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Date:  
 30 November 2021

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Ref: 17/4/AEL/MP312/11/09

Dear Ms Nembilwi

### **KRIEL POWER STATION'S MONTHLY STACK EMISSIONS REPORT FOR THE MONTH OF OCTOBER 2021**

This serves as the monthly report required in terms of Section 7.4 in Kriel Power Station's Atmospheric Emission License 17/4/AEL/MP312/11/09. The emissions are for the month of October 2021. Verified emissions of particulates matter, SO<sub>2</sub> and NO<sub>x</sub> (as NO<sub>2</sub>) are also included.

#### **Raw Materials and Products**

**Table 1:** Quantity of Raw Materials and Products used/produced for the month of October 2021

Raw Materials and Products used	Raw Material Type	Units	Maximum Permitted Consumption / Rate (Quantity)	Consumption / Rate in Month of October 2021
	Coal	Tons/month	1 227 600	589 536.00
	Fuel Oil	Tons/month	5 000	4 789.95
Production Rates	Product/ By-Product Name	Unit	Maximum Production Capacity Permitted (Quantity)	Production Rate in Month of October 2021
	Ash	Tons/month	not specified	416.8
	RE PM	kg/MWh	not specified	<i>Still under verification</i>

1/...

## Abatement Technology

**Table 2:** Abatement Equipment Control Technology for October 2021.

Associated Unit/Stack	Technology Type	Actual Efficiency (%)
		October 2021
Unit 1	ESP	Outage
Unit 2	ESP	99.73%
Unit 3	ESP	99.72%
Unit 4	ESP	99.77%
Unit 5	ESP	99.77%
Unit 6	ESP	99.73%

## Energy Source Characteristics

**Table 3:** Energy Source Material Characteristics for the month of October 2021

Characteristic	Stipulated Range (Unit)	Monthly Average Content
Sulphur Content	0.6-1.2 (%)	0.68
Ash Content	21-36 (%)	25.28

## Monthly Monitor Reliability

Associated Unit/Stack	PM (%)	SO <sub>x</sub> (%)	NO <sub>x</sub> (%)
North	77.64	94.11	98.35
South	97.84	100	100

