

**Environmental Monitoring Report**  
**For**  
**20 MW Ground Mounted Solar Power Plant Project**  
**Connected to Taungdawgwin Substation**  
**(Operation Phase)**  
**(2<sup>nd</sup> Time)**  
**(April 2023 – September 2023)**

Proposed by



Green Power Energy Co., Ltd.

Prepared by



E Guard Environmental Services

**September, 2023**

## Table of Contents

List of Figures .....	ii
List of Table .....	iii
INTRODUCTION .....	1
1. METHODOLOGY .....	2
1.1 Ambient Air Quality.....	2
1.2 Ambient Noise.....	2
1.3 Water Quality .....	3
1.4 Monitoring and Sampling Locations.....	5
2. ENVIRONMENTAL QUALITY .....	7
2.1 Ambient Air Quality.....	7
2.2 Ambient Noise Level .....	11
2.3 Wind Speed and Direction .....	15
2.4 Water Quality Standards .....	16
2.5 Water quality .....	17
3. ENVIRONMENTAL MONITORING PLAN .....	21
3.1 Monitoring records for Safety Plan.....	21
4. Environmental Monitoring Record for Reforestation (Plantation).....	26
5. Records for CSR activities .....	27
6. Records for GRM .....	31
7. Records for waste disposal .....	32
Appendix 1 (Water results).....	34
Appendix 2 (Attendance List of Environmental Awareness Training) .....	39

## **List of Figures**

Figure 1.4.1: Air Quality Monitoring Location of Taungdawgwin Solar Power Project.....	5
Figure 1.4.2: Noise Level Monitoring Locations of Taungdawgwin Solar Power Project.....	6
Figure 1.4.3: Water Quality Sampling Locations of Taungdawgwin Solar Power Project.....	6
Figure 2.1.1: Air quality measuring at Taungdawgwin Solar Power project site during operation period .....	8
Figure 2.1.2: Fluctuation of Air Pollutants during diel cycle (28 <sup>th</sup> to 29 <sup>th</sup> August, 2023).....	10
Figure 2.1.3: Fluctuation of Particulate Matters during diel cycle (28 <sup>th</sup> to 29 <sup>th</sup> August, 2023).....	10
Figure 2.2.1: Noise Level Monitoring In Front of the Main Office .....	11
Figure 2.2.2: Noise Level Monitoring Near the Labor Camp.....	11
Figure 2.2.3: Noise Level at Point 1 (In Front of the Main Office).....	13
Figure 2.2.4: Noise Level at Point 2 (Near the Labor Camp).....	14
Figure 2.3.1: Wind Speed and Wind Direction (Blowing From) at Taungdawgwin Solar Power Project Site (28 <sup>th</sup> to 29 <sup>th</sup> August, 2023) .....	15
Figure 2.3.2: Wind Class Frequency Distribution at Taungdawgwin Solar Power Project Site (28 <sup>th</sup> to 29 <sup>th</sup> August, 2023) .....	15
Figure 2.5.1: On-site Water Quality Measuring of Surface Water .....	20
Figure 2.5.2: Water Quality Sampling of Surface Water.....	20
Figure 2.5.3: On-site Water Quality Measuring of Ground Water .....	20
Figure 2.5.4: Water Quality Sampling of Ground Water.....	20
Figure 2.5.5: Water Quality Sampling of Waste Water .....	20

## List of Table

Table 1.1.1: Ambient Air Quality Measurement .....	2
Table 1.2.1: Noise level monitoring .....	2
Table 1.2.2: Equipment used to measure ambient air and noise measurement .....	2
Table 1.3.1: Environmental Quality Parameters for Water quality .....	4
Table 1.3.2: Equipment for water sampling.....	4
Table 1.4.1: Locations of Environmental Quality sampling points .....	7
Table 2.1.1: Air Pollutants emission results (Taungdawgwin Solar Power Project) (28 <sup>th</sup> to 29 <sup>th</sup> August, 2023).....	9
Table 2.1.2: Observed Ambient Air Quality Results from Selected Points.....	11
Table 2.1.3: Air Emission Levels (Standard).....	<b>Error! Bookmark not defined.</b>
Table 2.2.1: Observed Values of Noise Level Measurement In Front of the Main Office (Source).....	12
Table 2.2.2: Observed Values of Noise Level Measurement Near the Labor Camp (receptor).....	13
Table 2.2.3: Observed Ambient Noise Level Results from Selected Points.....	<b>Error! Bookmark not defined.</b>
Table 2.4.1: Ambient water quality standards for the protection of aquatic life .....	16
Table 2.5.1: Comparison of Surface Water Quality, Ground Water Quality and Waste Water Quality with Guidelines .....	18

## INTRODUCTION

The proposed project is developed by Green Power Energy Co., Ltd. is located on an 80.9-hectare site southeast of Kyaukse, Myit Thar Township, Mandalay Region, Myanmar. Its coordinate points are 21° 26' 31.62" N, 96° 17' 10.63" E and the average altitude of the site is 0 m. is the second mega-scale solar PV project by Gold Energy Company Limited (the first being the 30-MW Thapyay Wa project – also in Mandalay district). Taungdawgwin involved a foundation of 6,807 piles to enable solar tracking so as to maximize PV energy captured by 45,980 solar panels. The project can generate 25.1 MW of direct current, or 22.9 MW of alternating current, per year. About 14% of the energy generated will go towards the nearby Kyaukse town, while the remainder will be linked to the Thapyay Wa substation and connected to the national grid via 6.05 miles of 33-kV transmission line, also built by GPE. With domestic energy consumption forecast to grow between 15-17% per year, solar power has been identified as a potentially significant source of renewable energy. While solar PV energy had been introduced for several years in Myanmar it accounted for about 1% of the country's installed energy generation capacity as at 2020. The solar PV tenders announced by MOEE form the country's largest-ever tender exercise for mega-scale solar projects (between 30 MW to 50 MW each) with a combined potential new capacity of 1.06 gigawatts (GW). However, the COVID-19 pandemic in 2020 and 2021 disrupted business travel and the supply and raised the costs of imported components such as PV panels and equipment. The operating environment was also affected by an economic slowdown and domestic issues. As a result, most of the 28 successful bidders did not complete their projects. Despite these immense challenges, Clean Power Energy Co., Ltd completed the Thapyay Wa (30 MW) project – the first among the 28 eventual bidders to do so.

### Key Information

Project Details	Taungdawgwin
Location	Kyaukse, Myit Thar Township (Mandalay Division)
Capacity	20 MW
Nature of Project	BOO *
PPA #	20 years
Total Occupied Area	80.9 hectares
No. of panels	45,980
PV efficiency	545 Watts/panel (solar tracking capability)
Annual Generating Power	25.059 MW DC – 22.90 MW AC
Transmission Line	6.05 miles
Project Commencement	Dec-21
Project Commissioning	Nov-22
Commercial Operation Date	Nov-17-2022

Developer	Green Power Energy Company Limited
-----------	------------------------------------

## 1. METHODOLOGY

Baseline environmental parameters and sampling locations were defined according to the objectives for environmental impact assessment, and monitoring purposes. Locations for sampling and analysis of water quality, ambient air quality, vibration and noise level of the project site were identified by E Guard Environmental Services Co., Ltd.

### 1.1 Ambient Air Quality

The emissions of dust particles and gases were measured for 24hrs continuously at the selected sites using the Environmental Perimeter Air Station (EPAS). The results were compared with National Environmental Quality Guidelines NEQG, American Conference of Governmental Industrial Hygienists (ACGIH) and National Ambient Air Quality Standards (NAAQS). EPAS provides direct readings in real time with data-logging capabilities. Air quality is composed of dust and gas emissions of the ambient air.

Table 1.1.1: Ambient Air Quality Measurement

<b>Ambient Air Quality (1 location)</b>	
Gas Emission	CO, CO <sub>2</sub> , SO <sub>2</sub> , NO <sub>2</sub>
Dust Emission	PM <sub>10</sub> , PM <sub>2.5</sub>

### 1.2 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 Digital Sound Level 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 1.2.1: Noise level monitoring

<b>Noise monitoring (2 locations)</b>	
<b>Noise Emission</b>	LAeq (dBA) (1hr, 24 hrs.)

Table 1.2.2: Equipment used to measure ambient air and noise measurement

<p><b>Davis Vantage Pro2 Wireless Weather Station</b>  Provides detailed current weather conditions and expanded forecasts - all at a glance  The Vantage Pro2 uses a frequency-hopping spread spectrum radio from 902 MHz to 928 MHz</p>	
---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	--

<p>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><b>Haz-Scanner EPAS</b> PM<sub>10</sub>, PM<sub>2.5</sub>, NO<sub>2</sub>, SO<sub>2</sub>, CO, CO<sub>2</sub>, Temperature, and Relative Humidity</p>	
<p><b>Digital Sound Level Meter</b> Noise</p>	

### 1.3 Water Quality

Water samples were collected on site with appropriate sampling equipment and procedures. The sampling team has pre-arranged with the labs in Yangon for analysis and logistic arrangement made to reach the preserved samples with unique IDs to the designated labs within 48hrs.

The sampling and survey team has a list of local laboratories providing analytical services for ground water, waste water and surface water quality analysis. Up to this date, there is no laboratory having accredited certification for water quality testing (environmental analysis) in Myanmar. PRO Lab and Water Quality Laboratory of Forest Research Institute have used for water quality analysis among the list of laboratories. These laboratories have been recognized as a long-term establishment in Myanmar and employed qualified technical staffs.

