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Date:
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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 JULY 2022

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 July 2022. Verified emissions of particulates matter, SO₂ and NO_x (as NO₂) are also included.

Raw Materials and Products

Table 1: Quantity of Raw Materials and Products used/produced for the month of July 2022

| Raw Materials and Products used | Raw Material Type | Units | Maximum Permitted Consumption / Rate (Quantity) | Consumption / Rate in Month of July 2022 |
|---------------------------------|--------------------------|------------|--|--|
| | Coal | Tons/month | 1 227 600 | 542 275 |
| | Fuel Oil | Tons/month | 5 000 | 3 220.42 |
| Production Rates | Product/ By-Product Name | Unit | Maximum Production Capacity Permitted (Quantity) | Production Rate in Month of July 2022 |
| | Ash | Tons/month | not specified | 251.6 |
| | RE PM | kg/MWh | not specified | 0.29 |

1/...

Abatement Technology

Table 2: Abatement Equipment Control Technology for July 2022.

| Associated Unit/Stack | Technology Type | Actual Efficiency (%) | Utilisation |
|-----------------------|-----------------|-----------------------|-------------|
| | | July 2022 | July 2022 |
| Unit 1 | ESP | 99.82% | 83.2% |
| Unit 2 | ESP | 99.83% | 54.5% |
| Unit 3 | ESP | 99.81% | 62.2% |
| Unit 4 | ESP | 99.60% | 71.7% |
| Unit 5 | ESP | 99.85% | 79.7% |
| Unit 6 | ESP | 99.32% | 4.7% |

Energy Source Characteristics

Table 3: Energy Source Material Characteristics for the month of July 2022





| Characteristic | Stipulated Range (Unit) | Monthly Average Content |
|-----------------|-------------------------|-------------------------|
| Sulphur Content | 0.6-1.2 (%) | 0.77 |
| Ash Content | 21-36 (%) | 23.27 |

Monthly Monitor Reliability

| Associated Unit/Stack | PM (%) | SO _x (%) | NO _x (%) |
|-----------------------|--------|---------------------|---------------------|
| North | 92.59 | 73.32 | 75.28 |
| South | 97.47 | 17.79 | 18.20 |

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 |

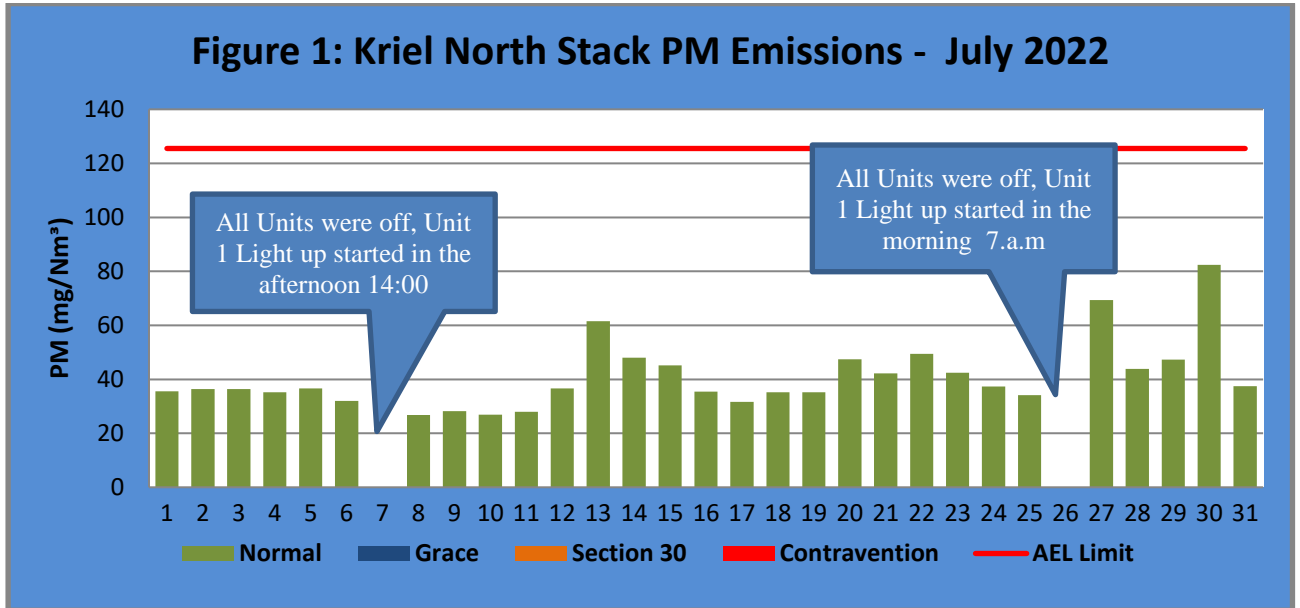


Figure 1: PM emissions for the month of July 2022 against emission limit for the North Stack. Monthly average was 40.8 mg/Nm³

