Eskom
Generation

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

Date:
15th June 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 MAY 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	JUN 2017	JUL 2017	AUG 2017	SEP 2017	OCT 2017	NOV 2017	DEC 2017	JAN 2018	FEB 2018	MAR 2018	APR 2018	MAY 2018
Monthly Tonnage	1	70.23	34.95	61.36	65.19	71.68	108.77	90.10	46.69	Off	Off	Off	Off
	2	36.73	31.62	47.40	56.79	51.66	99.27	84.35	165.43	57.98	60.80	28.57	44.25
	3	39.75	30.24	48.85	61.23	47.64	97.34	82.94	172.35	55.05	62.50	29.56	35.97
	4	31.23	22.41	165.94	148.80	183.23	165.67	173.61	188.43	166.34	132.22	87.07	123.63
	5	25.52	17.14	30.95	45.36	147.51	74.42	49.59	82.97	68.06	97.63	61.14	83.25
	6	44.15	39.51	Off	Off	Off	5.37	22.74	53.43	62.15	50.91	52.66	44.17
	Station	247.61	175.85	354.51	377.37	501.73	550.84	503.33	709.30	409.57	404.02	258.99	331.28
GWhSO		1357.6	1977.7	1557.1	1703.4	1580.5	1802.7	1998.5	1783.6	1562.9	1733.7	1594.2	1627.7

Generation Division (Operating Unit Coal 2)
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2. COAL AND LOAD FACTOR:

STATION		JUN 2017	JUL 2017	AUG 2017	SEP 2017	OCT 2017	NOV 2017	DEC 2017	JAN 2018	FEB 2018	MAR 2018	APR 2018	MAY 2018
Load Factor		77.44	73.03	75.25	78.05	80.55	83.88	85.33	82.96	88.34	86.45	78.39	89.58
Ash Content	%	26.01	26.24	28.42	28.70	24.34	24.11	29.57	27.15	23.3	26.41	25.3	27.70
Sulphur Content	%	0.79	0.94	1.00	1.00	1.00	1.0	1.0	1.0	0.95	0.90	1.00	1.2
Total Moisture	%	9.46	9.33	9.54	7.10	8.11	10.69	9.64	9.43	9.60	9.57	9.21	9.7

3. GASEOUS EMISSIONS:

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

	JUN 2017	JUL 2017	AUG 2017	SEP 2017	OCT 2017	NOV 2017	DEC 2017	JAN 2018	FEB 2018	MAR 2018	APR 2018	MAY 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.

	JUN 2017	JUL 2017	AUG 2017	SEP 2017	OCT 2017	NOV 2017	DEC 2017	JAN 2018	FEB 2018	MAR 2018	APR 2018	MAY 2018
Units 1-3	9.97	6.53	9.64	8.66	9.40	10.46	10.31	8.25	6.95	7.84	6.62	7.68
Unit 4	2.74	2.16	3.52	3.15	3.62	3.38	3.71	2.89	2.85	3.16	3.29	3.94
Unit 5	3.57	2.32	2.99	3.02	3.25	3.15	3.50	3.31	3.02	3.51	3.07	3.95
Unit 6	3.34	2.36	Off	Off	Off	0.44	2.80	3.70	2.46	3.13	3.15	3.93
All Units	19.63	13.37	16.15	14.83	16.27	17.43	20.32	18.15	15.28	17.64	16.12	19.50

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

	JUN 2017	JUL 2017	AUG 2017	SEP 2017	OCT 2017	NOV 2017	DEC 2017	JAN 2018	FEB 2018	MAR 2018	APR 2018	MAY 2018
Units 1-3	3.12	2.96	3.02	2.71	2.95	3.28	3.23	2.59	2.18	2.46	2.07	2.01
Unit 4	0.86	0.98	1.10	0.99	1.13	1.06	1.16	0.91	0.89	0.99	1.03	1.03
Unit 5	1.12	1.05	0.94	0.95	1.02	0.99	1.10	1.04	0.95	1.10	0.96	1.03
Unit 6	1.05	1.07	Off	Off	Off	0.14	0.88	1.16	0.77	0.98	0.99	10.3
All Units	6.15	6.07	5.06	4.65	5.10	5.46	6.37	5.69	4.79	5.53	5.05	5.09

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

	JUN 2017	JUL 2017	AUG 2017	SEP 2017	OCT 2017	NOV 2017	DEC 2017	JAN 2018	FEB 2018	MAR 2018	APR 2018	MAY 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.

	JUN 2017	JUL 2017	AUG 2017	SEP 2017	OCT 2017	NOV 2017	DEC 2017	JAN 2018	FEB 2018	MAR 2018	APR 2018	MAY 2018
Units 1-3	8.91	6.29	7.60	7.82	7.59	12.65	9.94	7.15	5.55	8.31	6.73	6.64
Unit 4	1.49	1.27	2.89	1.54	2.91	2.51	2.43	1.61	1.81	2.28	2.18	1.96
Unit 5	2.34	2.25	4.66	1.55	2.84	3.05	2.89	2.54	2.57	2.74	2.61	2.58
Unit 6	2.81	2.05	Off	Off	Off	0.14	1.06	1.44	1.03	1.22	2.73	2.65
All Units	15.55	11.85	15.15	10.91	13.35	18.36	16.33	12.74	10.96	14.55	14.26	13.83

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

	JUN 2017	JUL 2017	AUG 2017	SEP 2017	OCT 2017	NOV 2017	DEC 2017	JAN 2018	FEB 2018	MAR 2018	APR 2018	MAY 2018
Units 1-3	2.65	3.04	3.78	3.57	3.48	5.98	5.03	3.26	2.98	3.78	2.82	2.47
Unit 4	1.03	0.85	1.81	0.87	1.84	1.53	1.52	0.98	1.30	1.26	1.01	0.84
Unit 5	1.30	1.16	2.41	0.68	1.35	1.41	1.35	1.43	1.32	1.28	1.06	1.02
Unit 6	1.38	0.99	Off	Off	Off	0.07	0.54	0.79	0.55	0.63	1.25	1.10
All Units	6.35	6.04	8.01	5.12	6.66	8.99	8.44	6.46	6.15	6.95	6.15	5.43