The following laboratories were used for analysis of water and parameters shown in the **Table 1.3.1.**


1. PRO Lab, No. (9), Sabae Housing, Pyi Htaung Su Road, (26) Ward, South Dagon Tsp, Yangon, Myanmar. Tel: 09 893 767424
2. Water Quality Laboratory, Forest Research Institute, Yezin, Nay Pyi Taw. Tel: 09 430 19169, 09 420 705131

Table 1.3.1: Environmental Quality Parameters for Water quality

<i>Surface Water Parameters (1 location)</i>	
Physical Parameter	Total Suspended Solids, Turbidity, Oil and Grease
Chemical Parameter	pH, EC, DO, TDS, Salinity, COD, Total Nitrogen, Total Phosphorus, Potassium
Biological Parameter	BOD
<i>Ground Water Parameters (1 location)</i>	
Physical Parameter	Total Suspended Solids, Turbidity, Oil and Grease
Chemical Parameter	pH, EC, DO, TDS, Salinity, COD, Total Nitrogen, Total Phosphorus, Potassium
Biological Parameter	BOD, Total Coliform Bacteria
<i>Waste Water Parameters (1 location)</i>	
Physical Parameter	Total Suspended Solids, Oil and Grease,
Chemical Parameter	pH, COD, Total Nitrogen, Total Phosphorus
Biological Parameter	BOD, Total Coliform Bacteria

Water samplings are conducted using the following equipment as shown in figure (Table 1.3.2).

Table 1.3.2: Equipment for water sampling

<p><b>HORIBA U-50, Multiparameter Water Quality Meter</b>                  Multiple sensors allow for the measurement of 11 parameters simultaneously. (pH, pH(mv), ORP, DO, Salinity, TDS, Seawater Specific Gravity, Temperature, Turbidity, Water depth)                  Patented auto-calibration features provide hassle free calibration of pH, dissolved oxygen, conductivity and turbidity.                  Ultra-sensitive Turbidity Sensors (Models U-50) Precision has been improved over conventional instruments.                  Improved stability of the dissolved oxygen sensor has been achieved with a new 3 electrode design for fast response and polarographic sensor for ease of maintenance.                  pH and ORP electrodes can be replaced individually to reduce replacement costs.</p>	
--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	--------------------------------------------------------------------------------------



**Water Sampling Bottle**



#### **1.4 Monitoring and Sampling Locations**

Sampling locations were confirmed by environmental specialist on site before doing the sampling. Water quality sampling locations consist of 3 sampling locations (SWQ: from Myo Gyi Dam Channel, GWQ: from the project site and WWQ: from the discharge water channel of the project site). Air quality was monitored at the selected 1 location; in front of the office in the project site of Taungdawgwin Solar Power project site that can get results of the existing ambient air quality. Noise level was monitored at two selected locations (N1: in front of the office in the project site of Taungdawgwin Solar Power project site as source and N2: near the labor camp as receptor).



**Figure 1.4.1: Air Quality Monitoring Location of Taungdawgwin Solar Power Project**



Figure 1.4.2: Noise Level Monitoring Locations of Taungdawgwin Solar Power Project

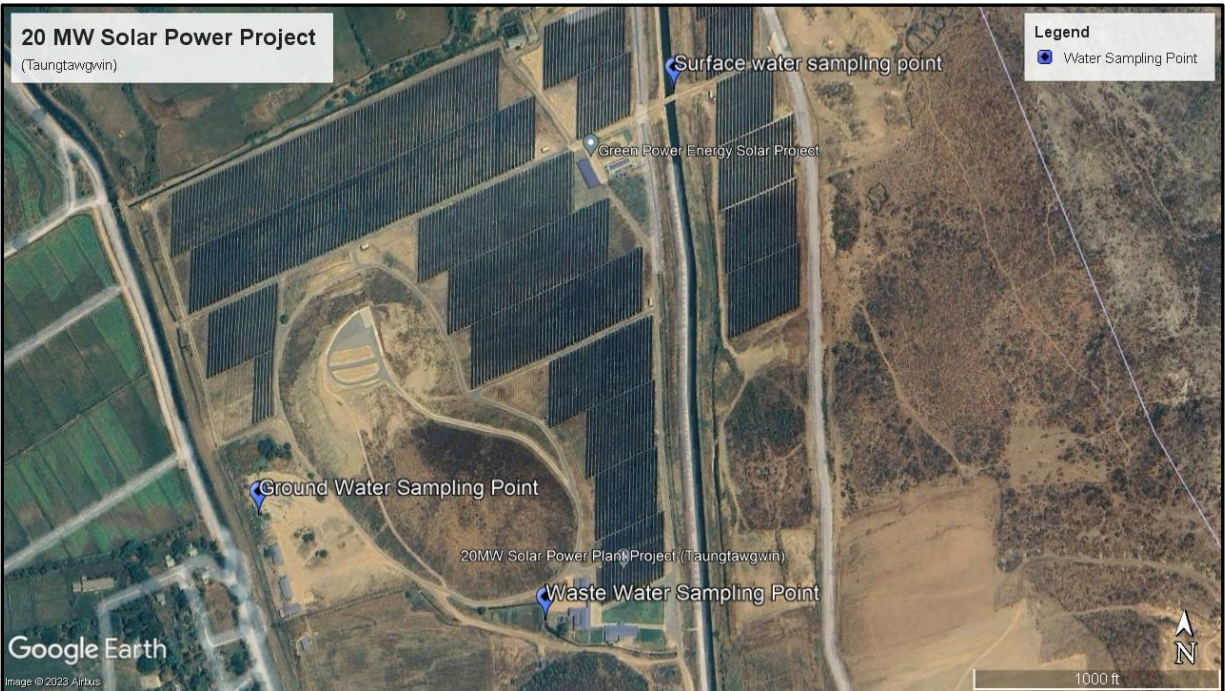


Figure 1.4.3: Water Quality Sampling Locations of Taungdawgwin Solar Power Project

Table 1.4.1: Locations of Environmental Quality sampling points

Locations No.	Points	Coordinate	Locations
<b>Ambient Air Quality Monitoring Location</b>			
1.	AQ1	Lat - 21°26'32.48"N Long - 96°17'10.83"E	in front of the office in the project site of Taungdawgwin Solar Power project site
<b>Noise Level Monitoring Locations</b>			
1.	N1	Lat - 21°26'32.48"N Long - 96°17'10.83"E	in front of the office in the project site of Taungdawgwin Solar Power project site
2.	N2	Lat - 21°26'33.08"N Long - 96°16'55.95"E	near the labor camp as receptor
<b>Water Quality Monitoring Location</b>			
1.	SWQ	Lat - 21°26'54.21"N Long - 96°17'12.70"E	from Myo Gyi Dam Channel
2.	GWQ	Lat - 21°26'34.71"N Long - 96°16'55.06"E	from the project site
3.	WWQ	Lat - 21°26'31.38"N Long - 96°17'7.76"E	from the discharge water channel of the project site

AQ = Air Quality

N = Noise

SWQ = Surface Water Quality

GWQ = Ground Water Quality

WWQ = Waste Water Quality

## 2. ENVIRONMENTAL QUALITY

### 2.1 Ambient Air Quality

The air quality monitoring was done at selected locations during 28<sup>th</sup> to 29<sup>th</sup> August 2023. During this survey, these parameters were measured with adequate devices named Environmental Perimeter Air Station (EPAS) viz; Particulate Matters (PM<sub>10</sub> and PM<sub>2.5</sub>) and gases CO<sub>2</sub>, CO, SO<sub>2</sub>, NO<sub>2</sub> via 24-hour basis.



Air Quality measuring at Point 1  
28.08.2023 to 29.08.2023  
(in front of the office in the project site of  
Taungdawgwin Solar Power project site)

Figure 2.1.1: Air quality measuring at Taungdawgwin Solar Power project site during operation period

**Particulate matters (PM<sub>10</sub> and PM<sub>2.5</sub>)** results are within guideline values as shown in table. Atmospheric particulate matters such as PM<sub>10</sub> and PM<sub>2.5</sub> have their ability to reach the deepest part of lungs and so affect respiratory process. In this air quality survey of the project site, the surveyed results of these particulate matters gathered from EPAS. The results with one-hour interval are shown in the following table.

**Sulfur Dioxide (SO<sub>2</sub>)** is generated from combustion of fuels such as oil and coal, and as by-product from some chemical production or wastewater treatment processes. On-road and off-road vehicles are also emission source of SO<sub>2</sub>. SO<sub>2</sub> irritates the respiratory tract, injures lung tissues and reduces visibility and level of sunlight.

**Nitrogen Oxides (NO<sub>x</sub>)** in the ambient air consist of nitric oxide (NO), nitrogen dioxide (NO<sub>2</sub>) and nitrous oxide (N<sub>2</sub>O). NO<sub>2</sub> is formed by chemical reaction of NO and ozone. The main sources of NO<sub>2</sub> are combustion of fuel and on-road and off-road vehicles. NO<sub>2</sub> decreases lung function and resistance to infection. The gas emission can be monitored by combustion modification, flue gas recirculation, water/ steam injection and the same measures for SO<sub>2</sub> reduction.

Likewise, **Carbon Monoxide (CO) and Carbon dioxide (CO<sub>2</sub>)** have the same emission sources and mitigation measures for SO<sub>2</sub> and NO<sub>2</sub>. They are poisonous gas and cause damage to the respiratory organ.

Detail results and variation patterns with one-hour interval of pollutants are shown in tables and figures below. Results of average, peak and minimum of a day are calculated in the table.

