit 6	86.6	84.9	84.9

Note: NO_x emissions is measured as NO in PPM. Final NO_x value is expressed as total NO₂

Table 6.1: Monthly tonnages for the month of April 2022

Associated Unit/Stack	PM (tons)	SO ₂ (tons)	NO _x (tons)
Unit 1	2.0	189	100
Unit 4	157.7	2 574	1 504
Unit 5	187.9	3 121	1 519
Unit 6	114.8	1 736	946
SUM	462.46	7 619	4 069

Table 6.2: Operating days in compliance to PM AEL Limit - April 2022

Associated Unit/Stack	Normal	Grace	Section 30	Contravention	Total Exceedance	Average PM (mg/Nm ³)
Unit 1	2	0	0	0	0	22.0
Unit 2	Off-line	Off-line	Off-line	Off-line	Off-line	Off-line
Unit 3	Off-line	Off-line	Off-line	Off-line	Off-line	Off-line
Unit 4	22	7	1	0	8	96.3
Unit 5	23	7	0	0	7	89.0
Unit 6	12	8	0	0	8	120.3
SUM	59	22	1	0	23	

Table 6.3: Operating days in compliance to SOx AEL Limit - April 2022

Associated Unit/Stack	Normal	Grace	Section 30	Contravention	Total Exceedance	Average SOx (mg/Nm ³)
Unit 1	4	0	0	0	0	1 090.9
Unit 4	30	0	0	0	0	1 432.7
Unit 5	30	0	0	0	0	1 468.8
Unit 6	24	0	0	0	0	1 692.2
SUM	88	0	0	0	0	

Table 6.4: Operating days in compliance to NOx AEL Limit - April 2022

Associated Unit/Stack	Normal	Grace	Section 30	Contravention	Total Exceedance	Average NOx (mg/Nm ³)
Unit 1	4	0	0	0	0	553.1
Unit 4	30	0	0	0	0	838.4
Unit 5	30	0	0	0	0	715.2
Unit 6	24	0	0	0	0	902.5
SUM	88	0	0	0	0	

Table 6.5: 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: Duvha Unit 1 PM Emissions - April 2022

