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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 MARCH 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 March 2021. 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 March 2021

| Raw Materials and Products used | Raw Material Type | Units | Maximum Permitted Consumption / Rate (Quantity) | Consumption / Rate in Month of March 2021 |
|---------------------------------|--------------------------|------------|--|--|
| | Coal | Tons/month | 1 227 600 | 740 850 |
| | Fuel Oil | Tons/month | 5 000 | 4 194.24 |
| Production Rates | Product/ By-Product Name | Unit | Maximum Production Capacity Permitted (Quantity) | Production Rate in Month of March 2021 |
| | Ash | Tons/month | not specified | 321.3 |
| | RE PM | kg/MWh | not specified | 0.35 <i>(figure still to be verified)</i> |

1/...

Abatement Technology

Table 2: Abatement Equipment Control Technology for March 2021.

| Associated Unit/Stack | Technology Type | Minimum Control Efficiency (%) | Actual Efficiency (%) |
|-----------------------|-----------------|--------------------------------|-----------------------|
| | | | March 2021 |
| Unit 1 | ESP | 98% | 99.77% |
| Unit 2 | ESP | 98% | 99.83% |
| Unit 3 | ESP | 98% | 99.66% |
| Unit 4 | ESP | 98% | 99.84% |
| Unit 5 | ESP | 98% | Outage |
| Unit 6 | ESP | 98% | 99.81% |

Energy Source Characteristics

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





| Characteristic | Stipulated Range (Unit) | Monthly Average Content |
|-----------------|-------------------------|-------------------------|
| Sulphur Content | 0.6-1.2 (%) | 0.63 |
| Ash Content | 21-36 (%) | 22.69 |

Monthly Monitor Reliability

| Associated Unit/Stack | PM (%) | SOx (%) | NOx (%) |
|-----------------------|--------|---------|---------|
| North | 96.24% | 98.79% | 100.00% |
| South | 99.55% | 99.57% | 100.00% |