Table 2.1.1: Air Pollutants emission results (Taungdawgwin Solar Power Project) (28<sup>th</sup> to 29<sup>th</sup> August 2023)

Taungdawgwin Solar Power Project Air Results									
Date	Time		CO <sub>2</sub> (ppm)	CO (ppm)	NO <sub>2</sub> (µg/m <sup>3</sup> )	PM <sub>10</sub> µg/m <sup>3</sup>	PM <sub>2.5</sub> µg/m <sup>3</sup>	RH %	SO <sub>2</sub> (µg/m <sup>3</sup> )
28.08.2023	10:00-10:59	Average	373.33	0.01	2.65	7.20	5.60	68.18	0.15
28.08.2023	11:00-11:59	Average	396.15	0.01	2.82	7.30	5.55	67.12	0.20
28.08.2023	12:00-12:59	Average	436.87	0.01	3.73	8.17	6.75	65.17	0.41
28.08.2023	13:00-13:59	Average	487.07	0.01	3.51	7.63	6.23	65.32	0.46
28.08.2023	14:00-14:59	Average	432.87	0.01	3.63	9.53	8.83	63.35	0.24
28.08.2023	15:00-15:59	Average	445.42	0.01	3.60	6.48	4.73	60.88	0.35
28.08.2023	16:00-16:59	Average	436.57	0.01	3.79	5.27	2.25	65.35	0.44
28.08.2023	17:00-17:59	Average	408.75	0.00	3.73	5.20	2.32	66.13	0.00
28.08.2023	18:00-18:59	Average	508.52	0.00	5.33	6.30	4.92	70.93	0.00
28.08.2023	19:00-19:59	Average	448.37	0.01	4.57	7.12	5.68	72.48	0.00
28.08.2023	20:00-20:59	Average	407.07	0.01	4.48	5.58	4.17	75.23	0.00
28.08.2023	21:00-21:59	Average	380.37	0.00	4.17	7.35	6.22	77.65	0.00
28.08.2023	22:00-22:59	Average	378.20	0.01	4.42	7.48	6.33	79.12	0.00
28.08.2023	23:00-23:59	Average	380.23	0.01	3.54	8.33	6.90	81.85	0.10
29.08.2023	0:00-0:59	Average	386.95	0.01	4.20	6.65	5.32	85.02	0.13
29.08.2023	1:00-1:59	Average	396.77	0.01	3.22	5.98	4.67	84.02	0.19
29.08.2023	2:00-2:59	Average	400.67	0.01	5.48	6.43	5.22	85.22	0.09
29.08.2023	3:00-3:59	Average	401.55	0.01	5.80	6.85	5.55	86.95	0.00
29.08.2023	4:00-4:59	Average	406.75	0.01	3.60	7.63	6.35	86.87	0.00
29.08.2023	5:00-5:59	Average	418.90	0.01	5.45	7.68	6.40	83.75	0.00
29.08.2023	6:00-6:59	Average	428.12	0.00	3.89	6.83	5.27	79.28	0.00
29.08.2023	7:00-7:59	Average	424.50	0.00	3.82	6.97	5.27	75.28	0.09
29.08.2023	8:00-8:59	Average	384.70	0.00	5.83	7.02	5.45	71.20	0.42
29.08.2023	9:00-9:59	Average	387.56	0.01	4.78	8.28	6.85	67.82	0.31
<b>Average</b>			414.84	0.01	4.17	7.05	5.53	74.34	0.15
<b>1 hour Minimum</b>			373.33	0.00	2.65	5.20	2.25	60.88	0.00
<b>1 hour Maximum</b>			508.52	0.01	5.83	9.53	8.83	86.95	0.46

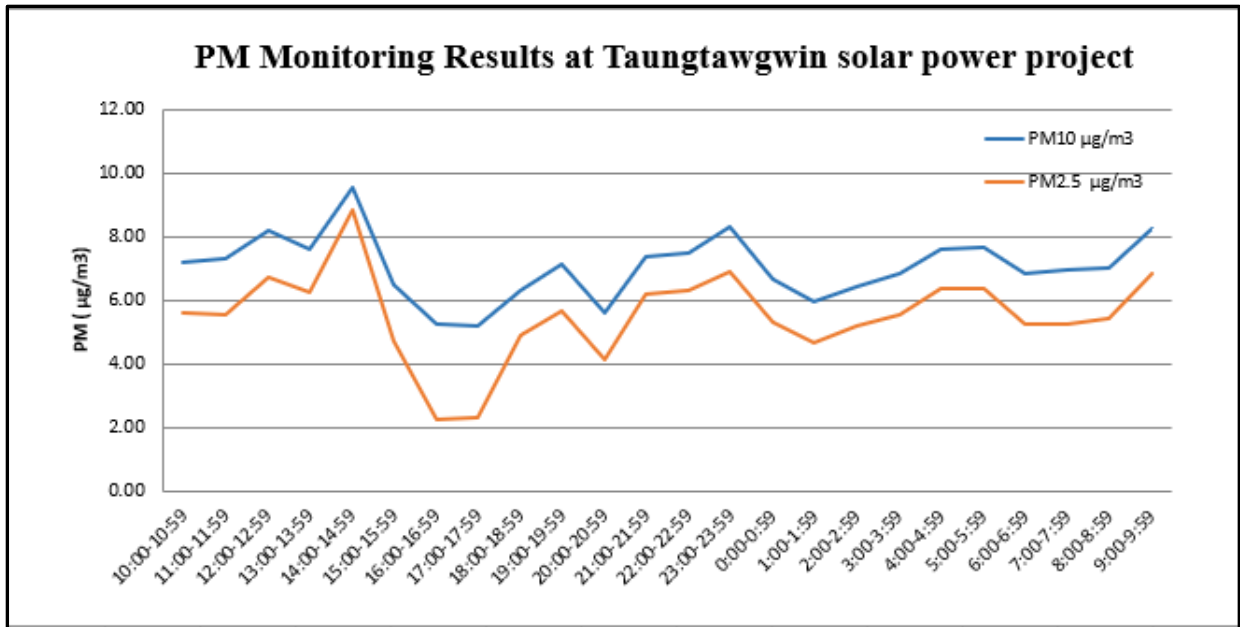


Figure 2.1.2: Fluctuation of Particulate Matters during diel cycle (28<sup>th</sup> to 29<sup>th</sup> August 2023)

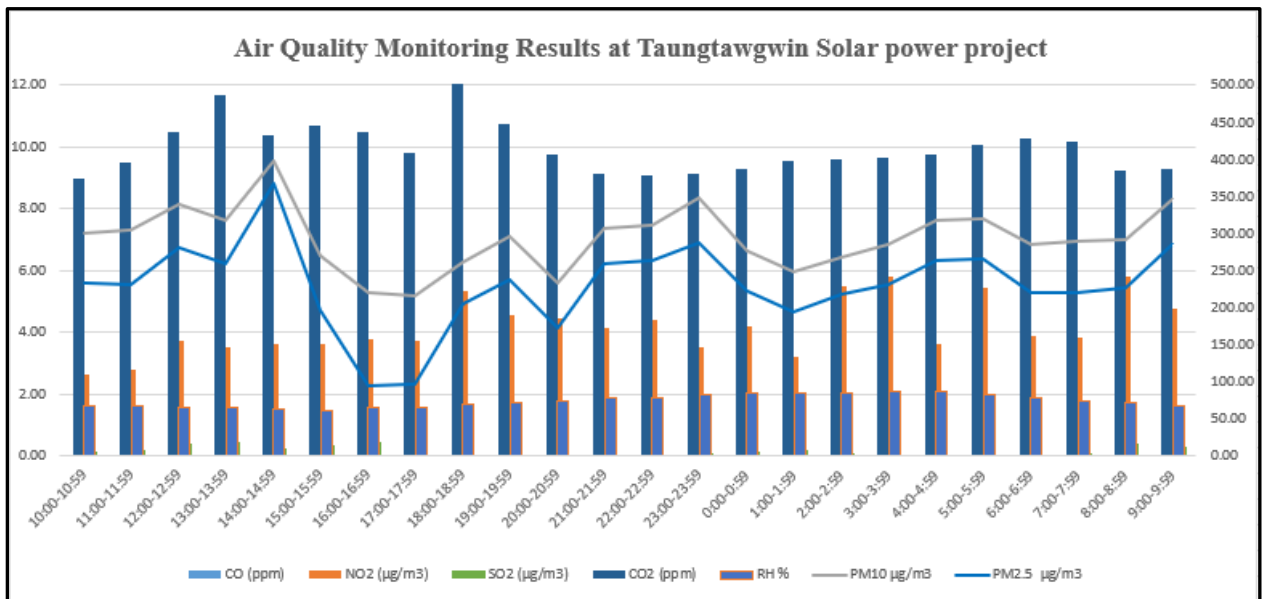


Figure 2.1.3: Fluctuation of Air Pollutants during diel cycle (28<sup>th</sup> to 29<sup>th</sup> August 2023)

Parameters	Baseline Results	Observed Values	NEQG	ACGIH	NAAQS	Unit	Averaging Period
PM <sub>10</sub>	25.13	7.05	50	-	-	µg/m <sup>3</sup>	24hrs
PM <sub>2.5</sub>	10.84	5.53	25	-	-	µg/m <sup>3</sup>	24hrs
CO	0.04	0.01	-	-	9	ppm	8hrs
CO <sub>2</sub>	451.72	427.3	-	5000	-	ppm	8hrs
SO <sub>2</sub>	0.14	0.15	20	-	-	µg/m <sup>3</sup>	24hrs
NO <sub>2</sub>	28.97	5.83	200	-	-	µg/m <sup>3</sup>	1hrs

Table 2.1.2: Observed Values of ambient air quality results from selected points.

Detail results with one-hour interval of pollutants are shown in **Table 2.1.1**. The average, peak and minimum values of results per day are calculated. As per above table 2.1.2, it can be seen that all parameters measured are within the National Environmental Quality (Emission) Guideline (NEQEG), American Conference of Governmental Industrial Hygienists (ACGIH) and National Ambient Air Quality Standards (NAAQS).