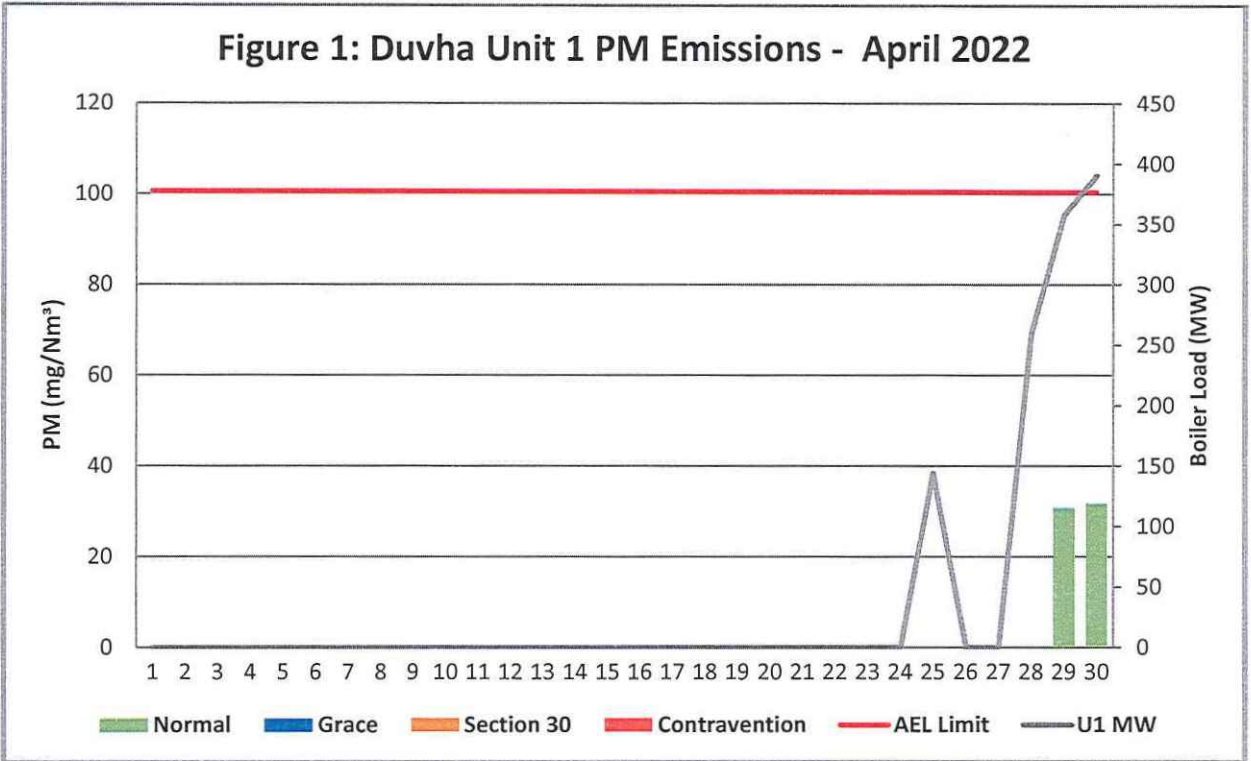


Figure 2: Duvha Unit 4 PM Emissions - April 2022

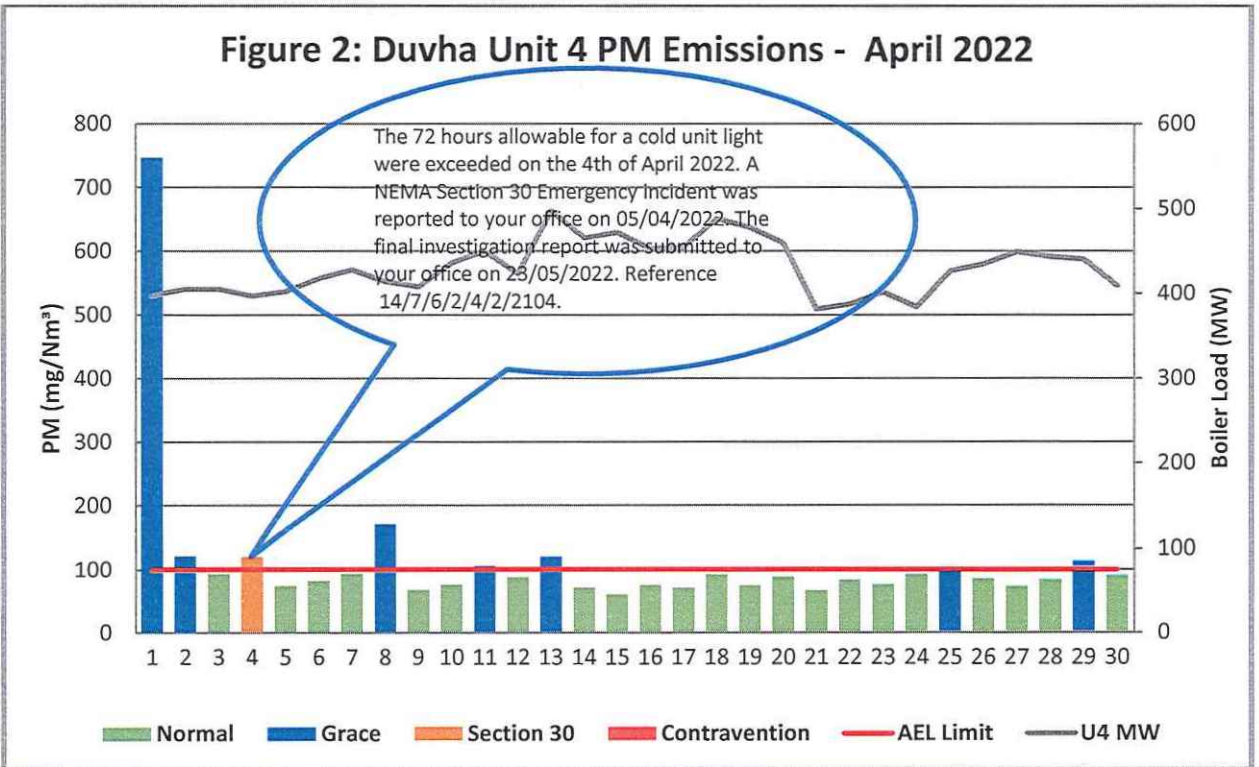


Figure 3: Duvha Unit 5 PM Emissions - April 2022

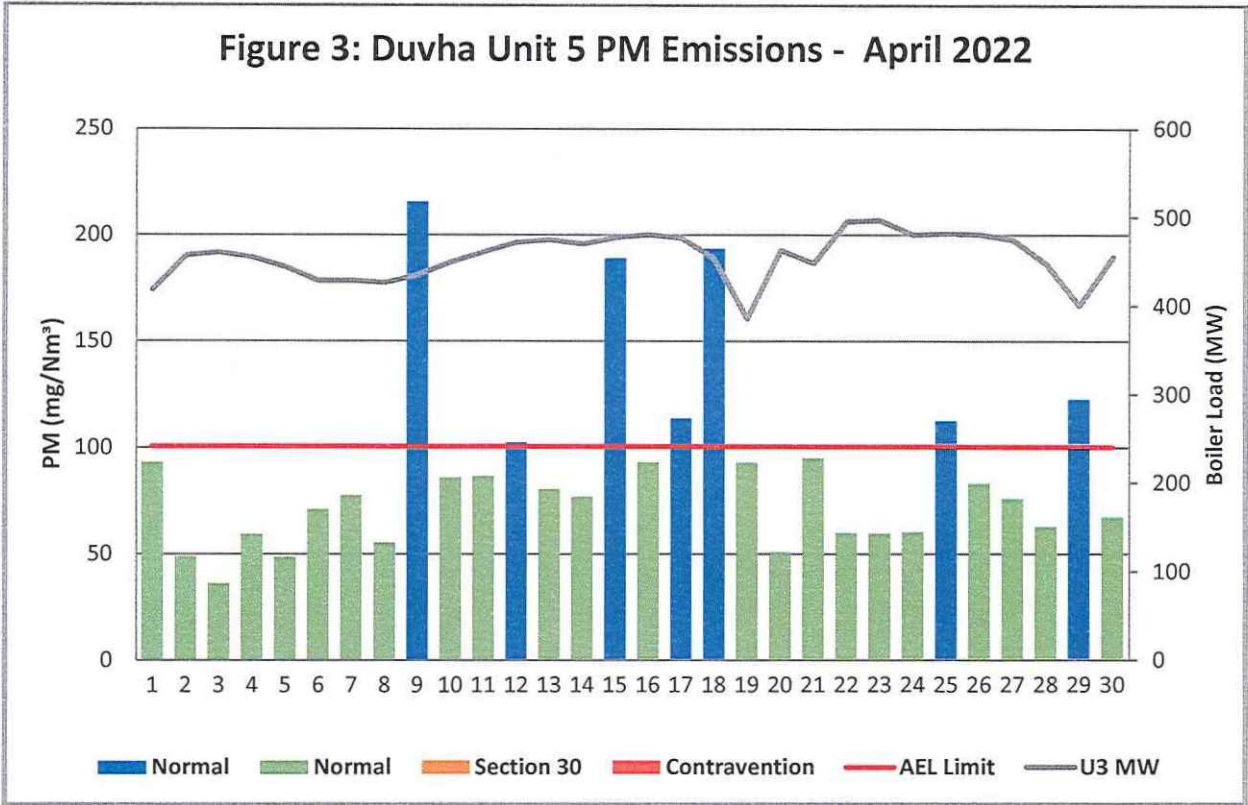


Figure 4: Duvha Unit 6 PM Emissions - April 2022

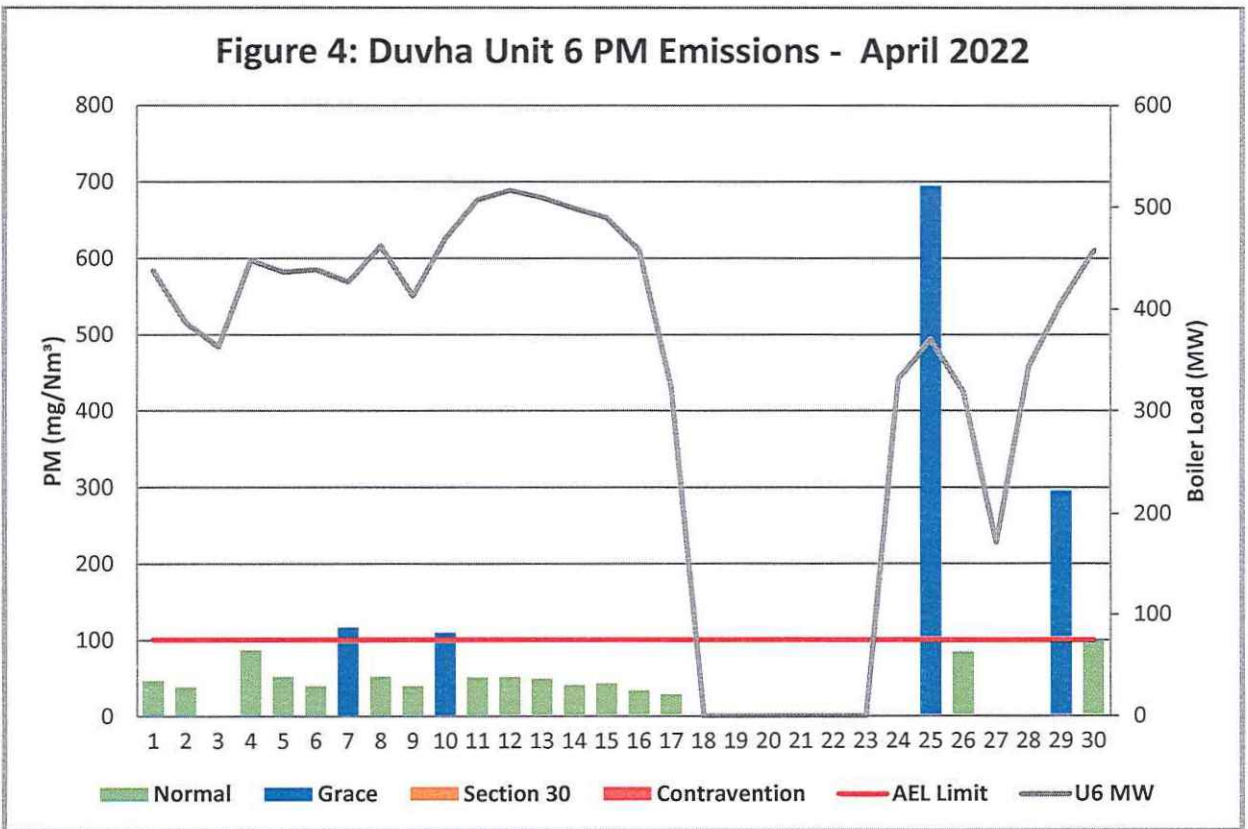


Figure 5: Duvha Unit 1 SOx Emissions - April 2022

