Eskom
Generation

Department of Agriculture, Rural Development, Land and Environmental Affairs
The Director: Pollution and Waste Management
Private Bag X11219
Nelspruit 1200

Date:
15th September 2018
Enquiries:

Attention:
Mr. M Mahlalela

Nkangala District Municipality
PO Box 437
Middelburg 1050

Attention:
Mr. V Mahlangu

MATLA POWER STATION
AIR QUALITY REPORT FOR AUGUST 2018

The figures reported in this report are preliminary, and are to be considered for information purposes only. Final annual figures are those reported within 60 days of the independent audit conducted at the end of the financial year (March).

1. PARTICULATE EMISSIONS: MONTHLY TONNAGES.

	BLR	SEP 2017	OCT 2017	NOV 2017	DEC 2017	JAN 2018	FEB 2018	MAR 2018	APR 2018	MAY 2018	JUN 2018	JUL 2018	AUG 2018
Monthly Tonnage	1	65.19	71.68	108.77	90.10	46.69	Off	Off	Off	Off	Off	Off	95.56
	2	56.79	51.66	99.27	84.35	165.43	57.98	60.80	28.57	44.25	74.24	74.20	69.81
	3	61.23	47.64	97.34	82.94	172.35	55.05	62.50	29.56	35.97	86.14	79.36	173.07
	4	148.80	183.23	165.67	173.61	188.43	166.34	132.22	87.07	123.63	67.06	56.07	45.66
	5	45.36	147.51	74.42	49.59	82.97	68.06	97.63	61.14	83.25	90.26	45.00	73.61
	6	Off	Off	5.37	22.74	53.43	62.15	50.91	52.66	44.17	47.93	46.24	74.64
	Station	377.37	501.73	550.84	503.33	709.30	409.57	404.02	258.99	331.28	365.62	300.89	532.34
GWhSO		1703.4	1580.5	1802.7	1998.5	1783.6	1562.9	1733.7	1594.2	1627.7	1491.5	1398.1	1368.0

Generation Division (Operating Unit Coal 2)
Matla Power Station SA
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Private Bag X 5012, Kriel, 2271 SA
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2. COAL AND LOAD FACTOR:

STATION		SEP 2017	OCT 2017	NOV 2017	DEC 2017	JAN 2018	FEB 2018	MAR 2018	APR 2018	MAY 2018	JUN 2018	JUL 2018	AUG 2018
Load Factor		78.05	80.55	83.88	85.33	82.96	88.34	86.45	78.39	89.58	76.24	72.31	71.04
Ash Content	%	28.70	24.34	24.11	29.57	27.15	23.3	26.41	25.3	27.70	27.92	27.6	30.93
Sulphur Content	%	1.00	1.00	1.0	1.0	1.0	0.95	0.90	1.00	1.2	1.00	1.00	1.00
Total Moisture	%	7.10	8.11	10.69	9.64	9.43	9.60	9.57	9.21	9.7	9.47	9.43	7.91

3. GASEOUS EMISSIONS:

CO_2 emissions: kilotons emitted per month, calculated from coal analysis and emission factors.

	SEP 2017	OCT 2017	NOV 2017	DEC 2017	JAN 2018	FEB 2018	MAR 2018	APR 2018	MAY 2018	JUN 2018	JUL 2018	AUG 2018
Units 1-3												
Unit 4												
Unit 5												
Unit 6												
All Units												

SO_2 emissions: kilotons emitted per month, calculated from coal analysis and emission factors.

	SEP 2017	OCT 2017	NOV 2017	DEC 2017	JAN 2018	FEB 2018	MAR 2018	APR 2018	MAY 2018	JUN 2018	JUL 2018	AUG 2018
Units 1-3	8.66	9.40	10.46	10.31	8.25	6.95	7.84	6.62	7.68	6.18	6.34	6.02
Unit 4	3.15	3.62	3.38	3.71	2.89	2.85	3.16	3.29	3.94	3.18	3.22	2.07
Unit 5	3.02	3.25	3.15	3.50	3.31	3.02	3.51	3.07	3.95	2.77	1.67	2.77
Unit 6	Off	Off	0.44	2.80	3.70	2.46	3.13	3.15	3.93	2.99	2.89	2.75
All Units	14.83	16.27	17.43	20.32	18.15	15.28	17.64	16.12	19.50	15.12	14.13	13.61

NO_x emissions: kilotons emitted per month, calculated from coal analysis and emission factors.

	SEP 2017	OCT 2017	NOV 2017	DEC 2017	JAN 2018	FEB 2018	MAR 2018	APR 2018	MAY 2018	JUN 2018	JUL 2018	AUG 2018
Units 1-3	2.71	2.95	3.28	3.23	2.59	2.18	2.46	2.07	2.01	1.94	1.99	1.88
Unit 4	0.99	1.13	1.06	1.16	0.91	0.89	0.99	1.03	1.03	1.00	1.01	0.65
Unit 5	0.95	1.02	0.99	1.10	1.04	0.95	1.10	0.96	1.03	0.87	0.52	0.87
Unit 6	Off	Off	0.14	0.88	1.16	0.77	0.98	0.99	10.3	0.94	0.91	0.86
All Units	4.65	5.10	5.46	6.37	5.69	4.79	5.53	5.05	5.09	4.74	4.43	4.26

CO_2 emissions: kilotons emitted per month, measured with the continuous emission monitoring system. NOTE: These are unverified values for information purposes only.

	SEP 2017	OCT 2017	NOV 2017	DEC 2017	JAN 2018	FEB 2018	MAR 2018	APR 2018	MAY 2018	JUN 2018	JUL 2018	AUG 2018
Units 1-3												
Unit 4												
Unit 5												
Unit 6												
All Units												

SO_2 emissions: kilotons emitted per month, measured with the continuous emission monitoring system. NOTE: These are unverified values for information purposes only.

	SEP 2017	OCT 2017	NOV 2017	DEC 2017	JAN 2018	FEB 2018	MAR 2018	APR 2018	MAY 2018	JUN 2018	JUL 2018	AUG 2018
Units 1-3	7.82	7.59	12.65	9.94	7.15	5.55	8.31	6.73	6.64	6.72	6.43	6.26
Unit 4	1.54	2.91	2.51	2.43	1.61	1.81	2.28	2.18	1.96	1.86	1.84	1.15
Unit 5	1.55	2.84	3.05	2.89	2.54	2.57	2.74	2.61	2.58	2.12	1.13	2.26
Unit 6	Off	Off	0.14	1.06	1.44	1.03	1.22	2.73	2.65	2.40	2.38	2.18
All Units	10.91	13.35	18.36	16.33	12.74	10.96	14.55	14.26	13.83	13.10	11.79	11.85

NO_X emissions: kilotons emitted per month, measured with the continuous emission monitoring system. NOTE: These are unverified values for information purposes only.