Table 2.1.3: Air Emission Levels (Standard)

No.	Parameter	Unit	Maximum Concentration			
			NAAQS	ACGIH	NEQEG	Average Period
1	Carbon Dioxide	ppm	-	5000	-	8-hour
2.	Carbon monoxide	ppm	9	-	-	8-hour
3.	Sulfur dioxide	$\mu\text{g}/\text{m}^3$	-	-	20	24-hour
4.	Nitrogen dioxide	$\mu\text{g}/\text{m}^3$	-	-	200	1 hour
5.	Particulate matter PM <sub>10</sub>	$\mu\text{g}/\text{m}^3$	-	-	50	24-hour
6.	Particulate matter PM <sub>2.5</sub>	$\mu\text{g}/\text{m}^3$	-	-	25	24-hour

Source: Myanmar National Environmental Quality (Emission) Guidelines, National Ambient Air Quality Standards (NAAQS), American Conference of Governmental Industrial Hygienists (ACGIH).

## 2.2 Ambient Noise Level

Ambient noise level for the proposed project was measured with Digital Sound Level Meter at two locations: one point was set in front of the main office as source point and one point was set near the labor camp as receptor point, on 28<sup>th</sup> to 29<sup>th</sup> August 2023. Measuring period is 24 hours continuously.



Figure 2.2.1: Noise Level Monitoring in Front of the Main Office



Figure 2.2.2: Noise Level Monitoring Near the Labor Camp

The observed values are described in **Table 2.2.1** and **Table 2.2.2**; and the following figures are noise level measurement at the proposed project.

Table 2.2.1: Observed Values of Noise Level Measurement in Front of the Main Office (Source)

No.	Date	Time	Observed Mean Value (Source)	Weight	Day/Night	Average
1	29.08.2023	7:00:13-7:59:13	48.33	A	Day	49.28
2	29.08.2023	8:00:13-8:59:13	51.63	A	Day	
3	29.08.2023	9:00:13-9:59:13	55.10	A	Day	
4	28.08.2023	10:00:13-10:59:13	49.70	A	Day	
5	28.08.2023	11:00:13-11:59:13	50.28	A	Day	
6	28.08.2023	12:00:13-12:59:13	50.13	A	Day	
7	28.08.2023	13:00:13-13:59:13	50.18	A	Day	
8	28.08.2023	14:00:13-14:59:13	51.14	A	Day	
9	28.08.2023	15:00:13-15:59:13	46.08	A	Day	
10	28.08.2023	16:00:13-16:59:13	44.69	A	Day	
11	28.08.2023	17:00:13-17:59:13	48.58	A	Day	
12	28.08.2023	18:00:13-18:59:13	47.88	A	Day	
13	28.08.2023	19:00:13-19:59:13	52.51	A	Day	
14	28.08.2023	20:00:13-20:59:13	47.69	A	Day	
15	28.08.2023	21:00:13-21:59:13	45.22	A	Day	
16	28.08.2023	22:00:13-22:59:13	47.86	A	Night	45.28
17	28.08.2023	23:00:13-23:59:13	47.17	A	Night	
18	29.08.2023	0:00:13-0:59:13	41.85	A	Night	
19	29.08.2023	1:00:13-1:59:13	44.86	A	Night	
20	29.08.2023	2:00:13-2:59:13	43.13	A	Night	
21	29.08.2023	3:00:13-3:59:13	44.66	A	Night	
22	29.08.2023	4:00:13-4:59:13	45.39	A	Night	
23	29.08.2023	5:00:13-5:59:13	46.75	A	Night	
24	29.08.2023	6:00:13-6:59:13	45.82	A	Night	
Average			47.78			



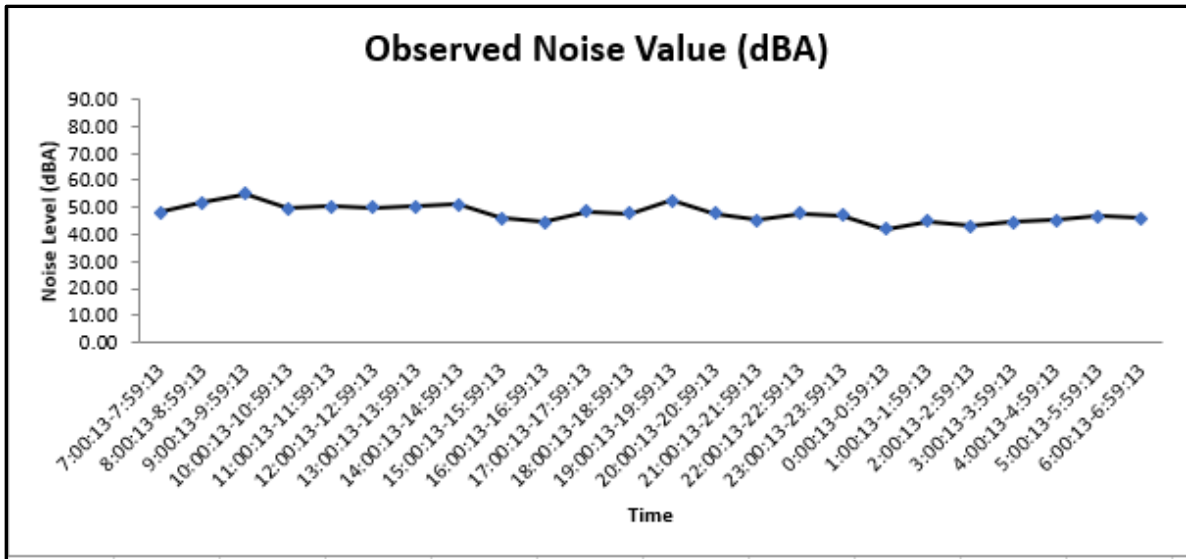


Figure 2.2.3: Noise Level at Point 1 (In Front of the Main Office)

Table 2.2.2: Observed Values of Noise Level Measurement Near the Labor Camp (receptor)

No.	Date	Time	Observed Mean Value (Source)	Weight	Day/Night	Average
1	29.08.2023	7:00:13-7:59:13	42.52	A	Day	46.37
2	29.08.2023	8:00:13-8:59:13	44.09	A	Day	
3	29.08.2023	9:00:13-9:59:13	44.23	A	Day	
4	28.08.2023	10:00:13-10:59:13	56.47	A	Day	
5	28.08.2023	11:00:13-11:59:13	42.71	A	Day	
6	28.08.2023	12:00:13-12:59:13	42.81	A	Day	
7	28.08.2023	13:00:13-13:59:13	55.27	A	Day	
8	28.08.2023	14:00:13-14:59:13	43.92	A	Day	
9	28.08.2023	15:00:13-15:59:13	41.78	A	Day	
10	28.08.2023	16:00:13-16:59:13	45.35	A	Day	
11	28.08.2023	17:00:13-17:59:13	46.24	A	Day	
12	28.08.2023	18:00:13-18:59:13	44.41	A	Day	
13	28.08.2023	19:00:13-19:59:13	48.87	A	Day	
14	28.08.2023	20:00:13-20:59:13	49.14	A	Day	
15	28.08.2023	21:00:13-21:59:13	47.65	A	Day	
16	28.08.2023	22:00:13-22:59:13	46.49	A	Night	43.39

17	28.08.2023	23:00:13-23:59:13	43.48	A	Night
18	29.08.2023	0:00:13-0:59:13	41.05	A	Night
19	29.08.2023	1:00:13-1:59:13	43.23	A	Night
20	29.08.2023	2:00:13-2:59:13	41.67	A	Night
21	29.08.2023	3:00:13-3:59:13	43.74	A	Night
22	29.08.2023	4:00:13-4:59:13	42.08	A	Night
23	29.08.2023	5:00:13-5:59:13	46.14	A	Night
24	29.08.2023	6:00:13-6:59:13	42.63	A	Night
Average			45.25		

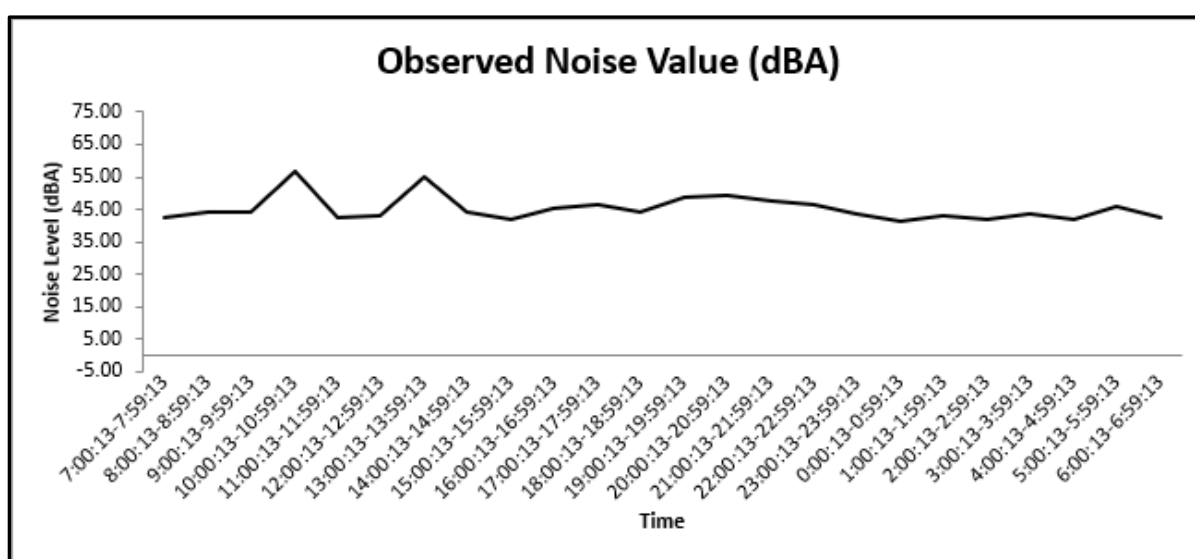


Figure 2.2.4: Noise Level at Point 2 (Near the Labor Camp)

Point	Taungdawgwin Solar Power Project	
	Day Time	Night Time
At source (In front of the main office)	49.28	45.28
<b>Guideline Values for Industrial</b>	<b>70</b>	<b>70</b>
At receptor (Near the labor camp)	46.37	43.39
<b>Guideline Values for Residential</b>	<b>55</b>	<b>45</b>
<b>Baseline Results at Point 1 (Project Site)</b>	52.92	41.55
<b>Baseline Results at Point 2 (Project Site)</b>	54.22	40.64

Table 2.2.3 Observed Ambient Noise Level Results from Selected Points

The observed values are compared with the National Environmental Quality (Emission) Guidelines as shown in **Table 2.2.3**, which indicates the separate level for industrial and residential points.