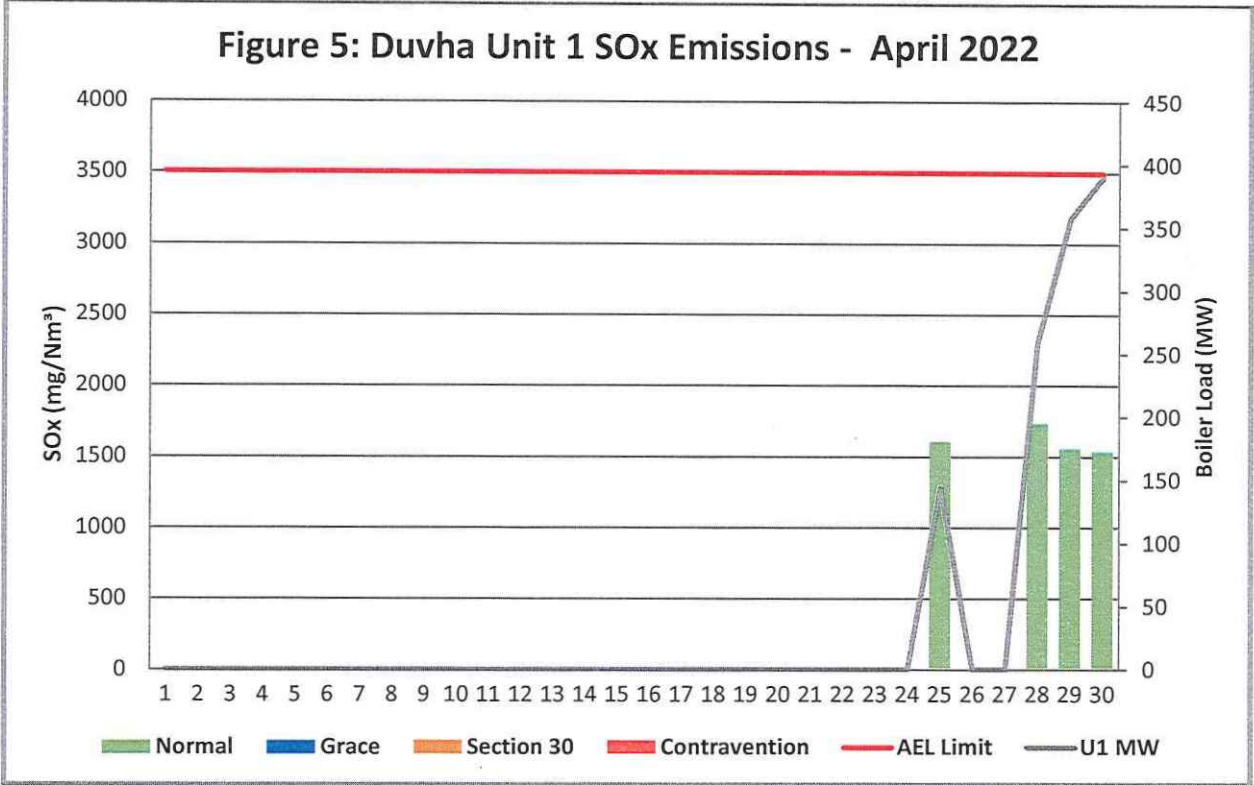


Figure 6: Duvha Unit 4 SOx Emissions - April 2022

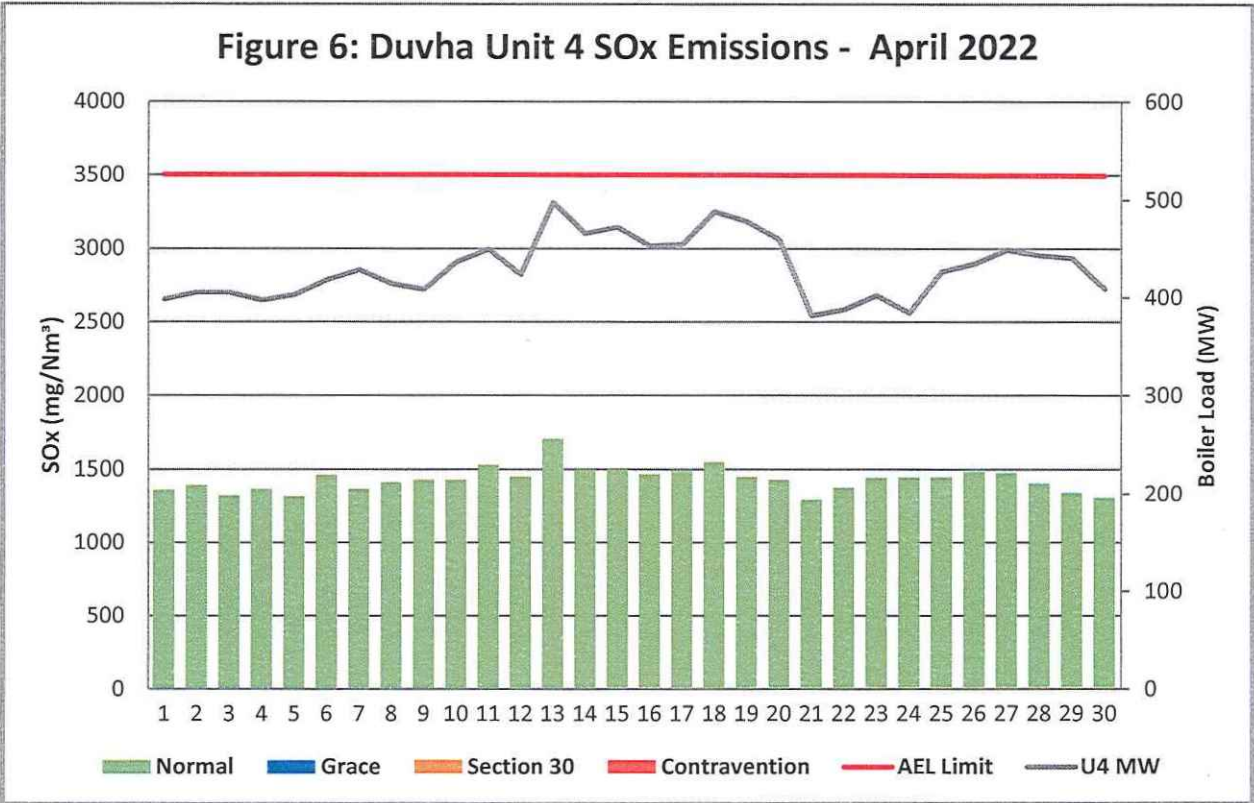


Figure 7: Duvha Unit 5 SOx Emissions - April 2022

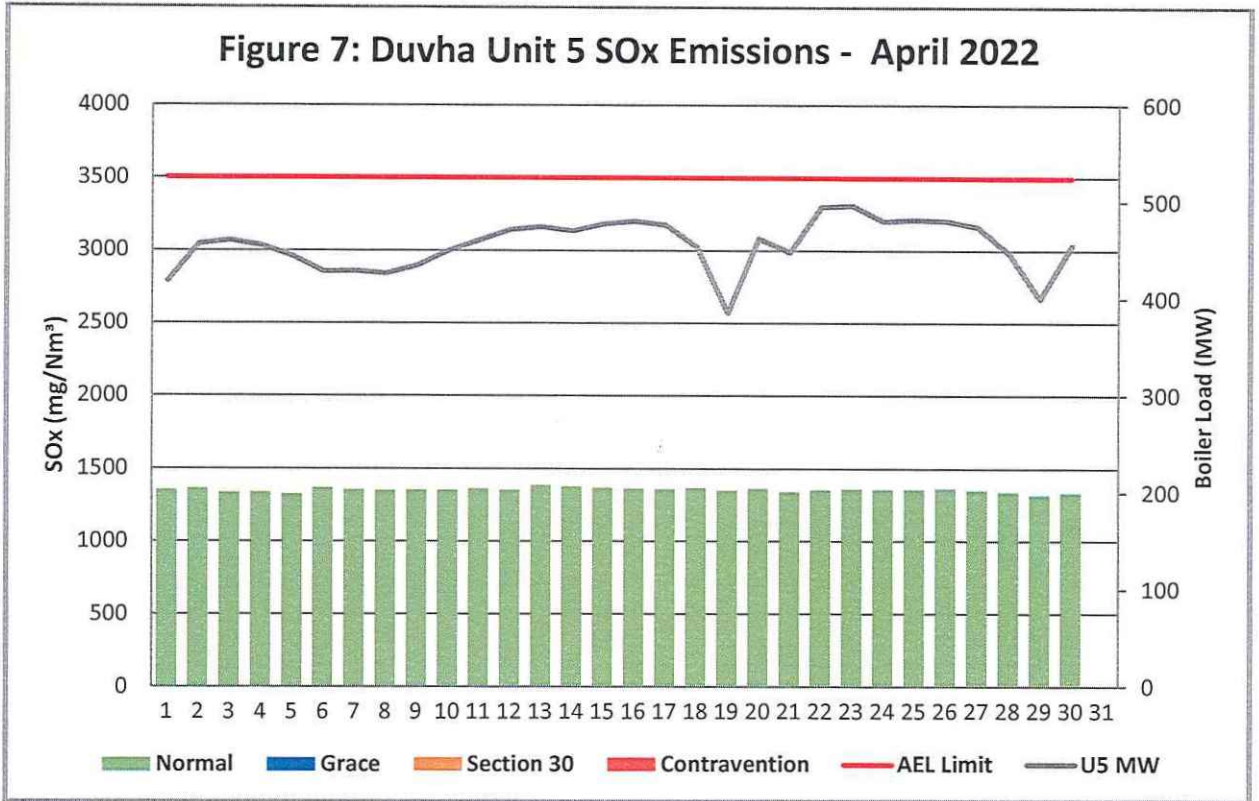


Figure 8: Duvha Unit 6 SOx Emissions - April 2022

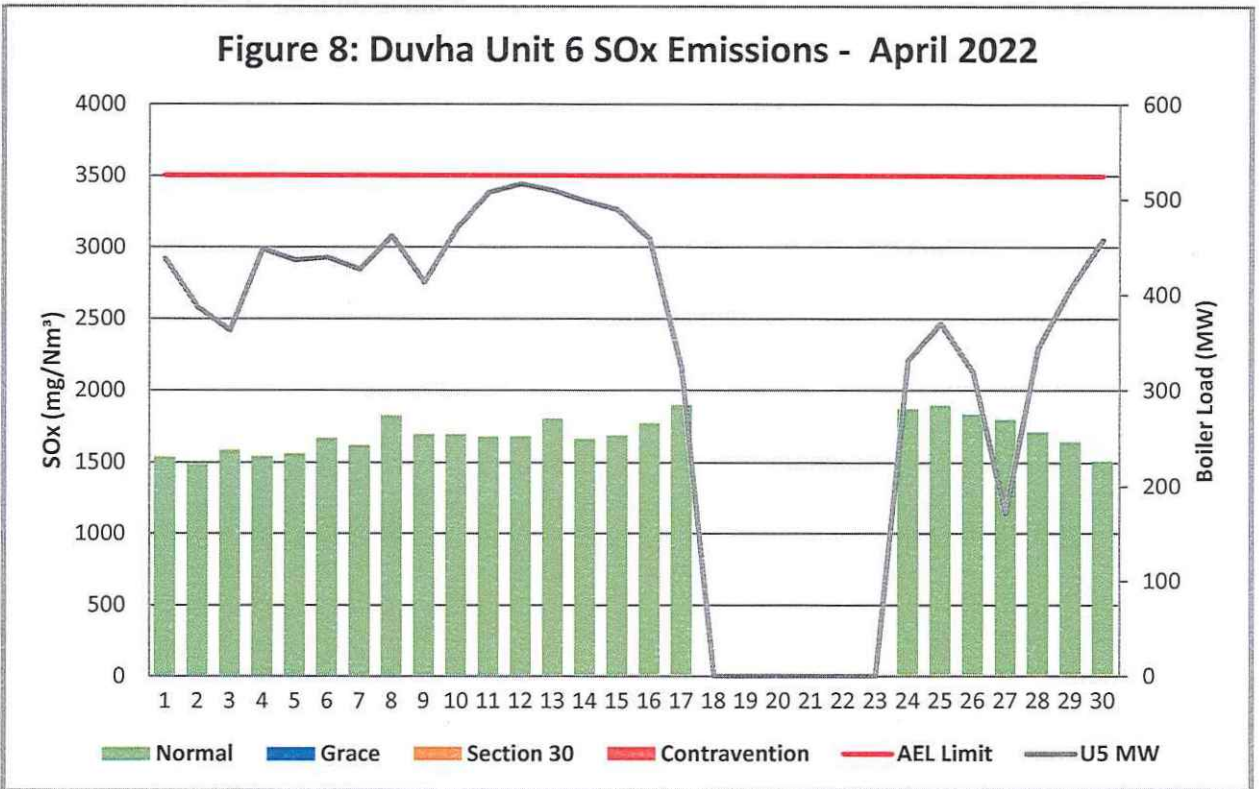