	SEP 2017	OCT 2017	NOV 2017	DEC 2017	JAN 2018	FEB 2018	MAR 2018	APR 2018	MAY 2018	JUN 2018	JUL 2018	AUG 2018
Units 1-3	3.57	3.48	5.98	5.03	3.26	2.98	3.78	2.82	2.47	2.61	2.48	2.27
Unit 4	0.87	1.84	1.53	1.52	0.98	1.30	1.26	1.01	0.84	0.87	0.81	0.53
Unit 5	0.68	1.35	1.41	1.35	1.43	1.32	1.28	1.06	1.02	0.90	0.37	0.70
Unit 6	Off	Off	0.07	0.54	0.79	0.55	0.63	1.25	1.10	1.19	1.11	0.89
All Units	5.12	6.66	8.99	8.44	6.46	6.15	6.95	6.15	5.43	5.57	4.77	4.40

CO_2 emissions (mg/Nm^3): Average concentration per month (at 273 K, 101.3 kPa and 10% O_2), measured with the continuous emission monitoring system. NOTE: These are unverified values for information purposes only

	SEP 2017	OCT 2017	NOV 2017	DEC 2017	JAN 2018	FEB 2018	MAR 2018	APR 2018	MAY 2018	JUN 2018	JUL 2018	AUG 2018
Units 1-3												
Unit 4												
Unit 5												
Unit 6												

SO_2 emissions (mg/Nm^3): Average concentration per month (at 273 K, 101.3 kPa and 10% O_2), measured with the continuous emission monitoring system. NOTE: These are unverified values for information purposes only

Limit 4000	SEP 2017	OCT 2017	NOV 2017	DEC 2017	JAN 2018	FEB 2018	MAR 2018	APR 2018	MAY 2018	JUN 2018	JUL 2018	AUG 2018
Units 1-3	2094	1831	2390	2127	1883	1587	2246	2036	2153	2203	2116	2129
Unit 4	1627	2023	1513	1447	1476	1350	1626	1628	1685	1590	1761	1614
Unit 5	1731	1966	2046	1906	1751	1827	1856	1850	1797	1656	1533	1658
Unit 6	Off	Off	1421	1385	1353	1406	1425	1540	1620	1529	1554	1572

SO_2 daily average emissions: AEL limit exceedances

Limit 3500	SEP 2017	OCT 2017	NOV 2017	DEC 2017	JAN 2018	FEB 2018	MAR 2018	APR 2018	MAY 2018	JUN 2018	JUL 2018	AUG 2018
Units 1-3	0	0	0	0	0	0	0	0	0	0	0	0
Unit 4	0	0	0	0	0	0	0	0	0	0	0	0
Unit 5	0	0	0	0	0	0	0	0	0	0	0	0
Unit 6	0	0	0	0	0	0	0	0	0	0	0	0

NO_x emissions (mg/Nm^3): Average concentration per month (at 273 K, 101.3 kPa and 10% O_2), measured with the continuous emission monitoring system. NOTE: These are unverified values for information purposes only

Limit 1700	SEP 2017	OCT 2017	NOV 2017	DEC 2017	JAN 2018	FEB 2018	MAR 2018	APR 2018	MAY 2018	JUN 2018	JUL 2018	AUG 2018
Units 1-3	956	838	1128	1074	858	851	1017	852	797	853	806	770
Unit 4	914	1269	914	894	896	970	872	752	713	735	773	745
Unit 5	759	938	949	892	982	936	859	753	708	703	493	519
Unit 6	Off	Off	682	705	751	751	740	711	674	757	717	646

NO_x daily average emissions: AEL limit exceedances

Limit 1200	SEP 2017	OCT 2017	NOV 2017	DEC 2017	JAN 2018	FEB 2018	MAR 2018	APR 2018	MAY 2018	JUN 2018	JUL 2018	AUG 2018
Units 1-3	0	0	2	0	0	0	0	0	0	0	0	0
Unit 4	0	20	0	0	0	0	0	0	0	0	0	0
Unit 5	0	0	0	0	0	0	0	0	0	0	0	0
Unit 6	0	0	0	0	0	0	0	0	0	0	0	0

4. PARTICULATE EMISSION PERFORMANCE

	MONTH AVERAGE EMISSIONS	AEL LIMIT(DAILY AVERAGE)	HIGHEST DAILY AVERAGE
UNIT	**mg/Nm3**	**mg/Nm3**	**mg/Nm3**
1, 2 & 3	99.99	200	243.66
4	68.78	200	372.63
5	49.80	100	134.06
6	51.62	100	71.97
Station	67.55		
YTD	51.70		

ABATEMENT APPARATUS AVAILABILITY

Unit		1	2	3	4	5	6	Station
Precipitator efficiency	%	99.78	99.83	99.62	99.84	99.82	99.81	99.78
Precipitator availability	%	100.00	100.00	99.60	99.07	98.46	99.02	99.43
SO_3 plant utilisation	%	99.66	99.82	99.60	95.91	99.43	99.83	99.70

ATMOSPHERIC EMISSION LICENSE LIMIT EXCEEDED

UNIT	AEL LIMIT EXCEEDED (TOTAL) Days	AEL LIMIT EXCEEDED (LIGHT-UP/SHUT DOWN) Days	AEL LIMIT EXCEEDED (UPSET CONDITIONS) Days	AEL LIMIT EXCEEDED (MAINTENANCE) Days	AEL LIMIT EXCEEDED (SECTION 30 / CONTRAVENTION) Days
1, 2 & 3	5	3	1	1	0
4	1	1	0	0	0
5	1	0	0	1	0
6	0	0	0	0	0
Station	7	4	1	2	0
YTD	21	4	10	4	3

5. DISCUSSION

Unit 1:

The boiler fires were taken out at 09:48 on the 30th July 2018 and the boiler force cooled. Ignition was established on the 3rd August 2018 at 06:17. Floating of the boiler drum safety valves commenced on the 3rd August 2018 at 16:20. Floating of the superheat safety valves commenced on the 4th August 2018 at 03:50.
Floating of the boiler safety valves was completed and boiler fires were taken out on the 4th August 2018 at 14:00 when the IP bypass valve Spraywater failed.
Boiler ignition was established on the 5th August 2018 at 18:10. Steam was admitted to the turbine for commissioning of the start-up system. The turbine was run up to 3000RPM on the 6th August 2018 at 11:28 for the electrical system commissioning commenced. The electrical system commissioning was completed on the 7th August 2018 at 16:35. The boiler tripped on the 7th August 2018 at 18:00.
Ignition was established on the 7th August 2018 at 20:00, the unit synchronised on load at 22:05 and loaded gradually to 200MW for commissioning purposes. The unit tripped on the 10th August 2018 at 18:37 and remained off load for maintenance. The unit returned to service on the 14th August 2018 at 15:35. The unit was taken off load on the 15th August 2018 at 20:28. The unit returned to service on the 18th August 2018 at 15:35.
The SO_3 flue gas conditioning plant proved to be problematic to return to service following the long outage. Sulphur flow to the burner could not be established. The sulphur supply strainer was replaced a few times, the sulphur supply piping dismantled twice and eventually a blockage was located in the inlet of the sulphur control valve. The failure of the SO_3 plant resulted in elevated emissions for the month.

