



**Figure 3-9 photograph of overhead water tank**



**Figure 3-10 photographs of water treatment plant**

**Water treatment plant**

At the proposed project, water treatment plant was installed and its capacity is about 7000 L/hr and it was contracted with Water Treatment Engineering. Some particulars were extracted from the quotation and shown as follows and quotation was shown at **Appendix (V)**.

- Capacity 7000 L/h
- Booster Pump 2HP  
Accessories - pressure tank, Switch, Gauge
- Sand Filter 18"D + 65"H  
Fiberglass Reinforced Plastic (FRP)
- Dion Filter 18"D 65"H  
Fiberglass Reinforced Plastic (FRP)
- Activated Carbon Filter 18"D 65"H

Fiberglass Reinforced Plastic (FRP)

- Micron Filter                      Plastic  
20" housing  
20" p p filter (5 micron)
- Ultra Violet Sterilizer    3"D + 37"L  
Stainless Steel

**Process in brief**

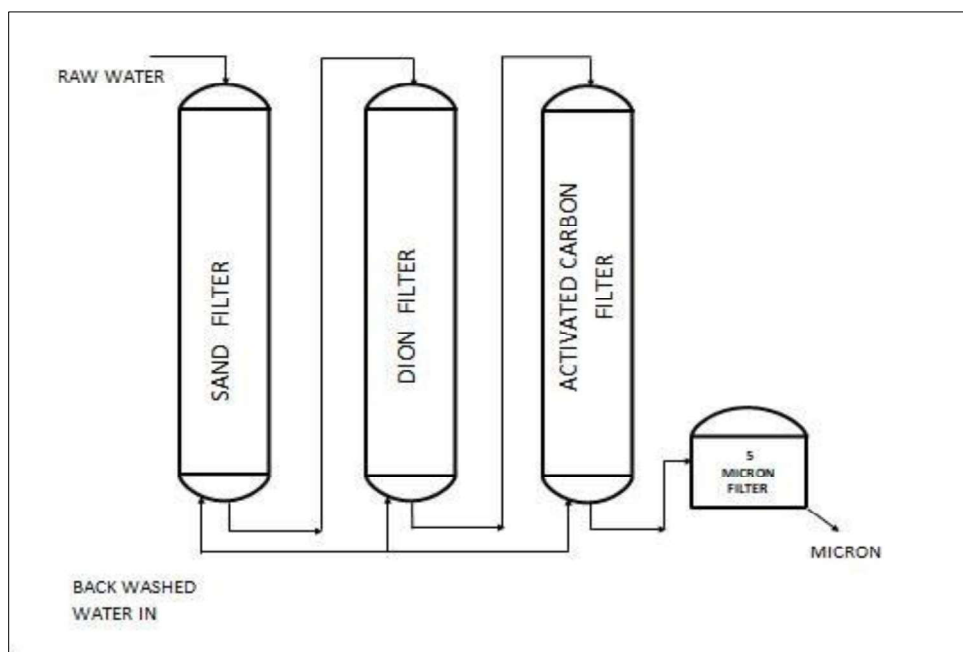
Raw water is pumped in Sand Filter, exchange filter, activated carbon filter, micron filter and ultra violet sterilizer in series.

**Function of each section is as follow**

- Sand filter                      - Remove the medium particles
- Exchange filter                - Remove the cat and an ion
- Activated Carbon filter- Remove the odor and bad taste
- Micron filter                    - Remove the fire particles larger than 5 micron
- Ultra violet sterilizer - Sterilization, (kill the microorganism)

After passing water treatment plant, the affluent be clean, good taste and odor, free from micro-organism and in drinking water standards. It depends upon the influence water quality.

**Water Treatment Process Plant Diagram**



**3.3.8.2 Energy usage**

**Electrical Source and Usage**

Electricity will be mainly sourced from National Electricity Gridline from YESC but Backup 250 KVA Generator will be also installed for



emergency use when power outage. The project proponent will submit to the YESC to get the electricity permit. The study area has an existing electrical infrastructure that may be able to feed the development. Estimated Annual electricity requirement is 45 MW.

The photograph of transformer and generator are shown at **Fig 3-11** and **Fig 3-12** respectively.



**Figure 3-11 photograph of transformer; 537 H.P**



**Figure 3-12 photograph of generator, 250 KVA**

### **3.3.8.3 Fuel Usage**

Diesel will be mainly used for generators to generate the electricity and for transportation. The annual usage amount of diesel is approximately (420) gallons and required fuel is available by retail purchasing and stored at 200 liter mild steel drums.



Figure 3-13 Diesel storage condition

### 3.3.9 Wastewater Treatment Plant

After reconstruction/renovation of project on 2023, test run and commercial production had been started on 2024. There is wastewater treatment plant and operation. Wastewater treatment plant was installed and run by Golden Ozone General Trading Co., Ltd. [for waste water Treatment System (13m<sup>3</sup>/day)]. Two parties as GOG and Nippon Paint took agreement to install and run the wastewater treatment plant (13m<sup>3</sup>/day) by former for the latter. Details of contract document were shown as **Appendix VII**. The followings were extracted from contract.

#### A. Guarantee Treated Water Quality

pH < 6~9

Total Suspended Solid (TSS) < 50 ppm (with 520 lit/hr flow rate)

Total Dissolved Solid (TDS) < 1800 ppm

Biological Oxygen Demand < 30 ppm (with 520 lit/hr flow rate)

Chemical Oxygen Demand < 125 ppm (with 520 lit/hr flow rate)

#### B. Limited Influent Quality

pH < 6~9

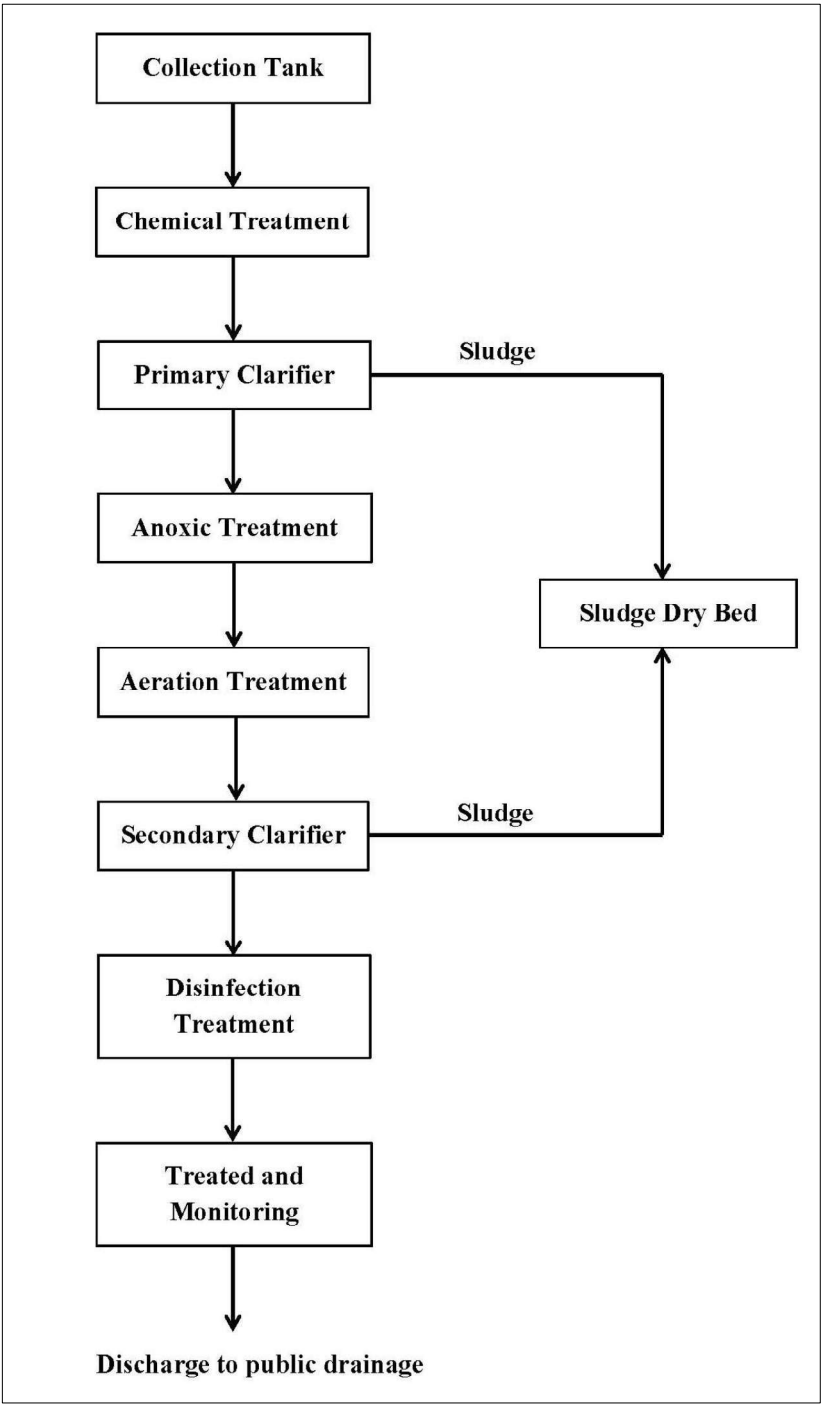
Total Suspended Solid (TSS) < 81000 ppm

Total Dissolved Solid (TDS) < 2000 ppm

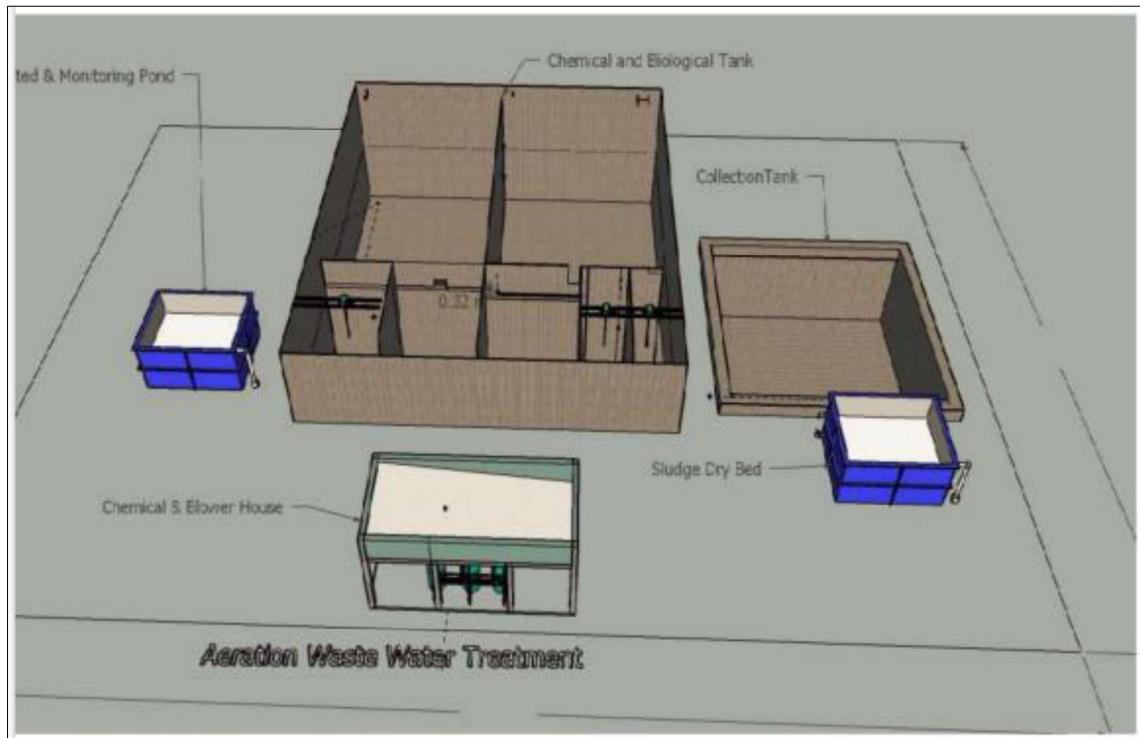
Biological Oxygen Demand < 520 ppm

Chemical Oxygen Demand < 12800 ppm

C. Treatment System Flow Chart



D. Treatment Plant Overview Drawing



#### **E. Chemical Using**

- Anion Polymer (Flocculent)
- Alum Liquid (Coagulant)
- NaOH (pH control)

#### **F. ANOXIC wastewater Treatment**

Anoxic wastewater treatment is the chemical and biological treatment that reduces nitrate, phosphorus and other residual organics and solids in wastewater effluent after primary and secondary treatment.

#### **G. MICROORGANISM**

Microorganism used on ANOXIC process was available from BIOWISH TECHNOLOGIES INTERNATIONAL INC and shown as following.



**Figure 3-14 Microorganism used in wastewater treatment plant and photo of adding to treatment plant**

### Wastewater Treatment Process

Capacity - 13 m<sup>3</sup>/ day

Treatment Process - chemical and biological treatment

Detail of wastewater treatment plant is shown as follows. Wastewater from paint production process and domestic such as office, toilet, etc. is about 450gal/day (1.70344m<sup>3</sup>/day) and wastewater is temporary stored in the collection tank. In the chemical treatment step, there are two systems:

- (1) Coagulation by ACH
- (2) Flocculation and Sedimentation by Polymer

In the Coagulation process where chemicals are added to destabilize suspended particles, allowing them to clump together for easier removal. ACH (Aluminum Chlorohydrate) is a highly effective coagulant used in wastewater treatment. ACH is added to raw water, where it dissociates and forms aluminum hydroxide complexes. The positively charged aluminum species neutralize the negative charge of suspended particles (such as dirt, organic matter, and microorganisms). The neutralized particles begin to aggregate and form larger clumps called "flocs".

Flocculation and sedimentation are crucial steps in water and wastewater treatment for removing suspended solids and impurities. When polymers are used as flocculants, they enhance the aggregation of particles, leading to improved sedimentation. Flocculation is the process of agglomerating destabilized particles into



larger clumps (flocs) that can be easily settled or filtered out. After flocculation, the flocs settle by gravity in the sedimentation process.

After chemical treatment, waste water is sent to the primary clarifier that is a settling tank which allows wastewater to slow down, enabling heavy solids(sludge) to sink to the bottom and lighter materials (scum, grease and oil) to float to the surface and sludge were removed. The benefits of this step are

- Reduces organic load on secondary treatment systems
- Removes 50-70% of suspended solids (TSS) and around 30-40% of BOD (Biochemical Oxygen Demand)

Remaining wastewater was treated in anoxic treatment tank. Dos Biological enzyme is used in this treatment. Anoxic tank is used before aeration for pre-denitrification and used for both nitrogen and phosphorous removal. This treatment is enhancing nutrient removal in advanced treatment. The benefits of Anoxic Treatment are

- Reduces Nitrogen Pollution –Prevents harmful algal blooms.
- Lower Oxygen Demand – Reduces aeration costs compared to nitrification.
- Improves Water Quality – Reduces ammonia and nitrate discharge

Aeration tank reduces BOD of waste water passed through the Anoxic treatment and Dos Biological enzyme is put into the aeration tank to achieve the treatment. The benefits of this step are

- Bacteria break down organic matter, reducing Biochemical Oxygen Demand (BOD) and Chemical Oxygen Demand (COD)
- Converts ammonia ( $\text{NH}_3$ ) into nitrate ( $\text{NH}_3^-$ ), preventing toxic buildup

In the Secondary Clarifier, solid – liquid separation, sludge collection and effluent clarification are take places.

After treatment in the secondary clarifier, Disinfection Treatment, the final stage in waste water treatment is carried out. That stage aims to eliminate harmful pathogens, bacteria, viruses and parasites before the treated effluent is discharged into water bodies or reused.

Finally monitoring and testing the physical parameters and chemical parameters are carried out to ensure compliance and environmental safety and then discharge to public drainage or use back for toilet water. Sludge dry bed from Primary and Secondary Clarifier is stored in sludge dry tank and finally disposed by Dowa. Sludge dry tank is described in Figure 3-16.

The estimated daily wastewater generation from activities within the project is 450 gallons per day(1.70344 m<sup>3</sup>/day), while the design capacity of the project's Wastewater Treatment Plant is 13 m<sup>3</sup>/day. From analyzed wastewater's results of Section 4.5.2.8.3, all analyzed data are in standard. Therefore, it is assessed that the design capacity of the Wastewater Treatment Plant is sufficient to carry out daily wastewater treatment operations and effectively reduce potential adverse impacts.

## **4 Description of the Environment**

### **4.1 Introduction**

In this chapter, the existing environment, environmental profile and secondary and primary information for the proposed project are described. This section includes the description of the study area's socio-economic, cultural and visual, physical and biological characteristics. For the purpose of characterization and quantification of various pollutants, visits were made and detailed field studies were conducted in each category.

The proposed project site is located in Plot No. 44, Myay Taing Block No. 24, Ngwe Pin Lal Industrial Zone, Hlaing Thar Yar Township, Yangon Region. The factory area is 2.237 acres. Ngwe Pin Lal Industrial Zone 3 had been established since 2003 and Zone area is about 204.23 acres. This zone has been operating with various manufacturing such as Food Manufacturing, Garments, Textile and Leather Products Manufacturing, Wood Manufacturing, Chemicals Manufacturing, Metal, Machinery, Electronics and Printing.

### **4.2 Study Limit**

Ngwe Pin Lal Industrial Zone area which located Nippon Paint Factory had already established with a lot of factories and location which said factory plans to operate have the existing facilities. It is necessary to describe the environmental and social conditions of a refined 'Study Area'. The Study Area refers to the area that needs to be considered in order to adequately understand and describe the baseline conditions likely to be affected by the project. The study area includes consideration for the potential environmental, social and health interactions associated with the project, and must consider downstream impacts, for example those associated with such elements as potential aquatic discharges, emissions to air and discharges to soil.

There are four townships, Hlaing Thar Yar, Shwe Pyi Thar, Htantabin and Insein Townships as surroundings of the proposed project. For this Project, based on examination of the project activities, the geographical location of factory area and their potential impact extent, GMES (Environmental Consultancy Service) has defined the overall Study Area boundaries to be generally limited to within a 2 km radius of Factory Area (i.e. Center of Factory Area). The location of townships and overall study area of the project was shown at **Figure 4-1**.

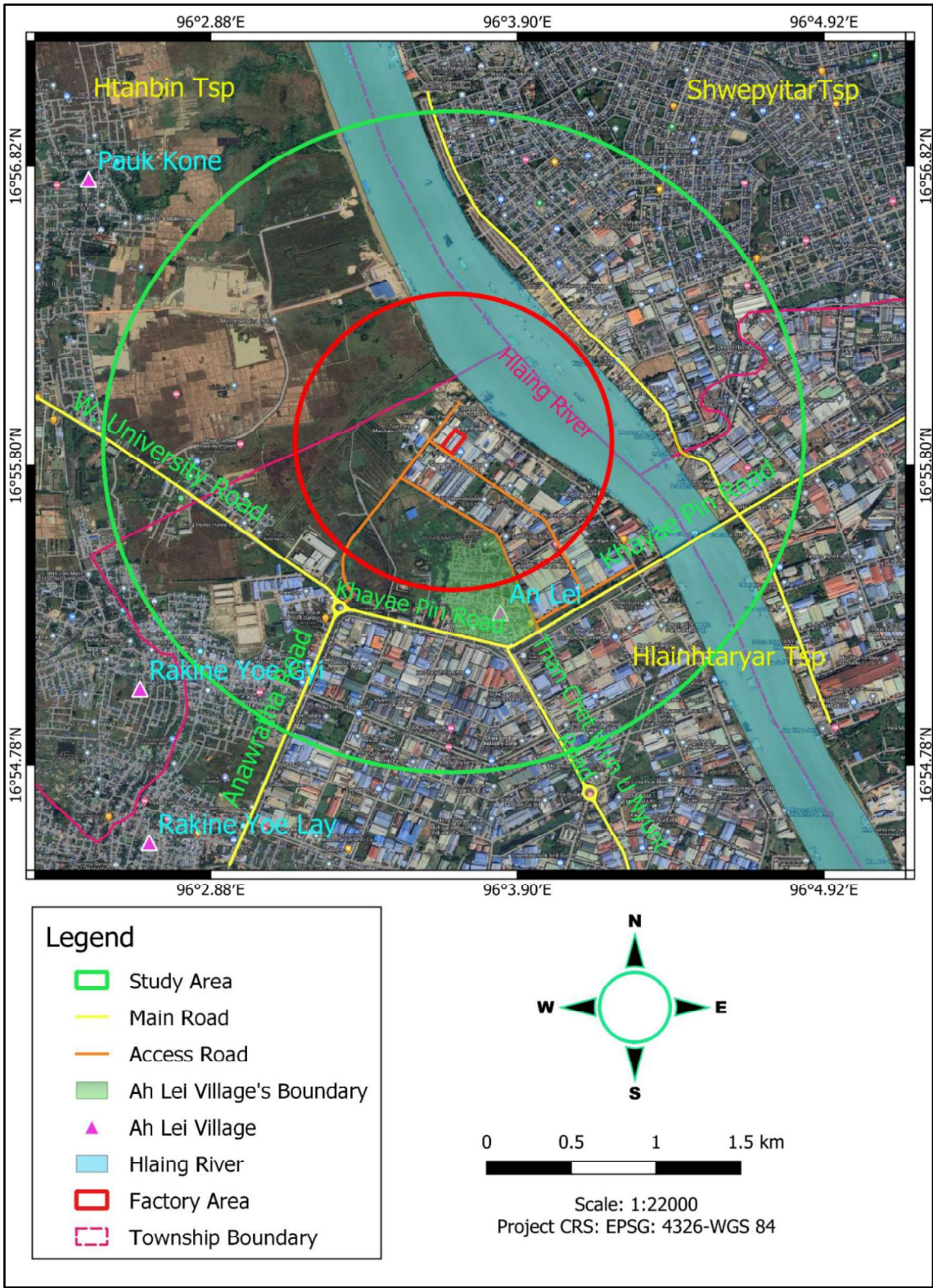


Figure 4-1 Overall Project Study Area



#### 4.2.1 Surrounding Villages

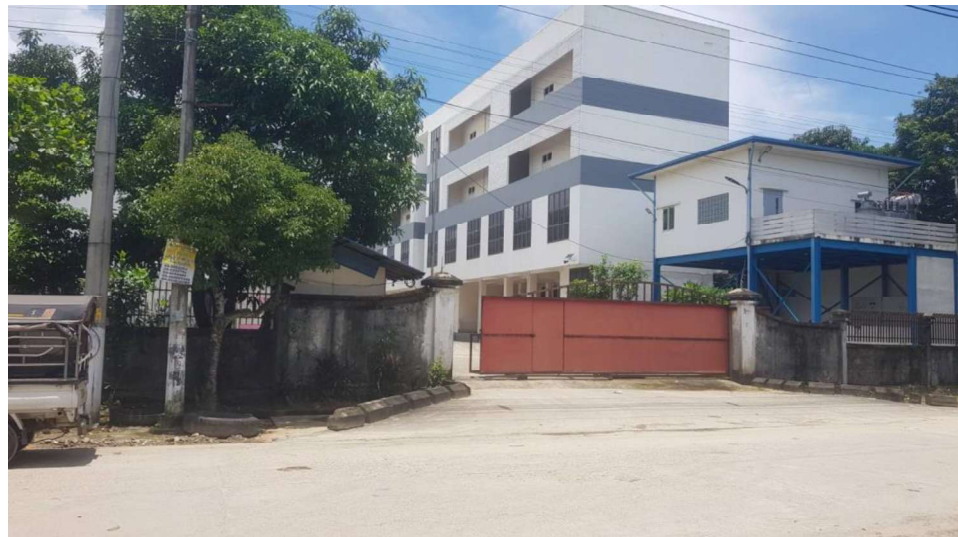
The villages located near the proposed factory are Rakhine Yoe Gyi Village, Pauk Kone Village and Ah Lel Village. Among them Ah Lel Village is the nearest one.

#### Plant Surroundings

There are four industrial plants at project surroundings as, at front side “Lawpen Bakery; at rear side “Brother Garment; at left side “Coride Corwar Garment” and at right side “PEA Godown”. They are shown as following figures.



Goggle map of plant surroundings



LAWPEN BAKERY



**BROTHER GARMENT**



**CORIDE CORWAR GARMENT**



**PEA GODOWN**

**Figure 4-2 Four industrial plants as surroundings of project**



### 4.3 Definition of Study Area and Area of Influence (AOI)

Before impact assessment of different environmental components is undertaken, considering the nature of this Project and its potential environmental issues, it is pertinent to highlight the following components:

- (v) physical components;
- (vi) biological components;
- (vii) socio- economic components; and
- (viii) cultural components.

The environmental and social setting associated with the project is assessed by the desk study, preliminary field observation undertaken in August to September 2022, and follow-up field visit in November 2022.

#### 4.3.1 Study Area

The Study Area for the Nippon Paint project has been defined to ensure that impacts are effectively assessed. It includes:

**The Project Site:** The exact location where the project will be renovated in accordance with the proposed factory layout plan and operated.

**Immediate Surroundings:** A 2 km radius for physical and socio-economic environment (including health concern), 3 km radius for terrestrial environment from the project site encompassing nearby residential and commercial areas, roads, and any ecological or cultural features of relevance.

The study area focuses on this 2 km zone as the project's impacts—such as air, noise, water quality, odor and waste management are localized and unlikely to extend beyond this radius.

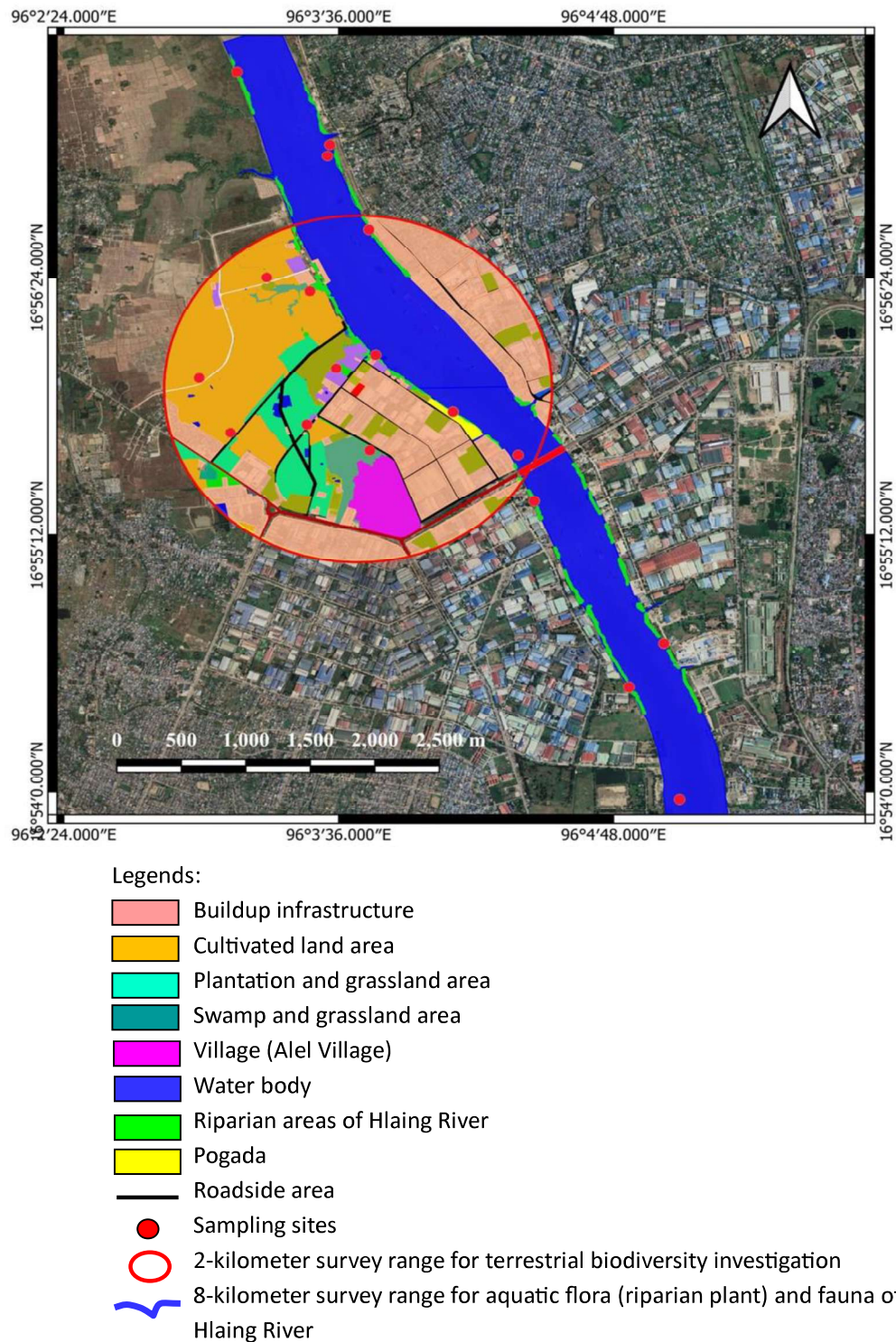
#### 4.3.2 Area of Influence (AOI)

The Area of Influence (AOI) is the geographic extent where project activities could directly or indirectly affect the environment and society. The AOI has also been defined as 2 km around the project site, which is sufficient for a paint factory project of this scale due to:

**Environmental Impact:** Renovation of the existing factory compound and operational impacts, such as dust, noise, odor, and waste disposal, are unlikely to affect areas beyond 2 km.

**Biological Impact:** Factory renovation work cannot not significantly impact the existing biological environment because renovation activity would be just only proper relocation of required main infrastructure within the proposed project compound that had already exist main building and installation the main machines and equipment for the paint operation. That means that, there are no major construction works. And waste water from the factory will be treated at the project site and then discharged to local drain system so that the final treated effluent quality will be within the National Emission Quality Guideline. So, the AOI for the aquatic ecosystem has been defined as the upstream, and downstream of the project's waste water effluent discharge point (i.e., 8 km survey range for aquatic flora and fauna of the Hlaing River bank). Therefore, the study area will cover the upstream and downstream of the proposed discharge point.

For the terrestrial biodiversity, investigation area was determined based on knowledge of the significant biodiversity impacts. In project surrounding area, data collection was taken within 3 km radius circular range of the project site as shown in **Figure 4-3**.



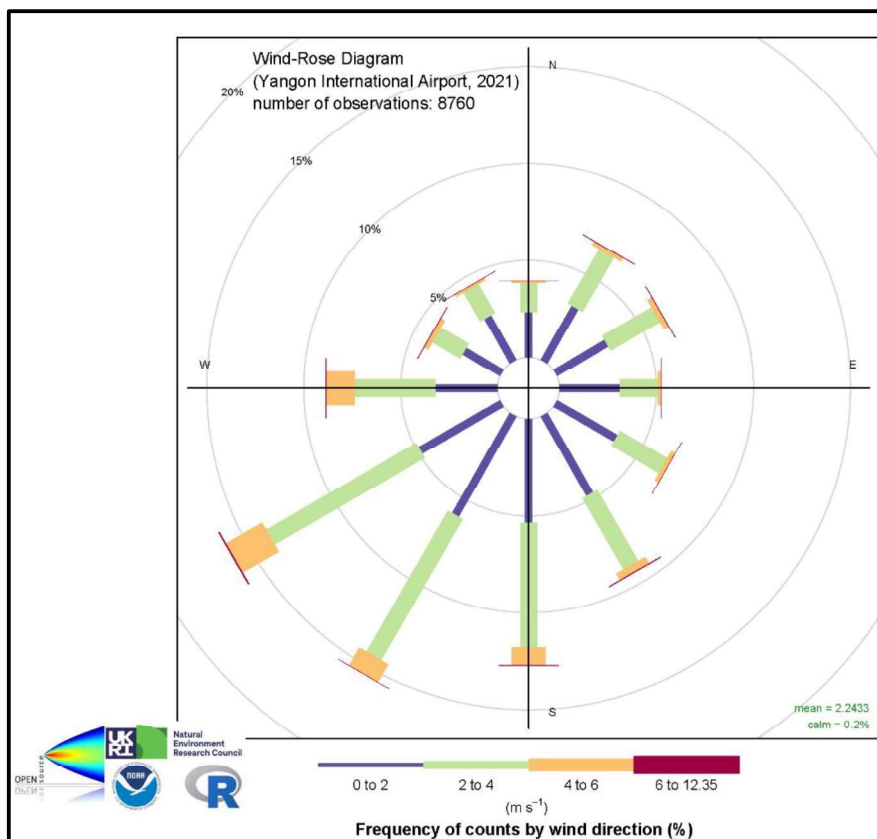
**Figure 4-3 Map of biological sampling sites in relation to some habitats**

**Social Impact:** Employment, local business opportunities, and potential disturbances, like increased traffic, are primarily relevant within the same 2 km radius based on the following Wind Rose diagram for the whole year 2021 as shown in Figure 4.4:

- The prevailing wind blew from the south-southwest and west-southwest more than 15% of year each and from south about 12.5% of year. The longest spoke shows that the wind blew from west-southwest at speeds between 0-2 m/s about 5% of year, 2-4 m/s about 8% of year, 4-6 m/s about 3% of year, and 6-12.35 m/s less than 1% of year.
- The wind blew from south-southeast below 10% of the year; at speeds between 0-2 m/s nearly 5% of year, 2-4 m/s about 3% of year, and 4-12.25 m/s about 1% of year.

Therefore, the potential receptor-areas due to wind speed and direction is being clarified as below and spatial orientation is described in Figure 4-4.

- The first receptor-area: between cardinal points of north to east-northeast from project compound
- The second receptor-area: between cardinal points of north-northwest to north



**Figure 4-4 Wind Rose Diagram for 2021**

These receptor-areas are settlement areas from Shwe Pyi Thar Township which are located about 970 meters from the project and on the other bank of Hlaing

River and upstream of the project compound. There are several business activities of sand and gravel trading, dockyards and Shwe Pyi Thar Industrial Zone (2) exist and these activities are also argued as the pollutant sources for the receptors. The potential impacts by the factor of the proposed project are determined as the neglectable or very low stage. Therefore, the settlement areas will not be taken into account in further social impact assessment.

According to the field observations in August and September of 2022, the drain system is already implemented in the industrial zone and the project will continue to use this existing drain in the operation phase as described in Figure 4.5. Therefore, the downstream segment of Hlaing River as mentioned in Figure 4.5 is being clarified as the potential receptor-area due to effluent water. The local people do not use river water for either domestic or drinking purposes. There is a fishing ground about 3000 meters downstream. So, aquatic survey will be conducting 8 km/3000 m downstream of the river and social survey will continue to assess the potential impacts on this river stretch according to the findings of biodiversity and physical assessments.

The road network within the industrial zone serves as a private access route for the factories and the vehicles from the project will not be required to use the road passing beside the residential area. Therefore, the social impacts of traffic criteria do not require study.

Rakhine Yoe Gyi Village is not far from the project site but the village is next to the Shwe Lin Ban Industrial Zone which is also another pollutant source rather than the proposed project. Pauk Kone Village is located a far distance from the project site and buffer with open spaces and cultivation plots. The pathways of pollutants (wind and runoff water) are not traceable according to the results of spatial analysis with archived data. Therefore, these two villages are not required for further study.

Ah Lel Village is recorded as the host community for the project as the village is located adjacent to the industrial zone as well as the same administrative boundary. The pluvial flood regularly occurs in raining season due to topography and poor drainage system, but there is no tidal effect. The village has been suffering from the odor from the industrial zone – in which the project is located.

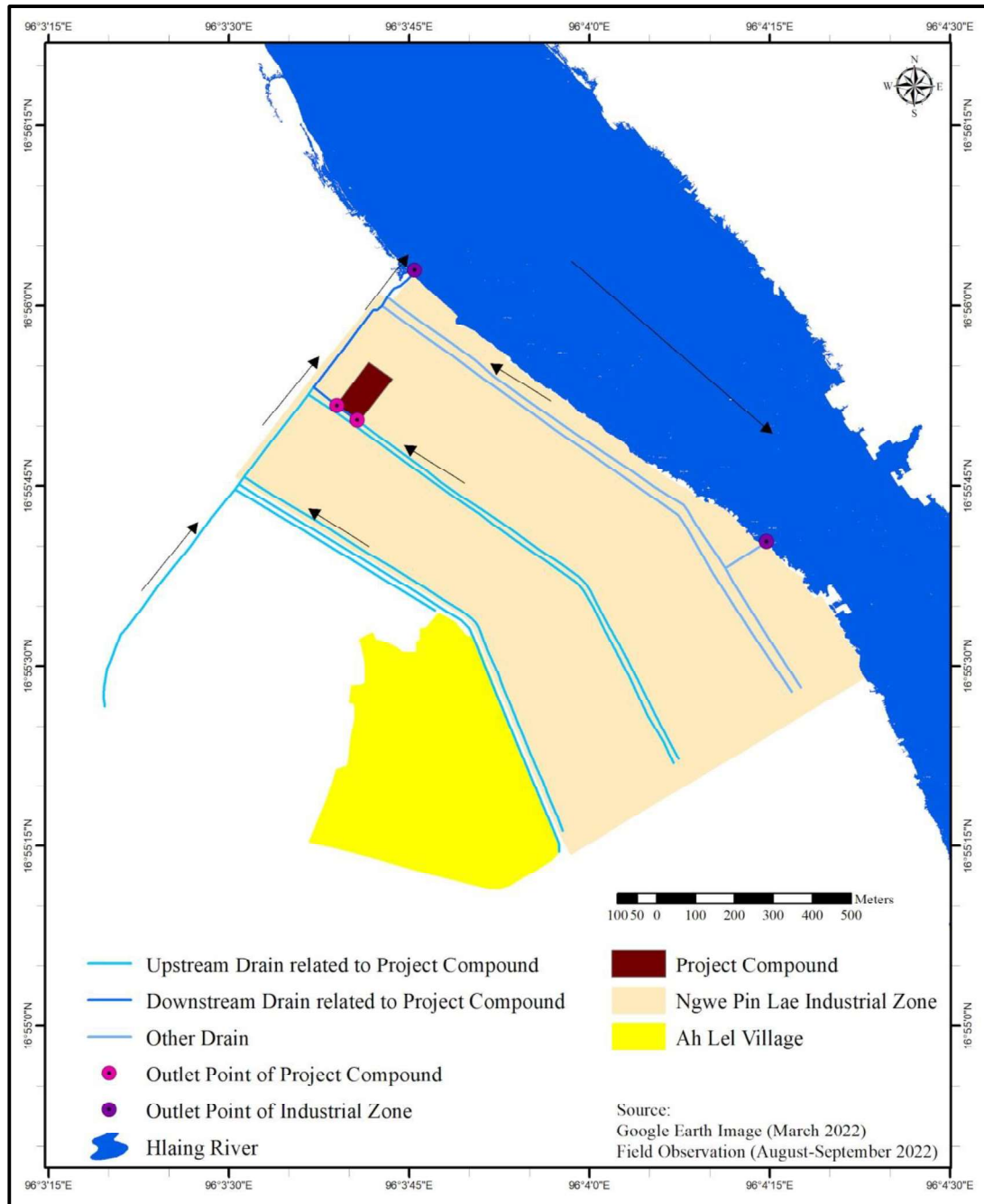


Figure 4-5 Observation Map for Drain Flow

#### 4.3.3 Rationale for Definition and Sufficiency

The decision to limit both the study area and AOI is based on the following considerations:

**Nature of the Project:** As a paint production, the impacts are primarily localized compared to other heavy industrial or infrastructure projects.

**Localized Impacts:** Activities such as renovation work for existing factory facility noise, air emissions, and waste generation are contained within a very short distance. The operation



activities are just only mixing and packing and effluent waste water will be discharged after treatment process.

**Socioeconomic Effects:** Employment opportunities and changes to local infrastructure are most significant within the immediate vicinity of the project.

**Existing Infrastructure:** The project area is well development to local roads and utilities, reducing the need to expand assessments beyond the 2 km radius.

**Ecological Sensitive Habitats:** According to Google Map and GIS database, no ecological sensitive habitats, protected and KEY biodiversity areas such as wildlife sanctuary, national parks, reserved forest, and wetland within the study area.

The 2 km radius for Physical and Social Environment (including cultural and health components) and 3 km for biodiversity are therefore sufficient to capture all potential direct and indirect impacts of the project while maintaining focus and efficiency in the study.

## 4.4 Methodology for Defining Study Areas and AOI

### 4.4.1 Data Collection

**Desktop Review:** Existing data on the project location, including satellite imagery, local maps, and municipal plans, were reviewed to identify nearby sensitive features (e.g., residential areas, cultural landmarks).

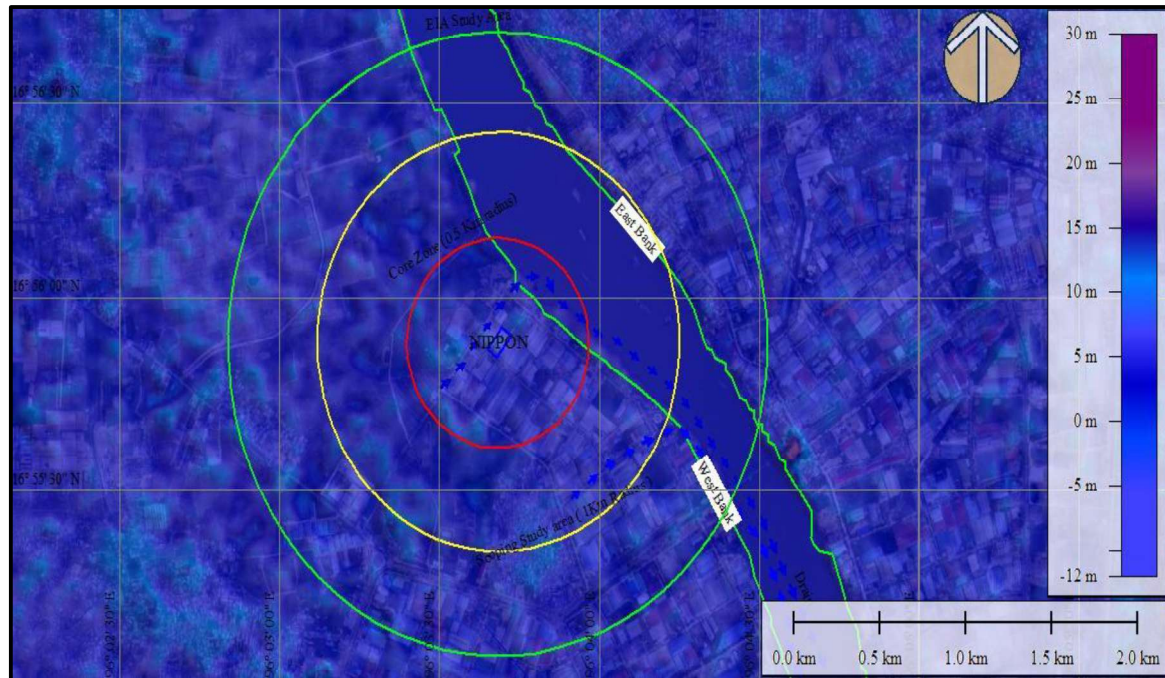
**Field Surveys:** Site visits were conducted to confirm the accuracy of data, observe current land use, and assess environmental and social conditions within the defined 1 km radius.

## 4.5 Environmental Quality (Secondary Data and Primary Data)

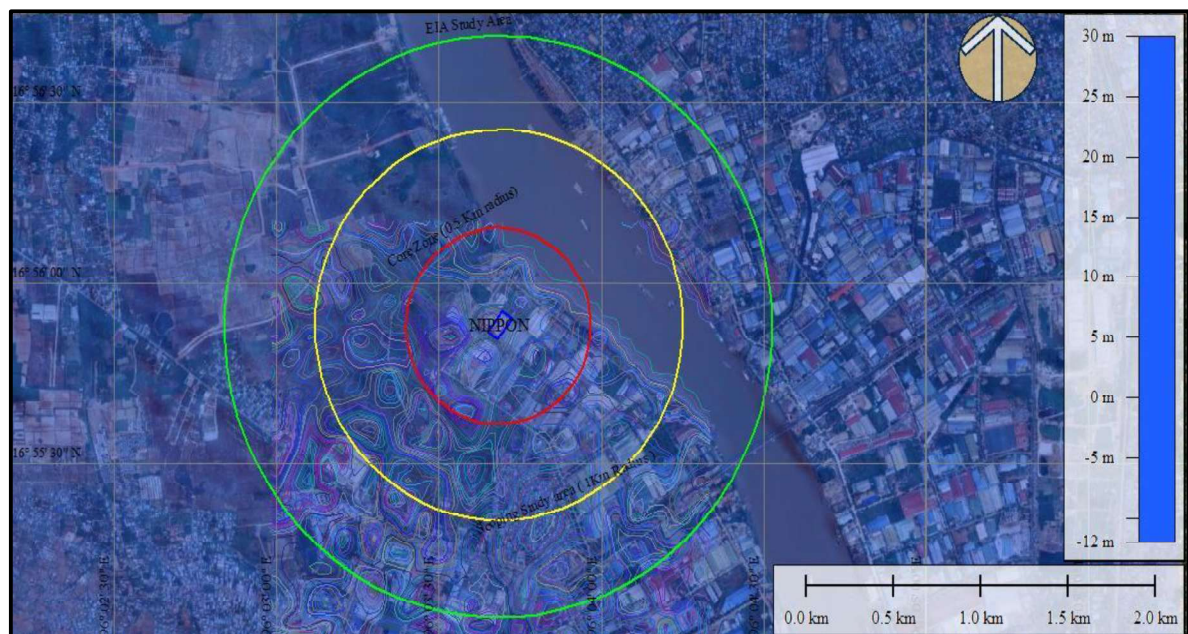
### 4.5.1 Secondary Data for Environmental Quality

#### 4.5.1.1 Topography

The project site has a mild slope towards the South with a level difference of approximately 2-m. The elevation of the site ranges between 9-m AMSL in the south and 6.5-m AMSL in the North. The presence of the open space increased the contour level on the northern side. The site also has a slope towards the east. A schematic diagram showing the elevation of the Project Site is presented in Figure. The contours in the Topographic map have been digitized in the GIS platform and have been assigned the respective elevation levels in meters concerning the mean sea level. Using the SRTM (Shuttle Radar Topography Mission) data, the elevation levels have been verified. DEM and Contour Map of the area around the site is shown in **Figure 4-6.**



**Figure 4-6 Elevation Map of the Project Area**



**Figure 4-7 Topographic Map of the Study Area**

#### 4.5.1.2 Climate and Meteorology

The project area has a tropical monsoon climate under the Koppen climate classification system. The industrial zone typically experiences a distinct rainy season from the month of May through to October when a substantial amount of precipitation occurs, and the dry season commences in November and ends in April. 30 years climate data for project area is attached in Appendix XII.

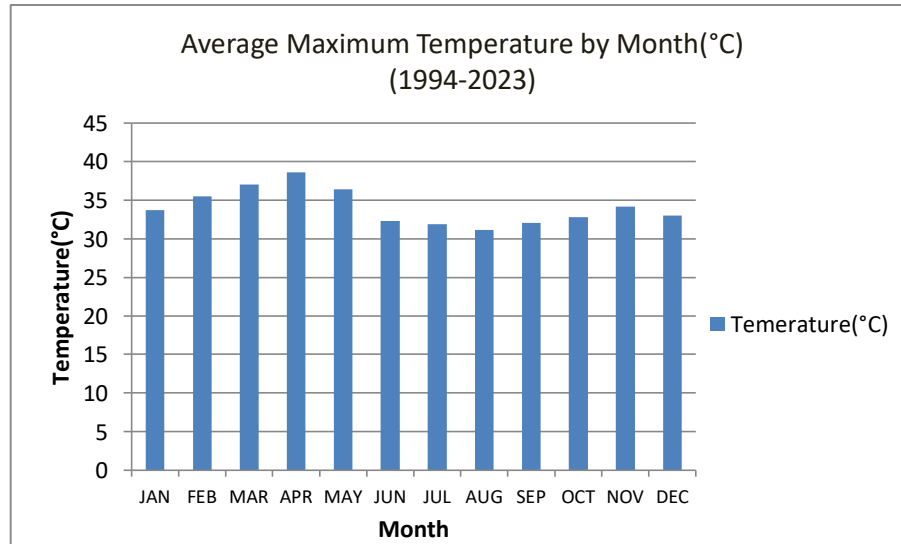
**Temperature**

The hottest period is between February and May, with little or no rain. At the end of this season, generally from March to April, the average monthly maximum temperature reaches the upper 38°C. The average maximum temperatures in the Industrial area range from 36.1°C to 40°C in April during the hot season (1994-2025) and it ranges from 30.9 °C to 34.0°C in December during the cooler season (1994-2025).

**Table 4-1 (30) years monthly maximum temperature (°C ) & data for project area**

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1994	34.5	35.9	37.3	39.3	37.4	32.7	32.5	31.2	32.2	32.8	34.7	33.1
1995	34.5	35.9	37.3	39.3	37.4	32.7	32.5	31.2	32.2	32.8	34.7	33.1
1996	33.2	34.1	36.2	36.4	32.8	31.0	31.2	30.7	31.7	32.5	32.5	32.5
1997	34.5	35.9	37.3	39.3	37.4	32.7	32.5	31.2	32.2	32.8	34.7	33.1
1998	34.5	35.9	37.3	39.3	37.4	32.7	32.5	31.2	32.2	32.8	34.7	33.1
1999	34.5	35.9	37.3	39.3	37.4	32.7	32.5	31.2	32.2	32.8	34.7	33.1
2000	34.5	35.9	37.3	39.3	37.4	32.7	32.5	31.2	32.2	32.8	34.7	33.1
2001	34.5	35.9	37.3	39.3	37.4	32.7	32.5	31.2	32.2	32.8	34.7	33.1
2002	34.5	35.9	37.3	39.3	37.4	32.7	32.5	31.2	32.2	32.8	34.7	33.1
2003	34.5	35.9	37.3	39.3	37.4	32.7	32.5	31.2	32.2	32.8	34.7	33.1
2004	34.5	35.9	37.3	39.3	37.4	32.7	32.5	31.2	32.2	32.8	34.7	33.1
2005	34.5	35.9	37.3	39.3	37.4	32.7	32.5	31.2	32.2	32.8	34.7	33.1
2006	34.5	35.9	37.3	39.3	37.4	32.7	32.5	31.2	32.2	32.8	34.7	33.1
2007	34.5	35.9	37.3	39.3	37.4	32.7	32.5	31.2	32.2	32.8	34.7	33.1
2008	34.5	35.9	37.3	39.3	37.4	32.7	32.5	31.2	32.2	32.8	34.7	33.1
2009	34.5	35.9	37.3	39.3	37.4	32.7	32.5	31.2	32.2	32.8	34.7	33.1
2010	34.5	35.9	37.3	39.3	37.4	32.7	32.5	31.2	32.2	32.8	34.7	33.1
2011	32.3	34.8	33.7	36.5	33.0	31.7	31.2	30.5	31.2	33.0	34.2	33.3
2012	33.5	36.0	36.9	37.9	34.8	31.7	31.1	30.2	32.1	33.9	33.8	33.0
2013	32.7	36.7	37.1	38.6	35.5	31.4	30.4	30.9	31.2	32.6	34.1	30.9
2014	32.3	34.4	37.4	38.1	35.9	32.1	31.0	31.1	31.9	33.6	33.4	33.8
2015	32.7	35.0	37.7	38.1	35.9	32.3	31.7	31.2	32.2	32.5	34.1	33.3
2016	31.6	34.4	36.7	38.6	37.1	31.7	31.8	31.3	31.9	32.3	33.4	33.5
2017	33.0	34.8	36.7	36.1	35.0	31.4	30.1	30.7	32.3	31.9	33.1	32.0
2018	32.4	34.4	36.4	37.5	35.2	31.0	29.9	30.2	31.9	32.9	33.7	33.2

2019	32.3	35.7	36.9	40.0	36.1	31.8	30.7	30.1	31.9	34.3	33.3	32.4
2020	33.5	34.9	37.3	39.1	37.1	32.2	31.9	31.5	32.1	31.5	33.9	33.6
2021	33.2	35.2	38.3	36.2	36.9	32.3	31.3	32.3	31.2	32.4	34.4	33.1
2022	33.4	34.7	36.9	37.3	33.9	32.0	31.8	31.0	31.5	33.0	33.2	33.0
2023	32.5	35.0	36.7	38.6	36.5	31.5	31.7	32.0	31.7	32.2	34.3	34.0
Average Maximum temperature	33.7	35.4	37.0	38.6	36.4	32.3	31.9	31.1	32.0	32.8	34.2	33.0



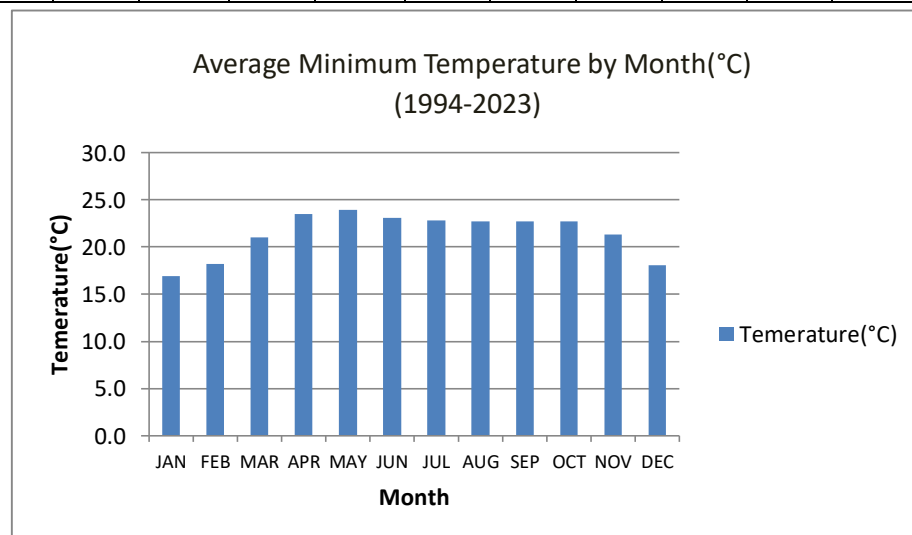
**Figure 4-8 (30) Years monthly maximum of the Project Area**

(Ref: Department of Meteorology and Hydrology (DMH) Gaba Aye station)

**Table 4-2 (30) years monthly minimum temperature (°C ) & data for project area**

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1994	17.5	19.5	21.2	24.3	25.0	23.3	23.2	22.8	23.0	22.6	20.5	17.8
1995	17.1	17.9	21.1	23.5	23.9	23.4	22.2	22.9	22.3	22.6	21.3	16.1
1996	14.5	18.3	20.8	22.9	24.1	24.1	23.9	23.4	23.6	23.5	22.3	19.2
1997	15.5	15.0	19.8	21.1	23.6	22.7	20.4	20.1	19.2	20.1	20.4	18.6
1998	16.1	17.0	19.7	23.7	25.8	24.8	24.6	24.1	24.6	24.5	23.5	20.7
1999	19.4	22.4	22.2	24.7	24.1	24.2	23.8	23.6	23.6	23.7	22.5	17.3
2000	17.6	18.8	21.4	24.8	24.4	23.4	24.1	23.7	23.5	23.4	20.7	18.1
2001	17.6	18.8	22.5	24.2	23.8	23.0	23.1	23.0	22.9	22.3	18.9	18.6
2002	16.6	18.4	20.0	22.8	22.9	22.6	22.6	21.8	21.9	21.8	21.0	17.8
2003	16.1	17.7	19.7	22.6	22.1	21.3	21.5	21.3	20.9	21.6	18.6	15.9
2004	15.1	15.9	18.9	21.7	21.7	20.5	20.3	20.3	20.6	20.3	19.0	13.8

2005	14.2	16.2	19.2	21.5	21.9	21.2	20.3	20.5	20.5	20.5	18.8	16.7
2006	14.8	16.3	19.4	21.0	20.8	20.6	20.1	22.8	24.2	24.5	22.2	17.8
2007	17.4	19.0	21.1	25.0	24.4	24.1	23.2	23.0	22.5	22.2	20.6	16.5
2008	17.0	17.4	21.1	23.3	22.6	22.0	21.6	21.3	21.3	21.5	19.5	16.6
2009	15.6	17.8	20.9	22.5	22.1	21.6	20.6	21.4	21.1	21.0	18.5	14.6
2010	15.9	18.3	23.2	25.6	25.9	25.4	25.0	24.6	24.3	24.1	22.0	19.2
2011	18.2	19.5	21.6	24.4	24.7	24.7	24.0	23.7	23.6	23.5	21.4	19.7
2012	17.1	18.8	21.9	24.4	24.5	23.6	22.7	22.4	22.6	22.7	22.1	17.3
2013	15.8	19.2	20.0	21.9	22.4	22.1	24.1	24.2	23.9	23.7	22.9	17.6
2014	16.1	17.8	20.0	23.8	23.7	22.8	21.8	21.3	21.0	22.6	21.9	19.5
2015	18.9	18.8	21.8	23.9	24.9	24.5	24.4	24.3	24.0	23.5	22.0	19.3
2016	15.7	18.8	22.1	24.1	24.2	23.2	22.9	22.6	23.9	24.0	22.8	21.4
2017	19.9	19.6	21.6	24.3	25.2	23.9	23.2	23.0	23.1	22.2	21.7	18.1
2018	17.3	17.4	20.4	22.8	23.2	21.6	21.4	21.0	21.1	20.5	18.7	17.9
2019	16.4	17.5	19.6	22.2	25.3	24.8	23.7	24.3	24.0	24.3	22.9	17.3
2020	17.5	18.2	21.6	24.6	25.7	24.1	24.2	23.7	23.8	23.2	22.5	19.7
2021	19.0	18.9	22.0	23.0	23.8	21.9	21.8	23.3	23.5	23.8	23.2	18.3
2022	18.5	17.2	22.9	24.9	25.0	24.6	24.3	23.4	23.9	23.2	22.6	21.0
2023	17.3	18.5	22.1	24.5	25.2	24.3	24.3	24.4	24.2	23.8	23.0	21.2
Average Minimum	16.9	18.2	21.0	23.5	23.9	23.1	22.8	22.7	22.7	22.7	21.3	18.1



**Figure 4-9 (30) Years monthly maximum of the Project Area  
(Ref: Department of Meteorology and Hydrology (DMH) Gaba Aye station)**



### Annual Rainfall

The Study Ngwe Pin Lal Industrial zone area draws an average of 2872 mm of total rainfall per year. On average there are 125 days per year with more than 0.1 mm of rainfall (precipitation) or 10.4 days with a quantity of rain per month. The driest weather is in February when an average of 3 mm of rainfall (precipitation) occurs. The wettest weather is in July when an average of 610 mm of rainfall (precipitation) occurs.

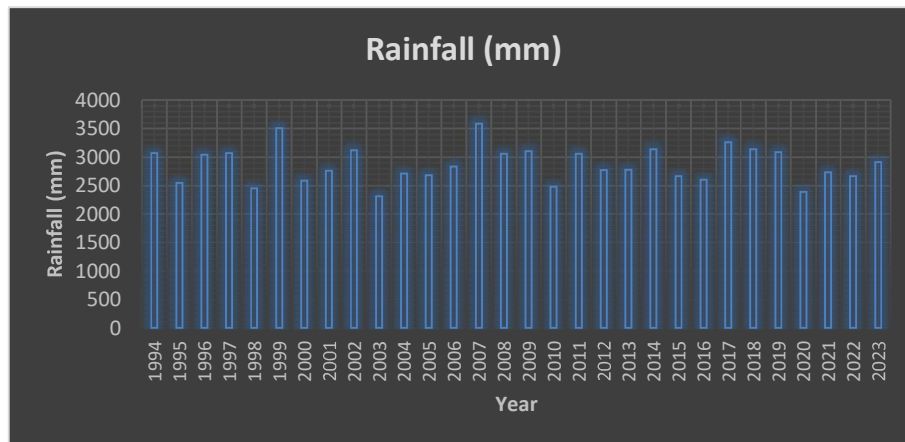
**Table 4-3 (30)years monthly total rainfall (mm) for project area**

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Total Rainfall (mm)
1994	0	Trace	138	3	240	694	680	751	383	167	16	0	3072
1995	0	0	0	0	219	588	598	351	517	243	36	0	2552
1996	0	74	0	43	375	560	479	675	496	196	132	11	3041
1997	0	0	0	38	261	455	773	848	530	129	34	0	3068
1998	0	0	0	24	419	425	404	623	295	247	16	0	2453
1999	0	0	50	388	510	566	526	568	449	388	67	0	3512
2000	0	0	0	34	333	663	434	414	478	224	3	0	2583
2001	0	9	53	0	369	591	682	452	268	312	21	0	2757
2002	0	0	0	Trace	413	631	504	604	596	124	224	24	3120
2003	1	0	0	0	454	598	387	445	352	78	0	0	2315
2004	0	0	0	12	411	734	506	703	297	49	0	0	2712
2005	0	0	39	10	151	445	673	538	578	108	43	94	2679
2006	0	0	Trace	156	341	411	780	634	366	147	Trace	0	2835
2007	0	0	0	Trace	837	559	700	446	774	260	16	0	3592
2008	5	7	25	169	656	431	541	474	448	301	6	0	3063
2009	0	0	5	46	457	561	914	485	508	125	0	0	3101
2010	Trace	0	0	0	308	529	367	467	402	367	7	33	2480
2011	48	0	127	5	412	567	574	615	538	178	Trace	0	3064
2012	Trace	0	0	8	167	450	717	864	379	69	115	2	2771
2013	6	0	0	0	125	551	630	464	612	371	13	3	2775
2014	0	0	0	Trace	295	701	818	575	197	224	300	26	3136
2015	0	0	9	40	185	580	687	408	329	355	69	0	2662
2016	23	0	0	0	288	379	618	526	543	227	1	0	2605
2017	1	0	0	81	449	650	802	382	401	371	125	Trace	3262
2018	Trace	0	0	42	259	627	806	578	472	229	70	61	3144

2019	50	0	0	0	271	551	630	782	450	183	167	0	3084
2020	0	0	0	6	221	671	410	406	336	275	69	0	2394
2021	Trace	Trace	0	70	135	819	596	227	408	433	50	0	2738
2022	2	6	44	15	431	344	529	796	304	150	39	4	2664
2023	0	7	5	0	155	759	527	425	541	434	57	4	2914
Average rainfall	5	3	17	40	338	570	610	551	442	232	57	9	2872

"Trace" : The amount of rainfall which cannot be measured

"1mm=0.04 inch"

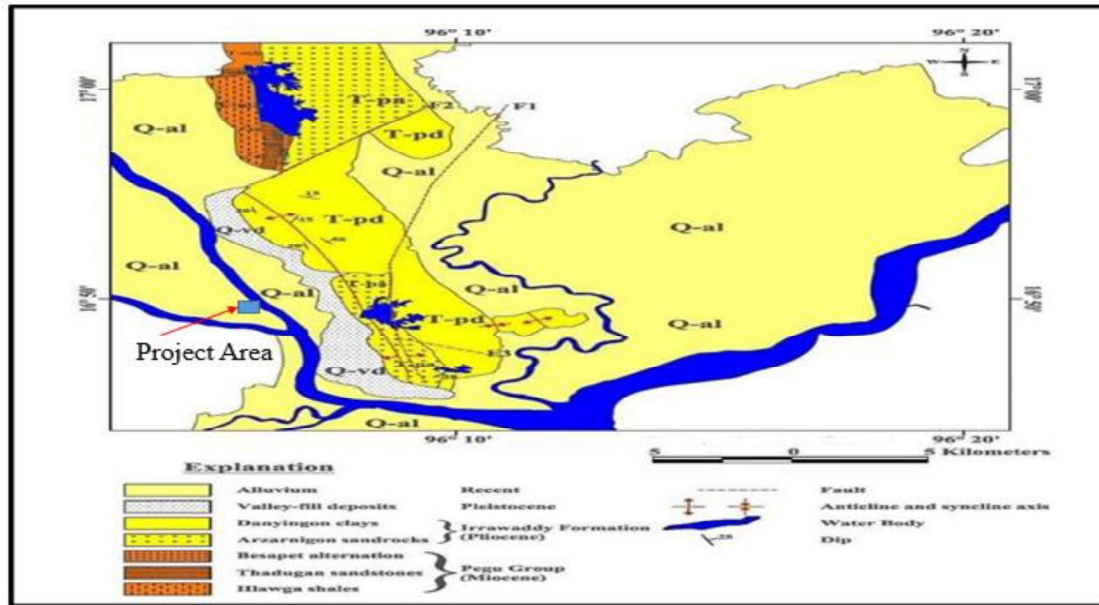


**Figure 4-10 (30) Years Annual Precipitation of the Project Area**  
(Ref: Department of Meteorology and Hydrology (DMH) Gaba Aye Station)

#### 4.5.1.3 Geology

The study area is underlain by alluvial deposits (Pleistocene to Recent), the non-marine fluvial sediments of Irrawaddy formation (Pliocene), and hard, massive sandstone of Pegu series (early-late Miocene). Alluvial deposits are composed of gravel, clay, silts, sands, and laterite which lie upon the eroded surface of the Irrawaddy formation at 3-8 m above mean sea level (MSL). The rock type in the project area is mainly soft rocks, which consist of sandstone, shale, limestones, and conglomerate. +-

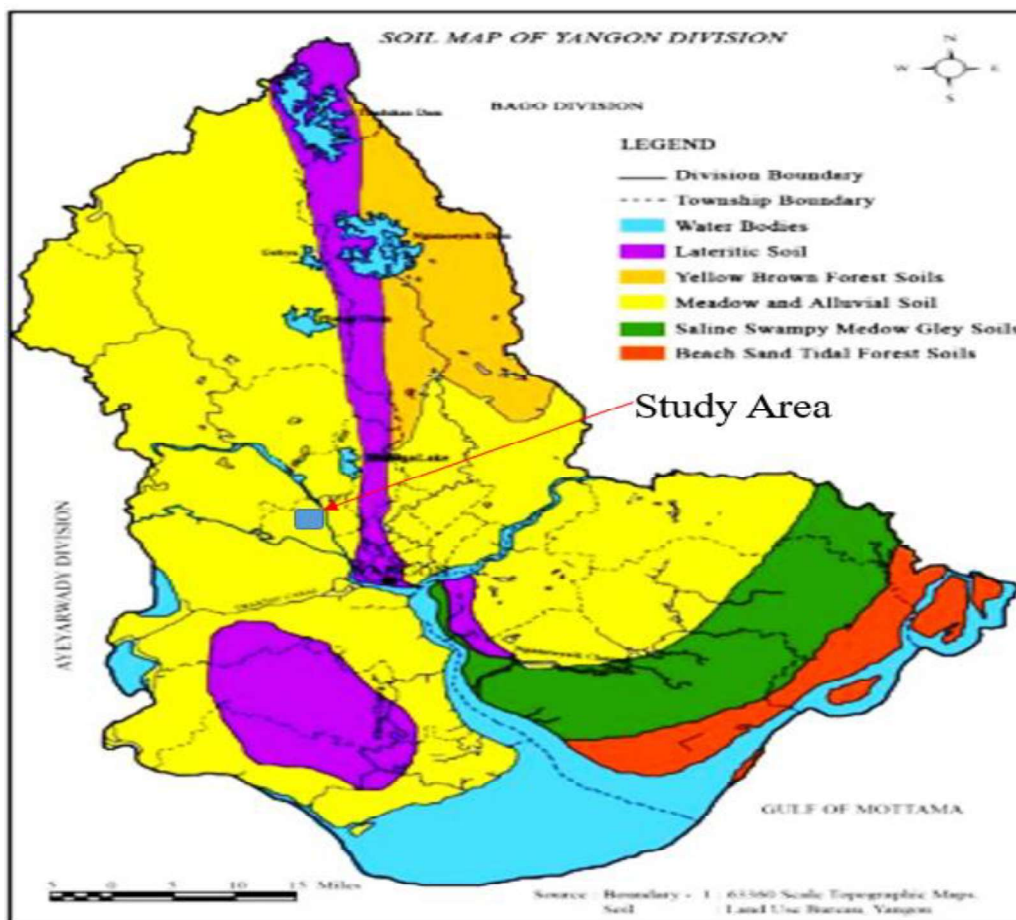
The Industrial zone is situated in the southern part of Central Lowland which is one of the three major tectonic provinces of Myanmar. The Taungnio Range of the Gyophyu catchments area of Taikkyi District, north of Yangon, through the Thanlyin Ridge, south of Yangon forming a series of isolated hills probably resulted from the progressive deformation of the Upper Miocene rocks as the eastern continuation of the subduction or stretching and compression along the southern part of the Central Basin and regional uplifting of the Pegu Yoma (Aung Lwin 2012).



**Figure 4-11 Generalized Geological Map of the Project Area (Project Area in Q-al)**  
(Source: Soil and Rock Distribution of the Yangon Area (Win Naing, 1972))

#### 4.5.1.4 Soil

The underlying soil type at the Project Site and its surroundings is characterized as the Meadow and Meadow Alluvial Soil. Meadow Soil is soil that occurs near the river plains exposed to occasional tidal floods, is non-carbonate, and usually contains some amount of salt. Both materials mainly comprise silty clay loam and neutral soil rich in plant nutrients. The upper layers (approximately 0 to 7 m) of the soil at the Project Site comprise largely cohesive layers with traces of sand and gravel, followed by sand layers with low silt content and trace gravel from 7 to 35 m. The lower layers comprise a denser silt layer with traces of sand and gravel from approximately 57 to 70 m.



**Figure 4-12 Soil Map of the Project Area**

#### 4.5.1.5 Groundwater

Based on Water Utilization Department of Myanmar, they have divided Myanmar's groundwater bodies into 13 major aquifers, namely: Alluvian, Irrawaddian, Peguan, Ecoene, Flysch, Cretaceous, Kalaw, Plateau Limestone, Lebyin, Cambrian, ChaungMaGyi, Metamorphic and Igneous (as shown in Figure 4-13 Nippon Factory is situated on Alluvian aquifer.)

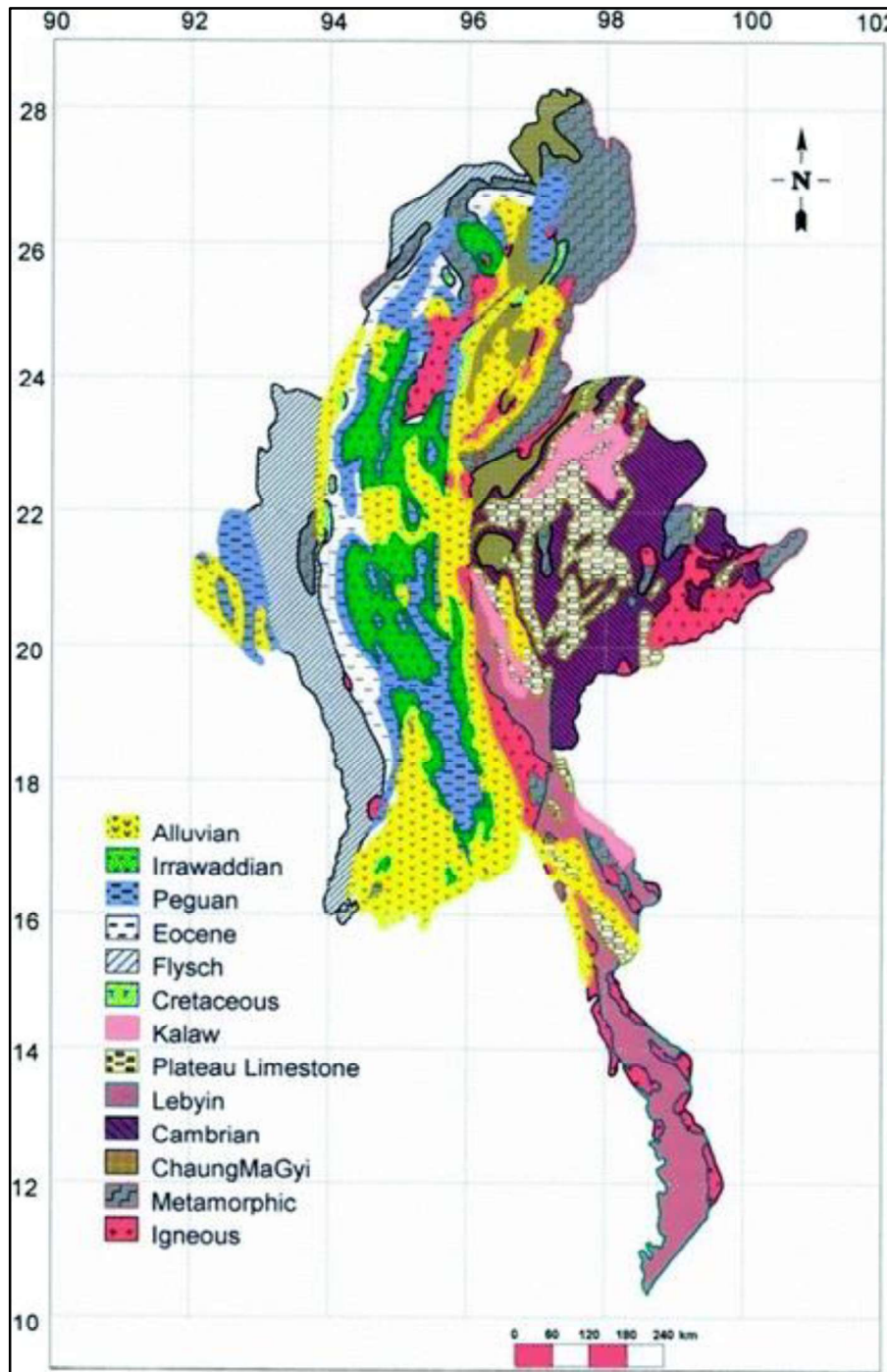
Groundwater is the principal source for industrial water supply in Hlaing Tha Ya Township. Groundwater sources are also utilized for domestic purposes in some areas. Observed aquifers in Magway Region have a maximum depth of 350 m. Based on local geological considerations, the potential groundwater source of the project area can be roughly stabilized groundwater level was observed to range between (-5.5) m MSL to (-30) m MSL.

In the central region, the low ridge, of Yangon City, ground water potential is low, and iron content is high in groundwater from this area and adjacent areas. On the other hand, groundwater potential is high in the rest flat plain region and very high along the rivers; however, salinity is high in ground



water (JICA & YCDC, 2002). As for its quality, water quality is generally not suitable for drinking due to the high chloride and pH value at Hlaing Tha Yar Township. (According to the baseline study for EMP Report at Hlaing Tha Yar Township)

The locations and parameters of groundwater quality for primary baseline study are shown at this chapter.



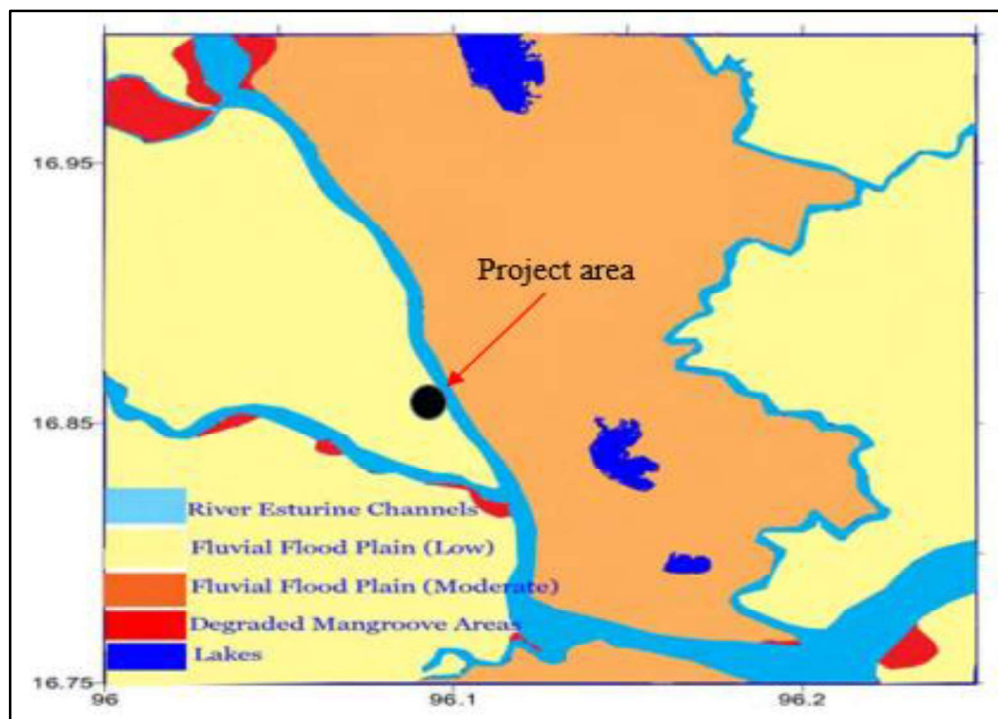
**Figure 4-13 Groundwater Bodies in Myanmar**

#### 4.5.1.6 Surface Water

The Project Site lies along the catchment of the Hlaing River. The Hlaing River flows in a southerly direction to converge into the Yangon River (the estuary). The Yangon River (also known as the Hlaing River) is formed by the confluence of the Pegu and Myitmake rivers and flows into the Gulf of Martaban which is part of the larger Andaman Sea. Rainfall falling on the catchment does exit the catchment as surface flow, from the drainage channel of the industrial area. The drainage in the industrial area surrounding the proposed Nippon paint Project is such that all the surface water drainage lines lead to the Hlaing River.

All these rivers have tidal and saline water intrusion effects within and beyond the limits of the township. In these rivers, freshwater with sediment concentrations of 1 gram per liter (g/l), or less, flows unidirectional, seaward direction during the rainy season, however, saline water intrusion to the landward direction occurs during the dry seasons and low river flow period and salinities reach maximum 20‰ and sediment concentrations rise to 6 g/l (Nelson, 2001).

The locations and parameters of surface water quality for baseline study are shown at this chapter.



**Figure 4-14 Geomorphological Map of Yangon River in and around the Area**

(Ref: International Archives of the Photogrammetry, Remote Sensing and Spatial Information Sciences, Volume XXXIX-B8, 2012)

**4.5.1.7 Noise and Vibration**

Noise pollution sources in the Project Area are likely to include the vehicle traffic from nearby roads, as well as any industries or generators in the surrounding area of Nippon Paint Project and from itself.

There are also vibration sources from the machineries of paint manufacturing such as pumps, compressors, agitator and vehicles. The location of noise and vibration measurement and results are shown at this chapter.

**4.5.1.8 Air Quality**

Myanmar was ranked by a study conducted by World Health Organisation (WHO) as a country with high levels of Particulate Matter. According to the IQAir data, at the readings of air quality taken over 2019, Yangon came in with a PM<sub>2.5</sub> reading of 31µg/m<sup>3</sup> as its yearly average was enough to rank it in 407th place out of all cities worldwide.

There are many causes of pollution present in Yangon. The main causes would be vehicle emissions, which would run on lower quality fuels as well as diesel fuel as well as emissions from factories, and with Yangon lacking a critical amount of development and infrastructure there would be an associated level of industrialization taking place. Other pertinent sources would be open burning of rubbish and organic waste, crop field burning and also poorly maintained construction sites and road repairs.

The locations and parameters of Air Quality for baseline study are shown at this chapter.

**4.5.1.9 Soil Quality**

Measuring the soil quality provides early warning of the potential effects and may be having in long term soil quality. It can help identify whether soil quality is degrading over time and what factors that may be contributing to soil degradation.

**4.5.1.10 Earthquake**

A review of available literature has shown that Myanmar is seismologically unstable and vulnerable to earthquakes due to its location in the active Alpide seismotectonic belt and the young Alpine- Himalayan- Sumatran orogenic belt (Theilen and Pararas-Carayannis, 2009). Historic records show that at least 15 major earthquakes with magnitudes  $M \geq 7.0$  RS have occurred in Myanmar in the last hundred years. These earthquakes occurred within Myanmar in the last century, at Bago (5 May 1930), at Yangon (27 March, 16 May and 21 May 1931), at Sagaing (16 July 1956) and at Bagan (8 July 1976) (Union of Myanmar, 2009).

According to the Myanmar Earthquake committee (2005), Yangon Region is located in an area where the seismic risk reaches maximum level of 0.15 (Destruction Zone). Nippon Paint Project Site is located in Moderate Zone (see Figure 4.13). A magnitude of 4.5 Richter Scale with its epicentre (49.2 km from Letpandan (30.2 miles) at latitude 18.123°N, longitude 96.062°E at depth 10 km was recently recorded on 19th December 2019. The epicentre of that recent earthquake was at north of Yangon and 140 km far from the Nippon Paint Project site (see Figure 4.14).

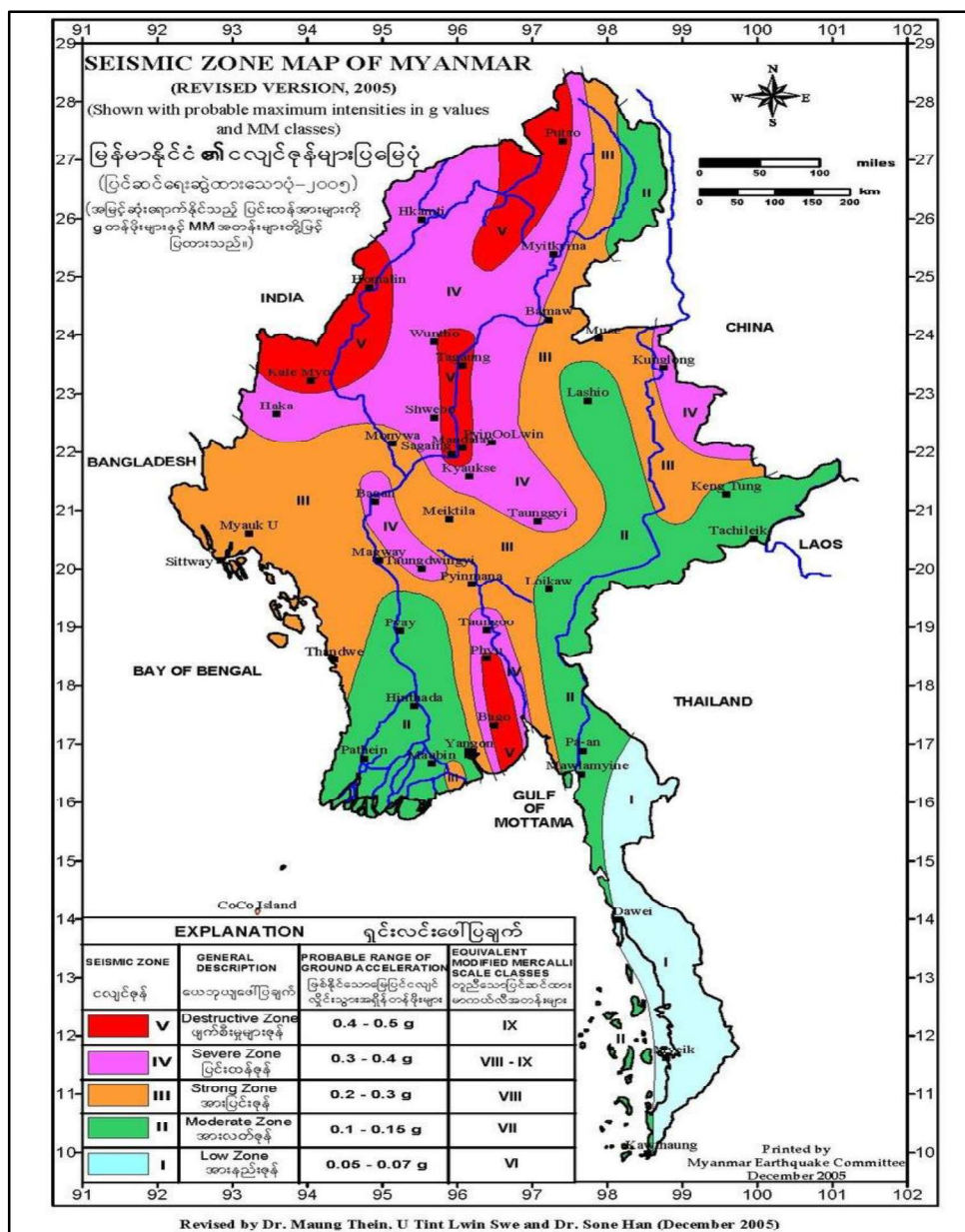


Figure 4-15 Seismic Zone Map of Myanmar



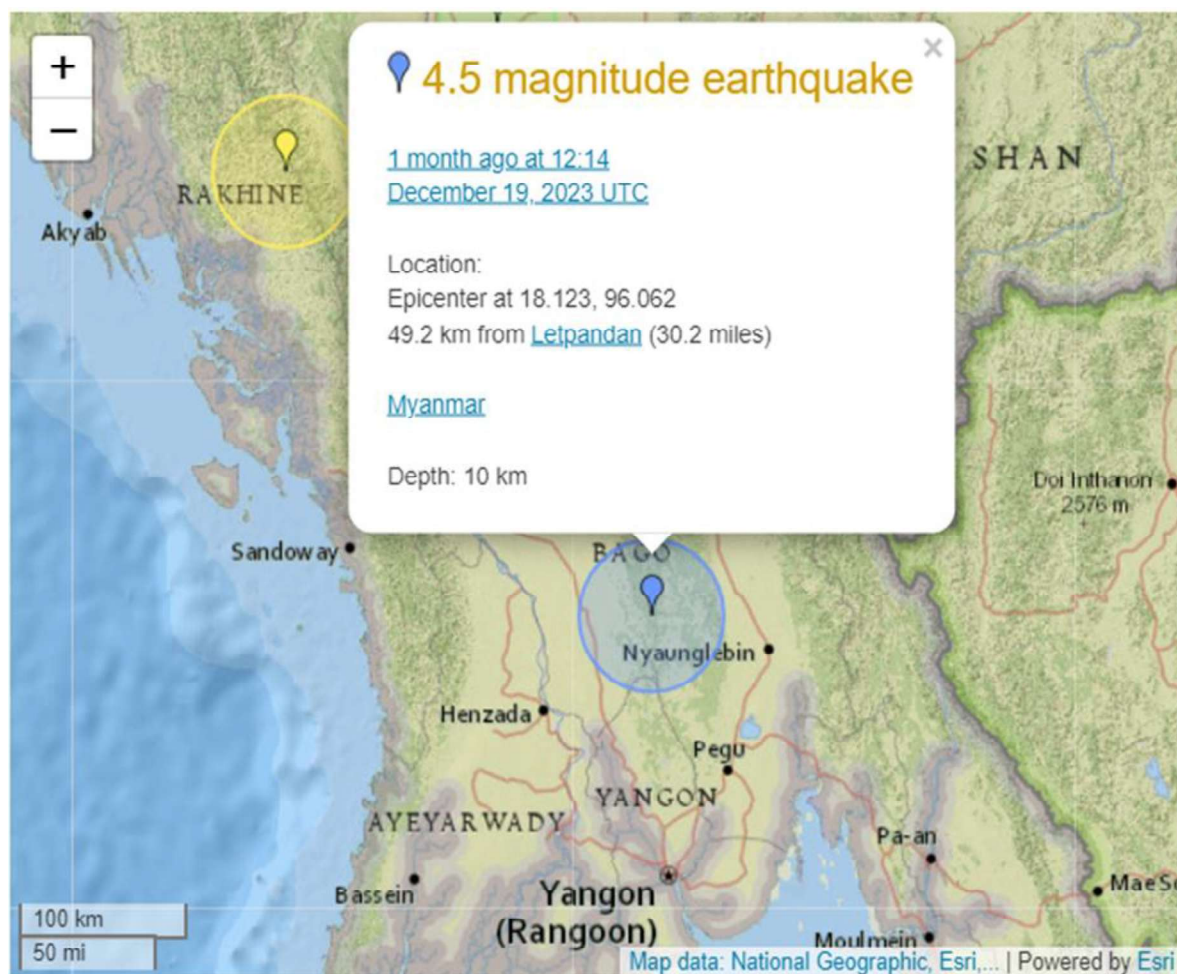


Figure 4-16 Recent Earthquake near Yangon Region

## 4.5.2 Primary Data for Environmental Quality

### 4.5.2.1 Air Quality

#### Overview

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There are many causes of pollution present in Yangon. The main causes would be vehicle emissions, which would run on lower quality fuels as well as diesel fuel as well as emissions from factories, and with Yangon lacking a critical amount of development and infrastructure there would be an associated level of industrialization taking place. Other pertinent sources would be open burning of rubbish and organic waste, crop field burning and also poorly maintained construction sites and road repairs.


### Ambient Air Quality

As the results of different air pollutants dispersion from the proposed project into surrounding atmosphere, it effects the air environment with significant impacts and forms an important part of impact assessment studies. An air quality assessment will be carried out in relation to the project development. In construction phase, there are no main construction works due to the lease the land including buildings and utilities portions. The main emission impact on the local air quality are likely from the engine as vehicles, generators and volatile vapor from paint raw materials during operation phase.

Within the proposed project site, it is necessary to provide an assessment of air quality in order to predict whether the elevated levels of air pollutants expose the future occupant or not.

Nitrogen oxide, nitrogen dioxide and particulate matter are most closely associated with traffic and generator emission, volatile vapor with paint raw materials and they can change the impact results of the project. Receptor locations are selected at the proposed project and Ah Lal Ywar, which can be affected by adverse effects of wind direction. The instruments used in baseline monitoring are shown as Figure 4-17.



Equipment	Measurable Parameters	Remark
	Noise (dBA)	

Equipment for Noise and its Measurable Parameter



Combustion analyzer



Vibration meter



(a) Aeroqual 500 Series with PM and CO Sensors



(b) Aeroqual 500 Series with PM Sensor



(c) MX-6 TVOC Detector

Equipment for workplace air quality measurement

Figure 4-17 Instruments used for Surveying to Environmental baseline data

### Materials and Methods

The objectives of the air quality monitoring exercise are to determine the normal concentration of respiratory particulates and gaseous/vapour emissions from the project area prior to the start of the said project. The air quality parameters are Oxygen (O<sub>2</sub>), Carbon monoxide (CO), Carbon Dioxide (CO<sub>2</sub>), Sulphur Dioxide (SO<sub>2</sub>), Nitrogen Dioxide (NO<sub>2</sub>), Particulate Matter (PM) and Total Volatile Organic Compound (TVOC).

Kane 900 and 988 plus combustion Analyzer is used to measure stack emission gas, PHOTOVAC 2020 ComboPro™ Photoionization Detector and DUST TRAK™ 8532 AEROQUEL MONITOR are used to measure workplace air quality and Sound Level Meter (SL-4033SD) for Noise level and Tri-axial Ground borne Vibration Meter RION VM-56 for Vibration.

### National Environmental Quality (Emission) Guideline

Sr. No.	Parameter	Averaging Period	Guideline Value (µg/m <sup>3</sup> )
1.	Nitrogen dioxide (NO <sub>2</sub> )	1-year	40
		1-hour	200
2.	Ozone (O <sub>3</sub> )	8-hour daily maximum	100
3.	PM <sub>10</sub>	1-year	20
		24-hour	50
4.	PM <sub>2.5</sub>	1-year	10
		24-hour	25
5.	Sulfur dioxide (SO <sub>2</sub> )	24-hour	20
		10-minutes	500

### Small Combustion Facilities Emission Guidelines

Sr. No.	Combustion Technology /Fuel	Particulate Matter PM <sub>10</sub> <sup>a</sup>	Sulfur Dioxide	Nitrogen Oxides
1.	Gas	-	-	200 <sup>b</sup> mg/Nm <sup>3</sup> 400 <sup>d</sup> mg/Nm <sup>3</sup> 1,600 <sup>e</sup> mg/Nm <sup>3</sup>
2.	Liquid	100	3	1,600-1,850 <sup>f</sup> mg/Nm <sup>3</sup>
3.	Natural gas (3-<15 MW)	-	-	90 <sup>h</sup> mg/Nm <sup>3</sup> 210 <sup>i</sup> mg/Nm <sup>3</sup>
4.	Natural gas (15-<50 MW)	-	-	50 mg/Nm <sup>3</sup>
5.	Fuels other than natural gas (3-<15 MW)	-	0.5 % sulfur	200 <sup>h</sup> mg/Nm <sup>3</sup> 310 <sup>i</sup> mg/Nm <sup>3</sup>
6.	Fuels other than natural gas (15-<50 MW)	-	0.5 % sulfur	150 mg/Nm <sup>3</sup>
7.	Gas	-	-	320 mg/Nm <sup>3</sup>
8.	Liquid	150 mg/Nm <sup>3</sup>	2,000 mg/Nm <sup>3</sup>	460 mg/Nm <sup>3</sup>
9.	Solid	150 mg/Nm <sup>3</sup>	2,000 mg/Nm <sup>3</sup>	650 mg/Nm <sup>3</sup>



### Method of Sampling and Analysis

Sampling rate for air quality is recorded automatically every one minute for important gases (SO<sub>2</sub>, NO<sub>2</sub>, CO<sub>2</sub>, CO, H<sub>2</sub>S, PM and O<sub>3</sub>) to describe ambient air quality. Sampling pump is adjusted to 2 liter/min. Different analysis methods are integrated in the instrument, such as particulate 90°Infrared light scattering for particulate matter (PM<sub>10</sub>, PM<sub>2.5</sub>), electrochemical sensor for toxic gases (SO<sub>2</sub>, NO<sub>2</sub>, CO, H<sub>2</sub>S), N DIR (optional sensor) for (CO<sub>2</sub>) and GA sensing Semiconductor- GSS technology (optional sensor) for O<sub>3</sub>.

### Ambient Air Quality at Site

The ambient air qualities were measured at 15.8.2022 and 27.4.2024 as construction/ renovation phase and operation phase respectively.

The ambient air quality measuring location, photo and results are shown as following for the 15.8.2022, construction/ renovation phase.

Point	Coordinate	Location Description
Ambient Air Measurement Point (AMP)	16° 55' 51.23" N 96° 3' 40.16" E	At Entrance Gate



Figure 4-18 Air quality measuring Location point at 15.8.2022



Figure 4-19 Photograph of air quality measuring at 15.8.2022

Table 4-4 Results of Ambient Air Quality measuring at site on 15.8.2022

SR. No	Parameters	Unit	Results	Measuring Avg. Period	General Guideline Value (NEQEG)	Avg. Period	Remark
1	Nitrogen Dioxide	$\mu\text{g}/\text{m}^3$	85.67	1	200 $\mu\text{g}/\text{m}^3$	1-hour	At Entrance Gate 16°55'51.23"N 96°3'40.16"E
		$\mu\text{g}/\text{m}^3$	42.37	24	NG	-	
2	Sulphur Dioxide	$\mu\text{g}/\text{m}^3$	0	24	20 $\mu\text{g}/\text{m}^3$	24-hours	
3	Particulate matter PM10	$\mu\text{g}/\text{m}^3$	37.34	24	50 $\mu\text{g}/\text{m}^3$	24-hours	
4	Particulate matter PM2.5	$\mu\text{g}/\text{m}^3$	19.82	24	25 $\mu\text{g}/\text{m}^3$	24-hours	
5	Ozone	$\mu\text{g}/\text{m}^3$	0.84	8	100 $\mu\text{g}/\text{m}^3$	8-hour daily Maximum	
			0.83	24	NG	-	

From the above monitoring results of ambient air quality (construction/renovation) and comparison data with standards, all parameters are in standards.

The ambient air quality measuring location, photo and results are shown as following for the 27.4.2024, operation phase.

Point	Coordinate	Location Description
Ambient Air Measurement Point (AMP)	16° 55' 51.23" N 96° 3' 40.16" E	At Entrance Gate



Figure 4-20 Air quality measuring location point at 27.4.2024



Figure 4-21 Photograph of air quality measuring at 27.4.2024

Table 4-5 Results of Ambient Air Quality at site on 27.4.2024

No.	Parameters	Unit	Result	Measuring Avg. Period		Guideline Value	Avg. Period	Remark
1	Nitrogen Dioxide	$\mu\text{g}/\text{m}^3$	19.54	1	hours	$200\mu\text{g}/\text{m}^3$	1-hour	27/04/2024 17:30 PM - 18:29 PM (Peak Hour)
		$\mu\text{g}/\text{m}^3$	11.58	24	hours	-	-	-
2	Sulphur Dioxide	$\mu\text{g}/\text{m}^3$	0	24	hours	$20\mu\text{g}/\text{m}^3$	24-hours	-
3	Particulate matter, $\text{PM}_{10}$	$\mu\text{g}/\text{m}^3$	28.51	24	hours	$50\mu\text{g}/\text{m}^3$	24-hours	-
4	Particulate matter, $\text{PM}_{2.5}$	$\mu\text{g}/\text{m}^3$	16.97	24	hours	$25\mu\text{g}/\text{m}^3$	24-hours	-
5	Ozone	$\mu\text{g}/\text{m}^3$	0.86	8	hours	$100\mu\text{g}/\text{m}^3$	8-hour daily Maximum	27/04/2024 9:30AM – 17:29 PM



								(8 hr avg)
		$\mu\text{g}/\text{m}^3$	0.83	24	hours	-	-	-

From the above monitoring results of ambient air quality (operation) and comparison data with standards, all parameters are in standards.

Moreover, there is comparison table of ambient air quality of at site on 15.8.2022 (construction/renovation) and that of on 27.4.2024 (operation phase), it is shown as following.

**Table 4-6 Comparison Table of Ambient Air Quality at site on 15.8.2022 (Construction / renovation) with that of 27.4.2024 (Operation phase)**

No.	Parameters	Unit	Measurement Results at 15.8.2022	Measurement Result at 27.4.2024	More/Less
1	Nitrogen Dioxide	$\mu\text{g}/\text{m}^3$	42.37(24 hr)	11.58 (24 hr)	-30.79
		$\mu\text{g}/\text{m}^3$	85.67 (1 hr)	19.54 (1 hr)	-66.13
2	Sulphur Dioxide	$\mu\text{g}/\text{m}^3$	0 (24 hr)	0 (24 hr)	-
3	Particulate matter, $\text{PM}_{10}$	$\mu\text{g}/\text{m}^3$	37.34 (24 hr)	28.51 (24 hr)	-8.33
4	Particulate matter, $\text{PM}_{2.5}$	$\mu\text{g}/\text{m}^3$	19.82 (24 hr)	16.97 (24 hr)	-3.01
5	Ozone	$\mu\text{g}/\text{m}^3$	0.83 (24 hr)	0.83 (24 hr)	-
		$\mu\text{g}/\text{m}^3$	0.84 (8 hr)	0.86 (8 hr)	+0.02

Although all parameters are in standards, some parameter' values of 2024 are more than of 2022 and some parameter' value are lesser. Generally industrial gases emissions favor the Ozone and organic compound emissions favor the Ammonia and VOC.

Detail measurement information is shown as following **Figure 4-22**.





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### Ambient Air Quality Measurement Results

Date: 15/05/2024

<b>Monitoring Location</b>	Nippon Paints (Myanmar) Co., Ltd	<b>Sampling I.D</b>	-	
<b>Location (Township)</b>	Hlaing Thar Yar Township	<b>Latitude</b>	16°55'51.23"N	
		<b>Longitude</b>	96° 3'40.16"E	
<b>Location (Region/State)</b>	Yangon	<b>Method</b>	Haz-Scanner Model-EPAS	
		<b>Station height (about ground)</b>	5 ft	
<b>Client</b>	Nippon Paints (Myanmar) Co., Ltd	<b>Log on / Time (Date, Time)</b>	27.4.2024	9:30 AM
<b>Air Sampling Survey Date</b>	27.4..2024	<b>Log off/ Time (Date, Time)</b>	28.4.2024	9:30 AM
<b>Contact Address/Phone</b>	-	<b>Survey Duration (hours)</b>	24 hrs.	

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### Comparison of Results Value and Guideline Standard

No	Parameters	Result	Unit	Measuring Avg. Period		Guideline Value	Avg. Period	Remark
1	Nitrogen Dioxide	19.54	$\mu\text{g}/\text{m}^3$	1	hours	200 $\mu\text{g}/\text{m}^3$	1-hour	27/04/2024 17:30 PM - 18:29 PM (Peak Hour)
		11.58	$\mu\text{g}/\text{m}^3$	24	hours	-	-	-
2	Sulphur Dioxide	0	$\mu\text{g}/\text{m}^3$	24	hours	20 $\mu\text{g}/\text{m}^3$	24-hours	-
3	Particulate matter PM <sub>10</sub>	28.51	$\mu\text{g}/\text{m}^3$	24	hours	50 $\mu\text{g}/\text{m}^3$	24-hours	-
4	Particulate matter PM <sub>2.5</sub>	16.79	$\mu\text{g}/\text{m}^3$	24	hours	25 $\mu\text{g}/\text{m}^3$	24-hours	-
5	Ozone	0.86	$\mu\text{g}/\text{m}^3$	8	hours	100 $\mu\text{g}/\text{m}^3$	8-hour daily Maximum	27/04/2024 9:30AM – 17:29 PM (8 hr avg)
		0.83	$\mu\text{g}/\text{m}^3$	24	hours	-	-	-

NG – No Guideline



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### Haz-Scanner Measurement Record

Date	Time	SO <sub>2</sub>	NO <sub>2</sub>	O <sub>3</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>
		ug/m <sup>3</sup>	ug/m <sup>3</sup>	ug/m <sup>3</sup>	ug/m <sup>3</sup>	ug/m <sup>3</sup>
27/4/2024	09:30 - 10:29	0.82	3.51	1.15	38.16	16.49
27/4/2024	10:30 - 11:29	0.36	1.97	0.82	17.46	12.90
27/4/2024	11:30 - 12:29	0.00	5.66	0.82	16.08	10.08
27/4/2024	12:30 - 13:29	0.11	12.41	0.82	15.68	10.83
27/4/2024	13:30 - 14:29	0.25	18.49	0.82	18.05	13.70
27/4/2024	14:30 - 15:29	1.03	18.75	0.82	23.44	21.56
27/4/2024	15:30 - 16:29	0.00	19.21	0.81	31.20	20.56
27/4/2024	16:30 - 17:29	0.00	19.00	0.82	36.71	22.78
27/4/2024	17:30 - 18:29	0.00	19.54	0.82	47.14	27.97
27/4/2024	18:30 - 19:29	0.09	19.43	0.82	37.93	23.97
27/4/2024	19:30 - 20:29	0.00	7.81	0.82	32.49	23.97
27/4/2024	20:30 - 21:29	0.00	11.34	0.82	23.54	13.32
27/4/2024	21:30 - 22:29	0.00	14.99	0.82	18.63	10.37
28/4/2024	22:30 - 23:29	0.00	16.01	0.82	29.02	14.65
28/4/2024	23:30 - 00:29	0.00	17.34	0.81	29.04	15.46
28/4/2024	00:30 - 01:29	0.00	2.58	0.81	41.91	23.69
28/4/2024	01:30 - 02:29	0.00	2.88	0.82	40.44	23.97
28/4/2024	02:30 - 03:29	0.03	4.44	0.82	23.54	13.32
28/4/2024	03:30 - 04:29	0.07	2.97	0.82	18.63	10.37
28/4/2024	04:30 - 05:29	0.00	18.76	0.82	29.02	14.65
28/4/2024	05:30 - 06:29	0.00	18.88	0.82	29.04	15.46
28/4/2024	06:30 - 07:29	0.31	13.97	0.80	18.96	8.48
28/4/2024	07:30 - 08:29	0.08	3.09	0.80	20.24	10.42
28/4/2024	08:30 - 09:29	0.00	4.92	0.80	47.93	28.33
Avg		0.00	11.58	0.83	28.51	16.97
Max		0.00	19.54	1.15	47.93	28.33
Min		0.00	1.97	0.80	15.68	8.48



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### Wind Rose Map

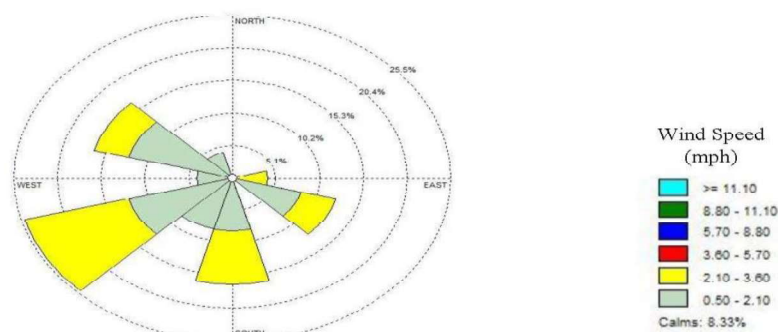


Figure: Wind Rose Map (27.4.2024 ~ 28.4.2024 blowing from)

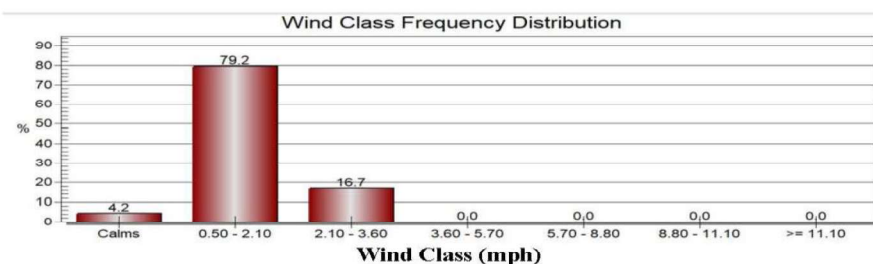


Figure 4-22 Detail measurement information of ambient air of site on 2024

### Air Quality of Workplace

The workplace air qualities were measured at 15.8.2022 and 27.4.2024 as construction/renovation phase and operation phase respectively.

The workplace air quality measuring location, photo and results are shown as following for the 15.8.2022 construction/renovation phase.





**Figure 4-23 Workplace air quality measuring location point at 15.8.2022**



**Figure 4-24 Photograph of workplace air quality measuring at 15.8.2022**

**Table 4-7 Results of Workplace Air Quality measuring on 15.8.2022**

No	Parameter	Unit	Results	NEQ(E)G Guideline Value	OHS Guideline	Duration
1	MX-6 (VOC)	ppb	-	-	-	24 Hour
2	Particulate Matter, PM <sub>10</sub>	µg/m <sup>3</sup>	17.46	50	-	24Hour
3	Particulate Matter, PM <sub>2.5</sub>	µg/m <sup>3</sup>	7.03	25	-	24Hour
4	Sound Level Meter	dBA	44.22	-	90	24 Hour

From the above monitoring results of workplace air quality (construction/renovation) and comparison data with standards, all parameters are in standards.

The workplace air quality measuring location, photo and results are shown as following for the 27.4.2024, operation phase.



Point	Coordinate	Location Description
Workplace air measuring point	16° 55' 53.44" N 96° 3' 41.12" E	At the Production Area



Figure 4-25 Workplace Air Quality measuring location point at 27.4.2024



Figure 4-26 Photograph of Workplace Air Quality measuring at 27.4.2024

Table 4-8 Results of Workplace Air Quality measuring on 27.4.2024

No.	Parameters	Result	Unit	Measuring Avg. Period		Guideline Value	Avg. Period	Remark
1	Nitrogen Dioxide	18.55	$\mu\text{g}/\text{m}^3$	1	hours	200 $\mu\text{g}/\text{m}^3$	1-hour	27/04/2024 10:30 PM - 11:30 PM (Peak Hour)
		2.95	$\mu\text{g}/\text{m}^3$	24	hours	-	-	-

2	Sulphur Dioxide	0	$\mu\text{g}/\text{m}^3$	24	hours	20 $\mu\text{g}/\text{m}^3$	24-hours	-
3	Particulate matter, $\text{PM}_{10}$	19.75	$\mu\text{g}/\text{m}^3$	24	hours	50 $\mu\text{g}/\text{m}^3$	24-hours	-
4	Particulate matter, $\text{PM}_{2.5}$	9.91	$\mu\text{g}/\text{m}^3$	24	hours	25 $\mu\text{g}/\text{m}^3$	24-hours	-
5	Ozone	0.83	$\mu\text{g}/\text{m}^3$	8	hours	100 $\mu\text{g}/\text{m}^3$	8-hour daily Maximum	27/04/2024 10:30AM – 18:29 PM (8 hr avg)
		0.82	$\mu\text{g}/\text{m}^3$	24	hours	-	-	-

From the above monitoring results of workplace air quality (operation phase) and comparison data with standards, all parameters are in standards.

Moreover, there is comparison table of workplace air quality at workplace on 15.8.2022 (construction/renovation) and that of on 27.4.2024 (operation phase), it is shown as following.

**Table 4-9 Comparison Table of Workplace Air Quality at workplace on 15.8.2022 (Construction / Renovation) with that of 27.4.2024 (Operation phase)**

Sr. No.	Parameter	Unit	Measurement Result at 15.8.2022	Measurement Result at 27.4.2024	More/ Less
1	Nitrogen Dioxide	$\mu\text{g}/\text{Nm}^3$	ND	18.55 (1 hr)	+18.55
			ND	2.95 (24 hr)	+2.95
2	Sulphur Dioxide	$\mu\text{g}/\text{m}^3$	ND	0 (24 hr)	+0
3	Particulate matter, $\text{PM}_{10}$	$\mu\text{g}/\text{m}^3$	17.46 (24hr)	19.75 (24 hr)	+2.29
4	Particulate matter, $\text{PM}_{2.5}$	$\mu\text{g}/\text{m}^3$	7.03 (24 hr)	9.91 (24 hr)	+2.88
5	Ozone	$\mu\text{g}/\text{m}^3$	ND	0.83 (1 hr)	+0.83
			ND	0.82 (24 hr)	+0.82

In above comparison table, the results of 2024 are more than that of 2022 because there is no production activitie in the construction/renovation phase at 2022 and the time which the workplace air qualities were measured at 27.4.2024 is operation phase. Detail measurement information is shown as following Figure 4-27.



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### Workplace Air Quality Measurement Results

Date: 17/05/2024

<b>Monitoring Location</b>	Workplace Air Quality Measurement	<b>Sampling I.D</b>	-	
<b>Location (Township)</b>	Hlaing Thar Yar Township	<b>Latitude</b>	16°55'53.44"N	
		<b>Longitude</b>	96° 3'41.12"E	
<b>Location (Region/State)</b>	Yangon	<b>Method</b>	Haz-Scanner Model-EPAS	
		<b>Station height (about ground)</b>	5 ft	
<b>Client</b>	Nippon Paints (Myanmar) Co., Ltd	<b>Log on / Time (Date, Time)</b>	27.4.2024	10:30 AM
<b>Air Sampling Survey Date</b>	27.4.2024	<b>Log off / Time (Date, Time)</b>	28.4.2024	10:30 AM
<b>Contact Address/Phone</b>	-	<b>Survey Duration (hours)</b>	24 hrs.	



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### Comparison of Results Value and Guideline Standard

No	Parameters	Result	Unit	Measuring Avg. Period		Guideline Value	Avg. Period	Remark
1	Nitrogen Dioxide	18.55	$\mu\text{g}/\text{m}^3$	1	hours	200 $\mu\text{g}/\text{m}^3$	1-hour	27/04/2024 10:30 PM - 11:30 PM (Peak Hour)
		2.95	$\mu\text{g}/\text{m}^3$	24	hours	-	-	-
2	Sulphur Dioxide	0	$\mu\text{g}/\text{m}^3$	24	hours	20 $\mu\text{g}/\text{m}^3$	24-hours	-
3	Particulate matter PM <sub>10</sub>	19.75	$\mu\text{g}/\text{m}^3$	24	hours	50 $\mu\text{g}/\text{m}^3$	24-hours	-
4	Particulate matter PM <sub>2.5</sub>	9.91	$\mu\text{g}/\text{m}^3$	24	hours	25 $\mu\text{g}/\text{m}^3$	24-hours	-
5	Ozone	0.83	$\mu\text{g}/\text{m}^3$	8	hours	100 $\mu\text{g}/\text{m}^3$	8-hour daily Maximum	27/04/2024 10:30AM – 18:29 PM (8 hr avg)
		0.82	$\mu\text{g}/\text{m}^3$	24	hours	-	-	-





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### Haz-Scanner Measurement Record

Date	Time	NO <sub>2</sub>	SO <sub>2</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>	O <sub>3</sub>
		ug/m <sup>3</sup>	ug/m <sup>3</sup>	ug/m <sup>3</sup>	ug/m <sup>3</sup>	ug/m <sup>3</sup>
27/4/2024	10:30 - 11:29	18.55	0.00	21.94	11.50	0.81
27/4/2024	11:30 - 12:29	9.92	0.00	18.65	10.76	0.89
27/4/2024	12:30 - 13:29	2.25	0.00	24.64	9.72	0.82
27/4/2024	13:30 - 14:29	1.93	0.00	20.76	7.42	0.82
27/4/2024	14:30 - 15:29	1.75	0.00	16.06	9.16	0.82
27/4/2024	15:30 - 16:29	1.75	0.00	17.25	9.82	0.82
27/4/2024	16:30 - 17:29	1.98	0.00	13.25	7.46	0.82
27/4/2024	17:30 - 18:29	12.55	0.00	15.59	8.45	0.82
27/4/2024	18:30 - 19:29	11.55	0.00	24.14	12.65	0.81
27/4/2024	19:30 - 20:29	1.16	0.00	20.51	11.83	0.79
27/4/2024	20:30 - 21:29	0.99	0.00	27.10	10.70	0.82
27/4/2024	21:30 - 22:29	0.22	0.00	22.84	8.16	0.82
27/4/2024	22:30 - 23:29	0.19	0.00	17.67	10.08	0.82
27/4/2024	23:30 - 00:29	0.18	0.00	18.97	10.80	0.83
28/4/2024	00:30 - 1:29	0.18	0.00	14.57	8.21	0.82
28/4/2024	1:30 - 2:29	0.20	0.00	17.15	9.29	0.82
28/4/2024	2:30 - 3:29	1.25	0.00	24.14	12.65	0.81
28/4/2024	3:30 - 4:29	2.16	0.00	20.51	11.83	0.78
28/4/2024	4:30 - 5:29	0.99	0.00	27.10	10.70	0.82
28/4/2024	5:30 - 6:29	0.22	0.00	22.84	8.16	0.82
28/4/2024	6:30 - 7:29	0.19	0.00	17.67	10.08	0.82
28/4/2024	7:30 - 8:29	0.18	0.00	18.97	10.80	0.82
28/4/2024	8:30 - 9:29	0.18	0.00	14.57	8.21	0.82
28/4/2024	9:30 - 10:29	0.20	0.00	17.15	9.29	0.82
Avg		2.95	0.00	19.75	9.91	0.82
Max		18.55	0.00	27.10	12.65	0.89
Min		0.18	0.00	13.25	7.42	0.78

Figure 4-27 Detail measurement information of Workplace Air at the site on 2024

#### 4.5.2.2 Air Quality of village nearest of the project

Air qualities of the Ah Lel Ywar Village, nearest of project were measured at 16.8.2022 and 28.4.2024 as Construction/Renovation phase and operation phase respectively.



The Air Quality of the Ah Lel Ywar village measuring location, photo and results are shown as following for the 16.8.2022 Construction/ Renovation phase.

Point	Coordinate	Location Description
Air Quality Measuring Point (AMP)	16° 55' 21.11" N 96° 3' 53.44" E	At Ah Lel Village Monastery

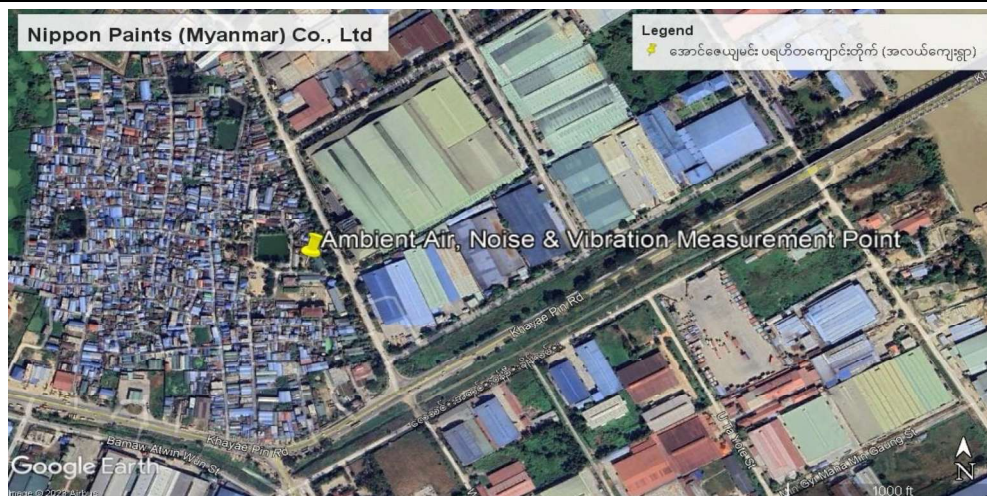


Figure 4-28 Air Quality measuring location point at 2022



Figure 4-29 Photograph of Air Quality measuring at Ah Lel Ywar on 2022

Table 4-10 Results of Air Quality Measuring at Ah Lel Ywar on 2022

No	Parameters	Unit	Result	Measuring Avg. Period		Guideline Value		Avg. Period	Remark
						NEQ(E)G Standard Guideline	WHO Air Quality Standard Guideline		
1	Nitrogen Dioxide	µg/m³	14.34	1	hours	200	-	1-hour	16/08/2022 14:00 -15:00 (Peak Hour)

		$\mu\text{g}/\text{m}^3$	7.23	24	hours	NG	25	24-hours	-
2	<b>Sulphur Dioxide</b>	$\mu\text{g}/\text{m}^3$	0.34	24	hours	20	40	24-hours	-
3	<b>Particulate matter PM<sub>10</sub></b>	$\mu\text{g}/\text{m}^3$	39.1	24	hours	50	45	24-hours	-
4	<b>Particulate matter PM<sub>2.5</sub></b>	$\mu\text{g}/\text{m}^3$	14.8	24	hours	25	15	24-hours	-
5	<b>Ozone</b>	$\mu\text{g}/\text{m}^3$	0.79	8	hours	100	100	8-hour daily Maximum	11:00-19:00 16/08/2022
		$\mu\text{g}/\text{m}^3$	0.8	24	hours	NG	-	24-hours	-

The Air Quality of the Ah Lal Ywar village measuring location, photo and results are shown as following for the 28.4.2024.

#### Location Points of Air Quality Measuring

Point	Coordinate	Location Description
Air Quality Measuring Point (AMP)	16° 55' 21.03" N 96° 3' 53.58" E	At Ah lel Village Monastery



Figure 4-30 Air Quality measuring location point at 2024



Figure 4-31 Photograph of Air Quality Measuring at Ah Lal Ywar on 2024

Table 4-11 Results of Air Quality Measuring at Ah Lel Ywar on 2024

No.	Parameters	Unit	Result	Measuring Avg. Period		Guideline Value		Avg. Period	Remark
						NEQ(E)G Standard Guideline	WHO Air Quality Standard Guideline		
1	Nitrogen Dioxide	$\mu\text{g}/\text{m}^3$	7.44	1	hours	200	-	1-hour	28/04/2024 11:30 AM - 12:29 PM (Peak Hour)
		$\mu\text{g}/\text{m}^3$	3.19	24	hours	-	25	24-hours	-
2	Sulphur Dioxide	$\mu\text{g}/\text{m}^3$	0	24	hours	20	40	24-hours	-
3	Particulate matter, PM <sub>10</sub>	$\mu\text{g}/\text{m}^3$	29.48	24	hours	50	45	24-hours	-
4	Particulate matter, PM <sub>2.5</sub>	$\mu\text{g}/\text{m}^3$	14.84	24	hours	25	15	24-hours	-
5	Ozone	$\mu\text{g}/\text{m}^3$	0.89	8	hours	100	100	8-hour daily Maximum	29/04/2024 10:30AM – 18:29 PM (8 hr avg)
		$\mu\text{g}/\text{m}^3$	0.91	24	hours	-	-	-	-

From the above monitoring result of Ah Lel Ywar, air quality (operation phase) and comparison data with standards, all parameters are in standards.

Moreover, there is comparison table of Ah Lel Ywar air quality on 2022 and that of 2024, and it is shown as following.

**Table 4-12 Comparison Table of Ah Lel Ywar Village, air quality on 16.8.2022 (Construction/Renovation) with that of 28.4.2024 Operation Phase**

Sr. No.	Parameters	Unit	Measurement Result at 15.8.2022	Measurement Result at 27.4.2024	More/Less
1	Nitrogen Dioxide	$\mu\text{g}/\text{m}^3$	14.34	7.44 (1 hr)	-6.9
			7.23	3.19 (24 hr)	-4.04
2	Sulphur Dioxide	$\mu\text{g}/\text{m}^3$	0.34	0 (24 hr)	-0.34
3	Particulate Matter PM <sub>10</sub>	$\mu\text{g}/\text{m}^3$	39.1	29.48 (24 hr)	-9.62
4	Particulate Matter PM <sub>2.5</sub>	$\mu\text{g}/\text{m}^3$	14.8	14.84 (24 hr)	+0.04
5	Ozone		0.79	0.89 (8hr)	+0.1
			0.8	0.91 (24 hr)	+0.11

Although all parameters are in standards, some parameters' values of 2024 are more than those of 2022 and some parameters' values are lesser.



4.5.2.3 Stack Emission Measurement

Electric Generator stack (Exhaust) emission

Electric generator stack (exhaust) emission was measured at 27.4.2024 and location of electric generator, photo of measuring and result of emission are shown as following.

Location point of electric generator stack emission measuring

Point	Coordinate	Description
P - 1	16°55'51.70"N 96° 3'39.25"E	electric generator



Figure 4-32 Location point of electric generator stack emission measuring



Figure 4-33 Photograph of electric generator stack emission

Generator Specifications

- Capacity - 250 KVA
- Fuel Type - Diesel

Table 4-13 Result of electric generator stack emission gases

Parameter	Unit	Results	NEQ(E) G Guideline for Small Combustion facilities
O <sub>2</sub>	%	16.73	-
CO	mg/m <sup>3</sup>	280	-
CO <sub>2</sub>	%	3.9	-
NO	mg/m <sup>3</sup>	49	460
SO <sub>2</sub>	mg/m <sup>3</sup>	0	2000

Capacity of electric generator used in paint factory is 250 KVA (200 kW) and emission limit standard if India for 56 to 560 kW generators are as following.

$$\text{No}_x \text{ emission limit} = 0.4 \text{ g/kWh}$$

No<sub>x</sub> emission limit for 200 kW =  $0.4 \times 200$

$$= 80 \text{ gm No}_x$$

i.e. For one hour running the 200 kW electric generator, it allows 80 gm NO<sub>2</sub> emission

The following assumptions are used for 200 kW electric generators.

$$\text{Fuel consumption} = 50 \text{ L/hr}$$

$$\text{Density of fuel} = 823 \text{ kg/m}^3 \text{ (g/l)}$$

$$\text{Carbon (C) content in diesel} = 84\%$$

$$\text{Hydrogen (H) content in diesel} = 16\%$$

Diesel fuel is compressed with no excess air for engine compressing.

### Calculation

one hour basic

Diesel Consumption	50 L/hr
Diesel Consumption	$50 \text{ L} \times 823 \text{ kg/m}^3 = 41.15 \text{ kg}$
Carbon Content in Diesel	$= 41.15 \times 84\% = 34.56 \text{ kg}$
Oxygen required for Carbon	$= 34.56 \times 32/12 = 92.17 \text{ kg}$
CO <sub>2</sub> emission from Carbon	$= 34.56 \times 44/12 = 126.72 \text{ kg}$
N <sub>2</sub> accompanied with O <sub>2</sub> from air	$= 92.17 \times 32/21 \times 79/21$
	$= 10.83 \text{ kg mole}$



Hydrogen content in Diesel	= $41.15 \times 16\%$	= 6.58 <i>kg</i>
O <sub>2</sub> required for hydrogen	= $6.58 \times 16/2$	= 52.67 <i>kg</i>
Water vapours emission from hydrogen	= $6.58 \times 18/2$	= 59.22 <i>kg</i>
N <sub>2</sub> accompanied with O <sub>2</sub> from air	= $52.67 \times 32/79$	= 21.19 <i>kg</i>
		= 6.19 <i>kg mole</i>

---

Emitted Gases = CO <sub>2</sub> + H <sub>2</sub> O + N <sub>2</sub>
= $126.72/44 + 59.12/18 + (10.83+ 6.19)$
= 2.88 + 3.28 + 10.83 + 6.19
= 23.18 <i>kg mole</i>
= $23.18 \times 22.4 \times 298/273$
= 566.78 <i>N m<sup>3</sup></i>
∴ NO <sub>2</sub> emission limit = $(80 \text{ gm} \times 1000 \text{ mg/g}) / 566.78 \text{ N m}^3$
= 141.1 <i>mg/Nm<sup>3</sup></i>

For 250 kVA (200kW) electric generator used in project, Sulfur dioxide emission limit calculations are following.

Sulphur content in diesel = 0.05% W

### Calculation

1 hour basic

Diesel consumption	= 50 L
Diesel consumption	= $50 \times 823 \text{ kg/m}^3$ = 41.15 kg
Sulphur content in diesel	= 0.05%
Sulphur content in diesel for 1 hour	= $41.15 \times 0.05\%$
	= 0.020575 kg
SO <sub>2</sub> emitted during 1 hr, generator running	= $0.020375 \times 64/32$
	= 0.041 kg
	= 41.15 gm
	= 41150 mg
SO <sub>2</sub> emission limited	= $41150 \text{ mg} / 566.78 \text{ Nm}^3$
	= 72.6 mg/Nm <sup>3</sup>

Therefore, for 250 kVA (200kW) generator, the emission limit for NO<sub>x</sub> and SO<sub>2</sub> are 141.1 mg/Nm<sup>3</sup> and 72.6 mg/Nm<sup>3</sup> respectively should be applied and submit to ECD to allow those emission limits.

#### Generator Specifications

Capacity 250 kVA (200kW)

Fuel Type Diesel

#### Comparison Table of Generator Stack Emission results with emission limits (Calculate)

Parameter	Unit	Result	Emission Limit (Calculation)	More/Less
O <sub>2</sub>	%	16.73	-	
CO	mg/m <sup>3</sup>	280	-	
CO <sub>2</sub>	%	3.9	-	
NO <sub>2</sub>	mg/m <sup>3</sup>	49	141.1	-92.1
SO <sub>2</sub>	mg/m <sup>3</sup>	(ND)	72.6	-72.6

#### Dust Collector Emission

Dust Collector emission was measured at 8.3.2025 and location of Dust Collector, photo of measuring and result of emission are shown as following.

#### Location point of dust collector emission measuring point

Point	Coordinate	Description
Dust collector area	16°55'54.48"N 96° 3'41.08"E	Dust Collector



Figure 4-34 Location of Particulate Matter Measurement Point

## Dust Collector Measurement Results

Sampling ID: 01 (Dust Collector)

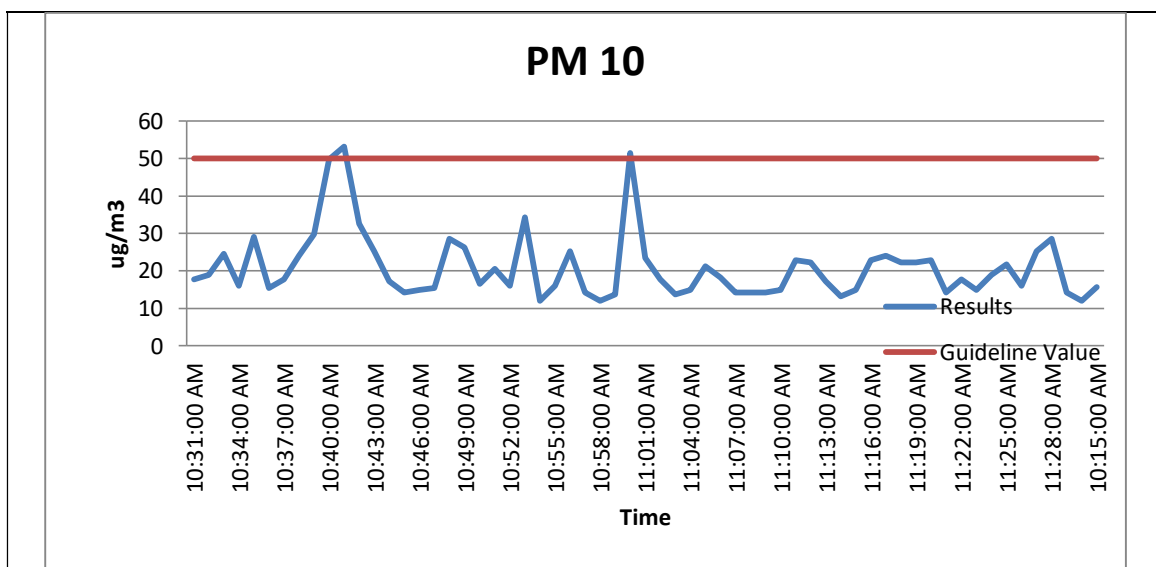
No.	Parameters	Dust Collector Measurement Results	Unit	NEQ(E)G Standard	Measuring Period
1.	PM <sub>10</sub>	20.88	μg/m <sup>3</sup>	50	1 Hour
2.	PM <sub>2.5</sub>	7.18	μg/m <sup>3</sup>	25	1 Hour

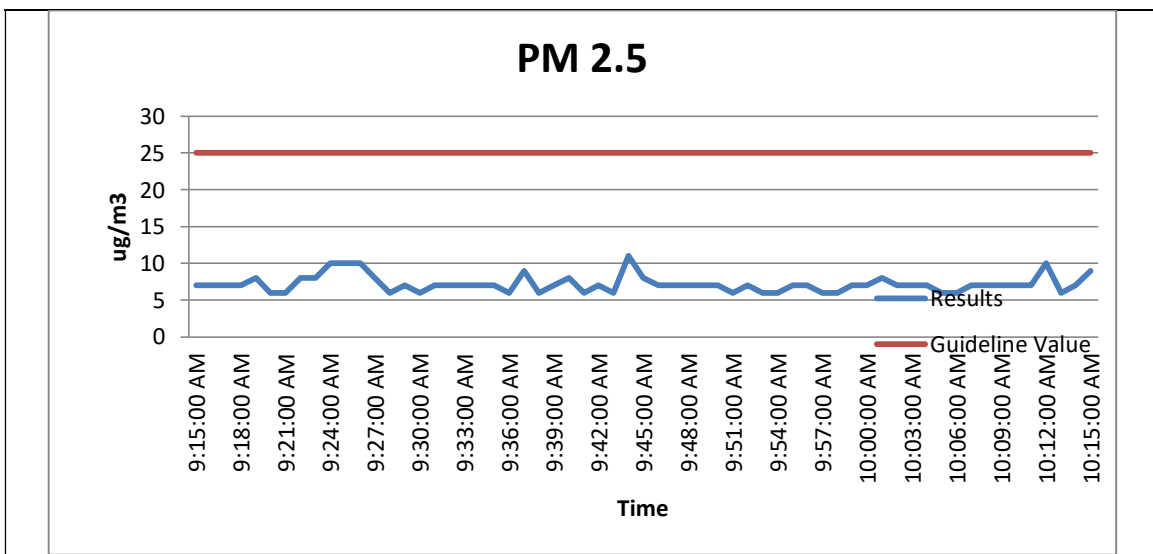
From the above results of dust collector emission, all parameters are in standards.



Figure 4-35 Recorded Photo

## Measurement Record





#### 4.5.2.4 Noise Environment

##### Overview

Noise often defined as unwanted sound, interferes with speech communication, causes annoyance, distracts from work, disturb sleep, thus deteriorating quality of human environment. Noise emission from the project area will be usually from vehicle traffic from nearby roads, as well as any industries or generators in the surrounding area of Nippon Paint Project and itself. The project is located within the Industrial Zone. The receptor will be the project workers, communities of Industrial Zone.

##### Noise Level Guideline

Parameter for noise level survey was determined according to Myanmar National Environmental Quality (Emission) Guidelines.

##### National Environmental Quality (Emission) Guideline, Noise Level Guideline


Receptor	One Hour LAeq , dBA	
	Day time 07:00-22:00 (10:00-22:00 for Public Holiday)	Night time 22:00-07:00 (22:00-10:00 for Public Holiday)
Industrial Commercial	70	70
Resident, Institutional, Educational	55	45

##### Monitoring Methodology and Material

Noise level measurements were conducted according to the relevant methods of the International Organization for Standardization (ISO). The equipment used for measurement is a Sound Level Meter (SL – 4033SD) and is calibrated by Aeroqual Limited, New Zealand and Amigos International

Co., Ltd, Myanmar. The Equipment of Noise and its Measurable Parameter is shown in **Table 4-13**.

**Table 4-14 Equipment for Noise and its Measurable Parameter**

Equipment	Measurable Parameters	Remark
	Noise (dBA)	Measurement Range 30~130 dBA

#### 4.5.2.4.1 Noise level measuring at Project Site (Ambient)

Noise baseline monitoring was conducted at four (4) boundary locations, during 9:00 to 22:00 for daytime and during 22:00 to 9:00 for night time per location by GMES team at 15th to 16th August 2022 Construction/Renovation phase. The locations of noise measuring points and photos of monitoring are shown as following.

#### Noise Monitoring Locations

Measuring Points	Coordinate of Location		Description of Sampling Location
	Latitude	Longitude	
NMP-1	16°55'50.78"N	96° 3'40.75"E	Corner of the factory-1
NMP-2	16°55'51.81"N	96° 3'39.00"E	Corner of the factory-2
NMP-3	16°55'54.95"N	96° 3'41.95"E	Corner of the factory-3
NMP-4	16°55'53.78"N	96° 3'43.14"E	Corner of the factory-4

NMP – Noise Measurement Points



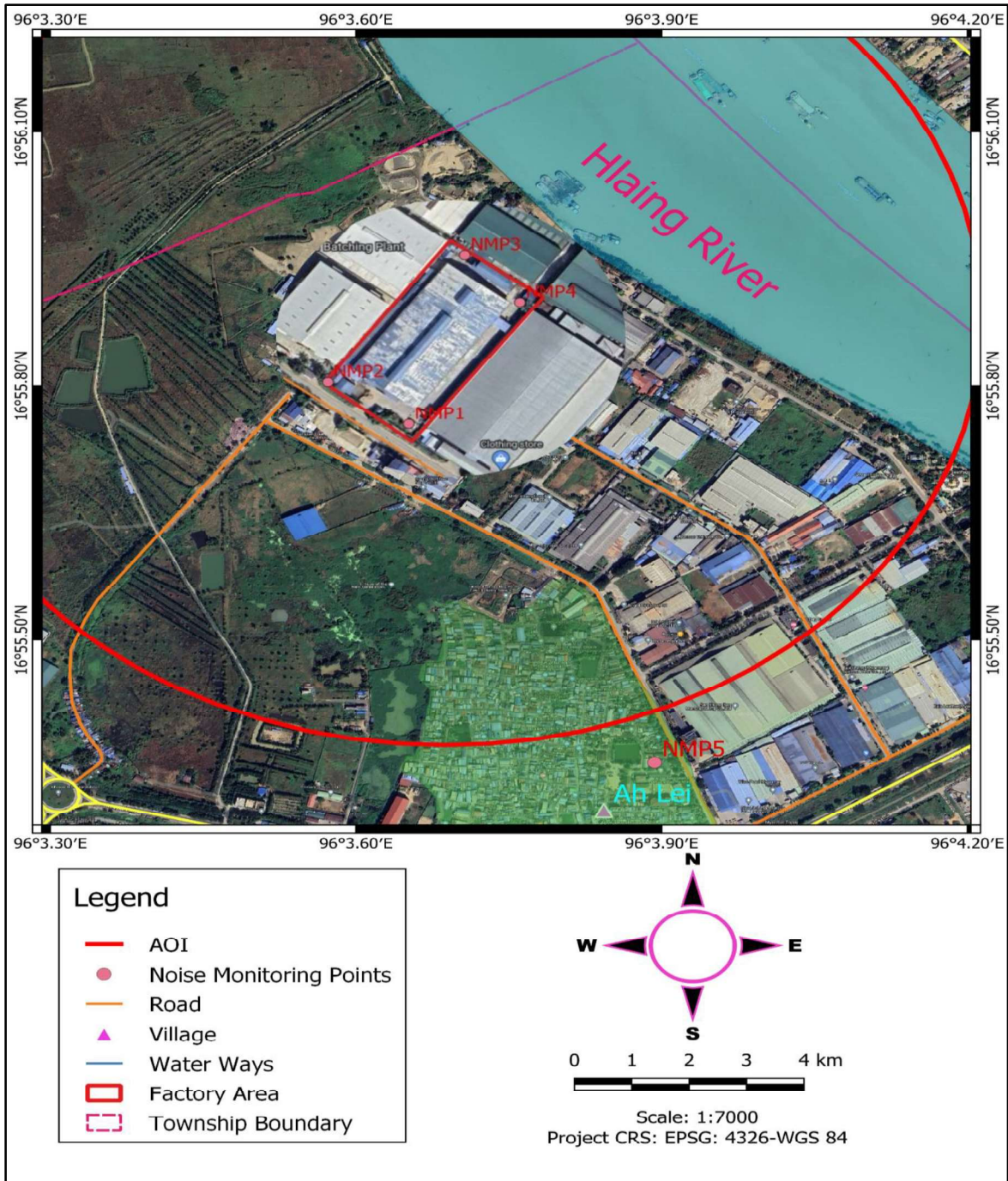


Figure 4-36 Map of Noise Monitoring Locations



**Figure 4-37 Photos of Noise Monitoring at 2022, Construction / Renovation**

**Table 4-15 Noise Measuring Result on 2022**

Point	Unit	Noise Level (Day Time)				NEQ(E)G Guideline
		Time period	Avg	Max	Min	
NMP-1	dBA	Day Time	50.60	67.80	42.00	70
		Night Time	56.36	86.70	46.30	70
NMP-2	dBA	Day Time	60.10	92.50	49.80	70
		Night Time	57.83	73.90	49.30	70
NMP-3	dBA	Day Time	64.84	80.10	60.00	70
		Night Time	62.46	82.10	54.80	70
NMP-4	dBA	Day Time	49.54	68.40	31.70	70
		Night Time	39.72	66.50	24.70	70



### Noise Level Measuring at Project site (Ambient) on 2024 (Operation phase)

Noise baseline monitoring was conducted at (4) boundary location at 27.4.2024 (operation phase) and location of measuring points are same as Figure 4-37. The measuring results are shown as following Table 4-16.