Figure 9: Duvha Unit 1 NOx Emissions - April 2022

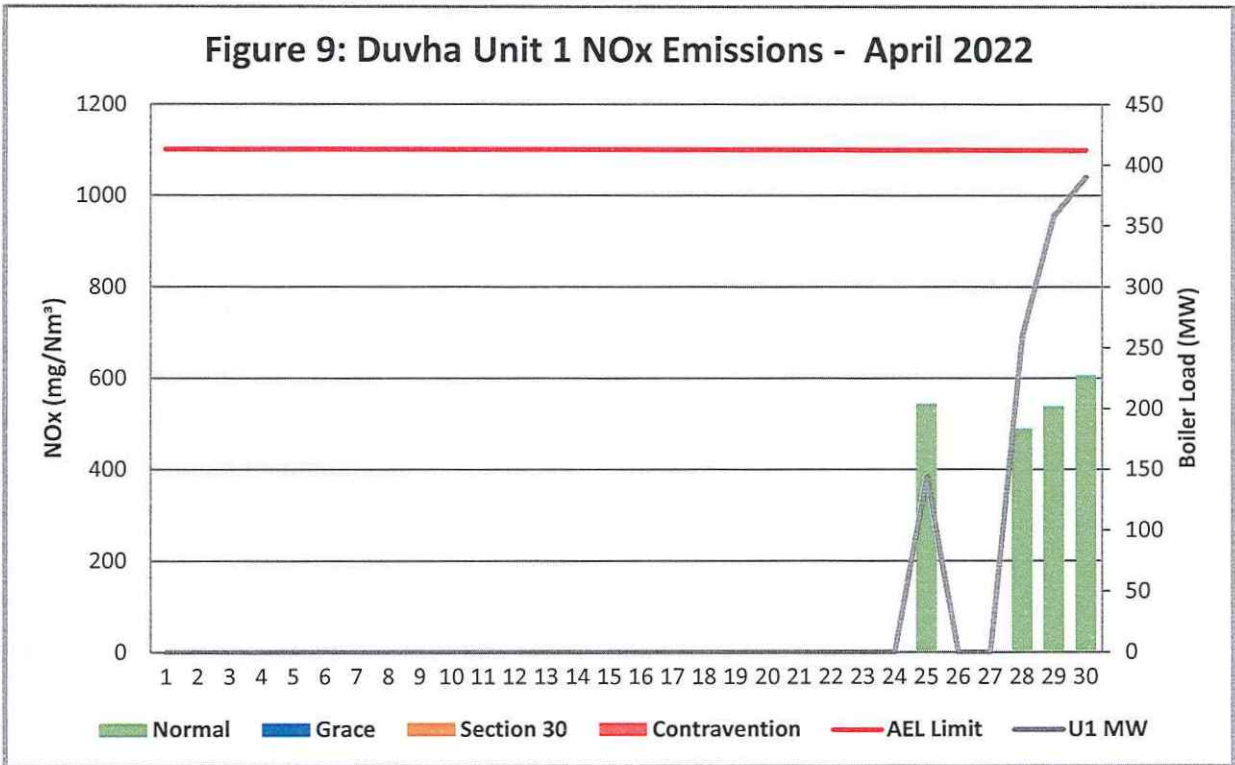


Figure 10: Duvha Unit 4 NOx Emissions - April 2022

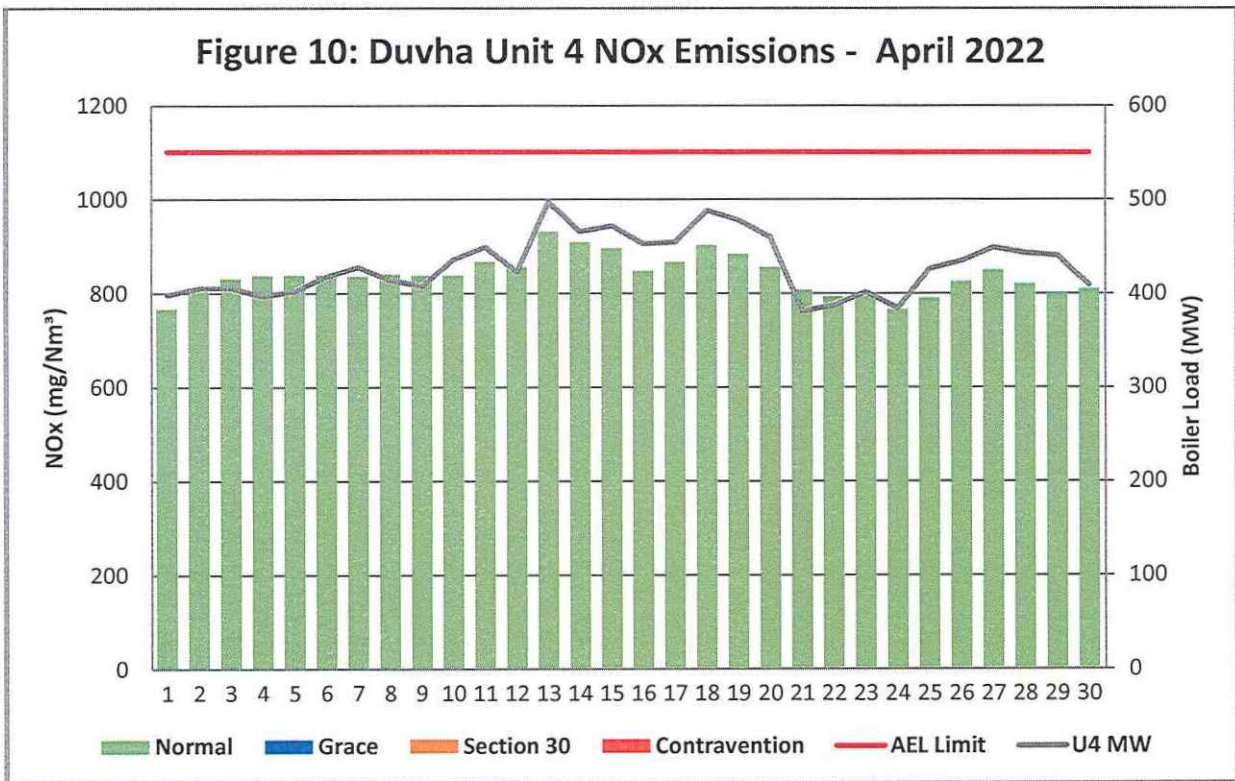


Figure 11: Duvha Unit 5 NOx Emissions - April 2022

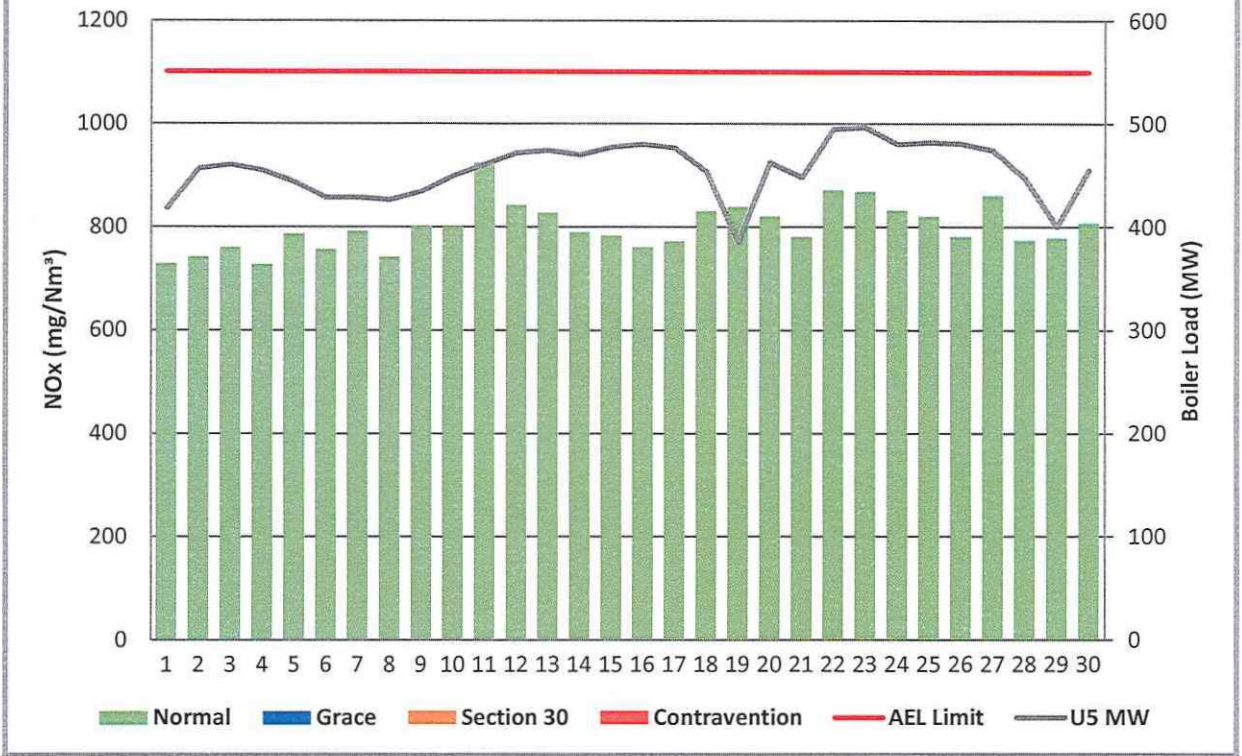
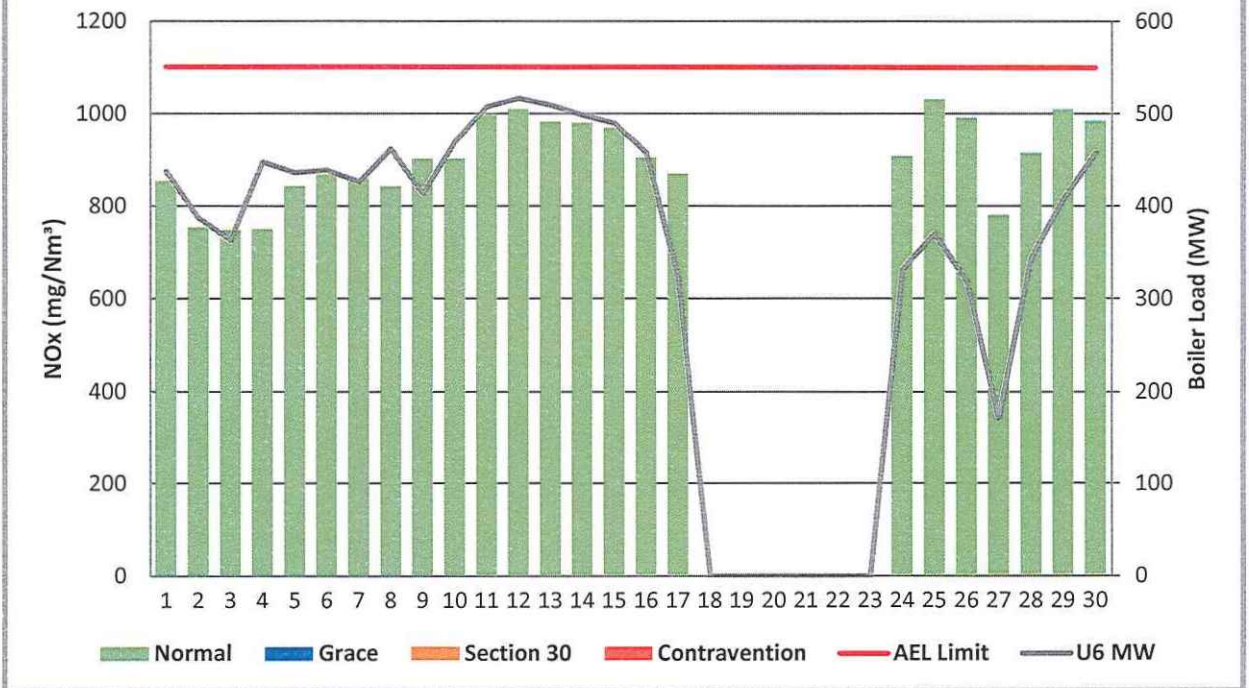


Figure 12: Duvha Unit 6 NOx Emissions - April 2022