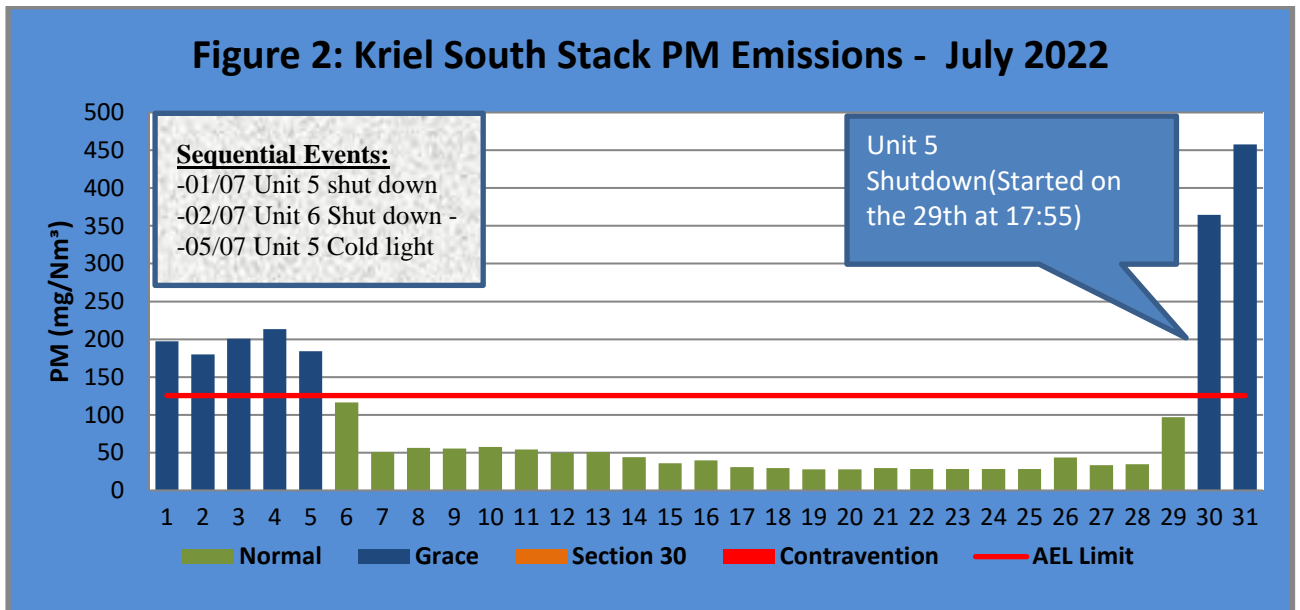


Figure 2: PM emissions for the month of July 2022 against emission limit for the South Stack. Monthly average was 98.2 mg/Nm³

