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Our Ref: SMPC/MM/2019-070

12 July 2019

To:

Director General
Department of Environmental Conservation
Ministry of Natural Resources and Environmental Conservation
Office Building No. (53)
Nay Pyi Taw, Myanmar

SUBJECT: MYINGYAN IPP – Submission of Environmental Management Plan and Greenhouse Gas Report

Dear Sir,

1. On 23 April 2015, Sembcorp Utilities Pte. Ltd. ("**Sembcorp**"), a wholly owned subsidiary of Sembcorp Industries Limited, an energy, water and marine group listed on the main board of the Singapore Exchange, was awarded a Notice of Award by the then Myanma Electric Power Enterprise ("**MEPE**"), a division under the Ministry of Electricity and Energy ("**MOEE**") (formerly known as Ministry of Electric Power) to develop and operate a 225-megawatt gas-fired power plant in central Myanmar under a 22-year power purchase agreement ("**Project**").
2. A Power Purchase Agreement (the "**PPA**") was signed on 29 March 2016 between the then MEPE and Sembcorp Myingyan Power Company Limited (the "**Company**"); the Company notes that Electric Power Generation Enterprise ("**EPGE**") has assumed all rights and contractual obligations of the then MEPE, including the PPA.
3. The Project is funded by multilateral development banks such as International Finance Corporation ("**IFC**") and Asian Development Bank ("**ADB**"), as well as several international commercial lenders and as such, an **Environmental and Social Impact Assessment ("ESIA")** was submitted in order to achieve **Environmental Compliance Certificate (ECC)**.
4. In accordance with Clause 4 of the ESIA, we are pleased to submit our 6-monthly Greenhouse Gas (GHG) Report in the form of our Air Quality Monitoring Report and Environmental Quality Monitoring Report.

5. Additionally, in accordance with Clause 109 of the Environmental Impact Assessment Procedure issued by the Ministry of Natural Resources and Environmental Conservation (MONREC), the Company is pleased to submit its Environmental and Social Monitoring Plan (ESMP) checklists.

6. Should you have any queries, please do not hesitate to contact Mr Dennis Foo at dennis.foo@sembcorp.com. If you require any assistance from us, please do let us know. Thank you for your continued support on this matter.

Yours sincerely,



Dennis Foo
Managing Director

Enclosed:

1. Air Quality Monitoring Report
2. Environmental Quality Monitoring Report
3. Air Quality Management Checklist
4. Preparedness Checklist
5. Noise & Vibration Checklist
6. OSH Management Checklist
7. Surface Water Management Checklist
8. Waste Management Checklist



Sembcorp Myingyan Power Co., Ltd.

Environmental Monitoring Report (Air Quality Monitoring)



Prepared by



30 April 2019

E Guard Environmental Services

Table of Contents

List of Figures	ii
List of Tables	iii
1. INTRODUCTION	1
2. METHODOLOGY	1
2.1 Ambient Air Quality.....	1
2.2 Ambient Noise.....	1
3. MONITORING LOCATIONS.....	3
4. ENVIRONMENTAL QUALITY MONITORING RESULTS.....	4
4.1 Ambient Air Quality Monitoring Results.....	4
4.2 Wind Speed and Direction	13
4.3 Ambient Noise.....	17
APPENDIX A.....	21
APPENDIX B	26

List of Figures

Figure 3. 1 Location of Monitoring Points	3
Figure 4. 1 PM Monitoring Results at Sa Ka Village	4
Figure 4. 2 PM Monitoring Results at Hnan Ywa Village	5
Figure 4. 3 PM Monitoring Results at Gyoke Pin Village.....	5
Figure 4. 4 PM Monitoring Results at Nyaung Kan Village	6
Figure 4. 5 Fluctuation of Air Pollutants during dial cycle (Sa Ka Village)	6
Figure 4. 6 Fluctuation of Air Pollutants during dial cycle (Hnan Ywa Village).....	7
Figure 4. 7 Fluctuation of Air Pollutants during dial cycle (Gyoke Pin Village).....	7
Figure 4. 8 Fluctuation of Air Pollutants during dial cycle (Nyaung Kan Village)	8
Figure 4. 9 Wind Speed and Wind Direction (Blowing From) at Sa Ka Village (ASR4).....	13
Figure 4. 10 Wind Class Frequency Distribution at Sa Ka Village (ASR4).....	13
Figure 4. 11 Wind Speed and Wind Direction (Blowing From) at Hnan Ywa Village (ASR3)	14
Figure 4. 12 Wind Class Frequency Distribution at Hnan Ywa Village (ASR3).....	14
Figure 4. 13 Wind Speed and Wind Direction (Blowing From) at Gyoke Pin Village (ASR5)	15
Figure 4. 14 Wind Class Frequency Distribution at Gyoke Pin Village (ASR5)	15
Figure 4. 15 Wind Speed and Wind Direction (Blowing From) at Nyaung Kan Village (ASR14)	16
Figure 4. 16 Wind Class Frequency Distribution at Nyaung Kan Village (ASR14).....	16
Figure 4. 17 Noise Level at near Sembcorp Myingyan Power Plant.....	18
Figure 4. 18 Noise Level at Sa Ka Village	19

List of Tables

Table 2. 1 Ambient Air Quality Parameters	1
Table 2. 2 Air Quality Guideline Values	1
Table 2. 3 Noise level monitoring.....	2
Table 2. 4 Equipment used to measure ambient air and noise measurement	2
Table 3. 1 Location of Monitoring Points.....	3
Table 4. 1 Observed Ambient Air Quality Results from Selected Points.....	4
Table 4. 2 Air Monitoring Results (Sa Ka Village).....	9
Table 4. 3 Air Monitoring Results (Hnan Ywa Village)	10
Table 4. 4 Air Monitoring Results (Gyoke Pin Village).....	11
Table 4. 5 Air Monitoring Results (Nyaung Kan Village)	12
Table 4. 6 Observed Values of Noise Level Measurement at near Sembcorp Myingyan Power Plant	17
Table 4. 7 Observed Values of Noise Level Measurement at Sa Ka Village	18
Table 4. 8 Observed Ambient Noise level Results from Myingyan Power Plant.....	19
Table 4. 9 Observed Ambient Noise level Results from Sa Ka Village	19
Table 4. 10 National Environmental Quality (Emission) Guidelines Values for Noise Level 20	

1. INTRODUCTION

This report is environmental monitoring (only air and noise quality monitoring) for Sembcorp Myingyan Power Plant which is located beside of Myingyan – Nyaung-Oo Road, near the Sa Ka village in Mandalay Region.

2. METHODOLOGY

Baseline environmental parameters and sampling locations were defined according to the objectives for environmental monitoring purposes. Locations for sampling and analysis of ambient air quality of the project site were identified by Sembcorp Myingyan Power Co.,Ltd.

2.1 Ambient Air Quality

The emissions of dust particles and gases were measured for 24hrs continuously at the selected sites by using the Environmental Perimeter Air Station (EPAS), and EPAS provides direct readings in real time with data-logging capabilities. The monitoring results were compared with National Environmental Quality (Emission) Guideline (NEQG), World Health Organization (WHO) and American Conference of Governmental Industrial Hygienists (ACGIH) guidelines.

Table 2. 1 Ambient Air Quality Parameters

<i>Ambient Air Quality (4 locations)</i>	
Gas Emission	CO, CO ₂ , SO ₂ , NO ₂
Dust Emission	PM ₁₀ , PM _{2.5}

Table 2. 2 Air Quality Guideline Values

Parameters	Guidelines Value	Unit	Organization	Averaging Period
PM ₁₀	50	µg/m ³	NEQ	24hrs
PM _{2.5}	25	µg/m ³	NEQ	24hrs
CO	9	ppm	NAAQS	8hrs
CO ₂	5000	ppm	ACGIH	8hrs
SO ₂	20	µg/m ³	NEQ	24hrs
NO ₂	200	µg/m ³	NEQ	24hrs

Source: Myanmar National Environmental Quality (Emission) Guidelines, December 2015 & Air quality guidelines global update. 2005. World Health Organization.

2.2 Ambient Noise

Noise level LAeq (dBA) will be measured at the selected locations that can reflect the exposure of the nearest local community and sensitive locations. Duration and frequency were measured for 24hrs continuously at the selected site using the Noise Meter.

The monitoring procedures, data analysis and interpretation were carried out in accordance with the instrument's manufacture and National Environmental Quality (Emission) Guidelines, World Health Organization (WHO) and International Finance Corporation (IFC guidelines in order to be in line with Environmental Conservation Department, Ministry of Natural



Resources and Environment Conservation (MONREC). "National Environmental Quality (Emission) Guidelines" for Myanmar was also presented the value of noise level as LAeq (dBA).

Table 2. 3 Noise level monitoring

Noise monitoring (3 locations)	
Noise Emission	LAeq (dBA) (1hrs, 24 hrs.)

Equipment used to measure ambient air and noise measurement are shown below (**Table 2. 4**)

Table 2. 4 Equipment used to measure ambient air and noise measurement

<p>Davis Vantage Pro2 Wireless Weather Station</p> <p>Provides detailed current weather conditions and expanded forecasts - all at a glance!</p> <p>The Vantage Pro2 uses a frequency-hopping spread spectrum radio from 902 MHz to 928 MHz to transmit and receive data up to 1,000' (300m) line of sight. In addition, the weather station features a bubble level, improved anemometer base, redesigned wind cups, and factory-calibrated wind direction. The integrated sensor suite combines temperature and humidity sensors, rain collector with an aluminum-plated tipping bucket, and anemometer into one package for easy setup. Measure inside and outside temperature and humidity, heat index, barometric pressure, dew point, rainfall, wind direction and speed, and wind chill.</p>	
<p>Haz-Scanner EPAS</p> <p>PM₁₀, PM_{2.5}, NO₂, SO₂, CO, CO₂, Temperature, and Relative Humidity</p>	
<p>Digital Sound Level Meter</p> <p>Noise and Vibration</p>	

3. MONITORING LOCATIONS

Locations of sampling sites were identified by Sembcorp Myingyan Power Co,ltd. Air quality was monitored at the four selected locations that are Sa Ka Village (ASR4), Hnan Ywa Village (ASR3), Gyoke Pin Village (ASR 5) and Nyaung Kan Village (ASR 14).

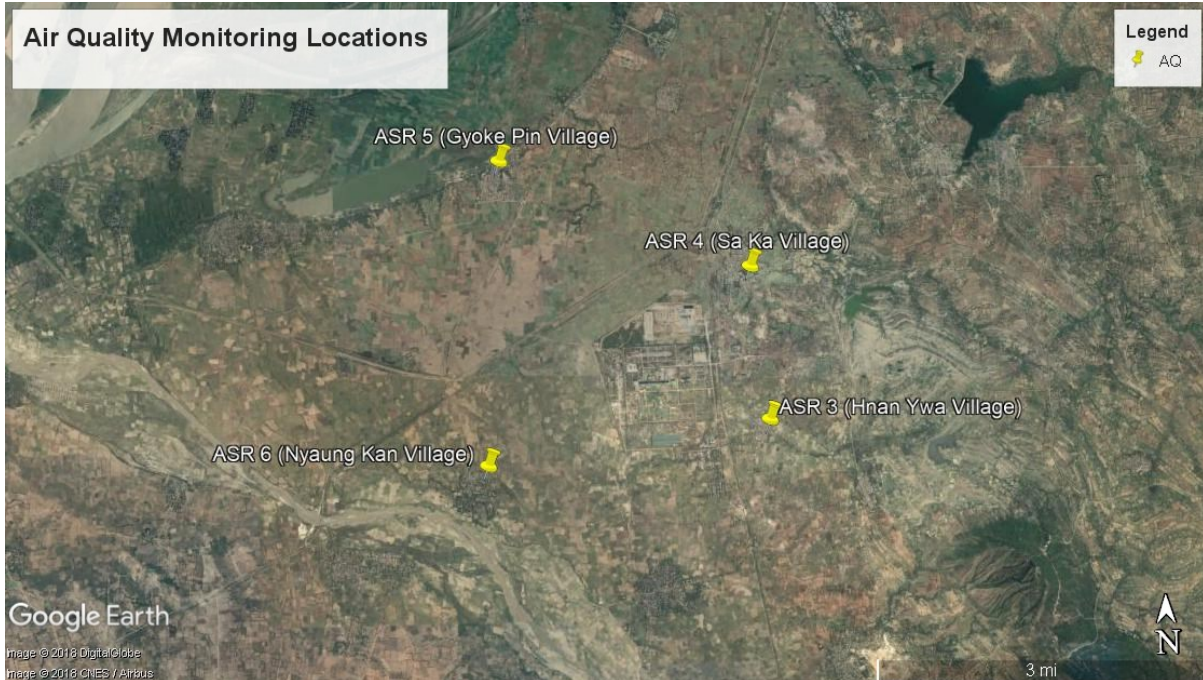


Figure 3. 1 Location of Monitoring Points

Table 3. 1 Location of Monitoring Points

Locations No.	Points	Coordinate	Locations
Ambient Air Quality and Noise Monitoring Locations			
1	ASR4	Lat- 21°23'29.937", Long- 95°22'58.976"	Sa Ka Village
2	ASR3	Lat- 21°22'17.579", Long- 95°23'18.340"	Hnan Ywa Village
3	ASR5	Lat- 21°24'21.890", Long- 95°21'06.897"	Gyoke Pin Village
4	ASR14	Lat- 21°21'58.234", Long- 95°20'51.426"	Nyaung Kan Village

4. ENVIRONMENTAL QUALITY MONITORING RESULTS

4.1 Ambient Air Quality Monitoring Results

24 hours air quality monitoring were done at each selected location from 3 April 2019 to 7 April 2019. The measured results are compared with national emission guidelines. Based on the results of air quality monitoring, most of the parameters are within the guidelines.

Table 4. 1 Observed Ambient Air Quality Results from Selected Points

Parameters	Observed Value				Guidelines Value	Unit	Averaging Period
	ASR4	ASR3	ASR5	ASR14			
PM ₁₀	29.15	31.53	39.95	43.32	50	µg/m ³	24hrs
PM _{2.5}	21.39	22.17	30.85	32.99	25	µg/m ³	24hrs
CO	0.00045	0.000025	0	0.0016	9	ppm	8hrs
CO ₂	285.99	424.62	397.51	201.69	5000	ppm	8hrs
SO ₂	2.62	2.62	2.62	2.62	20	µg/m ³	24hrs
NO ₂	14.67	39.15	13.17	17.97	200	µg/m ³	1hrs

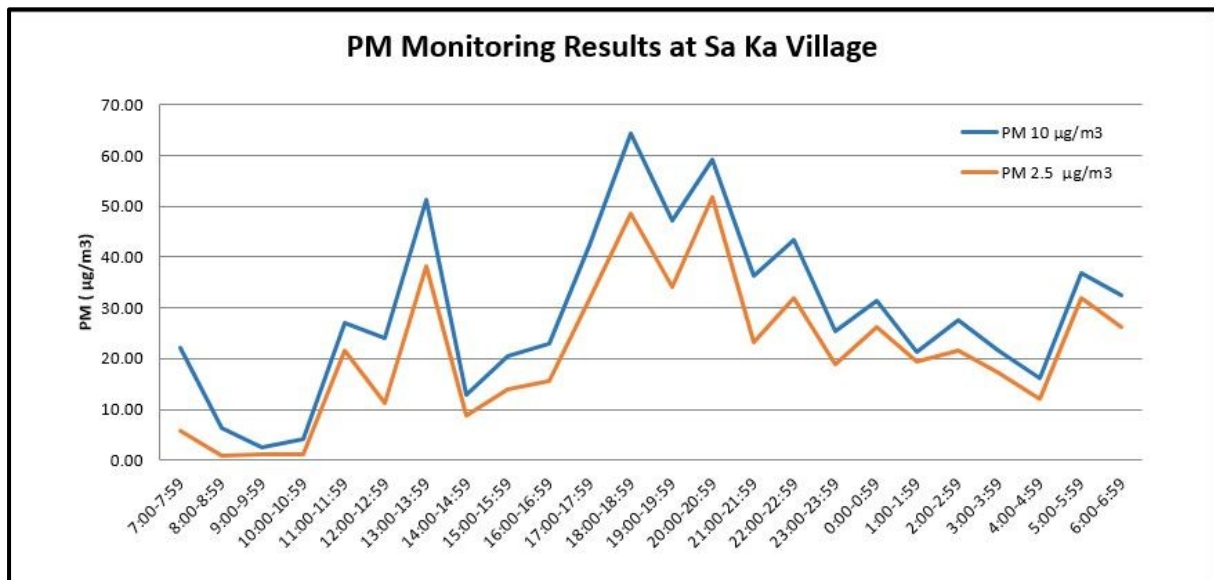


Figure 4. 1 PM Monitoring Results at Sa Ka Village

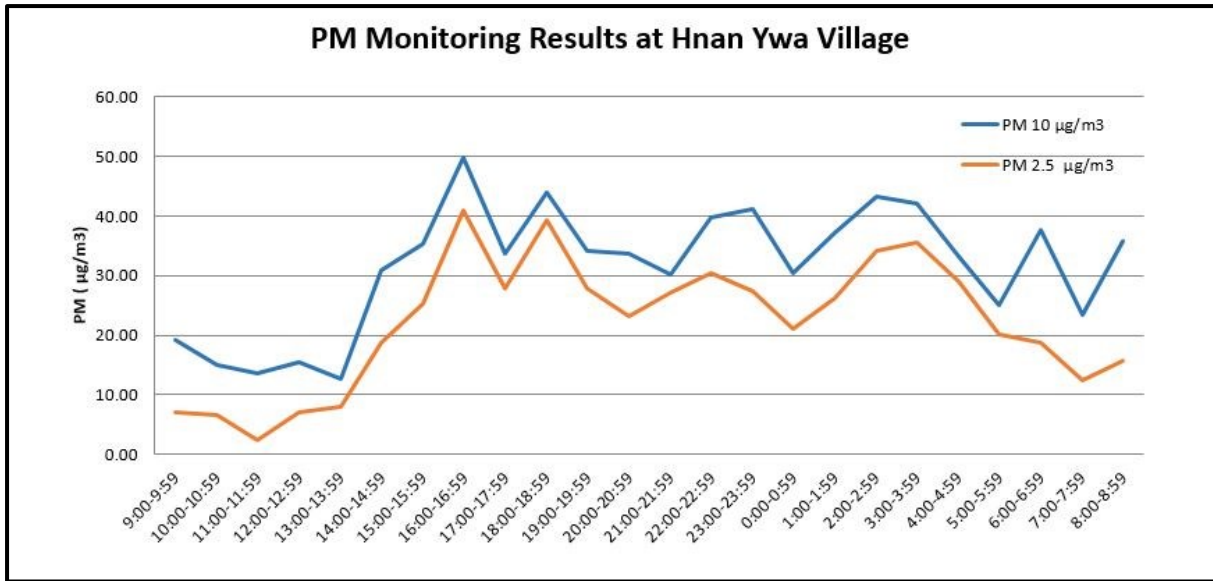


Figure 4. 2 PM Monitoring Results at Hnan Ywa Village

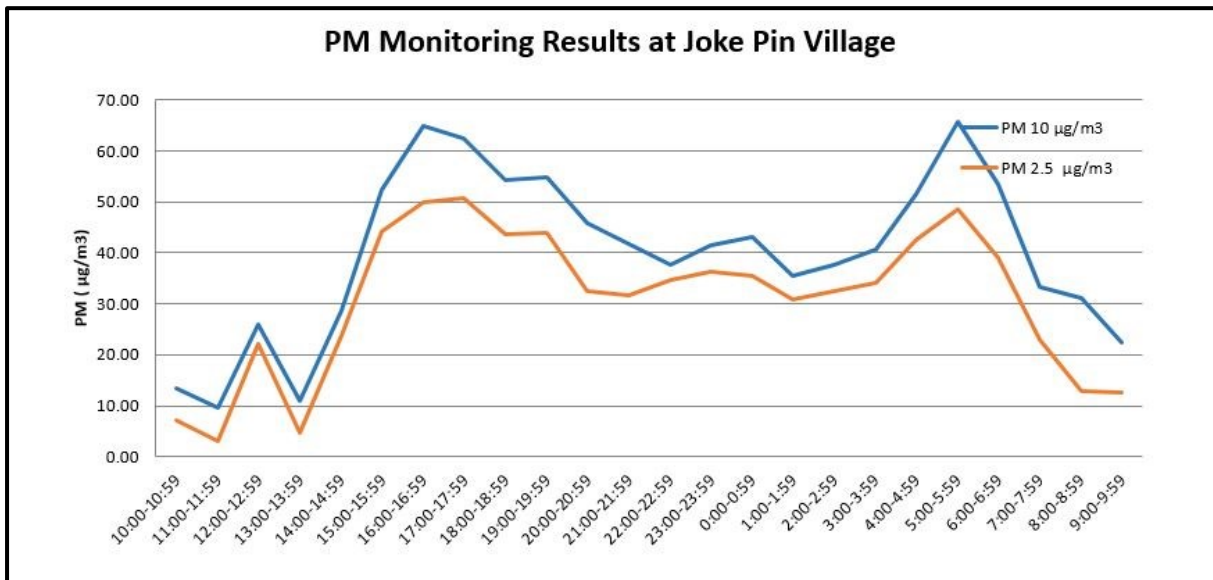


Figure 4. 3 PM Monitoring Results at Gyoke Pin Village

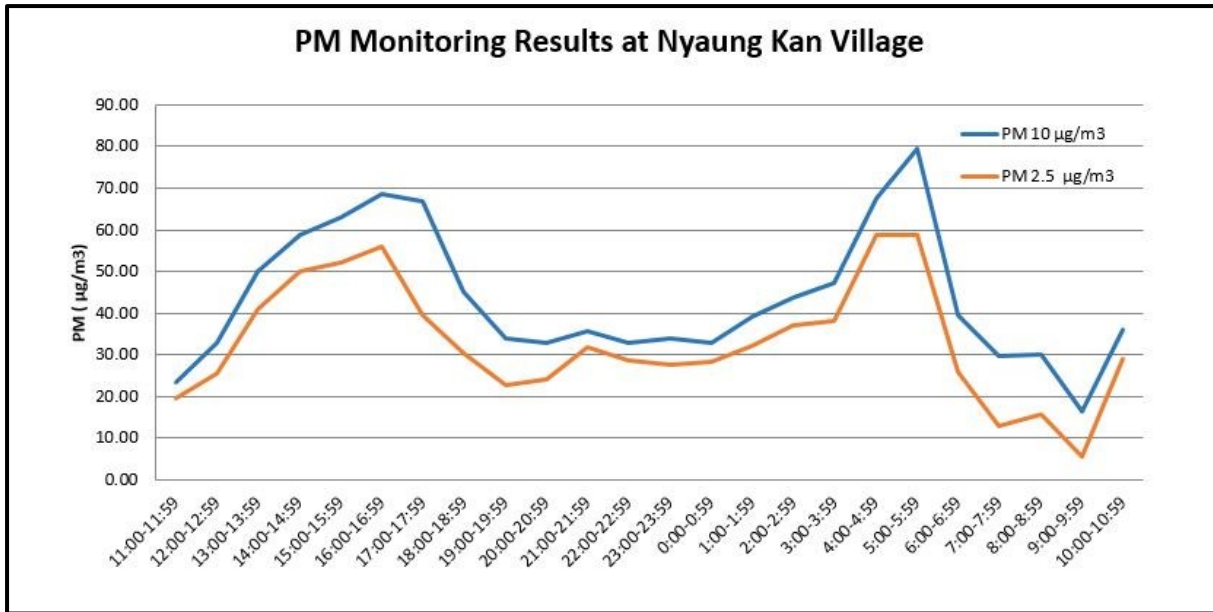


Figure 4. 4 PM Monitoring Results at Nyaung Kan Village

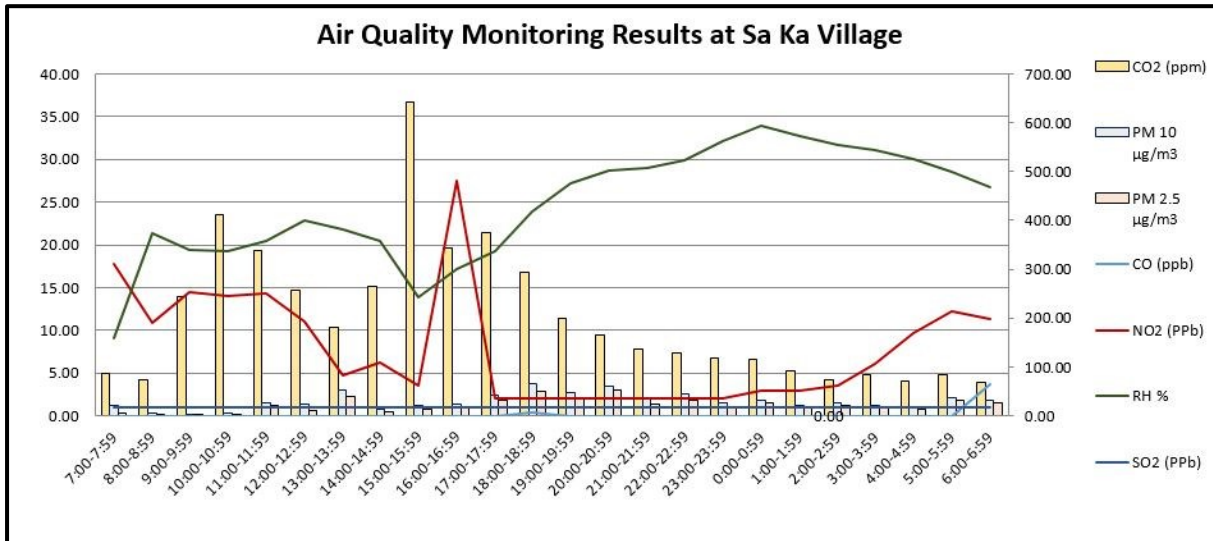


Figure 4. 5 Fluctuation of Air Pollutants during dial cycle (Sa Ka Village)