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 |

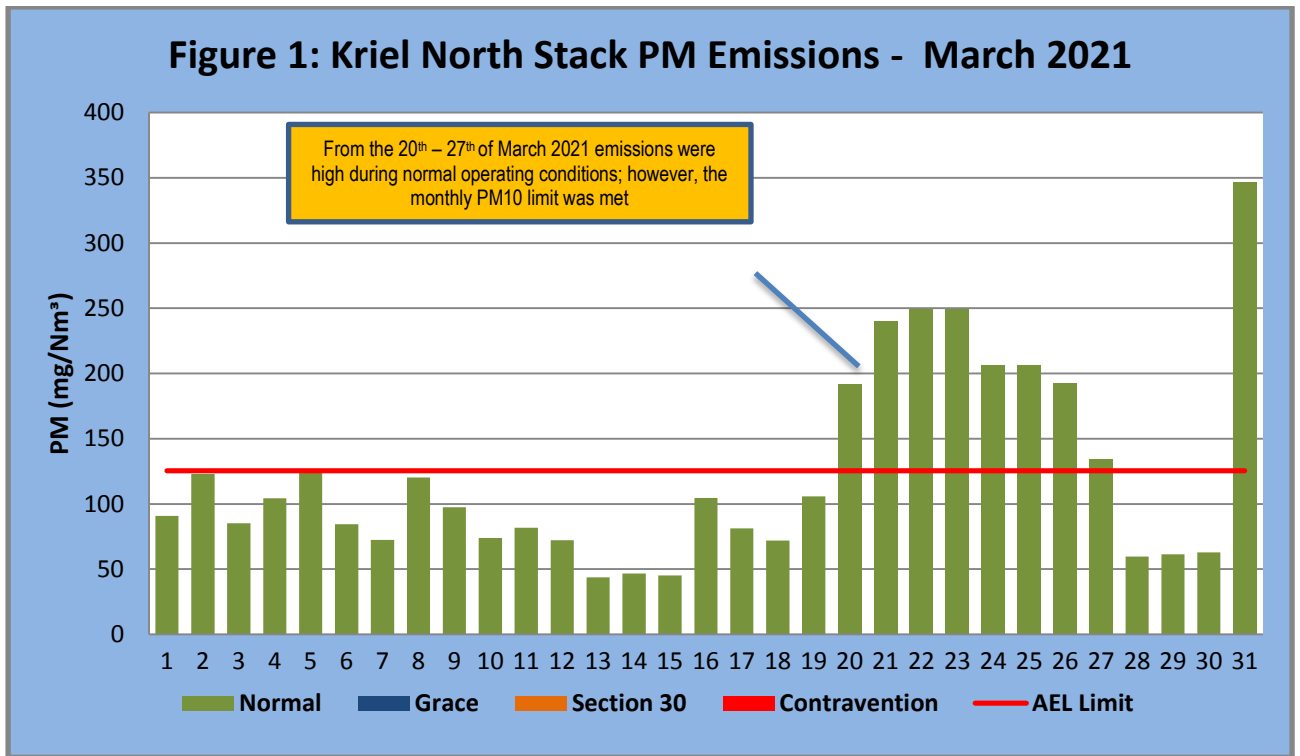


Figure 1: PM emissions for the month of March 2021 against emission limit for the North Stack; monthly average was 123.6mg/Nm³

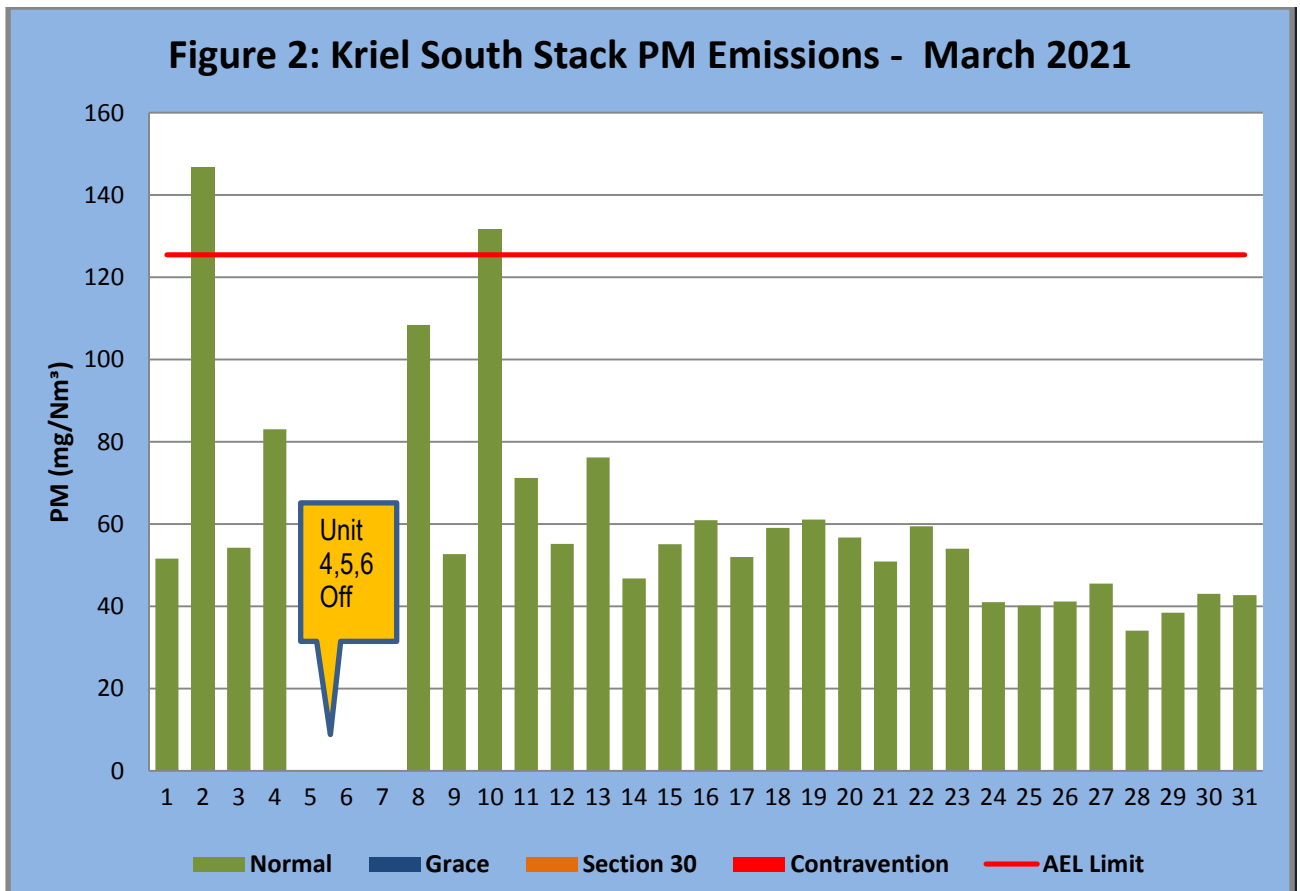


Figure 2: PM emissions for the month of March 2021 against emission limit for the South Stack; monthly average was 61.2mg/Nm³