## Emissions Reporting

**Table 6.5:** Graph 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

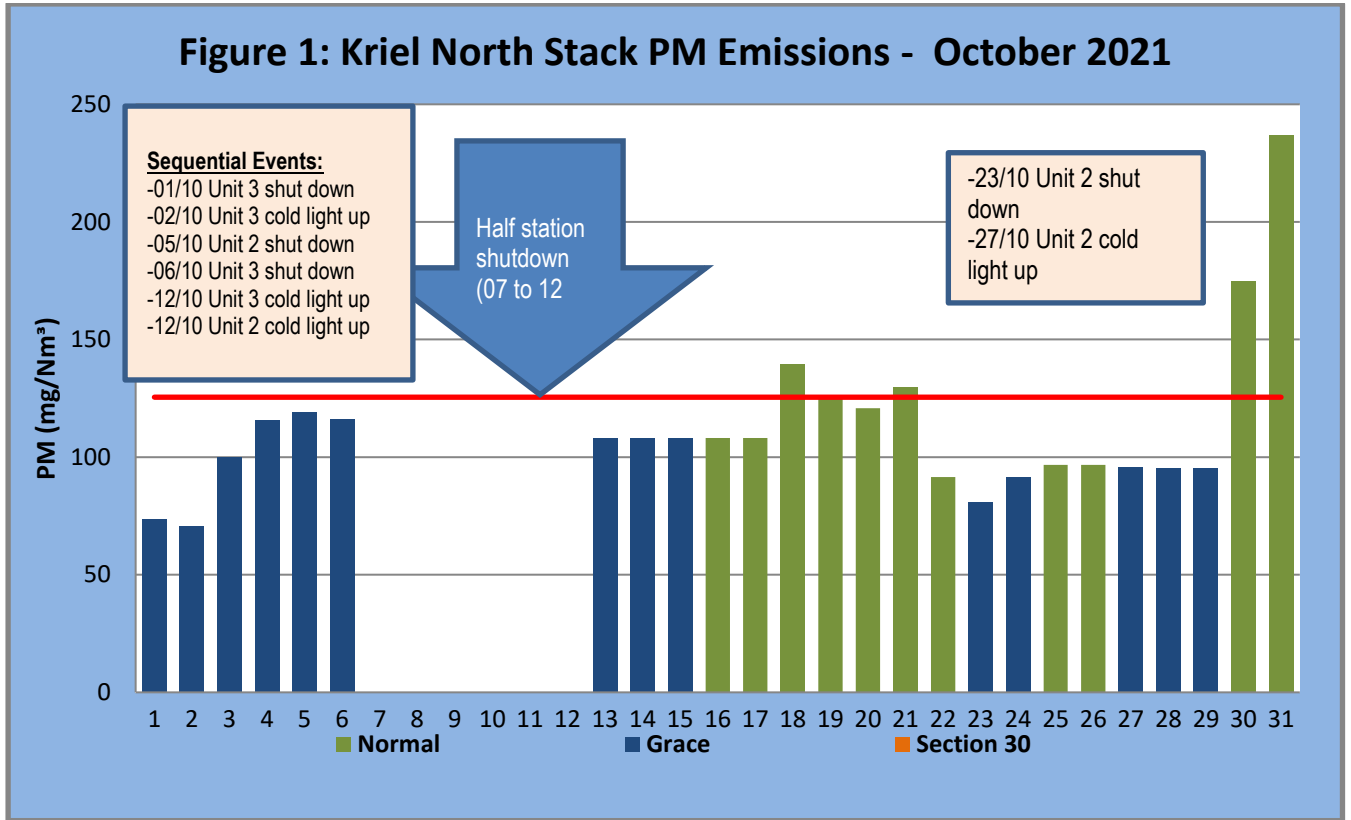


Figure 1: PM emissions for the month of October 2021 against emission limit for the North Stack. Monthly average was 112.2 mg/Nm<sup>3</sup>