The observed noise values of daytime and night time at the project site point 1 (in front of the main office) (source) are 49.28 dB (A) and 45.28 dB (A). The observed noise values of daytime and night time at the project site point 2 (near the labor camp) (receptor) are 46.37 dB (A) and 43.39 dB (A). The observed daytime value and night time values for both point are lower than the guideline value.

### 2.3 Wind Speed and Direction

The following figures describe the wind speed and wind direction of the proposed project site on 28<sup>th</sup> to 29<sup>th</sup> August 2023. According to the data, the wind direction is as per following Error! Reference source not found.3.1 to Error! Reference source not found.3.2.

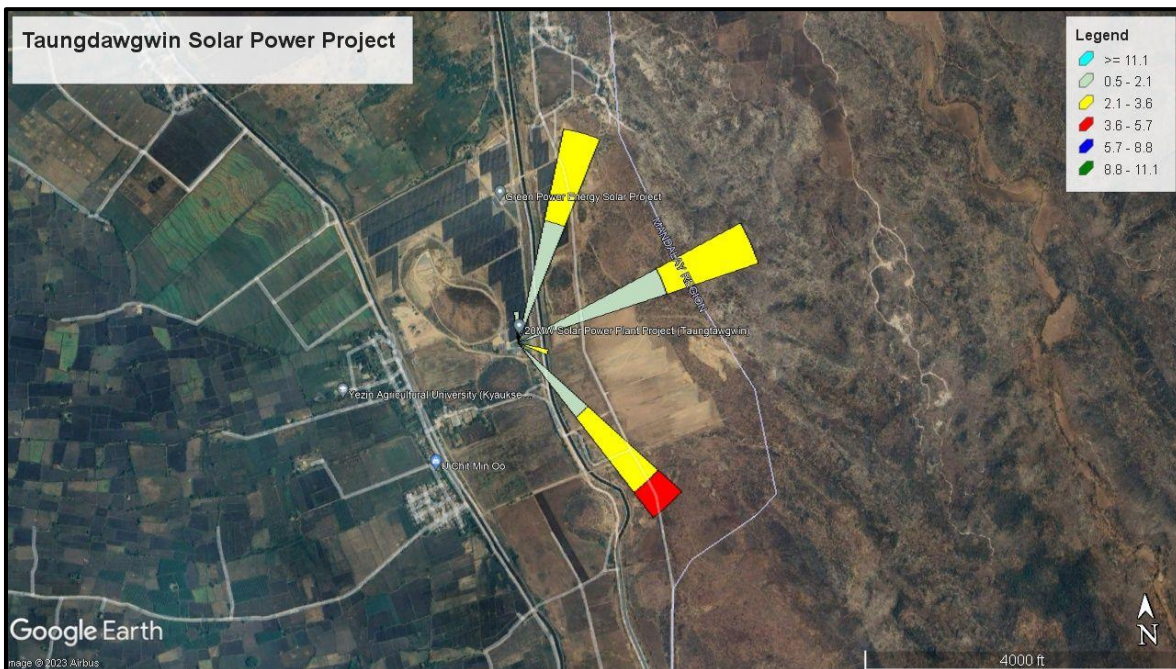


Figure 2.3.1: Wind Speed and Wind Direction (Blowing From) at Taungdawgwin Solar Power Project Site (28<sup>th</sup> to 29<sup>th</sup> August 2023)

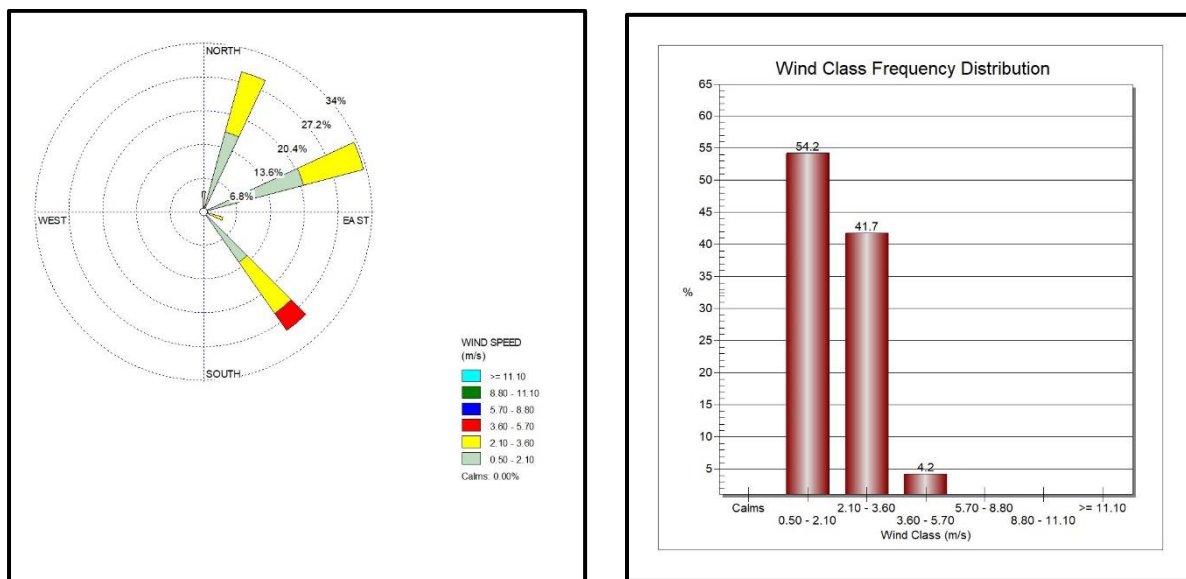


Figure 2.3.2: Wind Class Frequency Distribution at Taungdawgwin Solar Power Project Site (28<sup>th</sup> to 29<sup>th</sup> August 2023)

## 2.4 Water Quality Standards

Currently Myanmar does not have surface water quality standards for major rivers and its tributaries, natural and man-made streams or lakes, ground water, or reservoir water. Environmental conservation department is in the process of developing National Ambient Water Quality Standards based on the protection of aquatic life. It is recommended by the environmental specialist to compare the measured water quality results with the standards in **Table 2.4.1** below.

Table 2.4.1: Ambient water quality standards for the protection of aquatic life

Parameter	Unit	Concentration	Reference
Aluminum	mg/l	0.005 (if pH < 6.5) 0.1 (if pH > 6.5)	Australian and New Zealand guidelines for fresh and marine water quality. 2000. Australian and New Zealand Environment Conservation Council. Water Quality Guidelines for the Protection of Aquatic Life. 2016. Canadian Council of Ministers of the Environment. Metal mining technical guidance for environmental effects monitoring. 2012. Environment Canada.
Ammonia	mg/l	0.02	As above
Arsenic	mg/l	0.05	As above
Boron	mg/l	0.5	As above
Cadmium	mg/l	0.0002	As above
Chloride	mg/l	0.86	As above
Chromium (hexavalent)	mg/l	0.01	As above
Chromium (trivalent)	mg/l	0.0089	As above
Coliforms (total)	MPN/100ml	5000	As above
Coliforms (faecal)	MPN/100ml	1000	As above
Color	mg/l	Not significantly higher that seasonally adjusted background value	As above
Copper	mg/l	0.002	As above
Cyanide (free)	mg/l	0.005	As above
Dissolved oxygen	mg/l	6	As above
Ethanol	mg/l	1.4	As above
Fluoride	mg/l	0.2	As above
Iron	mg/l	0.3	As above
Lead	mg/l	0.001	As above
Manganese	mg/l	0.05	As above

Parameter	Unit	Concentration	Reference
Mercury	mg/l	0.0001	As above
Molybdenum	mg/l	0.073	As above
Naphthalene	mg/l	0.016	As above
Nickel	mg/l	0.015	As above
Nitrate	mg/l	5	As above
Nitrite	mg/l	0.06	As above
Oil & grease	-	Substantially absent, no iridescent sheen	As above
pH	-	6.5-9	As above
Phenols	mg/l	0.004	As above
Phosphorus	mg/l	0.15	As above
Selenium (total)	mg/l	0.005	As above
Silver	mg/l	0.0001	As above
Sulphide	mg/l	0.002	As above
Temperature	°C	< 2 increase	As above
Thallium	mg/l	0.004	As above
Total suspended solids	mg/l	10	As above
Tributyltin	mg/l	0.000008	As above
Turbidity	-	< 10% change	As above
Uranium	mg/l	0.015	As above
Zinc	mg/l	0.005	As above

## 2.5 Water quality

Surface water quality were recorded by on-site sampling was done at two selected locations and laboratory analysis at three selected locations systematically. The field surveys for environmental quality monitoring and sampling were done during 28<sup>th</sup> August 2023.

Objectives of the sampling and analysis of surface water quality and ground water quality is to understand the existing water quality at the selected locations and to monitor the impacts during the operation period.