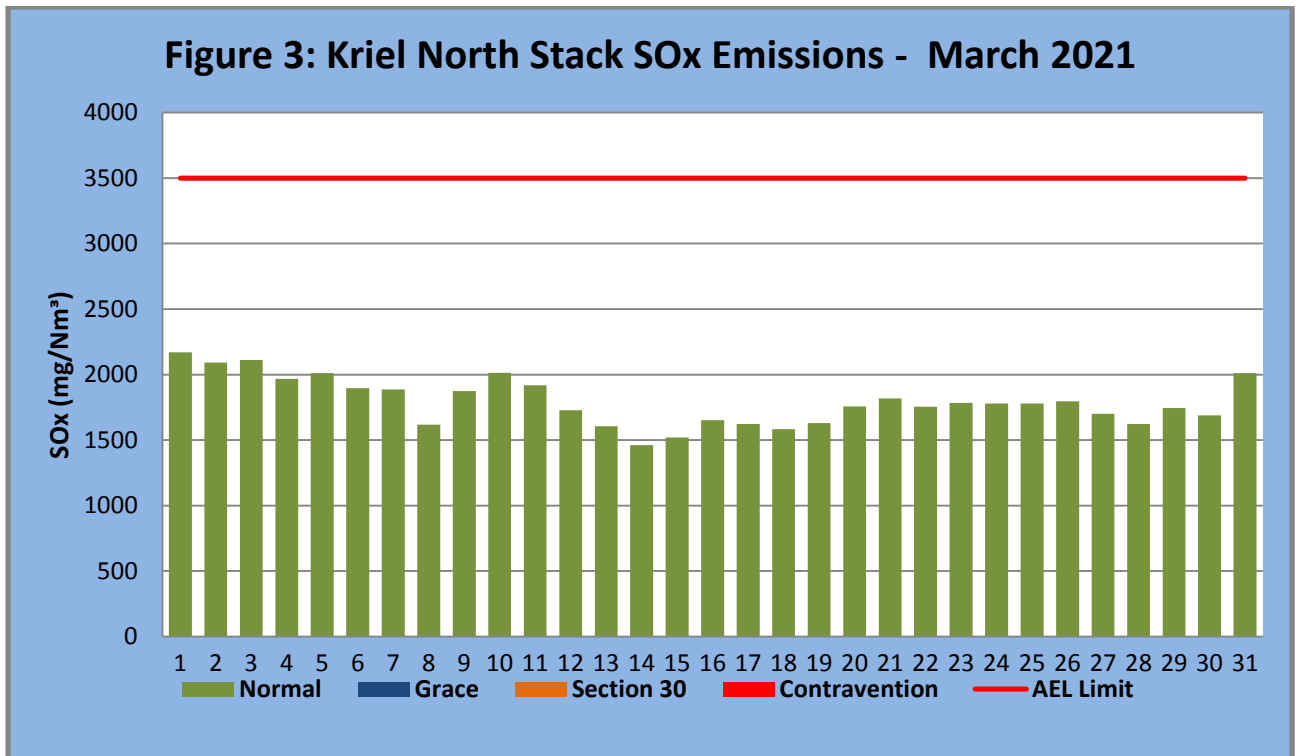


Figure 3. SO₂ emissions for the month of March 2021 against emission limit for the North Stack. The SO_x Limit is 3500mg/Nm³.