**Table 4-16 Noise Measuring Results on 2024**

Point	Unit	Noise Level (Day Time)				NEQ(E)G Guideline
		Time period	Avg	Max	Min	
NMP-1	dBA	Day Time	58.53	102.40	42.80	70
		Night Time	47.55	76.90	43.00	70
NMP-2	dBA	Day Time	66.94	87.69	51.30	70
		Night Time	67.56	91.50	39.40	70
NMP-3	dBA	Day Time	69.39	101.30	49.50	70
		Night Time	48.85	54.70	47.60	70
NMP-4	dBA	Day Time	67.43	81.10	42.60	70
		Night Time	62.44	90.40	36.90	70

According to the average measuring results of boundary noise level were lower than the NEQ(E)G Guideline Value.

The photos of noise level measuring are shown as Figure 4-38.

#### Recorded Photo



**Figure 4-38 photos of noise measuring at 2024, operation phase**

**Table 4-17 Comparison Table of Noise Level (Ambient) at site corner points at 2022 with those of 2024**

SR. No	Noise Level	Unit	Noise Level at 2022	Noise Level at 2024	More/Less
1	Noise Level at N 16° 55' 50.78" E 96° 3' 40.75"	dBA	50.60 day 56.36 night	58.53 day 47.55 night	+7.93 -8.81
2	Noise Level at N 16° 55' 51.81" E 96° 3' 39.00"	dBA	60.1 day 57.83 night	66.94 day 67.56 night	+6.84 +9.73
3	Noise Level at N 16° 55' 54.95" E 96° 3' 41.95"	dBA	64.84 day 62.46 night	69.39 day 48.85 night	+4.55 -13.61
4	Noise Level at N 16° 55' 53.78" E 96° 3' 43.14"	dBA	49.54 day 39.72 night	67.43 day 62.44 night	+17.89 +22.72

From the above comparison table, although all noise levels at 2022 and 2024 are in standards, some at 2024 are more than 2022 and some at 2024 are more than 2022.

All daytime noise levels are more, due to machineries and vehicles running during operation phase compare with 2022 renovation phase.

#### **4.5.2.4.2 Noise level measuring at site (workplace) on 2022**

Noise level measuring at site (workplace) on 2022 was performed and location point and result are shown as following.

##### **Workplace noise level location point on 2022**

Sr.No	Coordinate	Description of noise level measuring location
1	N 16° 55' 53.44" E 96° 3' 41.12"	At the production area

##### **Result of workplace Noise Level Measuring**

Point	Unit	Measurement	Result		
			Avg	Max	Min
N 16° 55' 53.44"	dBA	Day time	39.3	58	33.8



E 96° 3' 41.12"		Night time	38.3	43.5	33.1
-----------------	--	------------	------	------	------

**Noise level measuring at site (workplace) on 2024**

Noise level measuring at site (workplace) on 2024 was performed and location point, photos and result are shown as following.

**Table 4-18 Workplace noise level location point on 2024**

Sr.No	Coordinate	Description of noise level measuring location
1	N 16° 55' 53.44" E 96° 3' 41.12"	At the production area

**Figure 4-39 Photo of noise measuring at workplace on 2024****Table 4-19 Result of workplace Noise Level Measuring**

Point	Unit	Measurement	Result		
			Avg	Max	Min
N 16° 55' 53.44" E 96° 3' 41.12"	dBA	Day time	60.75	94.30	35.8
		Night time	57.13	101.3	47.6

From the above noise level measuring results, average noise level is in standard.

**4.5.2.4.3 Noise Level Measuring at nearest village of project**

Noise baseline monitoring was performed at monastery of Ah Lel Ywar Village, nearest of the project in 19<sup>th</sup> November 2022 and 27<sup>th</sup> April 2024.

Noise level measuring location, photo and results of 2022 at Ah Lel Ywar Village are shown as following.



Figure 4-40 Noise Level monitoring location

Table 4-20 Location of Noise Level at Ah Lal Ywar on 2022

Measuring Point	Co-ordinate Location		Description of
	Latitude	Longitude	
NM P	N 16° 55' 21.3"	E 96° 3' 53.59"	Aung Zay Ywar Min Monestary, Ah Lal Ywar Village

Table 4-21 Results of Noise level at Ah Lal Ywar on 2022

Description	Unit	Measurement	Results	One Hour LAeq (dBA) Guideline Value; Residential Institutional, educational	
NMP	dBA	Day	61.68	55	Day time 07:00-22:00 (10:00-22:00 for public holiday)
		Night	49.03	45	Night time 22:00-07:00 (22:00-10:00 for public holiday)

Noise level measuring location, photos and results of 2024 at Ah Lal Ywar Village are shown as following.

Point	Coordinate	Location Description
NMP	16° 55' 21.03" N 96° 3' 53.58" E	At Ah Lal Ywar Village Monastery



Figure 4-41 Noise level monitoring location



Figure 4-42 Photograph of Noise level monitoring

Table 4-22 Result of Noise level at Ah Lal Ywar Village on 2024

Description	Unit	Measurement	Result			One Hour LAeq (dBA)	
			Avg	Max	Min	Guideline Value Residential, Institutional	Guideline Value Educational
NMP (Ah Lal Ywar Village)	dBA	Day time	46.67	66.30	35.90	55	Day time 07:00-22:00 (10:00-22:00 for public holiday)
		Night time	41.23	66.35	34.00	45	Night time 22:00-07:00 (22:00-10:00 for public holiday)

Table 4-23 Comparison table of noise level measurement at Ah Lal Ywar Village on 2022 with that of 2024

Description	Unit	Result (Aug)		More/Less
		at 2022	at 2024	
Day time	dBA	61.68	46.67	-15.01
Night time	dBA	49.03	41.23	-7.80

The monastery of Ah Lal Ywar Village, where noise levels were measured, is a Monastic Education school. When the measurement was

conducted in 2022, it was during November, meaning that "It is time for Teaching sessions of academic year" and students were present in this Monastic Education School. However, when the measurement was taken in April 2024, it was during the summer holiday. So there were no students attending classes. As a result, the noise measurement results from 2022 were higher compared to those from 2024.

#### 4.5.2.5 Vibration Measurement

##### Vibration Measuring Instrument

The vibration data collecting is performed with the axes was (X, Y, Z). Vibrating measured instrument is shown in Figure 4-40.



**Figure 4-43 Vibrating measured instrument**

Vibrating standard guideline of DIN 4150: Part 3 "Structural Vibration in Buildings" was as follow.

DIN 4150			
Type of Structure	Peak Particle Velocity (mm/sec)		
Frequency	Acceptable Level	Moderate level	Extreme Level
Commercial and Industrial Building (Type-1)	20	20 ~ 40	40 ~ 50
Dwellings (Type-2)	5	5 ~ 15	15 ~ 20
Ancient and Historic Buildings (Type-3)	3	3 ~ 8	8 ~ 10

Vibration measuring was performed at Ah Lel Ywar Village and Near Security Gate of Project on 2022 and location and results are following.



**Table 4-24 Location of vibration measuring on 2022**

SR. No.	Point	Latitude	Longitude	Description
1	VMP-1	N 16° 55' 51.24"	E 96° 3' 40.12"	Near Security Gate of Project
2	VMP-2	N 16° 55' 21.03"	E 96° 3' 53.59"	Ah Lal Ywar Village Monastery

**Figure 4-44 Locations of Vibration measuring at 2022****Table 4-25 Vibration Measurement Result on 2022**

Summary of Vibration Monitoring Results					
Instrument ID	Date		Maximum Peak Vector Sum (mm/s)	Current Threshold mm/s	Remark
VMP- 1	19/11/2022	20/11/2022	ND	0.5	-
VMP- 2	21/11/2022	22/11/2022	0.59	0.5	Max: PVS on 21th, September 2022 16:40 PM

Remark: Vibration level is less than Threshold limit 0.5 mm/sec not recorded the data.

There were two measurements for vibration at security gate entrance of project and Ah Lal Ywar Village on 2024.

The vibration measuring, location points, results and vibration measurement records are shown as following.

**Table 4-26 Location of vibration measurement on 2024**

SR. No.	Point	Latitude	Longitude	Description
1	VMP-1	N 16° 55' 51.24"	E 96° 3' 40.12"	Near Security Gate of Project
2	VMP-2	N 16° 55' 21.03"	E 96° 3' 53.59"	Ah Lal Ywar Village Monastery



Figure 4-45 Location of Vibration Measurement Points

Table 4-27 Result of vibration measuring on 2024

Summary of Vibration Monitoring Results				
Instrument ID	Date		Maximum Peak Vector Sum (mm/s)	Remark
VMP – 1 Near Security Gate of Project	27/04/2024	28/04/2024	1.61	Max: PVS 27 <sup>th</sup> April, 2024 14:15 PM
VMP – 2 Ah Lal Ywar Village Monastery	28/04/2024	29/04/2024	ND	< 0.5 mm/sec

Remark: Vibration level is less than Threshold limit 0.5 mm/sec not recorded the data.

Table 4-28 Vibration Measurement Record

Date+Time	X [mm/s]	Y [mm/s]	Z [mm/s]	V  [mm/s]
27/4/2024 9:39 AM	0.46	0.21	0.63	1.30
27/4/2024 10:26 AM	0.29	0.34	0.49	1.12
27/4/2024 11:31 AM	0.35	0.17	0.38	0.90
27/4/2024 12:20 AM	0.34	0.44	0.52	1.30
27/4/2024 13:15:00 PM	0.31	0.22	-	0.42
27/4/2024 14:15:00 PM	0.61	0.44	0.55	1.61
27/4/2024 15:35:00 PM	0.40	0.52	0.61	1.53
27/4/2024 16:35:00 PM	0.38	0.23	0.32	0.93
27/4/2024 17:50:00 PM	0.31	0.41	0.50	1.22
27/4/2024 18:08:00 PM	0.43	0.47	0.61	1.51
27/4/2024 19:50:00 PM	0.34	0.21	-	0.84
27/4/2024 20:20:00 PM	0.58	-	0.43	0.11
28/4/2024 21:48:00 AM	0.54	-	0.41	0.61
28/4/2024 21:54:00 AM	0.31	-	-	1.39
28/4/2024 22:55:00 AM	-	0.61	-	0.31
28/4/2024 23:59:00 AM	-	-	0.33	3.1
28/4/2024 0:54 AM	0.29	-	0.24	0.53
28/4/2024 1:28 AM	0.85	0.17	-	0.62

28/4/2024 2:29 AM	-	-	0.24	0.4
28/4/2024 3:40 AM	-	0.25		0.7
28/4/2024 4:14 AM	-	-	0.88	0.6
28/4/2024 5:23 AM	-	-	0.00	0.34
28/4/2024 6:50 AM	0.36	-	-	0.88
28/4/2024 7:37 AM	0.41	-	-	0.35
28/4/2024 8:50 AM	0.43	0.37	0.52	1.31
28/4/2024 9:13 AM	-	-	0.15	0.15

**Table 4-29 Comparison Table of Vibration Measurement Results at 2022 with that of 2024**

Instrument ID	Unit	Measuring Result		More/Less
		2022	2024	
VMP - 1	mm/sec	ND	1.61	+1.61
VMP - 2	mm/sec	0.59	ND	-0.59

According to the results of vibration measurement of Ah Lel Ywar Village and Near Security Gate of Project on 2022 and 2024, all of these results are in the Vibrating standard guideline of DIN 4150: frequency type; “Commercial and Industrial Building (Type-1), Dwellings (Type-2), Ancient and Historic Buildings (Type-3)”. There is no direct or indirect impact on cultural heritage due to vibration generated during factory operations or when vehicle machinery is used.

#### 4.5.2.6 Soil Quality

Soil qualities monitoring were performed at project site on 2022 and 2024.

##### 4.5.2.6.1 Soil Quality at site on 2022

Soil quality of site on 2022 was monitored at two places as inside the factory and outside the factory. The location of soil quality monitoring, photographs of monitoring and results of that were shown as following.

Point	Coordinate	Location Description
SSP-1	16° 55' 53.53" N 96° 3' 43.12" E	Inside the factory
SSP-2	16° 55' 51.50" N 96° 3' 39.09" E	Outside the factory





Figure 4-46 Location of soil sampling points on 2022



Figure 4-47 Record Photographs of Soil Sampling  
 Table 4-30 Results of Soil quality monitoring at site on 2022

SR. No.	Parameters	Unit	Soil quality (inside the factory)	Soil quality (outside the factory)
1	Aluminum	mg / kg. soil	0.05	0.05
2	Arsenic	mg / kg. soil	0.05	0.125
3	Chloride	g / kg. soil	0.095	0.07
4	Copper	mg / kg. soil	<2.5	<2.5
5	Cyanide	mg / kg. soil	<0.05	<0.05
6	Extractable Acidity	c mole/ kg soil	3.5	3
7	Manganese	mg / kg. soil	<1	<1
8	P- Alkalinity	m mole/ l extract	0	0
9	pH	-	6.2	6.6
10	Total Alkalinity	m mole/ l extract	6	3.6
11	Total Iron	mg / kg. soil	<0.5	<0.5

Details of soil analyzing results were shown as following.

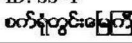




## Green Myanmar Environmental Services Co., Ltd




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Yangon, Myanmar

Tel: 09 897 978 296, 09-5081451 E-mail: [gmescompany@gmail.com](mailto:gmescompany@gmail.com), [info@gmes-mm.com](mailto:info@gmes-mm.com)

Project Name: Nippon Paint	Sample ID: SS -1 	Date of Collection: 15.8.2022
Sampling Location:	Latitude: 16°55'53.53"N	Date of Arrival at Lab: 15.8.2022
	Longitude: 96° 3'43.12"E	Date of Issue of Results: 9.9.2022

### Laboratory Analysis Results of Soil

Sr. No.	Parameters	Unit	Analysis Value	Minimum Measurement Range of Methods
1.	Aluminum	mg/kg soil	0.05	0.05 mg/kg soil
2.	Arsenic	mg/kg soil	0.05	0.025 mg/kg soil
3.	Chloride	g/kg soil	0.095	0.025 g/kg soil
4.	Copper	mg/kg soil	<2.5	2.5 mg/kg soil
5.	Cyanide	mg/kg soil	<0.05	0.05 mg/kg soil
6.	Extractable Acidity	cmol/kg soil	3.5	0.25 cmol/kg soil
7.	Manganese	mg/kg soil	<1	1 mg/kg soil
8.	P - Alkalinity	mmol/l extract	0	0.2 mmol/l extract
9.	pH	-	6.2	0.1
10.	Total Alkalinity	mmol/l extract	6	0.2 mmol/l extract
11.	Total Iron	mg/kg soil	<0.5	0.5 mg/kg soil

Analyzed By	Checked by	Approved By
		
U Myo Thura Kyaw Lab Technician (Laboratory)	U Thet Min Paing Lab Supervisor (Laboratory)	Daw Aye Thuzar Hein In-Charge (Laboratory)



## Green Myanmar Environmental Services Co., Ltd




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Project Name: Nippon Paint	Sample ID: SS -2 <del>SS-003</del>	Date of Collection: 15.8.2022
Sampling Location:	Latitude: 16°55'51.50"N	Date of Arrival at Lab: 15.8.2022
	Longitude: 96° 3'39.09"E	Date of Issue of Results: 9.9.2022

### Laboratory Analysis Results of Soil

Sr. No.	Parameters	Unit	Analysis Value	Minimum Measurement Range of Methods
1.	Aluminum	mg/kg soil	0.05	0.05 mg/kg soil
2.	Arsenic	mg/kg soil	0.125	0.025 mg/kg soil
3.	Chloride	g/kg soil	0.07	0.025 g/kg soil
4.	Copper	mg/kg soil	<2.5	2.5 mg/kg soil
5.	Cyanide	mg/kg soil	<0.05	0.05 mg/kg soil
6.	Extractable Acidity	cmol/kg soil	3	0.25 cmol/kg soil
7.	Manganese	mg/kg soil	<1	1 mg/kg soil
8.	P - Alkalinity	mmol/l extract	0	0.2 mmol/l extract
9.	pH	-	6.6	0.1
10.	Total Alkalinity	mmol/l extract	3.6	0.2 mmol/l extract
11.	Total Iron	mg/kg soil	<0.5	0.5 mg/kg soil

Analyzed By	Checked by	Approved By
		
U Myo Thura Kyaw Lab Technician (Laboratory)	U Thet Min Paing Lab Supervisor (Laboratory)	Daw Aye Thuzar Hein In-Charge (Laboratory)

4.5.2.6.2 Soil Quality at Site on 2024

Current situation of the project site was concrete floored and there was no space for soil sampling in the site. The soil sampling was carried out outside of the project site.

Soil sampling location point, photograph of soil sampling and results of soil analysis were shown as following.

Point	Coordinate	Location Description
SSP-1	16° 55' 51.50" N 96° 3' 39.09" E	Outside the factory



Figure 4-48 Location of Soil Sampling Points on 5.8.2024



Figure 4-49 Record photo of Soil Sampling on 5.8.2024

**Table 4-31 Results of Soil Quality monitoring at outside of the factory on 5.8.2024**

SR. No	Parameters	Unit	Soil Quality (Outside of factory)
1	Aluminum	mg / kg. soil	0.06
2	Arsenic	mg / kg. soil	0.05
3	Chloride	g / kg. soil	2.1
4	Copper	mg / kg. soil	<2.5
5	Cyanide	mg / kg. soil	<0.05
6	Extractable Acidity	c mole/ kg soil	5.1
7	Manganese	mg / kg. soil	3
8	P- Alkalinity	m mole/ l extract	0
9	pH	-	6.6
10	Total Alkalinity	m mole/ l extract	4.2
11	Total Iron	mg / kg. soil	1.5

The soil quality standard mentioned at Section 2.5 is for the polluted soil and the soil from outside of Nippon Paint Factory is industrial soil. So, the analysis results of soil quality should not compared with soil quality standards and it should be compared with latter with current value as base line data.

Moreover, there was a comparison table of soil quality at the outside of the factory on 2022 with that of 2024 and it was following.

**Table 4-32 Comparison tables of soil analysis data at the outside of the factory on 2022 with those of on 2024**

SR. No.	Parameters	Unit	Soil quality outside the factory 2022	Soil quality outside the factory 2024	more/less
1	Aluminum	mg / kg. soil	0.05	0.06	+0.01
2	Arsenic	mg / kg. soil	0.125	0.05	-0.075
3	Chloride	g / kg. soil	0.07	2.1	+2.03
4	Copper	mg / kg. soil	<2.5	<2.5	-
5	Cyanide	mg / kg. soil	<0.05	<0.05	-
6	Extractable Acidity	c mole/ kg soil	3	5.1	+2.1



7	Manganese	mg / kg. soil	<1	3	+2.0
8	P- Alkalinity	m mole/ l extract	0	0	-
9	pH	-	6.6	6.6	-
10	Total Alkalinity	m mole/ l extract	3.6	4.2	+0.6
11	Total Iron	mg / kg. soil	<0.5	1.5	+1.0

From the above table, except Arsenic, measured parameters were more of 2024 than those of 2022. It may be contaminated by soil waste and should be controlled by factory and Industrial Zone Committee.

#### 4.5.2.7 Odor Quality

Projects should control odors to ensure those odors that are offensive or unacceptable to neighbor do not occur.

##### 4.5.2.7.1 Odor monitoring at nearest village of project

Odor monitoring was performed at Ah Lel Ywar on 27-4-2024 and location point, location map, photograph of monitoring and result were shown as following.

Location of Odor Measurement Point

No	Parameter	Latitude	Longitude	Description
1	Odor Measurement	16°55'22.90"N	96° 3'46.39"E	Ah Lel Village

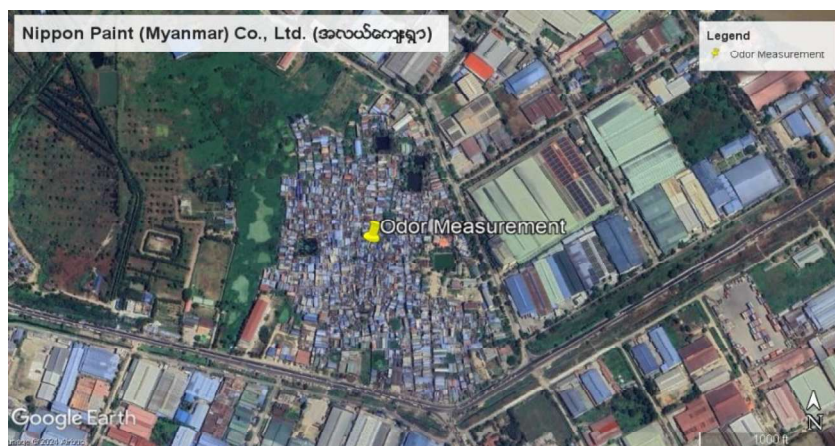


Figure 4-50 Location map of odor measurement point



Figure 4-51 Photograph of odor measurement record

Table 4-33 Result of odor at Ah lel Ywar on 27-4-2024

SR. No	Parameter	Unit	Result	Guideline National Environmental Quality (Emission) Guideline
1	Odor (ADM)	-	ND	5~10

#### 4.5.2.7.2 Odor monitoring at Site

##### Overview

Point and diffuse source odors from industries be minimized using available prevention and control techniques. Point source activities are those that involve stack emission of odor and which generally can be controlled using waste reduction, waste minimization and cleaner production principles on conventional emission control equipment. Diffuse source activities are generally dominated by area or volume source emission of odor and which can be more difficult to control. Projects should control odor levels should not exceed five to ten odorant units at the edge of populated areas in the vicinity of a project.

##### Monitoring Methodology and Material

Odor level measurements were performed by using Handheld Odor Meter OMX-TDM and OMX-ADM meter.

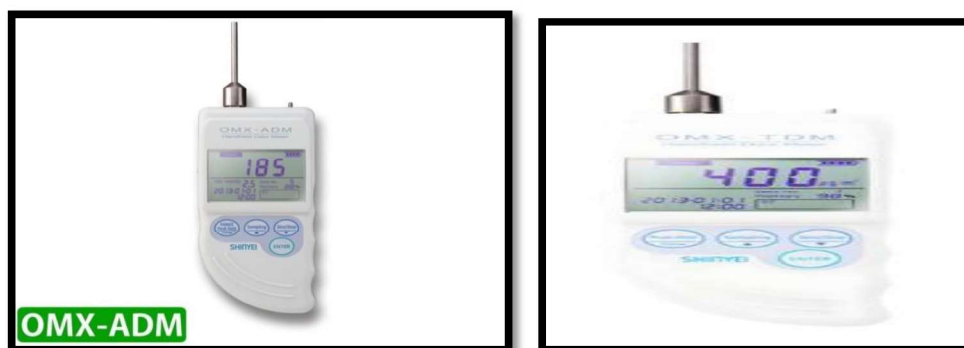


Figure 4-52 Photograph of ADM and ATM odor meter

**Location of Odor Management Points**

There are four odors measuring points and they are as follow.

**Table 4-34 Location of Odor Measuring Point**

SR. No.	Description	Latitude	Longitude
1	Chemical Store (OMP-1)	16° 55' 53.9" N	96° 3' 41.12" E
2	Paint Mixing (Filling Area) (OMP-2)	16° 55' 53.09" N	96° 3' 40.8" E
3	Paint Mixing (on Platform) (OMP-3)	16° 55' 53.16" N	96° 3' 40.47" E
4	Finished Good (Storage) (OMP-4)	16° 55' 52.63" N	96° 3' 41.46" E

**Photograph of location of Odor Measuring Points****Figure 4-53 Photograph of location of odor measuring points****Photograph of Odor Measurement****Recorded Photo****Chemical Store****Paint Mixing ( Filling Area )**



Figure 4-54 Photograph of odor measurement

Table 4-35 Results of odor measurement by ADM Odor Meter

SR. No	Measuring Point	Parameter	Unit	Result	National Environmental (Emission) Guideline
1	Chemical Store	Odor (ADM)	-	2	5 ~ 10
2	Paint Mixing (Filling Area)	Odor (ADM)	-	4	5 ~ 10
3	Paint Mixing (on platform)	Odor (ADM)	-	3	5 ~ 10
4	Finished Goods (Storage)	Odor (ADM)	-	ND	5 ~ 10

Table 4-36 Results of Odor Measurement TDM Odor Meter

SR. No	Measuring Point	Parameter	Unit	Result	National Environmental (Emission) Guideline
1	Chemical Store	Odor (TDM)	$\mu\text{g}/\text{m}^3$	5	-
2	Paint Mixing (Filling Area)	Odor (TDM)	$\mu\text{g}/\text{m}^3$	9	-
3	Paint Mixing (on platform)	Odor (TDM)	$\mu\text{g}/\text{m}^3$	4	-
4	Finished Goods (Storage)	Odor (TDM)	$\mu\text{g}/\text{m}^3$	ND	-

#### 4.5.2.8 Water Quality

As water environment of proposed project, the three types of water are noted and they are

- surface water
- ground water and
- wastewater

##### 4.5.2.8.1 Surface Water

Surface water is generally defined as any water that existing at the surface of the Earth. Usually, it is used specifically for terrestrial (inland) water bodies. Precipitation and run off from nearby higher areas are major causes of forming surface water. Surface water is used not only for drinking purpose but also for irrigation, wastewater treatment, livestock, industrial uses,



hydropower and recreation. (MM S 44: 2024; National Surface Water Quality Standard)

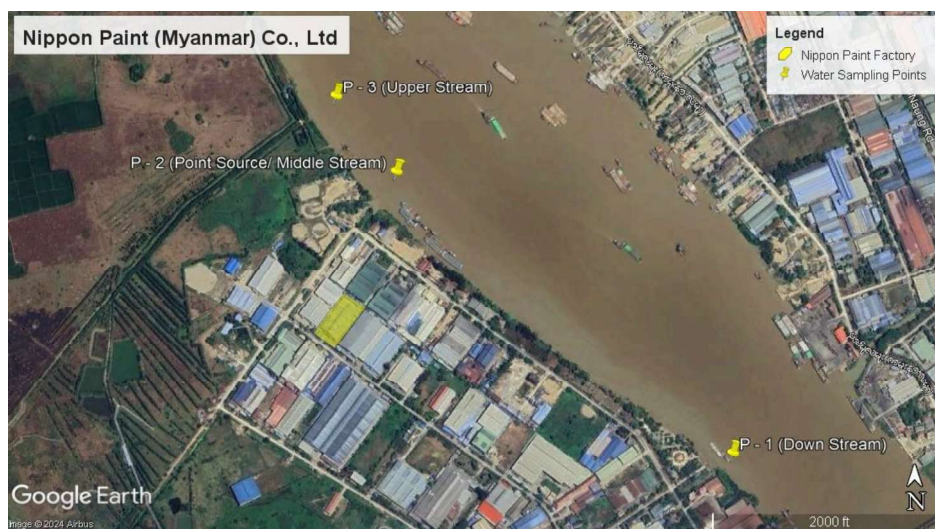
### Primary Baseline Sampling of Water

#### Sampling Methodology

Water samples were taken and filled into a sterilized plastic and glass sample containers (depending on the measuring parameters). All sampling procedures were conducted strictly according to relevant guidelines and standards with supervision of technical experts from GMES team.

#### Surface Water Sampling Location

All water samples were collected at the data of 15.8.2022 and 24.12.2022. There are three surface water samples as upstream, mid-stream and downstream Hlaing River and locations of sampling, photo of sampling and results of surface water samples are shown as following.



**Figure 4-55 Location of Surface Water Sampling**  
**Table 4-37 Location of Surface Water sampling on 2022**

Sampling Name	Coordinate Point		Description of Location
	Latitude	Longitude	
WSP -3	16° 56' 11.30" N	96° 3' 40.69"E	Upstream of Hlaing River
WSP -1	16° 55' 40.81" N	96° 4' 15.57"E	Downstream of Hlaing River
WSP -2	16° 56' 04.86" N	96° 3' 45.99"E	Midstream of Hlaing River (near wastewater discharge point of Industrial Compound)



**Figure 4-56 Photograph of Surface water Sampling (Hlaing River)**

#### **Results of Surface Water (Hlaing River) Quality and Discussion**

The surface water samples were analysis in GMES laboratory, Alarm Ecological laboratory and ISO TECH laboratory depend on parameter requirements. The analyzed results of water quality from Hlaing River were compared with NEQEG Guideline and National Surface Water Quality Standard (MM S 44: 2024). The analyzed results and standards are shown as following.

**Table 4-38 Analyzed results of surface water (Hlaing River) and Standard on 2022**

Parameters	Unit	Analyzed Value			Guideline	
		WSP -1 Up- stream	WSP - 2 Down- stream	WSP - 3 Middle- stream	NEQEG General Application	National Surface Water Quality Standard (MM S 44:2024) (Environmental Conservation Class IV)
5 day Biochemical Oxygen Demand	mg/L	< 30	< 30	< 30	50	25
Arsenic	mg/L	0.005	0.005	0.005	0.1	-

Chemical Oxygen Demand	mg/L	48	36	48	250	50
Oil and Grease	mg/L	< 5	< 5	< 5	10	-
pH	-	7.8	7.6	7.8	6 – 9	5 - 9
Total Iron	mg/L	3	3	3	3.5	-
Temperature increase	°C	< 3	< 3	< 3	< 3	-
Total Suspended Solid	mg/L	120	146	128	50	100
Cadmium	mg/L	0.01	0.01	ND	0.1	-
Lead	mg/L	0.2	0.3	0.2	0.1	-
Zinc	mg/L	< 0.02	< 0.02	< 0.02	2	-
Nickel	mg/L	ND	ND	ND	0.5	-
Sulfide	mg/L	< 0.04	< 0.04	< 0.04	1	-
Phenol	mg/L	< 0.1	< 0.1	< 0.1	0.5	-
Chromium (Hexavalent)	mg/L	0.2	0.05	0.05	0.1	-
Cyanide (CN)	mg/L	Nil	Nil	Nil	0.1	-
Copper (Cu)	mg/L	Nil	Nil	Nil	0.5	-

From above surface water analyzed results, for the WSP-1, upstream of Hlaing River, except total suspended water, lead, chromium, all analyzed results were in standards as NEQEG and National Surface Water Standards.

For WSP -2, downstream of Hlaing River, except total suspended solid, lead, all analyzed results were in standards.

For WSP-3, midstream of Hlaing River, midstream of Hlaing River (near wastewater discharge point of Industrial Compound) except total suspended solid, lead, all analyzed results were in standards.

#### **Surface water (Hlaing River) analyzing on 2024**

Surface water (Hlaing River) sampling and analyzing were performed at upstream, downstream and midstream (near wastewater discharge point of Industrial Compound) on 7.6.2024.

Location of surface water quality, photo of sampling and results of surface water analysis were shown following.

**Table 4-39 Location of surface water sampling at 2024**

Sampling Name	Coordinate Point		Description of Location	Sampling Date
	Latitude	Longitude		
WSP -1	16° 55' 40.81" N	96° 4' 15.57"E	Downstream of Hlaing River	7.6.2024
WSP -2	16° 56' 04.86" N	96° 3' 45.99"E	Midstream of Hlaing River (near wastewater discharge point of	7.6.2024



			Industrial Compound)	
WSP -3	16° 56' 11.30" N	96° 3' 40.69"E	Upstream of Hlaing River	7.6.2024



Figure 4-57 Location of Surface Water Sampling on 2024



Figure 4-58 Location of Surface Water Sampling on 2024

Table 4-40 The analyzed results of surface water (Hlaing River) and Standards on 2024

Parameters	Unit	Analyzed Value			Guideline
		WSP-3 Up Stream of	WSP-1 Down stream of	WSP-2 Mid stream of	
					National Surface Water Quality Standard (MM S 44:2024) (Environmental



		Hlaing River	Hlaing River	Hlaing River	Conservation Class IV)
5 day Biological Oxygen Demand	mg/l	4.1	4.6	5.6	25
Chemical Oxygen Demand	mg/l	< 15	< 15	< 15	50
pH	-	7	6.6	6.7	5-9
Total Suspended Solid	mg/l	85	42	53	100
Ammonia Nitrogen	mg/l	0.3	0.2	0.2	0.8
Dissolved Oxygen	mg/l	5.44	5.1	5.21	>3
Copper	mg/l	ND	ND	ND	-
Oil & Grease	mg/l	4	4	5	No noticeably seen
E. coli	MPN/100 ml	300	300	300	1000

From the above surface water analyzed results, all parameter are in standards.

**Table 4-41 Comparison Table of Surface water Quality at 2022 with those of 2024.  
(Hlaing River- up, down and mid-stream)**

SR No	Parameter	Unit	Hlaing River, upstream			Hlaing River, downstream			Hlaing River, midstream		
			2022	2024	more/less	2022	2024	more/less	2022	2024	more/less
1	5 day Biochemical Oxygen Demand	mg/L	<30	4.1	-	<30	4.6	-	<30	5.6	-
2	Arsenic	mg/L	0.005	-	-	0.005	-	-	0.005	-	-
3	Chemical Oxygen Demand	mg/L	48	<15	-	36	<15	-	48	<15	-
4	Oil and Grease	mg/L	<5	4	-	<5	4	-	<5	5	-
5	p <sup>H</sup>	-	7.8	7	-0.8	7.6	6.6	-1.0	7.8	6.7	-1.1
6	Total Iron	mg/L	3	-	-	3	-	-	3	-	-
7	Temperature Increase	°C	≤3	≤3	-	≤3	≤3	-	≤3	≤3	-
8	Total Suspended Solid	mg/L	120	85	-35	146	42	-104	128	63	-65
9	Cadmium	mg/L	0.01	-	-	0.01	-	-	ND	-	-

10	Lead	mg/L	0.2	-	-	0.3	-	-	0.2	-	-
11	Zinc	mg/L	<0.02	-	-	<0.02	-	-	<0.02	-	-
12	Nickel	mg/L	ND	-	-	ND	-	-	ND	-	-
13	Sulphide	mg/L	<0.04	-	-	<0.04	-	-	<0.04	-	-
14	Phenol	mg/L	<0.1	-	-	<0.1	-	-	<0.1	-	-
15	Chromium (Hexavalent)	mg/L	0.2	-	-	0.05	-	-	0.05	-	-
16	Cyanide (CN)	mg/L	NIL	-	-	NIL	-	-	NIL	-	-
17	Copper (Cu)	mg/L	NIL	ND	-	NIL	ND	-	NIL	ND	-
18	Ammonia Nitrogen	mg/L	-	0.3	-	-	0.2	-	-	0.2	-
19	Dissolved Oxygen	mg/L	-	5.44	-	-	5.4	-	-	5.21	-
20	E. coli	MPN/100ml	-	300	-	-	300	-	-	300	-

From above comparison table, parameters of 2022 are referred to General Application of NEQ(E)G and those of 2024 upon Surface Water Standard Guideline. There are little parameters are compared as pH and Total Suspended Solids and both are less. There is request to allow comparing the parameters of Hlaing River qualities with Surface Water Quality Standards on monitoring plan for future.

#### Surface water (Hlaing River) analyzing on 2025

Surface water (Hlaing River) sampling and analyzing were performed at upstream, downstream and midstream (near wastewater discharge point of Industrial Compound) on 8.3.2025. The samples were analyzed in ALARM Ecological Lab and Pro lab depend on parameter requirement.

Location of surface water quality, photo of sampling and results of surface water analysis were shown following. The Laboratory test results of Hlaing River are attached in Appendix XIV.

#### Location of surface water sampling at 2025

Sampling Name	Coordinate Point		Description of Location	Sampling Date
	Latitude	Longitude		
WSP -1	16° 55' 40.81" N	96° 4' 15.57"E	Downstream of Hlaing River	8.3.2025
WSP -2	16° 56' 04.86" N	96° 3' 45.99"E	Midstream of Hlaing River (near wastewater discharge point of Industrial Compound)	8.3.2025
WSP -3	16° 56' 11.30" N	96° 3' 40.69"E	Upstream of Hlaing River	8.3.2025



Figure 4-59 Location of Surface Water Sampling on 2025



Figure 4-60 Photos of Surface Water Sampling on 2025

Table 4-42 The analyzed results of surface water (Hlaing River) and Standards on 2025

Parameters	Unit	Analyzed Value			Guideline
		WSP-3 Up Stream of Hlaing River	WSP-1 Down stream of Hlaing River	WSP-2 Mid stream of Hlaing River	
5 day Biological Oxygen Demand	mg/l	4.3	4.8	4.3	National Surface Water Quality Standard (MM S 44:2024) (Environmental Conservation Class IV)  25

Chemical Oxygen Demand	mg/l	< 15	< 15	< 15	50
pH	-	8	7.8	8.1	5-9
Total Suspended Solid	mg/l	95	80	85	100
Ammonia Nitrogen	mg/l	0.23	0.21	0.26	0.8
Dissolved Oxygen	mg/l	4.36	4.10	4.41	>3
Copper	mg/l	ND	0.02	ND	-
Oil & Grease	mg/l	3	3	3	No noticeably seen
E. coli	MPN/100 ml	-	-	-	1000

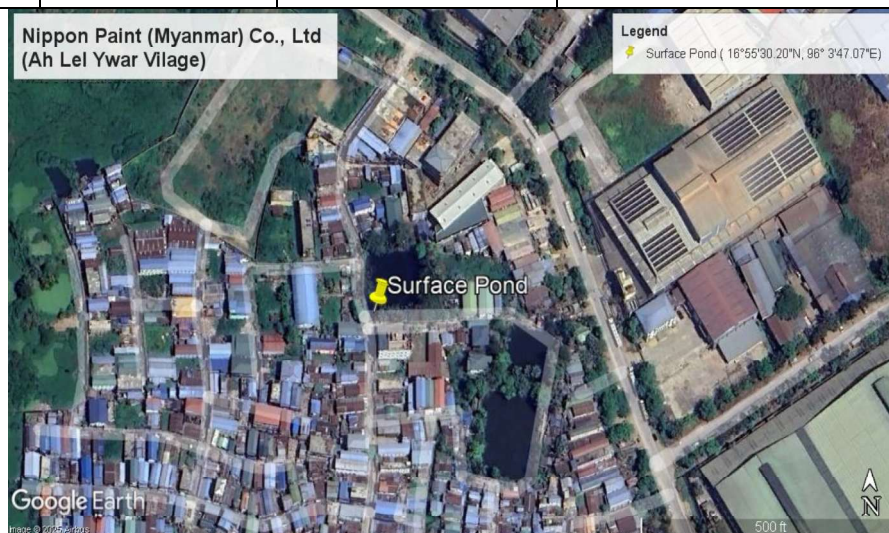
From above surface water analyzed results for Hlaing River, all analyzed results were in standards of National Surface Water Quality Standard (MM S 44:2024).

#### Surface Pond Water Sampling on 2025

According to the instructions of the Department of Environmental Conservation, surface pond water sampling of Ah Lel Ywar was collected at date of 8.3.2025 and analyzing were performed. The samples were analyzed in ALARM Ecological Lab and Pro lab depend on parameter requirement.

The location of sampling point, photograph of sampling and analyzed result are shown as following. The Laboratory test results of surface pond water are attached in Appendix XIV.

Sampling Name	Coordination Points		Description of Location
	Latitude	Longitude	
GW-1	16° 55' 30.20" N	96° 03' 47.07" E	Surface pond, Ah Lel Ywar Village



**Figure 4-61 Location of Surface Pond Water Sampling on 2025**





Figure 4-62 Location of Surface Pond Water Sampling on 2025

Table 4-43 Laboratory analysis of Surface Pond water on 2025

SR. No	Parameters	Unit	Analyzed Value of Surface Pond	National Surface Water Quality Standard (MM S 44:2024) (Environmental Conservation Class IV)
1	5 day Biological Oxygen Demand	mg/l	4.1	25
2	Chemical Oxygen Demand	mg/l	<15	50
3	pH	-	7.8	5-9
4	Total Suspended Solid	mg/l	34	100
5	Ammonia Nitrogen	mg/l	<0.2	0.8
6	Dissolved Oxygen	mg/l	2.88	>3
7	Copper	mg/l	0.02	-
8	Oil & Grease	mg/l	3	No noticeably seen
9	E. coli	MPN/100 ml		1000

From above surface water analyzed results for surface pond water sampling of Ah Lel Ywar, all analyzed results were in standards of National Surface Water Quality Standard (MM S 44:2024).

#### 4.5.2.8.2 Groundwater

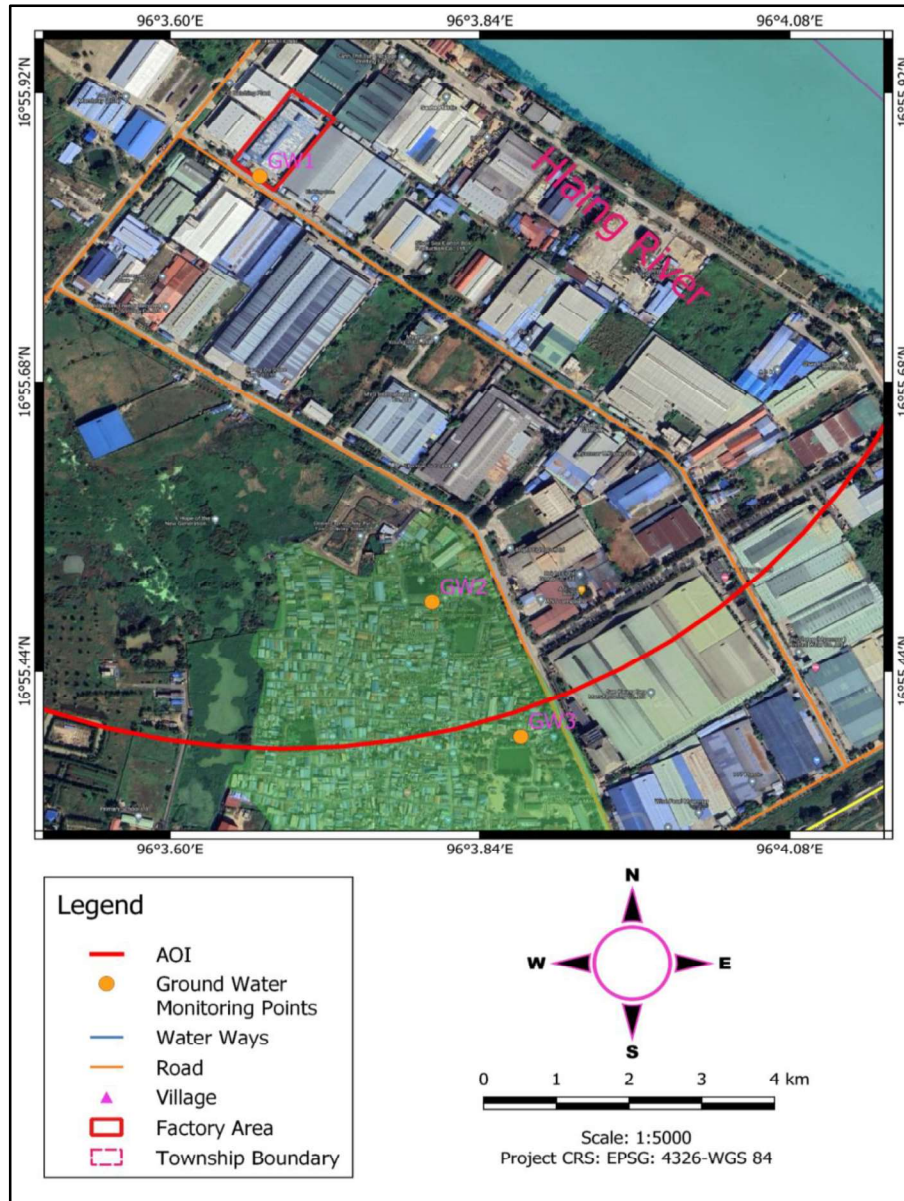
##### Sampling Locations for 2022

Groundwater sampling was conducted at three (3) locations within the plant site and at Ah Lel Village. The samples are collected during 15th to 16th August 2022 and 19th November 2022. The photos of groundwater sampling activities are shown in Figure 4-64. The Sampling locations are shown in Table 4.44 and Figure 4-63.

Table 4-44 Coordinates of Groundwater Sampling location

Sampling	Coordination Points	Description of Location
----------	---------------------	-------------------------

Name	Latitude	Longitude	
GW1	16° 55' 51.04" N,	96° 03' 40.17" E	Tube Well within the Project Site
GW2	16°55' 21.31"N	96°03' 53.32"E	Tube Well at Church, Ah Lel Ywar Village
GW3	16° 55' 23.15" N	96° 03' 52.30" E	Tube Well at Aung Zay Yar Min Monastery, Ah Lel Ywar Village



**Figure 4-63 Map of Groundwater Sampling Locations**



**Figure 4-64 Photos of Groundwater Sampling on 2022**  
**Sampling Results on 2022**

The samples were analyzed in GMES Lab, ALARM Ecological Lab and ISO TECH lab depend on parameter requirement. Most of parameters were within the desirable limits as per Standards but Total Dissolved Solids (TDS), Total Iron and Turbidity are exceeded than drinking standard. The results of groundwater samples are shown in Table 4.45.

**Table 4-45 Laboratory analysis of groundwater samples**

SR. No.	Parameters	Unit	Analysis Value			Drinking Water Standards			
			GW1	GW2	GW3	WHO (2011)	EPA (Spring 2012)	Indian Specification (IS:10500, 2012)	2019 National Drinking Water Standard
1	Arsenic	mg/l	0	0.01	0	0.01	0.01	0.01	0.05
2	Chloride	mg/l	178	210	73	250	250	250	250
3	pH	-	8.4	6.9	7.0	6.5~8.5	6.5~8.5	6.5~8.5	6.5~8.5
4	Total Alkalinity as CaCO <sub>3</sub>	mg/l	172	166	91	-	-	200	-
5	Total Dissolved Solids	mg/l	720	680	200	600	500	500	100
6	Total Hardness as CaCO <sub>3</sub>	mg/l	120	430	41	500	-	200	500
7	Total Iron	mg/l	1	3	<0.1	0.3	0.3	0.3	1.0
8	Turbidity	NTU	5.19	14.9	7.65	5	-	1	5
9	Sulphate	ppm	14	14	12	500		200	-
10	Aluminum	mg/l	0.01	< 0.01	0.01	<0.2		0.03	0.2
11	Manganese	mg/l	Nil	0.9	0.4	0.4		0.1	0.4
12	Cyanide (CN)	mg/l	Nil	0.02	Nil	0.07		0.05	0.07
13	Copper (Cu)	mg/l	Nil	Nil	Nil	2		0.05	2

From the above groundwater analysis results, at the project site, except pH value with Standard of Ministry of Health, Total Dissolved Solid with WHO, EPA and India Standards, iron content with WHO, EPA and India Standards, turbidity with WHO, India Standards and Ministry of Health Standards, all measured parameters were in four Standards.

For the groundwater of tube well at Church, Ah Lel Ywar Village, except total iron with WHO, EPA, India Standards and Ministry of Health Standards; turbidity with WHO, India Standards, Ministry of Health Standards; Manganese with WHO, EPA, India Standards and Ministry of Health Standards, all measured parameters were in four standards.

For the groundwater of monastery at Ah Lel Ywar Village, except turbidity with WHO, India Standards and Ministry of Health; Manganese with India Standards; all measured parameters were in four standards.

#### **Groundwater and Surface Pond Water Sampling on 2024**

There were three ground waters and surface pond water (especially used as drinking water) samples on 2024 and analyzed at various laboratories and results are shown as following. The locations of three groundwater sampling are same as those of 2022.

Sampling Name	Coordination Points		Description of Location
	Latitude	Longitude	
GW1	16° 55' 51.04" N,	96° 03' 40.17" E	Tube Well within the Project Site
GW2	16°55 '21.31 "N	96°03' 53.32 "E	Tube Well at Church, Ah Lel Ywar Village
GW3	16° 55' 23.15" N	96° 03' 52.30" E	Tube Well at Aung Zay Yar Min Monastery, Ah Lel Ywar Village
GW4	16° 55' 30.20" N	96° 03' 47.07" E	Surface pond, Ah Lel Ywar Village



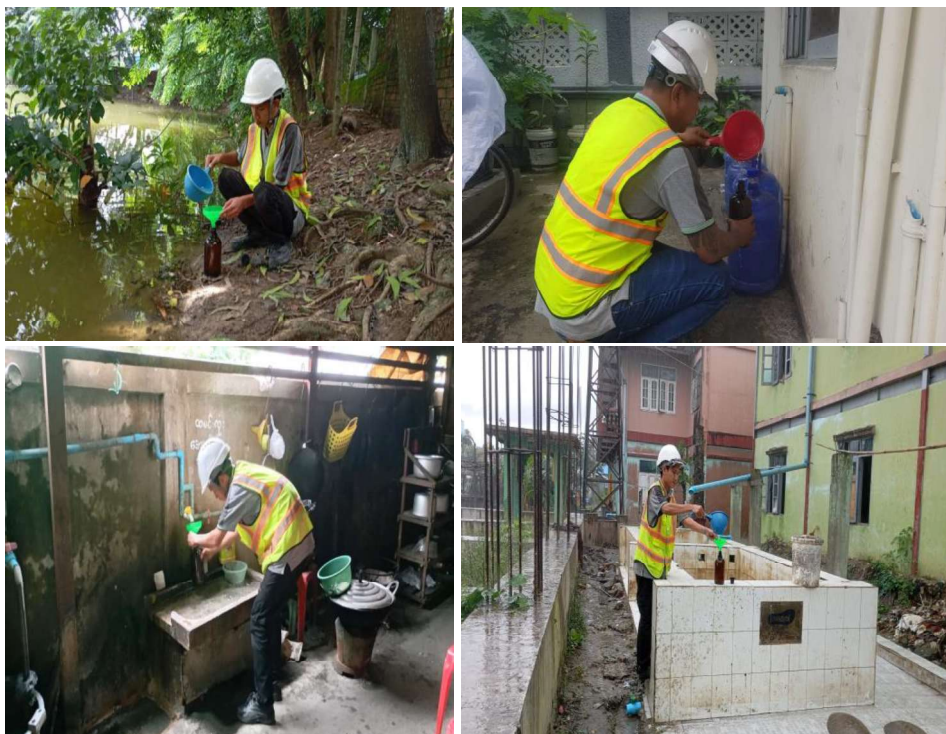


Figure 4-65 Photos of Groundwater Sampling on 2022

Table 4-46 Laboratory analysis of groundwater and Surface Pond water on 2024

SR. No	Parameters	Unit	GW-1 Tube well at Site	GW-2 Tube well at Church	GW-3 Tube well at Monastery	Surface Pond for drinking water	WHO	EPA	India Standard	2019 National Drinking Water Standard
1	Arsenic	mg/l	0.005	0.005	0.005	0.005	0.01	0.01	0.01	0.05
2	Chloride	mg/l	8.1	110	82	64	250	250	250	250
3	pH	-	6.8	7.1	7.2	7.3	6.5~8.5	6.5~8.5	6.5~8.5	6.5~8.5
4	Total Alkalinity as CaCO <sub>3</sub>	mg/l	19	14	23	8	-	-	200	-
5	Total Dissolved Solid	mg/l	471	472	375	605	600	500	500	100
6	Total Hardness as CaCO <sub>3</sub>	mg/l	87.32	85.88	98.15	90.17	500	-	200	500
7	Total Iron	mg/l	0.32	0.42	0.35	0.45	0.3	0.3	0.3	1.0
8	Turbidity	NTU	5	6	8	10	5	-	1	5
9	Sulphate	mg/l	2.5	4.8	15.5	50.6	500	-	200	-
10	Aluminum	mg/l	0.02	0.02	0.02	0.02	<0.2	-	0.03	0.2
11	Manganese	mg/l	0.7	0.9	0.3	0.9	0.4	-	0.1	0.4
12	Cyanide (CN)	mg/l	<0.01	<0.01	<0.01	<0.01	0.07	-	0.05	0.07

From the above analyzed results of ground water, at the project site except total iron with WHO, EPA and India Standards ; turbidity with India Standards, Manganese with WHO, EPA, India Standards and Ministry of Health Standards and all measured parameters were in four standards.

Results of ground water (tube well) of church, Ah Lel Ywar except total iron with WHO, EPA and India Standards; turbidity with WHO and India Standards; Aluminum with India Standard; Manganese with WHO, India Standard and Ministry of Health Standards; all measured parameters were in four standards;

Results of ground water (tube well) of monastery, Ah Lel Ywar except total iron with WHO, EPA and India Standards; turbidity with WHO, India Standards and Ministry of Health Standards; Manganese with India Standards and all measured parameters were in four standards;

Results of surface pond of Ah Lel Ywar, except total dissolved solid; total iron with WHO, EPA and India Standard, turbidity with WHO, India Standards and Ministry of Health Standards, Manganese with WHO, India Standards and Ministry of Health Standards, all measured parameters were in four standards.

There are comparisons of analyzed values of ground water at 2022 with those of 2024 and it is as following.

**Table 4-47 Comparison Table of Ground Water (tube well) Qualities at 2022 with those of 2024**

SR No	Parameters	Unit	Tube well at Site			Tube well at Church of Ah Lel Ywar			Tube well at Monastery of Ah Lel Ywar		
			2022	2024	More /less	2022	2024	More /less	2022	2024	More /less
1	Arsenic	mg/L	0.005	0.005	-	0.01	0.005	-0.005	0	0.005	+0.005
2	Chloride	mg/L	178	81	-97	130	110	-20	73	82	+9
3	pH	-	8.4	6.8	-1.6	7.3	7.1	-0.2	7.0	7.2	+0.2
4	Total Alkalinity as CaCO <sub>3</sub>	mg/L	172	19	-153	166	14	-152	91	23	-68
5	Total Dissolve Solid	mg/L	720	471	-249	357	472	+115	200	375	+175
6	Total Hardness as CaCO <sub>3</sub>	mg/L	120	87.32	-32.68	120	85.88	-34.12	41	98.15	+57.15
7	Total Iron	mg/L	1	0.32	-0.68	1.1	0.42	-0.68	<0.1	0.35	+0.34
8	Turbidity	NTU	5.19	5	-0.19	14.9	6	-8.9	7.65	8	+0.35
9	Sulphate	mg/L	14	2.5	-11.5	14	4.8	-9.2	12	15.5	+3.5
10	Aluminum	mg/L	0.01	0.02	+0.01	<0.01	0.02	+0.01	0.01	0.02	+0.01
11	Manganese	mg/L	Nil	0.7	+0.7	0.9	0.9	-	0.4	0.3	-0.1
12	Cyanide (CN)	mg/L	Nil	<0.01	-	0.02	<0.01	-0.01	Nil	<0.01	-

From the above comparison table, quality of tube well at site as Aluminum and Manganese were more and due to more consumption of tube well water for the more population.

Qualities of tube well at church of Ah Lel Ywar were not different in reasonable amount.

Qualities of tube well at monastery of Ah Lel Ywar were different in little due to more consumption of tube well water for more populations.

#### 4.5.2.8.3 Wastewater on 2024

Wastewater outlet from wastewater treatment plant was collected at date of 29.7.2024 and location of sampling point, photograph of sampling and analyzed result are shown as following.

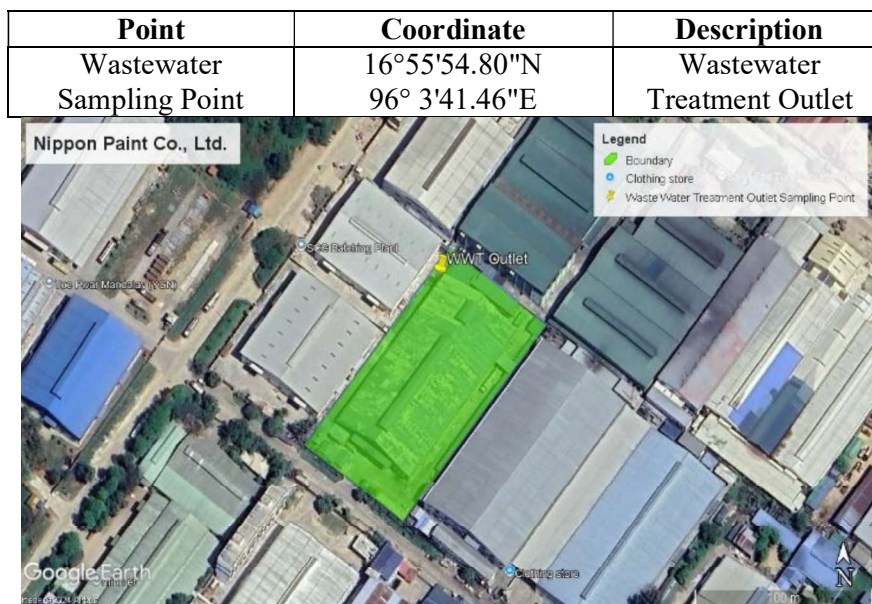


Figure 4-66 Location of wastewater outlet of treatment plant

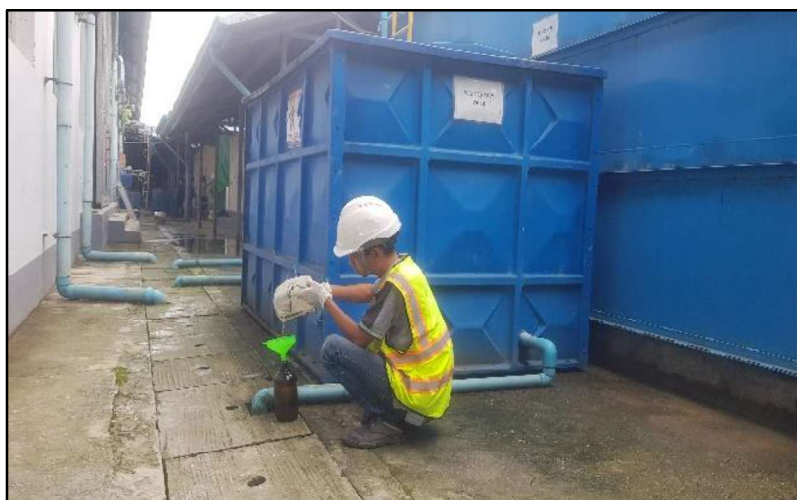


Figure 4-67 photograph of wastewater sampling

Table 4-48 Analyzed results of wastewater outlet from wastewater treatment plant and comparison with NEQEG General Application

Parameters	Unit	Analyzed value	NEQEG General Application	More/less
5-day Biochemical Oxygen Demand	mg/L	10	50	-40

**Environmental Impact Assessment (EIA) Report*****Nippon Paint (Myanmar) Company Limited***

Ammonia	mg/L	0.024	10	-9.976
Arsenic	mg/L	Nil	0.1	-0.1
Chemical Oxygen Demand	mg/L	32	250	-218
Chlorine(Total Residual)	mg/L	Nil	0.2	-0.2
Copper	mg/L	Nil	0.5	-0.5
Cyanide (Total)	mg/L	0.012	1	-0.988
Fluoride	mg/L	0.2	20	-19.8
Iron	mg/L	0.48	3.5	-3.02
Lead	mg/L	Nil	0.1	-0.1
pH	-	7.3	6-9	in standard
Temperature	°C	≤3	≤3	
Total Coliform bacteria	100 ml	30	400	-370
Total Suspended Solid	mg/L	19	50	-31
Zinc	mg/L	Nil	2	-2

From above analyzed results, all analyzed data are in standard.

Wastewater analyzed results of various laboratories were shown as following.





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B.Sc Engg. (Civil), Dip S.E. (Delft) Lecturer of YIT (Retd), Consultant (Y.C.D.C), LWSE 001.  
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WTL-RE-001

Issue Date - 01-12-2012  
Effective Date - 01-12-2012  
Issue No - 1.0/ Page 2 of 2

WW0724 094

### WATER QUALITY TEST RESULTS FORM

Client Nippon Paint Co., Ltd.  
Nature of Water Wastewater (Outlet)  
Location Ngwe Pin Lae Industrial Zone  
Date and Time of collection 29.7.2024  
Date and Time of arrival at Laboratory 30.7.2024  
Date and Time of commencing examination 31.7.2024  
Date and Time of completing 5.8.2024

### Results of Water Analysis

Temperature (°C)	25.0	°C	
Fluoride (F)	0.2	mg/l	
Lead (as Pb)	Nil	mg/l	
Arsenic (As)	Nil	mg/l	
Nitrate (N.NO <sub>3</sub> )		mg/l	
Chlorine (Residual)	Nil	mg/l	
Ammonia Nitrogen (NH <sub>3</sub> )	0.024	mg/l	
Ammonium Nitrogen (NH <sub>4</sub> )		mg/l	
Dissolved Oxygen (DO)		mg/l	
Chemical Oxygen Demand (COD)	32	mg/l	
Biochemical Oxygen Demand (BOD) (5 days at 20 °C)	10	mg/l	
Cyanide (CN)	0.012	mg/l	
Zinc (Zn)	Nil	mg/l	
Copper (Cu)	Nil	mg/l	
Silica (SiO <sub>2</sub> )		mg/l	

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

Tested by

Signature: Hein

Name: Zaw Hein Oo

B.Sc (Chemistry)  
Sr. Chemist  
ISO Tech Laboratory

Approved by

Signature: Thinzar Theint Theint

Name: Thinzar Theint Theint

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Issue No - 1.0/Page 1 of 1

M0724 075

**WATER QUALITY TEST (MICROBIOLOGY) RESULTS FORM**

Client Nippon Paint Co., Ltd.  
Nature of Water Wastewater (Outlet)  
Location Ngwe Pin Lae Industrial Zone  
Date and Time of collection 29.7.2024  
Date and Time of arrival at Laboratory 30.7.2024  
Date and Time of commencing examination 30.7.2024  
Date and Time of completing 31.7.2024

**Results of Water Analysis****WHO Drinking Water Guideline  
(Geneva - 1993)**

Total Coliform Count	30	CFU/100ml	Not detected
Thermotolerant (fecal) Coliform Count	8	CFU/100ml	Not detected
pH	7.3		6.5 - 8.5
Turbidity	19	NTU	5 NTU
Colour (True)	10	TCU	15 TCU
Free Chlorine	Nil	mg/l	
Total Chlorine	Nil	mg/l	

\*Sample Collection and Date &amp; Time Error.

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

: &lt; - Less than

Tested by

Signature: HernName: Zaw Hein Oo

B.Sc (Chemistry)  
Sr. Chemist  
ISO Tech Laboratory

Approved by

Signature: Thinzar Theint TheintName: Thinzar Theint Theint

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**ISO-TECH LABORATORY**

**WTL-RE-001**  
Issue Date - 01-12-2012  
Effective Date - 01-12-2012  
Issue No - 1.0/ Page 1 of 2

**WW0724 094**

**WATER QUALITY TEST RESULTS FORM**

Client: Nippon Paint Co., Ltd.  
Nature of Water: Wastewater (Outlet)  
Location: Ngwe Pin Lae Industrial Zone  
Date and Time of collection: 29.7.2024  
Date and Time of arrival at Laboratory: 30.7.2024  
Date and Time of commencing examination: 31.7.2024  
Date and Time of completing: 5.8.2024

**Results of Water Analysis**

**WHO Drinking Water Guideline (Geneva - 1993)**

pH	7.3	6.5 - 8.5
Colour (True)	TCU	15 TCU
Turbidity	NTU	5 NTU
Conductivity	micro S/cm	
Total Hardness	mg/l as CaCO <sub>3</sub>	500 mg/l as CaCO <sub>3</sub>
Calcium Hardness	mg/l as CaCO <sub>3</sub>	
Magnesium Hardness	mg/l as CaCO <sub>3</sub>	
Total Alkalinity	mg/l as CaCO <sub>3</sub>	
Phenolphthalein Alkalinity	mg/l as CaCO <sub>3</sub>	
Carbonate (CaCO <sub>3</sub> )	mg/l as CaCO <sub>3</sub>	
Bicarbonate (HCO <sub>3</sub> )	mg/l as CaCO <sub>3</sub>	
Iron	0.48 mg/l	0.3 mg/l
Chloride (as CL)	mg/l	250 mg/l
Sodium Chloride (as NaCL)	mg/l	
Sulphate (as SO <sub>4</sub> )	Nil mg/l	500 mg/l
Total Solids	mg/l	1500 mg/l
Total Suspended Solids	19 mg/l	
Total Dissolved Solids	mg/l	1000 mg/l
Manganese	mg/l	0.05 mg/l
Phosphate	mg/l	
Phenolphthalein Acidity	mg/l	
Methyl Orange Acidity	mg/l	
Salinity	ppt	

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

Tested by: Heing  
Signature: Zaw Hein Oo  
Name: B.Sc (Chemistry)  
Sr.Chemist

Approved by: Thinzar Theint Theint  
Signature: B.Sc (Civil)  
Name: Assistant Technical Officer  
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Figure 4-68 Analyzed results of wastewater by various laboratories

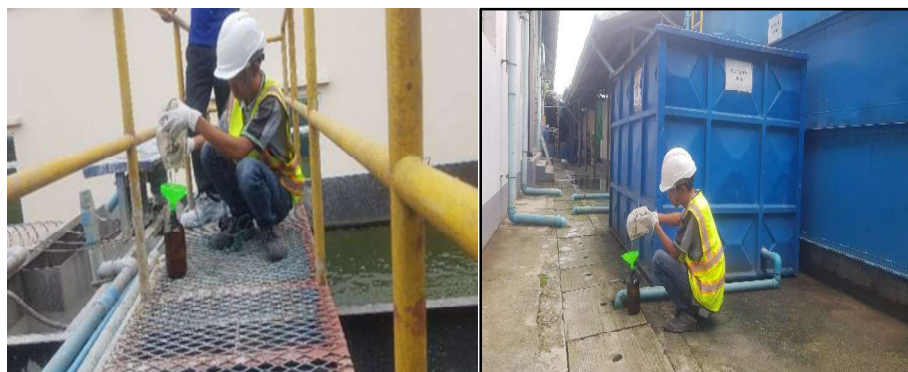
**Wastewater Quality on 2025**

Wastewater inlet and outlet from wastewater treatment plant was collected at date of 3.3.2025 and the samples were analyzed in Pro Lab, and ISO TECH lab depend on parameter requirement. The location of sampling point, photograph of sampling and analyzed result are shown as following. Wastewater analyzed results of various laboratories were shown in Appendix XIII.

Point	Coordinate	Description
Wastewater Sampling Point	16°55'54.70"N 96° 3'41.27"E	Wastewater Treatment Inlet
Wastewater Sampling Point	16°55'54.80"N 96° 3'41.46"E	Wastewater Treatment Outlet



**Figure 4-69 Locations of wastewater inlet and outlet of treatment plant**



**Figure 4-70 photograph of wastewater sampling**

**Table 4-49 Analyzed results of wastewater inlet and outlet from wastewater treatment plant and comparison with NEQEG General Application**

Parameters	Unit	Analyzed value		NEQEG General Application
		inlet	outlet	
5-day Biochemical Oxygen Demand	mg/L	40	20	50
Ammonia	mg/L	0.04	0.037	10
Arsenic	mg/L	Nil	Nil	0.1
Cadium	mg/L	ND	ND	0.1
Chemical Oxygen Demand	mg/L	200	32	250
Chlorine(Total Residual)	mg/L	Nil	Nil	0.2
Chromium (hexavalent)	mg/L	0.04	0.01	0.1



Chromium (total)	mg/L	0.1	0.01	0.5
Copper	mg/L	Nil	Nil	0.5
Cyanide (free)	mg/L	Nil	Nil	0.1
Cyanide (Total)	mg/L	-	-	1
Fluoride	mg/L	0.6	<0.02	20
Heavy Metals (total)	mg/L	-	-	10
Iron	mg/L	1.0	0.08	3.5
Lead	mg/L	0.05	0.05	0.1
Mercury	mg/L	0.006	0.001	0.01
Nickel	mg/L	0.4	0.2	0.5
Oil and Grease	mg/L	7	6	10
pH	-	8.1	7.1	6-9
Phenols	mg/L	0.1	<0.1	0.5
Selenium	mg/L	0.05	<0.1	0.1
Silver	mg/L	0.1	<0.02	0.5
Sulphide	mg/L	0.40	0.319	1
Temperature	°C	≤3	≤3	≤3
Total Coliform bacteria	100 ml	8	5	400
Total Phosphorus	mg/L	2.0	1.0	2
Total Suspended Solid	mg/L	10	5	50
Zinc	mg/L	Nil	Nil	2

All the parameters included in the general guideline of NEQEG, except for unmeasurable Cyanide (total) and Heavy metal have been measured. From above analyzed results, all analyzed data are in standard.

In the above section 4.5.2 Primary Data for Environmental Quality, GMES conducted the sampling points for baseline survey; air quality, noise quality, vibration, soil quality, odor quality, water quality, wastewater. Environmental experts conducted a systematically analyzed and studied the areas that could be affected by the Nippon Paint factory's paint manufacturing operations and selected those sampling points for assessment. These sampling points focus on 2 km study area as the project's impacts—such as air, noise, water quality, odor are unlikely to extend beyond this radius. The almost all the results for those locations where the measurements were taken fell within the acceptable standard guidelines. Therefore, it was found that there was no impact of the adverse effect not only inside the factory but also around the factory, so it is reported that the sampling points where the measurements were made are sufficient.

## 4.6 Biological Characteristics

### 4.6.1 Executive Summary

Nippon Paint Factory's project site is located in the Ngwe Pin Lal Industrial Zone, Hlaing Thar Yar Township, Yangon. The central coordinate point of the project site is 16° 55' 52.76"N and 96° 3'41.25"E. The project area is located at a distance of about 300 meters on the west bank of the Hlaing River and the total area is about 2.44 acres. There is no biological significant habitat *in the core zone*. But, the different characters of habitat such as estuary water of Hlaing River, riparian area comprise of mangrove patch and grass along the survey area of Hlaing River, swamp area, plantation and cultivated area in the terrestrial environment. No ecological sensitive habitats and KEY biodiversity areas within 10 km *in the buffer zone*. The study area, terrestrial environment mainly comprises of plantation, agriculture land, residential and industrial area which will cover about 90% of land of the project area. The aim of biological study are to identify survey area range where likely to be impacted on biodiversity by the project, to identify the key biological species existing in the survey area, to identify the potential issues and which issues are likely to be impacted significantly on aquatic and terrestrial biodiversity by the project, which biological matters need to be addressed in most detail in EIA processes as well as to anticipate, avoid and minimize the adverse significant effects on biodiversity of the proposed project. Relevant study methods such as point count, list method, random sampling and plot sampling were applied to collect samples at 18 sampling points which cover aquatic and terrestrial habitats. A total survey range is 8 kilometers cover upstream and downstream area of the project site for the aquatic study identified as impact or influence area in the river. For terrestrial zone, 3-kilometer circular range cover different terrestrial habitats of shrub, grass, swamp area, plantation and cultivated lands was assigned to survey as identified to be impact zone covering direct and indirect impact zones. Biological survey resulted that no ecological significant habitats and IUCN Red list species of flora and fauna were found. According to the values of relative frequency (%), the most common 10 species of riparian plant including mangrove in the buffer zone are *Cyperus difformis*, *Avicennia officinalis* (Thame), *Cyperus malaccensis*, *Commelina diffusa* (Wetkyok), *Cyperus haspan* (Wet-lar-myet), *Avicennia alba* (Lame), *Colocasia affinis* (Pein), *Mimosa pigra* (Yesubok), *Cyperus iria*, and *Saccharum spontaneum* (Kaing). As a terrestrial plants in the buffer zone, the most common 10 plant species (small plants) are *Alternanthera philoxeroides*, *Alternanthera sessilis* (Pazun-sar), *Eupatorium odoratum* (Bizat), *Mimosa pudica* (Htikayon), *Sida carpinifolia* (Katsine), *Cynodon dactylon* (Myin-sar-myet), *Panicum repens* (Myet-kha), *Paspalidium flavidum* (Sin-ngo-myet), *Alternanthera brasiliana*, and *Amaranthus spinosus* (Hin-nu-nwe-subauk). No natural forest was found in the survey area. As a record of fauna, small numbers and common species were recorded. No IUCN Red list species are recorded. Small scale fishery, fishing practices undertaken by individual fishing households was found in the river in. As estuary fauna, fish- the Dwarf Catfish, Caroun croaker, Golden tank goby and

Bald glassy are and shrimp- rainbow shrimp and Stork shrimp and crab- mud crabs, three spotted crabs and other small mangrove crabs are commonest species. Small number of coastal birds including egrets was found. House sparrow, spotted dove, pigeon and common mina are found as common terrestrial bird species. No large mammals are found. No IUCN Red list species are recorded. No breeding sites of birds and other animals are observed during the survey.

Based on biological survey data and information, project activities especially in operation stage will have impact on aquatic flora and fauna more than terrestrial fauna and flora. The effluent discharges (untreated or poorly treated paint industry effluents) and air pollution from factory will have impact on aquatic and terrestrial biodiversity. Potential issues and impacts are identified as below;

1. Point source effluent discharges (untreated or poorly treated paint industry effluents) from industries can be measurable toxic to aquatic organisms like a very sensitive small organisms e.g., planktons, benthic organisms (importance food source for other aquatic organism including fish and prawn) and larvae organisms or juveniles rather than large animals. Highly concentration of toxic can have the potential to disrupt normal functioning of fish, shrimps and other animals. Impact can be direct on aquatic organism at nearest of point source effluent discharges area. Impact may have moderate or low level on those aquatic small organisms. To mitigate the impact, effluent disposal should be well treated in accordance with national emission guide line that can reduce the impact to acceptable units.
2. Paint production factory that releases VOCs (Volatile Organic Compounds) into the air and can cause air pollution that can impact on biodiversity. It can reduce the reproductive potential of animals, reduces crop or natural vegetation production and degrade the structure and function of ecosystems. As fewer VOCs released by this proposed paint factory, it may have impact on terrestrial biodiversity, habitats and aquatic ecosystem as low or negligible level.

Based on Biological data and investigation, the terms of reference (ToR) document are presented in this report. It defines all aspects of how a consultant or a team will conduct an evaluation, outlines the responsibilities of the team, methodology and provides a clear description of the resources available to conduct the study as well as to identify the issues are likely to be impacted significantly on aquatic and terrestrial biodiversity caused by the project which need to be addressed in most detail.

#### **4.6.2 Introduction**

Nippon Paint Factory's project site is located in the Ngwe Pin Lal Industrial Zone, Hlaing Thar Yar Township, Yangon. The central coordinate point of the project site is 16° 55' 52.76"N and 96° 3'41.25"E. The area has 2.44 acres. The project site is very close to the Hlaing River. The proposed project is a paint production project. Generally, Paint products consist of high VOC (Volatile Organic Compounds)

contents especially in Oil-based paint. VOC reacts with oxygen and form an ozone layer in the presence of sunlight. This ozone is considered as a contributory factor to global warming and air pollution as part of the greenhouse effect ([www.rawlinspaints.com](http://www.rawlinspaints.com)). But the proposed project is Various-Based Paint Production (e.g., Interior and exterior Emulsion paints, Ceiling paint, Enamel paint, road and wood paint) Project. As water-based paints feature solvents that are primarily made up of water, it releases much fewer VOCs into the air and is therefore considered better for the environment and people's health. Water-based paints contain filler, pigments and binder, all dissolved in water. So, this type of paint production project will cause less damage to the environment.

However, the constituents of industrial effluents are usually diverse, containing a mixture of chemicals which depend on the type of industry generating the effluent, industrial processes, and raw materials used in production. Paint and pigment industries are a kind of manufacturing industries that generate potentially toxic effluents. Effluents from this kind of industries usually have measurable concentrations of organic solvents, inorganic toxic metals, suspended solids, and other hazardous substances (Krithika & Philip, 2016; Malakootian et al., 2009). Point source effluent discharges from industries are major sources of pollutants in aquatic ecosystems. Some researchers documented that untreated or poorly treated paint industry effluents can be highly toxic to aquatic organisms, having the potential to disrupt normal functioning of organisms at low concentrations.

#### **4.6.3 Environmental Regulatory Compliance related to Biodiversity**

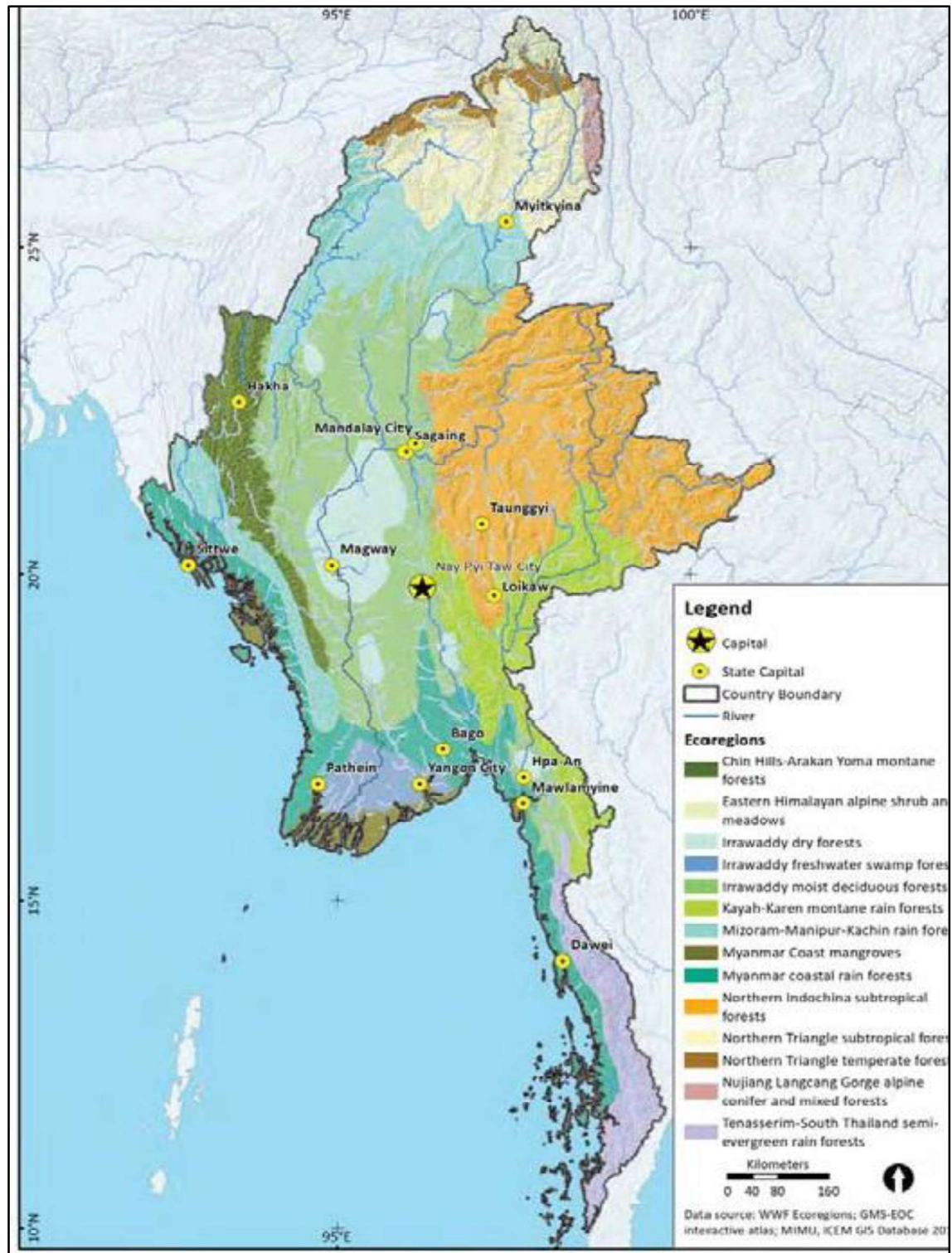
The followings are the recent applicable Myanmar Laws, rules, regulation and some international regulation and practicing relating (but not limited) to the proposed project.

- a. The Environmental Conservation Law (2012) (Section – 7 Nagyi, 14, 15, 17 Salone, 25, 29).
- b. Environmental Conservation Rules (2014) (Section 69, b).
- c. Environmental Impact Assessment Regulation (2015) (Paragraph (5/5.4, 5.6, 8/ 8.5, 85/5, 117).
- d. National environmental quality (emission) guidelines 2015. (Annex 1.1, 1.2).
- e. Fresh water fisheries Law (1991) (Section (40).
- f. Forest law (2018): Chapter (4): Section 12(a)(c); Chapter (12): Section 39 to 47
- g. Biodiversity and Conservation of Protected Area Law 2018: Multi different kind of Biological Life and Environmental Protection (Section 39(c) (f) (g) (h); 40 (a) (b); 41 (a) (b) (c))
- h. Biodiversity and Conservation of Protected Area Rule 2020. Protection and conservation of wildlife emphasized red list species and endemic species.



#### **4.6.4 Ecoregion Description**

Myanmar has 14 major ecoregions, or relatively large areas of land or water which each contain characteristic, geographically distinct assemblages of plants and animals in Figure 4.71. More than half the country is covered by 3 of the 14 ecoregions - Ayeyarwady moist deciduous forest (20.6%), Northern Indochina subtropical forest (20.5%) and Mizoram-Manipur-Kachin rain forests (10.5%). Overall, 8 of the forest ecoregions (and 72% of Myanmar's forest areas) were classified as either vulnerable or critically endangered some years ago. The factory is located in Ayeyarwady freshwater swamp forest.



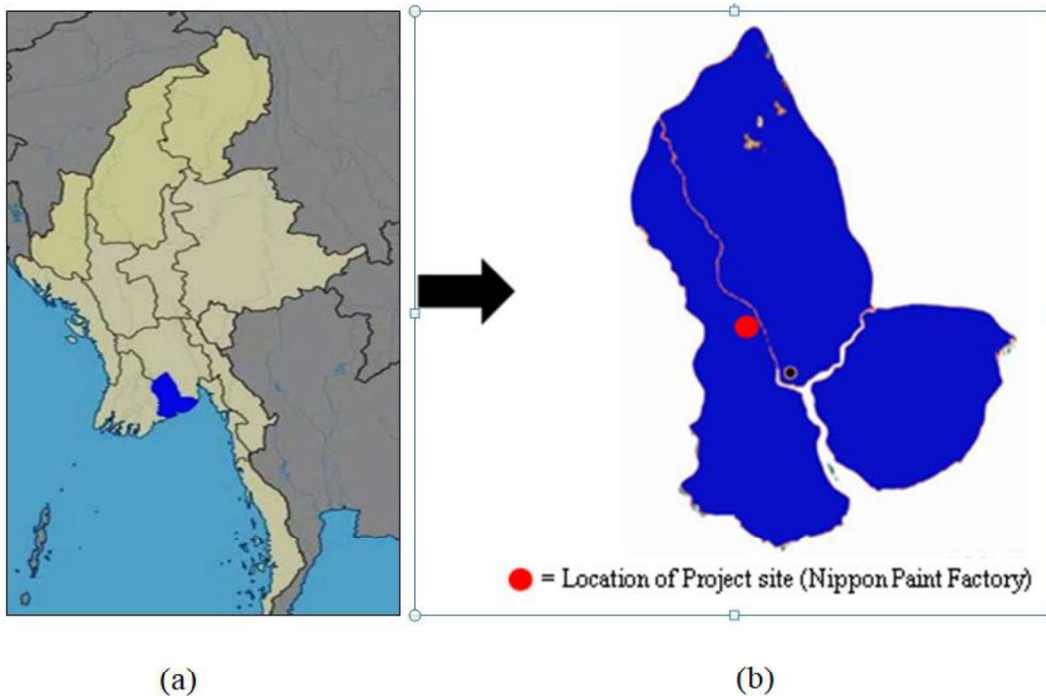
**Figure 4-71 Ecoregion in Myanmar**

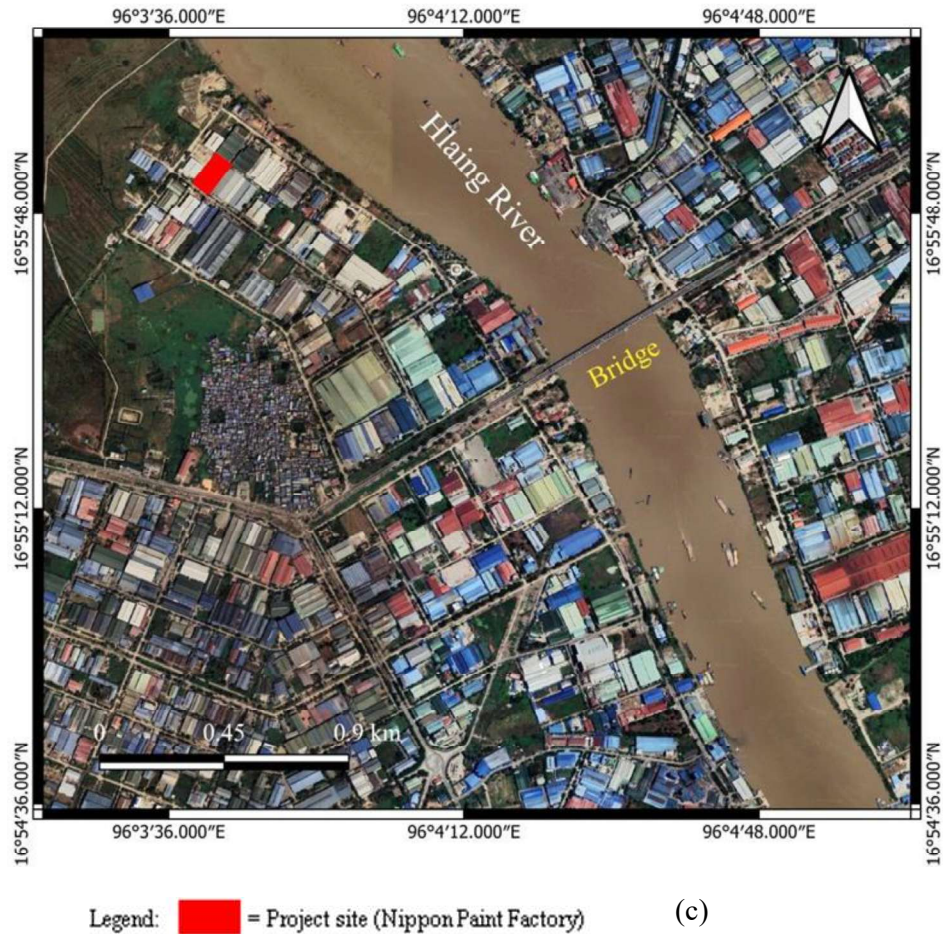
Source: Supplement-Biodiversity-in-Myanmar-including-Protected-Areas-and-Key-Biodiversity-Areas.pdf (modify by GMES)

#### 4.6.5 Key Biodiversity Area

Currently, there were 45 officially recognized Protected Areas in Myanmar in which 8 are ASEAN Heritage Park–AHP as well as 76 KBAs of which 54 are recognized as IBAs but the majorities have no legal status. KBA designation assists countries in identifying priority areas for future conservation efforts and protection; and supports development planning by highlighting the value of areas so that impacts on biodiversity can be avoided. KBAs are also being increasingly being targeted as potential areas for offset sites. Currently, KBAs cover 17% of the country.

Hlawga Park with reservoir is a Terrestrial KBA which is located about 8 km apart from Nippon Paint project site and there is no KBA within the Study Area (see in Figure 4.72).





**Figure 4-72 Location of the project site: (a) Yangon Region of Myanmar; (b) project site in Yangon Region; and (c) Detailed project site in Ngwe Pin Lal Industrial Zone, Hlaing Thar Yar Township, Yangon Region**



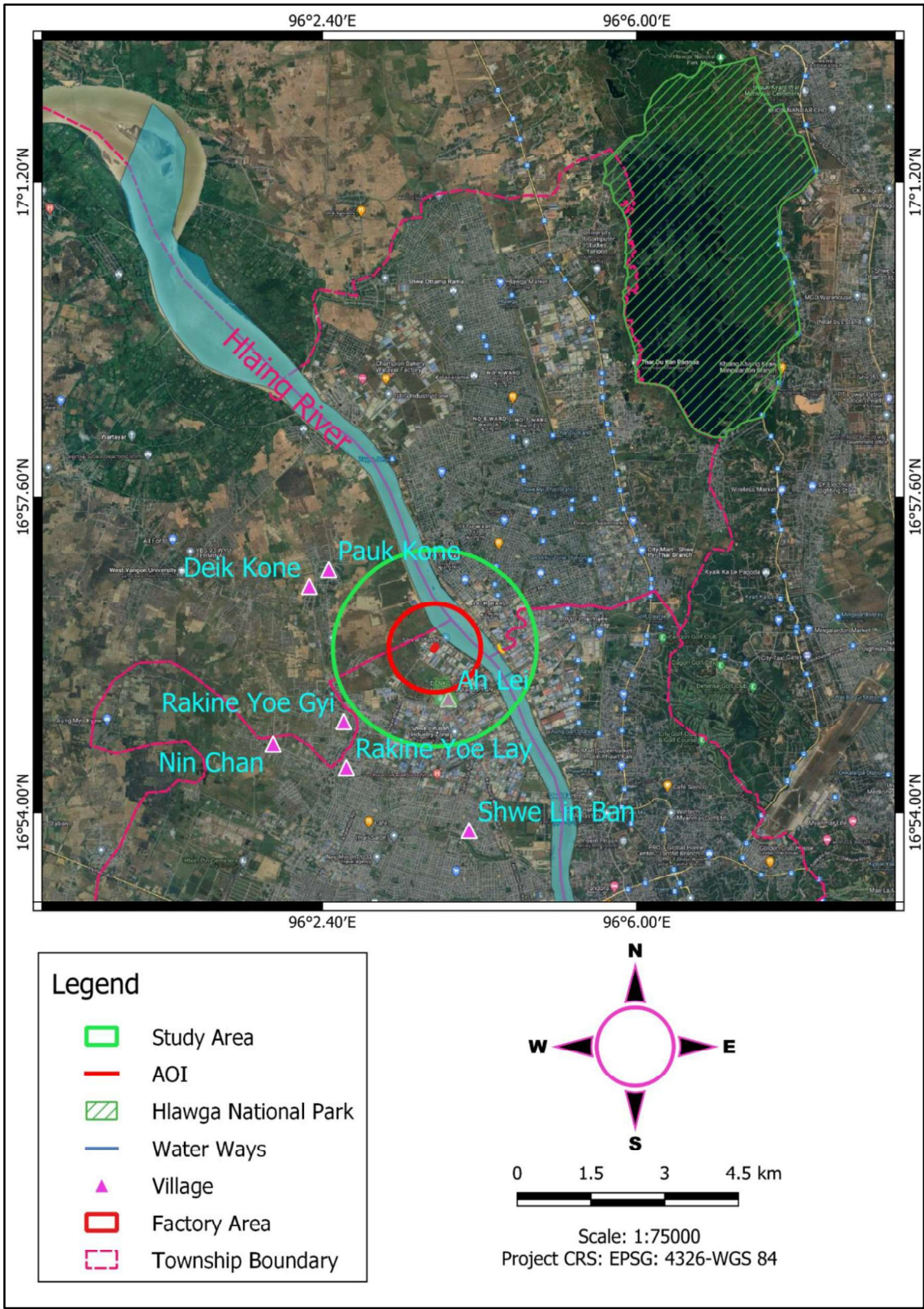
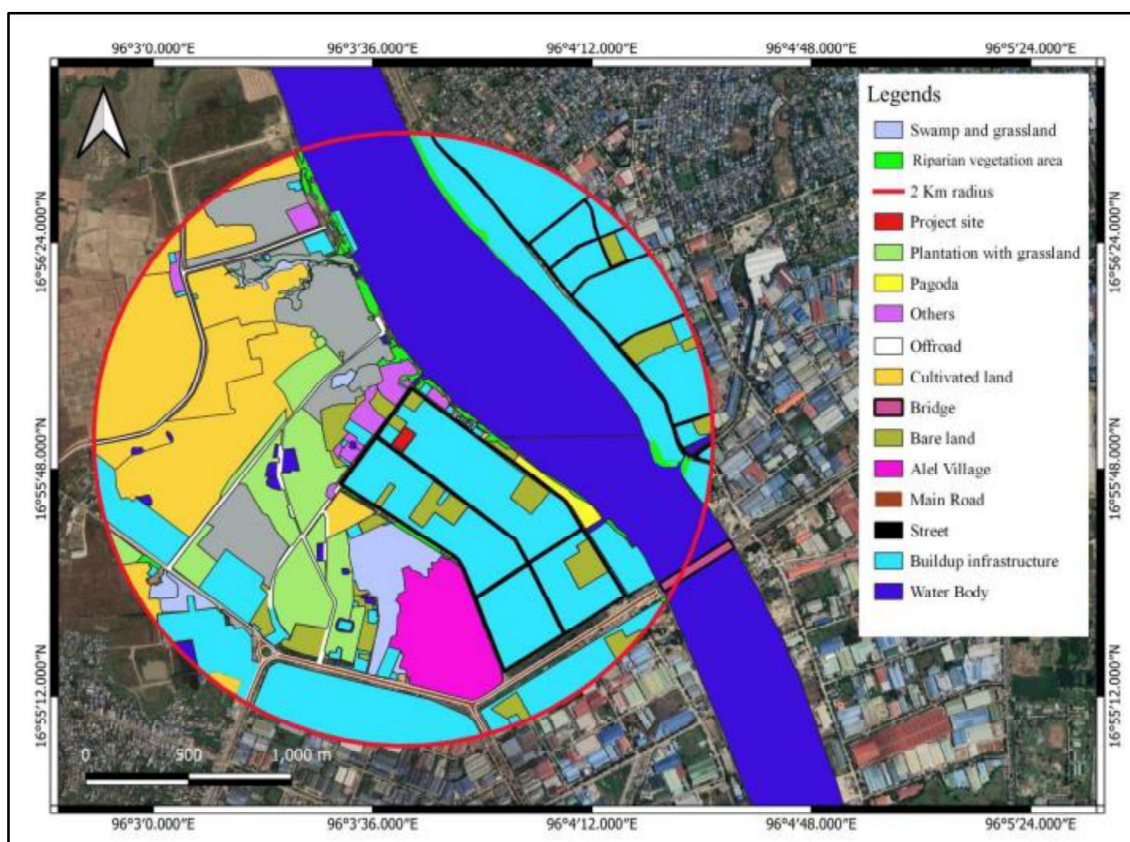


Figure 4-73 Key Biodiversity Area in the region

According to Google Map and GIS database, no ecological sensitive habitats, protected and KEY biodiversity areas such as wildlife sanctuary, national parks, reserved forest, and wetland within the study area. But the Study area encompasses following different biological habitats such as Hlaing River, Riparian area along the survey area of Hlaing River, Plantation area of *Acacia auriculiformis* (Malaysia-padauk) and *Acacia mangium* (Mangiumcia), swamp and grassland areas and Cultivated land area.

The study area, terrestrial environment is mainly comprising of plantation, agriculture land, residential and industrial area which will cover about 90% of land of the project area as shown in Figure 4-74. According local knowledge, for the aquatic, the vegetation is mainly present in the riparian area (dominant of mangrove and grass) along the river bank while aquatic fauna regard fish and fishery, pangasius catfish, draft catfish and crustations are commonly observed which catches in fishing nets. Coastal birds of little egrets, pond herons and terrestrial birds of some city inhabitant birds like a sported dove, pigeons, house crows, sparrow and common minor are observed as dominant species. No endangered or endemic species are reported in the survey area. Generally, project area including survey zones or buffer zones is not significantly important for biodiversity.



**Figure 4-74 Land Covers and Some Biological Habitats within the Study Area**



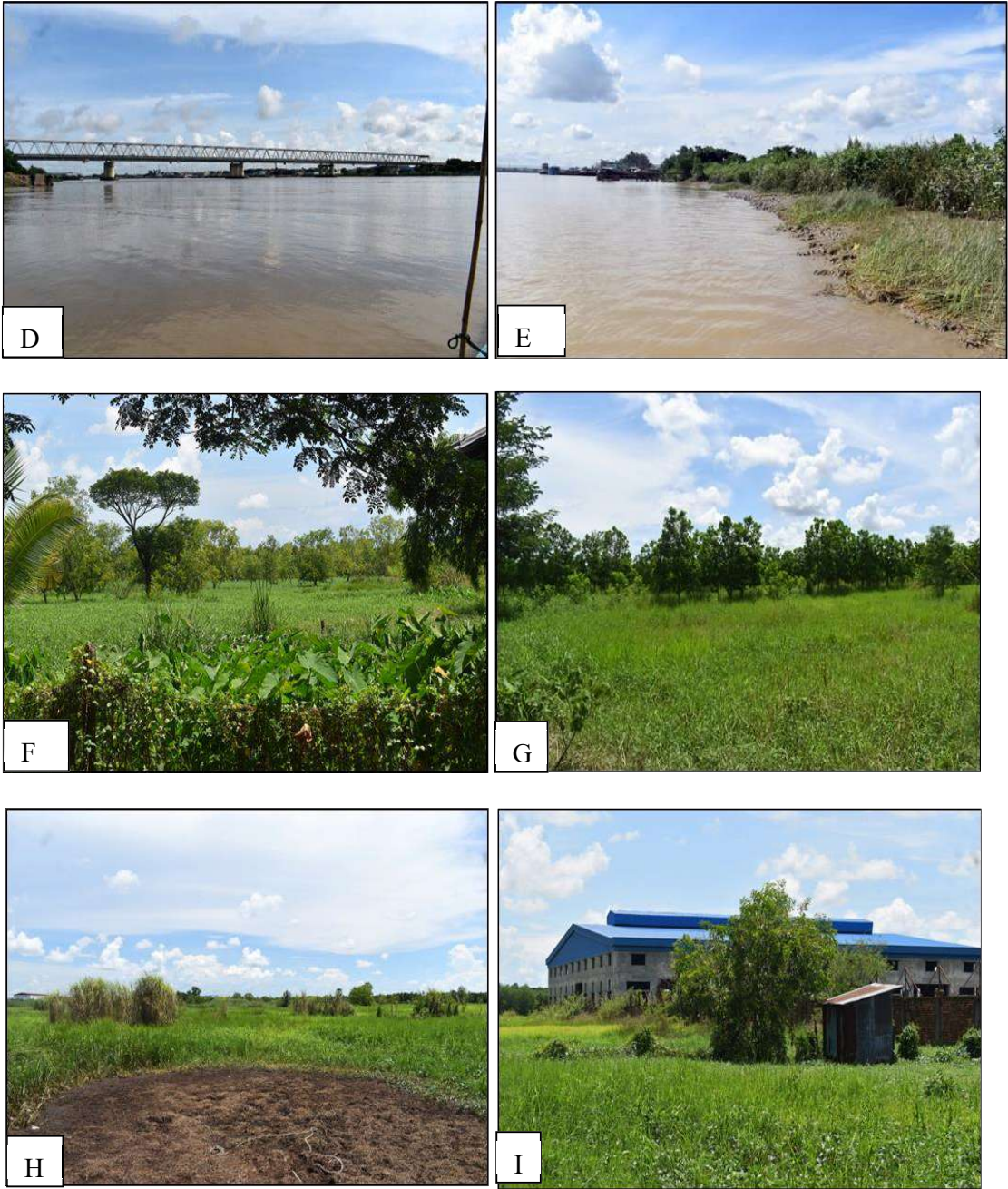
#### **4.6.6 Biodiversity Field Survey (Primary Data)**

The Biological primary survey was undertaken during September and November 2022 to obtain information on terrestrial flora and fauna, aquatic community within the Study Area. The nearest water body is Hlaing River, which is 4.15 kilometers away from the factory.

##### **4.6.6.1 Field Survey Area**

Environmental around the project area was shown as following.



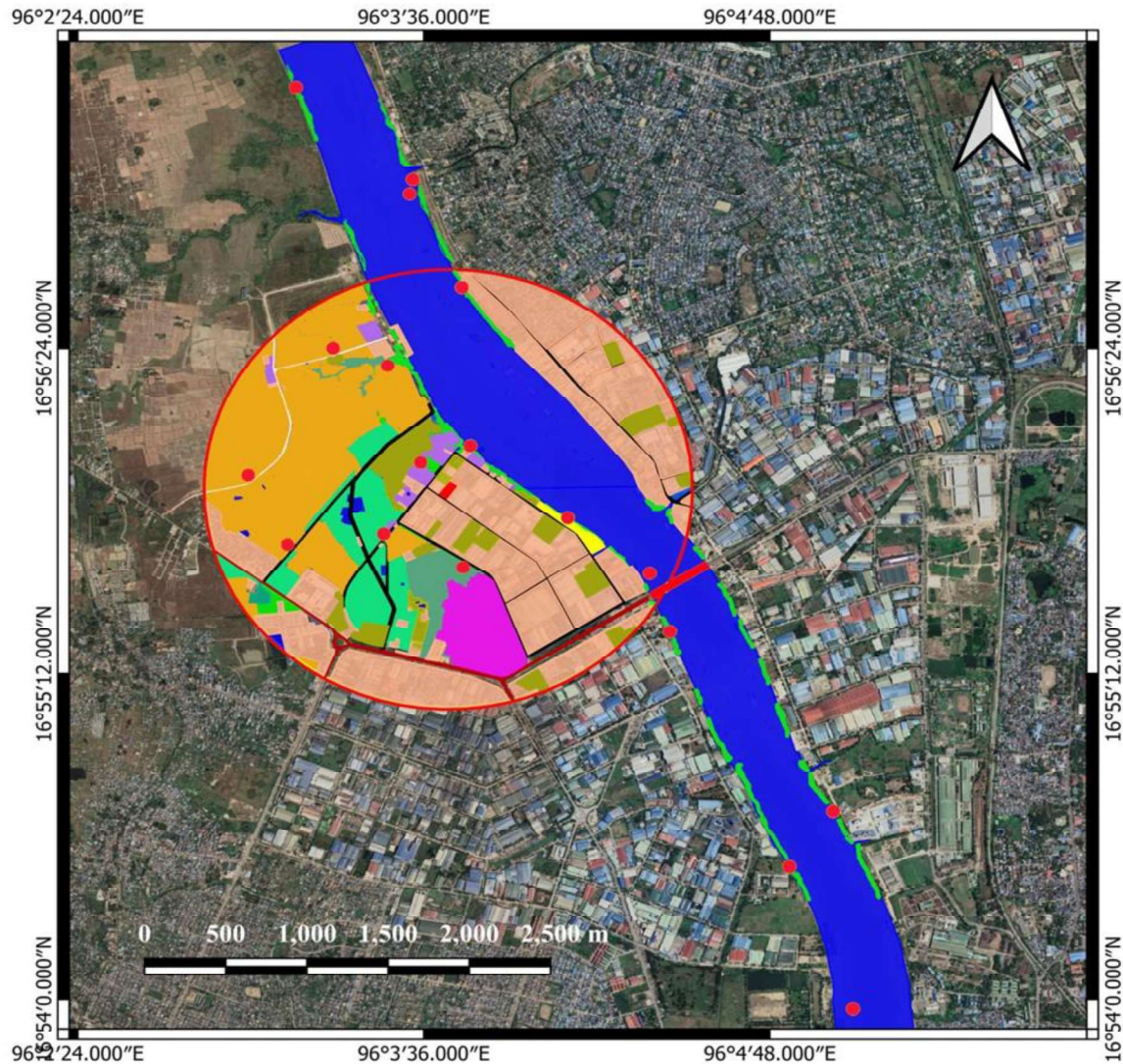






**Figure 4-75 Biological environments around the project area: (A) The project site (Nippon Paint Factory); (B-C) Roadside areas; (D) Hlaing River; (E) Riparian area of Hlaing River; (F) Plantation area of *Acacia auriculiformis* (Malaysia-padauk) and grassland; (G) Plantation area of *Acacia mangium* (Mangiumcia) and grassland; (H-I) Swamp and grassland areas; and (J) Cultivated land area**

The biodiversity survey areas, shown in Figure 4-75 were determined based on knowledge of the significant biodiversity impact areas. In project surrounding area, data collection was taken within 3 km radius circular range of project site. In the data collection of flora and fauna, total of (18) sampling points were included in Table 4.50.



Legends:

- Buildup infrastructure
- Cultivated land area
- Plantation and grassland area
- Swamp and grassland area
- Village (Alel Village)
- Water body
- Riparian areas of Hlaing River
- Pogada
- Roadside area
- Sampling sites
- 2-kilometer survey range for terrestrial biodiversity investigation
- 8-kilometer survey range for aquatic flora (riparian plant) and fauna of
- Hlaing River

**Figure 4-76 Map of biological sampling sites in relation to some habitats**

**Table 4-50 Representative GPS points of Biodiversity Survey**

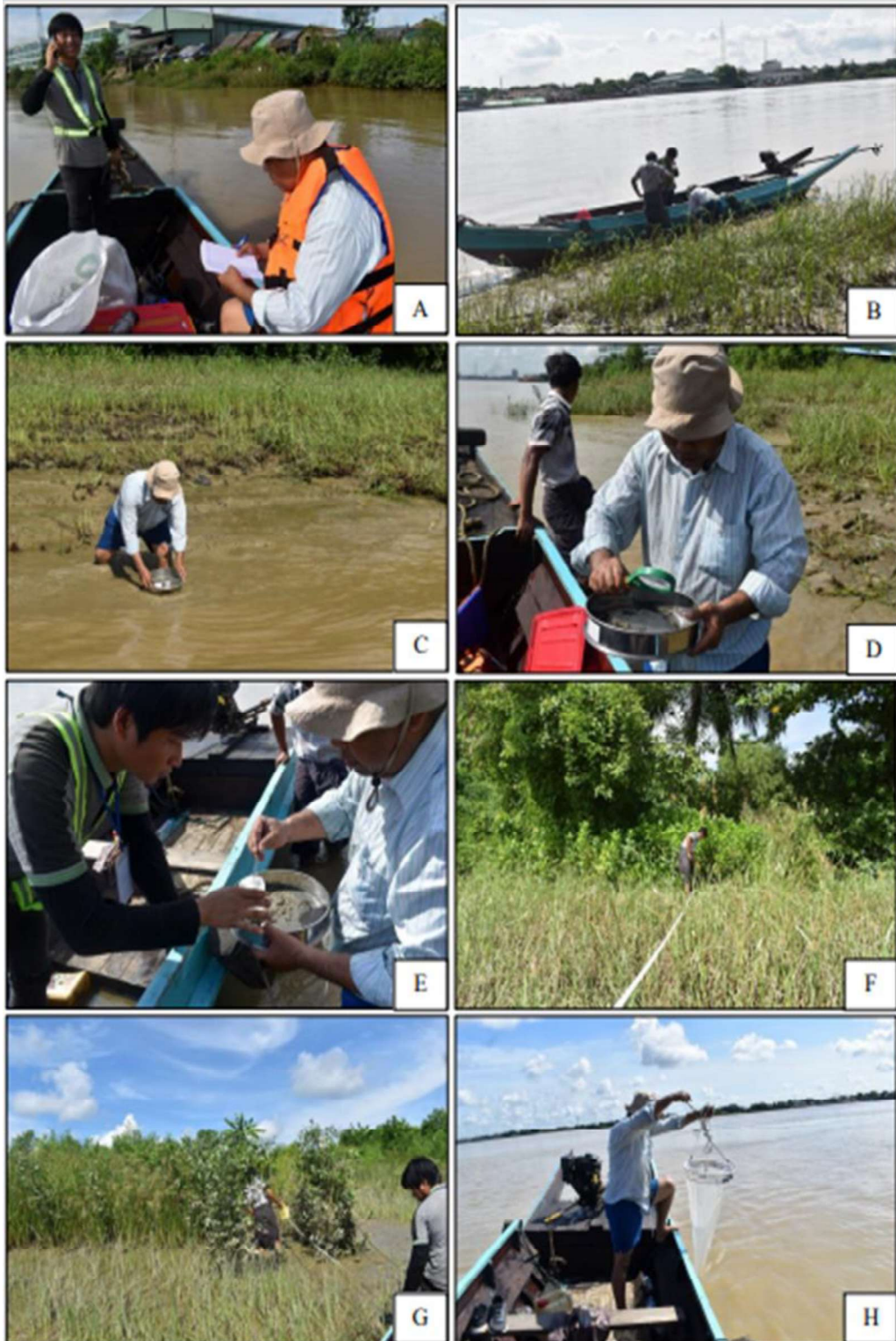
Sr. No.	Latitude	Longitude	Habitat Types	Survey Types	Survey areas
1	16°55'58.67"N	96° 3'35.34"E	Shrub land	Flora-fauna	Terrestrial
2	16°55'42.92"N	96° 3'27.64"E	Plantation and grassland	Flora-fauna	Terrestrial
3	16°55'35.56"N	96° 3'44.13"E	Swamp and grassland	Flora-fauna	Terrestrial
4	16°55'40.64"N	96° 3'7.61"E	Cultivated land	Flora-fauna	Terrestrial
5	16°55'55.90"N	96° 2'59.43"E	Cultivated land	Flora-fauna	Terrestrial
6	16°56'24.04"N	96° 3'17.08"E	Shrub land	Flora-fauna	Terrestrial
7	16°56'20.18"N	96° 3'28.48"E	Creek vegetation area	Flora-fauna	Terrestrial
8	16°56'2.41"N	96° 3'45.66"E	Riparian area	Riparian flora and fauna	Aquatic (Hlaing River)
9	16°55'46.45"N	96° 4'5.94"E	Riparian area	Riparian flora	Aquatic (Hlaing River)
10	16°55'21.37"N	96° 4'27.19"E	Riparian area	Riparian flora and fauna	Aquatic (Hlaing River)
11	16°54'29.31"N	96° 4'52.06"E	Riparian area	Riparian flora and fauna	Aquatic (Hlaing River)
12	16°54'41.63"N	96° 5'1.20"E	Riparian area	Riparian flora	Aquatic (Hlaing River)
13	16°56'37.48"N	96° 3'43.91"E	Riparian area	Riparian flora	Aquatic (Hlaing River)
14	16°57'1.34"N	96° 3'33.70"E	Riparian area	Riparian flora fauna	Aquatic (Hlaing River)
15	16°57'21.71"N	96° 3'9.35"E	Riparian area	Riparian flora and fauna	Aquatic (Hlaing River)
16	16°56'58.10"N	96° 3'33.04"E	Hlaing River	Fish, benthic fauna and planktons	Aquatic (Hlaing River)
17	16°55'34.26"N	96° 4'23.00"E	Hlaing River	Fish, benthic fauna and planktons	Aquatic (Hlaing River)
18	16°53'57.91"N	96° 5'5.29"E	Hlaing River	Fish, benthic fauna and planktons	Aquatic (Hlaing River)

#### 4.6.6.2 Survey Methodologies

Sampling and data collection of flora and fauna were conducted in Hlaing River and terrestrial areas in the survey range area where will be possible direct or indirect impact on flora and fauna by the project. A survey trip for the Hlaing River was used by boat while the walking-through survey was conducted for terrestrial environment around the project site. A distance of 2- kilometer radius was assigned as scope survey range for terrestrial areas around the project site coverage of different habitats while a distance of 8-kilometer range which will cover not only the upstream and downstream area of the project site but also for the important parts of river ecosystem included



riparian zone, mangrove, intertidal zone, and river zone (littoral, pelagic and benthic zones) for aquatic flora and fauna study of Hlaing River (see Figure 4.77). Further methodology on specific surveys will be provided in the sections below,







(A-B) Aquatic survey by boat in Hlaing River; (C) Benthos survey; (D) Examination on benthos sample; (E) Collection of benthos samples; (F-G) 20-meter transect set up for riparian vegetation surveys; (H) Collection of zooplanktons; (I) Fish sample collection from cast net (J) sample collection from drift gill net; (K) Terrestrial plant survey (Roadside plants); (L) Recording coordinates by GPS for mapping and sampling sites; (M) Market survey; and (N) Interview with residents

**Figure 4-77 Photos of Field activities**

#### **4.6.6.2.1 Flora Survey**

##### ***Methods***

Sampling and data collection of plants was conducted in riparian areas of Hlaing River and terrestrial areas of roadside, swamp and grassland, plantation and grassland, and cultivated land. In riparian plant surveys, 30

meters line transects were constructed and recorded flora. Sampling sites were randomly selected in such habitat areas. In terrestrial plant surveys, direct observation was conducted in different habitats and recorded plants. Observed species were recorded in flora datasheets with their occurrences. Flora sampling sites were recorded by Garmin 64 GPS. Taking photographs and specimen collection are also conducted for verification and identification processes. Relative frequency (%) Observed plant species in relation to different habitats in terrestrial areas (eg, roadside, swamp and grassland, plantation and grassland, and cultivated land area) and a total of (11) line-transect in riparian areas were used to calculate relative frequency (%). The calculation was based on their occurrences in different habitats and numbers of line-transect.

#### ***Relative frequency (%)***

Observed plant species in relation to different habitats in terrestrial areas (eg. roadside, swamp and grassland, plantation and grassland, and cultivated land area) and a total of (11) line-transect in riparian areas were used to calculate relative frequency (%). The calculation was based on their occurrences in different habitats and numbers of line-transect.

$$\text{Relative frequency (RF \%)} = \frac{\text{Number of occurrences}}{\text{Total number of occurrences}} \times 100$$

The species identification was carried out by using key to families of flowering plants and appropriate literature and confirmed by matching with herbarium specimens of Department of Botany, University of Yangon.

#### ***Survey Materials***

Materials used for recording are strings for sample plotting and transecting, digital camera for recording, GPS, maps, permanent marker, field note books.

#### ***Results of Flora***

##### ***Riparian plants***

During the survey, a total of (34) plant species from (16) families was recorded as shown in Appendix IV. It comprises of herbs with 12 species represented 35.3%, followed by each 5 species of climbers, small trees and trees accounted for 14.7%, 4 species of shrubs with 11.8% and 3 species of grass with 8.8% (see Figure 4-78). In family composition, the major contributed family was Fabaceae (with 7 species), followed by Cyperaceae (with 5 species), and Acanthaceae, Arecaceae and Poaceae (with each 3 species). The remaining families were (2) to (1) species was presented in Figure 4.36. No IUCN red list species was found. According to the values of relative frequency (%), the most common (10) species of riparian plant in the

survey are *Cyperus difformis*, *Avicennia officinalis* (Thame), *Cyperus malaccensis*, *Commelina diffusa* (Wetkyok), *Cyperus haspan* (Wet-lar-myet), *Avicennia alba* (Lame), *Colocasia affinis* (Pein), *Mimosa pigra* (Yesubok), *Cyperus iria*, and *Saccharum spontaneum* (Kaing).

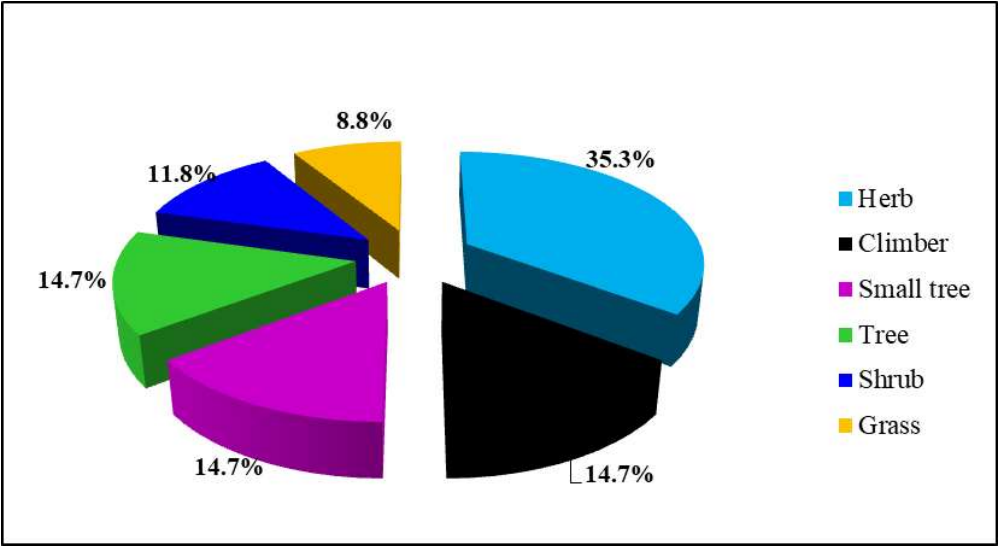


Figure 4-78 Species composition of riparian plants

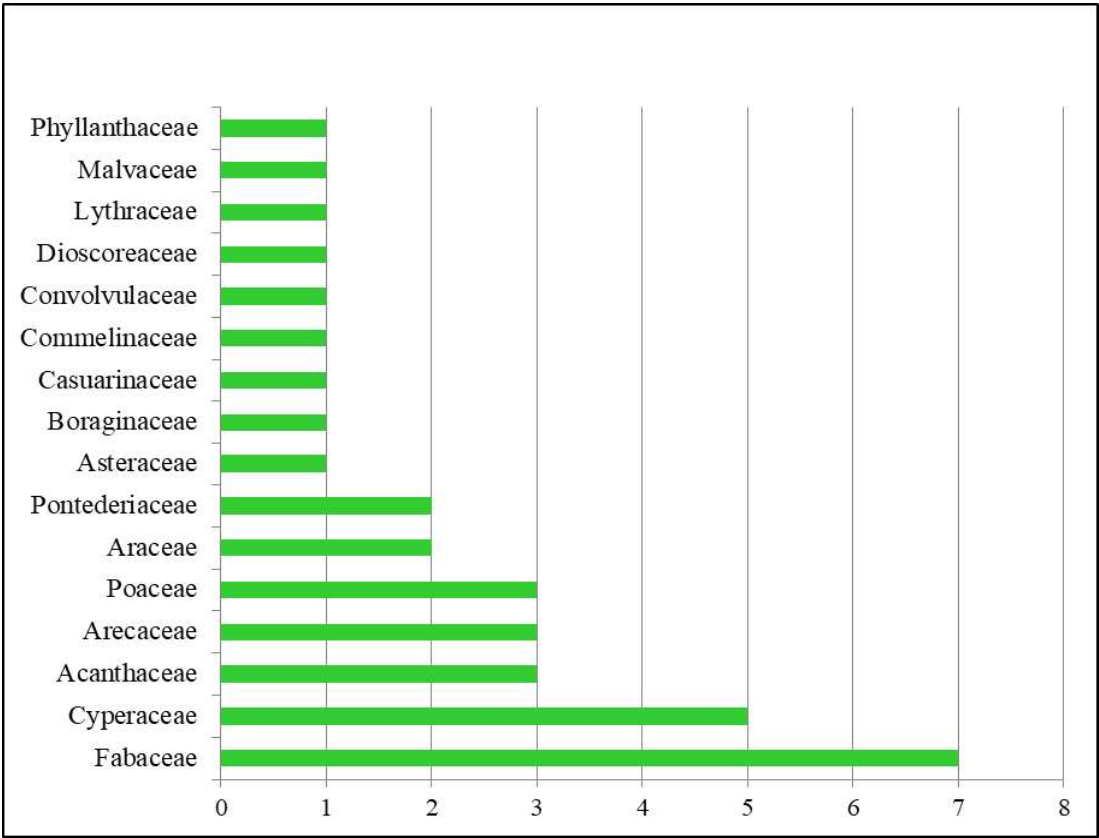


Figure 4-79 Family composition of riparian species

**Observed riparian plant species from Hlaing River together with scientific names, family names, Myanmar names, habitat, IUCN status (2021), Old status of IUCN red list, occurrence and relative frequency (%) (Species were ranked by RF (%) values)**

No.	Scientific Name	Family Name	Myanmar Name	Habit	IUCN status (2021); Version 2021-3	Old status of IUCN Red List	Occurrence	RF(%)
1	<i>Cyperus difformis</i> L.	Cyperaceae	Nil	Herb	NL	LC	8	7.5
2	<i>Avicennia officinalis</i> L	Acanthaceae	Thame	Tree	NL	LC	7	6.6
3	<i>Cyperus malaccensis</i> Lam.	Cyperaceae	Nil	Herb	NL	NL	7	6.6
4	<i>Commelina diffusa</i> Burm. f	Commelinaceae*1	Wetkyok	Herb	NL	LC	5	4.7
5	<i>Cyperus haspan</i> L.	Cyperaceae	Wet-lar-myet	Herb	NL	LC	5	4.7
6	<i>Avicennia alba</i> Blume	Acanthaceae	Lame	Small tree	NL	LC	4	3.8
7	<i>Colocasia affinis</i> Schott.	Araceae	Pein	Herb	NL	NL	4	3.8
8	<i>Mimosa pigra</i> L.	Fabaceae	Ye-suboke	Shrub	NL	LC	4	3.8
9	<i>Cyperus iria</i> L.	Cyperaceae	Nil	Herb	NL	LC	4	3.8
10	<i>Saccharum spontaneum</i> L.	Poaceae*3	Kaing	Grass*3	NL	LC	4	3.8
11	<i>Paspalum vaginatum</i> Sw.	Poaceae	Kikuyu grass	Grass	NL	NL	4	3.8
12	<i>Eichhornia crassipes</i> Mart.) Solms	Pontederiaceae	Beda	Herb	NL	NL	4	3.8
13	<i>Ipomoea aquatica</i> Forssk.	Convolvulaceae*1	Ye-kazun	Climber	NL	LC	3	2.8
14	<i>Dioscorea villosa</i> L.	Dioscoreaceae*1	Kauk-yin-n we	Climber	NL	NL	3	2.8
15	<i>Cassia tora</i> L.	Fabaceae	Dangywe	Shrub	NL	NL	3	2.8
16	<i>Mikania scandens</i> (L.) Willd.	Asteraceae*1	Bizat-n we	Climber	NL	NL	3	2.8
17	<i>Hibiscus tiliaceus</i> L.	Malvaceae*1	Ye-ngan-shaw	Small tree*5	NL	NL	3	2.8
18	<i>Eragrostis pilosa</i> (L.) P. Beauv.	Poaceae	Myet-wa-lon	Grass	NL	NL	3	2.8
19	<i>Mimosa pudica</i> L.	Fabaceae	Htikayon	Herb	NL	LC	3	2.8

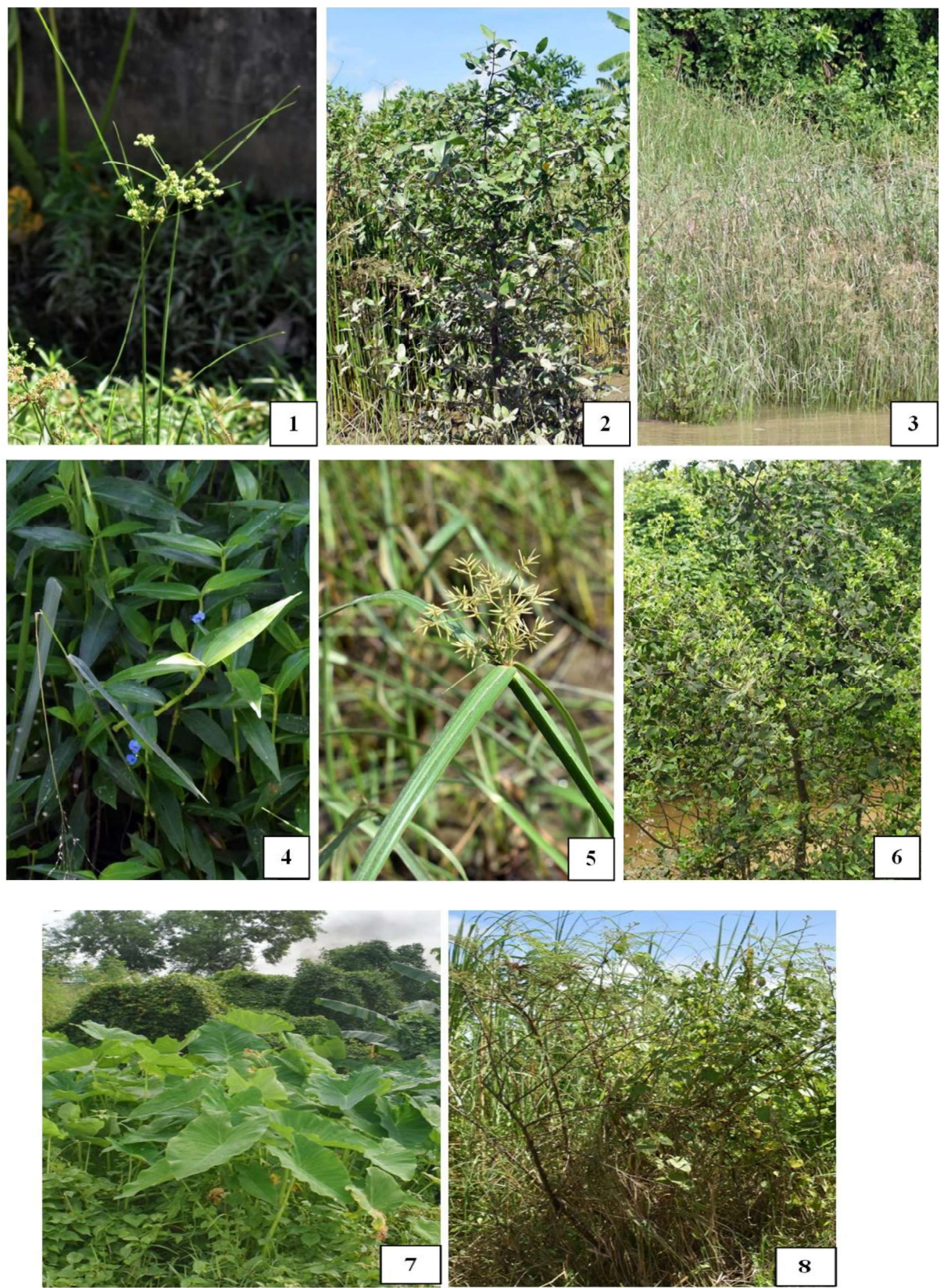


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No.	Scientific Name	Family Name	Myanmar Name	Habit	IUCN status (2021); Version 2021-3	Old status of IUCN Red List	Occurrence	RF(%)
20	<i>Thunbergia grandiflora</i> (Roxb.) Rottl.) Roxb.	Acanthaceae*3	Pan-ye-sut-n we	Climber	NL	NL	2	1.9
21	<i>Cryptocoryne ciliata</i> (Roxb.) Fischer	Araceae*2	Nga-dan-sa	Herb	NL	NL	2	1.9
22	<i>Heliotropium indicum</i> L.	Boraginaceae*1	Sin-hna-maung	Herb	NL	LC	2	1.9
23	<i>Scirpus juncooides</i> Roxb.	Cyperaceae*5	Nil	Herb	NL	NL	2	1.9
24	<i>Derris elegans</i> Benth.	Fabaceae	Migyaung-n we	Climber*5	NL	LC	2	1.9
25	<i>Sesbania bispinosa</i> (Jacq.) W. Wight	Fabaceae	Nyan	Shrub	NL	LC	2	1.9
26	<i>Pongamia pinnata</i> Pierre	Fabaceae	Thinwin-phyu	Tree	NL	NL	2	1.9
27	<i>Sonneratia caseolaris</i> (L.) Engl.	Lythraceae*1	Lamu	Tree*5	NL	LC	2	1.9
28	<i>Phyllanthus reticulatus</i> Poir.	Phyllanthaceae*1	Ye-chin-yar	Shrub*4	NL	NL	2	1.9
29	<i>Monochoria hastafolia</i> Presl	Pontederiaceae*2	Le-padauk	Herb*12	NL	NL	2	1.9
30	<i>Nipa fruticans</i> Wurm.	Arecaceae	Dani	Small tree	NL	NL	1	0.9
31	<i>Cocos nucifera</i> L.	Arecaceae	Ohn	Tree	NL	NL	1	0.9
32	<i>Phoenix paludosa</i> Roxb.	Arecaceae*3	Thinbaung	Small tree	NL	NL	1	0.9
33	<i>Casuarina equisetifolia</i> Forst.	Casuarinaceae*1	Pinle-kabwe	Tree	NL	LC	1	0.9
34	<i>Leucaena glauca</i> (L.) Benth.	Fabaceae*7	Bawsagaing	Small tree	NL	NL	1	0.9
	(34) species	(16) families	Total numbers of occurrence and relative frequency (%)=				106	100

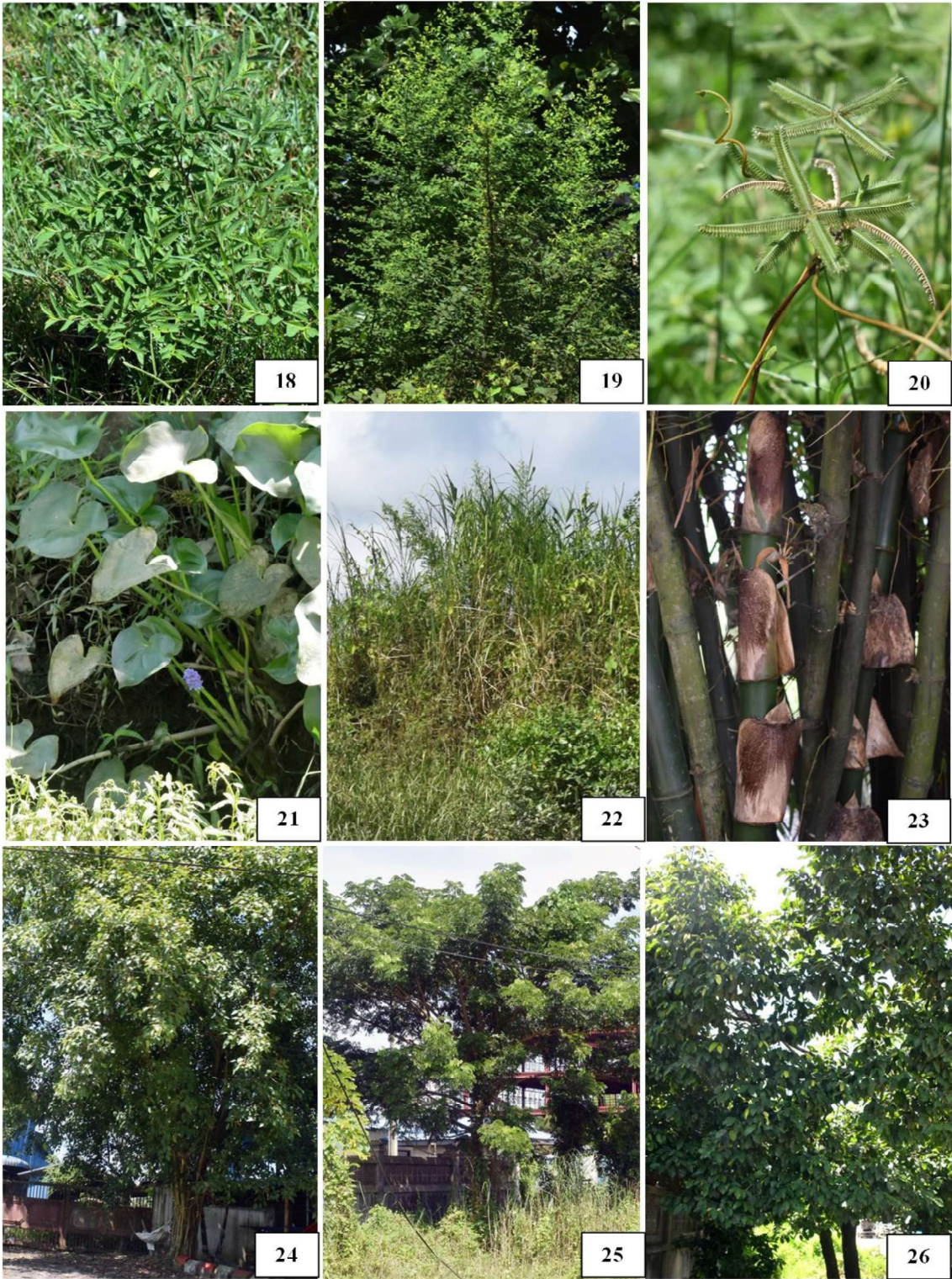
**Note:** IUCN - International Union for Conservation of Nature; RF (%) - Percentage of relative frequency; \*n - numbers of species individual; Nil- Myanmar name was not given















**Figure 4-80 some recorded photographs of riparian plant species (Figures 1 to 8):**

1-Cyperus difformis (Nil); 2- Avicennia officinalis (Thame); 3- Cyperus malaccensis (Nil); 4- Commelina diffusa (Wetkyok); 5-Cyperus haspan (Wet-lar-myet); 6-Avicennia alba (Lame); 7-Colocasia affinis (Pein); and 8-Mimosa pigra (Ye-suboke); and **Figure (10-B) Some recorded photographs of terrestrial plant species (Figures 9 to 31):** 9- Albizia procera (Sit); 10- Terminalia catappa (Banda); 11- Sterculia foetida (Letpan-shaw); 12- Polyalthia longifolia (Lan-tama); 13- Barringtonia acutangula (Ye-kyi); 14- Alternanthera philoxeroides (Nil); 15- Alternanthera sessilis (Pazun-sar); 16- Eupatorium odoratum (Bizat); 17- Mimosa pudica (Htikiyon); 18- Sida carpinifolia (Katsine); 19- Phyllanthus reticulatus (Ye-chin-yar); 20- Dactyloctenium aegyptium (Myet-lay-gwa); 21- Monochoria hastata (Le-padauk); 22- Phragmites vallisneria (Kyu-kaing); 23- Dendrocalamus hamiltonii (Wanet); 24- Ficus rumphii (Nyaung-phyu); 25-Samanea saman (Thinbaw-kokko); 26- Mimosa pudica (Kyayay); 27- Panicum repens (Myet-kha); 28- Physalis minima (Bauk-pin); 29- Cleome gynandra (Gangala); 30- Mikania scandens (Bizat-n we); and 31- Sphagneticola calendulacea (Negya-gale).

#### 4.6.6.2.2 Fauna Survey

##### Reptiles and Amphibians Survey

##### Survey Method

Amphibian and reptiles include frogs & toads, snakes, turtles & tortoises and lizards. Specimens were observed by visual encounter survey method (Visual encounter method in the survey area. Observation for species richness and abundance along a survey path (Crump & Scott, 1994) with active searching in potential places in the wet area, nearby the stream and

under the rocks and logs, among the bush and check the burrowing holes along the study routes in a particular habitat.

***Survey Result***

A total of 12 species that included 4 species of frogs and toad, 5 species of snake, 1 species of turtle and 2 species of lizards were recorded in the survey area. Indian cricket frog, Common tree frog, and Water snake were most common. No IUCN red list species were found during the survey.

**Bird Survey*****Survey Method***

Bird survey was focused on mangrove vegetation and mud flat/intertidal zone of the study area where aquatic birds might be searching food and resting at low tide and high tide condition. Random sampling method was used for the bird survey. The photograph of birds was taken by use of Tele-Camera (Tele: Tamaron 150-600mm, Camera Nikon D720). Binocular (Nikon 8X40) was also used for bird observation. Identified was made matching with field guided book for (Craig Robson 2011 and Tin Tun Aung 2014). No. of species, abundance and habitat utilization were recorded. Nest and breeding place was also examined during the survey. Migratory birds and threatened species were identified.

***Results***

During the survey, a total of 23 species of birds were recorded, including 18 terrestrial and 5 coastal and aquatic birds. In the terrestrial habitats in the survey area, there was found that the birds such as house sparrow, common minna and house crow are more abundant than other species. The aquatic birds were not abundantly found. All recorded birds are common and widely distributed species so that can occur in similar habitats. No IUCN Red list species were found. No bird nests and nest habitats were found during the survey.