### Water Quality Measurement

<b>Surveyor: Aung Moe Oo</b>	<b>Date: 28.8.2023</b>
<b>Location: Surface Water (from Myo Gyi Dam Channel)</b>	<b>Time: 12:00</b>
<b>Lat. &amp; Long.: 21°26'54.21"N, 96°17'12.70"E</b>	<b>Instrument: Horiba U-50</b>
<b>Temperature: 27.87°C</b>	

### Onsite Surface Water Measurement Results

Sr. No.	pH	Electrical Conductivity			DO (mg/l)	Turbidity (NTU)	Remarks
		EC (ms/cm)	TDS (g/l)	Salinity (ppt)			
1	7.61	0.3	0.17	0.1	10.83	3.89	-

### Water Quality Measurement

<b>Surveyor: Aung Moe Oo</b>	<b>Date: 28.8.2023</b>
<b>Location: Ground Water (from the project site)</b>	<b>Time: 04:30</b>
<b>Lat. &amp; Long.: 21°26'31.95"N, 96°17'9.66"E</b>	<b>Instrument: Horiba U-50</b>
<b>Temperature: 25.23°C</b>	

#### Onsite Ground Water Measurement Results

Sr. No.	pH	Electrical Conductivity			DO (mg/l)	Turbidity (NTU)	Remarks
		EC (ms/cm)	TDS (g/l)	Salinity (ppt)			
1	7.48	1.06	0.62	0.5	9.02	9.35	-

Table 2.5.1: Comparison of Surface Water Quality, Ground Water Quality and Waste Water Quality with Guidelines

Parameter	Unit	SWQ	GWQ	WWQ	International and National Guideline			
					A	B	C	D
Dissolved Oxygen (DO)	mg/l	5.37	4.82	-	-	-	6	-
Oil and Grease	mg/l	Nil	2	4	-	-	Substantially absent	10
Total Coliform	MPN/ml	-	230	11000	-	-	5	400
Total Dissolved Solids	mg/l	172	616	-	-	No guideline	-	-
Turbidity	NTU	4.28	10.22	-	-	Not mentioned	<10	-
Biochemical Oxygen Demand (BOD)	mg/l	0.47	0.5	0.49	-	-	-	30
Chemical Oxygen Demand (COD)	mg/l	1.2	1.2	1.6	-	-	-	125
Total Nitrogen	mg/l	0.48	0.48	0.83	-	-	-	10
Total Phosphorus	mg/l	0.014	0.018	0.02	-	-	-	2
Total Suspended Solids	mg/l	6.4	5.8	7.8	-	-	10	50
Potassium	mg/l	0.61	ND	-	-	-	-	-

SWQ = from Myo Gyi Dam Channel

GWQ = from the project site

WWQ = from the discharge water channel of the project site

A= WHO (Normally found in fresh water/surface water/ground water)

B= WHO (DW) (Health based guideline by the WHO)

C= Ambient water quality standards for the protection of aquatic life

D= National Environmental Quality Emission Guideline (Electric Power Transmission and Distribution)

According to the comparison of water quality results and the guidelines, all other parameters of surface water, ground water and waste water are below the limit except Total Coliform Count of waste water from the waste water drainage of the project site. These waste water should be released into the final out let only after getting settled in the sedimentation ponds.

## Photo Record for Water Quality Sampling



Figure 2.5.1: On-site Water Quality Measuring of Surface Water



Figure 2.5.2: Water Quality Sampling of Surface Water



Figure 2.5.3: On-site Water Quality Measuring of Ground Water



Figure 2.5.4: Water Quality Sampling of Ground Water




Figure 2.5.5: Water Quality Sampling of Waste Water



### 3. ENVIRONMENTAL MONITORING PLAN


#### 3.1 Monitoring records for Safety Plan



**GREEN POWER ENERGY COMPANY LIMITED.**  
 # 511-B, 5<sup>th</sup> Floor, Corner of Pyay Road & Hledan Road, Hledan Centre, Kamayut Township, Yangon, Myanmar.  
 Ph; +95 9 444805511 Email; greenpowerenergycold@gmail.com

1. ENVIRONMENTAL MORNITORING PLAN  
 1.1 Monitoring Records for Safety Plan

Monthly Record					
Date	Place	Activity	Organization	Number of	Remarks
April,2023	Working Area	Aware Training About PPE	Taung Daw Gwin Solar Power Plant	15	
May, 2023	Power Staion	Fire Safety Training	Taung Daw Gwin Solar Power Plant	50	
Iunc, 2023	Working Area	Electrical Safety Training	Taung Daw Gwin Solar Power Plant	17	
July, 2023	Power Staion	Provide PPE Safetv	Taung Daw Gwin Solar Power Plant	16	
August, 2023	Office Meeting Room	Health Care	Taung Daw Gwin Solar Power Plant	40	
September,2023	PV Field	Harzard and Safety Training	Taung Daw Gwin Solar Power Plant	20	



**GREEN POWER ENERGY COMPANY LIMITED.**  
 # 511-B, 5<sup>th</sup> Floor, Corner of Pyay Road & Hledan Road, Hledan Centre, Kamayut Township, Yangon, Myanmar.  
 Ph; +95 9 444805511 Email; greenpowerenergycold@gmail.com

1.2 Monitoring Records for Occupational Safety Equipment

Date	Place	Type	Quantity	Remark	Inspected By	Supervisor
1.september.2023	Store	Safety Shoe	24		U Zaw Myo Aung	U Kyaw Zin Htet
1.september.2023	Store	Safety Gloves	24		U Zaw Myo Aung	U Kyaw Zin Htet
1.september.2023	Store	Safety Helmet	24		U Zaw Myo Aung	U Kyaw Zin Htet
1.september.2023	Store	Safety Belt	24		U Zaw Myo Aung	U Kyaw Zin Htet

## Records of Health and Safety Plan Activities





## Emergency Contact List Attached in the Project Site

EMP Report For 20 MW Ground Mounted Solar Power Plant Project  
Proposed by Green Power Energy Co.,Ltd

**အရေးပေါ်အခြေအနေတုံ့ပြန်မှု အစီအစဉ်**

စီမံကိန်းလုပ်ငန်းအတွင်းမှ အရေးကြီး ဆက်သွယ်ရမည့် ဖုန်းနံပါတ်များ		
အမည်	ရာထူး	ဖုန်းနံပါတ်
ဦးကျော်ဇင်ထက်	စက်ရုံမှူး	09 259 201 955
ဦးဇော်ဇော်ဖြိုး	ဒု-စက်ရုံမှူး	09 777 858 349
ဦးဇော်မျိုးအောင်	လုပ်ငန်းခွင်အန္တရာယ်ကင်းရှင်းရေးအရာရှိ	09 775 900 410
ဦးမျိုးမင်းမြတ်	ကြီးကြပ်ရေးမှူး	09 792 707 988
ဦးနေမင်းထွန်း	ရှေ့ဦးသူနာပြု	09 449 872 330
ဦးငြိမ်းချမ်းထွေး	အရေးပေါ်အခြေအနေ ထိန်းချုပ်ရေးမှူး	09 977 049 321

အရေးကြီး ဆက်သွယ်ရမည့် ဒေသတွင်းဖုန်းနံပါတ်များ		
အမည်(ဌာန)	အကြောင်းအရာ	ဖုန်းနံပါတ်
မြို့နယ်မီးသတ်ဌာန	မီးလောင်ခြင်းအတွက်	09 267 780 853
တိုက်နယ်ရဲစခန်း	လုံခြုံရေးကိစ္စများအတွက်	09 757 757 042
အနီးဆုံးဆေးခန်း (သံရွာ/အာရောဂျီ)	ထိခိုက်ဒဏ်ရာရသူများအတွက်	09 780 573 818
အနီးဆုံးဆေးရုံ (သံရွာ)	ထိခိုက်ဒဏ်ရာရသူများအတွက်	09 421 209 833
မြို့နယ်လျှပ်စစ်ဌာန	လျှပ်စစ်မီးကိစ္စ	09 661 906 744
မြို့နယ်အထွေထွေ အုပ်ချုပ်ရေးဌာန	အထွေထွေ အုပ်ချုပ်ရေးကိစ္စ	

### Fire Extinguisher Check List





No	Date	Description	Location	Number	Units	Remarks
1	21.9.2023	Fire Extinguisher (50kg)	Power Station	2	Nos	
2	21.9.2023	Fire Extinguisher (10 kg)	Power Station	3	Nos	
3	21.9.2023	Fire Extinguisher (10 kg)	Briefing Hall	3	Nos	
4	21.9.2023	Fire Extinguisher (10 kg)	Office	2	Nos	
5	21.9.2023	Fire Extinguisher (5 kg)	6 Unit (1)	3	Nos	
6	21.9.2023	Fire Extinguisher (5 kg)	6 Unit (2)	3	Nos	
7	21.9.2023	Fire Extinguisher (5 kg)	6 Unit (3)	3	Nos	
8	21.9.2023	Fire Extinguisher (5 kg)	6 Unit (4)	3	Nos	
9	21.9.2023	Fire Extinguisher (5 kg)	Staff Housing	3	Nos	
10	21.9.2023	Fire Extinguisher (5 kg)	Store	3	Nos	
11	21.9.2023	Fire Extinguisher (5 kg)	Messing	3	Nos	
12	21.9.2023	Fire Extinguisher (10 kg)	Kitchen Room	2	Nos	
13	21.9.2023	Fire Extinguisher (5 kg)	Main Gate	1	Nos	
14	21.9.2023	Fire Extinguisher (5 kg)	Gate (1)	1	Nos	
15	21.9.2023	Fire Extinguisher (5 kg)	Gate (2)	1	Nos	
16	21.9.2023	Fire Extinguisher (5 kg)	On Hill Gate	1	Nos	
17	21.9.2023	Fire Extinguisher (5 kg)	Tower	1	Nos	
18	21.9.2023	Fire Extinguisher (10 kg)	Box X'mer (1)	3	Nos	
19	21.9.2023	Fire Extinguisher (10 kg)	Box X'mer (2)	3	Nos	
20	21.9.2023	Fire Extinguisher (10 kg)	Box X'mer (3)	3	Nos	
21	21.9.2023	Fire Extinguisher (10 kg)	Box X'mer (4)	3	Nos	