Unit 2:

The unit tripped on the 7th August 2018 at 01:04 on reverse power protection when the load ramped to zero following a draught group trip. The unit returned to service on the 7th August 2018 at 07:35.
The unit tripped on the 8th August 2018 on turbine vacuum protection. The unit remained off load for a planned outage. The unit returned to service on the 22nd August 2018 at 22:39. The opportunity was utilised to carry out precipitator repairs.
The south stack AEL limit was exceeded from the 21st to 24th August 2018 when unit 1 light up and boiler 2 shut down followed each other.

Unit 3:

The unit experienced several precipitator field failures due to full dust hoppers resulting in elevated emissions for the month.
The unit also experienced several SO_3 plant failure which aggravated the situation.

Unit 4:

The unit was taken off load on the 19th August 2018 at 02:17 for a planned outage. The opportunity was utilised to empty the dust hoppers and carry out precipitator repairs. The unit returned to service on the 28th August 2018 at 05:57.
The unit was taken off load on the 30th August 2018 at 21:34 for boiler tube leak repairs.
The unit experienced several precipitator field failures due to full dust hoppers. As a result, higher than normal emissions were recorded for the month.

Unit 5:

The unit tripped on the 7th August 2018 at 14:02 when a turbine control module failed. The unit returned to service on the 8th August 2018 at 08:37. The unit experienced several precipitator field failures due to full dust hoppers. As a result, higher than normal emissions were recorded for the month.
The SO_3 flue gas conditioning plant was taken off load on the 27th August 2018 for maintenance to repair a gas leak on the distribution pipework. The AEL limit was exceeded for the day.

Unit 6:

The unit was taken off load on the 25th August 2018 at 14:28 for maintenance to remove an ash build up in the boiler throat. The unit returned to service on the 29th August 2018 at 04:24. The opportunity was utilised to carry out minor precipitator repairs.
The unit experienced several precipitator field failures due to full dust hoppers. As a result, higher than normal emissions were recorded for the month.

SO_3 common Plant:

The SO_3 flue gas conditioning common plant tripped on the 9th and 22nd August 2018. These trips could be attributed to the high levels of impurities found in the sulphur delivered to the power station. This in effect caused several sulphur flow failures at the units.

Gas Emissions:

The south stack O_2 analyser reading remained high. The OEM established that the sensor is faulty. The procurement process to replace the sensor has commenced. The O_2 reading is thus calculated based on the O_2/CO_2 balance.
The availability of the CEMS was good for the month of August 2018.
The gas emissions measured by the CEMS was well below the AEL limit for the duration of the month.

General:

The coal quality supplied to the station remained poor during the month, impacting negatively on the particulate emissions.
The change in coal quality negatively impacted on the dust handling plant due to the change in dust particle size and density.

6. LIGHT UP:

Unit:	1	
Fires in:	18:10	5 August 2018
Synchronisation:	22:05	7 August 2018
Emissions below Limit:	U2 LU	
Fires in to synchronisation:	51:44	Hours
Synchronisation to < Limit:		Hours

Unit:	2	
Fires in:	05:00	7 August 2018
Synchronisation:	07:35	7 August 2018
Emissions below Limit:	U2 SD	
Fires in to synchronisation:	2:35	Hours
Synchronisation to < Limit:		Hours

Unit:	5	
Fires in:	00:25	8 August 2018
Synchronisation:	08:37	8 August 2018
Emissions below Limit:	11:18	8 August 2018
Fires in to synchronisation:	8:12	Hours
Synchronisation to < Limit:	2:41	Hours

Unit:	1	
Fires in:	02:30	14 August 2018
Synchronisation:	15:35	14 August 2018
Emissions below Limit:	4:15	16 August 2018
Fires in to synchronisation:	13:05	Hours
Synchronisation to < Limit:	36:40	Hours

Unit:	1	
Fires in:	10:00	18 August 2018
Synchronisation:	21:11	18 August 2018
Emissions below Limit:	10:15	20 August 2018
Fires in to synchronisation:	11:11	Hours
Synchronisation to < Limit:	37:03	Hours

Unit:	2	
Fires in:	09:00	22 August 2018
Synchronisation:	22:39	22 August 2018
Emissions below Limit:	06:57	24 August 2018
Fires in to synchronisation:	13:39	Hours
Synchronisation to < Limit:	32:18	Hours

Unit:	4	
Fires in:	20:35	27 August 2018
Synchronisation:	05:57	28 August 2018
Emissions below Limit:	22:37	29 August 2018
Fires in to synchronisation:	9:22	Hours
Synchronisation to < Limit:	40:40	Hours

Unit:	6	
Fires in:	22:10	28 August 2018
Synchronisation:	04:24	29 August 2018
Emissions below Limit:	07:50	28 August 2018
Fires in to synchronisation:	6:14	Hours
Synchronisation to < Limit:	3:26	Hours