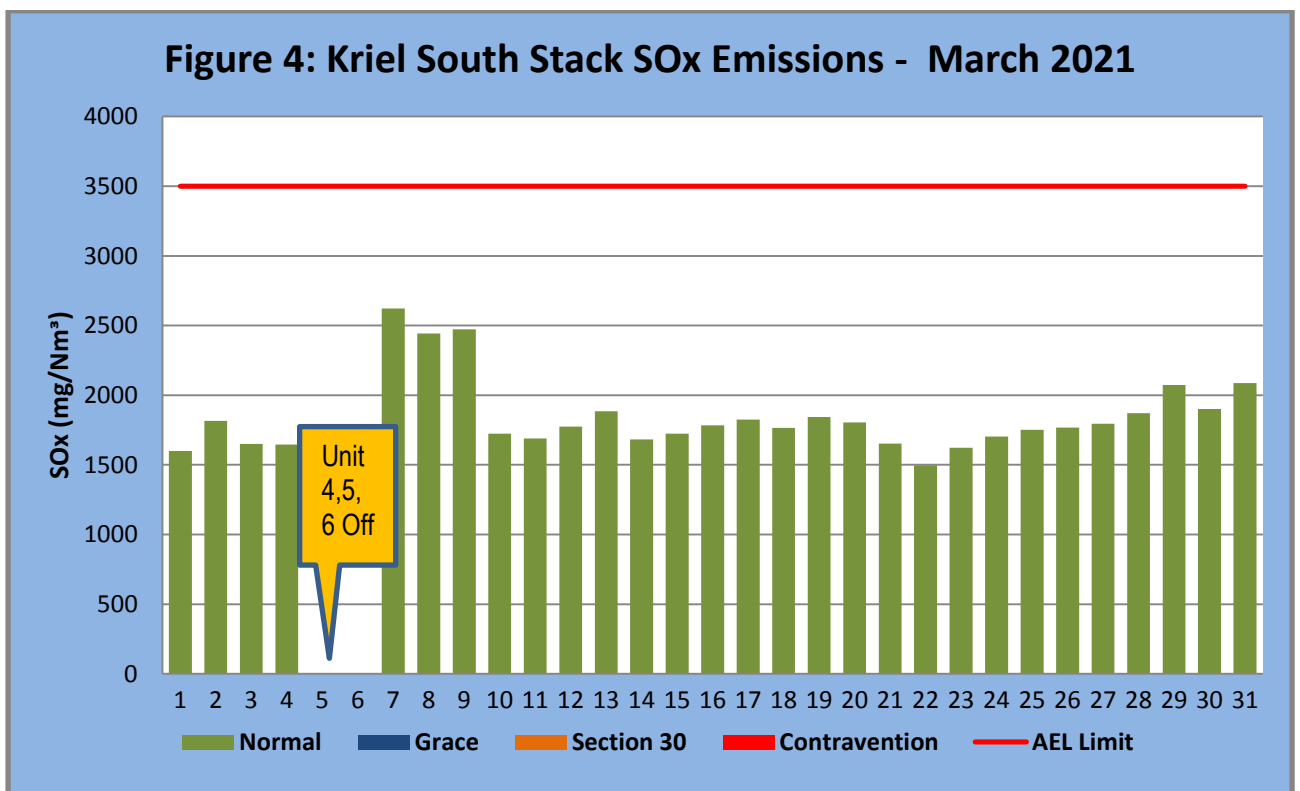


Figure 4. SO₂ emissions for the month of March 2021 against emission limit for the South Stack.