**Crab survey*****Survey Method***

During the survey, crab specimens were collected from the active fishing such as crab fisher, stow nets and fence nets. Some of them were randomly collected while some were collected by plot and scooping method (1x1 sq. ft) in intertidal zone at sampling sites. Collected specimen crabs were photographed in the fresh condition during the field.

***Survey Result***

Mud crab *Scylla serrata*, three-spot swimming crab *Portunus sanguinolentus* and other small crabs were recorded in the survey area.

**Mammals*****Survey Method***

Direct observation will be taken to observe mammals and at the same time, there were looking at their tracks and signs that animals left along their routes. Observation of track and signs such as footprints, nest holes, and scats feeding signs in their natural habitats to confirm their presence were made by use of field guide book for tracks and signs study.

***Survey Result***

No large mammals were found. Instead, rats such as black rat *Rattus rattus* and Ricefield rat *Rattus argentiventer* were found.

**Fish*****Fish Survey******Survey Method***

Fish samples were randomly collected along the river habitats at both upstream and downstream areas in the survey area (see Figure 4.81). Fish samples were collected from various active fishing gears such as cast net drift gill net, fence nets and stow nets and market at nearest village of study area. Fishing boats, gears and location were recorded and counted to indicate the fish caught availability and status during the survey. Fish specimens were measured and taken photographs in the fresh condition to identify the species. Interview with fishermen was conducted to get fish information about common and abundant species, economic important species and fishing season. Identification of the recorded fishes was made by FAO (2012) and Fish base 2015.

***Survey Result***

Fish samples were recorded from freshwater and estuary water in the survey area. A total of 24 fish species were composed that included 6 freshwater and 18 estuary water fish and 3 shrimp species during the survey. As freshwater fish, Thick-lipped gourami, climbing perch and Rice paddy eel were recorded as more abundant than other species in the study area. As estuary fish, the number of Dwarf Catfish, Caroun croaker, Golden tank goby and Bald glassy are largely recorded than other species during the survey. Most recorded shrimps were Rainbow Shrimp and Stork shrimp in the survey area. As economic important fish such as Hilsa fish, seabass and Pangas catfish were recorded, but they are not abundant. No IUCN red list species was found during the survey period.



Dwarf catfish



Giant freshwater prawn



Miscellaneous fish from stow net

**Figure 4-81 some fauna recorded from survey area**

### **Benthos survey**

#### *Survey Method*

The specimens of benthic fauna (worms, crabs, mollusk, snails, and insect larvae) will be collected in the river bed and coastal shallow water and intertidal zone in the survey area. Grab sampler will be used to collect river bed fauna in Figure 4.82. Some of the specimens like a crabs and mollusk will be collected from crab and mollusk fishers. Samples will be collected at low tide condition in the intertidal zone and among mangrove vegetation. Some of them will be randomly collected while others collected by plot and scooping method (1x1 sq. ft) in intertidal zone at sampling/survey points. Then the collected sediment will be washed in the sea water and passed through a 1 mm sieve to collect macro invertebrate benthos, mollusk, and crabs left in the sieve. After sieving the specimens will be pick up using forceps and preserved with 5 % formalin for further analysis and identification. Some crabs and mollusk will be photographed in the fresh condition during the field.





**Figure 4-82 Benthos sampling by use of grab sampler**

#### ***Survey Result***

During the survey, three groups of invertebrate's benthic animals such as Phylum Mollusca (snails & bivalves), Phylum Arthropoda (crabs) and Phylum Annelida (worms) were recorded. Among them, Phylum Arthropoda (crabs e.g., *Metopograpsus* sp, *Machieria* sp), was more abundantly found in downstream of the river in the influence area of the project. Benthic fauna plays an important role in marine ecosystems as the primary food for other aquatic animals.

#### **Planktons survey/Sampling**

##### ***Survey Method***

There are two kinds of plankton species, one is zooplankton and another one is phytoplankton. Phytoplankton sampling can be achieved by use of a plankton net may be used with a mesh size of 20-25 $\mu$ m in **Figure 4.74**. The net should be dragged back and for the just below the surface of sea water or held in the stream of waving water for a few minutes. This should allow for the collection of sample cells. The contents of the net should then be emptied into a wide mouthed plastic storage bottle and preservative add of required. The sample can be taken a vertical or horizontal haul with the phytoplankton net over a 2- or 3-meter depth to cover the zone where light penetration is sufficient (Euphotic zone) to encourage algal (phytoplankton) growth.

Zooplankton Net will be used for Zooplankton samplings. Net is conical devices made with five nylon mesh 200 $\mu$ m (Figure 4.83). The zooplankton net is pulled through the water either vertically or horizontally for a known distance. Zooplanktons are captured in the vial or mesh walled bucket at the bottom of the net and they can be raised into a storage bottle for counting. The amount of water from which zooplanktons are removed is

estimate as length of two times month diameter of the net. After that the collected samples are continued qualitative and quantitative study.



**Figure 4-83 Plankton sampling by use of plankton net**

#### ***Survey Result***

The study area of the Hlaing River result a presence of 39 plankton species, comprising 8 zooplankton and 31 phytoplankton species. These species are common and widely distributed in brackish water and coastal regions, contributing significantly to the aquatic ecosystem as a part of the food chain and food web system.

#### **4.6.6.3 Discussion for Flora and Fauna**

From the survey results for flora and fauna, there were no IUCN red list if Threatened Species and were ordinary and project site is at already improved Industrial Zone. The construction/renovation and decommissioning phases are short time duration and there were few adverse impacts upon flora and fauna. The operation phase is long time duration and there were some adverse impact upon the environment if the waste managements were not perfect. The effluent (untreated as poorly treated paint industry effluent), solid wastes and air pollution from project will have negative impacts an aquatic and terrestrial biodiversity.

#### **4.6.6.4 Conclusion**

The project proponent must conduct the relevant laws, rules and instruction with environmental conservation purposes and facts of Environmental Management Plan and Environmental Monitoring Plan strictly in order to reduce the negative impacts and increase the positive impacts.

## **4.7 Socio-Economic Characteristics**

### **4.7.1 Introduction**

This SIA Report provides the assessment approach and execution for social impacts that could be caused by the proposed project. The approach is drawn to cover the operation phase. This SIA Report aims to:

- Determine the Area of Influence (AOI) which could be affected by the operation of the proposed project.
- Determine the Valued Environmental Components (VECs) within the above AOI.
- Explore the existing socio-economic situations of surrounding communities.
- Determine potential impacts by project activities on the local communities.
- Evaluate the social impacts and formulate the relevant and adequate mitigation measures for Environmental Management Plan (EMP).

### **Limitation of SIA**

The assessment is based on the preliminary findings of SIA report, public and stakeholders concerns from the three Public Consultation Meetings (PCM), and issues raised by local communities during Key Informant Interviews (KII), Focal Group Discussions (FGD), and household surveys.

The above assessments have been taken within the potential affected areas identified in scoping phases between August 2023 and May 2024.

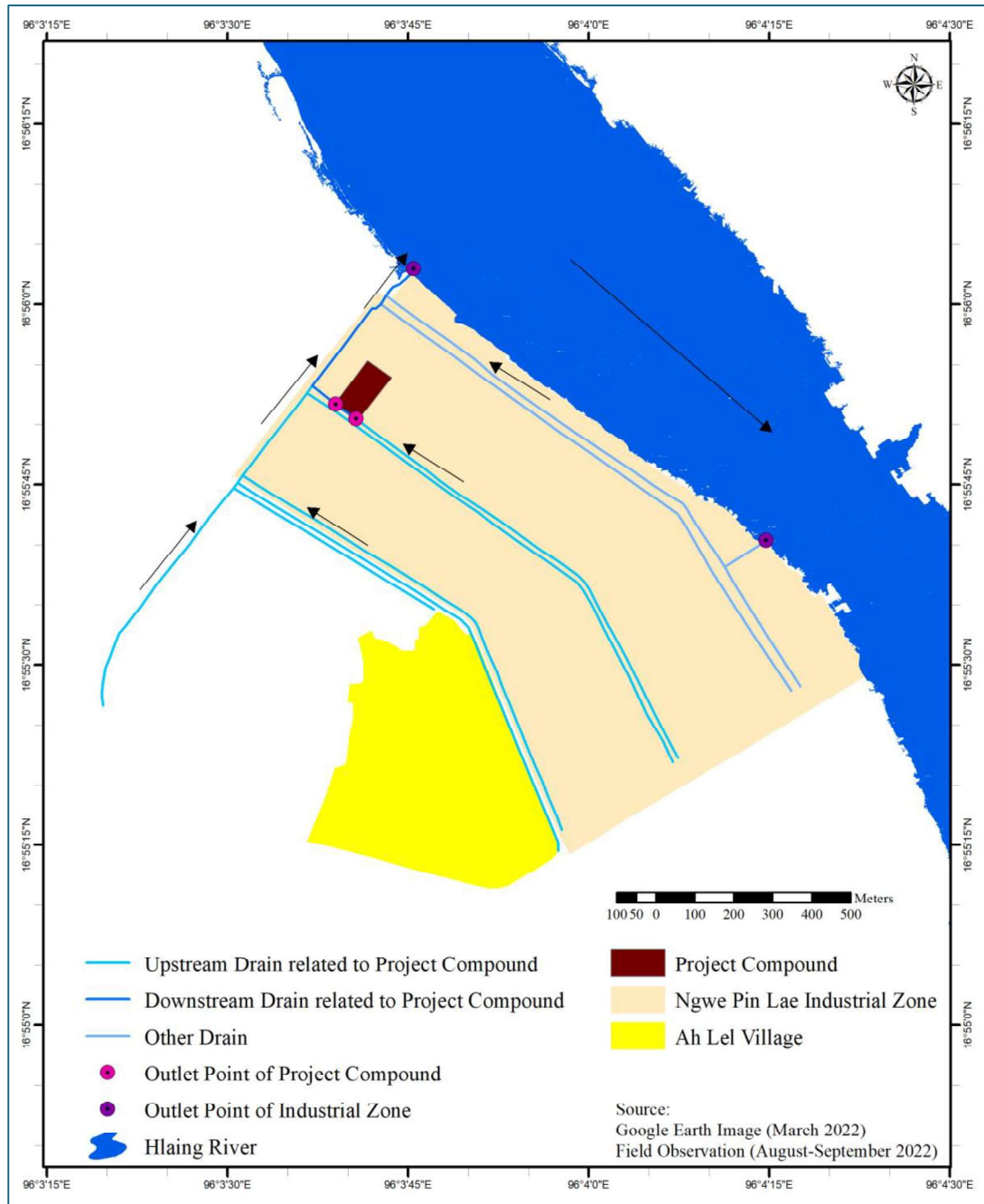
### **4.7.2 Social Baseline Environment**

#### **4.7.2.1 SIA Study Area**

The overall study area is followed to the areas defining in scoping phase. The detailed assessments are focus on the AOI which is defining in first PCM according to the public participation and final field assessment results, which are described in Figure 4-84.

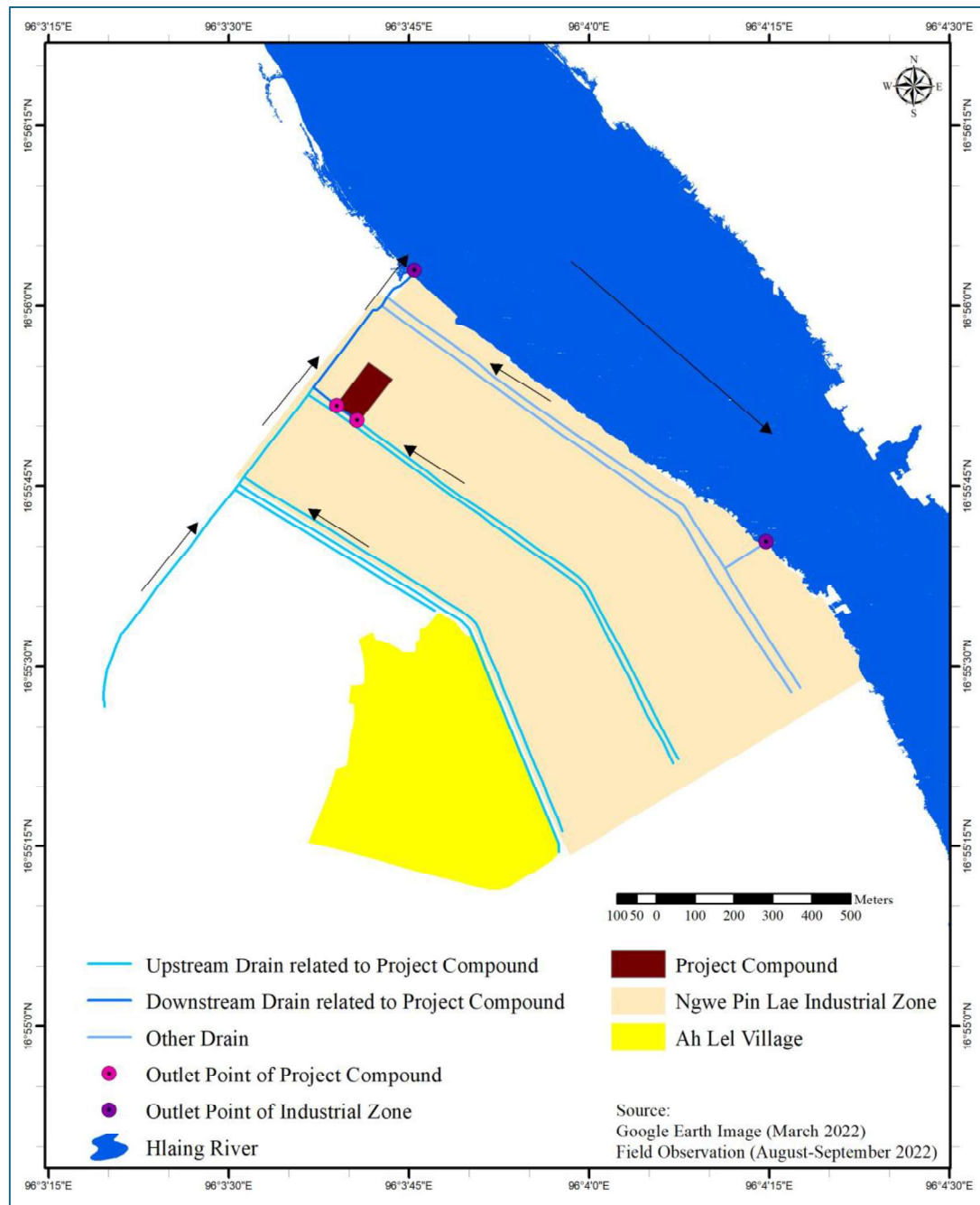
Ah Lel Village is recorded as the host community for the project as the village is located in adjacent to the industrial zone as well as same administrative boundary. Pluvial floods regularly occur in the rainy season due to topography and poor drainage system, but there is no tidal effect. The village may be suffered the noise and odor from the Industrial Zone in which the project is located. The noise monitoring at Ah Lel village were performed on 2022 and 2024 as well as odor monitoring on 2024. Therefore, further social assessment will be taken focusing on Ah Lel Village with the following aspects.

- Host community of the whole industrial zone
-



**Figure 4-84 Observation Map to identify Study Area**





**Figure 4-85 Land of Occupation Ngwe Pin lae Industrial Zone**

#### 4.7.2.2 Methodology and Approach

##### Materials and Methods

The SIA Team uses household questionnaires to conduct the socio-economic conditions of local communities. The EIA consultant firm invites all-inclusive stakeholders to participate in the series of PCM. The SIA Team follows-up to investigate their concerns through the appropriate FGDs at community level. The necessary brainstorming sections are arranged with the

EIA Team for technical aspects, with the project proponent for operation issues, and with the local communities to get resolutions for their concerns.

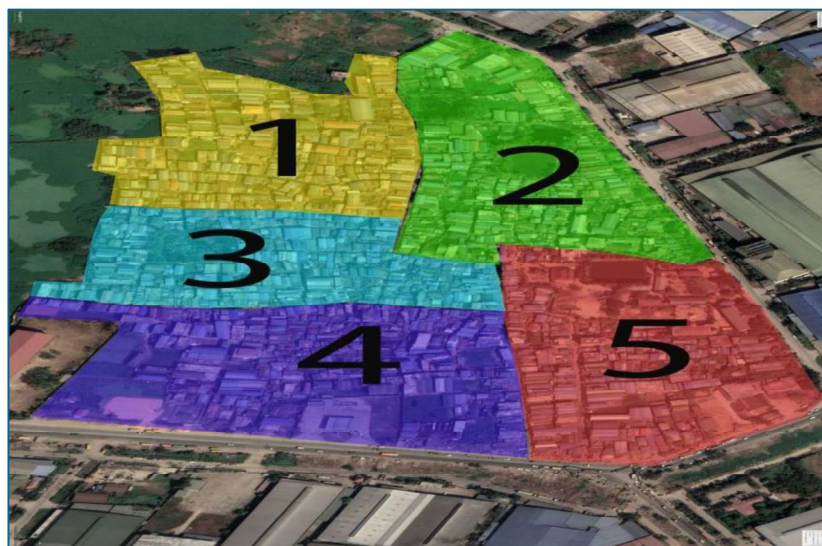
**Desktop Assessment**

The SIA Team reviewed the scoping report and extracted the key points which are required to consider during the SIA stage. The expert team made brainstorming to determine the impacts based on preliminary findings in scoping phase, technical concerns by EIA consultants, and public concerns by various stakeholders and developed concept maps for mitigation measures.

The social team drives the quantitative and qualitative data from surveys statistically to determine the socio-economic conditions and degree of their concerns for impacts calculations.

**Field Assessment**

The SIA Team visited all five areas of Ah Lel Village to follow-up for the issues and concerns raised within SIA assessments and the three PCMs. During these visits, the social expert meets with the community representatives, key informants, and some residents to discuss their desires and concerns about the proposed projects. The social survey team takes household surveys to explore the socio-economic conditions of residents.



**Figure 4-86 Five Areas of the Ah Lel Village**

<sup>2</sup> These area-partitions are intended only for SIA process.

**4.7.2.3 Social Baseline Results****4.7.2.3.1 Methodology and Approach**

In Ah Lel Village, there is a significant difference in the number of housing units and households as well as there are several families living under the same roof. Some of the original residents have more than one housing-unit in the same compound or in different compounds. According to the

preliminary finding from FGD, six out of ten families are living in their own housing units in general. Therefore, the questionnaire interview will be conducted to 92 respondents of different families and different housing-units, with combination of systemic and stratified sampling methods.

In fact, the survey was successfully conducted from February 17 to 20, 2023 with 90 respondents from individual families who are living under different roofs. Their clusters of distribution are described in Table 4-51.

**Table 4-51 Matrixes of respondent's clusters**

			Male	Female	Sub-Total	Total
Living Patterns	Housing-Unit Holders	Original Residents	7	10	17	51
		Immigrants after 2002	22	12	34	
	Rentals	Rental (unit wise)	5	15	20	39
		Rental (Hostel)	11	8	19	
		Total	45	45		90

Source: Family Survey in February 2023

Result

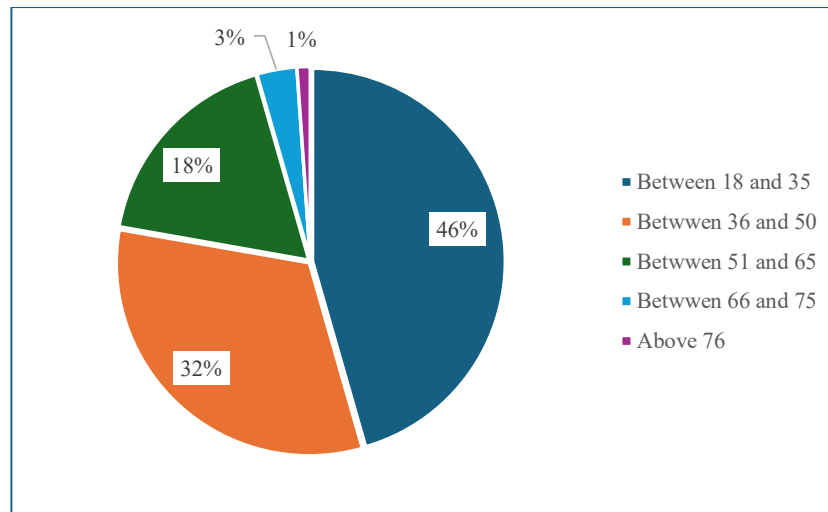
Margin of error: **10.20%**

This means, in this case, there is a 95% chance that the real value is within  $\pm 10.20\%$  of the measured/surveyed value.

Confidence Level: ① 
Sample Size: ② 
Population Proportion: ③ 
Population Size: ④  Leave blank if unlimited population size.

**Figure 4-87 Calculation for survey quality**

According to the statistical approach, the exploratory argument has a 95% chance that the real value is within  $\pm 10.2\%$  of the surveyed value.

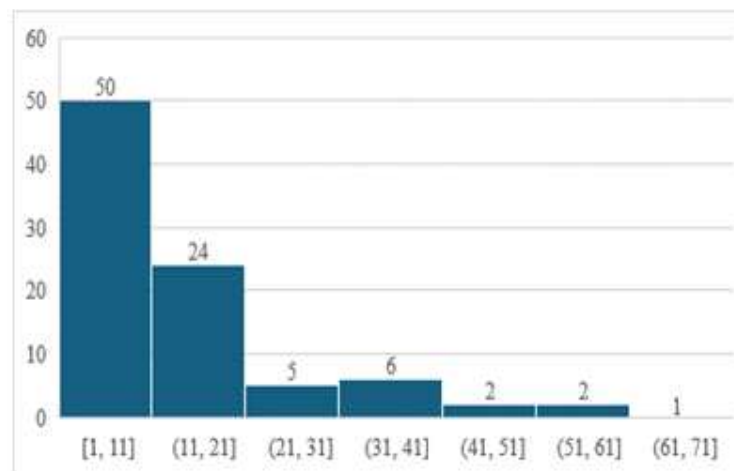


**Figure 4-88 Age-ranges of respondents**

The survey was oriented to the cluster of young working-force ages (46%) and middle working-force ages (32%).

#### 4.7.2.3.2 Attributes of Respondent's Families

Among the majority of Bamar, the survey is conducted to 3% of Kayin Ethnic people. Almost of them are Buddhist and the Christian shares very few percentages.



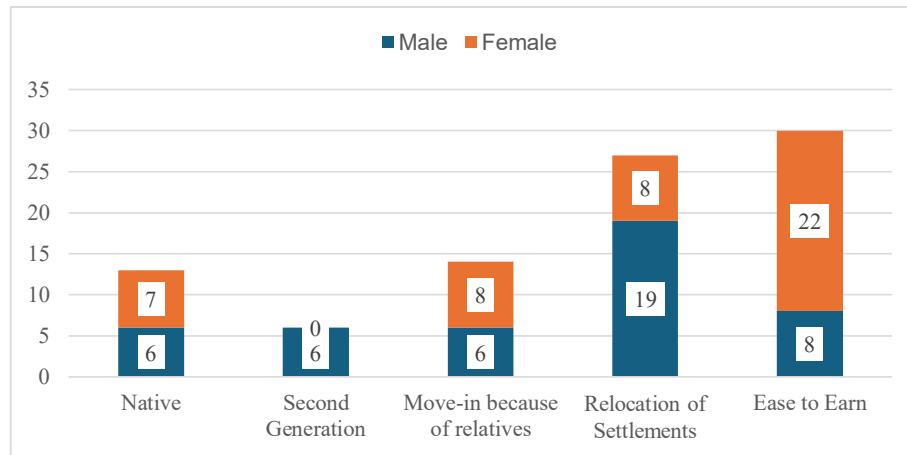
**Figure 4-89 Histogram for duration of continuous living**

Source: Family Survey in February 2023

The above histogram summarizes for the total number of families according to the duration of their continuously living in the village. According to the statistical result, the original people of before Hlaingtharya demarcation lesser to compare with original people of after Hlaingtharya gazette. At the present, the most dominant group is found as the immigrants less than 12 years. The distribution of their living periods is also found to be nearly normal distribution with mean value of 15-years and 68% of respondents are living in



village up to 28 years continuously. This statistic highlights that most of the original people and immigrants have been desired to live permanently in this area.

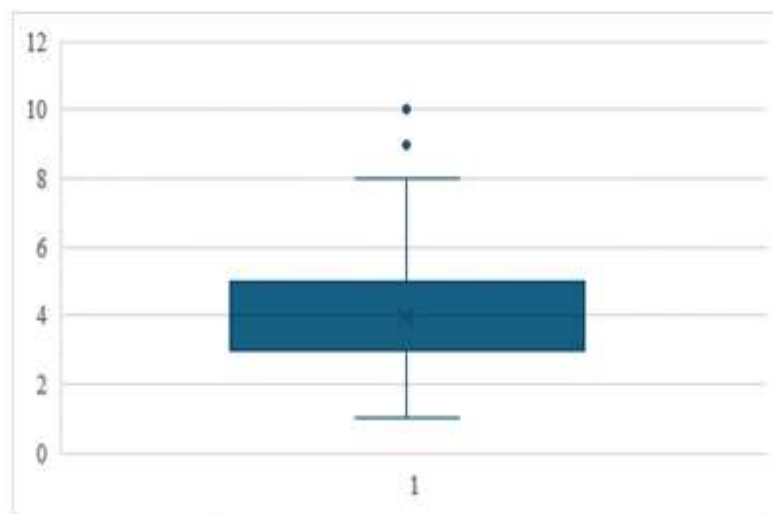


**Figure 4-90 Column chart for reasons of settle**

Source: Family Survey in February 2023

Among the five root causes of settle in Ah Lel Village, the two majorities are found as “Ease to earn for jobs”, in which 33% of respondents gave input and “Relocation of Settlements”, where 30% feedback. The significant findings are ratio of male respondents for the root of “Relocation of Settlements” and the ratio of female respondents for the root of “Ease to Earn”. Therefore, it could be argued that migrant female workforce is also dominant stratify in the village and the main pull-factor as well as hold-factor would be job-polls of industrial landscape.

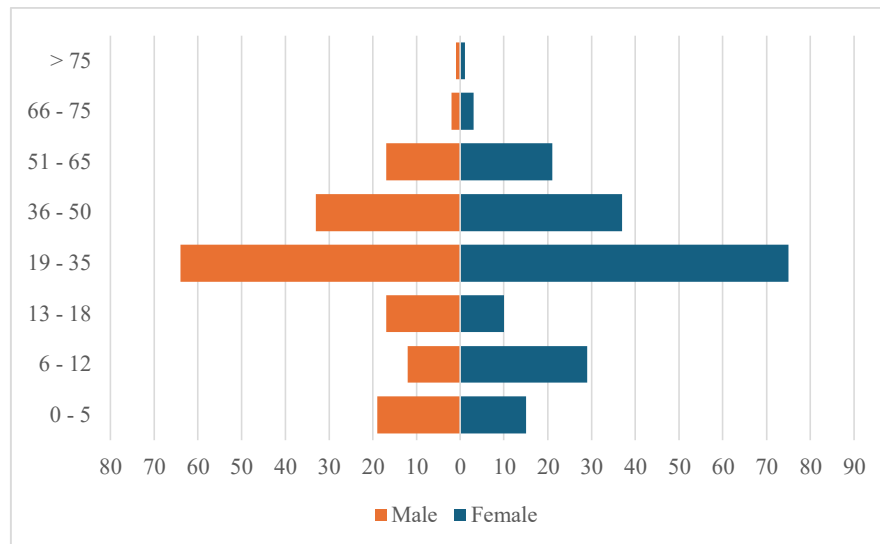
According to the survey data, there are 356 persons in these 90 sample families, in which their gender ratio is found as 86.39. The average family size for respondent’s families is found to be 4 and it can be explored that the average family size for the whole village would be between 3 and 5; it is the normal figure for every community.



**Figure 4-91: Box and Whisker chat for family members.**

Source: Family Survey in February 2023

According to the Box & Whisker chart, the families composed of 9 and 10 family members are now recorded as outliers for further analysis. The one-person family is found to be the common type of the village.

**Figure 4-92 Population pyramid for respondent's families**

Source: Family Survey in February 2023

According to the above pyramid of family members, the major groups are ages between 19 to 35 years and followed by 36 to 50 years; both are workable age ranges. It could be argued that these young workforces can find the relevant jobs in local job-polls. In the last 5 years, the newborn of male is increase than previous period, but the reverse trend is recorded for female born.

#### 4.7.2.3.3 Economic Conditions of Respondent's Families

There are 82 males (about 50% of total males) and 88 females (about 46% of total females) are working to earn the income. On the qualitative study with preliminary assessment, the Executive Officer of Village Tract described that there were less opportunities for young male to seek the jobs at factories. According to this family survey, it could be argued that there would be other various job opportunities for male either in formal or informal economic sectors.

**Table 4-52 Jenks Natural Breaks optimization for proportion of working family-members**

<i>class</i>	<i>lower</i>	<i>upper</i>	<i>count</i>
1	0.25	0.4	15
2	0.5	0.5	24

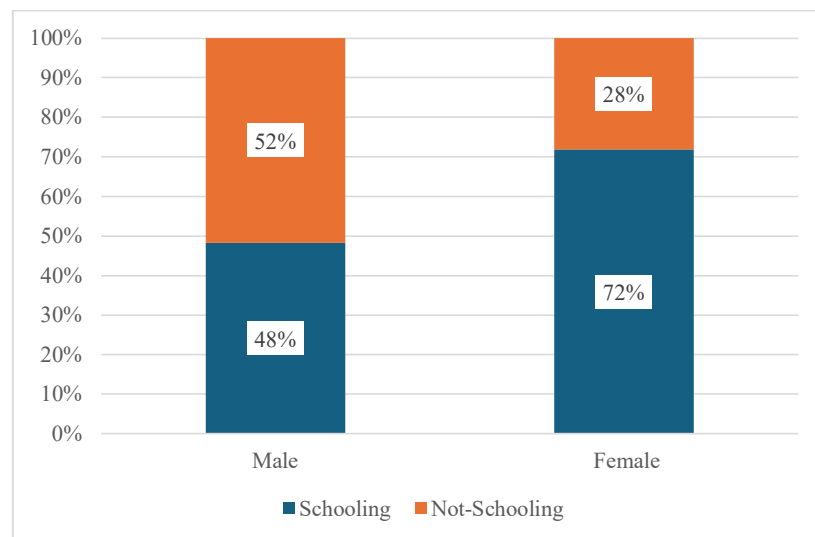
3	0.571429	0.666667	8
4	0.714286	0.833333	9
5	1	1	34
GVF	0.050476	6.416018	0.992133

Source: Family Survey in February 2023

Regarding the result of Jenks Natural Breaks Classification on the families of 90 respondents, the proportions of working persons for every 100 families are found as below.

- All family members are working in 38 families.
- 70% to 85% of family members work in 10 families.
- 55% to 69% of family members work in 9 families.
- Half of the family members are working in 27 families.
- 25% to 40% of family members are working in 17 households.

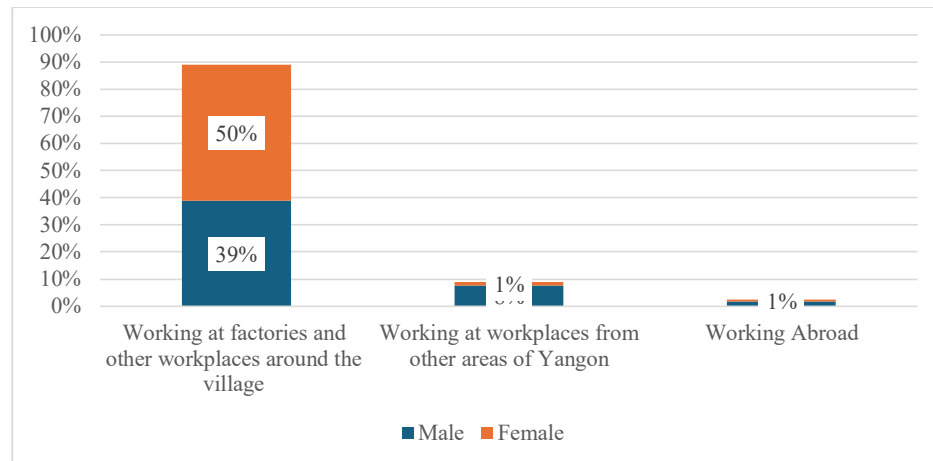
Assume that all these working persons were being the ages between 18 and 64 years – even though there might be child labors – about 28% of males and 34% of females are not working for income generation.



**Figure 4-93 100% Stacked Column chart for schooling of family members**

Source: Family Survey in February 2023

The composition of schooling ages (aged between 6 and 18 years) of the respondent's families is only 19% and the drop-off rate is found as significantly for male-teenagers. One of the push factors for them is ease of finding the causal jobs such as bike-taxi services and daily-wages jobs.



**Figure 4-94 Column chart for working territories**

Source: Family Survey in February 2023

Regarding the development of industrial landscape and job opportunities of direct and indirect forward linkage, most of the working persons are from the local industries of Hlainigtharya (East) and Hlaingtharya (West) townships.

**Table 4-53 Regression model for situation of working persons**

<i>Regression Statistics</i>	
Multiple R	0.83736
R Square	0.701171
Adjusted R Square	0.697775
Standard Error	0.579487
Observations	90

Source: Family Survey in February 2023

This regression model is to predict the contribution of working people in nearby areas to the total number of working people of each family. The Regression Statistics highlight that the job opportunities from local industries is crucial for the 70 % of the respondent's families as the Pearson Regression value is 0.84.

This study explores the working sectors and living patterns of the as described in following Treemaps of Figure 4-95 and Figure 4-96. The living patterns are classified as below.

- Original Residents mean the residents who have been living continuously for more than 20 years.
- Immigrants (Type 1) mean the residents who have been immigrated after 2002 and holding the land properties.



- Immigrants (Type 2) mean the residents who have been immigrated after 2002 and their accommodations are in rental scheme.
- Immigrants (Type 3) mean the residents who have been immigrated after 2002 and living in hostels.

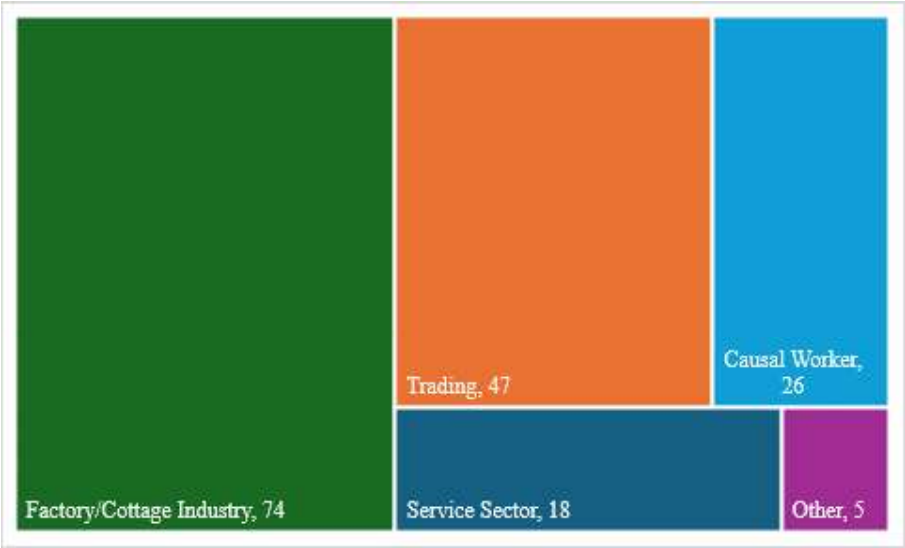


Figure 4-95 Treemap for working sectors

Source: Family Survey in February 2023

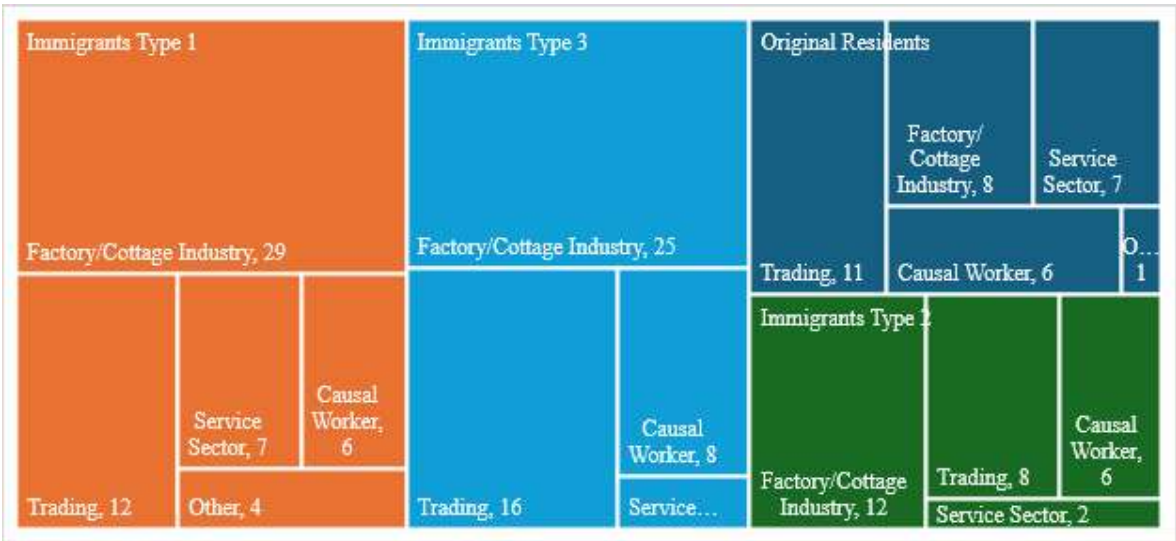


Figure 4-96 Treemap for working clusters according to the living patterns

Source: Family Survey in February 2023

According to these results, the dominant working sectors for the village families is found as the Factory/ Cottage Industry especially for all three types of Immigrants as well as the dominant working forces are from the Immigrants Type 1 and followed by Type 3. As the consequences of above analytical results, it could be argued that the influx of new incomers is usual

and leading to develop the hostel -services as the main business for Original Residents and Immigrant Type 1.

#### 4.7.2.3.4 Income and Expenditure Pattern of Respondent's Families

The families who have several income sources were found during the community walk, therefore the major income source and its sharing in total family income as well the expense per monthly average is explored in the family survey. The study explores (1) major sources for income generation, (2) monthly income from the major source, (3) monthly family income (4) monthly expenditure. Among 90 respondents, 78 respondents (about 87%) have completely responded for these indicators. Among them, one respondent who answered that his monthly income is 2,100,000 Kyats from Apartment Rental and found as extremely outlier and another two respondents who answered that monthly expenditure is less than 10,000 Kyats are found as not reliable inputs for the study. Therefore, the study on income and expenditure pattern is based on the inputs of 75 respondents (about 83% of total respondents) and the margin of error would be increased to 11.18%.

**Result**

Margin of error: **11.18%**

This means, in this case, there is a 95% chance that the real value is within  $\pm 11.18\%$  of the measured/surveyed value.

Confidence Level: 95%  
 Sample Size: 75  
 Population Proportion: 57%  
 Population Size: 18080 (Leave blank if unlimited population size.)

**Calculate** **Clear**

**Figure 4-97 Calculation for survey quality**

Source: [Sample Size Calculator](#)

**Table 4-54 Summaries for sharing of major income sources**

Major Income Source	Sharing within Respondents	Sharing for Average Total Income
Trading	32%	84%
Factory Worker	44%	66%
Casual Job	8%	85%
Apartment Rental	3%	100%
Taxi (both car and bike)	8%	93%
Driver at factory	3%	90%

Air-Con Service	3%	80%
-----------------	----	-----

Source: Family Survey in February 2023

According to the survey data and statistical results, the most dominant income sources are found to be Factory Workers and Trading Activities. The sharing of total income by Factory Worker is about 66%, and Trading is 84%, therefore there would be another family business in small scales exists. The families in which the major income is from Apartment Rental almost depend on this service completely.

In this study, the family groups according to their average monthly income are classified manually as below.

- Low Income Group: average monthly income is less than or equal to 250,000 Kyats.
- Lower-Middle Income Group: average monthly income is above 250,000 Kyats and up to 500,000 Kyats.
- Middle Income Group: average monthly income is above 500,000 Kyats and up to 750,000 Kyats.
- Upper-Middle Income Group: average monthly income is above 750,000 Kyats and up to 1,000,000 Kyats.
- High Income Group: average monthly income is above 1,000,000 Kyats.



**Figure 4-98 Treemap for clusters of working persons patterns**

Source: Family Survey in February 2023

According to the statistical analysis, the Lower-Middle Income Group is found to be the dominant cluster for the area in which most of these families are mainly depending on the income from Factory workers/ Cottage Industries and then Trading Businesses.

For the income and expenditure, a few families can earn more than 850,000 Kyats which is comparatively higher than others. The monthly

expenditures for most of the families do not exceed 450,000 Kyats. The summarization of their income and expenditure is listed in **Table 4-51**.

**Table 4-55 Summary of income and expenditure**

	Income (Kyats)	Expenditure (kyats)
Minimum	120,000	80,000
Average	350,000	250,000
Maximum	1,200,000	800,000

Source: Family Survey in February 2023

**Table 4-56 Regression model for expenditure and family members**

<i>Regression Statistics</i>	
Multiple R	0.908417663
R Square	0.82522265
Adjusted R Square	0.811709136
Standard Error	129567.8852
Observations	75

Source: Family Survey in February 2023

The above regression model is to predict the relationship of family expenditures to their family members. The Regression Statistics highlight that the expenditures deviate depending on the family members in nearly 83% of these families, as the Pearson Regression value is 0.91. This finding highlights that the residential families are spending mostly on their basic needs. The average spendable amount of individual is recorded about 69,000 Kyats.

For the families who are leasing their accommodations, these rental fees are fixed and flat costs for their living expenses.

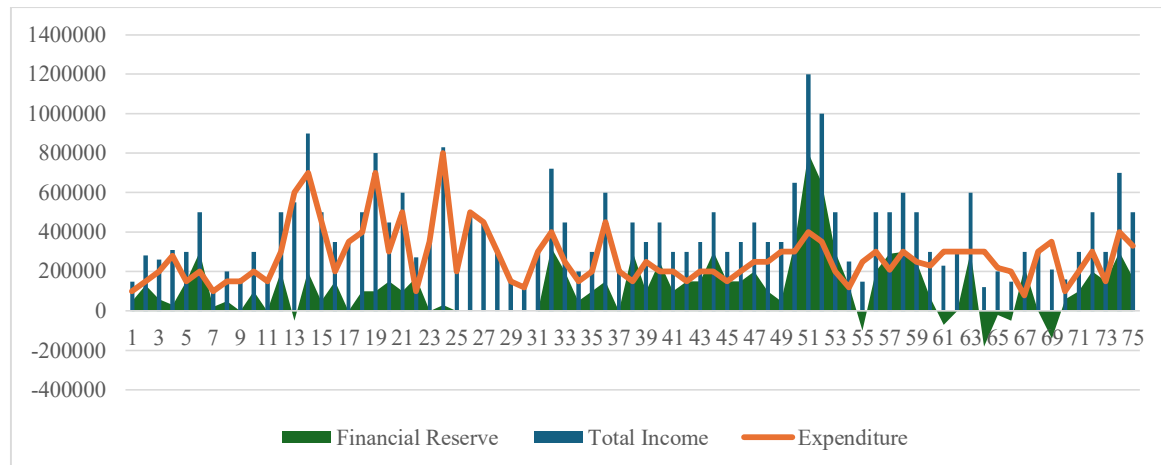
**Table 4-57 Rental cost and its proportion**

	Minimum	Mode	Mean	Maximum
Rental Fee	40,000	65,000	76,129	150,000
Expense Ratio	1/10	1/7	1/4	1/2

Source: Family Survey in February 2023

These rental fees would vary between the range of 40,000 Kyats and 150,000 Kyats depending on footprint areas and facilities. In general, the standard rental fee would be between 65,000 Kyats and 75,000 Kyats. The proportions of these rental costs vary one-tenth to half of their total expenditure. Most of the renters spend one-seventh to one-fourth of their total expenditures for accommodation leasing.





**Figure 4-99 Financial reserve of families**

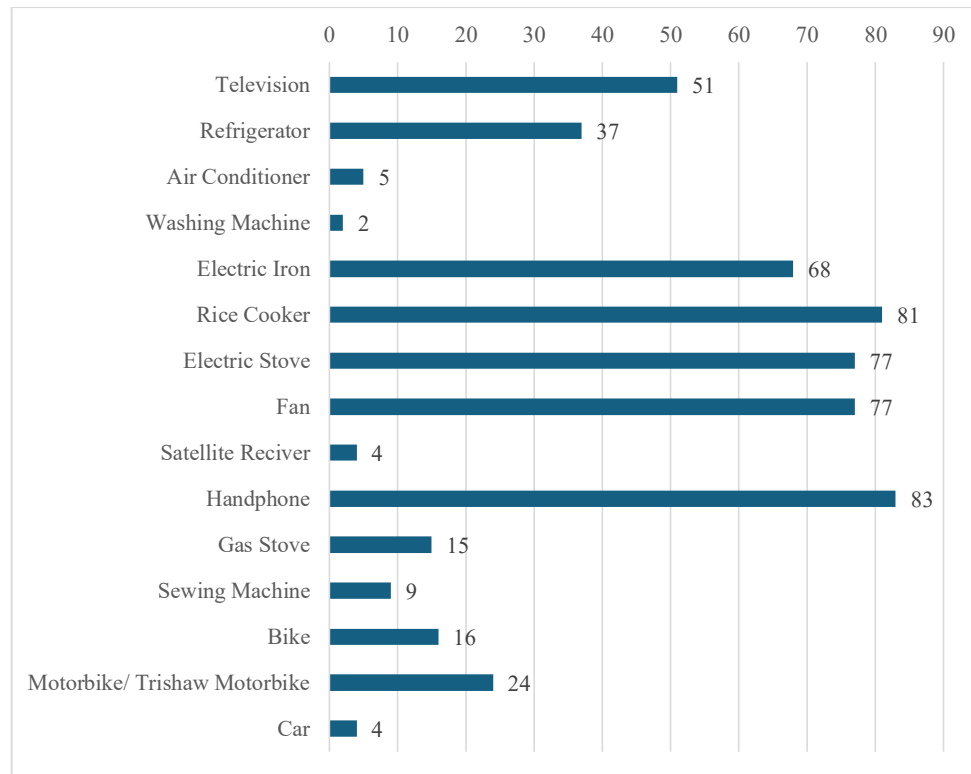
Source: Family Survey in February 2023

According to the Figure 4-99, most of the families have income surplus, but few of families (7 out of 75 families) from are found as their earning power is deficit. These families are mostly from the low-income group (6 out of 75 families) and falling in the poverty trap can be determined as a vulnerable group in terms of economics. Again, some families (14 out of 75 families) seem as if they are not financially secure as their income generations are on the margin with expenditure. Among these 14 families, 6 families are from the low-income group and the rest 8 families are from the lower-middle income group.

Although 56 out of 75 families have financial reserve, only one family has bank-saving practice.

#### 4.7.2.3.5 Properties of Families

In the family survey, there are 15 items examined whether these respondent's families have belonging or not.



**Figure 4-100 Items belonging by families**

Source: Family Survey in February 2023

According to the survey results, it is commonly found that,

- 9 out of 10 households use mobile phones as the common communication medium.
- 3 out of 10 households possess motorbikes and 2 out of 10 households possess bikes for their transportation mode.
- 6 out of 10 households have televisions for family entertainment and gathering news and information.
- 9 out of 10 households have electric cookers, electric stoves, and fans, and 8 out of 10 families have electric irons as home appliances.

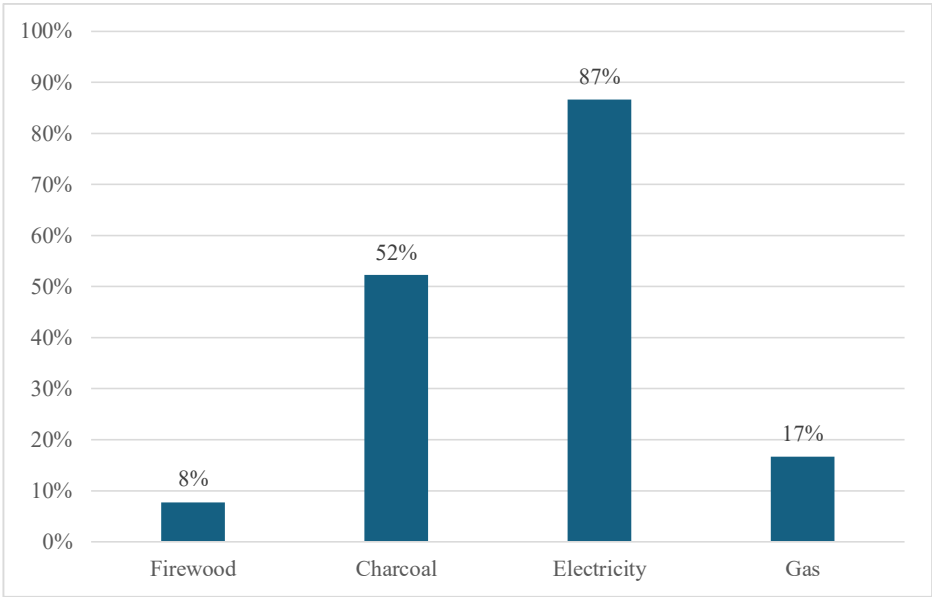
#### 4.7.2.3.6 Utilities of Fuels and Water

As Ah Lel is formed as an urban village, the housing units can access the public electricity, and 90% of respondent's families use the public electricity supply for lighting and 87% also use it for cooking. All the families use the alternative sources for lighting in case the electric supply is lack off.

- For every 10 families, 6 to 7 families use candles.
- For every 10 families, about 2 families use battery-lamps.
- Few families use solar power, rechargeable bulbs, and generators.

At the present, most families spend about 5000 Kyats to 16,000 Kyats for electric bills as the basic. These amounts are a small portion of their total expenditure; less than one-tenth.

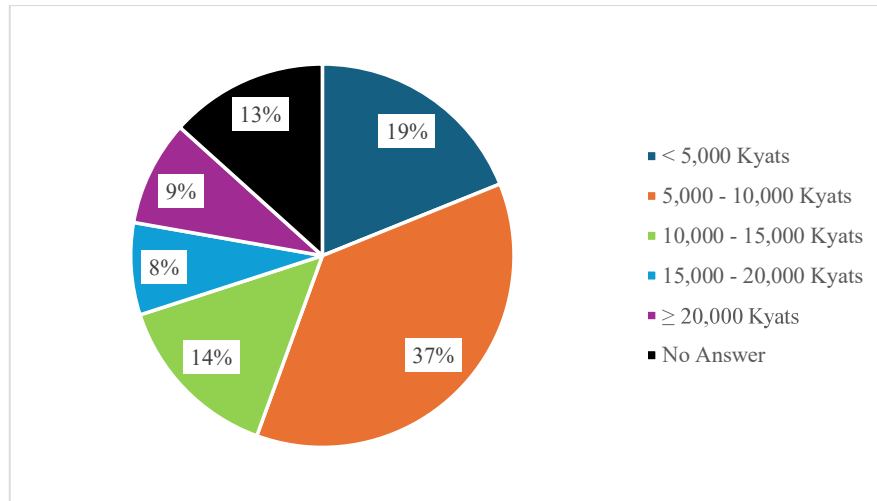
Besides electricity, these families use other fuel sources of firewood, charcoal and gas for cooking as shown in **Figure 4-93**. This survey finding of percentage overlap describes that there are multiple sources of fuel being used for daily cooking in individual family



**Figure 4-101 Energy sources for cooking**

*Source: Family Survey in February 2023*

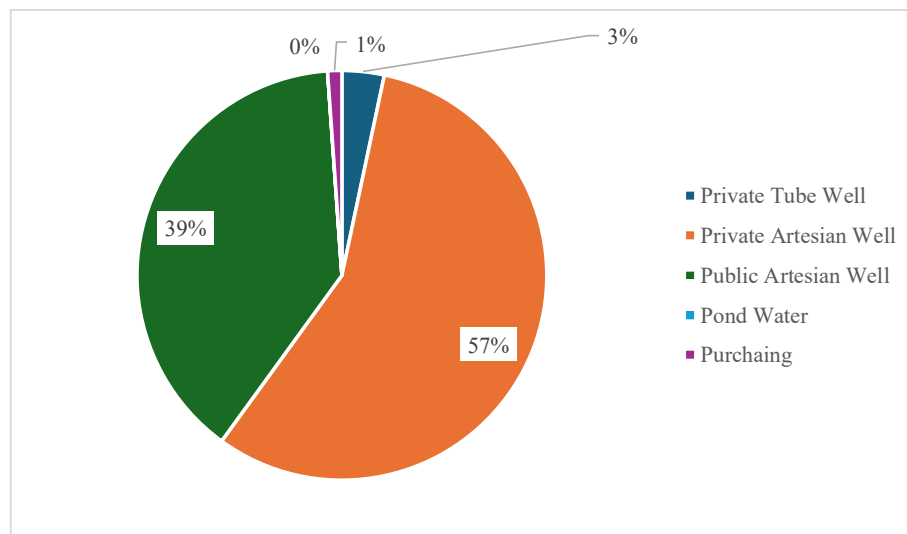
The families who have not been using electricity for cooking use charcoal as the main fuel source and firewood as secondary source. There is no family who use firewood as the single fuel source. All the families using gas fuel are also using electricity for cooking. As these families use multiple fuel sources in addition to electricity, they have another explicit cost for cooking fuel as described in Figure 4-101. Normally, individual families spend 6,000 Kyat to 15,000 Kyats for additional cooking fuels and these amounts are not significant for their total expenditure.



**Figure 4-102 Expenditure for additional fuel**

Source: Family Survey in February 2023

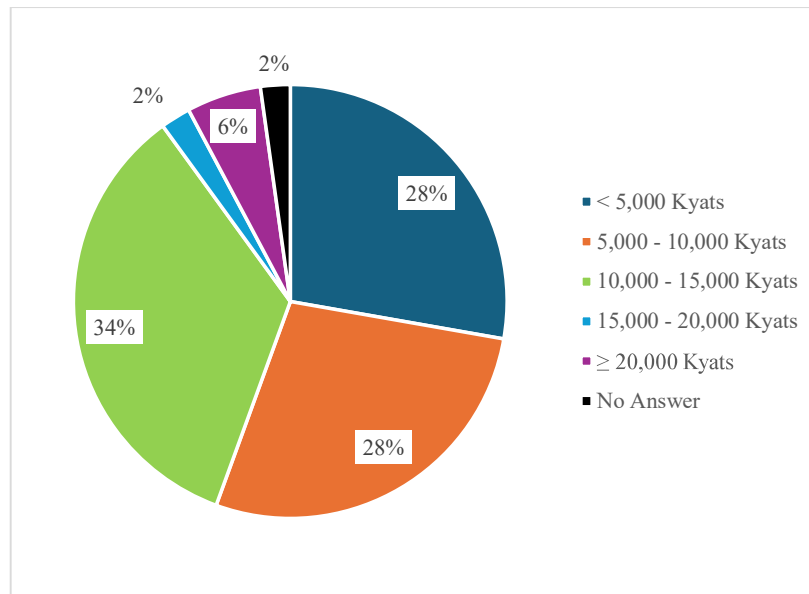
About 96% of families depend on artesian wells – either private or public wells – for their domestic uses and 81% of respondents answer that their water sources are not drinkable. Therefore, almost of their families purchase bottled water for drinking. Therefore, they have another expense for water as described in Figure 4-103 and Figure 4-104. Normally, individual families spend 5,000 Kyat to 15,000 Kyats for purchasing water and these amounts are also not significant for their total expenditure.



**Figure 4-103 Domestic Water Sources**

Source: Family Survey in February 2023





**Figure 4-104 Expenditure for water uses**

*Source: Family Survey in February 2023*

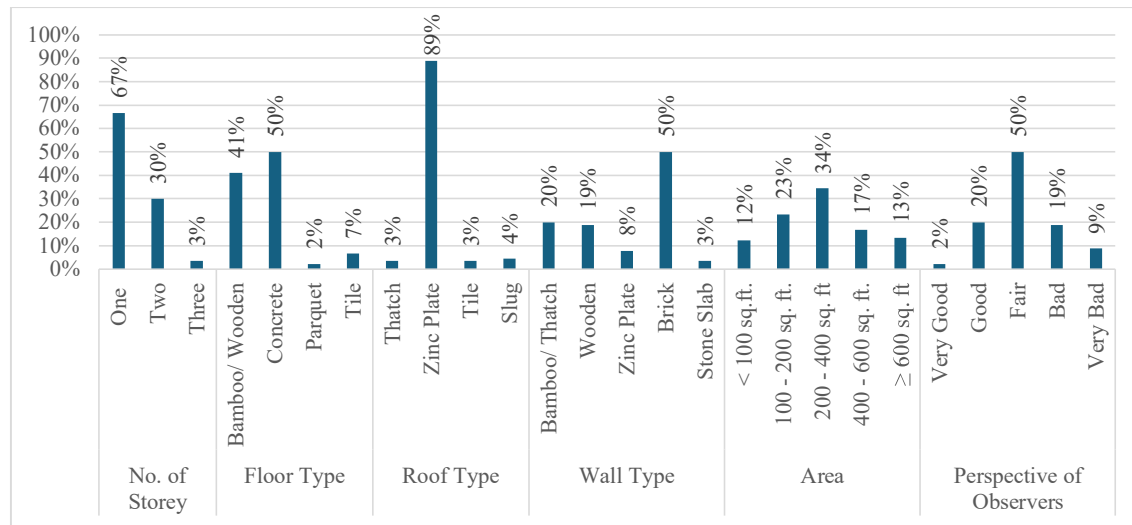
#### 4.7.2.3.7 Conditions of Housing Units

There are six indicators taken in this survey to explore the conditions of housing units: (1) number of storey, (2) floor type, (3) roof type, (4) wall type, (5) area of housing unit, (6) Perspectives by Observers<sup>4</sup> as illustrated in Figure 4-105.

Among the 90 housing units,

- 67% of housing units are one-storey buildings, and 30% are two-storey buildings.
- 50% of housing units are with concrete floors, and 14% are flooring with bamboo or wooden material.
- For roofs, 89% of housing units use zinc plates.
- 50% of housing units use brick materials for walls, 20% use bamboo or thatch, and 19% use wooden material.
- 34% of these households possess an area of 200 to 400 square feet, 23% are between 100 and 200 square feet, and 17% are between 400 and 600 square feet.
- The observers comment that 50% of housing units are in fair condition, 20% in good condition and 19% in bad condition.

In general, most of the housing units in this area are one-storey buildings with concrete, bamboo or wooden floor, roofing with zinc plate, wall with brick, bamboo/thatch or wooden material and the building footprint area are between 100 and 600 square feet. About 38% of families, who are living in the housing units of very-bad condition, are found from low-income and lower-middle income groups. Therefore, these families could be determined as the vulnerable families of poor infrastructure.



**Figure 4-105 Conditions of Housing Units**

*Source: Family Survey in February 2023*

#### 4.8 Cultural Heritage Characteristics

The project area is in the Ngwe Pin Lal Industrial Zone, Hlaing Thar Yar Township of Yangon Region area. Ngwe Pin Lal Industrial Zone had been established since 2003 and zone area is about 204.23 acres. There are four townships, Hlaing Thar Yar, Shwe Pyi Thar, Htantabin and Insein Township as surroundings of the proposed project. The villages located near the project are Rakhine Yoe Gyi, Paunk Kone, Ah Lel Village and Ah Lel Village is nearest one. The location of townships and project site were shown as Figure 4-106.

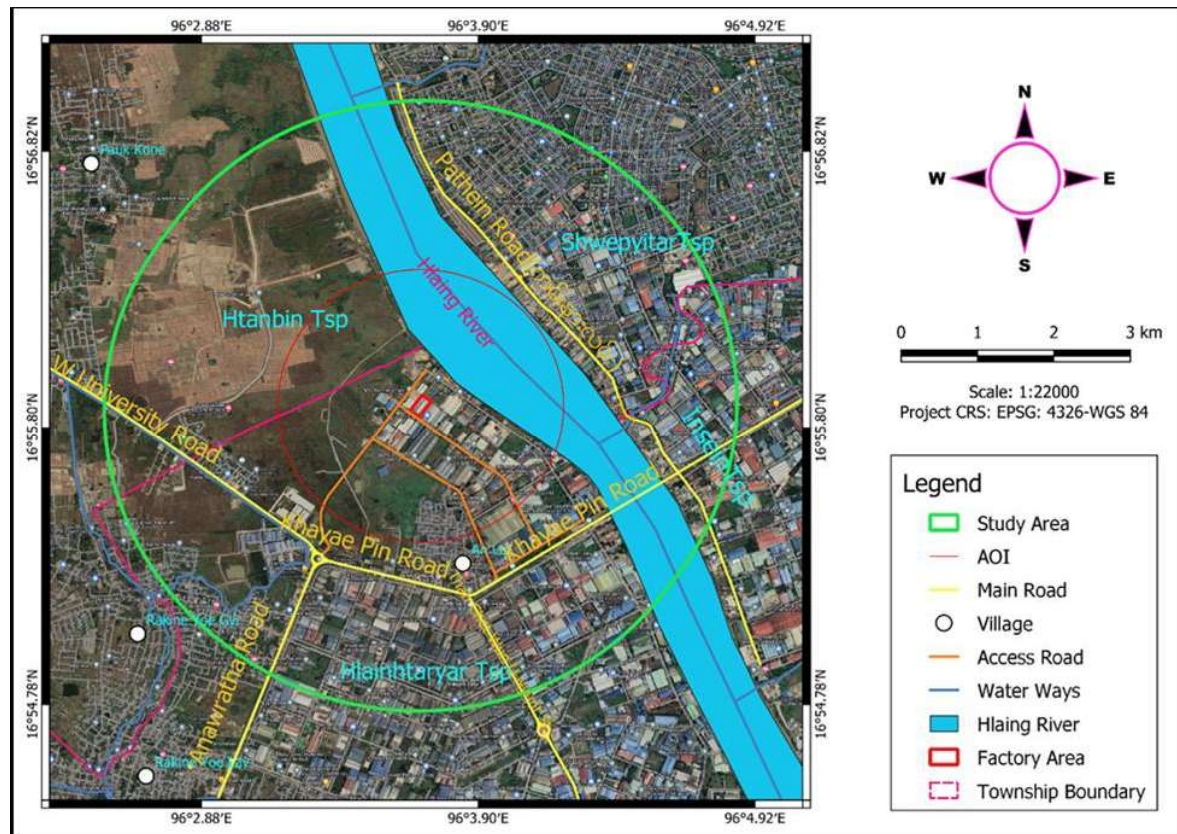


Figure 4-106 Location of 4 townships and project

Distances from project site to surrounding area are shown as following.

Table 4-58 Distance from project site to surrounding area

Land Utilization and Economic Components	Reference Location	Approximate Distance from Project Compound (nearest edge-to-edge)	Remark
Settlement Areas of Shwepyithar Township	East bank of Hlaing River and upstream of project compound	970-meter in northeast direction	The plots of sand and gravel trading and dockyard and Shwepyithar Industrial Zone (2) exist as buffer space
Shwepyithar Industrial Zone (2)	East bank of Hlaing River	980-meter in east direction	Similar activities of industrial zones
Shwepyithar Industrial Zone (3)	East bank of Hlaing River	1280-meter in southeast direction	Similar activities of industrial zones
Shwepyithar	East bank of Hlaing	1625-meter in	Similar activities of

Land Utilization and Economic Components	Reference Location	Approximate Distance from Project Compound (nearest edge-to-edge)	Remark
Industrial Zone (4)	River	southeast direction	industrial zones
Ah Lel Village	Between Ngwe Pin Lae and Shwe Lin Ban industrial zones	530-meter in south direction	<ul style="list-style-type: none"> <li>• Nearest settlement area and which is GAD gazette village</li> <li>• Adjacent with the Ngwe Pin Lae Industrial Zone</li> </ul>
Shwe Lin Ban Industrial Zone	West bank of Hlaing River	1225-meter in south direction	Similar activities of industrial zones
Rakhine Yoe Gyi Village	Adjacent with west of Shwe Lin Ban Industrial Zone	1240-meter in southwest direction	Open spaces and some developing plots and most-northern part of Shwe Lin Ban Industrial Zone serve as buffer area
Small Business Cluster	Beside the West University Road	1080-meter in west direction	Small scale and cottage industries are functioning
Pauk Kone Village	At the north edge of cultivation plots	2185-meter in northwest direction	-

#### 4.8.1 Potential Places for Cultural Heritage

From the regional data of Hlaing Thar Yar Township, compiled by General Administrative Department of township, there are no famous historic buildings. There are normal monastery, Christian community and religion pagoda at Ah Lel Village, nearest of the project site. There are monastery as Aung Zay Yar Min and Sandamuni Aung Sat Kyar pagoda at Ah Lel Village and Mahar Yayzamuni (Ngwe Pin lal pagoda) near the Ngwe Pin Lal Industry Zone. Photographs of monastery, Christian community and pagoda are shown as follows.

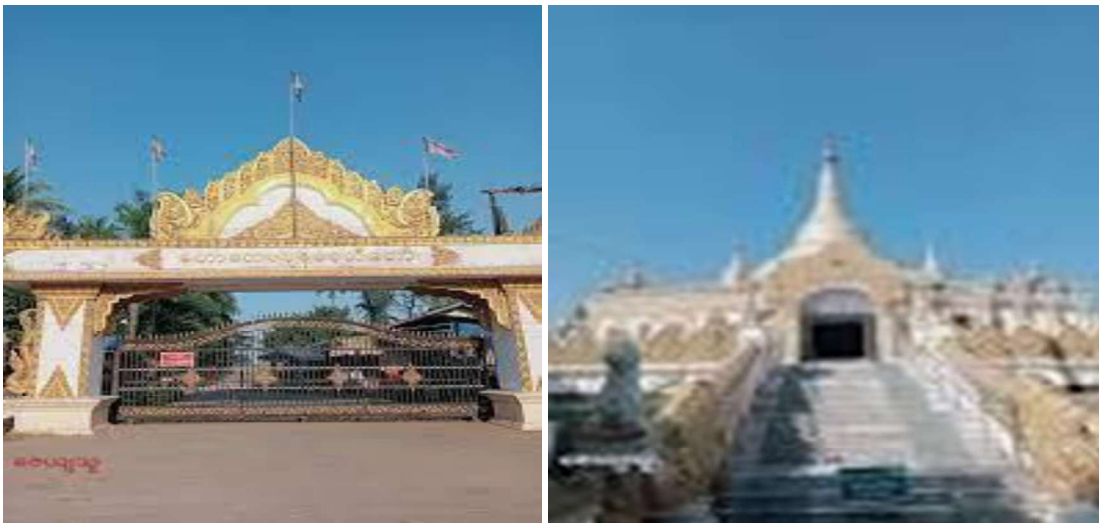




**Figure 4-107 Aung Zayar Min Monastery**



**Figure 4-108 Sandamuni Aung Sat Kyar Pagoda**



**Figure 4-109 Mahar Tayzamuni (Ngwe Pin lal pagoda)**



**Figure 4-110 Christian Community**

However there are no famous historic buildings, potential impacts might be challenged some pollution for Ah Lel Village as vapour emission, noise and vibration. Referring the results of ambient air quality of site on 2024; air quality of Ah Lel Village on 2024; Noise quality at Ah Lel Village on 2024 and vibration results of Ah Lel Village on 2024 and vibration results of security gate entrance of project on 2024, all anticipated impacts upon cultural heritage sector are very few significance.

#### **4.8.2 Conclusion of Cultural Heritage**

However, there are no famous historic buildings and very few significance upon cultural heritage sector, if some archaeological remains and cultural significance will be come out when the factory buildings are expanded further, it will be reported the heritage authority of Department of Archaeological and National Measure, Ministry of Religious Affairs and Culture.

### **4.9 Health Components**

#### **4.9.1 Framework of HIA Study**

In this HIA study, the following three factors are considered as the determinants of Health.

- Individual factors: gender, age, dietary intake, tobacco use, alcohol intake, employment status, educational attainment, workplace stress, occupational safety.
- Social and environmental factors: assess to public services, social support or isolation, quality of air and water, housing, income, access to safe drinking water and adequate sanitation, attitudes to disability, settlement design, local transport available, social welfare.
- Institutional factors: availability of health services, educational and employment, environmental and public health legislation, environmental management and monitoring plans.

#### **4.9.2 Objectives of HIA Study**

There are two portions for this assessment: community health and occupational health. The objectives for community health are,

- To access the baseline conditions of community health of nearby residents.
- To identify the major issues this could be raised by project activities.
- To evaluate the potential health risks if there would be affected impacts.
- To propose mitigation measures to minimize or avoid if there would be affected impacts.

The objective for the occupational health is,

- To access the logbook records for the existing factory (sick leave, average number of working hours for employee, occupational illness, days of absence by occupational illness; complaints and grievance information)

#### **4.9.3 HIA Methods**

The team uses the following methods for this HIA study.

- Interviewing key informants and conducting Focal Group Discussions (FGD) including
  - the in-charge of sub Rural Health Center (RHC),
  - a retired Health Assistant (HA) who is also living in the nearby community,
  - nurses from a private clinic which is in the community also, and
  - elder villagers and representatives of the community.
- Collection and analysis of secondary data for health profile and village profile from the corresponding sub-RHC and village.
- Conducting field observation and family survey for primary data.
- Environmental quality assessment for bio-physical environment.
- Mapping using Geographic Information Systems (GIS).

#### **Questionnaire Survey to Family Level**

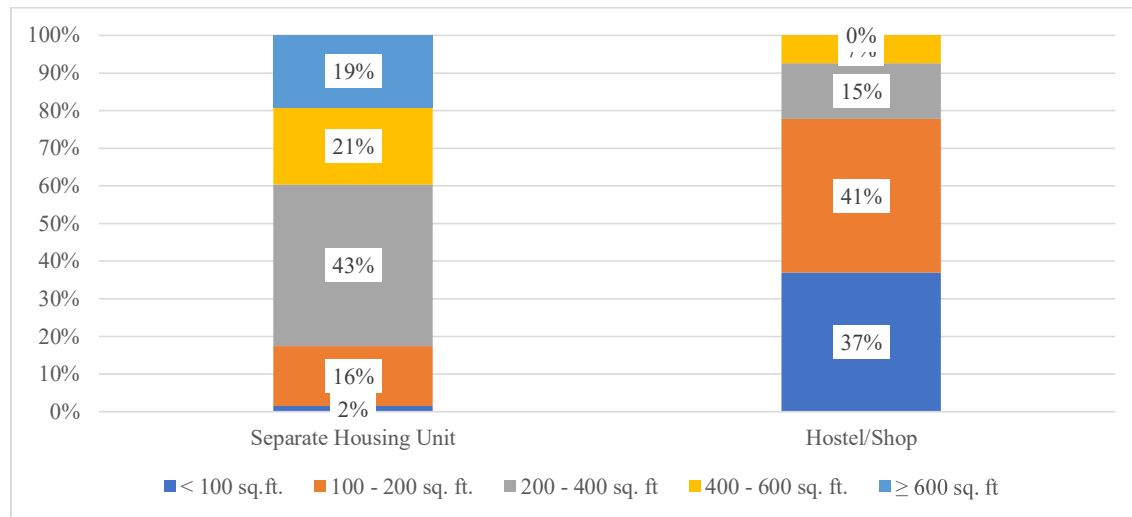
This survey is conducted on 90 families from Ah Lel Ywar Village according to the geographic scooping of the study. The survey explores the following characteristics and circumferences of the community,

- Demographic and economic status
- Healthcare service facilities
- Personal behaviors
- Diseases
- Medical examinations and immunizations
- Health education
- Options on healthcare services available

#### 4.9.4 Data Analysis

##### Living Circumstances of Families

Among these 90 families, 70% are living in separate housing units – either holding or renting – and the rest 30% are living in hostels or shops. The average family size of families who are living with separate housing units is found to be 5.0 where the average value for another group is 4.4.



**Figure 4-111 Comparison chart for area occupied by families**

Source: Family Survey in February 2023

Although the average family sizes of these two groups are, in similarly, their occupied living areas are significantly different as described in Figure 4-111. The salient findings are as described below.

- At least 88% of families living with separate housing units have footprint areas of more than 200 square feet.
- About 30% of families – who are living with separate housing units of less than 200 square feet – hold the properties.
- At least 88% of families living in hostels or shops have footprint areas of less than 200 square feet.
- As the worst scenario of 5 members living in area of 100 square feet, the individual footage is only 20 square feet, which is not sufficient for social distance in pandemic period.

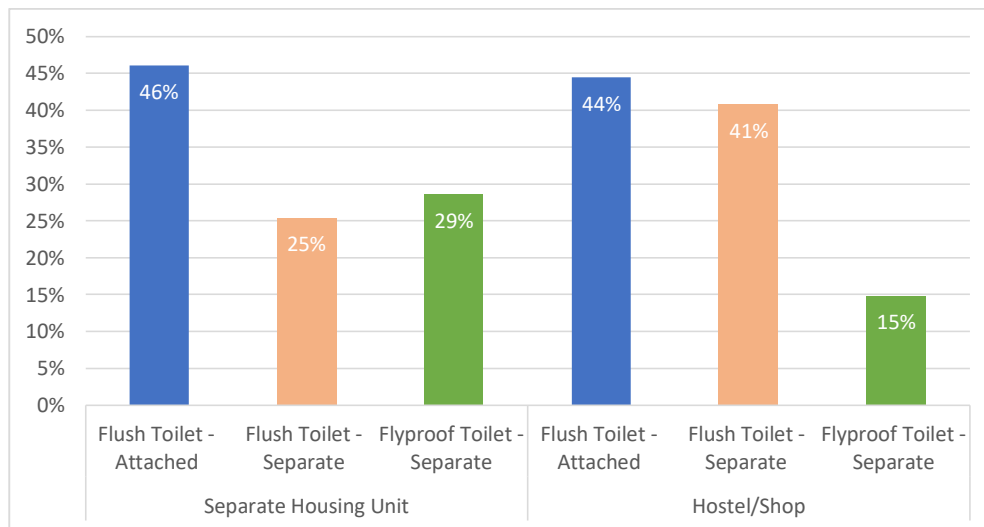
Based on these findings, the HIA report is focused on presenting a comparison with these living circumstances.

##### Water Use, Sanitation and Waste Management Practice

The major source for domestic water is ground water and the Water Quality Index (WQI) of sample water is 87.24, i.e., very poor water quality due to high iron and manganese contamination, and turbidity. This tube well water requires adequate treatment before using it. Most of the respondent's answer that this water source is not suitable for drinking and their families purchase bottled water for drinking. A small



number of families still use ground water and rain harvesting by treating such as filtering and boiling. There are three to four ponds in the village and the WQI of sample water is found to be 369.20, i.e., unfit for consumption due to high iron and manganese contamination, and turbidity.



**Figure 4-112 Types of toilets**

Source: Family Survey in February 2023

More than 70% of families – living with separate housing units – and more than 80% of families – living in hostels or shops – use flush toilets. About 29% of families from the first group and 15% of families from the second group use fly proof toilets. Among these types of toilets, the flush toilets attached to the bathrooms or adjacent to the bathrooms or bathing-spaces are as usual. For a hygiene environment, the proximity of separate fly proof or traditional toilets to water-use spaces is to be considered. In this village, very few fly-proof toilets are proximate to the water-use spaces. These toilets belong to the families, who are living with separate housing units, i.e., they serve as the private toilets for family members.

[<sup>2</sup>This WQI is calculated with Weighted Arithmetic Index method (Brown et al., 1972) by using 10 parameters of Chloride, pH, Alkalinity, TDS, TH, Iron, Turbidity, Sulphate, Aluminum, and Manganese in referencing the WHO and Indian standards. The index result would be valiance in certain degree as some parameters like DO and EC did not include in this calculation.]



**Figure 4-113 Diagram for proximity of toilet to water-use space**

Source: Family Survey in February 2023

The 62% of all families throw their solid to municipal garbage tanks and other 37% are throwing to the waste collectors which is provide by Thant Myanmar. These survey results found to be that residential families have good practice on waste management. During the field observation, it was found that there are plastic wastes thrown within the open plots. Therefore, it can be argued that these families follow proper waste management systems for kitchen and domestic waste, but weak in personal behavior such as throwing plastic bags of snacks.

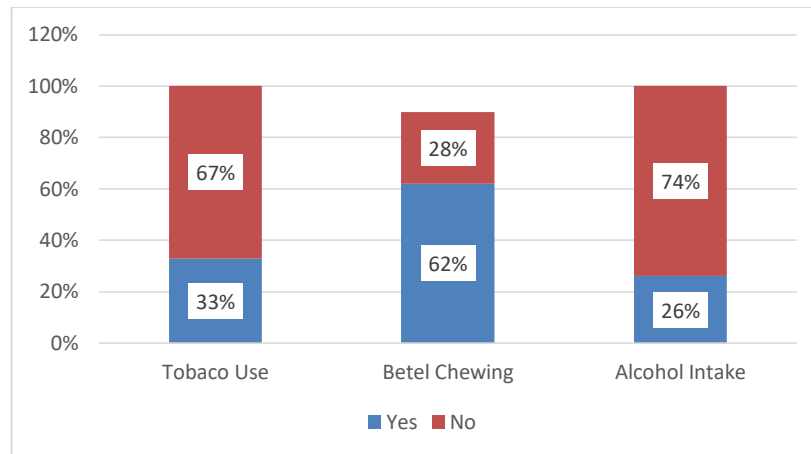
### Eating Habits

Among these families, 74% are eating meat and vegetable fare which is a good habit for health; the other 20% are eating vegetables more, and the rest 6% prefer to eat the meat. 80% of them use palm oil as edible oil, the other 17% use peanut oil, and the rest use sesame oil and others.

### Substance Use Habits

For substance use habits, three habits of tobacco use, betel chewing, and alcohol intake are examined among these respondent families. According to the survey findings, betel chewing is found to be the common use habit for the village, 68% of families have this habit. 33% of families have tobacco-use and 26% have alcohol-intake habits respectively.

Another salient finding is the multi-use habits according to the family as listed in Table 4-61. Among these families, 39% have betel-chewing habit only and 11% have the habit to use all substance. Another 18% do not have a habit of using any substance. Among the families who have habit of tobacco use, 8% are living in hostels.

**Figure 4-114 Family ratio of substance use by category**

Source: Family Survey in February 2023

**Table 4-59 Habit combinations according to the families**

Habit Combinations	Tobacco only	Betel only	Alcohol Only	Tobacco & Betel	Tobacco & Alcohol	Betel & Alcohol	Tobacco, Betel & Alcohol	No Habit
% of Families	8%	39%	1%	10%	4%	9%	11%	18%

Source: Family Survey in February 2023

**Table 4-60 Statistics for tobacco use**

Duration		Type	
< 1 year	7%	Cigarette	27%
1 - 5 years	33%	Cigar	53%
> 5 years	60%	Both	20%

Source: Family Survey in February 2023

Among the families whose members have tobacco use, 60% of smokers have been smoking for more than 5 years already. More than half of them usually smoke traditional cigars rather than cigarettes. But 20% of smokers take both.

**Table 4-61 Statistics for daily consumption of betel chewing**

Few	40%
Few but with Cured Tobacco	32%
Many	27%

Source: Family Survey in February 2023

Among the families who have betel-chewing habit, 40% chew a few amounts and another 32% chew a few amounts but they chew put in the cured tobacco. 27% reply that they regularly chew many quantities, but they avoid putting such ingredients.

**Table 4-62 Statistics for alcohol intake**

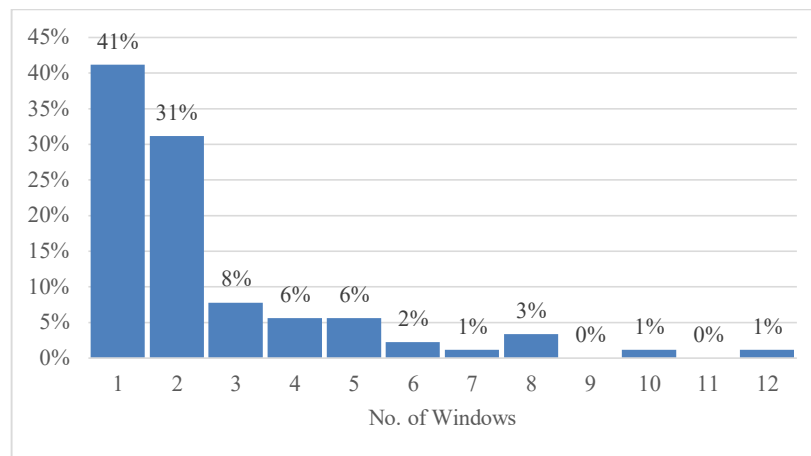
< 1 year	17%
1 - 5 years	39%
> 5 years	43%

Source: Family Survey in February 2023

For those family-members who have alcohol-intake habit, 43% have been taking more than 5 years, and the other 56% are less than 5 years.

### Ventilation of Housing Units and Living Apartments

83% of respondents answered that the roof-heights of their units are more than 6 feet, but the rest 17% answered that the heights are not. It would be argued that they are living in the loft of the buildings, or their housing units are low-ceiling houses which are built to accommodate the average height of family members. According to their inputs, about 72% of units or apartments have only one or two windows.

**Figure 4-115 Column chart for no. of windows**

Source: Family Survey in February 2023

According to the survey results, all hostel apartments and 60% of the separate housing units have one or two windows. Among these families, about 15% are living in either units or apartments which have a maximum height of 6 feet and only one or two windows. These types of accommodation can be determined as the poor ventilation.





Figure 4-116 Ventilation components of housing units and living apartments

Source: Family Survey in February 2023

Kitchen Condition and Cooking Practice

Among these respondent’s apartments, only 22% have kitchen-room facilities; those all are from families who are living with separate housing units.

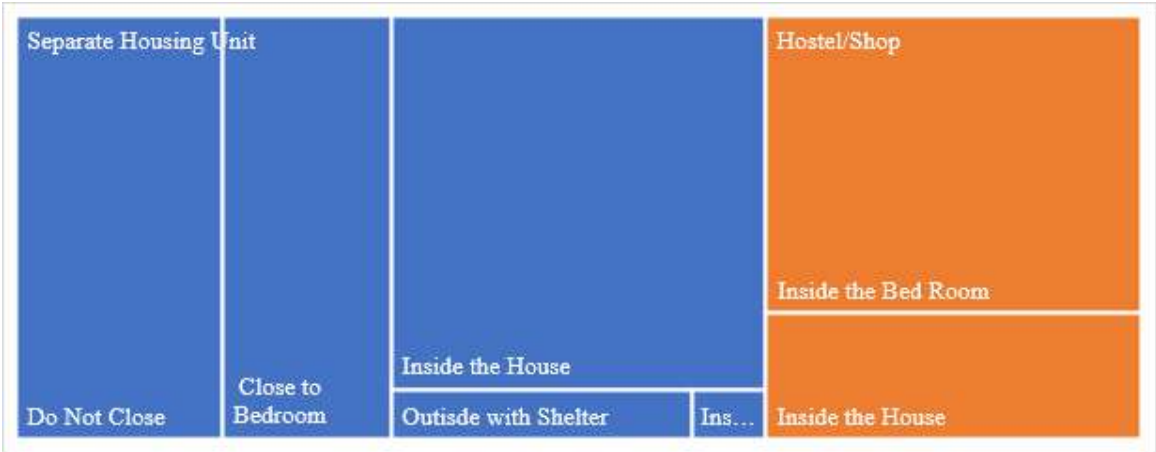


Figure 4-117 Kitchen condition and cooking practice

Source: Family Survey in February 2023

The summary of the survey results is as described below.

- Among the families who have kitchen rooms, 55% response that their kitchen rooms are not close to the bedrooms, where other 45% response that close to the bedrooms.
- Among the families who do not have kitchen rooms, about 88% response that they have been cooking inside the houses, the other 9% have been cooking outside with shelter, and the rest have been cooking inside the house.
- Among the families who are living in the hostels or shops, 70% response that they have been cooking inside the bedrooms, whereas the rest 30% have been cooking inside the housing units.

As 50 out of 90 respondents use charcoal and wood stoves, 88% of them say that there is smoke from their stoves but mostly in little amount.

### **Mosquito-Borne Disease Prevention**

All the families use the normal mosquito nets regularly. In addition, 21% of families always use mosquito coils, and the other 56% use them sometimes. The rest 23% have not used the mosquito coils.

### **Disability Persons**

Among these respondent families, only 4% have members of disability persons. Their disability symptoms are,

- Walking disability,
- Vision disability,
- Speaking disorder, and
- Intellectual disability / Down's syndrome

All of them cannot work but the persons with vision disability and speaking disorder can able to self-care routine.

### **Opinions on Environmental Conditions**

This section is approached and explored totally based on the individual opinions of the respondents. There are no technical or professional judgements taken within the study. There are seven indicators used in which,

- Three indicators are related to living spaces, and
- Four indicators are related to the village environment.

The summary of their opinions based on their personal perspectives are listed in Table 4-63.

Among these respondents, 80% say that they feel good for indoor ventilation and air quality. 34% say that they feel bad about outdoor air quality and 32% of these respondents (11% of total respondents) say that it is caused by bad odor. The survey is conducted to the families from different nine streets and the respondents suffering the bad odor are from six streets.

**Table 4-63 Individual opinions upon environmental conditions**

Indicator	Feel Good (%)	Feel Bad (%)	Cannot Describe (%)
-----------	---------------	--------------	---------------------

<i>Indicators related to living space</i>			
Indoor Ventilation	80%	20%	0%
Indoor Air Quality	80%	20%	0%
Outdoor Air Quality	66%	34%	0%
<i>Indicators related to village environment</i>			
Pollution due to waste and sewage	11%	84%	4%
Air Pollution	9%	86%	6%
Water Pollution	8%	84%	8%
Noise Pollution	29%	71%	0%

Source: Family Survey in February 2023

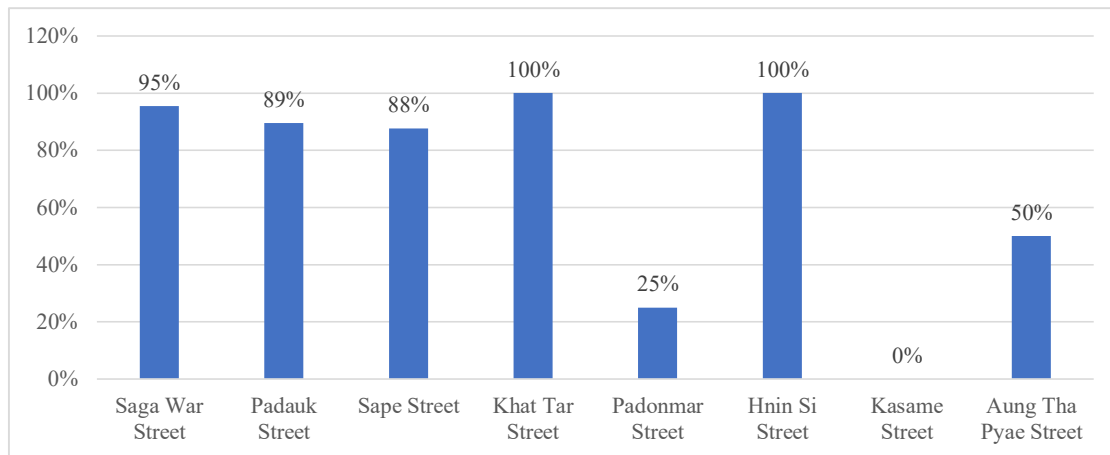
More than 70% of respondents are feeling bad about the environmental conditions of the village. Among 90 respondents, 61% say that they are feeling bad about all four environmental indicators; this statistical data of streetwise are listed in Table 4-64.

**Table 4-64 Statistics for streetwise respondents**

Street Name	Total Respondents	Respondents who are Feeling Bad on all Environmental Indicators	Percent
Saga War Street	22	13	59%
Padauk Street	19	14	74%
Sape Street	8	5	63%
Khat Tar Street	14	12	86%
Padonmar Street	8	0	0%
Hnin Si Street	7	6	86%
Kha Yae Street	1	1	100%
Kasame Street	7	3	43%
Aung Tha Pyae Street	4	1	25%
<b>Total</b>	<b>90</b>	<b>55</b>	<b>61%</b>

Sometimes, their feeling on environmental quality is difficult to connect with technical aspect, e.g., most of the personal feeling on ambient noise is not distinguished between technically standardization and their unwanted voices. In generally, the rate of respondents who are living at the streets of Khat Tar, Hnin Si, and Padauk would to be suffering of the environmental pollutions, is high (more than 70%). This rate is low for Padonmar and Aung Tha Pyae streets (less than 30%).

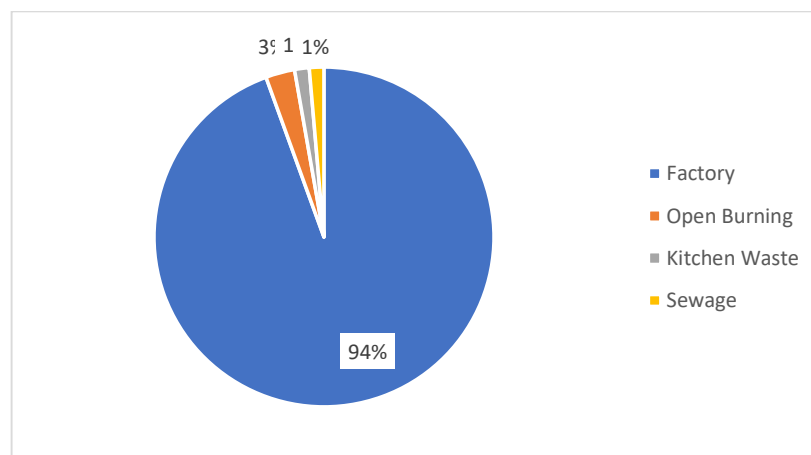
Among these respondents, 71% response that there are some air-pollutant sources exists in the surrounding. The responding rates by street are described in Figure 4-118.



**Figure 4-118 Response for air-pollutant sources**

Source: Family Survey in February 2023

According to this result, the significant percents of respondents from streets of Khat Tar, Hnin Si, Saga War, Padauk and Sape answer that there are air-pollutant sources exist around them. Nearly 95% of respondents – who answer that there are air-pollutant sources exist – input that the pollutant sources are the factories from the surrounding areas. The rest 5% responses that pollutants are caused by open-burning, kitchen waste and sewage.



**Figure 4-119 Air-pollutant sources described by respondents**

Source: Family Survey in February 2023

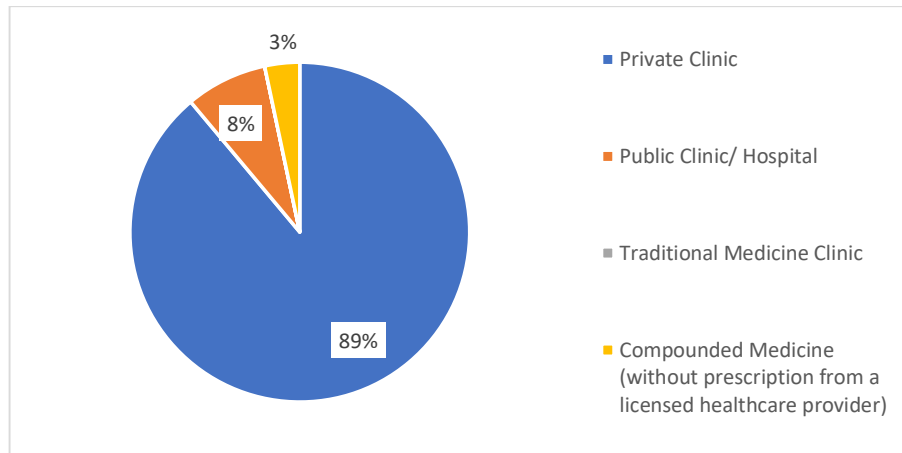
In conclusion, these pollutions would appear according to the following causes.

- Odor emission from some surrounding factories
- Poor solid waste management
- Inadequate drain system
- Level of PM2.5



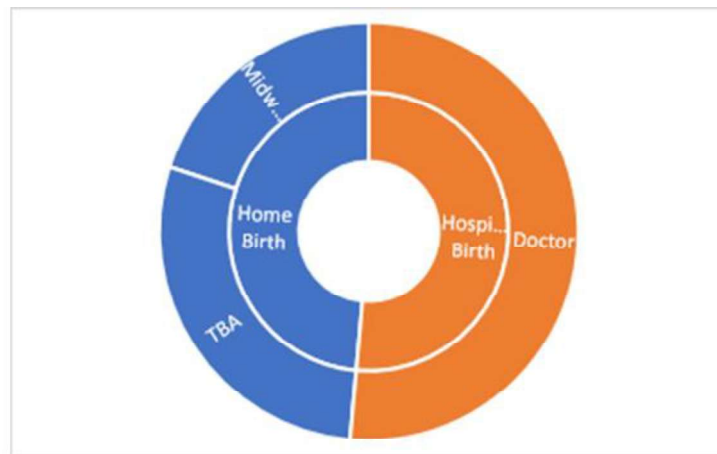
### Community Health Conditions of Ah Lel Village

Basically, 89% of these families depend on private clinics for their health care. Only 8% of them go to public clinics/hospitals. 3% response that they use compounded medicines without prescription from a licensed healthcare provider.



**Figure 4-120 Health-care facilities depended by respondents.**

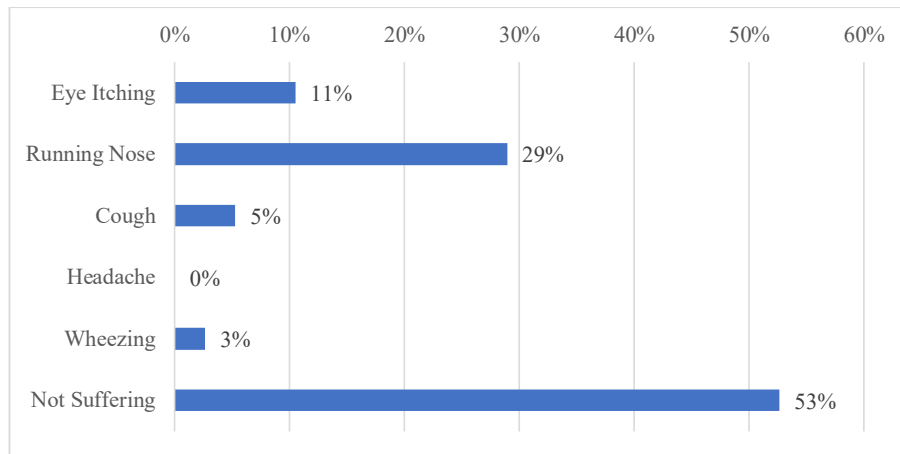
Source: Family Survey in February 2023



**Figure 4-121 Birth Practice**

Source: Family Survey in February 2023

When examining the place for babies to be born, only 35 respondents participated in the answer. Among them, 49% response for home birth with midwives and Traditional Birth Assistant (TBA), and the rest 51% response for hospital birth with doctor. According to the survey results, the malnutrition children are found as the rare case as of 2% of families have.



**Figure 4-122 Summary of symptoms linked to kitchen smoke.**

Source: Family Survey in February 2023

As 56% of families use charcoal and wood stoves and mostly smoke in little amounts during the cooking, some of them suffer several symptoms linked to kitchen smoke. The summary of these symptoms is described based on inputs by 38% of respondents who use charcoal and wood stoves. According to their responses, 53% of them do not suffer any symptoms linked to kitchen smoke, whereas 29% have been suffering from a running nose and 11% have been suffering eye itching.

90 respondent families have a total of 356 people. This study can record the diseases occurrence and the treatment practices as described below.

- There are 2 people who have malaria; one person takes treatment with physician at hospital, but another person takes folk medicines. The first person is 50 years old and has lived in the village about 9 years and the second person is 38 years old and has lived in the village about 18 years. As the malaria case is found as very rare case, it would be also argued that they have been infected before they move-in this village.
- Tuberculosis (the major communicable disease) cases can trace only 2 records and these people take treatment at hospitals.
- There are 4 people who have suffered diarrhea symptoms; 3 people take treatment with physicians, and one uses compounded medicines.
- There are 13 people who have suffered hypertension; six people take treatment with physicians, five people use compounded, another two people take traditional and folk medicines respectively. As their age range varies between 35 and 80 years, hypertension is happening in the middle and old ages.
- There are 6 people who have suffered diabetes; four people take treatment with physicians, two people take traditional and folk medicines respectively.

- There are 4 people who have asthma (major non-communicable diseases – NCD); two people take treatment with physicians, and the other two take traditional medicines and compounded medicines.
- There are 23 people recorded suffering with sore throat. 20 of them are taking only compounded medicines, and the other two people take treatment with physicians. The last person has never taken the treatment.
- For running nose cases of 29 people, 20 of them are taking only compounded medicines, one is taking folk medicine and another one has never taken the treatment. 6 people take treatment with physicians and the last two take treatment from nurses.
- There are 4 people who have suffered wheezing; 3 of them regularly go to clinic but the other person takes the compounded medicines.
- There are 10 people who are frequently coughing, among them one person is suffering cough up blood and 3 persons have cough up phlegm. The person who suffered cough up blood has been taken treatment at hospital. The people who have coughed up phlegm have been taking both clinical treatment and compounded medicines. The other people take compounded medicines.
- There are four people who have been suffering chest pains and they take both proper treatment at clinic as well as taking compounded medicines.
- There are 26 people who have been suffering indigestion and stomach pains. Among them, 10 people take treatment from physicians and other people have been taking compounded medicines.

The above results highlight that there would be a certain degree of demand for the compound medicines.

Among the 90 respondents,

- 86% of them have not had any medical checkup.
- 78% of them have no experience attending health awareness programs.
- 87% are Covid-19 vaccinated full dosages and booster dose also.

#### 4.9.4.1 Environment of Ah Lel Ywar

##### Air Quality of Ah Lel Village on 2024

The air quality measurement at Ah Lel Village on 2024 was shown as follow.

##### Results of Air Quality Measuring at Ah Lel Ywar Village on 2024

No.	Parameters	Unit	Result	Measuring Avg. Period		Guideline Value	Avg. Period	Remark
1	Nitrogen Dioxide	$\mu\text{g}/\text{m}^3$	7.44	1	hours	$200\mu\text{g}/\text{m}^3$	1-hour	28/04/2024 11:30 AM - 12:29 PM (Peak Hour)

		µg/m <sup>3</sup>	3.19	24	hours	-	-	-
2	Sulphur Dioxide	µg/m <sup>3</sup>	0	24	hours	20 µg/m <sup>3</sup>	24-hours	-
3	Particulate matter, PM <sub>10</sub>	µg/m <sup>3</sup>	29.48	24	hours	50 µg/m <sup>3</sup>	24-hours	-
4	Particulate matter, PM <sub>2.5</sub>	µg/m <sup>3</sup>	14.84	24	hours	25 µg/m <sup>3</sup>	24-hours	-
5	Ozone	µg/m <sup>3</sup>	0.89	8	hours	100µg/m <sup>3</sup>	8-hour daily Maximum	29/04/2024 10:30AM – 18:29 PM (8 hr avg)
		µg/m <sup>3</sup>	0.91	24	hours	-	-	-

From the above air quality results, all parameters measured are in standards.

Moreover above air quality was shown as AQI (Air Quality Index) as follow.

**AQI for air quality of Ah Lel Ywar on 2024**

Parameter	Measurement Value	AQI	AQI Category
	mg/Nm <sup>3</sup>		
Nitrogen Dioxide	7.44	7	Good
Sulphur Dioxide	0	0	Good
Particulate matter PM <sub>10</sub>	29.48	27	Good
Particulate matter PM <sub>2.5</sub>	14.84	62	Moderate
Ozone (8 hr)	0.89	0	Good

From above AQI except PM<sub>2.5</sub>, all parameters are good and PM<sub>2.5</sub> may be due to more vehicles running.

**Noise Condition of Ah Lel Ywar Village on 2024**

The noise level was measured at Ah Lel Ywar Village on 2024 and it was shown as follow.

Description	Unit	Measurement	Result			One Hour LAeq (dBA)	
			Avg	Max	Min	Guideline	Value Residential, Institutional Educational
NMP (Ah Lel Ywar Village)	dBA	Day time	46.67	66.30	35.90	55	Day time 07:00-22:00 (10:00-22:00 for public holiday)
		Night time	41.23	66.35	34.00	45	Night time 22:00-07:00 (22:00-10:00 for public holiday)



From above noise level average value of noise were under standard.

**Ground Water Quality of Ah Lel Ywar on 2024**

Ground water of Ah Lel Ywar was sampled and analyzed on 2024 and results were as follow.

**Laboratory Ground Water analyzed data for Ah Lel Ywar on 2024 and compared with standard**

SR. No	Parameters	Unit	GW-2 Tube well at Church	GW-3 Tube well at Monastery	Surface Pond	WHO	EPA	India Standard	2019 National Drinking Water Standard
1	Arsenic	mg/l	0.005	0.005	0.005	0.01	0.01	0.01	0.05
2	Chloride	mg/l	110	82	64	250	250	250	250
3	pH	-	7.1	7.2	7.3	6.5~8.5	6.5~8.5	6.5~8.5	6.5~8.5
4	Total Alkalinity as CaCO <sub>3</sub>	mg/l	14	23	8	-	-	200	-
5	Total Dissolved Solid	mg/l	472	375	605	600	500	500	100
6	Total Hardness as CaCO <sub>3</sub>	mg/l	85.88	98.15	90.17	500	-	200	500
7	Total Iron	mg/l	0.42	0.35	0.45	0.3	0.3	0.3	1.0
8	Turbidity	NTU	6	8	10	5	-	1	5
9	Sulphate	mg/l	4.8	15.5	50.6	500	-	200	-
10	Aluminum	mg/l	0.02	0.02	0.02	<0.2	-	0.03	0.2
11	Manganese	mg/l	0.9	0.3	0.9	0.4	-	0.1	0.4
12	Cyanide (CN)	mg/l	<0.01	<0.01	<0.01	0.07	-	0.05	0.07

**Laboratory Analyzed data of ground water of Ah Lel Ywar and compared with standard**

SR. No.	Parameter	Unit	Tube well at Monastery	2019 National Drinking Water Standard	more /less
1.	Arsenic	mg /L	0.005	0.05	-0.045
2.	Chloride	mg /L	82	250	-168
3.	pH	-	7.2	6.5~8.5	in standard
4.	Total alkalinity as CaCO <sub>3</sub>	mg /L	23	-	-

5.	Total Dissolved Solid	mg /L	375	100	+275
6.	Total Hardness as CaCO <sub>3</sub>	mg /L	98.15	500	- 401.85
7.	Total Iron	mg /L	0.35	1	-0.65
8.	Turbidity	NTU	8	5	+3
9.	Sulphate	mg /L	15.5	-	-
10.	Aluminum	mg /L	0.02	0.2	-0.18
11.	Manganese	mg /L	0.3	0.4	-0.1
12.	Cyanide (CN)	mg /L	<0.01	0.07	-0.06

From the above table except Total dissolved solid and turbidity, all measured parameters were in standards.

From the air quality, noise level and ground water quality comparison with standards, Ah Lel Ywar was at good health environment.

#### 4.9.4.2 Environment of Project Site

The paint industry may give some potential noise to adverse health impacts on the surrounding community base on construction/renovation, operation and decommissions. The periods of construction/renovation and decommissions are short term and adverse impacts are very few significance. The period of operation phase is moderately long and adverse impacts may be significance if mitigation measures are not sufficient. Monitoring results of ambient air quality, noise quality, odor quality, and vibration and wastewater qualities at project site may make adverse impact and they are summarized as follow.

#### Results of Ambient Air Quality at site on 2024

No.	Parameters	Unit	Result	Measuring Avg. Period		Guideline Value	Avg. Period	Remark
1	Nitrogen Dioxide	µg/m <sup>3</sup>	19.54	1	hours	200µg/m <sup>3</sup>	1-hour	27/04/2024 17:30 PM - 18:29 PM (Peak Hour)
		µg/m <sup>3</sup>	11.58	24	hours	-	-	-
2	Sulphur Dioxide	µg/m <sup>3</sup>	0	24	hours	20 µg/m <sup>3</sup>	24-hours	-
3	Particulate matter, PM <sub>10</sub>	µg/m <sup>3</sup>	28.51	24	hours	50 µg/m <sup>3</sup>	24-hours	-
4	Particulate	µg/m <sup>3</sup>	16.79	24	hours	25 µg/m <sup>3</sup>	24-hours	-

## Environmental Impact Assessment (EIA) Report

### *Nippon Paint (Myanmar) Company Limited*

	matter, PM <sub>2.5</sub>							
5	Ozone	μg/m <sup>3</sup>	0.86	8	hours	100μg/m <sup>3</sup>	8-hour daily Maximum	27/04/2024 9:30AM – 17:29 PM (8 hr avg)
		μg/m <sup>3</sup>	0.83	24	hours	-	-	-

From above ambient air quality monitoring results, all measured parameters are in standards.

### Noise Measuring Result at site on 2024

Point	Unit	Noise Level		NEQEG Guideline	more / less
		Time Period	Average Level		
Corner 1 of site	dBA	Day Time	58.53	70	-11.47
		Night Time	47.55	70	-22.45
Corner 2 of site	dBA	Day Time	66.94	70	-3.06
		Night Time	67.56	70	-2.44
Corner 3 of site	dBA	Day Time	69.39	70	-0.61
		Night Time	48.85	70	-21.15
Corner 4 of site	dBA	Day Time	67.43	70	-2.57
		Night Time	62.44	70	-7.56

From above noise level at site on 2024 (operation phase) was under standard.

### Result of Vibration Measuring at Site on 2024

Point	Unit	Vibration Level	acceptable level for commercial and industrial building	more / less
Near Security Gate of Project	mm / s	1.61	20	-18.39

Vibration level at site was under standard.

### Odor Measuring Result at site on 2024

#### Results of odor Measurement by ADM odor meter

SR.No.	Measuring Point	Parameter	Unit	Result	National Quality	Environmental (Emission
--------	-----------------	-----------	------	--------	------------------	-------------------------

					Guideline)
1.	Chemical Store	odor (ADM)	-	2	5~10
2.	Paint Mixing (Filling Area)	odor (ADM)	-	4	5~10
3.	Paint Mixing (on platform)	odor (ADM)	-	3	5~10
4.	Finished Goods (Storage)	odor (ADM)	-	ND	5~10

From the above odor measurement results at site on 2024, they are under standard.

#### **Results of Wastewater analyzed at site on 2024**

There was an analyzed data of wastewater, outlet of wastewater treatment plant at site on 2024, as follow.

#### **Analyzed results of wastewater outlet from wastewater plant and comparison with NEQEG General Application**

Parameters	Unit	Analyzed value	NEQEG General Application	More/less
5-day Biochemical Oxygen Demand	mg/L	10	50	-40
Ammonia	mg/L	0.024	10	-9.976
Arsenic	mg/L	Nil	0.1	-0.1
Chemical Oxygen Demand	mg/L	32	250	-218
Chlorine (Total Residual)	mg/L	Nil	0.2	-0.2
Copper	mg/L	Nil	0.5	-0.5
Cyanide (Total)	mg/L	0.012	1	-0.988
Fluoride	mg/L	0.2	20	-19.8
Iron	mg/L	0.48	3.5	-3.02
Lead	mg/L	Nil	0.1	-0.1
pH	-	7.3	6-9	in standard
Temperature	°C	≤3	≤3	
Total Coliform bacteria	100 ml	30	400	-370
Total Suspended Solid	mg/L	19	50	-31
Zinc	mg/L	Nil	2	-2

From above analyzed results, all analyzed data are in standard. From the results, monitoring data of ambient air, noise, vibration, odor and wastewater at site are in standard and they favor the very few significance of impacts upon environments. Performing the Environmental Management plan procedures and Environmental Monitoring Plan mentioned at this report in order to qualities of ambient air, noise, vibration, odor and wastewater will be in standards.



## **5 Key Potential Environmental Impacts and Mitigation Measures**

In this chapter,

- Identify project activities that could beneficially or adversely impact the environment,
- Predict and assess the environmental impacts of such activities,
- Examine each environmental aspect-impact relationship in detail and identify its degree of significance,
- Identify possible mitigation measures for these project activities and select the most appropriate mitigation measure, based on the reduction in significance achieved and practicality in implementation are shown.

### **5.1 Methodology and Approach**

#### **5.1.1 Methodology**

Four main methods were used by the team conducting the exercise:

- Review of project documents and other relevant information:
- Site visits:

Two site visits were carried out to identify key environmental and social issues on-site.

- Specialized data collection

Socio-economic aspects: soliciting specific socio-economic views from the local authorities and affected communities regarding land use and tenure, population and settlement patterns at the project site, economic activities, legal issues, cultural aspects, and existing infrastructure.

Physical geographical aspects: Landforms, climatic conditions etc.

Ecological aspects: the current status of flora and fauna of the area, and ecosystem interactions.

Water resources aspects: two tube well, 4" diameter and 300 ft depth.

- Public Consultation: There are three public consultation meetings as
  - 1<sup>st</sup> public meeting during the preparation of scoping report (held at 29-1-2023)
  - 2<sup>nd</sup> public meeting (held at 29-5-2024)
  - 3<sup>rd</sup> public meeting (held at 7-8-2024)

#### **5.1.2 Approach**

Aspects and impacts associated with the construction/renovation, operation and decommissioning phases identified during the EIA procedure shall be extensively assessed. Comprehensive mitigation measures informed by the specialist reports as

well as consultation with key stakeholders shall be in the report as well as in the Environmental Management Plan.

## 5.2 Brief Description of the Process

Paint production process was shown at Section 3.3.8 in detail and brief explain was follow.

- Pre- Dispersion
- Dispersion, Grinding and Mixing
- Thinning/ Adjusting/ Tinting
- Filtering
- Quality Control
- Labelling and Storage

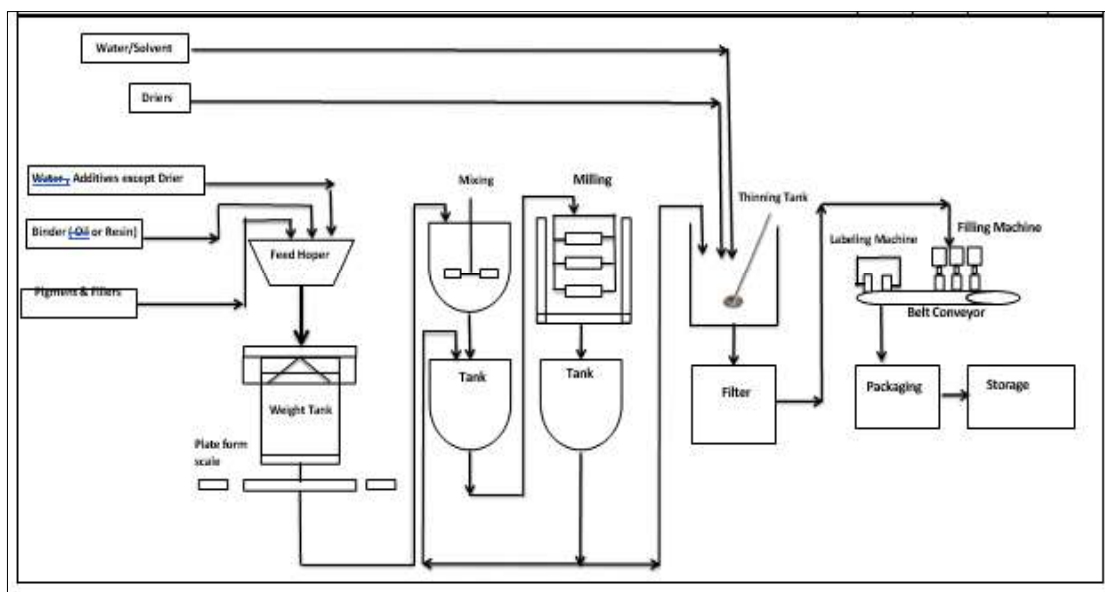


Figure 5-1 Production Process Flow Chart

## 5.3 Description of Possible Environmental Impacts and Cumulative Impact

Like many other projects, it has not only direct but also indirect impacts on the environments. Thus, it is necessary to minimize the negative impacts and enhance the positive impacts or in other words benefits. Possible environmental impacts in process was following table.

Table 5-1 Possible Environmental Impact in Process

Inputs	
Raw Materials	<ul style="list-style-type: none"> <li>▪ for water based paint (60 kinds of raw material)</li> </ul>

	<ul style="list-style-type: none"> <li>for solvent based paint (11 kinds of raw materials)</li> </ul>
Utilities	<ul style="list-style-type: none"> <li>diesel oil</li> <li>water</li> <li>electricity</li> </ul>
Chemicals Apparatus and Equipment	<ul style="list-style-type: none"> <li>for water treatment plant Salt, Resin, Activated Carbon, Micron filter</li> <li>for wastewater treatment plant Caustic Soda, Anion Polymer Alum Liquid, Microorganism</li> </ul> <p><b>Main Production Machinery</b></p> <ul style="list-style-type: none"> <li>20 kinds of machines and equipment</li> </ul> <p><b>Water Treatment Plant</b></p> <ul style="list-style-type: none"> <li>Sand filter, exchange filter, activated carbon filter, micron filter, ultra violet sterilizer,</li> </ul> <p><b>Wastewater treatment plant</b></p> <p>Collection tank, chemical tank, clarifier tank, aeration tank, pipes and accessory.</p> <ul style="list-style-type: none"> <li>Construction materials for plant steel structure, I beam, cement, sand,</li> </ul> <p><b>Renovation</b></p> <p>Lubricating oil: Grease, Welding Work, Cutting Tools, etc</p>
Transportation	<ul style="list-style-type: none"> <li>vehicles, forklift, trolley</li> </ul>
Packaging Materials	<ul style="list-style-type: none"> <li>can, plastic bucket</li> </ul>
<b>Output</b>	
Products	<ul style="list-style-type: none"> <li>water based paint</li> <li>solvent based paint</li> </ul>
Air emission	<ul style="list-style-type: none"> <li>Dust, gaseous emission and VOC, emission from combustion (engine) such as CO<sub>2</sub>, NO<sub>x</sub>, and SO<sub>2</sub></li> <li>Odor</li> <li>gases, transformer oil leakage</li> </ul>
Liquid wastes	<ul style="list-style-type: none"> <li>reject water from water treatment plant</li> <li>regeneration water</li> <li>sanitary water</li> <li>equipment washed water</li> <li>treated wastewater</li> <li>spill and leakage of liquid raw material, fuel, battery acid</li> <li>domestic water from office, laboratory</li> <li>reject products</li> <li>reject liquid raw materials</li> <li>used engine oils, lubricating oils</li> </ul>
Solid wastes	<ul style="list-style-type: none"> <li>empty packaging materials                             <ul style="list-style-type: none"> <li>plastic bags, drum, steel drum, wooden waste</li> </ul> </li> </ul>

	<p>paper bags etc.</p> <ul style="list-style-type: none"> <li>▪ reject solid raw materials</li> <li>▪ used resin, activated carbon, sand, micron filter</li> <li>▪ sludges from wastewater treatment plant</li> <li>▪ used and replaced spare parts, handtools</li> <li>▪ used maintenance materials ( sand paper, gloves, pieces of welding electrodes, cutting wheel)</li> </ul>
Noise	<ul style="list-style-type: none"> <li>▪ Noise from machinery and equipment</li> <li>▪ noise from vehicle</li> <li>▪ noise from electric generator</li> </ul>
Vibration	<ul style="list-style-type: none"> <li>▪ from machines and equipment</li> <li>▪ from vehicle</li> <li>▪ from electric generator</li> </ul>

### 5.3.1 Environmental Impact Assessment

**Nippon Paint (Myanmar) Company Limited** is going to manufacture and distribute various kinds of paints. Environmental impacts are classified on construction/renovation, operation and decommission phase.

#### 5.3.1.1 Environmental Impacts and sources during construction/renovation phase

Environmental impacts and main sources by **Nippon Paint (Myanmar) Company Limited** for construction/renovation phase are summarized as following table.

**Table 5-2 Environmental Impacts and sources for construction/renovation phase**

Impacts upon	Activity	Potential Impacts
<b>Air</b>	<p>-Transportation of renovation materials, fuel, lubricants, installation worker</p> <p>-Electric generator running</p> <p>-Transportation of machineries, equipment, tanks, pipe and pipe accessories</p> <p>-Renovation on normal construction works upon existing building.</p> <p>-Installation of machines pipe work, frame, platform</p> <p>-Painting make smooth with sandpaper</p> <p>-Welding works</p> <p>-Cutting works</p>	<p>Engines' exhaust as CO<sub>2</sub>, CO, NO<sub>x</sub>, SO<sub>2</sub>, PM<sub>10</sub>, PM<sub>2.5</sub></p> <p>Engines' exhaust as CO<sub>2</sub>, CO, NO<sub>x</sub>, SO<sub>2</sub>, PM<sub>10</sub>, PM<sub>2.5</sub></p> <p>CO<sub>2</sub> is GHG gas</p> <p>SO<sub>2</sub>, CO are poisonous</p> <p>Emitted gases and vapor by welding works, cutting works</p> <p>Spill and leakage of lubricant oil, diesel etc.</p> <p>VOC, odor from paint, thinner fine particles.</p>
<b>Noise and</b>	- Transportation of construction material, machineries and equipment,	- Noise and vibration by engine,



<b>Vibration</b>	<ul style="list-style-type: none"> <li>workers,</li> <li>- Electric Generator running,</li> <li>- Welding and Cutting work,</li> <li>- Pipe works,</li> <li>- tube well pump</li> </ul>	<ul style="list-style-type: none"> <li>- Nuisance and audio disturbance.</li> <li>- Noise and vibration by welding machine, cutter,</li> <li>- Pump running</li> </ul>
<b>Water (Surface and Ground water)</b>	<ul style="list-style-type: none"> <li>- Sanitary water from employees installation workers,</li> <li>- Flushing water from tank, pipeline testing</li> <li>- Spillage and leakage of liquid materials such as fuel, lubricants oil, paint, thinner etc</li> <li>- Emitted dust, particles vapor carried by rain water</li> <li>- Improper and direct discharge of general wastes ( liquids and solids ) on the ground or in the drain</li> </ul>	<p>Changing the surface water' quality (physical and chemical )</p> <p>Changing the quality of ground water (physical and chemical )</p>
<b>Soil</b>	<ul style="list-style-type: none"> <li>- Sanitary water from employees installation workers,</li> <li>- Flushing water from tank, pipeline testing</li> <li>- Spillage and leakage of liquid materials such as fuel, lubricants oil, paint, thinner etc</li> <li>- Emitted dust, particles vapor carried by rain water</li> <li>- Improper and direct discharge of general wastes ( liquids and solids ) on the ground or in the drain</li> </ul>	<p>Changing the quality of soil (physical, chemical, structure)</p>
<b>Biodiversity</b>	<ul style="list-style-type: none"> <li>- Emitted gases, vapor, dusts, particulate matter</li> <li>- noise and vibration</li> <li>- Wastewater</li> </ul>	<ul style="list-style-type: none"> <li>-Destroy the ecosystem</li> <li>-Fauna species move to others</li> </ul>
<b>Archaeology and Heritage</b>	<ul style="list-style-type: none"> <li>- Emitted gases, vapor, dusts, particulate matter</li> <li>- noise and vibration</li> <li>- Wastewater</li> </ul>	<ul style="list-style-type: none"> <li>-destroy the ancient monuments, antique objects.</li> <li>- make short life of ancient monuments.</li> </ul>
<b>Socio Economic</b>	<ul style="list-style-type: none"> <li>- Migrant workers</li> </ul>	<ul style="list-style-type: none"> <li>- Risk of spreading contagious disease</li> <li>- Inflation</li> <li>- Culture conflicts</li> </ul>

	<ul style="list-style-type: none"> <li>- Installation tools</li> <li>- Chemicals</li> <li>- Work Place</li> </ul>	<ul style="list-style-type: none"> <li>- Population and demographic change</li> <li>- Riot between migrant and natives</li> <li>- Electric shock</li> <li>- Hand arm Vibrating Syndrome</li> <li>- Fire, accident risk</li> <li>- Skin burning from handling of chemicals (battery acid)</li> <li>- Heat Stress</li> <li>- Injury (slipping)</li> </ul>
<b>Social Health</b>	<ul style="list-style-type: none"> <li>- Migrant workers</li> <li>- Installation tools</li> <li>- Chemicals</li> <li>- Work Place</li> </ul>	<ul style="list-style-type: none"> <li>- Risk of spreading contagious disease</li> <li>- Electric shock</li> <li>- Hand arm Vibrating Syndrome</li> <li>- Fire, accident risk</li> <li>- Skin burning from handling of chemicals (battery acid)</li> <li>- Heat Stress</li> <li>- Injury (slipping)</li> </ul>

**Table 5-3 Environmental Impacts and sources for Operation phase**

<b>Impacts upon</b>	<b>Activity</b>	<b>Potential Impacts</b>
<b>Air</b>	<ul style="list-style-type: none"> <li>- Vehicles running for transportation of raw materials, machineries spares, fuel, employees, finishing product</li> <li>- Electric generator</li> <li>- Paint raw materials transportation, loading, unloading, processing</li> <li>- Transformer and air conditioner and refrigerator</li> <li>- Mixing the paint raw materials</li> <li>- Filling the finished goods to packing</li> <li>- Aerobic digestion in wastewater treatment plant</li> </ul>	<ul style="list-style-type: none"> <li>- Emitted vapor and Particulate matter make respiratory impacts</li> <li>- Emitted combusted gases</li> <li>- Powder form raw material dispersing</li> <li>- Volatile liquid raw material</li> <li>- Leakage of transformer oil and refrigerants</li> <li>- Dispersion and Volatilizing</li> <li>- Volatilizing</li> <li>- CO<sub>2</sub> and other volatile vapor</li> <li>- CO and SO<sub>2</sub> are toxic gas</li> <li>- CO<sub>2</sub> is GHG gas</li> </ul>

<b>Noise and Vibration</b>	<ul style="list-style-type: none"> <li>- Water pump</li> <li>- Air compressor</li> <li>- Vehicles and forklift</li> <li>- Generator engine</li> <li>- Mixer</li> <li>- Diaphragm pump</li> <li>- Raw materials loading unloading</li> <li>- Finished good transportation</li> </ul>	<ul style="list-style-type: none"> <li>- Nuisance and audio disturbance.</li> <li>- Hand arm Vibrating Syndrome</li> </ul>
<b>Water (Surface and Ground water)</b>	<ul style="list-style-type: none"> <li>- Sanitary water from employees</li> <li>- Flushing water from tank, mixer, pipe etc..especially water base production</li> <li>- Reject water from water treatment plant</li> <li>- Leakage and spill of fuel, lubricants raw materials for paints ( liquids and solids ), products</li> <li>- Treated wastewaters</li> <li>- Damage raw and products</li> </ul>	-Changing the quality of surface and ground water if properly not controlled
<b>Soil</b>	<ul style="list-style-type: none"> <li>- Sanitary water from employees</li> <li>- Flushing water from tank, mixer, pipe etc.. Especially water base production</li> <li>- Reject water from water treatment plant</li> <li>- Leakage and spill of fuel, lubricants raw materials for paints ( liquids and solids ), products</li> <li>- Treated wastewaters</li> <li>- Damage raw and products</li> </ul>	Changing the quality of soil if not properly manage.
<b>Biodiversity</b>	<ul style="list-style-type: none"> <li>- Emitted gas and particulate matter from engines</li> <li>- Evaporated solvent of paint raw materials</li> <li>- Dispersed particles of powder form paint raw materials</li> <li>- Gases leakage and spillage of chemical</li> <li>- Noise and vibration of various machineries and equipment</li> </ul>	<ul style="list-style-type: none"> <li>-Destroy the ecosystem</li> <li>-Fauna species move to others</li> </ul>
<b>Archaeology and</b>	- Emitted gas and particulate matter	-destroy the ancient

<b>Heritage</b>	<ul style="list-style-type: none"> <li>from engines</li> <li>- Evaporated solvent of paint raw materials</li> <li>- Dispersed particles of powder form paint raw materials</li> <li>- Gases leakage and spillage of chemical</li> <li>- Noise and vibration of various machineries and equipment</li> </ul>	<ul style="list-style-type: none"> <li>monuments, antique objects.</li> <li>- make short life of ancient monuments.</li> </ul>
<b>Socio Economic</b>	<ul style="list-style-type: none"> <li>- Migrant workers</li> <li>- Operation equipment</li> <li>- Raw materials for paints</li> <li>- Operation place</li> </ul>	<ul style="list-style-type: none"> <li>- Risk of spreading contagious disease</li> <li>- Inflation</li> <li>- Culture conflicts</li> <li>- Riot between migrant and natives</li> <li>- Electric shock</li> <li>- Fire risk</li> <li>- Accident risk</li> <li>- Skin burning from handling of raw materials</li> <li>- Injury</li> </ul>
<b>Social Health</b>	<ul style="list-style-type: none"> <li>- Migrant workers</li> <li>- Operation equipment</li> <li>- Raw materials for paints</li> <li>- Operation place</li> <li>- Noise and vibration</li> </ul>	<ul style="list-style-type: none"> <li>- Risk of spreading contagious disease</li> <li>- Electric shock</li> <li>- Fire risk</li> <li>- Eye irritation</li> <li>- Accident risk</li> <li>- Skin burning from handling raw materials</li> <li>- Injury</li> <li>- Nuisance and audio disturbance.</li> </ul>

**Table 5-4 Environmental Impacts and Sources during Decommissioning phase**

<b>Impacts upon</b>	<b>Main Sources</b>	<b>Potential Impacts</b>
<b>Air</b>	<p>DEMOLISHING WORKS</p> <ul style="list-style-type: none"> <li>- Emission of Particulate matter, dust</li> <li>- Emitted dust, gases and PM from engines</li> <li>- Emitted dust from cutting of tank by torch</li> <li>- Emission from demolishing the building</li> <li>- Emission from digging of foundation</li> </ul>	<ul style="list-style-type: none"> <li>- Particulate matter, dust make respiratory diseases</li> </ul>
<b>Noise and</b>	Hitting, hammering, hand held	-Nuisance and audio



<b>Vibration</b>	vibration machines for demolishing of building, foundation etc. – vehicles and generator engines – loading unloading for debris	disturbance -hand arm vibration syndrome
<b>Water (Surface and Ground water)</b>	- Spillage and leakage of lubricant, fuel battery acid, engine coolant from demolishing equipment vehicles, generators - washed water from tank, machineries and equipment - wastewater treatment plant left water - left liquid from septic tank - improper dispose of waste material (solid and liquid)	- change the qualities of surface and ground water if properly not management
<b>Soil</b>	- Spillage and leakage of lubricant, fuel battery acid, engine coolant from demolishing equipment vehicles, generators - washed water from tank, machineries and equipment - wastewater treatment plant left water - left liquid from septic tank - improper dispose of waste material (solid and liquid)	- change the quality of soil if not properly controlled
<b>Biodiversity</b>	- emitted gases and particulate matter from engines - noise and vibration during demolishing - dust and fine particles from demolishing work	-Destroy the ecosystem -Fauna species move to others
<b>Archaeology and Heritage</b>	-emitted gases and particulate matter from engines -noise and vibration during demolishing -dust and fine particles from demolishing work	-Destroy the ancient monuments, antique objects. - make short life of ancient monuments.
<b>Socio Economic</b>	- migrant worker - demolishing equipment - demolishing place	- Risk of spreading contagious disease - Inflation - Culture conflicts - Riot between migrant and natives

		<ul style="list-style-type: none"> <li>- Electric shock</li> <li>- Fire risk</li> <li>- Accident risk</li> <li>- Injury</li> <li>- unemployment of employees from paint factory</li> </ul>
<b>Social Health</b>	<ul style="list-style-type: none"> <li>- migrant workers</li> <li>- demolishing equipment</li> <li>- demolishing place</li> </ul>	<ul style="list-style-type: none"> <li>-risk of spreading contagious diseases</li> <li>-electrical shock</li> <li>-fire risk</li> <li>-accident risk</li> <li>-injury</li> </ul>

### 5.3.2 Environmental Impacts Significance

Methodology and approach for environmental impacts are already shown in Section 5-1 and significance of impacts will be carried. The significance of the impacts arises is rated by using **matrix** method as following formula:

$$\text{Significance} = (\text{Duration} + \text{Extent} + \text{Severity}) \times \text{Probability}$$

#### *Significance of Impacts*

**Table 5-5 Significance Evaluation**

<b>Significance</b>	<b>Scores</b>	<b>Negative Impact</b>
<b>Negligible</b>	10-30	Negligible does not require any additional mitigation or any specific management action as there is almost no impacts.
<b>Minor</b>	31-60	Minor may or may not require additional mitigation or management action as the activity has low impact with low significance.
<b>Moderate</b>	61-90	Moderate will require certain additional mitigation and management action as the activity could have impact with medium significance.
<b>Major</b>	91-120	Major shall require specific additional mitigation measures and management action as the activity could have impact with high significance.
<b>Critical</b>	121-150	Critical cannot be reduced by implementing mitigation measures and require alternative technology as the activity has very high significance impact.

#### *Duration of Impacts*

Duration classification describes the duration or period of time required until the environmental effect can no longer be measured or the valued ecosystem components return to their baseline conditions.

**Table 5-6 Duration Classification**

<b>Duration</b>	<b>Criteria</b>	<b>Score</b>
Short Term	Impact will be occurred during short term activities or operation and disappear itself through natural process after the operation.	2
Medium Term	The impact will last for a period of time such as a season (3 months or up to 1 year or during construction period.)	3
Long Term	The impact will be occurred throughout the operational life of the project. But it can be alleviated by naturally or mitigation measures.	4
Permanent	This is non-reversible impact and cannot be rectified by natural process or human action.	5

***Extent of Impacts***

Extent describes the geographic area of environmental effects from the project.

**Table 5-7 Extent Classification**

<b>Extent</b>	<b>Criteria</b>	<b>Score</b>
Footprint or Local	Impact area is at footprint or local.	2
Project Site and Neighborhood	Impact area is within project site or up to 1 km radius.	3
Regional	Impact area exceeds 1 km and up to 100 km.	4
National	Impact area exceeds 100 km and extends to nation wise.	5

***Severity Classification***

Severity classification describes the magnitude of the impact that shows the extent of the damage. In other words, it is the amount of change of the measurable parameters relative to its baseline conditions.

**Table 5-8 Severity Classification**

<b>Intensity</b>	<b>Classification</b>	<b>Score</b>
Very Low	Impact is unlikely to be noticed.	1
Low	Localized impact occurs but only on small patch of affected environment/ communities with negligible damage.	2
Medium	Impact is suffered only to the affected area/ communities and likely to extend to the whole project area.	3
High	Impact is suffered to the affected area/ communities and can go beyond project site.	4
Very High	Impact is suffered and affected to large environment or communities and extend to noational scale.	5

***Probability Classification***

Probability of the impacts describes the chances of the occurrences of these impacts.

Table 5-9 Probability Classification

Probability	Classification	Score
Rare	Impact has never been occurred but it should not be taken into accounts as 0% probability.	2
Unlikely	Impact is unlikely to occur but may occur at sometimes during operation.	4
Likely	Impact is likely to occur at sometimes as there are some incidents experienced before in similar projects.	6
Very Likely	Impact is very likely to occur several times during operational phase in similar projects.	8
Certainly	Impact will occur anytime during operational phase. Incident has happened in similar projects.	10

### 5.3.2.1 Evaluation Impact Significance of Construction Phase before Mitigation

Impact significance of construction / renovation phase before mitigation is summarized as following.

Table 5-10 Impact Significance of Construction/Renovation Phase before Mitigation

Impacts upon	Evaluation				Significance	
	Duration	Extent	Severity	Probability	Rating	Level
Air	3	4	4	6	66	Moderate
Noise and Vibration	3	4	4	6	66	Moderate
Water (Ground and Surface water)	2	3	3	6	48	Minor
Soil	2	3	3	6	48	Minor
Biodiversity	2	3	3	6	48	Minor
Archaeology and Heritage	2	3	3	6	48	Minor
Socio economic	2	3	3	6	48	Minor
Socio Health	2	3	3	6	48	Minor

### 5.3.2.2 Evaluation Impact Significance of Operation Phase before Mitigation

Impact significance of operation phase before mitigation is summarized as following.

Table 5-11 Impact Significance of Operation Phase before Mitigation

Impacts	Evaluation				Significance	
	Duration	Extent	Severity	Probability	Rating	Level
Air	4	4	4	6	72	Moderate
Noise and	4	4	4	6	72	Moderate

<b>Vibration</b>						
<b>Water (Ground and Surface water)</b>	4	4	3	6	66	Moderate
<b>Soil</b>	4	3	3	6	60	Minor
<b>Biodiversity</b>	4	3	4	6	66	Moderate
<b>Archaeology and Heritage</b>	4	4	3	6	66	Moderate
<b>Socio economic</b>	4	4	3	6	66	Moderate
<b>Socio Health</b>	4	4	3	6	66	Moderate

### 5.3.2.3 Evaluation Impact Significance of Decommissioning Phase before Mitigation

Impact significance of decommissioning phase before mitigation are summarized as following.

**Table 5-12 Impact Significance of Decommissioning Phase before Mitigation**

Impacts	Evaluation				Significance	
	Duration	Extent	Severity	Probability	Rating	Level
<b>Air</b>	3	4	4	6	66	Moderate
<b>Noise and Vibration</b>	3	4	4	6	66	Moderate
<b>Water (Ground and Surface water)</b>	2	3	3	6	48	Minor
<b>Soil</b>	2	3	3	6	48	Minor
<b>Biodiversity</b>	2	3	3	6	48	Minor
<b>Archaeology and Heritage</b>	2	3	3	6	48	Minor
<b>Socio economic</b>	2	3	3	6	48	Minor
<b>Socio Health</b>	2	3	3	6	48	Minor

### 5.3.3 Impacts and Mitigation Measure

Mitigation measures of environmental impacts due to Nippon Paint (Myanmar) Co., Ltd paint project are summarized as following.

#### 5.3.3.1 Impact Mitigation Measures of Construction/Renovation phase

Impacts mitigation measures of construction/renovation phase are summarized as following table.