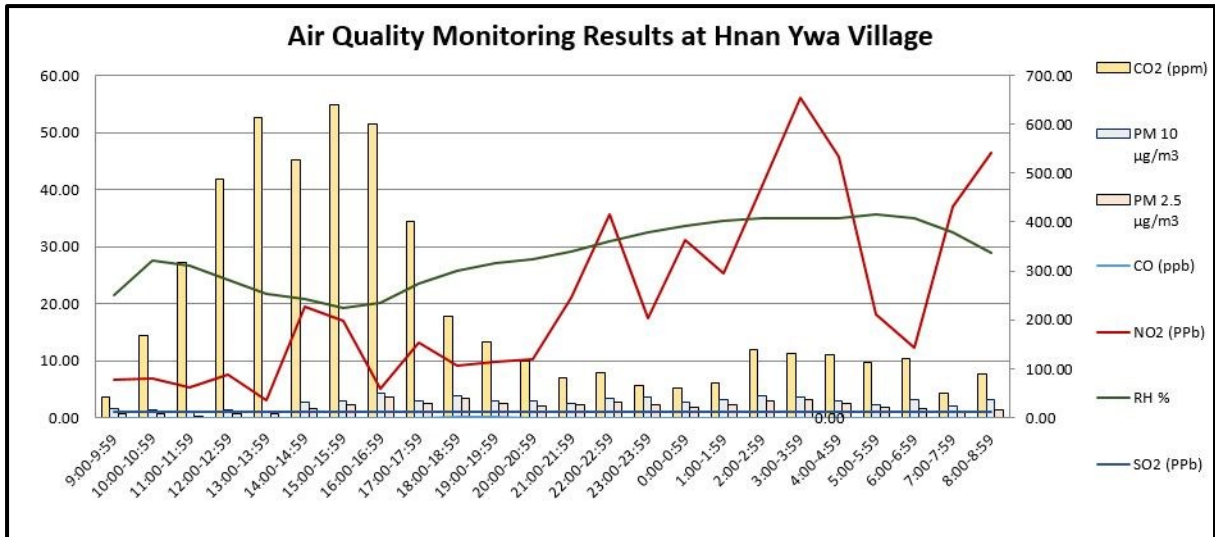


Figure 4. 6 Fluctuation of Air Pollutants during dial cycle (Hnan Ywa Village)

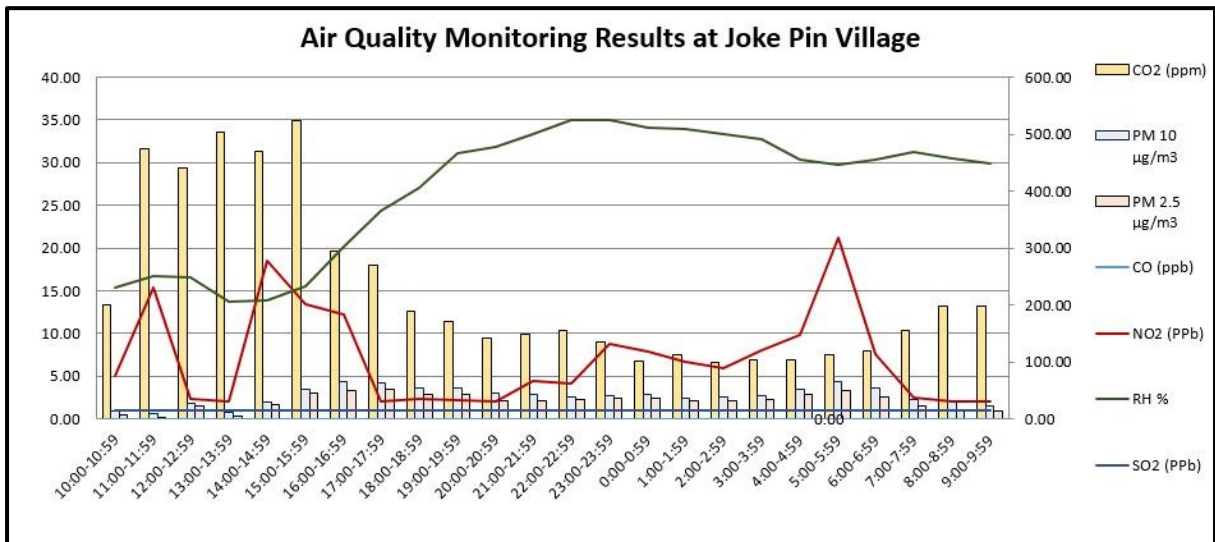


Figure 4. 7 Fluctuation of Air Pollutants during dial cycle (Gyoke Pin Village)

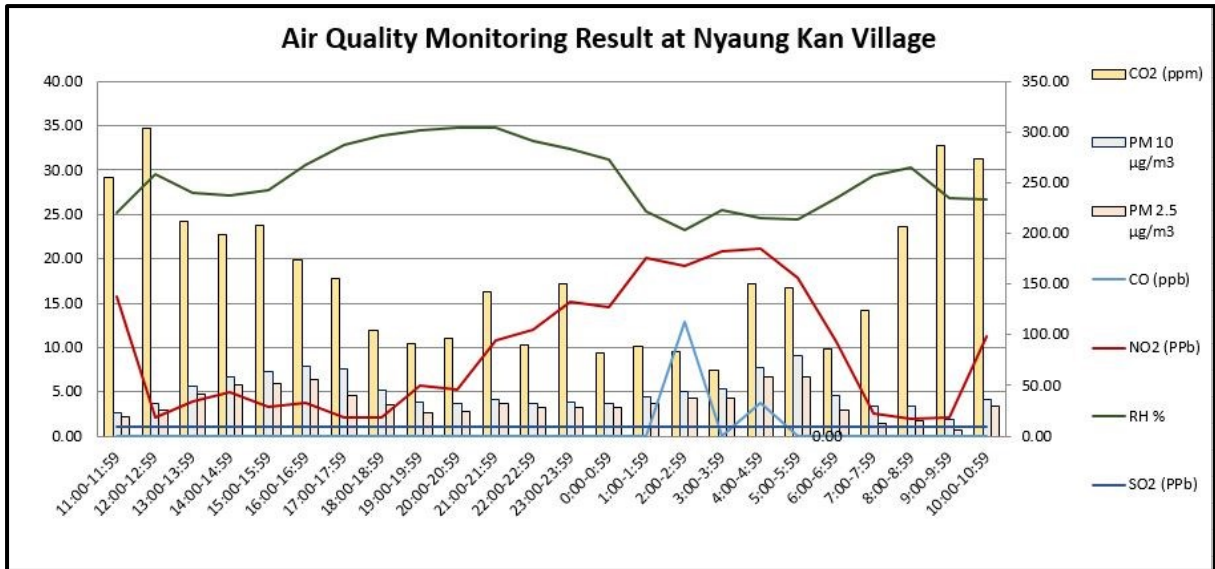


Figure 4. 8 Fluctuation of Air Pollutants during dial cycle (Nyaung Kan Village)

Detail results with one-hour interval of pollutants are shown in **Table 4. 2** to **Table 4. 5**. Most results are under the Myanmar National Environmental Quality (emission) Guidelines. But, PM_{2.5} at Gyoke Pin Village and Nyaung Kan Village are upper the Myanmar National Environmental Quality (emission) Guidelines because PM is high at dry season to more blow and passing through the motor cycle.

Table 4. 2 Air Monitoring Results (Sa Ka Village)

Date	Time		CO ₂ (ppm)	CO (ppb)	NO ₂ (ppb)	PM ₁₀ µg/m ³	PM _{2.5} µg/m ³	RH %	SO ₂ (ppb)
3.4.2019	7:00-7:59	Average	86.83	0.00	17.70	22.27	5.80	9.08	1.00
3.4.2019	8:00-8:59	Average	73.87	0.00	10.88	6.32	1.00	21.30	1.00
3.4.2019	9:00-9:59	Average	242.85	0.00	14.53	2.42	1.03	19.45	1.00
3.4.2019	10:00-10:59	Average	413.07	0.00	14.03	4.03	1.28	19.25	1.00
3.4.2019	11:00-11:59	Average	338.50	0.00	14.28	27.10	21.57	20.48	1.00
3.4.2019	12:00-12:59	Average	257.38	0.00	11.03	23.95	11.25	22.87	1.00
3.4.2019	13:00-13:59	Average	180.87	0.00	4.77	51.38	38.08	21.83	1.00
3.4.2019	14:00-14:59	Average	265.48	0.00	6.25	12.88	8.87	20.52	1.00
3.4.2019	15:00-15:59	Average	643.70	0.00	3.52	20.53	13.87	13.88	1.00
3.4.2019	16:00-16:59	Average	343.80	0.00	27.57	22.95	15.52	17.23	1.00
3.4.2019	17:00-17:59	Average	375.95	0.00	2.00	42.35	31.75	19.27	1.00
3.4.2019	18:00-18:59	Average	293.27	0.45	2.00	64.43	48.65	23.83	1.00
3.4.2019	19:00-19:59	Average	199.05	0.00	2.00	47.20	34.03	27.25	1.00
3.4.2019	20:00-20:59	Average	166.47	0.00	2.00	59.22	51.87	28.77	1.00
3.4.2019	21:00-21:59	Average	137.35	0.00	2.00	36.32	23.33	29.00	1.00
3.4.2019	22:00-22:59	Average	128.32	0.00	2.00	43.50	31.88	29.85	1.00
3.4.2019	23:00-23:59	Average	118.03	0.00	2.02	25.28	18.85	32.13	1.00
4.4.2019	0:00-0:59	Average	115.15	0.00	2.98	31.43	26.25	33.95	1.00
4.4.2019	1:00-1:59	Average	91.93	0.00	2.98	21.40	19.45	32.77	1.00
4.4.2019	2:00-2:59	Average	72.98	0.00	3.45	27.57	21.55	31.67	1.00
4.4.2019	3:00-3:59	Average	85.05	0.00	6.10	21.68	17.15	31.13	1.00
4.4.2019	4:00-4:59	Average	70.17	0.00	9.65	16.12	12.15	30.03	1.00
4.4.2019	5:00-5:59	Average	83.38	0.00	12.17	36.77	32.00	28.55	1.00
4.4.2019	6:00-6:59	Average	69.12	3.60	11.30	32.42	26.12	26.68	1.00
Average			202.19	0.17	7.80	29.15	21.39	24.62	1.00
1 hour Maximum			69.12	0.00	2.00	2.42	1.00	9.08	1.00
1 hour Minimum			643.70	3.60	27.57	64.43	51.87	33.95	1.00

Table 4. 3 Air Monitoring Results (Hnan Ywa Village)

Date	Time		CO ₂ (ppm)	CO (ppb)	NO ₂ (ppb)	PM ₁₀ µg/m ³	PM _{2.5} µg/m ³	RH %	SO ₂ (ppb)
4.4.2019	9:00-9:59	Average	42.98	0.00	6.70	19.20	7.15	21.53	1.00
4.4.2019	10:00-10:59	Average	168.37	0.00	6.93	15.10	6.68	27.52	1.00
4.4.2019	11:00-11:59	Average	318.67	0.00	5.23	13.65	2.50	26.73	1.00
4.4.2019	12:00-12:59	Average	487.38	0.00	7.57	15.37	7.03	24.17	1.00
4.4.2019	13:00-13:59	Average	613.12	0.00	3.15	12.68	7.92	21.75	1.00
4.4.2019	14:00-14:59	Average	527.22	0.00	19.37	30.97	18.78	20.83	1.00
4.4.2019	15:00-15:59	Average	638.73	0.00	17.00	35.33	25.20	19.23	1.00
4.4.2019	16:00-16:59	Average	600.48	0.00	5.15	49.70	40.85	20.12	1.00
4.4.2019	17:00-17:59	Average	401.93	0.00	13.10	33.70	27.82	23.52	1.00
4.4.2019	18:00-18:59	Average	206.93	0.10	9.18	43.90	39.30	25.75	1.00
4.4.2019	19:00-19:59	Average	155.25	0.10	9.82	34.08	27.75	27.00	1.00
4.4.2019	20:00-20:59	Average	114.22	0.00	10.27	33.57	23.17	27.87	1.00
4.4.2019	21:00-21:59	Average	82.60	0.00	20.92	30.20	27.03	29.13	1.00
4.4.2019	22:00-22:59	Average	92.50	0.00	35.70	39.72	30.45	31.02	1.00
4.4.2019	23:00-23:59	Average	66.77	0.00	17.35	41.17	27.33	32.55	1.00
5.4.2019	0:00-0:59	Average	59.70	0.00	31.05	30.52	20.98	33.70	1.00
5.4.2019	1:00-1:59	Average	70.73	0.00	25.23	37.17	26.23	34.47	1.00
5.4.2019	2:00-2:59	Average	138.55	0.00	40.53	43.37	34.25	35.00	1.00
5.4.2019	3:00-3:59	Average	130.70	0.00	56.05	42.15	35.62	34.88	1.00
5.4.2019	4:00-4:59	Average	127.47	0.00	45.70	33.10	29.08	35.00	1.00
5.4.2019	5:00-5:59	Average	111.80	0.00	18.17	25.08	20.15	35.53	1.00
5.4.2019	6:00-6:59	Average	120.23	0.00	12.20	37.77	18.63	34.98	1.00
5.4.2019	7:00-7:59	Average	49.77	0.00	36.95	23.47	12.43	32.50	1.00
5.4.2019	8:00-8:59	Average	89.20	0.00	46.53	35.85	15.63	28.85	1.00
Average			225.64	0.01	20.83	31.53	22.17	28.48	1.00
1 hour Minimum			42.98	0.00	3.15	12.68	2.50	19.23	1.00
1 hour Maximum			638.73	0.10	56.05	49.70	40.85	35.53	1.00

Table 4. 4 Air Monitoring Results (Gyoke Pin Village)

Date	Time		CO ₂ (ppm)	CO (ppb)	NO ₂ (ppb)	PM ₁₀ µg/m ³	PM _{2.5} µg/m ³	RH %	SO ₂ (ppb)
5.4.2019	10:00-10:59	Average	201.08	0.00	5.07	13.33	7.10	15.37	1.00
5.4.2019	11:00-11:59	Average	475.15	0.00	15.38	9.63	3.02	16.67	1.00
5.4.2019	12:00-12:59	Average	441.30	0.00	2.30	25.93	22.23	16.50	1.00
5.4.2019	13:00-13:59	Average	504.33	0.00	2.00	11.10	4.73	13.68	1.00
5.4.2019	14:00-14:59	Average	470.66	0.00	18.47	28.76	23.82	13.82	1.00
5.4.2019	15:00-15:59	Average	523.78	0.00	13.40	52.30	44.17	15.57	1.00
5.4.2019	16:00-16:59	Average	294.75	0.00	12.15	64.82	49.98	20.13	1.00
5.4.2019	17:00-17:59	Average	269.05	0.00	2.05	62.32	50.75	24.37	1.00
5.4.2019	18:00-18:59	Average	188.90	0.00	2.35	54.18	43.77	27.07	1.00
5.4.2019	19:00-19:59	Average	169.92	0.00	2.17	54.92	43.80	31.07	1.00
5.4.2019	20:00-20:59	Average	142.72	0.00	2.00	45.77	32.47	31.83	1.00
5.4.2019	21:00-21:59	Average	147.72	0.00	4.38	41.80	31.68	33.37	1.00
5.4.2019	22:00-22:59	Average	154.60	0.00	4.13	37.65	34.68	34.98	1.00
5.4.2019	23:00-23:59	Average	134.13	0.00	8.73	41.60	36.27	35.00	1.00
6.4.2019	0:00-0:59	Average	102.18	0.00	7.92	43.03	35.47	34.03	1.00
6.4.2019	1:00-1:59	Average	112.32	0.00	6.65	35.38	30.93	34.00	1.00
6.4.2019	2:00-2:59	Average	99.22	0.00	5.85	37.67	32.55	33.40	1.00
6.4.2019	3:00-3:59	Average	104.52	0.00	7.98	40.77	34.02	32.82	1.00
6.4.2019	4:00-4:59	Average	102.63	0.00	9.87	51.62	42.67	30.40	1.00
6.4.2019	5:00-5:59	Average	112.65	0.00	21.22	65.80	48.65	29.72	1.00
6.4.2019	6:00-6:59	Average	119.30	0.00	7.55	53.57	39.02	30.37	1.00
6.4.2019	7:00-7:59	Average	154.33	0.00	2.50	33.37	22.97	31.22	1.00
6.4.2019	8:00-8:59	Average	198.33	0.00	2.00	31.12	12.97	30.50	1.00
6.4.2019	9:00-9:59	Average	198.93	0.00	2.00	22.37	12.60	29.93	1.00
Average			225.94	0.00	7.01	39.95	30.85	26.91	1.00
1 hour Minimum			99.22	0.00	2.00	9.63	3.02	13.68	1.00
1 hour Maximum			523.78	0.00	21.22	65.80	50.75	35.00	1.00

Table 4. 5 Air Monitoring Results (Nyaung Kan Village)

Date	Time		CO ₂ (ppm)	CO (ppb)	NO ₂ (ppb)	PM ₁₀ µg/m ³	PM _{2.5} µg/m ³	RH %	SO ₂ (ppb)
6.4.2019	11:00-11:59	Average	255.78	0.00	15.77	23.42	19.43	25.27	1.00
6.4.2019	12:00-12:59	Average	303.98	0.00	2.08	32.77	25.52	29.58	1.00
6.4.2019	13:00-13:59	Average	211.35	0.00	3.95	49.95	41.02	27.47	1.00
6.4.2019	14:00-14:59	Average	199.47	0.00	4.98	58.92	50.07	27.08	1.00
6.4.2019	15:00-15:59	Average	208.08	0.00	3.32	63.13	52.03	27.80	1.00
6.4.2019	16:00-16:59	Average	174.13	0.00	3.77	68.58	56.07	30.53	1.00
6.4.2019	17:00-17:59	Average	155.70	0.00	2.18	66.90	39.60	32.85	1.00
6.4.2019	18:00-18:59	Average	105.02	0.00	2.07	45.15	30.40	33.95	1.00
6.4.2019	19:00-19:59	Average	91.18	0.00	5.73	33.78	22.87	34.57	1.00
6.4.2019	20:00-20:59	Average	96.45	0.00	5.25	32.75	24.20	34.85	1.00
6.4.2019	21:00-21:59	Average	142.05	0.00	10.80	35.70	31.75	34.78	1.00
6.4.2019	22:00-22:59	Average	90.35	0.00	11.98	32.72	28.72	33.32	1.00
6.4.2019	23:00-23:59	Average	149.75	0.00	15.18	34.02	27.75	32.37	1.00
7.4.2019	0:00-0:59	Average	82.70	0.00	14.55	32.75	28.38	31.27	1.00
7.4.2019	1:00-1:59	Average	88.45	0.00	20.15	39.35	32.05	25.32	1.00
7.4.2019	2:00-2:59	Average	83.57	12.87	19.13	43.60	36.95	23.32	1.00
7.4.2019	3:00-3:59	Average	65.35	0.00	20.85	47.17	38.12	25.50	1.00
7.4.2019	4:00-4:59	Average	150.05	3.80	21.22	67.62	58.67	24.62	1.00
7.4.2019	5:00-5:59	Average	147.03	0.00	17.87	79.40	58.85	24.45	1.00
7.4.2019	6:00-6:59	Average	85.47	0.00	10.63	39.53	25.97	26.80	1.00
7.4.2019	7:00-7:59	Average	124.17	0.00	2.63	29.87	12.92	29.38	1.00
7.4.2019	8:00-8:59	Average	206.67	0.00	2.00	29.92	15.60	30.32	1.00
7.4.2019	9:00-9:59	Average	286.85	0.00	2.17	16.50	5.73	26.88	1.00
7.4.2019	10:00-10:59	Average	273.27	0.00	11.20	36.15	29.08	26.63	1.00
Average			157.37	0.69	9.56	43.32	32.99	29.12	1.00
1 hour Minimum			65.35	0.00	2.00	16.50	5.73	23.32	1.00
1 hour Maximum			303.98	12.87	21.22	79.40	58.85	34.85	1.00

4.2 Wind Speed and Direction

The following figure describes the wind speed and wind direction of the proposed project site on, 3 to 7 April 2019 respectively. According to the data, the wind direction is following **Figure 4. 9 to Figure 4. 16.**

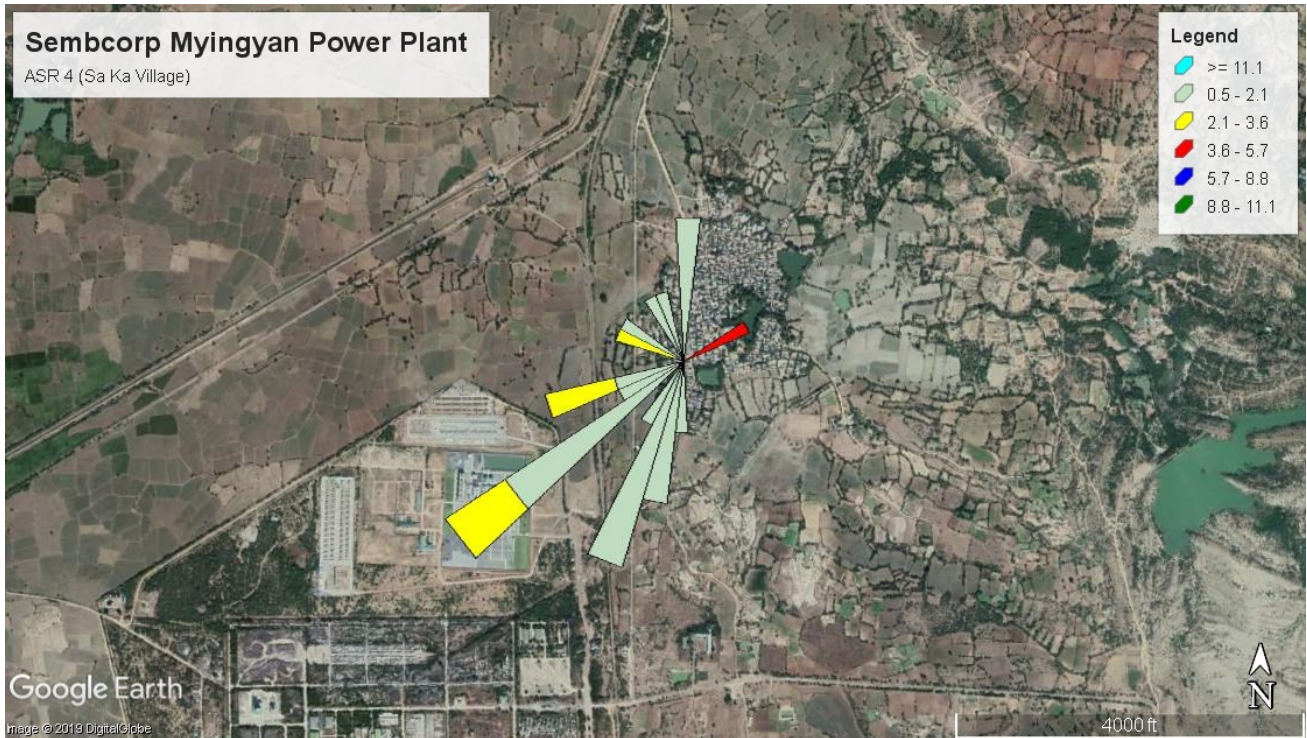


Figure 4. 9 Wind Speed and Wind Direction (Blowing From) at Sa Ka Village (ASR4)