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

	JUN 2017	JUL 2017	AUG 2017	SEP 2017	OCT 2017	NOV 2017	DEC 2017	JAN 2018	FEB 2018	MAR 2018	APR 2018	MAY 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	JUN 2017	JUL 2017	AUG 2017	SEP 2017	OCT 2017	NOV 2017	DEC 2017	JAN 2018	FEB 2018	MAR 2018	APR 2018	MAY 2018
Units 1-3	1671	1582	1875	2094	1831	2390	2127	1883	1587	2246	2036	2153
Unit 4	1938	1589	2112	1627	2023	1513	1447	1476	1350	1626	1628	1685
Unit 5	2003	1749	2562	1731	1966	2046	1906	1751	1827	1856	1850	1797
Unit 6	1508	1395	Off	Off	Off	1421	1385	1353	1406	1425	1540	1620

SO_2 daily average emissions: AEL limit exceedances

Limit 3500	JUN 2017	JUL 2017	AUG 2017	SEP 2017	OCT 2017	NOV 2017	DEC 2017	JAN 2018	FEB 2018	MAR 2018	APR 2018	MAY 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	JUN 2017	JUL 2017	AUG 2017	SEP 2017	OCT 2017	NOV 2017	DEC 2017	JAN 2018	FEB 2018	MAR 2018	APR 2018	MAY 2018
Units 1-3	763	760	932	956	838	1128	1074	858	851	1017	852	797
Unit 4	1326	1042	1313	914	1269	914	894	896	970	872	752	713
Unit 5	1109	915	1291	759	938	949	892	982	936	859	753	708
Unit 6	741	657	Off	Off	Off	682	705	751	751	740	711	674

NO_x daily average emissions: AEL limit exceedances

Limit 1200	JUN 2017	JUL 2017	AUG 2017	SEP 2017	OCT 2017	NOV 2017	DEC 2017	JAN 2018	FEB 2018	MAR 2018	APR 2018	MAY 2018
Units 1-3	1	0	0	0	0	2	0	0	0	0	0	0
Unit 4	15	0	17	0	20	0	0	0	0	0	0	0
Unit 5	1	0	21	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	25.54	200	86.68
4	99.45	200	399.06
5	55.72	100	109.1
6	25.79	100	82.0
Station	51.63		
YTD	44.49		

ABATEMENT APPARATUS AVAILABILITY

Unit		1	2	3	4	5	6	Station
Precipitator efficiency	%	Off	99.84	99.84	99.70	99.80	99.89	99.82
Precipitator availability	%	Off	100.00	99.70	96.77	98.67	98.17	98.78
SO_3 plant utilisation	%	Off	99.09	99.46	100.00	99.78	100.00	99.19

ATMOSPHERIC EMISSION LICENSE LIMIT EXCEEDED

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

5. DISCUSSION

Unit 1:

Unit was taken off load on the 10th January 2018 for a major refurbishment outage.

Unit 2:

The flue gas conditioning plant performed well during the month and emissions well below the AEL limit was recorded for the month.
The SO_3 flue gas conditioning plant tripped several times during the month but most of the trips were of a short duration and the impact on the particulate emissions was limited.

Unit 3:

The flue gas conditioning plant performed well during the month and emissions well below the AEL limit was recorded for the month.
The unit experienced a few precipitator field failures during the month. The impact on the particulate emissions was minimal.
The unit tripped on the 15th May 2018 at 03:25 when the power supply to the right hand draught group tripped due to a control module failure. The unit returned to service on the 15th May 2018 at 13:38.
The unit tripped on the 18th May 2018 at 03:51 when the right hand ID fan motor failed. The unit returned to service on the 18th May 2018 at 08:41. The right hand draught group remained off load for replacement of the ID fan motor. The RH ID fan motor was replaced and returned to service on the 20th May 2018 at 04:41 and the unit loaded to full load.
Higher than normal particulate emissions were recorded for this period because the low load prohibited the SO_3 from being placed in service, but the emissions remained within the AEL limit.
The SO_3 flue gas conditioning plant tripped on the 26th May 2018 at 02:16 when the blower V-belts failed. The belts were replaced and the plant returned to service at 13:30 on the 26th May 2018.

Unit 4:

The unit experienced a few precipitator field failures during the month which resulted in an increase in particulate emissions. The coal quality deteriorated during this period resulting in hopper levels.
The SO_3 flue gas conditioning plant was taken off line on the 4th May 2018 at 09:50 for gas leak repairs. The plant returned to service at 16:45 on the same day. The daily average particulate emissions exceeded the AEL limit for the day.
The left hand precipitator fields tripped intermittently as from 16:30 on the 17th May 2018 due to field controller malfunctioning. Maintenance managed to place some fields in service but the emissions still remained above the AEL limit. The problem was eventually resolved by re-programming most of the controller e-proms, replacement of thyristors. The emissions reduced to levels below the AEL limit at 21:00 on the 19th May 2019. The AEL limit was exceeded for a period of 48hours.
The unit experienced precipitator field failures due to full hoppers as from the 26th May 2018. The emissions, however was managed well below the AEL limit.

Unit 5:

The unit experienced a few precipitator field failures during the month which resulted in an increase in particulate emissions. The coal quality deteriorated during this period resulting in hopper levels. With an already stressed plant the dust handling plant experienced trips due to low air pressure and blocked dust conveying lines and as a result the daily average emissions exceeded the AEL limit on the 23rd May 2018.
The unit also experienced a few SO_3 flue gas conditioning plant failures but these were of a short duration and the impact on the particulate emissions was limited.
The unit experienced several precipitator field failure due to full dust hoppers towards the end of the month. A gradual increase in emissions was noted.

Unit 6:

The unit was taken off load on the 30th April 2017 at 22:30 for maintenance to repair a leaking Spraywater valve. The unit returned to service on the 2nd May 2018 at 12:18. The opportunity was utilised to carry out minor precipitator repair.
The unit experienced a few precipitator field failures during the month which resulted in an increase in particulate emissions. The coal quality deteriorated during this period resulting in hopper levels.

SO_3 common Plant:

The SO_3 flue gas conditioning plant tripped on the 1st April 2018 at 12:55. All of the SO_3 plants were back in service by 15:00 on the same day.

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 April 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 boilers 5 and 6 remained poor during the month, impacting negatively on the particulate emissions.