7 SHUT DOWN AND LIGHT UP INFORMATION

Tables 7.1: Shut-down and light-up information for the month of April 2022

Unit No.1	Event 1	
Breaker Open (BO)	<i>BO previously</i>	<i>BO previously</i>
Draught Group (DG) Shut Down (SD)	<i>n/a</i>	<i>n/a</i>
BO to DG SD (duration)	<i>n/a</i>	DD:HH:MM
Fires in time	<i>11:00 am</i>	<i>2022/04/28</i>
Synch. to Grid (or BC)	<i>6:35 pm</i>	<i>2022/04/28</i>
Fires in to BC (duration)	<i>00:07:35</i>	DD:HH:MM
Emissions below limit from BC (end date)	<i>not > limit</i>	<i>not > limit</i>
Emissions below limit from BC (duration)	<i>n/a</i>	DD:HH:MM

Unit No.4	Event 1	
Breaker Open (BO)	<i>BO previously</i>	<i>BO previously</i>
Draught Group (DG) Shut Down (SD)	<i>n/a</i>	<i>n/a</i>
BO to DG SD (duration)	<i>n/a</i>	DD:HH:MM
Fires in time	<i>10:05 am</i>	<i>2022/03/31</i>
Synch. to Grid (or BC)	<i>9:20 pm</i>	<i>2022/03/31</i>
Fires in to BC (duration)	<i>00:11:15</i>	DD:HH:MM
Emissions below limit from BC (end date)	<i>2:00 pm</i>	<i>2022/04/03</i>
Emissions below limit from BC (duration)	<i>02:16:40</i>	DD:HH:MM