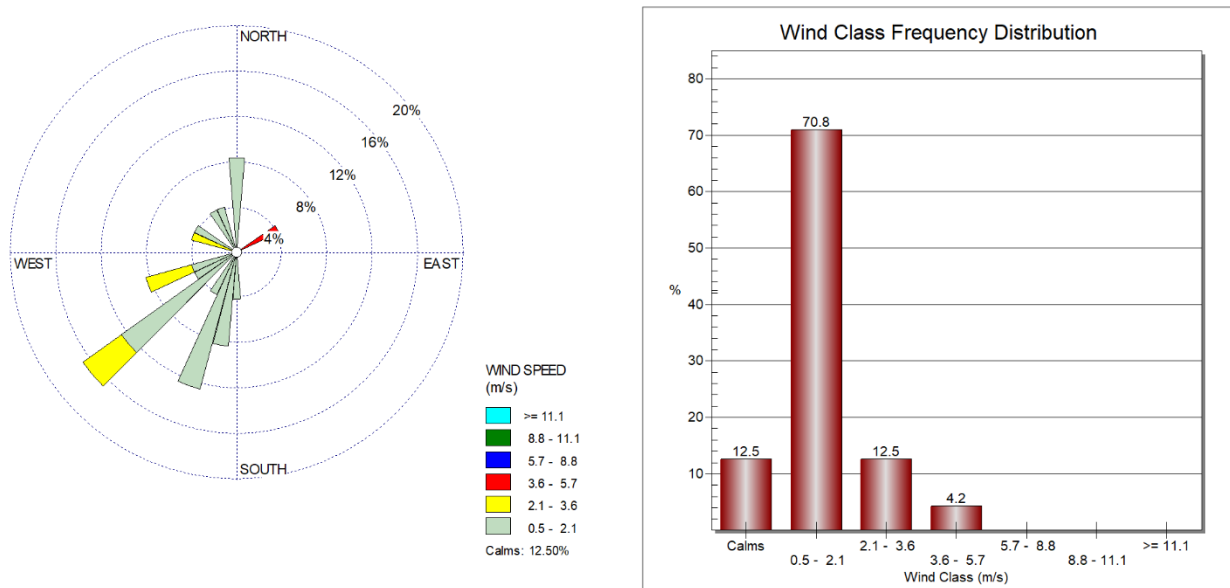


Figure 4. 10 Wind Class Frequency Distribution at Sa Ka Village (ASR4)

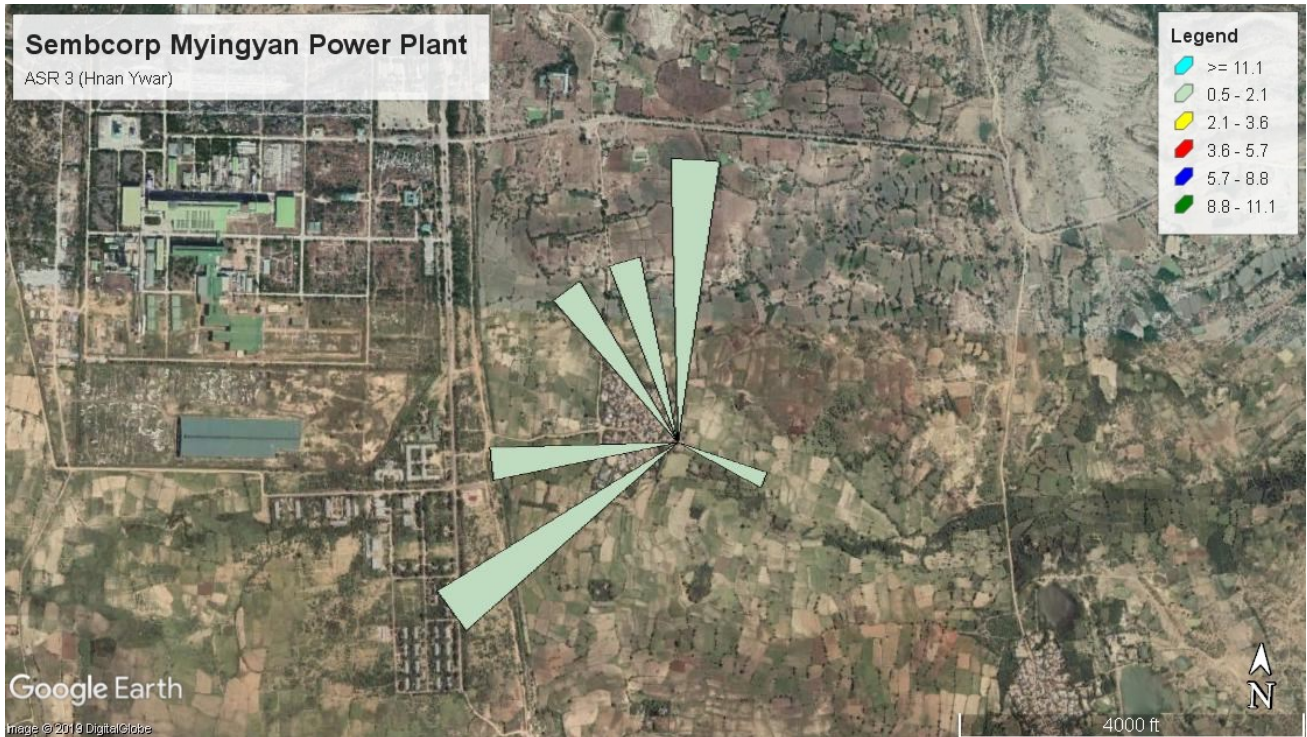


Figure 4. 11 Wind Speed and Wind Direction (Blowing From) at Hnan Ywa Village (ASR3)

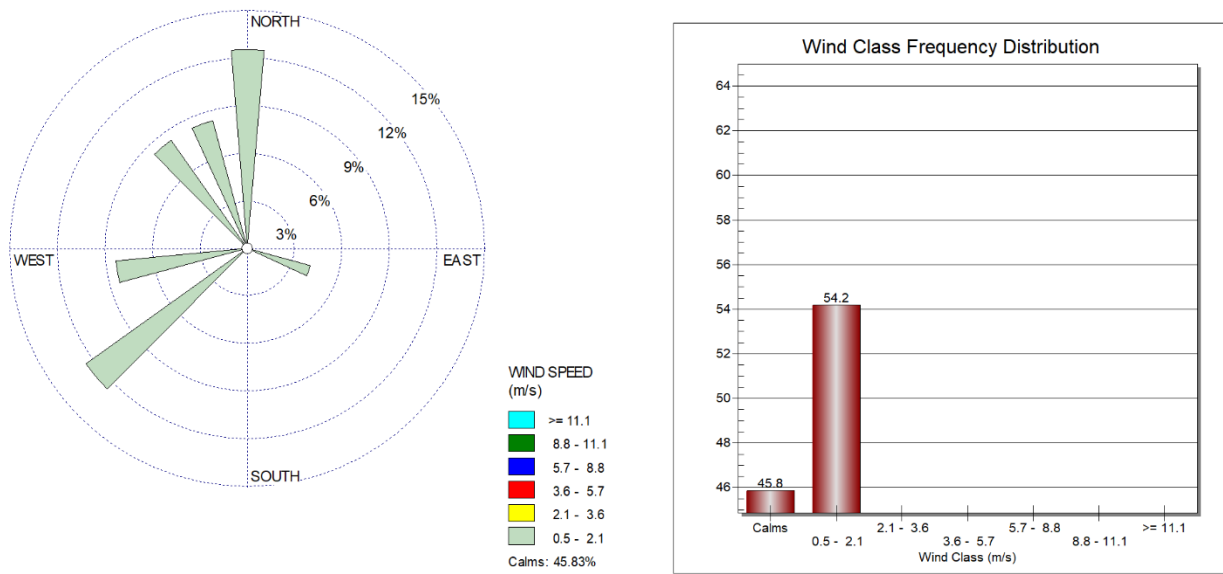


Figure 4. 12 Wind Class Frequency Distribution at Hnan Ywa Village (ASR3)



Figure 4. 13 Wind Speed and Wind Direction (Blowing From) at Gyoke Pin Village (ASR5)

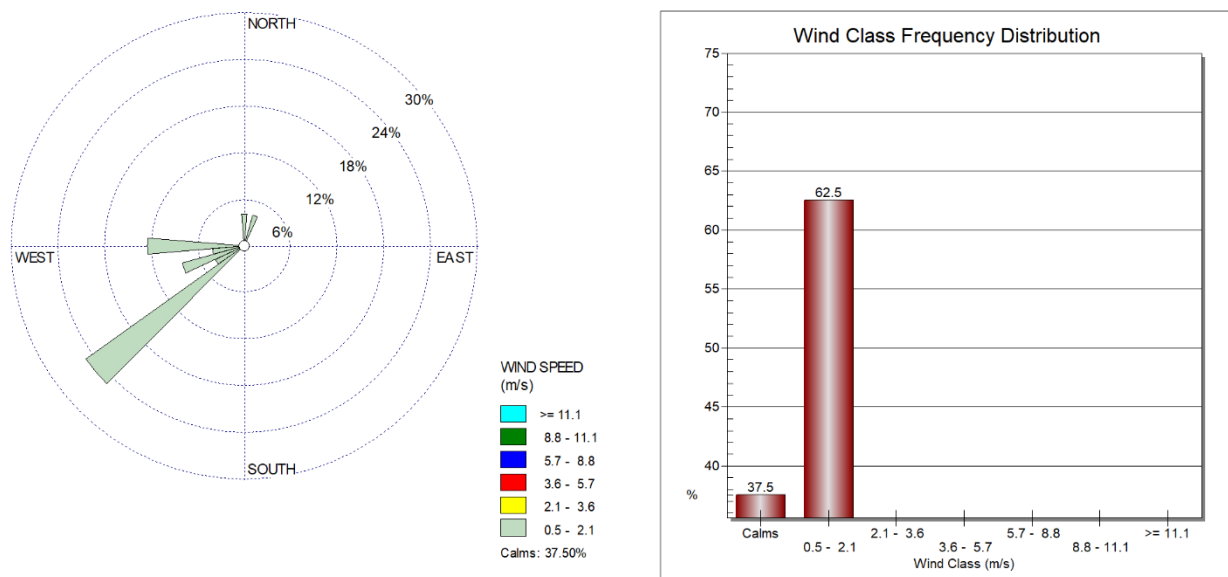


Figure 4. 14 Wind Class Frequency Distribution at Gyoke Pin Village (ASR5)

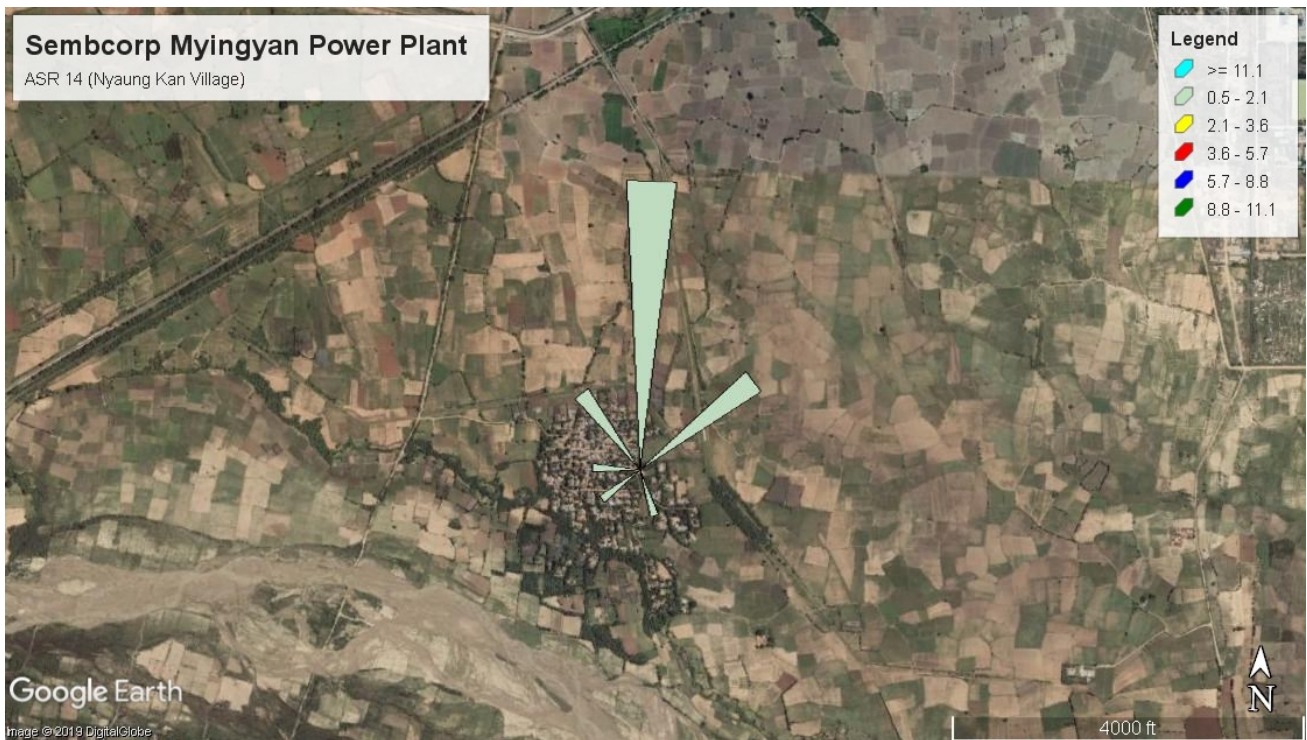


Figure 4. 15 Wind Speed and Wind Direction (Blowing From) at Nyaung Kan Village (ASR14)

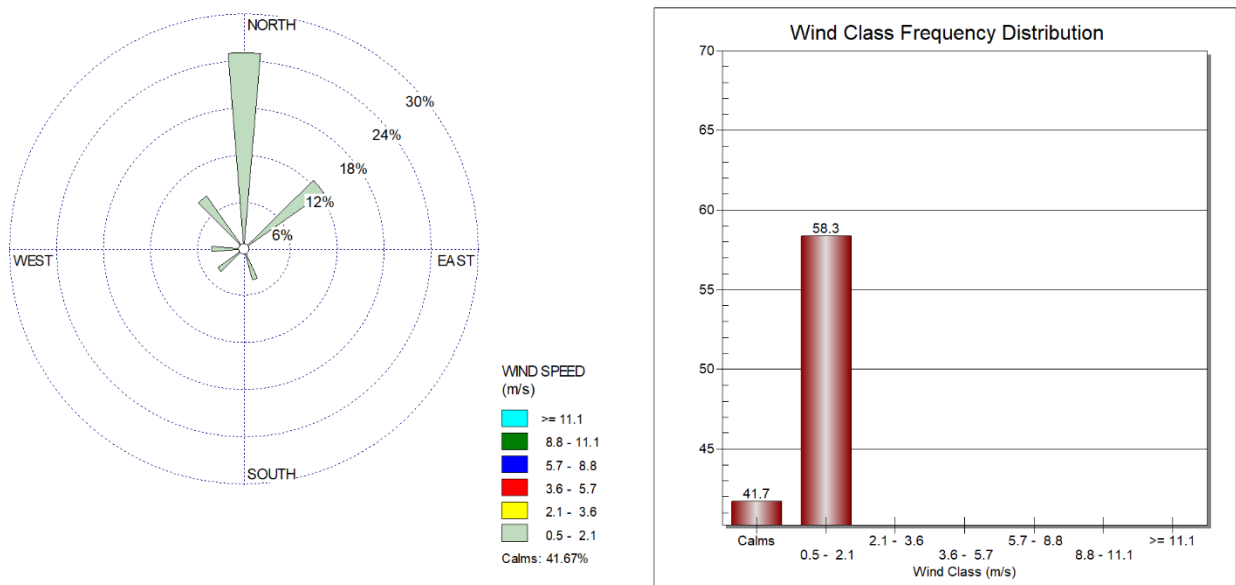


Figure 4. 16 Wind Class Frequency Distribution at Nyaung Kan Village (ASR14)

4.3 Ambient Noise

Ambient noise level for the proposed project was measured with Digital Sound Level Meter at the project site. The noise level measurement is conducted at sembcorp myingyan power points: these points are nearly sembcop myingyan power plant and air monitoring point at sa ka village on 3 to 5 April 2019. Measuring period is 24 hours continuously. The observed values are described in **Table 4. 6 to Table 4. 9** and the following figures are noise level measurement at the proposed project.

Table 4. 6 Observed Values of Noise Level Measurement at near Sembcorp Myingyan Power Plant

No.	Date	Time	Observed Mean Value (Source)	Weight	Day/Night	Average
1	5.4.2019	7:00:13-7:59:13	60.34	A	Day	57.70
2	4.4.2019	8:00:13-8:59:13	58.65	A	Day	
3	4.4.2019	9:00:13-9:59:13	59.04	A	Day	
4	4.4.2019	10:00:13-10:59:13	58.00	A	Day	
5	4.4.2019	11:00:13-11:59:13	57.45	A	Day	
6	4.4.2019	12:00:13-12:59:13	56.49	A	Day	
7	4.4.2019	13:00:13-13:59:13	55.60	A	Day	
8	4.4.2019	14:00:13-14:59:13	56.53	A	Day	
9	4.4.2019	15:00:13-15:59:13	56.00	A	Day	
10	4.4.2019	16:00:13-16:59:13	59.38	A	Day	
11	4.4.2019	17:00:13-17:59:13	58.47	A	Day	
12	4.4.2019	18:00:13-18:59:13	59.80	A	Day	
13	4.4.2019	19:00:13-19:59:13	56.05	A	Day	
14	4.4.2019	20:00:13-20:59:13	56.00	A	Day	
15	4.4.2019	21:00:13-21:59:13	57.70	A	Day	
16	4.4.2019	22:00:13-22:59:13	60.43	A	Night	59.27
17	4.4.2019	23:00:13-23:59:13	61.63	A	Night	
18	5.4.2019	0:00:13-0:59:13	59.66	A	Night	
19	5.4.2019	1:00:13-1:59:13	52.71	A	Night	
20	5.4.2019	2:00:13-2:59:13	55.96	A	Night	
21	5.4.2019	3:00:13-3:59:13	60.70	A	Night	
22	5.4.2019	4:00:13-4:59:13	62.46	A	Night	
23	5.4.2019	5:00:13-5:59:13	61.52	A	Night	
24	5.4.2019	6:00:13-6:59:13	58.41	A	Night	
Average			58.29			

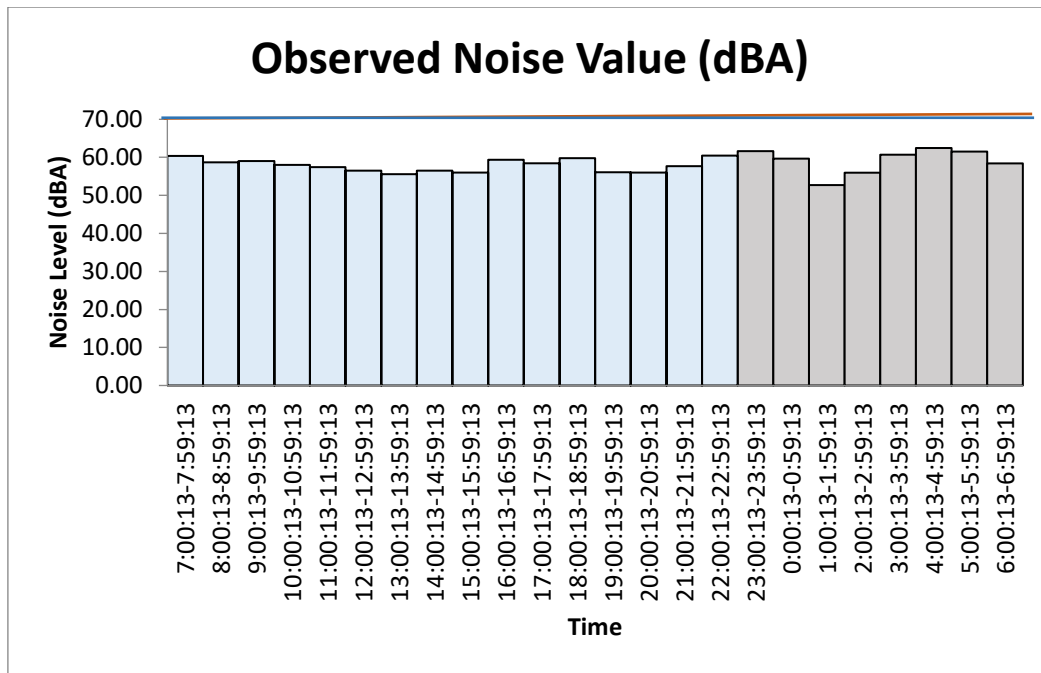


Figure 4. 17 Noise Level at near Sembcorp Myingyan Power Plant

Table 4. 7 Observed Values of Noise Level Measurement at Sa Ka Village

No.	Date	Time	Observed Mean Value (Source)	Weight	Day/Night	Average
1	3.4.2019	7:00:13-7:59:13	60.63	A	Day	56.96
2	3.4.2019	8:00:13-8:59:13	58.04	A	Day	
3	3.4.2019	9:00:13-9:59:13	54.56	A	Day	
4	3.4.2019	10:00:13-10:59:13	54.24	A	Day	
5	3.4.2019	11:00:13-11:59:13	53.19	A	Day	
6	3.4.2019	12:00:13-12:59:13	75.44	A	Day	
7	3.4.2019	13:00:13-13:59:13	55.71	A	Day	
8	3.4.2019	14:00:13-14:59:13	52.57	A	Day	
9	3.4.2019	15:00:13-15:59:13	55.16	A	Day	
10	3.4.2019	16:00:13-16:59:13	49.10	A	Day	
11	3.4.2019	17:00:13-17:59:13	52.67	A	Day	
12	3.4.2019	18:00:13-18:59:13	58.04	A	Day	
13	3.4.2019	19:00:13-19:59:13	57.75	A	Day	
14	3.4.2019	20:00:13-20:59:13	61.34	A	Day	
15	3.4.2019	21:00:13-21:59:13	55.95	A	Day	
16	3.4.2019	22:00:13-22:59:13	52.88	A	Night	55.39
17	3.4.2019	23:00:13-23:59:13	54.70	A	Night	
18	4.4.2019	0:00:13-0:59:13	52.98	A	Night	
19	4.4.2019	1:00:13-1:59:13	52.42	A	Night	

20	4.4.2019	2:00:13-2:59:13	50.75	A	Night	
21	4.4.2019	3:00:13-3:59:13	49.77	A	Night	
22	4.4.2019	4:00:13-4:59:13	57.67	A	Night	
23	4.4.2019	5:00:13-5:59:13	63.61	A	Night	
24	4.4.2019	6:00:13-6:59:13	63.73	A	Night	
Average			56.37			

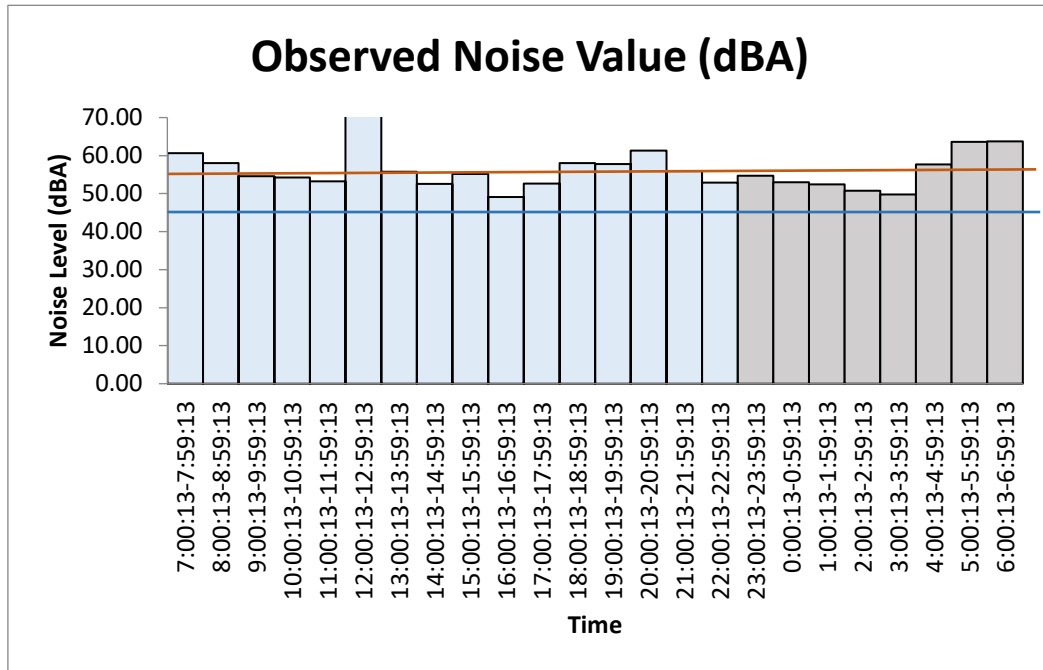


Figure 4. 18 Noise Level at Sa Ka Village

Table 4. 8 Observed Ambient Noise level Results from Myingyan Power Plant

Point	Sembcorp Myingyan Power Plant	
	Day Time	Night Time
Sembcorp Myingyan Power Plant	57.70	59.27
Guideline Values	70	70

Table 4. 9 Observed Ambient Noise level Results from Sa Ka Village

Point	Sembcorp Myingyan Power Plant	
	Day Time	Night Time
Sa Ka Village	56.96	55.39
Guideline Values	55	45

The observed values of sembcorp myingyan power plant are lower than the guidelines. So, Sembcorp myingyan power plant is acceptable for environmental. The observed values are compared with the National Environmental Quality (Emission) Guidelines as shown in **Table 4. 10** which indicates the separate level for residential and industrial points.