Table 5-13 Impact Mitigation Measures of Construction/Renovation Phase

Impacts Upon	Activity	Potential Impacts	Mitigation Measure
<b>Air</b>	Transportation of renovation materials, equipment machineries, fuel, lubricant installation worker	Vehicle engines exhaust gases, CO, NO <sub>x</sub> , CO <sub>2</sub> , SO <sub>2</sub> , PM <sub>10</sub> , PM <sub>2.5</sub>	<ul style="list-style-type: none"> <li>- Car pool system</li> <li>- engine power in good condition</li> <li>- use good quality fuel</li> <li>- regular maintenance</li> </ul>
	Emergency Electric Generator	generator exhaust CO, NO <sub>x</sub> , CO <sub>2</sub> , SO <sub>2</sub> , PM <sub>10</sub> , PM <sub>2.5</sub>	<ul style="list-style-type: none"> <li>- engine power in good condition</li> <li>- use good quality fuel</li> <li>- regular maintenance</li> <li>- not overloading (engine power and load are in match)</li> </ul>
	Normal renovation work	emitted gases from welding	<ul style="list-style-type: none"> <li>- good quality welding machine</li> <li>- skill person is assigned</li> <li>- good ventilation</li> </ul>
	Installation and testing machineries	leak and spill of lubricant diesel oil	<ul style="list-style-type: none"> <li>- assigned the skill person</li> <li>- wipe out at once and dispose properly (under guideline of Zone Committee and YCDC)</li> <li>- conducted by MSDS</li> <li>- good ventilation</li> </ul>
	Paint workers	<ul style="list-style-type: none"> <li>-smoothing the surface (dust emitting)</li> <li>-painting (VOC emitting)</li> <li>-leakage and spill</li> </ul>	<ul style="list-style-type: none"> <li>- good ventilation</li> <li>- wear the PPE</li> <li>- conducted by MSDS</li> <li>- wipe out at once and dispose properly</li> </ul>
<b>Noise and Vibration</b>	Transportation of construction/renovation materials, equipment, workers	Noise and vibration of vehicles	<ul style="list-style-type: none"> <li>- good engine power and silencer system, suspension</li> </ul>
	Electric generator	Noise and vibration of engine	<ul style="list-style-type: none"> <li>- good engine power and silencer system, suspension</li> <li>- balancing the power and load</li> <li>- tightening the foundation</li> </ul>

	Welding, Cutting	Noise	<ul style="list-style-type: none"> <li>- good quality tools</li> <li>- not performing the noisy works at the same time</li> <li>- wearing the PPE</li> </ul>
<b>Water (Surface and Ground Water)</b>	<ul style="list-style-type: none"> <li>- installation workers, project employee</li> <li>- engine</li> <li>- tank, pipeline flushing, test run</li> </ul>	<ul style="list-style-type: none"> <li>- Sanitary Water</li> <li>- Coolant, fuel</li> <li>- Washed and test water</li> </ul>	<ul style="list-style-type: none"> <li>- Temporary septic tank and dispose by YCDC</li> <li>- assigned to skill workers</li> <li>- disposed by guidelines of YCDC</li> </ul>
	-liquid raw material such as fuel lubricant, battery acid	- Spillage and leakage	- wipe out at once and cleaning material are disposed by guideline of YCDC
	-renovation/construction debris (solid and liquid)	- wood, plastic cans, bucket paints, used lubricants	- store in container with lids and dispose by guideline by YCDC
<b>Soil</b>	<ul style="list-style-type: none"> <li>- installation workers, project employee</li> <li>- engine</li> <li>- tank, pipeline flushing, test run</li> </ul>	<ul style="list-style-type: none"> <li>- Sanitary Water</li> <li>- Coolant, fuel</li> <li>- Washed and test water</li> </ul>	<ul style="list-style-type: none"> <li>- Temporary septic tank and dispose by YCDC</li> <li>- assigned to skill workers</li> <li>- disposed by guidelines of YCDC</li> </ul>
	-liquid raw material such as fuel lubricant, battery acid	- Spillage and leakage	- wipe out at once and cleaning material are disposed by guideline of YCDC
	-renovation/construction debris (solid and liquid)	- wood, plastic cans, bucket paints, used lubricants	- store in container with lids and dispose by guideline by YCDC
<b>Biodiversity</b>	- engine of vehicles	<ul style="list-style-type: none"> <li>- CO, CO<sub>2</sub>, SO<sub>2</sub></li> <li>- Particles matter</li> </ul>	<ul style="list-style-type: none"> <li>- Car pool system</li> <li>- good engine power</li> <li>- use good quality fuel</li> </ul>
	- engine of electric generator	<ul style="list-style-type: none"> <li>- CO, CO<sub>2</sub>, SO<sub>2</sub></li> <li>- Particles matter</li> </ul>	<ul style="list-style-type: none"> <li>- good engine power</li> <li>- use good quality fuel</li> <li>- not overloading</li> </ul>
	- running of pump, engine and installation equipment	- noise and vibration	- not performing the noisy works at the same time

<b>Archaeology and Heritage</b>	- engine of vehicles	- CO, CO <sub>2</sub> , SO <sub>2</sub> - Particles matter	- Car pool system - good engine power - use good quality fuel
	- engine of electric generator	- CO, CO <sub>2</sub> , SO <sub>2</sub> - Particles matter	- good engine power - use good quality fuel - not overloading
	- running of pump, engine and installation equipment	- noise and vibration	- not performing the noisy worker at the same time
<b>Socio Economic</b>	migrant worker	-risk of contagious diseases -risk -inflation -cultured conflict -population and demographic change	-assigned the native person as possible -perform the open and transparent communication between migrant and native person
	installation tool	-electric shock -hand arm vibration syndromes -fire -accident	-using good quality hand tools -assigned the trained and skill person -study the operation manual before use -regular check and repair
	workplace	-Heat stress -injury (slipping) -Pain of hand, shoulder and back bone	-temperature and humidity adjusting -wearing the PPE -harmony of workplace (height of employee, stool, etc. ) -not working with the wrong position -avoid the inability to carry out the task over and over again
<b>Social Health</b>	installation tool	-electric shock -hand arm vibration syndromes -fire -accident	-using good quality hand tools -assigned the trained and skill person -study the operation manual before use -regular check and

			repair
	workplace	<ul style="list-style-type: none"> <li>-Heat stress</li> <li>-injury (slipping)</li> <li>-Pain of hand, shoulder and back bone</li> </ul>	<ul style="list-style-type: none"> <li>-temperature and humidity adjusting</li> <li>-wearing the PPE</li> <li>-harmony of workplace (height of employee, stool, etc. )</li> <li>-not working with the wrong position</li> <li>-avoid the inability to carry out the task over and over again</li> </ul>

### 5.3.3.2 Impact Mitigation Measures of Operation Phase

Impacts mitigation measures of operation phase are summarized as following table.

**Table 5-14 Impacts Mitigation Measures of Operation Phase**

Impacts Upon	Activity	Potential Impacts	Mitigation Measure
<b>Air</b>	Vehicles running for raw materials, spare parts, fuel, employees, packaging material, finished goods	<ul style="list-style-type: none"> <li>- emitted gases and particulate matter</li> <li>- CO, CO<sub>2</sub>, SO<sub>2</sub>, NO<sub>x</sub>, PM<sub>10</sub>, PM<sub>2.5</sub></li> </ul>	<ul style="list-style-type: none"> <li>- Car pool system</li> <li>- good condition in engine power</li> <li>- used good quality fuel</li> <li>- regular maintenance</li> <li>- plantation</li> </ul>
	Electric generator	<ul style="list-style-type: none"> <li>- emitted gases and particulate matter</li> <li>- CO, CO<sub>2</sub>, SO<sub>2</sub>, NO<sub>x</sub>, PM<sub>10</sub>, PM<sub>2.5</sub></li> </ul>	<ul style="list-style-type: none"> <li>- good condition in engine power</li> <li>- used good quality fuel</li> <li>- regular maintenance</li> <li>- not over load (match load and power)</li> </ul>
	Paint raw material transportation, loading, unloading, storing, mixing, filling	<ul style="list-style-type: none"> <li>- volatile liquid raw materials</li> <li>- dispersing of fine powder raw material</li> </ul>	<ul style="list-style-type: none"> <li>- assigned the skilled person</li> <li>- storage area should be low temperature and good ventilation</li> <li>- conducting the particulates in MSDS</li> <li>- not open the lid when not necessary</li> <li>- assigned skill person</li> </ul>

			- good ventilation and dust collector in good efficiency
	Transformer and refrigerator	- leakage of transformer oil and refrigerant	- regular inspection and repair by authorized person - regular inspection and repair - using environmental friendly refrigerants
	Wastewater treatment plant	- emitted gases from aerobic digestion	- control the emitted gas not more or less
<b>Noise and Vibration</b>	- water pump - air compressor - engines of vehicles and forklift - engines of generator - mixer - Diaphragm pumps - raw material loading unloading - transportation of finished goods	- nuisance and audio disturbance - Hand arm vibration syndrome	- regular maintenance and repairing the water pump, engines diaphragm pump - tightening foundation bolt - suspensions of vehicles are in good condition - car pool system
<b>Water (Surface and Ground Water)</b>	- Sanitary water	- High BOD, COD and others	- naturally decompose in Septic tank disposed by guideline of YCDC
	- flushed water from tank, pipeline, mixer especially water based paint	- High BOD, COD and others	- treated in wastewater treatment plant - treated wastewater quality in NEQ (E) G guideline
	- leakage and spill of fuel liquid and solid paint raw materials lubricant, product	- fine powder and VOC	- wipe out at once and cleaning materials are disposed by YCDC guideline
	- Treated wastewater	- High BOD, COD	- quality of wastewater in NEQ(E) G guideline
	- Reject water of water treatment plant	- High impurities	- disposed by YCDC guideline
	- damage raw materials	- Highly pollutant	- disposed by YCDC guideline
	- reject products	- Highly pollutant	- disposed by YCDC guideline



<b>Soil</b>	- Sanitary water	- High BOD, COD and others	- naturally decompose in Septic tank disposed by guideline of YCDC
	- flushed water from tank, pipeline mixer especially water based paint	- High BOD, COD and others	- treated in wastewater treatment plant - treated wastewater quality in NEQ (E) G guideline
	- leakage and spill of fuel liquid and solid paint raw materials lubricant, product	- fine powder and VOC	- wipe out at once and cleaning materials are disposed by YCDC guideline
	- Treated wastewater	- High BOD, COD	- quality of wastewater in NEQ(E) G guideline
	- Reject water of water treatment plant	- High impurities	- treated in wastewater treatment plant
	- damage raw materials	- Highly pollutant	- disposed by YCDC guideline
	- reject products	- Highly pollutant	- disposed by YCDC guideline
<b>Biodiversity</b>	- engines of vehicles	- emitted gases move the faunae species to other	- maintenance and repair the engines
	- engines of generator	- emitted gases move the faunae species to other	- maintenance and repair the engines
	- VOC of liquid raw material	- VOC move the faunae species to other	- liquid raw materials are stored in low temperature and good ventilation
	- disperse of fine particular of powder form raw	- fine dust particles move the faunae species to other	- dust collector efficiency in high, good ventilation
	- VOC of leakage and spillage of raw and finished product	- VOC move the faunae species to other	- wipe out at once and cleaning materials are disposed by YCDC guideline
	- VOC and dispersed fine particles from paint production	- VOC move the faunae species to other	- lids of mixer are not open if not necessary
	- running of machineries (direct and indirect)	- noise and vibration move the faunae species to other	- well maintenance and good lubricating - tightening foundation bolt

<b>Archaeology and Heritage</b>	- engines of vehicles	- emitted gases dust and fine particles destroy the ancient monument and antique object and also make short life of ancient and antique object	- maintenance and repair the engines
	- engines of generator		- maintenance and repair the engines
	- VOC of liquid raw material		- liquid raw materials are stored in low temperature and good ventilation
	- disperse of fine particular of powder from raw		- dust collector efficiency in high, good ventilation
	- VOC of leakage and spillage of raw and flushed pollutant		- wipe out at once and cleaning materials are disposed by YCDC guideline
	- VOC and disposed fine particles from paint production		- lids of mixer are not open if not necessary
<b>Socio Economic</b>	- running of machineries (direct and indirect)		- well maintenance and good lubricating - tightening foundation bolt
	Operation employees (migrant workers)	- risk of contagions decreases - riot - inflation - cultured conflict - population and demographic change	- assigned the native person as possible - perform the open and transparent communication between migrant and native
	Operation equipment	- electric shock - hand arm vibration syndromes - fire - accident	- good quality operation equipment - regular maintenance - assigned skill person - training between operation
	workplace	- Heat stress - dust and fine particles, VOC - injury - Pain of hand, shoulder and back bone	- temperature and humidity adjusting - dust collector in high efficiency - good ventilation - PPE wearing - not working with the wrong position - harmony of workplace (height of employee,

			stool, etc. ) - avoid the inability to carry out the task over and over again
	wastewater treatment plant	- emitted gas from aerobic operation	- air blowing is not more or less - treated wastewater in standard
<b>Social Health</b>	Operation equipment	- electric shock - hand arm vibration syndromes - fire - accident	- good quality operation equipment - regular maintenance - assigned skill person - training before operation
	workplace	- Heat stress - dust and fine particles, VOC - injury - Pain of hand, shoulder and back bone	- temperature and humidity adjusting - dust collector in high efficiency - good ventilation - PPE wearing - not working with the wrong position - harmony of workplace (height of employee, stool,etc. ) - avoid the inability to carry out the task over and over again

### 5.3.3.3 Impact Mitigation Measures of Decommissioning Phase

Impact mitigation measures of decommissioning phase are summarized as following table.

**Table 5-15 Impact Mitigation Measures of Decommissioning Phase**

Impacts Upon	Activity	Potential Impacts	Mitigation Measure
<b>Air</b>	- Transportation of demolishing materials, equipment fuel, lubricant workers	- vehicle engine exhaust gases CO, NO <sub>x</sub> , CO <sub>2</sub> , SO <sub>2</sub> , PM <sub>10</sub> , PM <sub>2.5</sub>	- Car pool system - engine power in good condition - used good quality fuel - regular maintenance
	- Electric generator	- engine exhaust CO, NO <sub>x</sub> , CO <sub>2</sub> , SO <sub>2</sub> , PM <sub>10</sub> , PM <sub>2.5</sub>	- engine power in good condition - used good quality fuel - regular maintenance - not over loading (engine power and load

			are in match)
	- Demolishing work (cutting with gas, cutter)	- emitted gases and fine particles	- good quality demolishing tools - assigned the skill person - good ventilation
<b>Noise and Vibration</b>	- Vehicles	- Noise and vibration	- good engine power and silencer, suspension. system
	- Generator	- Noise and vibration	- good engine power and silencer, suspension system
	- Welding cutting	- Noise and vibration	- tightening the foundation bolt and nut
	- Loading unloading of demolishing material	- Noise and vibration	- balancing the power and load - not performing the noisy work at the same time - wearing the PPE - assigned the skill person
<b>Water (Surface and Ground Water)</b>	- demolishing workers	- Sanitary water	- temporary septic tank and disposed by YCDC guideline
	- vehicles engine	- spillage of coolant, fuel, lubricants, etc.)	- assigned the skill person
	- generator engine	- spillage of coolant, fuel, lubricants, etc.)	- assigned the skill person
	- liquid left in wastewater treatment plant	- High BOD, COD	- disposed by YCDC guideline
	- wastewater left in septic tank	- High BOD, COD	- disposed by YCDC guideline
	- demolished debris (solid and liquid)	- change the eco-system	- disposed by YCDC guideline
<b>Soil</b>	- demolishing workers	- Sanitary water	- temporary septic tank and disposed by YCDC guideline
	- vehicles engine	- spillage of coolant, fuel, lubricants, etc.)	- assigned the skill person

	- generator engine	- spillage of coolant, fuel, lubricants, etc.)	- assigned the skill person
	- liquid left in wastewater treatment plant	- High BOD, COD	- disposed by YCDC guideline
	- wastewater left in septic tank	- High BOD, COD	- disposed by YCDC guideline
	- demolished debris (solid and liquid)	- change the eco-system	- disposed by YCDC guideline
<b>Biodiversity</b>	- vehicles engines	- CO, CO <sub>2</sub> , SO <sub>2</sub> , NO <sub>x</sub> , PM <sub>10</sub> , PM <sub>2.5</sub>	- car pool system - good engine power - use good quality fuel
	- engines of generator	- CO, CO <sub>2</sub> , SO <sub>2</sub> , NO <sub>x</sub> , PM <sub>10</sub> , PM <sub>2.5</sub>	- good engine power - use good quality fuel - not overloading
	- running of pump, engine, demolishing equipment	- noise and vibration	- not performing the noisy work at the same time
<b>Archaeology and Heritage</b>	- vehicles engines	- CO, CO <sub>2</sub> , SO <sub>2</sub> , NO <sub>x</sub> , PM <sub>10</sub> , PM <sub>2.5</sub>	- car pool system - good engine power - use good quality fuel
	- engines of generator	- CO, CO <sub>2</sub> , SO <sub>2</sub> , NO <sub>x</sub> , PM <sub>10</sub> , PM <sub>2.5</sub>	- good engine power - use good quality fuel - not overloading
	- running of pump, engine, demolishing equipment	- noise and vibration	- not performing the noisy work at the same time
<b>Socio economic</b>	- migrant worker for demolishing work	- risk of contagions decrease - riot - inflation - cultural conflict - population and demographic change	- assigned the native person as possible - perform the open and transparent communication between migrant and native
	- demolishing equipment	- electric shock - fire risk - accident risk - injury - hand arm vibrating	- good quality demolishing tools - assigned the trained and skill person - study the operating manual before use



		syndrome	- regular check and repair
	- demolishing place	- Heat stress - injury - pain of hand, shoulder and back bone	- temperature and humidity adjusting - wearing PPE - harmony of workplace (height of employee , stool, etc.) - not working with wrong position - avoid the inability to carry out the task over and over again
<b>Social Health</b>	- demolishing equipment	- electric shock - fire risk - accident risk - injury - hand arm vibrating syndrome	- good quality demolishing tools - assigned the trained and skill person - study the operating manual before use - regular check and repair
	- demolishing place	- Heat stress - injury - pain of hand, shoulder and back bone	- temperature and humidity adjusting - wearing PPE - harmony of workplace (height of employee , stool, etc.) - not working with wrong position - avoid the inability to carry out the task over and over again

#### 5.3.4 Evaluation Residual Impact Significances

After mitigation measure, impact significances are reduced and residual impacts significances are summarized for paint manufacturing and distribution of Nippon Paint (Myanmar) Company Limited.

##### 5.3.4.1 Residual Impact Significances of Construction/Renovation Phase

Residual impact significances of construction/renovation phase are summarized as following table.

**Table 5-16 Residual Impact Significance of Construction/Renovation Phase**

Impacts	Evaluation				Significance	
	Duration	Extent	Severity	Probability	Rating	Level
<b>Air</b>	2	3	2	6	42	Minor
<b>Noise and Vibration</b>	2	3	2	6	42	Minor

<b>Water (Ground and Surface water)</b>	2	3	2	6	42	Minor
<b>Soil</b>	2	3	2	6	42	Minor
<b>Biodiversity</b>	2	3	2	4	28	Minor
<b>Archaeology and Heritage</b>	2	3	2	4	28	Minor
<b>Socio economic</b>	2	3	2	4	28	Minor
<b>Socio Health</b>	2	3	2	4	28	Minor

#### 5.3.4.2 Residual Impact Significances of Operation Phase

Residual impact significances of operation phase are summarized as following table.

**Table 5-17 Residual Impact Significance of Operation Phase**

<b>Impacts</b>	<b>Evaluation</b>				<b>Significance</b>	
	<b>Duration</b>	<b>Extent</b>	<b>Severity</b>	<b>Probability</b>	<b>Rating</b>	<b>Level</b>
<b>Air</b>	4	3	2	6	54	Minor
<b>Noise and Vibration</b>	4	3	2	6	54	Minor
<b>Water (Ground and Surface water)</b>	4	3	2	6	54	Minor
<b>Soil</b>	4	3	2	6	54	Minor
<b>Biodiversity</b>	4	3	2	4	36	Minor
<b>Archaeology and Heritage</b>	4	3	2	4	36	Minor
<b>Socio economic</b>	4	3	2	4	36	Minor
<b>Socio Health</b>	4	3	2	4	36	Minor

#### 5.3.4.3 Residual Impact Significances of Decommissioning Phase

Residual impact significances of decommissioning phase are summarized as following table.

**Table 5-18 Residual Impact Significances of Decommissioning Phase**

<b>Impacts</b>	<b>Evaluation</b>				<b>Significance</b>	
	<b>Duration</b>	<b>Extent</b>	<b>Severity</b>	<b>Probability</b>	<b>Rating</b>	<b>Level</b>
<b>Air</b>	2	3	2	6	42	Minor
<b>Noise and</b>	2	3	2	6	42	Minor

<b>Vibration</b>						
<b>Water (Ground and Surface water)</b>	2	3	2	6	42	Minor
<b>Soil</b>	2	3	2	6	42	Minor
<b>Biodiversity</b>	2	3	2	6	42	Minor
<b>Archaeology and Heritage</b>	2	3	2	6	42	Minor
<b>Socio economic</b>	2	3	2	6	42	Minor
<b>Socio Health</b>	2	3	2	6	42	Minor

### 5.3.5 Comparison Tables of Impact Significance before and after Mitigation

Comparison Tables of impact significance before and after mitigation for the construction/renovation phase, operation phase and decommissioning phase are following.

**Table 5-19 Comparison Table of Impact Significance before and after Mitigation for the Construction/Renovation phase**

Sr. No	Impact upon	Significance before mitigation		Significance after mitigation		More / Less	Remark
		Rating	Level	Rating	Level		
1.	Air	66	Moderate	42	Minor	-24	
2.	Noise and Vibration	66	Moderate	42	Minor	-24	
3.	Water (Ground and Surface water)	48	Minor	42	Minor	-6	
4.	Soil	48	Minor	42	Minor	-6	
5.	Biodiversity	48	Minor	28	Minor	-20	
6.	Archaeology and Heritage	48	Minor	28	Minor	-20	
7.	Socio economic	48	Minor	28	Minor	-20	
8.	Socio Health	48	Minor	28	Minor	-20	

**Table 5-20 Comparison table of impact significance before and after mitigation for the Operation phase**

Sr. No	Impact on	Significance before mitigation		Significance after mitigation		More / Less	Remark
		Rating	Level	Rating	Level		
1.	Air	72	Moderate	54	Minor	-18	
2.	Noise and Vibration	72	Moderate	54	Minor	-18	

3.	Water (Ground and Surface water)	66	Moderate	54	Minor	-12	
4.	Soil	60	Minor	54	Minor	-6	
5.	Biodiversity	66	Moderate	36	Minor	-30	
6.	Archaeology and Heritage	66	Moderate	36	Minor	-30	
7.	Socio economic	66	Moderate	36	Minor	-30	
8.	Socio Health	66	Moderate	36	Minor	-30	

**Table 5-21 Comparison Table of Impact Significance before and after Mitigation for the Decommissioning phase**

Sr. No	Impact on	Significance before mitigation		Significance after mitigation		More / Less	Remark
		Rating	Level	Rating	Level		
1.	Air	66	Moderate	42	Minor	-42	
2.	Noise and Vibration	66	Moderate	42	Minor	-42	
3.	Water (Ground and Surface water)	48	Minor	42	Minor	-6	
4.	Soil	48	Minor	42	Minor	-6	
5.	Biodiversity	48	Minor	42	Minor	-6	
6.	Archaeology and Heritage	48	Minor	42	Minor	-6	
7.	Socio economic	48	Minor	42	Minor	-6	
8.	Socio Health	48	Minor	42	Minor	-6	

#### 5.4 Key Issues to be addressed and Mitigation Measures Operation Phase

The key issues as regard to the Nippon Paint (Myanmar) Co.Ltd, to be addressed are:

- Air Pollution Mitigation Measure
- Noise and Vibration Pollution Mitigation Measure
- Wastewater and Solid Waste Pollution Mitigation Measure
- Water (Surface water and Ground Water) Pollution Mitigation Measure
- Offensive Odor Mitigation Measure
- Soil Pollution Mitigation Measure
- Biodiversity Impact Mitigation Measure
- Archaeology and Heritage Impact Mitigation Measure
- Socio - Economic Impact Mitigation Measure
- Socio-Health Impact Mitigation Measure

➤ Occupational Health and Safety Mitigation Measure

**5.4.1 Air Pollution Mitigation Measure**

**Air pollution** can be from,

- vehicles' engine exhaust (emitted gases)
- generator engine exhaust (emitted gases)
- transportation, loading, unloading of powder form paint raw materials (dust and particles)
- transportation, loading, unloading of solvent type paint raw materials (VOC)
- mixing of paint raw materials for paint processing (fine dust particles, VOC)
- transformer oil and refrigerant leakage
- aerobic digestion of wastewater treatment (CO<sub>2</sub> and water vapour)
- leakage and spill of liquid raw materials in storing.

**Mitigation Measure for Air Pollution**

- Car pool system
  - engine power in good condition
  - used good quality fuel
  - regular maintenance
  - plantation
- Generator engine power in good condition
  - used good quality fuel
  - regular maintenance
  - not over load (match load and power)
- assigned the trained and skilled person
- assigned the trained and skilled person and study the MSDS before handling
- studying the operation procedure, manual before operation
- assigned the trained and skill person
- regular maintenance by authorized person and skill person
- aeration is controlled not more or less
- store in low temperature and good ventilation
  - store and if spillage and leakage performed at once by instruction of MSDS
- monitoring twice a year at specified locations and assess to be in standard guideline

**5.4.2 Noise and Vibration Pollution Mitigation Measure**

**Noise and Vibration** can be from,

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- running of tube well pump
- air compressor for diaphragm pump
- running of pump
- vehicle and forklift engine running
- running of generator engine
- mixing equipment motor running
- raw materials, transportation, loading, unloading
- finished goods transportation, loading, unloading
- pump running of water treatment plant
- pump, air compressor running of wastewater treatment plant

**Mitigation Measures for Noise and Vibration Pollution**

- regular maintenance for water pump
- check and repair, lubricating the air compressor
- check and adjust the diaphragm tension and aliquement
- car pool system
  - regular maintenance, repair
- check and repair the generator engine
  - tightening the foundation bolt and nut
  - not overloading
- assigned the trained and skill person
- study the operation procedure, manual before running
- assigned the trained and skill person
- use auxiliary tools for convenient work
- regular maintenance of pump and tightening
- the foundation bolt and nut
- aerobic digestion with air flow rate not more or less
- monitoring twice a year at specified location and access to be in the standard guideline

**5.4.3 Wastewater and solid wastes Pollution Mitigation Measures**

Wastewater can be from,

- Sanitary water of employees
- tanks, pipelines, pump flushing with water especially in water based paint production
- engine cooling water leakage, spill when renewing
- used engine oil, battery acid
- transformer oil, battery acid leakage and spillage when refilling, renewing
- treated wastewater from wastewater treated plant

**Mitigation Measure for Wastewater Pollution**

- naturally decomposed in septic tank and disposed by YCDC guidelines when full

- treated in wastewater treatment plant and to be in NEQ (E) G guidelines
- treated in wastewater treatment plant
- earn money and disposed by YCDC guidelines if not
- assigned the trained and skill employees and wipe out at once when leak and spill
- assigned the trained and skill employees
  - studying the wastewater treatment procedure, manual before operation
  - monitoring twice a year from treated wastewater outlet and assess to be in NEQ (E) G guidelines

**Solid wastes can be from**

- personal debris of employees
- wastes from laboratory
- wastes from office work
- wooden crate, plastic packing materials of raw materials
- empty containers of solid and liquid raw materials
- spillage and leakage of raw materials
- dust collected at dust collector
- reject raw materials
- reject finished product
- expired life of materials from water treatment plant
- (sand, carbon, resin, micron filler)
- sludge from wastewater treatment plant
- used spare parts of machineries
- used parts of vehicles, engines
- (tyre, battery etc.)

**Mitigation Measure for solid wastes pollution**

- collect, separate dry and wet and disposed by YCDC guidelines
- collect, separate hazardous and non-hazardous and disposed by YCDC guidelines
- collect, separate dry and wet and disposed by YCDC guidelines
- collect, reuse in other places and earn money
- earn money and disposed under YCDC guidelines if not
- wipe out, collect at once and disposed the cleaning materials under guidelines of YCDC
- dusts are collected and disposed by YCDC guidelines
- earn money and disposed under YCDC guidelines if not
- disposed under YCDC guidelines
- collect, earn money and disposed by YCDC guidelines if not
- collected and disposed by YCDC guidelines
- earn money and disposed by YCDC guidelines if not
- earn money
- take the kinds of solid wastes and amounts, ledger monthly and assess not to be unnecessary situation

#### 5.4.4 Surface and Ground Water Pollution Mitigation Measure

Surface and ground water can be polluted by wastewater and solid waste. By making the mitigation measure for the wastewater and solid wastes concerning the Nippon Paint (Myanmar) Co., Ltd paint manufacturing factory as well as surface and ground water. This was summarized as follow.

**Table 5-22 Sources of waste material and Mitigation Measure**

Source of Pollution	Mitigation Measure
<b>Wastewater</b>	
– Sanitary water of employees	– Nationally decomposed in septic tank and disposed by YCDC guidelines when full
– reject and back washed water of water treatment plant	– disposed by YCDC guideline
– tanks, pipelines, pump flushing with water especially in water based paint production	– treated in wastewater treatment plant and to be in NEQ (E) G guidelines
– engine cooling water leakage, spill when renewing	– treated in wastewater treatment plant
– used engine oil and battery acid	– earn money and disposed by YCDC guidelines if not
– transformer oil, battery acid leakage and spillage when refilling, renewing	– assigned the trained and skill employees and wipe out at once when leak and spill
– treated wastewater from wastewater treatment plant	<ul style="list-style-type: none"> <li>– assigned the trained and skill person, studying the wastewater treatment procedure, manual before operation</li> <li>– monitoring twice a year for the treated wastewater outlet and assess to be in NEQ (E) G guidelines</li> </ul>
<b>Solid Wastes</b>	
– personal debris of employees	– collect, separate dry and wet and disposed by YCDC guidelines
– wastes from laboratory	– collect, separate hazardous and non-hazardous and disposed by YCDC guidelines
– wastes from office work	– collect, separate dry and wet and disposed by YCDC guidelines
– wooden crate, plastic packaging materials of raw materials	– collect, reuse in other places and earn money
– empty containers of solid and liquid raw materials	– earn money and disposed under YCDC guidelines if not
– spillage and leakage of raw materials	– wipe out, collect at once and disposed the cleaning materials under guidelines of YCDC
– dust collected at dust collector	– dusts are collected and disposed by YCDC guideline

– reject raw materials	– earn money and disposed under YCDC guideline if not
– reject finished product	– disposed under YCDC guidelines
– expired life materials from water treatment plant (sand, carbon, resin, micron filter)	– collect, earn money and disposed by YCDC guideline if not
– sludge from wastewater treatment plant	– disposed by YCDC guidelines
– used spare parts of machineries	– earn money and disposed by YCDC guideline if not
– used parts of vehicles, engines (tyre, battery etc.)	– earn money – take the kinds of solid wastes and amount, ledger monthly and assess not to be in unnecessary situation

#### 5.4.5 Offensive Odor Mitigation Measure

Offensive Odor can be from,

- vehicles' engine exhaust (emitted gases)
- generator engine exhaust (emitted gases)
- transportation, loading, unloading of powder form paint raw materials (dust and particles)
- transportation, loading, unloading of solvent type paint raw materials (VOC)
- mixing of paint raw materials for paint processing (fine dust particles, VOC)
- transformer oil, refrigerant and air condition leakage
- leakage and spill of liquid raw materials in storing.

#### Mitigation Measure for Offensive Odor

- Car pool system
  - engine power in good condition
  - used good quality fuel
  - regular maintenance
  - plantation
- Generator engine power in good condition
  - used good quality fuel
  - regular maintenance
  - not over load (match load and power)
- assigned the trained and skilled person and study the MSDS before handling
- studying the operation procedure, manual before operation
- regular maintenance by authorized person and skill person

- aeration is controlled not more or less
- store in low temperature and good ventilation
  - store and if spillage and leakage performed at once by instruction of MSDS
- not opening the lids of containers, mixing tanks unnecessary conditions,
- not storing solvents at higher temperature,
- checking the spills and leaks of solvents
- wiping out and repairing, collecting, treating with equipment such as dust collectors
- Install good ventilation system.
- Regular checking and maintenance of dust collector and collection pipeline
- Regular checking of VOC emission stack and monitoring according to schedule
- monitoring twice a year at specified locations and assess to be in standard guideline

#### **5.4.6 Soil Pollution Mitigation Measure**

**Soil** can be polluted by mostly wastewater and solid wastes. By making the mitigation measure for the wastewater and solid wastes, the proposed project favors as well as soil pollution. This was summarized as follow.

**Wastewater** can be from, sanitary water of employees, reject and back washed water of water treatment plant; tanks, pipelines, pumps flushing with water especially in water based paint production; engine cooling water leakage spill when renewing; used engine oil and battery acid; transformer oil, battery acid and leakage and spillage when refilling, renewing; treated wastewater from wastewater treatment plant.

**Mitigation measures** for wastewater be, naturally decomposed in septic tank and disposed by YCDC guidelines when full; treated in wastewater treatment plant; treated in wastewater treatment plant and to be in NEQ (E) G guidelines; treated in wastewater treatment plant; earn money and disposed by YCDC guidelines if not; assigned the trained and skill employees and wipe out at once when leak and spill; assigned the trained and skill person, studying the wastewater treatment procedure, manual before operation; monitoring twice a year from the treated wastewater outlet and assess to be in NEQ (E) G guidelines.

**Solid wastes** can be from personal debris of employees; wastes from laboratory; wastes from office works; wooden crate, plastic packing materials of raw materials, empty containers of solid and liquid raw materials; spillage and leakage of raw materials; dust collected at dust collector; reject raw materials; reject finished products; expired life materials from water treatment plant (sand, carbon, resin,



micron filter); sludge from wastewater treatment plant; used spare parts of machineries ; used parts of vehicles, engines (tyre, battery etc.).

**Mitigation measures for solid wastes** can be, collect, separate dry and wet and disposed by YCDC guidelines; collect, separate hazardous and non-hazardous and disposed by YCDC guidelines; collect, separate dry and wet and disposed by YCDC guidelines; collect, reuse in other place and earn money; earn money and disposed under YCDC guidelines if not; wipe out, collect at once and disposed the cleaning materials under guidelines of YCDC; dust are collected and disposed by YCDC guidelines; earn money and disposed under YCDC guidelines if not; disposed under YCDC guidelines; collect, earn money and disposed by YCDC guidelines if not; disposed by YCDC guidelines, earn money and disposed by YCDC guidelines if not; earn money and take the kinds of solid wastes and amount ledger monthly and assess not to be in unnecessary situation.

#### 5.4.7 Biodiversity Impact Mitigation Measures

The main impacts upon biodiversity can be **emitted gases, wastewater, noise and vibration**. Impacts sources and mitigation measure of biodiversity was as follow.

**Table 5-23 Sources of Impact upon Biodiversity and Mitigation Measures**

Impact Source	Mitigation Measure
– emitted gases as CO, CO <sub>2</sub> , NO <sub>x</sub> , SO <sub>2</sub> , PM <sub>10</sub> , PM <sub>2.5</sub> of engines of vehicles	<ul style="list-style-type: none"> <li>• car pool system</li> <li>• engine power in good condition</li> <li>• used good quality fuel</li> <li>• planting</li> </ul>
– emitted gases as CO, CO <sub>2</sub> , NO <sub>x</sub> , SO <sub>2</sub> , PM <sub>10</sub> , PM <sub>2.5</sub> of engines of electric generator	<ul style="list-style-type: none"> <li>• car pool system</li> <li>• engine power in good condition</li> <li>• used good quality fuel</li> <li>• planting</li> <li>• not overloading</li> </ul>
– VOC emission of liquid raw material	<ul style="list-style-type: none"> <li>• liquid raw materials are stored in cold and good ventilation</li> <li>• check and repair not to be leakage and spillage</li> </ul>
– dispersion of fine powder form raw materials	<ul style="list-style-type: none"> <li>• dust collector in good efficiency</li> <li>• collect dust and disposed by YCDC guidelines</li> <li>• good ventilation</li> </ul>
– VOC of leakage and spillage; dust dispersion from leakage and spillage of raw materials	<ul style="list-style-type: none"> <li>• wipe out at once and dispose cleaning material by YCDC guidelines</li> </ul>
– VOC and dispersion of fine particles from paint production (transportation, loading, unloading, mixing of solid and liquid raw material)	<ul style="list-style-type: none"> <li>– assigned the trained and skill labor when transportation, loading, unloading of raw materials</li> <li>• not open the lid of mixer if</li> </ul>

	unnecessary
– treated wastewater from wastewater treatment plant	– quality of treated wastewater in NEQ (E) G standard
– noise and vibration of running vehicles, engine of generator, machineries	– well maintenance and good lubricants <ul style="list-style-type: none"> <li>• tightening the foundation bolt and nut</li> <li>• good alignment</li> </ul> – monitoring plan twice a year such as collecting the information of flora (plant) such as eco-system, changing the species (decreasing, increasing and deterioration, invasive alien species as well as fauna (animal))

#### 5.4.8 Archaeology and Heritage impact Mitigation Measures

The main impacts upon **Archaeology** can be **emitted gases, noise and vibration**. Impact sources and mitigation measure of Archaeology were as follow.

**Table 5-24 Sources of impact upon Archaeology and Mitigation Measures**

Impact Source	Mitigation Measure
– emitted gases as CO, CO <sub>2</sub> , NO <sub>x</sub> , SO <sub>2</sub> , PM <sub>10</sub> , PM <sub>2.5</sub> of engines of vehicles	<ul style="list-style-type: none"> <li>• car pool system</li> <li>• engine power in good condition</li> <li>• used good quality fuel</li> <li>• planting</li> </ul>
– emitted gases as CO, CO <sub>2</sub> , NO <sub>x</sub> , SO <sub>2</sub> , PM <sub>10</sub> , PM <sub>2.5</sub> of engines of electric generator	<ul style="list-style-type: none"> <li>• car pool system</li> <li>• engine power in good condition</li> <li>• used good quality fuel</li> <li>• planting</li> <li>• not overloading</li> </ul>
– VOC emission of liquid raw material	<ul style="list-style-type: none"> <li>• liquid raw materials are stored in cold and good ventilation</li> <li>• check and repair not to be leakage and spillage</li> </ul>
– dispersion of fine powder form raw materials	<ul style="list-style-type: none"> <li>• dust collector in good efficiency</li> <li>• collect dust and disposed by YCDC guidelines</li> <li>• good ventilation</li> </ul>
– VOC of leakage and spillage; dust dispersion from leakage and spillage of raw materials	<ul style="list-style-type: none"> <li>• wipe out at once and dispose cleaning material by YCDC guidelines</li> </ul>
– VOC and dispersion of fine particles from paint production (transportation, loading, unloading, mixing of solid and liquid raw material)	– assigned the trained and skill labor when transportation, loading, unloading of raw materials <ul style="list-style-type: none"> <li>• not open the lid of mixer if unnecessary</li> </ul>
– treated wastewater from wastewater treatment plant	– quality of treated wastewater in NEQ (E) G standard

<ul style="list-style-type: none"> <li>– noise and vibration of running vehicles, engine of generator, machineries</li> </ul>	<ul style="list-style-type: none"> <li>– well maintenance and good lubricants               <ul style="list-style-type: none"> <li>• tightening the foundation bolt and nut</li> <li>• good alignment</li> </ul> </li> <li>– monitoring plan twice a year such as collecting the information of cultural heritage situation and if exists it will be reported to the heritage authority of Department of Archaeology and National Museum, Ministry of Religious Affairs and Culture.</li> </ul>
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#### 5.4.9 Impact upon Socio Economic and Mitigation Measure

The main impacts upon Socio Economic can be operation employees (migrant workers), running of operation equipment and machineries, situation of work place and emitted wastes. Impact sources and mitigation measures of Socio Economic were as follow.

**Table 5-25 Sources of Impact upon Socio Economic and Mitigation Measures**

Impact Sources	Mitigation Measures
<ul style="list-style-type: none"> <li>– Operation employees (Migrant Workers)               <ul style="list-style-type: none"> <li>• risk of contagions decreases</li> <li>• riot</li> <li>• inflation</li> <li>• cultural conflict</li> <li>• population and demographic change</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• assigned the native employees as possible</li> <li>• perform the open and transparent communication between migrant and native</li> <li>• grievance redress mechanism</li> <li>• CSR plan for employees and pollution</li> </ul>
<ul style="list-style-type: none"> <li>– running of operation machineries               <ul style="list-style-type: none"> <li>• noise and vibration</li> <li>• electric shock</li> <li>• hand arm vibration syndrome</li> <li>• fire</li> <li>• accident</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• good quality operation machineries</li> <li>• regular maintenance</li> <li>• assigned trained and skill person</li> <li>• study the operation manual before operation</li> <li>• conduct the OHS limitation</li> </ul>
<ul style="list-style-type: none"> <li>– work place               <ul style="list-style-type: none"> <li>• heat stress</li> <li>• dust and VOC, fine particles</li> <li>• injury</li> <li>• pain of hand, shoulder and backbone</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• adjust the temperature and humidity</li> <li>• dust collector in high efficiency</li> <li>• good ventilation</li> <li>• PPE wearing</li> <li>• not working with the wrong position</li> <li>• harmony of work place (height of employees, stools etc.)</li> <li>• avoid the inability to carry out the task over and over again</li> </ul>
<ul style="list-style-type: none"> <li>– wastewater treatment plant</li> </ul>	<ul style="list-style-type: none"> <li>• air blowing is not more or less</li> <li>• treated wastewater in standard</li> </ul>
<ul style="list-style-type: none"> <li>– emitted wastes</li> </ul>	<ul style="list-style-type: none"> <li>• all ambient air, workplace air quality,</li> </ul>

	noise and vibration, soil quality, wastewater quality are in standard <ul style="list-style-type: none"> <li>• take the action of grievance redress mechanism regularly and get information and solved</li> <li>• monitoring twice a year for the air, wastewater, noise and vibration, soil quality and assess to be under guidelines</li> </ul>
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#### 5.4.10 Impacts upon Social Health and Mitigation Measure

The main impacts upon Social Health can be operation machineries, situation of work place and emitted wastes. Impact sources and mitigation measures of Social Health were as follow.

**Table 5-26 Sources of Impacts upon Social Health and Mitigation Measures**

Impact Sources	Mitigation Measures
– running of operation machineries <ul style="list-style-type: none"> <li>• noise and vibration</li> <li>• electric shock</li> <li>• hand arm vibration syndrome</li> <li>• fire</li> <li>• accident</li> </ul>	<ul style="list-style-type: none"> <li>• good quality operation machineries</li> <li>• regular maintenance</li> <li>• assigned trained and skill person</li> <li>• study the operation manual before operation</li> <li>• conflict the OHS limitation</li> </ul>
– work place <ul style="list-style-type: none"> <li>• heat stress</li> <li>• dust and VOC, fine particles</li> <li>• injury</li> <li>• pain of hand, shoulder and backbone</li> </ul>	<ul style="list-style-type: none"> <li>• adjust the temperature and humidity</li> <li>• dust collector in high efficiency</li> <li>• good ventilation</li> <li>• PPE wearing</li> <li>• not working with the wrong position</li> <li>• harmony of work place (height of employees, stools etc.)</li> <li>• avoid the inability to carry out the task over and over again</li> </ul>
– wastewater treatment plant	<ul style="list-style-type: none"> <li>• air blowing is not more or less</li> <li>• treated wastewater in standard</li> </ul>
– emitted wastes	<ul style="list-style-type: none"> <li>• all ambient air, workplace air quality, noise and vibration, soil quality, wastewater quality are in standard</li> <li>• monitoring twice a year for the air, wastewater, noise and vibration, soil quality and assess to be under guidelines</li> </ul>

#### 5.4.11 Occupational Health and Safety Mitigation Measure

The main impacts upon Occupational Health and Safety can be operation machineries, situation of work place and emitted wastes. Impact sources and mitigation measures of Social Health were as follow.

**Impact sources;**

- Dust and particles (Explosion, nuisance, eye irritation, respiratory infection probably suffer cancer)
- Emitted vapour
- Accident and injury
- Accident by vehicles
- Moving parts of machineries wrapping the hair, clothes
- Noise (Nuisance and audio disturbance)
- Odor (nuisance the respiration tract)
- Industrial hazard (Electric shock ,Heat burn, Steam burn, Cold burn)
- Chemical hazard
- Fire hazard

**Mitigation Measure**

- Ensure necessary facilities are provided according to Factories Act.
- Regular medical checkup for workers
- Give the OHS training for new workers regularly.
- Record the accident and injuries.
- Powerful engine for vehicles and generators, Good maintenance, Use good quality fuel
- Good ventilation
- Good quality PPE
- Assigning the skilled and cautious employees, drivers and helpers (fallen from vehicles when loading and unloading the raw materials, products and spare part machineries etc)
- Maintenance the engine exhausts system, lubricating, aligning the machines, belt, etc.
- avoid working with the leisure time
- not assign the person at the high noise level for long term
- control the leakage of transform oil and refrigerant
- use good quality electrical hand tools
- insulating the hot metal part (e.g valve and joint pipe Line)
- insulated the cold surface (e.g refrigerant Lines)
- assigned the skilled and cautious person to handle the hazardous chemical
- explain the MSDS of hazardous chemical and conducting the safety procedure
- not be conditions that fine particle oxygen (air) and spark (hot surface)

## **5.5 RISK ASSESSMENT AND MITIGATION PLAN**

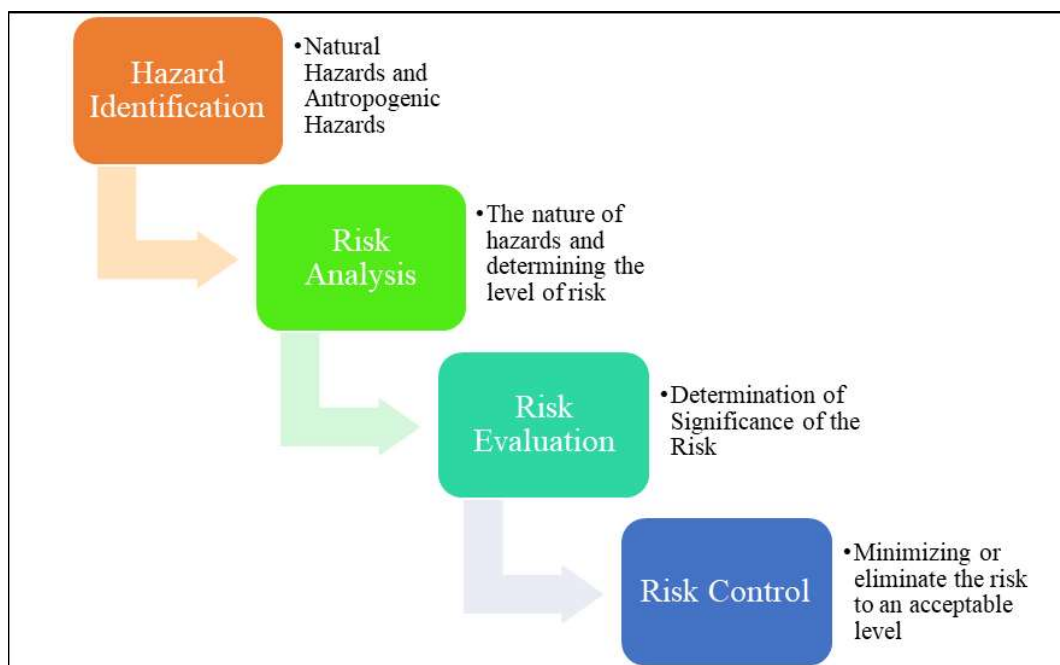
### **5.5.1 Risk Assessment Methodology**

Risk assessment methodology is adopted to Canadian Centre for Occupational Health and Safety (CCOHS) and International Civil Aviation Organization-ICAO (2013). Risk assessment is the overall process of evaluating the likelihood of adverse

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effects on, or transmission through, the natural environment, as well as the hazards associated with human activities. The risk assessment will be performed based on hazard identification, risk analysis, risk evaluation and risk control. The risk assessment of Nippon Paint Myanmar is conducted based on potential hazards that occur during paint manufacturing processes, as well as risks that may affect the project. The risk assessment and control process will be performed as shown in Figure 5.2.



**Figure 5-2 Risk Assessment**

### 5.5.2 Hazard Identification

Hazard identification is the process of identifying, listing, and characterizing hazards caused by natural events and production processes. Addressing both anthropogenic and natural hazards is crucial for comprehensive disaster preparedness and risk mitigation. This project considers natural hazards such as earthquake, flooding and storm, as well as major anthropogenic hazards including chemical hazards, fire and explosion hazards, electrical failures, mechanical and equipment malfunction.

### 5.5.3 Risk Analysis

A comprehensive risk analysis was conducted, focusing on the nature of the hazards, including an evaluation of both risk probability and risk severity. Risk probability refers to the likelihood or frequency of a hazard occurring. The risk probability is categorized into five levels of likelihood: frequent, occasional, remote, improbable, and extremely improbable. The risk probability range is shown in Table 5-27.

Table 5-27 Risk Probability Table

Likelihood	Definition	Value
Certain	✧ The hazard is expected to occur in most circumstances.	5
Occasional	✧ The hazard will probably occur at some time.	4
Possible	✧ The hazard might occur at some time.	3
Improbable	✧ The hazard could occur at some time.	2
Exceptional	✧ The hazard may occur only in exceptional circumstances.	1

The risk severity is the potential adverse effect that may occur due to exposure to the risk. The risk severity is determined by five levels as described in Table 5-28.

Table 5-28 Risk Severity Table

Severity	Definition	Value
Catastrophic	✧ Equipment destroyed ✧ Multiple deaths ✧ Massive effect to environment	A
Major	✧ Serious injury ✧ Major equipment damage	B
Moderate	✧ Serious incident ✧ Injury to persons	C
Minor	✧ Degrades or affects normal paint operational procedures	D
Negligible	✧ No physical injury ✧ No damage to assets ✧ No effect to environment	E

#### 5.5.4 Risk Evaluation

The risk evaluation is the determination of risk significance level. The risk evaluation was conducted as shown in Table 5-29. If the assessed risk indexes (5A, 5B, 4A) are unacceptable under the existing circumstance, the operation or process should be stopped immediately and any operation should not be permitted until sufficient control measures have been implemented to reduce the risk to an acceptable level. For the high-risk indexes (5C, 4B, 3A), the process should be investigated and the controls should be implemented immediately. For the moderate-risk indexes (1A, 2A, 2B, 3B, 3C, 4C, 4D, 5D, 5E), the risk mitigation should be performed or reviewed as necessary. For the low-risk indexes (1B, 1C, 2C, 2D, 3D, 3E, 4E), risk mitigation or review is optional. For the negligible risk indexes (1D, 1E, 2E), no risk mitigation measure is required.

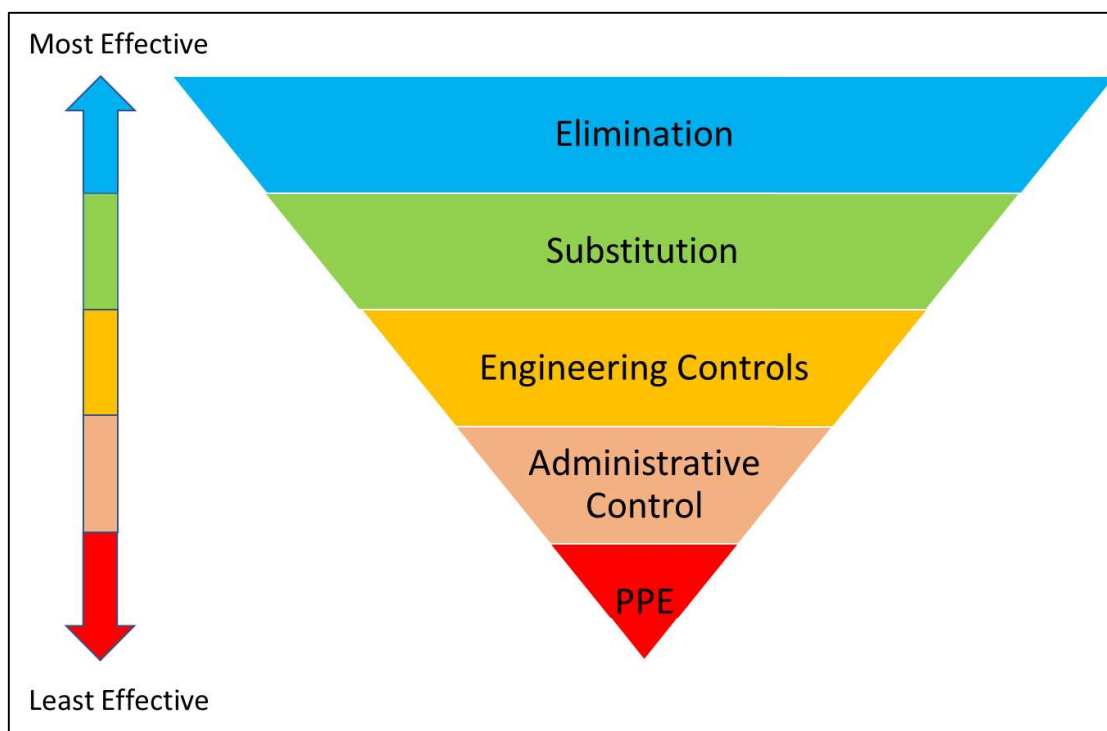
Table 5-29 Risk Evaluation (Risk Probability x Severity)

Risk Probability	Risk Severity				
	Catastrophic-	Major-B	Moderate-C	Minor-D	Negligible-E

	A				
Certain-5	5A (Extreme)	5B (Extreme)	5C (High)	5D (Moderate)	5E (Moderate)
Occasional-4	4A (Extreme)	4B (High)	4C (Moderate)	4D (Moderate)	4E (Low)
Possible-3	3A (High)	3B (Moderate)	3C (Moderate)	3D (Low)	3E (Low)
Improbable-2	2A (Moderate)	2B (Moderate)	2C (Low)	2D (Low)	2E (Negligible)
Exceptional-1	1A (Moderate)	1B (Low)	1C (Low)	1D (Negligible)	1E (Negligible)

### 5.5.5 Risk Control: The Hierarchy of Controls

The hierarchy of controls is a step-by-step approach to eliminating or reducing workplace hazards. These controls are ranked from most to least effective and include elimination, substitution, engineering controls, administrative controls, and personal protective equipment. The hierarchy of controls diagram is shown in Figure 5-3.



**Figure 5-3 Hierarchy of Controls**

**Risk Elimination:** It ensures the hazard no longer exists.

**Risk Substitution:** It means changing out a material or process to reduce the hazards.

**Engineering Controls:** It reduces the exposure by preventing hazards from coming into contact with workers.

**Administrative Controls:** It changes the way work is done or give workers more information by providing workers with relevant procedures, training, or warnings.

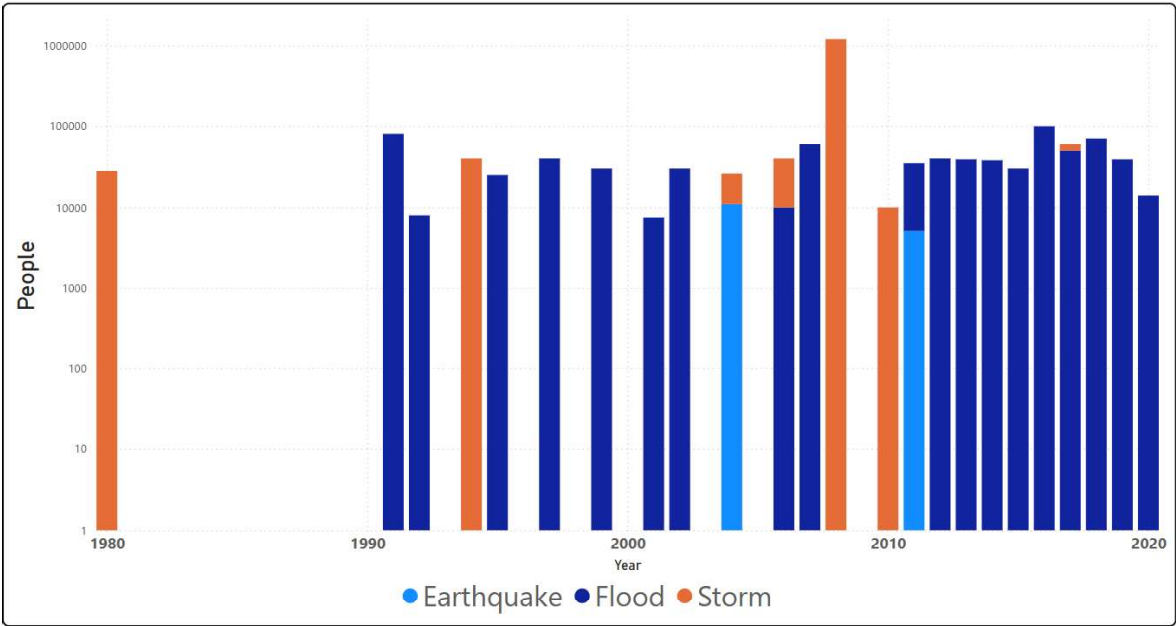
**PPE:** PPE refers to anything workers wear to help protect them from workplace hazards.

### **5.5.6 Natural Disasters**

#### **5.5.6.1 Potential Risk**

The assessment of natural disaster risk is based on historical disaster events, hazard exposure, and vulnerability. Due to limited historical disaster data specific to the Yangon Region, national-level data has been used for analysis. According to the Myanmar Information Management Unit (MIMU), Myanmar is among the most disaster-affected countries in the world, with flooding being the most frequent hazard. The number of people affected by natural hazards—including earthquakes, floods, and storms—between 1980 and 2020 are presented in Figure 5-4. Additionally, Figure 5-5 illustrates the townships impacted by floods and cyclones from 2008 to 2020. As shown in Figure 5-5, the project area (Yangon Region) has experienced seasonal flooding every year from 2011 to 2024, except in 2014 and 2022. The region was also significantly impacted by Cyclone Nargis in 2008. Figure 5-6 presents the hazard, exposure, vulnerability, and risk assessment results for Myanmar. According to the risk index map, the project area is not classified among the high flood-risk townships.

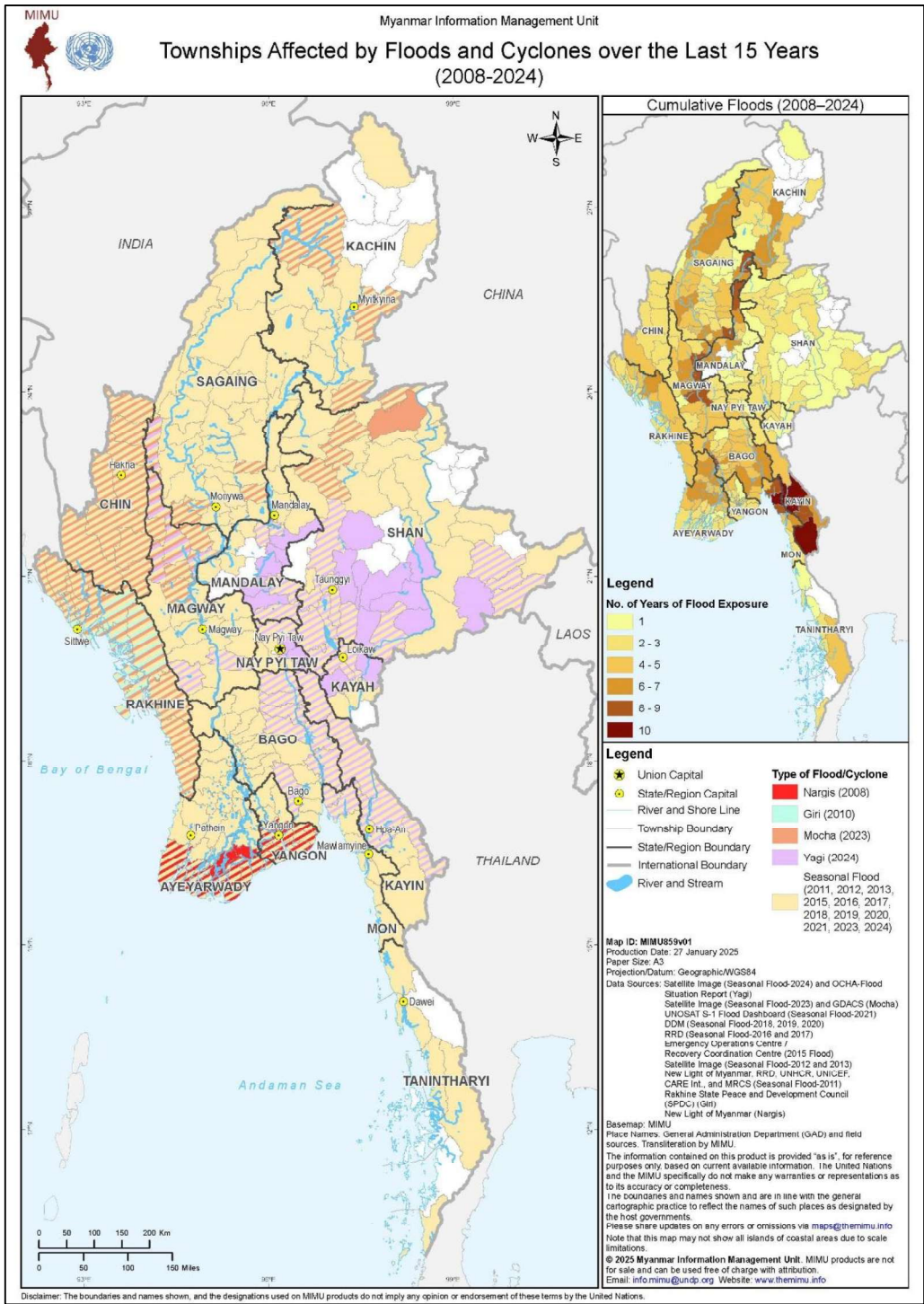
Furthermore, the proposed project building was renovated in 2023, and commercial production commenced on June 1, 2023. Since then, the project area has not experienced any damages or losses from any disasters. However, the project proponent has prepared a disaster management response plan in case disasters occur in the future.



Source: Myanmar Information Management Unit (MIMU)

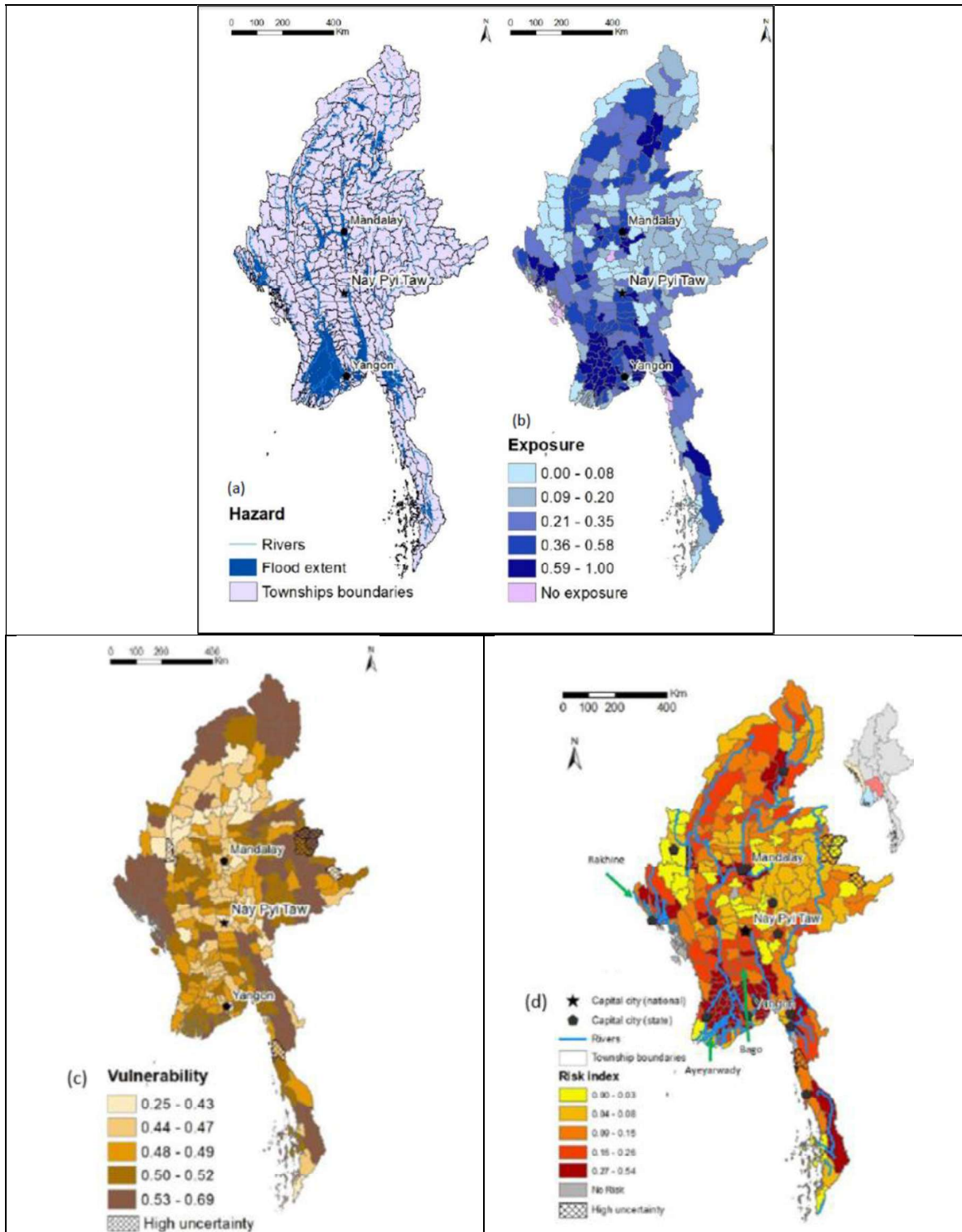
**Figure 5-4 Number of people affected by natural hazards by year from 1980 – 2020 in Myanmar**





Source: MIMU

Figure 5-5 Townships Affected by Floods and Cyclone (2008 – 2024)

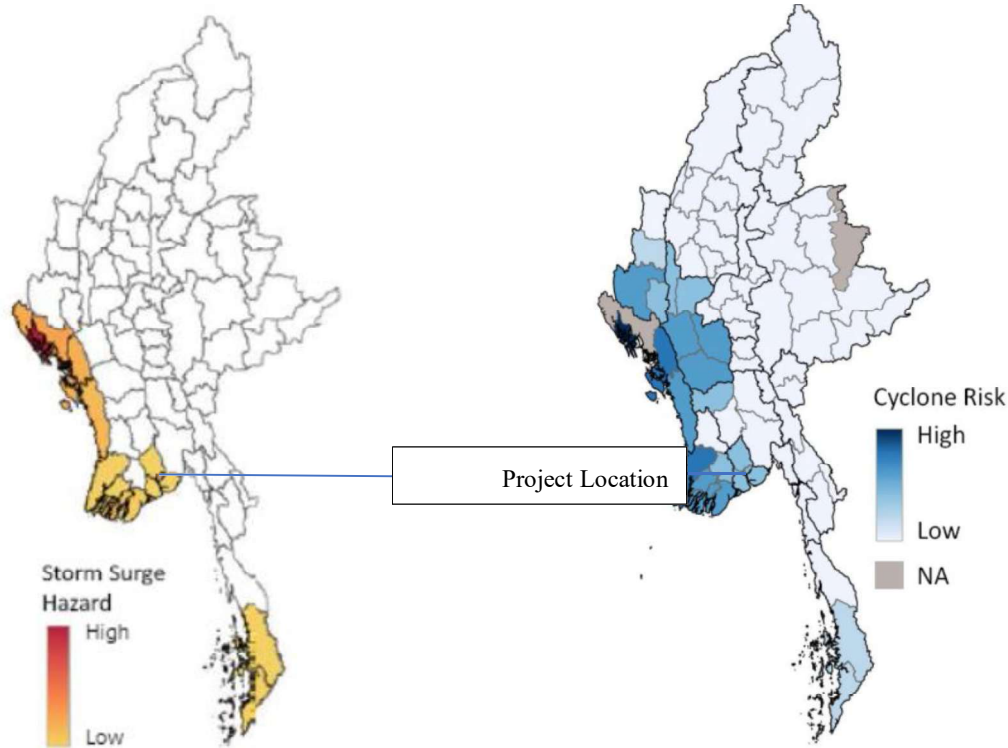


Source: MIMU

**Figure 5-6 Flood Risk Assessment (a) hazard, (b) exposure, (c) vulnerability, (d) risk classification**

Figure 5.7 illustrates the storm surge hazard and cyclone risk maps of Myanmar. According to the figure, the project area is situated in a region classified as

having low to moderate risk of storm surges and cyclones. According to the Myanmar Earthquake committee (2005), Yangon Region is located in an area where the seismic risk reaches maximum level of 0.15 (Destruction Zone). Figure 4.13 describes the seismic zone map of Myanmar. As shown in figure, the project site is located in Moderate Zone.

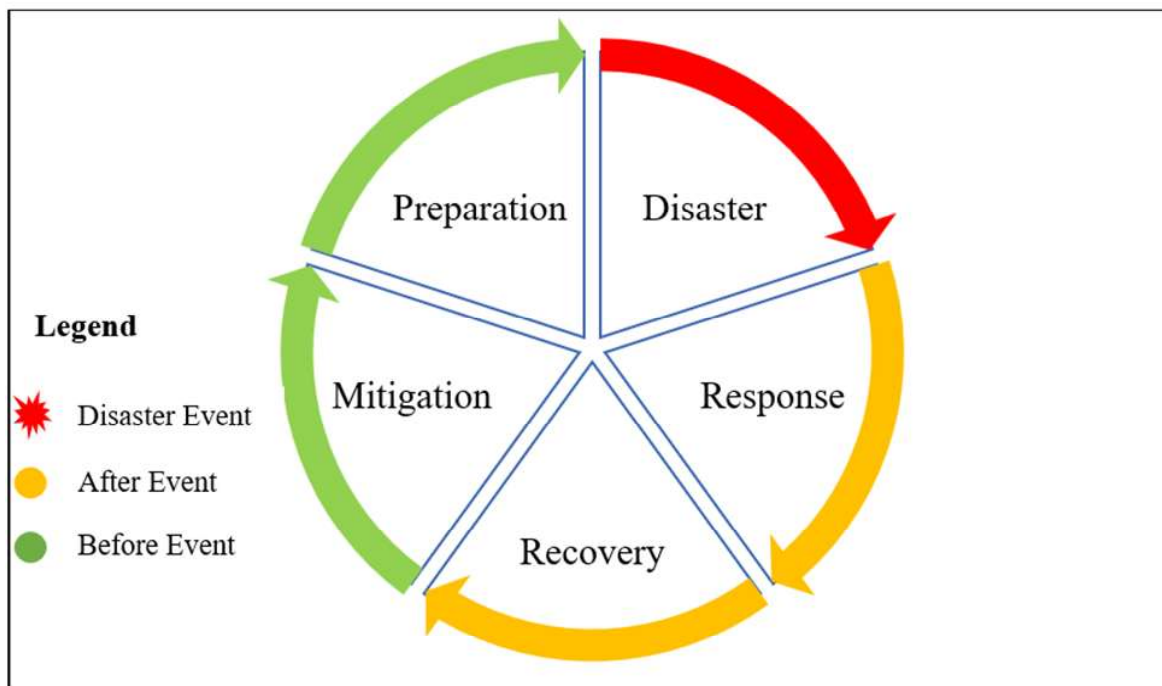


Source: MIMU

**Figure 5-7 Storm Surge Hazard and Cyclone Risk**

#### 5.5.6.2 Disaster Management Plan

A disaster management plan is essential for ensuring the safety of employees, minimizing operational disruptions, and protecting assets in the event of natural disasters such as earthquakes, floods, and storms. This plan outlines a continuous cycle consisting of four key phases: Preparation, Response, Mitigation, and Recovery. As illustrated in Figure 5.8, preparation and mitigation are performed before a disaster, while response and recovery will take place after a disaster event.



**Figure 5-8 Disaster Management Cycle**

**Mitigation and Preparation Plan:** Before disaster event, the following preparation will be performed at the factory.

- ❖ Shelves, storage tanks, and heavy machinery will be secured to prevent toppling.
- ❖ Hazardous chemicals will be stored in waterproof containers.
- ❖ Drainage systems are installed around the facility and regularly cleaned to prevent clogging.
- ❖ Roofing and windows are strengthened to withstand high winds.
- ❖ Employees will receive training on emergency evacuation, fire safety, and hazardous material handling.
- ❖ The emergency response team is formed to respond effectively in case of an emergency as shown in Table 6.4.
- ❖ First aid kits will be readily available throughout the factory.
- ❖ Emergency contact list will be displayed in a publicly visible area of the factory.





**Response Plan:** The emergency response team leader will activate team members in the event of an emergency. The response plan includes communication among emergency team members, evacuation procedures, rescue operations, administering first aid to injured individuals, transporting severely injured persons to hospitals, and coordinating with local authorities for emergency assistance. During an earthquake, employees will follow the “Drop, Cover, and Hold” protocol. Additionally, operations will be shut down, and power will be turned off to prevent short circuits during floods and storms.

**Recovery Plan:** After a disaster event, a comprehensive damage and loss assessment will be conducted and documented. Repairs will be prioritized to restore safe working conditions, ensuring the structural integrity of the facility. Additionally, power will be restored, and debris, along with any hazardous material spills, will be safely cleaned up. The functionality of critical systems, including drainage and fire suppression systems, will be checked and repaired if necessary. Disaster response strategies will be reviewed and improved based on lessons learned, incorporating feedback from employees and emergency response teams. Furthermore, support will be provided to affected employees, including counseling assistance if needed, to facilitate their recovery.



### 5.5.7 Chemical Hazards

#### 5.5.7.1 Potential Risk

The operation of paint industry involves using various chemical hazards due to the use of raw materials such as biocides, pigments, binders, solvents, and additives. These chemicals may pose risks such as toxicity, flammability, skin and respiratory irritation, and environmental pollution. The key chemical hazards based on the selected raw materials are described as followed:

**Inhalation Hazards:** Propylene Glycol and Petro Resins may cause respiratory tract irritation when inhaled in high concentrations. Exposure to vapors from Turpentine and Touch Dry Thinner can lead to dizziness, headaches, and nausea. Additionally, inhalation of fine particles from Titanium Dioxide variants may result in lung irritation.

**Skin and Eye Irritation Hazards:** Biocides, such as DISPERBYK 187, BIOX P520LP, and MERGAL K20, may cause skin and eye irritation upon direct contact. Silicone-based defoamers such as AD 400 and AD 1124 can lead to allergic reactions and skin irritation. Moreover, anti-skinning agents & pigments (Ultramarine Blue, Titanium Dioxide) can cause mild to severe irritation upon prolonged exposure.


**Flammability Hazards:** Long Oil Alkyd is highly flammable and can contribute to fire hazards. Hard Dry Thinner and Turpentine emit volatile organic compounds (VOCs) that can ignite easily, leading to fire and explosion risks.

**Environmental Hazards:** Improper disposal of chemicals can cause soil and water contamination. Improper transportation, storage and handling of chemicals can cause spills and leakage.

Potential Hazard	Probability	Severity	Risk Evaluation	Control Measures
Inhalation hazard	Possible (3)	Moderate (C)	3C (Moderate)	Required
Skin and eye irritation hazards	Possible (3)	Moderate (D)	3C (Moderate)	Required
Flammability hazards	Possible (3)	Moderate (C)	3C (Moderate)	Required
Environmental hazards	Possible (3)	Major (B)	3B (Moderate)	Required

### 5.5.7.2 Control Measures

Elimination and substitution are not considered, as the hazards are not classified as high-risk, and the best alternative chemicals have already been selected based on their environmental benefits and superior operational performance. The following control measures will be implemented:

Engineering Controls	<ul style="list-style-type: none"> <li>❖ Local exhaust ventilation system is installed to provide good ventilation.</li> <li>❖ Flammable solvents, such as Turpentine and Thinner, are stored in fireproof containers away from heat sources, and no smoking signs are displayed near the chemical storage area.</li> <li>❖ Propylene Glycol and pigments are stored in sealed, labeled containers to avoid spills and exposure.</li> <li>❖ Wastewater treatment plant is installed to prevent chemical leaks into water sources.</li> <li>❖ Fire extinguishers and firefighting equipment are provided in the workplace as shown in Figure 6.21.</li> <li>❖ To prevent spills and leakage, chemicals should be transported using sealed, impact-resistant containers and secured properly to avoid tipping during transit.</li> <li>❖ Chemicals will be stored in well-ventilated, temperature-controlled areas, away from incompatible substances.</li> <li>❖ The chemical spill clean up procedure will be activated in case of occurring chemical spills and leakages.</li> </ul> 
Administrative Controls	<ul style="list-style-type: none"> <li>❖ Regular training on safe handling, spill response, and disposal of chemicals will be conducted.</li> <li>❖ All chemicals are labeled clearly and safety data sheets are provided in the work area.</li> <li>❖ Fire drill and firefighting training are provided to the employees.</li> <li>❖ The condition of firefighting equipment will be checked regularly.</li> </ul>
PPE	<ul style="list-style-type: none"> <li>❖ Respirators will be provided when handling fine pigments (e.g. Titanium Dioxide) and solvents (e.g., Turpentine).</li> <li>❖ Chemical-resistant gloves and safety goggles will be used when handling biocides and dispersants.</li> <li>❖ Long-sleeved clothing will be worn to prevent skin exposure.</li> </ul>



### 5.5.8 Fire and Explosion Hazards

#### 5.5.8.1 Potential Risk

Solvents such as Turpentine, Hard Dry Thinner, and Long Oil Alkyd are highly flammable and can ignite easily. Additionally, vapors from volatile organic compounds (VOCs) can accumulate in enclosed spaces, significantly increasing the risk of fire. Improper storage and handling of flammable materials near heat sources further heighten the danger of ignition. Moreover, sparks from electrical equipment or static discharge can act as ignition sources, leading to potential fire hazards.

Potential Hazard	Probability	Severity	Risk Evaluation	Control Measures
Fire and explosion	Possible (3)	Major (B)	3B (Moderate)	Required

#### 5.5.8.2 Control Measures

Engineering Controls	<ul style="list-style-type: none"> <li>❖ Flammable solvents, such as Turpentine and Thinner, are stored in fireproof containers away from heat sources.</li> <li>❖ Fire extinguishers and firefighting equipment are provided in the workplace as shown in Figure 6.21.</li> </ul>
Administrative Controls	<ul style="list-style-type: none"> <li>❖ No smoking signs will be displayed in the workplace.</li> <li>❖ Fire drill and firefighting trainings are provided to the employees.</li> <li>❖ The condition of firefighting equipment will be checked regularly.</li> <li>❖ Emergency response plan is established with designated fire wardens and response teams.</li> </ul>

### 5.5.9 Electrical Failures, Mechanical and Equipment Malfunction

#### 5.5.9.1 Potential Risk

Electrical Failures	<ul style="list-style-type: none"> <li>❖ Short circuits, overloaded circuits, and faulty wiring can cause electrical fires.</li> <li>❖ Power surges or outages may disrupt operations and damage electrical</li> </ul>
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	<p>equipment.</p> <ul style="list-style-type: none"> <li>❖ Exposure of electrical components to flammable vapors and dust can increase fire risks.</li> </ul>
Mechanical and Equipment Malfunction	<ul style="list-style-type: none"> <li>❖ Failure of mixing, grinding, or dispersing equipment can lead to production delays and potential hazards.</li> <li>❖ Malfunctioning ventilation systems can lead to the accumulation of toxic fumes and flammable vapors.</li> <li>❖ Conveyor belt and pump failures can cause leaks and spills of hazardous chemicals.</li> <li>❖ Unmaintained or poorly calibrated equipment can lead to inconsistent product quality.</li> <li>❖ Failure of fire suppression systems can escalate fire incidents.</li> </ul>

Potential Hazard	Probability	Severity	Risk Evaluation	Control Measures
Electrical Failures	Possible (3)	Major (B)	3B (Moderate)	Required
Mechanical and equipment malfunction	Possible (3)	Major (B)	3B (Moderate)	Required

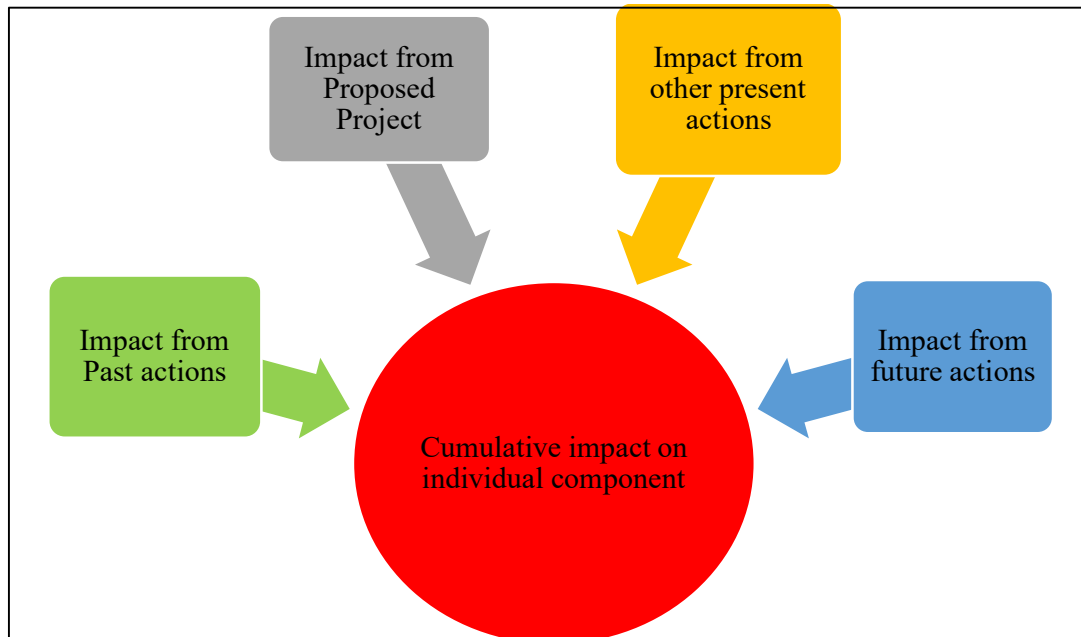
#### 5.5.9.2 Control Measures

Engineering Controls	<ul style="list-style-type: none"> <li>❖ Circuit breakers, and grounding systems are installed to prevent electrical hazards.</li> <li>❖ To prevent electrical malfunctions, equipment will be regularly inspected and maintained, and electrical devices will be kept away from water. Additionally, overloading circuits will be avoided.</li> </ul>
Administrative Controls	<ul style="list-style-type: none"> <li>❖ Ventilation and exhaust systems will be regularly inspected to remove hazardous fumes and maintain air quality.</li> <li>❖ The condition of mechanical and electrical equipment and fire suppression system will be regularly checked before using to prevent accidents and damages due to malfunctions.</li> </ul>
PPE	<ul style="list-style-type: none"> <li>❖ Insulated gloves and footwear will be provided for workers who handle electrical components.</li> <li>❖ Workers will be equipped with fire-resistant clothing in high-risk areas.</li> <li>❖ Respirators or masks will be used in case of ventilation failure leading to toxic fumes.</li> <li>❖ Safety goggles and face shields will be provided for protection against sparks or chemical splashes from equipment failures.</li> </ul>

## 6 Cumulative Impact Assessment

### 6.1 Methodology and Approach

Cumulative Impact Assessment (CIA) evaluates the combined effects of past, present, and future activities on the environment, society, and economy. It goes beyond assessing individual project impacts by considering the combined effects of multiple actions over time. The cumulative impact diagram is shown in below.



The following approaches will be performed for conducting a comprehensive CIA.

- ❖ Identification of existing and planned projects using map
- ❖ Identification of cumulative impacts by assessing direct, indirect impact of existing and proposed activities and baseline data
- ❖ Assessment and prediction of cumulative impacts
- ❖ Developing mitigation measures to reduce the project's contribution to the cumulative impacts.

### 6.2 Brief Description and Map of Relevant Projects

Figure 6-1 illustrates the relevant projects and activities surrounding the project site. These include sand and gravel manufacturing and trading, concrete production, garment factories, plastic factories, a package printing factory, a paper factory, carton box production, panels and electrical products manufacturing, residential areas, as well as waterway transport activities.





**Figure 6-1 Relevant Projects around the Project Site**

### 6.3 Identification and Assessment of the Potential Cumulative Impacts

The impacts of the project may extend beyond individual effects and are interconnected with various industries and activities in the surrounding area. Combined wastewater discharge from the project, various industries around the project, and residential area could degrade the water quality of the Hlaing River, potentially harming nearby industries, communities, and the natural environment if not properly managed. Furthermore, air pollution and noise emissions are not solely attributable to a single project but can accumulate from multiple sources, exacerbating environmental and health concerns for nearby residents and industries. Consequently, effective and ongoing management of cumulative impacts is crucial to mitigate environmental degradation and promote sustainable development.

In addition, the paint production process may generate cumulative health impacts due to the combined effects of various stages, including raw material handling, mixing, grinding, packaging, and waste management. Prolonged exposure to hazardous substances can lead to chronic illnesses, exacerbating health risks over time. Workers exposed to toxic chemicals may develop respiratory diseases, skin conditions, and neurological disorders, which

indicates the need for strict safety measures and protective protocols. To safeguard employee health, the company provides free medical check-ups for all employees and has an emergency fund allocated for medical treatment in case of work-related injuries. A designated vehicle with a driver is on standby to transport injured workers to the nearest hospital promptly. Additionally, medicine and first aid kits are available on-site to handle emergency cases. Employees requiring further medical attention are referred to a social welfare hospital for care. The project proponent also conducts First Aid Training to equip employees with essential skills to respond to workplace emergencies. Furthermore, the company supplies medicine or covers the cost of medication for long-term employees as needed. To enhance worker protection, the company provides “Group Life Insurance” (Personal Accident Injuries) for all staff, as well as PPE to the employees who handle the chemicals.



Potential Impact	Baseline Quality	Sources	Potential Cumulative Impacts
Hlaing River Water Quality	<ul style="list-style-type: none"> <li>❖ The water quality results indicate that total suspended solids and lead levels exceed acceptable limits in the upstream, midstream, and downstream sections of the Hlaing River.</li> <li>❖ All wastewater quality results from the proposed project are within the NEQEG (2015).</li> </ul>	<ul style="list-style-type: none"> <li>❖ Wastewater discharge from residential area, waterway transport activities, and various industries around the project</li> </ul>	<ul style="list-style-type: none"> <li>❖ Water quality of Hlaing River can be deteriorated and it can affect aquatic life and communities relying on the river if the untreated water is discharged to the river.</li> </ul>
Surrounding Air Quality	<ul style="list-style-type: none"> <li>❖ Air quality results measured at Ah Lel</li> </ul>	<ul style="list-style-type: none"> <li>❖ Air pollution and dust emission from</li> </ul>	<ul style="list-style-type: none"> <li>❖ The cumulative impacts from</li> </ul>

and Dust Pollution	<p>Ywar are within the standards.</p> <p>❖ Stack emission results are also within the guidelines.</p>	<p>generators, road vehicles and various industries</p>	<p>multiple projects and various sources can lead to increased levels of pollutants which can cause respiratory problems and other health issues.</p> <p>❖ Additionally, it can increase greenhouse gas emissions from various sectors contributes to climate change.</p>
Noise Pollution	<p>❖ Noise levels (ambient and workplace) are found within the guidelines</p>	<p>❖ Traffic noise</p> <p>❖ Industrial noise</p> <p>❖ Generators</p>	<p>❖ The increased noise levels from various sources may impact worker health and nearby communities.</p>
Solid Waste Generation	<p>❖ Domestic waste and hazardous waste generation from the factory</p>	<p>❖ Domestic waste and hazardous waste from various industries</p>	<p>❖ Increased landfill burden, improper waste disposal leading to environmental pollution.</p>

## 6.4 Mitigation Measures

Potential Impact	Mitigation Measures
Hlaing River Water Quality	<p>❖ The proposed project implements wastewater treatment systems before discharge.</p> <p>❖ Water quality monitoring in the river will be conducted regularly to detect pollution trends.</p> <p>❖ Enforcement of wastewater discharge regulations should be strengthened, and discharging wastewater should be ensured compliance with NEQEG (2015) for all industries.</p>
Surrounding Air Quality and	<p>❖ Regular maintenance of generators and industrial machinery should be performed to minimize</p>

Dust Pollution	<p>emissions.</p> <ul style="list-style-type: none"><li>❖ Dust suppression techniques such as water spraying on unpaved roads will be performed.</li><li>❖ Dust collector is installed in the project factory.</li><li>❖ The use of emission control technologies should be enforced in industries.</li></ul>
Noise Pollution	<ul style="list-style-type: none"><li>❖ The noise can be decreased by repairing and checking the toughness of the vehicles, the power of the vehicles, the suspension of the car body, the exhaust pipe and silencers.</li><li>❖ Operational hours will be strictly limited to avoid nighttime noise pollution.</li></ul>
Solid Waste Generation	<ul style="list-style-type: none"><li>❖ Waste segregation is implemented at the source to separate recyclables, hazardous waste, and general waste.</li><li>❖ Recycling and reuse programs will be promoted to reduce landfill waste.</li><li>❖ Proper disposal of hazardous waste will be ensured in compliance with environmental regulations.</li></ul>

## **7 ENVIRONMENTAL MANAGEMENT PLAN AND MONITORING PLAN**

### **7.1 Objectives of Environmental Management Plan**

The purpose of Environmental Management Plan (EMP) is to structure and guide all activities during all phases of the project to ensure orderly, safe, compliant and environmentally and socially responsible project operations. Key objectives of the EMP are as follows:

- To ensure continuing compliance with legal Requirements and government policies;
- To provide the initial mechanism for ensuring measures identified in this study to mitigate potentially adverse impacts are implemented;
- To provide framework for mitigation impacts during project execution;
- To provide assurance to regulation and stakeholder that their requirement with respect to health and safety environment;
- To undertake monitoring to demonstrate that prediction made within this EMP are valid, and
- To provide a framework for the compliance with auditing and inspection programs.

The environmental and social management plan is an important tool to ensure that the health, safety and security of people and communities within and vicinity of the project are protected.

An EMP; which is important in managing the impact of the proposed project, is constructed based on the findings of initial assessment. EMP is an integral part of the health, safety and environmental management system. This is also tool to ensure the impacts are properly managed.

### **7.2 Environmental Management Organization, Role and Responsibility**

#### **7.2.1 Organization of Environmental and Social Management Plan and Monitoring**

Nippon Paint (Myanmar) Company Limited will set up the organizations including representative person of various departments. Managing Director will supervise the organizations to implement the Environmental and Social Management and Monitoring Plan. The organization chart for Environmental and Social Management Plan is as shown in Figure 7.1.





**Figure 7-1 Organization chart for Environmental and Social Management Plan**

At present, the following representative persons are assigned to implement the Environmental Management Plan as listed in Table 7.1.

**Table 7-1 Representative person for Environmental and Social Management Plan**

Sr. No.	Name	Designation	Years in services	Qualification	Duty
1	U Zin Win Tun	Health, Safety and Environment Officer	2 Months	B E Mechanical	Leader
2	Daw Moe Pyar	Factory Admin	9 years	B.A (Geo)	Member -1
3	U Tint Zaw Oo	Production Supervisor	3 Months	B Sc (Chemistry )	Member -2
4	Daw Aye Zin	Logistics Executive	8.5 years	B.A (Eco)	Member -3
5	U Myo Min	Logistics Executive	2 Years	B.A (Philosophy)	Member -4

### 7.2.2 Duties and Responsibilities

The Organization will perform the followings:

- Implementation of Environmental Management Plan.
- Management for environmental monitoring of the project site and its related area.
- Commissioning of pollution control equipment.
- Specification and regulation of maintenance schedules for pollution control equipment.
- Ensuring that standards of housekeeping in the plant are maintained.
- Ensuring water use is minimized.
- Organizing meetings of the Environmental Management Committee and reporting to the committee.

The organization will also be responsible for monitoring of the plant safety and safety related systems which include:

- Checking of safety related operating conditions.
- Visual inspection of safety equipment.
- Preparation of a maintenance plan and documentation of maintenance work specifying different maintenance intervals and the type of work to be performed.

Other responsibilities of the cell will include:

- Conduct and submit twice a year Environmental Audit regularly.
- The cell will also take mitigation or corrective measures as required or suggested by the Government authorities.
- Keep the management updated on regular basis about the conclusions / results of monitoring activities and proposes measures to improve environment preservation and protection.
- Conduct regular safety drills and training programs to educate employees on safety practices. A qualified and experienced safety officer will be responsible for the identification of the hazardous conditions and unsafe acts of workers and advise on corrective actions, organize training programs and provide professional expert advice on various issues related to occupational safety and health.
- Conduct safety and health audits to ensure that recommended safety and health measures are followed.

The role and responsibilities of the members of organization are described in Table 6.2.

**Table 7-2 Role and Responsibilities of Member of Organization**

<b>Role</b>	<b>Responsibilities</b>
Health, Safety and Environment Officer	<ul style="list-style-type: none"> <li>• Studying the environmental, social management plan and perform the budget allotment by owner or factory manager for monitoring and mitigation measures subjected in environmental and social management plan.</li> <li>• Preparing the monitoring and mitigation measures to respective department</li> <li>• If environmental conservation department instructs to submit new revised EIA/EMP, connect the third party and make the revised report.</li> <li>• Make the other members specified duties.</li> <li>• Report the performance of organization to owner or factory manager</li> <li>• Manage to document the monitoring report.</li> </ul>
Factory Admin	<ul style="list-style-type: none"> <li>• To monitor and assess the implementation of EMP</li> <li>• To discuss the results of EMP with the environmental team</li> <li>• To prepare the monitoring report</li> <li>• To give suggestions for improving EMP</li> <li>• To participate in any environmental and emergency activities</li> </ul>
Production Supervisor	<ul style="list-style-type: none"> <li>• To monitor the parameters described in EMP and</li> </ul>

	ECC <ul style="list-style-type: none"> <li>• To implement the mitigation measures</li> <li>• To report the results of EMP</li> <li>• To inform the environmental team at one when find out some problems to occur</li> </ul>
Logistics Executive	<ul style="list-style-type: none"> <li>• To follow the EMP and aware of environmental impacts</li> <li>• To participate in any environmental and emergency activities</li> </ul>
Logistics Executive	<ul style="list-style-type: none"> <li>• Studying the EIA/EMP report</li> <li>• Arrange to perform the sampling and analyzing of water, waste and soil</li> <li>• Estimate the report to relevant department</li> <li>• Arrange the smooth expenditure of members</li> <li>• Budgetary control</li> <li>• If necessary, manage and make discipline.</li> </ul>

### 7.3 Key Commitment of Proponent for Environmental Management Plan

**Nippon Paint (Myanmar) Company Limited** will comply policy, Myanmar laws and rules, international conventions and agreements, requirements of government institutions as details in **Chapter 2**.

**Nippon Paint (Myanmar) Company Limited** is committing to:

- Comply with all mitigation/enhancement measures identified in this EIA
- Submit regular environmental monitoring reports
- Construct and operate Wastewater Treatment Plant
- Discharge Wastewater with NEQ(E)G.
- Conduct training development related Environmental, Health and Safety issues

**Nippon Paint (Myanmar) Company Limited** sets a high standard for working conditions and job satisfaction. Employees are educated about the entire manufacturing process and cross-trained to perform multiple functions of the Paint Production Plant.

### 7.4 Overall Budget for the EMP

**Nippon Paint (Myanmar) Company Limited** estimated to allocate budget for the implement the Environmental Management Plan. Total estimated overall budget for Environmental Management Plan (i.e., including Estimate Cost for Environmental Monitoring) is 25,700,000 kyats for operation phase and 20,000,000 kyats for closing phase. **Nippon Paint (Myanmar) Company Limited** also commits that additional budget will be provided if this estimated budget is not enough when the environmental management plan is implemented as practically.

Nippon Paint (Myanmar) Company Limited will allocate budget for each management sub-plans and the allocated budget of each sub-plan are as described in Table 7.3.

(Note; *Estimated budget of each sub-plan will include budget of monitoring as described each sub-plans*)

**Table 7-3 Estimated Budget allocation for each sub-plan**

No.	Item	Estimated Budget Allocation (Kyats)
<b>Operation Phase Environmental Management Plan</b>		
1.	<b>Air Quality Management and Monitoring Plan</b> Ambient Air Quality Management and Monitoring Plan (4,000,000) Workplace Air Quality Management and Monitoring Plan (600,000) Electric Generator Exhaust Gas and Dust collector Emission gas Quality Management and Monitoring Plan (1200,000)	5,800,000
2.	<b>Noise Level Management and Monitoring Plan</b> Boundary Noise Level Management and Monitoring Plan (800,000) Workplace Noise Level Management and Monitoring Plan (100,000)	900,000
3.	Vibration Management and Monitoring Plan	1,200,000
4.	Underground water Quality Management and Monitoring Plan	1,800,000
5.	Surface Water Quality Management and Monitoring Plan	1,800,000
6.	Wastewater Quality Management and Monitoring Plan	7,200,000
7.	Soil Quality Management and Monitoring Plan	600,000
8.	Odor Management and Monitoring Plan	1,200,000
9.	Solid Waste Management and Monitoring Plan	600,000
10.	OHS Management and Monitoring Plan	600,000
11.	Biodiversity Management and Monitoring Plan	600,000
12.	Hazardous Chemical Management and Monitoring Plan	1,000,000
13.	Emergency Response Plan	600,000
14.	Archaeology Management and Monitoring Plan	600,000
15.	Socio Economic Management and Monitoring Plan	600,000

16.	Socio Health Management and Monitoring Plan	600,000
<b>Total</b>		<b>25,700,000</b>
<b>Closing Phase Environmental Management Plan</b>		
1.	Air Pollution Management Plan	5,000,000
2.	Water Pollution Management Plan	3,000,000
3.	Soil Contamination Management Plan	1,000,000
4.	Noise/ Vibration, Pollution Management Plan	2,000,000
5.	Waste Management Plan	3,000,000
6.	Occupational Health and Safety Management Plan	3,000,000
7.	Handling of Chemicals Management Plan	3,000,000
<b>Total</b>		<b>20,000,000</b>

## 7.5 Environmental Management and Monitoring Sub-Plans (Operation Phase)

### 7.5.1 Air Quality Management and Monitoring Plan

Air Quality Management and Monitoring Plan will be mainly focused for the operation phase.

#### 7.5.1.1 Ambient Air Quality Management Plan and Monitoring Plan

##### *Objectives*

- To protect the air environment from pollution.
- The measured ambient air quality should be in standard guideline of 1-1 of NEQ(E)G.

##### *Legal Requirement*

Air Quality Management and Monitoring Plan will be undertaken in accordance with Occupational Health and Safety Law (2019), Public Health Law (1972), Environmental Conservation Law (2015), National Environmental Quality (Emission) Guideline and other relevant laws as details in **Chapter 2**. Ambient air quality general guidelines are shown as follow;

#### **Ambient air quality general guidelines (NEQ(E)G 1-1)**

<b>Parameter</b>	<b>Averaging Period</b>	<b>Guideline Value, <math>\mu\text{g}/\text{m}^3</math></b>
Nitrogen Dioxide	1-year	40
	1-hour	200
Ozone	8-hour daily maximum	100
Particulate Matter, $\text{PM}_{10}$	1-year	20
	24-hour	50



Particulate Matter, PM <sub>2.5</sub>	1-year	10
	24-hour	25
Sulfur Dioxide	24-hour	20
	10-minute	500

### *Maps and Photos*

The ambient air quality monitoring point at Entrance Gate (16° 55' 51.23" N, 96° 3' 40.16" E) and at Ah Lal Village Monastery (16° 55' 21.03" N, 96° 3' 53.58" E) are shown in Figure 7.2.



**Figure 7-2 Ambient air quality measuring location point**

**Implementation Schedule**

Ambient air quality is monitored twice a year.

**Management Action**

Ambient air quality management plan is performed by following.

**Ambient Air Quality Management Plan**

Nippon Paint (Myanmar) Company Limited	
Sources	Management Plan
<b>Emitted gases and odors of the vehicle's exhaust gases</b>	<p>-Due to the transportation of raw materials, products, machineries, spare parts, employees air pollutants, such as CO<sub>2</sub>, CO, SO<sub>2</sub> and carbon particles are emitted.</p> <p>-Thus, it is necessary management to reduce the vapor and gases emissions to the air.</p> <p><b>Car pool system</b> – carpool with each other instead of running separately, reducing the usage of vehicles,</p> <p><b>Maintain the vehicles</b> – get regular tune-ups, follow the manufacturer's maintenance schedule, and use the recommended motor oil, usually managing the engine power of the vehicles and the machinery good power condition.</p> <p>-To reduce SO<sub>x</sub> emissions, use vehicles that are more efficient and less polluting and good quality fuels.</p> <p>-The emitted carbon dioxide gas and the water vapor can be reduced by planting trees in the project backyard</p>
<b>Emitted gases and odors of the electric generators' exhaust</b>	<p>-The generators are used for emergency back-up when power fails. Generator exhaust contains high levels of carbon dioxide and sometimes carbon monoxide when efficiency is low.</p> <p>-To be high efficiency of engine power and routine maintenance is carried out.</p>
<b>Leakage of gases from transformers, refrigerator and air condition</b>	<p>-Check and repair by authorized person.</p> <p>-routine maintenance of refrigerator and air condition</p> <p>-installed safeguard</p> <p>-operator refrigeration unit by SOP</p>
<b>dust and fine particles during loading, unloading of raw materials as powder form and fine particles come out during mixing raw materials and solvents</b>	<p>-handling in gently when working with powder form raw materials and solvents,</p> <p>-not opening the lids of containers,</p> <p>-not storing solvents at higher temperature,</p> <p>-checking the spills and leaks of solvents</p> <p>-wiping out and repairing, collecting, treating with equipment such as dust collectors</p> <p>-disposed fine particles in systematic under control of YCDC or DOWA</p>

<b>Gaseous &amp; VOC, Dust Emission</b>	<ul style="list-style-type: none"><li>-Install good ventilation system.</li><li>-Regular checking of dust collector</li><li>-Regular maintenance of dust collector</li><li>-Regular checking of dust collection pipeline</li><li>-Careful handling and weighing of the pigment powder</li><li>-Regular checking of VOC emission stack and monitoring according to schedule</li><li>-Regular checking of connecting pipeline</li></ul>
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***Monitoring plan***

Professional instrumentation and air quality monitoring expert person are hired by project and monitor ambient air quality twice a year at specified point.

***Methodology***

Ambient air quality is measured and results are compared with standard to assess the condition of pollution. The two consecutive results are compared to assess the pollution is better or worse.

***Form of monitoring for ambient air quality***

Form of ambient air quality monitoring is shown as follow and it includes parameters, measuring method, time schedule, monitoring place, frequency and recorded method and standard reference.

Form of Ambient Air Monitoring Plan

Nippon Paint (Myanmar) Company Limited												
Sr. No.	Parameters	Unit	Measurement Methods	Time Schedule	Measured Place	Budget Allotment	Frequency	Recorded Method				The Standards and Reference *NEQ(E)G
								Previous and Present Data Comparison Method				
								Previous Data	Present Data		More/ Less	
									Date	Value		
1.	The particulate matters PM <sub>2.5</sub>  PM <sub>10</sub>	 µg/m <sup>3</sup>  µg/m <sup>3</sup>	HAZ Scanner Model EPAS	October April	-at Entrance Gate (16°55' 51.23"N, 96°3' 40.16" E)  -Ah Lel Village Monastery (16°55' 21.03"N, 96°3' 53.58" E)	4,000,000	Twice a year					10 – 1 year 25 – 24 hours  20 – 1 year 50 – 24 hours
2.	Sulfur Dioxide	µg/m <sup>3</sup>										20 – 24 hours 500 – 10 minutes
3.	Nitrogen Oxide	µg/m <sup>3</sup>										40 – 1 year 200 – 1 hour
4.	Ozone	µg/m <sup>3</sup>										100 – 8 hours daily maximum

**Estimated Budget and Responsible Team**

Estimated budget amount for ambient air quality monitoring is as follow and if it not be sufficient, extra allotment is planned.

**Estimated budget for ambient air quality monitoring**

Sr.No.	Purposes	Estimated Expenditure (MMK)
1	Ambient air quality measuring 1,000,000 x 2 x 2	4,000,000

Responsible team for monitoring the ambient air quality is shown at paragraph 7-2-1 and also duties are at 7-2-2.

**7.5.1.2 Workplace Air Quality Management Plan and Monitoring Plan****Objective**

- To protect the employees by impact of workplace air quality
- To assess the pollution condition of workplace

**Legal Requirement**

There are no direct guideline and it is assumed that workplace air quality is influenced by emitted gases of combustion of boiler and electric generator and refer as NEQ(E)G 1-1.

Combustion technology	Particulate matter PM <sub>10</sub>	Sulfur dioxide	Nitrogen dioxide
Liquid	150 mg/Nm <sup>3</sup>	2000 mg/Nm <sup>3</sup>	460 mg/Nm <sup>3</sup>

**Maps and Photos**

The workplace air quality monitoring point is at the Production Area (16° 55' 53.44" N, 96° 3' 41.12" E) as shown in Figure 7.3.





**Figure 7-3 Workplace air quality measuring location point**  
**Implementation Schedule**

Workplace air quality is monitored twice a year.

**Management Action**

Workplace air quality management plan is performed by following.

**Workplace air quality management plan**

Nippon Paint (Myanmar) Company Limited	
Sources	Management Plan
<b>Leakage of gases from transformers oil vapour, refrigerant from air condition refrigerator</b>	<ul style="list-style-type: none"> <li>- Check and repair the transformer by authorized person</li> <li>- Good maintenance and preventive precaution for refrigerator, air condition, water cooler</li> <li>- Operate refrigeration unit by SOP</li> </ul>
<b>Emitted gases and odors of the electric generators' exhaust</b>	<ul style="list-style-type: none"> <li>- The generators are used for emergency back-up when power fails. Generator exhaust contains high levels of carbon dioxide and sometimes carbon monoxide when efficiency is low.</li> <li>- To be high efficiency of engine power and routine maintenance is carried out.</li> <li>- Not to be overload (Match engine power and loads)</li> </ul>
<b>Dust and fine particles during loading, unloading of raw materials as powder form and fine particles come out during</b>	<ul style="list-style-type: none"> <li>-handling in gently when working with powder form raw materials and solvents,</li> <li>-not opening the lids of containers, mixing tanks unnecessary condition</li> <li>-not storing solvents at higher temperature,</li> <li>-checking the spills and leaks of solvents</li> <li>-wiping out and repairing, collecting, treating with equipment such as dust</li> </ul>

<b>mixing raw materials and solvents</b>	collectors -disposed fine particles in systematic under control of YCDC or DOWA
<b>Gaseous &amp; VOC , Dust Emission</b>	-Install good ventilation system. -Regular checking of dust collector -Regular maintenance of dust collector -Regular checking of dust collection pipeline -Careful handling and weighing of the pigment powder -Regular checking of VOC emission stack and monitoring according to schedule -Regular checking of connecting pipeline

***Monitoring Plan***

Professional instrumentation and air quality monitoring expert person are hired by project and monitored workplace air quality twice a year at specified point.

***Methodology***

Workplace air quality is monitored and results are compared with standard to assess the condition of pollution. The two consecutive results at the same point are compared to assess the pollution is better or worse.

***Report form of monitoring for workplace air quality***

Report form of workplace air quality monitoring is shown as follows and it includes parameter, measuring method, time schedule, monitoring place, frequency recorded method, standard reference.

# Environmental Impact Assessment (EIA) Report

Nippon Paint (Myanmar) Company Limited

## Report Form of Workplace Air Quality Monitoring Plan

Sr. No.	Parameters	Unit	Measurement Methods	Time Schedule	Measured Place	Estimated budget	Frequency	Recorded Method					The Standards and Reference *NEQ(E)G	
								Previous and Present Data Comparison Method						
								Previous Data		Present Data		More/ Less		
								Date	Value	Date	Value			
1.	Particulate Matter, PM10	µg/m³	PM meter (Aeroqual 500) Kane 98	October April	Production Area (16° 55' 53.44" N, 96° 3' 41.12" E)	600,000	Twice a year						50 µg/m³ 24-hours	
2.	Sulphur dioxide	µg/m³												20 µg/m³ 24-hours
3.	Nitrogen Oxide	µg/m³												200µg/m³ 1-hour
4.	Particulate matter, PM <sub>2.5</sub>	µg/m³												25 µg/m³ 24-hours
5.	Ozone	µg/m³												100µg/m³ 8-hour daily Maximum

**Estimated Budget and Responsible Team**

Estimated budget amount for workplace air quality monitoring is as follow and if it not be sufficient, extra allotment is planned.

**Estimated budget for workplace air quality monitoring**

Sr.No.	Purposes	Estimated Expenditure (MMK)
1	workplace air quality measuring 300,000 x 2	600,000

Responsible team for monitoring and reporting the workplace air quality is shown at paragraph 7.2.1 and also duties are at 7.2.2.

**7.5.1.3 Electric Generator Exhaust Gas and Dust Collector Emission gas Quality Management Plan and Monitoring****Objective**

To assess the electric generator exhaust gas and dust collector emission gas quality, this influenced the workplace air quality.

If it is beyond the standard there makes to be better.

**Legal Requirement**

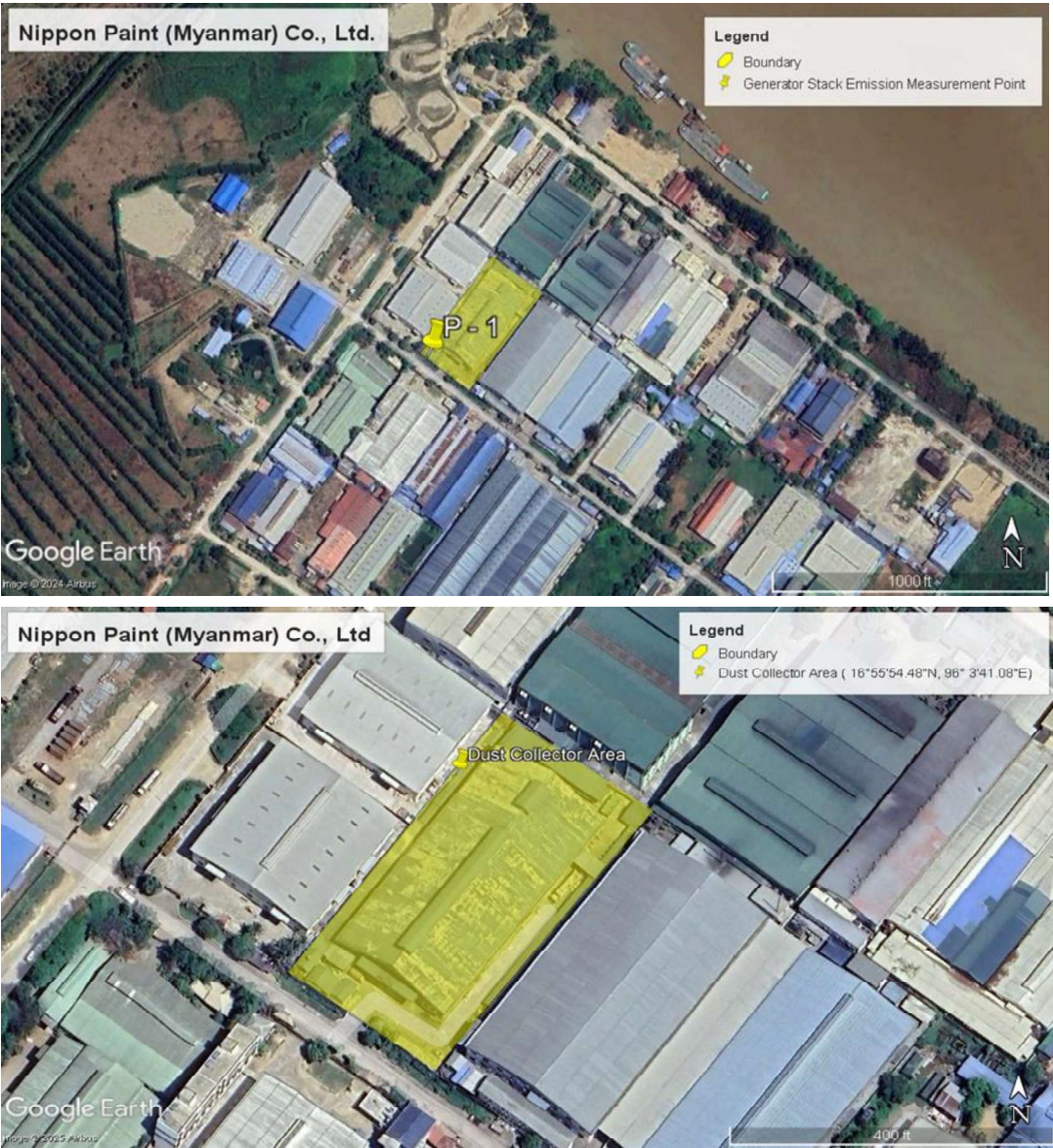
The electric generator exhaust gas quality standard is NEQ(E)G 1-1 as follow.

Combustion technology	Particulate matter PM <sub>10</sub>	Sulfur dioxide	Nitrogen dioxide
Liquid	150 mg/Nm <sup>3</sup>	2000 mg/Nm <sup>3</sup>	460 mg/Nm <sup>3</sup>

**Maps and Photos**

Electric generator exhaust gas and dust collector emission gas quality monitoring point are 16°55'51.70"N, 96° 3'39.25"E and, 16°55'54.48"N, 96° 3'41.08"E. The photos of points are shown as follows.





**Figure 7-4 Location point of electric generator stack emission measuring**  
***Implementation Schedule***

Electric generator exhausts gas and dust collector emission gas quality is monitored twice a year.

***Management Action***

Electric generator exhausts gas and dust collector emission gas quality management plan is performed by following.

**Electric generator exhaust gas quality management plan**

Nippon Paint (Myanmar) Company Limited	
Sources	Management Plan
Electric generator	- used low Sulphur diesel oil as fuel



exhaust gas, Dust Collector emission gas	<ul style="list-style-type: none"><li>- good maintenance of engine and regularly repair</li><li>- not over load ( match the load and generator capacity)</li><li>- Regular checking of dust collector</li><li>- Regular maintenance of dust collector</li><li>- Regular checking of dust collection pipeline</li></ul>
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***Monitoring Plan***

Professional instrumentation and air quality monitoring expert person are hired by project and monitored electric generator exhaust gas quality twice a year.

***Methodology***

Electric generator exhaust gas quality and dust collector emission gas quality is monitored and results are compared with standard to assess the condition of pollution. The two consecutive results are compared to assess the pollution is better or worse.

***Report form of electric generator exhaust gas quality monitoring plan***

Report form of electric generator exhaust gas and dust collector emission gas quality monitoring is shown as follows and it includes parameter, measuring method, time schedule, monitoring place, frequency recorded method, standard reference.

Report Form of Electric Generator Exhaust Gas and Dust Collector Emission Gas Quality Monitoring Plan

Sr. No.	Parameters	Unit	Measurement Methods	Time Schedule	Measured Place	Estimated budget	Frequency	Recorded Method						The Standards and Reference *NEQ(E)/G
								Previous and Present Data Comparison Method						
								Previous Data		Present Data		More/ Less		
								Date	Value	Date	Value	Date	Value	
1.	Particulate Matter, PM <sub>10</sub>	mg/N m <sup>3</sup>	PM meter (Aeroqual 500)  Kane 98	October  April	Electric generator exhaust pipe 16°55'51.70"N, 96° 3'39.25"E <b>Dust Collector</b> 16°55'54.48"N, 96° 3'41.08"E	600,000	Twice a year							150 mg/Nm <sup>3</sup>
2.	Sulphur dioxide	mg/N m <sup>3</sup>												2000 mg/Nm <sup>3</sup>
3.	Nitrogen Oxide	mg/N m <sup>3</sup>												460 mg/Nm <sup>3</sup>
4.	Particulate Matter, PM <sub>2.5</sub>	mg/N m <sup>3</sup>												25

**Estimated Budget and Responsible Team**

Estimated budget amount for electric generator exhaust gas and Dust Collector emission gas quality monitoring is as follow and if it not be sufficient, extra allotment is planned.

**Estimated budget for electric generator exhaust gas quality monitoring**

Sr.No.	Purposes	Estimated Expenditure (MMK)
1	Electric generator exhaust gas and Dust Collector emission gas quality measuring 300,000 x 2 x 2 Twice a year x one point	1200,000 MMK

Responsible team for monitoring and reporting the electric generator exhaust gas and dust collector emission gas quality is shown at paragraph 7.2.1 and also duties are at 7.2.2.

**7.5.2 Noise Level Management Plan and Monitoring Plan****7.5.2.1 Noise Level at Boundaries of site****Objective**

- To protect the environment from noise pollution
- The measured noise level should be in standard guideline of 1-3 of NEQ(E)G

**Legal Requirement**

Noise Level Management and Monitoring Plan will be undertaken in accordance with Occupational Health and Safety Law (2019), Public Health Law (1972), Environmental Conservation Law (2015), National Environmental Quality (Emission) Guideline (2015) and other relevant laws as details in Chapter 2. Standard guidelines of noise level are shown as 1-3 of NEQ(E)G and it is shown as following.

**Noise Level**

Receptor	One Hour LAeq (dBA) <sup>a</sup>	
	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
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**Maps and Photos****Location of Boundaries Noise Measurement Point**

SR.No	Coordinate Point
1	16° 55' 50.78" N, 96° 3' 40.75" E
2	16° 55' 51.81" N, 96° 3' 39.00" E
3	16° 55' 54.95" N, 96° 3' 41.95" E
4	16° 55' 53.78" N, 96° 3' 43.14" E



**Figure 7-5 location of Boundary noise measurement point**  
**Implementation Schedule**

Noise level at specified points is measured twice year.

**Management Plan**

Noise level management plan is performed by following.

**Noise level management plan**

Nippon Paint ( Myanmar) Company Limited	
Sources	Management Plan in Brief
Vehicles activity	-The noise can be decreased by repairing and checking the toughness of the vehicles, the power of the vehicles, the suspension of the car body, the exhaust pipe and silencers.

Machineries	-the alignment of the machines the toughness, refilling the lubricants, normal tension of belt; tightening the foundation bolts nuts are checked and mended to reduce the impact by those action to the environment.
Provision of PPE and arrangement	-Proceeding to wear the protection equipment such as the ear cover and the shoes, and the hats for the employees; transferring the duty places not to be long time working in one place are processed to reduce the impacts by the noise and the vibration.

***Monitoring Plan***

Noise level monitoring expert person are hired by project and monitored noise level at specified point twice a year.

***Methodology***

Noise level monitored and results are compared with standard to assess the condition of pollution. The two consecutive results at same place are compared to assess the pollution is better or worse.

***Report form of Boundary noise level monitoring plan***

Report form of Boundary noise level monitoring plan is shown as follows and it includes parameter, measuring method, time schedule, monitoring place, frequency recorded method, standard reference.



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Nippon Paint (Myanmar) Company Limited

Form of Noise Level Monitoring Plan

Sr. No.	Parameters	Unit	Measureme nt Methods	Time Schedule	Measured Place	Budget	Frequency	Recorded Method					The Standards and Reference *NEQ(E)G
								Previous and Present Data Comparson Method					
								Previous Data		Present Data		More/ Less	
								Date	Value	Date	Value		
1.	The Noise	dBA	Noise meter	October April	16° 55' 50.78" N, 96° 3' 40.75" E 16° 55' 51.81" N, 96° 3' 39.00" E 16° 55' 54.95" N, 96° 3' 41.95" E 16° 55' 53.78" N, 96° 3' 43.14" E	800,000	Twice a year					70	

**Estimated Budget and Responsible Team**

Estimated budget amount for Boundary noise level monitoring is as follow and if it not be sufficient, extra allotment is planned.

**Estimated budget for Boundary noise level monitoring plan**

Sr.No.	Purposes	Estimated Expenditure (MMK)
1	Boundary noise level monitoring 100,000 x4 x 2 Twice a year x 4 point	800,000 MMK

Responsible team for monitoring and reporting of Boundary noise level is shown at paragraph 7.2.1 and also duties are at 7.2.2.

**7.5.2.2 Workplace Noise Level Management and Monitoring Plan****Objective**

- To protect employee from noise pollution
- The measured noise level should be in standard guideline of 1-3 of NEQ(E)G

**Legal Requirement**

Standard guidelines of noise level are shown as 1-3 of NEQ(E)G and it is shown as following.

**Noise Level**

Receptor	One Hour LAeq (dBA) <sup>a</sup>	
	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

**Maps and Photos**

The workplace noise level monitoring point are at 16° 55' 53.44" N, 96° 3' 41.12" E at the production area and the photo of point is shown as follows.



**Figure 7-6 location of workplace noise level monitoring point**  
**Implementation Schedule**

Workplace noise level at specified points is measured twice a year.

#### **Management Plan**

Noise level management plan is performed by following.

#### **Noise level management plan**

Nippon Paint (Myanmar) Company Limited	
Sources	Management Plan in Brief
<b>Vehicles activity</b>	-The noise can be decreased by repairing and checking the toughness of the vehicles, the power of the vehicles, the suspension of the car body, the exhaust pipe and silencers.
<b>Machineries</b>	-the alignment of the machines the toughness, refilling the lubricants, normal tension of belt; tightening the foundation bolts nuts are checked and mended to reduce the impact by those action to the environment
<b>Provision of PPE and arrangement</b>	-Proceeding to wear the protection equipment such as the ear cover and the shoes, and the hats for the employees; transferring the duty places not to be long time working in one place are processed to reduce the impacts by the noise and the vibration.

#### **Monitoring Plan**

Noise level monitoring expert person are hired by project and monitored noise level at specified point twice a year.

#### **Methodology**

Noise level monitored and results are compared with standard to assess the condition of pollution. The two consecutive results at same place are compared to assess the pollution is better or worse.

***Report form of workplace noise level monitoring plan***

Report form of workplace noise level monitoring is shown as follows and it includes parameter, measuring method, time schedule, monitoring place, frequency recorded method, standard reference.

Environmental Impact Assessment (EIA) Report

Nippon Paint (Myanmar) Company Limited

Report Form of Workplace Noise Level Monitoring Plan

Sr. No.	Parameters	Unit	Measurement Methods	Time Schedule	Measured Place	Estimated budget	Frequency	Recorded Method						The Standards and Reference *NEQ(E)G
								Previous and Present Data Comparison Method				More/ Less		
								Previous Data		Present Data				
								Date	Value	Date	Value	Date	Value	
	The Noise	dBA	Noise meter	October April	16° 55' 53.44" N, 96° 3' 41.12" E at the production area	100,000	Twice a year							70



**Estimated Budget and Responsible Team**

Estimated budget amount for workplace noise level monitoring is as follow and if it not be sufficient, extra allotment is planned.

**Estimated budget for workplace noise level monitoring plan**

Sr.No.	Purposes	Estimated Expenditure (MMK)
1	Workplace noise level monitoring 50,000 x1 x 2 Twice a year x 1point	100,000 MMK

Responsible team for monitoring and reporting of workplace noise level is shown at paragraph 7.2.1 and also duties are at 7.2.2.

**7.5.3 Vibration Management and Monitoring Plan****Objective**

- To protect the environment by impact of vibration
- If impact of vibration is significant, there be reducing of impact

**Legal Requirement**

Vibration Management Plan will be undertaken in accordance with Occupational Health and Safety Law (2019), Public Health Law (1972), Environmental Conservation Law (2015), National Environmental Quality (Emission) Guideline (2015) and other relevant laws as details in Chapter 2. Vibration standard guidelines are referred as D 4150-3:1999 and it is shown as following.

**Vibration Velocity**

Line	Type of structure	Vibration peak particle velocity (mm/s)			
		Foundation frequency			Plane of floor of uppermost storey
		Less than 10 Hz	10 to 50 Hz	50 to 100 <sup>+</sup> Hz	Frequency mixture
1	Building use for commercial purpose, industrial building and building of similar design	20	20 to 40	40 to 50	40
2	Dwelling and building of similar design and/or use	5	5 to 15	15 to 20	15
3	Structure that, because of their sensitivity to vibration do not correspond to those listed in Lines 1 and 2 and are of great intrinsic value (e.g building that are under a preservation order	3	3 to 8	8 to 10	8

\*for frequency above 100Hz, at least the value specified in this column shall be applied

### Maps and Photos

Vibration measuring points are at Near Security Gate of Project **and** Ah Lal Ywar Village Monastery and the photo of points are shown as follows;

Location of vibration measurement

SR. No.	Point	Latitude	Longitude	Description
1	VMP-1	16° 55' 51.24" N	96° 3' 40.12" E	Near Security Gate of Project
2	VMP-2	16° 55' 21.03" N	96° 3' 53.59" E	Ah Lal Ywar Village Monastery



Figure 7-7 location of vibration measuring point

### Implementation Schedule

Vibration measurement is performed at specified points twice a year.

### Management Plan

Vibration level management plan is performed by following

#### Vibration level management plan

Nippon Paint (Myanmar) Company Limited	
Sources	Management Plan in Brief
<b>Rotating components of machines</b>	<ul style="list-style-type: none"> <li>-adjust the unbalancing</li> <li>-adjust the misalignment</li> <li>-tightening the looseness</li> <li>-Reduce the rubbing action</li> </ul>
<b>Foundation</b>	<ul style="list-style-type: none"> <li>-good foundation structure</li> <li>-tightening the foundation bolt nuts</li> <li>-isolating dumping or absorbing material</li> </ul>

	-absorbing the vibration ( Spring box or -) - measure the vibration level and repair if necessary
--	--

***Monitoring Plan***

Vibration level monitoring expert person are hired by project and monitored at specified point twice a year.

***Methodology***

Vibration level is monitored and results are compared with standard to assess the impact of vibration. The two consecutive results at same point are compared to assess the better or worse.

***Report form of vibration level monitoring plan***

Report form of vibration level monitoring plan is shown as follows and it includes parameter, measuring method, time schedule, monitoring place, frequency recorded method, standard reference.

# Environmental Impact Assessment (EIA) Report

Nippon Paint (Myanmar) Company Limited

## Report Form of Vibration Level Monitoring Plan

Sr. No.	Parameters	Unit	Measurement Methods	Time Schedule	Measured Place	Estimated budget	Frequency	Recorded Method					The Standards and Reference
								Previous and Present Data Comparison Method				More/ Less	
								Previous Data	Present Data		Value		
									Date	Value			
	Vibration	mm/sec	Vibration meter	October April	-16° 55' 51.24" N, 96° 3' 40.12" E Near Security Gate of Project - 16° 55' 21.03" N, 96° 3' 53.58" E Ah Lal Ywar Village Monastery	1,200,000	Twice a year						3mm/sec

**Estimated Budget and Responsible Team**

Estimated budget amount of vibration level monitoring is as follow and if it not be sufficient, extra allotment is planned.

**Estimated budget for workplace Vibration level monitoring plan**

Sr.No.	Purposes	Estimated Expenditure (MMK)
1	Vibration level monitoring 300,000 x2x 2 Twice a year x 2 point	1,200,000 MMK

Responsible team for monitoring and reporting of vibration level is shown at paragraph 7.2.1 and also duties are at 7.2.2.

**7.5.4 Underground Water Quality Management and Monitoring Plan****Objective**

- To protect the ground water quality to be used as drinking water

**Legal Requirement**

Referring the -the underground water Act, 21<sup>st</sup> – June 1930

-the conservation of water resource and river law, the state peace and development council law No 8/2006 8-10-2006

-2019 National Drinking Water Standard

**2019 National Drinking Water Standard**

SR.No	Parameter	Unit	Value	Remark
1	Turbidity	NTU	5	
2	Arsenic	mg/l	0.05	
3	Aluminum	mg/l	0.2	
4	Chloride	mg/l	250	
5	Copper	mg/l	2-0	
6	Cyanide	mg/l	0.07	
7	Managanese	mg/l	0.4	
8	pH	-	6.5~8.5	
9	Sulphate	mg/l	250	
10	Total AlkaLineity as CaCO <sub>3</sub>	-	-	
11	Total Dissolved Solid	mg/l	1000	
12	Total Hardness as CaCO <sub>3</sub>	mg/l	500	



13	Total Iron	mg/l	1	
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**Maps and Photos**

Three underground water samples are collected and analyzed. The sampling points are shown as following.

Sampling Name	Coordination Points		Description of Location
	Latitude	Longitude	
GW1	16° 55' 51.04" N,	96° 03' 40.17" E	Tube Well within the Project Site
GW2	16°55' 21.31"N	96°03' 53.32"E	Tube Well at Church, Ah Lel Ywar Village
GW3	16° 55' 23.15" N	96° 03' 52.30" E	Tube Well at Aung Zay Yar Min Monastery, Ah Lel Ywar Village



**Figure 7-8 location of underground water sampling points**

**Implementation Schedule**

Underground water samples are collected at specified point and analyzed twice a year.

**Management Plan**

Underground water quality management plan is performed by following.

**Underground water quality management plan**

Nippon Paint( Myanmar) Company Limited	
Sources	Management Plan in Brief

<b>Groundwater usage</b>	<ul style="list-style-type: none"><li>- Only use approved and permitted groundwater wells; and</li><li>- Record and follow-up water consumption to avoid excessive consumption</li><li>- Don't Wastewater when not in use.</li><li>- Inspect and maintain the water pipeline to prevent the leakage.</li></ul>
<b>Spillage</b>	-spillages of fuel, chemicals, lubricant oils, battery acid etc are prevented.
<b>Disposal of waste</b>	-properly disposed or disposed by authorized party for hazardous waste
<b>Dumping the waste</b>	-strictly prohibited
<b>Septic tank</b>	-to be enough naturally treated.
<b>Wastewater</b>	-wastewater quality is under standard
<b>Checking</b>	-underground water samples are regularly checked and repair if necessary.

***Implementation Schedule***

Quality of underground water sampled at specified point and analyzed at approved laboratory twice a year.

***Monitoring Plan***

Expert laboratory person are hired by project and analyzed twice a year.

***Methodology***

Underground water quality is compared with standard to assess the condition of pollution. The two consecutive results at same point are compared to assess the better or worse.

***Report form of underground water quality monitoring plan***

Report form of underground water quality monitoring plan is shown as follows and it includes parameter, measuring method, time schedule, monitoring place, frequency recorded method, standard reference.

# Environmental Impact Assessment (EIA) Report

Nippon Paint (Myanmar) Company Limited

## Report Form of Underground Water Quality Monitoring Plan

Sr. No.	Parameters	Unit	Measurement Methods	Time Schedule	Measured Place	Estimate d budget	Frequency	Recorded Method					2019 National Drinking Water Standard		
								Previous and Present Data				More / Less			
								Previous Data	Present Data		Value				
									Date	Value				Date	Value
	Aluminum	mg/L	Spectrophotometer	October	- 16° 55'51.04"N, 96° 03' 40.17" E Tube	1,800,000	Twice a year					0.2			
	Arsenic	mg/L	APHA-AWWA-WPCF	September	Well within the Project Site							0.05			
	Chloride	mg/L	APHA-AWWA-WPCF									250			
	Copper	mg/L	Spectrophotometer		-16° 55 '21.31 "N							2			
	Cyanide	mg/L	Spectrophotometer		96°03' 53.32"E Tube							0.07			
	Manganese	mg/L	Spectrophotometer		Well at Church,							0.4			
	pH	-	pH meter		Ah LeI Ywar Village							6.5~8.5			
	Sulfate	mg/L	APHA-AWWA-WPCF		-16° 55' 23.15" N 96° 03' 52.30" E Tube							250			
	Total Alkalinity as CaCO <sub>3</sub>	mg/L	APHA-AWWA-WPCF		Well at Aung Zay							-			
	Total Dissolved Solids	mg/L	APHA-AWWA-WPCF		Yar Min Monastery, Ah LeI Ywar Village							1000			
	Total Hardness as CaCO <sub>3</sub>	mg/L	APHA-AWWA-WPCF									500			
	Total Iron	mg/L										0.3			
	Turbidity	mg/L NTU	Trubidity mttter									1			
												5			

**Estimated Budget and Responsible Team**

Estimated budget amount of underground water quality monitoring is as follow and if it not be sufficient, extra allotment is planned.

**Estimated budget for underground water quality monitoring plan**

Sr.No.	Purposes	Estimated Expenditure (MMK)
1	Underground water quality monitoring 300,000 x3 x 2 Twice a year x3 point	1,800,000 MMK

Responsible team for monitoring and reporting of underground water quality monitoring is shown at paragraph 7.2.1 and also duties are at 7.2.2.

**7.5.5 Surface Water Quality Management and Monitoring Plan****Objective**

- To protect the surface water quality.
- To facilitate the livelihood of the surround people alongside the surface water.

**Legal Requirement**

Surface Water Quality Management and Monitoring Plan will be undertaken in accordance the Conservation of Water Resource and River Law (2006), Public Health Law (1972), Environmental Conservation Law (2015), National Environmental Quality (Emission) Guideline (2015), NEQEG General Application and National Surface Water Quality Standard (MM S 44:2024) (Environmental Conservation Class IV) and other relevant laws as details in Chapter 2.

**Maps and Photos**

The three surface water samples are collected and analyzed. The sampling points are shown as following.

Sampling Name	Coordinate Point		Description of Location
	Latitude	Longitude	
WSP -1	16° 55' 40.81" N	96° 4' 15.57"E	Downstream of Hlaing River
WSP -2	16° 56' 04.86" N	96° 3' 45.99"E	Midstream of Hlaing River (near wastewater discharge point of Industrial Compound)
WSP -3	16° 56' 11.30" N	96° 3' 40.69"E	Upstream of Hlaing River



**Figure 7-9 location of Surface water sampling points**

#### **Management Plan**

Surface water (Hlaing River) quality management plan is performed as following and there were responsible for the all person stay alongside the Hlaing River.

#### **Management plan**

Nippon Paint (Myanmar) Company Limited	
Sources	Management Plan in Brief
Agricultural activity	-over sediments, nutrients pesticides are prohibited
Farming activity	-wastewater from farming are prohibited or in standard
Sanitary water	-domestic sanitary waste are prohibit
wastewater	-all wastewaters are in standard guideline.
Wastewater treat	-wastewaters quality is under standard
Blocking the flow	-free flowing
Wastewater treatment	-wastewater are treated and under standard.
Solid wastes	-prohibit the disposal of solid waste
Action	-regularly sampling and checking the quality of surface water

#### **Implementation Schedule**

Surface water are sampled at specified point and analyzed at approved laboratory twice a year.



***Monitoring Plan***

Expert laboratory person are hired by project and analyzed twice a year.

***Methodology***

Surface water quality is compared with standard to assess the impact of pollution. The two consecutive results at same point are compared to assess the better or worse.

***Report form of surface water quality monitoring plan***

Report form of surface water quality monitoring plan is shown as follows and it includes parameter, measuring method, time schedule, monitoring place, frequency recorded method, standard reference.

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Nippon Paint (Myanmar) Company Limited

Report Form of Surface Water Quality Monitoring Plan

Sr. No.	Parameters	Unit	Measurement Methods	Time Schedule	Measured Place	Frequency	Estimated budget	Recorded Method					The National Surface Water Quality Standard (MM 44:2024) (Environmental Conservation Class IV)
								Previous and Present Data Comparison Method					
								Previous Data		Present Data		More/ Less	
								Date	Value	Date	Value		
1	Total Suspended Solids	mg/l	APHA-AWWA-WPCF	April September	-16° 55' 40.81" N 96° 4' 15.57"E Down stream of Hlaing River	Twice a year	1,800,000					150	
2	COD	mg/l	APHA-AWWA-WPCF		-16° 56' 04.86" N 96° 3' 45.99"E Midstream of Hlaing River (near wastewater discharge point of Industrial Compound)							100	
3	5 day BOD	mg/l	APHA-AWWA-WPCF									30	
4	Dissolved Oxygen (DO)	mg/L	Jenway Dissolve Oxygen Meter (Model 970)									>2	
5	pH	-	pH meter		-16° 56' 11.30" N 96° 3' 40.69"E Upstream of Hlaing River							-	
6	Ammonia Nitrogen	mg/L	Hach DR 3900 Spectrophotometer, Salicylate Method									0.9	
7	Oil and grease	mg/l	APHA-AWWA-WPCF									Not Noticeably Seen	
8	Escherichia (E.coli)	MPN/ 100 mL (or) CFU/100 mL	FDA-BAM:MPN Method									-	
9	Copper	mg/l	Spectro-photometer									-	

**Estimated Budget and Responsible Team**

Estimated budget amount of surface water quality monitoring is as follow and if it not be sufficient, extra allotment is planned.

**Estimated budget for surface water quality monitoring plan**

Sr.No.	Purposes	Estimated Expenditure (MMK)
1	Surface water quality monitoring 300,000 x3 x 2 Twice a year x 3 point	1,800,000 MMK

Responsible team for monitoring and reporting of surface water quality monitoring is shown at paragraph 7.2.1 and also duties are at 7.2.2.

**7.5.6 Wastewater Quality Management and Monitoring Plan****Objective**

- To protect the water environment from pollution
- The wastewater quality measured should be in standard guideline of 1-2 NEQ(E)G (General Application)

**Legal Requirement**

Referring the effluent level of NEQ(E)G ,1-2(General Application)

Sr.	Parameter	Unit	Guideline Value
1	5-day Biochemical oxygen demand	mg/l	50
2	Ammonia	mg/l	10
3	Arsenic	mg/l	0.1
4	Cadmium	mg/l	0.1
5	Chemical Oxygen Demand	mg/l	250
6	Chlorine (total residual)	mg/l	0.2
7	Chromium (hexavalent)	mg/l	0.1
8	Chromium (total)	mg/l	0.5
9.	Copper	mg/l	0.5
10.	Cyanide (free)	mg/l	0.1
11.	Cyanide (total)	mg/l	1
12.	Fluoride	mg/l	20
13.	Heavy Metals (total)	mg/l	10
14.	Iron	mg/l	3.5

Sr.	Parameter	Unit	Guideline Value
15.	Lead	mg/l	0.1
16.	Mercury	mg/l	0.01
17.	Nickel	mg/l	0.5
18.	Oil and Grease	mg/l	10
19.	pH	S.U	6 – 9
20.	Phenols	mg/l	0.5
21.	Selenium	mg/l	0.1
22.	Silver	mg/l	0.5
23.	Sulphide	mg/l	1
24.	Temperature Increase	°C	<3
25.	Total Coliform bacteria	100ml	400
26.	Total Phosphorus	mg/l	2
27.	Total Suspended Solids	mg/l	50
28.	Zinc	mg/l	2

**Maps and Photos**

Wastewater sample as wastewater treatment outlet (or) treated final discharge wastewater are collected and coordinate point map is as follow.