Unit No.6	Event 1		Event 2		Event 3	
Breaker Open (BO)	<i>5:45 pm</i>	<i>2022/04/02</i>	<i>2:00 am</i>	<i>2022/04/17</i>	<i>4:35 am</i>	<i>2022/04/26</i>
Draught Group (DG) Shut Down (SD)	<i>6:20 pm</i>	<i>2022/04/02</i>	<i>1:00 am</i>	<i>2022/04/18</i>	<i>DG did not trip or SD</i>	<i>DG did not trip or SD</i>
BO to DG SD (duration)	<i>00:00:35</i>	DD:HH:MM	<i>00:23:00</i>	DD:HH:MM	<i>n/a</i>	DD:HH:MM
Fires in time	<i>9:25 am</i>	<i>2022/04/03</i>	<i>6:25 pm</i>	<i>2022/04/23</i>	<i>6:25 pm</i>	<i>2022/04/23</i>
Synch. to Grid (or BC)	<i>2:55 pm</i>	<i>2022/04/03</i>	<i>4:05 am</i>	<i>2022/04/24</i>	<i>5:05 am</i>	<i>2022/04/28</i>
Fires in to BC (duration)	<i>00:05:30</i>	DD:HH:MM	<i>00:09:40</i>	DD:HH:MM	<i>04:10:40</i>	DD:HH:MM
Emissions below limit from BC (end date)	<i>5:00 am</i>	<i>2022/04/05</i>	<i>not > limit</i>	<i>not > limit</i>	<i>11:00 pm</i>	<i>2022/04/30</i>
Emissions below limit from BC (duration)	<i>01:14:05</i>	DD:HH:MM	<i>n/a</i>	DD:HH:MM	<i>02:17:55</i>	DD:HH:MM

9 GENERAL

Units 2 and 3 were offload during the month of April 2022.

The averages Oxygen(O₂) and Carbon Dioxide (CO₂) data from the QAL 2 tests reports were used for reporting for Units 1, 5 and 6 due to poor performance of the O₂ and CO₂ gaseous monitors. These poor performances of the gaseous monitors were identified to be caused by the incorrect installation of O₂ analyser. An action is being implemented to relocate all the units' O₂ monitors to their own measurement port. This action will be completed no later than 31 December 2022.

Unit 1 SO_x and NO_x gaseous emissions monitors reliabilities were below 80% for the month of April 2022. This was due to power supply failure. The power was restored.

Exceedances:

Unit 4:

08/04/2022

Electrostatic Precipitator (ESP) fields system was faulty and tripping on undervoltage. The SO₃ plant was also not injecting.

11/04/2022

The right hand dust hopper 16 was full.

13/04/2022

The SO₃ plant tripped due to sulphur tank level high indicator faulty.

25/04/2022

High back-end temperatures after sootblowing was conducted.

29/04/2022

The SO₃ plant was not in service due to sulphur storage tank level. The Dust Handling plant (DHP) tripped due to silo vacuum low.

Unit 5:

09/04/2022

The SO₃ plant was not in service due to low duct temperature. Dust hopper 16 was full.

12/04/2022

The DHP left hand row 1 was blocked.

15/04/2022

The SO₃ plant tripped due to low duct temperature.

17-18/04/2022

The SO₃ plant kept tripping on low duct temperature. DHP dust hoppers right hand 1 and 6 were full.

25/04/2022

The DHP row 1 was blocked.

29/04/2022

The DHP was switched off due to faulty level probe. The DHP right hand row 4 was blocked.

Unit 6:

07/04/2022

The DHP right hand side was blocked.

10/04/2022

The SO3 plant was not in service.

25/04/2022

Unit cold light up.

29/04/2022

Unit cold light up.

The rest of the information demonstrating compliance with the emission license conditions is supplied in the annual emission report which will be sent to your office.

10 Complaints and S30 Incidents Register

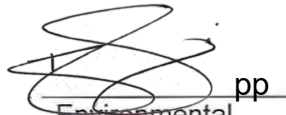
Refer to addendum A



Boiler Plant Engineering
Manager

14 Dec 2022

Date

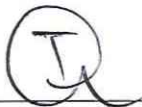


Environmental
Manager

pp

15/12/2022

Date



Engineering Manager

2022/12/14

Date

Compiled by:

Environmental Officer

For:

Nkangala District
Municipality

Air Quality Officer

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Generation Asset
Management

R
Rampiar

E Patel

Duvha Power Station:

Engineering
Manager
Operating
Manager
Maintenance
Manager

ADDENDUM TO MONTHLY EMISSIONS REPORT

9 COMPLAINTS REGISTER

Table 9. Complaints for the month of April 2022

Source Code / Name	Root Cause Analysis	Calculation of Impacts / emissions associated with the incident	Dispersion modeling of pollutants where applicable	Measures implemented to prevent reoccurrence	Date measure will be implemented
No complaints were received during the month of April 2022.					

10 S30 INCIDENT OR LEGAL CONTRAVENTION REGISTER

To be completed in the case of a S30 incident or a legal contravention:

Unit no	Incident Start Date	Incident End Date	Incident Cause	Remedial action	S30 initial notification sent	Date S30 investigation report sent	Date DEA Acknowledgment	Date DEA Acceptable	Comments / Reference No.
Unit 4	04/04/2022	04/04/2022	Negligence in execution of duties	<p>Corrective Actions to Be Taken:</p> <p>1. An awareness to be conducted with Operators for the filling of the check sheet (BL027).</p> <p>2. Reinforce the process to be followed as per the procedure of managing the emissions (BI096).</p> <p>Preventative Action to Be Taken:</p> <p>1. The appropriate corrective action to be taken against the person.</p>	05/04/2022	23/05/2022	Incident acknowledgement received on 13/04/2022.	N/A	14/7/6/2/4/2/2104