Table 4. 10 National Environmental Quality (Emission) Guidelines Values for Noise Level

Receptor	One Hour LAeq (dBA)	
	Daytime 07:00 - 22:00 (10:00 - 22:00 for Public Holidays)	Nighttime 22:00 - 07:00 (22:00 - 10:00 for Public Holidays)
Residential, institutional, educational	55	45
Industrial, commercial	70	70

The observed values of the proposed project for daytime at sembcorp myingyan power plant and Sa Ka village are 57.70 dB (A) and 56.96 dB (A). The observed values of the proposed project for night time at sembcorp myingyan power plant and Sa Ka village are 59.27 dB (A) and 55.39 dB (A). The proposed project is located adjacent to the residential and commercial area. So, the observed values of daytime and nighttime at sembcorp myingyan power plant are under the National Environmental Quality (Emission) Guidelines. The observed values of daytime and nighttime at Sa Ka village are upper the National Environmental Quality (Emission) Guidelines because of this village have ceremony of ordination.

APPENDIX A

Description of Haz-scanner (EPAS)

HAZ-SCANNER

Wireless Environmental Perimeter Air Station **EPAS**

- Direct reading
- Build your own station with up to 14 simultaneous air measurements including U.S. EPA criteria air pollutants
 - Standard configuration measures 5 parameters including PM10 or TSP particulates, NO_x, CO, temperature, and relative humidity
 - Add one or all optional interchangeable sensors with upgradable software and/or EPAS-specific meters (up to 9 sensors/meters total) as listed on the reverse side. Choose from additional sensors for toxic gas (including methane), hydrocarbons, VOCs, and biological/chemical agents and EPAS-specific meters for solar radiation/UV or IR, barometric pressure, sound/noise, atomic radiation, ELF radiation, rain, and wind speed/direction
 - Available analog input port for alternative meter
 - Interchangeable size-selective impactors are available for PM1.0, PM2.5, or PM4.0 (close approximation of respirable)
 - Can monitor up to 2 PM sizes simultaneously
- Real-time readings, datalogging capabilities
 - Optional wireless data transmission up to 5 miles
 - Optional Ethernet internet connection for 24/7 data reporting
- Easily portable and deployable
- Battery operated
- Network up to 8 EPAS to one central PC or Mac
- Easy-to-use graph and reporting software compatible with PC and Mac

The portable HAZ-SCANNER™ EPAS wireless environmental perimeter air station is easily deployed as an ambient air quality monitor to scan, measure, and document critical EPA criteria pollutants including nitrogen dioxide, carbon monoxide, sulfur dioxide, ozone, carbon dioxide, particulates, VOCs, and more. The EPAS is the only instrument on the market with sensors offering simultaneous monitoring of two different sizes of PM. The EPAS provides direct readings in real time with datalogging capabilities. The graph and reporting software is compatible with PC and Mac. Contact an SKC product specialist to build your EPAS including up to 14 simultaneous critical air measurements in one battery-operated instrument.

HAZ-SCANNER Wireless EPAS Applications

- Ambient air quality monitoring
- Hazardous incident response
- Waste site remediation monitoring
- Military/homeland security
- Perimeter monitoring
- Near roadway monitoring

Go to www.skcinstruments.com/prod/Haz-Scanner.asp for more information.



Measure up to 14 critical air parameters simultaneously with HAZ-SCANNER EPAS.



SKC Inc. 724-941-5701 SKC-West 714-992-2780 SKC Gulf Coast 281-859-8050 SKC South 434-852-7145
www.skcinstruments.com

HAZ-SCANNER EPAS

Wireless Environmental Perimeter Air Station



HAZ-SCANNER EPAS shown with optional solar panels

Performance Profile

The HAZ-SCANNER EPAS is optimized for ambient air applications; custom calibration for specific ranges or applications is available upon request.

Display	LCD real time
Operation	2-key splash-proof membrane switch
Power	12-V Absorption Glass Mat (AGM) rechargeable battery, 100-240 V AC, or optional solar panel
Display Measurements	Max, Min, TWA, STEL
Recording Time	1 sec to 21 weeks
Sampling Rate	1 sec, 1 min, 10 min, 1 hr, adjustable
Data Storage	256, 512 data points
Sampling Pump	1.0 to 3.0 L/min
Digital Output	RS-232 (PC), RS-423 (Mac)
Software	PC or Mac
Enclosure (weather-proof case)	8 x 14 x 18 in (15.2 x 35.6 x 25.4 cm)
Weight	12 lbs (5.4 kg)
Operating Temperature	23 to 122 F (-5 to 50 C)
Storage Temperature	-40 to 148 F (-40 to 60 C)
Humidity	95% non-condensing (use mist heater)
Wireless Radio Modes	900 MHz (U.S.), 948 MHz (Europe) up to 5 miles - line of sight (optional)
Auxiliary Analog Input	0 to 2.5 VDC (1 channel for alternative meter)

Configure an EPAS for Up to 14 Simultaneous Measurements

The standard HAZ-SCANNER EPAS includes the monitor (calibrated for ambient air applications) with sensors/meters for PM10 or TSP, VOCs, temperature, humidity, and wind speed/direction in a NEMA 4 enclosure, acid gas scrubber, internal battery, universal 110-240 V AC battery charger, software, cables, and CD with instructions.

Configure the monitor with additional sensors/meters — up to 4 optional interchangeable sensors with upgradable software and/or up to 4 EPAS-specific meters (listed below). See page 3 for specifications. *Specify sensors and meters when ordering.*

- PM1.0, 2.5, or 4.0
- Ammonia (EC)
- Carbon Dioxide (NDIR)
- Carbon Monoxide (EC)
- Chlorine (EC)
- Ethylene Oxide (EL)
- Hydrocarbon (methane-specific, EC)
- Hydrocarbons (EC)
- Hydrogen Chloride (EL)
- Hydrogen Cyanide (EC)
- Hydrogen Sulfide (EC)
- Nitric Oxide (EC)
- Nitrogen Dioxide
- Oxygen
- Ozone
- Phosphine (EL)
- Sulfur Dioxide
- Rain
- Solar Radiance
- Sound and Noise
- Acoustic Radiation
- ELF Radiation
- Barometric Pressure
- Dew Point Temperature
- Wet Bulb Temperature

Contact SKC to build an EPAS with available sensors/meters/calibration for your application!

SKC Limited Warranty and Return Policy

SKC products are subject to the SKC Limited Warranty and Return Policy, which provides SKC's sole liability and the buyer's exclusive remedy. To view the complete SKC Limited Warranty and Return Policy, go to <http://www.skcinstruments.com/warranty.asp>.



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HAZ-SCANNER EPAS

Wireless Environmental Perimeter Air Station

HAZ-SCANNER EPAS Sensor/Meter Specifications

Parameter	Sensor*	Measurement/ Concentration Range	Accuracy	Minimum Resolution	Display Resolution	Additional Information
Particulates	90° infrared light scattering	0 to 5000 µg/m ³	Greater of < ± 10% of reading or 2% full scale	10 µg/m ³	1 µg/m ³	Measures particle sizes: 10 µm or TSP (standard) or 1, 2.5, or 4 µm (optional) in the 0.1 to 100 µm size range
VOCs	PID (10.6 eV)	0 to 50,000 ppb (0 to 50 ppm)	Greater of < ± 10% of reading or 2% full scale	5 ppb	1 ppb	Minimum detection level is 0.01 ppm. Standard sensor
Toxic Gas: NH ₃ - Ammonia	Gas-sensing semiconductor (GSS) technology	0 to 100 ppm	Greater of < ± 10% of reading or 2% full scale	< 0.2 ppm	0.1 ppm	Optional sensor
Toxic Gas: CO ₂ - Carbon Dioxide	NDIR	0 to 5000 ppm	Greater of < ± 10% of reading or 2% full scale	50 ppm	1 ppm	Optional sensor
Toxic Gas: CO - Carbon Monoxide	Electrochemical	0 to 10,000 ppb (0 to 10 ppm)	Greater of < ± 10% of reading or 2% full scale	20 ppb	1 ppb	Optional sensor
Toxic Gas: Cl ₂ - Chlorine	Electrochemical	0 to 100 ppm	Greater of < ± 10% of reading or 2% full scale	< 0.2 ppm	0.1 ppm	Optional sensor
Toxic Gas: (C ₂ H ₄ O) - Ethylene Oxide	Electrochemical	0 to 1500 ppm	Greater of < ± 10% of reading or 2% full scale	8 ppm	1 ppm	Optional sensor
Toxic Gas: Hydrocarbon, CH ₄ - Methane-specific	NDIR	0 to 1% Vol., 0 to 10,000 ppm, 0 to 20% LEL	Greater of < ± 10% of reading or 2% full scale	± 50 ppm or 0.1% LEL	50 ppm/ 0.1% LEL	Optional sensor
Toxic Gas: (Non-methane) Hydrocarbons (HC)	NDIR	Calibrated for 0 to 20% LEL of selected gas	Greater of < ± 10% of reading or 2% full scale	± 50 ppm/ 0.1% LEL	50 ppm/ 0.1% LEL	Optional sensor - specify gas type when ordering: ethane, propane, butane, hexane, ethanal, ethylene, or ethylene oxide
Toxic Gas: HCl - Hydrogen Chloride	Electrochemical	0 to 100 ppm	Greater of < ± 10% of reading or 2% full scale	< 0.2 ppm	0.1 ppm	Optional sensor
Toxic Gas: HCN - Hydrogen Cyanide	Electrochemical	0 to 100 ppm	Greater of < ± 10% of reading or 2% full scale	< 0.2 ppm	0.1 ppm	Optional sensor
Toxic Gas: H ₂ S - Hydrogen Sulfide	Electrochemical	0 to 25 ppm	Greater of < ± 10% of reading or 2% full scale	< 0.15 ppm	0.1 ppm	Optional sensor
Toxic Gas: NO - Nitric Oxide	Electrochemical	0 to 100 ppm	Greater of < ± 10% of reading or 2% full scale	< 0.2 ppm	0.1 ppm	Optional sensor
Toxic Gas: NO ₂ - Nitrogen Dioxide	Electrochemical	0 to 5000 ppb (0 to 5 ppm)	Greater of < ± 10% of reading or 2% full scale	5 ppb	1 ppb	Optional sensor
Toxic Gas: O ₂ - Oxygen	Electrochemical	0 to 30% Vol.	Greater of < ± 10% of reading or 2% full scale	0.6%	0.1%	Optional sensor
Toxic Gas: O ₃ - Ozone	Gas-sensing semiconductor (GSS) technology	0 to 150 ppb (0 to 0.15 ppm) 0 to 500 ppb (0 to 0.5 ppm)	Greater of < ± 10% of reading or 2% full scale	1 ppb	1 ppb	Optional sensor
Toxic Gas: PH ₃ - Phosphine	Electrochemical	0 to 100 ppm	Greater of < ± 10% of reading or 2% full scale	< 0.2 ppm	0.1 ppm	Optional sensor
Toxic Gas: SO ₂ - Sulfur Dioxide	Electrochemical	0 to 5000 ppb (0 to 5 ppm) for ambient applica- tions	Greater of < ± 10% of reading or 2% full scale	5 ppb	1 ppb	Optional sensor

* Not approved for intrinsically safe applications; do not use in explosive gas environments.

Specifications continued on next page →



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www.skcing.com

HAZ-SCANNER EPAS

Wireless Environmental Perimeter Air Station

HAZ-SCANNER EPAS Sensor/Meter Specifications (con't)

Parameter	Sensor*	Measurement/ Concentration Range	Accuracy	Minimum Resolution	Display Resolution	Additional Information
Rain Fall/ Precipitation	Rain gauge (heated, tipping bucket)	0 to 5 inches daily	$\pm 1\%$ at 2 in/hr	0.01 in	0.01 in/tp	Optional meter
Temperature	NTC thermister	-4 to 140 F (-20 to 50 C)	Greater of $\pm 3\%$ degree F or C of reading	1 degree F or C	1 degree F or C	Standard sensor
Relative Humidity (RH)	Thin-film capacitive	0 to 100% RH	$\pm 2\%$ RH	1% RH	1% RH	Standard sensor
Solar Radiance Intensity	Photodiode	1110 watts/ square meter (W/m ²)	$\pm 5\%$ of full scale (reference Eppley PSP at 1000 W/m ²)	1 W/m ²	1 W/m ²	Optional meter
Sound and Noise	Type 2 SLM	30 to 130 deci- bels (dB)	± 1.5 dB	0.1 dB	1 dB	Optional meter
Atomic Radiation	Geiger counter	1 to 19,999 counts per minute (cpm) or 0.001 to 100 milliRad/hr	$\pm 10\%$ Typical $\pm 15\%$ Max.	1 cpm or .001 mR/hr	1 cpm or .001 mR/hr	Optional meter
ELF Radiation	Sensor with single- axis probe	1 to 200 gauss (G)	$\pm 10\%$ or 5% FS	1 G	1 G	Optional meter
Wind Speed/ Direction	3-cut anemometer/ continuous rotation potentiometric wind direction vane	0 to 125 mph 5 to 355°	± 1 mph or $\pm 8\%$ $\pm 3^\circ$	1 mph/1°	1 mph/1°	Standard sensor
Barometric Pressure	Piezo resistive	28.25 to 30.75 in Hg	± 0.09 in Hg	0.01 in Hg	0.01 in Hg	Optional sensor
Dew Point Temperature	Software calcula- tion from RH and temperature	3.2 to 122 F (-15 to 50 C)	± 3 F	1 F	1 F	Optional meter - software calculated
Wet Bulb Temperature	Capsulated therm- istor with wick	3.2 to 122 F (-15 to 50 C)	± 3 F	1 F	1 F	Optional meter - one meter

* Not approved for intrinsically safe applications; do not use in explosive gas environments.



Calibration Certificate

Customer	Eguard
System Model	EPAS
System Serial	915081
Calibration Date	2018 April 21

Sensor	Low	Actual	High	Actual
CO	0 ppm	0 ppm	10 ppm	8.2 ppm
CO2	0 ppm	0 ppm	300 ppm	250 ppm
SO2	0 ppm	0 ppm	2 ppm	1.5 ppm
NO2	0 ppm	0 ppm	3 ppm	2.1 ppm
PMA	0 ug/m3	0 ug/m3	23400 ug/m3	21100 ug/m3
PMB	0 ug/m3	0 ug/m3	21000 ug/m3	19100 ug/m3

Temperature **22 deg C**
Relative Humidity **32%**

Note

Perform by EDC technician's instruction.

This instrument is manufactured by Environmental Device Corporation (USA).



Perform by

Nanda Maung	Technical Service Engineer	Nanova Co,ltd
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Yangon Office

22A , Shan Yeik Thor Street , Sanchaung Township.

01-2304901 , 01-2304902

Help Line - 09977477774

APPENDIX B

Field Photos

Air Monitoring Point at Sa Ka Village

(ASR4)

Lat- 21°23'29.937", Long- 95°22'58.976"

3.4.2019 to 4.4.2019



Air Monitoring Point at Hnan Ywa Village

(ASR3)

Lat- 21°22'17.579", Long- 95°23'18.340"

4.4.2019 to 5.4.2019



Air Monitoring Point at Gyoke Pin Village

(ASR5)

Lat- 21°24'21.890", Long- 95°21'06.897"

5.4.2019 to 6.4.2019



Air Monitoring Point at Nyaung Kan Village

(ASR14)

Lat- 21°21'58.234", Long- 95°20'51.426"

6.4.2019 to 7.4.2019





Sembcorp Myingyan Power Co., Ltd.

Environmental Monitoring Report (Air Quality Monitoring)



Prepared by



14 December 2018

E Guard Environmental Services

Table of Contents

List of Figures	ii
List of Tables	iii
1. INTRODUCTION	1
2. METHODOLOGY	1
2.1 Ambient Air Quality.....	1
2.2 Ambient Noise.....	1
3. MONITORING LOCATIONS.....	3
4. ENVIRONMENTAL QUALITY MONITORING RESULTS.....	4
4.1 Ambient Air Quality Monitoring Results.....	4
4.2 Wind Speed and Direction	13
4.3 Ambient Noise.....	17
APPENDIX A.....	21
APPENDIX B	26

List of Figures

Figure 3. 1 Location of Monitoring Points	3
Figure 4. 1 PM Monitoring Results at Sa Ka Village4	
Figure 4. 2 PM Monitoring Results at Hnan Ywa Village	5
Figure 4. 3 PM Monitoring Results at Gyoke Pin Village.....	5
Figure 4. 4 PM Monitoring Results at Nyaung Kan Village	6
Figure 4. 5 Fluctuation of Air Pollutants during dial cycle (Sa Ka Village)	6
Figure 4. 6 Fluctuation of Air Pollutants during dial cycle (Hnan Ywa Village).....	7
Figure 4. 7 Fluctuation of Air Pollutants during dial cycle (Gyoke Pin Village).....	7
Figure 4. 8 Fluctuation of Air Pollutants during dial cycle (Nyaung Kan Village)	8
Figure 4. 9 Wind Speed and Wind Direction (Blowing From) at Sa Ka Village (ASR4).....	13
Figure 4. 10 Wind Class Frequency Distribution at Sa Ka Village (ASR4).....	13
Figure 4. 11 Wind Speed and Wind Direction (Blowing From) at Hnan Ywa Village (ASR3)	14
Figure 4. 12 Wind Class Frequency Distribution at Hnan Ywa Village (ASR3).....	14
Figure 4. 13 Wind Speed and Wind Direction (Blowing From) at Gyoke Pin Village (ASR5)	15
Figure 4. 14 Wind Class Frequency Distribution at Gyoke Pin Village (ASR5)	15
Figure 4. 15 Wind Speed and Wind Direction (Blowing From) at Nyaung Kan Village (ASR14)	16
Figure 4. 16 Wind Class Frequency Distribution at Nyaung Kan Village (ASR14).....	16
Figure 4. 17 Noise Level at near Sembcorp Myingyan Power Plant.....	18
Figure 4. 18 Noise Level at Sa Ka Village	19

List of Tables

Table 2. 1 Ambient Air Quality Parameters	1
Table 2. 2 Air Quality Guideline Values	1
Table 2. 3 Noise level monitoring.....	2
Table 2. 4 Equipment used to measure ambient air and noise measurement	2
Table 3. 1 Location of Monitoring Points.....	3
Table 4. 1 Observed Ambient Air Quality Results from Selected Points.....	4
Table 4. 2 Air Monitoring Results (Sa Ka Village).....	9
Table 4. 3 Air Monitoring Results (Hnan Ywa Village)	10
Table 4. 4 Air Monitoring Results (Gyoke Pin Village).....	11
Table 4. 5 Air Monitoring Results (Nyaung Kan Village)	12
Table 4. 6 Observed Values of Noise Level Measurement at near Sembcorp Myingyan Power Plant	17
Table 4. 7 Observed Values of Noise Level Measurement at Sa Ka Village	18
Table 4. 8 Observed Ambient Noise level Results from Myingyan Power Plant.....	19
Table 4. 9 Observed Ambient Noise level Results from Sa Ka Village	19
Table 4. 10 National Environmental Quality (Emission) Guidelines Values for Noise Level	20

1. INTRODUCTION

This report is environmental monitoring (only air and noise quality monitoring) for Sembcorp Myingyan Power Plant which is located beside of Myingyan – Nyaung-Oo Road, near the Sa Ka village in Mandalay Region.

2. METHODOLOGY

Baseline environmental parameters and sampling locations were defined according to the objectives for environmental monitoring purposes. Locations for sampling and analysis of ambient air quality of the project site were identified by Sembcorp Myingyan Power Co.,Ltd.

2.1 Ambient Air Quality

The emissions of dust particles and gases were measured for 24hrs continuously at the selected sites by using the Environmental Perimeter Air Station (EPAS), and EPAS provides direct readings in real time with data-logging capabilities. The monitoring results were compared with National Environmental Quality (Emission) Guideline (NEQG), World Health Organization (WHO) and American Conference of Governmental Industrial Hygienists (ACGIH) guidelines.

Table 2. 1 Ambient Air Quality Parameters

Ambient Air Quality (4 locations)	
Gas Emission	CO, CO ₂ , SO ₂ , NO ₂
Dust Emission	PM ₁₀ , PM _{2.5}

Table 2. 2 Air Quality Guideline Values

Parameters	Guidelines Value	Unit	Organization	Averaging Period
PM ₁₀	50	µg/m ³	NEQ	24hrs
PM _{2.5}	25	µg/m ³	NEQ	24hrs
CO	9	ppm	NAAQS	8hrs
CO ₂	5000	ppm	ACGIH	8hrs
SO ₂	20	µg/m ³	NEQ	24hrs
NO ₂	200	µg/m ³	NEQ	24hrs

Source: Myanmar National Environmental Quality (Emission) Guidelines, December 2015 & Air quality guidelines global update. 2005. World Health Organization.

2.2 Ambient Noise

Noise level LAeq (dBA) will be measured at the selected locations that can reflect the exposure of the nearest local community and sensitive locations. Duration and frequency were measured for 24hrs continuously at the selected site using the Noise Meter.