7. GRAPHS:

See attached graphs

8. COMPLAINTS

Name of complainant	Date	Description of complaint	Action taken
No Complaints			

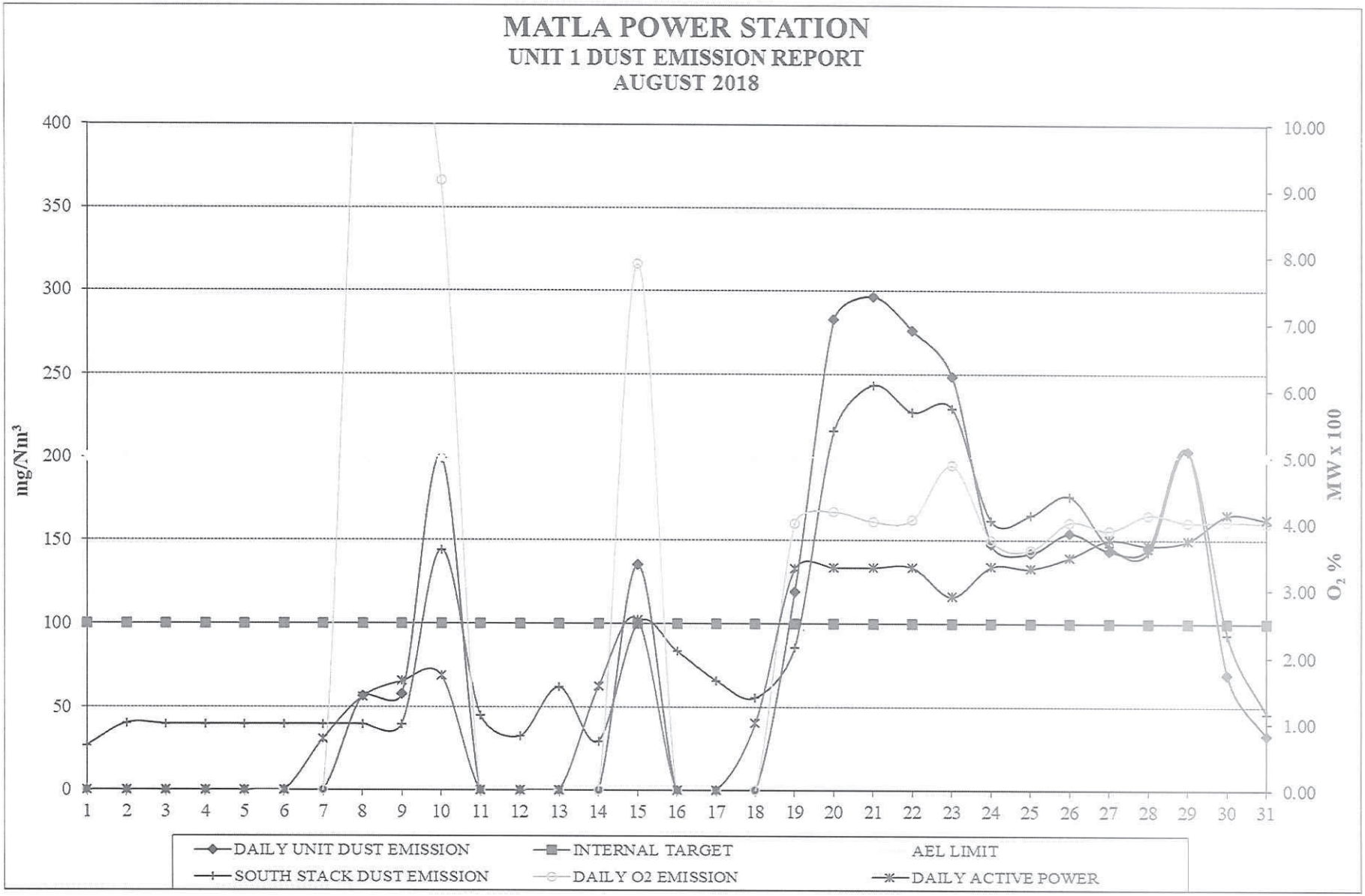
9. NOTIFICATION OF CONTRAVENTION OF EMISSION LICENCE CONDITIONS

Date	
Power Station Unit(s)	Matla Power Station –
Date of incident *Time of incident*	Start date and time: End date:
Nature of incident	Extended start-up ☐ On-line maintenance ☐ Extended shut-down ☐
Emission limit exceedance	
Details of incident	
Risks posed by the incident to public health, safety and property	
Toxicity of substance or by-products released by the incident	
Mitigation to avoid or minimize the incident effects on public health and the environment	
Compiler and contact details	Name: Tel no: Email:
Responsible manager and contact details	Name: Tel no: Email:

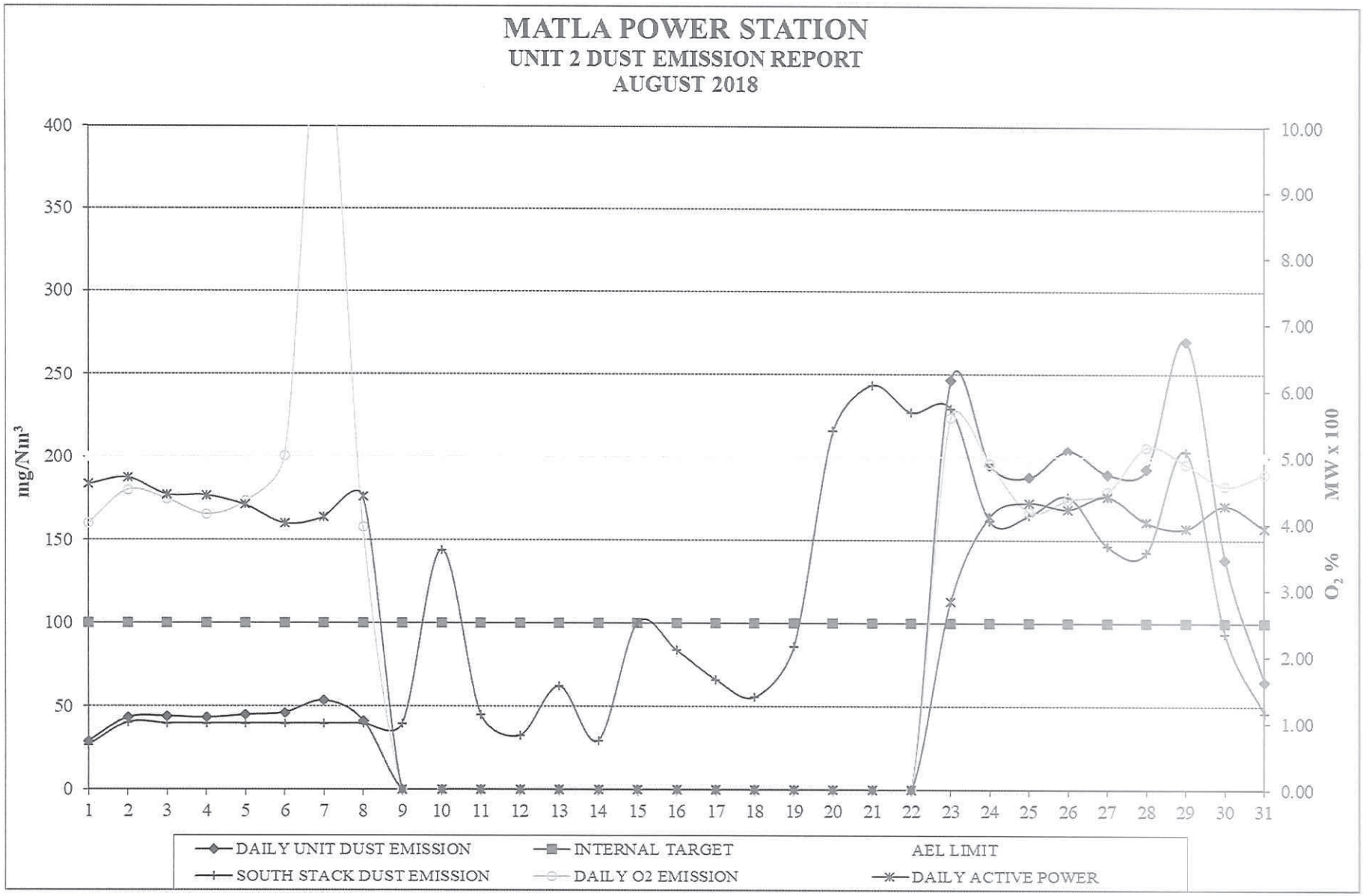
BOILER PLANT ENGINEERING

Copies to: Licensing Authority
Power Station Manager (Acting)
Environmental Practitioner
Engineering Manager
Boiler Plant Engineering Manager
Maintenance Manager (Acting)
Unit Electrical Maintenance Manager
Operating Manager
Production Manager
Outside Plant Maintenance Manager
Coal Manager
Megawatt Park, Corporate Consultant Air Pollution
Plant Performance Units 1 to 6