#### 4. Environmental Monitoring Record for Reforestation (Plantation)



စီမံကိန်းကြောင့် ပျက်စီးသွားသောနေရာများတွင် ဒေသနှင့်ကိုက်ညီသော သစ်ပင်များစိုက်ပျိုးထားခြင်း မြေပုံ



	စပျစ်စိုက်ခင်း အပင်(၄၀၀)		သရက်ပင်စိုက်ခင်း အပင် (၃၀)
	နဂါးမောက်စိုက်ခင်း အပင် (၁၀၀၀)		
	သင်္ဘောသီးပင်စိုက်ခင်း အပင် (၃၀၀)		

## 5. Records for CSR activities



**GREEN POWER ENERGY COMPANY LIMITED.**

# 511-B, 5<sup>th</sup> Floor, Corner of Pyay Road & Hledan Road, Hledan Centre, Kamayut Township, Yangon, Myanmar.  
Ph: +95 9 444805511 Email: greenpowerenergycoLtd@gmail.com

### 2. Records for CSR activities

Date	Place	Type	Amount (MMK)/Activites	Received By
October,2022	တောင်တော်တောင်	တောင်တော်ဘုရားလမ်း အသစ်ဖောက်လုပ်ခြင်း		
November,2022	သံဃာ့ဆေးရုံ	Renovated Civil & Electrical Work in Thamywa Hospital		
December,2022	သံဃာ့ဆေးရုံ	ဆေးဝါးလျှောက်ခြင်း		
January,2023	တောင်တော်တောင်	တောင်တော်တောင်တက်လမ်းသို့ စီးကြိုသွယ်တန်းပေးခြင်း		
May ,2023	မန္တလေးတိုင်းရုံး	သံဃာတော်အပါး(၁၀၂၆၈)ပါးအတွက် ဆွမ်းဆန်ခဲမီးလောင်လှူခြင်း		
June ,2023	သံဃာ့ဆေးရုံ	ဆေးဝါးလျှောက်ခြင်း		
August,2023	ဆိုလာစက်ရုံ	ဝါဆိုသက်န်းကပ်လှူခြင်း		



## Photo Records of CSR Activities



ပြည်ထောင်စုသမ္မတမြန်မာနိုင်ငံတော်အစိုးရ  
မန္တလေးတိုင်းဒေသကြီးအစိုးရအဖွဲ့ရုံး  
မန္တလေးမြို့



## ဂုဏ်ပြုမှတ်တမ်းရွာ

ကဆုန်လပြည့်နေ့တွင် သံဃာတော်အပါး (၁၀၂၆၈)ပါးအား ဆွမ်းဆန်စိမ်းလောင်းလှူရန်နှင့် လှူဖွယ်ပစ္စည်းများ ဆက်ကပ်လှူဒါန်း နိုင်ရန်အတွက် Green Power Energy Co.,Ltd မှ အလှူငွေကျပ် ၅,၀၀၀,၀၀၀/- (ကျပ်ငါးဆယ်သိန်းတိတိ)ကို စေတနာသဒ္ဓါတရား ထက်သန်စွာ လှူဒါန်းပါသဖြင့် ကျေးဇူးဥပကာယတင်ရှိပါကြောင်း မှတ်တမ်းတင်ဂုဏ်ပြုအပ်ပါသည်။

 ၂.၅.၂၇

ဝန်ကြီးချုပ်  
မန္တလေးတိုင်းဒေသကြီးအစိုးရအဖွဲ့

ရက်စွဲ။ ၂၀၂၃ခုနှစ်၊ မေလ ၂ ရက်

## 6. Records for GRM



**GREEN POWER ENERGY COMPANY LIMITED.**

# 511-B, 5<sup>th</sup> Floor, Corner of Pyay Road & Hledan Road, Hledan Centre, Kamayut Township, Yangon, Myanmar.  
Ph: +95 9 444805511 Email: greenpowerenergycold@gmail.com

### 3. Monitoring Records for GRM

Monthly Record					
Date	Place	Activity	Organization Or Individual	Action Plan	Recorded by
-	-	-	-	-	-

### GRM Organization of Taungdawgwin Solar Power Project Site

မကျေလည်မှုများ ဖြေရှင်းပေးရေး ကော်မတီ			
စဉ်	အမည်	တာဝန်	ဌာန
၁	ဦးကျော်စိုး	ဥက္ကဋ္ဌ	ဝါတပ်
၂	ဦးစော်မျိုးအောင်	အတွင်းရေးမှူး	GPE Co., Ltd
၃	ဦးရွှေမန်း	အဖွဲ့ဝင် (၁)	မြစ်သားမြို့နယ်၊ လွန်ကျော် အမှတ်(၃)
၄	ဦးအောင်ကြည်	အဖွဲ့ဝင် (၂)	မြစ်သားမြို့နယ်၊ လွန်ကျော် အမှတ်(၃)
၅	ဦးဌေးမင်း	အဖွဲ့ဝင် (၃)	GPE Co., Ltd

## 7. Records for waste disposal



**GREEN POWER ENERGY COMPANY LIMITED.**  
 # 511-B, 5<sup>th</sup> Floor, Corner of Pyay Road & Hledan Road, Hledan Centre, Kamayut Township, Yangon, Myanmar.  
 Ph: +95 9 444805311 Email: greenpowerenergycold@gmail.com

### 4. Records for Waste Disposal

Date	Place	Type	Amount	Inspected By
15.Apr.2022	ဝန်ထမ်းလိုင်းများ / ရုံး	အမှိုက်စို / အမှိုက်ခြောက်	55 Kg	U Zaw Myo Aung
30.Apr.2022	ဝန်ထမ်းလိုင်းများ / ရုံး	အမှိုက်စို / အမှိုက်ခြောက်	55 Kg	U Zaw Myo Aung
15.May.2022	ဝန်ထမ်းလိုင်းများ / ရုံး	အမှိုက်စို / အမှိုက်ခြောက်	55 Kg	U Zaw Myo Aung
31.May.2022	ဝန်ထမ်းလိုင်းများ / ရုံး	အမှိုက်စို / အမှိုက်ခြောက်	55 Kg	U Zaw Myo Aung
15.June.2022	ဝန်ထမ်းလိုင်းများ / ရုံး	အမှိုက်စို / အမှိုက်ခြောက်	45 Kg	U Zaw Myo Aung
30.June.2022	ဝန်ထမ်းလိုင်းများ / ရုံး	အမှိုက်စို / အမှိုက်ခြောက်	55 Kg	U Zaw Myo Aung
15.July.2023	ဝန်ထမ်းလိုင်းများ / ရုံး	အမှိုက်စို / အမှိုက်ခြောက်	45 Kg	U Zaw Myo Aung
31.July.2023	ဝန်ထမ်းလိုင်းများ / ရုံး	အမှိုက်စို / အမှိုက်ခြောက်	44 Kg	U Zaw Myo Aung
15.Aug.2023	ဝန်ထမ်းလိုင်းများ / ရုံး	အမှိုက်စို / အမှိုက်ခြောက်	30 Kg	U Zaw Myo Aung
31.Aug.2023	ဝန်ထမ်းလိုင်းများ / ရုံး	အမှိုက်စို / အမှိုက်ခြောက်	30 Kg	U Zaw Myo Aung
15.Sep.2023	ဝန်ထမ်းလိုင်းများ / ရုံး	အမှိုက်စို / အမှိုက်ခြောက်	35 Kg	U Zaw Myo Aung
30.Sep.2023	ဝန်ထမ်းလိုင်းများ / ရုံး	အမှိုက်စို / အမှိုက်ခြောက်	40 Kg	U Zaw Myo Aung

### Records for waste disposal





## Appendix 1 (Water results)



Myanmar Innovation Group of Co., Ltd  
 Address : No. (9), Sabae Housing, Pyi Htaung Su Road,  
 (26) Ward, South Dagon Tsp, Yangon, Myanmar.  
 Tel : 09-893 767 424  
 E-mail : info@prolabmyanmar.com

### LABORATORY ANALYSIS REPORT

- 1 Client Name : Taung Daw Gwin Solar Power Project
- 2 Location : Kyaukse
- 3 Type of Sample : SW
- 4 Sample No. : 00768/2023
- 5 Contact Person : Ko Khin Zaw Min
- 6 Phone No. : 09-797005176
- 7 Date Received : 29.08.2023
- 8 Date of Test Performed : 29.08.2023
- 9 Date of Issued : 06.09.2023
- 10 Result :

No.	Parameter	Result	Unit	WHO STD 2018	Method
1	Dissolved Oxygen	5.37	mg/L	6 mg/L	Hanna HI98193 - DO and BOD Meter
2	Oil and Grease	Nil	mg/L	NA	<sup>(a)</sup> 5520D, Soxhlet Extraction Method
3	Salinity	5.42	mg/L	NA	<sup>(a)</sup> 4500-Cl <sup>-</sup> B, Argentometric Method

**Remark:**

**This certificate is issued only for the receipt of the test sample.**

<sup>(a)</sup> American Public Health Association, Standard Methods for the Examination of Water and Wastewater.

**Tested By**

Name : NAW EH THA KU  
 Position : Laboratory Technician  
 Signature : .....*Eh*.....

**Approved By**

Name : KYAWT KYAWT YIN  
 Position : Technical Consultant Manager  
 Signature : .....*Ky*.....