The monitoring procedures, data analysis and interpretation were carried out in accordance with the instrument's manufacture and National Environmental Quality (Emission) Guidelines, World Health Organization (WHO) and International Finance Corporation (IFC guidelines in order to be in line with Environmental Conservation Department, Ministry of Natural

Resources and Environment Conservation (MONREC). "National Environmental Quality (Emission) Guidelines" for Myanmar was also presented the value of noise level as LAeq (dBA).

Table 2. 3 Noise level monitoring

Noise monitoring (2 locations)	
Noise Emission	LAeq (dBA) (1hrs, 24 hrs.)

Equipment used to measure ambient air and noise measurement are shown below (**Table 2. 4**)

Table 2. 4 Equipment used to measure ambient air and noise measurement

<p>Davis Vantage Pro2 Wireless Weather Station</p> <p>Provides detailed current weather conditions and expanded forecasts - all at a glance!</p> <p>The Vantage Pro2 uses a frequency-hopping spread spectrum radio from 902 MHz to 928 MHz to transmit and receive data up to 1,000' (300m) line of sight. In addition, the weather station features a bubble level, improved anemometer base, redesigned wind cups, and factory-calibrated wind direction. The integrated sensor suite combines temperature and humidity sensors, rain collector with an aluminum-plated tipping bucket, and anemometer into one package for easy setup. Measure inside and outside temperature and humidity, heat index, barometric pressure, dew point, rainfall, wind direction and speed, and wind chill.</p>	
<p>Haz-Scanner EPAS</p> <p>PM₁₀, PM_{2.5}, NO₂, SO₂, CO, CO₂, Temperature, and Relative Humidity</p>	
<p>Digital Sound Level Meter</p> <p>Noise and Vibration</p>	

3. MONITORING LOCATIONS

Locations of sampling sites were identified by Sembcorp Myingyan Power Co,ltd. Air quality was monitored at the four selected locations that are Sa Ka Village (ASR4), Hnan Ywa Village (ASR3), Gyoke Pin Village (ASR 5) and Nyaung Kan Village (ASR 14).

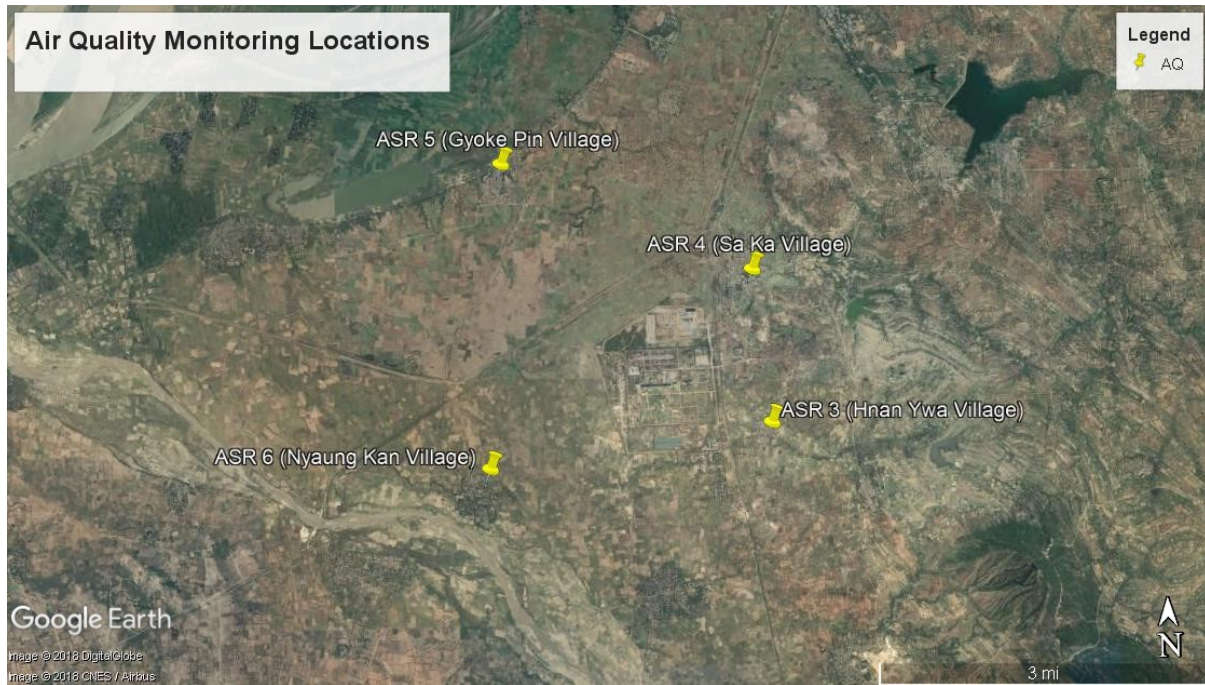


Figure 3. 1 Location of Monitoring Points

Table 3. 1 Location of Monitoring Points

Locations No.	Points	Coordinate	Locations
Ambient Air Quality and Noise Monitoring Locations			
1	ASR4	Lat- 21°23'29.834", Long- 95°22'58.592"	Sa Ka Village
2	ASR3	Lat- 21°22'17.599", Long- 95°23'17.681"	Hnan Ywa Village
3	ASR5	Lat- 21°24'21.944", Long- 95°21'06.779"	Gyoke Pin Village
4	ASR14	Lat- 21°21'58.373", Long- 95°20'51.782"	Nyaung Kan Village

4. ENVIRONMENTAL QUALITY MONITORING RESULTS

4.1 Ambient Air Quality Monitoring Results

24 hours air quality monitoring were done at each selected location from 30 November 2018 to 4 December 2018. The measured results are compared with national emission guidelines. Based on the results of air quality monitoring, all the parameters are within the guidelines.

Table 4. 1 Observed Ambient Air Quality Results from Selected Points

Parameters	Observed Value				Guidelines Value	Unit	Averaging Period
	ASR4	ASR3	ASR5	ASR14			
PM ₁₀	16.66	14.71	17.65	20.42	50	µg/m ³	24hrs
PM _{2.5}	10.09	8.91	11.48	12.68	25	µg/m ³	24hrs
CO	0.00015	0.00016	0.0005	0.00035	9	ppm	8hrs
CO ₂	158.50	156.44	170.22	168.35	5000	ppm	8hrs
SO ₂	2.62	2.62	2.62	2.62	20	µg/m ³	24hrs
NO ₂	16.46	12.30	18.66	23.87	200	µg/m ³	24hrs

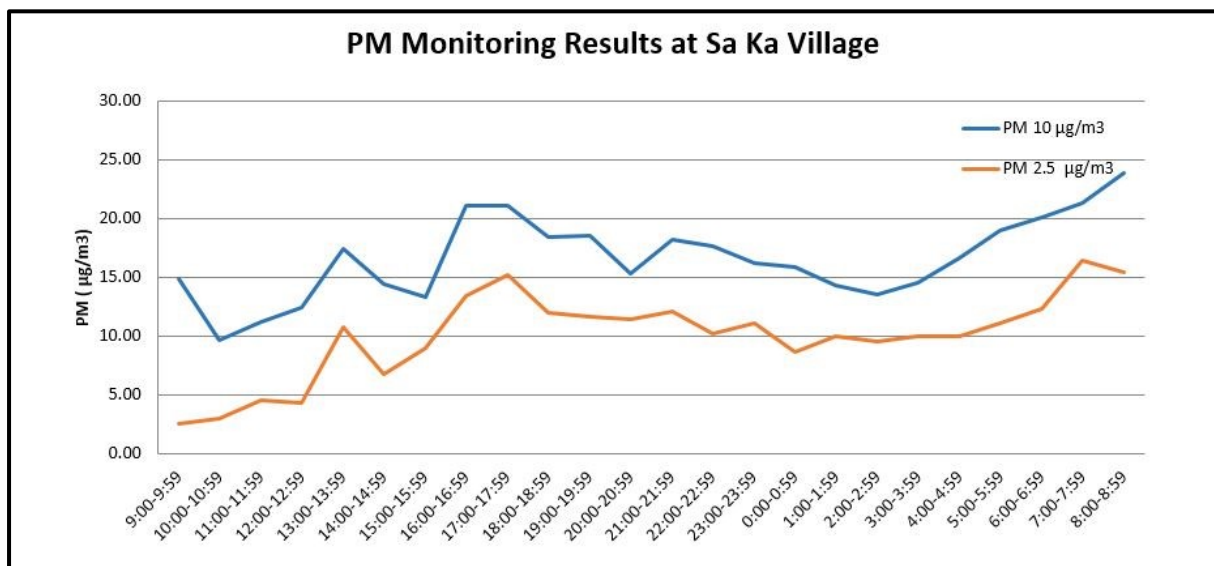


Figure 4. 1 PM Monitoring Results at Sa Ka Village

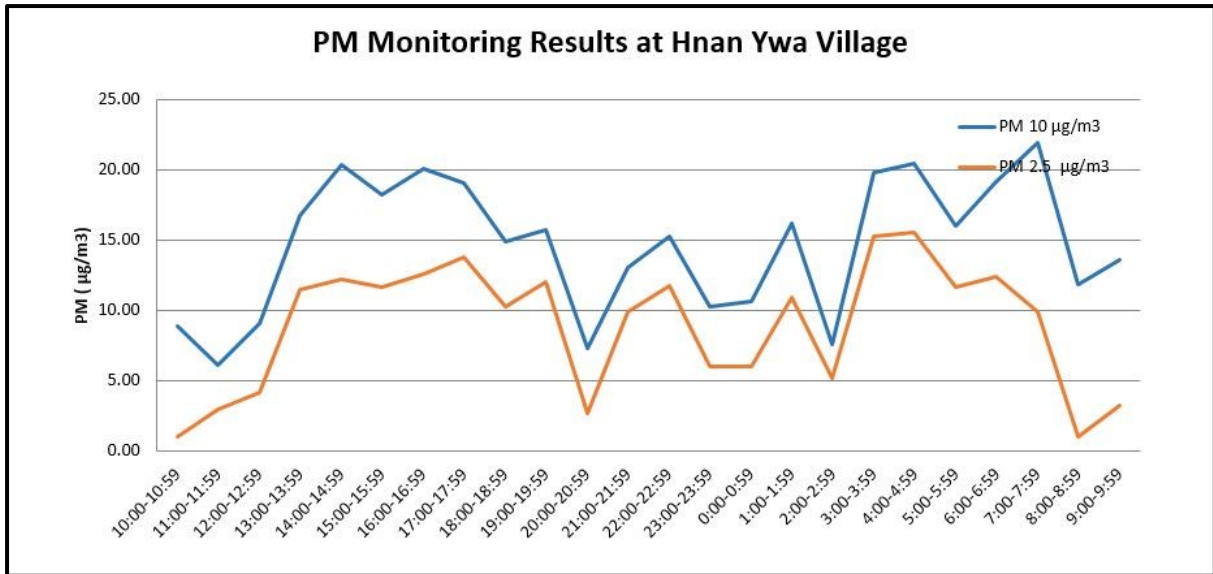


Figure 4. 2 PM Monitoring Results at Hnan Ywa Village

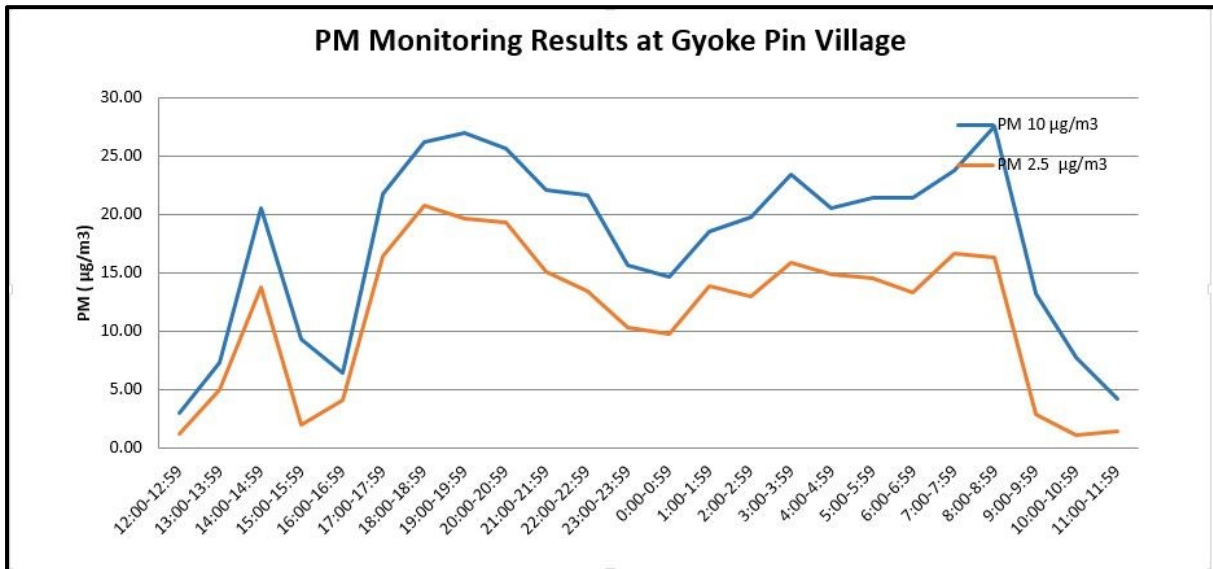


Figure 4. 3 PM Monitoring Results at Gyoke Pin Village

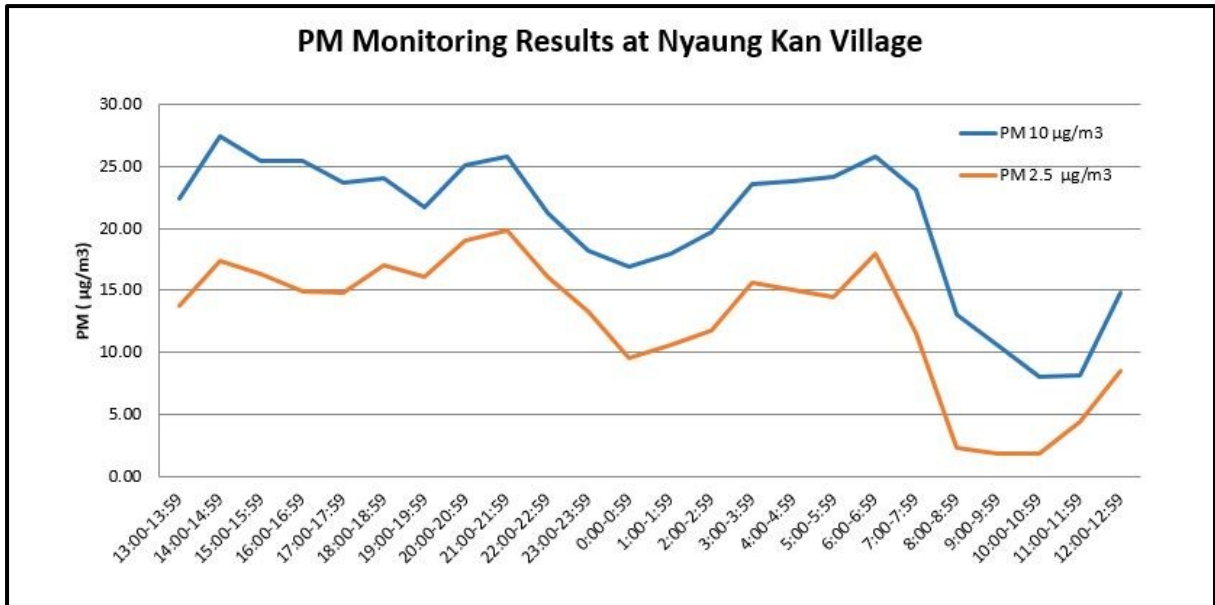


Figure 4. 4 PM Monitoring Results at Nyaung Kan Village

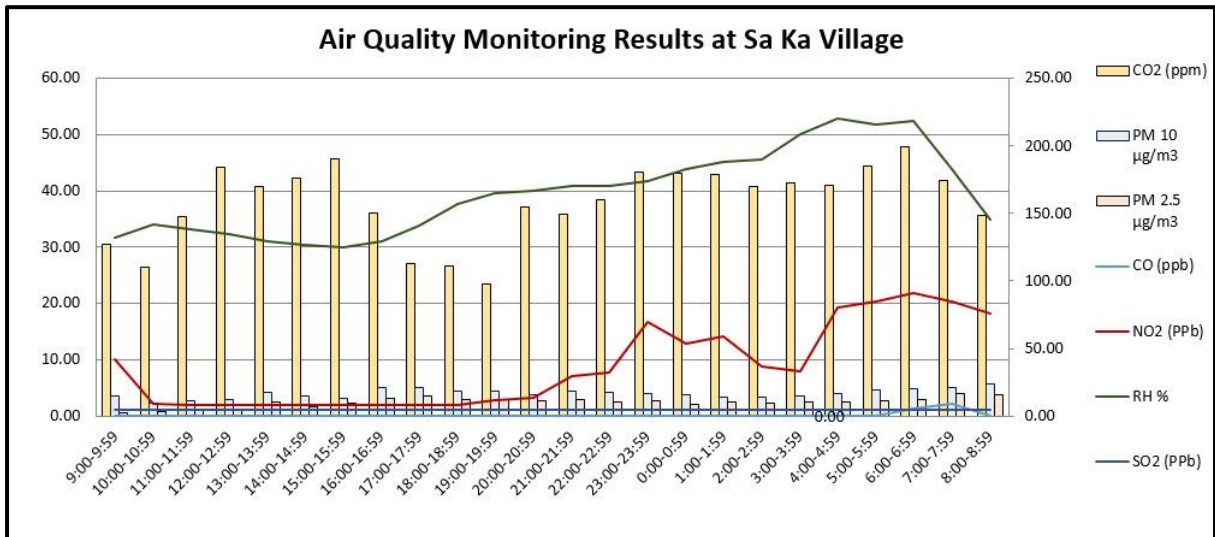


Figure 4. 5 Fluctuation of Air Pollutants during dial cycle (Sa Ka Village)

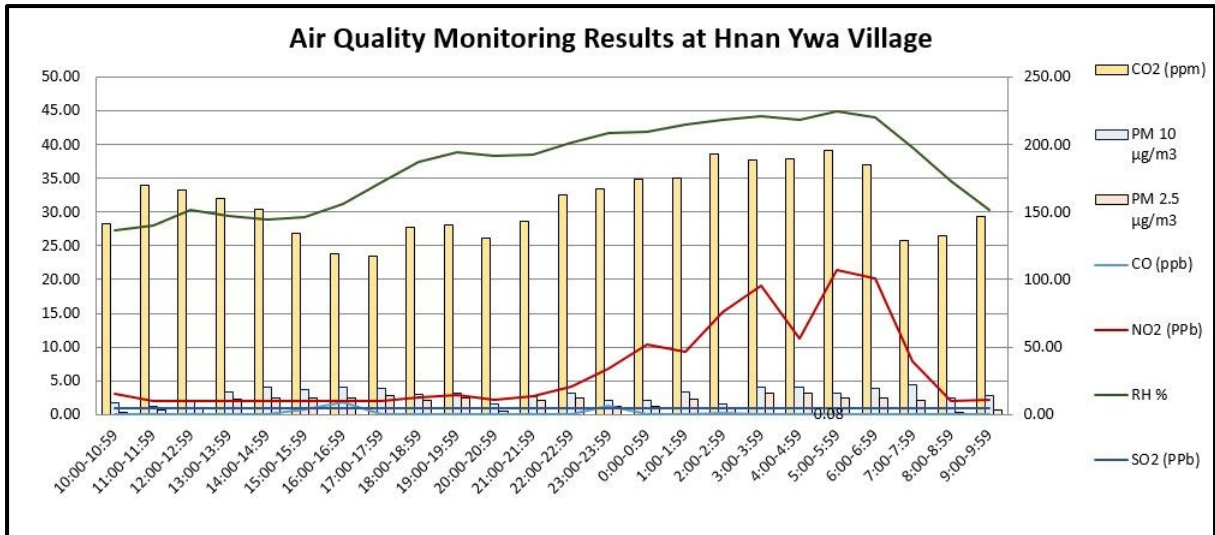


Figure 4. 6 Fluctuation of Air Pollutants during dial cycle (Hnan Ywa Village)

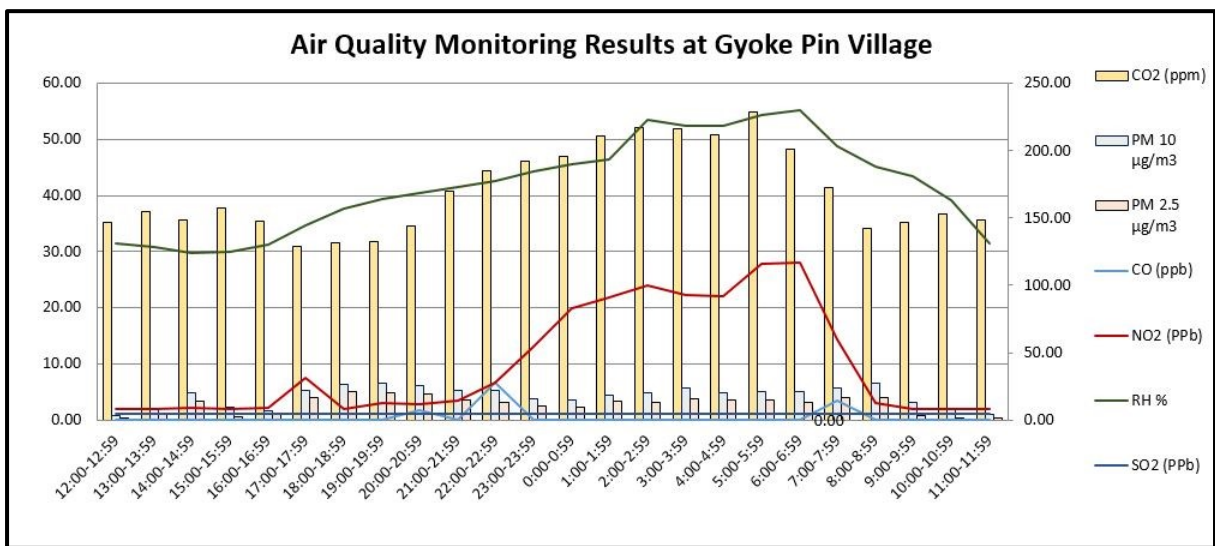


Figure 4. 7 Fluctuation of Air Pollutants during dial cycle (Gyoke Pin Village)

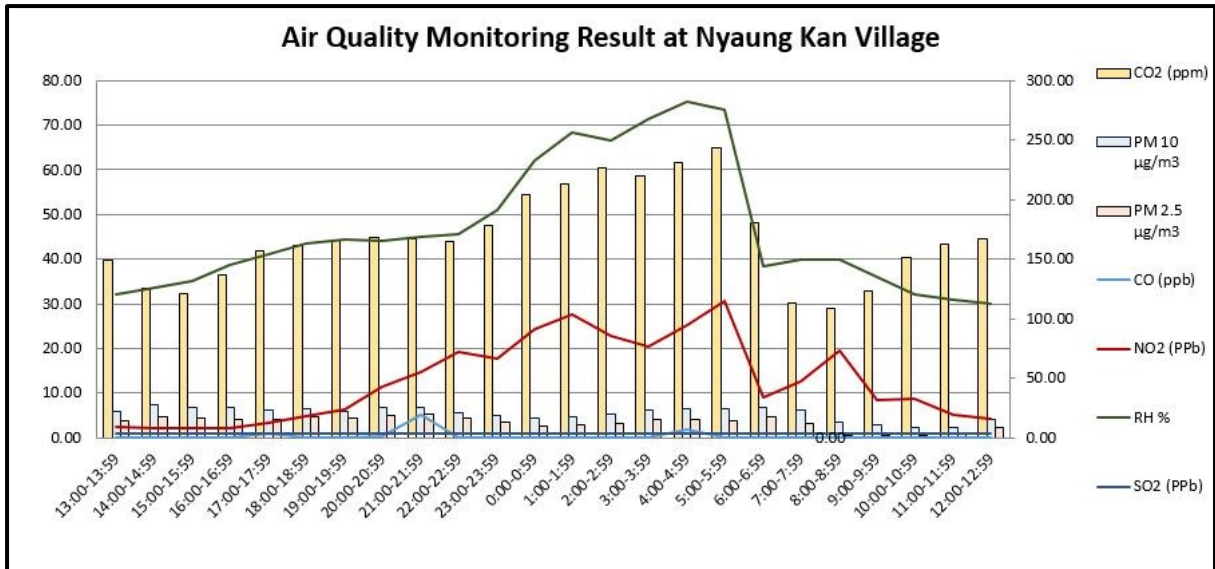


Figure 4. 8 Fluctuation of Air Pollutants during dial cycle (Nyaung Kan Village)

Detail results with one-hour interval of pollutants are shown in **Table 4. 2** to **Table 4. 5**. All results are under the Myanmar National Environmental Quality (emission) Guidelines.