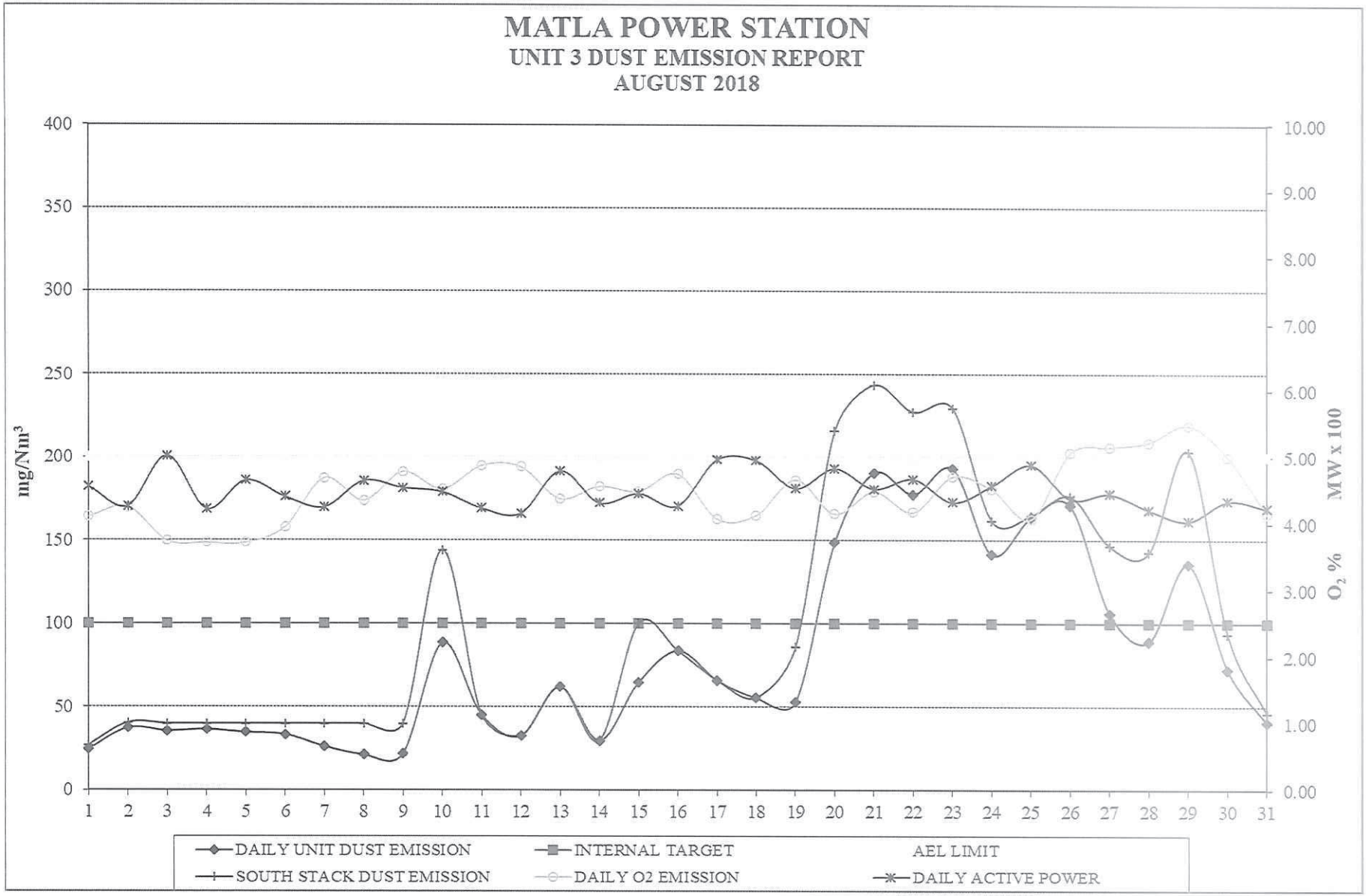
MATLA POWER STATION
UNIT 1 DUST EMISSION REPORT
AUGUST 2018



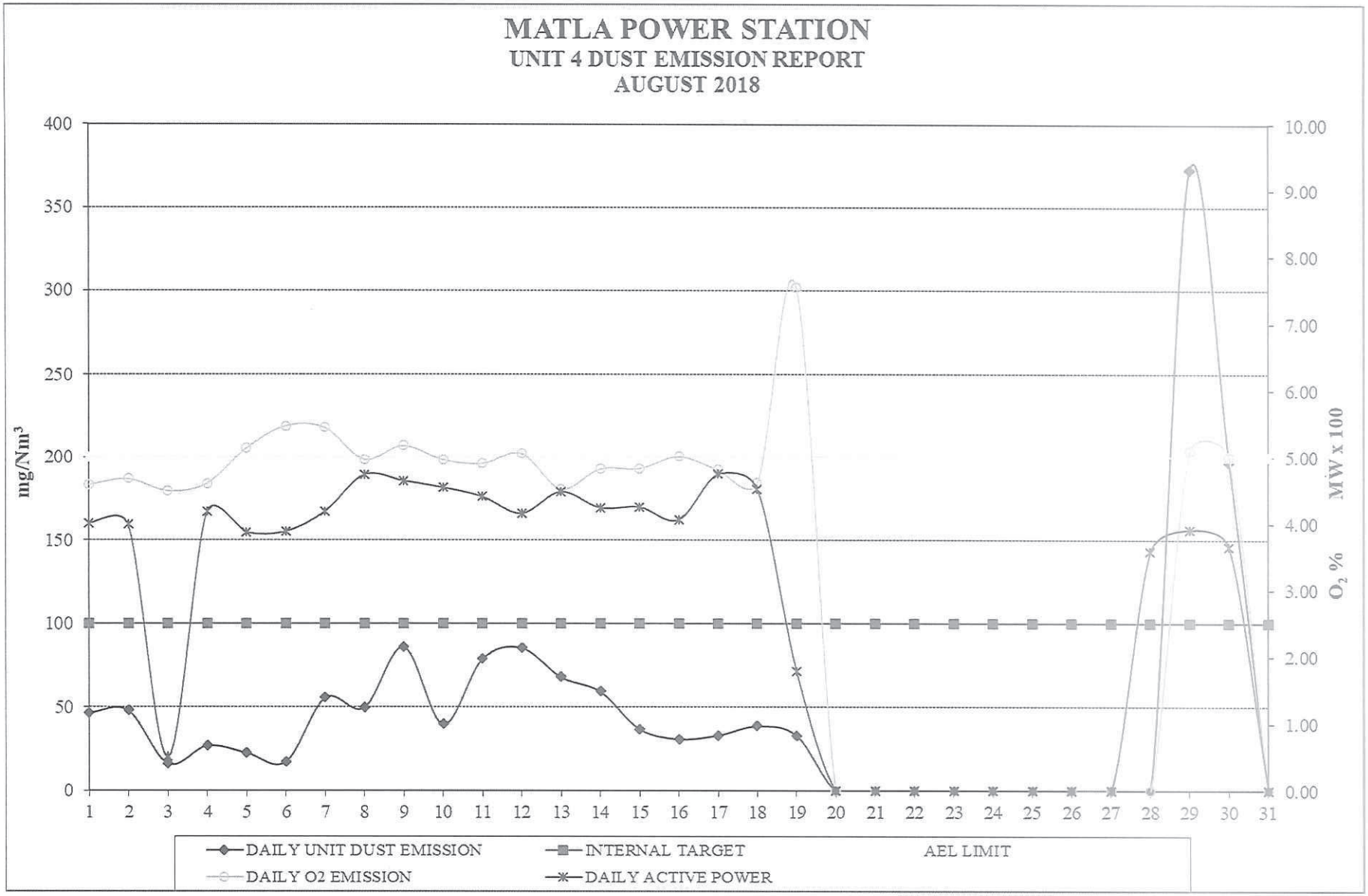
MATLA POWER STATION
UNIT 2 DUST EMISSION REPORT
AUGUST 2018



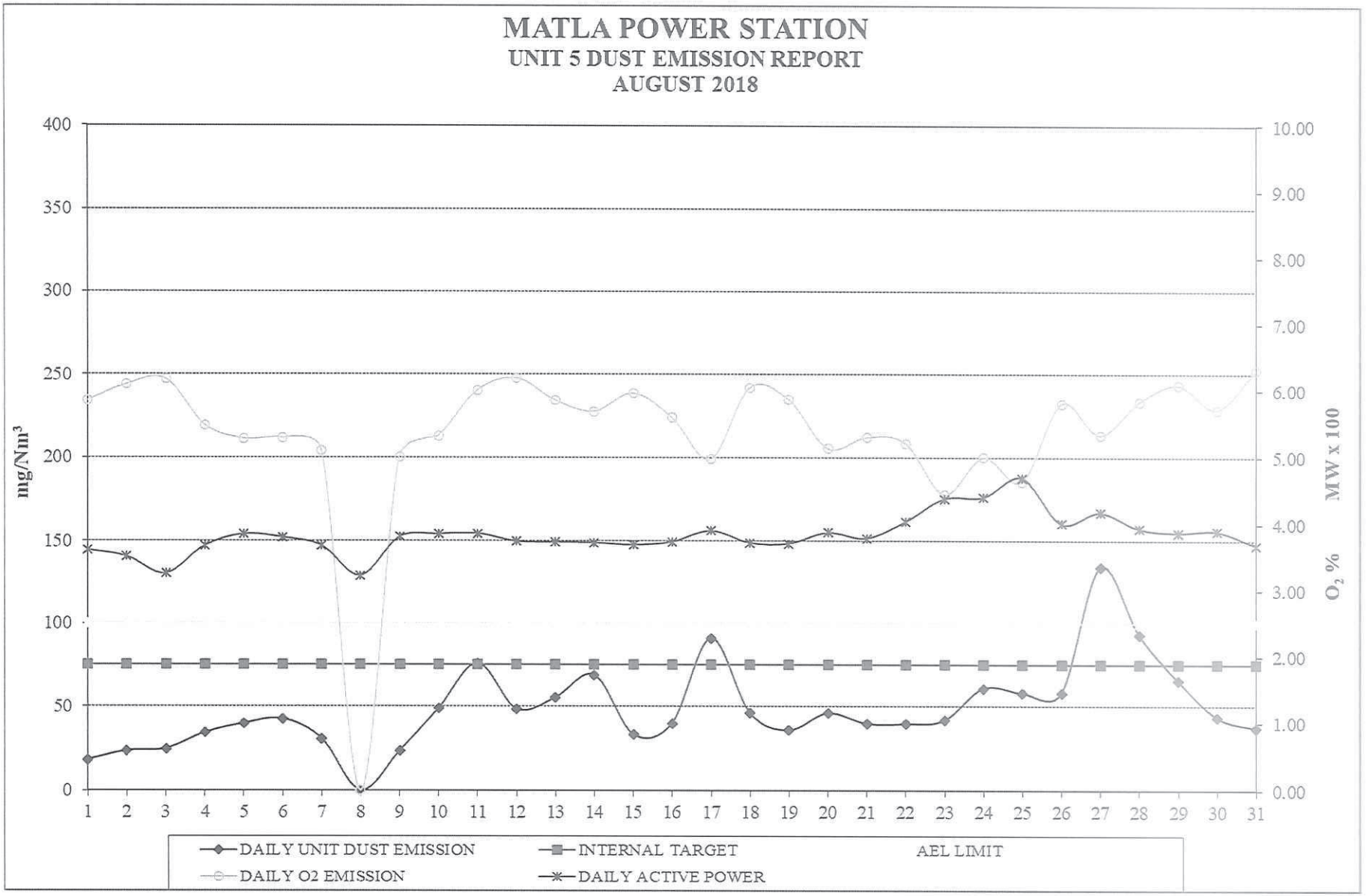
MATLA POWER STATION
UNIT 3 DUST EMISSION REPORT
AUGUST 2018



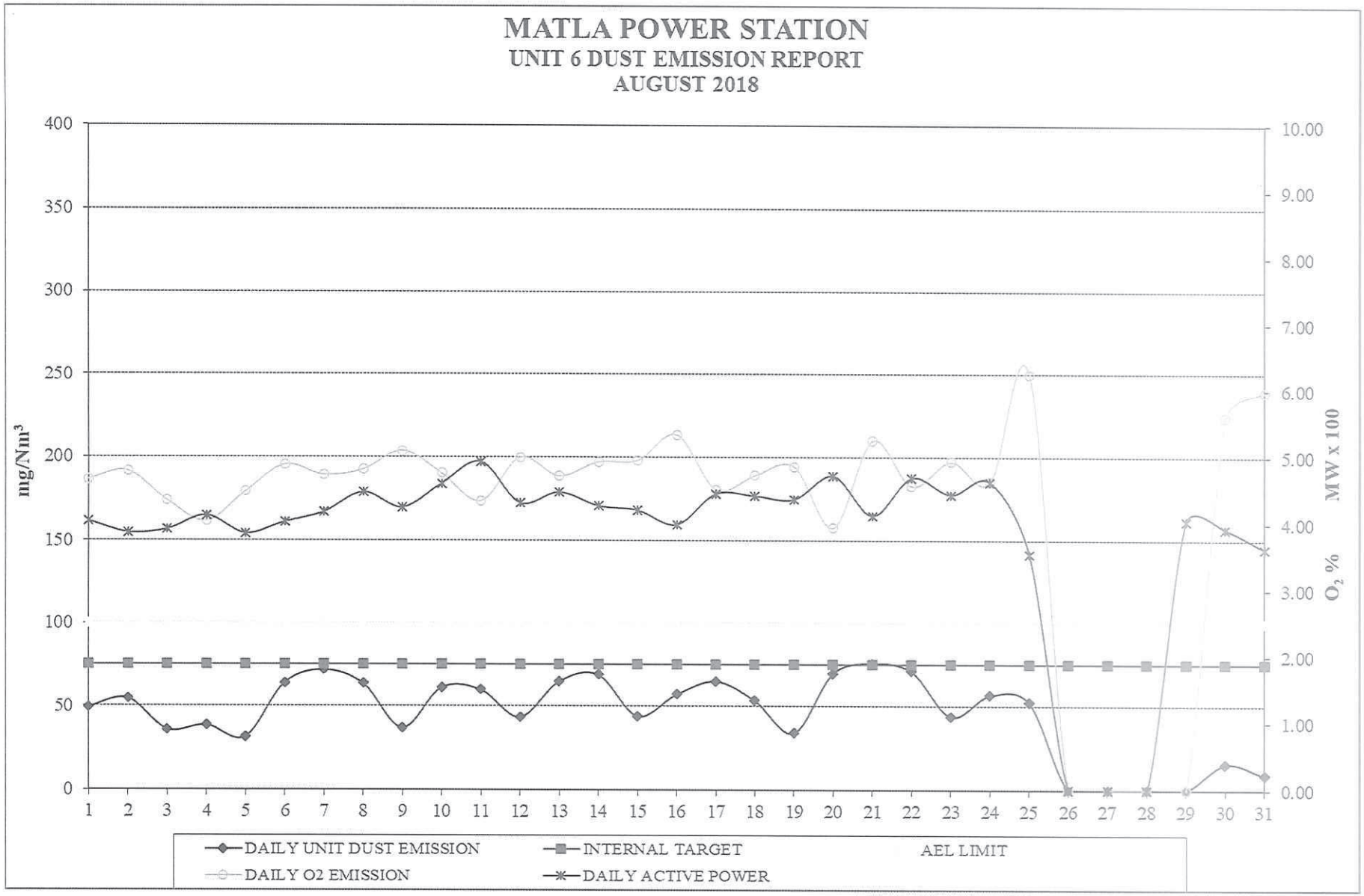
MATLA POWER STATION
UNIT 4 DUST EMISSION REPORT