LAB-FO-024-00

**LABORATORY ANALYSIS REPORT**

- 1 Client Name : Taung Daw Gwin Solar Power Project
- 2 Location : Kyaukse
- 3 Type of Sample : WW
- 4 Sample No. : 00769/2023
- 5 Contact Person : Ko Khin Zaw Min
- 6 Phone No. : 09-797005176
- 7 Date Received : 29.08.2023
- 8 Date of Test Performed : 29.08.2023
- 9 Date of Issued : 06.09.2023
- 10 Result :

No.	Parameter	Result	Unit	WHO STD 2018	Method
1	Oil and Grease	4	mg/L	-	<sup>(a)</sup> 5520D, Soxhlet Extraction Method
2	Total Coliform	110	MPN/ml	-	FDA-BAM: MPN Method

**Remark:**

This certificate is issued only for the receipt of the test sample.

Dispose treated waste water according to state and local regulations.

<sup>(a)</sup> American Public Health Association, Standard Methods for the Examination of Water and Wastewater.

**Tested By**

Name : NAW EH THA KU  
Position : Laboratory Technician  
Signature : .....

**Approved By**

Name : KYAWT KYAWT YIN  
Position : Technical Consultant Manager  
Signature : .....



**LABORATORY ANALYSIS REPORT**

- 1 Client Name : Taung Daw Gwin Solar Power Project
- 2 Location : Kyaukse
- 3 Type of Sample : GW
- 4 Sample No. : 00770/2023
- 5 Contact Person : Ko Khin Zaw Min
- 6 Phone No. : 09-797005176
- 7 Date Received : 29.08.2023
- 8 Date of Test Performed : 29.08.2023
- 9 Date of Issued : 06.09.2023
- 10 Result :

No.	Parameter	Result	Unit	WHO STD 2018	Method
1	Dissolved Oxygen	4.82	mg/L	6 mg/L	Hanna HI98193 - DO and BOD Meter
2	Oil and Grease	2	mg/L	NA	<sup>(1)</sup> 5520D, Soxhlet Extraction Method
3	Salinity	37.92	mg/l.	NA	<sup>(1)</sup> 4500-Cl <sup>-</sup> B, Argentometric Method
4	Total Coliform	2.3	MPN/ml	ND per 100 mL	FDA-BAM: MPN Method

**Remark:**

**This certificate is issued only for the receipt of the test sample.**

<sup>(1)</sup> American Public Health Association, Standard Methods for the Examination of Water and Wastewater.

**Tested By**

Name : NAW EH THA KU  
Position : Laboratory Technician  
Signature : .....*Em*.....

**Approved By**

Name : KYAWT KYAWT YIN  
Position : Technical Consultant Manager  
Signature : .....*Ky*.....



LAB-FO-024-00





The Government of the Republic of the Union of Myanmar  
Ministry of Natural Resources and Environmental Conservation  
Department of Forest  
Forest Research Institute  
Water Quality Laboratory, Yezin



Ref: WQL/0252/2023  
Date: 18-9-2023

ANALYTICAL TEST REPORT

Customer Name: **Taung Taw Gwin Solar Power Project**

Customer Address :

Assignment number	WL/2023-80	Sampling Location	
Sample number	1	Sampling Date	
Sample type	Waste Water	Sample received date	28-8-2023
Comments			

Parameter	Result	Unit	Method reference	Instruments
pH	7.98	-	ISO 10523:2008	ManTech Robot (PC-1300-475E)
BOD	0.49	mg/L	Potentiometric	YSI ProDO Tester
COD	1.6	mg/L	Titrimetic	Titration
Total Nitrogen	0.83	mg/L	Kjeldahl	Kjeldahl distillation assembly
Total Phosphorus	20.48	µg /L	NS 4725	SFA(SKALAR SAN plus Analyzer) SA 3000/5000, SA 1100
Total Suspended Solids	7.8	mg/L	NS 4733:1983	Circulation and Filtration System

Remark: This certificate is issued only for the receipt of the test sample.

Tested by

Signature :

Name : Dr. Thida Cho  
Assistant Research Officer

Approved by

Signature :

Name : Dr. Thida Swe  
Assistant Research Officer



The Government of the Republic of the Union of Myanmar  
 Ministry of Natural Resources and Environmental Conservation  
 Department of Forest  
 Forest Research Institute  
 Water Quality Laboratory, Yezin



Ref : WQL/0253/2023  
 Date:18-9-2023

ANALYTICAL TEST REPORT

Customer Name: **Taung Taw Gwin Solar Power Project**

Customer Address :

Assignment number	WL/2023-80	Sampling Location	
Sample number	2	Sampling Date	
Sample type	Ground Water	Sample received date	28-8-2023
Comments			

Parameter	Result	Unit	Method reference	Instruments
pH	7.48	-	ISO 10523:2008	ManTech Robot (PC-1300-475E)
Turbidity	10.22	FNU	ISO 7027:1999	ManTech Robot (MT-165-981)
Conductivity	104.93	mS/m	NS-ISO 7888:1993	ManTech Conductivity, Model 4510 Conductivity/TDS meter
BOD	0.5	mg/L	Potentiometric	YSI ProDO Tester
COD	1.2	mg/L	Titrimetric	Titration
Potassium	ND	mg/L	ISO 10304-1: 2009	Ion Chromatography (Thermo Scientific, DIONEX AQUION)
Total Dissolved Solids	616	mg/L	Potentiometric	PROZOR® TDS&EC Test Meter
Total Nitrogen	0.48	mg/L	Kjeldahl	Kjeldahl distillation assembly
Total Phosphorus	17.67	µg /L	NS 4725	SFA(SKALAR SAN plus Analyzer) SA 3000/5000,SA 1100
Total Suspended Solids	5.8	mg/L	NS 4733:1983	Circulation and Filtration System

Remark: This certificate is issued only for the receipt of the test sample.

Tested by

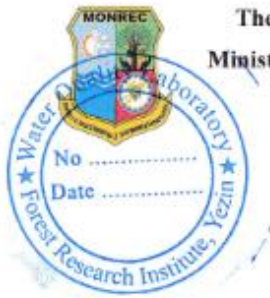
Signature :

Name : Dr. Thida Cho  
 Assistant Research Officer

Approved by

Signature :

Name : Dr. Thida Swe  
 Assistant Research Officer



The Government of the Republic of the Union of Myanmar  
 Ministry of Natural Resources and Environmental Conservation  
 Department of Forest  
 Forest Research Institute  
 Water Quality Laboratory, Yezin



Ref : WQL/0254/2023  
 Date:18-9-2023

ANALYTICAL TEST REPORT

Customer Name: **Taung Taw Gwin Solar Power Project**  
 Customer Address :

Assignment number	WL/2023-80	Sampling Location	
Sample number	3	Sampling Date	
Sample type	Surface Water	Sample received date	28-8-2023
Comments			

Parameter	Result	Unit	Method reference	Instruments
pH	7.61	-	ISO 10523:2008	ManTech Robot (PC-1300-475E)
Turbidity	4.28	FNU	ISO 7027:1999	ManTech Robot (MT-165-981)
Conductivity	30.15	mS/m	NS-ISO 7888:1993	ManTech Conductivity, Model 4510 Conductivity/TDS meter
BOD	0.47	mg/L	Potentiometric	YSI ProDO Tester
COD	1.2	mg/L	Titrimetric	Titration
Potassium	0.61	mg/L	ISO 10304-1: 2009	Ion Chromatography (Thermo Scientific, DIONEX AQUION)
Total Dissolved Solids	172	mg/L	Potentiometric	PROZOR® TDS&EC Test Meter
Total Nitrogen	0.48	mg/L	Kjeldahl	Kjeldahl distillation assembly
Total Phosphorus	13.94	µg /L	NS 4725	SFA(SKALAR SAN plus Analyzer) SA 3000/5000,SA 1100
Total Suspended Solids	6.4	mg/L	NS 4733:1983	Circulation and Filtration System

Remark: This certificate is issued only for the receipt of the test sample.

Tested by

Signature :

Name : Dr. Thida Cho  
 Assistant Research Officer

Approved by

Signature :

Name : Dr. Thida Swe  
 Assistant Research Officer

## Appendix 2 (Attendance List of Environmental Awareness Training)

Environmental Training တွင် တက်ရောက်သူများ စာရင်း (Attendance List)

ရက်စွဲ: ၂၀၂၃ ခုနှစ်၊ ဩဂုတ်လ (၂၈) ရက်

စဉ်	အမည်	ဌာန	ရာထူး	ဆက်သွယ်ရန် ဖုန်းနံပါတ်	လက်မှတ်	မှတ်ချက်
၁	ဦးကျော်အောင်	EP	EE	၀၇-၂၅၇၂၀၂၁၅၅၅	<i>[Signature]</i>	
၂	ဒေါ်ခင်အေးအေး	EP	JE	၀၇-၄၅၄၀၄၀၈၃၃၈	<i>[Signature]</i>	
၃	ဒေါ်အိမ်မိုး	EP	JE	၀၇-၇၇၆၃၀၈၃၃၀	<i>[Signature]</i>	
၄	ဒေါ်စိုစို	EP	JE	၀၇-၄၅၆၄၄၄၁၇၂	<i>[Signature]</i>	
၅	ဒေါ်အိမ်မိုးအိမ်	EP	JE	၀၇-၇၇၇၇၄၂၁၃၇	<i>[Signature]</i>	
၆	ဒေါ်ဇော်ဇော်	EP	JE	၀၇-၇၈၂၇၃၄၇၁၅	<i>[Signature]</i>	
၇	ဒေါ်ပန်းအိမ်မိုး	Account	Cashier	၀၇-၈၈၇၀၁၀၈၅၅	<i>[Signature]</i>	
၈						
၉						
၁၀						
၁၁						
၁၂						
၁၃						
၁၄						
၁၅						