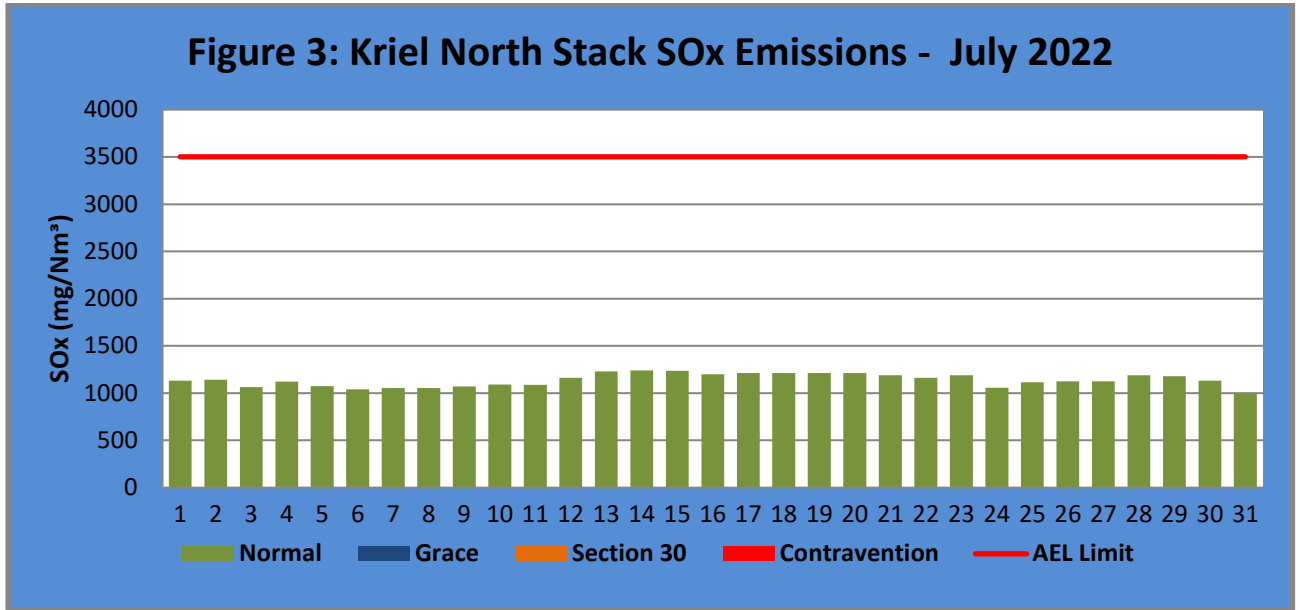


Figure 3. SO₂ emissions for the month of July 2022 against emission limit for the North Stack. The SO_x Limit is 3500mg/Nm³.

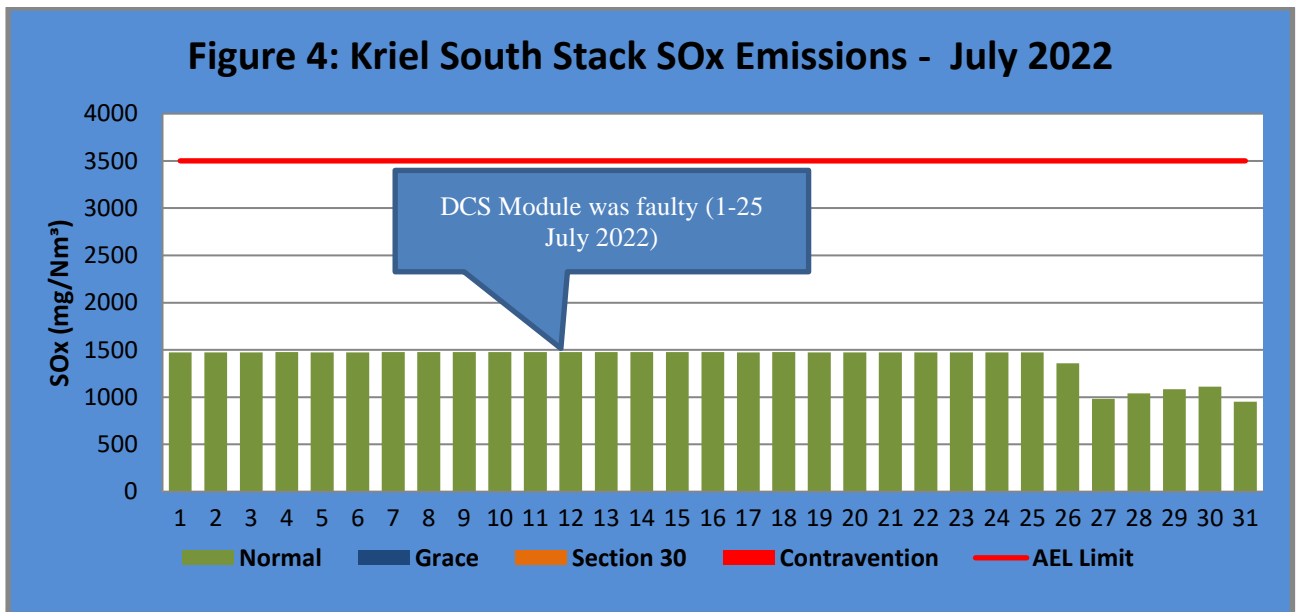


Figure 4. SO₂ emissions for the month of July 2022 against emission limit for the South Stack. The SO_x Limit is 3500mg/Nm³.