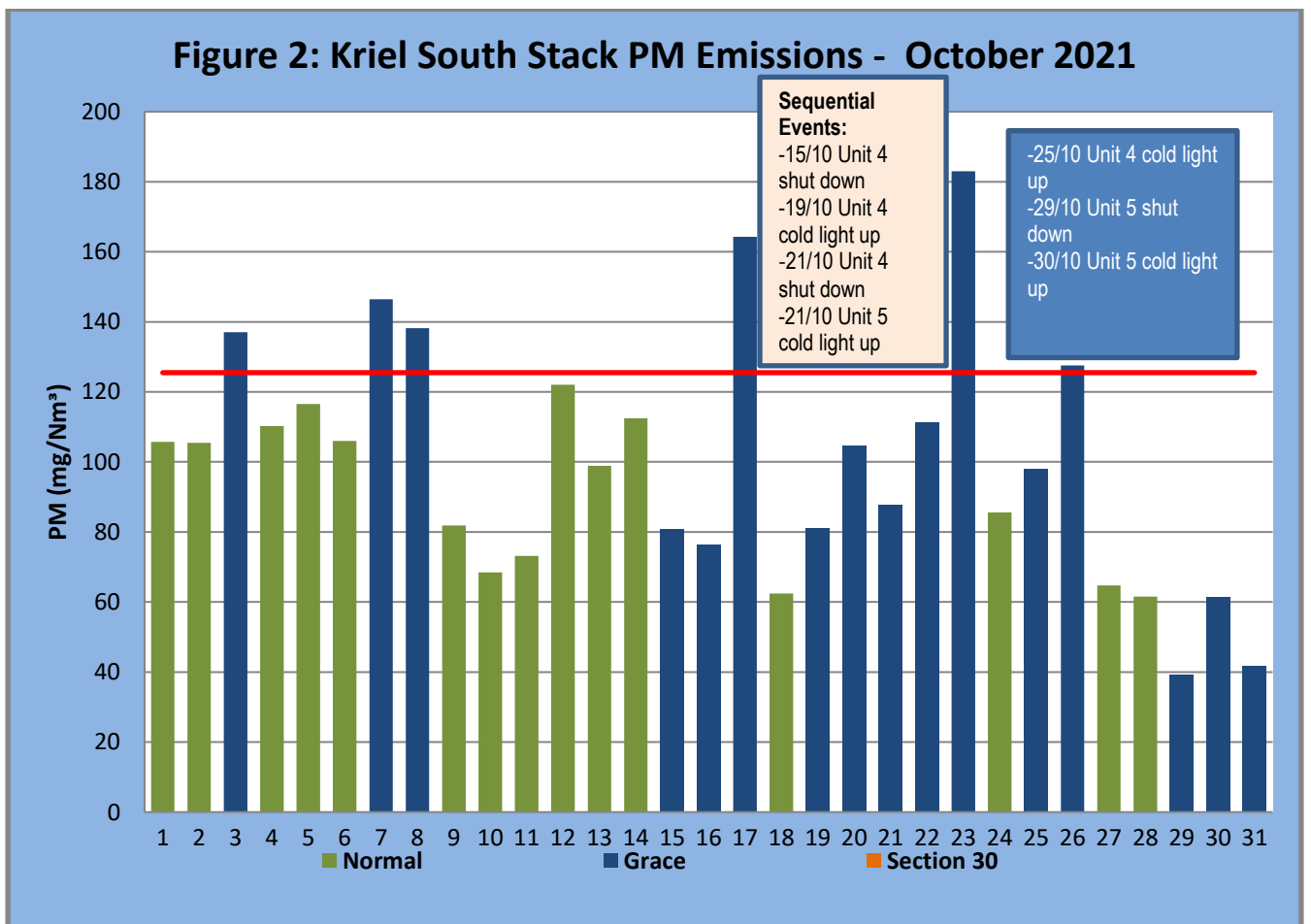


Figure 2: PM emissions for the month of October 2021 against emission limit for the South Stack. Monthly average was 98.5 mg/Nm<sup>3</sup>