Table 4. 2 Air Monitoring Results (Sa Ka Village)

Date	Time		CO ₂ (ppm)	CO (ppb)	NO ₂ (ppb)	PM ₁₀ µg/m ³	PM _{2.5} µg/m ³	RH %	SO ₂ (ppb)
30.11.2018	9:00-9:59	Average	127.35	0.00	10.08	14.87	2.60	31.72	1.00
30.11.2018	10:00-10:59	Average	110.15	0.00	2.10	9.68	3.03	34.00	1.00
30.11.2018	11:00-11:59	Average	147.45	0.00	2.00	11.25	4.60	33.30	1.00
30.11.2018	12:00-12:59	Average	184.22	0.00	2.00	12.48	4.37	32.25	1.00
30.11.2018	13:00-13:59	Average	169.93	0.00	2.00	17.45	10.78	31.00	1.00
30.11.2018	14:00-14:59	Average	176.35	0.00	2.00	14.48	6.78	30.37	1.00
30.11.2018	15:00-15:59	Average	190.80	0.00	2.00	13.33	9.03	29.98	1.00
30.11.2018	16:00-16:59	Average	150.50	0.00	2.00	21.13	13.45	31.15	1.00
30.11.2018	17:00-17:59	Average	113.00	0.00	2.00	21.10	15.20	33.88	1.00
30.11.2018	18:00-18:59	Average	110.90	0.00	2.03	18.52	11.98	37.65	1.00
30.11.2018	19:00-19:59	Average	97.70	0.00	2.82	18.58	11.73	39.65	1.00
30.11.2018	20:00-20:59	Average	154.75	0.00	3.32	15.30	11.47	40.00	1.00
30.11.2018	21:00-21:59	Average	149.38	0.00	7.10	18.20	12.10	40.97	1.00
30.11.2018	22:00-22:59	Average	160.17	0.00	7.78	17.68	10.22	41.00	1.00
30.11.2018	23:00-23:59	Average	181.10	0.00	16.82	16.28	11.13	41.67	1.00
1.12.2018	0:00-0:59	Average	179.90	0.00	12.92	15.92	8.67	43.98	1.00
1.12.2018	1:00-1:59	Average	179.07	0.00	14.20	14.35	10.07	45.25	1.00
1.12.2018	2:00-2:59	Average	170.18	0.00	8.77	13.62	9.62	45.68	1.00
1.12.2018	3:00-3:59	Average	172.62	0.00	7.97	14.62	10.03	50.18	1.00
1.12.2018	4:00-4:59	Average	170.90	0.00	19.25	16.67	9.97	52.88	1.00
1.12.2018	5:00-5:59	Average	185.07	0.00	20.37	18.98	11.08	51.82	1.00
1.12.2018	6:00-6:59	Average	199.27	1.40	21.83	20.13	12.38	52.52	1.00
1.12.2018	7:00-7:59	Average	174.68	2.10	20.38	21.38	16.52	43.90	1.00
1.12.2018	8:00-8:59	Average	148.57	0.00	18.17	23.93	15.43	34.97	1.00
Average			158.50	0.15	8.75	16.66	10.09	39.57	1.00
1 hour Minimum			97.70	0.00	2.00	9.68	2.60	29.98	1.00
1 hour Maximum			199.27	2.10	21.83	23.93	16.52	52.88	1.00

Table 4. 3 Air Monitoring Results (Hnan Ywa Village)

Date	Time		CO ₂ (ppm)	CO (ppb)	NO ₂ (ppb)	PM ₁₀ µg/m ³	PM _{2.5} µg/m ³	RH %	SO ₂ (ppb)
1.12.2018	10:00-10:59	Average	141.70	0.00	3.10	8.88	1.00	27.38	1.00
1.12.2018	11:00-11:59	Average	170.13	0.00	2.00	6.10	2.95	28.10	1.00
1.12.2018	12:00-12:59	Average	166.22	0.00	2.00	9.13	4.13	30.27	1.00
1.12.2018	13:00-13:59	Average	160.18	0.00	2.00	16.77	11.50	29.50	1.00
1.12.2018	14:00-14:59	Average	152.33	0.00	2.00	20.40	12.23	28.98	1.00
1.12.2018	15:00-15:59	Average	134.20	0.70	2.00	18.25	11.72	29.33	1.00
1.12.2018	16:00-16:59	Average	118.75	1.73	2.00	20.08	12.57	31.32	1.00
1.12.2018	17:00-17:59	Average	116.97	0.00	2.00	19.08	13.78	34.45	1.00
1.12.2018	18:00-18:59	Average	139.17	0.00	2.55	14.92	10.28	37.43	1.00
1.12.2018	19:00-19:59	Average	140.40	0.00	2.83	15.80	12.02	38.97	1.00
1.12.2018	20:00-20:59	Average	131.05	0.00	2.20	7.33	2.65	38.40	1.00
1.12.2018	21:00-21:59	Average	143.05	0.00	2.75	13.10	9.92	38.52	1.00
1.12.2018	22:00-22:59	Average	162.90	0.00	4.18	15.27	11.75	40.32	1.00
1.12.2018	23:00-23:59	Average	167.77	1.20	6.75	10.25	6.05	41.75	1.00
2.12.2018	0:00-0:59	Average	174.18	0.00	10.43	10.65	6.02	42.00	1.00
2.12.2018	1:00-1:59	Average	174.92	0.00	9.37	16.22	10.90	43.08	1.00
2.12.2018	2:00-2:59	Average	193.35	0.12	15.13	7.65	5.18	43.75	1.00
2.12.2018	3:00-3:59	Average	188.95	0.00	19.08	19.85	15.28	44.18	1.00
2.12.2018	4:00-4:59	Average	189.28	0.08	11.20	20.52	15.55	43.73	1.00
2.12.2018	5:00-5:59	Average	195.65	0.00	21.35	16.03	11.72	45.03	1.00
2.12.2018	6:00-6:59	Average	184.97	0.00	20.10	19.22	12.43	44.05	1.00
2.12.2018	7:00-7:59	Average	129.30	0.00	7.83	21.95	9.97	39.68	1.00
2.12.2018	8:00-8:59	Average	132.18	0.00	2.00	11.88	1.00	34.68	1.00
2.12.2018	9:00-9:59	Average	146.90	0.00	2.18	13.63	3.28	30.33	1.00
Average			156.44	0.16	6.54	14.71	8.91	36.89	1.00
1 hour Minimum			116.97	0.00	2.00	6.10	1.00	27.38	1.00
1 hour Maximum			195.65	1.73	21.35	21.95	15.55	45.03	1.00

Table 4. 4 Air Monitoring Results (Gyoke Pin Village)

Date	Time		CO ₂ (ppm)	CO (ppb)	NO ₂ (ppb)	PM ₁₀ µg/m ³	PM _{2.5} µg/m ³	RH %	SO ₂ (ppb)
2.12.2018	12:00-12:59	Average	146.40	0.00	2.00	2.97	1.28	31.48	1.00
2.12.2018	13:00-13:59	Average	155.27	0.00	2.00	7.32	4.97	30.78	1.00
2.12.2018	14:00-14:59	Average	148.32	0.00	2.08	20.55	13.85	29.87	1.00
2.12.2018	15:00-15:59	Average	157.17	0.00	2.00	9.38	2.07	29.95	1.00
2.12.2018	16:00-16:59	Average	147.28	0.00	2.08	6.50	4.12	31.18	1.00
2.12.2018	17:00-17:59	Average	128.82	0.00	7.55	21.85	16.42	34.68	1.00
2.12.2018	18:00-18:59	Average	131.52	0.00	2.00	26.22	20.82	37.70	1.00
2.12.2018	19:00-19:59	Average	132.43	0.00	3.05	27.03	19.72	39.38	1.00
2.12.2018	20:00-20:59	Average	144.13	1.83	2.70	25.67	19.32	40.48	1.00
2.12.2018	21:00-21:59	Average	169.87	0.00	3.40	22.15	15.15	41.63	1.00
2.12.2018	22:00-22:59	Average	185.50	6.68	6.65	21.68	13.43	42.68	1.00
2.12.2018	23:00-23:59	Average	192.58	0.00	13.18	15.67	10.33	44.33	1.00
3.12.2018	0:00-0:59	Average	195.97	0.00	19.88	14.65	9.77	45.60	1.00
3.12.2018	1:00-1:59	Average	210.78	0.00	21.83	18.53	13.87	46.47	1.00
3.12.2018	2:00-2:59	Average	217.57	0.00	23.98	19.83	12.98	53.48	1.00
3.12.2018	3:00-3:59	Average	216.15	0.00	22.32	23.52	15.95	52.50	1.00
3.12.2018	4:00-4:59	Average	211.83	0.00	22.02	20.53	14.90	52.53	1.00
3.12.2018	5:00-5:59	Average	228.87	0.00	27.93	21.45	14.60	54.35	1.00
3.12.2018	6:00-6:59	Average	201.58	0.00	28.10	21.47	13.40	55.32	1.00
3.12.2018	7:00-7:59	Average	172.30	3.40	14.32	23.78	16.72	48.90	1.00
3.12.2018	8:00-8:59	Average	142.53	0.00	3.05	27.57	16.37	45.23	1.00
3.12.2018	9:00-9:59	Average	146.70	0.00	2.05	13.22	2.90	43.43	1.00
3.12.2018	10:00-10:59	Average	152.87	0.00	2.00	7.77	1.13	39.17	1.00
3.12.2018	11:00-11:59	Average	148.95	0.00	2.00	4.23	1.43	31.45	1.00
Average			170.22	0.50	9.92	17.65	11.48	41.78	1.00
1 hour Minimum			128.82	0.00	2.00	2.97	1.13	29.87	1.00
1 hour Maximum			228.87	6.68	28.10	27.57	20.82	55.32	1.00

Table 4. 5 Air Monitoring Results (Nyaung Kan Village)

Date	Time		CO ₂ (ppm)	CO (ppb)	NO ₂ (ppb)	PM ₁₀ µg/m ³	PM _{2.5} µg/m ³	RH %	SO ₂ (ppb)
3.12.2018	13:00-13:59	Average	149.38	0.00	2.37	22.35	13.82	32.20	1.00
3.12.2018	14:00-14:59	Average	125.82	0.00	2.00	27.37	17.37	33.65	1.00
3.12.2018	15:00-15:59	Average	121.28	0.00	2.00	25.45	16.37	35.05	1.00
3.12.2018	16:00-16:59	Average	136.48	0.18	2.17	25.48	14.93	38.62	1.00
3.12.2018	17:00-17:59	Average	156.68	0.93	3.23	23.70	14.82	41.00	1.00
3.12.2018	18:00-18:59	Average	161.15	0.00	4.72	24.07	17.07	43.40	1.00
3.12.2018	19:00-19:59	Average	165.63	0.00	6.27	21.70	16.07	44.43	1.00
3.12.2018	20:00-20:59	Average	167.80	0.45	11.57	25.08	18.97	44.18	1.00
3.12.2018	21:00-21:59	Average	167.45	5.20	14.82	25.78	19.78	45.08	1.00
3.12.2018	22:00-22:59	Average	165.23	0.00	19.15	21.27	16.15	45.58	1.00
3.12.2018	23:00-23:59	Average	178.48	0.00	17.70	18.22	13.28	50.88	1.00
4.12.2018	0:00-0:59	Average	204.57	0.00	24.32	16.90	9.55	62.13	1.00
4.12.2018	1:00-1:59	Average	212.90	0.00	27.57	17.98	10.63	68.48	1.00
4.12.2018	2:00-2:59	Average	226.33	0.00	22.97	19.72	11.80	66.62	1.00
4.12.2018	3:00-3:59	Average	220.15	0.00	20.55	23.53	15.63	71.35	1.00
4.12.2018	4:00-4:59	Average	231.38	1.75	25.18	23.82	15.10	75.38	1.00
4.12.2018	5:00-5:59	Average	243.78	0.00	30.53	24.15	14.42	73.52	1.00
4.12.2018	6:00-6:59	Average	180.05	0.00	8.98	25.82	17.92	38.43	1.00
4.12.2018	7:00-7:59	Average	113.03	0.00	12.57	23.08	11.53	40.00	1.00
4.12.2018	8:00-8:59	Average	108.40	0.00	19.47	13.03	2.30	40.02	1.00
4.12.2018	9:00-9:59	Average	123.22	0.00	8.47	10.65	1.87	35.90	1.00
4.12.2018	10:00-10:59	Average	151.63	0.00	8.62	8.02	1.92	32.13	1.00
4.12.2018	11:00-11:59	Average	162.80	0.00	5.10	8.15	4.45	30.90	1.00
4.12.2018	12:00-12:59	Average	166.63	0.00	4.32	14.87	8.52	29.95	1.00
Average			168.35	0.35	12.69	20.42	12.68	46.62	1.00
1 hour Minimum			108.40	0.00	2.00	8.02	1.87	29.95	1.00
1 hour Maximum			243.78	5.20	30.53	27.37	19.78	75.38	1.00

4.2 Wind Speed and Direction

The following figure describes the wind speed and wind direction of the proposed project site on, 7 to 11 September 2018 respectively. According to the data, the wind direction is following **Figure 4. 9** to **Figure 4. 16**.

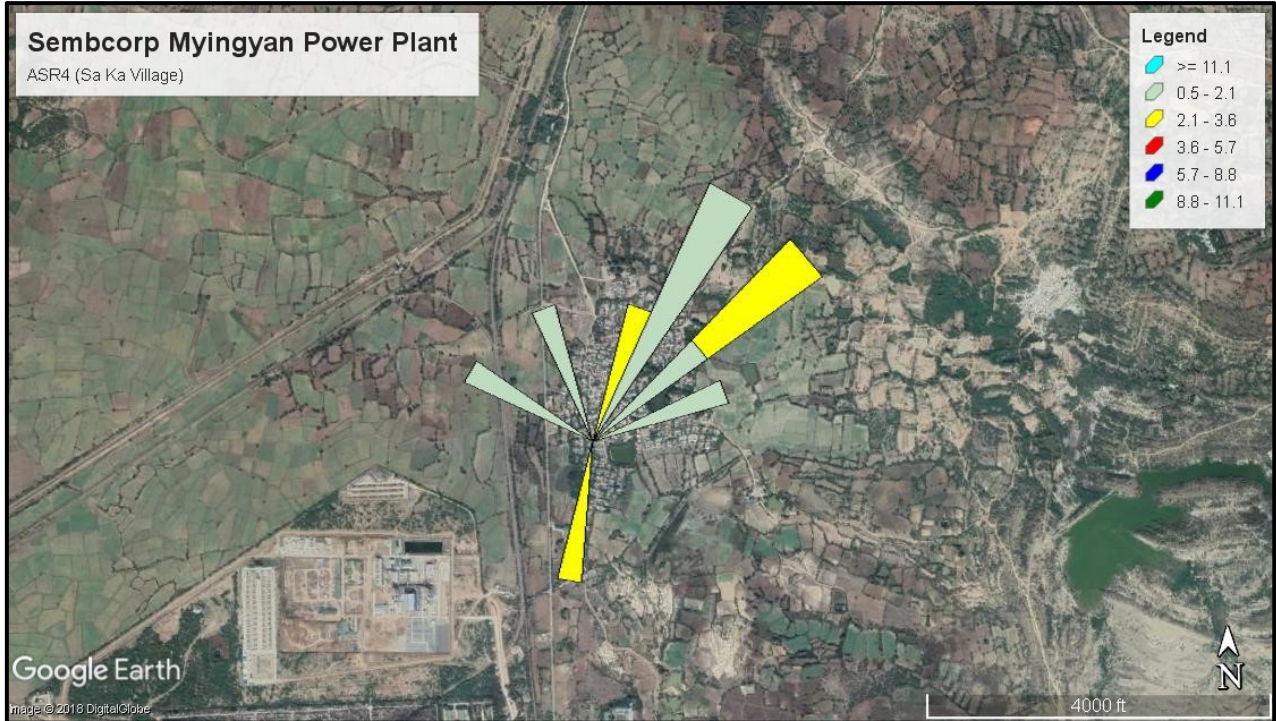


Figure 4. 9 Wind Speed and Wind Direction (Blowing From) at Sa Ka Village (ASR4)

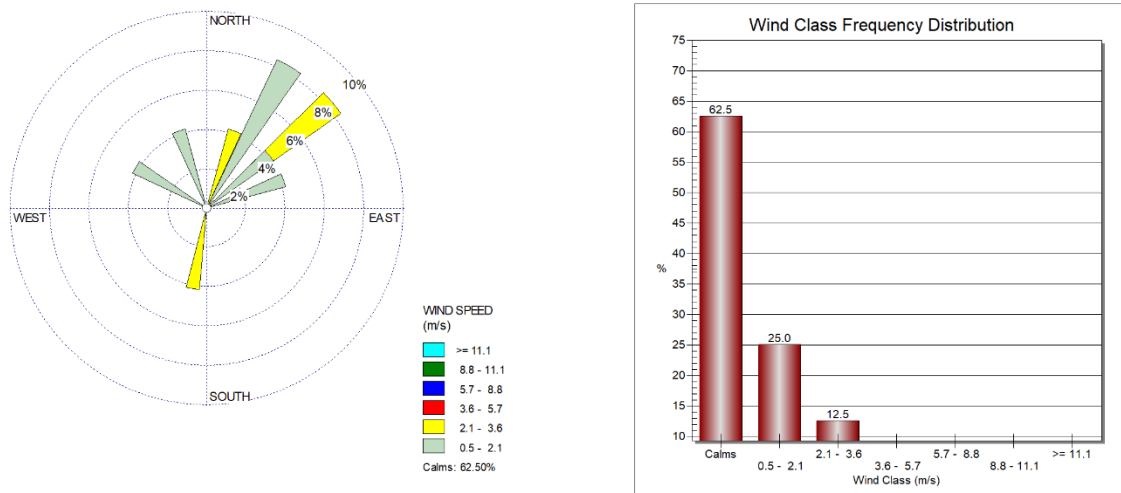


Figure 4. 10 Wind Class Frequency Distribution at Sa Ka Village (ASR4)



Figure 4. 11 Wind Speed and Wind Direction (Blowing From) at Hnan Ywa Village (ASR3)

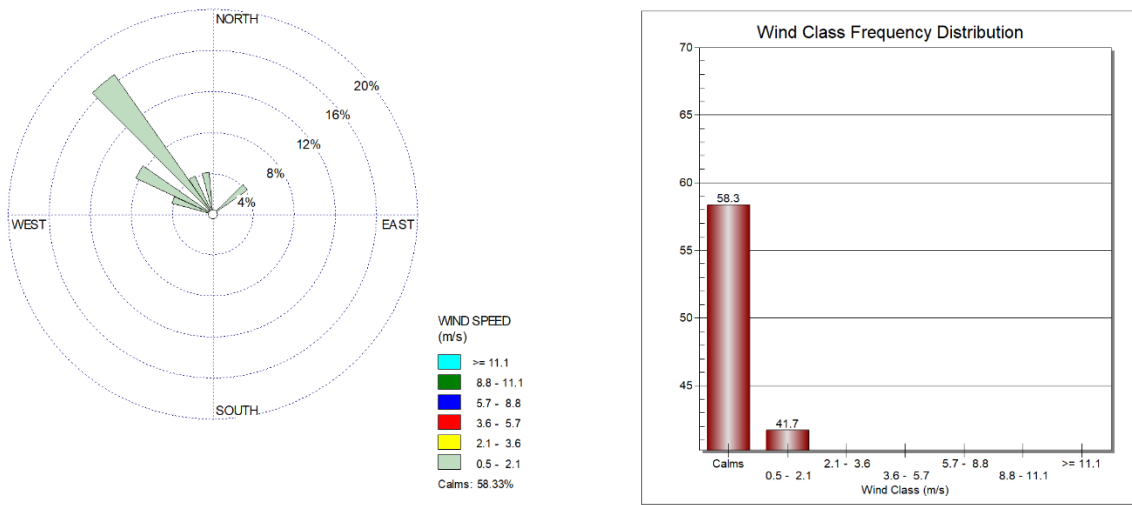


Figure 4. 12 Wind Class Frequency Distribution at Hnan Ywa Village (ASR3)

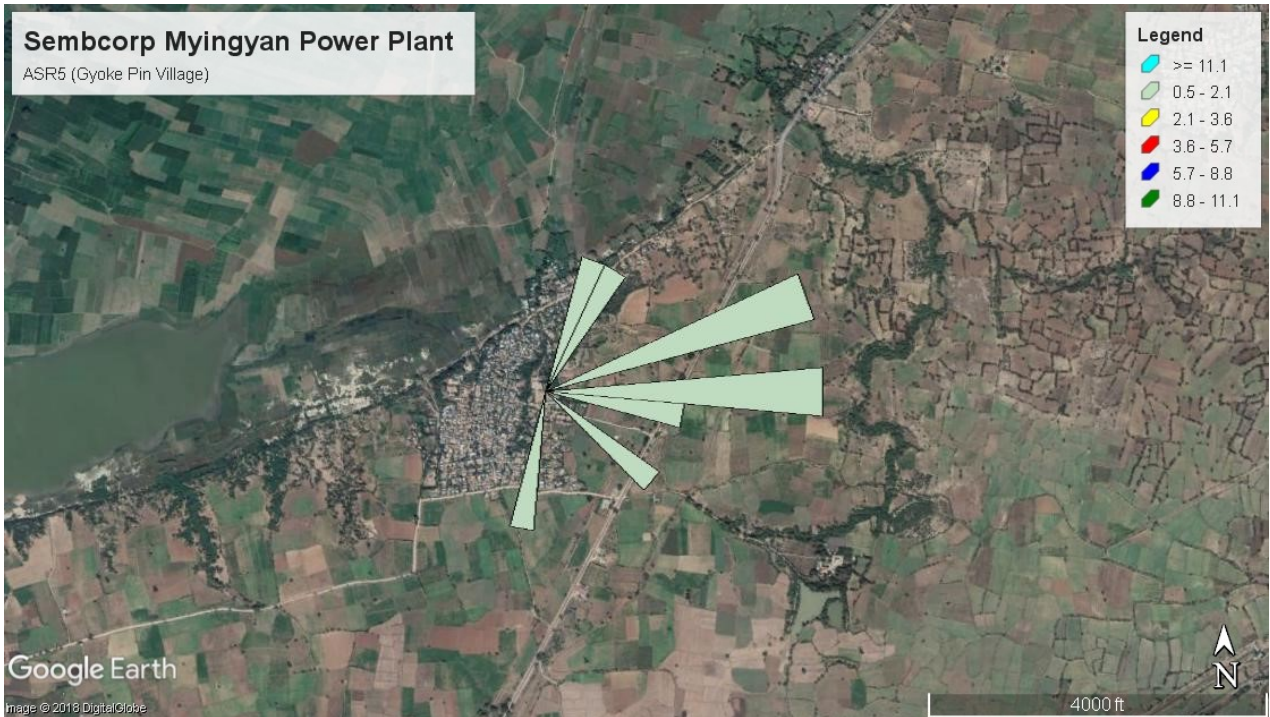


Figure 4. 13 Wind Speed and Wind Direction (Blowing From) at Gyoke Pin Village (ASR5)