The south smoke stack dust monitor correlation test was carried out from the 3rd to 12th April 2018. The correlation factors have been implemented as from the 1st April 2018.

6. LIGHT UP:

Unit:	6	
Fires in:	07:15	2 May 2018
Synchronisation:	12:18	2 May 2018
Emissions below Limit:	16:10	2 May 2018
Fires in to synchronisation:	5:03	Hours
Synchronisation to < Limit:	3:52	Hours

Unit:	3	
Fires in:	07:15	15 May 2018
Synchronisation:	13:38	15 May 2018
Emissions below Limit:	11:00	16 May 2018
Fires in to synchronisation:	6:23	Hours
Synchronisation to < Limit:	21:22	Hours

Unit:	3	
Fires in:	06:00	18 May 2018
Synchronisation:	08:41	18 May 2018
Emissions below Limit:	13:15	May 2018
Fires in to synchronisation:	2:41	Hours
Synchronisation to < Limit:	4:34	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:

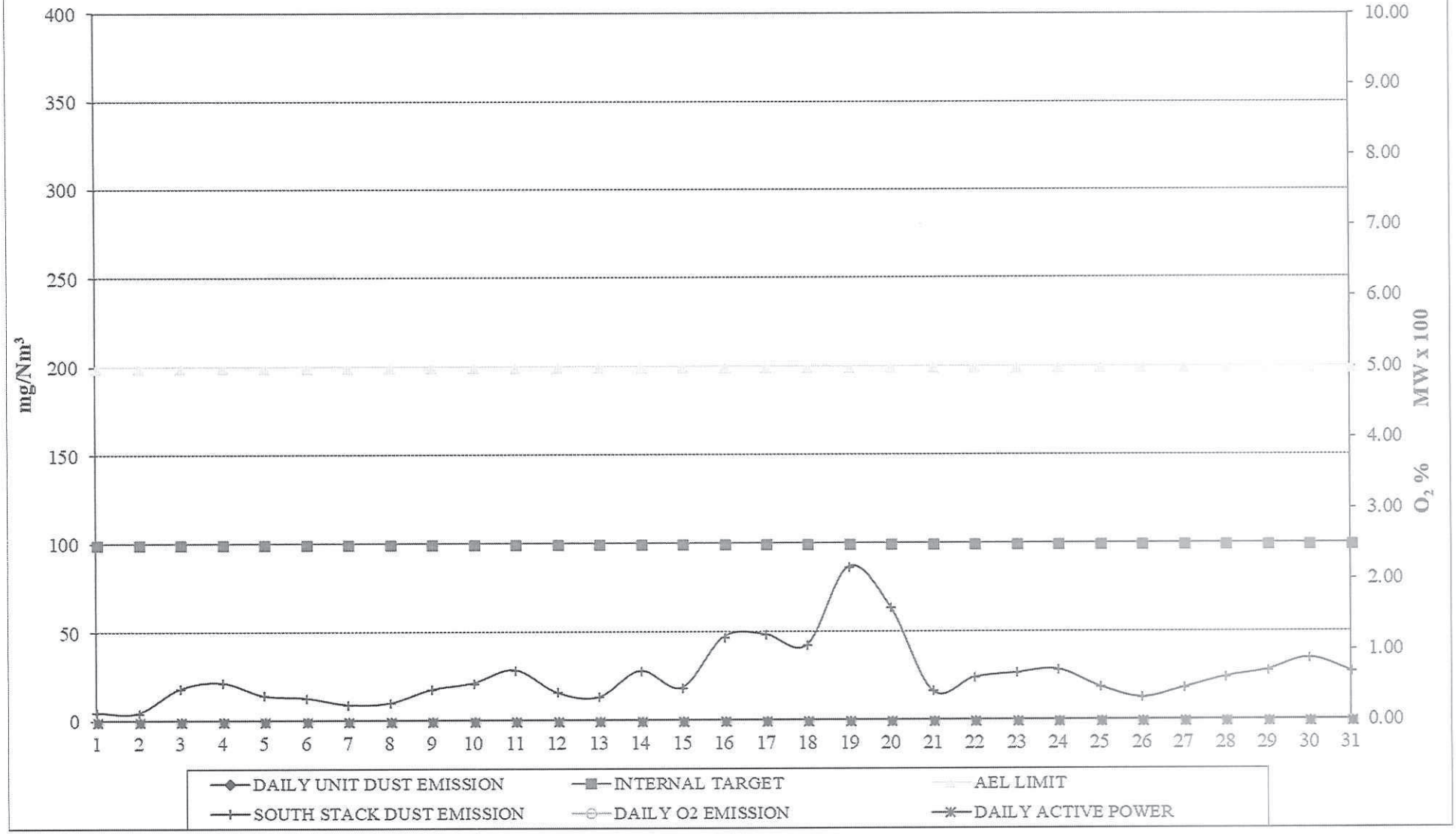
BOILER PLANT ENGINEERING

Copies to: Licensing Authority
Power Station Manager
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