AUGUST 2018



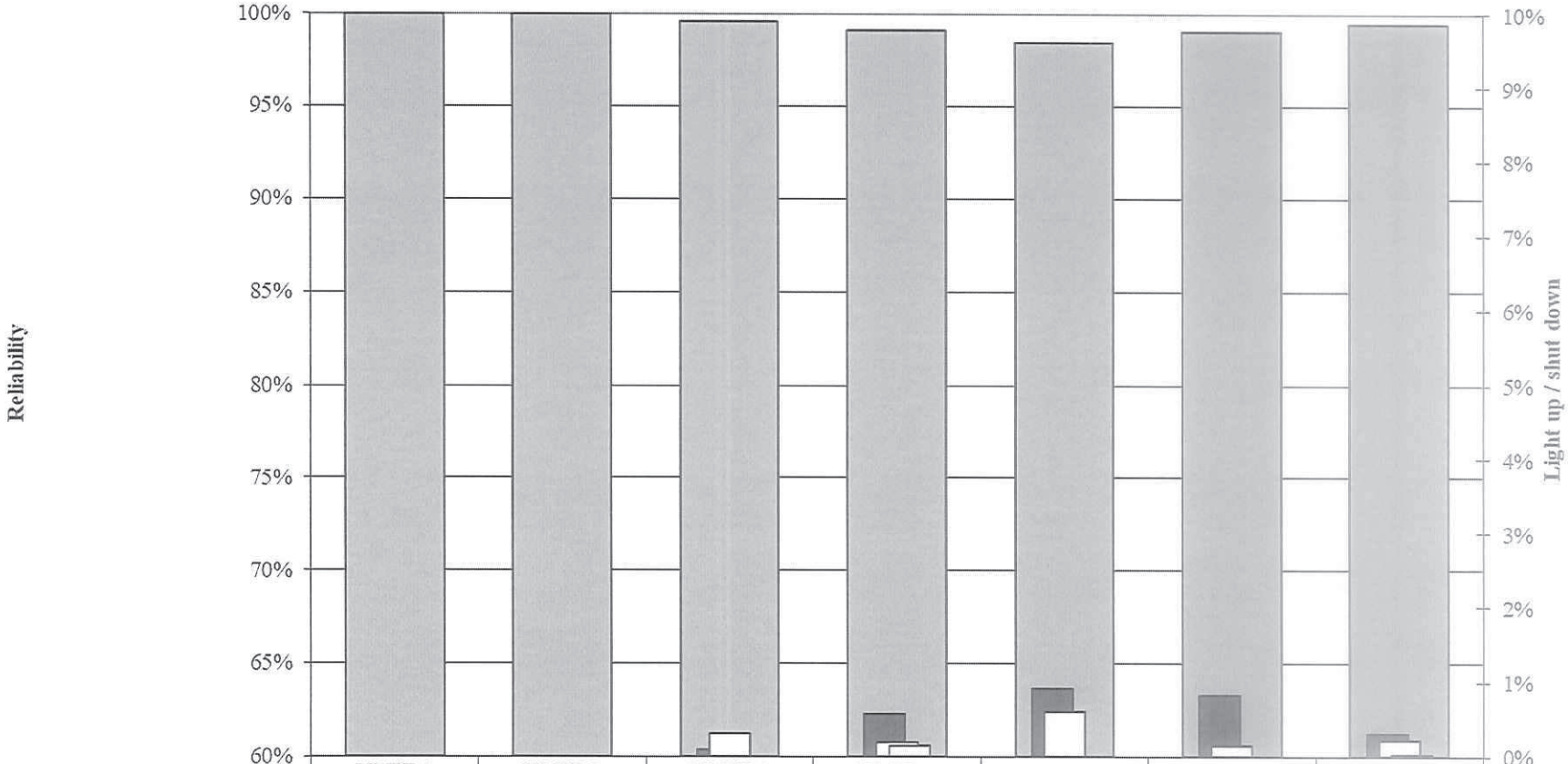
MATLA POWER STATION
UNIT 5 DUST EMISSION REPORT
AUGUST 2018



MATLA POWER STATION
UNIT 6 DUST EMISSION REPORT
AUGUST 2018



MATLA POWER STATION
PRECIPITATOR RELIABILITY
AUGUST 2018

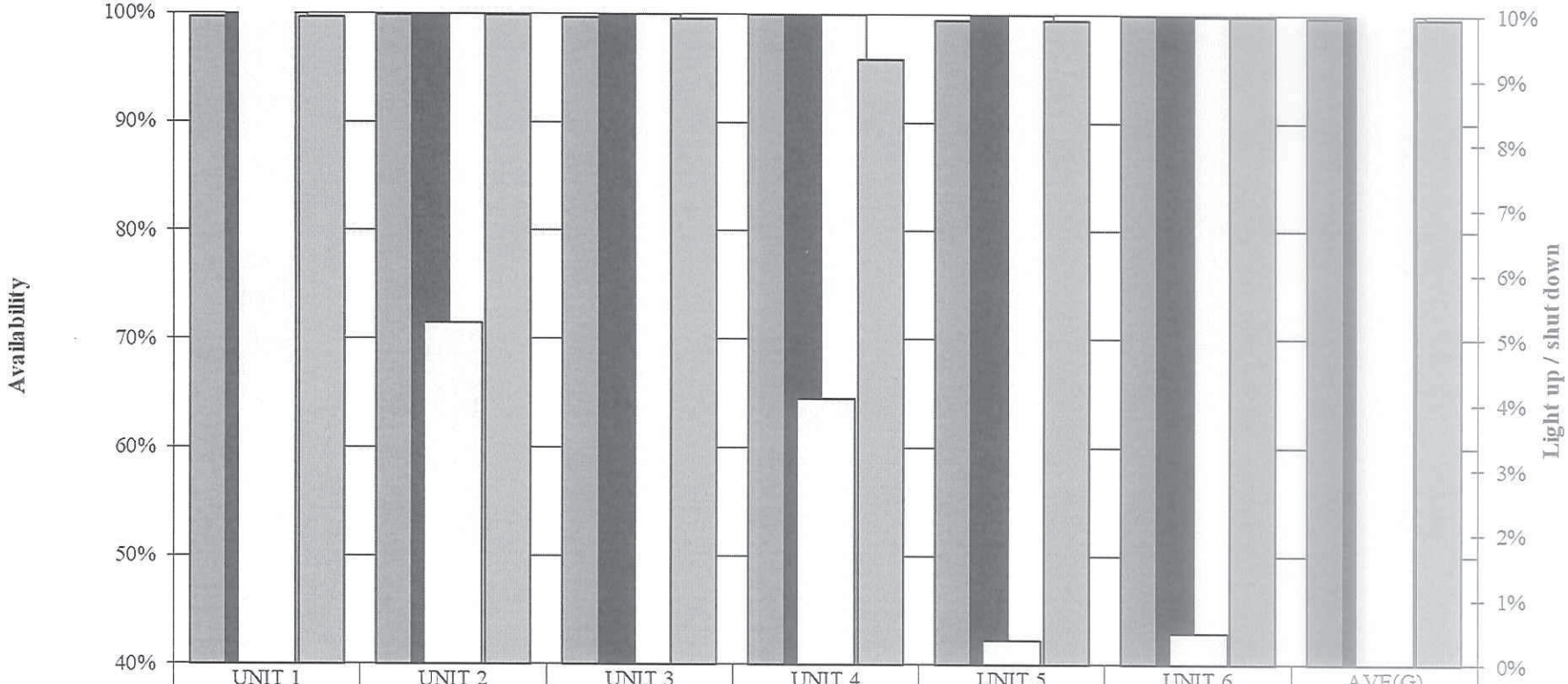


	UNIT 1	UNIT 2	UNIT 3	UNIT 4	UNIT 5	UNIT 6	AVE(G)
Reliability	100.00%	100.00%	99.60%	99.07%	98.46%	99.02%	99.43%