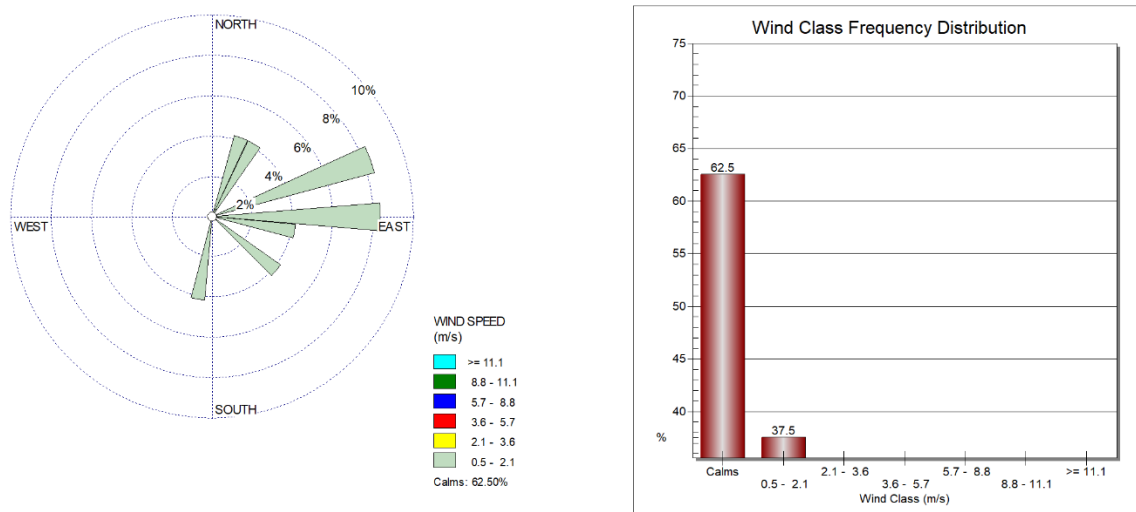


Figure 4. 14 Wind Class Frequency Distribution at Gyoke Pin Village (ASR5)

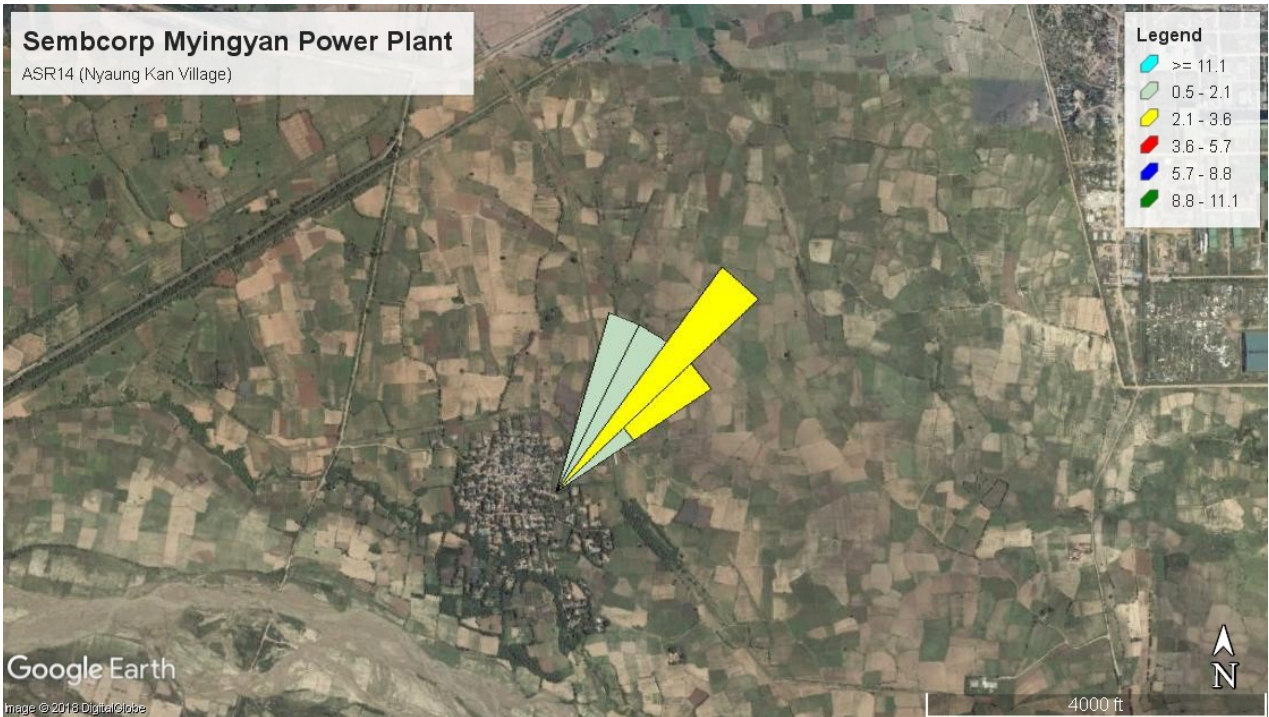


Figure 4. 15 Wind Speed and Wind Direction (Blowing From) at Nyaung Kan Village (ASR14)

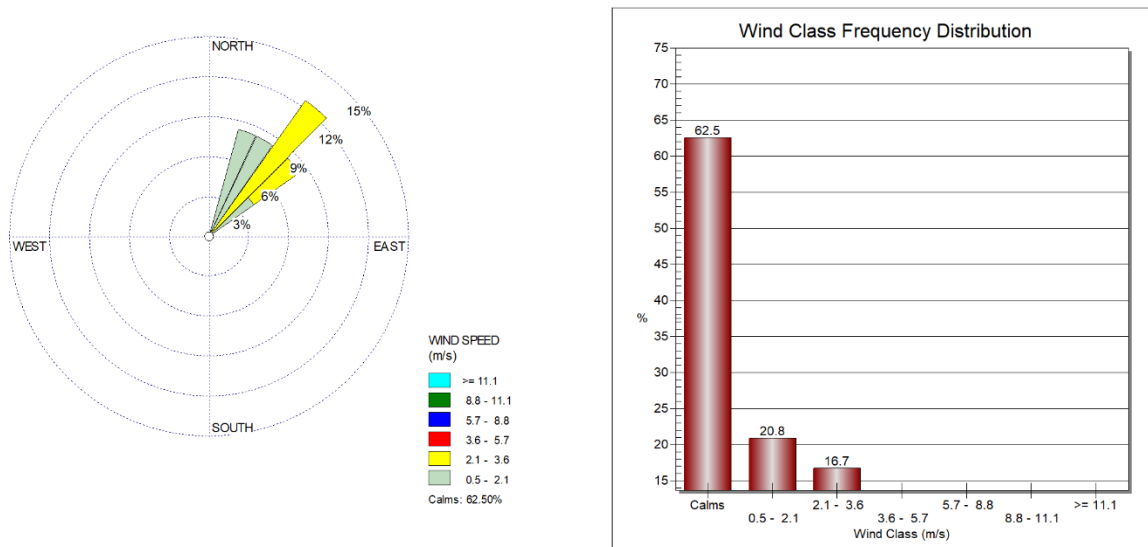


Figure 4. 16 Wind Class Frequency Distribution at Nyaung Kan Village (ASR14)

4.3 Ambient Noise

Ambient noise level for the proposed project was measured with Digital Sound Level Meter at the project site. The noise level measurement is conducted at sembcorp myingyan power points: these points are nearly sembcop myingyan power plant and air monitoring point at sa ka village on 30 to 1 December 2018. Measuring period is 24 hours continuously. The observed values are described in **Table 4. 6 to Table 4. 9** and the following figures are noise level measurement at the proposed project.

Table 4. 6 Observed Values of Noise Level Measurement at near Sembcorp Myingyan Power Plant

No.	Date	Time	Observed Mean Value (Source)	Weight	Day/Night	Average
1	1.12.2018	7:00:13-7:59:13	53.17	A	Day	52.26
2	1.12.2018	8:00:13-8:59:13	53.21	A	Day	
3	1.12.2018	9:00:13-9:59:13	52.87	A	Day	
4	30.11.2018	10:00:13-10:59:13	51.80	A	Day	
5	30.11.2018	11:00:13-11:59:13	54.03	A	Day	
6	30.11.2018	12:00:13-12:59:13	53.62	A	Day	
7	30.11.2018	13:00:13-13:59:13	51.93	A	Day	
8	30.11.2018	14:00:13-14:59:13	53.21	A	Day	
9	30.11.2018	15:00:13-15:59:13	53.29	A	Day	
10	30.11.2018	16:00:13-16:59:13	54.63	A	Day	
11	30.11.2018	17:00:13-17:59:13	54.80	A	Day	
12	30.11.2018	18:00:13-18:59:13	42.56	A	Day	
13	30.11.2018	19:00:13-19:59:13	53.15	A	Day	
14	30.11.2018	20:00:13-20:59:13	56.20	A	Day	
15	30.11.2018	21:00:13-21:59:13	45.36	A	Day	
16	30.11.2018	22:00:13-22:59:13	39.32	A	Night	42.84
17	30.11.2018	23:00:13-23:59:13	40.97	A	Night	
18	1.12.2018	0:00:13-0:59:13	41.04	A	Night	
19	1.12.2018	1:00:13-1:59:13	42.98	A	Night	
20	1.12.2018	2:00:13-2:59:13	44.86	A	Night	
21	1.12.2018	3:00:13-3:59:13	44.39	A	Night	
22	1.12.2018	4:00:13-4:59:13	42.20	A	Night	
23	1.12.2018	5:00:13-5:59:13	39.27	A	Night	
24	1.12.2018	6:00:13-6:59:13	50.54	A	Night	
Average			48.73			

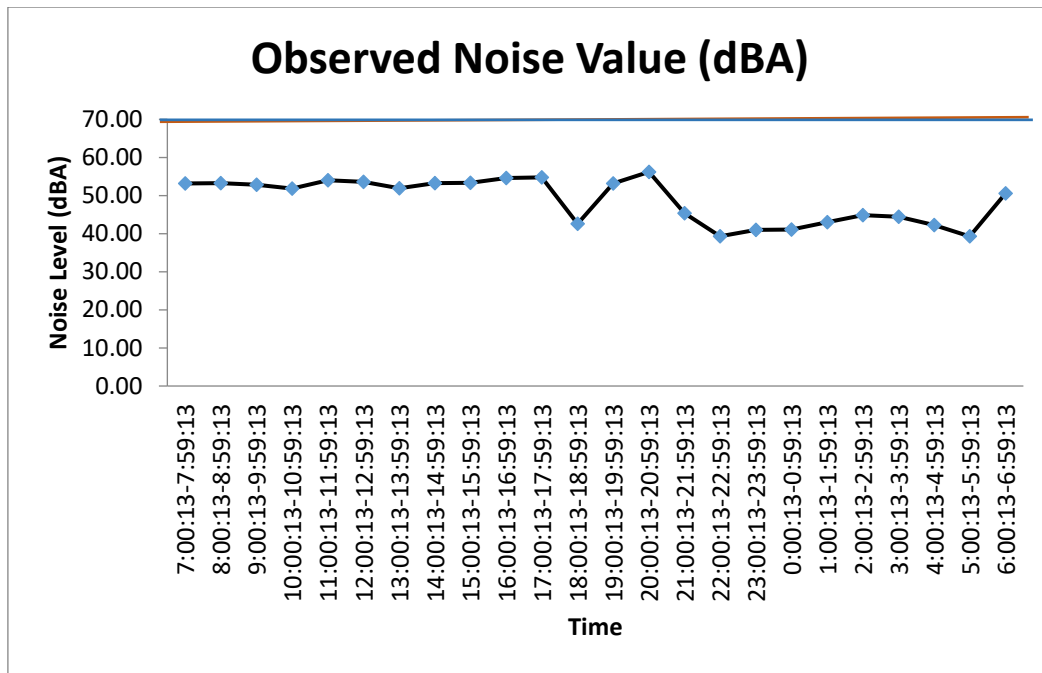


Figure 4. 17 Noise Level at near Sembcorp Myingyan Power Plant

Table 4. 7 Observed Values of Noise Level Measurement at Sa Ka Village

No.	Date	Time	Observed Mean Value (Source)	Weight	Day/Night	Average
1	1.12.2018	7:00:13-7:59:13	56.03	A	Day	58.32
2	30.11.2018	8:00:13-8:59:13	57.16	A	Day	
3	30.11.2018	9:00:13-9:59:13	53.93	A	Day	
4	30.11.2018	10:00:13-10:59:13	54.36	A	Day	
5	30.11.2018	11:00:13-11:59:13	55.78	A	Day	
6	30.11.2018	12:00:13-12:59:13	56.68	A	Day	
7	30.11.2018	13:00:13-13:59:13	62.67	A	Day	
8	30.11.2018	14:00:13-14:59:13	59.58	A	Day	
9	30.11.2018	15:00:13-15:59:13	55.90	A	Day	
10	30.11.2018	16:00:13-16:59:13	58.42	A	Day	
11	30.11.2018	17:00:13-17:59:13	61.18	A	Day	
12	30.11.2018	18:00:13-18:59:13	63.55	A	Day	
13	30.11.2018	19:00:13-19:59:13	60.53	A	Day	
14	30.11.2018	20:00:13-20:59:13	62.32	A	Day	
15	30.11.2018	21:00:13-21:59:13	56.70	A	Day	
16	30.11.2018	22:00:13-22:59:13	54.10	A	Night	56.62
17	30.11.2018	23:00:13-23:59:13	56.80	A	Night	
18	1.12.2018	0:00:13-0:59:13	56.55	A	Night	
19	1.12.2018	1:00:13-1:59:13	57.92	A	Night	
20	1.12.2018	2:00:13-2:59:13	57.96	A	Night	

21	1.12.2018	3:00:13-3:59:13	58.15	A	Night
22	1.12.2018	4:00:13-4:59:13	57.22	A	Night
23	1.12.2018	5:00:13-5:59:13	56.46	A	Night
24	1.12.2018	6:00:13-6:59:13	54.44	A	Night
Average			57.68		

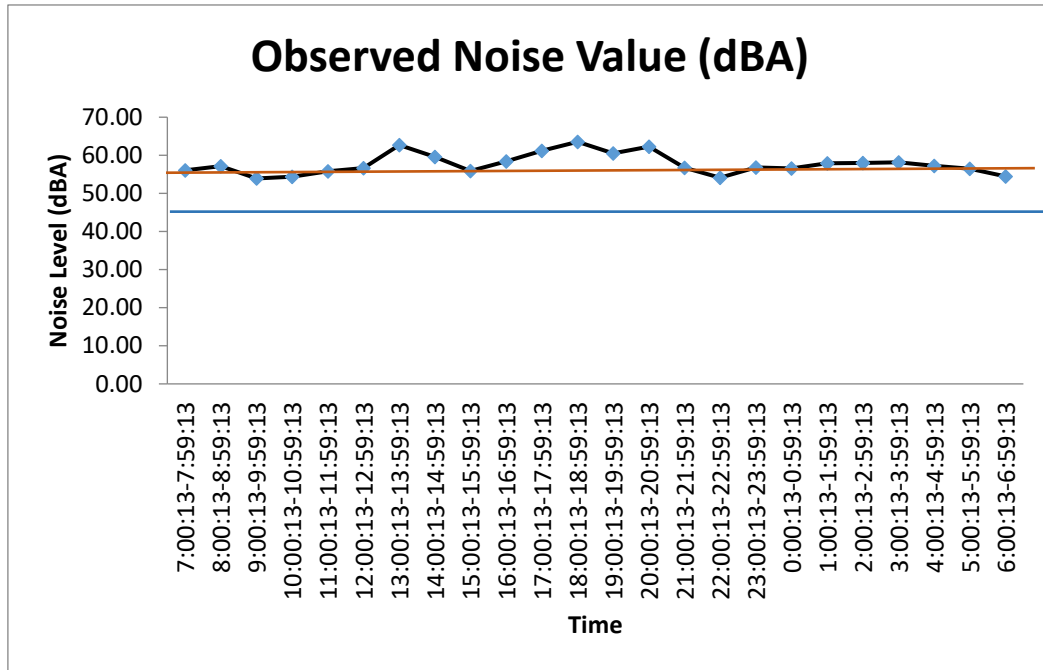


Figure 4. 18 Noise Level at Sa Ka Village

Table 4. 8 Observed Ambient Noise level Results from Myingyan Power Plant

Point	Semcorp Myingyan Power Plant	
	Day Time	Night Time
Semcorp Myingyan Power Plant	52.26	42.84
Guideline Values	70	70

Table 4. 9 Observed Ambient Noise level Results from Sa Ka Village

Point	Semcorp Myingyan Power Plant	
	Day Time	Night Time
Sa Ka Village	58.32	56.62
Guideline Values	55	45

The observed values of sembcorp myingyan power plant are lower than the guidelines. So, Sembcorp myingyan power plant is acceptable for environmental. The observed values are compared with the National Environmental Quality (Emission) Guidelines as shown in **Table 4. 10** which indicates the separate level for residential and industrial points.

Table 4. 10 National Environmental Quality (Emission) Guidelines Values for Noise Level

Receptor	One Hour LAeq (dBA)	
	Daytime 07:00 - 22:00 (10:00 - 22:00 for Public Holidays)	Nighttime 22:00 - 07:00 (22:00 - 10:00 for Public Holidays)
Residential, institutional, educational	55	45
Industrial, commercial	70	70

The observed values of the proposed project for daytime at sembcorp myingyan power plant and Sa Ka village are 52.26 dB (A) and 58.32 dB (A). The observed values of the proposed project for night time at sembcorp myingyan power plant and Sa Ka village are 42.84 dB (A) and 56.62 dB (A). The proposed project is located adjacent to the residential and commercial area. So, the observed values of daytime and nighttime at sembcorp myingyan power plant are under the National Environmental Quality (Emission) Guidelines. The observed values of daytime and nighttime at Sa Ka village are upper the National Environmental Quality (Emission) Guidelines because of this village have Pagoda festival.

APPENDIX A

Description of Haz-scanner (EPAS)

HAZ-SCANNER

Wireless Environmental Perimeter Air Station **EPAS**

- Direct reading
- Build your own station with up to 14 simultaneous air measurements including U.S. EPA criteria air pollutants
 - Standard configuration measures 5 parameters including PM10 or TSP particulates, NO_x, CO, temperature, and relative humidity
 - Add one or all optional interchangeable sensors with upgradable software and/or EPAS-specific meters (up to 9 sensors/meters total) as listed on the reverse side. Choose from additional sensors for toxic gas (including methane), hydrocarbons, VOCs, and biological/chemical agents and EPAS-specific meters for solar radiation/UV or IR, barometric pressure, sound/noise, atomic radiation, ELF radiation, rain, and wind speed/direction
 - Available analog input port for alternative meter
 - Interchangeable size-selective impactors are available for PM1.0, PM2.5, or PM4.0 (close approximation of respirable)
 - Can monitor up to 2 PM sizes simultaneously
- Real-time readings, datalogging capabilities
 - Optional wireless data transmission up to 5 miles
 - Optional Ethernet internet connection for 24/7 data reporting
- Easily portable and deployable
- Battery operated
- Network up to 8 EPAS to one central PC or Mac
- Easy-to-use graph and reporting software compatible with PC and Mac

The portable HAZ-SCANNER™ EPAS wireless environmental perimeter air station is easily deployed as an ambient air quality monitor to scan, measure, and document critical EPA criteria pollutants including nitrogen dioxide, carbon monoxide, sulfur dioxide, ozone, carbon dioxide, particulates, VOCs, and more. The EPAS is the only instrument on the market with sensors offering simultaneous monitoring of two different sizes of PM. The EPAS provides direct readings in real time with datalogging capabilities. The graph and reporting software is compatible with PC and Mac. Contact an SKC product specialist to build your EPAS including up to 14 simultaneous critical air measurements in one battery-operated instrument.

HAZ-SCANNER Wireless EPAS Applications

- Ambient air quality monitoring
- Hazardous incident response
- Waste site remediation monitoring
- Military/homeland security
- Perimeter monitoring
- Near roadway monitoring

Go to www.skcinstruments.com/prod/Haz-Scanner.asp for more information.



Measure up to 14 critical air parameters simultaneously with HAZ-SCANNER EPAS.



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www.skcinstruments.com

HAZ-SCANNER EPAS

Wireless Environmental Perimeter Air Station



HAZ-SCANNER EPAS shown with optional solar panels

Performance Profile

The HAZ-SCANNER EPAS is optimized for ambient air applications; custom calibration for specific ranges or applications is available upon request.

Display	LCD real time
Operation	2-key splash-proof membrane switch
Power	12-V Absorption Glass Mat (AGM) rechargeable battery, 100-240 V AC, or optional solar panel
Display Measurements	Max, Min, T&A, ST&L
Recording Time	1 sec to 21 weeks
Sampling Rate	1 sec, 1 min, 10 min, 1 hr, adjustable
Data Storage	256, 512 data points
Sampling Pump	1.0 to 3.0 L/min
Digital Output	RS-232 (PC), RS-423 (Mac)
Software	PC or Mac
Enclosure (weather-proof case)	8 x 14 x 18 in (15.2 x 35.6 x 25.4 cm)
Weight	12 lbs (5.4 kg)
Operating Temperature	23 to 122 F (-5 to 50 C)
Storage Temperature	-40 to 148 F (-40 to 60 C)
Humidity	95% non-condensing (use inlet heater)
Wireless Radio Modes	900 MHz (U.S.), 948 MHz (Europe) up to 5 miles - line of sight (optional)
Auxiliary Analog Input	0 to 2.5 VDC (1 channel for alternative meter)

Configure an EPAS for Up to 14 Simultaneous Measurements

The standard HAZ-SCANNER EPAS includes the monitor (calibrated for ambient air applications) with sensors/meters for PM10 or TSP, VOCs, temperature, humidity, and wind speed/direction in a NEMA 4 enclosure, acid gas scrubber, internal battery, universal 110-240 V AC battery charger, software, cables, and CD with instructions.

Configure the monitor with additional sensors/meters — up to 4 optional interchangeable sensors with upgradable software and/or up to 4 EPAS-specific meters (listed below). See page 3 for specifications. *Specify sensors and meters when ordering.*

- PM1.0, 2.5, or 4.0
- Ammonia (EC)
- Carbon Dioxide (NDIR)
- Carbon Monoxide (EC)
- Chlorine (EC)
- Ethylene Oxide (EL)
- Hydrocarbon (methane-specific, EC)
- Hydrocarbons (EC)
- Hydrogen Chloride (EL)
- Hydrogen Cyanide (EC)
- Hydrogen Sulfide (EC)
- Nitric Oxide (EC)
- Nitrogen Dioxide
- Oxygen
- Ozone
- Phosphine (EL)
- Sulfur Dioxide
- Rain
- Solar Radiance
- Sound and Noise
- Acoustic Radiation
- ELF Radiation
- Barometric Pressure
- Dew Point Temperature
- Wet Bulb Temperature

Contact SKC to build an EPAS with available sensors/meters/calibration for your application!

SKC Limited Warranty and Return Policy

SKC products are subject to the SKC Limited Warranty and Return Policy, which provides SKC's sole liability and the buyer's exclusive remedy. To view the complete SKC Limited Warranty and Return Policy, go to <http://www.skcline.com/warranty.asp>.