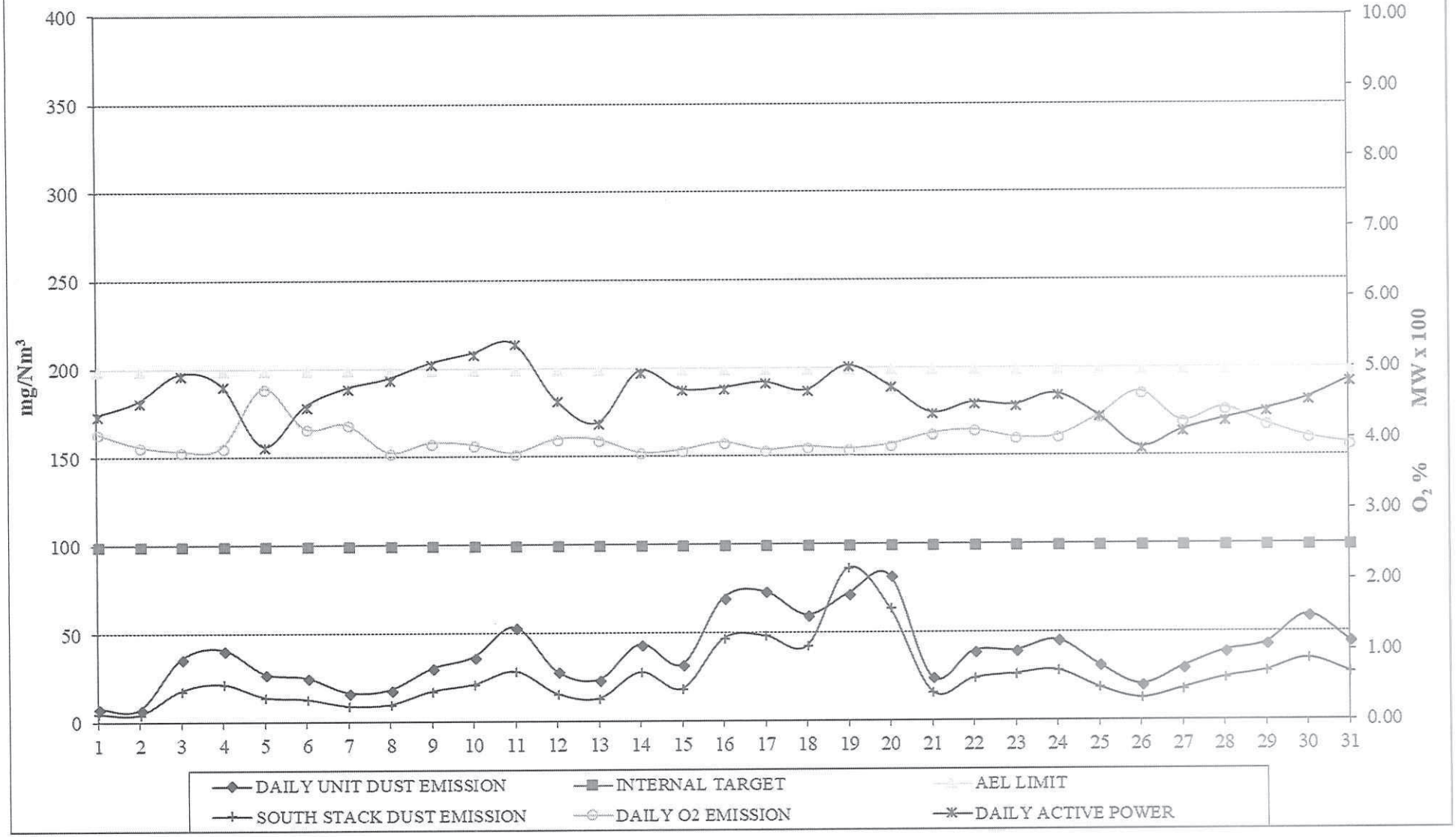
MAY 2018



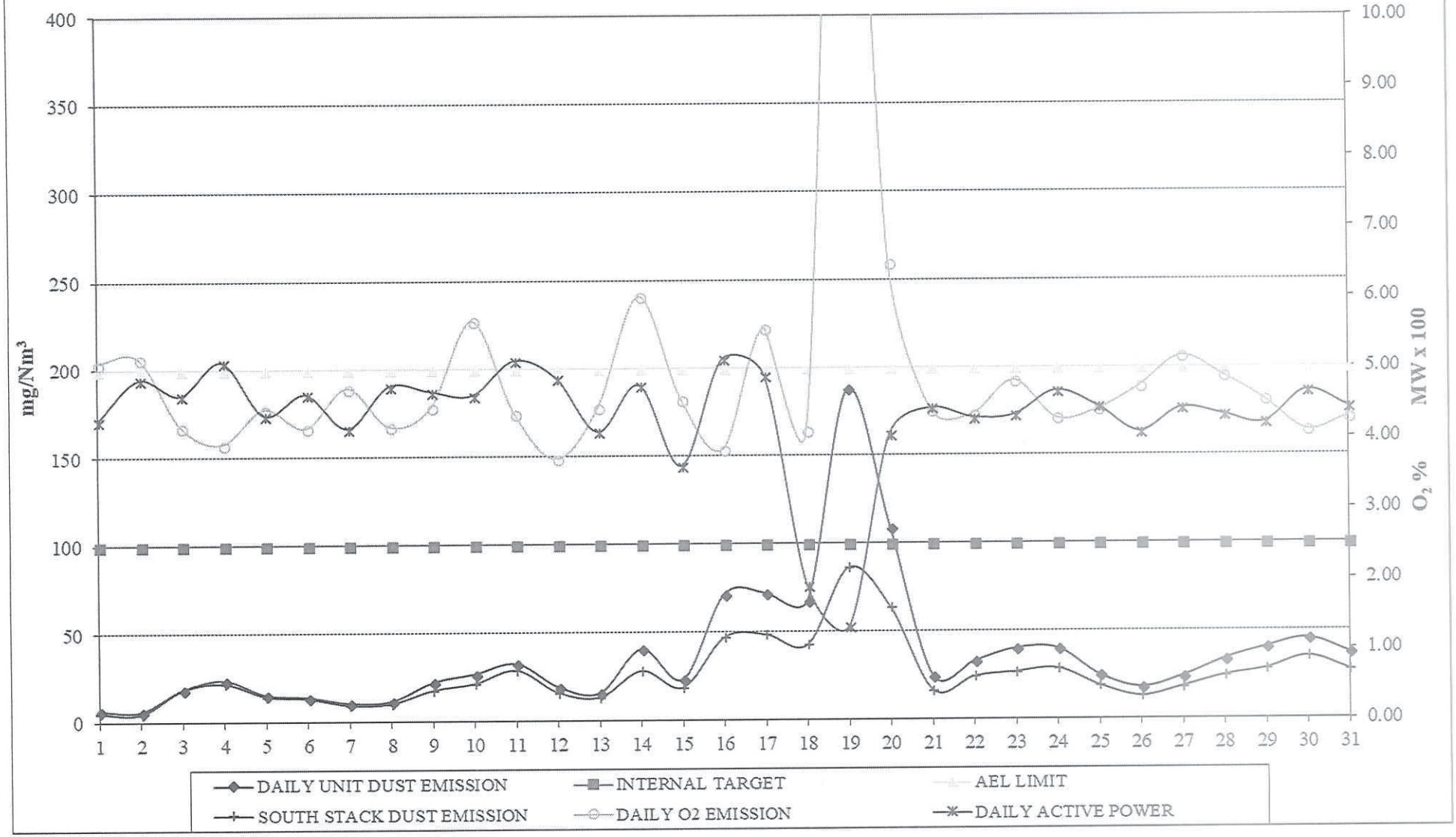
MATLA POWER STATION

UNIT 2 DUST EMISSION REPORT

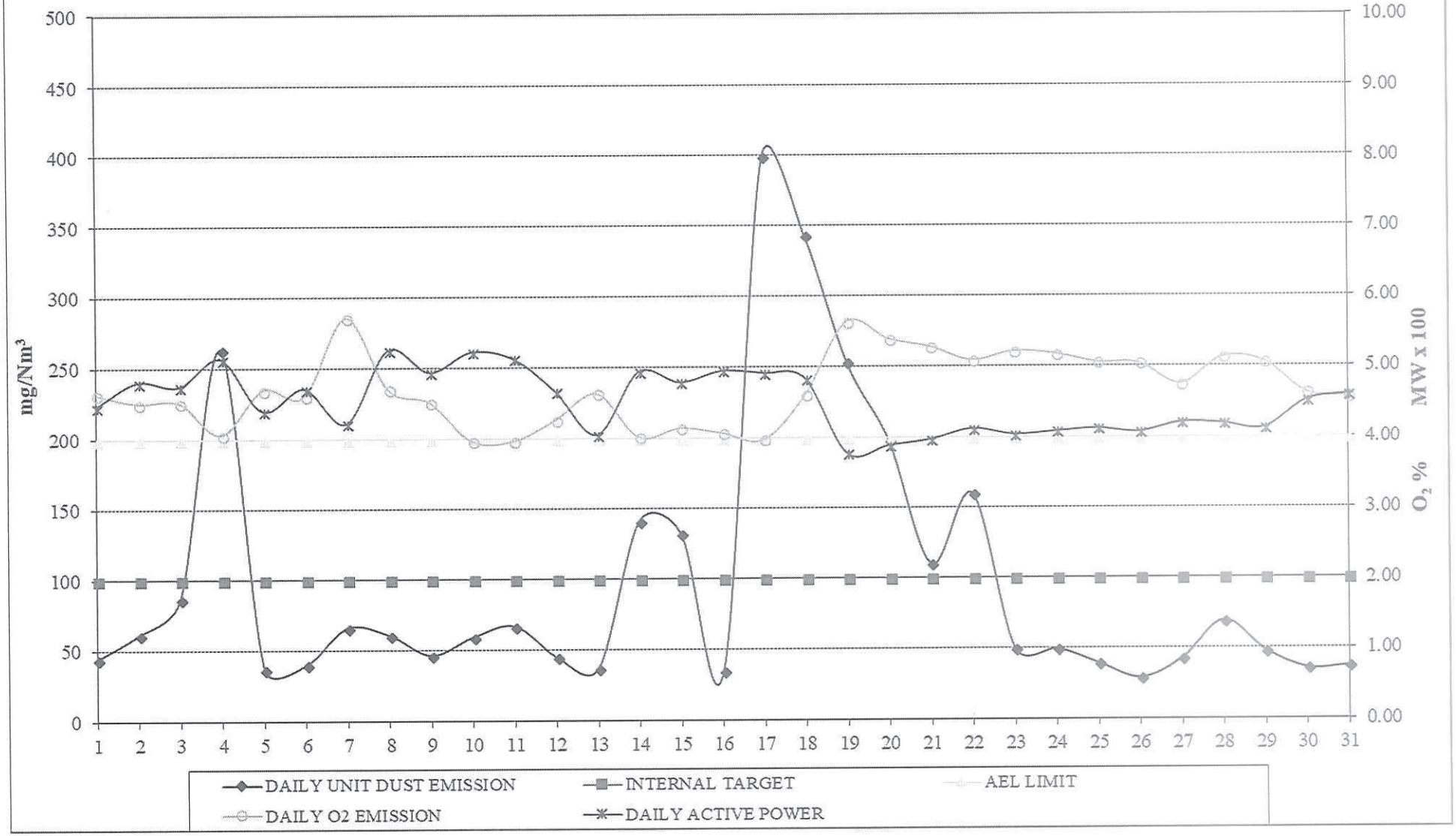
MAY 2018



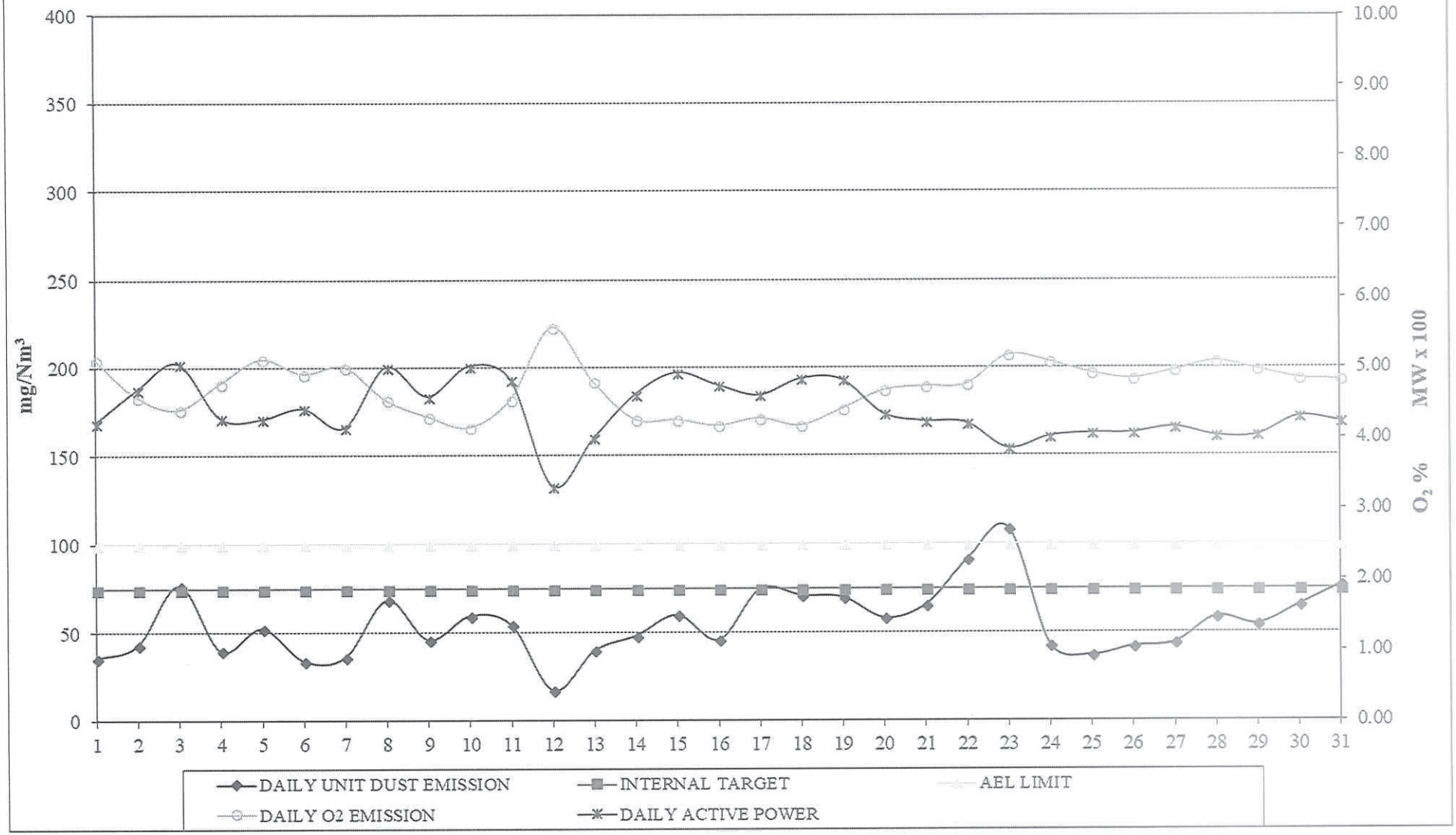
MATLA POWER STATION
UNIT 3 DUST EMISSION REPORT
MAY 2018



MATLA POWER STATION