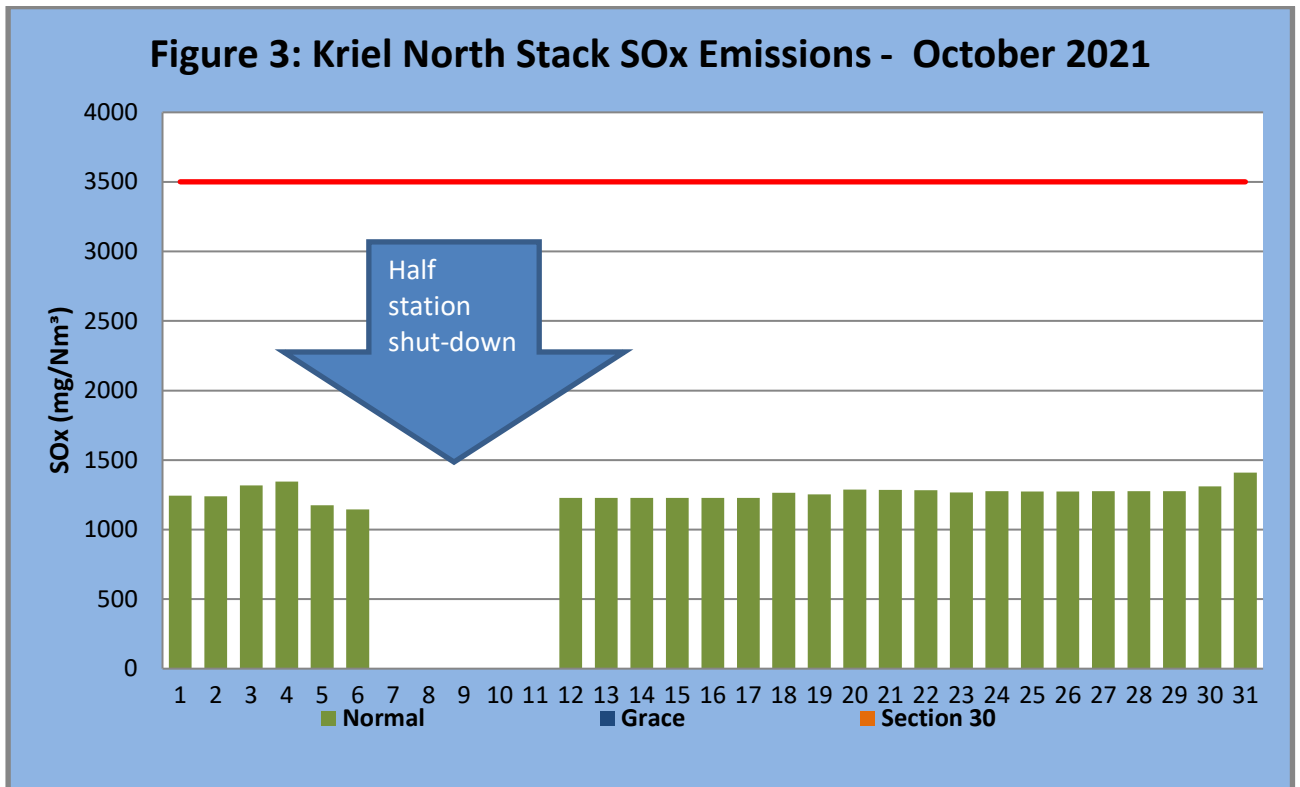


Figure 3. SO<sub>2</sub> emissions for the month of October 2021 against emission limit for the North Stack. The SO<sub>x</sub> Limit is 3500mg/Nm<sup>3</sup>.

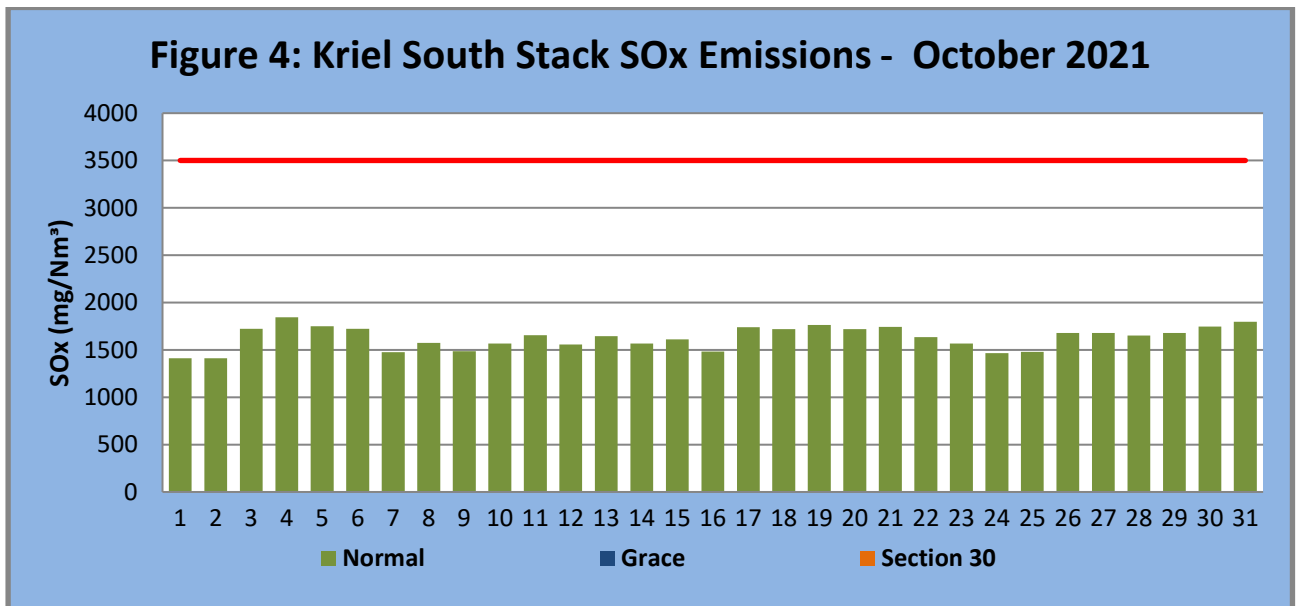


Figure 4. SO<sub>2</sub> emissions for the month of October 2021 against emission limit for the South Stack. The SO<sub>x</sub> Limit is 3500mg/Nm<sup>3</sup>.