**Figure 7-10 location of wastewater sampling points**

**Implementation Schedule**

Wastewater sample is collected at specified point and analyzed twice a year.

**Management Plan**

Wastewater quality management plan is performed as following.

**Management plan**

<b>Nippon Paint ( Myanmar) Company Limited</b>	
<b>Sources</b>	<b>Management Plan in Brief</b>
Wastewater from employee's daily usage	<ul style="list-style-type: none"> <li>-flush water toilets is decomposed naturally in the septic tank</li> <li>-clean out by YCDC when full</li> <li>-educating and uniting the employee to reduce the over usage of water</li> </ul>
Spill and leakage of transformer oil, lubricant oil, fuel, battery acid	<ul style="list-style-type: none"> <li>-check and repair the spill and leakage</li> <li>-wipe and cleaning material are disposal by guideline of YCDC</li> <li>-old materials are collected, store and sold out and disposed under guideline of YCDC</li> <li>- Assigning the employees who work neatly and skillfully when renewing, refilling the engine oil, battery acid, lubricant, etc</li> <li>- wiping out the leakages and spillage at once, repairing in time and at once when leak and spill,</li> </ul>
washed water from machinery and pipelines (water based paints section)	-send to wastewater treatment plant
back washed water from water treatment plant	-using the necessary and sufficient amount of back washed water in water treatment plant
Wastewater from wastewater treatment plant	<ul style="list-style-type: none"> <li>-treating the wastewater to be under NEQ(E)G guidelines.</li> <li>-performance by SOP and quality of outlet of the treatment plant should be in standard guideline of NEQ(E)G</li> </ul>

**Monitoring Plan**

Laboratory expert person are hired by project and wastewater are sampled and analyzed twice a year.

**Methodology**

Wastewater quality is compared with standard to assess the condition of pollution. The two consecutive results at same point are compared to assess the better or worse.

**Report form of wastewater quality monitoring plan**



Report form of wastewater quality monitoring plan is shown as follows and it includes parameter, measuring method, time schedule, monitoring place, frequency recorded method, standard reference.

# Environmental Impact Assessment (EIA) Report

Nippon Paint (Myanmar) Company Limited

## Report Form of Wastewater Quality Monitoring Plan

Sr. No	Parameters	Unit	Measurement Methods	Time Schedule	Measured Place	Frequency	Estimated budget	Recorded Method					The Standards and Reference *NEQ(E)G
								Previous and Present Data Comparison Method					
								Previous Data	Present Data		More/ Less		
									Date	Value		Date	
1	5-day Biochemical oxygen demand	mg/l	Spectrophotometer	April September	- wastewater treatment inlet	Twice a year	7,200,000						50
2	Chemical Oxygen Demand	mg/l	APHA-AWWA-WPCF		- wastewater treatment outlet								250
3	Oil and grease	mg/l	APHA-AWWA-WPCF										10
4	pH	-	pH meter										6-9
5	Temperature increase	°C	Thermometer										<3
6	Total Coliform bacteria	100ml	Plate count										400
7	Total phosphorus	mg/l	Spectrophotometer										5
8	Total suspended solids	mg/l	APHA-AWWA-WPCF										50
9	Ammonia	mg/l	LoviBond Spectro-Direct Method 60										10
10.	Arsenic	mg/l	LoviBond Arsenic Test Kit										0.1
11	Cadmium	mg/l	AAS, Shimadzu AA-6200 Cd (228.8 nm)										0.1
12	Chlorine (total residual)	mg/l	LoviBond Spectro-Direct Method 157										0.2
13	Chromium (hexavalent)	mg/l	LoviBond Spectro-Direct Method 125										0.1

*Nippon Paint (Myanmar) Company Limited*

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**Estimated Budget and Responsible Team**

Estimated budget amount of wastewater quality monitoring is as follow and if it not be sufficient, extra allotment is planned.

**Estimated budget for wastewater quality monitoring plan**

Sr.No.	Purposes	Estimated Expenditure (MMK)
1	Wastewater quality monitoring 1,800,000 x2 x 2 1 point and twice a year	7,200,000 MMK

Responsible team for monitoring and reporting of wastewater quality monitoring is shown at paragraph 7.2.1- and also duties are at 7.2.2.

**7.5.7 Soil Quality Management and Monitoring Plan****Objective**

- To protect the soil environment from pollution

**Legal Requirement**

Although there is standard guideline for soil, they are for the polluted one and one of there is stated at section 2-5 of this report. The soil of the proposed plant is industrial area and therefore request to allow that the analyzed parameter of soil of current are as baseline and further data should be compared such as pollution is better or worse.

**Maps and Photos**

Soil was sampled at outside the factory 16°55'51.50" N, 96° 3' 39.09"E shown as follow.



**Figure 7-11 location of soil sampling point  
Management plan**

<b>Nippon Paint (Myanmar) Company Limited</b>	
<b>Sources</b>	<b>Management Plan in Brief</b>
General solid wastes as worn out paper stationaries (old used, ruined) waste of personal wastes of employee	-kept in dustbin with cover and disposed by YCDC guidelines.
Packaging materials such as paper bags, plastic bags, plastic container, cans, rejects of raw materials, products	-collect and reuse at some place, selling and dispose by YCDC guidelines
Solid waste (sludge) from wastewater treatment plant, used materials from water treatment process (such as sand, activated carbon, resin, micro filter cartridge)	-collect and use as natural fertilizer -collect and reuse at some place, selling and dispose by YCDC guidelines

### ***Monitoring Plan***

Laboratory expert person are hired by project and soil sample is collected and analyzed twice a year.

### ***Methodology***

The analyzed data of two consecutives soil samples compared to assess pollution is better or worse.

### ***Report form of soil quality monitoring plan***

Report form of soil quality monitoring plan is shown as follows and it includes parameter, measuring method, time schedule, monitoring place, frequency recorded method, standard reference.



# Environmental Impact Assessment (EIA) Report

Nippon Paint (Myanmar) Company Limited

## Report Form of Soil Quality Monitoring Plan

Sr. No.	Parameters	Unit	Measurement Methods	Time Schedule	Measured Place	Frequency	Estimated budget	Recorded Method					The Standards and Reference *NEQ(E)/G
								Previous and Present Data Comparison Method				More / Less	
								Previous Data		Present Data			
								Date	Value	Date	Value		
1။	Aluminum	mg/kg	Procedures for Soil Analysis, 6 <sup>th</sup> Edition, ISRIC, FAO of the United Nations	April October	-Outside the factory	Twice a year	600,000						
၂။	Arsenic	mg/kg											
၃။	Chloride	mg/kg											
၄။	Copper	mg/kg											
၅။	Cyanide	mg/kg											
၆။	Extractable Acidity	cmol/kg											
၇။	Manganese	mg/kg											
၈။	P-Alkalinity	mmol/l.extract											
၉။	Total Alkalinity	mmol/l.extract											
၁၀။	pH	-											
၁၁။	Total Iron	mg/kg											

**Estimated Budget and Responsible Team**

Estimated budget amount of soil quality monitoring is as follow and if it not be sufficient, extra allotment is planned.

**Estimated budget for Soil quality monitoring plan**

Sr.No.	Purposes	Estimated Expenditure (MMK)
1	Soil quality monitoring 300,000 x2 1 point and twice a year	600,000 MMK

Responsible team for monitoring and reporting of soil quality monitoring is shown at paragraph 6.2.1 and also duties are at 6.2.2.

**7.5.8 Odor Management and Monitoring Plan****Objective**

- To protect the environment from off-odor.

**Legal Requirement**

Standard guideline of odor is stated at 1-4 of NEQ(E)G. It states 'Projects should control odors to ensure that odors that are offensive or unacceptable to neighbor do not occur. Generally, odor levels should not exceed five to ten odorant units at the edge of populated areas in the vicinity of a project.

**Maps and Photos**

To assess the odor, two measurement points are Paint Mixing (Filling Area)(16° 55' 53.09" N, 96° 3' 40.8" E) and Finished Goods (Storage) (16° 55' 52.63" N, 96° 3' 41.46" E). The location map is follow.



**Figure 7-12 location of odor measurement points**

**Implementation Schedule**

The odor levels are measured at the specified place twice a year.

**Management Plan**

Odor level management plan is performed as following.

**Odor level management plan**

Nippon Paint (Myanmar) Company Limited	
Sources	Management Plan
<b>Emitted gases and odors of the vehicle's exhaust gases</b>	<p>-Due to the transportation of raw materials, products, machineries, spare parts, employee's air pollutants such as CO<sub>2</sub>, CO, SO<sub>2</sub> and carbon particles are emitted.</p> <p>-Thus, it is necessary management to reduce the vapor and gases emissions to the air.</p> <p><b>Car pool system</b> – carpool with each other instead of running separately, reducing the usage of vehicles,</p> <p><b>Maintain the vehicles</b> – get regular tune-ups, follow the manufacturer's maintenance schedule, and use the recommended motor oil, usually managing the engine power of the vehicles and the machinery good power condition.</p> <p>-To reduce SO<sub>x</sub> emissions, use vehicles that are more efficient and less polluting and good quality fuels.</p> <p>-The emitted carbon dioxide gas and the water vapor can be reduced by planting trees in the project backyard</p>
<b>Emitted gases and odors of the electric generators' exhaust</b>	<p>-The generators are used for emergency back-up when power fails. Generator exhaust contains high levels of carbon dioxide and sometimes carbon monoxide when efficiency is low.</p> <p>-To be high efficiency of engine power and routine maintenance is carried out.</p>
<b>Leakage of gases from transformers, refrigerator and air condition</b>	<p>-Check and repair by authorized person.</p> <p>-routine maintenance of refrigerator and air condition</p> <p>-installed safeguard</p> <p>-operator refrigeration unit by SOP</p>
<b>dust and fine particles during loading, unloading of raw materials as powder form and fine particles come out during mixing raw materials and solvents</b>	<p>-handling in gently when working with powder form raw materials and solvents,</p> <p>-not opening the lids of containers, mixing tanks unnecessary conditions,</p> <p>-not storing solvents at higher temperature,</p> <p>-checking the spills and leaks of solvents</p> <p>-wiping out and repairing, collecting, treating with equipment such as dust collectors</p> <p>-disposed fine particles in systematic under control of YCDC or DOWA</p>

<b>Gaseous &amp; VOC, Dust Emission</b>	<ul style="list-style-type: none"><li>-Install good ventilation system.</li><li>-Regular checking of dust collector</li><li>-Regular maintenance of dust collector</li><li>-Regular checking of dust collection pipeline</li><li>-Careful handling and weighing of the pigment powder</li><li>-Regular checking of VOC emission stack and monitoring according to schedule</li><li>-Regular checking of connecting pipeline</li></ul>
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***Monitoring Plan***

Odor measured expert person are hired by project and monitor at specified place twice a year.

***Methodology***

Odor measured results are compared with standard to assess the condition of pollution. The two consecutive results of the same place are compared to assess the pollution is better or worse.

***Report form of odor monitoring plan***

Report form of odor monitoring plan is shown as follows and it includes parameter, measuring method, time schedule, monitoring place, frequency recorded method, standard reference.

Environmental Impact Assessment (EIA) Report

Nippon Paint (Myanmar) Company Limited

Report Form of odor Monitoring Plan

Sr. No.	Parameters	Unit	Measurement Methods	Time Schedule	Measured Place	Estimated budget	Frequency	Recorded Method					The Standards and Reference *NEQ(E)G	
								Previous and Present Data Comparison Method				More/ Less		
								Previous Data	Present Data		Value			
									Date	Date				Value
	Odor	5~10	Odor meter	April October	- Paint Mixing (Filling Area) ( 16° 55' 53.09" N, 96° 3' 40.8" E) and Finished Goods (Storage) (16° 55' 52.63" N,96° 3' 41.46" E)	1,200,000	Twice a year					5~10		



***Estimated Budget and Responsible Team***

Estimated budget amount of odor level monitoring plan is as follow and if it not be sufficient, extra allotment is planned.

**Estimated budget for odor quality monitoring plan**

<b>Sr.No.</b>	<b>Purposes</b>	<b>Estimated Expenditure (MMK)</b>
1	Odor monitoring plan 300,000 x2 x 2 2 point and twice a year	1,200,000 MMK

Responsible team for monitoring and reporting of odor quality monitoring is shown at paragraph 7.2.1 and also duties are at 7.2.2.

**7.5.9 Solid Waste Management and Monitoring Plan*****Objective***

- To reduce the waste generation
- To protect occupational and public health, biodiversity

***Legal Requirement***

Solid Waste Management and Monitoring Plan will be undertaken in accordance with Occupational Health and Safety Law (2019), Public Health Law (1972), Prevention and Control of Communicable Diseases Law (Amendment) (2011), Environmental Conservation Law (2015), National Environmental Quality (Emission) Guideline (2015) and other relevant laws as details in **Chapter 2**.

***Maps and Photos***

Photo of temporary storage area of solid waste disposal (16°55' 53.90"N, 96° 3'43.35"E) is as shown in following Figure.



Figure 7-13 Solid waste disposal Area

**Implementation Schedule**

Solid waste Management and Monitoring Plan will be implemented throughout the entire operation phase of the Project.

**Management Actions**

The management actions of **Solid waste Management and Monitoring Plan** will be implemented during the operation phase and is performed as following.

**Solid waste Management Plan**

Nippon Paint (Myanmar) Company Limited	
Sources	Management Plan
<b><u>Non-hazardous Solid Waste</u></b> <b>From Office Work</b> <ul style="list-style-type: none"> <li>- Bulb and lamp (used, broken, damage)</li> <li>- Used stationery (used paper, tonner, ball pan, correction pan)</li> </ul> <b>Used parts of vehicle</b> <ul style="list-style-type: none"> <li>- Used tire and tube</li> <li>- Used battery</li> </ul> <b>Packing materials</b> <b>Used parts of water treatment plant</b>	<ul style="list-style-type: none"> <li>- Solid waste will be segregated into domestic waste and process waste and used by separate bins.</li> <li>- Enough rubbish bins shall be provided at the site of plant.</li> <li>- Any solid waste will not be disposed to the water resources</li> <li>- All domestic solid wastes (non-reusable) will be transferred to the YCDC (Yangon City Development Committee).</li> <li>- Some domestic solid waste (recycle or reusable solid wastes) will be sold to the recycling shop for further use, as appropriate.</li> <li>- All reusable maintenance wastes will be sold to the recycling shop for further use, as appropriate and rest of waste with contaminated oil disposed will be transferred to City Development Committee.</li> <li>- Awareness will be given to employee about handling</li> </ul>

	of solid waste at the Factory.
<p><b><u>Hazardous Solid Waste</u></b></p> <ul style="list-style-type: none"> <li>- The following wastes have been identified as the hazardous wastes generated from Nippon Paint Factory: <ul style="list-style-type: none"> <li>- Used and broken light bulb and lamp</li> <li>- Used battery</li> <li>- Solvent, brocide drums empty</li> <li>- Solvents and paints wipes materials</li> <li>- sludge from wastewater treatment plant</li> <li>- Off- Spec Products</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>- Hazardous Solid wastes will be separated and store in proper labelled container (bins, skips, etc.).</li> <li>- All used hydraulic and lubricant oil will be collected in separate containers.</li> <li>- Use lubricants oil will be sold for further reuse as appropriate.</li> <li>- Sold and use in other purpose, disposed by guideline by YCDC</li> <li>- Some used hydraulic and lubricant oil containers will be reused and the rest may be returned to Supplier.</li> <li>- Other hazardous waste (wastes with contaminated oil) will be transferred to waste disposal site of Yangon City Development Committee.</li> <li>- Used Activated carbon (i.e., Activated carbon are out of spec and cannot regenerate anymore) will be stored with secure container at designated area and it will be transferred to the YCDC (Yangon City Development Committee) and disposed it.</li> <li>- All hazardous solid wastes generated from the laboratory will be transferred to the CDC (Yangon City Development).</li> </ul>

***Monitoring Plan***

Solid waste monitoring plan is shown as follows. The monitoring plan will include parameters, measuring method, time schedule, monitoring place, estimated budget and frequency.

**Solid waste monitoring plan**

Parameters	Unit	Measurement Methods	Time Schedule	Monitoring Place	Estimated budget	Frequency
Solid waste generation	kg	Documentation of record	End of Month	- Solid waste disposal Area at Factory (16°55' 53.90"N, 96° 3'43.35"E)	600,000	Every month

***Estimated Budget and Responsible Team***

Estimated budget amount of solid waste monitoring plan is as follow and if it not be sufficient, extra allotment is planned.

**Estimated budget for solid waste quality monitoring plan**

Sr.No.	Purposes	Estimated Expenditure (MMK)
1	Solid waste generation	600,000 MMK

Responsible team for monitoring and reporting of odor quality monitoring is shown at paragraph 7.2.1 and also duties are at 7.2.2.

**7.5.10 Occupational Health and Safety Management and Monitoring Plan*****Objective***

To protect the employees of the proposed project from health problems and set up the safe works.

***Legal Requirement***

Occupational Health and Safety Management and Monitoring Plan will be undertaken in accordance with Occupational Health and Safety Law (2019), Public Health Law (1972), Environmental Conservation Law (2015), National Environmental Quality (Emission) Guideline (2015) and other relevant laws as details in Chapter 2. There are no direct measurements and it is assessed by indirect measurement such as

- sick leave
- accident and injury record
- average number of working hours for employee
- occupational illness
- days of absence caused by occupational illness, and
- complaints and grievance information

***Maps and Photos***

To assess the occupational health and safety, the skilled administration work person is assigned the duties, to document the records such as sick leaves, accident and injury record, average number of working hour for employees; occupational illness; days of absence caused by occupational illness and complaints and grievance information. Therefore administration office (16° 55' 52.36" N, 96° 3' 39.73" E) is noted as main place of occupational health and safety affairs and it was shown as following.



**Figure 7-14 Administration office location point**  
**Implementation Schedule**

Facts about occupational health and safety are documented by monthly.

#### **Management Plan**

Management plan for occupational health and safety is as follow.

<b>Nippon Paint (Myanmar) Company Limited</b>	
<b>Sources</b>	<b>Management Plan in Brief</b>
Occupational Health and Safety	<ul style="list-style-type: none"> <li>-Ensure necessary facilities are provided according to Factories Act.</li> <li>-Regular medical checkup for workers.</li> <li>-Give the OHS training for new workers regularly.</li> <li>-Record the accident and injuries.</li> </ul>
<b>Dust and particles</b> (Explosion, nuisance, eye irritation, respiratory infection probably suffer cancer) <b>Emitted vapour</b>	<ul style="list-style-type: none"> <li>-powerful engine for vehicles and generators</li> <li>-good maintenance</li> <li>-use good quality fuel</li> <li>-good ventilation</li> <li>-good quality PPE</li> </ul>
<b>Accident and injury</b>	<ul style="list-style-type: none"> <li>-fallen from vehicles when loading and unloading the raw materials, products and spare part machineries etc</li> <li>(assigning the skilled and cautious person)</li> </ul>
<b>Accident by vehicles</b>	<ul style="list-style-type: none"> <li>-assigning the skilled and cautious employees</li> <li>-good maintenance the vehicles</li> </ul>

	-assigning the skilled and cautious drivers and helpers
<b>Moving parts of machineries wrapping the hair, clothes</b>	-assigning the cautious employees -cover the moving parts
<b>Noise</b> (Nuisance and audio disturbance)	-maintenance the engine exhaust system -lubricating -aligning the machines, belt, etc. -avoid to work with the leisure time -not assign the person at the high noise level for long term -arrange the PPE
<b>Odor</b> (nuisance the respiration tract)	-powerful engine -good quality fuel -fuel and air in right ratio for engines, solvents -control the leakage of transform oil -control the leakage of refrigerant
<b>Industrial hazard</b> Electric shock Heat burn Steam burn Cold burn Chemical hazard	-use good quality electrical hand tools -insulating the hot metal part (e.g valve and joint pipe Line - insulated the cold surface (e.g refrigerant Lines) -assigned the skilled and cautious person to handle the hazardous chemical -explain the MSDS of hazardous chemical and conducting the safety procedure
<b>Fire hazard</b>	-manage the leak and spill of fuel -not be conditions that fine particle oxygen (air) and spark (hot surface)

### ***Monitoring Plan***

Assess the document about the occupational health and safety affairs as frequency and severity.

### ***Methodology***

Assess the monthly occupational health and safety affair as frequency and severity and conclude better or worse.

### ***Report form of occupational health and safety***

Report form of occupational monitoring plan is shown as follows and it includes parameter, measuring method, time schedule, monitoring place, frequency recorded method.



# Environmental Impact Assessment (EIA) Report

Nippon Paint (Myanmar) Company Limited

## Report form of occupational health and safety

Sr. No.	Parameters	Unit	Measurement Methods	Time Schedule	Measured Place	Frequency	Estimated budget	Recorded Method					The Standards and Reference *NEQ(E)G
								Previous and Present Data Comparison Method				More/ Less	
								Previous Data		Present Data			
								Date	Value	Date	Value		
								1.	-sick leaves -average number of working hours for employee -occupational illness -days of absence caused by occupational illness -complaints and grievance information	No. No. No. No. No.	Data collection and comparison		

**Estimated Budget and Responsible Team**

Estimated budget amount of occupational health and safety monitoring plan is as follow and if it not be sufficient, extra allotment is planned.

**Estimated budget of occupational health and safety monitoring plan**

Sr.No.	Purposes	Estimated Expenditure (MMK)
1	Occupational health and safety monitoring plan 50,000 x12	600,000 MMK

Responsible team for occupational health and safety is shown at paragraph 7.2.1 and also duties are at 7.2.2.

**7.5.11 Biodiversity Management and Monitoring Plan****Objective**

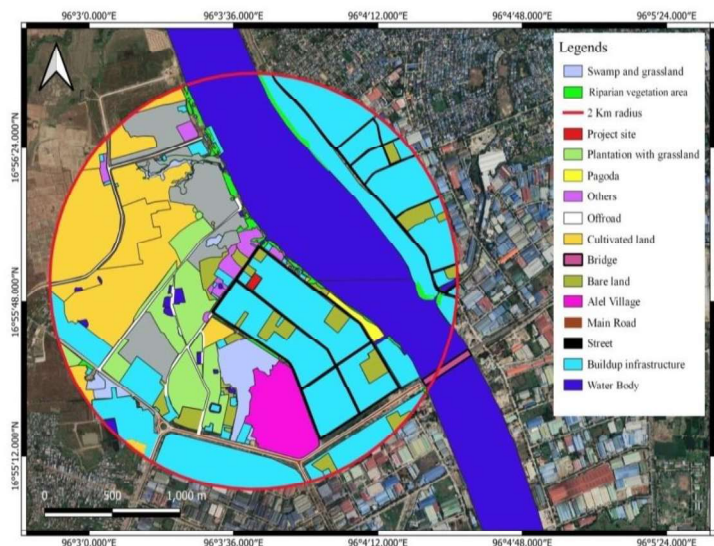
- To protect the local species by invasion of alien species
- To control the decline of biodiversity value and species richness which support the ecosystem

**Legal Requirement**

Referring the law, 'The Conversation of Biodiversity and Protected Area Law, The Pyidaungsu Hlutaw Law No. 12/2018)

**Maps and Photos**

There may be invaded on Hlaing Thar Yar Township by alien species and these township are protected and they are shown as following.



**Figure 7-15 Land covers and some biological habitats of the project site within a distance of 2-kilometer radius together with Hlaing River**

**Implementation Schedule**

Collection the situation Invasive of alien species and inform to the relevant department to protect the local species.

**Management Plan**

Invasive species management plan is as follow.

The development of the project area is likely to result in the loss of all plant species from the area, especially if the ground is leveled prior to development. This effectively removes the habitat for all animal species. EMP for potential negative impacts affecting biodiversity during project operation is described in the table below.

Nippon Paint (Myanmar) Company Limited	
Source of impact	Management Plan
Human disturbance	<p><b>Potential impacts</b></p> <ul style="list-style-type: none"> <li>- Potential impacts associated with fauna and flora are concerned with the clearing and disturbance of on-site personnel</li> </ul> <p><b>Action</b></p> <ul style="list-style-type: none"> <li>- Flora and fauna will be examined continuously over the construction and operation phases of the project. Examination will be made monthly and seasonally; hot dry and cold dry seasons.</li> <li>- The management program will aim to: minimize stress, injury and death to fauna and flora; Provide guidance to relevant personnel on fauna and flora conservation and handling; Ensure compliance with relevant policies; Implement rehabilitation like re-vegetation.</li> </ul>

**Monitoring Plan**

Document the records about invasive alien species by monthly. Administration work skilled person is assigned to document the records and is honorable reward 50000 per month.

**Methodology**

The two consecutive documents are compared in frequency and severity to assess the invasion of alien species is better or worse.

Environmental Impact Assessment (EIA) Report

Nippon Paint (Myanmar) Company Limited

Report Form of Invasion of Alien Species

Sr. No.	Parameters	Unit	Measurement Methods	Time Schedule	Measured Place	Estimated budget	Frequency	Recorded Method					The Standards and Reference *NEQ(E)G	
								Previous and Present Data Comparison Method				More/ Less		
								Previous Data	Present Data		Value			
									Date	Date				Value
1	Invasion of alien species	frequency and severity	Document the record	every month	Ngwe Pin Lal Industrial Zone, Hlaing Thar Yar Township, Yangon Region	600,000	The whole month							

**Estimated Budget and Responsible Team**

Estimated budget amount for invasion alien species monitoring plan is as follow and if it not be sufficient, extra allotment is planned.

**Estimated budget for invasion alien species monitoring plan**

Sr.No.	Purposes	Estimated Expenditure (MMK)
1	Documentation of record for invasion alien species 500,00 x12	600,000 MMK

Responsible team for monitoring and reporting the invasion of alein **species** is shown at paragraph 7.2.1 and also duties are at 7.2.2.

**7.5.12 Archaeology and Heritage Management and Monitoring Plan***Objective*

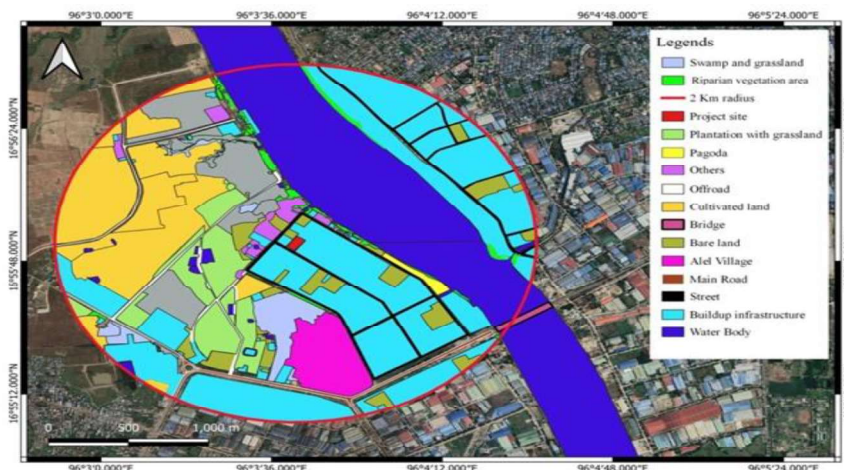
- To protect the famous ancient monuments, antique objects, and cultural heritage region.
- To inform the cultural heritage situation of exists at Hlaing Htar Yar Township to authority of Department of Archaeology and National Museum, Ministry of Religious Affairs and Culture.

*Legal Requirement*

Referring the laws; the Protection and Presevation of Cultural Heritage Regions Law; Protection and Presevation of Antique Objects Law; the Protection and Presevation of Ancient Monument Law

*Overview Maps and Site Layout Maps, Images Aerial Photos, Satellite Images*

Hlaing Thar Yar Township is considered as the area of collection about the information of cultural heritage affairs and shown as following.



**Figure 7-16 Area for collection about the information of cultural heritage affairs**

***Implementation Schedule***

Collection the information of cultural heritage affairs on every month and if exists inform to the Department of Archaeology and National Museum; Ministry of Religious Affairs and culture.

***Management Plan***

From the regional data compiled by Administration Government Department of Hlaing Thar Yar Township, although there is no famous ancient monument, explain the importance and value of ancient monuments, antique objects and cultural heritage regions to the employees and public at appropriate times and assemble.

***Monitoring Plan***

Document the records about information of cultural heritage affairs by monthly and one person is assigned to collect.

***Methodology***

If there are records about information of cultural heritage affairs, inform to Ministry of Religious Affairs and culture.



Environmental Impact Assessment (EIA) Report

Nippon Paint (Myanmar) Company Limited

Report form of Cultural heritage affairs

Sr. No.	Parameters	Unit	Measureme nt Methods	Time Schedule	Measured Place	Frequency	Estimate d budget	Recorded Method					The Standards and Reference *NEQ(E)G
								Previous and Present Data Comparison Method					
								Previous Data		Present Data		More/ Less	
								Date	Value	Date	Value		
1.	information of cultural heritage affairs	Signific ance Level	Collect the information	every month	Hlaing Thar Yar Township	The whole year	600,000						

***Estimated Budget and Responsible Team***

Estimated budget amount for collection about information of cultural heritage affairs is follow and report to relevant department.

**Estimated Budget for collection about information of Cultural Heritage Affairs and report to relevant Department**

SR.No	Documentation of record for cultural heritage affairs	Estimated Expenditure (MMK)
1.	Documentation of record for cultural heritage affairs 50,000×12	600,000 MMK

Responsible team for monitoring and reporting the information of cultural heritage is shown at paragraph 7-2-1 and also duties are at 7-2-2.

**7.5.13 Socio Economic Management and Monitoring Plan*****Objectives***

To prevent the social dispute among employees, proponent, and public

***Legal Requirements***

Referring the law, The Ethnic Rights Protection Law (2015); Ethnic Right Protection Rules (2019); The Factories Act (1951); Amendment (2016); The Settlement Labour Dispute Law (2012) Amendment of the Settlement of Labor Dispute Law (2019)

***Overview maps, and Site Layout maps, images, aerial photos, Satellite Images***

Hlaing Thar Yar Township is considered as area of interest for the social economic affairs probable and shown as follow.

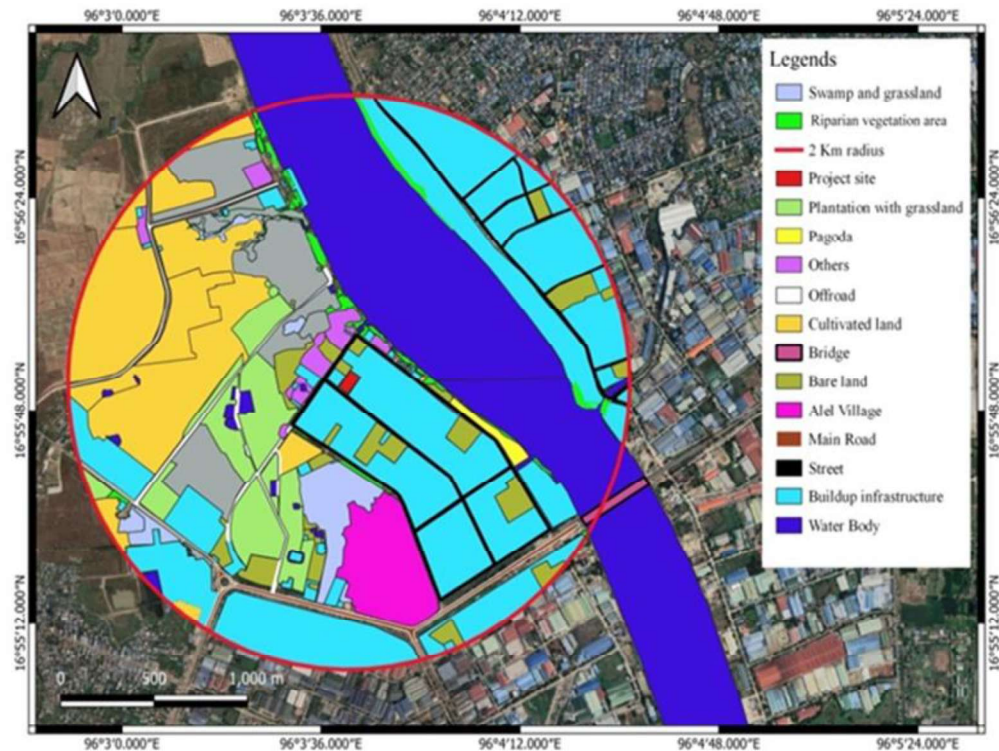


Figure 7-17 Area of interest for social economic affair probable

#### **Implementation Schedule**

Document the records of social dispute, riot, and grievance information the whole month.

#### **Management Plan**

##### **Management Plan for Socio Economic**

Nippon Paint (Myanmar) Company Limited	
Impact Sources	Management Plan in Brief
Operation employees (Migrant workers)	<ul style="list-style-type: none"> <li>– assigned the native employees as possible</li> <li>– perform the open and transparent communication between migrant and native</li> </ul>
Operation equipment	<ul style="list-style-type: none"> <li>– good quality operation equipment</li> <li>– regular maintenance</li> <li>– assigned skill person</li> <li>– train before operation</li> </ul>

Work place	<ul style="list-style-type: none"><li>– temperature and humidity adjust</li><li>– dust collector in high efficiency</li><li>– good ventilation</li><li>– PPE wearing</li><li>– not working with the wrong position</li><li>– harmony of workplace</li><li>– avoid the inability to carry out the task over and over again</li></ul>
Communication	<ul style="list-style-type: none"><li>– good grievance mechanism</li><li>– well CSR for employees and public</li><li>– conduct the laws about employees, payment, social security, worker engagement etc.</li></ul>

***Monitoring Plan***

Document the records of social dispute, riot, grievance information and assess more or less comparing consecutive data.

***Methodology***

# Environmental Impact Assessment (EIA) Report

Nippon Paint (Myanmar) Company Limited

## Report form of Social Economic monitoring

Sr. No.	Parameters	Unit	Measurement Methods	Time Schedule	Measured Place	Frequency	Estimated budget	Recorded Method					The Standards and Reference *NEQ(E)G
								Previous and Present Data Comparison Method					
								Previous Data		Present Data		More/ Less	
								Date	Value	Date	Value		
1.	- Record of dispute - Record riot - Information of grievance mechanism	frequency and severity	Document the records	every month	Hlaing Thar Yar Township	The whole year	600,000						

***Estimated Budget and Responsible Team***

Estimated budget amount for document record of disputment, riot, and information of grievance mechanism is follow.

**Estimated Budget for collection the information of social economic affair**

SR. No.	Documentation of record for social economic	Estimated Expenditure
1.	Documentation of record for dispute, riot and grievance mechanism 50,000×12	600,000

Responsible team for monitoring and assessment the records about social economic is shown at paragraph 7-2-1 and also duties are at 7-2-2.

**7.5.14 Social Health Management and Monitoring Plan*****Objective***

To prevent the communicable diseases in the Hlaing Thar Yar Township and to improve the health status of employees

***Legal Requirement***

Referring the law; the prevention and control of Communicable Diseases Law (1995); Amending (2011); Occupational Health and Safety Law (2013), Public Health Law (1972)

***Overview maps, and Site Layout maps, images, Aerial photos, Satellite Images***

Hlaing Thar Yar Township is considered as area of interest for the Social Health and shown as follow.



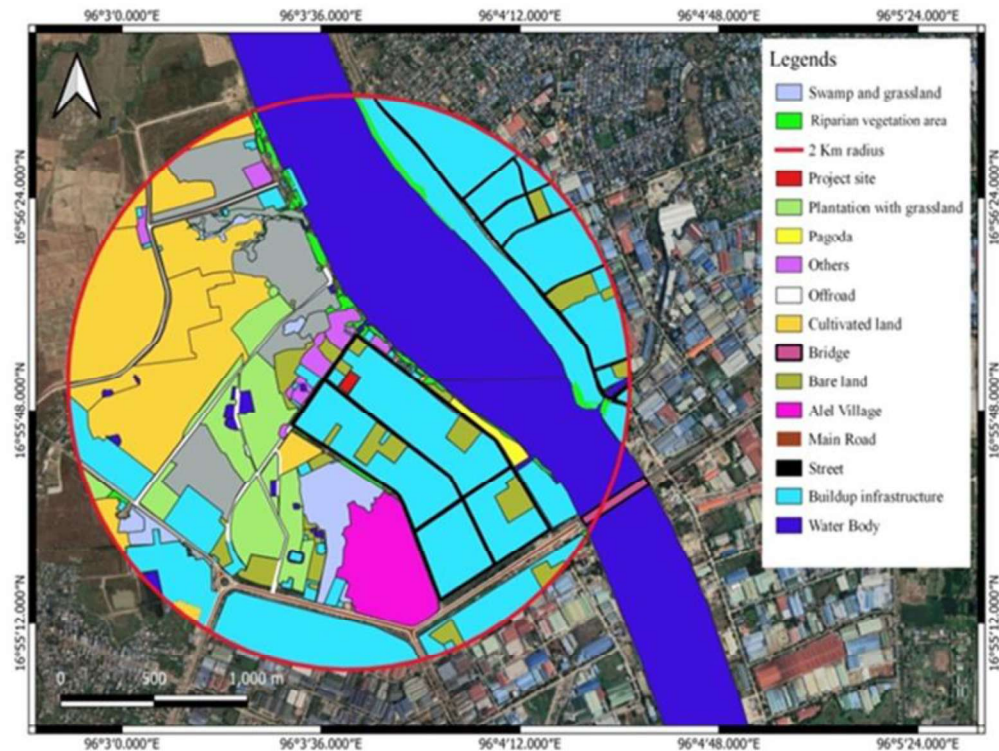


Figure 7-18 Area of interest for Social Health

**Implementation Schedule**

Document the records of spread of infection diseases and participate in communicable health plan the whole month.

**Management Plan for Social Health**

Impact Sources	Management Plan in Brief
Migrant workers	<ul style="list-style-type: none"> <li>– regular medical check up</li> <li>– health education program in local community and employees</li> </ul>
Infection diseases	<ul style="list-style-type: none"> <li>– take the information and educate the employees and public</li> <li>– vaccination</li> <li>– quarantine</li> <li>– participate in vaccination , quarantine</li> <li>– donations such as medicine, rescue materials</li> </ul>

***Monitoring Plan***

Document the records of Infections disease in Hlaing Thar Yar Township and assess more or less comparing consecutive data.

***Methodology***

Environmental Impact Assessment (EIA) Report

Nippon Paint (Myanmar) Company Limited

Report form of Social Health monitoring

Sr. No.	Parameters	Unit	Measurement Methods	Time Schedule	Measured Place	Frequency	Estimated budget	Recorded Method					The Standards and Reference *NEQ(E)G
								Previous and Present Data Comparison Method				More/ Less	
								Previous Data		Present Data			
								Date	Value	Date	Value		
1.	Infections disease	frequency and severity	Document the records	every month	Hlaing Thar Yar Township	The whole year	600,000						

**Estimated Budget and Responsible Team**

Estimated budget amount for document record of Social Health monitoring plan is as follow and if it not be sufficient, extra allotment is planned.

**Estimated budget for Social Health monitoring plan**

Sr.No.	Purposes	Estimated Expenditure (MMK)
1	Documentation of record for spread of infectious diseases 500,00 x12	600,000 MMK

Responsible team for monitoring and assessment the records about Social Health is shown at paragraph 7.2.1 and also duties are at 7.2.2.

**7.6 Hazardous Chemical Management Plan**

Hazardous Chemical Management Plan will be mainly focused for the operation phase.

**Objective**

- To minimize the risk of hazardous chemicals.
- To response effectively to spillage and leakage.

The exposure of workers to the hazardous substances from working in paint manufacturing may cause acute or chronic health effects.

Long-term (chronic) health effects may include:

- Chronic obstructive airway disease;
- Chronic dermatitis;
- Lung function failure;
- Kidney and liver functions failure and
- Affect reproductive system.

Short-term (acute) health effects may include:

- Skin irritation
- Skin burns or eyes burn;
- Vomiting and diarrhea;
- Irritation to the nose, throat and lungs;
- Headache, dizziness, nausea and fatigue; and
- Asthmatic allergies.

To avoid potential chronic and acute health problems and other explosion and fire hazard, the following hazardous chemicals management plan should be implemented by proponent. Major elements of hazardous chemicals management include

- Chemical Inventory
- Risk Assessment of Hazardous Chemicals
- Risk Control Measures and
- Emergency Preparedness
- Training

### ***Hazardous Chemical Management Plan***

#### **Chemical Inventory**

Make a comprehensive chemical inventory by listing all chemicals used in factory. All chemicals in inventory should have been checked and approved by EHS manager or health and safety coordinator.

#### **Risk Assessment of Chemicals**

- 1- List all the chemicals used in the paint manufacturing process, for example, pigments, solvents, resins, powders, etc.
- 2- Check the hazard categories from the label on the container and the material safety data sheet (MSDS). The hazardous substances can be classified into three categories, namely high, medium and low.
- 3- Inspect the workplace procedures to find out exposure levels of the employees. The typical exposure levels include; unlikely to expose, likely to expose and highly likely to expose.
- 4- Rate the risks associated with hazardous substances. The ratings of risks depend on the estimated likelihood of exposure and the potential severity of the hazards. Typically, the ratings of risks can be summarized as high risk, medium risk and low risk.

For high risk, the necessary control measures must be implemented and safe handling procedures must be carried out. A long-term control and monitoring shall be required.

For medium risk, remedial safety measures should be taken for using the chemicals.

For low risk, can it be considered the risk is tolerable for human health and environment. Though it should be used with care.

#### **Risk Control Measure**

If the probable risks of exposure to hazardous chemicals cannot be eliminated or avoided totally, engineering controls, administrative control and PPE can be used for precaution and mitigation of risks.

***Engineering controls*** such as ventilation can minimize or dilution of VOC emission around the area of emission source. Such control can reduce

- Inhalation of hazardous chemicals by operators
- Skin and eye contact to hazardous chemicals
- Fire and explosion hazard

VOC emission in storage area and process area can be reduced by two types of ventilation: local exhaust ventilation and dilution ventilation.

*Local exhaust ventilation* captures VOC by drawing the contaminants into a capture hood. *Dilution ventilation* is the dilution of pollution by displacing of contaminated air by fresh air. The fresh air can be supplied by mechanically such as supply fans or by natural air currents through doors and windows.

***Administrative controls*** are such as

- Reducing exposure of employees to hazardous substances by rotating shifts, scheduling breaks, etc.
- Prepare details of standard operation procedures (SOP) and ensure followed by operators.
- Prepare safe handling procedures of hazardous chemicals and ensure followed by employees.

**PPE** provides a barrier to shield workers from exposure to chemical hazards. However, the use of PPE as a safety measure should be limited to situations where all the other safety measures are not practicable or where PPE is used in conjunction with other precaution measures to increase the level of protection.

- Provide appropriate PPE such as gloves, boots, sleeves, respirators, goggles and aprons to the employees who have potential to exposure the chemicals.
- The selection of PPE can refer to MSDS instructions.

#### ***Storage and handling procedures***

- Place the lids for containers with relief valves.
- Provide well ventilation in storage area for flammable substances.
- Store flammable liquids in designated containers with proper labelling.
- Do not put any flammable liquid containers under direct sunlight or near any sources of heat or ignition.
- Keep in low temperature of the area where hazardous chemicals are stored.
- Post the warning signs on storage cabinets and outside storage areas.
- Use a first-in/first-out policy in using of chemicals from inventory stock to prevent expire of products.
- Do not mix unknown chemicals.
- Wash hands after handling chemicals.
- Do not keep together any incompatible chemicals.
- Follow transportation instructions stated in MSDS while carrying the chemicals.
- Safety glasses recommended where the possibility of getting dust particles in eyes exists.

#### **Emergency Preparedness**

The Hazardous Materials Emergency Response Plan is designed to minimize hazards to human health and impact on environment from any accidental release of hazardous materials. This plan outlines the emergency procedures that shall be followed by personnel if hazardous materials are released.

#### ***Emergency Preparedness***

- Provide fire extinguishers and automatic fire sprinkler systems in place of chemical storage area. Fire extinguishers type must be for chemical fire.
- Install smoke detector in chemical storage room.
- Provide deluge shower, emergency eyewash, water supply and buckets in adjacent to the storage facility to decontaminate.
- Provide spill equipment such as
  - Shovel,
  - Broom,
  - Absorbent pads for containment,
  - Oil absorbent,
  - Neutralizing agents (powder, acids, and bases) and
  - PPE (respirator, gloves, goggles, and chemical suites with booties and hood).

#### ***Emergency Response Procedure***

- Prepare spill response procedure as follows.



<ul style="list-style-type: none"> <li>➤ Wash immediately skin areas coming into contact with the solvents with soap and water.</li> <li>➤ Firstly, identify the spill -major or minor.</li> <li>➤ Notify persons in the immediate area that a spill has occurred.</li> <li>➤ Avoid breathing vapors, mists or dust of the spilled material.</li> <li>➤ Turn off all ignition sources, if possible.</li> <li>➤ If injured or contaminated with hazardous chemicals immediately proceed with personal decontamination procedures.</li> <li>➤ Evacuate room and close the door.</li> <li>➤ Call the emergency contact numbers:</li> <li>▪ Emergency contact numbers must be posted in storage room and which includes; <ul style="list-style-type: none"> <li>➤ Emergency coordinator -</li> <li>➤ Local fire department number -</li> <li>➤ Ambulance call number -</li> </ul> </li> <li>▪ For spills on skin, follow these procedures: <ul style="list-style-type: none"> <li>➤ Immediately flush with flowing water for at least 15 minutes.</li> <li>➤ Remove all jewelry and accessories.</li> <li>➤ Check MSDS to see if any delayed effects should be expected.</li> <li>➤ Seek medical attention for even minor chemical burns.</li> <li>➤ Do not use creams or lotions.</li> </ul> </li> <li>▪ For spills on clothing, follow these procedures: <ul style="list-style-type: none"> <li>➤ Do not attempt to wipe the clothes.</li> <li>➤ Quickly remove all contaminated clothing, shoes, and jewelry while using the safety shower. Do not pull up the pull over shirts, just cut off the shirts and remove from the body.</li> <li>➤ Flush the affected body area with warm water for at least 15 minutes.</li> <li>➤ Get medical attention as soon as possible.</li> <li>➤ Discard contaminated clothes as hazardous waste.</li> </ul> </li> <li>▪ For splashes into the eye, take these steps: <ul style="list-style-type: none"> <li>➤ Flush the eye by using the eyewash for at least 15 minutes.</li> <li>➤ Hold the eyelids away from the eyeball, and move the eye up and down and sideways to wash.</li> </ul> </li> <li>▪ After spill, information related with spill such as <ul style="list-style-type: none"> <li>➤ Date and time of spill</li> <li>➤ Type of spill</li> <li>➤ Location of spill</li> <li>➤ Name of caller</li> <li>➤ Amount of spill</li> </ul> </li> </ul> <p>shall be recorded and reported to top management.</p>	<p><b>Training</b></p> <p>Arrange and provide the following trainings to employees.</p> <ul style="list-style-type: none"> <li>▪ Safe operation practices.</li> <li>▪ Safe handling procedures.</li> <li>▪ Chemical hazard training.</li> <li>▪ Spill response procedures.</li> </ul> <p><b>First Aid Procedures for Chemical Hazard</b></p> <p>First aid procedures for each chemical are different. Therefore, for each chemical, follow the first aid procedures stated in respective MSDS. The general first aid procedures are as follow.</p>
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- Wash affected area of skin with water.
- Flush eye with water about 15 minutes
- Remove patient from contaminated area.
- Consult physician if symptoms develop.
- A shower is recommended if significant dust exposure occurs.
- Wash after any contact, before eating, and at the end of the work period.

**Responsibilities**

- To prepare and implement EMP for Hazardous Chemical Management.
- To arrange and provide the trainings for
  - Safe handling procedures of chemicals
  - Spill emergency response procedure
  - Chemical hazard
- To make sure all employees follow the EMP.
- To make sure the employees strictly follow the safe handling procedures while they are dealing with the chemicals.
- To provide suitable PPE to employees sufficiently.
- To keep record all chemicals related incidents.
- To review the parameters and chemical incidents and take corrective actions if the EMP is insufficient.

**Implement Schedule**

Hazardous Chemical Management Plan will be implemented throughout the entire operation phase of the Project.

**Estimated Budget and Responsible Team**

Estimated budget amount of Hazardous Chemical Management and monitoring plan is as follow and if it not be sufficient, extra allotment is planned.

**Estimated budget for Hazardous Chemical monitoring plan**

Sr.No.	Purposes	Estimated Expenditure (MMK)
1	Hazardous Chemical Management Plan	1,000,000 MMK

Responsible team for monitoring and reporting of Hazardous Chemical monitoring is shown at paragraph 6.2.1 and also duties are at 6.2.2.

**7.7 Hlaing River Pollution Management Plan**

The Project Site lies along the catchment of the Hlaing River. The Hlaing River flows in a southerly direction to converge into the Yangon River (the estuary). According to the field observations in August and September of 2022, the drain system is already implemented in the industrial zone and the project will continue to use this existing drain in the operation phase. Therefore, the downstream segment of Hlaing River as mentioned in figure 4.5 is being clarified as the potential receptor-area due to effluent water. The local people do not use river water for either domestic or drinking purposes. There is a fishing ground about 3000

meters downstream. So, aquatic survey was conducting 8 km/3000 m downstream of the river and social survey was continue to assess the potential impacts on this river stretch according to the findings of biodiversity and physical assessments.

Rainfall falling on the catchment does exit the catchment as surface flow, from the drainage channel of the industrial area. The drainage in the industrial area surrounding the proposed Nippon paint Project is such that all the surface water drainage lines lead to the Hlaing River.

The Hlaing River is a crucial waterway in Myanmar, supporting transportation, agriculture, fisheries, and local communities. However, increasing pollution from industrial waste, domestic sewage, and agricultural runoff has significantly degraded its water quality. This management plan aims to address pollution issues and implement sustainable solutions to restore and protect the river.

### **Major Sources of Pollution**

- **Industrial Waste:** Discharge from factories, chemical plants, and shipyards.
- **Domestic Wastewater:** Untreated sewage from households and urban areas.
- **Agricultural Runoff:** Pesticides, fertilizers, and sediments entering the river.
- **Plastic and Solid Waste:** Improper disposal of waste leading to river contamination.

### **Pollution Control Strategies**

#### **Industrial Waste Management**

- Implement strict wastewater treatment regulations for industries.
- All wastewaters are in standard guideline.
- Wastewater is treated and wastewater quality is under standard.
- Establish monitoring systems and penalties for non-compliance.
- Promote eco-friendly and sustainable industrial practices.

#### **Domestic Wastewater Treatment**

- Develop and expand sewage treatment facilities.
- Domestic sanitary waste is prohibited.
- Encourage the use of decentralized wastewater treatment systems.
- Improve sanitation and waste disposal infrastructure.

#### **Agricultural Pollution Control**

- Promote organic farming and reduce chemical usage.
- Over sediments, nutrients pesticides are prohibited.
- Wastewater from farming are prohibited or in standard.
- Implement buffer zones with vegetation along riverbanks.
- Educate farmers on sustainable water and soil management practices.

#### **Solid Waste and Plastic Reduction**

- Introduce waste segregation and recycling programs.

- Prohibit the disposal of solid waste.
- Implement strict bans on dumping waste into the river.
- Raise public awareness through clean-up campaigns and education programs.

**Monitoring and Enforcement**

- Establish a Hlaing River Pollution Control Task Force.
- Regularly sampling and checking the quality of surface water.
- Conduct regular water quality testing and publish reports.
- Strengthen legal frameworks and enforcement mechanisms.

**Community Involvement and Awareness**

- Engage local communities in river conservation activities.
- Encourage public participation in reporting pollution incidents.
- Collaborate with NGOs and environmental groups for conservation projects.

**Conclusion**

To prevent the wastewater generated from production does not enter farmlands or the Hlaing River, the factory ensures that the discharged wastewater is treated through a wastewater treatment system and is only released when it meets the NEQEG guidelines. Nippon Paint Factory strictly follows the above-mentioned pollution control strategies to prevent water pollution in the Hlaing River. Protecting the Hlaing River requires a collaborative effort between the government, industries, local communities, and environmental organizations. By implementing these strategies, the river's ecosystem can be restored, ensuring sustainable water resources for future generations.

**7.8 Emergency Response and Disaster Management Plan**

A clearly defined emergency response and preparedness policy will be developed and brought to the proposed project. An effective response is seen as the direct outcome of quality environmental management and comprehensive training and awareness of safety procedures. The principal objective of emergency preparedness is to localize accidents and minimize them.

The proposed development will have an Emergency Response Plan, which will provide guidelines to allow for flexible response to a range of potential circumstances. The plan would include:

- Chain of command and coordination procedures
- Lines of communication
- Means of obtaining needed information and assistance

Relevant portions will be strategically located at vantage points across the property to allow for immediate access. All employees will receive safety and emergency response training as a part of the initiation process.

Employers have the principal obligation to take care of their employees. It is their duty to ensure safety in the workplace in time of calamity. The project will establish the

Emergency Response Team (ERT) and carry out the following Emergency Response Plan (ERP).

- Assemble an emergency team
- Stock up emergency supplies
- Conduct regular training with employees
- Establish preventative measures
- Take medical supplies on hand
- Outline emergency responses and establish the chain of command
- Review and revise the plan regularly

Even if there is low possibility of experiencing any kind of emergency, it should be required to prepare necessary management plans as it can bring a huge impact on project facilities, project employees, and the environment. **Table 1.4** describes the members of emergency response team and their responsibilities.

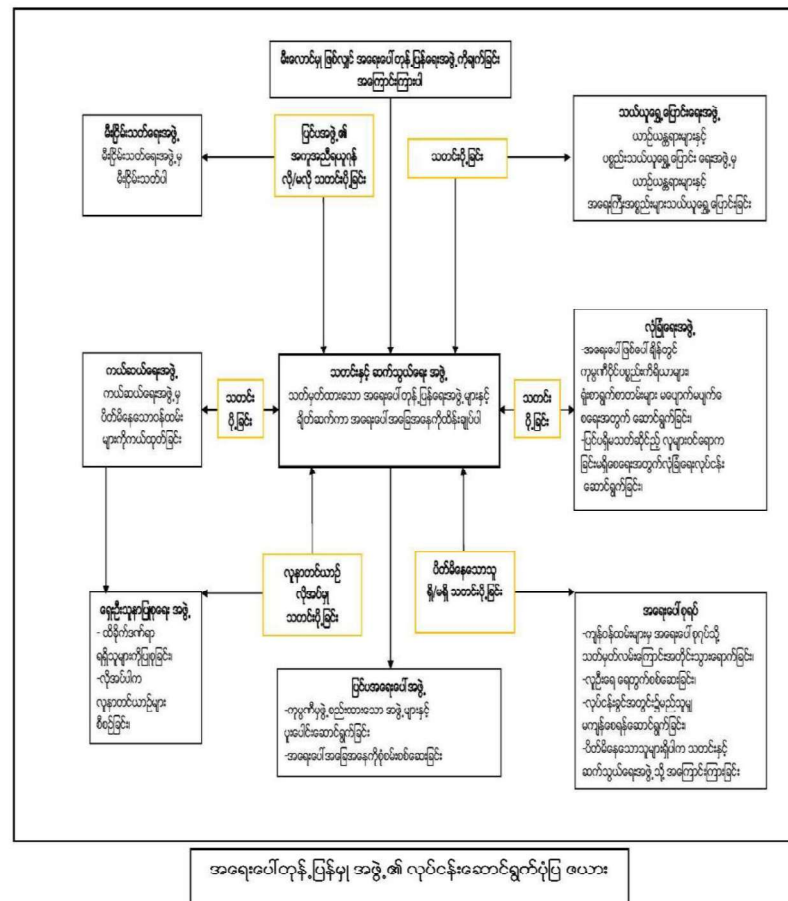
**Table 7-4 Emergency Response Team (ERT) and Responsibilities**

No.	Team Member	Responsibilities
1	Managing Director (MD)	<i>Commander in Chief (CIC)</i> ➤ Scan the overview conditions of the scene ➤ Give instructions to Incident Commander to evacuate or initiate ERP
2	Operation Manager (OM)	<i>Incident Commander (IC)</i> ➤ Give instructions to On Scene Commander to secure or contain the incidents immediately and report to CIC to seek for further advice and instructions ➤ Order Production Manager to initiate evacuation plan or emergency response plan ➤ Decide which resources will be used for ERP
3	Production Supervisor (PS)	<i>On Scene Commander (OSC)</i> ➤ Assess the incident, report the overview of incident to IC, secure the scene ➤ Organize the ERT crews and assets to initiate the ERP ➤ Appoint evacuation team leader ➤ Give detail instructions to ERT crews to carry out
4	Employees	➤ Carry out the ERP as directed by OSC

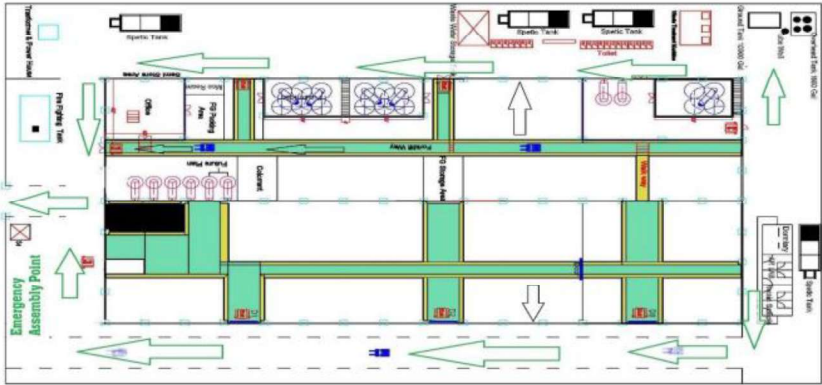
**Objective**

- To prepare and response emergency cases
- To save the property, life of workers and community

**Legal Requirement**







Emergency evacuation plan

Figure 7-19 Emergency Evacuation plan





**Figure 7-20 Fire Hose Reel and Fire Extinguishers**



**Figure 7-21 Fire Hydrants and Water Tank for Firefighting**

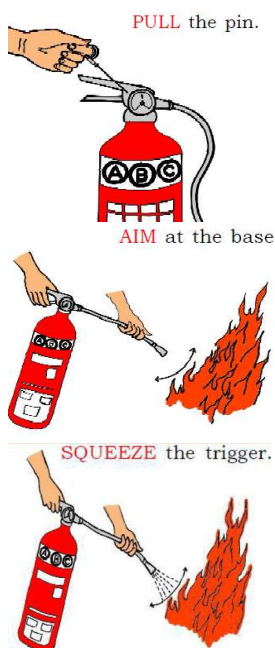
**Figure 7.22** shows the color coding of fire extinguishers (so it should be printed in color) and can be used as a guideline for Fire Extinguisher selection.

Symbols found on fire extinguishers & what they mean		Water	Foam spray	ABC powder	Carbon dioxide	Wet chemical
Wood, paper & textiles		✓	✓	✓	✗	✓
Flammable liquids		✗	✓	✓	✓	✗
Flammable gases		✗	✗	✓	✗	✗
Electrical contact		✗	✗	✓	✓	✗
Cooking oils & fats		✗	✗	✗	✗	✓

Figure 7-22 Guidelines for Fire Extinguishers

### Operating a Fire Extinguisher

Fire extinguishers should be only used if safe and if trained to do so. Even though extinguishers come in a number of shapes and sizes, they all operate in a similar manner. To employ the extinguisher with proper technique, just remember the acronym “**PASS**.”



**P** – Pull the pin at the top of the extinguisher that keeps the handle from being accidentally pressed.

**A** - Aim at the base-not the flames. This is important- in order to put out the fire, you must extinguish the fuel.

**S** – Stand approximately 8 feet away from the fire and squeeze the handle to discharge the extinguisher. If you release the handle, the discharge will stop.





**S** – Sweep the nozzle back and forth at the base of the fire and then move towards the fire once it starts to diminish.

After the fire appears to be out, watch it carefully since it may re-ignite! Be sure to read the instructions on your fire extinguisher different fire extinguishers recommend operating them from different distances.

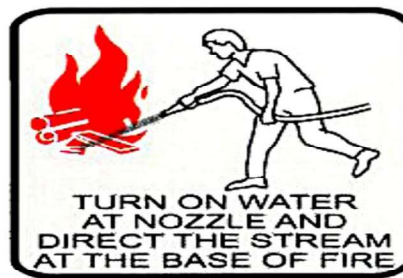
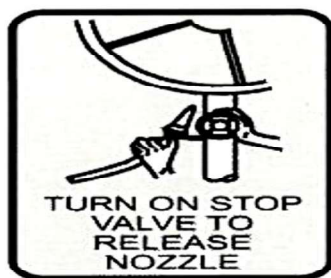
**Figure 7-23 Description of Fire Extinguisher**

#### Using Fire Extinguishers

1. Ensure that you use the correct extinguisher.
2. Always keep an emergency exit behind you.
3. Stay low to avoid the effects of smoke/heat.
4. Direct extinguisher stream at base of flames.
5. Move stream in a side to side, sweeping motion.
6. If the fire gets to the point where you can no longer able to control it, retreat and close the doors. But do not lock the doors.

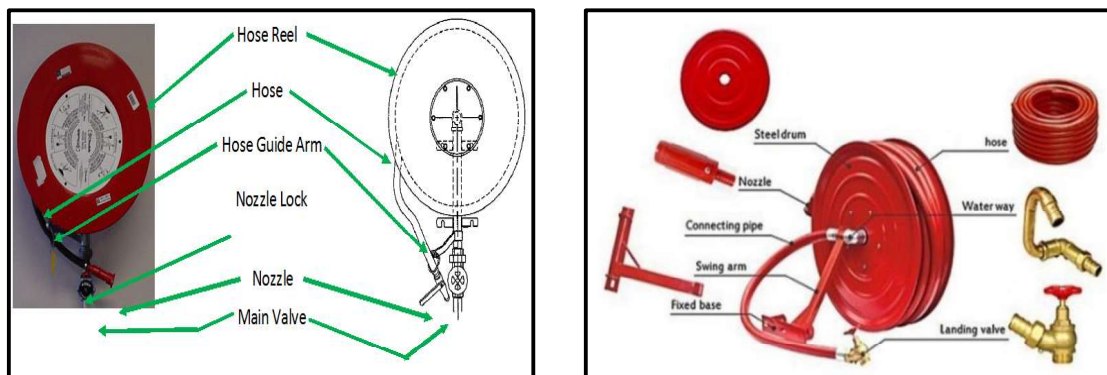
#### Using Fire Hose Reels

1. Turn on the stop valve.
2. Run out the length of hose.
3. Turn on the water nozzle and direct stream at the base of the fire.
4. Endure you leave a direct egress path between you and the exit door/egress route.



**NOTE:** Fire Hose Reels should NOT be used within range of electrical equipment.

**Figure 7-24 Description of Fire Hose Reel**



**Figure 7-25 Explanation of Fire Hose Reel**

### ***Emergency Preparedness Plan for Earthquake***

Emergencies can create a variety of hazards for employees in the impacted area. Preparing before an emergency incident plays a vital role in ensuring the employers and employees have the necessary equipment, know where to go, and know how to keep themselves safe when an emergency occurs.

Emergency preparedness training for earthquake should be provided to all employees to be aware of the safe steps for it. The following preparedness plan should be done for emergency earthquake.

- All the shelves are fastened securely to the walls.
- Heavy and larger things are kept on the lower shelves.
- Brace or anchor heavy machineries, containers, tanks, stock and appliances that could shift, fall, hurtle or rupture during an earthquake.
- Anchor filing cabinets, mirrors or pictures to wall studs.
- Lock the rollers of large pieces of furniture. Attach computers and towers to desks.
- Design firefighting installations (pumps, water tanks, piping etc.) to be earthquake resistant.
- Apply safety film to windows and glass doors especially where breakage could cause the most injuries or damage.
- Ensure enough gap around pipes at penetrations through walls.
- First aid kits, flash lights and batteries are readily available.
- Prepare the emergency contact numbers of the nearest fire station, police station, and hospitals and display it in a place that everyone can see it.

### ***Emergency Response Plan for Earthquake***

- Turn off all electrical equipment and gas line.
- Wear shoes and carry flashlight.
- Bring emergency supplies.
- Do not leave anyone behind.
- Close all doors.
- Use the stairs only. Never take the elevator.
- Assemble in a safe outdoor area.

- For indoor, search the safe spots such as under sturdy desk or table and stay away from glass windows, mirrors, and heavy cabinets.
- For outdoor, go away from the buildings, trees, telephone, electrical lines and overpasses.
- Stay as safe as possible during earthquake and make minimum movements until the shaking is finished.
- Follow the drop, cover and hold on procedures to be safe during earthquakes.
- Cooperate with emergency response team.



Figure 7-26 Safety Procedures during Earthquake

### Flood Control Plan

Each employer is responsible for the safety and health of its workers and for providing a safe and healthful workplace for its employees. Employers are required to protect



employees from the anticipated hazards associated with the flood response and recovery operations that workers are likely to conduct.

All of the employees also should aware the following factors from safety point of view before and during flood.

**Factors from Safety Point of View before Flood**

- To control the flood and to minimize the damage by flood.
- To listen to information on flood broadcasting by government program.
- The control centers of building services such as ventilation control cabinets and electric control cabinets, energy meters, computer servers and telecommunication cabinets should be placed above the expected flood level.
- Supply circuits should be able to be shut down storey by storey.
- Necessary capacity such as manpower, equipment, materials, transportation, etc. must be provided.
- Regular exercise must be conducted.

**Factors from Safety Point of View during Flood**

- Do not walk through flowing water. Six inches of moving water can knock you off your feet.
- Use a pole to test the depth of standing water before you proceed.
- Do not drive through a flooded area. Two feet of water will carry away most automobiles.
- Stay away from power lines and electrical wires.
- Turn off your all electricity if your building is flooded.
- Watch out for hiding animals.
- Look before you step because mud can be very slippery to walk on and broken glass, nails and the debris may be deposited by receding floodwaters.
- Be alert for gas leaks. Leave the area immediately if you smell gas fumes.

***Emergency Response Plan for Storm***

- listening information of meteorological news and necessary preparation in advance [windspeed, high rain, direction, arrival time rank of severity (orange, yellow, red, etc.)]
- factory is shutdown if necessary

- check and repair by structure code of overhead water tank racks, chimney and high building
- store some waters (drinking other purposes), foods, medicine
- plan the emergency plan for storm
- medical care during storm, first aid
- plan the budget allotment
- transportation of injured person to hospital, clinic, etc.
- take notice the poisonous creatures
- emergency light if necessary

***Implement Schedule***

Emergency Response Plan will be implemented throughout the entire operation phase of the Project.

***Management Actions***

Management actions of Emergency Response Plan are performed as described in followings;

- The factory management has taken proper measures to handle any emergency situation like fire, earthquake, flooding and occupational accident.
- The provision and inspection of firefighting equipment and fire hydrant system will be implemented in all the manufacturing process line.
- Automatic alarm system is provided at the factory for alerting the workers in case of fire.
- Fire drill will be performed biannually.
- A warning system which consists of alarm bells, visual alarms, or other forms of communication will alert all personal for emergency cases.
- A regular Emergency drill will be performed in order to maintain a high level of readiness for the emergency response, checking the effectiveness of the measures in place to prepare for and respond to emergencies.
- The assembly point for emergency cases has been defined in front of the factory.
- Detail of evacuation plan (route, fire exit, emergency exit door etc.) will be provided and hanged at visible places.
- Workers will be informed about what to do in earthquake like stay in a safe place such as under table or desk, not to try move outside during earthquake, workers who will be outside during earthquake shall remain stay out of the building, trees lamp post etc. Other relevant safety instruction of emergency situation is informed to workers by training.
- An emergency contact directory consisting contact numbers of nearest fire service, local police station, hospitals etc., will be prepare and display it in a place that everybody can see it.
- A safety committee which may include fire brigade team, rescue team etc. will be established and will arrange a meeting in every month to conduct training, drill etc.

- First aid trainings, first aid kit and first aid room will be provided at the factory.

### Monitoring plan

Monitoring Plan of Emergency Response Plan is shown in **Table 6.5**.

**Table 7-5 Monitoring Plan of Emergency Response Plan**

Parameters	Unit	Measurement Methods	Time Schedule	Measured Place	Frequency	Estimated budget
- Record of fire accidents relevant with plant directly or indirectly	No.	Record and Document	daily	At Factory	every month	600,000
- Fire brigade training records for all employee	No.					
- Record of cooperation with local fire brigade	No.					

### Projected Budgets and Responsibilities

**Nippon Paint (Myanmar) Company Limited** will allocate estimated 600,000 kyats per year for Emergency Response Plan including cost for monitoring.

## 7.9 Closing Phases Environmental Management Plan

At the closing phase, probable impacts on the environment were due to the closing activities. Now the Closing Phases Environmental Management Plans (CEMPs) shall express how these activities will be managed to avoid or mitigate environmental impacts, and how the environmental management plan will be implemented based on the mitigation measures. The CEMPs shall be a framework to which the principal contractor's HSE management system will apply.

### 7.9.1 Environmental Management Plan of Closing Phases

#### (1) Air Pollution Management Plan

##### Management Plan

The following mitigation measures should be applied by main contractor and the subcontractors to minimize the air pollution impact during closing phase.

##### Dust and Particulate Matter

- Spray of water in outdoor area to suppress dust emission.
- Provide wheel wash bay for the vehicles.
- Forbid open fires.
- Main contractors (closing) shall ensure to cover the trucks for transportation of construction materials.
- Cover closing waste and debris materials in designated place before moving out from premise.
- Main contractors (closing) shall clean up the access roads or public roads if there is any dropping from the trucks during transportation.

<p>VOC</p>	<ul style="list-style-type: none"> <li>▪ Cover all exposed loose earth with net.</li> <li>▪ Do regular maintenance of the generators.</li> <li>▪ Turn off the machinery /engines while not in use.</li> <li>▪ The operation of the combustion engines (e.g. welding machine, cutting machines, engine-driving pump, etc.) shall be in compliance with the Myanmar regulation requirement.</li> <li>▪ No waste oils may be used as fuel. Only standard fuels shall be used (e.g. light fuel oil, natural gas and petrol).</li> <li>▪ When certain activities may result in the emission of VOC, the work method shall be determined beforehand.</li> <li>▪ Main contractors (closing) shall keep construction and closing machine and vehicle in good condition to reduce the pollutant emission. Use effective machineries.</li> </ul>
<p>Odor</p>	<ul style="list-style-type: none"> <li>▪ Remove excavated odorous soil from site as quickly as possible.</li> <li>▪ Cover the waste bins.</li> <li>▪ Maintain good housekeeping in toilet areas.</li> <li>▪ Provide good ventilation in chemical storage area.</li> <li>▪ Dispose organic waste regularly.</li> </ul>
<p><b>Responsible Team</b></p>	
<p>Contractor's HSE Team</p>	
<p><b>Responsibilities</b></p>	
<p>To implement the EMP and make sure all contractors follow the EMP.</p>	
<p>Estimated budget for air pollution management plan is about 5,000,000 kyats.</p>	

### **(2) Water Pollution Management Plan**

<b>Management Plan</b> The following mitigation measures are presented for minimizing impact from wastewater handling and disposal. <ul style="list-style-type: none"><li>▪ Store fuel, lubricant and hazardous chemicals in proper way in designated area.</li><li>▪ Provide bio-septic tank to minimize suspended solid and to remove floating oil &amp; grease in wastewater.</li><li>▪ Avoid direct disposal of used oil and solid waste into the drains.</li><li>▪ Have a debris trap for wastewater discharge.</li><li>▪ Wash equipment and vehicle at designated areas with wash water collection systems.</li><li>▪ The hydro test water needs to be collected and tested for any contaminants.</li><li>▪ Accidental spillages of hazardous substances to be immediately remediated.</li><li>▪ Site runoff shall pass through over weir.</li></ul>	
<b>Responsible Team</b> Contractor's HSE Team	
<b>Responsibilities</b> To implement the EMP and make sure all contractors follow the EMP.	
Estimated budget for water pollution management plan is about 3,000,000 kyats.	

### **(3) Soil Contamination Management Plan**

<p><b>Management Plan</b></p> <ul style="list-style-type: none"> <li>▪ Avoid stockpiling and disposal of general solid waste, waste oil and used lubricant on the bare land.</li> </ul>
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<ul style="list-style-type: none"> <li>▪ Avoid percolation of liquid waste on the bare land.</li> <li>▪ Prepare safe handling procedures of hazardous chemical and fuel.</li> <li>▪ Store hazardous chemicals and fuel in appropriate way.</li> <li>▪ Provide a suitable water drainage channels to discharge water safely.</li> <li>▪ Carry out the restoration of the worked area, once the constructions work has been done, by backfilling, landscaping/ leveling and planting of suitable tree species.</li> <li>▪ Retain vegetation where possible to avoid soil erosion.</li> <li>▪ Re-vegetate disturbed surfaces immediately after construction activities are completed.</li> <li>▪ The EPC contractor shall arrange to remove all construction related contaminated topsoil to the full depth of pollution and replace it at his own expense with approved topsoil.</li> <li>▪ The EPC contractor will be responsible for remediating any polluted topsoil.</li> <li>▪ Provide wind screening and storm water control to prevent soil loss from the site.</li> <li>▪ Depending on the nature and extent of the spill, contaminated soil must be either excavated or treated on-site.</li> </ul>
<b>Responsible Team</b> Contractor's HSE Team
<b>Responsibilities</b> To implement the EMP and make sure all contractors follow the EMP.
Estimated budget for soil contamination management plan is about 1,000,000 kyats.

#### **(4) Noise/ Vibration, Pollution Management Plan**

<b>Management Plan</b> Demolishing environment is always noisy and, as a result, noise is a common demolishing hazard. Loud, repetitive, and excessive noise causes long term hearing problems, such as deafness. To prevent this, the following management plan should be adhered. <ul style="list-style-type: none"> <li>▪ Undertake regular maintenance of equipment.</li> <li>▪ Provide earplugs/muffs, or other hearing protective device to those who work in the noisy area.</li> <li>▪ Ensure the vehicle drivers to turn off the engine while not moving.</li> <li>▪ Allow transportation of materials only in the normal working hours.</li> <li>▪ Allow noise generating activities only in the normal working hours.</li> <li>▪ Use low noise equipment where practicable.</li> <li>▪ Use hydraulic piling hammers instead of diesel driven hammer.</li> <li>▪ Install noise barrier to contain the high noise levels in necessary conditions.</li> <li>▪ Silencers will be fitted during blow down and drying of lines and vessels during pre-commissioning.</li> <li>▪ All power tools must be checked by EHS engineer and must have verification sticker.</li> <li>▪ Prior to the commencement of noisy or vibration operation Manager (C) shall inform intended working hours to owner and shall liaise with neighborhoods.</li> </ul>
<b>Responsible Team</b> Contractor's HSE Team
<b>Responsibilities</b> To implement the EMP and make sure all contractors follow the EMP.
Estimated budget for noise/vibration, pollution management plan is about 2,000,000 kyats.

**(5) Waste Management Plan****Management Plan****Waste segregation**

- Follow YCDC guidelines to dispose the wastes to be in line with their rules and regulations.
- All waste materials shall be classified and segregated into the following categories:
  - (1) Hazardous waste  
Oil, chemical, solvents, paint, insulations, any toxic substances etc.
  - (2) Non-Hazardous waste
    - Type A: (Stone, bricks, grit etc.)
    - Type B: (Metals, electrical and instrument cabling, wood, plastic, rubber, etc.)
    - Type C: (Domestic waste, food, rubbish etc.)
- All hazardous waste must be collected in red plastic bags.

**Waste Disposal**

- Type A waste will be disposed by Township Development Councils for waste collection.
- Type B waste will be disposed by YCDC.
- Type C waste will be collected in black plastic bags.
- All solid waste must be registered for disposal.
- Risk Assessment in waste management form must be carried out for transportation of waste.
- Before transportation of waste, collection and transportation steps shall be checked and approved by HSE officer.

**Waste Handling**

- Provide adequate and appropriate large bins for bulky construction and closing waste.
- A housekeeping team should be appointed to regularly maintain the litter situation on the construction site;
- Prohibit littering around in the closing site.
- Provide training programs to workers for awareness of safe handling procedures of solid wastes and hazardous waste.

**Responsible Team**

Contractor's HSE Team

**Responsibilities**

To implement the EMP and make sure all contractors follow the EMP.

Estimated budget for waste management plan is about 3,000,000 kyats.

**(6) Occupational Health and Safety Management Plan****Management Plan**

During construction and closing phases of the proposed project, the potential health and safety impacts on employees and contractors can be minimized by implementing the following plan.

**Health Prevention Plan**

- Adhere to environmental health and safety regulations.
- Ensure consistently good water quality through regular water analysis to ascertain compliance to public health standards.
- Provide adequate sanitary facilities for male and female construction workers.

**Safety/Emergency Plan**

- Provide a fully equipped first aid kit.
- Provide first aid training to selected employees and contractors.



<ul style="list-style-type: none"> <li>▪ Provide safety training to all contractors and employees who involved in construction activities.</li> <li>▪ Adhere to environmental health and safety regulations.</li> <li>▪ Only allow to trained and authorized persons to handle the hazardous materials.</li> <li>▪ Keep all related SDS in place.</li> <li>▪ Display adequate warning signs in all hazardous working areas.</li> <li>▪ Uncovered manholes, excavations and trenches must be clearly demarcated.</li> <li>▪ Firefighting equipment must be placed in prominent positions across the site where it is easily accessible.</li> <li>▪ All speed limits must be adhered to.</li> <li>▪ All warning signs shall be posted in English, Myanmar, Thailand and Japanese languages.</li> <li>▪ All construction and closing equipment must be properly guarded to prevent injuries to workers.</li> <li>▪ Emergency numbers for local police and rescue services etc. must be placed in a prominent area.</li> </ul> <p><b>Infectious Disease Control</b></p> <ul style="list-style-type: none"> <li>▪ Do regular cleaning of toilets and canteen area and temporary office area.</li> <li>▪ Cover waste bins to avoid breeding of flies and other insects</li> <li>▪ Make sure there will be no water ponding within premise to avoid breeding of mosquitos.</li> <li>▪ Educate the contractors for awareness of sensitization, self-hygiene and precaution practices such as safe social distancing, wearing masks and washing hands, etc.</li> </ul> <p><b>Noise and vibration</b></p> <p>Hand arm vibration syndrome and hearing problems of the construction and closing workers can be reduced by following plan.</p> <ul style="list-style-type: none"> <li>▪ All hand tools and portable power tools shall be of recognized industrial manufacturer and must be kept in good repair.</li> <li>▪ All power tools must be passed inspection program and verified by contractor inspection sticker.</li> <li>▪ Undertake regular maintenance of equipment.</li> <li>▪ Provide earplugs/muffs, or other hearing protective device to those who work in the noisy area.</li> </ul> <p><b>Prevention of Heat Stress</b></p> <p>The weather in Yangon region is hot and humid at most times and that can lead to workers for experiencing heat stress when working long hours under direct sunlight or without shelter. For prevention of experiencing heat stress, the following mitigation measures should be implemented.</p> <ul style="list-style-type: none"> <li>▪ Provide safe and adequate drinking water taps or station.</li> <li>▪ Provide workers' shelters.</li> <li>▪ Give break when the workers need to work long hours under direct sunlight.</li> </ul>
<p><b>Responsible Team</b></p> <p>Contractor's HSE Team</p>
<p><b>Responsibilities</b></p> <p>To implement the EMP and make sure all contractors follow the EMP.</p>
<p>Estimated budget for occupational health and safety management plan is about 3,000,000 kyats.</p>

**(7) Handling of Chemicals Management Plan****Management Plan**

- The EPC contractor must acquire SDSs for all chemicals and hazardous substances used on site.
- Provide training for environmental impacts of chemicals and hazardous substances.
- Provide required PPE to the employees who handle the chemicals.
- Hazardous material storage areas must be signposted clearly.
- Place all hazardous materials in bunded containment areas.
- All hazardous substances must be stored away from any water body on site.
- For every spill, immediately contain, recover and clean up the spill.
- All spillages must be reported to the HSE Officer and Project Manager.
- Provide fire prevention facilities at hazardous chemical storage facility.

**Responsible Team**

Contractor's HSE Team

**Responsibilities**

To implement the EMP and make sure all contractors follow the EMP.

Estimated budget for Chemicals management plan is about 3,000,000 kyats.

**7.10 Environmental Monitoring Plan**

Environmental monitoring and audits will be undertaken during the operation and closing phase to check that the environmental management measures are being satisfactorily implemented and that they are delivering the appropriate level of environmental performance.

Monitoring frequency should be sufficient to provide representative data for the parameter being monitored. Monitoring data should be analyzed and reviewed at regular intervals and compared with the operating standards and national guidelines so that any necessary corrective actions can be taken. The proponent is committed to adhere to the environmental monitoring parameters in terms of location, schedule and responsibilities as provided in Table 6.6.

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Table 7-6 Environmental Monitoring Plan

No	Impact	Monitoring Method	Monitoring Item and Parameter	Location	Frequency	Responsibilities
1.	Air Quality	Measurement	<b>Ambient Air Quality</b> (SO <sub>2</sub> , NO <sub>2</sub> , Ozone, PM <sub>2.5</sub> , PM <sub>10</sub> )	At Entrance Gate (16° 55' 51.23"N 96° 3' 40.16" E) Ah Lel Village Monastery (16° 55' 21.03"N 96° 3' 53.58" E)	Twice a year	EMP Team
			<b>Workplace (indoor) Air Quality</b> (PM <sub>10</sub> , PM <sub>2.5</sub> , SO <sub>2</sub> , NO <sub>2</sub> , Ozone, VOC)	Production Area (16° 55' 53.44" N 96° 3' 41.12" E)	Twice a year	
			<b>Electric Generator Exhaust Gas Quality,</b> (PM <sub>10</sub> , SO <sub>2</sub> , NO <sub>2</sub> )	Electric generator exhaust pipe (16° 55' 51.70" N 96° 3' 39.25" E)	Twice a year	
			<b>Dust Collector Emission Gas Quality</b> (PM <sub>10</sub> , PM <sub>2.5</sub> )	Dust Collector 16°55'54.48"N, 96° 3'41.08"E	Twice a year	
2.	Noise Quality	Measurement	<b>Noise Level at Boundaries</b> Leq [(dB(A)]	NMP-1 (16° 55' 50.78" N 96° 3' 40.75" E) NMP-2 (16° 55' 51.81" N 96° 3' 39.00" E) NMP-3 (16° 55' 54.95" N 96° 3' 41.95" E) NMP-4 (16° 55' 53.78" N 96° 3' 43.14" E)	Twice a year	EMP Team

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			<b>Workplace (indoor) Noise Quality</b> Leq [(dB(A)]	Production Area (16° 55' 53.44" N 96° 3' 41.12" E)	Twice a year	
3.	Vibration	Measurement	Vibration Level (Hz)	Near Security Gate of Project (16° 55' 51.24" N 96° 3' 40.12" E) Ah Lal Ywar Village Monastery (16° 55' 21.03" N 96° 3' 53.58" E)	Twice a year	EMP Team
4.	Water Quality	Sampling	<b>Underground Water Quality</b> (Aluminum, Arsenic, Chloride, Copper, Cyanide, Manganese, pH, Sulfate, Total Alkalinity as CaCO <sub>3</sub> , Total Dissolved Solids, Total Hardness as CaCO <sub>3</sub> , Total Iron, Turbidity)	Tube Well within the Project Site (16° 55' 51.04" N 96° 03' 40.17" E) Tube Well at Church, Ah Lal Ywar Village (16° 55' 21.31" N 96° 03' 53.32" E) Tube Well at Aung Zay Yar Min Monastery, Ah Lal Ywar Village (16° 55' 23.15" N 96° 03' 52.30" E)	Twice a year	EMP Team
			<b>Surface Water Quality</b> Total Suspended Solids, COD, 5 day BOD, Dissolved Oxygen (DO), pH, Ammonia Nitrogen, Oil and grease, Escherichia Coli (E.coli), Copper	Downstream of Hlaing River (16° 55' 40.81" N 96° 4' 15.57" E) Midstream of Hlaing River (near wastewater discharge point of Industria Compound) (16° 56' 04.86" N	Twice a year	

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				96° 3' 45.99"E) Upstream of Hlaing River (16° 56' 11.30" N 96° 3' 40.69"E)		
			<b>Wastewater Quality</b> (5 day Biochemical Oxygen Demand, Ammonia, Arsenic, Cadmium, Chemical Oxygen Demand, Chlorine (Total residual), Chromium (Hexavalent), Chromium (Total), Copper, Cyanide (Free), Cyanide (Total), Fluoride, Iron, Lead, Mercury, Nickel, Oil and Grease, pH, Phenols, Selenium, Silver, Sulfide, Temperature Increase, Total Coliform Bacteria, Total Phosphorous, Total Suspended Solids, Zinc)	Wastewater Treatment Inlet 16°55'54.70"N 96° 3'41.27"E wastewater treatment outlet 16°55'54.80"N 96° 3'41.46"E	Twice a year	
5	Soil Quality	Sampling	<b>Soil</b> (pH, Chloride (Cl <sup>-</sup> ), Total Iron (Fe), Arsenic (As), Cyanide (CN), Aluminum (Al), Manganese (Mn), P – Alkalinity, Total Alkalinity, Extractable Acidity)	Outside the factory (16° 55' 51.50" N 96° 3' 39.09" E)	Twice a year	EMP Team
6	Odor	Measurement	Odor Level (Odor Unit)	Paint Mixing (Filling Area) ( 16° 55' 53.09" N, 96° 3' 40.8" E) and Finished Goods (Storage) (16° 55' 52.63" N, 96° 3' 41.46" E).	Twice a year	EMP Team
7	Solid Waste	Audits, photographic	<b>Non-Hazardous Wastes</b> ▪ Separate bins for different kinds of	solid waste disposal (16° 55' 53.90" N	Monthly	EMP Team

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		documentation	<p>waste</p> <ul style="list-style-type: none"> <li>Record the solid waste amount</li> <li>Inspect the waste disposal system</li> </ul> <p>Inspect storage system of waste</p> <p><b>Hazardous Wastes</b></p> <ul style="list-style-type: none"> <li>Record the storage amount of hazardous wastes such as fluorescent tube lights, batteries, machine oil containers, etc.</li> <li>Inspect the disposal system</li> <li>Inspect the hazardous wastes storage area</li> </ul>	96° 3' 43.35" E)		
8	Occupational Health and Safety	Record and Manage	<ul style="list-style-type: none"> <li>sick leaves</li> <li>average number of working hours for employee</li> <li>occupational illness</li> <li>days of absence caused by occupational illness</li> <li>complaints and grievance information</li> <li>Invasion of alien species</li> </ul>	<p>leave, record section of Administrative Department</p> <p>(16° 55' 52.36" N 96° 3' 39.73" E)</p>	Monthly	EMP Team
9	Biodiversity	Record and Manage	<ul style="list-style-type: none"> <li>Invasion of alien species</li> </ul>	<p>Office</p> <p>(16° 55' 52.36" N 96° 3' 39.73" E)</p>	Monthly	EMP Team
10	Hazard Chemical	Record and Manage	<ul style="list-style-type: none"> <li>Chemical Inventory</li> <li>Risk Assessment of Hazardous Chemicals</li> <li>Risk Control Measures and Emergency Preparedness Training</li> </ul>	<p>Office</p> <p>(16° 55' 52.36" N 96° 3' 39.73" E)</p>	Monthly	EMP Team
11	Emergency Risk	Record and Manage	<ul style="list-style-type: none"> <li>Inspect the firefighting equipment such as extinguisher, fire hydrants and fire hose</li> <li>Record the training situation and trained person</li> <li>Inspect and record the emergency</li> </ul>	Factory compound	Monthly or if necessary	EMP Team



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			<ul style="list-style-type: none"> <li>▪ response activities</li> <li>▪ Inspect and record the situation of drain in the project area</li> <li>▪ Record the emergency response plan</li> <li>▪ Record the inspection information</li> </ul>			
12	Archaeology and Heritage	Collect the information	<ul style="list-style-type: none"> <li>▪ information of cultural heritage affairs</li> </ul>	Hlaing Thar Yar Township	The whole year	EMP Team
13	Socio Economic	Document the records	<ul style="list-style-type: none"> <li>▪ Record of disputant</li> <li>▪ Record riot</li> <li>▪ Information of grievance mechanism</li> </ul>	Hlaing Thar Yar Township	The whole year	EMP Team
14	Social Health	Document the records	<ul style="list-style-type: none"> <li>▪ Infections disease</li> </ul>	Hlaing Thar Yar Township	The whole year	EMP Team

## **8 PUBLIC CONSULTATION AND DISCLOSURE**

Public consultation is a crucial and regulatory component for EIA process according to the EIA procedure, 2015. It can be used a powerful tool to explore the potential impacts by the proposed project by means of public participation.

### **8.1 Purpose and Methodology**

The objectives of public consultation are:

GMES apply public consultation as an active mechanism for promoting the public participation process,

- to ensure transparency between public and the project proponent,
- to ensure accountability in decision-making process,
- to participate various stakeholders and interested parties in EIA process,
- to collect the feedback and comments from Stakeholders on the proposed project and
- to enhance the outputs and outcomes of EIA process.

From the third-party side, GMES will perform the stakeholder engagement process in the scoping phase as described in following steps.

- Explore the interested stakeholders including:
  - nearby communities,
  - relevant authorities and other government departments,
  - committees and associations which are related to the industrial zones.
- Circulate disclosed information to these stakeholders before the meeting.
- Invite all these stakeholders to the meeting.
- Explain and discuss about the proposed project and EIA baseline assessment with respect and honest manner.
- Create agenda slot to raise their concerns and point-of-view in PCM.
- Collect their feedbacks and suggestions for further assessment.
- Arrange cluster-wise FGD according to public concerns and suggestions within PCM.

### **8.2 Identification of Stakeholders**

Stakeholders for a project means that any interested or project-affected individuals and groups. At the beginning of scoping phase, GMES can identify only Potential Project Affected (PPA) stakeholders – either directly or indirectly effected by the project – based on baseline surveys and findings from the public consultation process. The project proponent also has the social responsibility to handle the stakeholder engagement process with a simple policy of “Open-To-All”. GMES as the third-party consultation firm will advise to the project proponent to formulate the proper stakeholder engagement plan in accordance with Environmental Impact Assessment Procedure, 2015.

The preliminary list of stakeholders identified that could be potentially impacted by the Projects activities are shown in below:

Government	- Regional Environmental Conservation Department (ECD), Yangon
	- District ECD
	-General Administrative Department (GAD) of Hlaing Thar Yar (West) Township
	-Department of Health, Hlaing Thar Yar (West) Township,
CSO	-Urban Health Center, Hlaing Thar Yar (West) Township,
Nearby Community	-Ah Lel Village
Industry in Surrounding	-Seven factories from Ngwe Pin Lal Industrial Zone

### **8.3 Public Consultation Meeting**

There are three public consultation meetings as

- 1<sup>st</sup> public meeting during the preparation of scoping report (held at 29-1-2023)
- 2<sup>nd</sup> public meeting (held at 29-5-2024)
- 3<sup>rd</sup> public meeting (held at 7-8-2024)

#### **8.3.1 First Public Consultation Meeting**

First public consultation meeting was meeting for scoping report and it was held at 29-1-2023, at the office of Industrial Zone Management Committee, Ngwe Pin Lal Industrial Zone, Hlaing Thar Yar (West) Township of Yangon Region. Various Stakeholders have been invited including,

- Yangon Region Environmental Conservation Department (ECD),
- District ECD Office,
- General Administrative Department (GAD) of Hlaing Thar Yar (West) Township,
- Hlaing Thar Yar (West) Township Development Committee,
- Department of Health, Hlaing Thar Yar (West) Township,
- Urban Health Center, Hlaing Thar Yar (West) Township,
- Village Tract Executive Offer, Ah Lel Village Tract
- Aung Zay Yar Min Monastery, Ah Lel Village
- Board of Trustees, Ngwe Pin Lae Pagoda
- Kayin Christian Community, Ah Lel Village
- Three folks from Ah Lel Village
- Factories from Ngwe Pin Lal Industrial Zone

On the PCM day, there are 16 participants (13 males and 3 females) attend the meeting. (The copy of attendance list and suggestion letters from PCM is attached in **Appendix III**.



**Figure 8-1 Photos of First Public Consultation Meeting**

**8.3.1.1 Agenda**

The main agenda of PCM consists of three contexts as described in below.

1. Introduction and Information Disclosure:
  - i) Disclose the information about the proposed project by a senior executive from project proponent.
  - ii) Brief introduction about third-party consultant team, EIA procedure, baseline assessment, preliminary findings by EIA Team Leader and representative Area Experts
2. Open Discussion: The participants can raise any questions and their concerns related to the proposed project. The project proponent and EIA firm respond their questions and concerns. These questions and concerns are recorded to apply in further assessment.
3. Collection of further suggestions from individuals: The participant's suggestions are also important for EIA process and EIA firm will ensure to act upon these suggestions.  
(The PCM agenda, meeting minutes in Myanmar version)

**8.3.1.2 Key Questions and Concerns**

There is no key question raised during the first PCM. There are five suggestions and concerns raised through the suggestion forms which are described in the following table with the Reference of Scoping Report.

Name	Suggestion/Concern	Action Plan on Suggestion/Concern
<b>Stakeholders</b>		
U Kyaw Soe District ECD	<ul style="list-style-type: none"> <li>▪ EIA Team must define sufficient Study Area for Scoping Process</li> <li>▪ The wastewater from the factor operation must be treated prior the final effluent points according to the NEQEG standards</li> </ul>	<ul style="list-style-type: none"> <li>▪ For Scoping Process, the EIA team has identified an adequate study area.</li> <li>▪ The Wastewater treatment system will be carried out in the factory and the wastewater will be discharged only after has been treated.</li> </ul>
Daw Cho Wai Lwin District ECD	<ul style="list-style-type: none"> <li>▪ EIA Team must define sufficient Study Area for EIA Process</li> <li>▪ Ensure the waste disposal for preventing the pollutions of water, air, and environment</li> </ul>	<ul style="list-style-type: none"> <li>▪ For EIA Process, the EIA team has identified an adequate study area.</li> <li>▪ Waste materials will be disposed carefully to avoid pollution of water, air and environment.</li> </ul>

Name	Suggestion/Concern	Action Plan on Suggestion/Concern
<b>Stakeholders</b>		
U Thein Lwin EO Office, Hlaingtharya (West) Township Development Committee	<ul style="list-style-type: none"> <li>Health &amp; Safety due to chemical use</li> <li>Avoid direct effluent of wastewater into the drain and implement treatment system</li> <li>Wages and social welfare will be according to the regulatory requirements</li> <li>Apply legal license-to-operate from corresponding Development committee</li> </ul>	<ul style="list-style-type: none"> <li>Ensure that health and safety due to chemicals.</li> <li>Wastewater from the factory will be discharged into the drainage system after treatment in the wastewater treatment system.</li> <li>Procedure will be followed.</li> <li>Suggestions will be accepted.</li> </ul>
<b>Project Affected People (PAP)</b>		
U Zaw Ye Aung 10-Household Head Ah lel Village	<ul style="list-style-type: none"> <li>Implement adequate mitigation for bad odor to prevent the community health</li> </ul>	<ul style="list-style-type: none"> <li>The factory will implement adequate mitigation measures for bad odor to prevent the community health.</li> </ul>
U Aung Zaw Moe 100-Household Head Ah Lel Village	<ul style="list-style-type: none"> <li>Take care on Community Health of villagers</li> <li>Create Job Opportunities for villagers</li> </ul>	<ul style="list-style-type: none"> <li>Suggestions will be accepted and carried out.</li> </ul>

### 8.3.2 Second Public Consultation Meeting

Second public meeting was held on May 29<sup>th</sup>, 2024 at the factory of Nippon Paint (Myanmar) Co., Ltd, Ngwe Pin Lal Industrial Zone, Hlaing Thar Yar Township, Yangon. List of people who attended the public meeting was recorded with their signatures. There were 42 participants from local community attended the public meeting and participated in open discussion. Suggestion letters prepared in a form were distributed at the beginning of the first public meeting and (12) suggestion letters are collected back when the meeting is concluded. The meeting minutes, attendance lists, meeting record photos and suggestion by attendance is attached in **Appendix IX**. Discussions in suggestion letters are as follow in Table.

**Table 8-1 Description of closing speech (AD) and suggestion sheets from the Public consultation meeting**

Sr.	Name	Suggestion/Concern
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No		
<b>Stakeholders</b>		
1	U Myint Zaw Oo (Assistant Director, Environmental Conservation Department, Northern District)	<ul style="list-style-type: none"> <li>▪ To follow and implement the company's current environmental protection policies.</li> <li>▪ To comply with the certificates obtained internationally</li> </ul>
<b>Project Affected People (PAP)</b>		
2	U Aung Zaw Oo Yangon Municipal Office (Hlaing Tharyar (West) District)	<ul style="list-style-type: none"> <li>▪ To dispose solid waste through the on call system and report the action to the township municipal office</li> <li>▪ To clear the bushes around the factory and ensure regular cleanliness of the fences (It is a consultation to make it in line with the city features)</li> </ul>
3	U Win Naing (Ah Lel Ywar Village)	<ul style="list-style-type: none"> <li>▪ Thank you very much for the focus discussion on Ah Lel Ywar Village in today's discussion</li> <li>▪ Create Job Opportunities for villagers</li> </ul>
4	U Myint Soe (Ah Lel Ywar Village)	<ul style="list-style-type: none"> <li>▪ To give job priority to the villagers</li> </ul>
5	U Zaw Ye Aung (Ah Lel Ywar Village)	<ul style="list-style-type: none"> <li>▪ As a village administrative official, the recommendations are that the factory should prevent the chemical odors from coming out of the factory in order to prevent the health risks that will befall the villagers and pay attention to the health of the villagers.</li> <li>▪ Dispose of waste materials properly.</li> <li>▪ To control noise from the factory as much as possible</li> <li>▪ If there is a need for workers, those who live in the Ah Lel Ywar village should be given priority and given appropriate positions.</li> </ul>







Figure 8-2 Photos of Second Public Consultation Meeting

### 8.3.3 Third Public Consultation Meeting

Third public meeting was carried out on August 7<sup>th</sup> 2024 at the factory of Nippon Paint (Myanmar) Co., Ltd, Ngwe Pin Lal Industrial Zone, Hlaing Thar Yar Township, Yangon. At this meeting, about 30 participants from local community including district level officer in-charge of government departments attended the public meeting and participated in open discussion. List of people who attended the public meeting was recorded with their signatures. Suggestion letters prepared in a form were distributed at the beginning of the public meeting and (10) suggestion letters are collected back when the meeting is concluded. The meeting minutes, attendance lists, meeting record photos and suggestion by attendance is attached in **Appendix X**.

**Table 8-2 Description of closing speech (AD) and suggestion sheets from the Public consultation meeting**

Sr. No	Name	Suggestion/Concern
Stakeholders		

1	U Myint Zaw Oo (Assistant Director, Environmental Conservation Department, Northern District))	<ul style="list-style-type: none"> <li>There are costs in the monitoring plan. So, the wastewater monitoring could be done every six months instead of every three months.</li> <li>Since Nippon Paint is a big company, it has environmental study standards. I want to add those. Not now, of course. According to the international standard, I think those are the details that the environment of the company, people and profit. I want to describe what the parent company has set out to do and avoid.</li> <li>Director General (DG) went to inspect the bicycle factory recently; there was a great system of spraying. I'm sure that this company also has systematic standards. I want them to be highlighted. If necessary, I would like to add picture and highlight.</li> <li>Another thing is that they said there is already existing wastewater treatment plant. I'd like to have a detailed explanation in Burmese about how it operates. Additionally, I would also like to mention that the system in the factory is mainly built to remove what kind of dirt. This way, we will have more clear understanding and convenient when we go to the field. Also, I would like to include the annual cost of system. If these details are provided, we will be approved immediately.</li> </ul>
<b>Project Affected People (PAP)</b>		
1.	Daw Yu Wah Soe	<ul style="list-style-type: none"> <li>To employ the villagers</li> </ul>
2.	U Zaw Ye Aung (Ah Lal Ywar Village)	<ul style="list-style-type: none"> <li>As a member of the village administration, I would like to express my sincere thanks to your company for opening up in the administration of Ah Lal Ywar village and increasing the job opportunities for the young people who live in the village.</li> <li>When your company needs to hire staff, please consider giving priority to people who live in the village.</li> </ul>
3.	U Aye Soe (Ah Lal Ywar Village)	<ul style="list-style-type: none"> <li>We appreciate your company's respect and planning for Ah Lal Ywar village.</li> </ul>
4.	Daw Htet Wai Soe (Ah Lal Ywar Village)	<ul style="list-style-type: none"> <li>To repair of the waste and drainage systems.</li> </ul>
5.	U Sai Myint Myat (Ah Lal Ywar Village)	<ul style="list-style-type: none"> <li>No recommendations.</li> </ul>
6.	Daw May Thu Soe (Ah Lal Ywar Village)	<ul style="list-style-type: none"> <li>Agree to suggestions.</li> </ul>
7.	U Aung Htet Thu (Ah Lal Ywar Village)	<ul style="list-style-type: none"> <li>Agree to suggestions.</li> </ul>
8.	U Myint Soe (Ah Lal Ywar Village)	<ul style="list-style-type: none"> <li>No recommendations.</li> </ul>
9.	U Min Naing	<ul style="list-style-type: none"> <li>No recommendations.</li> </ul>



(Ah Lel Ywar Village)	
-----------------------	--





**Figure 8-3 Photo of Third Public Consultation Meeting**

## **8.4 Public Disclosure**

Public disclosure is one of the requirements in Scoping phase of EIA process. According to the EIA procedure, 2015, disclose information about the proposed Project to the public and civil society through posting on the Project or Project Proponent's website(s) and local media, including by means of the prominent posting of legible sign boards and advertising boards at the Project site which are visible to the public;

For this Scoping Phase, GMES together with project proponent disclose the relevant information to the Stakeholders at the consultation meetings and the approved Scoping report will be disclosed to the Government Department such as Myanmar Investment Commission (MIC), Directorate of Industrial Supervision and Inspection (DISI), Regional Environmental Conservation Department (ECD), Regional Administration Department and others (local library and nearby communities, CSO).

The information of Nippon Paint (Myanmar) Co., Ltd can read at <https://www.nipponpaint.com.mm/my/> and <https://www.facebook.com/nipponpaintmyanmar> and will disclose at this links. In addition, information related to the project that the public needs to know will be announced on this website.



## **8.5 Future Consultations**

In future, the Company, Nippon Paint (Myanmar) Co., Ltd, plans to hold consultation meeting with project affected people occasionally. In this meeting, the company will invite related Governmental Department, NGO, and project affected people.

In addition, the company will continuously engage with the residents in order to inform the operation of the plant or to discuss the issues due the project activities. The company will solve the complains and suggestions of project affected people with Complaints and Grievances Mechanism of Company and the laws and regulations of Myanmar.

## **8.6 Corporate Social Responsibility**

Corporate social responsibility (CSR) is now an important factor in company's project operation. Nippon Paint (Myanmar) Company Limited will take up different social activities in future and presently an Initial CSR Plan has been prepared.

### **8.6.1 Employee's Social Welfare Plan**

Employee welfare raises the company's expenses but if it is done correctly, it has huge benefits for both the employee and the employer. In fact, employee welfare is in the interest of the employee, the employer and the society as a whole. The objectives of employee welfare are:

- It helps to improve the loyalty and morale of the employees.
- It reduces labour turnover and absenteeism.
- It helps to improve employee productivity.
- Welfare measures help to improve the goodwill and public image of the company.

The project proponent has employee's welfare plan and submitted to Myanmar Investment Commission. The following facilities and services are the usual company practices and based on the labor law of the country. The project proponent has a welfare plan for employees are as follows;

#### **(a). Staff Transportation**

This factory arranges the transportation for all employees.

#### **(b). Other Benefits**

All reasonable supporting were performed by factory such as purified drinking water, water closets and the sanitation system, support basis food for employee' families. The activities of **Nippon Paint (Myanmar) Company Limited** as development program are:

- ✓ Annual Kahtain Robes is donated
- ✓ Occasional donation for natural disaster and other emergency condition for staff and employee.



**Figure 8-4 Monsoon Gift to support basis food for staff**  
*Uniform*

All employees are supplied with four uniforms and personal protective equipment such as mask, gloves (rubber, cotton), safety boots and hats.



**Figure 8-5 Personal Protective Equipment provide**

**Health Care**

The company has arranged for employees to undergo a medical examination before entering the workplace and medical examination form is described in Appendix XI. The company provides medical check-ups (free of charge) for all employees twice a year and categorized by section as following.

**Regular Medical Examination for 2024**

No.	Department	2024 January	2024 June
1	Production	Regular Medical Examination	Regular Medical Examination
2	Logistics	Regular Medical Examination	Regular Medical Examination
3	Office Staff	Regular Medical Examination	Regular Medical Examination
4	Sales Staff	Regular Medical Examination	Regular Medical Examination

**Regular Medical Examination for 2025**

No.	Department	2025 April	2025 October
1	Production	Regular Medical Examination	Regular Medical Examination
2	Logistics	Regular Medical Examination	Regular Medical Examination
3	Office Staff	Regular Medical Examination	Regular Medical Examination
4	Sales Staff	Regular Medical Examination	Regular Medical Examination

If any emergency cases arise due to work- related activities, in case of worker injuries, a vehicle with a driver is kept ready to transport the patient to the nearest hospital as quickly as possible. The transportation follows the shortest route to ensure timely arrival at the hospital. An emergency fund is set aside for medical treatment in emergency cases.

In addition, purified water is provided for staff drinking water. Appropriate sanitation facilities are installed and regular disinfection work carried out. Health, Safety and Environment Officer of Environmental and Social Management Team will be responsible for providing healthcare for the workers. The project proponent provides the following health programs.

- a) Medicine and first aid kits are available at the factory to address emergency cases.
- b) The factory has first aid kits and a resting room for staff who feel sick.
- c) Those who are sick will be sent to social welfare hospital for care.
- d) The project proponent trains employees on basic health care such as First aid Training. It aims to teach staff how to provide first aids for injured person during emergency cases.
- e) The project proponent supply medicine and/or provide for the cost of medicine longtime employees as required.
- f) The project proponent supply “Group Life Insurance (Personal Accident Injuries)” for staff.



**CB Insurance**  
Citizen Business Insurance Public Ltd

No	Location	Amounts
1	Donation for Mocha Storm effected painters at Sittwe, Rakhine State	29,000,000 Kyats
2	Donation to Buddhist Stupas painting with golden color at Yangon Region	Gold Paint GW 7000 (1 gl)-12 Cans
3	Donation to Thanyote Buddhist Monastery	175.000 Kyats

	Fence Painting at Yangon Region	
4	Donate basic needs for monks and children in the monastery at Bago Region	300,000 Kyats
5	Oral Rehydration Salt Solution Campaign at Mandalay Region	Targeted painter 500
6	Donation to Painter Philanthropic Organization at Mandalay	150,000 Kyats
7	Donation to Painter Philanthropic Organization at Pyin Oo Lwin City	150,000 Kyats
8	International Women's Day	Empowering orphaned and Disabled woman through paint education and sport.
9	Donation rice bag to needy people	
10	Donation to Army Day commemoration	200000 Kyats
11	Donation to Children's hospital with 550 beds (Yankin)	12500 Kyats for Lunch
12	Donation to Care Teen Youth Charity	Donation of house paint for food hall
13	Donation to See-Zar-Yeik (Twilight Villa)	12 Bags of rice

### CSR for Mocha Storm Effected painters @ Sittwe, Rakhine State

❖ CSR proposed by Ko Htun Htun Kyaw for Mocha Storm effected painters @ Sittwe.

❖ 100,000 Kyats for each 29 Painters (Total – 29 Lakhs)



Money donation to Mocha storm effected painters in Sittwe



### CSR – @ Yangon Region

- CSR proposed by Ko Thein for Buddhist Stupas painting with golden color.
- ❖ Gold Paint GW7000 (1gl) – 4 Cans for each Stupa (Total – 4 Stupas)



Painting Buddhism Stupas @ Yangon Region

### Buddhist Monastery Fence Painting Donation @ Yangon

- ❖ CSR proposed by Ko Brown for Buddhist Monastery Fence Painting Donation.
- ❖ Special Putty – (4 bags), Atom Sealer (18L) – 1 Can, Atom 2 in 1 SAO -2033 (1gl) -1 Can, Atom 2 in 1 AO 2011 (18 L) - 1 Can, Mingalar Gold Paint (GW - 9000) (1gl) – 1 Can
- Budget – 175,000 Kyats



Before



After

Thanyote Buddhist monastery @ Yangon region

### Basic needs donation for Buddhist Monastery @ Bago Region

- ❖ CSR proposed by Ko Phvo Thiha Kyaw to donate basic needs for monks and children in the monastery. (Rice, Oil, Cold Drinks and Cakes)
- ❖ Total Budget – 300,000 Kyats



Donation@ Buddhist Monastery at Bago Region



### Oral Rehydration Salt Solution Campaign @ Mandalay Region

- ❖ Oral Rehydration Salt Solution Campaign is proposed by Ko Sai Htet Lwin.
- ❖ Targeted painters – 500



Oral Rehydration Salt donation to painters in Mandalay

### Donation to Painter Philanthropic Organization @ Mandalay

- ❖ This Campaign is proposed by Ko Sai Htet Lwin.
- ❖ Nippon Paint Myanmar donates 150,000 Kyats for Painter Philanthropic Organization in Mandalay.



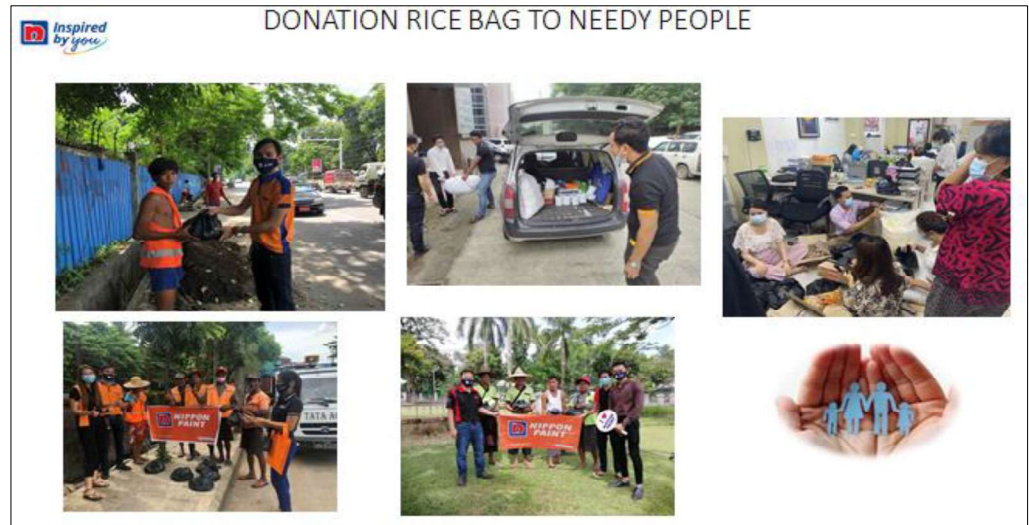
Donation to Painter Philanthropic Organization @ Mandalay

### Donation to Painter Philanthropic Organization @ Pwin Oo Lwin City

- ❖ This Campaign is proposed by Ko Sai Htet Lwin.
- ❖ Nippon Paint Myanmar donates 150,000 Kyat for Painter Philanthropic Organization in Pwin Oo Lwin City.



Donation to Painter Philanthropic Organization @ Pwin Oo Lwin City







Donation to Army Day commemoration and Donation to Children's hospital with 550 beds (Yankin)



Donation to Care Teen Youth Charity

Donation to See-Zar-Yeik (Twilight Villa)

Figure 8-8 Photos of Donations

### 8.6.3 Training

Training (a performance improvement tool) is needed when employees are not performing up to a certain standard or at an expected level of performance. The difference between the actual level of job performance and the expected level of job performance indicates a need for training. The identification of training needs is the first step in a uniform method of instructional design. A successful training needs

analysis will identify those who need training and what kind of training is needed. It is counter-productive to offer training to individuals who do not need it or to offer the wrong kind of training. A Training Needs Analysis helps to put the training resources to good use.

Today's, workplace often requires employees to be independent thinkers responsible for making good decisions based on limited information. This kind of work may require training if the employee does not have these skills. Below is a list of various competencies that employees may be required to possess in order to perform their jobs well.

**Table 8-4 Training and Knowledge Sharing plan**

Sr.No	Traning	Location
1.	Chemical Safety Course	Myanmar Engineering Council
2.	First Aid Training (WIN OSHE SAFETY ACADEMY)	MICT Park
3.	Fire Fighting Training	FYMG Co., Ltd
4.	Fire Safety Manager Course	Department of Fire
5.	OSH Supervisor Training Course (Sharing to colleagues)	FYMG Co., Ltd



**Action:** Chemical Safety Course

**Location:** Myanmar Engineering Council





Action: First Aid Training (WIN OSHE SAFETY ACADEMY)

Location: MICT Park



FIRST AID TRAINING





**NIPPON PAINT**

Action: Fire Fighting Training

Location: FYMG Co.,Ltd



**NIPPON PAINT**

Action: Fire Safety Manager Course

Location: Department of Fire

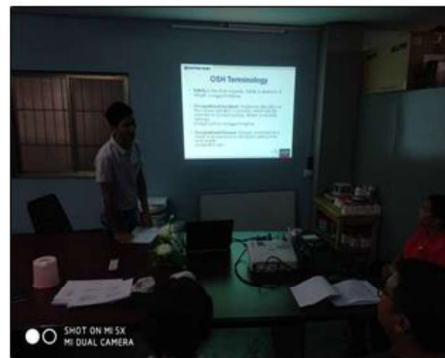






**Action:** OSH Supervisor Training Course (Sharing to colleagues)

**Location:** FYMG Co., Ltd



**Figure 8-9 Training and Knowledge Sharing**

#### 8.6.4 CSR Budget Allotment

At **Nippon Paint (Myanmar) Co., Ltd**, estimated budget for Corporate Social Responsibility is planned as 2.0% of annual net profit and plan for development program such as Employee's Social Welfare Plan and Public

Development and Donation. If there were not sufficient as 2% of annual net profit, it will plan for extra budget.

## **8.7 Grievance Redress Mechanism (GRM)**

A grievance redress mechanism (GRM) must be made available to parties who have grievances or are not satisfied with any part of the development of proposed project and compensation process.

### **8.7.1 Purposes of GRM**

The purposes of a well-established and well-functioning GRM are following;

- To ensure that grievances, complaints and concerns are addressed and resolved in a fair, transparent and easily accessible manner in order to achieve the goals of restoring positive relationships with affected persons/households and communities.
- To be responsive to the needs of beneficiaries and to address and resolve their grievances;
- To serve as a conduit for soliciting inquiries, inviting suggestions, and increasing community participation;
- To collect information that can be used to improve operational performance;
- To promote transparency and accountability
- To deter fraud and corruption and mitigate project risks
- To facilitate timely feedback from local communities in order to support the project's commitment to continuous improvement.

### **8.7.2 Basic Elements of GRM Design**

It is based on an integrated approach guided by five principles and five process steps, with adequate resources assigned to them. These basic elements are relevant for all project sizes and industries.

However, the processes behind them are context-specific, and the form of the grievance mechanism should be adapted to the needs of both the project and relevant stakeholders.

### **8.7.3 Principles of GRM**

1. Proportionality: Scaled to risk and adverse impact on affected communities
2. Cultural Appropriateness: Designed considering culturally appropriate ways of handling community concerns
3. Accessibility: Clear and understandable mechanism that is accessible to all segments of the affected communities at no cost
4. Transparency and Accountability: To all stakeholders
5. Appropriate Protection: A mechanism that prevents retribution and does not impede access to other remedies

**Table 8-5 Process Steps**

<b>Steps</b>	<b>Description</b>
<b>Step 1:</b> Publicize the Mechanism	<b>Publicizing Grievance Redress Mechanism Manual:</b> GRM manual should be publicize and make sure the availability of manual to all stakeholders.
<b>Step 2:</b> Receive and Register	<b>Receiving and Keeping Track of the Grievances:</b> Once stakeholders are aware of the mechanism and access it to raise grievances, there is need of processing the grievances. Processing includes: 1) collecting grievances; 2) recording grievances as they come in; 3) registering them in a central place; and 4) tracking them throughout the processing cycle to reflect their status and importance
<b>Step 3:</b> Review and investigate	<b>Reviewing and Investigating Grievances:</b> All grievances will need to undergo some degree of review and investigation, depending on the type of grievance and clarity of circumstances
<b>Step 4:</b> Develop Resolution options, Respond to the Grievances	<b>Developing Resolution Options and Preparing a Response:</b> Once the grievance is well understood, resolution options can be developed taking into consideration Stakeholders preferences, project policy, past experience, current issues, and potential outcomes
<b>Step 5:</b> Monitor And Evaluate	<b>Monitoring, Reporting and Evaluating a Grievance Mechanism:</b> Monitoring and reporting can be tools for measuring the effectiveness of the grievance mechanism and the efficient use of resources, and for determining broad trends and recurring problems so they can be resolved proactively before they become points of contention. Monitoring and reporting also create a base level of information that can be used to report back to communities.

#### **8.7.4 Grievance Handling Form**

At Nippon Paint (Myanmar) Co., Ltd, there Grievance Handling Form is shown and it consists description of complainant and official worker for registration, comments.

The forms are shown as English and Myanmar languages.

**OFFICIAL GRIEVANCE HANDLING FORM**

Serial Number.....

Text Box: Photo

**DETAILS OF THE PROJECT AFFECTED PERSON**

Name: .....

Gender: Female ..... Male .....

Contact Number: .....

Occupation: .....

Marital Status: Married...

Single...

Divorced...

Widow(er)...

Separated...

Name of Spouse: .....Contact Number: .....

Next of Kin: .....Contact Number: .....

Address: .....

.....

**GRIEVANCE DESCRIPTION**

Signature of Complainant.....

Date: .....

**FOR OFFICIAL USE ONLY**

Reg. Number: .....

Date Opened: .....

Name of the Recorder: .....

Contact Number .....

Location.....

**Comments from Grievance Handling Committee**

Resolved.....

Referred.....

Closed....

Reasons for Referral:.....

.....

.....

Name & Signature of Officer .....

Date: .....

**To be filled by Project Affected Person:**

Unsatisfactorily handled....

Satisfactorily Handled....

The information filled above is true and correct to the best of my knowledge.

Signature of Complainant: .....

Date: .....

**Comments from Grievance Handling Committee**

Resolved: ....

Referred: ....

Closed.....

Signature of GHC Official .....

Name: .....

Date: .....

မော်နီတိုင်းကုဒ်လုံလားခံကွပ်ကဲသည့်ပုံစံ

အမှတ်.....

စာတွဲ

စီမံကိန်းသက်သေခံ ပုဂ္ဂိုလ်ထုလက်မှတ်

အမည် : .....

ကိုး / မ ..... မ / .....ကိုး

ဆက်သွယ်ရန်နံပါတ် : .....

ရက်စွဲ : .....

အိမ်ထောင်ရေးအချစ်အနက် :

လက်မှတ် .....

ကြာရှည် : .....

မုဆိုးဖို/မုဆိုးမ .....

အိမ်ထောင်ကြီး .....

ဇနီး/ခင်ပွန်း : .....ဆက်သွယ်ရန်နံပါတ် : .....

အနီးစပ်ဆုံးဝတ်ဆင် : ..... ဆက်သွယ်ရန်နံပါတ် : .....

စေ့ရပ်ပွား : .....

.....

မော်နီတိုင်းကုဒ်လုံလားမေးမြန်းချက်

.....

.....

မော်နီတိုင်းကုဒ်လုံလား.....

ရက်စွဲ : .....

ရုံးမှပေးသော

မှတ်တမ်းတင်သည့်နံပါတ် : .....

ဖိုင်သည့်ရက်စွဲ : .....



၂၃ : .....

**8.7.5 Set up the Grievance Handling Committee**

Nippon Paint (Myanmar) Co., Ltd forms the grievance handling committee as following.

**Table 8-6 Grievance Handling Committee**

<b>Grievance Redress Mechanism (GRM) team</b>					
No.	Name	Designation	Years in Service	Qualification	Duty
1	U Sai Nay Zar Lin	Country Manager	1 years	BE (EC)	Patron
2	U Zin Win Tun	HSE	2 months	B E Mechanical	Leader
3	Daw Kyi Kyi Nwe	Production Manager	4 years	B.E (Chemical Engineering)	Member
4	U Sithu Soe	Warehouse Manager	6 years	B.Sc (Bio Chemistry)	Member
5	Daw Htet Thiri Aung	HR Manager	6 years	B.C. Tech (Hons)	Member

**8.7.6 Collection, Solving and Replying the Complaints and Grievances**

The collections of complaints and grievances upon the production and distribution of proposed project are performed as following.

- Hanging the suggestion box on the gate of project
- Distribution the phone numbers of complaints and grievance team leader, members at the gate
- Distribution the phone numbers of complaints and grievances team leader and members to the government administrative department of wards, villages and township.
- The team of complaints and grievances administration will discuss upon complaints and desires and solve or submit to higher level if they cannot solve.

**8.7.7 Estimated Time Duration to solving the Complaints and Grievances**

Estimated time for solving the complaints and grievances upon proposed factory, will be following depending on the conditions

**Estimated Time Duration to Solve the Complaints and Grievances**

---

Sr.No.	Time Duration	Remark
1	one week	If factory manager can solve
2	two to four weeks	If company owner can solve
3	more than four weeks	If to get the helps of court, advocate and professional of laws

## 9 Conclusion

**Nippon Paint (Myanmar) Company Limited** is proposing to establish ‘Manufacturing, Distribution and Sales the Various Kinds of Paint’ project at Plot No. (44), Myay Taing Block No. (24), Ngwe Pin Lal Industrial Zone, Hlaing Thar Yar Township, Yangon Region with the area of 2.273 acres by the permit number 369/2022 dated 1-7-2022 of Myanmar Investment Commission. There was a contract between Green Myanmar Environmental Services Company Limited and Nippon Paint (Myanmar) Company Limited to prepare the Environmental Impact Assessment report at July 2022. Green Myanmar Environmental Services Company Limited prepared the scoping reports that of initial stage of Environmental Impact Assessment report and there were two scoping reports from 2023 to 2024 and approved letter form ECD at April 2024 to carry on the EIA. At the project site installation of machineries and running for test run were performed and commercial run at June 2023.

Form the assessment **Biodiversity**, no endangered or endemic species are reported in the survey area. From the survey results for flora and fauna, there were no IUCN red list if Threatened Species and were ordinary and project site is at already improved Industrial Zone. From the **Socio-economic** assessment, the sources that could be harmful to surrounding social environment would be the odor and noise and to reduce the noise and odor suffering, the project proponent shall plant the native plants as the wind shield along the fence of the factory compound and conduct the EMP and EMOP procedure. From the assessment of **Cultural Heritage**, however, there are no famous historic buildings and very few significance upon cultural heritage sector, if some archaeological remains and cultural significance will be come out, it will be reported the heritage authority of Department of Archaeological and National Museum, Ministry of Religious Affairs and Culture. From the **Health** assessment, monitoring data of ambient air, noise, vibration, odor and wastewater at site are in standard and they favor the very few significance of impacts upon environments.

There are monitoring and analyzing **the ambient air, workplace air, ambient noise levels, workplace noise levels, generator exhaust emission, vibrations, soil quality, odor quality, surface waters, ground waters and wastewaters** and all measured parameters except ground water at the project site; total iron with WHO, EPA and India Standards; turbidity with India Standards, Manganese with WHO, EPA, India Standards and Ministry of Health Standards were in the standards.

These facts show that biodiversity, cultural heritage, hydrology, health and socio-economic are minimum significant under adverse impacts. Myanmar will benefit from increase employment, increased earnings, increased tax revenue, increased foreign investment. The project will also have economic and environmental value-added on a national and regional scale. By controlling the existing conditions with environmental management plan, this proposed project be increasing the positive impacts and minimizing the negative impacts.