UNIT 4 DUST EMISSION REPORT
MAY 2018



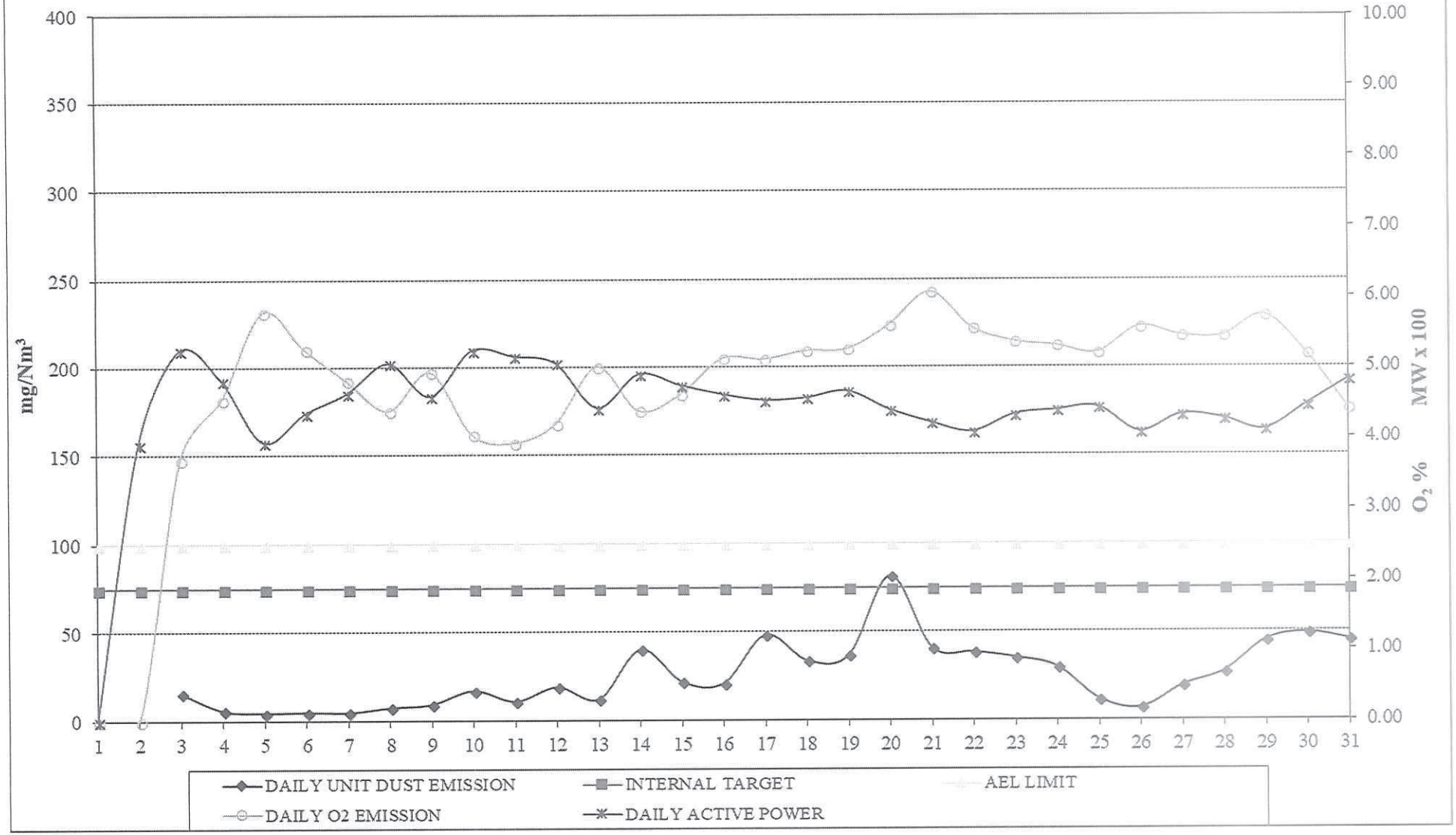
MATLA POWER STATION
UNIT 5 DUST EMISSION REPORT
MAY 2018



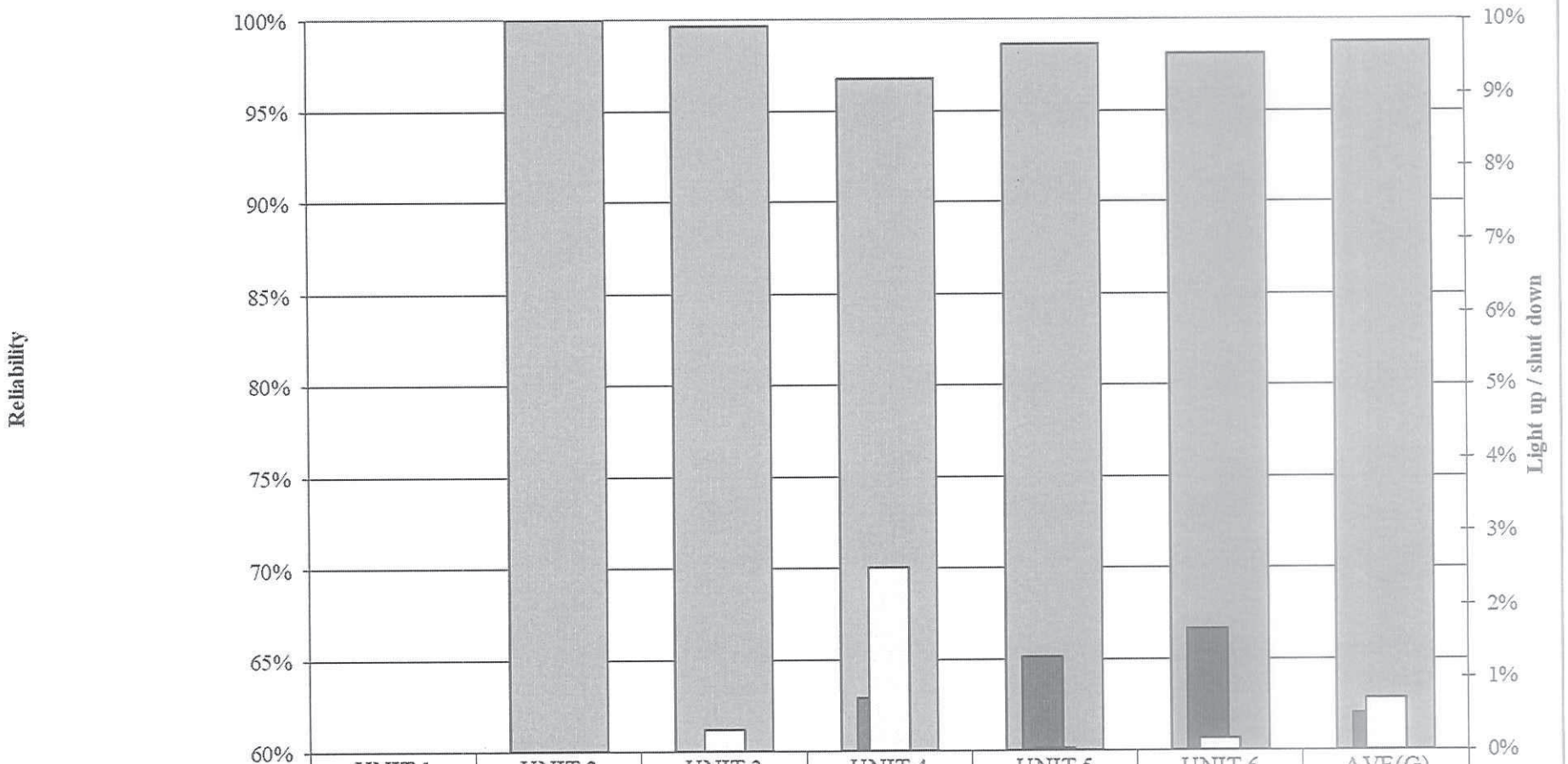
MATLA POWER STATION

UNIT 6 DUST EMISSION REPORT

MAY 2018



MATLA POWER STATION
PRECIPITATOR RELIABILITY
MAY 2018