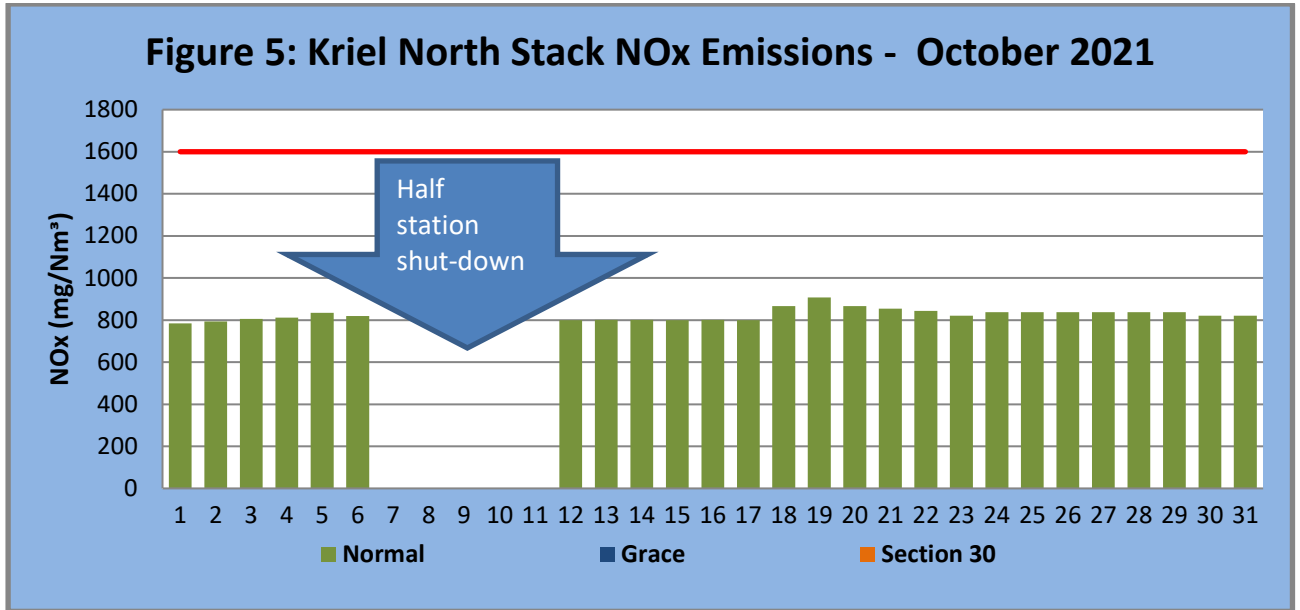


Figure 5. NO<sub>x</sub> emissions for the month of October 2021 against emission limit for the North Stack. The NO<sub>x</sub> Limit is 1600mg/Nm<sup>3</sup>.