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HAZ-SCANNER EPAS

Wireless Environmental Perimeter Air Station

HAZ-SCANNER EPAS Sensor/Meter Specifications

Parameter	Sensor*	Measurement/ Concentration Range	Accuracy	Minimum Resolution	Display Resolution	Additional Information
Particulates	90° infrared light scattering	0 to 5000 µg/m ³	Greater of $\pm 10\%$ of reading or 2% full scale	10 µg/m ³	1 µg/m ³	Measures particle sizes: 10 µm or TSP (standard) or 1, 2.5, or 4 µm (optional) in the 0.1 to 100 µm size range
VOCs	PID (10.6 eV)	0 to 50,000 ppb (0 to 50 ppm)	Greater of $\pm 10\%$ of reading or 2% full scale	5 ppb	1 ppb	Minimum detection level is 0.01 ppm. Standard sensor
Toxic Gas: NH ₃ - Ammonia	Gas-sensing semiconductor (GSS) technology	0 to 100 ppm	Greater of $\pm 10\%$ of reading or 2% full scale	<math>< 0.2</math> ppm	0.1 ppm	Optional sensor
Toxic Gas: CO ₂ - Carbon Dioxide	NDIR	0 to 5000 ppm	Greater of $\pm 10\%$ of reading or 2% full scale	50 ppm	1 ppm	Optional sensor
Toxic Gas: CO - Carbon Monoxide	Electrochemical	0 to 10,000 ppb (0 to 10 ppm)	Greater of $\pm 10\%$ of reading or 2% full scale	20 ppb	1 ppb	Optional sensor
Toxic Gas: Cl ₂ - Chlorine	Electrochemical	0 to 100 ppm	Greater of $\pm 10\%$ of reading or 2% full scale	<math>< 0.2</math> ppm	0.1 ppm	Optional sensor
Toxic Gas: (C ₂ H ₄ O) - Ethylene Oxide	Electrochemical	0 to 1500 ppm	Greater of $\pm 10\%$ of reading or 2% full scale	8 ppm	1 ppm	Optional sensor
Toxic Gas: Hydrocarbon, CH ₄ - Methane-specific	NDIR	0 to 1% Vol., 0 to 10,000 ppm, 0 to 20% LEL	Greater of $\pm 10\%$ of reading or 2% full scale	± 50 ppm or 0.1% LEL	50 ppm/ 0.1% LEL	Optional sensor
Toxic Gas: (Non-methane) Hydrocarbons (HC)	NDIR	Calibrated for 0 to 20% LEL of selected gas	Greater of $\pm 10\%$ of reading or 2% full scale	± 50 ppm/ 0.1% LEL	50 ppm/ 0.1% LEL	Optional sensor - specify gas type when ordering: ethane, propane, butane, hexane, ethanol, ethylene, or ethylene oxide
Toxic Gas: HCl - Hydrogen Chloride	Electrochemical	0 to 100 ppm	Greater of $\pm 10\%$ of reading or 2% full scale	<math>< 0.2</math> ppm	0.1 ppm	Optional sensor
Toxic Gas: HCN - Hydrogen Cyanide	Electrochemical	0 to 100 ppm	Greater of $\pm 10\%$ of reading or 2% full scale	<math>< 0.2</math> ppm	0.1 ppm	Optional sensor
Toxic Gas: H ₂ S - Hydrogen Sulfide	Electrochemical	0 to 25 ppm	Greater of $\pm 10\%$ of reading or 2% full scale	<math>< 0.15</math> ppm	0.1 ppm	Optional sensor
Toxic Gas: NO - Nitric Oxide	Electrochemical	0 to 100 ppm	Greater of $\pm 10\%$ of reading or 2% full scale	<math>< 0.2</math> ppm	0.1 ppm	Optional sensor
Toxic Gas: NO ₂ - Nitrogen Dioxide	Electrochemical	0 to 5000 ppb (0 to 5 ppm)	Greater of $\pm 10\%$ of reading or 2% full scale	5 ppb	1 ppb	Optional sensor
Toxic Gas: O ₂ - Oxygen	Electrochemical	0 to 30% Vol.	Greater of $\pm 10\%$ of reading or 2% full scale	0.6%	0.1%	Optional sensor
Toxic Gas: O ₃ - Ozone	Gas-sensing semiconductor (GSS) technology	0 to 150 ppb (0 to 0.15 ppm) 0 to 500 ppb (0 to 0.5 ppm)	Greater of $\pm 10\%$ of reading or 2% full scale	1 ppb	1 ppb	Optional sensor
Toxic Gas: PH ₃ - Phosphine	Electrochemical	0 to 100 ppm	Greater of $\pm 10\%$ of reading or 2% full scale	<math>< 0.2</math> ppm	0.1 ppm	Optional sensor
Toxic Gas: SO ₂ - Sulfur Dioxide	Electrochemical	0 to 5000 ppb (0 to 5 ppm) for ambient applications	Greater of $\pm 10\%$ of reading or 2% full scale	5 ppb	1 ppb	Optional sensor

* Not approved for intrinsically safe applications; do not use in explosive gas environments.

Specifications continued on next page 



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HAZ-SCANNER EPAS

Wireless Environmental Perimeter Air Station

HAZ-SCANNER EPAS Sensor/Meter Specifications (con't)

Parameter	Sensor*	Measurement/ Concentration Range	Accuracy	Minimum Resolution	Display Resolution	Additional Information
Rain Fall/ Precipitation	Rain gauge (heated, tipping bucket)	0 to 5 inches daily	$\pm 1\%$ at 2 in/hr	0.01 in	0.01 in/tp	Optional meter
Temperature	NTC thermister	-4 to 140 F (-20 to 50 C)	Greater of $\pm 3\%$ degree F or C of reading	1 degree F or C	1 degree F or C	Standard sensor
Relative Humidity (RH)	Thin-film capacitive	0 to 100% RH	$\pm 2\%$ RH	1% RH	1% RH	Standard sensor
Solar Radiance Intensity	Photodiode	1110 watts/ square meter (W/m ²)	$\pm 5\%$ of full scale (reference Eppley PSP at 1000 W/m ²)	1 W/m ²	1 W/m ²	Optional meter
Sound and Noise	Type 2 SLM	30 to 130 deci- bels (dB)	± 1.5 dB	0.1 dB	1 dB	Optional meter
Atomic Radiation	Geiger counter	1 to 19 999 counts per minute (cpm) or 0.001 to 100 milliRad/hr	$\pm 10\%$ Typical $\pm 15\%$ Max.	1 cpm or .001 mR/hr	1 cpm or .001 mR/hr	Optional meter
ELF Radiation	Sensor with single- axis probe	1 to 200 gauss (G)	$\pm 10\%$ or 5% FS	1 G	1 G	Optional meter
Wind Speed/ Direction	3-cut anemometer/ continuous rotation potentiometric wind direction vane	0 to 125 mph 5 to 355°	± 1 mph or $\pm 8\%$ $\pm 3^\circ$	1 mph/1°	1 mph/1°	Standard sensor
Barometric Pressure	Piezo resistive	28.25 to 30.75 in Hg	± 0.09 in Hg	0.01 in Hg	0.01 in Hg	Optional sensor
Dew Point Temperature	Software calcula- tion from RH and temperature	3.2 to 122 F (-15 to 50 C)	± 3 F	1 F	1 F	Optional meter - software calculated
Wet Bulb Temperature	Capsulated therm- istor with wick	3.2 to 122 F (-15 to 50 C)	± 3 F	1 F	1 F	Optional meter - one meter

* Not approved for intrinsically safe applications; do not use in explosive gas environments.



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Calibration Certificate for Haz-scanner

Calibration Certificate

Customer	Eguard
System Model	EPAS
System Serial	915081
Calibration Date	2018 April 21

Sensor	Low	Actual	High	Actual
CO	0 ppm	0 ppm	10 ppm	8.2 ppm
CO2	0 ppm	0 ppm	300 ppm	250 ppm
SO2	0 ppm	0 ppm	2 ppm	1.5 ppm
NO2	0 ppm	0 ppm	3 ppm	2.1 ppm
PMA	0 ug/m3	0 ug/m3	23400 ug/m3	21100 ug/m3
PMB	0 ug/m3	0 ug/m3	21000 ug/m3	19100 ug/m3

Temperature 22 deg C
Relative Humidity 32%

Note

Perform by EDC technician's instruction.

This instrument is manufactured by Environmental Device Corporation (USA).



Perform by

Nanda Maung	Technical Service Engineer	Nanova Co,ltd
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Yangon Office

22A , Shan Yeik Thor Street , Sanchaung Township.

01-2304901 , 01-2304902

Help Line - 0997747774

APPENDIX B

Field Photos

Air Monitoring Point at Sa Ka Village

(ASR4)

Lat- 21°23'29.834", Long- 95°22'58.592"

30.11.2018 to 1.12.2018



Air Monitoring Point at Hnan Ywa Village

(ASR3)

Lat- 21°22'17.599", Long- 95°23'17.681"

1.12.2018 to 2.12.2018



Air Monitoring Point at Gyoke Pin Village

(ASR5)

Lat- 21°24'21.944", Long- 95°21'06.779"

2.12.2018 to 3.12.2018



Air Monitoring Point at Nyaung Kan Village

(ASR14)

Lat- 21°21'58.373", Long- 95°20'51.782"

3.12.2018 to 4.12.2018



Sembcorp Myingyan Power Company Limited

Myingyan 225MW CCPP Project

Air Quality Management Monitoring Monthly Checklist Form (Operational Phase)

S/No	Description	Yes	No	Details of Observation / Location	Corrective Action to be Taken	Action taken Date	Verified by
1	Built-in dry low NOx burners to reduce NOx emission at stack to below 25ppm at all times?	Yes		Installed at both stack monitoring through CEMS	NIL	Done	Tin
2	Monitor ambient air quality in and around the Project site as per the Environment Monitoring Program formulated for the Project.	Yes		Monitored by 3 rd Party Consultant. Result found under the WBG standard limit.	NIL	Continue	Tin
3	Continuous emission monitoring (CEM) systems installed common for both main stack and bypass stack for real-time data collection on emission status from the Plant monitoring emission concentrations of NOx as NO2, PM, SO2, O2, moisture content?	Yes		Monitoring by Continuous emissions monitoring system (CEMS) at site and Central Control Room (CCR)	Data gathered continue from CEMS, average for the every month	Continue	Tin
4	Monitor ambient air quality monitoring as per ESIA Monitoring Programme formulated for the Plant?	Yes		Carried out accordingly	NIL	Continue	Tin
5	Annual CEM validation for NOx, CO, PM2.5 and O2 at Main Stack and Bypass Stack by using standard methods?	Yes		Used standard method	NIL	Continue	Tin
6	Are there any emission of dark smoke from Equipment and Machinery?	Yes		Plan to road watering spray system will be start on daily	NIL	Continue	Tin
7	Are there evidences of open burning of waste carried out?		No	Nil	NIL	-	-
8	Are there operational & maintenance activities to create high dust emission on site and taken adequate control measures?	Yes		Carried out accordingly	NIL	Continue	Tin

Date / Time of inspection: 30th Mar 2019**Location:** Plant internal & external**Role of Individual Undertaking Monitoring:** Tin Ko Ko (HSSE Officer) and Tin Aung Swe (HSSE Manager) and Pyi Soe Aung (HSSE Officer)



CMB Monitored by 3rd Party consultant result found under the WBG standard limit



3rd party conducted quarterly ambient air quality monitoring
3rd – March at #4 communities locations
External Air Quality monitoring

Sembcorp Myingyan Power Company Limited

Myingyan 225 MW CAPP Project

Emergency Preparedness & Response Management Monitoring Checklist Form

No	Description	Yes	No	Details of Observation	Corrective Action to be Taken	Action taken date	Verified by
1	Emergency contact list displayed in prominent area, such as, notice board, resting shelters?	Yes		Displayed in offices notice boards, security guard house, and canteen and updating regularly.	Nil	Monthly	Tin
2	Emergency evacuation route is pasted on prominent location?	Yes		Posted in major buildings	Nil	Complete	Tin
3	Regular inspection on emergency resources?	Yes		Inspection carried out monthly by appointed persons	To put appropriate signage at dedicated areas To order 10 more fire extinguishers to replace bad condition units. To order 2 more firefighting suits for ERT and 2 SCBA To buy additional fire hose and nozzles for firefighting purpose To order 2 more foam type extinguishers for another major areas	30 th May 2019	Tin
3	Emergency drill exercise was conducted regularly?	Yes		Conducting at least monthly Emergency evacuation and response drill conducted on Feb 2019	To conduct Tier 3 emergency drill in January 2019 To conduct Natural Disaster (e.g. earthquake) Bomb threat emergency drill in March To conduct chemical spillage drill exercise in April	(Complete) (Complete) (Complete) April 2019	Tin
4	Regular inspection on clearance of emergency evacuation route, for emergency vehicle access?	Yes		Weekly inspection conducted by plant management team.	To maintain clear of all access routes to main building for emergency vehicle entry (e.g. firefighting vehicle)	On-going	Management
5	Emergency response team was trained to deal with emergency situation? - First Aid - Firefighting - Rescue	Yes		Plant personnel trained in all equipment and shell we Firetruck exercise conducted during drill conducted on 6 th Dec 2019	Recommend to do regular exercise on effective use of firefighting equipment, such as operating fire engine, hoses, nozzles, etc.	On-going	Tin

				Conducted martial art training to control any emergency circumstances.			
6	Adequate number of emergency response team in place?	Yes		Detailed found in Management Procedure	Update information on HSSE notice boards	Done	Tin

Date / Time: April 30, 2019

Location: Myingyan 225MW CCPP

Name of individual undertaking the monitoring: Tin Aung Swe, Pyi Soe Aung, Tin Ko Ko, Lek (Security)



To conduct chemical spillage drill exercise
 On 23rd April 2019
 (Tuesday) at 10:00AM, 2
 supply workers were
 tasked to carry out
 chemical (Acid) filling at
 Cooling Tower Chemical
 Dosing area with Forklift
 (opposite the Demin MCC
 area)

Sembcorp Myingyan Power Company Limited

Myingyan 225MW CCPP Project

Noise and Vibration Management Monitoring Checklist Form

S/N	Description	Yes	No	Details of Observation / Location	Action to be Taken	Action taken date	Verified by
1	Are there operation & maintenance noise activities and area identified?	Yes		Operation noise will affect the (SMPC Staff and Contractors workers)	Closely supervise and inspect the using of ear Protection equipment.	Continue	Tin
2	Are noisy parts of Machines enclosed?		No	No noise machines	NIL	Done	Tin
3	Are Machines serviced and maintained regularly?	Yes		No noise machines	NIL	Done	Tin
4	Are machines correctly mounted to avoid vibration and reduce noise levels?	Yes		No noise machines	NIL	Done	Tin
5	Are sound absorbing materials used on site such as noise barrier?		No	Engineering control as sound barrier	Required action to be taken	In progress	Tin
6	Regular monitoring done for identified NSRs within 500m from the Plant boundary? (ESIA recommended quarterly)	Yes		Plant wall fence barriers to prevent noise	NIL	Done	Tin
7	Have there been any complaints from outside communities concerning noise through the Projects grievance mechanism?		No	Monitored by 3 rd Party Consultant result found under the WBG standard limit	NIL	Continue	Tin
8	Is the Plant Management discussed about noise issue in meeting, such as workforce training on noise protection and prevention?	Yes		To be Discussed with monthly HSSE committee meeting	Required action to be taken	Continue	Tin

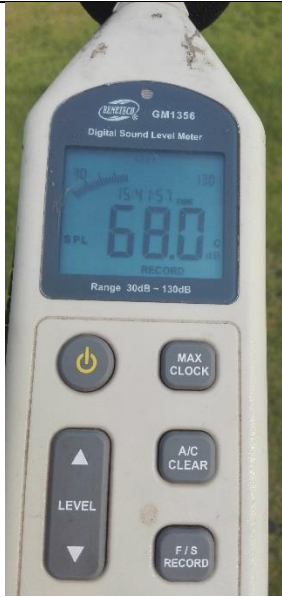
Date / Time: 30th April 2019

Location: Plant internal & external

Name of individual Undertaking Monitoring: Tin Ko Ko (HSSE Officer) and Tin Aung Swe (HSSE Manager) and Pyi Soe Aung (HSSE Officer)



Will be measured for 24hrs continuously at the selected location at nearest at V Power project site using the Noise Meter Internal Noise Quality monitoring



External Noise Quality monitoring

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Sembcorp Myingyan Power Company Limited

Myingyan 225MW CCPP Project

Workers Occupational Health and Safety Control measure implementation & monitoring checklist

No.	Description	Yes	No	Details of Observation / Location	Corrective Action to be Taken	Action taken date	Verified by
1	Is the HSE policy authorized by company top management and communicated to the persons working under the control of organization?	Yes		HSE policy has signed by company top management and displayed in all the HSSE notice boards and meeting rooms.	Continues monitoring to be done.	Done	Tin
2	Are personnel working under the organization comply with safe working practices to prevent from OHS risk associated to the activities. Are Permit-To-Work system implemented by the Plant such as Hot-work, working at height, lifting operation, Excavation and Confined space work, etc.?	Yes		Routine inspection was carried out on the ongoing activities and some finding for improvement were shared. Such as, -Improper placement of gas cylinders -Inadequate barricade (only soft barricade) for opening of steam blow down sump. -Poor housekeeping	Briefing/Training Continues monitoring	Done	Tin
3	Are trainings and consultation program for workers who involved in high risk activities conducted by the O&M and Contractors?	Yes		Conducted outage related HSE training such as HSE induction and tread related training	Training record to be kept for filing and audit purpose	Continue	Tin
4	Are HSSE meetings conducted accordingly, such as Daily HSE and O&M meeting, Tool box meeting, HSSE Committee meeting, etc.?	Yes		Conducted HSE and O&M meeting. Meeting with vendor regarding ad-hoc work, Meeting with contractor regarding renovation works, Meeting with district fire department, Tool box meeting conducted by individual group.	March HSSE Committee meeting is planned to conduct on April 2019.	April-2019	Management team
5	Are all the near-miss, incidents, accidents, and occupational diseases, dangerous occurrence at the project activity area, plant and workers camp investigated and reported?	Yes		Investigation conducted as per management plan and reporting protocol. No near-miss or incident reported at the month of October.	Lesson learnt to be shared. Monitored corrective & preventive action taken status	Continue	
6	In-house rules are implemented and monitoring for the compliances.	Yes		Life Saving rule implemented In house rule highlighted in HSE induction. Designated smoking areas were implemented within the plant.	Consequence management procedure under review by management	Done	

7	Is HSE promotional activities for workforce implemented by Plant Management?	Yes		Incentive awards giving out for HSSE observation submission and Life Saving Rule safety quiz.	To plan for motorbike safety promotion (providing proper helmet)	5- Dec -2018	Tin
8	Is there implemented procedure on evaluation, selection and control of sub-contractor? Is the daily monitoring on labor and working condition conducted by contractor, especially, no child and forced labor will be employed by contractors?	Yes		Contractor/ supplier and vendor were evaluated HSE performance before commence work	Monitoring by HSSE, O&M and Finance Department.	Ongoing	Tin
9	Is there implemented HSE inspection program and documented?	Yes		Weekly management site-walk inspection conducted and documented accordingly.	Observations and improvement to be shared to the workforce. Critical work activities and PTW to be audited regularly	weekly	
10	Are equipment, electrical tools, machineries, lifting gears, and scaffold inspected by competent personnel?	Yes		Inspected by authorized person by monthly and issued inspection sticker. Sub-standard tools/equipment are rejected and repaired as per standard during inspection.	End-user to be carried out before use to ensure that tools/equipment have inspected and valid inspection sticker.	Continue	
11	Are Method Statements, Risk Assessments & Safe Work Procedures complying with required work activities that will be potential harm to workforce?	Yes		Outage PTW application supported by Risk Assessment documents. Risk Assessment reviewed by O&M and HSE personnel.	Safe Operating Committee to be included to review critical task MS-RA.	Ongoing	
12	Is there any form of control on movement of hazardous substances such as chemicals? Any PPEs compliance on handling of such chemicals?	Yes		PTW is necessary for the handling of hazardous substances such as chemicals. Comply with PPEs requirement as stated in SDS.	Continues monitoring by HSSE personnel.	23-April-2019	
13	Are firefighting equipment's provided and inspected/tested regularly? Any damaged firefighting equipment replaced timely?	Yes		Inspected monthly basis and damaged are replaced timely. Observation found access to the firefighting equipment was obstructed by materials.	Continues carrying out by HSSE and Security personnel. Access to the firefighting to be free from obstruction at all times.	Continue Done	
14	Pre-employment medical check and routine health screen conducted? Annual audiometric test conducted for the persons working under the organization?	Yes		Pre-employment medical check was carried out for the existing staffs and will be continues for the upcoming staffs as well.	Annual audiometric test to be carried out	4-Feb-2019 Done	

Date / Time: 30st April 2019

Location: Plant area

Role of Individual Undertaking Monitoring: Tin Ko Ko (HSSE Officer) and Plant management team

Sembcorp Myingyan Power Company Limited

Myingyan 225MW CCPP Project

Surface Water Management Monitoring Checklist Form (Operational Phase)

S/N	Description	Yes	No	Details of Observation	Action to be Taken	Action taken date	Verified by
1	Treated by oil/water separators before discharge to central monitoring basin (CMB).	Yes		Connected according design and plan	To be monitored by HSSE team regularly	Continue	Tin
2	Implement adequate sanitary facilities for onsite personnel.	Yes		Provided sufficient facility	To be monitored by HSSE team regularly	Continue	Tin
3	Liquid effluents arising from operations will be treated to the applicable IFC guideline prior to discharge. The sewage from the entire plant area will be collected and treated in a sewage treatment plant (STP). No untreated sewage will be directly discharged into the Ayeyarwady River, or disposed of on land, for the duration of the project life cycle.	Yes		STP functioned according to design	To be monitored by HSSE team regularly Discharge water to be tested quarterly by 3 rd Party	Continue	Tin
4	Wastewater collected from canteen kitchens, including that from basins, sinks and floor drains, should be discharged into sanitary sewers via grease traps. The sanitary sewer should then be treated prior to discharge or reuse as greywater.	Yes		Kitchen under renovating for O&M phase. Design included all necessary requirement.	To be monitored by HSSE team regularly	Continue	Tin
5	Conduct monitoring of waste water discharge point at a Ayeyarwady River (Seik Nyan Pumping Station) frequency of once every quarterly.	Yes		3 rd party contract signed for water quality test	To be monitored by HSSE team regularly	Continue	Tin
6	Implement discharge system shutdown in event that discharge temperature of effluent exceeds standard.	Yes		Installed sensors to monitor	To be monitored by Operation and HSSE team regularly	Continue	Tin
7	Implement Awareness program to workforce? (i.e. ESMP Awareness Training to Staff)	Yes		Plan included all staff to be trained ESMPs	To be monitored by HR and HSSE team	In progress	Tin
8	Store and handle all hazardous substances in accordance with their SDS and readily accessible for reference.	Yes		All chemical provided with SDS and awareness briefing conducted before use	To be monitored by HSSE team regularly	Done	Tin

Date / Time: 30th Mar 2019

Location: Operation area

Role of Individual Undertaking Monitoring: HSSE and Plant Management Team



CMB Monitored by 3rd Party consultant result found under the WBG standard limit



To inspect and monitor inspect all chemical feeding area and water treatment area

Sembcorp Myingyan Power Company Limited

Myingyan 225MW CCPP Project

Waste (Hazardous and Non-Hazardous) Management Monitoring Checklist Form

S/No	Description	Yes	No	Details of Observation / Location	Action to be Taken	Action Taken date	Verified by
1	What kinds of waste are generated are identified (by waste category)?	Yes		Segregated Hazardous and Non-hazardous waste	Waste disposal contract to be finalized	In progress	Tin
2	Are waste data records managed in accordance with the requirements?	Yes		Waste disposal recorded	To be monitored by HSSE team	Continue	Tin
3	Is the waste stored in a way that does not adversely affect human health and the environment?	Yes		Handled accordance with management procedure	Monitored by Admin and HSSE team	Continue	Tin
4	Is the waste storage site in accordance with environmental requirements?	Yes		Temporary stored in covered bin and disposed regularly	Monitored by Admin and HSSE team	Continue	Tin
5	Are hazardous wastes stored in accordance with the requirements?	Yes		Stored in designated area	Monitored by Operation and HSSE team	Continue	Tin
6	Is the packaging marked/labelled with information on the origin of materials used?	Yes		Materials especially Chemical with appropriate label displayed	Monitored by Operation and HSSE team	Continue	Tin
7	Are waste clean-up measures being undertaken on regular basis?	Yes		Included in daily activities	Monitored by Operation and HSSE team	Continue	Tin
8	Are workers being trained on the requirements mentioned in this plan in accordance with the Workers Training Plan?	Yes		Training conducted according to training matrix	Monitored by HR and HSSE team	Continue	Tin

Date / Time: 30th April 2019

Location: Operation area

Role of Individual Undertaking Monitoring: HSSE and Plant Management Team