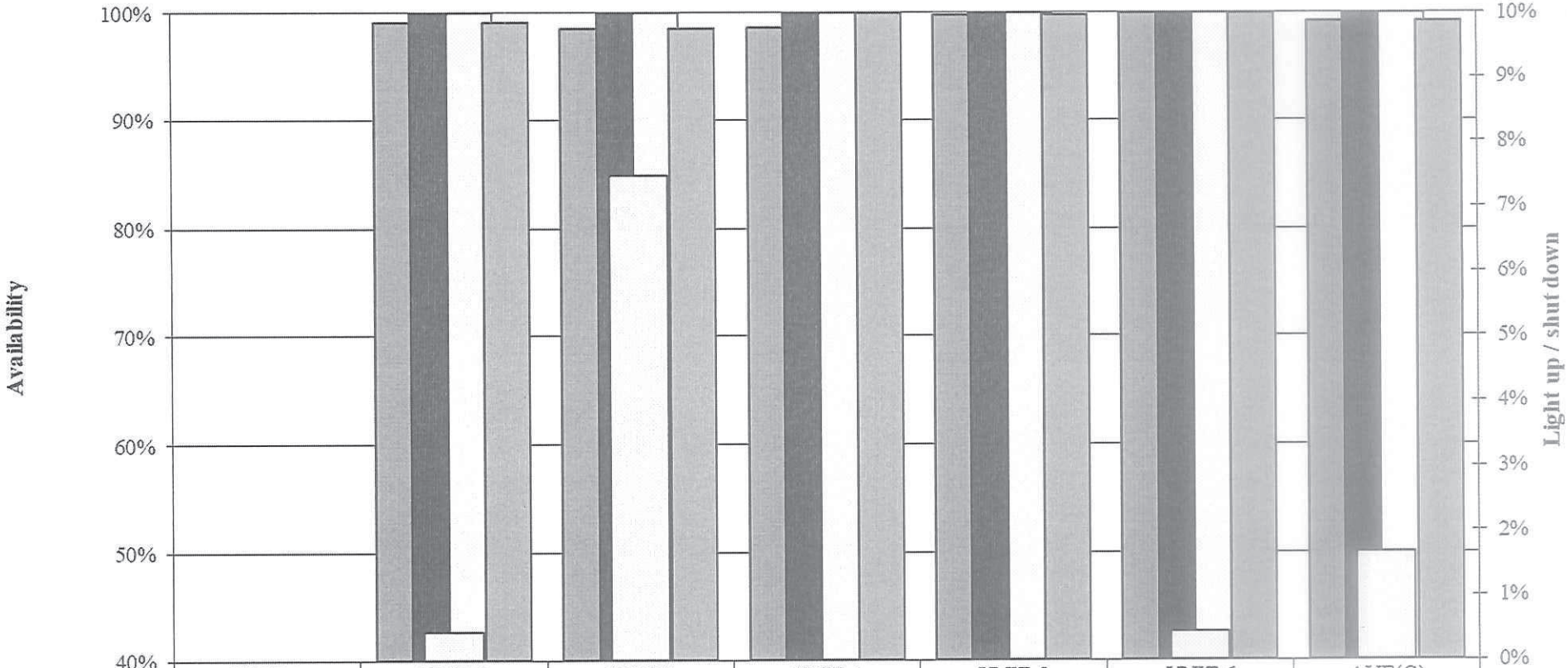


	UNIT 1	UNIT 2	UNIT 3	UNIT 4	UNIT 5	UNIT 6	AVE(G)
Reliability		100.00%	99.70%	96.77%	98.67%	98.17%	98.78%
Loss due to hopper levels		0.00%	0.00%	0.72%	1.29%	1.67%	0.50%
Loss due to short term incidents		0.00%	0.30%	2.51%	0.03%	0.17%	0.71%