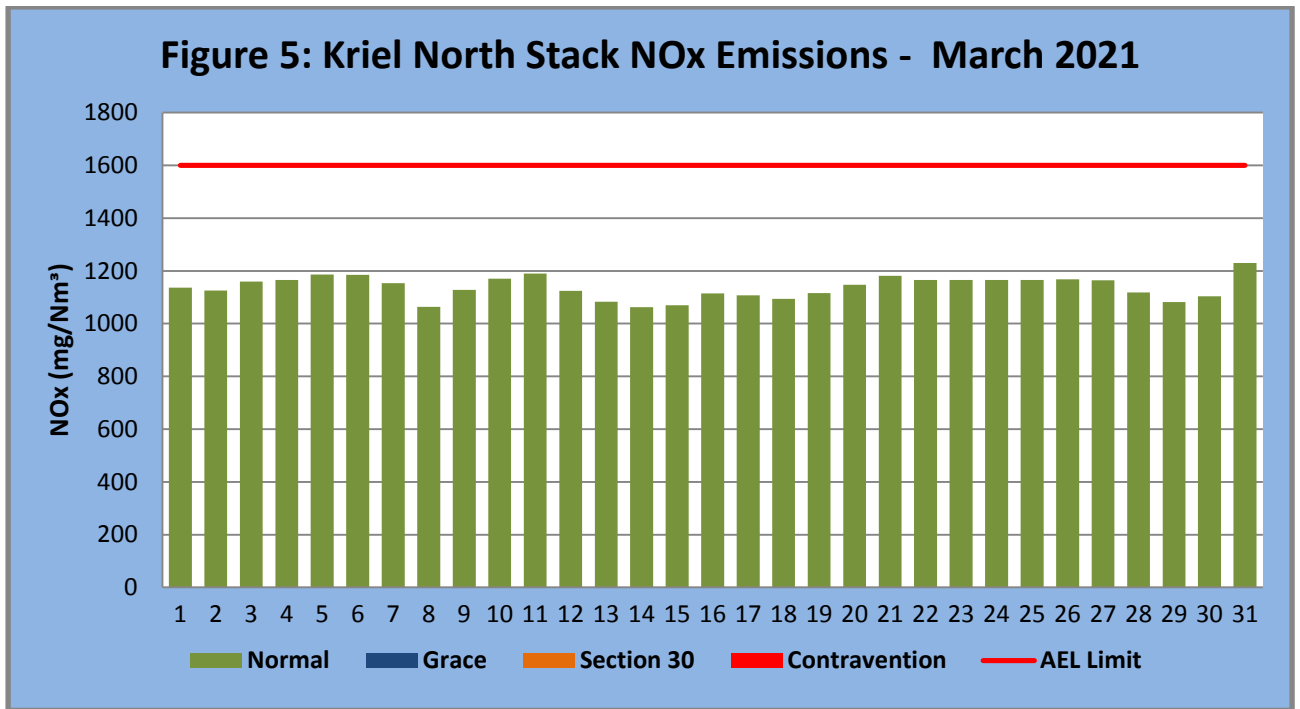


Figure 5. NO₂ emissions for the month of March 2021 against emission limit for the North Stack.