# APPENDICES

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### Appendix III Attendance Lists and Suggestion Letters for Public Consultation Meeting

“Nippon Paint (Myanmar) Co., Ltd.” ၏ အကွက်အမှတ် (၄၄)၊ မြေတိုင်းအကွက်အမှတ် (၂၄)၊ ငွေပင်လယ်ကန်မူရန်၊ လှိုင်သာယာ (အနောက်ပိုင်း) မြို့နယ်တွင်  
ဆောင်ရွက်မည့် သုတ်ဆေးအမျိုးမျိုးထုတ်လုပ်ဖြန့်ဖြူးရောင်းချခြင်းလုပ်ငန်း ကက်ရုံအတွက် ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းအစီရင်ခံစာနှင့်ပတ်သက်၍  
အများပြည်သူနှင့်တွေ့ဆုံဆွေးနွေးပွဲသို့ တက်ရောက်ရန် ဖိတ်ကြားသည့်စာရင်း

ရက်စွဲ - .၁၁.၂၀၂၃ ခုနှစ်၊

စဉ်	အမည်	ရာထူး	နေရာ	Email	ရန်နံပါတ်	လက်မှတ်
၁			ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဦးစီးဌာန၊ ရန်ကုန်တိုင်းဒေသကြီး	ygnrecd.inveaif@gmail.com	၀၁-၈၂၀၃၈၃၃၇	
၂	ဦးကျော်စိုး	ဆိုက်ဘာဝန်ထူ	ရခိုင်ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဦးစီးဌာန၊ ရန်ကုန်မြောက်ပိုင်းခရိုင်	ygnrecd.monrec@gmail.com	၀၇-၄၈၁၂၇၇၆၇	
၃	အို.အောင်မောင် (Aung Maung)	စာရေးဆရာ	အထွေထွေအုပ်ချုပ်ရေးဦးစီးဌာန၊ လှိုင်သာယာ (အနောက်ပိုင်း) မြို့နယ်			
၄	ဦးအောင်ဦး	အထွေထွေအုပ်ချုပ်ရေး	လှိုင်သာယာ (အနောက်ပိုင်း) မြို့နယ်			
၅	မ.အောင်မောင်	မ.အောင်မောင်	ကုန်းမာရေးဦးစီးဌာန၊ လှိုင်သာယာမြို့နယ်		၈၇၄၄၀၁၀၇၇၇	
၆	မ.အောင်မောင်	မ.အောင်မောင်	ဒေသန္တရကုန်းမာရေး၊ လှိုင်သာယာမြို့နယ်		၆၇.၄၇၁၀၁၇၄၆	
၇	ဦးအောင်မောင်	အုပ်ချုပ်ရေးမှူး	ရပ်ကွက်အုပ်ချုပ်ရေးမှူး၊ အလယ်ကျေးရွာ			
၈	ဦးအောင်မောင်	အုပ်ချုပ်ရေးမှူး	လူမှုရေးအသင်းအဖွဲ့ အလယ်ကျေးရွာ			
၉	ဦးအောင်မောင်	ဦးအောင်မောင်	အောင်ယောကျ်ား ပရဟိတဘုန်းတော်ကြီးကျောင်း			
၁၀	ဦးအောင်မောင်	အုပ်ချုပ်ရေးမှူး	ငွေပင်လယ်ဘုရား (ဂေါပကအဖွဲ့)			
၁၁	ဦးအောင်မောင်	အုပ်ချုပ်ရေးမှူး	အောင်ကျေးရွာ			
၁၂	ဦးအောင်မောင်	အုပ်ချုပ်ရေးမှူး	အောင်ကျေးရွာ			

"Nippon Paint (Myanmar) Co., Ltd." ၏ အကွက်အမှတ် (၄၄)၊ မြေတိုင်းအကွက်အမှတ် (၂၄)၊ ငွေပင်လယ်တက်မှုရန်၊ လှိုင်သာယာ (အနောက်ပိုင်း)မြို့နယ်တွင်  
ဆောင်ရွက်မည့် သုတ်ဆေးအမျိုးမျိုးထုတ်လုပ်ရန်၊ ရောင်းချရန်၊ စက်ရုံအတွက် ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းအစီရင်ခံစာနှင့်ပတ်သက်၍  
အများပြည်သူနှင့်တွေ့ဆုံဆွေးနွေးပွဲသို့ တက်ရောက်ရန် စိတ်ကြိုက်သည့်စာရင်း

ရက်စွဲ - .၁.၂၀၂၃ ခုနှစ်။

စဉ်	အမည်	ရာထူး	စာရ်/ ကုမ္ပဏီ/ အဖွဲ့အစည်းအမည်	Email	စုန်း (Viber)	လက်မှတ်
၁	Bon Cho Cho Win	HR	San Thit Tun (43, 47)			
၂		HR	Bin Win (လှိုင်သာယာ) ၄၆			
၃		HR	စက်ရုံ (လှိုင်သာယာ) ၃၄			
၄		HR	San Hla (49)			
၅		HR	Running Tech. (51/A)			
၆		HR	ဆေးဦးဌေး (34-35)			
၇		HR	Har San. Battery (36)			
၈						
၉	ဖေဖိုးအိုးဇွေ	တာဝန်ခံ	ကဏ္ဍကုမ္ပဏီ (အလံမြို့နယ်)			
၁၀						
၁၁						
၁၂						



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မြေတိုင်းအကွက်အမှတ်(၂၄)၊ အကွက်အမှတ် (၂၄) တွင် အကောင်အထည်ဖော် ဆောင်ရွက်လျက်ရှိသည့်

"သုတ်ဆေးအမျိုးမျိုးထုတ်လုပ်ဖြန့်ဖြူးရောင်းချခြင်းလုပ်ငန်း" စီမံကိန်းအတွက်

ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းလုပ်ငန်း၊ နယ်ပယ်အတိုင်းအတာသတ်မှတ်ခြင်းအစီရင်ခံစာရေးဆွဲခြင်းနှင့်ပတ်သက်၍

တွေ့ဆုံဆွေးနွေးပွဲသို့ တက်ရောက်သူများစာရင်း

ရက်စွဲ ။ ၂၀၂၃ ခုနှစ်၊ ဇန်နဝါရီလ (၂၉)ရက်

စဉ်	အမည်	ရာထူး	အဖွဲ့အစည်းအမည်	လက်မှတ်
၁	ဦးကျွန်းစိုး	A D	ခရိုင် ပတ်ဘလစ် ဘွဲ့ ပြန်လည်	
၂	ဒေါ်ချိုကျွန်း	"	Nuesing (R.T)	
၃	ဦး သိန်းလွင်	ဦးစီးအရာရှိ E.O	V.C.D.C ရန်ကုန်မြို့နယ်	
၄	ဦးစောစော	အထွေထွေ	အထွေ	
၅	ဦးစောစော	အထွေထွေ	အထွေ	
၆	ဦးစောစော	အထွေထွေ	အထွေ	
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မြေတိုင်းအကွက်အမှတ်(၂၄)၊ အကွက်အမှတ် (၂၄) တွင် အကောင်အထည်ဖော် ဆောင်ရွက်လျက်ရှိသည့်

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တွေ့ဆုံဆွေးနွေးပွဲသို့ တက်ရောက်သူများစာရင်း

ရက်စွဲ ။ ၂၀၂၃ ခုနှစ်၊ ဇန်နဝါရီလ (၂၉)ရက်

စဉ်	အမည်	ရပ်ကွက်/ ကျေးရွာအုပ်စု	လက်မှတ်
၁	ဦးနုပန်းနီ	အလယ်ကျေးရွာ	ဦးနုပန်းနီ
၂	ဦးခင်မင်းလတ်	ငွေပင်လယ်စက်မှုဇုန်	ခင်မင်းလတ်
၃	မိုးဝင်းဝင်းမော်		ဝင်းမော်
၄	မိုးသန့် ဝင်း		ဝင်းသန့်
၅	ကိုအောင်မောင်	အလယ်ကျေးရွာ	အောင်မောင်
၆	ကိုကျော်ဝိဇ္ဇာ		ကျော်ဝိဇ္ဇာ
၇	ဦးမင်းစိုး	အလယ်ကျေးရွာ	မင်းစိုး
၈	ဦးမင်းမောင်ဝင်း	"	မင်းမောင်ဝင်း
၉	ဦးစိုးစိုး	"	စိုးစိုး
၁၀	ကိုမောင်အောင်စိုး	"	မောင်အောင်စိုး
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မြေတိုင်းအကွက်အမှတ်(၂၄)၊ အကွက်အမှတ် (၂၄) တွင် အကောင်အထည်ဖော် ဆောင်ရွက်လျက်ရှိသည့်  
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တွေ့ဆုံဆွေးနွေးပွဲသို့ တက်ရောက်သူများစာရင်း

ရက်စွဲ ။ ၂၀၂၃ ခုနှစ်၊ ဇန်နဝါရီလ (၂၉)ရက်

စဉ်	အမည်	ရာထူး	အဖွဲ့အစည်းအမည်	လက်မှတ်
၁	Ky. (M) Nwe	P.M.	Nippon Paint Myanmar	
၂	U Aung Mye	Admin	Nippon Paint Myanmar	
၃	Aung Kyaw Soe Moe	Office	Nippon Paint Myanmar	
၄	Thar Kyne	Sales & Marketing Sr. Manager	Nippon Paint Myanmar	
၅	Thar Yarn Pu	Business Development & Product Manager	Nippon Paint (Myanmar)	
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၂၀				



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"သုတ်ဆေးအမျိုးမျိုးထုတ်လုပ်ဖြန့်ဖြူးရောင်းချခြင်းလုပ်ငန်း" စီမံကိန်းအတွက်

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ရင်းနှီးပွင့်လင်းစွာ အကြံပြုရေးသားနိုင်ပါကြောင်းနှင့်လူကြီးမင်းတို့၏ အကြံပြုချက်များကို စီမံကိန်း တာဝန်ရှိသူများနှင့်  
တင်ပြဆွေးနွေးပေးသွားမည် ဖြစ်ပါသည်။

စဉ်	ဆွေးနွေးအကြံပြုချက်
၁	နယ်မြေ စဉ်းစာ သဘောအရ ၇၅၆ နဲ့ လက်လီ လက် နယ်မြေ ၆၆ စတုရန်း ကီလိုမီတာပါရှိသည်။
၂	စက်မှု လုပ်ငန်းစဉ် အစဉ် လက်လီ၊ စက်မှုလုပ်ငန်း - NCEC ၇၆ နဲ့ ၆၆ စတုရန်း Treatment အစဉ်းစာ ၁၈ စက်လက်

လက်မှတ်

အမည်

ဆက်သွယ်ရန်ဖိစစ်

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မြေတိုင်းအကွက်အမှတ်(၂၄) အကွက်အမှတ် (၂၄) တွင် အကောင်အထည်ဖော် ဆောင်ရွက်လျက်ရှိသည့်  
"သုတ်ဆေးအပျိုးဖျိုးထုတ်လုပ်ဖြန့်ဖြူးရောင်းချခြင်းလုပ်ငန်း" စီမံကိန်းအတွက်

ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းလုပ်ငန်း၊ နယ်ပယ်အတိုင်းအတာသတ်မှတ်ခြင်းအစီရင်ခံစာနှင့်ပတ်သက်၍ အကြံပြုစာ  
ရင်းနှီးပွင့်လင်းစွာ အကြံပြုရေးသားနိုင်ပါကြောင်းနှင့်လူကြီးမင်းတို့၏ အကြံပြုချက်များကို စီမံကိန်း တာဝန်ရှိသူများနှင့်  
တင်ပြဆွေးနွေးပေးသွားမည် ဖြစ်ပါသည်။

စဉ်	ဆွေးနွေးအကြံပြုချက်
၁	EIA စာချုပ် အောက် ၂၄ ပွင့် နဲ့ အောက် ၁၃၄ နယ်ပယ် ချင်း အောက် ၁၃၄
၂	ကျွန်ုပ်တို့ ပတ်ဝန်းကျင်ညစ်ညမ်းမှု မျှော်မှတ် အောင် Waste Disposal များ အား ချစ်စေကျ စိုက်ပျိုးမှု

လက်မှတ်

အမည်

ဆက်သွယ်ရန်လိပ်စာ

၂

ဒေါ်ခင်စုမာ

ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ရေးဌာန

လှိုင်သာယာမြို့နယ်၊ ငွေပင်လယ်စက်မှုဇုန်


ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းလုပ်ငန်း၊ နယ်ပယ်အတိုင်းအတာသတ်မှတ်ခြင်းအစီရင်ခံစာနှင့်ပတ်သက်၍ အကြံပြုစာရင်းနှီးပွင့်လင်းစွာ အကြံပြုရေးသားနိုင်ပါကြောင်းနှင့်လူကြီးမင်းတို့၏ အကြံပြုချက်များကို စီမံကိန်း တာဝန်ရှိသူများနှင့် တင်ပြဆွေးနွေးပေးသွားမည် ဖြစ်ပါသည်။

[illegible]

လက်မှတ်

အမည်

## ဆက်သွယ်ရန်လိပ်စာ



2. 2017

செவ்வாய், 9/11

(25/5/2021)

09-4489 11523



# Green Myanmar

Environmental Services Co., Ltd

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မြေတိုင်းအကွက်အမှတ်(၂၄) အကွက်အမှတ် (၂၄) တွင် အကောင်အထည်ဖော် ဆောင်ရွက်လျက်ရှိသည့်

"သုတ်ဆေးအမျိုးမျိုးထုတ်လုပ်ဖြန့်ဖြူးရောင်းချခြင်းလုပ်ငန်း" စီမံကိန်းအတွက်

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တင်ပြဆွေးနွေးပေးသွားမည် ဖြစ်ပါသည်။

စဉ်	ဆွေးနွေးအကြံပြုချက်
၁။	<p>ဆေးအမျိုးမျိုးထုတ်လုပ်ဖြန့်ဖြူးရောင်းချခြင်းလုပ်ငန်းအတွက် သတ်မှတ်ထားသော မြေတိုင်းအကွက်အမှတ်(၂၄) အကွက်အမှတ် (၂၄) တွင် အကောင်အထည်ဖော် ဆောင်ရွက်လျက်ရှိသည့် "သုတ်ဆေးအမျိုးမျိုးထုတ်လုပ်ဖြန့်ဖြူးရောင်းချခြင်းလုပ်ငန်း" စီမံကိန်းအတွက် ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းလုပ်ငန်း၊ နယ်ပယ်အတိုင်းအတာသတ်မှတ်ခြင်းအစီရင်ခံစာနှင့်ပတ်သက်၍ အကြံပြုစာ ရင်းနှီးပွင့်လင်းစွာ အကြံပြုရေးသားနိုင်ပါကြောင်းနှင့်လူကြီးမင်းတို့၏ အကြံပြုချက်များကို စီမံကိန်း တာဝန်ရှိသူများနှင့် တင်ပြဆွေးနွေးပေးသွားမည် ဖြစ်ပါသည်။</p>

လက်မှတ်

အမည်

ဆက်သွယ်ရန်လိပ်စာ

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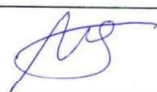
ရင်းနှီးပွင့်လင်းစွာ အကြံပြုရေးသားနိုင်ပါကြောင်းနှင့်လူကြီးမင်းတို့၏ အကြံပြုချက်များကို စီမံကိန်း တာဝန်ရှိသူများနှင့် တင်ပြဆွေးနွေးပေးသွားမည် ဖြစ်ပါသည်။

စဉ်	ဆွေးနွေးအကြံပြုချက်
	<p>မူကြမ်းမင်းသိန်းက company သည် စာမည်ကျော်စွာ နှစ်ပတ်လည် ကျင်းပသည့် အခါတွင် မြေအောက်ရေအဆင့်ကို စစ်ဆေးရန် နမူနာများ ရယူပြီး စစ်ဆေးရန် အစီအစဉ် ရေးဆွဲထားပါသည်။</p>

လက်မှတ်

အမည်

ဆက်သွယ်ရန်လိပ်စာ



ဒေါ်အေးဝင်း

အေးအေးအေး

(အေးအေးအေး)

၀၉ ၄၄၈၅ ၁၁၅၂၃





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ရင်းနှီးပွင့်လင်းစွာ အကြံပြုရေးသားနိုင်ပါကြောင်းနှင့်လူကြီးမင်းတို့၏ အကြံပြုချက်များကို စီမံကိန်း တာဝန်ရှိသူများနှင့် တင်ပြဆွေးနွေးပေးသွားမည် ဖြစ်ပါသည်။

စဉ်	ဆွေးနွေးအကြံပြုချက်
	ကျေးဇူးတင် ဖြစ်ပါသည်။ ကျွန်ုပ်တို့က ဤစာချုပ် ခွင့်အပ်ပါရန် အဆင်ပြေစွာ စာချုပ် ခွင့်အပ်ပါရန် ဆောင်ရွက် ပေးပါရန် အကြံပြု ခံယူပါသည်။

လက်မှတ်

အမည်

ဆက်သွယ်ရန်လိပ်စာ

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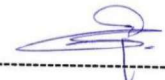
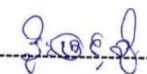


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စဉ်	ဆွေးနွေးအကြံပြုချက်
	အခြေခံ ဗျ ကံမြေမပါ

လက်မှတ်

အမည်

ဆက်သွယ်ရန်လိပ်စာ





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စဉ်	ဆွေးနွေးအကြံပြုချက်
	အကြံပြုချက် မရှိပါ

လက်မှတ်

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အမည်

ဦးစောလင်းနိုင်

ဆက်သွယ်ရန်လိပ်စာ

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# Green Myanmar

Environmental Services Co., Ltd

No.115, Kanaung Min Thar Gyi Road, Industrial Zone (1), Hlaing Thar Yar Industrial City,  
Yangon, Myanmar

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"Nippon Paint (Myanmar) Co., Ltd." ၏ ရန်ကုန်တိုင်းဒေသကြီး၊ လှိုင်သာယာမြို့နယ်၊ ဓဋ္ဌပင်လယ်စက်မှုဇုန်၊

မြေတိုင်းအကွက်အမှတ်(၂၄)၊ အကွက်အမှတ် (၂၄) တွင် အကောင်အထည်ဖော် ဆောင်ရွက်လျက်ရှိသည့်

"သုတ်ဆေးအမျိုးမျိုးထုတ်လုပ်ဖြန့်ဖြူးရောင်းချခြင်းလုပ်ငန်း" စီမံကိန်းအတွက်

ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းလုပ်ငန်း၊ နယ်ပယ်အတိုင်းအတာသတ်မှတ်ခြင်းအစီရင်ခံစာနှင့်ပတ်သက်၍ အကြံပြုစာ

ရင်းနှီးပွင့်လင်းစွာ အကြံပြုရေးသားနိုင်ပါကြောင်းနှင့်လူကြီးမင်းတို့၏ အကြံပြုချက်များကို စီမံကိန်း တာဝန်ရှိသူများနှင့် တင်ပြဆွေးနွေးပေးသွားမည် ဖြစ်ပါသည်။

စဉ်	ဆွေးနွေးအကြံပြုချက်
	အကြံပြုချက် ချိတ်ပါ

လက်မှတ်

အမည်

ဆက်သွယ်ရန်လိပ်စာ

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## Appendix IV EIA Working Team

Green Myanmar Environmental Services Co., Ltd.'s team members are as follows:

### *List of GMES EIA Project Team*

No.	Title of Post	Terms of Reference	Nominee, Organization & Transitional Consultant Registration Number
1.	Consultant	Overall management of EIA operation Managing & Team building Budget and Financial management Advice on air quality control system Give advice on air pollution evaluate and mitigation Advice on the water pollution evaluate, mitigation and water quality monitoring Give advice on the writing Environmental Management Plan	Engr. U Sein Thaung Oo Chairman Green Myanmar Environmental Services Co., Ltd. Professional Engineer  EIA-AC 045/2023
2.	Team Leader	Technical meeting & workshop Lead and facilitation of public consultation and stakeholder engagement Project Supervision and overall technical management Preparing and writing Waste assessment and management plan for EIA Documentation Impact assessment for noise and vibration and preparing/writing noise assessment chapter and noise management plan for EIA Documentation Preparation for air pollution control management plan Preparation of guideline for environmental sampling of air quality and monitoring	Engr. U Kyaw Soe Win Managing Director Green Myanmar Environmental Services Co., Ltd. Experience in EIA processing  EIA-AC 046/2023
3.	Environmental Consultant	Advise on the design of EIA Develop term of reference for duty and responsibility among EIA team Advise on the environmental baseline Advise on the field survey Facilitate technical analysis Streamline the Environmental Management Plan (EMP)	Engr. Daw Khin Swe Aye Former Lecturer, Chemical Engineering Dept., YTU  No.0021
4.	Consultant	Assist in preparation of guideline for environmental sampling of air and water quality Assist in report preparation for environmental baseline Quality control and reviewing of EIA Documentation Preparing and writing hazardous assessment and management plan for EIA Documentation Risk assessment and risk management	Daw Khin Shwe Htay Former Lecturer, Chemical Engineering Dept., YTU Environmental Engineer  EIA-AC 100/2024

No.	Title of Post	Terms of Reference	Nominee, Organization & Transitional Consultant Registration Number
5.	Consultant (Laboratory Analysis)	Team leader for water sampling and laboratory testing Check the result of environmental laboratory testing Writing the environmental baseline for physical environment Environmental impact evaluation and Assessment Preparing water/soil pollution control management plan Preparing and writing the Environmental management plan	U Myo Myint Retired Factory Manager Ministry of Industry (1)  EIA-AC 047/2023
6.	Specialist (Waste Management)	Collecting field data for industrial and municipal waste Assist in laboratory testing Data processing, computing, projection, modeling and analysis Assist in report preparation	Engr. Daw Tin May Soe Retired Professor & Head, Chemical Engineering Dept., MTU Experience in environmental toxicology and pollution control  No.0028
7.	Consultant on Energy Saving Management and Chemical Risk Assessment & Hazardous Chemical Management	Advise on energy saving management Advise on the risk assessment preparation Develop terms of reference for duty and responsibility among IEE/EMP team Advise on the environmental baseline Advise on the field survey	Daw Kyaw Kyaw Win Director (Retired) Myanmar Petrochemical Enterprise Ministry of Electrical and Energy
8.	Social Operation and Field Coordinator	Develop operational checklist for social survey Facilitate technical meeting and record keeping Assist in data mining and secondary data collection and coordinate with local authority and communities for village level meeting	U Khin Aung Consultant Green Myanmar Environmental Services Co., Ltd.  EIA-AC 099/2024
9.	Environmental Quality Engineer & Senior	Team leader for baseline survey (air, water, soil, noise and vibration) Air and noise/vibration data analysis and assessment Questionnaires survey for social baseline	U Kyi Han Bo B.E - Aerospace Fuel and Propellant Engineer Myanmar Aerospace

No.	Title of Post	Terms of Reference	Nominee, Organization & Transitional Consultant Registration Number
	Environmental Specialist	survey Finalize checking for report and report formatting	Engineering University  EIA-AC 048/2023
10.	Specialist on Biodiversity (Flora)	Collection of Flora and Fauna data Developing methods, impacts & mitigation Comment upon biodiversity environment	Biodiversity Experts (flora & fauna) Dr. Kyaw Zay Moe Flora Expect,  Dr. Ko Myint Fauna Expect, Transitional Consultant Registration No. 0037  U Pyae Phyo Kyaw B. Sc (Forestry)
11.	Hydrology Consultant	Design of hydrological survey Supervise hydrological survey Report on relevant section	U Sai Soe Thant B.Sc (Physics) AGTI (EC)
12.	SIA Consultants	Advise on the design of SIA Develop term of reference for duty and responsibility among SIA team Advise on the environmental baseline Advise on the field survey Advise on data processing and laboratory testing Facilitate technical analysis Streamline the SIA report and Social Management Plan SIA team Leading	U Thein Soe Social Expect  Transitional Consultant Registration No.0029
13.	Legal Consultant	To manage environmental conflicts To arrange resettlement discussion for resolution of environmental disputes To create a mechanism for the resolution of land-use conflicts To review relevant environmental impact assessment law for the proposed project	Daw Tin Yi Win Director (Retired), Union Attorney General's Office
14.	Public Health Consultant	Health Baseline Survey and Health impact Assessment Data Analysis	Dr. Myint Thein M.B.,B.S (MDY) SAMA 6858  U Myo Thet Naung B.E - Aerospace Fuel and

No.	Title of Post	Terms of Reference	Nominee, Organization & Transitional Consultant Registration Number
			Propellant Engineer Myanmar Aerospace Engineering University
15.	Environmental Monitoring Experts	Environmental baseline measuring Data analysis Coordinate for public consultation meeting Report preparing and formatting	U Aung Ko Min B.E (Chemical Engineering)  U Aung Kyaw Than B.E (Chemical Engineering)  U Thiha Zaw B.Sc (Physics)
16.	Laboratory Experts	Water sampling and laboratory testing Preparation for water & wastewater sampling Preparation for laboratory testing Laboratory testing Reporting for laboratory result	Daw Aye Thuzar Hein B.E (Chemical Engineering)  U Thet Min Paing B.E (Chemical Engineering)



Certificate for Environmental Impact Assessment License (Organization)

ပြည်ထောင်စုသမ္မတမြန်မာနိုင်ငံတော်အစိုးရ  
The Government of the Republic of the Union of Myanmar  
သယံဇာတနှင့် သဘာဝပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဝန်ကြီးဌာန  
Ministry of Natural Resources and Environmental Conservation  
ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဦးစီးဌာန  
Environmental Conservation Department  
ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းဆိုင်ရာလုပ်ငန်းလိုင်စင် (အဖွဲ့အစည်း)  
Environmental Impact Assessment License (Organization)

Green Myanmar Environmental Services Co.,Ltd ၊ ကုမ္ပဏီမှတ်ပုံတင်အမှတ်-၁၁၀၂၉၉၉၃၁ အား အကြံပေး  
အဖွဲ့အမျိုးအစား(ခ) အဖြစ် လုပ်ကိုင်ဆောင်ရွက်ရန် ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းဆိုင်ရာ လုပ်ငန်းလိုင်စင်ကို  
ကနဦးပတ်ဝန်းကျင် ဆန်းစစ်ခြင်းနှင့် ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းပြုလုပ်သည့် တတိယပုဂ္ဂိုလ် သို့မဟုတ်  
အဖွဲ့အစည်းလုပ်ငန်း လိုင်စင်ဆိုင်ရာ လုပ်ထုံးလုပ်နည်းနှင့်အညီ ဤဝန်ကြီးဌာန၏ အတည်ပြုချက်ဖြင့် ထုတ်ပေး  
လိုက်သည်။

It is here by issued Green Myanmar Environmental Services Co.,Ltd ၊ Registration No. 110299931 has  
fulfilled the requirements for obtaining an Environmental Impact Assessment License to conduct as a  
Consulting Organization Type(B) under the Licensing Procedure for the Third Persons or  
Organizations Undertaking Initial Environmental Examination and Environmental Impact Assessment,  
approved by the Ministry of Natural Resources and Environmental Conservation.

လိုင်စင်နံပါတ် License Number	: EIA-CO(B)006/2024
ထုတ်ပေးသည့် ရက်စွဲ Date of Issue	: 30-9-2024
ကုန်ဆုံးသည့် ရက်စွဲ Date of Expiry	: 29-9-2027

  
(သိန်းတိုး)  
ညွှန်ကြားရေးမှူးချုပ်

စည်းကမ်းချက်များ

၁။ ဤလုပ်ငန်းလိုင်စင်ကိုင်ဆောင်ထားသူသည်-

- (က) လုပ်ငန်းလိုင်စင်မိတ္တူကို လုပ်ငန်းခွင်တွင် အများမြင်သာအောင် ချိတ်ဆွဲ၍ မူရင်းကို လုံခြုံစွာထိန်းသိမ်းထားရှိရမည်။
- (ခ) လုပ်ငန်းလိုင်စင်ကို ပြင်ဆင်ခြင်းနှင့် ဖျက်ဆီးခြင်း၊ လုပ်ငန်းလိုင်စင်မူရင်း သို့မဟုတ် မိတ္တူကို မသက်ဆိုင်သူ တစ်ဦးအား အကြောင်းပြောပြခြင်း၊ အမည်ခံအသုံးပြုခြင်းနှင့်တစ်ဆင့်လွှဲပြောင်းကိုင်ဆောင်စေခြင်း မပြုရ။
- (ဂ) လုပ်ငန်းလိုင်စင်ပါအချက်များကို ပြုပြင်ပြောင်းလဲရန် လိုအပ်ပါက ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဦးစီးဌာနသို့ ကြိုတင် တင်ပြလျှောက်ထားရမည်။
- (ဃ) လုပ်ငန်းလိုင်စင် ဖျက်စီးခြင်း၊ ပျောက်ဆုံးခြင်း ဖြစ်ပွားပါက ၇ ရက်အတွင်း ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဦးစီးဌာနသို့ အကျိုးအကြောင်းခိုင်လုံစွာ ဖော်ပြ၍ တင်ပြလျှောက်ထားရမည်။
- (င) လုပ်ငန်းလိုင်စင်ကို သတ်မှတ်သည့် စည်းကမ်းဘောင်အတွင်း လုပ်ငန်းလုပ်ကိုင်ခွင့် အငြင်းပွားမှုများနှင့်စပ်လျဉ်း၍ တာဝန်ယူဖြေရှင်းရမည်။ ယင်းသို့ဖြေရှင်းနိုင်ခြင်းမရှိပါက လုပ်ငန်းလုပ်ကိုင်ခွင့်ရပ်ဆိုင်းခြင်း သို့မဟုတ် ပယ်ဖျက် ခြင်း ခံရမည်။
- (စ) လုပ်ငန်းလိုင်စင်တွင် ခွင့်ပြုထားသည့် ကျွမ်းကျင်မှုနယ်ပယ်များအတွက်သာ တာဝန်ယူ လေ့လာဆန်းစစ်ရေးဆွဲရမည်။
- (ဆ) အဖွဲ့အစည်းဖြစ်လျှင် အဖွဲ့အစည်းတွင် ဒါရိုက်တာဘုတ်အဖွဲ့ (Board of Director) ၊ အကြံပေးပုဂ္ဂိုလ်၊ အထောက် အကူပြုအဖွဲ့ဝင်များ ပြောင်းလဲမှုတစ်စုံတစ်ရာ ရှိပါက ပြောင်းလဲသည့် နေ့ရက်မှစ၍ ရက်ပေါင်း ၉၀ အတွင်း တည်ဆဲ ဥပဒေများနှင့်ညီ ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဦးစီးဌာနသို့ အချိန်မီ အကြောင်းကြားရမည်။
- (ဇ) အကြံပေးအဖွဲ့အမျိုးအစား (က) သို့မဟုတ် (ခ) တွင် အဓိကအကြံပေးပုဂ္ဂိုလ်အဖြစ် ဆောင်ရွက်နေသော အကြံပေးပုဂ္ဂိုလ် သို့မဟုတ် တွဲဖက်အကြံပေးပုဂ္ဂိုလ်ဖြစ်ပါက အခြားအကြံပေးအဖွဲ့အစည်းတွင် အဓိကအကြံပေးပုဂ္ဂိုလ်အဖြစ် ဖြစ်စေ၊ အဓိကမဟုတ်သော အကြံပေးပုဂ္ဂိုလ်အဖြစ် ဖြစ်စေ ပါဝင်ဆောင်ရွက်ခြင်း မပြုရ။
- (ဈ) ပတ်ဝန်းကျင်ထိန်းသိမ်းရေး ဥပဒေ၊ နည်းဥပဒေများ၊ အမိန့်၊ ညွှန်ကြားချက်နှင့် လုပ်ထုံးလုပ်နည်းများကိုလည်းကောင်း၊ ကနဦးပတ်ဝန်းကျင်ဆန်းစစ်ခြင်းနှင့် ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းပြုလုပ်သည့် တတိယပုဂ္ဂိုလ် သို့မဟုတ် အဖွဲ့အစည်းများလုပ်ငန်းလိုင်စင်ဆိုင်ရာလုပ်ထုံးလုပ်နည်း အပိုဒ် ၃၃ ပါ စည်းကမ်းချက်များကိုလည်းကောင်း၊ ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဦးစီးဌာနက အခါအားလျော်စွာ သတ်မှတ်သည့် စည်းကမ်းချက်များကိုလည်းကောင်း လိုက်နာရမည်။

၂။ လုပ်ငန်းလိုင်စင်သက်တမ်းတိုးခြင်းနှင့် စပ်လျဉ်း၍-

- (က) လုပ်ငန်းလိုင်စင်လုပ်ထုံးလုပ်နည်းတွင် သတ်မှတ်ထားသည့်အတိုင်း လုပ်ငန်းလိုင်စင် သက်တမ်းမကုန်ဆုံးမီ သုံးလ ကြိုတင်၍ မပျက်မကွက် လိုင်စင် သက်တမ်းတိုးရမည်။
- (ခ) လုပ်ငန်းလိုင်စင်သက်တမ်းတိုးရန် လျှောက်ထားခြင်း၊ လိုင်စင်ထုတ်ယူခြင်းကို ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဦးစီး ဌာနသို့ လူကိုယ်တိုင် သို့မဟုတ် အဖွဲ့အစည်းတာဝန်ခံကိုယ်တိုင် လာရောက် ဆောင်ရွက်ရမည်။
- (ဂ) လုပ်ငန်းလိုင်စင်သက်တမ်းတိုးပြီး လိုင်စင်အသစ်ထုတ်ယူရာတွင် လက်ဝယ်ရှိမူရင်းလိုင်စင်ကို ပြန်လည်အပ်နှံရမည်။

၃။ လုပ်ငန်းလိုင်စင်ရရှိသူသည် ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဦးစီးဌာနက ခွင့်ပြုထားသော ပတ်ဝန်းကျင်ဆန်းစစ်ခြင်း အမျိုးအစားမှအပ အခြားဆန်းစစ်ခြင်းအမျိုးအစားကို လေ့လာဆန်းစစ်ရေးဆွဲဆောင်ရွက်ခြင်း မပြုရ။

၄။ လုပ်ငန်းလိုင်စင်ရရှိသူသည် မြန်မာနိုင်ငံ၏ တည်ဆဲဥပဒေတစ်ရပ်ရပ်ကို ဖောက်ဖျက်ကြောင်း သို့မဟုတ် ဆန်းစစ်ခြင်း လုပ်ငန်းများဆောင်ရွက်ရာတွင် သိသာထင်ရှားသော မှားယွင်းမှုများ ပါရှိနေပြီး သတ်မှတ်စံချိန်စံညွှန်း သို့မဟုတ် ပတ်ဝန်းကျင် ထိန်းသိမ်းရေးဥပဒေ၊ နည်းဥပဒေများ၊ ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းဆိုင်ရာ လုပ်ထုံးလုပ်နည်းတို့အရ စိစစ်သုံးသပ်ပြီး ကနဦးသဘောထားမှတ်ချက်နှင့်အညီ ပြန်လည်ပြင်ဆင်ခြင်း မရှိကြောင်း ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဦးစီးဌာန၏ သတ်မှတ် ဆုံးဖြတ်ခြင်းခံရလျှင် လုပ်ငန်းလိုင်စင် ရပ်ဆိုင်းခြင်း သို့မဟုတ် ပယ်ဖျက်ခြင်း ခံရမည်။

၅။ လုပ်ငန်းလိုင်စင်ရရှိသော အဖွဲ့အစည်းသည် သက်ဆိုင်ရာစီမံကိန်းအတွက် လေ့လာဆန်းစစ်ရေးဆွဲဆောင်ရွက်ရန် တတိယအဖွဲ့အစည်းအတည်ပြုချက်ရယူရာ၌ မိမိအဖွဲ့အစည်းတွင် ပါဝင်သည့် အကြံပေးပုဂ္ဂိုလ်၊ တွဲဖက်အကြံပေးပုဂ္ဂိုလ် များ၏ အမည်စာရင်းမှအပ အခြားပုဂ္ဂိုလ်များ၏ အမည်စာရင်းများကို တင်ပြခွင့်မရှိရ။

၆။ လုပ်ငန်းလိုင်စင်ရရှိသောအဖွဲ့အစည်းသည် မိမိအဖွဲ့အစည်းက လက်လှမ်းမမီသော ကျွမ်းကျင်မှုနယ်ပယ်များအတွက် လေ့လာ ဆန်းစစ်ရေးဆွဲဆောင်ရွက်နိုင်ရန် လုပ်ငန်းလိုင်စင်ရရှိပြီးဖြစ်သည့် တစ်သီး ပုဂ္ဂလိကလုပ်ကိုင်သူ (Freelancer) အကြံပေးပုဂ္ဂိုလ် သို့မဟုတ် တွဲဖက်အကြံပေးပုဂ္ဂိုလ်ကို သက်ဆိုင်ရာစီမံကိန်းအတွက်သာ ငှားရမ်းဆောင်ရွက်ရမည်။



Green Myanmar Environmental Services Co.,Ltd

လိုင်စင်နံပါတ် License Number : EIA-CO(B)006/2024

အဖွဲ့အစည်းက လေ့လာဆန်းစစ်ခွင့်ရှိသော စီမံကိန်းလုပ်ငန်းအုပ်စုများ

စဉ်	လုပ်ငန်းလိုင်စင်ဆိုင်ရာလုပ်ထုံးလုပ်နည်း ပုံစံ (ခ) ပါ စီမံကိန်းလုပ်ငန်းအုပ်စုများ	မှတ်ချက်
၁။	အကြံပေးအဖွဲ့အမျိုးအစား(ခ)အတွက် လုပ်ငန်းလိုင်စင်သာခွင့်ပြုသော်လည်း ကျွမ်းကျင်မှု နယ်ပယ်များလိုအပ်သည့်အတွက် လေ့လာဆန်းစစ်ခွင့်ရှိသည့် စီမံကိန်းလုပ်ငန်းအုပ်စုများမရှိသေးပါ။	

Green Myanmar Environmental Services Co.,Ltd

လိုင်စင်နံပါတ် License Number : EIA-CO(B)006/2024

Eligible Categories of Projects to be conducted by the Organization

Sr. No.	Categories of Projects as per Form B of Licensing Procedure	Note
1.	Although the license for the Consulting Organization Type(B) is allowed, there are no project groups that have the right to conduct for the requirement of expertise areas.	

Green Myanmar Environmental Services Co., Ltd

လိုင်စင်နံပါတ် License Number : EIA-CO(B)006/2024

(က) အဓိကအကြံပေးပုဂ္ဂိုလ်များ

စဉ်	အမည်	လုပ်ငန်းလိုင်စင်အမှတ်	မှတ်ချက်
၁	J	၃	၄

(က) အကြံပေးပုဂ္ဂိုလ်

၁	ဦးကျော်နိုင်ဦး	EIA - C 052/2024	
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(ခ) တွဲဖက်အကြံပေးပုဂ္ဂိုလ်

၁	ဦးစိန်သောင်းဦး	EIA - AC 045/2023	
၂	ဦးကျော်စိုးဝင်း	EIA - AC 046/2023	
၃	ဦးမျိုးမြင့်	EIA - AC 047/2023	
၄	ဒေါ်ခင်ရွှေဌေး	EIA - AC 100/2024	
၅	ဦးကြည်ဟန်တို	EIA - AC 048/2023	
၆	ဦးဇော်ဝင်းမြင့်	EIA - AC 063/2023	

(ခ) အဓိကမဟုတ်သော အကြံပေးပုဂ္ဂိုလ်များ

စဉ်	အမည်	လုပ်ငန်းလိုင်စင်အမှတ်	မှတ်ချက်
၁	J	၃	၄

(က) အကြံပေးပုဂ္ဂိုလ်

၁	မရှိပါ	-	
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(ခ) တွဲဖက်အကြံပေးပုဂ္ဂိုလ်

၁	ဦးခင်အောင်	EIA - AC 099/2024	
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## Certificate for Environmental Impact Assessment License (Individual)




ပြည်ထောင်စုသမ္မတမြန်မာနိုင်ငံတော်အစိုးရ  
 The Government of the Republic of the Union of Myanmar  
 သယံဇာတနှင့် သဘာဝပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဝန်ကြီးဌာန  
 Ministry of Natural Resources and Environmental Conservation  
 ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဦးစီးဌာန  
 Environmental Conservation Department  
 ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဆန်းစစ်ခြင်းဆိုင်ရာလုပ်ငန်းလိုင်စင် (ပုဂ္ဂိုလ်)  
**Environmental Impact Assessment License (Individual)**

ဦးစိန်သောင်းဦး၊ ၁၂/မရက(နိုင်)၀၈၂၈၇၁ အား တွဲဖက်အကြံပေးပုဂ္ဂိုလ် အဖြစ် လုပ်ကိုင်ဆောင်ရွက်ရန် ပတ်ဝန်းကျင် ထိန်းသိမ်းရေးဆန်းစစ်ခြင်းဆိုင်ရာ လုပ်ငန်းလိုင်စင်ကို ကနဦးပတ်ဝန်းကျင်ဆန်းစစ်ခြင်းနှင့် ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဆန်းစစ်ခြင်း ပြုလုပ်သည့် တတိယပုဂ္ဂိုလ် သို့မဟုတ် အဖွဲ့အစည်း လုပ်ငန်းလိုင်စင်ဆိုင်ရာ လုပ်ထုံးလုပ်နည်းနှင့် အညီ ဤဝန်ကြီးဌာန၏ အတည်ပြုချက်ဖြင့် ထုတ်ပေးလိုက်သည်။  
 It is hereby issued that U Sein Thaung Oo, 12/MaYaKa(N)082871 has fulfilled the requirements for obtaining an Environmental Impact Assessment License to conduct as an Associate Consultant under the Licensing Procedure for the Third Persons or Organizations Undertaking Initial Environmental Examination and Environmental Impact Assessment, approved by the Ministry of Natural Resources and Environmental Conservation.

လေ့လာဆန်းစစ်ခွင့်ရှိသည့် ကျွမ်းကျင်မှုနယ်ပယ်များမှာ အောက်ပါအတိုင်းဖြစ်သည်-  
 The areas of expertise, eligible to be conducted, are as follows:

1. ရေထုညစ်ညမ်းမှု ကြိုတင်ကာကွယ်ခြင်း၊ ထိန်းချုပ်ခြင်း၊ စောင့်ကြပ်ကြည့်ရှုခြင်းနှင့် ထိခိုက်မှုကြိုတင်ခန့်မှန်းခြင်း (Water Pollution Prevention, Control, Monitoring and Prediction of Impacts)
2. စက်မှုလုပ်ငန်းစီမံခန့်ခွဲမှု (Industrial Management)
- 3.
- 4.
- 5.

လိုင်စင်နံပါတ် License Number : EIA-AC 045/2023  
 ထုတ်ပေးသည့် ရက်စွဲ Date of Issue : 1-12-2023  
 ကုန်ဆုံးသည့် ရက်စွဲ Date of Expiry : 30-11-2026




(သိန်းတိုး)  
 ဩန်ကြားရေးမှူးချုပ်




**ပြည်ထောင်စုသမ္မတမြန်မာနိုင်ငံတော်အစိုးရ**  
**The Government of the Republic of the Union of Myanmar**  
**သယံဇာတနှင့် သဘာဝပတ်ဝန်းကျင် ထိန်းသိမ်းရေး ဝန်ကြီးဌာန**  
**Ministry of Natural Resources and Environmental Conservation**  
**ပတ်ဝန်းကျင် ထိန်းသိမ်းရေး ဦးစီးဌာန**  
**Environmental Conservation Department**  
**ပတ်ဝန်းကျင် ထိန်းသိမ်းမှု ဆန်းစစ်ခြင်း ဆိုင်ရာ လုပ်ငန်း လိုင်စင် (ပုဂ္ဂိုလ်)**  
**Environmental Impact Assessment License (Individual)**

**ဦးကျော်စိုးဝင်း၊ ၁၂/ဥကတ(နိုင်)၀၃၈၄၅၃ အား တွဲဖက်အကြံပေးပုဂ္ဂိုလ် အဖြစ် လုပ်ကိုင်ဆောင်ရွက်ရန်**  
**ပတ်ဝန်းကျင်ထိန်းသိမ်းမှုဆန်းစစ်ခြင်းဆိုင်ရာ လုပ်ငန်းလိုင်စင်ကို ကနဦးပတ်ဝန်းကျင်ဆန်းစစ်ခြင်းနှင့် ပတ်ဝန်းကျင်**  
**ထိန်းသိမ်းမှုဆန်းစစ်ခြင်းပြုလုပ်သည့် တတိယပုဂ္ဂိုလ် သို့မဟုတ် အဖွဲ့အစည်း လုပ်ငန်းလိုင်စင်ဆိုင်ရာ လုပ်ထုံး**  
**လုပ်နည်းနှင့်အညီ ဤဝန်ကြီးဌာန၏ အတည်ပြုချက်ဖြင့် ထုတ်ပေးလိုက်သည်။**  
**It is hereby issued that U Kyaw Soe Win, 12/OuKaTa(N)038453 has fulfilled the requirements for**  
**obtaining an Environmental Impact Assessment License to conduct as an Associate Consultant under**  
**the Licensing Procedure for the Third Persons or Organizations Undertaking Initial Environmental**  
**Examination and Environmental Impact Assessment, approved by the Ministry of Natural Resources**  
**and Environmental Conservation.**  
**လေ့လာဆန်းစစ်ခွင့်ရှိသည့် ကျွမ်းကျင်မှုနယ်ပယ်များမှာ အောက်ပါအတိုင်းဖြစ်သည်-**  
**The areas of expertise, eligible to be conducted, are as follows:**

1. လူမှုရေးဆိုင်ရာ လေ့လာခြင်းနှင့် သရုပ်ခွဲဆန်းစစ်ခြင်း (Social Study and Analysis)
- 2.
- 3.
- 4.
- 5.

**လိုင်စင်နံပါတ် License Number : EIA-AC 046/2023**  
**ထုတ်ပေးသည့် ရက်စွဲ Date of Issue : 1-12-2023**  
**ကုန်ဆုံးသည့် ရက်စွဲ Date of Expiry : 30-11-2026**




**(သိန်းတိုး)**  
**ညွှန်ကြားရေးမှူးချုပ်**





ပြည်ထောင်စုသမ္မတမြန်မာနိုင်ငံတော်အစိုးရ  
The Government of the Republic of the Union of Myanmar  
သယံဇာတနှင့် သဘာဝပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဝန်ကြီးဌာန  
Ministry of Natural Resources and Environmental Conservation  
ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဦးစီးဌာန  
Environmental Conservation Department  
ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဆန်းစစ်ခြင်းဆိုင်ရာလုပ်ငန်းလိုင်စင် (ပုဂ္ဂိုလ်)  
**Environmental Impact Assessment License (Individual)**



ဦးမျိုးမြင့် ၊ ၁၂/ပာတ(နိုင်)၀၁၅၃၁၅ အား တွဲဖက်အကြံပေးပုဂ္ဂိုလ် အဖြစ် လုပ်ကိုင်ဆောင်ရွက်ရန် ပတ်ဝန်းကျင် ထိခိုက်မှုဆန်းစစ်ခြင်းဆိုင်ရာ လုပ်ငန်းလိုင်စင်ကို ကနဦးပတ်ဝန်းကျင်ဆန်းစစ်ခြင်းနှင့် ပတ်ဝန်းကျင်ထိခိုက်မှု ဆန်းစစ်ခြင်း ပြုလုပ်သည့် တတိယပုဂ္ဂိုလ် သို့မဟုတ် အဖွဲ့အစည်း လုပ်ငန်းလိုင်စင်ဆိုင်ရာ လုပ်ထုံးလုပ်နည်းနှင့် အညီ ဤဝန်ကြီးဌာန၏ အတည်ပြုချက်ဖြင့် ထုတ်ပေးလိုက်သည်။

It is hereby issued that U Myo Myint, 12/PaBaTa(N)015315 has fulfilled the requirements for obtaining an Environmental Impact Assessment License to conduct as an Associate Consultant under the Licensing Procedure for the Third Persons or Organizations Undertaking Initial Environmental Examination and Environmental Impact Assessment, approved by the Ministry of Natural Resources and Environmental Conservation.

လေ့လာဆန်းစစ်ခွင့်ရှိသည့် ကျွမ်းကျင်မှုနယ်ပယ်များမှာ အောက်ပါအတိုင်းဖြစ်သည်-


The areas of expertise, eligible to be conducted, are as follows:

1. ရေထုညစ်ညမ်းမှု ကြိုတင်ကာကွယ်ခြင်း၊ ထိန်းချုပ်ခြင်း၊ စောင့်ကြပ်ကြည့်ရှုခြင်းနှင့် ထိခိုက်မှုကြိုတင် ခန့်မှန်းခြင်း (Water Pollution Prevention, Control, Monitoring and Prediction of Impacts)
2. အထွေထွေပတ်ဝန်းကျင်စီမံခန့်ခွဲခြင်း (General Environmental Management)
- 3.
- 4.
- 5.


လိုင်စင်နံပါတ် License Number : EIA-AC 047/2023  
ထုတ်ပေးသည့် ရက်စွဲ Date of Issue : 1-12-2023  
ကုန်ဆုံးသည့် ရက်စွဲ Date of Expiry : 30-11-2026




  
(သိန်းတိုး)  
ညွှန်ကြားရေးမှူးချုပ်





**REPUBLIC OF THE UNION OF MYANMAR**  
**Ministry of Natural Resources and Environmental Conservation**  
**CERTIFICATE FOR TRANSITIONAL CONSULTANT REGISTRATION**  
 (ကြားကာလအကြံပေးလုပ်ကိုင်သူမှတ်ပုံတင်ခြင်းအထောက်အထားလက်မှတ်)

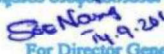



No. 0021 Date 11.03.2018

The Ministry of Natural Resources and Environmental Conservation, hereby, issues this certificate to the person under Environmental Impact Assessment Procedure, Notification No. 616/2015.

(ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းဆိုင်ရာ လုပ်ထုံးလုပ်နည်း၊ အမိန့်ကြော်ငြာစာအမှတ်၊ ၆၁၆/၂၀၁၅ အရ သယံဇာတနှင့် သဘာဝပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဝန်ကြီးဌာနသည် ဤအထောက်အထားလက်မှတ်ကို လူပုဂ္ဂိုလ်အားထုတ်ပေးလိုက်သည်။)

(a) Name of Consultant (အကြံပေးပုဂ္ဂိုလ်အမည်)	Engr. Daw Khin Swe Aye	 
(b) Citizenship (နိုင်ငံသား)	Myanmar	
(c) Identity Card / Passport Number (မှတ်ပုံတင်/နိုင်ငံကူးလက်မှတ် အမှတ်)	12/Sa Kha Na (N) 017708	
(d) Address (ဆက်သွယ်ရန်လိပ်စာ)	14 B, Wai Lu Wun Main Street, Sanchaung, Yangon. <a href="mailto:khinsweaye.daw@gmail.com">khinsweaye.daw@gmail.com</a> , 09 5015475 Green Myanmar Environmental Services Co.,Ltd.	
(e) Organization (အဖွဲ့အစည်း)	Green Myanmar Environmental Services Co.,Ltd.	
(f) Type of Consultancy (အကြံပေးလုပ်ကိုင်မှုအမျိုးအစား)	Person	
(g) Duration of validity (သက်တမ်းကုန်ဆုံးရက်)	31 March 2018	

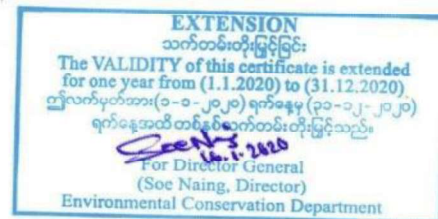
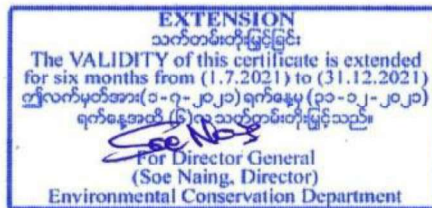
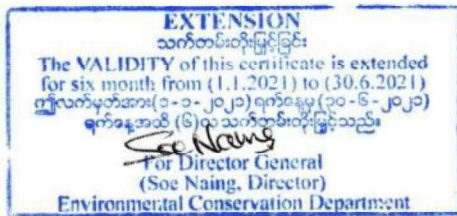
**EXTENSION**  
 သက်တမ်းတိုးမြှင့်ခြင်း  
 The VALIDITY of this certificate is extended  
 for one year from (1.4.2018) to (31.3.2019)  
 ဤလက်မှတ်အား (၀-၄-၂၀၁၈) ရက်နေ့မှ (၃၁-၃-၂၀၁၉)  
 ရက်နေ့အထိ တစ်နှစ်သက်တမ်း တိုးမြှင့်သည်။  
  
 For Director General  
 (Soe Naing, Director)  
 Environmental Conservation Department

  
 Director General  
 Environmental Conservation Department  
 Ministry of Natural Resources and Environmental Conservation

Areas of Expertise Permitted  
(ခွင့်ပြုသည့် ကျွမ်းကျင်မှုနယ်ပယ်များ)

1. Air Pollution Control

2. Waste Management



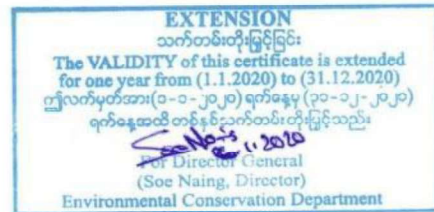
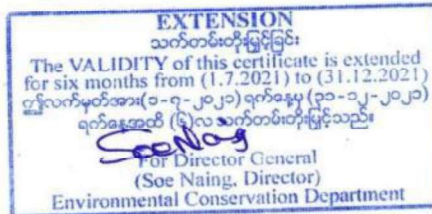
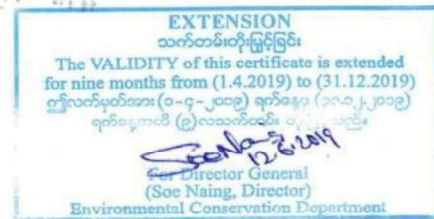
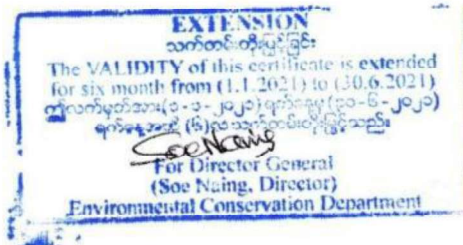


		<p align="center"><b>REPUBLIC OF THE UNION OF MYANMAR</b>  <b>Ministry of Natural Resources and Environmental Conservation</b>  <b>CERTIFICATE FOR TRANSITIONAL CONSULTANT REGISTRATION</b>          (ကြားကာလအကြံပေးလုပ်ကိုင်သူမှတ်ပုံတင်ခြင်းအထောက်အထားလက်မှတ်)</p>		
No.	<b>10028</b>	Date	<b>31.03.2018</b>	
<p>The Ministry of Natural Resources and Environmental Conservation, hereby, issues this certificate to the person under Environmental Impact Assessment Procedure, Notification No. 616/2015.</p> <p>(ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းဆိုင်ရာ လုပ်ထုံးလုပ်နည်း၊ အမိန့်ကြော်ငြာစာအမှတ်၊ ၆၁၆/၂၀၁၅ အရ သယံဇာတနှင့် သဘာဝပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဝန်ကြီးဌာနသည် ဤအထောက်အထားလက်မှတ်ကို လူပုဂ္ဂိုလ်အားထုတ်ပေးလိုက်သည်။)</p>				
(a) Name of Consultant (အကြံပေးပုဂ္ဂိုလ်အမည်)	Prof. Engr. Daw Tin May Soe			
(b) Citizenship (နိုင်ငံသား)	Myanmar			
(c) Identity Card / Passport Number (မှတ်ပုံတင်/နိုင်ငံကူးလက်မှတ် အမှတ်)	12/ Ka Ma Ya (N) 016072			
(d) Address (ဆက်သွယ်ရန်လိပ်စာ)	115, Kanaung Min Thargyi Road, Hlaing Thar Yar Industrial City, Zone (1), Hlaing Thar Yar Township, Yangon. <a href="mailto:tinmaysoe949@gmail.com">tinmaysoe949@gmail.com</a> , 09 5077081 Green Myanmar Environmental Services Co., Ltd.			
(e) Organization (အဖွဲ့အစည်း)	Person			
(f) Type of Consultancy (အကြံပေးလုပ်ကိုင်မှုအမျိုးအစား)	31 March 2018			
(g) Duration of validity (သက်တမ်းကုန်ဆုံးရက်)				
<div style="border: 1px solid black; padding: 5px; margin-top: 20px;"> <p align="center"><b>EXTENSION</b>          သက်တမ်းတိုးကြွင်းခြင်း</p> <p>The <b>VALIDITY</b> of this certificate is extended for one year from (1.4.2018) to (31.3.2019)          ဤလက်မှတ်အား (၁-၄-၂၀၁၈) ရက်နေ့မှ (၃၁-၃-၂၀၁၉) ရက်နေ့အထိ တစ်နှစ်သက်တမ်း တိုးချိန်သည်။</p> <p align="center"><i>Soe Naing</i>          For Director General          (Soe Naing, Director)          Environmental Conservation Department</p> </div> <div style="margin-top: 20px; text-align: right;"> <p><i>Soe Naing</i>          Director General          Environmental Conservation Department          Ministry of Natural Resources and Environmental Conservation</p> </div>				

Areas of Expertise Permitted  
(ခွင့်ပြုသည့် ကျွမ်းကျင်မှုနယ်ပယ်များ)

1. Water Pollution Control

2. Chemical Engineering Process Design





ပြည်ထောင်စုသမ္မတမြန်မာနိုင်ငံတော်အစိုးရ  
The Government of the Republic of the Union of Myanmar  
သယံဇာတနှင့် သဘာဝပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဝန်ကြီးဌာန  
Ministry of Natural Resources and Environmental Conservation  
ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဦးစီးဌာန  
Environmental Conservation Department  
ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းဆိုင်ရာလုပ်ငန်းလိုင်စင် (ပုဂ္ဂိုလ်)  
Environmental Impact Assessment License (Individual)



ဒေါ်ခင်ရွှေဌေး၊ ၁၂/သယံဇာတ(နိုင်)၀၀၈၈၀၈ အား တွဲဖက်အကြံပေးပုဂ္ဂိုလ် အဖြစ် လုပ်ကိုင်ဆောင်ရွက်ရန် ပတ်ဝန်းကျင် ထိခိုက်မှုဆန်းစစ်ခြင်းဆိုင်ရာ လုပ်ငန်းလိုင်စင်ကို ကနဦးပတ်ဝန်းကျင်ဆန်းစစ်ခြင်းနှင့် ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်း ပြုလုပ်သည့် တတိယပုဂ္ဂိုလ် သို့မဟုတ် အဖွဲ့အစည်း လုပ်ငန်းလိုင်စင်ဆိုင်ရာ လုပ်ထုံးလုပ်နည်းနှင့်အညီ ဤဝန်ကြီး ဌာန၏ အတည်ပြုချက်ဖြင့် ထုတ်ပေးလိုက်သည်။

It is hereby issued that **Daw Khin Shwe Htay, 12/ThaGaKa(N)008808** has fulfilled the requirements for obtaining an Environmental Impact Assessment License to conduct as an **Associate Consultant** under the Licensing Procedure for the Third Persons or Organizations Undertaking Initial Environmental Examination and Environmental Impact Assessment, approved by the Ministry of Natural Resources and Environmental Conservation.

လေ့လာဆန်းစစ်ခွင့်ရှိသည့် ကျွမ်းကျင်မှုနယ်ပယ်များမှာ အောက်ပါအတိုင်းဖြစ်သည်-

The areas of expertise, eligible to be conducted, are as follows:

1. စွန့်ပစ်အစိုင်အခဲနှင့် ဘေးအန္တရာယ်ရှိ စွန့်ပစ်ပစ္စည်း စီမံခန့်ခွဲခြင်း (Solid Waste and Hazardous Waste Management)
- 2.
- 3.
- 4.
- 5.

လိုင်စင်နံပါတ် License Number	: EIA-AC 100/2024
ထုတ်ပေးသည့် ရက်စွဲ Date of Issue	: 31-5-2024
ကုန်ဆုံးသည့် ရက်စွဲ Date of Expiry	: 30-5-2027




  
 (သိန်းတိုး)  
 ညွှန်ကြားရေးမှူးချုပ်





ပြည်ထောင်စုသမ္မတမြန်မာနိုင်ငံတော်အစိုးရ  
The Government of the Republic of the Union of Myanmar  
သယံဇာတနှင့် သဘာဝပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဝန်ကြီးဌာန  
Ministry of Natural Resources and Environmental Conservation  
ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဦးစီးဌာန  
Environmental Conservation Department  
ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဆိုင်ရာလုပ်ငန်းလိုင်စင် (ပုဂ္ဂိုလ်)  
Environmental Impact Assessment License (Individual)



ဦးခင်အောင်၊ ၁၂/မရက(နိုင်)၀၄၇၀၃၂ အား တွဲဖက်အကြံပေးပုဂ္ဂိုလ်အဖြစ် လုပ်ကိုင်ဆောင်ရွက်ရန် ပတ်ဝန်းကျင် ထိခိုက်မှု ဆန်းစစ်ခြင်းဆိုင်ရာ လုပ်ငန်းလိုင်စင်ကို ကနဦးပတ်ဝန်းကျင်ဆန်းစစ်ခြင်းနှင့် ပတ်ဝန်းကျင်ထိခိုက်မှု ဆန်းစစ်ခြင်း ပြုလုပ်သည့် တတိယပုဂ္ဂိုလ် သို့မဟုတ် အဖွဲ့အစည်း လုပ်ငန်းလိုင်စင်ဆိုင်ရာ လုပ်ထုံးလုပ်နည်းနှင့်အညီ ဤဝန်ကြီးဌာန၏ အတည်ပြုချက်ဖြင့် ထုတ်ပေးလိုက်သည်။

It is hereby issued that U Khin Aung, 12/MaYaKa(N)047032 has fulfilled the requirements for obtaining an Environmental Impact Assessment License to conduct as an **Associate Consultant** under the Licensing Procedure for the Third Persons or Organizations Undertaking Initial Environmental Examination and Environmental Impact Assessment, approved by the Ministry of Natural Resources and Environmental Conservation.

လေ့လာဆန်းစစ်ခွင့်ရှိသည့် ကျွမ်းကျင်မှုနယ်ပယ်များမှာ အောက်ပါအတိုင်းဖြစ်သည်-

The areas of expertise, eligible to be conducted, are as follows:

- လူမှုရေးဆိုင်ရာ လေ့လာခြင်းနှင့် သရုပ်ခွဲဆန်းစစ်ခြင်း (Social Study and Analysis)
- 
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- 
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လိုင်စင်နံပါတ် License Number	: EIA-AC 099/2024
ထုတ်ပေးသည့် ရက်စွဲ Date of Issue	: 31-5-2024
ကုန်ဆုံးသည့် ရက်စွဲ Date of Expiry	: 30-5-2027




  
(သိန်းတိုး)  
ညွှန်ကြားရေးမှူးချုပ်



ပြည်ထောင်စုသမ္မတမြန်မာနိုင်ငံတော်အစိုးရ  
The Government of the Republic of the Union of Myanmar  
သယံဇာတနှင့် သဘာဝပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဝန်ကြီးဌာန  
Ministry of Natural Resources and Environmental Conservation  
ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဦးစီးဌာန  
Environmental Conservation Department  
ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဆန်းစစ်ခြင်းဆိုင်ရာလုပ်ငန်းလိုင်စင် (ပုဂ္ဂိုလ်)  
**Environmental Impact Assessment License (Individual)**



ဦးကြည်ဟန်ဘို ၊ ၁၂/ဒဂုံ(နိုင်)၀၂၂၂၃၁ အား တွဲဖက်အကြံပေးပုဂ္ဂိုလ် အဖြစ် လုပ်ကိုင်ဆောင်ရွက်ရန် ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဆန်းစစ်ခြင်းဆိုင်ရာ လုပ်ငန်းလိုင်စင်ကို ကနဦးပတ်ဝန်းကျင်ဆန်းစစ်ခြင်းနှင့် ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဆန်းစစ်ခြင်း ပြုလုပ်သည့် တတိယပုဂ္ဂိုလ် သို့မဟုတ် အဖွဲ့အစည်း လုပ်ငန်းလိုင်စင်ဆိုင်ရာ လုပ်ထုံးလုပ်နည်းနှင့် အညီ ဤဝန်ကြီးဌာန၏ အတည်ပြုချက်ဖြင့် ထုတ်ပေးလိုက်သည်။

It is hereby issued that U Kyi Han Bo, 12/DaGaMa(N)022231 has fulfilled the requirements for obtaining an Environmental Impact Assessment License to conduct as an Associate Consultant under the Licensing Procedure for the Third Persons or Organizations Undertaking Initial Environmental Examination and Environmental Impact Assessment, approved by the Ministry of Natural Resources and Environmental Conservation.

လေ့လာဆန်းစစ်ခွင့်ရှိသည့် ကျွမ်းကျင်မှုနယ်ပယ်များမှာ အောက်ပါအတိုင်းဖြစ်သည်။  
The areas of expertise, eligible to be conducted, are as follows:

1. ဆူညံသံနှင့် တုန်ခါမှု (Noise and Vibration)
- 2.
- 3.
- 4.
- 5.

လိုင်စင်နံပါတ် License Number : EIA-AC 048/2023  
ထုတ်ပေးသည့် ရက်စွဲ Date of Issue : 1-12-2023  
ကုန်ဆုံးသည့် ရက်စွဲ Date of Expiry : 30-11-2026





(သိန်းတိုး)

ညွှန်ကြားရေးမှူးချုပ်



## Certificates of EIA Project Consultants



**REPUBLIC OF THE UNION OF MYANMAR**  
**Ministry of Natural Resources and Environmental Conservation**  
**CERTIFICATE FOR TRANSITIONAL CONSULTANT REGISTRATION**  
 (ကြားကာလအကြံပေးလုပ်ကိုင်သူမှတ်ပုံတင်ခြင်းအထောက်အထားလက်မှတ်)

No. **0037** Date **17.3.18**

The Ministry of Natural Resources and Environmental Conservation, hereby, issues this certificate to the person under Environmental Impact Assessment Procedure, Notification No. 616/2015.

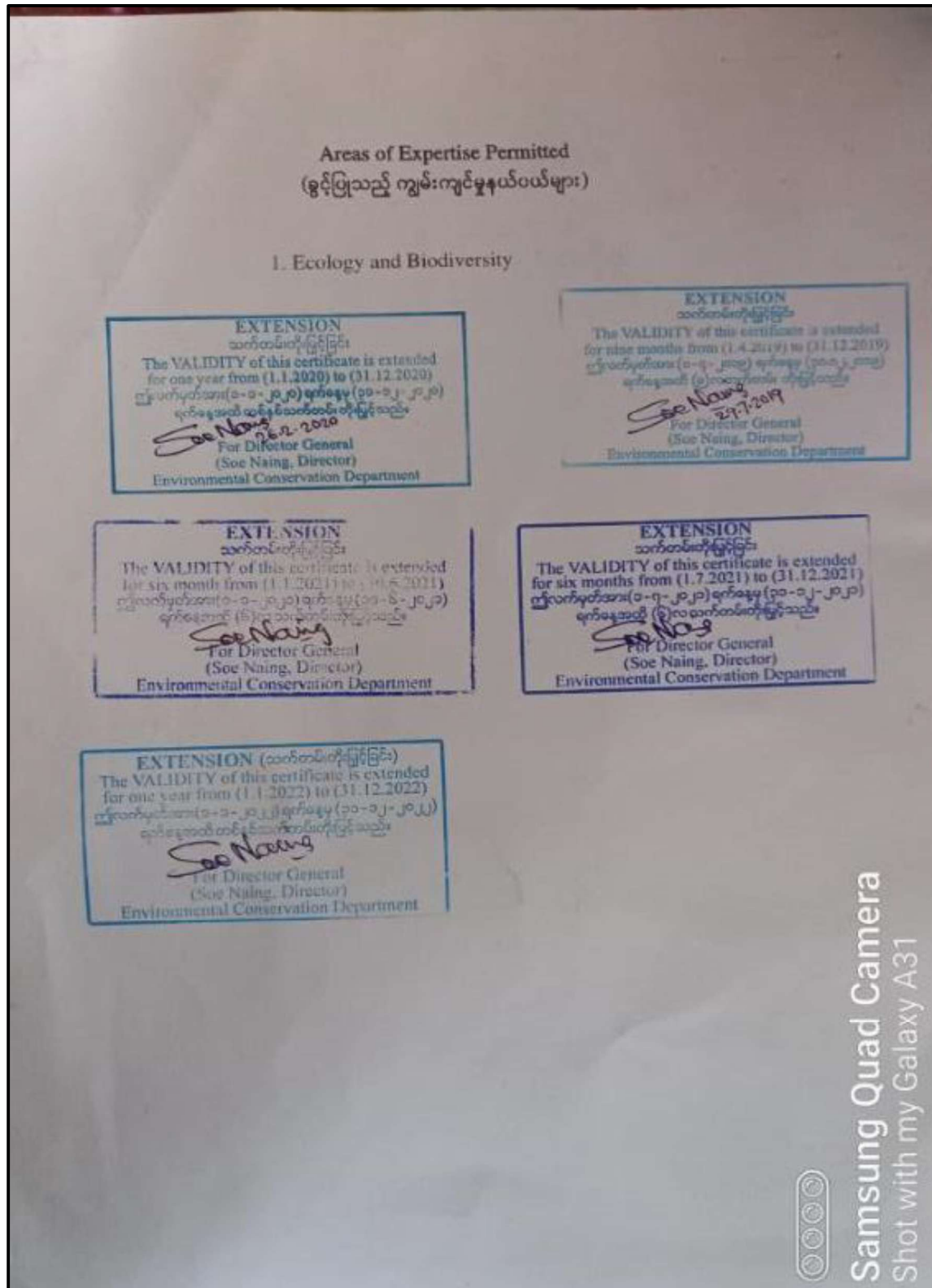
(ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းဆိုင်ရာ လုပ်ထုံးလုပ်နည်း၊ အမိန့်ကြော်ငြာစာအမှတ်၊ ၅၁၆/၂၀၁၅ အရ သယ်စာတစ်ခု သဘာဝပတ်ဝန်းကျင်ထိခိုက်သိမ်းစားခြင်းဌာနသည် ဤအထောက်အထားလက်မှတ်ကို လူပုဂ္ဂိုလ်အားထုတ်ပေးလိုက်သည်။)

(a) Name of Consultant (အကြံပေးပုဂ္ဂိုလ်အမည်)	Dr. Ko Myint
(b) Citizenship (နိုင်ငံသား)	Myanmar
(c) Identity Card / Passport Number (မှတ်ပုံတင်/နိုင်ငံကူးလက်မှတ် အမှတ်)	11/ Ya Ba Na (N) 013611
(d) Address (ဆက်သွယ်ရန်လိပ်စာ)	No.51, Room 2C (1 <sup>st</sup> Floor), Yaytarshay Lanthit Road, Bahan Township, Yangon. <a href="mailto:komyint07@gmail.com">komyint07@gmail.com</a> , 09 73149161
(e) Organization (အဖွဲ့အစည်း)	Environment Myanmar Cooperative Ltd.
(f) Type of Consultancy (အကြံပေးလုပ်ကိုင်မှုအမျိုးအစား)	Person
(g) Duration of validity (သက်တမ်းကုန်ဆုံးရက်)	31 March 2018

Director General  
 Environmental Conservation Department  
 Ministry of Natural Resources and Environmental Conservation

**EXTENSION**  
 သက်တမ်းတိုးချက်  
 The VALIDITY of this certificate is extended for one year from (1.4.2018) to (30.3.2019)  
 (၀-၄-၂၀၁၈) မှစ၍ (၃၀-၃-၂၀၁၉) အထိ တစ်နှစ်အတွက် တိုးချက်သည်။

Samsung Quad Camera  
 Shot with my Galaxy A31





REPUBLIC OF THE UNION OF MYANMAR

Ministry of Natural Resources and Environmental Conservation

CERTIFICATE FOR TRANSITIONAL CONSULTANT REGISTRATION

(ကြားကာလအကြံပေးလုပ်ကိုင်သူမှတ်ပုံတင်ခြင်းအထောက်အထားလက်မှတ်)



No. 10029

Date 17.03.2018

The Ministry of Natural Resources and Environmental Conservation, hereby, issues this certificate to the person under Environmental Impact Assessment Procedure, Notification No. 616/2015.

(ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းဆိုင်ရာ လုပ်ထုံးလုပ်နည်း၊ အမိန့်ကြော်ငြာစာအမှတ်၊ ၆၁၆/၂၀၁၅ အရ သယံဇာတနှင့် သဘာဝပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဝန်ကြီးဌာနသည် ဤအထောက်အထားလက်မှတ်ကို လူပုဂ္ဂိုလ်အားထုတ်ပေးလိုက်သည်။)

<p>(a) Name of Consultant (အကြံပေးပုဂ္ဂိုလ်အမည်)</p> <p>(b) Citizenship (နိုင်ငံသား)</p> <p>(c) Identity Card / Passport Number (မှတ်ပုံတင်/နိုင်ငံကူးလက်မှတ် အမှတ်)</p> <p>(d) Address (ဆက်သွယ်ရန်လိပ်စာ)</p> <p>(e) Organization (အဖွဲ့အစည်း)</p> <p>(f) Type of Consultancy (အကြံပေးလုပ်ကိုင်မှုအမျိုးအစား)</p> <p>(g) Duration of validity (သက်တမ်းကုန်ဆုံးရက်)</p>	<p>U Thein Soe</p> <p>Myanmar</p> <p>12/ Ya Ka Na (N) 059643</p> <p>Room 24, Building 13, Shwe Ohn Pin Housing (1), Yan Aye Street, No. (5) Ward, Yankin Township, Yangon. <a href="mailto:ktsoester@gmail.com">ktsoester@gmail.com</a> , 09 5084203 Environment Myanmar Cooperative (EMC)</p> <p>Person</p> <p>31 March 2018</p>
---	---

**EXTENSION**  
သက်တမ်းတိုးမြှင့်ခြင်း

The VALIDITY of this certificate is extended for one year from (1.4.2018) to (31.3.2019)  
ဤလက်မှတ်အား (၁-၄-၂၀၁၈) မှတ်နေ့မှ (၃၁-၃-၂၀၁၉) မှတ်နေ့ထိ တစ်နှစ်သက်တမ်း တိုးမြှင့်သည်။

*Soe Naing*  
For Director General  
(Soe Naing, Director)  
Environmental Conservation Department

*[Signature]*  
Director General  
Environmental Conservation Department  
Ministry of Natural Resources and Environmental Conservation



**Areas of Expertise Permitted**  
(စွန့်ပြုသည့် ကျွမ်းကျင်မှုနယ်ပယ်များ)

1. Facilitation of meeting

2. Socio-economy

**EXTENSION**  
သက်တမ်းတိုးမြှင့်ခြင်း

The VALIDITY of this certificate is extended for one year from (1.1.2020) to (31.12.2020)  
ဤလက်မှတ်အား (၁-၁-၂၀၂၀) ရက်နေ့မှ (၃၁-၁၂-၂၀၂၀) ရက်နေ့အထိ တစ်နှစ်သက်တမ်းတိုးမြှင့်သည်။

*Soe Naing*  
For Director General  
(Soe Naing, Director)  
Environmental Conservation Department

**EXTENSION**  
သက်တမ်းတိုးမြှင့်ခြင်း

The VALIDITY of this certificate is extended for nine months from (1.4.2019) to (31.12.2019)  
ဤလက်မှတ်အား (၁-၄-၂၀၁၉) ရက်နေ့မှ (၃၁-၁၂-၂၀၁၉) ရက်နေ့အထိ (၉)လသက်တမ်း တိုးမြှင့်သည်။

*Soe Naing*  
For Director General  
(Soe Naing, Director)  
Environmental Conservation Department

**EXTENSION**  
သက်တမ်းတိုးမြှင့်ခြင်း

The VALIDITY of this certificate is extended for six month from (1.1.2021) to (30.6.2021)  
ဤလက်မှတ်အား (၁-၁-၂၀၂၁) ရက်နေ့မှ (၃၀-၆-၂၀၂၁) ရက်နေ့အထိ (၆)လသက်တမ်းတိုးမြှင့်သည်။

*Soe Naing*  
For Director General  
(Soe Naing, Director)  
Environmental Conservation Department

**EXTENSION**  
သက်တမ်းတိုးမြှင့်ခြင်း

The VALIDITY of this certificate is extended for six months from (1.7.2021) to (31.12.2021)  
ဤလက်မှတ်အား (၁-၇-၂၀၂၁) ရက်နေ့မှ (၃၁-၁၂-၂၀၂၁) ရက်နေ့အထိ (၆)လသက်တမ်းတိုးမြှင့်သည်။

*Soe Naing*  
For Director General  
(Soe Naing, Director)  
Environmental Conservation Department

**EXTENSION** (သက်တမ်းတိုးမြှင့်ခြင်း)

The VALIDITY of this certificate is extended for one year from (1.1.2022) to (31.12.2022)  
ဤလက်မှတ်အား (၁-၁-၂၀၂၂) ရက်နေ့မှ (၃၁-၁၂-၂၀၂၂) ရက်နေ့အထိ တစ်နှစ်သက်တမ်းတိုးမြှင့်သည်။

*Soe Naing*  
For Director General  
(Soe Naing, Director)  
Environmental Conservation Department





# Certificate of Completion

*In recognition that the following course was successfully completed by*

*Dr. Myint Thein*

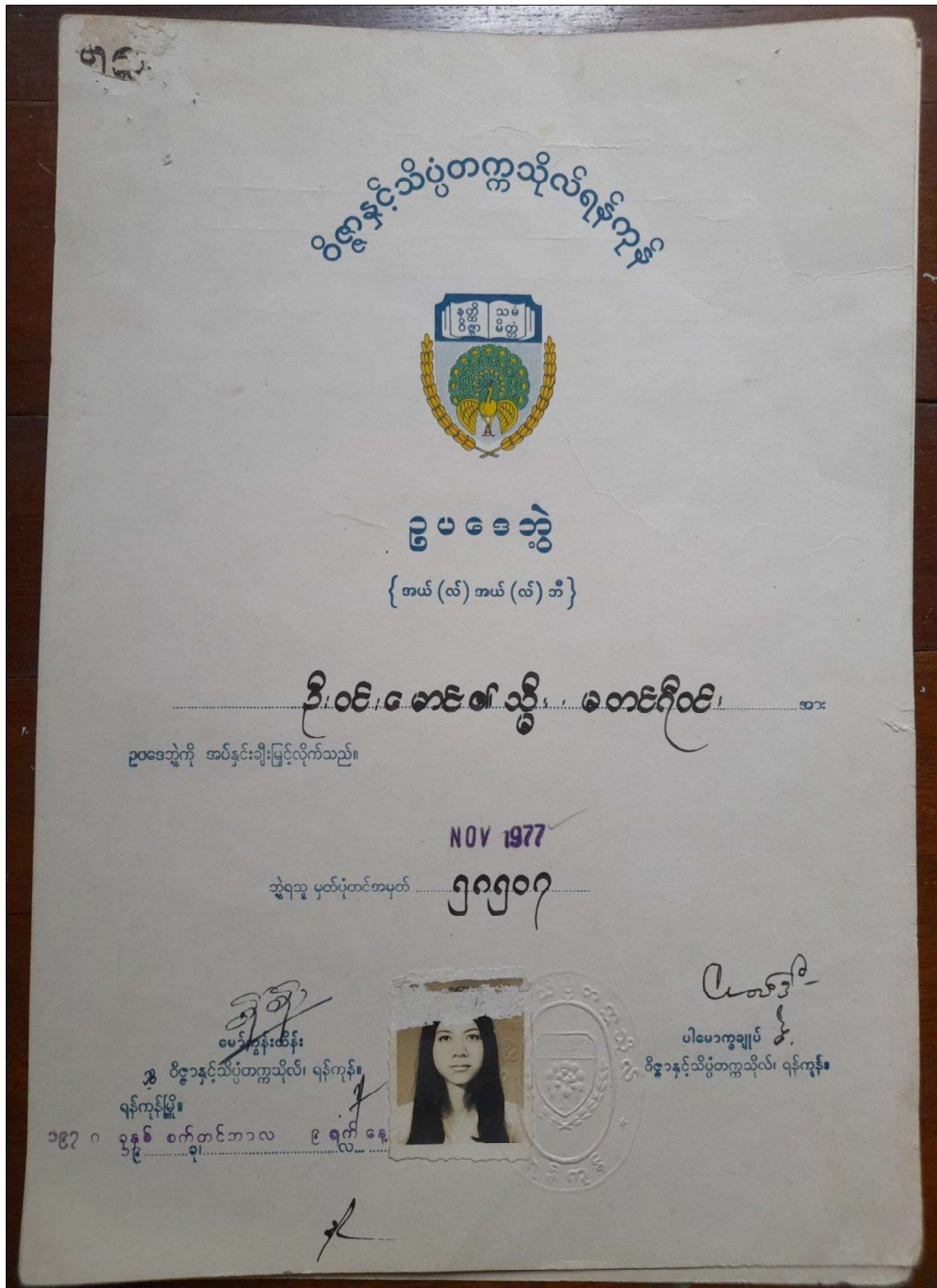
*Online Training on*  
**Health Impact Assessment**

October 12-16, 2020

**Kate Lazarus**  
Asia ESG Advisory Lead  
International Finance Corporation


**Dr. Janis Shandro**  
Director  
Arrowsmith Gold Inc.

**Zaw Naing Oo**  
Chairman  
Myanmar Environmental Assessment Association



၃၉၇

ဝိဇ္ဇာနှင့်သိပ္ပံတက္ကသိုလ်၊ ရန်ကုန်



ဝိဇ္ဇာသွဲ့

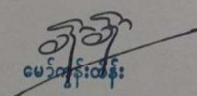
ဦးဝင်းမောင်၏သွို့ မောင်ရှိဝင်း -

ဝိဇ္ဇာသွဲ့ကို အပ်နှံခြင်းမြှင့်လိုက်သည်။


အဓိကဘာသာ..... ဥပဒေပညာ


MAR 1977

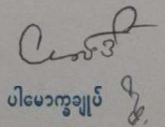
ဘွဲ့ရသူ မှတ်ပုံတင်အမှတ်..... 58507

  
မောင်ကျော်စိုး

ဝိဇ္ဇာနှင့်သိပ္ပံတက္ကသိုလ်၊ ရန်ကုန်





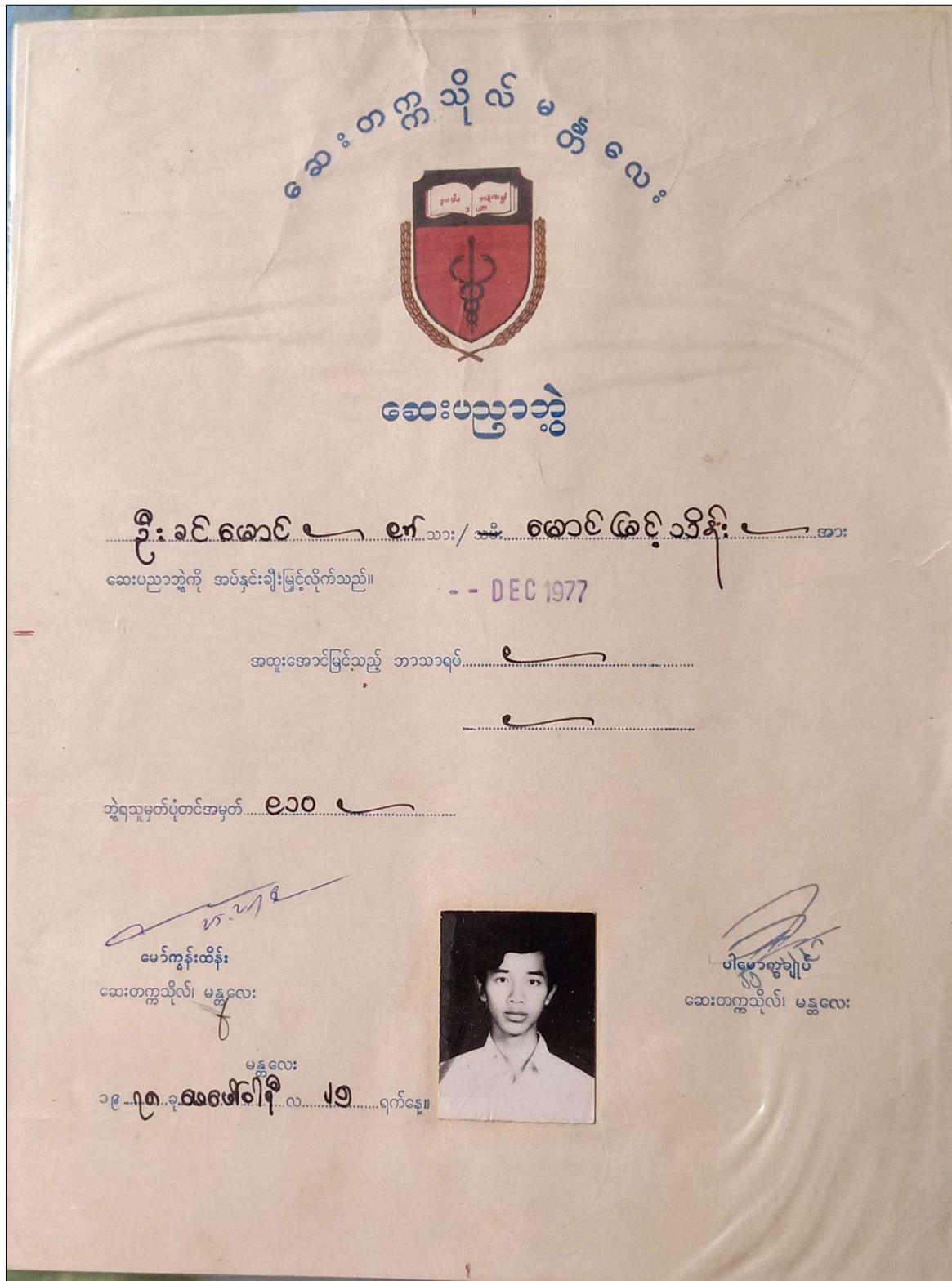
  
ပါမောက္ခချုပ်

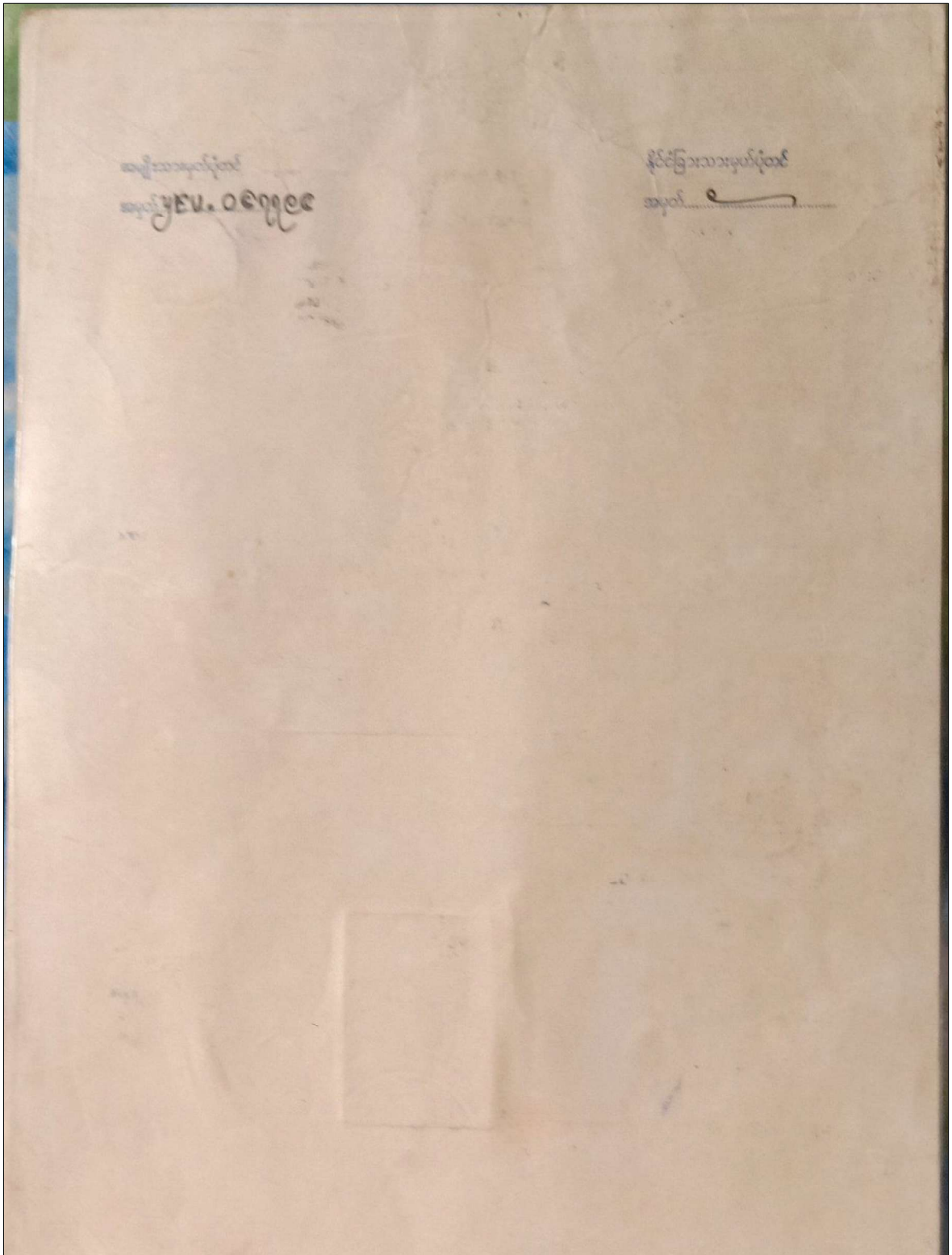
ဝိဇ္ဇာနှင့်သိပ္ပံတက္ကသိုလ်၊ ရန်ကုန်

၁၉၇၇ ခုနှစ် မတ်လ ၃၀ ရက်နေ့











## Appendix V Quotation of Water Treatment Plant

**WATER TREATMENT ENGINEERING**

ရေစနစ်အင်ဂျင်နီယာ၊ ပရို၊ ရေသန့်စနစ်၊ အချိုးချိုး

No.541, (Za) Quarter, Thudamar Road, North Oakkalar.

(Office):09-423741445,09-423723537, Ph: 09-73252597, 09-49209007

CUSTOMER NAME . . . . . Daw Kyi Kyi Nwe  
 SUBJECT . . . . . Water Treatment System  
 CAPACITY . . . . . 7000 L / Hr

QUOTATION -- 001208

Date -- 14 / 11 / 2022

NO	PARTICULAR	SPECIFICATION	QTY
1	Booster Pump (Auto Pressure Pump)	Power Supply : 220 V / 50 Hz Horse Power : 2 HP Accessories : Pressure Tank , Switch ,Gauge Country of Origin : China	1 Set
2	Sand Filter	Material : FRP (Fiberglass Reinforce Plastic) Dimension : <b>18"D + 65" H</b> Operation : Max Pressure 150 Psi Parameter : Max Temperature 120 F Connection : Manual Valve & Accessories : Pressure Gauge	1Set
3	Dion Filter	Material : FRP (Fiberglass Reinforce Plastic) Dimension : <b>18"D + 65" H</b> Operation : Max Pressure 150 Psi Parameter : Max Temperature 120 F Connection : Manual Valve & Accessories : Pressure Gauge	1Set
4	Activated Carbon Filter	Material : FRP (Fiberglass Reinforce Plastic) Dimension : <b>18"D + 65" H</b> Operation : Max Pressure 150 Psi Parameter : Max Temperature 120 F Connection : Manual Softener Valve & Accessories : Pressure Gauge	1Set
5	Micron Filter	Material : plastic Size : <b>20" housing (5 in 1)</b> Filter : 20" pp filter(5 micron)	1Set
8	Ultra Violet Sterilizer	Housing : Stainless Steel Size : <b>3"D +37"L</b> Power Supply : 220 v/50 Hz ,30/40 Watt Type : Horizontal	1 Set

**Total Amount**

Payment : : 20 % in advance payment on contract sing &  
 70 % after delivery and 10 % tustrun.

Validity : : Two weak after quotation date.

Warranty : : One year.

**BEST WISHES**

## Biological enzyme used in Wastewater Treatment System

**DOS**



### DOS BIOLOGICAL ENZYME

#### Product Description

BIO-CLEAN is a quality product from the United States that has the properties of a biological enzyme that helps treat bad odors, wastewater from landfills, wastewater from communities or industries, as well as sanitation work, which can decompose fat and dirt, has no chemical residues, is environmentally friendly, is safe for users, and is suitable for use at water temperatures not exceeding 60 degrees Celsius and PH values between 4-8 to achieve the highest efficiency in decomposition.

#### Qualification

DOS BIO CLEAN Special Grade A Bacteria Head Imported from the United States

High efficiency in starting the decomposition system. Reduce odors and organic waste.

Green (organic) products are safe for people, animals and plants, and environmentally friendly.

#### Product Usage

Pour DOSBIO CLEAN microorganisms into the toilet bowl and leave them to allow the microorganisms to work.

It should be done regularly every 3 months or every month.

#### Advice

Carefully study the application information.

If the sachet is opened and not used up, it should be closed completely, preferably within 48 hours.

#### Caution

Do not modify, modify the product, or misuse it.

Do not use acidic chemicals and alkalis to clean.

Store in a dry place out of the reach of children.

Do not store near heat and open flames.

DOS



Product Photo



## Appendix VII Contract Document of Wastewater Treatment Plant



### GOLDEN OZONE GENERAL TRADING COMPANY LIMITED

NO. 63, HLAING RIVER ROAD, PAUNK TAW QUARTER,  
INSEIN TOWNSHIP, YANGON. MYANMAR.

PHONE: +95 9428 315 936, +95 9250 670 716

Email: goldenozonetrading@gmail.com

Reg; No. 121410087

### AGREEMENT CONTRACT

#### BETWEEN

NIPPON PAINT (MYANMAR) CO., LTD.

#### AND

GOLDEN OZONE GENERAL TRADING CO., LTD.

(for Waste Water Treatment System(13M3/Day))

#### NIPPON PAINT (MYANMAR) CO., LTD.

No. (1/A), U Ta Yoke Gyi Street, Hlaing Thar Yar Industrial Zone (4).

Hlaing Tharyar Township, Yangon, Myanmar. **Herein after called the "NIPPON PAINT"**

#### GOLDEN OZONE GENERAL TRADING CO., LTD.

Registered Office at No. 63, Hlaing River Road, Paunk Taw Quarter,  
Insein Township, Yangon, Myanmar. **Herein after called the "GOG"**

**WITNESSETH:** that the **NIPPON PAINT** and **GOG** undertake and agree as follows:

#### ARTICLE A-1 THE WORK

The **GOG** shall:

- (a) Perform all Modification of the **Waste Water Treatment System(13M3/Day)** Work required by the Contract Documents for **NIPPON PAINT** which is Specify by Trane Technician and Proposed by **GOG**. (See below details Description) which have been signed in triplicate by both the parties,
- (b) Do and fulfil everything indicated by this Agreement, and
- (c) Commence the Work by the ( 25.11.2022 ) and substantially perform the Work of this Contract to be completed and deliver by the ( 24.2.2023 ) OR Project period is 90days after receiving Steel Tank support by **NIPPON PAINT**.

#### ARTICLE A-2 CONTRACT DOCUMENTS

The following is an exact list of the Contract Documents referred to (SEE TABLE OF CONTENTS FOR LIST OF DOCUMENTS AND DRAWINGS). **See below details**

##### 1.1.1 SUMMARY

##### 2.0 INTRODUCTION

1



**GOLDEN OZONE GENERAL TRADING COMPANY LIMITED**

**NO. 63, HLAING RIVER ROAD, PAUNG TAW QUARTER,  
INSEIN TOWNSHIP, YANGON. MYANMAR.**

**PHONE; +95 9428 315 936, +95 9250 670 716**

Email: goldenozonegeneraltrading@gmail.com

Reg: No. 121410087

2.1.1	2.0	TREATMENT SYSTEM SITE DETAILS
2.1.2	3.0	GUARANTEE TREATED WATER QUALITY
2.1.3	4.0	TREATMENT SYSTEM FLOW CHART
2.1.4	5.0	TREATMENT PLANT OVER VIEW DRAWING
2.1.5	6.0	DUTY SEPARATION
2.1.6	7.0	SUPPORT INSTALLATION LABOR & SERVICE
2.1.7	8.0	STRUCTURES TO SUPPLY BY CLIENT
2.1.8	9.0	POWER AND AREA REQUIRED
2.1.9	10.0	MODIFICATION
2.1.10	11.0	TEST RUN
2.1.11	12.0	RESPONSIBILITY
2.1.12	13.0	GUARANTEES
2.1.13	14.0	TAKING OVER AND COMMISSIONING

**1.0 INTRODUCTION**




**GOLDEN OZONE GENERAL TRADING COMPANY LIMITED**

**NO. 63, HLAING RIVER ROAD, PAUNK TAW QUARTER,  
INSEIN TOWNSHIP, YANGON, MYANMAR.**

**PHONE; +95 9428 315 936, +95 9250 670 716**

Email: goldenozonegeneraltrading@gmail.com

Reg: No. 121410087

We are proudly submit emulsion paint waste water treatment system with treated capacity 13m<sup>3</sup>/day. This treatment system can receive up to 13m<sup>3</sup>/day. The system proposed is Simi Auto System and only require one operator to oversee the running of the system. And we guarantee the treated effluent water result will be acceptable with WHO's waste water guide line.

**2.0 PROJECT SITE ADDRESS**

**No. (44), No. (2) Street, Ngwe Pin Lal Industrial Zone, Hlaing Thar Yar Township, Yangon, Myanmar.**

**3.0 GUARANTEE TREATED WATER QUALITY**
**(a) Target of Effluent Quality**

pH	< 6 - 9
Total Suspended Solid (TSS)	< 50 ppm (with 520 lit/hr flow rate)
Total Dissolved Solid (TDS)	< 1800 ppm
Biological Oxygen Demand	< 30 ppm (with 520 lit/hr flow rate)
Chemical Oxygen Demand	< 125 ppm (with 520 lit/hr flow rate)

**(b) Limited influent Quality**

pH	< 6 - 9
Total Suspended Solid (TSS)	< 81000 ppm
Total Dissolved Solid (TDS)	< 2000 ppm
Biological Oxygen Demand	< 520 ppm
Chemical Oxygen Demand	< 12800 ppm



**GOLDEN OZONE GENERAL TRADING COMPANY LIMITED**

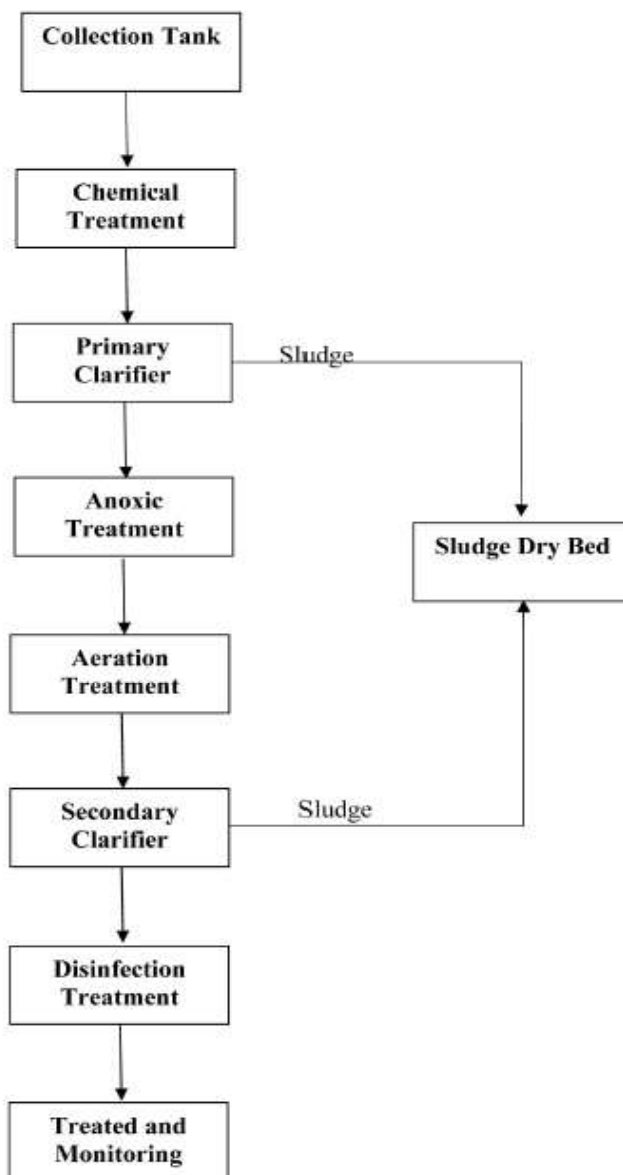
**NO. 63, HLAING RIVER ROAD, PAUNG TAW QUARTER,  
INSEIN TOWNSHIP, YANGON. MYANMAR.**

**PHONE; +95 9428 315 936, +95 9250 670 716**

Email; goldenozonegeneraltrading@gmail.com

Reg; No. 121410087

**4.0 TREATMENT SYSTEM FLOW CHART**



4



**GOLDEN OZONE GENERAL TRADING COMPANY LIMITED**

**NO. 63, HLAING RIVER ROAD, PAUNG TAW QUARTER,  
INSEIN TOWNSHIP, YANGON. MYANMAR.**

**PHONE; +95 9428 315 936, +95 9250 670 716**

Email; goldenozonegeneraltrading@gmail.com

Reg; No. 121410087

↓  
**Discharge to Public drainage**

**5.0**

**TREATMENT PLANT OVER VIEW DRAWING**

5



**GOLDEN OZONE GENERAL TRADING COMPANY LIMITED**

**NO. 63, HLAING RIVER ROAD, PAUNK TAW QUARTER,  
INSEIN TOWNSHIP, YANGON. MYANMAR.**

**PHONE; +95 9428 315 936, +95 9250 670 716**

Email; goldenzonegeneraltrading@gmail.com

Reg; No. 121410087



**GOLDEN OZONE GENERAL TRADING COMPANY LIMITED**

**NO. 63, HLAING RIVER ROAD, PAUNK TAW QUARTER,  
INSEIN TOWNSHIP, YANGON. MYANMAR.**

**PHONE; +95 9428 315 936, +95 9250 670 716**

Email; goldenozonegeneraltrading@gmail.com

Reg; No. 121410087

**6.0 Duty separation for Waste Water Treatment System(13M3/Day)**

S/N	Description	By GOG	By NIPPON PAINT
<b>1</b>	<b>For Collection Tank</b>		
	Submersible Pump (1 units)	By Us	
	Brand : : Dayuan or Equivalent		
	Flow Rate : : 7m3/hr		
<b>2</b>	<b>For Chemical Tank</b>		
	a. Dosing Pump and Tank	By Us	
	Quantity : : 2 Set		
	Brand : : SEKO or Equivalent		
	b. Agitator and Shelf	By Us	
	Quantity : : 2 Set		
	C/O : : Taiwan		
	c. Chemical		
	Anion Polymer (Flocculant chemical) ( 1 bag)	By Us	
	Alum liquid (Coagulant chemical) (5pails)	By Us	
	NaOH (pH control chemical) (5pails)	By Us	
<b>3.</b>	<b>For Primary Clarifier Tank</b>		
	Submersible Pump (1 units)	By Us	
	Brand : : Dayuan or Equivalent		
	Flow Rate : : 7m3/hr		
<b>4.</b>	<b>For Aeration Tank</b>		
	a. Ring Blower	By Us	
	Quantity : : 2 Set		
	Brand : : Xinya or Equivalent		
	Air Flow Rate : : 100 m3/hr		

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Reg; No. 121410087

	b. Air Diffuser (23 pcs)	By Us	
	C/O :: Taiwan		
	Air Flow Rate :: 2Nm3/min		
<b>5.</b>	<b>For Secondary Clarifier Tank</b>		
	Submersible Pump (1 units)	By Us	
	Brand :: Dayuan or Equivalent		
	Flow Rate :: 7m3/hr		
<b>6.</b>	Piping & Accessories	By Us	
<b>7.</b>	Electrical Accessories	By Us	
<b>8.</b>	Installation work of machine	By Us	
<b>9.</b>	Transportation Work	By Us	
<b>10.</b>	Consultant Work	By Us	
<b>11.</b>	Control Panel	By Us	
<b>12.</b>	Stainer for Sludge dry bed tank	By Us	
<b>13.</b>	Main Power & Water supply		By Client
<b>14.</b>	All Tank construction Work		By Client
<b>15.</b>	All Tank Foundation		By Client

**7.0 SUPPORT INSTALLATION ( LABOUR & SERVICE)****7.1 Piping Works**

We will supply good quality pipe & accessories and will install pipe-line c/w fittings, bolts/nuts, brackets, valves, flanges and gaskets, adequate pipe supports, etc for the treatment system within time schedule.

With Material and labour needed for the installation and completion of the piping system based on good workmanship practice for the installation and completion of the works.

**7.2 Electrical Works****Main Electrical Control Panel**



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Quantity : One (1) unit  
Description : All electrical control systems for the proposed system. Shall be in-door type (non-water proof) mounted on metal frame/wall.

**Electrical Wiring**

Quantity : One (1) Lot  
Description : Will supply Electrical cables and tray or pipe. All cabling shall be armored cable PVC/SWA/PVC .

**8.0 STRUCTURE TO SUPPLY BY NIPPON PAINT**

- Main electric power & waste water supply,
- All Civil work Installation for Each of Tank.
- Machine, Electrical & Pipe support & Foundation

**9.0 POWER AND AREA REQUIRED**

Power : The total average power required to operate the proposed new hotel effluent treatment system is estimated to be about 5 - 8 kw .

Area requirement is W 30ft, L 40ft.

**10.0 MODIFICATION**

We reserve the right to modify the final design of the system should the situation demand such action arises.

**11.0 TEST RUN**

Test run and commissioning after complete installation will be carried out by our

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experienced engineers together with client's assigned operators where at the same time, client's assigned operators will be trained.

**12.0 RESPONSIBILITY**

Upon completion of the treatment system, test run and commissioning shall commence immediately.

If One (1) consecutive samples taken over a span of two weeks, while the plant/system is operated at a normal continuous manner maintaining a constant flow rate, and if the quality is found to be within the stipulated limit then it shall be deemed that we have fulfilled our obligation.

**13.0 GUARANTEES****a) Process Guarantee**

Provide that the characteristics fall within the range stated in section 3.0 and specialized components as per specifications and required performance and the system is operated as per instruction from us, we guarantee that the treated water from the treatment system after going through the system will have a discharge quality of Standard As Listed In 3.0. This process is for flow rate of up to 13m3/day.

**b) Equipment Guarantee**

All new equipment (except consumable parts ) supplied by us is guaranteed to be free from defects. Should defect by faulty workmanship or material develop within twelve (12) months from the date of test run, we shall then repair or replace the defective material at our cost. Any replacement of consumable parts / equipment afterwards will be billed in a separate invoice. Warranties received from sub- suppliers are passed on to the client.

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*Note : This warranty will not apply if malfunction caused by lightning, misuse or negligence by the client and unstable power supply. This warranty does not apply to existing equipment.*

**14.0**

**TAKING OVER AND COMMISSIONING**

- The client shall take over the daily operation of the treatment system immediately after successful test run.
- The system will be handed over to the client upon completion of all works specified under the schedule of supply and commissioning.
- The operator shall not operate the system unless proper test run has been done. Any damage and/or defects arise from the client's running of the system before test run shall be borne by the client.
- Upon completion of construction, installation works and test run, commissioning shall commence.

The commissioning shall end once one (1) consecutive treated water samples taken and tested and if the quality is found to be within the stipulated limit while the plant/system is operated at a normal continuous manner maintaining a constant flow rate, basing on the effluent quality and quantity.

**ARTICLE A-3 CONTRACT PRICE**

**THE CONTRACT PRICE IS 26,500,000 Ks , Twenty-Six Million, Five Hundred Thousand Kyats Only ( Excluded 5% Commercial Tax )** which price shall be subject to adjustments as may be required in accordance with the General Conditions of the contract.

**ARTICLE A-4 PAYMENT**

- (a.) Subject to applicable legislation and, where such legislation does not exist or apply, in accordance with such prescribed regulations or industry practice in accordance with the provisions of the General Conditions of the Contract, the **NIPPON PAINT** shall:
  - (1) Make down 1<sup>st</sup> partial payments **30%** to the **GOG** on account of the Contract Price After signing the contract and receiving invoice.





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- (2) 2<sup>nd</sup> partial payment **30%** will be paid after 50% JOB finished
- (3) 3<sup>rd</sup> partial payment **30%** will be paid after 90% JOB finished and
- (4) 4<sup>th</sup> final payment **10%** hand over of the works in time including related documents. This is also noted in your quoted.
- (b.) If the **NIPPON PAINT** fails to make payments to the **GOG** as they become due under the terms of this Contract or in any award by a court, 5% interest will be charged for the overdue payment until the remaining payment received. Such interest shall be calculated and added to any unpaid amounts monthly.
- (c.) In case **GOG** fails to deliver the scope of works in time, this will results in delay compensation of **GOG** to **NIPPON PAINT** with the following condition, 0.3% of the contract value per day of delay (including all taxes applicable).
- (d.) Advising Bank **KBZ Bank**  
Account Name **KYI HTUN**  
Account No. **99930704001190401**  
NRC No. **12/THA KHA NA (Naing) 100372**

**ARTICLE A-5 WARRANTY PERIOD**

- a. Part Warranty for damages / defects of equipment from production failures only; but not included any damages / defects caused by wrong / improper utilizations or accident
- b. Part Warranty territory and scope: Yangon, Myanmar, scope of warranty will cover only parts, included from logistics cost (such as Tax and transport), and labour / travelling charge.
- c. Warranty covers **GOG's** standard parts only;
- d. Anyone with any modification adjustment by non-authorized personnel is not accepted for warranty.
- e. 5% Commercial tax has been collected due to present Myanmar revenue law.

**ARTICLE A-6 SUCCESSION**

The General Conditions of the Contract hereto annexed, and all other aforesaid Contract Documents, are all to be read into and form part of this Agreement and the whole shall constitute the Contract between the parties and subject to law and the provisions of the Contract Documents shall ensure to the benefit of and be binding upon the parties hereto, their respective heirs, legal representatives, successors and assigns.

**IN WITNESS WHEREOF** the parties hereto have executed this Agreement under their respective corporate seals and by the hands of their proper officers hereunto duly authorize

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**SIGNED, SEALED AND DELIVERED**  
in the presence of;

**NIPPON PAINT (MYANMAR) CO., LTD.**

**GOLDEN OZONE GENERAL  
TRADING CO., LTD.**

Name :  
Title :

Name : **KYI HTUN**  
Title : **Managing Director**  
**Golden Ozone General Trading Co., Ltd.**

**Witness**

**Witness**

Name :  
Title :

Name : **THURA ZAW**  
Title : **Director**  
**Golden Ozone General Trading Co., Ltd.**

N.B. Where any legal jurisdiction, local practice or client requirement calls for proof of authority to execute this document, proof of such authority in the form of a certified copy of a resolution naming the person or persons in question as authorized to sign the Agreement for and on behalf of the Corporation or Partnership, should be attached.

## Appendix VIII Fire Prevention and Safety Plan

မီးဘေးလုံခြုံရေးစီမံချက်

## ၁။ ။ရည်ရွယ်ချက်

ဤစီမံချက်သည် Nippon Paint (Myanmar) Co.,Ltd အတွက် မီးဘေးအန္တရာယ် ကာကွယ်ရေး၊ တုံ့ပြန်ရေး နှင့် မီးဘေးအန္တရာယ်ကြောင့် လူထိခိုက်မှု၊ ပစ္စည်းဆုံးရှုံးမှု၊ အနည်းဆုံး ဖြစ်စေရန်အတွက် ရည်ရွယ်ချက်ဖြင့် ရေးဆွဲခြင်းဖြစ်ပါသည်။

## ၂။ ။တည်နေရာ၊ နယ်နိမိတ်

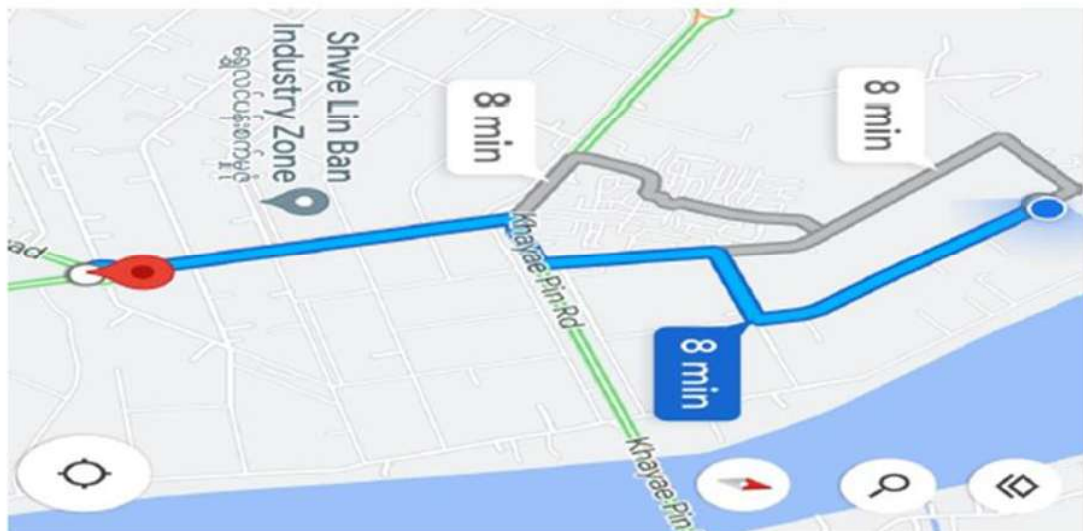
Nippon Paint (Myanmar) Co.,Ltd သည် အမှတ်(၄၄)၊ အမှတ် (၂)လမ်း ၊ မြေတိုင်းရပ်ကွက် အမှတ် (၂၄) ဧပြည်လယ်စက်မှုဇုန်၊ လှိုင်သာယာမြို့နယ်၊ ရန်ကုန်တိုင်းဒေသကြီး တွင်တည်ရှိပါသည်။

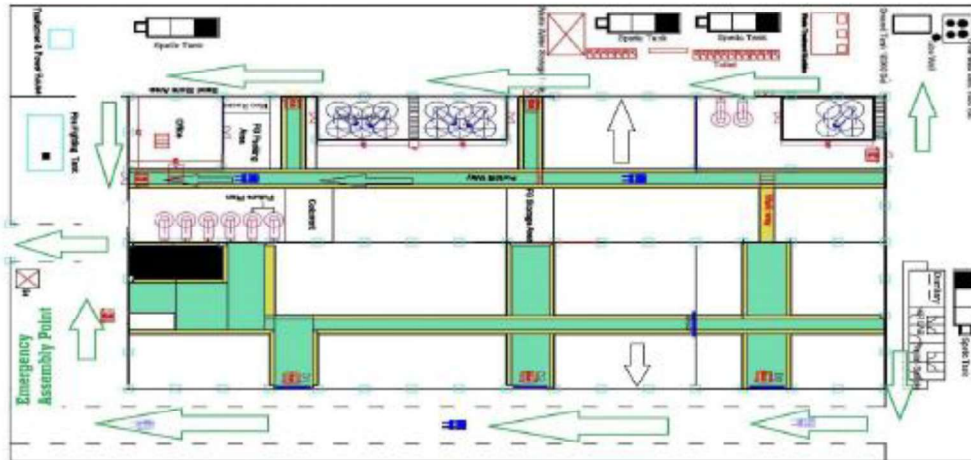
## ၃။ ။အဆောက်အဦး အမျိုးအစား နှင့် အရေအတွက်

Nippon Paint (Myanmar) Co.,Ltd (Factory) အဆောက်အဦးသည် Steel Structure ၂ထပ် Paint Production Factory+Office စက်ရုံအဆောက်အဦး အမျိုးအစားဖြစ်သည်။

## ၄။ ။လမ်းဆန်းဆက်သွယ်ရေး

Nippon Paint (Myanmar) Co.,Ltd (Factory) အဆောက်အဦးကို ဂိတ် ပင်ပေါက်မှ မီးသတ်ယာဉ်များ၊ လူနာတင်ကားများ အရေးပေါ်အခြေအနေ အတွက် အသုံးပြုနိုင်ပါသည်။





**Emergency evacuation plan**

၅။ မီးဘေး စိုးရိမ်ရမှုအခြေအနေ  
Nippon Paint (Myanmar) Co.,Ltd (Factory) အဆောက်အဦးတွင် သိုလှောင်ထားသော  
ဓာတုဗေဒ ပစ္စည်းများနှင့် အခြားပစ္စည်းများကြောင့် မီးလောင်မှုများဖြစ်ပေါ်နိုင်ပါသဖြင့်  
မီးဘေးစိုးရိမ်ရမှု အခြေအနေရှိပါသည်။

၆။ မီးလောင်မှုဖြစ်စေနိုင်သော အကြောင်းအရင်း

- (က) လျှပ်စစ်ပစ္စည်းများကြောင့် မီးလောင်ခြင်း
- (ခ) မီးစက်သုံး၊ စက်ယန္တရားများ၏ စက်သုံးဆီများကြောင့် မီးလောင်နိုင်ခြင်း
- (ဂ) ဓာတုဗေဒ ပစ္စည်းစနစ်တကျသိုလှောင်မှု မရှိသည့်အတွက် ဖြစ်ပေါ်နိုင်သော မီးလောင်မှု
- (ဃ) ပစ္စည်းသိုလှောင်ထားရှိသော နေရာတွင် ဖြစ်ပေါ်လာသော အောင်းပူကြောင့်မီးလောင်ခြင်း
- (င) မသမာသူတို့၏ ရှို့မီးကြောင့် မီးလောင်ခြင်း

၇။ ရေရရှိနိုင်မှု

Nippon Paint (Myanmar) Co.,Ltd (Factory) တွင်ဂါလန် ၂၅၀၀၀ဆန့်  
မြေအောက်ရေလှောင်ကန်တစ်ကန်၊ ဂါလန် ၃၅၀၀၀ဆန့် မီးသတ်ရေလှောင်ကန် တစ်ကန်၊ ဂါလန်  
၁၅၀၀၀ ဆန့် ရေစင်တစ်ခု တည်ဆောက်ထားရှိသဖြင့်အရေးပေါ်ရေရရှိနိုင်ပါသည်။





၈။ ။ဝန်ထမ်းအင်အား နှင့် အဖွဲ့များ၏ တာဝန်များ

Nippon Paint (Myanmar) Co.,Ltd (Factory) တွင် ကျား (၇၇)ဦး၊ မ (၈၄)ဦး ရှိပါသည်။

(က) မီးငြိမ်းသတ်ရေးအဖွဲ့

- ❖ အဖွဲ့ခေါင်းဆောင် - ဦးရာဇာသိမ်း၊ ဦးကျော်မိုးဇော်
- ❖ အဖွဲ့ဝင် - (၁) ဦးတင့်နိုင်ဝင်း၊ ဦးအောင်ကျော်ကျော်၊ ဦးသက်မောင်မောင်၊ ဦးချမ်းဆွေ၊ လှိုင်အဖွဲ့ဝင် - (၂)ဦးအောင်ကိုဦး၊ ဦးမြတ်မင်းအောင်၊ ဦးကျော်စိုးထက်၊ ဦးဇင်မင်းဦး၊ ဦးထွန်းလင်းနိုင်
- ❖ တာဝန်များ
  - အရေးပေါ်ဇာတ်တိုက်လေ့ကျင့်ခန်းများအား ဆောင်ရွက်ခြင်း။
  - မီးငြိမ်းသတ်ရေး ပစ္စည်းကိရိယာများအား ပုံမှန်စစ်ဆေးခြင်း။
  - မီးသတ်ယာဉ်များ အလွယ်တကူဝင်ထွက်နိုင်ရေးအတွက် လမ်းကြောင်းများအားစစ်ဆေးခြင်း။
  - လွတ်မြောက်ဆိုင်ရာ အရေးပေါ်အဝင်/ အထွက်လမ်းပြ မြေပုံ(သို့) layout planအား ကြိုတင်စီမံဆောင်ရွက်ထားရှိခြင်း။
  - မီးဘေးစိုးရိမ်ရသည့် မည်သည့်ကိစ္စရပ်မဆို လိုအပ်သလိုစစ်ဆေးခြင်းနှင့် လိုအပ်ချက်များ အတွက်အကြံပြုခြင်း မှတ်တမ်းထားရှိခြင်း။

အရေးပေါ်ချိန်

- ကနဦးမီးငြိမ်းသတ်ရေးလုပ်ငန်းအားထိရောက်စွာ ဆောင်ရွက်ခြင်း။
- ဝန်ထမ်းအင်အား လူအင်အားစာရင်းအချက်အလက်များအား ပြုစုထားရှိခြင်း။
- အရေးပေါ်ချိန် လုံလောက်စွာရေရှိနိုင်ရေးအတွက် မီးသတ်တပ်ဖွဲ့အား ကူညီဆောင်ရွက်ပေးခြင်း။
- အရေးပေါ်ဝင်လမ်း/ ထွက်လမ်းကြောင်းဆိုင်ရာပြ(မြေပုံ(သို့) Layout plan) အစရှိသည့် အချက်အလက်အား မီးငြိမ်းသတ်ရေးအဖွဲ့အစည်းထံတင်ပြခြင်း။
- အရေးပေါ်မီးငြိမ်းသတ်ရေးလုပ်ငန်းအား အဆင်ပြေချောမွေ့စေရေးအတွက် မီးသတ်ဌာနသို့ ကူညီပေးခြင်း။

(ခ) သတင်းနှင့် ဆက်သွယ်ရေးအဖွဲ့

- ❖ အဖွဲ့ခေါင်းဆောင် - ဒေါ်မိုးပြာ၊ ဦးမျိုးမင်း
- ❖ အဖွဲ့ဝင် - ဒေါ်သဇင်ထွန်း၊ ဒေါ်သန္တာဦး



❖ တာဝန်များ

- အရေးပေါ် ဖြစ်ပေါ်လာချိန်တွင် ပြင်ပအဖွဲ့အစည်းများအား အချိန်နှင့်တပြေးညီ အကြောင်းကြားခြင်း၊
- အရေးပေါ်ဆက်သွယ်ရမည့် (Update)နံပါတ်များအား စာရင်းပြုစုထားရှိခြင်း၊
- လိုအပ်သည့်သတင်းအချက်အလက်များ(ဝန်ထမ်းအင်အားစာရင်း၊ ရုံးစာရွက်စာတမ်းများ၊ ရုံးသုံးပစ္စည်းများ) အစရှိသည့် အချက်အလက်များအားစာရင်းပြုစုထားရှိခြင်း၊
- အရေးပေါ်ချိန် ပြင်ပအဖွဲ့အစည်းများထံ လိုအပ်သည့်သတင်းအချက်အလက်များ ပေးပို့ချိပ်ဆက်ကူညီဆောင်ရွက်ပေးခြင်း၊

(ဂ) ယာဉ်ယန္တရားရွှေ့ပြောင်းရေးအဖွဲ့

❖ အဖွဲ့ခေါင်းဆောင် - ဒေါ်အေးဇင်ထွေး

❖ အဖွဲ့ဝင် - ဦးအောင်ကိုကို၊ ဦးအောင်ကိုကိုသက်၊ ဦးထက်အာကာ၊ ဦးဇင်မင်းဦး၊ ဦးနန်းဝင်း

❖ တာဝန်များ

- အရေးပေါ်ချိန် အသုံးပြုနိုင်မည့် ပြင်ပလူမှုကယ်ဆယ်ရေးအဖွဲ့အစည်းများ၏ အထောက်အကူပြု ယာဉ်ယန္တရားဆက်သွယ်ရေးနံပါတ်များအားစာရင်း ပြုစုထားရှိခြင်း၊
- ရုံးသုံးယာဉ်ယန္တရားစာရင်းများအား စာရင်းပြုစုထားရှိခြင်း၊
- ပြင်ပအဖွဲ့အစည်းများ၏ နေ့စဉ် ယာဉ်အဝင်/အထွက်စာရင်းအား ပြုစုထားရှိခြင်း၊
- ယာဉ်ယန္တရား(Car Parking)နေရာများအားစနစ်တကျထားရှိထားခြင်း၊
- အရေးပေါ်အဖွဲ့အစည်းများ၏ ယာဉ်အဝင်/အထွက်လမ်းကြောင်း ကြိုတင်သက်မှတ်ထားရှိခြင်း၊ ပိတ်ဆို့မှုမရှိစေရေးအတွက် ကြိုတင်ဆောင်ရွက်ထားရှိခြင်း၊
- အရေးပေါ်ချိန် အတတ်နိုင်ဆုံး မီးငြိမ်းသတ်ရေး၊ ကယ်ဆယ်ရေးလုပ်ငန်းအတွက် လိုအပ်သည့် ယာဉ်ယန္တရားအကူအညီအား အတတ်နိုင်ဆုံး ကူညီဆောင်ရွက်ပေးခြင်း၊

(ဃ) ပစ္စည်းများ/ရုံးစာရွက်စာတမ်းများသယ်ယူရွှေ့ပြောင်းရေးအဖွဲ့

❖ အဖွဲ့ခေါင်းဆောင် - ဦးစည်သူစိုး၊ ဒေါ်ကြည်ကြည်နွဲ့

❖ အဖွဲ့ဝင် - ဒေါ်မြင့်မြင့်သိန်း၊ ဒေါ်တင်ဌေးဝိုင်း၊ ဦးအောင်မြတ်ထွန်း၊ ဦးမျိုးမင်း၊ ဦးထက်မြိုးအောင်

❖ တာဝန်များ

- ကုမ္ပဏီပိုင်ဦးစားပေး ပစ္စည်းစာရင်းအား အသေးစိတ်မှတ်တမ်းထားရှိခြင်း၊
- အရေးပေါ်ဖြစ်ပေါ်ချိန်တွင် ပစ္စည်းများအား သယ်ယူရွှေ့ပြောင်းရေးအတွက် သက်ဆိုင်ရာအဖွဲ့ များအား ကြိုတင်ဖွဲ့စည်းထားရှိခြင်း၊





- ပစ္စည်းများအား ရွေ့ပြောင်းရေးအတွက် ဘေးကင်းသည့် နေရာအား ကြိုတင်သက်မှတ်ထားရှိခြင်း။
- သတ်မှတ်ထားသည့် အရေးကြီးပစ္စည်းများ/ ရုံးစာရွက်စာတမ်းများအား ဦးစားပေး အဆင့်အလိုက် ရွေ့ပြောင်းခြင်းနှင့် မပျောက်မပျက်ထိန်းသိမ်းထားရှိခြင်း။

(င) ကယ်ဆယ်ရေးအဖွဲ့

- ❖ အဖွဲ့ခေါင်းဆောင် - ဦးသူရကျော်
- ❖ အဖွဲ့ဝင် - ဦးပြည့်ဖြိုးမောင်၊ ဦးချစ်မင်းသူ၊ ဦးစိုးကျော်သူ (၂)
- ❖ တာဝန်များ

အရေးပေါ် ရှေးဦးသူနာပြုရေးအဖွဲ့များ ဖွဲ့စည်းထားရှိခြင်း။

- ရှေးဦးသူနာပြုရေးနှင့် ပတ်သက်သည့် လိုအပ်သည့်သင်တန်းများအား စေလွှတ်ခြင်း။
- ပြင်ပရှာဖွေကယ်ဆယ်ရေးအဖွဲ့အစည်းများ၏ ဆက်သွယ်ရေးနံပါတ်များအား ပြုစုထားရှိခြင်း။
- ကယ်ဆယ်ရေးနှင့် ပတ်သက်သည့် အထောက်အကူပြုပစ္စည်း(ရှေးဦးသူနာပြုရေး)ပစ္စည်းများ အား ကြိုတင်စီစဉ်ဆောင်ရွက်ထားရှိခြင်း။
- အရေးပေါ်ရှာဖွေကယ်ဆယ်ရေးနှင့် ပတ်သက်သည့် မှတ်တမ်းများထားရှိခြင်း။
- အရေးပေါ်ချိန် ရှာဖွေကယ်ဆယ်ရေး လုပ်ငန်းများဆောင်ရွက်ခြင်းနှင့် ရှေးဦးသူနာပြုရေး လုပ်ငန်းဆောင်ရွက်ခြင်း။
- အရေးပေါ်ပြင်ပအဖွဲ့အစည်းများ ရောက်ရှိလာပါက ရှာဖွေကယ်ဆယ်ရေးလုပ်ငန်းအား ပူးပေါင်းဆောင်ရွက်ပေးခြင်း။

(စ) လုံခြုံရေးအဖွဲ့

- ❖ အဖွဲ့ခေါင်းဆောင် - ဦးသူရပင်းထက်
- ❖ အဖွဲ့ဝင် - ဦးမျိုးမြင့်၊ ဦးလှမျိုးထွန်း
- ❖ တာဝန်များ

- အရေးပေါ်ဖြစ်ပေါ်ချိန်တွင် ကုမ္ပဏီပိုင်ပစ္စည်းကိရိယာများ၊ ရုံးစာရွက်စာတမ်းများ မပျောက်မပျက်စေရေးအတွက် ဆောင်ရွက်ခြင်း။
- ပြင်ပရှိမသတ်ဆိုင်သည့် လူများဆင်ရောက်ခြင်းမရှိစေရေးအတွက် လုံခြုံရေးလုပ်ငန်း ဆောင်ရွက်ခြင်း။
- ပြင်ပရှိအရေးပေါ်အဖွဲ့အစည်းများ ရောက်ရှိလာပါက လုံခြုံရေးဆိုင်ရာကိစ္စများအား အကူအညီပေးခြင်း။



- (ဆ) ရုံးချိန်ပြင်ပနှင့် အစိုးရရုံးပိတ်ရက်များ အတွက် အရေးပေါ်အဖွဲ့
- ❖ အဖွဲ့ခေါင်းဆောင် - ဦးမျိုးမြင့်၊
  - ❖ အဖွဲ့ဝင် - ဦးလှမျိုးထွန်း
  - ❖ တာဝန်များ
    - မီးငြိမ်းသတ်ခြင်း
    - သတင်းပေးပို့ခြင်း
    - အရေးပေါ်ဖြစ်ပေါ်ချိန်တွင် ကုမ္ပဏီပိုင်ပစ္စည်းကိရိယာများ၊ ရုံးစာရွက်စာတမ်းများ မပျောက်မပျက်စေရေးအတွက် ဆောင်ရွက်ခြင်း
    - ပြင်ပရှိမသတ်ဆိုင်သည့် လူများဝင်ရောက်ခြင်း မရှိစေရေးအတွက် လုံခြုံရေးလုပ်ငန်း ဆောင်ရွက်ခြင်း
    - ပြင်ပရှိအရေးပေါ်အဖွဲ့အစည်းများ ရောက်ရှိလာပါက လုံခြုံရေးဆိုင်ရာကိစ္စများအား အကူအညီပေးခြင်း

၉။ မီးဘေး လုံခြုံရေးထားရှိမှု(နေရာပြခြေပုံ၊ မီးသတ်ဆေးဘူး စသည်)  
 Authentic Group of Companies (Head Office) အဆောက်အဦးတွင် Sprinkler System ၊ Fire Hydrant (၅)ခု၊ Fire Hose Reel (၉)ခု၊ မီးသတ်ဆေးဘူး( ၄၁ လုံး) များ ထားရှိထားပါသည်။

ထားရှိသော နေရာ	အမျိုးအစား	အရေအတွက်
Production Side	25kg DCP	25kg DCP (၁)လုံး
	5kg DCP	5kg DCP (၅)လုံး
	3kg DCP	3kg DCP (၄)လုံး
Logistic Side	35kg DCP	35kg DCP (၂)လုံး
	5kg DCP	5kg DCP (၁၈) လုံး
	3kg DCP	3kg DCP (၃)လုံး
AR Lab	5kg DCP	5kg DCP (၄လုံး)
Front Area	25kg DCP	25kg DCP (၂) လုံး
	3kg DCP	3kg DCP (၂) လုံး



၁၀။ ။ ကြိုတင်ကာကွယ်ရေး စီမံထားရှိမှု

က။ ။ ကြိုတင်ကာကွယ်ရေး အပိုင်း

❖ မီးဘေးလုံခြုံရေးဆိုင်ရာ သင်တန်းပေးခြင်း

Nippon Paint (Myanmar) HTY တွင် တာဝန် ထမ်းဆောင်နေသော ဝန်ထမ်းများ နှင့် ဖွဲ့စည်းထားသော အရေးပေါ်တုံ့ပြန်ရေးအဖွဲ့ (Emergency Response Team) ဝင်များ အားလုံးကို မီးဘေးလုံခြုံရေး အတွက် လိုအပ်သော အောက်ပါ သင်တန်းများကို မီးဘေးလုံခြုံရေး တာဝန်ခံမှ ဦးဆောင်ကာ လေတစ်ကြိမ်သင်တန်းပေးရမည်။ ဝန်ထမ်းများ အားလုံး မပျက်မကွက် တက်ရောက်ပြီး တက်ရောက်မှတ်တမ်းများ ထားရှိရမည်။

- အခြေခံ မီးလောင်မှု သဘောတရား
- မီးလောင်မှု ဖြစ်စေနိုင်သော အရင်းအမြစ်များ
- အခြေခံ မီးသတ်ဆေးပူး အသုံးပြုပုံ
- အရေးပေါ်တုံ့ပြန်ရေးအဖွဲ့ (Emergency Response Team) ၏ လုပ်ငန်းတာဝန်များ
- မီးလောင်မှု ဖြစ်ပေါ်ပါက လိုက်နာရမည့် အချက်များ နှင့် ရှောင်ကြဉ်ရမည့် အချက်များ
- ရှေးဦးသူနာပြုစုခြင်း (First Aid) ဆိုင်ရာ အချက်များ
- ကယ်ဆယ်ရေးဆိုင်ရာ အချက်များ
- သတင်းနှင့် ဆက်သွယ်ရေးဆိုင်ရာ အချက်များ
- ပစ္စည်းများ သယ်ယူရွှေ့ပြောင်းခြင်းနှင့် လုံခြုံရေးဆိုင်ရာအချက်များ

❖ မီးဘေးလုံခြုံရေးပစ္စည်းများကို စစ်ဆေးခြင်း

သက်ဆိုင်ရာ အရေးပေါ်တုံ့ပြန်ရေးအဖွဲ့ (Emergency Response Team) များမှ မီးဘေးလုံခြုံရေးနှင့် အရေးပေါ်တုံ့ပြန်ရေးပစ္စည်းများ (မီးလောင်မှု ဖြစ်စေနိုင်သော နေရာများ၊ မီးသတ်ဆေးပူး၊ မီးသတ်ပိုက်၊ ရေလှောင်ကန်၊ ရေစုပ်စက်၊ ရှေးဦးသူနာပြု သေတ္တာ၊ အစရှိသည်) ကို လစဉ်စစ်ဆေးကာ စစ်ဆေးမှု မှတ်တမ်းထားရှိမည်။

❖ အရေးပေါ်တုံ့ပြန်ရေး အစီအစဉ်များကို လေ့ကျင့်ခြင်း

သက်ဆိုင်ရာ အရေးပေါ်တုံ့ပြန်ရေးအဖွဲ့ (Emergency Response Team) များမှ တည်ဆဲဥပဒေ၊ နည်းဥပဒေ၊ လုပ်ထုံး လုပ်နည်း၊ အမိန့်၊ ညွှန်ကြားချက်များနှင့် အညီ အောက်ဖော်ပြပါ အရေးပေါ်တုံ့ပြန်ရေး အစီအစဉ်များ လေ့ကျင့်ခြင်းကို လေ တစ်ကြိမ် ပုံမှန်ပြုလုပ်ရမည်။

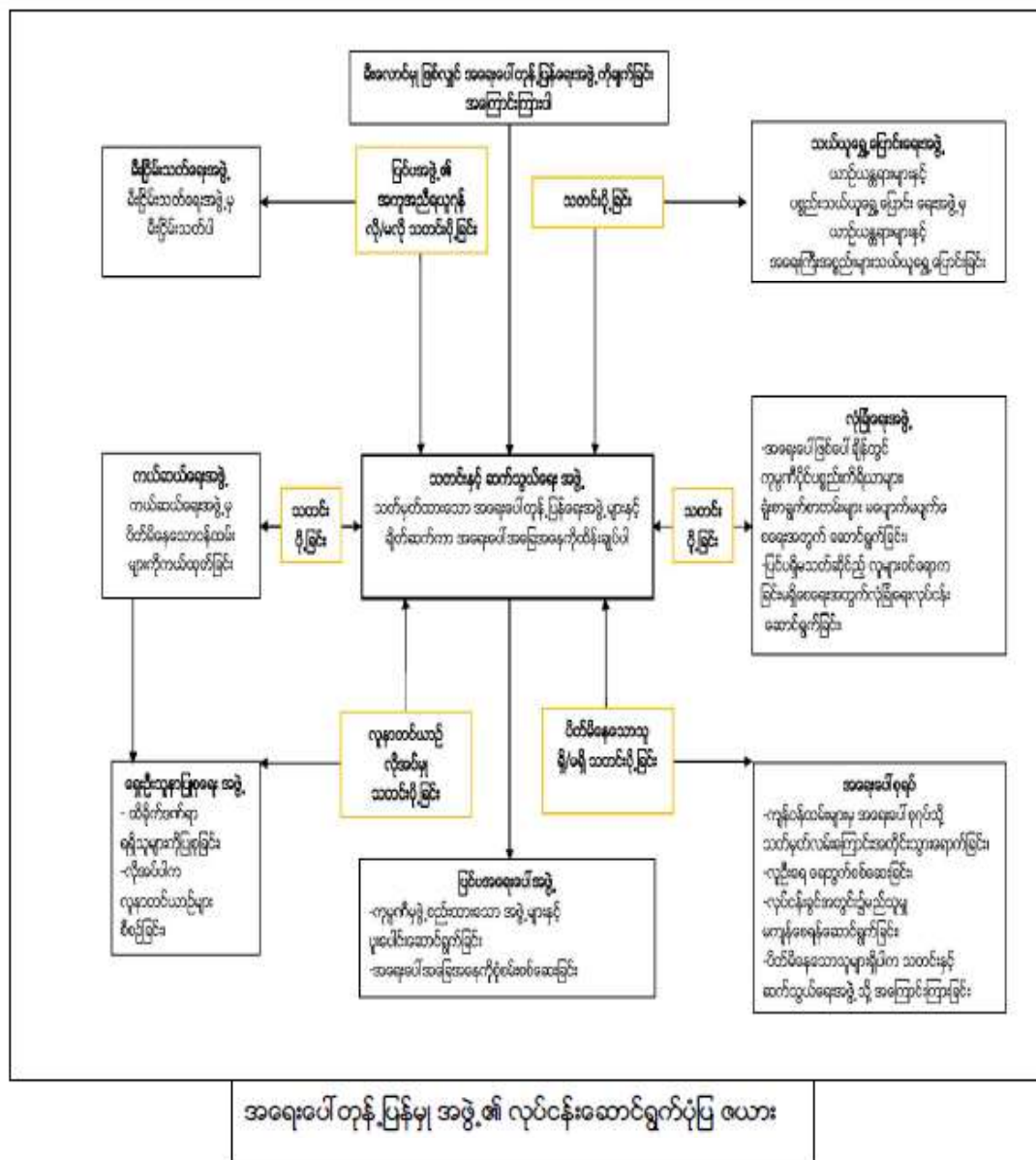
- မီးသတ်ဆေးပူဖြင့် မီးကြိုမ်းသတ်ခြင်း
- မီးသတ်ပိုက်များဖြင့် မီးကြိုမ်းသတ်ခြင်း





- ကယ်ဆယ်ရေး လုပ်ဆောင်ပုံအဆင့်ဆင့်
- အန္တရာယ်ရှိသောအရပ်ကို စွန့်ခွာပုံ အဆင့်ဆင့်
- ရှေးဦးသူနာပြုရခြင်း
- သတင်းပေးပို့ခြင်းနှင့် ပြင်ပအဖွဲ့များကို ဆက်သွယ်ခြင်း

ခ။ မီးလောင်မှု၊ ဖြစ်ပွားစဉ် စနစ်တကျ ဖြိုခွဲသတ်ရေးအပိုင်း





၈။ ဖြစ်ပွားပြီးနောက် စနစ်တကျ ဆောင်ရွက်ခြင်း အပိုင်း မီးလောင်မှု၊ ဖြစ်ပေါ်ပြီးပါက အရေးပေါ်တုံ့ပြန်ရေးအဖွဲ့ (Emergency Response Team) များမှ မီးလောင်မှု၊ ဖြစ်စေခဲ့သော အကြောင်းရင်းများကို ကွင်းဆင်းစစ်ဆေးခြင်း၊ ပြင်ပ အရေးပေါ်တုံ့ပြန်ရေးအဖွဲ့များ၏ ကွင်းဆင်းစစ်ဆေးခြင်းကိုပူးပေါင်းပါဝင်ခြင်း၊ ဝန်ထမ်းများကို အသိပညာပေးလုပ်ငန်းများ ပြန်လည်ပြုလုပ်ခြင်း၊ ရေးဆွဲထားသော စီမံချက်ကို ပြန်လည် သုံးသပ်ကာ လိုအပ်သည့်အချက်များကို ထပ်မံဖြည့်စွက်ခြင်း၊ မီးငြိမ်းသတ်ရေးပစ္စည်းများ ထပ်တိုးဖြည့်တင်းခြင်းဖြင့် အလားတူမီးလောင်မှု၊ ဖြစ်စဉ်များထပ်မံမဖြစ်ပွားစေရန် ပြုလုပ်ဆောင်ရွက်ရပါမည်။

၁၁။ ဆက်သွယ်ရေး

Nippon Paint (Myanmar) HTY တွင် ဖွဲ့စည်းထားသော သတင်းနှင့် ဆက်သွယ်ရေး အဖွဲ့မှ မီးလောင်မှု၊ အခြေအနေ ဖြစ်ပေါ်လာပါက အောက်ဖော်ပြပါ ပြင်ပ (အရေးပေါ်တုံ့ပြန်ရေး) အဖွဲ့အစည်းများနှင့်ချိတ်ဆက်ကာ အရေးပေါ်အခြေအနေကို အချိန်နှင့် တပြေးညီ ဆက်သွယ်၍ အရေးပေါ် အခြေအနေကို ထိန်းချုပ်ရန်လိုအပ်သည်။

မြန်မာနိုင်ငံ မီးသတ်တပ်ဖွဲ့ဌာနချုပ်	- 01 666 912
ရွှေလင်းပန်း မီးသတ်တပ်ဖွဲ့	- 01 254000
မီးသတ်အဖွဲ့ အရေးပေါ် (Hotline)	- 191
မြန်မာနိုင်ငံရဲတပ်ဖွဲ့ (Hotline)	- 199
လှိုင်သာယာ အနောက်ပိုင်း ရဲစခန်း	- 09 440024344
လှိုင်သာယာ အနောက်ပိုင်း လျှပ်စစ်ဌာန	- 01 687894
လှိုင်သာယာပြည်သူ့ဆေးရုံ	- 01 640814
နာရေးကူညီမှု အသင်း (လူနာတင်ယာဉ်)	- 09 421119566 / 09 400000911
နာရေးကူညီမှု အသင်း (သီးသန့် မီးသတ်တပ်ဖွဲ့)	- 01 706421
ဝေဠုကျော်ဖောင်ဒေးရှင်း	- 09 979753212



**Appendix IX 2<sup>nd</sup> Public Consultation Meeting**

နောက်ဆက်တွဲ(က)  
အများပြည်သူနှင့်တွေ့ဆုံပွဲအခမ်းအနားအစီအစဉ်

## အခမ်းအနားအစီအစဉ်

နေ့စွဲ ။ ၂၉ / ၅ / ၂၀၂၄  
 အချိန် ။ နေ့လယ် ၂ : ၀၀ နာရီ  
 နေရာ ။ Nippon Paint စက်ရုံခန်းမ

- ၁။ Nippon Paint (Myanmar) Co., Ltd. ၏ သုတ်ခေးအမျိုးမျိုးထုတ်လုပ်ဖြန့်ဖြူးရောင်းချခြင်းလုပ်ငန်း စက်ရုံနှင့်ပတ်သက်၍ စေ့ဆုံဆွေးနွေးပွဲအခမ်းအနား ဖွင့်လှစ်ကြောင်း ကြေငြာခြင်း
- ၂။ စီမံကိန်းလုပ်ငန်း အကြောင်းအရာနှင့်ပတ်သက်၍ Nippon Paint (Myanmar) Co., Ltd. ၏ တာဝန်ရှိသူ တစ်ဦးမှ ရှင်းလင်းတင်ပြခြင်း
- ၃။ စီမံကိန်းလုပ်ငန်းနှင့်ပတ်သက်၍ ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းဆိုင်ရာ အကြောင်းအရာများကို Green Myanmar Environmental Services Co., Ltd. မှ ဦးကျင်းဇီးဝင်းမှ ရှင်းလင်း တင်ပြခြင်း
- ၅။ စီမံကိန်းလုပ်ငန်းနှင့်ပတ်သက်၍ လူမှုစီးပွားဆိုင်ရာဆန်းစစ်ခြင်းများကို ဦးသိန်းစိုးမှ ရှင်းလင်းတင်ပြခြင်း
- ၆။ တက်ရောက်လာသူများမှ စီမံကိန်းနှင့်ပတ်သက်၍ သိရှိလိုသော အကြောင်းအရာများကို ဆွေးနွေး မေးမြန်းခြင်း နှင့် ဆွေးနွေးမေးမြန်းဖွတ်များနှင့်ပတ်သက်၍ တက်ရောက်လာသည့်အဖွဲ့များမှ မြန်လည် ရှင်းလင်း မြေကြားခြင်း
- ၇။ တက်ရောက်လာသူများအား Nippon Paint (Myanmar) Co., Ltd. တာဝန်ရှိသူတစ်ဦးမှ ကျေးဇူးတင် စကား ပြောကြားခြင်း
- ၈။ အခမ်းအနားအစီအစဉ်ပြီးမြောက်ကြောင်းကြေငြာခြင်း။

နောက်ဆက်တွဲ(ခ)  
ဆွေးနွေးပွဲတက်ရောက်သူများစာရင်း



# Green Myanmar

## Environmental Services Co., Ltd

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"Nippon Paint (Myanmar) Co., Ltd." ၏ ရန်ကုန်တိုင်းဒေသကြီး၊ လှိုင်သာယာမြို့နယ်၊ ဓဉ္ဇပင်လယ်တံတိုင်းနှင့်

မြေတိုင်းအတွက်အမှတ်(၂၄)၊ အတွက်အမှတ် (၂၄) တွင် အကောင်အထည်ဖော် ဆောင်ရွက်လျက်ရှိသည့်

"သုတ်ဆေးအမျိုးမျိုးထုတ်လုပ်ဖြန့်ဖြူးရောင်းချခြင်းလုပ်ငန်း" စီမံကိန်းအတွက်

မတ်လနှင့်တိုင်ထိစိုက်မှုဆန်းစစ်ခြင်း အစီရင်ခံစာရေးဆွဲခြင်းနှင့်ပတ်သက်၍

စုတ်ယူအကြောင်းတွေ့ရှိရသောဆွေးနွေးပွဲသို့ တက်ရောက်သူများစာရင်း

ရက်စွဲ : ၂၀၂၄ ခုနှစ်၊ မေလ ( ၂၉ ) ရက်

စဉ်	အမည်	ရာထူး	အဖွဲ့အစည်းအမည်	လက်မှတ်
၀	မြသုဇာရေမြို့	AT	ECB	
၂	ဒေါ်သုဇာ	ADSO	ECB	
၃	ဒေါ်အောင်အောင်မြို့	အထွေထွေ အုပ်ချုပ်ရေး	မြသုဇာရေမြို့	
၄	ဒေါ်အောင်အောင်မြို့	ဒေါ်အောင်အောင်မြို့	"	
၅				
၆				
၇				
၈				
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၁၃				
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၁၈				
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၂၀				



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"Nippon Paint (Myanmar) Co., Ltd." ခန့်မှန်းတိုင်းတာခြင်း၊ လွှဲပြောင်းမှု၊ ဖွဲ့စည်းပုံ၊ လုပ်ငန်းစဉ်၊  
ပြုပြင်ဆင်ဆင်မှု (၂၄)၊ အကောင်အထည်ဖော် ဆောင်ရွက်လျက်ရှိသည့်

\* သုတ်စစ်ဆေးမှု၊ သုတ်စစ်ဆေးမှု၊ သုတ်စစ်ဆေးမှု၊ သုတ်စစ်ဆေးမှု၊ သုတ်စစ်ဆေးမှု

ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်း အစီရင်ခံစာရေးဆွဲခြင်းနှင့်ပတ်သက်၍

ဥပဒေအရရှိသည့် ဆုံးဖြတ်ချက်နှင့် တက်ရောက်သည့်စာရင်း

ရက်စွဲ : ၂၀၂၄ ခုနှစ်၊ ဇူလိုင်လ ( ၂၆ ) ရက်

စဉ်	အမည်	ရပ်ကွက်/ ကျေးရွာအုပ်စု	လက်မှတ်
၁	မိုးမြင့်မြင့် သိန်း	Nippon Paint	
၂	ဦးအောင်	အလယ်ကျေးရွာ၊ ကွင်းသာယာ	
၃	မောင်မောင်	အလယ်ကျေးရွာ၊ ကွင်းသာယာ၊ အနောက် မြင်းခြံ၊ ၂၄	
၄	ဦးအောင်	အလယ်ကျေးရွာ၊ ကွင်းသာယာ	
၅	ဦးအောင်	"	
၆	ဦးအောင်	"	
၇	ဦးအောင်	အလယ်ကျေးရွာ၊ (၆) ကောက်ကမ်း၊ ကွင်းသာယာ	
၈	ဦးအောင်	(၆) ကောက်ကမ်း၊ ကွင်းသာယာ	
၉	ဦးအောင်	အလယ်ကျေးရွာ၊ ကွင်းသာယာ	
၁၀	ဦးအောင်	အလယ်ကျေးရွာ၊ ကွင်းသာယာ	
၁၁	ဦးအောင်	အလယ်ကျေးရွာ၊ ကွင်းသာယာ	
၁၂	မိုးမြင့်မြင့်	(၆) ကောက်ကမ်း၊ ကွင်းသာယာ၊ မြင်းခြံ	
၁၃	မိုးမြင့်မြင့်	အလယ်ကျေးရွာ၊ ကွင်းသာယာ	
၁၄	ဦးအောင်	အလယ်ကျေးရွာ၊ ကွင်းသာယာ (အနောက် မြင်းခြံ) မြင်းခြံ	
၁၅			
၁၆			
၁၇			
၁၈			
၁၉			
၂၀			





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"Nippon Paint (Myanmar) Co., Ltd." ၏ ရန်ကုန်တိုင်းဒေသကြီး၊ လှိုင်သာယာမြို့နယ်၊ ရွှေပင်လယ်စက်မှုဇုန်၊

မြေတိုင်းအကွက်အမှတ်(၂၄)၊ အကွက်အမှတ် (၂၄) တွင် အကောင်းအထည်ခက် ဆောင်ရွက်လျက်ရှိသည့်

"သုတ်ဆေးအမျိုးမျိုးထုတ်လုပ်ဖြန့်ဖြူးရောင်းချခြင်းလုပ်ငန်း" စီမံကိန်းအတွက်

ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်း အစီရင်ခံစာရေးဆွဲခြင်းနှင့်ပတ်သက်၍

ဓုတ်ယူအကြံပြုချက်၊ ဆုံးဖြတ်ချက်ချမှတ်သည့် တက်ရောက်သူများစာရင်း

ရက်စွဲ ။ ၂၀၂၄ ခုနှစ်၊ မေလ ( ၂၉ ) ရက်

စဉ်	အမည်	ရာထူး	အဖွဲ့အစည်းအမည်	လက်မှတ်
၀	ဦးမိုးမြင့်	ချက်/ချစ်	ဦးမိုးမြင့်	
၁	ဦးမိုးမြင့်	၂၂	၂၂	
၂	ဦးမိုးမြင့်	၂၂	၂၂	
၃	ဦးမိုးမြင့်	၂၂	၂၂	
၄	ဦးမိုးမြင့်	၂၂	၂၂	
၅	ဦးမိုးမြင့်	ဦးမိုးမြင့်	၂၂	
၆				
၇				
၈				
၉				
၁၀				
၁၁				
၁၂				
၁၃				
၁၄				
၁၅				
၁၆				
၁၇				
၁၈				
၁၉				
၂၀				



# Green Myanmar

## Environmental Services Co., Ltd

No.115, Kanung Min Thar Gyi Road, Industrial Zone (1), Hlaing Thar Yar Industrial City,  
Yangon Region, Myanmar

Tel: 09 897 978 296, 09-5081451 E-mail: [gmescorpany@gmail.com](mailto:gmescorpany@gmail.com), [info@gmescorpany.com](mailto:info@gmescorpany.com)

"Nippon Paint (Myanmar) Co., Ltd." ၏ ရန်ကုန်တိုင်းဒေသကြီး၊ လှိုင်သာယာမြို့နယ်၊ ဓမ္မပင်လယ်စက်မှုဇုန်

မြေတိုင်းအတွက်အမှတ်(၂၄)၊ အတွက်အမှတ် (၂၄) တွင် အကောင်အထည်ဖော် ဆောင်ရွက်လျက်ရှိသည့်

" သုတ်ဆေးအမျိုးမျိုးထုတ်လုပ်ဖြန့်ဖြူးရောင်းချခြင်းလုပ်ငန်း" မီမက်န်းအတွက်

ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်း အစီရင်ခံစာရေးဆွဲခြင်းနှင့်ပတ်သက်၍

ဗဟိုယအကြိမ်တွေ့ဆုံဆွေးနွေးသည့် တက်ရောက်သူများစာရင်း

ရက်စွဲ : ၂၀၂၄ ခုနှစ်၊ ဇူလိုင် ( ၂၉ ) ရက်

စဉ်	အမည်	ရပ်ကွက်/ ကျေးရွာအုပ်စု	လက်မှတ်
၁	မြို့စားကြီးကောင်	စန္ဒရည်သာ၊ ကီးကျိုက်လုပ်ကွက်	
၂	ဦးစောမြို့ခိုင်း	ကျွန်းကျွန်း၊ ချိုသာယာ	
၃	မြို့စားကြီးကောင်	"	
၄			
၅			
၆			
၇			
၈			
၉			
၁၀			
၁၁			
၁၂			
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၁၈			
၁၉			
၂၀			

**Nippon paint (Myanmar)Co., Ltd**



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မြေတိုင်းအကွက်အမှတ်(၂၄)၊ အကွက်အမှတ် (၂၄) တွင် အကောင်အထည်ဖော် ဆောင်ရွက်လျက်ရှိသည့်  
"သုတ်ဆေးအမျိုးမျိုးထုတ်လုပ်ခြင်း၊ ရောင်းချခြင်းလုပ်ငန်း" ဖိတ်ခေါ်မှုအတွက်

မတ်ဝါးကျွတ်စိုက်မှုဆန်းစစ်ခြင်း အစီရင်ခံစာရေးဆွဲခြင်းနှင့်ပတ်သက်၍  
ဥတိယအကြိမ်တွေ့ဆုံဆွေးနွေးသည့် တက်ရောက်သူများစာရင်း

ရက်စွဲ: ၂၀၂၄ ခုနှစ်၊ ဖေဖော်ဝါရီ ( ၂၉ ) ရက်

စဉ်	အမည်	ရာထူး	အဖွဲ့အစည်းအမည်	လက်မှတ်
၁	ဦးကျော်စိုးဝင်း	Managing Director	Green Myanmar Environmental Services Co., Ltd	
၂	ဦးမျိုးစုစု	Consultant	" "	
၃	ဦးထွန်းလင်းကျော်	Manager	Green Man Env. Co., Ltd.	
၄	ဦးကျော်မင်းဦး	Engineer	" "	
၅	ဦးမအောင်ကျော်မင်း	"	"	
၆	ဦးကျော်စိုးဝင်း	Senior Environmental Engineer	"	
၇	ဦးစိုးဝင်း	Surveyor	"	
၈	ဦးကျော်စိုးဝင်း	"	"	
၉				
၁၀				
၁၁				
၁၂				
၁၃				
၁၄				
၁၅				
၁၆				
၁၇				
၁၈				
၁၉				
၂၀				

နောက်ဆက်တွဲ (ဂ)

လူထုတွေ့ဆုံပွဲမှ အကြံပြုချက်များ



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မြေတိုင်းအတွက်အမှတ်(၂၄) အတွက်အမှတ် (၂၄) တွင် အကောင်အထည်ဖော် ဆောင်ရွက်လျက်ရှိသည့်

" သုတ်ဆေးအမျိုးမျိုးထုတ်လုပ်ဖြန့်ဖြူးရောင်းချခြင်းလုပ်ငန်း" စီမံကိန်းအတွက်

မတ်လမ်းကွင်းထိခိုက်မှုဆန်းစစ်ခြင်းအစီရင်ခံစာနှင့်ပတ်သက်၍ အကြံပြုစာ


ရင်းနှီးမြှုပ်နှံလင်းစွာ အကြံပြုရေးသားနိုင်ပါကြောင်းနှင့်လူကြီးအမတ်တို့၏ အကြံပြုချက်များကို စီမံကိန်း တာဝန်ရှိသူများနှင့် တင်ပြဆွေးနွေးပေးသွားမည် ဖြစ်ပါသည်။

စဉ်	ဆွေးနွေးအကြံပြုချက်
	<p>-စက်ရုံတွက် ဇွန်(၁၆)အချိန် မှာ ကျီ On Call ဆွန် ဇွန် စောင့်ရှောက်ရန် ဌာန. စောင့်ရှောက်ထားရှိ မှု.ကား မြို့နယ် မည် ပင် ဌာ. ခန့်(၁၄) ကန့် သမင်း. ချီ.တင်(၁၄)ကန့်.</p> <p>-စက်ရုံ ပတ်ဝန်းကျင် ဌာ(၁၄)ကန့် မှာ. ဌာ.ကင်း.မြို့. ဌာ.ခန့်. ရုံး.မှ</p> <p>ကား. ချီ.ဌာ. သမ. ဌာ. သက်ရှက် မှာ. ဌာ. စောင့်ရှောက်ရန်</p> <p>→မြို့စက်.ကန့်.၄၄.ကန့် (၁၄)ကန့် စောင့်ရှောက် မျှော်လင့် ဌာ. ဌာ.ဌာ.ပါသည့်က.</p>

လက်မှတ်

အမည်

ဆက်သွယ်ရန်လိပ်စာ

  
 ဦး.ဟောင်း.ဟောင်း  
 မြို့နယ်.ခန့်.ကန့်.  
 မြို့နယ်.ဟောင်း.ဟောင်း(မ.ဟောင်း.ဟောင်း)မြို့နယ်







**Green Myanmar**  
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မြေပိုင်းအတွက်အမှတ်(၂၄) အတွက်အမှတ် (၂၄) တွင် အကောင်အထည်ဖော် ဆောင်ရွက်လျက်ရှိသည်။

\* သုတ်စောအပါးမှ သုတ်လုပ်ခြင်းစတင်ချင်းလုပ်ငန်း\* စီမံကိန်းအတွက်

မတ်လနဲ့ကနဦးထိတိုက်မှုဆန်းစစ်ခြင်းအစီရင်ခံစာနှင့်ပတ်သက်၍ အကြံပေးစာ

ရင်းနှီးမြှုပ်နှံလင်းစွာ အကြံပြုပေးသားနိုင်ပါစေကြောင်းနှင့်လူကြီးမင်းတို့၏ အကြံပြုချက်များကို စိမ့်ကိန်း တာဝန်ရှိသူများနှင့် တင်ပြဆွေးနွေးမပညာမည် ဖြစ်ပါသည်။

[illegible]

လက်မှတ်

အပူ

ဆက်သွယ်ရန်ပီပီစာ

Handwritten signature: *Bob*



# Green Myanmar

Environmental Services Co., Ltd

No.115, Kanaung Min Thar Gyi Road, Industrial Zone (1), Hlbing Thar Yar Industrial City,  
Yangon, Myanmar

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မြေတိုင်းအတွက်အမှတ် (၂၄)၊ အကွတ်အမှတ် (၂၄) တွင် အကောင်အထည်ဖော် ဆောင်ရွက်လျက်ရှိသည့်


" သုတ်ဆေးအမျိုးမျိုးထုတ်လုပ်ဖြန့်ဖြူးရောင်းချခြင်းလုပ်ငန်း" စီမံကိန်းအတွက်

ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းအစီရင်ခံစာနှင့်ပတ်သက်၍ အကြံပြုစာ

ရင်းနှီးမြှုပ်နှံလင်းစွာ အကြံပြုချမှတ်သောနိုင်ငံခြားနှင့်လူကြီးပင်းတို့၏ အကြံပြုချက်များကို စီမံကိန်း ယာခန့်ရှိသူများနှင့်  
တစ်ပြုချော့နှောပေးသွားမည် ဖြစ်ပါသည်။

စဉ်	ဆွေးနွေးအကြံပြုချက်
	အဆင်ပြေရန် ဆောင်ရွက်စေလိုပါသည်။

လက်မှတ်



အမည်

Myo Min

ဆက်သွယ်ရန်လိပ်စာ

.....  
.....