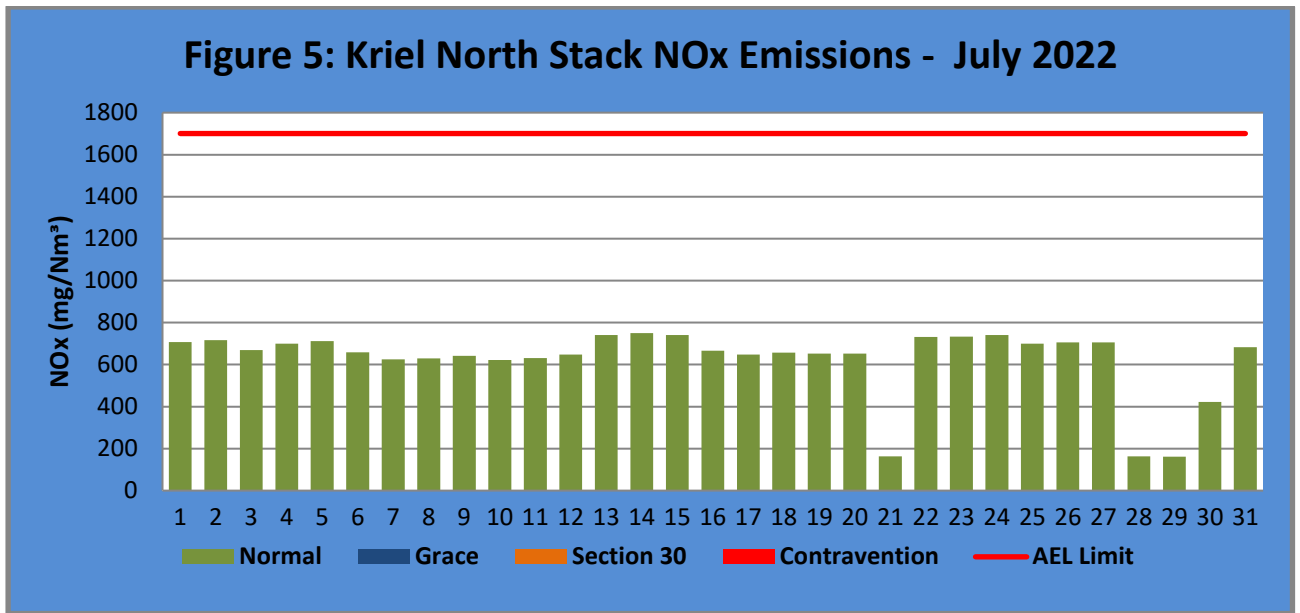


Figure 5. NO₂ emissions for the month of July 2022 against emission limit for the North Stack. The NO_x Limit is 1600mg/Nm³.