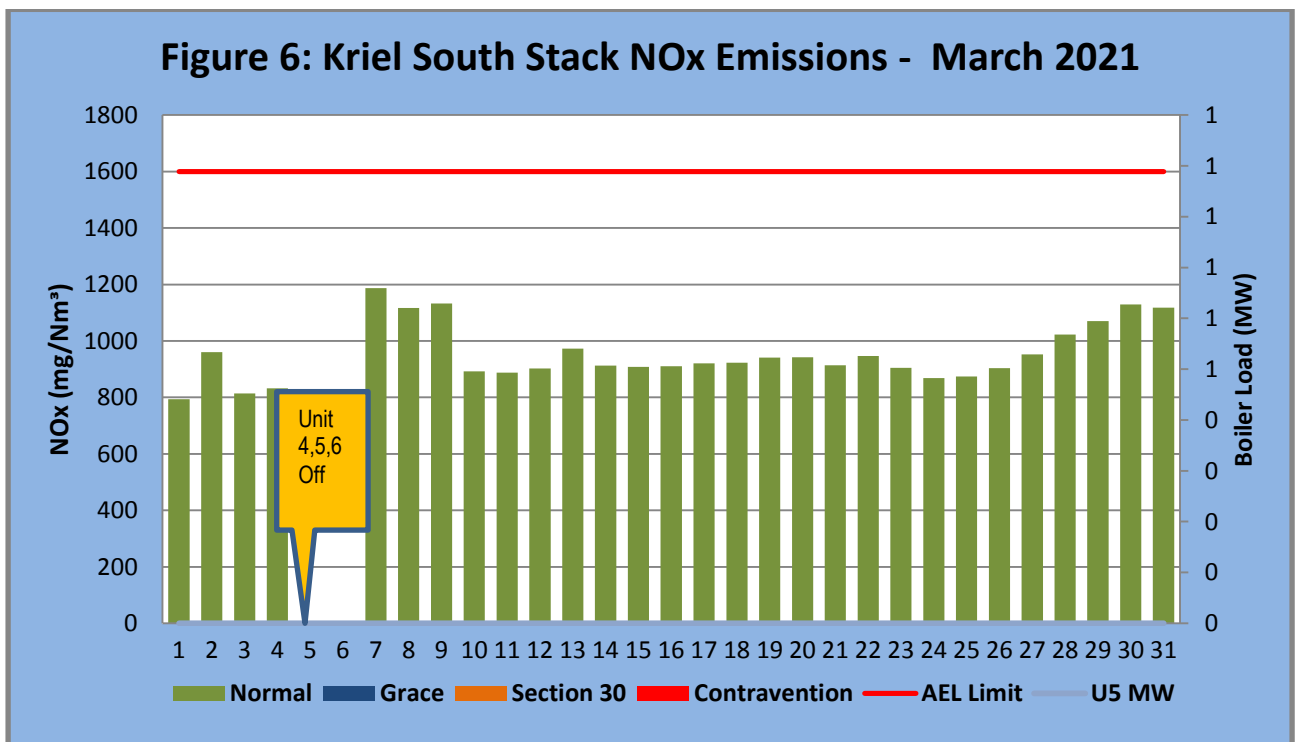


Figure 6. NO₂ emissions for the month of March 2021 against emission limit for the South Stack.

Table 4: Monthly tonnages for the month March 2021

| Unit | PM (tons) | SO ₂ (tons) | NO ₂ (tons) |
|------|-----------|------------------------|------------------------|
| SUM | 321.3 | 6800.6 | 3911.2 |

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 - March 2021

| Associated Unit/Stack | Normal | Grace | Section 30 | Contravention | Total Exceedance | Average PM (mg/Nm ³) |
|-----------------------|--------|-------|------------|---------------|------------------|----------------------------------|
| North | 31 | | 0 | 0 | 9 | 123.6 |
| South | 31 | | 0 | 0 | 2 | 61.2 |

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

| Associated Unit/Stack | Normal | Grace | Section 30 | Contravention | Total Exceedance | Average SOx (mg/Nm ³) |
|-----------------------|--------|-------|------------|---------------|------------------|-----------------------------------|
| North | 31 | 0 | 0 | 0 | 0 | 1 793.3 |
| South | 31 | 0 | 0 | 0 | 0 | 1844.0 |

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

| Associated Unit/Stack | Normal | Grace | Section 30 | Contravention | Total Exceedance | Average NOx (mg/Nm ³) |
|-----------------------|--------|-------|------------|---------------|------------------|-----------------------------------|
| North | 31 | 0 | 0 | 0 | 0 | 1 138.4 |
| South | 31 | 0 | 0 | 0 | 0 | 953.6 |

Light up information

Table 6: PM Start-up information for the month of fabricate March 2021

| North Stack | Event 1 | | Event 2 | |
|--|-------------|-------------|---------------|---------------|
| Unit No. | Unit 1 | | Unit 2 | |
| Breaker Open (BO) | 7:00 PM | 2021/03/20 | BO previously | BO previously |
| Draught Group (DG) Shut Down (SD) | 00:12:05 | DD:HH:MM | n/a | n/a |
| BO to DG SD (duration) | 6:30 AM | 2021/03/23 | n/a | DD:HH:MM |
| Fires in time | 2:40 PM | 2021/03/25 | 3:25 AM | 2021/03/17 |
| Synch. to Grid (or BC) | 02:08:10 | DD:HH:MM | 4:00 PM | 2021/03/18 |
| Fires in to BC (duration) | 12:00 AM | 2021/02/23 | 01:12:35 | DD:HH:MM |
| Emissions below limit from BC (end date) | | DD:HH:MM | 12:00 AM | 2021/02/23 |
| Emissions below limit from BC (duration) | 7:00 PM | 2021/03/20 | | DD:HH:MM |
| North Stack | Event 3 | | Event 4 | |
| Unit No. | Unit 3 | | Unit 2 | |
| Breaker Open (BO) | 11:20 PM | 2021/03/11 | 10:40 PM | 2021/03/26 |
| Draught Group (DG) Shut Down (SD) | 12:10 PM | 2021/03/12 | 1:15 PM | 2021/03/27 |
| BO to DG SD (duration) | 00:12:50 | DD:HH:MM | 00:14:35 | DD:HH:MM |
| Fires in time | 11:20 PM | 2021/03/14 | 11:55 AM | 2021/03/29 |
| Synch. to Grid (or BC) | 4:20 PM | 2021/03/15 | 7:50 AM | 2021/03/30 |
| Fires in to BC (duration) | 00:17:00 | DD:HH:MM | 00:19:55 | 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 |