# Green Myanmar

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မြေတိုင်အတွက်အမှတ် (၂၄)၊ အတွက်အမှတ် (၂၄) တွင် အကောင်အထည်ဖော် ဆောင်ရွက်လျက်ရှိသည့်

"သုတ်ဆေးအမျိုးမျိုးထုတ်လုပ်ဖြန့်ဖြူးရောင်းချခြင်းလုပ်ငန်း" မိမိတို့အတွက်

ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းအစီရင်ခံစာနှင့်ပတ်သက်၍ အကြံပြုစာ

ရင်းနှီးမြှုပ်နှံလင်းစွာ အကြံပြုချေရာသားနိုင်ပါကြောင်းနှင့်လူကြီးမင်းတို့၏ အကြံပြုချက်များကို မိမိတို့၏ တာဝန်ရှိသူများနှင့် တင်ပြဆွေးနွေးပေးသွားမည် ဖြစ်ပါသည်။

စဉ်	ဆွေးနွေးသောကြီးကြီးချုပ်
	အကြံပြုချက် - မရှိပါ။ အဆင့်မြင့်ပါစမ်း

လက်မှတ်

အမည်

ဆက်သွယ်ရန်ပိတ်စာ

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# Green Myanmar

Environmental Services Co., Ltd

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မြေတိုင်းအကွက်အမှတ်(၂၄)၊ အကွက်အမှတ် (၂၄) တွင် အကောင်အထည်ဖော် ဆောင်ရွက်လျက်ရှိသည့်  
"သုတ်ဆေးအမျိုးမျိုးထုတ်လုပ်ဖြန့်ဖြူးရောင်းချခြင်းလုပ်ငန်း" စီမံကိန်းအတွက်

ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းအစီရင်ခံစာနှင့်ပတ်သက်၍ အကြံပြုစာ



ရင်းနှီးမြှုပ်နှံလင်းစွာ အကြံပြုဆောင်ရွက်နိုင်ပါကြောင်းနှင့်လူကြိုက်ပင်တို့၏ အကြံပြုချက်များကို စီမံကိန်း တာဝန်ရှိသူများနှင့်  
တင်ပြဆွေးနွေးပေးသွားမည် ဖြစ်ပါသည်။

စဉ်	ဆွေးနွေးအကြံပြုချက်
	<p>ဗျူဟာ ရေပျံးဖျာ ဗဟုစုံ ဗဟုဝန်ဆောင်မှု မည့် ဆောင်ရွက် ပေးပါရန် ဝန်ဆောင်ခေါ်ငြိမ်းအား ပေးခေါ်ပေးပါ</p>

လက်မှတ်

အမည်

ဆက်သွယ်ရန်လိပ်စာ

  
  
  
 .....





# Green Myanmar

Environmental Services Co., Ltd

No.115, Kanazung Min Thar Gyi Road, Industrial Zone (1), Hlaing Thar Yar Industrial City,  
Yangon, Myanmar  
Tel: 09 897 978 296, 09-5081451 E-mail: [greencompany@gmail.com](mailto:greencompany@gmail.com), [info@green-myanmar.com](mailto:info@green-myanmar.com)

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မြေတိုင်းအတွက်အမှတ်(၂၄) အတွက်အမှတ် (၂၄) တွင် အကောင်အထည်ဖော် ဆောင်ရွက်လျက်ရှိသည့်  
" သုတ်ဆေးအမျိုးမျိုးထုတ်လုပ်ဖြန့်ဖြူးရောင်းချခြင်းလုပ်ငန်း" စီမံကိန်းအတွက်  
ပတ်ဝန်းကျင်ထိခိုက်မှုစစ်ဆေးခြင်းအစီရင်ခံစာနှင့်ပတ်သက်၍ အကြံပြုစာ


ရင်းနှီးမြှုပ်နှံလင်းစွာ အကြံပြုချေရာသားနိုင်ပါကြောင်းနှင့်လျက်ရှိသောအကြံပြုချက်များကို စီမံကိန်း တာဝန်ရှိသူများနှင့်  
တင်ပြဆွေးနွေးပေးသွားမည် ဖြစ်ပါသည်။

စဉ်	ဆွေးနွေးအကြံပြုချက်
	<p>အကြံပြုချက်များ</p>

လက်မှတ်

အမည်

ဆက်သွယ်ရန်လိပ်စာ

  
 ၉.၈.၆၆  
 ၀၇-၇၈၆-၇၈၇-၇၆၇



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ဓပြတိုင်းအကွက်အမှတ်(၂၄)၊ မေကွက်အမှတ် (၂၄) တွင် အကောင်အထည်ဖော် ဆောင်ရွက်လျက်ရှိသည့်

"သုတ်စောအမျိုးမျိုးထုတ်လုပ်ဖြန့်ဖြူးရောင်းချခြင်းလုပ်ငန်း" စီမံကိန်းအတွက်

ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းအစီရင်ခံစာနှင့်ပတ်သက်၍ အကြံပြုစာ

ရင်းနှီးမြှုပ်နှံလင်းစွာ အကြံပြုချေးသားမိုင်ပါကြောင်းနှင့်လျက်ရှိမင်းတို့၏ အကြံပြုချက်များကို စီမံကိန်း တာဝန်ရှိသူများနှင့်  
တင်ပြဆွေးနွေးပေးသွားမည် ဖြစ်ပါသည်။

စဉ်	ဆွေးနွေးအကြံပြုချက်
	မရှိပါ

လက်မှတ်

\_\_\_\_\_ 26/6/20

အမည်

\_\_\_\_\_ ဆက်သွယ်ရေး

ဆက်သွယ်ရန်လိပ်စာ

\_\_\_\_\_ ရွှေဘိုလမ်း ၁၈၈၊ ရန်ကုန်မြို့



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မြေတိုင်းအကွက်အမှတ်(၂၄)၊ အကွက်အမှတ် (၂၄) တွင် အကောင်အထည်ဖော် ဆောင်ရွက်လျက်ရှိသည့်

" သုတ်ဆေးအစွဲဖို့စုထုတ်လုပ်ခြင်းနှင့်ရောင်းချခြင်းလုပ်ငန်း" စီမံကိန်းအတွက်

ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းအစီရင်ခံစာနှင့်ပတ်သက်၍ အကြံပြုစာ

ရင်းနှီးမြှုပ်နှံလင်းစွာ အကြံပြုဆောင်ရွက်နိုင်ပါကြောင်းနှင့်လူကြီးပင်ဆို့၏ အကြံပြုချက်များကို စီမံကိန်း တာဝန်ရှိသူများနှင့်  
တင်ပြဆွေးနွေးပေးသွားမည် ဖြစ်ပါသည်။

စဉ်	ဆွေးနွေးအကြံပြုချက်
	<p>အဆင့်-၁</p> <p>မရှိပါ</p> <p>အဆင့်မြေမပါဘဲ</p>

လက်မှတ်

အမည်

ဆက်သွယ်ရန်လိပ်စာ

အောင်စိုး Soe

အောင်စိုး

09-966896570



# Green Myanmar

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မြေတိုင်းအတွက်အမှတ် (၂၄)၊ အတွက်အမှတ် (၂၄) တွင် အကောင်အထည်ဖော် ဆောင်ရွက်လျက်ရှိသည့်

"သုတ်စေးအမျိုးမျိုးထုတ်လုပ်ခြင်းခြံမြေဆောင်းချောင်းလုပ်ငန်း" ဇီမင်္ဂနီအတွက်

ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းအစီရင်ခံစာနှင့်ပတ်သက်၍ အကြံပြုစာ

ရင်းနှီးမြှုပ်နှံလင်းစွာ အကြံပြုဆေးချသောနိုင်ပါကြောင်းနှင့်လူကြီးမင်းတို့၏ အကြံပြုချက်များကို ဇီမင်္ဂနီ၊ တာဝန်ရှိသူများနှင့်  
တင်ပြဆွေးနွေးပေးသွားမည် ဖြစ်ပါသည်။

စဉ်	ဆွေးနွေးအကြံပြုချက်
	<p>အဆင်ပြေပါသည်</p>

လက်မှတ်

Myo

အမည်

Myo Thaw Hlaing

ဆက်သွယ်ရန်လိပ်စာ



# Green Myanmar

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မြေတိုင်းအကွက်အမှတ်(၂၄)၊ အကွက်အမှတ် (၂၄) တွင် အကောင်အထည်ဖော် ဆောင်ရွက်လျက်ရှိသည့်

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ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းအစီရင်ခံစာနှင့်ပတ်သက်၍ အကြံပြုစာ

ရင်းနှီးမြှုပ်နှံလင်ဧက အကြံပြုရေးသားနိုင်ပါကြောင်းနှင့်လူကြီးမင်းတို့၏ အကြံပြုချက်များကို စီမံကိန်း တာဝန်ရှိသူများနှင့်  
တင်ပြဆွေးနွေးပေးသွားမည် ဖြစ်ပါသည်။

စဉ်	ဆွေးနွေးအကြံပြုချက်
	<p>၁။ ဤမြေပေါ်တွင်</p>

လက်မှတ်

အမည်

ဆက်သွယ်ရန်လိပ်စာ



Chan Myae Aung

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# Green Myanmar

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မြေတိုင်းအတွက်အမှတ်(၂၄)၊ အတွက်အမှတ် (၂၄) တွင် အကောင်အထည်ဖော် ခေတ္တခံစားလွှာကိုချိသည့်

"သုတ်ခေတ္တခံစားလွှာထုတ်လုပ်ခြင်းစရင်းချေးငွေလုပ်ငန်း" စီမံကိန်းအတွက်

ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းအစီရင်ခံစာနှင့်ပတ်သက်၍ အကြံပြုစာ

ရင်းနှီးမြှုပ်နှံလင်းစွာ အကြံပြုရေးသားနိုင်ပါကြောင်းနှင့်လူကြီးမင်းတို့၏ အကြံပြုချက်များကို စီမံကိန်း တာဝန်ရှိသူများနှင့်  
တင်ပြဆွေးနွေးဆောင်ရွက်မည် ဖြစ်ပါသည်။

စဉ်	ဆွေးနွေးအကြံပြုချက်
	<p>အကြံပြုချက်များ</p>

လက်မှတ်

အမည်

ဆက်သွယ်ရန်လိပ်စာ

  
 \_\_\_\_\_  
 Hae Myo Aung  
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 \_\_\_\_\_  
 \_\_\_\_\_



# Green Myanmar

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မြေတိုင်အတွက်အမှတ်(၂၄)၊ အတွက်အမှတ် (၂၄) တွင် အကောင်းအထည်ခတ် ဆောင်ရွက်လျက်ရှိသည့်

"သုတ်ဆေးအမျိုးမျိုးထုတ်လုပ်ဖြန့်ဖြူးရောင်းချခြင်းလုပ်ငန်း" ဝိမံကိန်းအတွက်

ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းအစီရင်ခံစာနှင့်ပတ်သက်၍ အကြံပြုစာ

ရင်းနှီးမြှုပ်နှံလင်းဖွာ အကြံပြုရေးသားနိုင်ပါကြောင်းနှင့်လူကြီးမင်းတို့၏ အကြံပြုချက်များကို ဝိမံကိန်း ဘာဝန်ရှိသူများနှင့်  
တင်ပြဆွေးနွေးပေးသွားမည် ဖြစ်ပါသည်။

စဉ်	ဆွေးနွေးအကြံပြုချက်
	<p>အကြံပြုချက်</p>

လက်မှတ်

၆

အမည်

မောင်မိုး

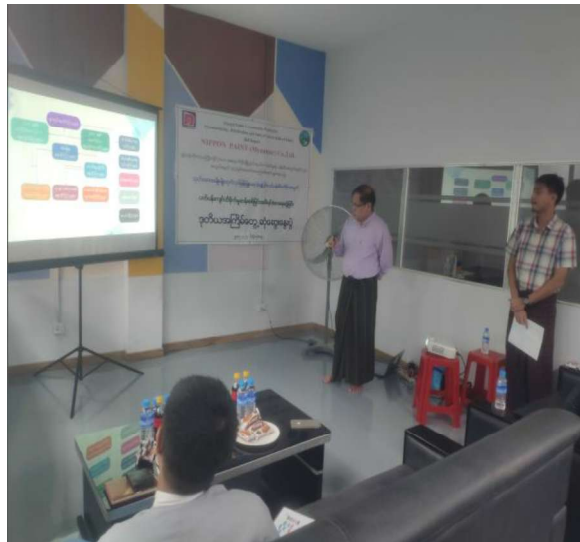
ဆက်သွယ်ရန်လိပ်စာ

၆ ဖုန်းလွှတ်၊ ရန်ကုန်

နောက်ဆက်တွဲ(ဃ)  
အများပြည်သူနှင့်တွေ့ဆုံဆွေးနွေးခြင်းမှတ်တမ်းဓာတ်ပုံများ







**Appendix X 3<sup>rd</sup> Public Consultation Meeting**



# Nippon Paint (Myanmar) Company Limited

“သုတ်ဆေးအမျိုးမျိုးထုတ်လုပ်ဖြန့်ဖြူးရောင်းချခြင်းလုပ်ငန်း”

ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းအစီရင်ခံစာရေးဆွဲခြင်းလုပ်ငန်း

တတိယအကြိမ်

အများပြည်သူနှင့်တွေ့ဆုံဆွေးနွေးပွဲအစည်းအဝေးမှတ်တမ်း

ပြုစုသူ



**Green Myanmar Environmental Services Co., Ltd**

အမှတ်(၁၁၅)၊ ကနောင်မင်းသားကြီးလမ်း၊ လှိုင်သာယာစက်မှုဇုန်(၁)၊ လှိုင်သာယာမြို့နယ်၊

ရန်ကုန်တိုင်းဒေသကြီး၊

အီးမေးလ် - [gmescompany@gmail.com](mailto:gmescompany@gmail.com)

ဖုန်း - ၀၉ ၈၉၇ ၉၇၈ ၂၉၆

၂၀၂၄ ခုနှစ်၊ ဩဂုတ်လ(၇)ရက်

## မာတိကာ

စဉ်	အကြောင်းအရာ	စာမျက်နှာ
၁။	နိဒါန်း	၂
၂။	ရည်ရွယ်ချက်	၂
၃။	လူထုတွေ့ဆုံဆွေးနွေးပွဲဆိုင်ရာအချက်အလက်များ	၃
၄။	အများပြည်သူနှင့် တွေ့ဆုံဆွေးနွေးပွဲတွင် ရှင်းလင်းတင်ပြချက်များနှင့် ဆွေးနွေးချက်များ	၃
၅။	အခမ်းအနားတက်ရောက်လာသူအချို့၏ အကြံပြုချက်များ	၃၈
၆။	နိဂုံး	၃၉
၇။	နောက်ဆက်တွဲ (က) အများပြည်သူနှင့်တွေ့ဆုံပွဲအခမ်းအနားအစီအစဉ်	၄၀
၈။	နောက်ဆက်တွဲ (ခ) ဆွေးနွေးပွဲတက်ရောက်လာသူများစာရင်း	၄၂
၉။	နောက်ဆက်တွဲ (ဂ) လူထုတွေ့ဆုံပွဲမှ အကြံပြုချက်များ	၄၈
၁၀။	နောက်ဆက်တွဲ (ဃ) အများပြည်သူနှင့် တွေ့ဆုံဆွေးနွေးခြင်းမှတ်တမ်းတင်ဓာတ်ပုံများ	၆၁

**Nippon Paint (Myanmar) Co., Ltd. ၏ သုတ်ဆေးအမျိုးမျိုးထုတ်လုပ်ဖြန့်ဖြူးရောင်းချခြင်းလုပ်ငန်း  
စီမံကိန်းအတွက် ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းအစီရင်ခံစာရေးဆွဲခြင်း**

**အများပြည်သူနှင့်တွေ့ဆုံဆွေးနွေးပွဲ (တတိယအကြိမ်) အစည်းအဝေးမှတ်တမ်း**

<b>EIA ရေးဆွဲသည့်အဖွဲ့အစည်းအမည်</b>	Green Myanmar Environmental Services Co., Ltd.
<b>စီမံကိန်းဖော်ဆောင်သူ</b>	Nippon Paint (Myanmar) Co., Ltd.
<b>စီမံကိန်းအမည်</b>	သုတ်ဆေးအမျိုးမျိုးထုတ်လုပ်ဖြန့်ဖြူးရောင်းချခြင်းလုပ်ငန်း
<b>အစည်းအဝေးကျင်းပသည့်နေရာ</b>	အကွက်အမှတ်(၂၄)၊ Nippon Paint စက်ရုံခန်းမ။ ငွေပင်လယ်စက်မှုဇုန်၊လှိုင်သာယာ (အနောက်ပိုင်း) မြို့နယ်
<b>နေ့ရက်</b>	၇.၈.၂၀၂၄ (ဗုဒ္ဓဟူး)
<b>နေ့ရက်</b>	နေ့လည်(၂ : ၀၀)နာရီမှ ညနေ (၅:၀၀)နာရီအထိ

**၁။နိဒါန်း**

Nippon Paint (Myanmar) Co., Ltd. ၏ သုတ်ဆေးအမျိုးမျိုးထုတ်လုပ်ဖြန့်ဖြူးရောင်းချခြင်းလုပ်ငန်း စီမံကိန်းကို ရန်ကုန်တိုင်းဒေသကြီး၊ လှိုင်သာယာ (အနောက်ပိုင်း) မြို့နယ်၊ ငွေပင်လယ် စက်မှုဇုန်၊ မြေတိုင်းအမှတ် (၂၄)၊ မြေကွက်အမှတ် (၄၄) တွင် လုပ်ကိုင်ဆောင်ရွက်မည်ဖြစ်ပါသည်။ ထိုသို့ဆောင်ရွက်နိုင်ရန်အတွက် စီမံကိန်းနှင့်ပတ်သက်၍ ပတ်ဝန်းကျင်နှင့် လူမှုဝန်းကျင်ထိခိုက်မှု ဆန်းစစ်ခြင်းဆိုင်ရာ လုပ်ငန်းများအား Green Myanmar Environmental Services Co., Ltd. မှ တာဝန်ယူဆောင်ရွက်ရာတွင် နယ်ပယ်တိုင်းတာသတ်မှတ်ခြင်းအစီရင်ခံစာကို သယံဇာတနှင့် သဘာဝပတ်ဝန်းကျင်ထိန်းသိမ်းရေး ဝန်ကြီးဌာနသို့ တင်ပြခဲ့ရာ ၂၀၂၄ခုနှစ် ဧပြီလ(၂၅) ရက်နေ့တွင် အတည်ပြုကြောင်း အကြောင်းကြားစာ ရရှိခဲ့ပါသည်။ နယ်ပယ်တိုင်းတာသတ်မှတ်ခြင်းအစီရင်ခံစာ အတည်ပြုချက်ရရှိသဖြင့် ပတ်ဝန်းကျင်ထိခိုက်မှု ဆန်းစစ်ခြင်း အစီရင်ခံစာရေးဆွဲနိုင်ရန်အတွက် အဓိကလိုအပ်ချက်ဖြစ်သော အများပြည်သူနှင့် တွေ့ဆုံပွဲများ ဆက်လက်ပြုလုပ်သွားရမည်ဖြစ်ရာ ယခုအကြိမ်သည် တွေ့ဆုံဆွေးနွေးပွဲ (တတိယအကြိမ်)ဆောင်ရွက်ခြင်း ဖြစ်ပါသည်။ အဆိုပါတွေ့ဆုံဆွေးနွေးပွဲ ရလဒ်များအား သိရှိနိုင်ရေးအတွက် တွေ့ဆုံဆွေးနွေးပွဲ အစည်းအဝေးမှတ်တမ်းအား ပြုစုရေးသားခြင်း ဖြစ်ပါသည်။

**၂။ ရည်ရွယ်ချက်**

လူထုတွေ့ဆုံပွဲမှ ဆွေးနွေးချက်များနှင့် အကြံပြုချက်များအား သိရှိနိုင်စေရန်နှင့် လိုအပ်ချက်များကို အနှစ်ချုပ်တင်ပြခြင်း ဖြစ်ပါသည်။

**၃။ လူထုတွေ့ဆုံဆွေးနွေးပွဲဆိုင်ရာအချက်အလက်များ**

ရန်ကုန်တိုင်းဒေသကြီး၊ လှိုင်သာယာ (အနောက်ပိုင်း)မြို့နယ်၊ ငွေပင်လယ်စက်မှုဇုန်၊ အကွက် အမှတ်(၄၄)၊ Nippon Paint စက်ရုံတွင် ကျင်းပပြုလုပ်ခဲ့သော Nippon Paint (Myanmar) Co., Ltd. ၏ သုတ်ဆေးအမျိုးမျိုး ထုတ်လုပ်ဖြန့်ဖြူးခြင်းလုပ်ငန်းစီမံကိန်းနှင့် ပတ်သက်၍ တတိယအကြိမ်လူထုတွေ့ဆုံပွဲ အခမ်းအနားအစီအစဉ်များနှင့် တွေ့ဆုံဆွေးနွေးခြင်းများကို အောက်တွင်ဖော်ပြထားပါသည် -

တွေ့ဆုံပွဲအခမ်းအနားအစီအစဉ်ကို နောက်ဆက်တွဲ (က)တွင်ဖော်ပြထားပါသည်။

**(က) တွေ့ဆုံပွဲတက်ရောက်သူများစာရင်း**

တွေ့ဆုံဆွေးနွေးပွဲသို့ ဌာနဆိုင်ရာအစိုးရအဖွဲ့အစည်းများ၊ စက်မှုဇုန်စီမံခန့်ခွဲရေးကော်မတီမှတာဝန် ရှိသူများ၊ အလယ်ကျေးရွာအုပ်ချုပ်ရေးအဖွဲ့အစည်းမှ တာဝန်ရှိသူများ၊ အလယ်ကျေးရွာ ဒေသခံရပ်မိရပ်ဖ များ၊ Nippon Paint (Myanmar) Co., Ltd. မှ တာဝန်ရှိသူများ၊ စိမ်းလန်းမြန်မာ ပတ်ဝန်းကျင်ဆိုင်ရာ ဝန်ဆောင်မှုကုမ္ပဏီလီမိတက်မှ အဖွဲ့ဝင်များ စုစုပေါင်း(၃၀)ဦးခန့် တက်ရောက်ပြီး အကြံပြုစာရွက် (၁၀) စောင် ရရှိခဲ့ကြပါသည်။ တွေ့ဆုံဆွေးနွေးပွဲ တက်ရောက်သူများစာရင်းကို နောက်ဆက်တွဲ (ခ) တွင် ဖော်ပြ ထားပါသည်။

**(ခ) ဆွေးနွေးမှုပုံစံနှင့်မှတ်တမ်းထားရှိမှုများ**

ဆွေးနွေးမှုပုံစံအား တက်ရောက်လာသူများက အစည်းအဝေးကျင်းပနေစဉ်အတွင်း မိမိသိလိုသည် များကို ကိုယ်တိုင်ကိုယ်ကျ ဆွေးနွေးခြင်းနှင့် စာဖြင့်အကြံပြုဆွေးနွေးခြင်းဟု နှစ်မျိုးစီစဉ်ထားပါသည်။ ဆွေးနွေးမှုပုံစံအား စာဖြင့် မှတ်တမ်းတင်ခြင်း၊ အသံသွင်းမှတ်တမ်းတင်ခြင်း၊ ဓါတ်ပုံမှတ်တမ်း၊ ဗီဒီယိုဖြင့် မှတ်တမ်းထားရှိခြင်း စသည်တို့ဖြင့် မှတ်တမ်းထားပြီး အစီရင်ခံစာပြုစုရာတွင် ထည့်သွင်းရေးဆွဲသွားမည် ဖြစ်ပါသည်။ စာဖြင့်အကြံပြုဆွေးနွေးသည့် ပုံစံများအား နောက်ဆက်တွဲ (ဂ)တွင် ဖော်ပြထားပါသည်။ တွေ့ဆုံဆွေးနွေးပွဲ မှတ်တမ်းတင် ဓါတ်ပုံများအား နောက်ဆက်တွဲ (ဃ)တွင် ဖော်ပြထားပါသည်။

**၄။ အများပြည်သူနှင့်တွေ့ဆုံဆွေးနွေးပွဲတွင်ရှင်းလင်းတင်ပြချက်များနှင့်ဆွေးနွေးချက်များ**

တတိယအကြိမ် အများပြည်သူနှင့် တွေ့ဆုံဆွေးနွေးပွဲတွင် အောက်ပါအဖွဲ့ဝင်များမှ ရှင်းလင်းတင်ပြ ခဲ့ကြပါသည် -

စဉ်	အမည်	အဖွဲ့အစည်း	ရာထူး
၁	ဦးသန်းကြွယ်	Nippon Paint (Myanmar) Co., Ltd	Sale and Marketing Manager
၂	ဦးမြင့်ဇော်ဦး	မြောက်ပိုင်းခရိုင်၊ ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဦးစီးဌာန	A.D
၃	ဦးကျော်စိုးဝင်း	Green Myanmar Environmental Services Co., Ltd	အုပ်ချုပ်မှုဒါရိုက်တာ
၄	ဦးသိန်းစိုး	Green Myanmar Environmental Services Co., Ltd	Social Consultant

**အစည်းအဝေးတက်ရောက်သူများထဲမှ အရေးပါသူအချို့**

စဉ်	အမည်	ကျေးရွာ	အဖွဲ့အစည်း	ရာထူး
၁.	ဦးမြင့်ဇော်ဦး	မြောက်ပိုင်းခရိုင်	ECD	A.D
၂.	ဒေါ်ကြည်ကြည်ဝင်း	မြောက်ပိုင်းခရိုင်	ECD	ဦးစီးအရာရှိ
၃.	ဒေါ်သင်းသင်းစု	မြောက်ပိုင်းခရိုင်	ECD	ဒုဦးစီး
၄.	ဦးနိုင်ဝင်း	ငွေပင်လယ်	ဇန်နီကော်မတီ	ရုံးအဖွဲ့မှူး
၅.	ဦးမင်းနိုင်	အလယ်ကျေးရွာ	အုပ်ချုပ်ရေး	
၆.	ဦးမြင့်ဦး	အလယ်ကျေးရွာ	အုပ်ချုပ်ရေး	
၇.	ဒေါ်ယုဝါစိုး	အလယ်ကျေးရွာ	ရပ်မိရပ်ဖ	
၈.	ဦးဇော်ရဲအောင်	အလယ်ကျေးရွာ	အုပ်ချုပ်ရေး	
၉.	ဦးမြင့်စိုး	အလယ်ကျေးရွာ	ရပ်မိရပ်ဖ	
၁၀.	မထက်ထက်ဝေစိုး	အလယ်ကျေးရွာ	ရပ်မိရပ်ဖ	

ဆွေးနွေးတင်ပြချက်များမှာ အောက်ပါအတိုင်း ဖြစ်ပါသည် -

**ဦးသန်းကြွယ် (Sale and Marketing Manager, Nippon Paint Co., Ltd)**

- ဦးစွာအစည်းအဝေးတက်ရောက်လာသူများအား နှုတ်ခွန်းဆက်သခြင်း
- Company အကြောင်း မိတ်ဆက်ခြင်း
- Company သည် အရှေ့တောင်အာရှအပါအဝင် နိုင်ငံပေါင်း (၇၈) နိုင်ငံတွင် လုပ်ကိုင်လျှက်ရှိပြီး စက်ရုံပေါင်း (၁၁၈) ရှိကြောင်း
- Nippon Paint (Myanmar) အား ၂၀၁၇ ခုနှစ်တွင် စတင်ခဲ့ကြောင်းနှင့် ထုတ်လုပ်လျှက်ရှိသော ထုတ်ကုန်အမျိုးအစားများအား ရှင်းလင်းပြောကြားခြင်း
- ကမ္ဘာလုံးဆိုင်ရာဈေးကွက်တွင် နံပါတ် (၄) နေရာတွင်ရှိနေပြီး၊ အရှေ့တောင်အာရှတွင် နံပါတ် (၁) နေရာတွင်ရှိကြောင်း၊ ဝန်ထမ်းပေါင်း (၂၉,၀၀၀) ကျော်ရှိကြောင်း
- တစ်ခြားနိုင်ငံများတွင် ပတ်ဝန်းကျင်အတွက် အထောက်အကူဖြစ်စေသော စီမံချက်များအကြောင်း များရှင်းလင်းခြင်း
- Nippon Paint (Myanmar) သည် ၂၀၂၂ ခုနှစ်တွင် တွင် DICA မှ ခွင့်ပြုချက်ရရှိခဲ့ကြောင်းနှင့် တစ်နိုင်ငံလုံးအတိုင်းအတာနှင့် အရောင်းကိုယ်စားလှယ်ပေါင်း (၁၀၀၀) ကျော် ရှိကြောင်း
- Nippon paint mobile application ကိုလည်း smartphone များတွင် အသုံးပြုနိုင်ပြီး မိမိတို့အိမ်နှင့် ကိုက်ညီမည့် အရောင်များကို application (Nippon Paint App) မှတစ်ဆင့် ရွေးချယ်ပြီးလည်း မှာယူ နိုင်ကြောင်း



- နိုင်ငံတကာတွင် ရရှိခဲ့သော Certificate များအတိုင်း စံချိန်စံညွှန်းများနှင့်အညီ မြန်မာနိုင်ငံတွင် ထုတ်လုပ်ရောင်းချပေးနေကြောင်း
- ဆောက်လုပ်ရေးလုပ်ငန်းများအတွက် လိုအပ်သောအကြံဉာဏ်များပေးခြင်းကိုလည်း ဆောင်ရွက်ပေးလျက်ရှိကြောင်း
- သတ်မှတ်ထားသော စံချိန်စံညွှန်းများအတွင်း ထုတ်လုပ်ထားပြီး သဘာဝပတ်ဝန်းကျင်နှင့် သုံးစွဲသူများ မထိခိုက်စေရန် သုတ်ဆေးများကို ထုတ်လုပ်ထားကြောင်း
- CSR လုပ်ငန်းများနှင့် အလှူအတန်းများကိုလည်း ဆောင်ရွက်လျက်ရှိကြောင်း
- သစ်ပင်စိုက်ပျိုးခြင်းလုပ်ငန်းများကိုလည်း ဆက်လက်လုပ်ဆောင်သွားရန် ရှိကြောင်း
- စီးပွားရေးရေရှည်တည်တံ့စေရေးထက် ပတ်ဝန်းကျင်နှင့် အနာဂတ်မျိုးဆက်သစ်တွေရဲ့ လိုအပ်ချက်များကို ရေရှည်တည်တံ့စေရန် အဓိကထားကြောင်းနှင့် ပတ်ဝန်းကျင်အရင်းအမြစ်များထိန်းသိမ်းခြင်း၊ လူသားအရင်းအမြစ်ပတ်ဝန်းကျင်နှင့် အမြတ်အစွန်း စသည့် အခြေခံ ဒေါက်တိုင် ၃ ခုကို ညီမျှစေရန် ဆောင်ရွက်သွားမည်ဖြစ်ကြောင်း

သဘာဝပတ်ဝန်းကျင်	လူမှုရေး	အုပ်ချုပ်ရေး
<ul style="list-style-type: none"> <li>▪ စွမ်းအင်အသုံးပြုမှုနှင့် ထိရောက်မှု</li> </ul>	<ul style="list-style-type: none"> <li>▪ မျှတသောနေထိုင်မှု</li> </ul>	<ul style="list-style-type: none"> <li>▪ ကော်ပိုရိတ်အုပ်ချုပ်ရေး</li> </ul>
<ul style="list-style-type: none"> <li>▪ ရာသီဥတုပြောင်းလဲမှုဆိုင်ရာ မဟာဗျူဟာ</li> </ul>	<ul style="list-style-type: none"> <li>▪ တန်းတူအလုပ်အကိုင်အခွင့်အလမ်း</li> </ul>	<ul style="list-style-type: none"> <li>▪ အန္တရာယ်ကင်းရှင်းရေးစီမံခန့်ခွဲမှု</li> </ul>
<ul style="list-style-type: none"> <li>▪ အမှိုက်လျော့ချခြင်း</li> </ul>	<ul style="list-style-type: none"> <li>▪ ဝန်ထမ်းအကျိုးခံစားခွင့်</li> </ul>	<ul style="list-style-type: none"> <li>▪ လိုက်နာခြင်း</li> </ul>
<ul style="list-style-type: none"> <li>▪ ဖန်လုံအိမ်ဓာတ်ငွေ့ထုတ်လွှတ်မှု</li> </ul>	<ul style="list-style-type: none"> <li>▪ လုပ်ငန်းခွင်ကျန်းမာရေးနှင့် ဘေးကင်းရေး</li> </ul>	<ul style="list-style-type: none"> <li>▪ စီးပွားရေးဆိုင်ရာ ကျင့်ဝတ်အလေ့အကျင့်များ</li> </ul>
<ul style="list-style-type: none"> <li>▪ Carbon Footprint ကို လျော့ချခြင်း</li> </ul>	<ul style="list-style-type: none"> <li>▪ ရပ်ရွာထိတွေ့ဆက်ဆံမှု</li> </ul>	<ul style="list-style-type: none"> <li>▪ ပဋိပက္ခများကိုရှောင်ကြဉ်ခြင်း</li> </ul>
	<ul style="list-style-type: none"> <li>▪ အလုပ်သမားဥပဒေများကို လိုက်နာခြင်း</li> </ul>	<ul style="list-style-type: none"> <li>▪ သမာဓိနှင့် ပွင့်လင်းမြင်သာမှု</li> </ul>
	<ul style="list-style-type: none"> <li>▪ တာဝန်ယူမှုရှိသော ထောက်ပံ့ရေး ကွင်းဆက်မိတ်ဖတ်များ</li> </ul>	

## ဦးကျော်စိုးဝင်း (အုပ်ချုပ်မှုဒါရိုက်တာ) (Green Myanmar)

ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်း

Environmental Impact Assessment (EIA for Nippon Paint (Myanmar) Co.,Ltd.

### စီမံကိန်းနှင့်ပတ်သက်၍တင်ပြမည့်အကြောင်းအရာများမှာ

၁. စီမံကိန်းနှင့်ပတ်သက်၍လေ့လာဆန်းစစ်ရသည့်အချက်များ
၂. ပတ်ဝန်းကျင်ထိခိုက်မှုလေ့လာဆန်းစစ်ခြင်းလုပ်ငန်းစဉ်
၃. နယ်ပယ်အတိုင်းအတာသတ်မှတ်ခြင်းဆိုင်ရာ အစီရင်ခံစာနှင့် အတည်ပြုကြောင်း သဘောထားမှတ်ချက် ပြန်ကြားစာ
၄. စီမံကိန်းဆိုင်ရာအချက်အလက်များအပေါ်လေ့လာဆန်းစစ်ခြင်း
၅. ပတ်ဝန်းကျင်ဆိုင်ရာအခြေခံအချက်အလက်များ ကောက်ယူတိုင်းတာခြင်း
၆. ပတ်ဝန်းကျင်ညစ်ညမ်းမှုကာကွယ်ရန် ဆောင်ရွက်ထားရှိမှုများ
၇. သယံဇာတအရင်းအမြစ်များအား စနစ်တကျစီမံခြင်း
၈. ကျန်းမာရေး၊လုပ်ငန်းခွင်ဘေးအန္တရာယ်ကင်းရှင်းရေးနှင့် မီးဘေးအန္တရာယ်
၉. စီမံကိန်းမှပတ်ဝန်းကျင်အပေါ်သက်ရောက်နိုင်မှုများ
၁၀. ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်သည့်နည်းစနစ် (Impact Assessment Methodology)
၁၁. ပတ်ဝန်းကျင် စီမံခန့်ခွဲမှုအစီအစဉ်
၁၂. ဘေးအန္တရာယ်ရှိဓာတုပစ္စည်းများအား စီမံခန့်ခွဲမှု အစီအစဉ်
၁၃. ပတ်ဝန်းကျင်စောင့်ကြပ်ကြည့်ရှုရေးအစီအစဉ်
၁၄. လူမှုစီးပွားတာဝန်သိမှုနှင့် ပတ်ဝန်းကျင်ထိခိုက်မှုလျော့နည်းစေရေးအတွက် ရံပုံငွေထားရှိရမည့် အစီအစဉ်
၁၅. သုံးသပ်အကြံပြုချက်နှင့်နိဂုံး

### (၁) စီမံကိန်းနှင့်ပတ်သက်၍ လေ့လာဆန်းစစ်ရသည့်အချက်များမှာ

၁. ဥပဒေရေးရာလေ့လာဆန်းစစ်ခြင်း
၂. ရှေးဟောင်းအမွေအနှစ်ဆိုင်ရာထိခိုက်နိုင်မှုလေ့လာဆန်းစစ်ခြင်း
၃. ဇီဝမျိုးစုံမျိုးခွဲဆိုင်ရာ ထိခိုက်နိုင်မှုလေ့လာဆန်းစစ်ခြင်း
၄. စီးဆင်းရေးနှင့် ရေအသုံးချမှုဆိုင်ရာလေ့လာဆန်းစစ်ခြင်း
၅. ဘူမိလွင်ပြင်နှင့်မြေဆီလွှာအနေအထားလေ့လာဆန်းစစ်ခြင်း
၆. လူမှုစီးပွားဆိုင်ရာလေ့လာဆန်းစစ်ခြင်း
၇. ကျန်းမာရေးဆိုင်ရာလေ့လာဆန်းစစ်ခြင်း

၈.စက်ရုံကုန်ထုတ်လုပ်ငန်းစဉ်မှ ပတ်ဝန်းကျင်ဆိုင်ရာလေ့လာဆန်းစစ်ခြင်း

**(၂)ပတ်ဝန်းကျင်ထိခိုက်မှုလေ့လာဆန်းစစ်ခြင်းလုပ်ငန်းစဉ်တွင်**

၁. စီမံကိန်းဆိုင်ရာအချက်အလက်များအပေါ်ဆန်းစစ်ခြင်း

၂. နယ်ပယ်တိုင်းတာသတ်မှတ်ခြင်း

၃. ပတ်ဝန်းကျင်ဆိုင်ရာအခြေခံအချက်အလက်များကောက်ယူခြင်း

၄. သဘာဝပတ်ဝန်းကျင်နှင့် ဇီဝမျိုးစုံမျိုးကွဲများ၊ လူမှုအဖွဲ့အစည်းဆိုင်ရာတို့အပေါ် သက်ရောက်နိုင်မှုများ ကိုဖော်ထုတ်ခြင်း

၅. စီမံကိန်း၏သက်ရောက်နိုင်မှုများကို စီမံကိန်းဖော်ဆောင်မည့်ဒေသတွင်အာဏာပိုင်အဖွဲ့အစည်းများ၊ လူမှုရေးအဖွဲ့အစည်းများနှင့် ပြည်သူလူထုအား အသိပေးခြင်းနှင့် သဘောထားရယူခြင်း

၆. သက်ရောက်မှုများလျော့နည်းစေရန်ဆောင်ရွက်ရမည့်အချက်များ အစီအမံများချမှတ်ခြင်းနှင့် စောင့်ကြပ် ကြည့်ရှုမည့် အစီအစဉ်များသတ်မှတ်ခြင်း

၇. အစီရင်ခံစာပြုစုတင်ပြခြင်း

**(၃) သယံဇာတနှင့် သဘာဝပတ်ဝန်းကျင် ထိန်းသိမ်းရေးဝန်ကြီးဌာနသို့ တင်ပြခဲ့သော နယ်ပယ်အတိုင်းအတာ သတ်မှတ်ခြင်းဆိုင်ရာ အစီရင်ခံစာနှင့် အတည်ပြုကြောင်းသဘောထားမှတ်ချက်ပြန်ကြားစာ**

စီမံကိန်းမှ သယံဇာတနှင့် သဘာဝပတ်ဝန်းကျင် ထိန်းသိမ်းရေးဝန်ကြီးဌာနသို့ တင်ပြခဲ့သော နယ်ပယ်အတိုင်းအတာ သတ်မှတ်ခြင်းဆိုင်ရာ အစီရင်ခံစာနှင့် ဝန်ကြီးဌာနမှ (၂၅.၄.၂၀၂၄) ရက်နေ့ ရက်စွဲဖြင့် ပြန်ကြားလာသော အတည်ပြုကြောင်း သဘောထားမှတ်ချက်ပြန်ကြားစာ ကိုတင်ပြခြင်း

**(၄) စီမံကိန်းဆိုင်ရာအချက်အလက်များအပေါ်ဆန်းစစ်ခြင်း**

- ၂၀၂၂ ခုနှစ်မှစတင်ပြီး စီမံကိန်းဆိုင်ရာအချက်အလက်များအပေါ်ဆန်းစစ်ခြင်းလုပ်ငန်းစဉ်များကို ဆောင် ရွက်ခဲ့ပါသည်

- စီမံကိန်းတည်နေရာ

- စီမံကိန်းနယ်ပယ်အတိုင်းအတာသတ်မှတ်ခြင်း (၂) ကီလိုမီတာ အဝန်းအဝိုင်း

တည်နေရာ	ငွေပင်လယ်စက်မှုဇုန်
အနီးဆုံးမြေပေါ်ရေအရင်းအမြစ်	လှိုင်မြစ်
အနီးဆုံးကျေးရွာ	အလယ်ရွာ
ယဉ်ကျေးမှုအဆောက်အအုံများ	အောင်ဇေယျာမင်း ပရဟိတ ဘုန်းတော်ကြီးကျောင်း
အနီးပတ်ဝန်းကျင်	<ul style="list-style-type: none"> <li>- အရှေ့ဘက်၌လှိုင်မြစ်၊ ရွှေပြည်သာ တံတားနှင့် စက်မှုဇုန် အမှတ် (၃)</li> <li>- အနောက်ဘက်၌ ရွှေလင်ပန်း စက်မှုဇုန်နှင့် အလယ်ရွာ</li> </ul>

	- မြောက်ဘက်တွင် သဲကွင်း၊ ကုန်းတွင်းဆိပ်ကမ်း၊ မြေလွတ်မြေလပ်များ
စီမံကိန်းတည်ဆောက်ရေးကာလ	၂၀၂၂ ခုနှစ်ဇူလိုင်လမှ ဒီဇင်ဘာလ (၆) လ
လုပ်ငန်းလည်ပတ်ရေးကာလ	၂၀၂၃ ခုနှစ် မှ ၂၀၅၃ ခုနှစ်အထိ (၃၀ နှစ်)
ပိတ်သိမ်းချိန်ကာလ	တစ်နှစ်ခန့် (လုပ်ငန်းသက်တမ်းကုန်ဆုံးပြီးချိန်)

- ကုန်ထုတ်လုပ်မှုအမျိုးအစား နှင့် ကုန်ကြမ်းပစ္စည်းများ
  - သုတ်ဆေးအမျိုးမျိုးထုတ်လုပ်ခြင်းလုပ်ငန်းဖြစ်ပါသည်။
  - သုတ်ဆေးထုတ်လုပ်ခြင်းလုပ်ငန်းသည် Chemical Reaction ပါရှိသောလုပ်ငန်းမျိုး မဟုတ်ပဲ အသင့် ဝယ်ယူရရှိသည့် ကုန်းကြမ်းပစ္စည်းများကို စက်ရုံ၌ ရောစပ်၍ ကုန်ချော ထုတ်လုပ်ခြင်း လုပ်ငန်းစဉ် သာဖြစ်ပါသည်။
- ကုန်ကြမ်းပစ္စည်းအမျိုးအစားများ
  - resin (binder)
  - pigment to provide opacity, color or body
  - solvent to regulate viscosity
  - variety of additives to impart special characteristics
- ထုတ်ကုန်များနှင့် ထုတ်လုပ်မှု ပမာဏ
  - Water base Emulsion
  - Solvent base Emulsion
  - 8 ton/day to 10 ton/day
- Targeted production capacity 3000 ton/year
- သယ်ဇာတ အသုံးပြုမှု
  - ရေအရင်းအမြစ် - မြေအောက်ရေကိုအသုံးပြု (တွင်းရေ)
  - လျှပ်စစ်အရင်းအမြစ် - မဟာဓာတ်အားလိုင်း နှင့် 250 KVA Generator (Estimated annual electricity requirement is 45 MW)
- လူအရင်းအမြစ်
  - No. of Employee (174 persons)
  - working hours (8:30 am to 5:30 pm)
  - working day (Mon to Fri and Saturday 9:00 am to 12:00 pm (2 times per month))

-စက်ရုံမှထုတ်လုပ်သော ကုန်ချောများ

(မှတ်တမ်းဓာတ်ပုံများ)

### ထုတ်လုပ်မှု လုပ်ငန်းစဉ်

- ယေဘုယျအားဖြင့် သုတ်ဆေးထုတ်လုပ်ခြင်းသည် အဆင့်ဆင့်ပြုလုပ်သော ထုတ်လုပ်မှုလုပ်ငန်းစဉ်တွင် ဓာတု ဓာတ်ပြုမှု အနည်းငယ် (သို့) လုံးဝပါဝင်မှု မရှိပါ။ အများအားဖြင့် စက်ပိုင်းဆိုင်ရာ လုပ်ငန်းစဉ်များဖြစ်ပါသည်။

- ထုတ်လုပ်မှုတွင်

- ကုန်ကြမ်းများပြင်ဆင်ခြင်း

- ချိန်တွယ်ခြင်း

- ရောမွှေခြင်း

- ပျံ့နှံ့ကွဲလွင့်စေခြင်း

- အပျစ်အကျထိန်းညှိခြင်း

- ထည့်စရာများတွင်ထည့်ခြင်း

- သိုလှောင်ခြင်းနှင့် ဖြန့်ဖြူးရောင်းချခြင်းတို့ ဖြစ်ပါသည်။

-ရေဆေးထုတ်လုပ်ပုံအဆင့်ဆင့် (production process chart)

-ဆီဆေးထုတ်လုပ်ပုံအဆင့်ဆင့် (production process chart)

### (၅) ပတ်ဝန်းကျင်ဆိုင်ရာအခြေခံအချက်အလက်များကောက်ယူတိုင်းတာခြင်း၊

- လေ့လာမည့် နယ်ပယ်အတိုင်းအတာသတ်မှတ်ခြင်းနှင့် လေ့လာမည့်နည်းစနစ်များ

- EIA လေ့လာဆန်းစစ်မှုအတွက် သတင်းအချက်အလက်များရယူခြင်း

- မြေပြင်ကွင်းဆင်းလေ့လာခြင်းနှင့် အများပြည်သူတိုင်ပင်ဆွေးနွေးခြင်းလုပ်ငန်းများ

- တဆင့်ခံအချက်များနှင့် သုတေသနစာတမ်းများ/ အစီရင်ခံစာလေ့လာခြင်း

- စီမံကိန်းပတ်ဝန်းကျင်ရှင် လေထုအရည်အသွေး/လေတိုက်နှုန်းနှင့် လေတိုက်ရာအရပ်

- မြေပေါ်မြေအောက် ရေအရည်အသွေးနှင့် လှိုင်မြစ်၏ ရေအရည်အသွေးလေ့လာ ဆန်းစစ်ခြင်း

- စက်ရုံဝန်းအတွင်းရှိ မြေအရည်အသွေး၊ ဆူညံသံနှင့် တုန်ခါမှုတို့ကို တိုင်းတာလေ့လာ ဆန်းစစ်ခြင်း

- စီမံကိန်းဆိုင်ရာ အချက်အလက်များ/ ထုတ်လုပ်မှုနည်းစဉ်အားလေ့လာခြင်း



- သဘာဝနှင့် လူမှုပတ်ဝန်းကျင်အပေါ်သက်ရောက်နိုင်မှုများကို လေ့လာဆောင်ရွက်မည့် ဧရိယာအကျယ်အဝန်း (EIA လေ့လာမည့် နယ်ပယ် အတိုင်းအတာသက်မှတ်ခြင်း) စီမံကိန်းအလယ်မှ (၂) ကီလိုမီတာ အချင်းဝက် (မြေပုံ)
- စီမံကိန်း ပတ်ဝန်းကျင် (၂) ကီလိုမီတာ အတွင်းရှိ မြေအသုံးချမှုအခြေအနေ (မြေပုံ)
- ပတ်ဝန်းကျင် အရည်အသွေးတိုင်းတာသည့် စက်ပစ္စည်းများ (ပုံများ)
- စက်ရုံဝန်းအတွင်းလေထုအရည်အသွေးနှင့် ဆူညံသံတိုင်းတာခြင်း (၂၀၂၂ ခုနှစ် မှတ်တမ်းပုံများ)
- စီမံကိန်းအနီးပတ်ဝန်းကျင် လေထုအရည်အသွေးနှင့် ဆူညံသံတိုင်းတာခြင်း (၂၀၂၂ ခုနှစ် မှတ်တမ်းပုံများ)
- ပတ်ဝန်းကျင် လေထုအရည်အသွေးတိုင်းတာခြင်းရလဒ်များ (ရလဒ်အဖြေများ)
- လှိုင်မြစ်အတွင်းရေထုအရည်အသွေးနမူနာရယူခြင်း (၂၀၂၂ ခုနှစ် မှတ်တမ်းပုံများ)
- လှိုင်မြစ်အတွင်းရေထုအရည်အသွေးတိုင်းတာမှုရလဒ်များ (ရလဒ်အဖြေများ)
- အောင်ဇေယျာမင်းပရဟိတဘုန်းတော်ကြီးကျောင်း (အလယ်ရွာ)၏ ရေထုအရည်အသွေး တိုင်းတာမှုရလဒ်များ (ရလဒ်အဖြေများ)
- ခရစ်ယာန်ပရဟိတကျောင်း (အလယ်ရွာ) ၏ရေထုအရည်အသွေးတိုင်းတာမှုရလဒ်များ (ရလဒ်အဖြေများ)
- သောက်သုံးရေကန်(အလယ်ရွာ) ၏ရေထုအရည်အသွေးတိုင်းတာမှုရလဒ်များ (ရလဒ်အဖြေများ)
- စက်ရုံဝန်းအတွင်းရေထုအရည်အသွေးနမူနာရယူခြင်း (၂၀၂၂ ခုနှစ် မှတ်တမ်းပုံများ)
- စက်ရုံဝန်းအတွင်းရေထုအရည်အသွေးတိုင်းတာမှုရလဒ်များ (ရလဒ်အဖြေများ)
- စီမံကိန်းအနီးပတ်ဝန်းကျင်ရေထုအရည်အသွေးနမူနာရယူခြင်း (၂၀၂၂ ခုနှစ် မှတ်တမ်းပုံများ)
- လှိုင်မြစ်ရေ (Up) ၏ရေထုအရည်အသွေးတိုင်းတာမှုရလဒ်များ (ရလဒ်အဖြေများ)
- လှိုင်မြစ်ရေ (Middle) ၏ရေထုအရည်အသွေးတိုင်းတာမှုရလဒ်များ (ရလဒ်အဖြေများ)
- လှိုင်မြစ်ရေ (Down) ၏ရေထုအရည်အသွေးတိုင်းတာမှုရလဒ်များ (ရလဒ်အဖြေများ)
- စက်ရုံထွက်ပေါက် (၁) ၏ရေထုအရည်အသွေးတိုင်းတာမှုရလဒ်များ (ရလဒ်အဖြေများ)
- စက်ရုံထွက်ပေါက် (၂) ၏ရေထုအရည်အသွေးတိုင်းတာမှုရလဒ်များ (ရလဒ်အဖြေများ)
- Municipal Drain (စက်ရုံအကျော်) ၏ရေထုအရည်အသွေးတိုင်းတာမှုရလဒ်များ (ရလဒ်အဖြေများ)
- Tube Well ၏ရေထုအရည်အသွေးတိုင်းတာမှုရလဒ်များ (ရလဒ်အဖြေများ)
- စီမံကိန်းဧရိယာအတွင်း လေထုအရည်အသွေးနှင့် ဆူညံသံတိုင်းတာခြင်း (၂၀၂၂ ခုနှစ် မှတ်တမ်းပုံများ)
- စီမံကိန်းဧရိယာအတွင်း လေထုအရည်အသွေးနှင့် ဆူညံသံတိုင်းတာခြင်း ဆူညံသံတိုင်းတာမှု ရလဒ်များ (ရလဒ်အဖြေများ)
- စီမံကိန်းဧရိယာ မြေထုအရည်အသွေးနမူနာရယူခြင်း (၂၀၂၂ ခုနှစ် မှတ်တမ်းပုံများ)

- စီမံကိန်းဧရိယာအတွင်း တုန်ခါမှု တိုင်းတာခြင်း (၂၀၂၄ ခုနှစ် မှတ်တမ်းပုံများနှင့် ရလဒ်အဖြေများ)
- စက်ရုံအတွင်း မီးခိုးခေါင်းတိုင်တိုင်းတာခြင်း (၂၀၂၄ ခုနှစ်မှတ်တမ်းပုံများနှင့် ရလဒ်အဖြေများ)
- စီမံကိန်းဧရိယာအတွင်း အနံ့တိုင်းတာခြင်း (၂၀၂၄ ခုနှစ် မှတ်တမ်းပုံများနှင့် ရလဒ်အဖြေများ)
- စီမံကိန်းဧရိယာအတွင်း ရေထုအရည်အသွေးနမူနာရယူခြင်း (၂၀၂၄ ခုနှစ် မှတ်တမ်းပုံများနှင့် ရလဒ်အဖြေများ)
- အောင်ဇေယျာမင်း ပရဟိတ ဘုန်းတော်ကြီးကျောင်း (အလယ်ရွာ)
- စက်ရုံအဝီစိတွင်းရေ
- မြစ်ရေ (Point Source)
- မြစ်ရေ (Upper)
- မြစ်ရေ (Down)
- စီမံကိန်း အနီးဝန်းကျင်
- သောက်သုံးရေကန်
- ခရစ်ယာန်ပရဟိတကျောင်း
- စီမံကိန်း ပတ်ဝန်းကျင် အနီးရှိ ပတ်ဝန်းကျင်ဆိုင်ရာ လက်ရှိအခြေအနေ (၂၀၂၂ နှင့် ၂၀၂၄ ခုနှစ် တိုင်းတာချက်များအရ)

တိုင်းတာသည့် နယ်ပယ်များ	၂၀၂၂ ခုနှစ်အတွင်း တိုင်းတာခဲ့သည့် ရလဒ်များ	၂၀၂၄ ခုနှစ်အတွင်း တိုင်းတာခဲ့သည့် ရလဒ်များ
လေထု အရည်အသွေး	- အမျိုးသားပတ်ဝန်းကျင်ဆိုင်ရာ အရည်အသွေး (ထုတ်လွှတ်မှု) လမ်းညွှန်ချက်များအတွင်းရှိ	- အမျိုးသားပတ်ဝန်းကျင်ဆိုင်ရာ အရည်အသွေး (ထုတ်လွှတ်မှု) လမ်းညွှန်ချက်များအတွင်းရှိ
စက်ရုံအတွင်း လေထု အရည်အသွေး	- အမျိုးသားပတ်ဝန်းကျင်ဆိုင်ရာ အရည်အသွေး (ထုတ်လွှတ်မှု) လမ်းညွှန်ချက်များအတွင်းရှိ	- အမျိုးသားပတ်ဝန်းကျင်ဆိုင်ရာ အရည်အသွေး (ထုတ်လွှတ်မှု) လမ်းညွှန်ချက်များအတွင်းရှိ
ဆူညံသံနှင့် တုန်ခါမှု	- အမျိုးသားပတ်ဝန်းကျင်ဆိုင်ရာ အရည်အသွေး (ထုတ်လွှတ်မှု) လမ်းညွှန်ချက်များအတွင်းရှိ	- အမျိုးသားပတ်ဝန်းကျင်ဆိုင်ရာ အရည်အသွေး (ထုတ်လွှတ်မှု) လမ်းညွှန်ချက်များအတွင်းရှိ
လှိုင်မြစ်၏ရေ အရည်အသွေး	- TSS သည် အမျိုးသားပတ်ဝန်းကျင်ဆိုင်ရာ အရည်အသွေး (ထုတ်လွှတ်မှု) လမ်းညွှန်ချက်များပါ အထွေထွေ လမ်းညွှန်ချက် ထက်ကျော်လွန်နေပြီး	- အမျိုးသားပတ်ဝန်းကျင်ဆိုင်ရာ အရည်အသွေး (ထုတ်လွှတ်မှု) လမ်းညွှန်ချက်များအတွင်းရှိ

	- ကျန်ပါရာမီတာများသည် သက်မှတ် စံနှုန်းအတွင်းရှိ	
စီမံကိန်းရှေ့ မြောင်းရေ	- TSS, Ammonia, Lead တို့သည် စွန့်ပစ် ရေစံနှုန်းထက်ကျော်လွန်၊ - ကျန်ပါရာမီတာများ စံနှုန်းအတွင်းရှိ	
မြေအောက်ရေ အရည်အသွေး	- TSS, Total Iron and Turbidity တို့သည် WHO, India, EPA သတ်မှတ်စံနှုန်းထက် ကျော်လွန်၊ - ကျန်ပါရာမီတာများ သတ်မှတ်စံနှုန်း အတွင်းရှိ	- ခရစ်ယာန်ပရဟိတကျောင်း( အလယ် ကျေးရွာ)၊သောက်သုံးရေကန် (အလယ် ကျေးရွာ) တို့၏ Manganese သည် Drinking သတ်မှတ်စံနှုန်းထက်ကျော်လွန် - ကျန်ပါရာမီတာများသည် သတ်မှတ် စံနှုန်းအတွင်းရှိ
စီမံကိန်း အဝီစိ တွင်းရေ၏ အရည်အသွေး	- TSS, Turbidity တို့သည် WHO, India, EPA သတ်မှတ်စံနှုန်းထက်ကျော်လွန်၊ - ကျန်ပါရာမီတာများ သတ်မှတ်စံနှုန်း အတွင်းရှိ	- Manganese သည် Drinking သတ် မှတ်စံနှုန်းထက်ကျော်လွန် - ကျန်ပါရာမီတာများသည် သတ်မှတ် စံနှုန်းအတွင်းရှိ

- ဇီဝမျိုးစုံ မျိုးကွဲလေ့လာဆန်းစစ်ခြင်း
  - လေ့လာမှုပြုမည့်အကြောင်းအရာ
    - (၁) ကုန်းနှင့် ရေဆိုင်ရာ ဇီဝပတ်ဝန်းကျင် အခြေအနေ
    - (၂) ကုန်းသတ္တဝါနှင့် အပင်
    - (၃) ရေသတ္တဝါနှင့် အပင်
- စီမံကိန်းကြောင့် ဇီဝနှင့် ဇီဝပတ်ဝန်းကျင်အပေါ်ဆိုးကျိုးသက်ရောက်နိုင်ခြေ
  - ကုန်း၊ လေ၊ ရေနေသတ္တဝါနှင့် အပင်များပေါ်တွင် ဆိုးကျိုးသက်ရောက်မှု နည်းပါသည်
  - (၂၀၂၂ ခုနှစ်က တိုင်းတာရေးပြုလုပ်ခဲ့သော မှတ်တမ်းဓာတ်ပုံများနှင့် တွေ့ရှိချက်များ)
- မိုးလေဝသနှင့် ဇလဗေဒဆိုင်ရာ လေ့လာခြင်း
  - Scope of Hydrology Study (Surface water, Ground Water and Storm Water)
  - AOI of Hydrology Study (မြေပုံ)
  - average Climate of study area (30 years reference) (Charts)
  - Topography of study area (Map)
  - storm water drainage in (Factory) and surrounding area (Map)

- လူမှုပတ်ဝန်းကျင်ဆိုင်ရာ အချက်အလက်များကောက်ယူရန် သင်တန်းပေးခြင်း (၂၀၂၃ မှတ်တမ်းပုံများ)
- နယ်ပယ်အတိုင်းအတာသတ်မှတ်ခြင်းဆိုင်ရာ ပထမအကြိမ်လူထုတွေ့ဆုံပွဲ (၂၉.၁.၂၀၂၃) (မှတ်တမ်းပုံများ)
- 2<sup>nd</sup> Public Consultation Meeting (PCM) ကို ၂၀၂၄ ခုနှစ် မေလ ၂၉ ရက်နေ့၌ ကျင်းပပြုလုပ်ခဲ့ပါသည် (မှတ်တမ်းပုံများ)

**(၆). ပတ်ဝန်းကျင်ညစ်ညမ်းမှုကာကွယ်ရန် ဆောင်ရွက်ထားရှိမှုများ**

**လေထုအတွင်း အခိုးအငွေ့ ထုတ်လွှတ်မှုများ (လုပ်ငန်းလည်ပတ်ရေးကာလ)**

သုတ်ဆေးထုတ်လုပ်မှုလုပ်ငန်းစဉ်တွင် အငွေ့ပျံလွယ်သော အော်ဂဲနစ်ဒြပ်ပေါင်းများ(VoCs), အမှုန်အမွှားများ (PM10, PM2.5) အနံ့အသက်များ အဓိကထွက်ရှိနိုင်ပါသည်

- ဆေးရောစပ်သည့်နေရာမှ အငွေ့ပျံလွယ်သော ဩဂဲနစ်ဒြပ်ပေါင်းများ (VoVs), (မွေ့စက်များ၊မွေ့ကန်များ) မှ အမှုန်အမွှားများ (PM10, PM2.5)
- အနံ့အသက်များထွက်ရှိနိုင်မှု
- လုပ်ငန်းသုံးသယ်ယူပို့ဆောင်ရေးလုပ်ငန်းများနှင့် အရန် လျှပ်စစ်ဓာတ်အားထုတ်မီးစက်မှ NO2, CO2, CO များထွက်ရှိနိုင်မှု
- ကုန်ကြမ်းများ သိုလှောင်ကိုင်တွယ်ခြင်းမှ အမှုန်များထွက်ရှိနိုင်မှု

အဆိုပါ အခိုးအငွေ့ထွက်ရှိမှုများသည် ထုတ်လွှတ်နိုင်သည့် အကွာအဝေး၊ ပမာဏသည် စက်ရုံဝင်းအတွင်း၌သာ ပျံ့နှံ့ နိုင်မှု အခွင့်အလမ်းများသောကြောင့် ပတ်ဝန်းကျင် လေထုညစ်ညမ်းမှုထက် လုပ်ငန်းခွင်ရှိ ဝန်ထမ်းများ၏ ကျန်းမာရေးအပေါ်သက်ရောက်နိုင်မှုကိုသာ ပိုမိုအလေးထားဆောင်ရွက်သင့်သော လုပ်ငန်းဖြစ်သည်။

**(သက်ရောက်မှု အကဲဖြတ်သုံးသပ်ချက်)**

- အမှုန်အမွှားများ (PM10,PM2.5), VOC ထွက်ရှိနိုင်သော်လည်း ထွက်ရှိမှု ပမာဏနည်းပါးပြီး ထုတ်လုပ်မှုနည်းစဉ်တွင် အမှုန်ဖမ်းစက်များ တပ်ဆင်ထားသောကြောင့် ပတ်ဝန်းကျင်အပေါ်သက်ရောက်မှု အကဲဖြတ်ချက်များအရ ခန့်မှန်းနိုင်ပါသည်
- သို့ဖြစ်ပါ၍ လေထုညစ်ညမ်းမှုဆိုင်ရာ သက်ရောက်မှု၏အရေးပါမှုသည်လျော့ချရေးလုပ်ငန်းစဉ်များ မပြုလုပ်မီကပင် အသင့်အတင့်သာ သက်ရောက်နိုင်ကြောင်း သုံးသပ်ရပါသည်။ လျော့ချမှုများအပြီးတွင် သက်ရောက်မှု အတိုင်းအတာသည် နည်းပါးသည်ကို တွေ့ရှိရပါသည်။ VOC ထွက်ရှိမှုအပေါ် ခန့်မှန်း တွက်ချက်မှုအရအဆိုပြုစီမံကိန်းသည် လေထုညစ်ညမ်းမှုကို ထိန်းချုပ်သည့် စနစ်ပါရှိသည်ဖြစ်စေ၊ မပါရှိသည်ဖြစ်စေ ပတ်ဝန်းကျင်အပေါ်သက်ရောက်နိုင်မှုအဆင့် Insignificant အဖြစ်သတ်မှတ်နိုင်ပါသည်။

**( စက်ရုံ၌အသုံးပြုသည့် လျော့ချသည့်နည်းစနစ်)**

- ပတ်ဝန်းကျင် လေထုညစ်ညမ်းမှုကို အမှုန်ဖမ်းစက်တပ်ဆင်ခြင်းဖြင့် ထိန်းချုပ်နိုင်မည်ဖြစ်ပါသည်။

(အမှုန်ဖမ်းစက် နမူနာပုံစံ)

### **စွန့်ပစ်ရေထွက်ရှိမှု**

အောက်ဖော်ပြပါလုပ်ငန်းများကြောင့် စွန့်ပစ်ရေထုတ်လွှတ်မှုရှိနိုင်ပါသည်

- လုပ်ငန်းခွင်သန့်ရှင်းရေးဆောင်ရွက်ခြင်း
- ဝန်ထမ်းများအထွေထွေသုံးရေ (ဥပမာ- စားသောက်ခန်း၊ အထွေထွေသန့်ရှင်းရေး)
- သန့်စင်ခန်းများနှင့် ဆေးကြောရေ
- လုပ်ငန်းခွင်မှ သီးခြားရေဆိုးထွက်ရှိခြင်းမရှိသော်လည်း ယာဉ်ယန္တရားများဆေးကြောရာမှ ထွက်ရှိသောရေ
- စီးဆင်းရေများ

### **(လျှော့ချသည့် နည်းစနစ်)**

- ဆီဆေးများအားထုတ်လုပ်ရာတွင်ဖျော်ရည် (Solvent) များကိုသုတ်ဆေးအရောင်အနုအရင့်အလိုက် ထုတ်လုပ်ပြီး ကန်များဆေးကြောရာတွင် ၎င်းဖျော်ရည်များကို ပြန်လည်အသုံးပြုခြင်းဖြင့် စွန့်ပစ်ရေထွက်ရှိမှုကို လျော့ချခြင်း
- ရေဆိုးသန့်စင်စနစ်ထားရှိခြင်း

### **(သက်ရောက်မှု အကဲဖြတ်သုံးသပ်ခြင်း)**

- သုတ်ဆေးထုတ်လုပ်သော လုပ်ငန်းဖြစ်သော်လည်း ရေဆိုးထွက်ရှိမှုနည်းပါးပြီး စက်ရုံ၌ သန့်စင်စနစ်ထားရှိမည်ဖြစ်၍ ပတ်ဝန်းကျင်မြေထု၊ရေထုအပေါ်သက်ရောက်မှု ပမာဏ သိသာထင်ရှားမှု မရှိနိုင်ပါ
- ရေဆိုးများအားလည်း သတ်မှတ် စံနှုန်းများအတွင်းရောက်အောင် သန့်စင်ပြီးမှသာလျှင် Public Drain System မှတစ်ဆင့် စွန့်ထုတ်မည်ဖြစ်၍ သက်ရောက်မှု အတိုင်းအတာ အကျယ်အဝန်းသည်လည်း အကန့်အသတ် အတွင်းသာရှိပါသည်။ သက်ရောက်မှုသည် သိသာထင်ရှားမှုမရှိနိုင်ပါ
- ရေဆိုးသန့်စင်မှု ရလဒ်များကိုလည်းစောင့်ကြည့် စစ်ဆေးမည်ဖြစ်ပါသည်

### **(ရေဆိုးသန့်စင်မှု နည်းစနစ်)**

- Aeration Wastewater treatment System
- Design capacity = 13 m<sup>3</sup>/hr

### **(မိလ္လာအညစ်အကြေးနှင့် စွန့်ပစ်ရေသန့်စင်မှုစနစ်)**

- မိလ္လာအညစ်အကြေး အနည်အနှစ်များပြည့်လာပါက မြို့တော်စည်ပင်သာယာရေးဆိုးစုပ်ကားဖြင့် စုပ်ယူ စွန့်ပစ်ပါသည်

### **(စီးဆင်းရေ စီမံခန့်ခွဲမှု စနစ်) (Chart)**



### **ဆူညံသံနှင့် တုန်ခါမှုများ**

- ထုတ်လုပ်ရေးလုပ်ငန်းများ ဆေးရောစပ်သည့် ဆေးမွေစက်များ
- အအေးပေးစက်များနှင့် လေအေးပေးစက်များ
- အမှုန်ဖမ်းစက်နှင့် အငွေ့ဖမ်းစက်များ
- ကုန်ကြမ်း/ကုန်ချော သယ်ယူပို့ဆောင်ရေးနှင့် လုပ်ငန်းသုံးယာဉ်များ
- အရန်လျှပ်စစ်ထုတ်စက်များ

### **(လျှော့ချသည့်နစ်နစ်များ)**

- စက်ပစ္စည်းများကို ပုံမှန်ပြုပြင်ထိန်းသိမ်းခြင်း
- လုပ်ငန်းခွင်အကာအကွယ်များ ထောက်ပံ့ပေးခြင်း
- အသံလုံစနစ်ပါသောမီးစက်ကို အသုံးပြုခြင်း

### **(သက်ရောက်မှု အကဲဖြတ်သုံးသပ်ချက်)**

- ဆူညံသံတိုင်းတာမှုကို စက်ရုံဝန်းထောင့်များတွင် တိုင်းတာခဲ့ပြီး တိုင်းတာသည့်ရလဒ် (70 dB) အောက် ဖြစ်သဖြင့် နိုင်ငံတော်၏သတ်မှတ် စံနှုန်းအတွင်းသာရှိပါသည်။
- လုပ်ငန်းခွင်အတွင်း ဆူညံသံတိုင်းတာမှုရလဒ်သည်လည်း စံနှုန်းအတွင်းသာရှိပါသည်။
- ပတ်ဝန်းကျင်အပေါ်စီမံကိန်းကြောင့် သက်ရောက်နိုင်မှုမှာ မရှိသလောက် နည်းပါးပါသည်။
- စက်ပစ္စည်းများကို ပုံမှန်ပြုပြင်ထိန်းသိမ်းခြင်းနှင့် စစ်ဆေးခြင်း၊ လုပ်သားများအတွက် အကာအကွယ်ပစ္စည်းများ ထောက်ပံ့ပေးခြင်းဖြင့် ထိန်းချုပ်နိုင်ပါသည်။

(ဆူညံသံနှင့် တုန်ခါမှုလျှော့ချရေးအစီအမံများဆောင်ရွက်ထားရှိမှု မှတ်တမ်းပုံများ)

### **အစိုင်အခဲစွန့်ပစ်ပစ္စည်းများ**

စွန့်ပစ်ပစ္စည်းများအနေဖြင့် ဘေးအန္တရာယ်ရှိသော စွန့်ပစ်ပစ္စည်းများနှင့် ဘေးအန္တရာယ်မရှိသော စွန့်ပစ်ပစ္စည်းများထွက်ရှိနိုင်ပါသည်။

### **(ဘေးအန္တရာယ်ရှိသော စွန့်ပစ်ပစ္စည်းများ)**

- အရည်အသွေးမရှိသော ကုန်ချောများနှင့် သက်တမ်းလွန် ကုန်ကြမ်းများ
- ဖိတ်စင်မှုများကိုသုတ်ထားသည့် သန့်ရှင်းရေးပစ္စည်းများ
- ဓာတုကုန်ကြမ်းပစ္စည်းအိပ်ခွံများနှင့် ပုံးခွံများ

### **(ဘေးအန္တရာယ်မရှိသော စွန့်ပစ်ပစ္စည်းများ)**

- စက္ကူပုံးများ၊ ပလတ်စတစ်ပုံးခွံများ
- ဝန်ထမ်းများ အထွေထွေသုံးစွဲရာမှ ထွက်ရှိသော စွန့်ပစ်ပစ္စည်းများ

- မိလ္လာအညစ်အကြေး

**(စွန့်ပစ်ပစ္စည်းစီမံခန့်ခွဲမှု)**

- စွန့်ပစ်ပစ္စည်းများကို အမျိုးအစားခွဲ၍ စနစ်တကျ ထားရှိစွန့်ပစ်ပါသည်
- ဘေးအန္တရာယ်မရှိသော စွန့်ပစ်ပစ္စည်းများကို သက်ဆိုင်ရာမြို့နယ်စည်ပင်သာယာရေးကော်မတီနှင့် ချိတ်ဆက်၍ စွန့်ပစ်ပါသည်။
- ဘေးအန္တရာယ်ရှိသော စွန့်ပစ်ပစ္စည်းများကို သက်ဆိုင်ရာမှ သတ်မှတ်ခွင့်ပြုသည့် အဖွဲ့အစည်းများဖြင့် ချိတ်ဆက်၍ စွန့်ပစ်ရန် ဆောင်ရွက်ထားပါသည်

**(သက်ရောက်မှုအကဲဖြတ်သုံးသပ်ချက်)**

- စွန့်ပစ်ပစ္စည်းအမျိုးအစားခွဲ၍ စနစ်တကျ ထားရှိစွန့်ပစ်ခြင်းနှင့် ဘေးအန္တရာယ်ရှိစွန့်ပစ်ပစ္စည်းများကို Golden Dowa နှင့် စွန့်ပစ်ရန် ဆောင်ရွက်ထားရှိပြီးဖြစ်၍ ပတ်ဝန်းကျင် ရေထု၊ မြေထုအပေါ် သက်ရောက်မှု မရှိသဘောက်ဖြစ်ပါသည်။
- ဘေးအန္တရာယ်ရှိစွန့်ပစ်ပစ္စည်းများကြောင့် သက်ရောက်မှုအတိုင်းအတာ အကျယ်အဝန်းသည်လည်း အကန့်အသတ်အတွင်း (စက်ရုံဝင်းအတွင်း) သာ ရှိပါသည်။ ၎င်းတို့ကို စနစ်တကျဆောင်ရွက်မည်ဖြစ်ပြီး ထိခိုက်မှုပမာဏမှာ သိသာထင်ရှားမှုမရှိပါ။

**(၇) သယံဇာတအရင်းအမြစ်များအား စနစ်တကျစီမံခြင်း**

**ရေသုံးစွဲမှုလျော့နည်းစေရန်အတွက် စီမံဆောင်ရွက်ခြင်း (Water Efficiency)**

- ရေသုံးစွဲမှုလျော့နည်းစေရန်အတွက် ဖိအားသုံးရေဆေးစက်ဖြင့် ဆေးဖျော်အိုးများ၊ ကိရိယာများကို ဆေးကြောခြင်း သည် ပုံမှန်ရေခွက်ဖြင့်ဆေးခြင်းထက်ရေအသုံးပြုမှု အမြောက်အများ လျော့ချနိုင်သည်။

**စွမ်းအင်သုံးစွဲမှု လျော့နည်းစေရန်အတွက် စီမံဆောင်ရွက်ခြင်း (Energy Efficiency)**

- အလင်းဖောက်ဝင်နိုင်သော အမိုးများနှင့် နံရံများ တပ်ဆင်ခြင်း
- လေဝင်လေထွက်စနစ်ကောင်းမွန်စေရန်အတွက် ဇကာများ၊ ပန်ကာများ၊ အမိုး လေဝင် လေထွက် စနစ်များ ထားရှိခြင်း
- လျှပ်စစ်သုံးစွဲမှု လျော့နည်းစေရန် LED မီးလုံးများတပ်ဆင်ခြင်း

**(၈) ကျန်းမာရေး၊ လုပ်ငန်းခွင်ဘေးအန္တရာယ်ကင်းရှင်းရေးနှင့် မီးဘေးအန္တရာယ်**

**အလုပ်သမားများအတွက် စက်ရုံမှ ဆောင်ရွက်ပေးသည့်အစီအစဉ်များ**

- လုပ်ငန်းခွင်ဘေးအန္တရာယ်ကင်းရှင်းရေးနှင့် ကျန်းမာရေးထိခိုက်စေနိုင်သည့် အခြေအနေများကို ပုံမှန်စစ်ဆေးခြင်း

- လုပ်ငန်းခွင်ထိခိုက်မှုများ မဖြစ်ပွားစေရေးအတွက် ကြိုတင်ကာကွယ်မှုနှင့် အသိပညာပေးမှု အစီအမံများချမှတ် ဆောင်ရွက်ခြင်း

- လုပ်ငန်းခွင်ဘေးအန္တရာယ်ကင်းရှင်းရေးနှင့် ကျန်းမာရေးဆိုင်ရာအခြေအနေများ တိုးတက်ကောင်းမွန်စေရန် သင်တန်းပို့ချပေးခြင်း

- မီးဘေးလုံခြုံရေးစီမံချက်ရေးဆွဲ၍ ဇာတ်တိုက်လေ့ကျင့်ခြင်း၊ မီးသတ်ပစ္စည်းကိရိယာများအား စနစ်တကျ အသုံးပြုတတ်စေရန် လေ့ကျင့်ပေးခြင်း

- တစ်ကိုယ်ရေသုံး အကာအကွယ်ပစ္စည်းများ ထုတ်ပေးခြင်း

- ဘေးအန္တရာယ်ကင်းရှင်းရေးဆိုင်ရာဘုတ်များ တပ်ပေးခြင်း

- ဘေးအန္တရာယ်ကင်းရှင်းရေး Poster များတပ်ပေးခြင်း

- လုပ်ငန်းခွင်ကို သန့်ရှင်းစွာထားရှိစေခြင်း

- ဆေးသေတ္တာထားရှိခြင်း

- မီးသတ်သင်တန်းပေးခြင်း မှတ်တမ်းပုံများ

- အရေးပေါ်အန္တရာယ်များဖြစ်ပေါ်လာပါက ဆောင်ရွက်မည့်အစီအစဉ် (Chart)

### **မီးဘေးအန္တရာယ်ကြိုတင်ကာကွယ်ရေးအစီအစဉ်**

- မီးဘေးအန္တရာယ်ကာကွယ်ပစ္စည်းများထားရှိခြင်းနှင့် သင်တန်းများစနစ်တကျဆောင်ရွက်ခြင်း

- ချောဆီ/လောင်စာဆီများ ယိုဖိတ်မှုမရှိအောင် စနစ်တကျထားရှိခြင်း

- အရေးပေါ်အခြေအနေအတွက်ဆောင်ရွက်ရန် အစီအမံများချမှတ်ထားခြင်း

- မီးသတ်ရေလှောင်ကန်၊ မီးသတ်ရေငုတ်များ၊ မီးသတ်ပိုက်များထားရှိခြင်း (ပုံများ)

- မီးသတ်ဆေးဘူးများထားရှိခြင်း (ပုံများ)

- မီးအန္တရာယ် အချက်ပေးစနစ်ထားရှိခြင်း (ပုံများ)

- ကြိုတင်ဇာတ်တိုက်လေ့ကျင့်ခြင်း (မှတ်တမ်းပုံများ)

### **(၉).စီမံကိန်းမှ ပတ်ဝန်းကျင်အပေါ်သက်ရောက်နိုင်မှုများ**

#### **စီမံကိန်းကြောင့် ပတ်ဝန်းကျင်နှင့် လူမှုရေးအပေါ် သက်ရောက်နိုင်မှုများ**

- စက်ရုံအားပြန်လည်ပြင်ဆင်မွမ်းမံခြင်းကာလ၌ ဖြစ်ပေါ်နိုင်သော ပတ်ဝန်းကျင်နှင့် လူမှုရေးအပေါ် သက်ရောက်နိုင်မှုများ

- စက်ရုံလည်ပတ်ချိန်ကာလ၌ဖြစ်ပေါ်နိုင်သော ပတ်ဝန်းကျင်နှင့် လူမှုရေးအပေါ်သက်ရောက်နိုင်မှုများ

- စက်ရုံပိတ်သိမ်းချိန်ကာလ၌ ဖြစ်ပေါ်နိုင်သော ပတ်ဝန်းကျင်နှင့် လူမှုရေးအပေါ်သက်ရောက်နိုင်မှုများ

(အဆိုပါစီမံကိန်းကာလများအတွင်း ဖြစ်ပေါ်နိုင်သော သက်ရောက်နိုင်မှုများအား လျော့နည်းသက်သာစေ သည့်နည်းလမ်းနှင့် အစီအမံများကို ရေးဆွဲချမှတ်ခြင်းနှင့် ၎င်းအစီအမံများအား အကောင်အထည်ဖော် ဆောင်ရွက် စောင့်ကြပ်ကြည့်ရှုသည့် အစီအစဉ်များကို အစီရင်ခံစာ၌ရေးဆွဲတင်ပြသွားမည်ဖြစ်ပါသည်။)

**(၁၀).ပတ်ဝန်းကျင် ထိခိုက်မှုဆန်းစစ်သည့် နည်းစနစ် (Impact Assessment Methodology)**

**ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်သည့် နည်းစနစ် (Impact Assessment Methodology)**

**ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းနည်းလမ်း**

**သက်ရောက်မှု၏သိသာထင်ရှားမှု = (ကာလ + အတိုင်းအတာနယ်ပယ် + ပြင်းထန်မှု) x ဖြစ်နိုင်စွမ်း**

**ထိခိုက်မှုအကဲဖြတ်သည့်နည်းစနစ်**

- စီမံကိန်းလေ့လာနေစဉ်အတွင်း လူ၏ ဆောင်ရွက်မှုများကြောင့် ပတ်ဝန်းကျင်ရှိ ရုပ်ဝတ္ထု၊ ပစ္စည်းများ၊ ဇီဝပစ္စည်း၊ ယဉ်ကျေးမှုနှင့် လူမှုစီးပွားများ ပြောင်းလဲသွားခြင်းကို ထိခိုက်မှုဟု အဓိပ္ပါယ် သတ်မှတ်ပါသည်။
- ဒီအီးအေတီ (၁၉၉၈) လမ်းညွှန်ချက်များ၊ အီးအိုင်အေ လုပ်ထုံးလုပ်နည်းများကို အခြေခံ၍ ထိခိုက်မှု အကဲဖြတ်ခြင်းကို ဆောင်ရွက်ပါသည်။ မက်ထရစ်စနစ်၏ လုပ်ငန်းစဉ်များကို ဖော်ပြထားချက်နှင့်သင့်တော်သည့် လုပ်ငန်းစဉ်များကို အသုံးပြု၍ ထိခိုက်မှု အရေးပါမှုကို တိုင်းတာပါသည်။ ယင်းကို အသုံးပြု၍ နောက်ဆက်တွဲဖြစ်ရပ်များ ဖြစ်နိုင်ခြေရှိသည့် နယ်ပယ်များနှင့် ဆက်စပ်နယ်ပယ်နေသည့် ထိခိုက်မှုများကို တိုင်းတာရပါမည်။
- ထိခိုက်မှု၏ အရေးပါမှုကို အောက်ဖော်ပြပါ လိုအပ်ချက်များကို အသုံးပြု၍ ပိုင်းခြားရှာဖွေရပါမည်။

**Significances = | (Extent + Duration+ Magnitude) x Probability|**

ဗဟို	သက်ရောက်မှုဆောင်	
≤20	Negligible	လစ်လျူရှုနိုင်
≤40	Low	နည်းပါး
≤60	Moderate	အသင့်အတင့်
>60	High	မြင့်မား

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(ကုစားမှု မပြုလုပ်မီသက်ရောက်မှုတန်ဖိုးများဖော်ပြခြင်း - Charts and Tables)

(ကုစားမှုပြုလုပ်ပြီးနောက်အကြွင်းအကျန်သက်ရောက်မှု တန်ဖိုးများ ဖော်ပြခြင်း - Charts and Tables)

**(၁၁).ပတ်ဝန်းကျင် စီမံခန့်ခွဲမှု အစီအစဉ်**

ပြုပြင်တည်ဆောက်ရေးကာလ

လေထုအရည်အသွေးနှင့် အနံ့အသက်

(ဖုံမှုန့်နှင့် အမှုန့်များ)

- ဖုံမှုန့်ထခြင်းလျော့နည်းရန် စက်ရုံပြင်ပနေရာများအား ရေဖျန်းရန်၊ ယာဉ်များဘီးရေဆေးရန် နေရာများ ပြုလုပ်ထားရန်
- ပစ္စည်းများအား သေချာစွာသိုလှောင်ရန်
- မြေပေါ်တွင်မီးရှို့ခြင်းများ တားမြစ်ရန်

- ဆောက်လုပ်ရေးလုပ်ငန်းတာဝန်ရှိသူများမှ ပစ္စည်းများသယ်ဆောင်စဉ် ယာဉ်များအား ဖုံးအုပ်သယ်ရန် ညွှန်ကြားထားရန်
- လုပ်ငန်းခွင်အတွင်း ဆောက်လုပ်ရေး စွန့်ပစ်ပစ္စည်းများနှင့် အမှိုက်သရိုက်များအား ပြင်ပသို့ မသယ်ဆောင်မှီ သတ်မှတ်နေရာများတွင် သေချာစွာဖုံးအုပ်ထားရန်
- သယ်ဆောင်စဉ်ကာလအတွင်း ကုန်ထုတ်လမ်းနှင့် စည်ပင်လမ်းတလျှောက် ယာဉ်များမှ ပစ္စည်းများ ဖိတ်ကျနေပါက ဆောက်လုပ်ရေးတာဝန်ခံများမှ ရှင်းလင်းပေးရန်
- စုပုံထားသော မြေသားအားလုံးအား ပျံ့လွင့်မှုမရှိစေရန် ပိုက်များဖြင့် ဖုံးအုပ်ထားရန်

**( အနံ့အသက် )**

- လုပ်ငန်းခွင်အတွင်းမှ အနံ့ရှိသော မြေများတူဖော်ပြီးပါက အတတ်နိုင်ဆုံး အမြန်ဖယ်ထုတ်ရန်
- အမှိုက်ပုံးများဖုံးအုပ်ထားရန်
- အိမ်သာ၊ ရေချိုးခန်းများသန့်ရှင်းစွာထားရန်
- သိုလှောင်ရာနေရာအား လေဝင်/လေထွက် ကောင်းအောင်ဆောင်ရွက်ထားရန်
- အမှိုက်များအား အချိန်မှန် စွန့်ပစ်ရန်

**ရေထုအရည်အသွေး**

**(မြေပေါ်ရေနှင့် မြေအောက်ရေ)**

- လောင်စာဆီ၊ စက်ဆီ/ချောဆီနှင့် အန္တရာယ်ရှိသော ဓာတုပစ္စည်းများအား သတ်မှတ်နေရာများတွင် စနစ်တကျသိုလှောင်ရန်
- အနည်အနှစ်နည်းရန် ဇီဝမိလ္လာကန်သုံးရန်၊ စွန့်ပစ်ရေများအား စွန့်ပစ်ရေသန့်စင်မှု စနစ်မှတစ်ဆင့် စည်ပင်မြောင်းသို့ပို့ရန်
- စွန့်ပစ်အမှိုက်များ ယာယီသိမ်းဆည်းရာတွင် မိုးရေနှင့်အတူစီးဆင်းခြင်း မဖြစ်စေရန်အတွက် အရံအတား/အကာအရံ ပါသော (ပုံး/သိုလှောင်ဧရိယာ) များတွင် စနစ်တကျဖြင့် သိုလှောင်သိမ်းဆည်းရန်

**( စက်မှုဇုန်အတွင်း စည်ပင်ရေမြောင်းသို့ မစွန့်ပစ်မီ ရေပေါ်ဝေနေသော ဆီနှင့် အမဲဆီများ ဖယ်ရှားရန် )**

- ရေနုတ်မြောင်းများအတွင်းသို့ အသုံးပြုပြီးဆီများနှင့် အစိုက်အခဲအမှိုက်များ တိုက်ရိုက်စွန့်ပစ်ခြင်း မပြုလုပ်ရန်
- စွန့်ပစ်ရေထွက်ပေါက်များတွင် အမှိုက်စစ်ဧကားများတပ်ရန်
- ယာဉ်၊ ယန္တရားများအား ဆေးကြောရေ စုဆောင်းသည်စနစ်ပါရှိသည့် သတ်မှတ်နေရာများတွင်သာ ဆေးကြောရန်



- ပန့်များ ပိုက်လိုင်းများမှ hydrotest ပြုလုပ်ပြီး ရေများအတွင်း မသန့်ရှင်းသော/ အဆိပ်အတောက်ဖြစ်နိုင်သောပစ္စည်းများ ပါ/မပါ စစ်ဆေးနိုင်ရန် စုဆောင်း၊ စစ်ဆေးရန်
- အန္တရာယ် ရှိသော ပစ္စည်းများ မတော်တဆဖိတ်စင်မှုဖြစ်ပါက ချက်ခြင်းဖယ်ရှား၊ သန့်စင်ရန်
- လုပ်ငန်းခွင်အတွင်းမှ စီးကျရေများအား အရံအတားများမှတစ်ဆင့် စီးကျစေရန်

### မြေထုအရည်အသွေး

- အစိုင်အခဲစွန့်ပစ်ပစ္စည်းများနှင့် အသုံးပြုပြီး စက်ဆီ/ချောဆီများအား မြေပေါ်သို့တိုက်ရိုက်စွန့်ပစ်ခြင်း/ စုပုံခြင်းများ မပြုလုပ်ရန်
- မြေပြင်မှ တဆင့် မြေထုအတွင်းသို့ စွန့်ပစ်အရည်များစိမ့်ဝင်သွားခြင်းမှ ရှောင်ကြဉ်ရန်
- အန္တရာယ်ရှိ ဓာတုပစ္စည်းများနှင့် လောင်စာဆီများအား အန္တရာယ်ကင်းစွာ ကိုင်တယ်ဆောင်ရွက်ရန် လုပ်ငန်းစဉ်များ ချမှတ်ထားရန်
- လောင်စာဆီနှင့် အန္တရာယ်ရှိဓာတုပစ္စည်းများအား သင့်လျော်မှန်ကန်သော နည်းလမ်းဖြင့် သိုလှောင်ရန်
- စွန့်ထုတ်ရေများ အန္တရာယ်ကင်းစွာ စွန့်ထုတ်နိုင်ရန် လိုအပ်သင့်လျော်သော ရေနှုတ်မြောင်းများ ပြုလုပ်ထားရန်

### ဆူညံနှင့် တုန်ခါမှု

- စက်ကိရိယာများအား အချိန်မှန် ပြုပြင်ထိန်းသိမ်းရန်
- အသံဆူညံသောနေရာတွင် လုပ်သော အလုပ်သမားများအား အကြားအာရုံအကာအကွယ်ပစ္စည်းများ ပေးထားရန်
- ယာဉ်မောင်းများအား ရပ်နားနေစဉ် စက်ပိတ်ရန် ညွှန်ကြားထားရန်
- ပစ္စည်းများရွှေ့ပြောင်း၊ သယ်ဆောင်ရာတွင် သာမန်အလုပ်ချိန်အတွင်းသာဆောင်ရွက်ခွင့်ပြုရန်
- တတ်နိုင်သလောက် အသံငြိမ်စက်ပစ္စည်းများ အသုံးပြုရန်
- ပိုင်ရိုက်ရာတွင် ဒီဇယ်အင်ဂျင်ဖြင့်မောင်းသောတူများအစား ဖိအားသုံး တူများအသုံးပြုရန်
- လိုအပ်ပါက ဆူညံနှုန်းမြင့်သောနေရာတွင် အသံထိန်းအကာအရံများ တပ်ဆင်ရန်
- လုပ်ငန်းခွင်ဧရိယာတွင် စွမ်းအားမြင့်ကိရိယာများအားလုံးကို ဆောက်လုပ်ရေကန်ထရိုက်တာ၏ အသံအမှတ်ပြု ကတ်ပြားများဖြင့် ကပ်ထားရန်
- အလွန်ဆူညံသော/ တုန်ခါမှုများသော လုပ်ငန်းများ မဆောင်ရွက်မီ ဆောက်လုပ်ရေး မန်နေဂျာမှ လုပ်ငန်းကြာမြင့်ချိန်အား ပိုင်ရှင်ထံ အကြောင်းကြားထားပြီး အနီးဝန်းကျင်နှင့် ကြိုတင်ညှိနှိုင်းထားရန်
- ဆောက်လုပ်ရေး လုပ်ငန်းသုံးပစ္စည်း (ပလာယာ၊ ဝက်အူလှည့်၊ ဂွစသဖြင့်) နှင့် သယ်ယူလွယ်သော လျှပ်စစ်သုံးကိရိယာများ( လွန်၊ လွစသဖြင့်) တို့သည် အသံအမှတ်ပြု စက်မှုလုပ်ငန်းသုံးပစ္စည်းထုတ်လုပ်သူမှ ထုတ်သည့် အသံအပြုပစ္စည်းများကို သုံးရမည်ဖြစ်ပြီး အစဉ်ဂရုစိုက် ပြုပြင်ထားရန်

## **စွန့်ပစ်ပစ္စည်းများ စွန့်ပစ်မှု**

### **(အမှိုက်များအား အမျိုးအစားခွဲခြားခြင်း)**

- အမှိုက်များအားစွန့်ပစ်ရာတွင် ငွေပင်လယ်စက်မှုဇုန်ကော်မတီမှ လမ်းညွှန်ချက်အား လိုက်နာပြီး ၎င်းတို့၏ လုပ်ထုံးလုပ်နည်းနှင့် အညီဆောင်ရွက်ရန်

### **(၁) အန္တရာယ်ရှိအမှိုက်**

- ဆီ၊ ဓာတုဗေဒပစ္စည်းများ၊ ဖျော်ရည်များ၊ သုတ်ဆေး၊ အပူကာပစ္စည်းများ၊ မည်သည့် အဆိပ် အတောက် ပစ္စည်းမဆို
- အနီရောင် ပလတ်စတစ်အိတ်ဖြင့်ထည့်ရန်

### **(၂) အန္တရာယ်မရှိအမှိုက်များ**

- အုပ်၊ သဲ၊ ကျောက် အပိုင်းအစများ၊ သတ္တုများ၊ ဝါယာကြိုးများ၊ သစ်တိုသစ်စများ၊ ပလတ်စတစ်၊ ရာဘာ၊ မိလ္လာအညစ်အကြေး၊ စားကြွင်းစားကျန်၊ အမှိုက်သရိုက် စသဖြင့်

### **(အမှိုက်များစွန့်ပစ်ခြင်း)**

- ဘေးအန္တရာယ်မရှိသော အမှိုက်များအား YCDC မှစွန့်ပစ်ရန်၊ ဘေးအန္တရာယ်ရှိသော အမှိုက်များအား သက် ဆိုင်ရာသို့ စွန့်ပစ်ရန်
- အစိုက်အခဲအမှိုက်အားလုံးအား စွန့်ပစ်ရန် စာရင်းပြုစုထားရန်
- အမှိုက်များအား သယ်ယူမည့် အဆင့်များအား ဆောက်လုပ်ရေးတာဝန်ရှိသူမှ စစ်ဆေး၊ အတည်ပြုပေးထား ပြီးဖြစ်ရမည်။ သယ်ဆောင်စဉ်အတွင်း စွန့်ပစ်ပစ္စည်းစီမံခန့်ခွဲရေးမှ “အန္တရာယ်အကဲဖြတ်ခြင်း” ပုံစံနှင့် အညီ ဆောင်ရွက်ရန်

### **(အမှိုက်များအားကိုင်တွယ်ဆောင်ရွက်ခြင်း)**

- ကြီးမားလေးလံသော ဆောက်လုပ်ရေးအမှိုက်များအတွက် သင့်လျော်သော ပုံများထားပေးရန်
- ဆောက်လုပ်ရေးလုပ်ငန်းခွင်အတွင်း သန့်ရှင်းရေးအဖွဲ့ထားပြီး အချိန်မှန်ရှင်းစေရန်နှင့် လုပ်ငန်းခွင်တဝိုက် တွင် အမှိုက်သရိုက်များ စွန့်ပစ်ခြင်းမှ တားမြစ်ရန်
- အလုပ်သမားများအား အန္တရာယ်ရှိအမှိုက်များ ဘေးအန္တရာယ် ကင်းရှင်းစွာကိုင်တွယ်နိုင်ရေး သင်တန်းများ ပို့ချပေးပြီး နားလည်စေရန်

### **လုပ်ငန်းခွင်ကျန်းမာရေးနှင့် ဘေးအန္တရာယ်ကင်းရှင်းရေး**

- ပြည်သူ့ကျန်းမာရေး သတ်မှတ်ချက်စံနှုန်းအတိုင်း ကိုက်ညီသည့် သောက်သုံးရေးရရှိရန် ရေအရည်အသွေး အား တိုင်းတာစစ်ဆေးရမည်

- အပူဒဏ်မှ ကာကွယ်ရန် - သန့်ရှင်းသော သောက်ရေပိုက်များ (သို့) ရေဗူးများ လုံလောက်အောင် ပေးထားပါ

- အလုပ်သမားနားနေဆောင်များ ဆောက်ထားရန်၊ နေရောင်အောက်တွင် အချိန်ရှည်စွာ လုပ်ကိုင်ရမည်ဆိုပါက အလုပ်သမားများအား အနားပေးပါ။ ဆောက်လုပ်ရေးလုပ်သား အမျိုးသား၊ အမျိုးသမီးများအတွက် သီးခြားမိလ္လာစနစ် အလုံအလောက်ထားရှိရမည်

**(ဘေးအန္တရာယ်ကင်းရှင်းရေး/အရေးပေါ်အစီအစဉ်)**

- ဆေး၊ ဆေးပစ္စည်း ပြည့်စုံစွာပါရှိသော ရှေးဦးသူနာပြုသေတ္တာရှိရမည်။ ဝန်ထမ်းများအား ရှေးဦးသူနာပြုသင်တန်း ပို့ချပေးထားရမည်

- ဆောက်လုပ်ရေးလုပ်ငန်းခွင်အတွင်းရှိ ကန်ထရိုက်တာနှင့် ဝန်ထမ်းအားလုံး ဘေးအန္တရာယ်ကင်းရှင်းရေးသင်တန်းပို့ချ ထားရမည်

- အန္တရာယ်ရှိပစ္စည်းများအားကိုင်တွယ်ဆောင်ရွက်ရာတွင် လေ့ကျင့်သင်ကြားပြီး တာဝန်ရှိသူကိုတာ ဆောင်ရွက်စေရမည်

- သက်ဆိုင်ရာ MSDS များ နေရာတိုင်းတွင် အလွယ်တကူထားပါ။ အန္တရာယ်ရှိလုပ်ငန်းခွင်နေရာများတွင် အသိပေးသင်္ကေတများချိတ်ဆွဲထားပါ

- အဖုံဖွင့်ထားသော ရေမြောင်း၊ လူဆင်းပေါက်များ၊ မြေတူးသည်နေရာများအား ထင်ထင်ရှားရှား ပိုင်းခြားသတ်မှတ်ထားပါ

- လုပ်ငန်းခွင်အတွင်း မီးသတ်ဆေးဘူး၊ ပိုက်၊ ရေပုံများအား မြင်လွယ်သည့်နေရာတွင် အလွယ်တကူ အသုံးပြုနိုင်ရန် ပြုလုပ်ထားပါ

- မိုင်နှုန်းသတ်မှတ်ချက်အားလုံးကို လိုက်နာရန်

- နယ်မြေရဲစခန်း/ လူမှုကယ်ဆယ်ပေးအဖွဲ့စသည်တို့အား အရေးပေါ်ဆက်သွယ်ရန် ဖုန်းနံပါတ်များ ထင်ထင်ရှားရှား နေရာအနှံ့ရေးထားရန်

**(ကူးစက်ရောဂါထိန်းချုပ်ရေး)**

- အိမ်သာများ၊ စာသောက်ခန်းနှင့် ယာယီရုံးခန်းတို့အား အချိန်မှန်သန့်ရှင်းရေးပြုလုပ်ရန်

- အမှိုက်ပုံများအား ယင်နှင့် ပိုးမွှားများ မပေါက်ပွားစေရန်ဖုံးအုပ်ထားပါ။ ခြင်မပေါက်ဖွားစေရန် ရေဝပ်နေရာများမရှိအောင် ဂရုစိုက်ပါ

- ကန်ထရိုက်တာများအား တကိုယ်ရေသန့်ရှင်းရေးနှင့် လူမှုရေးဆိုင်ရာထိတွေ့မှုကဲ့သို့သော (ခေါင်းစည်းတပ်ခြင်း၊ လက်မကြာခဏ ဆေးခြင်း) ကြိုတင်ကာကွယ်သည့် အလေ့အထများရှိနေရန် ပညာပေးပါ

## **သက်ဆိုင်ရာနယ်မြေကျန်းမာရေးနှင့် ဘေးအန္တရာယ် ကင်းရှင်းရေး**

### **(သယ်ယူပို့ဆောင်ရေး)**

- ဆောက်လုပ်ရေးပစ္စည်းများ သယ်ဆောင်သည့် ယာဉ်မောင်းများသည် ဘေးအန္တရာယ်ရှိပစ္စည်းများနှင့် ကြီးမားသော စက်ပစ္စည်းများ၊ ကုန်များအား သယ်ယူပို့ဆောင်ရန်အတွက် သတ်မှတ်ထားသော ကုန်တင်ယာဉ်များကိုသာ အသုံးပြုရန်
- ယာဉ်ရပ်နားရန် နေရာအစီအစဉ်ထားရှိရန်
- ယာဉ်သုံးစွဲမှုစနစ် အစီအစဉ်ထားရန်
- လမ်းအန္တရာယ်အချက်ပြသကော်တများနှင့် လမ်းကြောင်းစီစဉ်ပြီးရှိရန်
- ယာဉ်မောင်းသည် ယာဉ်မောင်းလိုင်စင်ရှိရမည်ဖြစ်ပြီး ငွေပင်လယ်စက်မှုဇုန်နှင့် လုပ်ငန်းခွင်အတွင်း မိုင်နှုန်းကန့်သတ်ချက်များလိုက်နာဆောင်ရွက်ရန်
- ဆောက်လုပ်ရေးသုံးပစ္စည်းများအား လုံခြုံစွာဖုံးအုပ်၍ သယ်ဆောင်ရန်

### **(ကျန်းမာရေး)**

- ဖုံမထရန်ရေဖြန်းပါရန်
- စက်ယန္တရားများအား အချိန်မှန် ပြုပြင်ထိန်းသိမ်းပါရန်
- ဆူညံသော ပြုပြင်ဆောက်လုပ်ရေးလုပ်ငန်းများအား သာမန် လုပ်ငန်းချိန်ဖြစ်သော (မနက် ၉:၀၀ နာရီမှ ညနေ ၆:၀၀ နာရီ) အတွင်းသာဆောင်ရွက်ခွင့်ပြုရန်

### **(ကူးစက်ရောဂါ)**

- ဆောက်လုပ်ရေး အလုပ်သမားများအား လုပ်ငန်းခွင်မဝင်မီ ကျန်းမာရေးနှင့် တကိုယ်ရေသန့်ရှင်းရေး နားလည်သဘောပေါက်ရန် ပြောကြားရန်
- သက်ဆိုင်ရာနယ်မြေဧရိယာ၏ အခါအားလျော်စွာထုတ်ပြန်ထားသော လမ်းညွှန်ချက်များကို လိုက်နာဆောင်ရွက်ရန်

## **လုပ်ငန်းလည်ပတ်ရေးကာလ**

### **လေထုအရည်အသွေးနှင့် အနံ့အသက်**

#### **(VOC ထုတ်လွှတ်မှုထိန်းချုပ်ရေး)**

- ရောစပ်ကန်များအတွင်းမှ VOC ထုတ်လုပ်မှုထိန်းချုပ်ရန် အဖုံးဖွင့်ကန်များအစား အဖုံးပါကန်များ အသုံးပြုရန်၊ ထိုကဲ့သို့ပြုလုပ်ခြင်းဖြင့် VOC ထုတ်လွှတ်မှု ၉၀ ရာခိုင်နှုန်းအထိ လျှော့ချနိုင်သည်

- ပစ္စည်းကိရိယာများအားသန့်စင်ရာတွင် အသုံးပြုသည့် ဓာတုဗျော်ရည်မှ VOC ထုတ်လွှတ်ခြင်းကို လျှော့ချရန်အတွက် သန့်ရှင်းရေးပြုလုပ်မှု အကြိမ်ရေလျှော့ခြင်း (သို့) ဓာတုဗျော်ရည်အသုံးပြုမှုပမာဏလျှော့ခြင်းကို ပြုလုပ်ရန်
- သန့်ရှင်းရေးပြုလုပ်ရမည့် အကြိမ်ရေလျှော့နိုင်ရန်အတွက် သုတ်ဆေးထုတ်လုပ်မှု အသုတ်များအား အရောင်အနုမှ အရင့် အစီအစဉ်အရ ထုတ်လုပ်ရန် စီစဉ်ရန်
- အသုံးပြုပြီးဗျော်ရည်များအား ဖိအားလျှော့ဘားပါသည် အလုံပိတ်ကန်များတွင် စုဆောင်းလိုလှောင်ရန်
- အမြောက်အများသိုလှောင်ထားသော ဩဂဲနစ်ဒြပ်ပေါင်းများနှင့် ဗျော်ရည်များမှ လွတ်ထွက်လာမည့် VOC များအား ဖိအားလျှော့ဘားပါသည့်အလုံပိတ်ကန်များတွင်သိုလှောင်ရန်
- VOC အငွေ့ပျံခြင်းမှ ကာကွယ်ရန် ဗျော်ရည်များအား အေးမြသော အပူချိန်တွင်ထားရန်
- ဗျော်ရည်အား သွန်လောင်းထည့်ခြင်းအစား ပန်းများဖြင့် တနေရာမှ တနေရာပို့ရန်
- VOC ထုတ်လွှတ်မှုများကို ဖယ်ရှားရန် activate ကာဗွန်မှုန်များဖြင့် စုပ်ယူသည့်စက်တပ်ဆင်ရန်
- ယင်းစက်ခေါင်းတိုင်မှ ထွက်သည့် အငွေ့ထုတ်လွှတ်မှုအားပုံမှန်စောင့်ကြည့်စစ်ဆေးရန်
- ထုတ်လုပ်ရေးလုပ်ငန်းခွင်ရှိဝန်ထမ်းများအား နှာခေါင်းစည်းများ၊ အသက်ရှူကိရိယာပါ မျက်နှာဖုံးများ စသည့် တကိုယ်ရည်သုံး အကာအကွယ်ပစ္စည်းများ (PPE) များထုတ်ပေးရန်
- လုပ်ငန်းခွင်အတွင်းနှင့် ဓာတုပစ္စည်းများသိုလှောင်ရာနေရာများအား လေဝင်/လေထွက်ကောင်းမွန်စေရန် သင့်တော်သော စနစ်များ တပ်ဆင်ပေးရန်

**(ဖုံမှုန့်များနှင့် အမှုန်အမွှားများ ထုတ်လွှတ်မှုထိန်းချုပ်ရေး)**

- ထုတ်လုပ်မှုနေရာတဝိုက်တွင် အမှုန်ဖမ်းစနစ်တပ်ဆင်ရန်
- နေရာအလိုက်လေဝင်လေထွက်ကောင်းမွန်စေသည့် အိပ်ဇောစနစ်များတပ်ဆင်ရန်
- စက်ရုံပြင်ပ ဖုံမထရန် ရေဖျန်းရန်
- စက်ရုံအတွင်းနှင့် အဝန်းအဝိုင်းအတွင်းပစ္စည်းများ စနစ်တကျထားရန်
- ထုတ်လုပ်မှုဆောင်ရွက်သူ ဝန်ထမ်းများအားလုံး နှာခေါင်းစည်းများသေချာစွာတပ်ဆင်ရန်
- အမှုန်ဖမ်းစက် စနစ်အတွင်းရှိ အမှုန်ဖမ်းအိပ်များအား အချိန်မှန်စစ်ဆေးပြီး ပြုပြင်ထိန်းသိမ်းမှု ဆောင်ရွက်ရန်

**(အနံ့အသက်ထိန်းချုပ်မှု)**

- စားသောက်ခန်း၊ မိလ္လာများနှင့် အမှိုက်မိုးများအား အနံ့အသက်ဆိုးများထွက်ခြင်းမှ လျှော့ချရန် ကောင်းမွန်စွာထိန်းသိမ်း၊ ထားသို့၊ သန့်ရှင်းရေး ပြုလုပ်သည့် အလေ့အကျင့်ပြုလုပ်ရန်
- ကုန်ထုတ်လုပ်သည့်နေရာနှင့် ရုံးခန်းအတွင်း ပစ္စည်းများအား သန့်ရှင်းစွာထားရန်
- အနံ့ပြင်းပြီး အငွေ့ပျံလွယ်သော ဓာတုဗေဒသန့်ရှင်းရေး ပစ္စည်းများသုံးခြင်းမှ ရှောင်ရန်



- နှစ်လိုဖွယ်မှရှိသော အနံ့များထွက်ခြင်းမှ ကာကွယ်ရန် ဖျော်ရည်များ သိုလှောင်ရာနေရာနှင့် ထုတ်လုပ်မှု ဆောင်ရွက်သော နေရာများအား လုံလောက်သော လေဝင်/လေထွက်နှင့် ကျန်းမာရေးစနစ်များ ထားရှိရန်
- ဩဂုတ်နှစ်အမှိုက်များအား အချိန်မှန်စွန့်ရန်

## ရေထုအရည်အသွေး

### (မြေပေါ်တင်ကျန်သောရေစီမံခန့်ခွဲမှု)

- မိုးရွာခြင်း၊ ရေဆေးခြင်းများမှ မြေပေါ်တင်ကျန်သော ရေများအား ရေမြောင်းအတွင်းသို့ စွန့်ထုတ်ရန်
- ယင်းမြောင်းထွက်ပေါက်တွင် အမှိုက်များ အပြင်ပါမသွားစေရန် အမှိုက်စစ် ဧကာများတပ်ဆင်ရန်

### (မိလ္လာအညစ်အကြေးစွန့်ထုတ်မှု ထိန်းချုပ်ခြင်း)

- စွန့်ပစ်ရည်အားလုံးတွင် ပေါလောပေါ်နေသော အစိုက်အခဲများ အနည်ထိုင်စေရန် မိလ္လာကန်များ တပ်ဆင်ရန်
- ရေနုတ်မြောင်းများနှင့် ရေအိုင်၊ ရေကန်များအတွင်းသို့ အိမ်တွင်းသုံး အမှိုက်များ စွန့်ပစ်ခြင်းမှ တားမြစ်ရန်
- ရေနုတ်မြောင်းနှင့် စွန့်ပစ်ရည်စွန့်ထုတ်ရာ ထွက်ပေါက်များတွင် အမှိုက်စစ်ဧကာများတပ်ဆင်ရန်
- စွန့်ပစ်ရည်များမှ ဖယ်ထားသော ရေပေါ်ဆီနှင့် အမဲဆီများအား ပုံးများတွင်စုထားရန်
- စက်ပစ္စည်းနှင့် ယာဉ်များအားစွန့်ပစ်ရေစုဆောင်းမှုစနစ်ပါရှိသည့် သတ်မှတ်နေရာများတွင်သာ ရေဆေးခြင်းပြုလုပ်ရန်

### (အန္တရာယ်ရှိဓာတုပစ္စည်းများစွန့်ပစ်ခြင်းအားထိန်းချုပ်ခြင်း)

- လောင်စာဆီ၊ စက်ဆီ/ချောဆီနှင့် အန္တရာယ်ရှိဓာတုဗေဒကျန်းကျန်းများအား သတ်မှတ်နေရာတွင် စနစ်တကျသိုလှောင်ရန်
- အသုံးပြုပြီးဆီနှင့် အန္တရာယ်ရှိဓာတုပစ္စည်းအမှိုက်များအား ရေနုတ်မြောင်းအတွင်း တိုက်ရိုက် စွန့်ပစ်ခြင်းမပြုရန်
- အသုံးပြုပြီး စက်ဆီ/ချောဆီများစွန့်ပစ်ရာတွင် MSDS ဘေးအန္တရာယ်ကင်းရှင်းရေး အကြံပြုချက်များနှင့် ဓာတုပစ္စည်းထိန်းချုပ်မှု အဖွဲ့၏ ပတ်ဝန်းကျင်ဆိုင်ရာ လမ်းညွှန်မှုကို လိုက်နာရန်
- အန္တရာယ်ရှိပစ္စည်းများ မတော်တဆ ဖိတ်စင်မှုရှိခဲ့ပါက ညစ်ညမ်းသည့်အရာများ ရေနုတ်မြောင်းအတွင်း မပါသွားစေရန် လိုအပ်သည့် အရေးယူဆောင်ရွက်မှုများ ချက်ချင်းပြုလုပ်ရန်

## ဆူညံသံနှင့် တုန်ခါမှု

### (လုပ်ငန်းခွင်အတွင်းဆူညံသံထွက်ပေါ်မှုထိန်းချုပ်ခြင်း)

- ဆူညံနှုန်းများသောနေရာတွင် လုပ်ကိုင်ရသော ဝန်ထမ်းများအား အလှည့်ကျလုပ်ကိုင်စေရန်
- စက်ပစ္စည်းများအား အချိန်မှန်ပြုပြင်ထိန်းသိမ်းရန်၊ အသံငြိမ်ပစ္စည်းများသုံးရန်

- ဆူညံသံများသော နေရာတွင်လုပ်ကိုင်ရသော လုပ်သားများအား နားကြပ်၊ နားဖုံးများအား ထုတ်ပေးထားရန်၊ တုန်ခါမှုများသော စက်ပစ္စည်းများအတွက် အခုအခံထူထူများထည့်ပေးထားရန်

**(ပတ်ဝန်းကျင်တွင် ဆူညံသံထွက်ပေါ်ခြင်းထိန်းချုပ်ရန်)**

- ယာဉ်များမောင်းနှင်မှုမပြုလျှင် စက်ပိတ်ထားရန်
- သာမန်အလုပ်ချိန် (နံနက် ၈ နာရီမှ ၅ နာရီ)အတွင်းသာ ဆူညံသော လုပ်ငန်းများဆောက်ရွက်ရန်
- ဆူညံသံအဆင့်အား သတ်မှတ်ထားသည့်အတိုင်း စောင့်ကြည့်ရန်
- စောင့်ကြည့်စစ်ဆေးရာမှရသည့် ဆူညံသံအဆင့်အား စီမံခန့်ခွဲမှုထံ အစီရင်ခံတင်ပြ၍ မှတ်တမ်းတင်ထားရန်
- အခါအားလျော်စွာ ဆူညံသံနှင့် ပတ်သက်၍ ပြည်သူထံအသိပေးရန်
- အကယ်၍ ဝန်ထမ်းအား၏ နှစ်စဉ်အကြားအာရုံ စမ်းသပ်မှု ရလဒ်များကြောင့်သော်၎င်း၊ အသံနှင့် ပတ်သတ်၍ လူထုမှ မကျေနပ်ချက်တစ်ခုခု တင်ပြလာလျှင်သော်၎င်း၊ EMP အားပြန်လည်သုံးသပ်၍ ပြုပြင်မွန်းမံမှုများပြုလုပ်ရန်

**စွန့်ပစ်ပစ္စည်းများ စွန့်ပစ်မှုနှင့် မြေထုအရည်အသွေး**

**(အမှိုက်စွန့်ပစ်မှုထိန်းချုပ်ခြင်း)**

- မြေပြင်ပေါ်တွင်စွန့်ပစ်ဆီအမှိုက်များ
- အသုံးပြုပြီး စက်ဆီ/ချောဆီများ စွန့်ပစ်ပစ္စည်းများ တိုက်ရိုက်ပုံထားခြင်း မပြုလုပ်ရန်
- မြေပေါ်မှတဆင့် စွန့်ပစ်အရည်များ မြေအတွင်းစိမ့်ဝင်မသွားစေရန်
- အထွေထွေအမှိုက်များ စွန့်ပစ်ရန် လုံလောက်သင့်တော်သောနေရာနှင့် ပစ္စည်းများပုံပိုးထားရန်
- အသုံးပြုပြီးဆီများနှင့် အန္တရာယ်ရှိဓာတုပစ္စည်းများအား သီးခြားနေရာသတ်မှတ်၍ ခွဲခြားထားရန်

**(အန္တရာယ်ဓာတုပစ္စည်းများ ဖိတ်စင်မှု ထိန်းချုပ်ရန်)**

- အန္တရာယ်ရှိဓာတုပစ္စည်းများနှင့် လောင်စာများအား သင့်လျော်သော နည်းလမ်းများဖြင့် သိုလှောင်ထားရန်
- ကိုင်တွယ်နည်းစနစ်များနှင့် သယ်ယူပို့ဆောင်ရေးစနစ်များအား ဝန်ထမ်းများ သိရှိစေရန် လိုက်နာစေရန်
- ဓာတုဗေဒပစ္စည်းများ ဘေးအန္တရာယ်ကင်းစွာ ကိုင်တွယ်နည်းများအား စနစ်တကျလိုက်နာရန် လိုအပ်ကြောင်း ဝန်ထမ်းများအား နားလည် သဘောပေါက်ထားစေရန်
- အန္တရာယ်ရှိ ဓာတုပစ္စည်းများ ယိုစိမ့်ခြင်းမှ ကာကွယ်ရန် သိုလှောင်ရာအနီး အုပ်ဘောင်ပြုလုပ်ထားရန်
- ဓာတုပစ္စည်းနှင့် လောင်စာဆီ ဖိတ်စင်မှုများအတွက်သန့်ရှင်းရေးသုံးပစ္စည်း အစုံအလင်ထားရှိရန်
- မတော်တဆယိုစိမ့်မှုဖြစ်ပါက ဖြစ်ပွားရာနေရာအား စနစ်တကျဆောင်ရွက်ရန် သက်ဆိုင်ရာ ဝန်ထမ်းများအား လေ့ကျင့်သင်ကြားထားပေးရန်
- အန္တရာယ်ဓာတုပစ္စည်းသိုလှောင်ရာနေရာတွင် MSDS အားလုံးထားရှိရန်

- ၎င်းညွှန်ကြားချက်များအတိုင်း စနစ်တကျလိုက်နာဆောင်ရွက်ရန်
- ကန်များဆေးကြောရာတွင် ဖျော်ရည်အမြောက်အများသုံးပြုရသော်လည်း ယင်းတို့အားပြန်လည် စုဆောင်းပြီး ရေလုပ်ငန်းသုံး သုတ်ဆေးဖျော်စပ်အသုံးပြုရာတွင် ထပ်မံအသုံးပြုသည် ၊ သို့ဖြစ်ပါ၍ စွန့်ပစ်ဖျော်ရည် ထွက်ရှိခြင်းမရှိပါ

**(စွန့်ပစ်ပစ္စည်းများအား ခွဲခြားခြင်း)**

**က. စားကြွင်းစားကျန်**

- သြဂဲနစ်စွန့်ပစ်ပစ္စည်းများအား YCDC (လှိုင်သာယာအနောက်ပိုင်းမြို့နယ်) သို့ပို့ဆောင်ရန်

**ခ. အန္တရာယ်မရှိစွန့်ပစ်ပစ္စည်း**

- အထွေထွေအမှိုက်အားလုံးအား သင့်လျော်သော အမှိုက်ပုံးများတွင်စွန့်ပစ်၍ သင်လျော်သော အဖုံးများ ဖုံးအုပ်ထားရန်
- ငွေပင်လယ်စက်မှုဇုန်ကော်မတီ၏ လမ်းညွှန်ချက်များနှင့် အညီ စည်းမျဉ်းစည်းကမ်းများလိုက်နာ၍ အမှိုက်များ စွန့်ပစ်ရန်
- အန္တရာယ်မရှိအမှိုက်များအား “အန္တရာယ်မရှိ အမှိုက်” ဟု တံဆိပ်များကပ်ရန်
- အန္တရာယ်မရှိအမှိုက်များအား စွန့်ပစ်ပစ္စည်းပြန်လည် အသုံးပြုသူများထံရောင်းချရန် (သို့) YCDC လှိုင်သာယာအနောက်ပိုင်း မြို့နယ်သို့စွန့်ပစ်ရန်
- တတ်နိုင်သရွေ့ ပြန်လည်သုံးစွဲခြင်း၊ ထပ်မံပြုပြင်ပြောင်းလဲခြင်းများ ပြုလုပ်ရန်

**ဂ. အန္တရာယ်ရှိ စွန့်ပစ်ပစ္စည်း**

- “အန္တရာယ်ရှိအမှိုက်များ” ဟု ထင်ရှားစွာရေထိုးထားသော လုံခြုံသည့် ထည့်စရာ (သို့) ကန်များအတွင်း လုံခြုံစွာစွန့်ပစ်ရန်
- အန္တရာယ်ရှိ စွန့်ပစ်ပစ္စည်းများအားသက်ဆိုင်ရာမှ သတ်မှတ်ခွင့်ပြုသည် အဖွဲ့အစည်းများနှင့်သာ ဆောင်ရွက်ရန်
- အမှိုက်များကို အလုပ်ခွင်အတွင်းသီးခြားသတ်မှတ်နေရာများတွင် ကောင်းမွန်စွာသိုလှောင်ထားရန်

**(လေ့ကျင့်သင်တန်းပေးခြင်း)**

- အန္တရာယ်ရှိအမှိုက်များကိုတွယ်ဆောင်ရွက်စဉ် ဘေးအန္တရာယ်ကင်းစွာဆောင်ရွက်ရမည့်နည်းလမ်းများ နားလည်သဘော ပေါက်ရန် သင်ထားပေးရမည်၊ စွန့်ပစ်သည့်ရက်နှင့် ပမာဏအားလုံးကို မှတ်တမ်းထားရန်

## လုပ်ငန်းခွင်ကျန်းမာရေးနှင့် ဘေးအန္တရာယ်ကင်းရှင်းရေး

### (လုပ်ငန်းခွင်အခြေအနေ)

- ပစ္စည်းများကိုင်တွယ်ရာတွင် အခါအားလျော်စွာအထောက်အကူပြုပစ္စည်းများ အသုံးပြု၍ ဆောင်ရွက်ရန်
- ကြမ်းပြင်အား မချောစေသည့် ဆေးသုတ်ထားရန်နှင့် ချော်နိုင်သည့် နေရာမှန်သမျှ သတိပေး ဆိုင်းဘုတ် တပ်ထားရန်
- ဝန်းထမ်းများအားလုံး အန္တရာယ်ကင်းဖိနပ်၊ လက်အိတ်၊ ဦးထုတ်နှင့် မျက်လုံးအကာမျက်မှန်ကဲ့သို့ လိုအပ်သည့် PPE များ ဝတ်ဆင်စေရန်
- ကျန်းမာရေးနှင့် ညီညွတ်သော စားသောက်ဆိုင်၊ မီးဖိုဆောင်နှင့် စားသောက်ရန်နေရာများစီစဉ်ပေးရန်
- သန့်ရှင်းရေးကင်း၍ လုံလောက်သော သောက်သုံးရေထားရှိရန်၊ သန့်စင်ခန်း/အိမ်သာ အလုံအလောက် ထားရှိရန်
- လုပ်ငန်းခွင်ပတ်ဝန်းကျင်တွင် သစ်ပင်ပန်းမံများ ထားရှိရန်
- နှစ်စဉ်ကျန်းမာရေးစစ်ဆေးပေးခြင်းကဲ့သို့သော ကျန်းမာရေးစောင့်ရှောက်မှု စနစ်ရှိရန်

### (သင်တန်းများလေ့ကျင့်သင်ကြားပေးခြင်း)

- အန္တရာယ်ကင်းစွာလုပ်ကိုင်မှုနည်းလမ်းများ လေ့ကျင့်သင်ကြားပေးရန်
- စက်ကိရိယာများအား စနစ်တကျ ကိုင်တွယ်သုံးစွဲရန် အန္တရာယ်ရှိ ဓာတုပစ္စည်းများကိုင်တွယ်မှု သင်တန်း ပေးရန်
- အထွေထွေဘေးအန္တရာယ်ကင်းရှင်းရေးဆိုင်ရာ စည်းမျဉ်းများသင်တန်းများပေးရန်
- ကျန်းမာရေးနှင့် ပတ်သက်၍ နားလည်သဘောပေါက်မှု စကားဝိုင်းနှင့် တစ်ကိုယ်ရည်သန့်ရှင်းရေးဆိုင်ရာ အသိပညာပေးရန်