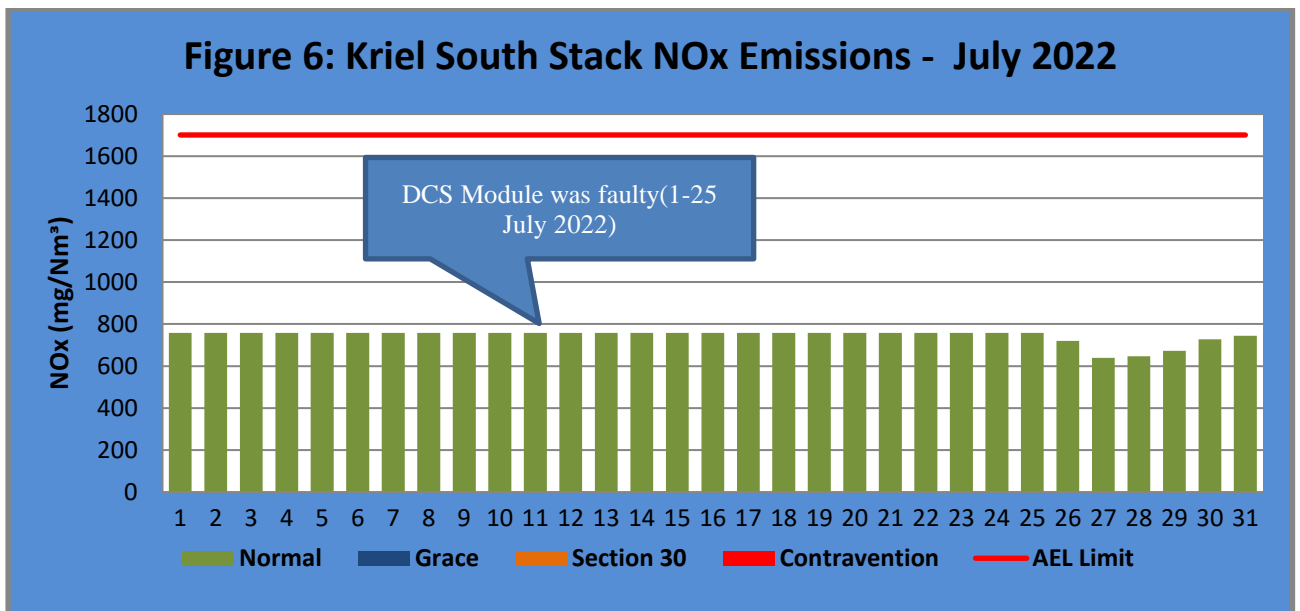


Figure 6. NO₂ emissions for the month of July 2022 against emission limit for the South Stack. The NO_x Limit is 1600mg/Nm³.

Table 4: Monthly tonnages for the month July 2022

| Unit | PM (tons) | SO ₂ (tons) | NO ₂ (tons) |
|------|-----------|------------------------|------------------------|
| SUM | 250.2 | 6 062.6 | 3 283.8 |

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 – July 2022

| Associated Unit/Stack | Normal | Grace | Section 30 | Contravention | Monthly Limit Exceedance | Average PM (mg/Nm ³) |
|-----------------------|--------|-------|------------|---------------|--------------------------|----------------------------------|
| North | 29 | 0 | 0 | 0 | 0 | 40.8 |
| South | 24 | 7 | 0 | 0 | 0 | 92.8 |

Table 5.2: Operating days in compliance to SOx AEL Limit - July 2022

| Associated Unit/Stack | Normal | Grace | Section 30 | Contravention | Total Exceedance | Average SOx (mg/Nm ³) |
|-----------------------|--------|-------|------------|---------------|------------------|-----------------------------------|
| North | 31 | 0 | 0 | 0 | 0 | 1 139.1 |
| South | 31 | 0 | 0 | 0 | 0 | 1 399.9 |

Table 5.3: Operating days in compliance to NOx AEL Limit – July 2022

| Associated Unit/Stack | Normal | Grace | Section 30 | Contravention | Total Exceedance | Average NOx (mg/Nm ³) |
|-----------------------|--------|-------|------------|---------------|------------------|-----------------------------------|
| North | 31 | 0 | 0 | 0 | 0 | 625.2 |
| South | 31 | 0 | 0 | 0 | 0 | 744.6 |

Light up information

Table 6: PM Start-up information for the month of July 2022

| North Stack | Event 1 | | Event 2 | | Event 3 | | Event 4 | |
|--|-------------|-------------|-------------|-------------|----------|------------|-------------|-------------|
| Unit No. | Unit 1 | | Unit 2 | | Unit | | Unit 3 | |
| Breaker Open (BO) | 11:55 PM | 2022/07/06 | | | 1:10 AM | 2022/07/07 | 11:15 PM | 2022/07/05 |
| Draught Group (DG) Shut Down (SD) | 2:25 AM | 2022/07/07 | | | 5:10 AM | 2022/07/07 | 11:00 AM | 2022/07/06 |
| BO to DG SD (duration) | 00:02:30 | DD:HH:MM | | DD:HH:MM | 00:04:00 | DD:HH:MM | 00:11:45 | DD:HH:MM |
| Fires in time | 11:10 AM | 2022/07/07 | 11:30 PM | 2022/07/07 | | | 1:50 PM | 2022/07/10 |
| Synch. to Grid (or BC) | 2:35 PM | 2022/07/07 | 8:30 PM | 2022/07/08 | | | 10:45 PM | 2022/07/10 |
| Fires in to BC (duration) | 00:03:25 | DD:HH:MM | 00:21:00 | DD:HH:MM | | DD:HH:MM | 00:08:55 | 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 | | DD:HH:MM | n/a | DD:HH:MM |