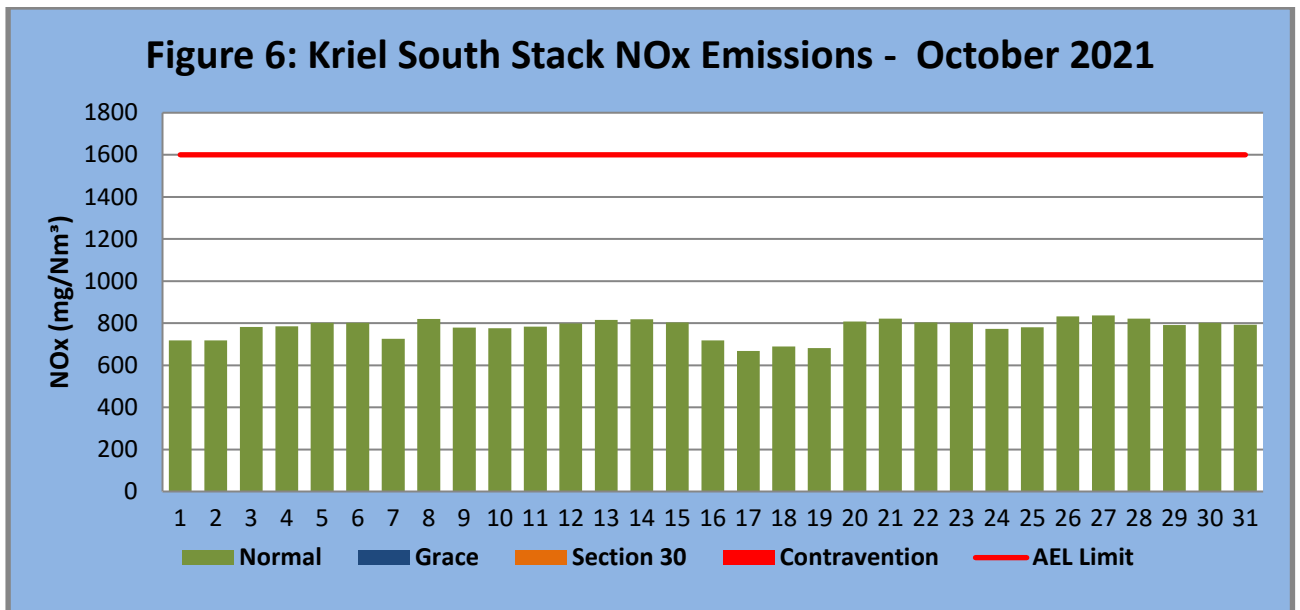


Figure 6. NO<sub>x</sub> emissions for the month of October 2021 against emission limit for the South Stack. The NO<sub>x</sub> Limit is 1600mg/Nm<sup>3</sup>.

Table 4: Monthly tonnages for the month October 2021

Unit	PM (tons)	SO <sub>2</sub> (tons)	NO <sub>2</sub> (tons)
SUM	416.8	5 512	2 903

**Table 5:** Each unit and respective days operating under normal operation and section 30 days respectively

Table 5.1: Operating days in compliance to PM AEL Limit - October 2021

Associated Unit/Stack	Normal	Grace	Section 30	Contravention	Monthly Limit Exceedance	Average PM (mg/Nm <sup>3</sup> )
North	11	14	0	0	0	112.2
South	15	16	0	0	0	98.5

Table 5.2: Operating days in compliance to SOx AEL Limit - October 2021

Associated Unit/Stack	Normal	Grace	Section 30	Contravention	Total Exceedance	Average SOx (mg/Nm <sup>3</sup> )
North	26	0	0	0	0	1 263.4
South	31	0	0	0	0	1630.5

Table 5.3: Operating days in compliance to NOx AEL Limit - October 2021

Associated Unit/Stack	Normal	Grace	Section 30	Contravention	Total Exceedance	Average NOx (mg/Nm <sup>3</sup> )
North	26	0	0	0	0	825.8
South	31	0	0	0	0	779.0

**Light up information**

**Table 6:** PM Start-up information for the month of October 2021

North Stack	Event 1		Event 2		Event 3		Event 4	
Unit No.	no event		Unit 2		no event		no event	
Breaker Open (BO)			11:15 PM	2021/10/05	BO previously	BO previously		
Draught Group (DG) Shut Down (SD)			2:10 PM	2021/10/06	n/a	n/a		
BO to DG SD (duration)		DD:HH:MM	00:14:55	DD:HH:MM	n/a	DD:HH:MM		DD:HH:MM
Fires in time			12:55 AM	2021/10/13				
Synch. to Grid (or BC)			3:30 PM	2021/10/13				
Fires in to BC (duration)		DD:HH:MM	00:14:35	DD:HH:MM		DD:HH:MM		DD:HH:MM
Emissions below limit from BC (end date)			not > limit	not > limit				
Emissions below limit from BC (duration)		DD:HH:MM	n/a	DD:HH:MM		DD:HH:MM		DD:HH:MM
North Stack ...Cont.	Event 5		Event 6		Event 7		Event 8	
Unit No.	Unit 3		Unit 3		Unit 2		Unit 3	
Breaker Open (BO)	9:45 AM	2021/10/01	12:55 PM	2021/10/06	4:00 PM	2021/10/14	8:45 AM	2021/10/15
Draught Group (DG) Shut Down (SD)	10:10 AM	2021/10/01	2:00 AM	2021/10/07	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)	00:00:25	DD:HH:MM	00:13:05	DD:HH:MM	n/a	DD:HH:MM	n/a	DD:HH:MM
Fires in time	5:25 AM	2021/10/02	3:35 AM	2021/10/12	4:00 PM	2021/10/14	8:45 AM	2021/10/15
Synch. to Grid (or BC)	10:35 AM	2021/10/02	12:50 PM	2021/10/14	3:30 PM	2021/10/15	2:40 PM	2021/10/17
Fires in to BC (duration)	00:05:10	DD:HH:MM	02:09:15	DD:HH:MM	00:23:30	DD:HH:MM	02:05:55	DD:HH:MM
Emissions below limit from BC (end date)	not > limit	not > limit	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	n/a	DD:HH:MM