| South Stack | Event 1 | | Event 2 | |
|--|----------|------------|----------|------------|
| Unit No. | Unit 4 | | Unit 6 | |
| Breaker Open (BO) | 8:10 AM | 2021/03/02 | 12:00 AM | 2021/03/05 |
| Draught Group (DG) Shut Down (SD) | 8:45 PM | 2021/03/02 | 12:30 PM | 2021/03/05 |
| BO to DG SD (duration) | 00:12:35 | DD:HH:MM | 00:12:30 | DD:HH:MM |
| Fires in time | 3:40 AM | 2021/03/07 | 3:45 PM | 2021/03/08 |
| Synch. to Grid (or BC) | 12:25 PM | 2021/03/07 | 11:25 PM | 2021/03/08 |
| Fires in to BC (duration) | 00:08:45 | DD:HH:MM | 00:07:40 | DD:HH:MM |
| Emissions below limit from BC (end date) | 12:00 AM | 2021/02/23 | 12:00 AM | 2021/02/23 |
| Emissions below limit from BC (duration) | | DD:HH:MM | | DD:HH:MM |
| South Stack | Event 3 | | | |
| Unit No. | Unit 4 | | | |
| Breaker Open (BO) | | 7:20 PM | | 2021/03/23 |
| Draught Group (DG) Shut Down (SD) | | 9:30 PM | | 2021/03/23 |
| BO to DG SD (duration) | | 00:02:10 | | DD:HH:MM |
| Fires in time | | 2:10 AM | | 2021/03/25 |
| Synch. to Grid (or BC) | | 6:40 AM | | 2021/03/25 |
| Fires in to BC (duration) | | 00:04:30 | | DD:HH:MM |
| Emissions below limit from BC (end date) | | 12:00 AM | | 2021/02/23 |
| Emissions below limit from BC (duration) | | | | DD:HH:MM |

Complaints Register

Table 9: Complaints for the month of March 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 March 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 **123.6 mg/Nm³** while south stack recorded PM10 monthly average figure of **61.2 mg/Nm³**. The gaseous (NOx & SOx) emissions on the north and south common stack were also within the **daily limit** during the month of March 2021; refer to graphs above.

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

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

| Month | Description of Section 30 Incidents - including the reference number | Root Cause (s) | Status of S30 Incident with DEFF (open or closed) | Remarks |
|--------------|---|---|---|---------------------|
| April – 2020 | No section 30 incident reported. | | | No event to report. |
| May – 2020 | No section 30 incident reported. | | | No event to report. |
| June – 2020 | No section 30 incident reported. | | | No event to report. |
| July – 2020 | No section 30 incident reported. | | | No event to report. |
| Aug - 2020 | Upset condition in unit 4, 5&6 exceeded 48 hours grace period. Section 30 compiled in terms of Section 7.3.2 Kriel's Atmospheric Emissions License | High hopper levels and ash transportation backlog at Unit 5 due to MCB | Open | 1 Event reported |
| Sep – 2020 | No section 30 incident reported. | | | No event to report. |
| Oct – 2020 | No section 30 incident reported. | | | No event to report. |
| Nov – 2020 | No section 30 incident reported. | | | No event to report. |
| Dec – 2020 | Upset conditions in unit 1 & 2 exceeded 48hours grace period(north stack) | Failure of 11KV overhead line due development of hotspot on the conductor. | Open | 1 Event reported |
| Jan – 2021 | Upset conditions in unit 1,2 and 3 exceeded 48hours grace period (north stack) | <ul style="list-style-type: none"> •Misfiring SO3 electric heater due to heater phase failure. •Contaminated sulphur in the storage tank. | Open | 1 Event reported |
| Feb - 2021 | <p>Upset conditions in unit 1,2 and 3 exceeded 48hours grace period (north stack)</p> <p>Upset Condition in Units 4&6 exceeded 48 ours Grace period (south stack)</p> | <p>Failure of SO3 Program Logic Controller system and power supply failure into the compressor plant</p> <p>Malfunction of Unit 4 SO3 heater</p> | Open | 2 Events |
| Mar - 2021 | No section 30 incident reported. | | | No event to report. |