| North Stack | Event 5 | | Event 6 | | Event 7 | |
|--|-------------|-------------|-----------------------|-----------------------|-------------|-------------|
| Unit No. | Unit 1 | | Unit 1 | | Unit 2 | |
| Breaker Open (BO) | 5:15 AM | 2022/07/17 | 8:40 PM | 2022/07/28 | 5:20 AM | 2022/07/17 |
| Draught Group (DG) Shut Down (SD) | 5:20 AM | 2022/07/17 | DG did not trip or SD | DG did not trip or SD | 8:45 AM | 2022/07/17 |
| BO to DG SD (duration) | 00:00:05 | DD:HH:MM | n/a | DD:HH:MM | 00:03:25 | DD:HH:MM |
| Fires in time | 10:25 AM | 2022/07/17 | 9:45 AM | 2022/08/01 | 12:20 PM | 2022/07/18 |
| Synch. to Grid (or BC) | 3:35 PM | 2022/07/17 | 3:50 PM | 2022/08/01 | 3:10 AM | 2022/07/19 |
| Fires in to BC (duration) | 00:05:10 | DD:HH:MM | 00:06:05 | DD:HH:MM | 00:14:50 | 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 |

| South Stack | Event 1 | | Event 2 | | Event 3 | | Event 4 | |
|--|-------------|-------------|----------|------------|-------------|-------------|----------|------------|
| Unit No. | Unit 5 | | Unit | | Unit 4 | | Unit | |
| Breaker Open (BO) | 11:20 PM | 2022/07/01 | 11:05 AM | 2022/07/02 | 5:20 AM | 2022/07/17 | 1:35 PM | 2022/07/19 |
| Draught Group (DG) Shut Down (SD) | 10:05 AM | 2022/07/02 | 5:55 PM | 2022/07/03 | 7:00 AM | 2022/07/17 | 7:30 AM | 2022/07/20 |
| BO to DG SD (duration) | 00:10:45 | DD:HH:MM | 01:06:50 | DD:HH:MM | 00:01:40 | DD:HH:MM | 00:17:55 | DD:HH:MM |
| Fires in time | 3:40 AM | 2022/07/05 | | | 11:25 PM | 2022/07/21 | | |
| Synch. to Grid (or BC) | 11:45 AM | 2022/07/05 | | | 3:10 PM | 2022/07/24 | | |
| Fires in to BC (duration) | 00:08:05 | DD:HH:MM | | DD:HH:MM | 02:15:45 | DD:HH:MM | | 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 | | DD:HH:MM | n/a | DD:HH:MM | | DD:HH:MM |

| South Stack | Event 5 | | Event 2 | | Event 3 | |
|--|-------------|-------------|-------------|-------------|----------|------------|
| Unit No. | Unit 4 | | Unit 5 | | Unit | |
| Breaker Open (BO) | 4:30 AM | 2022/07/25 | 4:25 AM | 2022/07/25 | 5:55 PM | 2022/07/29 |
| Draught Group (DG) Shut Down (SD) | 4:30 AM | 2022/07/25 | 4:25 AM | 2022/07/25 | 6:45 AM | 2022/07/30 |
| BO to DG SD (duration) | 00:00:00 | DD:HH:MM | 00:00:00 | DD:HH:MM | 00:12:50 | DD:HH:MM |
| Fires in time | 1:20 AM | 2022/07/28 | 11:00 AM | 2022/07/25 | | |
| Synch. to Grid (or BC) | 1:00 PM | 2022/07/28 | 4:30 PM | 2022/07/25 | | |
| Fires in to BC (duration) | 00:11:40 | DD:HH:MM | 00:05:30 | DD:HH:MM | | 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 | | DD:HH:MM |

Complaints Register

Table 9: Complaints for the month of July 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 by which measure will be implemented |
|---|---------------------|--|--|--|---|
| There was no complaint related to air quality received during the month of July 2022. | | | | | |

General

The particulate matter (PM10) emissions on the North Common Stack were within the **monthly limit**; North stack recorded the monthly PM10 average emissions figure of **40.8 mg/Nm³** while South Common Stack exceeded the **monthly limit** and recorded PM10 monthly average figure of **92.8 mg/Nm³**. The gaseous (NO_x & SO_x) emissions on the north and south common stacks were also within the **daily limit** during the month of July 2022; refer to graphs above.

However it must be noted that the South Common Stack gaseous monitor was malfunctional due a faulty DCS module which was attended to on the 25th of July 2022

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 2022/2023 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-2022 | None | | | |
| July - 2022 | None | | | |
| July - 2022 | None | | | |
| July - 2022 | None | | | |
| Aug - 2022 | | | | |
| Sep - 2022 | | | | |
| Oct - 2022 | | | | |
| Nov - 2022 | | | | |
| Dec - 2022 | | | | |
| Jan - 2023 | | | | |
| Feb - 2023 | | | | |
| Mar - 2023 | | | | |