Loss due to hopper levels	0.00%	0.00%	0.09%	0.57%	0.92%	0.83%	0.32%
Loss due to short term incidents	0.00%	0.00%	0.32%	0.20%	0.62%	0.15%	0.23%
Loss due to Internal faults	0.00%	0.00%	0.00%	0.15%	0.00%	0.00%	0.03%

MATLA POWER STATION

SO_3 PLANT AVAILABILITY

AUGUST 2018

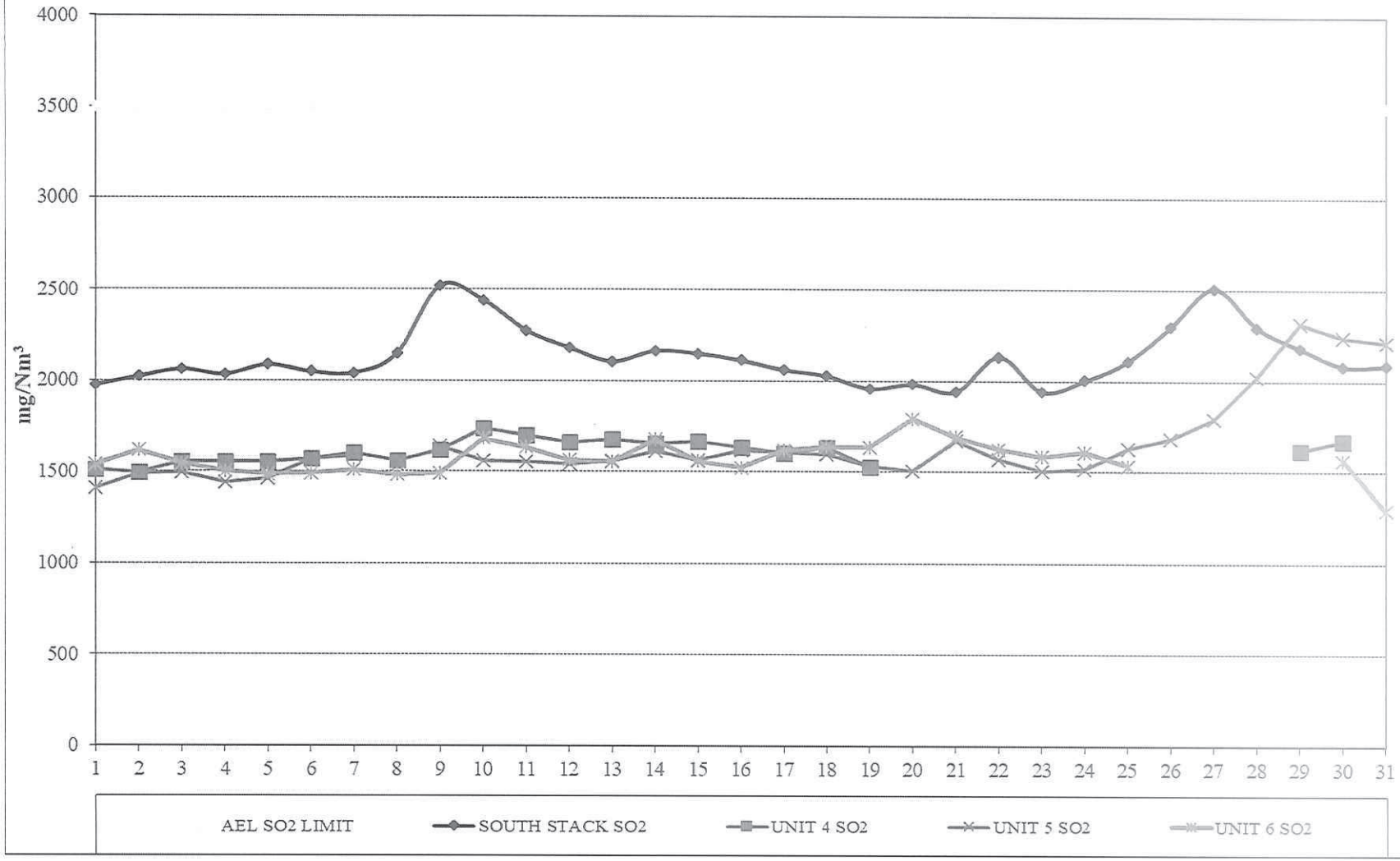


	UNIT 1	UNIT 2	UNIT 3	UNIT 4	UNIT 5	UNIT 6	AVE(G)
Unit Plant	99.66%	99.82%	99.67%	99.93%	99.51%	100.00%	99.77%
Desuperheater	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
Common plant	100.00%	100.00%	99.93%	99.92%	99.92%	99.83%	99.93%
SO3 Injection	99.66%	99.82%	99.60%	95.91%	99.43%	99.83%	99.70%
Light-up/	60.67%	5.23%	0.00%	4.09%	0.37%	0.48%	11.81%

MATLA POWER STATION

SMOKE STACK SO_2 EMISSION REPORT

AUGUST 2018



MATLA POWER STATION

SMOKE STACK NO_2 EMISSION REPORT

AUGUST 2018