South Stack	Event 1		Event 2		Event 3		Event 4	
Unit No.	no event		no event		no event		no event	
Breaker Open (BO)					9:20 PM	2021/10/05	2:45 PM	2021/10/06
Draught Group (DG) Shut Down (SD)					2:40 PM	2021/10/06	9:15 PM	2021/10/06
BO to DG SD (duration)		DD:HH:MM		DD:HH:MM	00:17:20	DD:HH:MM	00:06:30	DD:HH:MM
Fires in time								
Synch. to Grid (or BC)								
Fires in to BC (duration)		DD:HH:MM		DD:HH:MM		DD:HH:MM		DD:HH:MM
Emissions below limit from BC (end date)								
Emissions below limit from BC (duration)		DD:HH:MM		DD:HH:MM		DD:HH:MM		DD:HH:MM
South Stack ...Cont.	Event 1		Event 2		Event 3		Event 4	
Unit No.	no event		no event		Unit 4		Unit 5	
Breaker Open (BO)	9:15 PM	2021/10/06			1:05 AM	2021/10/01	7:25 PM	2021/10/15
Draught Group (DG) Shut Down (SD)	11:35 AM	2021/10/07			12:05 AM	2021/10/03	6:30 AM	2021/10/16
BO to DG SD (duration)	00:14:20	DD:HH:MM		DD:HH:MM	01:23:00	DD:HH:MM	00:11:05	DD:HH:MM
Fires in time					11:05 PM	2021/10/18	3:30 AM	2021/10/21
Synch. to Grid (or BC)					5:55 AM	2021/10/19	1:00 PM	2021/10/21
Fires in to BC (duration)		DD:HH:MM		DD:HH:MM	00:06:50	DD:HH:MM	00:09:30	DD:HH:MM
Emissions below limit from BC (end date)					not > limit	not > limit	not > limit	not > limit
Emissions below limit from BC (duration)		DD:HH:MM		DD:HH:MM	n/a	DD:HH:MM	n/a	DD:HH:MM

## Complaints Register

**Table 9:** Complaints for the month of October 2021.

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 by which measure will be implemented
There was no complaint related to air quality received during the month of October 2021.					

### General

The particulate matter (PM10) emissions on the North and South Common Stack were within the **monthly limit**; North stack recorded the monthly PM10 average emissions figure of **112.2 mg/Nm<sup>3</sup>** while south stack recorded the monthly PM10 average emissions figure of **98.5 mg/Nm<sup>3</sup>**. The gaseous (NO<sub>x</sub> & SO<sub>x</sub>) emissions on the north and south common stacks were also within the **daily limit** during the month of October 2021; refer to graphs above.

NB: The rest of the information demonstrating compliance with the emissions license conditions is supplied in the annual emission reports sent to your office.

Kriel Power Station's List of NEMA Section 30 Incidents for 2021/2022 Financial Year

Month	Description of Section30 Incidents - including the reference number	Root Cause (s)	Status of S30 Incident with DEFF (open or closed)	Remarks
April- 2021	Upset condition I Unit 1,2 and 3 exceeded 48 hours Grace Period	1.Castlet Key System failure 2.Defective Pyrometers	Open	1 event reported
May - 2021	None			
June - 2021	None			
July - 2021	None			
Aug - 2021	None			
Sep - 2021	South Stack: Upset condition in Unit 4,5 &5 exceeded 48 hours grace period	Spark from loose electrical connection on the motor terminal at the South SO3 pump house resulting into flashover	Open	1 Event reported
Oct - 2021	None			
Nov - 2021				
Dec - 2021				
Jan - 2022				
Feb - 2022				
Mar - 2022				