Loss due to Internal faults		0.00%	0.00%	0.00%	0.00%	0.00%	0.00%

MATLA POWER STATION

SO_3 PLANT AVAILABILITY

MAY 2018

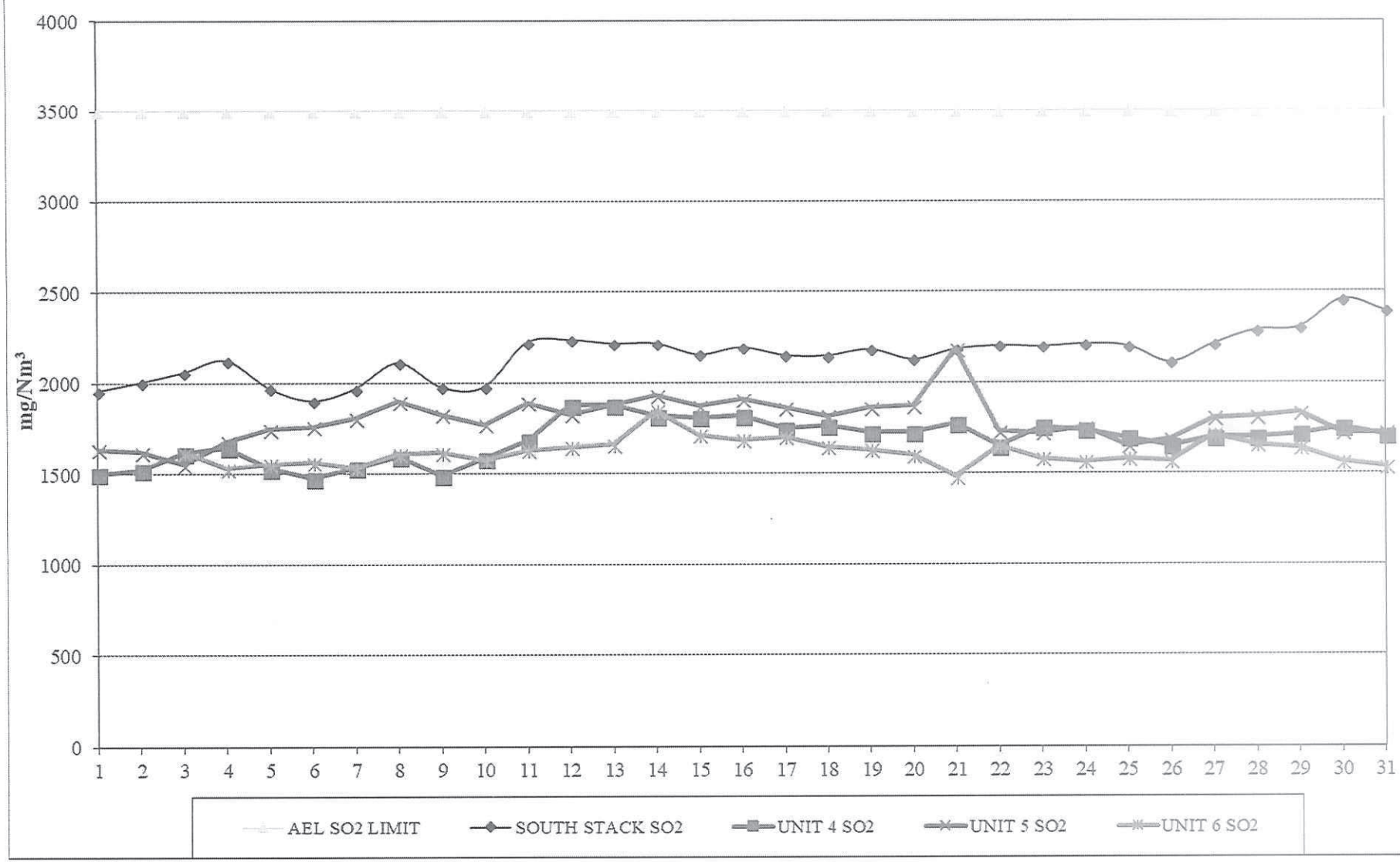


	UNIT 1	UNIT 2	UNIT 3	UNIT 4	UNIT 5	UNIT 6	AVE(G)
Unit Plant		99.09%	98.46%	98.61%	99.78%	100.00%	99.19%
Desuperheater		100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
Common plant		100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
SO3 Injection		99.09%	98.46%	100.00%	99.78%	100.00%	99.19%
Light-up/		0.44%	7.48%	0.00%	0.00%	0.44%	1.67%

MATLA POWER STATION

SMOKE STACK SO_2 EMISSION REPORT

MAY 2018



MATLA POWER STATION
SMOKE STACK NO_2 EMISSION REPORT
MAY 2018