### (အရေးပေါ်ရှေးဦးသူနာပြုနည်းလမ်းများ)

- မတော်တဆထိခိုက်မှု (သို့) ဖျားနာမှုဖြစ်လာပါက အရေးပေါ်အခြေအနေတုန့်ပြန်မှုအဖွဲ့သည် ရှေးဦးသူနာပြုနည်းလမ်းများအား အဆင်သင့်ပြင်ဆင်ထားရမည်
- ၁. လိုအပ်သည့် PPE များဝတ်ဆင်ရန်
- ၂. အရေးပေါ်အခြေအနေအားစစ်ဆေးရန်
- ၃. ထိခိုက်သူအား လိုအပ်သည့် အရေးပေါ်ဆောင်ရွက်မှုများ ပြုလုပ်ပေးပါ။ အသက်မရှုတော့ပါက CPR ပြုလုပ်ပေးခြင်း
- ၄. ၉၁၁ ကဲ့သို့ အရေးပေါ်ဆက်သွယ်ပါ

၅. ဖြစ်ပျက်မှု သတင်းအချက်များရယူပြီး EHS မန်နေဂျာထံသတင်းပို့ပါ အမည်/ထိခိုက်မှုအမျိုးအစား/ ဖြစ်ပျက်မှုအမျိုးအစား/ ဖြစ်ပျက်သည့် နေရာနှင့်အချိန်/ ရှေးဦးသူနာပြုအဖွဲ့မှ မည်ကဲ့သို့ ကုသပြုစုပေးထားသည် စသည်ဖြင့်

**သက်ဆိုင်ရာ နယ်မြေကျန်းမာရေးနှင့် ဘေးအန္တရာယ်ကင်းရှင်းရေး**

**(ဘေးအန္တရာယ်ကင်းရှင်းရေး)**

- ယာဉ်မောင်းအားလုံးသည် ဘေးအန္တရာယ်ကင်းရှင်းရေးဆိုင်ရာ နားလည်သိရှိသူဖြစ်ရမည်
- လမ်းမကြီးအသုံးပြုခြင်းအား ယာဉ်အသွားအလာများချိန်ရှောင်ရန်
- အန္တရာယ် ကုန်ပစ္စည်းများ သယ်ယူပို့ဆောင်ရာတွင် သတ်မှတ်ထားသော ပို့ဆောင်ရေးယာဉ်များသာ အသုံးပြုရန်
- ယာဉ်များအား သတ်မှတ်လမ်းကြောင်းဖြင့် သွားစေသည့်စနစ်ကျင့်သုံးပါ။ ယာဉ်ရပ်နားရန်နေရာ အလုံအလောက်ထားပါ

**(လေထုညစ်ညမ်းမှု)**

- စက်ရုံဝန်းကျင်တွင်ထွက်ပေါ်နိုင်သည့် ဖုန်မှုန့်များနှင့် လေတွင်လွင့်မျောအစုဖွဲ့နိုင်သည့် အမှုန်အမွှားများ အား ရေဖြန်းခြင်း လျော့ပါးအောင်ပြုလုပ်ပါ
- ကုန်ကြမ်းများသယ်ယူပို့ဆောင်စဉ်ယာဉ်များအား လုံခြုံစွာဖုံးအုပ်စေရန်
- လေထုညစ်ညမ်းမှုစီမံခန့်ခွဲရေးစီမံချက်အားတိကျစွာလိုက်နာရန်

**(ရေထုညစ်ညမ်းမှု)**

- ရေထုညစ်ညမ်းမှု စီမံခန့်ခွဲမှုအစီအစဉ်အားတိကျစွာလိုက်နာပါ
- စွန့်ပစ်ရေ၏ အရည်အသွေးအား အချိန်မှန် စောင့်ကြည့်စစ်ဆေးပါ

**(ပတ်ဝန်းကျင်ဆူညံမှု)**

- ညအချိန်တွင် ဆူညံမှုဖြစ်စေသော လုပ်ငန်းများဆောင်ရွက်ခြင်းမှ ရှောင်ကျဉ်ရန်

**(ကူးစက်ရောဂါ)**

- ထိတွေ့မှုအပေါ်တုန့်ပြန်မှု၊ တစ်ကိုယ်ရည်သန့်ရှင်းရေး၊ လူမှုရေးထိတွေ့မှုများကို နားလည်သဘောပေါက်ပြီးသင့်လျော် သည့်ကြိုတင်ကာကွယ်မှုများဆောင်ရွက်နိုင်သည့်နည်းလမ်းများအား ဝန်ထမ်းများနားလည်စေရန်ပညာပေးပြောကြား ထားရန်

**(လူမှုရေးဆိုင်ရာအပေါ်သက်ရောက်မှုစီမံခန့်ခွဲခြင်း)**

- ဒေသခံနယ်မြေအတွင်း လူမှုစီးပွားရေးအပေါ်ဆိုးကျိုးသက်ရောက်မှု နည်းပါးစေပြီး အကျိုးပိုမို ဖြစ်ထွန်းစေရန်

- ကုမ္ပဏီ CSR ရန်ပုံငွေလျာထားရန်
- ယင်း CSR ရန်ပုံငွေအား ပညာသင်ထောက်ပံ့ကြေးပေးခြင်း၊ ပညာရပ်ဆိုင်ရာ သင်တန်းပို့ချခြင်း
- ရပ်ကွက်ကျေးရွာဖွံ့ဖြိုးတိုးတက်ရေးအစီအစဉ်နှင့် လုပ်ငန်းခွင်ဆိုင်ရာ သင်တန်းအစီအစဉ်များကဲ့သို့သော လုပ်ငန်းများအတွက် အသုံးပြုရန်

**(စီမံကိန်းဝန်ထမ်းများနှင့် ဒေသခံများအကြား ပဋိပက္ခမဖြစ်စေရန် ထိန်းချုပ်ခြင်း)**

- ဒေသခံများအား ပြည်တွင်းအလုပ်သမားလိုအပ်ချက်အတွက် ခန့်ထားသည့် မူဝါဒကျင့်သုံးရန်
- စက်ရုံအလုပ်သမားများနှင့် ဒေသခံများ ထိတွေ့ရင်းနှီးမှုရှိစေရန် လူထုတွေ့ဆုံပွဲများ အခါအားလျော်စွာ ဆောင်ရွက်ပေးရန်
- ပြည်တွင်း/ပြည်ပ အလုပ်သမားအားလုံးအား ဒေသဆိုင်ရာယဉ်ကျေးမှုလေ့ထုံးစံများ နားလည်သဘောပေါက်ရန် သင်ကြားပို့ချရန်

**(ယာဉ်ကြွေးကျပ်တည်းမှုအားထိန်းချုပ်ရန်)**

- ယာဉ်မောင်းအားလုံးဘေးအန္တရာယ်ကင်းရှင်းရေး သင်တန်းတက်ပြီးဖြစ်ရန်
- လမ်းမကြီးအသုံးပြုခြင်းအားယာဉ်အသွားအလာများချိန်ရှောင်ရန်
- အန္တရာယ်ရှိကုန်ပစ္စည်းများသယ်ယူပို့ဆောင်ရာတွင်သတ်မှတ်ထားသော ပို့ဆောင်ရေးယာဉ်များသာ အသုံးပြုရန်
- ယာဉ်ရပ်နားရန် နေရာအလုံအလောက်ထားရှိရန်၊ ယာဉ်များအား သတ်မှတ်လမ်းကြောင်းဖြင့် သွားစေသည့် စနစ်ကျင့်သုံး ရန်

**(ဝန်ထမ်းသက်သာချောင်ချိရေးအစီအစဉ်)**

- ဝန်ထမ်းများနှင့် ပတ်သက်၍ ယင်းတို့၏ သက်သာချောင်ချိရေးဆိုင်ရာ ကိစ္စရပ်များကို စနစ်တကျ တာဝန်ယူဆောင်ရွက်ရန်
- ဝန်ထမ်းကြိုပို့ယာဉ်စီစဉ်ပေးရန်

**(၁၂).ဘေးအန္တရာယ်ရှိဓာတုပစ္စည်းများအား စီမံခန့်ခွဲမှုအစီအစဉ်**

**(လုပ်ငန်းခွင်ဓာတုဗေဒဆိုင်ရာထိတွေ့မှုအားထိန်းချုပ်ရန်)**

- ဝန်ထမ်းများအား ကြိုတင်ကာကွယ်သည့်အနေနှင့် လိုအပ်သော PPE များမဖြစ်မနေ ဝတ်ဆင်စေရန် (ဥပမာ - အန္တရာယ်ကင်း မျက်မှန်၊ လက်အိတ်၊ ဖိနပ်များနှင့် လိုအပ်ပါက အသက်ရှူမျက်နှာဖုံးတပ်ရန်)
- ဖောင်းကန်ကဲ့သို့ ထည့်စရာများ ဆေးကြောရာတွင် ကန့်သတ်နေရာ လုပ်ဆောင်ချက် အစီအစဉ်အား လိုက်နာရန်



- ထုတ်လွှတ်မှုဆောင်ရွက်သည့်နေရာ ဓာတုပစ္စည်းသိုလှောင်ရာ စသည့်နေရာများအနီးတွင် အရေးပေါ် ရေပိုက်များနှင့် မျက်စိရေဆေးပိုက်ခေါင်းများတပ်ဆင်ထားရန်
- ကုန်ထုတ်လုပ်မှုဆောင်ရွက်ရာနေရာအား လေဝင်/လေထွက်ကောင်းအောင်ဆောင်ရွက်ရန်

**(အရေးပေါ် ရှေးဦးသူနာပြုလုပ်ငန်းများ)**

- မတော်တဆ ထိခိုက်မှု (သို့) ဖျားနာမှုဖြစ်လာပါက ချက်ခြင်း၊ ယာယီကုသမှုပေးခြင်းဖြစ်သည့် အရေးပေါ် အခြေအနေ တုန့်ပြန်မှုအဖွဲ့သည် ရှေးဦးသူနာပြုနည်းလမ်းများအား အဆင်သင့် ပြင်ဆင်ထားရန်

၁. လိုအပ်သည့် PPE များဝတ်ဆင်ရန်

၂. အရေးပေါ်အခြေအနေအားစစ်ဆေးရန်

၃. ထိခိုက်သူအား လိုအပ်သည့် အရေးပေါ်ဆောင်ရွက်မှုများ ပြုလုပ်ပေးပါ။ အသက်မရှုတော့ပါက CPR ပြုလုပ်ပေးခြင်း

၄. ၉၁၁ ကဲ့သို့ အရေးပေါ်ဆက်သွယ်ပါ

၅. ဖြစ်ပျက်မှု သတင်းအချက်များရယူပြီး EHS မန်နေဂျာထံသတင်းပို့ပါ။ အမည်/ထိခိုက်မှုအမျိုးအစား/ ဖြစ်ပျက်မှုအမျိုးအစား/ ဖြစ်ပျက်သည့် နေရာနှင့်အချိန်/ ရှေးဦးသူနာပြုအဖွဲ့မှ မည်ကဲ့သို့ ကုသပြုစုပေးထား သည် စသည်ဖြင့်

**(အရေးပေါ်အခြေအနေဆောင်ရွက်မှုလုပ်ငန်းစဉ်များ)**

- နေ့ရက်နှင့် ဖြစ်ပွားချိန်
  - ဖိတ်စင်မှု အဆင့်/ အမျိုးအစား
  - ဖိတ်စင်သည့်နေရာ
  - သတင်းပို့သူအမည်
  - ဖိတ်စင်မှုမာဏ စသည်တို့အား မှတ်တင်းတင်၍ အထက်စီမံခန့်ခွဲသူ အဆင့်ထံသတင်းပို့ရန်
- ဓာတုပစ္စည်းများစီမံခန့်ခွဲမှုတွင် အောက်ပါအဓိကအခြေခံအချက်များပါဝင်သည်

**(ဓာတုပစ္စည်းများ၏ အသေးစိတ်စစ်တမ်း)**

- စက်ရုံတွင်အသုံးပြုသော ဓာတုပစ္စည်းအားလုံးပါဝင်သည့် အသေးစိတ်စစ်တမ်းအပြည့်အစုံ ပြုလုပ် ထားပါရန်
- ယင်းစာရင်းတွင်ပါဝင်သော ဓာတုပစ္စည်းများအားလုံးအား EHS မန်နေဂျာ (သို့) ကျန်းမာရေးနှင့် ဘေးအန္တရာယ်ကင်းရှင်းရေး ဆက်သွယ်ဆောင်ရွက်သူမှ စစ်ဆေးအတည်ပြုပြီးဖြစ်ရန်

**(ဓာတုဗေဒပစ္စည်းများ၏ အန္တရာယ် အကဲဖြတ်ခြင်း)**

- သုတ်ဆေးထုတ်လုပ်မှုလုပ်ငန်းစဉ်တိုင်းတွင်အသုံးပြုသော ဓာတုပစ္စည်းများအား စာရင်းပြုစုရန်

- MSDS တွင်စောင့်ကြည့်၍ အန္တရာယ် အမျိုးအစားစစ်ရန်

**(ဓာတုဗေဒပစ္စည်းများအား စွန့်ပစ်ခြင်းနှင့် ပျက်စီးခြင်း)**

- ဓာတုဗေဒပစ္စည်းအသုံးပြုသောဌာနများအား အရေးပေါ်ဖိတ်စင်မှုဖြစ်ပါက စုပ်ယူနိုင်မည့်ပစ္စည်းများ ပေးထားရန်
- ရေနံမြောင်းများအတွင်း ဓာတုဗေဒပစ္စည်းများ ၊ ဆီနှင့် အန္တရာယ်ရှိ စွန့်ပစ်ပစ္စည်းများ သွန်ခြင်းအား တားမြစ်ရန်
- သက်တမ်းလွန် ဓာတုဗေဒပစ္စည်းများနှင့် ဆက်လက်အသုံးမပြုတော့မည့် ဓာတုဗေဒပစ္စည်းများ စွန့်ပစ်ရန်အတွက် ကုမ္ပဏီ၏ စည်းမျဉ်းစည်းကမ်းအရအတည်ပြုခွင့်ပြုရန်တောင်းခံရန်၊ စွန့်ပစ်ခြင်းနှင့် ပျက်ဆီးခြင်းလုပ်ငန်းစဉ်အား ဥပဒေနှင့် အညီစွန့်ပစ်ပစ္စည်းစီမံခန့်ခွဲမှု လက်စွဲအရဆောင်ရွက်ရန်

**(အန္တရာယ်ထိန်းချုပ်မှုနည်းလမ်းများ)**

- အန္တရာယ်ဓာတုပစ္စည်းများနှင့် ထိတွေ့မှု အန္တရာယ်များအား ဖယ်ရှားနိုင်ခြင်း (သို့) လုံးဝရှောင်ကျဉ်ခြင်း မပြုလုပ်နိုင်ပါက အင်ဂျင်နီယာနည်းပညာဆိုင်ရာ ထိန်းချုပ်မှုများ၊ အုပ်ချုပ်မှုစီမံခန့်ခွဲရေးမှ ထိန်းချုပ်မှုများနှင့် PPE သုံးစွဲစေခြင်းများဖြင့် အန္တရာယ်အား ကြိုတင်ကာကွယ်လျော့ချနိုင်သည်

(Charts and Photos)

**(၁၃).ပတ်ဝန်းကျင်စောင့်ကြပ်ကြည့်ရှုရေးအစီအစဉ် (လုပ်ငန်းလည်ပတ်စဉ်ကာလ)**

ပတ်ဝန်းကျင်နှင့် လူမှုရေးဆိုင်ရာအချက်များ	စောင့်ကြပ်ကြည့်ရှုမည့် အမျိုးအစားများ	တည်နေရာ	အကြိမ်အရေအတွက်	တာဝန်ရှိသူ	နည်းစနစ်
လေထုအရည်အသွေး	လုပ်ငန်းခွင် (PM <sub>2.5</sub> and PM <sub>10</sub> , VOC)	ကုန်ချောထုတ်သည့်နေရာ	တစ်နှစ် ၂ကြိမ်	ကုမ္ပဏီ၏ ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှုအဖွဲ့မှ တာဝန်ခံအရာရှိ	စက်ရုံအတွင်း တိုင်းတာခြင်း
	အမွန့်ပမာဏစနစ်မှထွက်သော ဓာတ်ငွေ့များ(PM <sub>2.5</sub> and PM <sub>10</sub> , VOC)	အမွန့်ပမာဏစနစ်၏ အထွက်ခေါင်းတိုင်			
ရေအရည်အသွေး • စွန့်ပစ်ရေအရည်အသွေး	pH, ဆီ, ရေတွင် ပါဝင်သော အမွန့်များ(SS), BOD, COD, အရောင်နှင့်အပူချိန်	စက်ရုံမှ အထွက်ပေါက်	လစဉ်	ကုမ္ပဏီ၏ ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှုအဖွဲ့မှ တာဝန်ခံအရာရှိ	ဓာတ်ခွဲစမ်းသပ်ခြင်း
	ဓာတ်သတ္တုများ(Cu, Pb, Hg, Cr, Mn, Zn, Cd, Ba)		မိလ တစ်ကြိမ်		
	MJTD မှ သတ်မှတ်ထားသော အမျိုးအစားဥပဒေများ				
စွန့်ပစ်အစိုင်အခဲ	မှတ်တမ်းတင်ခြင်း • အမျိုးအစားခွဲခြားမှု • ထွက်ရှိမှုပမာဏ • အချိန်နှင့် နေ့စွဲ	အချိန်ကန်နေရာ	လစဉ်	ကုမ္ပဏီ၏ ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှုအဖွဲ့မှ တာဝန်ခံအရာရှိ	မှတ်တမ်းတင်ခြင်း
			မိလ တစ်ကြိမ်		
မြေထုညစ်ညမ်းမှု	• ဆီယိုမိမ့်မှု၊ ဓာတုပျော်ရည်များ၊ သုတ်ဆေးများ၊ စွန့်ပစ်ရေများ၊ ဖိတ်ကျမှုများကို မှတ်တမ်းတင်ခြင်း • မြေထုအရည်အသွေးစစ်ဆေးခြင်း	စက်ရုံခြံဝန်းအတွင်း	မိလ တစ်ကြိမ်	ကုမ္ပဏီ၏ ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှုအဖွဲ့မှ တာဝန်ခံအရာရှိ	ဓာတ်ခွဲစမ်းသပ်ခြင်း

ဆုညသံနှင့် တုန့်ခါမှု	ဆုညသံနှင့် တုန့်ခါမှုအဆင့်များကို တိုင်းတာခြင်း	စက်ရုံခြံဝန်းအတွင်း	တစ်နှစ် ၂ကြိမ်နှင့် တိုင်ကြားမှုရှိပါက	ကုမ္ပဏီ၏ ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှုအဖွဲ့ မှ တာဝန်ခံအရာရှိ	စက်ရုံအတွင်း တိုင်းတာခြင်း
အနံ့	<ul style="list-style-type: none"> <li>လေဝင်လေထွက်အခြေအနေများကို စစ်ဆေးခြင်း</li> <li>အနံ့များကို တိုင်းတာခြင်း</li> </ul>	စက်ရုံနှင့် သိုလှောင်အဆောက်အအုံ	တစ်နှစ် ၂ကြိမ်	ကုမ္ပဏီ၏ ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှုအဖွဲ့ မှ တာဝန်ခံအရာရှိ	ကိုယ်တိုင်အနံ့ခံ၍ စစ်ဆေးခြင်း
ဘေးအန္တရာယ်ရှိ စာတုပစ္စည်းများ	<ul style="list-style-type: none"> <li>စာတုပစ္စည်းများစာရင်း</li> <li>ယိုမိတ်မှုကို မှတ်တမ်းတင်ခြင်း</li> <li>စာတုပစ္စည်းကြောင့် လောင်ကျွမ်းခြင်းဖြစ်မှုမှတ်တမ်း</li> </ul>	စက်ရုံနှင့် သိုလှောင်အဆောက်အအုံ	လစဉ်	ကုမ္ပဏီ၏ ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှုအဖွဲ့ မှ ကျန်းမာရေးနှင့် ဘေးအန္တရာယ်ကင်းရှင်းရေး လုပ်ငန်းတာဝန်ခံ	မှတ်တမ်းတင်ခြင်း
စိမ်းလန်းစိုပြေရေး	စိမ်းလန်းစိုပြေရေးပြုလုပ်ထားသော အခြေအနေကို မှတ်တမ်းတင်ခြင်း	စက်ရုံခြံဝန်းအတွင်း	တစ်နှစ် ၂ကြိမ်	ကုမ္ပဏီ၏ ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှုအဖွဲ့ မှ တာဝန်ခံအရာရှိ	အမြင်ဖြင့် စစ်ဆေးခြင်း
လုပ်ငန်းခွင်ကျန်းမာရေး ငှက်နှင့် ဘေးအန္တရာယ်ကင်းရှင်းရေး	<ul style="list-style-type: none"> <li>မတော်တဆထိခိုက်မှုမှတ်တမ်း</li> <li>ကိုယ်ခန္ဓာအစိတ်အပိုင်းများ ထိခိုက်မှု</li> <li>ဝန်ထမ်းများ၏ ဆေးစစ်ပေးမှုမှတ်တမ်း</li> <li>လုပ်ငန်းခွင်ကျန်းမာရေးနှင့် ဘေးအန္တရာယ်ကင်းရှင်းရေး သင်တန်းပေးထားမှုမှတ်တမ်း</li> <li>စာတုပစ္စည်းများ စနစ်တကျ ဘေးအန္တရာယ်ကင်းရှင်းစွာ ကိုင်တွယ်ခြင်း</li> </ul>	စက်ရုံခြံဝန်းအတွင်း	လစဉ်	ကုမ္ပဏီ၏ ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှုအဖွဲ့ မှ ကျန်းမာရေးနှင့် ဘေးအန္တရာယ်ကင်းရှင်းရေး လုပ်ငန်းတာဝန်ခံ	မှတ်တမ်းတင်ခြင်း

	သင်တန်းပေးမှုမှတ်တမ်း၊ ဝန်ထမ်းများ၏ တိုင်ကြားမှုကို မှတ်တမ်းတင်ခြင်း				
	<ul style="list-style-type: none"> <li>PPE ထောက်ပံ့ပေးခြင်း</li> </ul>				
	<ul style="list-style-type: none"> <li>လေထုအရည်အသွေး စောင့်ကြပ်ကြည့်ရှုခြင်း အစီရင်ခံစာ</li> <li>ရေထုအရည်အသွေး စောင့်ကြပ်ကြည့်ရှုခြင်း အစီရင်ခံစာ</li> <li>မြေထုအရည်အသွေး စောင့်ကြပ်ကြည့်ရှုခြင်း အစီရင်ခံစာ</li> <li>ဆုညသံနှင့် တုန့်ခါမှု အရည်အသွေး စောင့်ကြပ်ကြည့်ရှုခြင်း အစီရင်ခံစာ</li> </ul>		တစ်နှစ် ၂ကြိမ်		
ပတ်ဝန်းကျင်လူထု၏ ကျန်းမာရေးနှင့် ဘေးအန္တရာယ်ကင်းရှင်းရေး	<ul style="list-style-type: none"> <li>ယာဉ်မတော်တဆဖြစ်မှုမှတ်တမ်း</li> <li>ဒေသခံမှ မကျေနပ်မှုများ မှတ်တမ်း</li> </ul>	ဒေသခံပြည်သူ	အခါအားလျော်စွာ	ကုမ္ပဏီ၏ ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှုအဖွဲ့ မှ ကျန်းမာရေးနှင့် ဘေးအန္တရာယ်ကင်းရှင်းရေး လုပ်ငန်းတာဝန်ခံ	မှတ်တမ်းတင်ခြင်း
အခြားလူမှုရေးလုပ်ငန်းများ	<ul style="list-style-type: none"> <li>CSR လုပ်ငန်းမှတ်တမ်း</li> <li>ဒေသခံဝန်ထမ်းခန့်ထားမှု မှတ်တမ်း</li> <li>လူထုမှ တိုင်ကြားမှု မှတ်တမ်း</li> </ul>	HR အဖွဲ့	တစ်နှစ် ၂ကြိမ်	ကုမ္ပဏီ၏ ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှုအဖွဲ့ မှ တာဝန်ခံအရာရှိ	မှတ်တမ်းတင်ခြင်း
အရေးပေါ်အန္တရာယ်ဖြစ်မှု	အရေးပေါ်အခြေအနေဖြစ်မှုမှတ်တမ်းနှင့် ၎င်းအား တုံ့ပြန်မှုအစီအစဉ်	စက်ရုံခြံဝန်းအတွင်း	လစဉ်	ကုမ္ပဏီ၏ ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှုအဖွဲ့	မှတ်တမ်းတင်ခြင်း

	<ul style="list-style-type: none"> <li>မီးဘေးအကာအကွယ်စနစ်များ စစ်ဆေးခြင်း</li> <li>မီးဘေးအန္တရာယ်ဖြစ်မှုမှတ်တမ်းနှင့် မီးသတ်သင်တန်းပေးမှုမှတ်တမ်း</li> <li>ဓာတုပစ္စည်းများနှင့် လောင်စာဆီယိုမီတ်မှုဖြစ်ခြင်းမှတ်တမ်းနှင့် ပြန်လည်တုံ့ပြန်မှု သင်တန်းမှတ်တမ်း</li> <li>လျှပ်စစ်အန္တရာယ်ဖြစ်မှုမှတ်တမ်းနှင့် ကာကွယ်ရေး သင်တန်းပေးမှုမှတ်တမ်း</li> </ul>			မှ ကျန်းမာရေးနှင့် ဘေးအန္တရာယ်ကင်းရှင်းရေး လုပ်ငန်းတာဝန်ခံ	
စွမ်းအင်သုံးစွဲမှု	မီးဖို	စက်ရုံခြံဝန်းအတွင်း	တစ်နှစ်ကြိမ်	ကုမ္ပဏီ၏ ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှုအဖွဲ့မှ မန်နေဂျာ	မှတ်တမ်းတင်ခြင်း
	ရေဖိုး				
	လောင်စာဆီ				

## ရည်ရွယ်ချက်

(က) စီမံကိန်း၏ ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှု အစီအစဉ်နှင့် စောင့်ကြည့်တိုင်းတာရေးအစီအစဉ်များအား လိုက်နာဆောင်ရွက်မှု အခြေအနေကို စက်မှုဇုန်စီမံခန့်ခွဲမှု ကော်မတီနှင့် ပတ်ဝန်းကျင်ရှိ ဒေသခံများသိရှိနိုင်စေရန်

(ခ) စက်ရုံနှင့် ပတ်ဝန်းကျင်ရှိဒေသခံများအကြားပတ်ဝန်းကျင်ရေးရာနှင့် သက်ဆိုင်သော အကြောင်းကိစ္စများအတွက် အပြန်အလှန်ဆက်သွယ်ဆောင်ရွက်နိုင်ရန်

## ဖွဲ့စည်းပုံ

(က) ပတ်ဝန်းကျင်စောင့်ကြပ်ကြည့်ရှုရေးအဖွဲ့တွင် အဓိကအားဖြင့် သက်ဆိုင်ရာ အစိုးရဌာနများ စက်မှုဇုန်စီမံခန့်ခွဲမှုကော်မတီ အဖွဲ့ဝင်များ စီမံကိန်းမှ တာဝန်ရှိသူများနှင့် ဒေသခံကိုယ်စားလှယ်များဟူ၍ အစုအဖွဲ့

(၃) ဖွဲ့ဖြင့် ဖွဲ့စည်းဆောင်ရွက်ရမည်ဖြစ်သည်

(ခ) ဒေသခံကိုယ်စားလှယ်များကို သက်ဆိုင်ရာ ကျေးရွာ/ရပ်ကွက် စက်မှုဇုန်များအလိုက် အများသဘောတူရွေးချယ်ထားပြီး ထည့်သွင်းဖွဲ့စည်းရန်ဖြစ်သည်

## (၁၄).လူမှုစီးပွားတာဝန်သိမှုနှင့် ပတ်ဝန်းကျင်ထိခိုက်မှုလျော့နည်းစေရန်အတွက် ရံပုံငွေ ထားရှိရမည့်

### အစီအစဉ်

- စီမံကိန်းအနေဖြင့် နှစ်စဉ်အသတ်အမြတ်၏ ရာခိုင်နှုန်းတစ်ခုကို လူမှုစီးပွားတာဝန်သိအစီအစဉ်အတွက် အသုံးပြုရန် ဖြစ်ပါသည်။ လူမှုပတ်ဝန်းကျင်သက်ရောက်မှု ဆန်းစစ်ချက် အရ စီမံကိန်း၏ အနီးပတ်ဝန်းကျင် ဒေသဒေသများတွင် လူမှုစီးပွားတာဝန်သိ ( Corporate Social Responsible - CSR) အစီအစဉ်များကို အကောင်အထည်ဖော်ဆောင်ရွက်ရမည် ဖြစ်ပါသည်။

- စီမံကိန်းအနေဖြင့် လူမှုစီးပွားတာဝန်သိအစီအစဉ်အပြင် ရှေ့တွင်ဖော်ပြခဲ့သော ပတ်ဝန်းကျင်ထိခိုက်မှု လျော့နည်းစေရန် နှစ်စဉ်စောင့်ကြပ်ကြည့်ရှုရမည် အစီအစဉ်အတွက် ကုန်ကျစရိတ်များကိုပါ တွက်ချက် ဖော်ပြပေးရမည်ဖြစ်ပါသည်။
- ဆက်လက်၍လည်း ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးရုံပုံငွေတစ်ခုသတ်မှတ်ကာ ဇီဝမျိုးစုံမျိုးခွဲများထိန်းသိမ်း စောင့်ရှောက်ခြင်း၊ ဒေသမျိုးရင်းသစ်ပင်များ ပြန်လည် စိုက်ပျိုးပြုစုခြင်း၊ စက်ရုံစီမံကိန်းနှင့် အနီးဆုံးဖြစ်သည့် ရေအရင်းအမြစ်(မြစ်၊ ချောင်း၊ မြောင်း) များပြုပြင်ထိန်းသိမ်းခြင်း၊ ရေနုတ်မြောင်းအသစ်တူးဖော်ခြင်းစသည့် လုပ်ငန်းများအတွက် ဆောင်ရွက်သွားရမည် ဖြစ်ပါသည်။

**(၁၅).သုံးသပ်အကြံပြုချက်နှင့် နိဂုံး**

- မီးဘေးအန္တရာယ်လျော့ချရန်အတွက် ကာကွယ်ရေးစီမံချက်ကို ဇာတ်တိုက်လေ့ကျင့်မှု ပြုလုပ်ရန် လိုအပ် သည်
- ထုတ်လုပ်မှုနေရာနှင့် စတုရန်းကီလိုမီတာတွင် လွင့်ထွက်သွားနိုင်သည့် VOC ထုတ်လွှတ်မှုကြောင့် ကျန်းမာရေး ထိခိုက်မှုအန္တရာယ်နည်းအောင် ကောင်မွန်သော လေဝင်၊ လေထွက်စနစ်စီမံထားရှိရမည်
- အန္တရာယ်ရှိ အမှိုက်များကို စွန့်ပစ်ရန်အတွက် အမှိုက်များအားပုံးများတွင် လုံခြုံစွာထည့်၍ အသိပေးတံဆိပ် များ ထင်ရှားစွာကပ်၍ SDS တွင်ဖော်ပြထားသည့်လမ်းညွှန်ချက်များအား လိုက်နာရန်နှင့် သင့်တော်သော စွန့်ပစ်မှု ပြုလုပ်ရန် အတွက် သက်ဆိုင်ရာ အဖွဲ့အစည်းနှင့် ဆက်သွယ်ရန်
- ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဦးစီးဌာနမှ EIA ကို အတည်ပြုပြီးပါက အဆိုပြုသူမှ EMP နှင့် စောင့်ကြည့်စစ် ဆေးရေး၊ နှစ်စဉ်ပတ်ဝန်းကျင်ဆိုင်ရာ စစ်ဆေးမှုနှင့် လိုအပ်သည် ပြုပြင်ဆောင်ရွက်မှုတို့ စီမံချက်အား အကောင်အထည်ဖော်ရပါမည်
- စီမံကိန်းသည် ပတ်ဝန်းကျင်အပေါ်ရေရှည် ဆိုးကျိုးသက်ရောက်မှုများ ဖြစ်ပေါ်နိုင်မှုမရှိသည်ကို သိရှိထား သော်လည်း ကြိုတင်မျှော်မှန်းထားသည့် ဖြစ်နိုင်ခြေဆိုးကျိုးများကို လျော့ချနိုင်ရန်အတွက် ပိုမိုပြည့်စုံသော EMP ကို အကောင်အထည်ဖော်ရပါမည်
- ယင်းသို့ဆောင်ရွက်ခြင်းဖြင့် စီမံကိန်း၏ သက်ရောက်မှုသည် ပတ်ဝန်းကျင်ယိုယွင်းမှုကို မဖြစ်စေပဲ ဖွံ့ဖြိုး တိုးတက်မည် ဖြစ်ပါသည်
- စီမံကိန်းပြင်ဆင်တည်ဆောက်ရေးကာလတွင် နိုင်ငံသားပိုင်း ကုမ္ပဏီများနှင့် ပြည်တွင်းမှ လုပ်သားများ အလုပ်အကိုင် အခွင့်အလမ်းများရရှိကာ တည်ဆောက်ရေးလုပ်ငန်းသုံးပစ္စည်းအရောင်းဆိုင်များနှင့် ဒေသ တွင်းစားသောက်ကုန်ရောင်းချသည့်လုပ်ငန်းများအနေဖြင့် စီးပွားရေးအခွင့်အလမ်းများရရှိမည်ဖြစ်သည်
- လုပ်ငန်းလည်ပတ်စဉ်ကာလတွင် လုပ်ငန်းခွင် ဘေးအန္တရာယ်ကင်းရှင်းရေးအတွက် တစ်ကိုယ်ရေသုံး အကာအကွယ်ပစ္စည်း များထားရှိခြင်း၊ ဓာတုပစ္စည်းများ သယ်ဆောင်၊ သိုလှောင်၊ ကိုင်တွယ်ရာတွင်လည်း နိုင်ငံတော်မှ ချမှတ်ထားသော ဥပဒေများအတိုင်း လိုက်နာဆောင်ရွက်ခြင်းဖြင့် ဘေးအန္တရာယ်ဖြစ်ပေါ်မှုကို ထိန်းသိမ်းဆောင်ရွက်နိုင်မည်ဖြစ်သည်

- အစီရင်ခံစာတွင်ပါရှိသည့် ထိခိုက်နိုင်မှုများကို ကြိုတင်တွက်ဆ၍ စနစ်တကျဇာတ်တိုက်လေ့ကျင့်မှုများ လုပ်ဆောင်ခြင်းဖြင့် ဓာတုနည်းစဉ်များကြောင့် အရေးပေါ်ဖြစ်ပေါ်လာနိုင်သည့် ပတ်ဝန်းကျင်နှင့် လူမှုရေးအပေါ် ထိခိုက်မှုများကို လျော့ချကာကွယ်နိုင်မည်ဖြစ်သည်
- သို့ဖြစ်ပါ၍ နိုင်ငံတော့ ဖွံ့ဖြိုးတိုးတက်ရေးအတွက် နိုင်ငံခြားရင်းနှီးမြှုပ်နှံမှုစီမံကိန်းများအား စနစ်တကျ စီမံဆောင်ရွက်သွား သင့်ပါကြောင်း အကြံပြုတင်ပြအပ်ပါသည်
- အားလုံးကို ကျေးဇူးတင်ပါတယ်၊ ကူညီပေးဖို့ ရပ်မိရပ်ဖတွေကိုလည်း မေတ္တာရပ်ခံပါတယ်

ဦးသိန်းစိုး (လူမှုစီးပွားပညာရှင်)

- ကျွန်တော်အရှေ့ပွဲမှာတုန်းကတော့ ဒီရွာနဲ့ပတ်သက်ပြီး ကနဦးတွေ့ရှိချက်တွေကို တင်ပြထားပါတယ်၊ အခုကတော့ နောက်ဆုံးအဆင့်ဆောင်ရွက်ထားရှိမှုကို ဆက်လက်တင်ပြသွားမှာပါ၊ ရွာက ကျယ်ပြန့်တဲ့အတွက် အပိုင်း (၅) ပိုင်းခွဲပြီးနေထိုင်တဲ့ ပုံစံကို လူ ၉၀ (အိမ်ထောင်စုမတူ၊ မိသားစုမတူ) ကို မေးခွန်းတွေမေးခဲ့ပါတယ်၊ အိုးပိုင်အိမ်ပိုင်နဲ့ ငှားရမ်းနေထိုင်သူဆိုပြီး မေးခဲ့ပါတယ်၊ ရွာမှာဓားမဦးချနေထိုင်သူတွေရှိသလို ယခုနောက်ပိုင်းမှ စက်မှုဇုန်တွေပေါ်ပေါက်လာမှ ရွေးပြောင်းနေထိုင်ကြသူတွေလည်းရှိပါတယ်၊ သူတို့တွေမှာလည်း အိုးပိုင်အိမ်ပိုင်တွေရှိများကြတဲ့ အတွက် ဘာကိုရည်ညွှန်းသလဲဆိုတော့ ရွေးပြောင်းနေထိုင်ကြသူတွေဟာ ယာယီနေထိုင်တာမျိုးမဟုတ်ပဲ ရေရှည်နေထိုင်ဖို့ ရွေးပြောင်းလာကြတာကို တွေ့ရပါတယ်၊ ဒါဟာလည်း စက်မှုဇုန်မှာ အမျိုးသမီးတွေကော အမျိုးသားတွေအတွက်ကော အလုပ်အကိုင်တွေရှိနေတဲ့ အတွက်ကြောင့်ဖြစ်ပါတယ်၊ ရွာနဲ့ စက်မှုဇုန် ဖွံ့ဖြိုးမှုဟာ ဆပ်စပ်မှုရှိနေတာကို တွေ့ရပါတယ်၊
  - ဝင်ငွေအားဖြင့်ဆိုရင်လည်း ဖြေဆိုသူတွေရဲ့ ၄၀% လောက်က စက်ရုံအလုပ်ကရတဲ့ ဝင်ငွေက မိသားစုဝင်ငွေရဲ့ ၆၀% လောက်ကိုရှိတယ်လို့ဖြေဆိုထားကြပါတယ်၊ မိသားစုတွေအတွက် စက်ရုံအလုပ်ရုံတွေက အများကြီး အထောက်အကူဖြစ် တာကိုတွေ့ရပါတယ်၊ ဈေးရောင်းတဲ့သူတွေနဲ့ အဆောင်ဌာနတဲ့သူတွေရဲ့ လုပ်ငန်းတွေဟာလည်း တိုးတက်လာတာကိုတွေ့ ရပါတယ်၊ စက်မှုဇုန်ကော စက်ရုံကောက ရွာနဲ့ သဟာဇာတ မဖြစ်စရာအကြောင်းမရှိတာကိုတွေ့ရပါတယ်
  - တကယ်တွေ့ရှိချက်တွေကတော့ စာအုပ်ထဲမှာ အများကြီးရှိပါတယ် ဒီမှာတော့ အချိန်ကြောင့် အနည်းငယ်ပဲတင်ပြခြင်းဖြစ်ပါတယ်၊ ဒီစက်ရုံတည်ရှိနေခြင်းဟာ ဒီဒေသအတွက် ရှိရင်ဘာဖြစ်မလဲ၊ မရှိရင်ဘာဖြစ်မလဲဆိုတာတွေကို သုံးသပ်ရပါတယ်
၁. လူအသိုင်းအဝိုင်းလုံခြုံမှု
  ၂. ဒီမှာနေတဲ့ လူတွေရဲ့စိတ်ပိုင်းဆိုင်ရာထိခိုက်မှုရှိ/မရှိ
  ၃. စီးပွားရေးအရအပြန်အလှန်အကျိုးပြုနိုင်ခြင်းရှိ/မရှိ
- ဆိုတဲ့ အချက် (၃) ချက်နဲ့ စဉ်းစားပါတယ်



- ဒီစက်ရုံမှာအလုပ်ခန့်မဲ့ လူ (၁၇၃) ယောက်ခန့်ထားမှာဖြစ်ပီ ဒီလူဦးရေတိုးလာပါကလည်း ဒီရွာအတွက် ထူးခြားမှုမရှိပါဘူး၊ ဒီစက်ရုံမရှိရင်လည်း တခြားစက်ရုံကအလုပ်သမားတွေဒီရွာမှာပဲ အဆောင်ငှားကြမှာဖြစ် လို့ ဒီလူဦးရေ (၁၇၃) ယောက်ဟာ ရွာအတွက်ဘာမှ မဖြစ်ပါဘူး
- ဒီလိုစက်မှုစုံမျိုးမှာ ဘေးအန္တရာယ်ထိခိုက်မှုနည်းတဲ့ စက်ရုံတစ်ခုပေါ်လာတဲ့အတွက် ကျေးရွာအတွက် အများကြီး CSR အကူအညီတွေ အလုပ်အကိုင်အခွင့်အလမ်းတွေရလာမှာဖြစ်ပါတယ်၊ ဒီစက်ရုံမရှိရင်လည်း ဒီနေရာမှာရှိတဲ့ အဆောက်အဦးကို ပိုင်ရှင်က တခြားတစ်ဦးကိုဌားမှာပဲဖြစ်တဲ့ အတွက်ထူခြားမှုမရှိပါဘူး
- စီးပွားရေးအကြည့်မယ်ဆိုရင်လည်း Nippon စက်ရုံသည် လူ၊ ပတ်ဝန်းကျင်၊ အကျိုးအမြတ်ရယ်ဆိုတဲ့ မူနဲ့ သွားနေတဲ့အတွက် စက်မှုစုံအတွက်လည်း တာဝန်သိတဲ့ စက်ရုံတခုရောက်လာတဲ့အတွက် ကြိုဆိုရမှာ ဖြစ်ပါတယ်၊ နိုင်ငံတော် အတွက်လည်း အခွန်အခတွေရလာမယ်၊ ဝန်ထမ်း (၁၇၃) ယောက်လည်း အလုပ် အကိုင် အခွင့်အလမ်းတွေရလာမယ်
- ဒီစက်ရုံကြောင့် လူမှုစီးပွားပတ်ဝန်းကျင်ကို ထိခိုက်နိုင်မှုရှိမရှိဆိုတာကိုလေ့လာတဲ့အခါမှာ ကျွန်တော်တို့ လုပ်ငန်းစတင်ကတည်းက တိုင်းတာမှုတွေပြုလုပ်ခဲ့ပြီး ရရှိလာတဲ့အဖြေတွေက ရွာထဲမှာရှိတဲ့ ရေကန်တွေမှာ မကနီစီယမ် များနေတာကို တွေ့ရပါတယ်၊ ဒါဟာလည်း ထိန်းချုပ်နိုင်ရင် ထိန်းချုပ်လို့ရတယ်ဆိုတာကို တင်ပြ ရင် နိဂုံးချုပ်ပါတယ်၊ ကျေးဇူးတင်ပါတယ်

ဦးမြင့်ဇော်ဦး (A.D, ECD မြောက်ပိုင်းခရိုင်) (အပိတ်အမှာစကား)

- Monitoring plan မှာ ကုန်ကျစရိတ်တွေရှိပါတယ် ၊ စွန့်ပစ်ရည်ကို (၃) လတကြိမ်အစား (၆) လတကြိမ် ဆို လည်း ဖြစ်ပါတယ်
- Nippon Paint ဆိုတော့ Company ကြီးဖြစ်တဲ့ အတွက် ပတ်ဝန်းကျင်လေ့လာမှု standard လေးတွေ ရှိ မှာပါ၊ အဲ့ဒါလေးတွေကိုထည့်ပေးစေချင်တယ်၊ အခုမပါဘူးပေါ့နော်၊ international standard အရ Company ဘက်ကပြောတဲ့ ပတ်ဝန်းကျင်ရယ်၊ လူရယ်၊ အကျိုးအမြတ်ရယ်ပေါ့နော်၊ အဲ့ဒါတွေက အသေးစိတ်တော့ ရှိ မယ်ထင်တယ်၊ ပင်မ company ကြီးက ဘာတွေဆောင်ရန်ရှောင်ရန်ချမှတ်ထားတယ်ဆိုတာကို ဖော်ပြစေ ချင်တယ်
- ဟိုနေ့က DG က စက်ဘီးစက်ရုံသွားကြည့်တယ်၊ အဲ့မှာ ဆေးမှုတ်တာက အတော်ကြီးစနစ်တကျရှိတာကို တွေ့ခဲ့ရပါတယ်၊ ဒီcompany မှာလည်း စနစ်တကျ standard တွေ ချမှတ်ထားတာမျိုးရှိမှာ သေချာပါတယ်၊ အဲ့ဒါတွေကို ပေါ်လွင်မှာထည့်ပေးစေချင်တယ်၊ လိုအပ်ရင် ပုံတွေပါထည့်ပေးစေချင်တယ်၊ Highlight လုပ်ပြီးထည့်စေချင်တယ်၊
- နောက်တခုက ရေဆိုးသန့်စင်စက်ဆောက်ပြီးသားရှိတယ်လို့ပြောထားပါတယ်၊ သူ့ရဲ့လည်ပတ်ပုံတွေကို မြန်မာလို အသေးစိတ်ပြန်ပြီးဖော်ပြစေချင်တယ်၊ ပြီးတော့ အခုစက်ရုံမှာရှိတဲ့ စနစ်က ဘယ်လိုအညစ်အကြေး မျိုးကို အဓိကထားပြီး ဖယ်ရှားဖို့ တည်ဆောက်ထားတာလည်းဆိုတာကို လည်းဖော်ပြစေချင်တယ်၊ အဲ့လိုပါ တော့ကျွန်တော်တို့လူကြီးတွေလည်း ပိုပြီးမျက်စိထဲမြင်မယ်၊ ကွင်းဆင်းတဲ့ အခါကြတော့လည်း ပိုအဆင်

ပြေတာပေါ့၊ နောက်ပြီးတော့ အဲစနစ်တခုရဲ့ တနှစ်ကုန်ကျ စရိတ်ကိုပါ ထည့်ပေးစေချင်တယ်၊ အဲဒါတွေပါရင် လူကြီးတွေကချက်ချင်းကို အတည်ပြုမှာပါ

### ဦးသန်းကြွယ် (Sale and Marketing Manager ၊ Nippon Paint)

- အခမ်းအနားတက်ရောက်လာသူအားလုံးကိုကျေးဇူးတင်ပါတယ်ခင်ဗျ

### ၅။ အခမ်းအနားတက်ရောက်လာသူတချို့၏ အကြံပြုချက်များ

စဉ်	အမည်	အကြံပြုချက်
၁။	ဒေါ်ယုဝါစိုး (အလယ်ရွာ)	အလုပ်သမားခေါ်ပေးရန်
၂။	ဦးဇော်ရဲအောင် (အလယ်ရွာ)	လူကြီးမင်းတို့ ကုမ္ပဏီအနေဖြင့် အလယ်ကျေးရွာ၏ အုပ်ချုပ်မှုအတွင်း လာရောက်ဖွင့်လှစ်ထားသည့်အတွက် ကျေးရွာအတွင်း မှီခိုနေထိုင်ကြသော လူငယ်များအတွက် အလုပ်အကိုင်အခွင့်အလမ်းများ ထပ်တိုးလာသည့်အတွက် လူကြီးမင်းတို့ ကုမ္ပဏီအား ကျေးရွာအုပ်ချုပ်ရေးအဖွဲ့ဝင် (၁) ဦးအနေဖြင့် အထူးပင် ကျေးဇူးတင်မိပါသည်။ လူကြီးမင်းတို့ကုမ္ပဏီဘက်ကလည်း လုပ်ငန်းခွင် လိုအပ်ချက်အရ ဝန်ထမ်းများ လိုအပ်လာသည့်အခါ ကျေးရွာအတွင်း မှီခိုနေထိုင်သူများကို ဦးစားပေးအနေဖြင့် ခေါ်ယူအသုံးပြုပေးပါရန် တောင်းဆိုအကြံပြုအပ်ပါသည်။
၃။	ဦးအေးစိုး	လူကြီးမင်းတို့ ကုမ္ပဏီမှ အလယ်ကျေးရွာအပေါ် အလေးထားဆောင်ရွက်ပြီး စီစဉ်ထားမှုအား ကျေးဇူးတင်ရှိပါသည်။
၄။	ဒေါ်ထက်ထက်ဝေစိုး (အလယ်ရွာ)	အမှိုက်၊ ရေမြောင်းများ ပြုပြင်ပေးရန် တောင်းဆိုပါတယ်။
၅။	ဒေါ်ယုဝါစိုး (အလယ်ရွာ)	အလုပ်သမားခေါ်ပေးရန်
၆။	ဦးစိုင်းမြင့်မြတ်	အကြံပြုချက်မရှိပါ။
၇။	ဒေါ်မေသူစိုး	အကြံပြုချက်များကို လက်ခံပါသည်။
၈။	ဦးအောင်ထက်သူ	အကြံပြုချက်များကို လက်ခံပါသည်။
၉။	ဦးမြင့်စိုး	ဆွေးနွေးစရာမရှိပါကြောင်း
၁၀။	ဦးမင်းနိုင်	အကြံပြုချက်မရှိပါ။

### ၆။ နိဂုံး

တွေ့ဆုံဆွေးနွေးပွဲတွင် ဒေသဆိုင်ရာအဖွဲ့အစည်းများနှင့် ဌာနဆိုင်ရာအစိုးရအဖွဲ့အစည်းများ၊ စက်မှုဇုန်စီမံခန့်ခွဲရေးကော်မတီမှတာဝန်ရှိသူများ၊ စီမံကိန်းလုပ်ငန်းဖော်ဆောင်သူများ၊ တတိယအဖွဲ့အစည်း အသီးသီး တက်ရောက်ခဲ့ကြပြီး စီမံကိန်းနှင့်ပတ်သက်သည့် ပတ်ဝန်းကျင်ဆိုင်ရာများနှင့် လူမှုစီးပွား

ဆိုင်ရာများကို ဆွေးနွေးခဲ့ကြပါသည်။ ယခုလူထုတွေ့ဆုံပွဲသည် ရည်ရွယ်ချက်များကို အောင်မြင်စွာ ကျင်းပနိုင်ခဲ့သည့် အစည်းအဝေးဖြစ်ကြောင်း မှတ်တမ်းတင်အပ်ပါသည်။

နောက်ဆက်တွဲ(က)  
အများပြည်သူနှင့်တွေ့ဆုံပွဲအခမ်းအနားအစီအစဉ်

## အခမ်းအနားအစီအစဉ်

နေ့စွဲ ။ ။ ၇ / ၈ / ၂၀၂၄

အချိန် ။ ။ နေ့လည် (၂. ၀၀) နာရီ

နေရာ ။ ။ Nippon Paint စက်ရုံခမ်းမ

1. Nippon Paint (Myanmar) Co., Ltd. ၏ သုတ်ဆေးအမျိုးမျိုး ထုတ်လုပ်ဖြန့်ဖြူး ရောင်းချခြင်းလုပ်ငန်း စက်ရုံနှင့်ပတ်သက်၍ တွေ့ဆုံဆွေးနွေးပွဲအခမ်းအနား၊ ဖွင့်လှစ်ကြောင်းကြေငြာခြင်း
2. စီမံကိန်းလုပ်ငန်း အကြောင်းအရာနှင့်ပတ်သက်၍ Nippon Paint (Myanmar) Co., Ltd. ၏ တာဝန်ရှိသူတစ်ဦးမှ ရှင်းလင်းတင်ပြခြင်း
3. စီမံကိန်းလုပ်ငန်းနှင့်ပတ်သက်၍ ပတ်ဝန်းကျင်ထိခိုက်မှု ဆန်းစစ်ခြင်းဆိုင်ရာ အကြောင်းအရာများကို Green Myanmar Environmental Services Co., Ltd. မှ ဦးကျော်စိုးဝင်းမှ ရှင်းလင်းတင်ပြခြင်း
4. စီမံကိန်းလုပ်ငန်းနှင့်ပတ်သက်၍ လူမှုစီးပွားဆိုင်ရာ ဆန်းစစ်ခြင်းများကို ဦးသိန်းစိုးမှရှင်းလင်းတင်ပြခြင်း
5. တက်ရောက်လာသူများမှ စီမံကိန်းနှင့်ပတ်သက်၍ သိရှိလိုသော အကြောင်းအရာများကို ဆွေးနွေးမေးမြန်းခြင်းနှင့် ဆွေးနွေးမေးမြန်းချက်များနှင့် ပတ်သက်၍ တက်ရောက်လာသည့် အဖွဲ့များမှ ပြန်လည်ရှင်းလင်း ဖြေကြားခြင်း
6. တက်ရောက်လာသူများအား Nippon Paint (Myanmar) Co., Ltd. တာဝန်ရှိသူတစ်ဦးမှကျေးဇူးတင်စကား ပြောကြားခြင်း
7. အခမ်းအနားအစီအစဉ် ပြီးမြောက်ကြောင်းကြေငြာခြင်း။

နောက်ဆက်တွဲ(ခ)

ဆွေးနွေးပွဲတက်ရောက်သူများစာရင်း



# Green Myanmar

## Environmental Services Co., Ltd

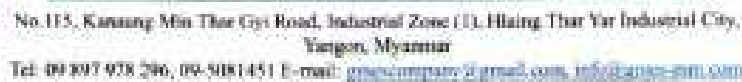
No.115, Kanaung Min Thar Gyi Road, Industrial Zone (1), Hsing Thar Yar Industrial City,  
Yangon, Myanmar  
Tel: 09 897 978 296, 09 5081451 E-mail: [greencompany@gmail.com](mailto:greencompany@gmail.com), [info@green-myanmar.com](mailto:info@green-myanmar.com)

"Nippon Paint (Myanmar) Co., Ltd." ၏ ရန်ကုန်တိုင်းဒေသကြီး၊ လှိုင်သာယာမြို့နယ်၊ ဓမ္မပင်လယ်စက်မှုဇုန်၊  
မြေတိုင်အတွက်အမှတ်(၂၄)၊ အတွက်အမှတ် (၂၄) တွင် အကောင်အထည်ဖော် ဆောင်ရွက်လျက်ရှိသည့်  
"သုတ်ဆေးအမျိုးမျိုးသုတ်လုပ်ခြင်း၊ ဆေးရောင်ချခြင်းလုပ်ငန်း" စီမံကိန်းအတွက်

ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းလုပ်ငန်းအစီရင်ခံစာရေးဆွဲခြင်းနှင့်ပတ်သက်၍  
(တတိယ)အကြိမ်တွေ့ဆုံဆွေးနွေးညှိနှိုင်း တက်ရောက်သူများစာရင်း

ရက်စွဲ :                      နံနက်                      နံနက်                      နံနက်                      နံနက်

စဉ်	အမည်	ရာထူး	အဖွဲ့အစည်းအမည်	လက်မှတ်
၁	ဦးအောင်လှိုင်	လုပ်ငန်းကြံ့ခိုင်ရေး	ECG	
၂	ခေါ်ကြောင်လှိုင်	ဦးစီးအရာရှိ	ECG	
၃	ခေါ်အောင်လှိုင်	ဒုတိယဦးစီးအရာရှိ	ECG	
၄	ဦးစိန်ဝင်း	ရုံးမှူး	ဓမ္မပင်လယ်စက်မှုဇုန်	
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မတ်တင်ကုန်ထိန်ကုန်ဆန်းစစ်ခြင်းလုပ်ငန်းအစီရင်ခံစာရေးဆွဲခြင်းနှင့်မတ်သက်၌  
(တော်ယ)အကြောင်းတွေ ဆွဲဆွဲဆွဲဆွဲသို့ တက်ရောက်သူများစာရင်း

စံ	အမည်	ရာထူး	အသေးစိတ်	မှတ်ချက်
၀	ဦးကျော်	Business Development & Marketing Manager	Wipro/Force co., Ltd	သူ
၁	Thant Kywe	Sales & Mkt	"	သူ
၂	ကုမ္ပဏီ	HR	"	သူ
၃	Non Key Three Progs	HR	"	သူ
၄	Flora Kywe	Pay admin	"	သူ
၅	Zin Win Tun	Safety	"	သူ
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\*Nippon Paint (Myanmar) Co., Ltd. ၏ မြန်မာနိုင်ငံအတွင်းရှိ လိုင်စင်ထားသည့် မြေဆီလောင်စက်များ၊  
မြေတိုင်းဆေးကွက်အမှတ် (၂၄) အကွက်အမှတ် (၂၄) တွင် အကောင်အထည်ဖော် ဆောင်ရွက်လျက်ရှိသည့်  
"သုတေသနအချို့သုတ်လုပ်ခြင်းများ" စီမံကိန်းအတွက်

(ဘဝဟိယ)အကြိမ်စက္ခု မှာပစ္စုပ္ပန်သို့ တက်ရောက်သူများအားလုံး

ရက်စွဲ :                      ခုနှစ်                      လ (                      )ရက်

စဉ်	အမည်	ရာရာ	လက်မှတ်
၀	ဦးအောင်	အထွေထွေ	အထွေထွေ / ပြောကြားသူ
၁	ဦးအောင်	အထွေထွေ	"
၂	ဦးအောင်	အထွေထွေ	အထွေထွေ / ပြောကြားသူ
၃	ဦးအောင်	အထွေထွေ	"
၄	ဦးအောင်	အထွေထွေ	"
၅	ဦးအောင်	အထွေထွေ	"
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“သုတိသေသနစာဖို့သုတိကုသိုလ်ဖြူစင်ရောင်ချေခြင်းလုပ်ငန်း” စီမံကိန်းစာတွက်

တစ်ဝန်းကွင်းထိ နီးကပ်မှုမရှိစေခြင်းအတွက် ငြိမ်သက်စွာ ဆုံးဖြတ်ချက်ချမှတ်ရန်  
(ဟောတိယ) အကြံပြုခဲ့လေ၍ ဆုံးမဆွေးနွေးခဲ့ပြီး တက်ရောက်သူများက အတည်

စဉ်	အမည်	အသက်	အသွယ်အသွယ်	လက်မှတ်
၁	ဒေါ်အောင်နီနီ	၈၀	GAMES	
၂	ဒေါ်နီနီ	၈၀	GAMES	
၃	ဒေါ်အောင်နီနီ	၈၀	GAMES	
၄	ဒေါ်အောင်နီနီ	၈၀	GAMES	
၅	ဒေါ်အောင်နီနီ	၈၀	GAMES	
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# Green Myanmar

## Environmental Services Co., Ltd

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မြေတိုင်းအကွက်အမှတ်(၂၄)၊ အကွက်အမှတ် (၂၄) တွင် အကောင်အထည်ဖော် ဆောင်ရွက်လျက်ရှိသည့်

" သုတ်မဆေးဆန်းသည့်သုတ်လုပ်ခြင်းခြံစိုဆောင်းချခြင်းလုပ်ငန်း" စီမံကိန်းအတွက်  
ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းလုပ်ငန်းအစီရင်ခံစာရေးဆွဲခြင်းနှင့်ပတ်သက်၍  
(တတိယ)အကြိမ်တွေ့ဆုံဆွေးနွေးညှိနှိုင်း တက်ရောက်သူများစာရင်း


ရက်စွဲ ။ ၁၂.၂၄ ရက်၊

က ( )ရက်

စဉ်	အမည်	ရက်တွက်/ ယနေ့စွဲရက်စွဲ	လက်မှတ်
၁	ဦးအောင်စိုး	အုမိ/အုမ မာမယ်ကျေးရွာ	
၂	ဦးမောင်	"	
၃	ဦးနုဒီဒီ	"	
၄	မေအုဝါစိုး	"	
၅	မတက်မေစိုး	"	
၆	ဒေါ်အေးစိုး	"	
၇	ဒေါ်မောင်စိုး	အမယ်ရွာ	
၈	မြတ်လင်း	နမယ်ရွာ	
၉	ကျော်မောင်ကျော်မောင်	"	
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နောက်ဆက်တွဲ (ဂ)

လူထုတွေ့ဆုံပွဲမှ အကြံပြုချက်များ



## Green Myanmar

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မြေတိုင်အတွက်အမှတ်(၂၄)၊ အတွက်အမှတ် (၂၄) တွင် အကောင်အထည်ဖော် ဆောင်ရွက်လျက်ရှိသည့်  
“ သုတ်ဆေးအမျိုးမျိုးထုတ်လုပ်ဖြန့်ဖြူးရောင်းချခြင်းလုပ်ငန်း” စီမံကိန်းအတွက်  
ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းလုပ်ငန်း အစီရင်ခံစာနှင့်ပတ်သက်၍ အကြံပြုစာ  
ရင်းနှီးမြှုပ်နှံလင်းစွာ အကြံပြုဆောင်ရွက်နိုင်ပါကြောင်းနှင့်လူကြီးမင်းတို့၏ အကြံပြုချက်များကို စီမံကိန်း တာဝန်ရှိသူများနှင့်  
တင်ပြဆွေးနွေးပေးသွားမည် ဖြစ်ပါသည်။

ရက်စွဲ : ၂၀၁၇ ခုနှစ် ၈၈ လ ( ၇ ) ရက်

စဉ်	ဆွေးနွေးအကြံပြုချက်
	<p style="font-size: 1.2em;">မာလုတ်အား ခေါ်ဝေါ်ရန်</p>

လက်မှတ် \_\_\_\_\_

အမည် \_\_\_\_\_

ဆက်သွယ်ရန်လိပ်စာ \_\_\_\_\_

yu

ဒေါ်လှညိုစိုး

ဦးမာလုတ် / ဒေါ်ဆုမာလုတ်





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ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းစာရင်း၊ အစီရင်ခံစာနှင့်ပတ်သက်၍ အကြံပြုစာ

ရက်စွဲ :                 နေ့စွဲ :                 လ (                 ) ရက်

cont'd

group

ဆက်သွယ်ရန်ပီပီစာ

7500





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\* Nippon Paint (Myanmar) Co., Ltd.\* ဝါး ချိန်ကုန်တိုင်းအသေကြေး၊ လိုင်ဘာဟာဗြို့နယ်၊ ခွေပင်လယ်စက်မှုဇုန်၊ မြေတိုင်းအကွက်အမှတ်(၂၄) အကွက်အမှတ် (၂၄) တွင် အကောင်အထည်ဖော် ဆောင်ရွက်လျက်ရှိသည့်

\* သုတ်ဆေးအချို့ရှိသည့်လုပ်ငန်းခြံအရောင်းချခြင်းလုပ်ငန်း\* စီမံကိန်းအတွက်

ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းလုပ်ငန်း အစီရင်ခံစာနှင့်ပတ်သက်၍ အကြံပြုစာ

ရင်းနှီးမြှုပ်နှံရင်းနှီးမြှုပ်နှံမှု အကြံပြုချက်များနှင့် ပတ်သက်၍ အကြံပြုချက်များကို စီမံကိန်း တာဝန်ရှိသူများနှင့် တိုင်ကြားမှုများအပေါ်တွင် ဖြစ်ပေါ်သည်။

ရက်စွဲ :                      ခုနှစ်၊                      လ (                      ) နက်

စဉ်	မေ့လျော့သောကြီးများ
	ကနိုက်၊ ကြေးငါးများ ပြုပြင်လဲ၊ ပြန်ကောင်းဆိုပါသည်

လက်မှတ်

အမည်

ဆက်သွယ်ရန်လိုအပ်စာ

Net

ദീനേശ്വരൻ

காரணம்: பின்வரும்:



# Green Myanmar

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မြေတိုင်အတွက်အမှတ်(၂၄)၊ အတွက်အမှတ် (၂၄) တွင် အကောင်အထည်ဖော် ဆောင်ရွက်လျက်ရှိသည့်

"သုတ်ဆေးအမျိုးမျိုးထုတ်လုပ်ခြင်းဖြင့်ဆေးရောင်ချခြင်းလုပ်ငန်း" စီမံကိန်းအတွက်

ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းလုပ်ငန်း အစီရင်ခံစာနှင့်ပတ်သက်၍ အကြံပြုစာ

ရင်းနှီးမြှုပ်နှံလင်းစွာ အကြံပြုရေးသားနိုင်ပါကြောင်းနှင့်လူကြီးမင်းတို့၏ အကြံပြုချက်များကို စီမံကိန်း တာဝန်ရှိသူများနှင့် တင်ပြဆွေးနွေးပေးသွားမည် ဖြစ်ပါသည်။

ရက်စွဲ : ၂၀၂၁ ခုနှစ်၊ ၈၈ လ ( ၇ ) ရက်

စဉ်	ဆွေးနွေးအကြံပြုချက်
	ကလွတ်စား၊ အိမ်စားရန်

လက်မှတ်

အမည်

ဆက်သွယ်ရန်လိပ်စာ

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# Green Myanmar

## Environmental Services Co., Ltd

No.115, Kanung Min Thar Gyi Road, Industrial Zone (1), Hlaing Thar Yar Industrial City,  
Yangon, Myanmar

Tel: 09-897 978 296, 09-5081451 E-mail: [greencompany@gmail.com](mailto:greencompany@gmail.com), [info@green-myanmar.com](mailto:info@green-myanmar.com)

"Nippon Paint (Myanmar) Co., Ltd." ၏ ရန်ကုန်တိုင်းဒေသကြီး၊ လှိုင်သာယာမြို့နယ်၊ ဓမ္မပင်လယ်စက်မှုဇုန်

မြေတိုင်းအကွက်အမှတ်(၂၄)၊ အကွက်အမှတ် (၂၄) တွင် အကောင်အထည်ဖော် ဆောင်ရွက်လျက်ရှိသည့်

" သုတ်ဆေးဆေးချိန်၊ သုတ်လုပ်ခြင်းခြားရောင်းချခြင်းလုပ်ငန်း" စီမံကိန်းအတွက်

ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းလုပ်ငန်း အစီရင်ခံစာနှင့်ပတ်သက်၍ အကြံပြုစာ

ရင်းနှီးမြှုပ်နှံလင်းစွာ အကြံပြုဆရာသာ၊ ခိုင်ပါကြောင်းနှင့် လူကြီးမင်းတို့၏ အကြံပြုချက်များကို စီမံကိန်း တာဝန်ရှိသူများနှင့် တင်ပြဆွေးနွေးပေးသွားမည် ဖြစ်ပါသည်။

ရက်စွဲ : ၂၀၂၄ ခုနှစ်၊ ဩဂုတ်လ ( ၇ ) ရက်

စဉ်	ဆွေးနွေးအကြံပြုချက်
	<p>အကြံပြုချက်များကို စီမံကိန်း တာဝန်ရှိသူများနှင့် တင်ပြဆွေးနွေးပေးသွားမည် ဖြစ်ပါသည်။</p>

လက်မှတ်

အမည်

ဆက်သွယ်ရန်အိမ်စာ

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၀၇-၆၆၇၇၆၅၅၁၀



# Green Myanmar

## Environmental Services Co., Ltd

No.115, Kamang Mee Thar Gyi Road, Industrial Zone (I), Hlaing Thar Yar Industrial City,  
Yangon, Myanmar

Tel: 09 897 978 296, 09-5081451 E-mail: [greencompany@gmail.com](mailto:greencompany@gmail.com), [info@green-mn.com](mailto:info@green-mn.com)

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မြေတိုင်အောက်အမှတ် (၂၄)၊ အကွက်အမှတ် (၂၄) တွင် အကောင်အထည်ဖော် ဆောင်ရွက်လျက်ရှိသည့်  
" သုတ်ဆေးအမျိုးမျိုးသုတ်လုပ်ခြင်းဖြင့်ဆေးဆေးလုပ်ငန်း" စီမံကိန်းအတွက်

ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းလုပ်ငန်း၊ အစီရင်ခံစာနှင့်ပတ်သက်၍ အကြံပြုစာ

ရင်းနှီးမြှုပ်နှံလင်းစွာ အကြံပြုဆရာသားနိုင်ပါကြောင်းနှင့်လူကြီးမင်းတို့၏ အကြံပြုချက်များကို စီမံကိန်း၊ တာဝန်ရှိသူများနှင့်  
ကပ်ပြဆွေးနွေးပေးသွားမည် ဖြစ်ပါသည်။

ရက်စွဲ : ၂၀၂၄ ခုနှစ် ၈ လ ( ၇ ) ရက်

စဉ်	ဆွေးနွေးအကြံပြုချက်
၁-	အကြံပြုချက်များ ကိုလက်ခံပါသည်။

လက်မှတ်

အမည်

ဆက်သွယ်ရန်လိပ်စာ

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၀၉ - ၄၆၆၈၇၆၆၇၉



# Green Myanmar

## Environmental Services Co., Ltd

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မြေတိုင်းအတွက်အမှတ်(၂၄)၊ အတွက်အမှတ် (၂၄) တွင် အကောင်အထည်ဖော် ဆောင်ရွက်လျက်ရှိသည့်  
" သုတ်ဆေးအမျိုးမျိုးသုတ်လုပ်ခြင်းဖြူဆေးရင်းစစ်ခြင်းလုပ်ငန်း" စီမံကိန်းအတွက်

ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းလုပ်ငန်း အစီရင်ခံစာနှင့်ပတ်သက်၍ အကြံပြုစာ

ရင်းနှီးမြှုပ်နှံလင်းစွာ အကြံပြုဆရာသားနိုင်ပါကြောင်းနှင့်လူကြီးမင်းတို့၏ အကြံပြုချက်များကို စီမံကိန်း တာဝန်ရှိသူများနှင့်  
တင်ပြဆွေးနွေးပေးသွားမည် ဖြစ်ပါသည်။


ရက်စွဲ : ၀၇ ခုနှစ် ၂၀၂၄/၀၁ ( ၉ ) ရက်

စဉ်	ဆွေးနွေးအကြံပြုချက်
၁-	အကြံပြုချက်များကို လက်ခံပါသည်။

လက်မှတ်

အမည်

ဆက်သွယ်ရန်လိပ်စာ

  
 ဒေါ်ခင်စန်းစိန်  
 ၀၉-၆၇၆၂၁၂၇၀၅၅



# Green Myanmar

## Environmental Services Co., Ltd

No.115, Kanaung Min Thar Gyi Road, Industrial Zone (1), Hlaing Thar Yar Industrial City,  
Yangon, Myanmar

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"Nippon Paint (Myanmar) Co., Ltd." ၏ ရန်ကုန်တိုင်းဒေသကြီး၊ လှိုင်သာယာမြို့နယ်၊ ဓမ္မပင်လယ်စက်မှုဇုန်၊  
မြေတိုင်းအတွက်အမှတ် (၂၄) အတွက်အမှတ် (၂၄) တွင် အကောင်အထည်ဖော် ဆောင်ရွက်လျက်ရှိသည့်  
" သုတ်ဆေးအမျိုးမျိုးထုတ်လုပ်ဖြန့်ဖြူးရောင်းချခြင်းလုပ်ငန်း" ဝိမံတိန်းအတွက်

ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းလုပ်ငန်း၊ အစီရင်ခံစာနှင့်ပတ်သက်၍ အကြံပြုစာ

ရင်းနှီးမြှုပ်နှံလင်းစွာ အကြံပြုဆေးသားနိုင်ပါကြောင်းနှင့်လူကြီးမင်းတို့၏ အကြံပြုချက်များကို ဝိမံတိန်း တာဝန်ရှိသူများနှင့်  
တင်ပြဆွေးနွေးပေးသွားမည် ဖြစ်ပါသည်။


ရက်စွဲ ၊ ၊ နံနက်၊ လ ( )ရက်

စဉ်	ဆွေးနွေးသောကြံပြုချက်
	<p>စာ: နန္ဒ စာမဂ္ဂါပါမောက္ခ</p>

လက်မှတ်

အမည်

ဆက်သွယ်ရန်လိပ်စာ

  
စာမဂ္ဂါပါမောက္ခ

စာမဂ္ဂါပါမောက္ခ





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ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းလုပ်ငန်း အစီရင်ခံစာနှင့်ပတ်သက်၍ အကြံပြုစာ

ရင်းနှီးမြှုပ်နှံလင်းစွာ အကြံပြုဆေးချာသောနိုင်ငံပါမကြောင်းနှင့်လူကြီးမင်းတို့၏ အကြံပြုချက်များကို စီမံကိန်း တာဝန်ရှိသူများနှင့် တင်ပြဆွေးနွေးပေးသွားမည် ခြင်းပါသည်။

ရက်စွဲ :                      နေ့စွဲ                      နေ့ (                      ) နာရီ

စဉ်	စာမျက်နှာစာရင်း
	၂၀၁၈ ခု ခုနှစ်အတွက်

ကဏ္ဍ

2003

ဆက်သွယ်ရန်ပိတ်

✓

प्रश्न:-

३०

## နောက်ဆက်တွဲ(ဃ)

### အများပြည်သူနှင့်တွေ့ဆုံဆွေးနွေးခြင်းမှတ်တမ်းဓာတ်ပုံ







## Appendix XI Medical Checkup Form

ဝန်ထမ်းများ၏ ကျန်းမာရေးအခြေအနေမှတ်တမ်း

Nippon Paint (Myanmar) Co., Ltd

သုတ်ဆေးအမျိုးမျိုးထုတ်လုပ်ခြင်းလုပ်ငန်း

၁။	အမည်	_____
၂။	လူမျိုး	_____
၃။	မွေးသက္ကရာဇ်	_____
၄။	မွေးဖွားရာဇာတိ	_____
၅။	အိမ်ထောင်ရေးအခြေအနေ	_____
	လူမျိုး/အမျိုး	_____ အိမ်ထောင်ရှိ
၆။	လုပ်သက်	_____
၇။	ဌာန	_____
၈။	နေရပ်လိပ်စာ	_____
၉။	ဆက်သွယ်ရန်ဖုန်း	_____
၁၀။	မိသားစုနောက်ခံ	_____

တော်စပ်ပုံ	အသက်	ကျန်းမာရေးအခြေအနေ	ကွယ်လွန်ပြီးဖြစ်လျှင်		
			ကွယ်လွန်ချိန်အသက်	ရောဂါ	အခြား
ဖခင်					
မိခင်					
ညီ/အကို					
ညီ/အမ					
သား					
သမီး					

၁၁။ ရောဂါဖြစ်ပွားမှု

ရောဂါဖြစ်ပွားမှု	ဖြစ်	မဖြစ်
မကြာခဏလည်ချောင်းနာ		
ရသဏ္ဍိတုပ်ကွေး		
အဆုတ်အဆေးမိ		
ရင်ကြပ်		
တီဘီ		
သွေးပေါင်ချိန်မြင့်တက်ခြင်း		
သွေးပေါင်ချိန်ကျခြင်း		
နှလုံးနှင့်သွေးကြောရောဂါ		
နှလုံးပတ်ဝန်းကျင်နာကျင်ခြင်း (ရင်ဘတ်ဘယ်ဘက်ခြမ်း)		
အစာမကြေခြင်း		
ဆီးနှင့် ကျောက်ကပ်ရောဂါ		
ဆီးကျောက်တည်		
ကျောရိုးနာ		
အဆစ်မြစ်နာ		
အိပ်မပျော်		
မကြာခဏခေါင်းကိုက်		
သွေးချို/ဆီးချို		
ငှက်ဖျားရောဂါ		
ဝမ်းကိုက်		
သွေးလွန်တုပ်ကွေး		
လိပ်ခေါင်းရောဂါ		
အူကျ		
လိင်အပျော်အပါးလိုက်စားမှုကြောင့် ရသည့်ရောဂါ		

၁၂။ အမြင်အာရုံ

ကောင်း/မကောင်း -----

ချို့ယွင်း -----

အကြားအာရုံ -----

အနီးမှန် -----

အဝေးမှန် -----

မျက်မှန်တပ် -----

၁၃။ အကြားအာရုံ

ပုံမှန်

ချို့ယွင်း

ဘယ်ဘက်

ညာဘက်

နားကြားကိရိယာတပ်ဆင်ခြင်း

၁၄။ အခြားမော်ပြရန်ရှိပါက

အတည်ပြုသူ

လက်မှတ်

ရာထူး

ရက်စွဲ

လက်မှတ်

ရာထူး

ဌာန

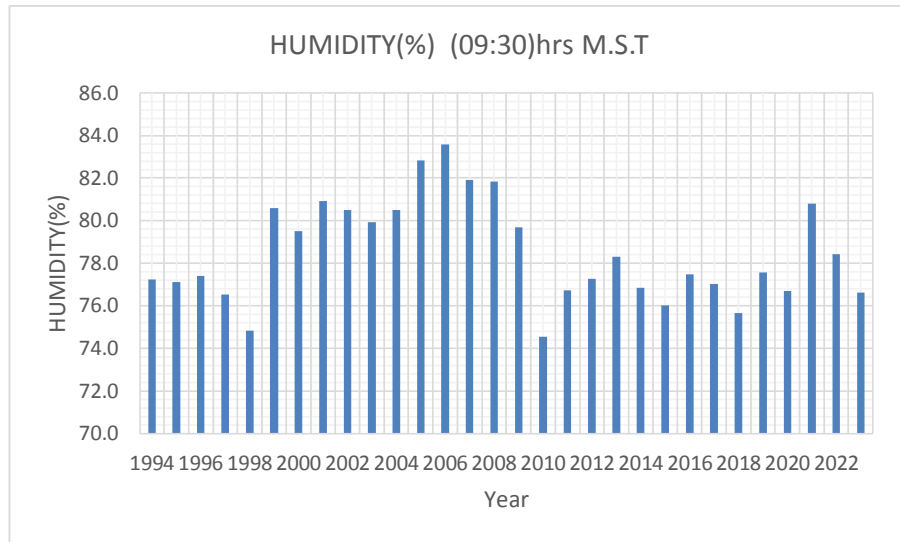
ရက်စွဲ



**Appendix XII 30 Years of Climate Change Data****YEARLY MEAN RELATIVE HUMIDITY(%) AT (09:30)hrs M.S.T****MONTHLY MEAN RELATIVE HUMIDITY(%) AT (09:30)hrs M.S.T**

YEA R	JA N	FE B	MA R	AP R	MA Y	JU N	JUL	AU G	SEP	OC T	NO V	DE C	HUMIDITY (%)
1994	68	62	70	70	82	91	93	92	89	78	68	64	77
1995	66	71	67	69	75	89	91	91	86	81	74	66	77
1996	63	69	73	70	82	85	86	86	84	82	75	73	77
1997	64	66	68	65	75	85	88	88	85	81	78	76	77
1998	70	70	62	62	74	85	85	87	83	80	71	68	75
1999	68	76	77	76	84	88	88	89	88	85	78	70	81
2000	72	68	72	74	83	91	90	90	89	85	73	67	80
2001	69	75	76	69	83	90	92	90	87	90	76	74	81
2002	74	76	75	69	78	90	90	89	90	79	82	74	81
2003	75	69	70	74	83	91	90	92	91	80	70	74	80
2004	74	71	74	68	84	90	91	94	89	80	73	78	81
2005	81	75	73	69	80	92	93	91	91	84	83	82	83
2006	84	75	77	75	84	91	95	93	92	84	78	75	84
2007	74	67	70	69	89	91	92	91	94	87	81	78	82
2008	78	68	71	78	87	89	91	95	92	85	76	72	82
2009	70	74	76	71	82	89	93	90	88	84	70	69	80
2010	70	64	73	67	70	83	85	86	83	80	68	66	75
2011	66	63	71	69	82	87	88	88	88	82	70	67	77
2012	63	70	70	66	77	86	88	89	84	80	78	75	77
2013	71	70	68	67	78	89	89	90	89	81	75	74	78
2014	71	70	66	71	75	87	91	89	83	76	77	66	77
2015	65	66	64	65	73	84	88	89	87	84	76	72	76
2016	67	71	70	68	72	85	88	89	87	86	74	73	77
2017	67	65	64	67	79	85	93	89	86	86	76	68	77
2018	68	63	72	62	70	86	91	89	83	80	72	72	76
2019	69	67	67	63	76	87	91	93	88	80	80	70	78
2020	68	65	66	67	69	86	86	88	86	85	79	76	77

2021	76	73	74	77	74	86	88	87	89	89	82	74	81
2022	77	63	66	65	75	86	88	87	89	89	82	74	78
2023	58	61	68	66	70	86	88	87	89	89	82	74	77

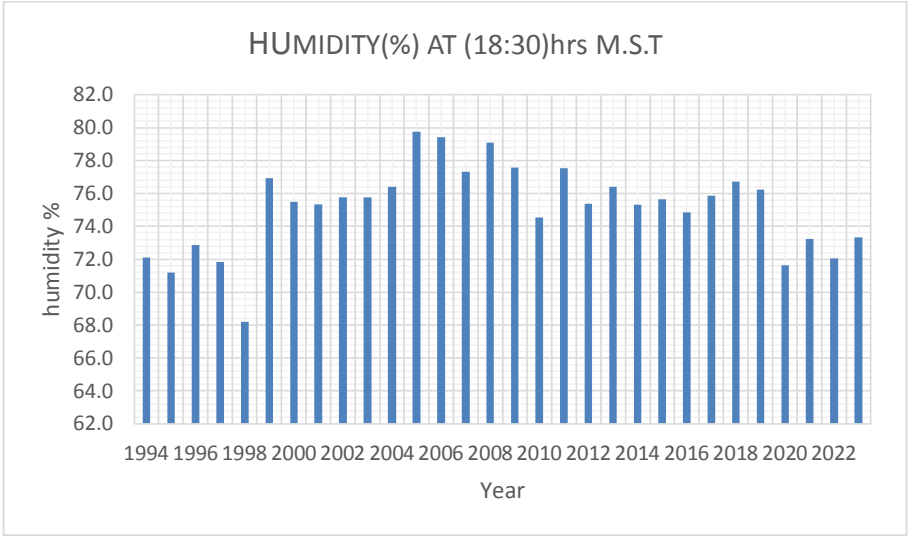


**YEARLY MEAN RELATIVE HUMIDITY(%) AT (18:30)hrs M.S.T**

**MONTHLY MEAN RELATIVE HUMIDITY(%) AT (18:30)hrs M.S.T**

YEA R	JA N	FE B	MA R	AP R	MA Y	JU N	JUL	AU G	SEP	OC T	NO V	DE C	HUMIDITY( %)
1994	55	49	58	62	80	91	93	93	87	75	63	58	72
1995	51	49	53	56	73	90	90	90	87	80	73	62	71
1996	53	50	56	59	82	89	85	89	84	82	74	73	73
1997	54	49	51	52	70	89	90	92	87	82	77	69	72
1998	56	48	42	50	71	88	84	87	83	78	71	61	68
1999	54	65	57	72	84	89	91	89	88	86	80	68	77
2000	60	59	54	67	84	90	87	91	90	86	74	64	76
2001	60	54	66	55	82	89	91	91	89	85	73	69	75
2002	62	55	56	54	76	92	90	93	90	85	81	75	76
2003	69	57	58	60	83	93	88	93	92	81	69	66	76
2004	62	61	56	55	86	90	92	96	90	81	73	75	76
2005	68	57	61	68	82	92	93	92	93	87	84	80	80
2006	76	64	61	66	85	91	96	93	91	86	74	70	79
2007	70	62	58	59	89	91	92	93	94	68	80	72	77
2008	70	62	58	70	88	90	93	93	92	87	76	70	79
2009	62	61	62	67	81	92	94	90	91	86	75	70	78
2010	63	56	58	54	71	87	87	89	90	88	78	75	75
2011	70	57	67	64	84	89	89	93	93	89	74	63	78
2012	59	56	52	57	77	85	91	93	87	84	86	78	75
2013	68	56	54	57	78	90	92	90	92	86	82	73	76
2014	66	55	49	59	74	91	93	90	88	85	82	70	75
2015	65	51	52	57	75	91	92	96	92	89	78	70	76
2016	64	56	57	55	70	87	89	90	91	90	78	71	75
2017	62	50	50	61	75	93	93	93	90	89	83	72	76
2018	71	57	56	58	73	90	96	93	88	86	78	75	77
2019	71	58	52	53	76	90	95	94	89	83	83	70	76
2020	61	53	52	54	67	89	85	88	84	85	73	67	72
2021	63	54	52	68	65	85	88	84	87	88	77	67	73
2022	63	48	49	52	78	87	85	89	86	78	79	71	72

2023	60	54	53	56	65	88	87	90	90	89	76	74	73
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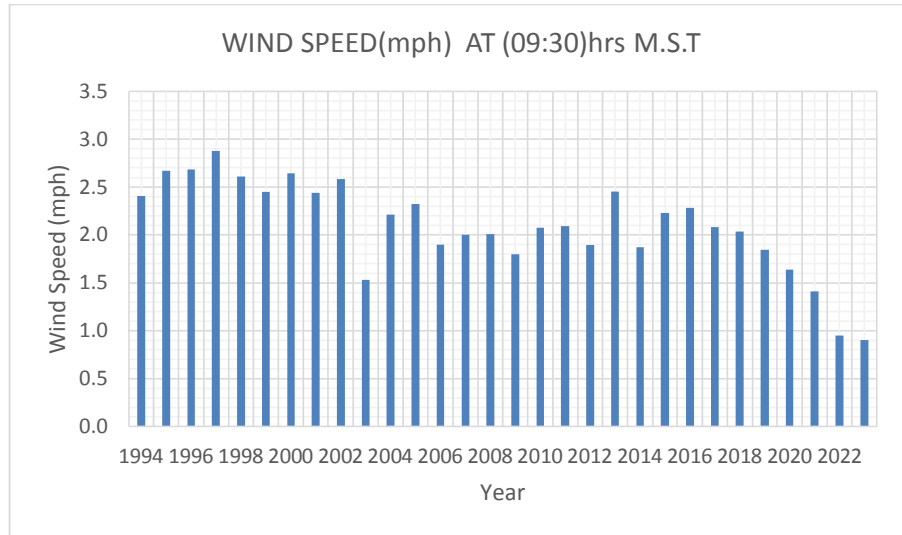


**YEARLY MEAN WIND SPEED(mph) AT (09:30)hrs M.S.T**

**MONTHLY MEAN WIND SPEED(mph) AT (09:30)hrs M.S.T**

YEA R	JAN	FEB	MA R	AP R	MA Y	JUN	JUL	AU G	SEP	OC T	NO V	DE C	WIND SPEED(m ph)
1994	2.3	2.3	2.1	2.3	2.5	2.5	2.7	2.4	2.2	2.3	2.9	2.4	2.4
1995	2.0	2.0	2.7	2.7	3.7	2.8	2.8	2.3	2.1	2.5	4.0	2.5	2.7
1996	2.1	2.1	2.3	2.8	2.6	3.7	3.1	2.2	2.7	2.3	3.0	3.4	2.7
1997	3.0	2.7	2.7	2.5	3.3	3.6	3.6	2.5	2.4	2.4	3.0	2.8	2.9
1998	2.5	2.5	2.4	2.9	2.6	2.4	2.7	2.5	2.6	2.4	3.2	2.5	2.6
1999	2.3	2.2	2.3	2.5	2.5	2.4	2.5	2.5	2.3	3.0	2.3	2.6	2.5
2000	2.9	2.8	2.6	2.9	2.6	2.9	2.4	2.4	2.3	2.7	2.6	2.6	2.6
2001	2.1	2.1	2.3	2.1	2.3	2.6	1.9	2.6	2.6	2.5	3.3	2.9	2.4
2002	2.7	2.4	2.4	2.4	3.5	2.7	3.0	3.1	2.7	2.1	2.0	2.1	2.6
2003	1.5	1.4	1.5	1.6	1.9	1.8	1.7	1.3	1.1	1.4	1.7	1.5	1.5
2004	1.4	1.6	1.3	3.5	2.8	3.3	1.7	2.2	2.4	1.9	2.0	2.4	2.2
2005	2.1	1.6	2.3	2.7	2.5	2.1	2.5	2.4	2.4	2.2	2.4	2.7	2.3
2006	1.6	1.4	1.6	2.0	2.3	1.8	1.7	1.8	2.1	1.8	2.3	2.2	1.9
2007	1.7	1.9	1.8	2.1	2.6	2.1	2.1	2.3	1.8	1.9	1.9	1.8	2.0
2008	1.7	1.4	1.5	1.5	4.8	2.1	2.1	1.9	1.7	1.5	2.1	1.8	2.0
2009	1.9	1.5	2.0	2.0	1.7	1.8	2.0	1.6	1.7	1.7	1.9	1.8	1.8
2010	1.9	2.0	1.7	2.0	2.3	2.2	1.8	2.1	2.0	2.4	2.4	2.2	2.1
2011	2.0	2.1	2.5	1.7	2.1	2.4	1.9	2.0	2.1	2.1	1.7	2.6	2.1
2012	2.1	1.8	1.5	1.9	1.5	1.9	1.5	1.6	1.6	1.9	2.5	2.8	1.9
2013	2.6	2.8	2.6	2.6	2.8	2.5	2.4	2.3	1.7	2.3	2.8	2.1	2.5
2014	2.2	1.7	1.9	1.6	1.9	1.6	2.0	2.0	1.6	2.0	1.9	2.0	1.9
2015	2.2	1.8	2.4	2.2	2.0	1.7	2.4	1.7	2.1	3.1	2.7	2.5	2.2
2016	2.7	2.2	1.7	2.1	2.4	2.1	2.1	2.5	2.4	2.3	2.7	2.3	2.3
2017	2.4	2.0	1.7	1.7	2.0	2.5	1.9	1.7	2.0	2.2	1.9	2.7	2.1
2018	1.9	1.6	1.7	1.6	2.2	2.4	2.0	2.3	2.4	1.9	2.2	2.1	2.0
2019	1.9	1.7	1.8	1.7	1.8	1.9	1.9	1.9	2.1	1.5	1.8	2.0	1.8
2020	1.6	2.0	1.7	1.6	1.5	1.5	1.4	1.6	1.5	1.8	1.7	1.6	1.6
2021	1.5	1.5	1.3	1.4	1.4	1.5	1.8	1.5	1.6	1.0	1.3	1.3	1.4

2022	0.9	1.0	0.8	1.1	1.3	0.8	0.9	1.2	0.6	0.8	1.0	1.0	1.0
2023	1.0	0.5	0.8	1.2	1.3	0.7	0.8	1.0	1.0	0.7	1.1	0.9	0.9



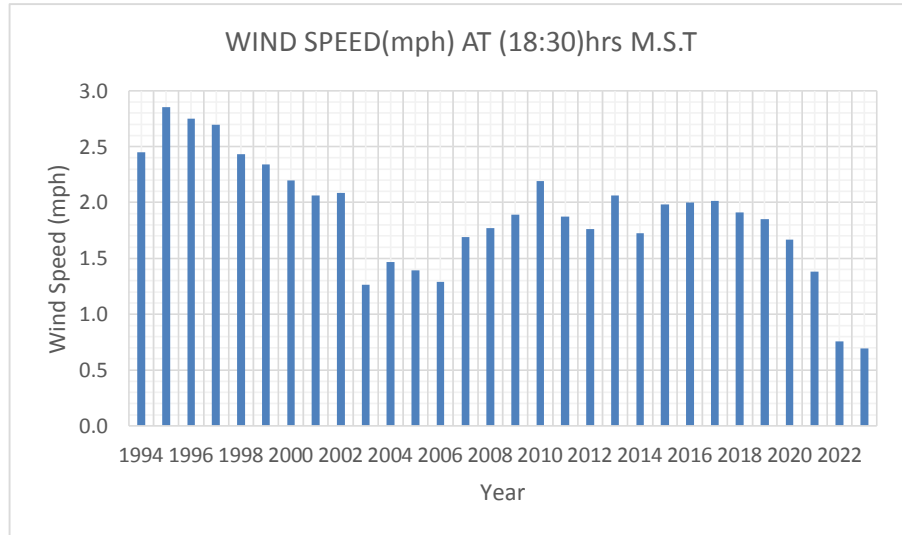


**YEARLY MEAN WIND SPEED(mph) AT (18:30)hrs M.S.T**

**MONTHLY MEAN WIND SPEED(mph) AT (18:30)hrs M.S.T**

YEA R	JAN	FEB	MA R	AP R	MA Y	JUN	JUL	AU G	SEP	OC T	NO V	DE C	WIND SPEED(m ph)
1994	1.9	2.5	3.6	4.2	2.6	2.1	2.5	2.7	2.1	1.6	1.5	2.1	2.5
1995	1.5	2.8	5.3	5.2	3.1	2.6	3.3	2.4	2.4	1.9	2.2	1.6	2.9
1996	1.7	2.4	3.2	4.2	2.7	2.8	3.0	2.5	2.9	2.1	2.7	2.9	2.7
1997	2.6	2.2	2.9	2.8	3.5	3.6	3.6	2.6	2.5	2.1	2.1	1.8	2.7
1998	2.1	2.6	2.6	2.9	3.0	2.2	2.5	2.5	2.4	2.2	2.2	2.2	2.4
1999	2.2	2.4	2.8	2.8	2.5	2.5	2.3	2.5	2.6	2.1	1.6	1.7	2.3
2000	1.9	1.9	2.4	2.9	2.5	3.3	2.7	2.1	2.1	1.5	1.4	1.7	2.2
2001	1.4	1.9	2.7	2.8	3.0	2.0	1.9	2.3	2.2	1.4	1.4	1.6	2.1
2002	1.2	1.8	2.5	4.1	3.6	2.1	2.6	2.3	1.8	1.0	1.3	0.6	2.1
2003	0.5	1.0	1.8	2.5	1.5	2.1	2.0	1.0	0.9	0.6	0.6	0.6	1.3
2004	0.5	1.0	1.7	2.9	2.6	2.4	1.9	1.1	1.0	0.9	0.8	0.8	1.5
2005	0.8	1.1	1.7	2.1	2.0	1.6	1.6	2.0	1.6	0.8	0.6	0.9	1.4
2006	0.8	0.9	1.5	1.9	1.4	1.4	1.6	1.8	1.1	1.0	1.1	1.1	1.3
2007	0.9	1.2	1.7	3.0	2.2	2.3	2.0	1.7	1.5	1.2	1.4	1.2	1.7
2008	1.2	1.2	1.7	1.7	2.1	2.4	2.6	1.9	1.7	1.5	1.6	1.6	1.8
2009	1.6	1.8	2.2	2.4	1.9	2.2	2.2	1.5	2.0	1.6	1.7	1.7	1.9
2010	1.7	2.1	2.5	2.7	2.9	2.1	2.2	1.9	2.0	2.4	2.0	1.9	2.2
2011	1.6	1.6	2.4	1.9	1.9	2.4	2.0	2.0	2.1	1.7	1.4	1.5	1.9
2012	1.5	1.6	1.6	2.5	2.2	2.0	1.6	1.8	1.7	1.5	1.5	1.5	1.8
2013	1.6	1.7	2.6	2.9	3.1	1.9	2.0	2.1	1.8	1.9	1.5	1.6	2.1
2014	1.5	1.8	2.1	2.2	2.0	1.9	2.0	1.7	1.7	1.3	1.2	1.2	1.7
2015	1.4	1.5	2.4	3.1	2.3	2.0	2.0	1.7	2.2	1.8	1.8	1.6	2.0
2016	1.5	1.7	1.6	2.6	2.8	2.7	2.1	2.1	2.0	1.8	1.5	1.6	2.0
2017	1.6	1.6	2.0	2.3	3.5	2.3	2.1	1.8	2.2	1.5	1.8	1.6	2.0
2018	1.4	1.5	2.0	2.0	2.3	2.3	2.2	2.2	2.0	1.6	1.9	1.6	1.9
2019	1.5	1.3	1.6	2.6	2.8	1.8	2.0	2.2	2.2	1.4	1.6	1.4	1.9
2020	1.3	1.5	1.7	2.2	1.7	2.1	1.7	1.9	1.6	1.7	1.3	1.3	1.7
2021	1.4	1.3	1.2	1.6	2.0	1.8	2.0	1.6	1.8	0.7	0.5	0.5	1.4

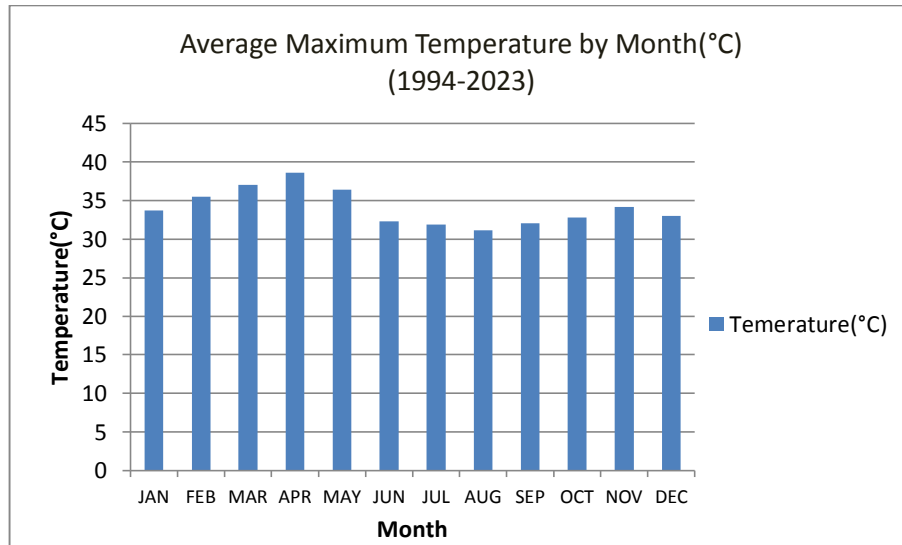
2022	0.6	0.6	1.0	0.9	1.1	0.8	0.9	1.2	0.7	0.6	0.1	0.7	0.8
2023	0.4	1.0	0.4	0.8	1.5	0.7	0.9	0.9	0.8	0.3	0.5	0.3	0.7



**YEARLY MAXIMUM TEMPERATURE (°C)****MONTHLY MAXIMUM TEMPERATURE (°C)**

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1994	34.5	35.9	37.3	39.3	37.4	32.7	32.5	31.2	32.2	32.8	34.7	33.1
1995	34.5	35.9	37.3	39.3	37.4	32.7	32.5	31.2	32.2	32.8	34.7	33.1
1996	33.2	34.1	36.2	36.4	32.8	31.0	31.2	30.7	31.7	32.5	32.5	32.5
1997	34.5	35.9	37.3	39.3	37.4	32.7	32.5	31.2	32.2	32.8	34.7	33.1
1998	34.5	35.9	37.3	39.3	37.4	32.7	32.5	31.2	32.2	32.8	34.7	33.1
1999	34.5	35.9	37.3	39.3	37.4	32.7	32.5	31.2	32.2	32.8	34.7	33.1
2000	34.5	35.9	37.3	39.3	37.4	32.7	32.5	31.2	32.2	32.8	34.7	33.1
2001	34.5	35.9	37.3	39.3	37.4	32.7	32.5	31.2	32.2	32.8	34.7	33.1
2002	34.5	35.9	37.3	39.3	37.4	32.7	32.5	31.2	32.2	32.8	34.7	33.1
2003	34.5	35.9	37.3	39.3	37.4	32.7	32.5	31.2	32.2	32.8	34.7	33.1
2004	34.5	35.9	37.3	39.3	37.4	32.7	32.5	31.2	32.2	32.8	34.7	33.1
2005	34.5	35.9	37.3	39.3	37.4	32.7	32.5	31.2	32.2	32.8	34.7	33.1
2006	34.5	35.9	37.3	39.3	37.4	32.7	32.5	31.2	32.2	32.8	34.7	33.1
2007	34.5	35.9	37.3	39.3	37.4	32.7	32.5	31.2	32.2	32.8	34.7	33.1
2008	34.5	35.9	37.3	39.3	37.4	32.7	32.5	31.2	32.2	32.8	34.7	33.1
2009	34.5	35.9	37.3	39.3	37.4	32.7	32.5	31.2	32.2	32.8	34.7	33.1
2010	34.5	35.9	37.3	39.3	37.4	32.7	32.5	31.2	32.2	32.8	34.7	33.1
2011	32.3	34.8	33.7	36.5	33.0	31.7	31.2	30.5	31.2	33.0	34.2	33.3
2012	33.5	36.0	36.9	37.9	34.8	31.7	31.1	30.2	32.1	33.9	33.8	33.0
2013	32.7	36.7	37.1	38.6	35.5	31.4	30.4	30.9	31.2	32.6	34.1	30.9
2014	32.3	34.4	37.4	38.1	35.9	32.1	31.0	31.1	31.9	33.6	33.4	33.8
2015	32.7	35.0	37.7	38.1	35.9	32.3	31.7	31.2	32.2	32.5	34.1	33.3
2016	31.6	34.4	36.7	38.6	37.1	31.7	31.8	31.3	31.9	32.3	33.4	33.5
2017	33.0	34.8	36.7	36.1	35.0	31.4	30.1	30.7	32.3	31.9	33.1	32.0
2018	32.4	34.4	36.4	37.5	35.2	31.0	29.9	30.2	31.9	32.9	33.7	33.2
2019	32.3	35.7	36.9	40.0	36.1	31.8	30.7	30.1	31.9	34.3	33.3	32.4
2020	33.5	34.9	37.3	39.1	37.1	32.2	31.9	31.5	32.1	31.5	33.9	33.6
2021	33.2	35.2	38.3	36.2	36.9	32.3	31.3	32.3	31.2	32.4	34.4	33.1
2022	33.4	34.7	36.9	37.3	33.9	32.0	31.8	31.0	31.5	33.0	33.2	33.0

2023	32.5	35.0	36.7	38.6	36.5	31.5	31.7	32.0	31.7	32.2	34.3	34.0
<b>Average Maximum</b>	33.7	35.4	37.0	38.6	36.4	32.3	31.9	31.1	32.0	32.8	34.2	33.0
<b>m</b>												

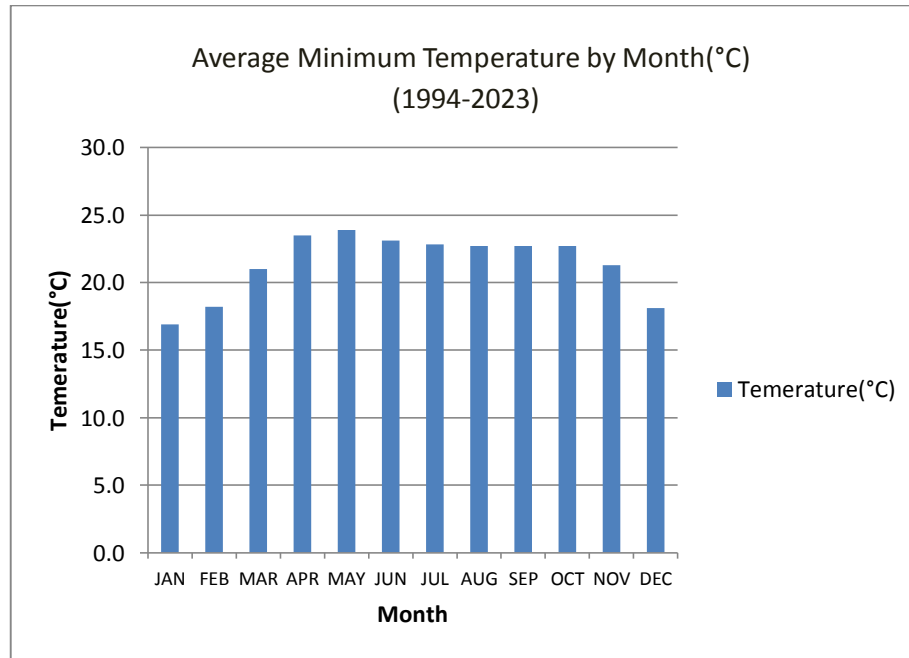


**YEARLY MINIMUM TEMPERATURE(°C)**

**MONTHLY MINIMUM TEMPERATURE(°C)**

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1994	17.5	19.5	21.2	24.3	25.0	23.3	23.2	22.8	23.0	22.6	20.5	17.8
1995	17.1	17.9	21.1	23.5	23.9	23.4	22.2	22.9	22.3	22.6	21.3	16.1
1996	14.5	18.3	20.8	22.9	24.1	24.1	23.9	23.4	23.6	23.5	22.3	19.2
1997	15.5	15.0	19.8	21.1	23.6	22.7	20.4	20.1	19.2	20.1	20.4	18.6
1998	16.1	17.0	19.7	23.7	25.8	24.8	24.6	24.1	24.6	24.5	23.5	20.7
1999	19.4	22.4	22.2	24.7	24.1	24.2	23.8	23.6	23.6	23.7	22.5	17.3
2000	17.6	18.8	21.4	24.8	24.4	23.4	24.1	23.7	23.5	23.4	20.7	18.1
2001	17.6	18.8	22.5	24.2	23.8	23.0	23.1	23.0	22.9	22.3	18.9	18.6
2002	16.6	18.4	20.0	22.8	22.9	22.6	22.6	21.8	21.9	21.8	21.0	17.8
2003	16.1	17.7	19.7	22.6	22.1	21.3	21.5	21.3	20.9	21.6	18.6	15.9
2004	15.1	15.9	18.9	21.7	21.7	20.5	20.3	20.3	20.6	20.3	19.0	13.8
2005	14.2	16.2	19.2	21.5	21.9	21.2	20.3	20.5	20.5	20.5	18.8	16.7
2006	14.8	16.3	19.4	21.0	20.8	20.6	20.1	22.8	24.2	24.5	22.2	17.8
2007	17.4	19.0	21.1	25.0	24.4	24.1	23.2	23.0	22.5	22.2	20.6	16.5
2008	17.0	17.4	21.1	23.3	22.6	22.0	21.6	21.3	21.3	21.5	19.5	16.6
2009	15.6	17.8	20.9	22.5	22.1	21.6	20.6	21.4	21.1	21.0	18.5	14.6
2010	15.9	18.3	23.2	25.6	25.9	25.4	25.0	24.6	24.3	24.1	22.0	19.2
2011	18.2	19.5	21.6	24.4	24.7	24.7	24.0	23.7	23.6	23.5	21.4	19.7
2012	17.1	18.8	21.9	24.4	24.5	23.6	22.7	22.4	22.6	22.7	22.1	17.3
2013	15.8	19.2	20.0	21.9	22.4	22.1	24.1	24.2	23.9	23.7	22.9	17.6
2014	16.1	17.8	20.0	23.8	23.7	22.8	21.8	21.3	21.0	22.6	21.9	19.5
2015	18.9	18.8	21.8	23.9	24.9	24.5	24.4	24.3	24.0	23.5	22.0	19.3
2016	15.7	18.8	22.1	24.1	24.2	23.2	22.9	22.6	23.9	24.0	22.8	21.4
2017	19.9	19.6	21.6	24.3	25.2	23.9	23.2	23.0	23.1	22.2	21.7	18.1
2018	17.3	17.4	20.4	22.8	23.2	21.6	21.4	21.0	21.1	20.5	18.7	17.9
2019	16.4	17.5	19.6	22.2	25.3	24.8	23.7	24.3	24.0	24.3	22.9	17.3
2020	17.5	18.2	21.6	24.6	25.7	24.1	24.2	23.7	23.8	23.2	22.5	19.7
2021	19.0	18.9	22.0	23.0	23.8	21.9	21.8	23.3	23.5	23.8	23.2	18.3
2022	18.5	17.2	22.9	24.9	25.0	24.6	24.3	23.4	23.9	23.2	22.6	21.0

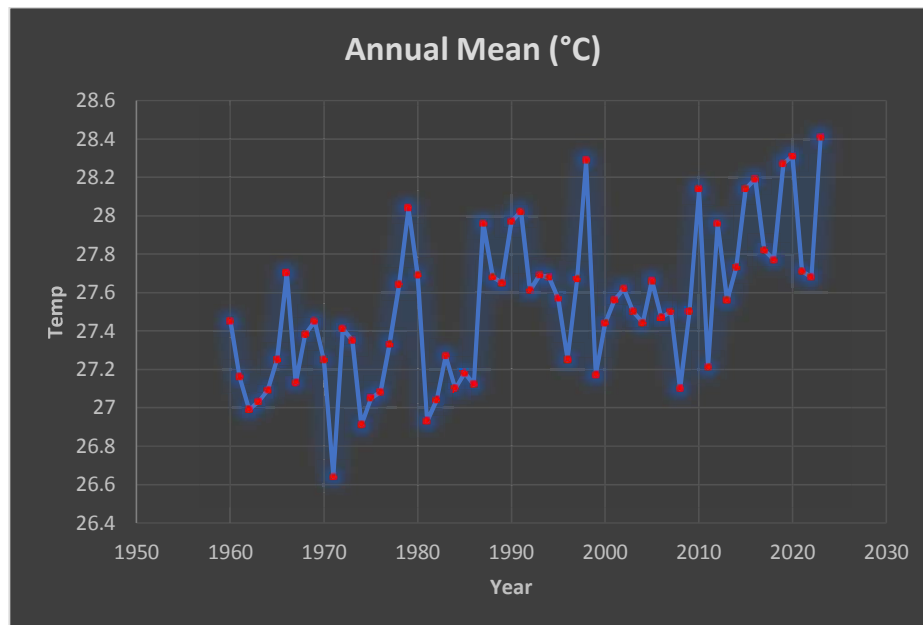
2023	17.3	18.5	22.1	24.5	25.2	24.3	24.3	24.4	24.2	23.8	23.0	21.2
<b>Average Minimum</b>	16.9	18.2	21.0	23.5	23.9	23.1	22.8	22.7	22.7	22.7	21.3	18.1





**Annual Mean Temperature(°C)**

	<b>Categor y</b>	<b>Annual Mean</b>	<b>Categor y</b>	<b>Annual Mean</b>	<b>Categor y</b>	<b>Annual Mean</b>	<b>Categor y</b>	<b>Annual Mean</b>
1	1960	27.45	1976	27.08	1992	27.61	2008	27.1
2	1961	27.16	1977	27.33	1993	27.69	2009	27.5
3	1962	26.99	1978	27.64	1994	27.68	2010	28.14
4	1963	27.03	1979	28.04	1995	27.57	2011	27.21
5	1964	27.09	1980	27.69	1996	27.25	2012	27.96
6	1965	27.25	1981	26.93	1997	27.67	2013	27.56
7	1966	27.7	1982	27.04	1998	28.29	2014	27.73
8	1967	27.13	1983	27.27	1999	27.17	2015	28.14
9	1968	27.38	1984	27.1	2000	27.44	2016	28.19
10	1969	27.45	1985	27.18	2001	27.56	2017	27.82
11	1970	27.25	1986	27.12	2002	27.62	2018	27.77
12	1971	26.64	1987	27.96	2003	27.5	2019	28.27
13	1972	27.41	1988	27.68	2004	27.44	2020	28.31
14	1973	27.35	1989	27.65	2005	27.66	2021	27.71
15	1974	26.91	1990	27.97	2006	27.47	2022	27.68
16	1975	27.05	1991	28.02	2007	27.5	2023	28.41



**YEARLY TOTAL RAINFALL (mm)**

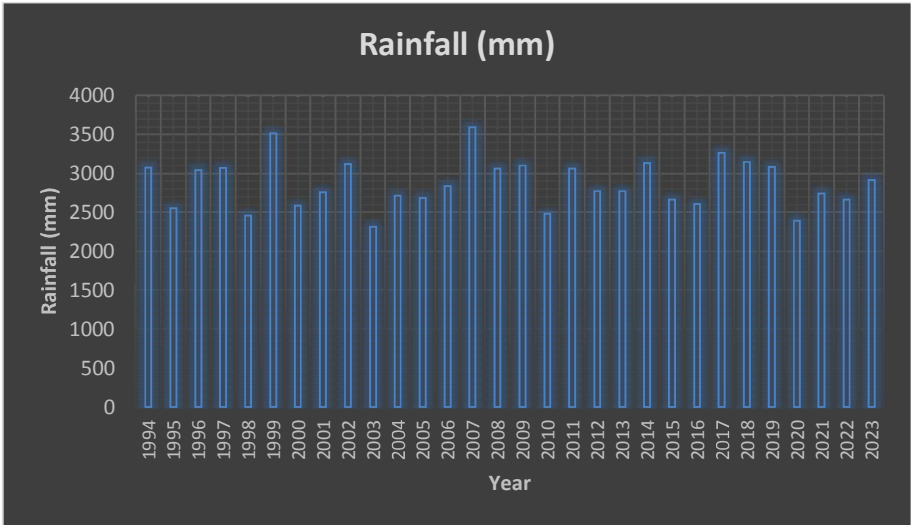
**MONTHLY TOTAL RAINFALL (mm)**

YEA R	JAN	FEB	MA R	APR	MA Y	JUN	JUL	AUG	SEP	OCT	NOV	DEC	RAINFA LL (mm)
1994	0	Trace	138	3	240	694	680	751	383	167	16	0	3072
1995	0	0	0	0	219	588	598	351	517	243	36	0	2552
1996	0	74	0	43	375	560	479	675	496	196	132	11	3041
1997	0	0	0	38	261	455	773	848	530	129	34	0	3068
1998	0	0	0	24	419	425	404	623	295	247	16	0	2453
1999	0	0	50	388	510	566	526	568	449	388	67	0	3512
2000	0	0	0	34	333	663	434	414	478	224	3	0	2583
2001	0	9	53	0	369	591	682	452	268	312	21	0	2757
2002	0	0	0	Trace	413	631	504	604	596	124	224	24	3120
2003	1	0	0	0	454	598	387	445	352	78	0	0	2315
2004	0	0	0	12	411	734	506	703	297	49	0	0	2712
2005	0	0	39	10	151	445	673	538	578	108	43	94	2679
2006	0	0	Trace	156	341	411	780	634	366	147	Trace	0	2835
2007	0	0	0	Trace	837	559	700	446	774	260	16	0	3592
2008	5	7	25	169	656	431	541	474	448	301	6	0	3063
2009	0	0	5	46	457	561	914	485	508	125	0	0	3101
2010	Trace	0	0	0	308	529	367	467	402	367	7	33	2480
2011	48	0	127	5	412	567	574	615	538	178	Trace	0	3064
2012	Trace	0	0	8	167	450	717	864	379	69	115	2	2771
2013	6	0	0	0	125	551	630	464	612	371	13	3	2775
2014	0	0	0	Trace	295	701	818	575	197	224	300	26	3136
2015	0	0	9	40	185	580	687	408	329	355	69	0	2662
2016	23	0	0	0	288	379	618	526	543	227	1	0	2605
2017	1	0	0	81	449	650	802	382	401	371	125	Trace	3262
2018	Trace	0	0	42	259	627	806	578	472	229	70	61	3144
2019	50	0	0	0	271	551	630	782	450	183	167	0	3084
2020	0	0	0	6	221	671	410	406	336	275	69	0	2394
2021	Trace	Trace	0	70	135	819	596	227	408	433	50	0	2738
2022	2	6	44	15	431	344	529	796	304	150	39	4	2664

2023	0	7	5	0	155	759	527	425	541	434	57	4	2914
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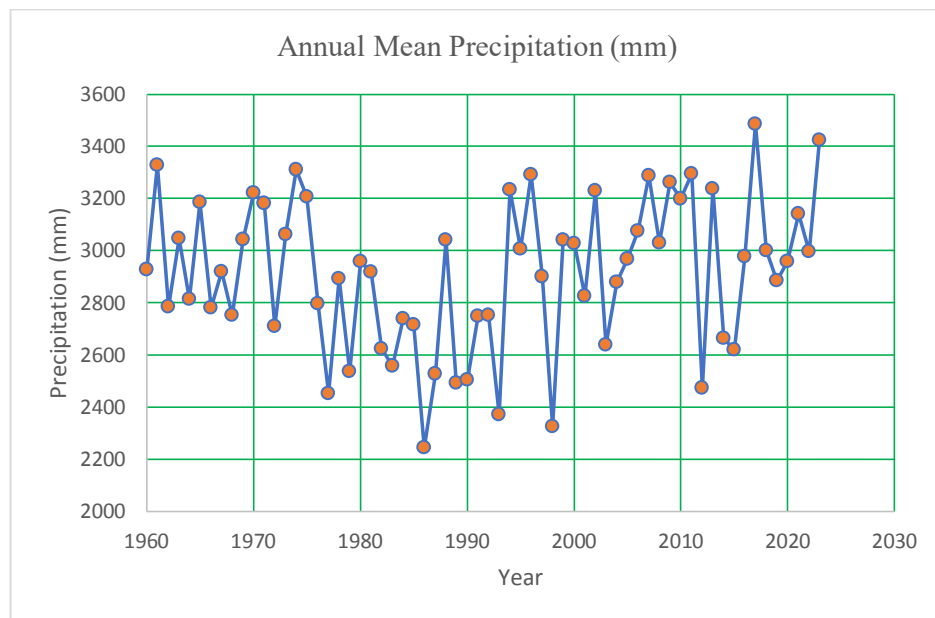
"Trace" : The amount of rainfall which cannot be measured

"1mm=0.04 inch"



**Annual Mean Precipitation (mm)**


Category	Annual Mean	Category	Annual Mean	Category	Annual Mean	Category	Annual Mean
1960	2927.75	1976	2796.86	1992	2751.9	2008	3028.74
1961	3327.74	1977	2451.44	1993	2372.19	2009	3262.24
1962	2785.1	1978	2893.47	1994	3234.31	2010	3199.21
1963	3045.93	1979	2536.36	1995	3006.06	2011	3294.85
1964	2813.47	1980	2958.28	1996	3290.38	2012	2473.55
1965	3185.38	1981	2918.13	1997	2900.81	2013	3236.61
1966	2780.98	1982	2624.23	1998	2325.74	2014	2664.08
1967	2920.13	1983	2557.93	1999	3040.81	2015	2618.75
1968	2751.79	1984	2738.39	2000	3027.23	2016	2977.25
1969	3043.55	1985	2716.38	2001	2825.52	2017	3485.21
1970	3221.87	1986	2244.48	2002	3230.37	2018	3000.05
1971	3182.36	1987	2526.7	2003	2638.3	2019	2884.73
1972	2709.71	1988	3040.53	2004	2879.52	2020	2958.2
1973	3062.9	1989	2493.26	2005	2967.11	2021	3140.98
1974	3309.79	1990	2504.42	2006	3076.35	2022	2997.63
1975	3205.6	1991	2749.1	2007	3287.18	2023	3424.39



		<b>May</b>	<b>Jun</b>	<b>Jul</b>	<b>Aug</b>	<b>Sep</b>	<b>Oct</b>	<b>Nov</b>
1	1994	240	694	680	751	383	167	16
2	1995	219	588	598	351	517	243	36
3	1996	375	560	479	675	496	196	132
4	1997	261	455	773	848	530	129	34
5	1998	419	425	404	623	295	247	16
6	1999	510	566	526	568	449	388	67
7	2000	333	663	434	414	478	224	3
8	2001	369	591	682	452	268	312	21
9	2002	413	631	504	604	596	124	224
10	2003	454	598	387	445	352	78	0
11	2004	411	734	506	703	297	49	0
12	2005	151	445	673	538	578	108	43
13	2006	341	411	780	634	366	147	Trace
14	2007	837	559	700	446	774	260	16
15	2008	656	431	541	474	448	301	6
16	2009	457	561	914	485	508	125	0
17	2010	308	529	367	467	402	367	7
18	2011	412	567	574	615	538	178	Trace
19	2012	167	450	717	864	379	69	115
20	2013	125	551	630	464	612	371	13
21	2014	295	701	818	575	197	224	300
22	2015	185	580	687	408	329	355	69
23	2016	288	379	618	526	543	227	1
24	2017	449	650	802	382	401	371	125
25	2018	259	627	806	578	472	229	70
26	2019	271	551	630	782	450	183	167
27	2020	221	671	410	406	336	275	69
28	2021	135	819	596	227	408	433	50
29	2022	431	344	529	796	304	150	39
30	2023	155	759	527	425	541	434	57
	<b>Max</b>	837.00	819.00	914.00	864.00	774.00	434.00	300.00
	<b>Avg</b>	338.23	569.67	609.73	550.87	441.57	232.13	60.57
	<b>Min</b>	125.00	344.00	367.00	227.00	197.00	49.00	0.00
	<b>Std Dev</b>	157.64	115.99	143.25	156.03	122.51	109.78	72.92


## Appendix XIII Wastewater Quality Test Result Form


### WasteWater(Inlet)



**ISO  
TECH  
LABORATORY**

Laboratory Technical Consultant: U Saw Christopher Maung  
B.Sc Engg. (Civil), Dip S.E.(Defn) Lecturer of YIT (Reid), Consultant (YK-001) WSE-001  
Former Member (UNICEF, Water quality monitoring & Surveillance Myanmar)





**WTL-RE-001**  
Issue Date - 01-12-2012  
Effective Date - 01-12-2012  
Issue No - 1.0/ Page 1 of 2

**WW00325 009**

### WATER QUALITY TEST RESULTS FORM

Client	Nippon Paint Myanmar
Nature of Water	Waste Water (Inlet)
Location	No.44, Ngwe Pin Lae 2 Road, Ngwe Pin Lae Industrial Zone.
Date and Time of collection	3.3.2025
Date and Time of arrival at Laboratory	5.3.2025
Date and Time of commencing examination	6.3.2025
Date and Time of completing	8.3.2025

### Results of Water Analysis

pH	-	
Colour (True)	-	TCU
Turbidity	-	NTU
Conductivity	-	micro S/cm
Total Hardness	-	mg/l as CaCO <sub>3</sub>
Calcium Hardness	-	mg/l as CaCO <sub>3</sub>
Magnesium Hardness	-	mg/l as CaCO <sub>3</sub>
Total Alkalinity	-	mg/l as CaCO <sub>3</sub>
Phenolphthalein Alkalinity	-	mg/l as CaCO <sub>3</sub>
Carbonate (CaCO <sub>3</sub> )	-	mg/l as CaCO <sub>3</sub>
Bicarbonate (HCO <sub>3</sub> )	-	mg/l as CaCO <sub>3</sub>
Iron	1.0	mg/l
Chloride (as CL)	-	mg/l
Sodium Chloride (as NaCL)	-	mg/l
Sulphate (as SO <sub>4</sub> )	-	mg/l
Total Solids	-	mg/l
Total Suspended Solids	10	mg/l
Total Dissolved Solids	-	mg/l
Manganese	-	mg/l
Phosphate	-	mg/l
Phenolphthalein Acidity	-	mg/l
Methyl Orange Acidity	-	mg/l
Salinity	-	ppt


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

**Tested by**  
Signature: Zaw Hein Oo  
**B.Sc (Chemistry)**  
Name: Sr.Chemist  
(a division of WEG Co., Ltd.) **ISO Tech Laboratory**

**Approved by**  
Signature: Thinzar Thant  
**B.E (Civil)**  
Name: Assistant Technical Officer  
**ISO Tech Laboratory**


No.18, Lanthit Road, Nanthargone Quarter, Insein Township, Yangon, Myanmar  
Ph: 01-640955, 09-880100172, 09-880100173, 01-644506, E-mail: isotechlaboratory@gmail.com, Website: weg-myanmar.com






**ISO  
TECH  
LABORATORY**

Laboratory Technical Consultant: U Saw Christopher Maung  
B.Sc. Engg. (Civil), Dip. S.E. (Defn), Lecturer of YIT (Retd), Consultant (Y.C.D.C), LWSE 001.  
Former Member (UNICEF, Water quality monitoring & Surveillance Myanmar)





ISO 9001:2015 Cert. No. 648283

**WTL-RE-001**  
 Issue Date - 01-1-2016  
 Effective Date - 01-1-2016  
 Issue No - 1.0/ Page 1 of 1

**M0325 016**

**WATER QUALITY TEST (MICROBIOLOGY) RESULTS FORM**

Client	Nippon Paint Myanmar		
Nature of Water	Wastewater (inlet)		
Location	No 44, Ngwe Pin Lae 2 Road, Ngwe Pin Lae Industrial Zone,		
Date and Time of collection	6.3.2025		
Date and Time of arrival at Laboratory	6.3.2025		
Date and Time of commencing examination	6.3.2025		
Date and Time of completing	7.3.2025		

**Results of Water Analysis**


**WHO Drinking Water Guideline  
(Geneva - 1993)**

Total Coliform Count	8	CFU/100ml	Not detected
Thermotolerant (fecal) Coliform Count	Not detected (<1)	CFU/100ml	Not detected
pH	8.1		6.5 - 8.5
Turbidity	1.5	NTU	5 NTU
Colour (True)	Nil	TCU	15 TCU
Free Chlorine	Nil	mg/l	
Total Chlorine	Nil	mg/l	

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

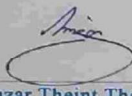
: < - Less than

**Tested by**

Signature: 

Name: Zaw Hein Oo  
B.Sc (Chemistry)  
 Sr. Chemist  
 ISO Tech Laboratory


**Approved by**

Signature: 

Name: Thinzar Theint Theint  
B.E (Civil)  
 Assistant Technical Officer  
 ISO Tech Laboratory


(a division of WEG Co., Ltd.)


No.18, Lanthit Road, Nantharagone Quarter, Insein Township, Yangon, Myanmar.  
 Ph: 01-640955, 09-880100172, 09-880100173, 01-644506, E-mail: isotechlaboratory@gmail.com, Website: weg-myanmar.com



**ISO  
TECH  
LABORATORY**

Laboratory Technical Consultant: U Saw Christopher Maung  
B.Sc Engg. (Civil), Dip S.E (Delft) Lecturer of YIT (Reid), Consultant (Y.C.D.C), LWSE 001,  
Former Member (UNICEF, Water quality monitoring & Surveillance Myanmar)





**WTL-RE-001**  
Issue Date - 01-12-2012  
Effective Date - 01-12-2012  
Issue No - 1.0/ Page 2 of 2

**WW0325 009**

### WATER QUALITY TEST RESULTS FORM


Client	Nippon Paint Myanmar
Nature of Water	Wastewater (Inlet)
Location	No.44, Ngwe Pin Lae 2 Road, Ngwe Pin Lae Industrial Zone.
Date and Time of collection	3.3.2025
Date and Time of arrival at Laboratory	5.3.2025
Date and Time of commencing examination	6.3.2025
Date and Time of completing	8.3.2025

#### Results of Water Analysis

Parameter	Result	Unit
Temperature (°C)	25.0	°C
Fluoride (F)	-	mg/l
Lead (as Pb)	-	mg/l
Arsenic (As)	Nil	mg/l
Nitrate (N.NO <sub>3</sub> )	-	mg/l
Chlorine (Residual)	-	mg/l
Ammonia Nitrogen (NH <sub>3</sub> )	0.04	mg/l
Ammonium Nitrogen (NH <sub>4</sub> )	-	mg/l
Dissolved Oxygen (DO)	-	mg/l
Chemical Oxygen Demand (COD)	200	mg/l
Biochemical Oxygen Demand (BOD) (5 days at 20 °C)	40	mg/l
Cyanide (CN)	Nil	mg/l
Zinc (Zn)	Nil	mg/l
Copper (Cu)	Nil	mg/l
Silica (SiO <sub>2</sub> )	-	mg/l


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

**Tested by**

Signature: 

Name: Zaw Hein Oo  
B.Sc (Chemistry)  
Sr.Chemist  
ISO Tech Laboratory

**Approved by**

Signature: 

Name: Thinzar Thein Theint  
B.E (Civil)  
Assistant Technical Officer  
ISO Tech Laboratory

(a division of WEG Co., Ltd.)  
No.18, Lanthit Road, Nanthargone Quarter, Insein Township, Yangon, Myanmar.  
Ph: 01-640955, 09-880100172, 09-880100173, 01-644506, E-mail: isotechlaboratory@gmail.com, Website: weg-myanmar.com



ANALYTICAL LABORATORY

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 : Nippon Paint Myanmar
- 2 Location : No. 44. Ngwe Pin Lae (2) Road, Ngwe Pin Lae Industrial Zone
- 3 Type of Sample : Waste Water (Inlet)
- 4 Sample No. : 0026 8/2025
- 5 Contact Person : Nippon Paint
- 6 Phone No. : 09-765421695
- 7 Date Received : 04.03.2025
- 8 Date of Test Performed : 04.03.2025
- 9 Date of Issued : 19.03.2025
- 10 Result :

No.	Parameter	Result	Unit	WHO STD 2018	Method
1	Chromium (Total)	0.1	mg/L	-	Hach DR 3900 Spectrophotometer, Alkaline Hypobromite Oxidation Method
2	Fluoride	0.6	mg/L	-	Hach DR 3900 Spectrophotometer, USEPA SPADNS2 Method
3	Lead	0.05	mg/L	-	AAS, Shimadzu AA-6200 Pb (283.3 nm)
4	Selenium	0.05	mg/L	-	Microwave Plasma Atomic Emission Spectroscopy Method
5	Silver	0.1	mg/L	-	Hach DR 3900 Spectrophotometer, Colorimetric 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 : SU THANDA BO

Position : Laboratory Technician

Signature :

**Approved By**

Name : THEMAR WINT


Position : Laboratory Manager

Signature :



LAB-FO-024-00

**ALARM Ecological Laboratory**  
**Water Testing Result Report**



**Report Number: EL-WR-25-04292**
**Date: March 18, 2025**

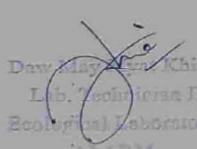

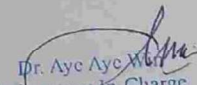
Client Information		Sample Information	
Client Name :	Nippon Paint Myanmar	Sample ID :	12568
Organization :	-	Sample Name :	Waste Water (Inlet)
Client ID :	-	Sample Type / Source :	-
Registration Date & Time :	4.3.2025	Sampling Date & Time :	3.3.2025
Contact :	09- 250282252	Sample Location :	No. 44 ,Ngwe Pin Lae 2 Road , Ngwe Pin Lae Industrial Zone.
Email :	kyi.kyi.nwe@nipponpaint.com.mm	Latitude :	-
Testing Purpose :	-	Longitude :	-

**Testing Results**  
This laboratory analysis report is based solely on the sample submitted by the client unless client took our sampling service.  
 This report shall not be reproduced except in full, without written approval of the laboratory

Sr.	Quality Parameters	Results	Units	Emission Standards	Remarks
1	Total Phosphorous <sup>3</sup>	2.0	mg/L	≤ 2 <sup>d</sup>	Normal
2	Cadmium <sup>7</sup>	ND	mg/L	≤ 0.1 <sup>d</sup>	LOD= 0.01 mg/L
3	Nickel <sup>1</sup>	0.4	mg/L	≤ 0.5 <sup>d</sup>	Above the Limit
4	Mercury	0.006	mg/L	≤ 0.01 <sup>d</sup>	Normal
5	Chromium (Hexavalent) <sup>3</sup>	0.04	mg/L	≤ 0.1	Above the Limit
6	Sulfide <sup>3</sup>	0.40	mg/L	≤ 1 <sup>d</sup>	Normal
7	Phenol <sup>3</sup>	0.1	mg/L	≤ 0.5 <sup>d</sup>	Normal
8	Oil & Grease <sup>3</sup>	7	mg/L	≤ 10 <sup>d</sup>	Normal

"ND" = Not Detected

"LOD" = Lower limit of detection
" - " = No Reference Standard

Tested by	Checked by	Approved by
 Daw May Khin Lab. Technician II Ecological Laboratory ALARM	 Daw Lio My Lab. Technician Ecological Laboratory ALARM	 Dr. Aye Aye Win Laboratory In-Charge EcoLab ALARM

No.237, Corner of Shu Khin Thar Street & 7 Street, (3) Block, South Oakkalapa Township, Yangon.  
 Tel: 09-407496078, Email: aelab.2022@gmail.com



## WasteWater(Outlet)

**ISO TECH LABORATORY**

Laboratory Technical Consultant: U Saw Christopher Maung  
B.Sc Engg. (Civil), Dip S.E.(Delft) Lecturer of YIT (Retd) Consultant (Y.C.D.C.) LWSE.001  
Former Member (UNICEF, Water quality monitoring & Surveillance Myanmar)

**WW00325 008**

**WTL-RE-001**  
Issue Date - 01-12-2012  
Effective Date - 01-12-2012  
Issue No - 1.0/Page 1 of 2

**WATER QUALITY TEST RESULTS FORM**

Client: Nippon Paint Myanmar  
Nature of Water: Wastewater (Outlet)  
Location: No.44, Ngwe Pin Lae 2 Road, Ngwe Pin Lae Industrial Zone  
Date and Time of collection: 3.3.2025  
Date and Time of arrival at Laboratory: 5.3.2025  
Date and Time of commencing examination: 6.3.2025  
Date and Time of completing: 8.3.2025

**Results of Water Analysis**


pH	-	
Colour (True)	-	TCU
Turbidity	-	NTU
Conductivity	-	micro S/cm
Total Hardness	-	mg/l as CaCO <sub>3</sub>
Calcium Hardness	-	mg/l as CaCO <sub>3</sub>
Magnesium Hardness	-	mg/l as CaCO <sub>3</sub>
Total Alkalinity	-	mg/l as CaCO <sub>3</sub>
Phenolphthalein Alkalinity	-	mg/l as CaCO <sub>3</sub>
Carbonate (CaCO <sub>3</sub> )	-	mg/l as CaCO <sub>3</sub>
Bicarbonate (HCO <sub>3</sub> )	-	mg/l as CaCO <sub>3</sub>
Iron	0.08	mg/l
Chloride (as CL)	-	mg/l
Sodium Chloride (as NaCL)	-	mg/l
Sulphate (as SO <sub>4</sub> )	-	mg/l
Total Solids	-	mg/l
Total Suspended Solids	5	mg/l
Total Dissolved Solids	-	mg/l
Manganese	-	mg/l
Phosphate	-	mg/l
Phenolphthalein Acidity	-	mg/l
Methyl Orange Acidity	-	mg/l
Salinity	-	ppt

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

Tested by: **Zaw Hein Oo**  
Signature: **B.Sc (Chemistry)**  
Name: **Sr.Chemist**  
(a division of WEG Co., Ltd.) **ISO Tech Laboratory**


Approved by: **Thinzar Phatun Thant**  
Signature: **B.E (Civil)**  
Name: **Assistant Technical Officer**  
**ISO Tech Laboratory**


No.18, Lanthit Road, Nanthargone Quarter, Insein Township, Yangon, Myanmar.  
Ph: 01-640955, 09-880100172, 09-880100173, 01-644506, E-mail: isotechlaboratory@gmail.com, Website: weg-myanmar.com



**ISO  
TECH  
LABORATORY**

Laboratory Technical Consultant: U Saw Christopher Maung  
B.Sc.Engg. (Civil), Dip.S. Ed(Delt) Lecturer of YIT (Retd.) Consultant (Y.C.D.C), LWSE 001.  
Former Member (UNICEF, Water quality monitoring & Surveillance Myanmar)





ISO 9001:2015 Cert. No. 688283

**WTL-RE-001**  
 Issue Date - 01-12-2012  
 Effective Date - 01-12-2012  
 Issue No - 1.0/ Page 2 of 2

**WW0325 008**


### WATER QUALITY TEST RESULTS FORM


Client	Nippon Paint Myanmar
Nature of Water	Wastewater (Outlet)
Location	No.44, Ngwe Pin Lae 2 Road, Ngwe Pin Lae Industrial Zone
Date and Time of collection	3.3.2025
Date and Time of arrival at Laboratory	5.3.2025
Date and Time of commencing examination	6.3.2025
Date and Time of completing	8.3.2025

### Results of Water Analysis

Temperature (°C)	25.0	°C
Fluoride (F)	-	mg/l
Lead (as Pb)	-	mg/l
Arsenic (As)	Nil	mg/l
Nitrate (N. NO <sub>3</sub> )	-	mg/l
Chlorine (Residual)	Nil	mg/l
Ammonia Nitrogen (NH <sub>3</sub> )	0.037	mg/l
Ammonium Nitrogen (NH <sub>4</sub> )	-	mg/l
Dissolved Oxygen (DO)	-	mg/l
Chemical Oxygen Demand (COD)	32	mg/l
Biochemical Oxygen Demand (BOD) (5 days at 20 °C)	20	mg/l
Cyanide (CN)	Nil	mg/l
Zinc (Zn)	Nil	mg/l
Copper (Cu)	Nil	mg/l
Silica (SiO <sub>2</sub> )	-	mg/l


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

**Tested by**  
 Signature:   
 Name: Zaw Hein Oo  
 B.Sc (Chemistry)  
 Sr.Chemist  
 ISO Tech Laboratory

**Approved by**  
 Signature:   
 Name: Thinzar Thein Theint  
 B.F (Civil)  
 Assistant Technical Officer  
 ISO Tech Laboratory


(a division of WEG Co., Ltd.)  
 No.18, Lanthit Road, Nanthargone Quarter, Insein Township, Yangon, Myanmar.  
 Ph: 01-640955, 09-880100172, 09-880100173, 01-644506, E-mail: isotechlaboratory@gmail.com, Website: weg-myanmar.com






**ISO  
TECH  
LABORATORY**

Laboratory Technical Consultant: U Saw Christopher Maung  
B.Sc Engg. (Civil), Dip S.E (Deflt) Lecturer of YIT (Retd) Consultant (Y.C.D.C), LWSE 001.  
Former Member (UNICEF, Water quality monitoring & Surveillance, Myanmar)





ISO 9001:2015 Cert. No. 488283

**WTL-RE-001**  
Issue Date - 01-1-2016  
Effective Date - 01-1-2016  
Issue No - 1.0/ Page 1 of 1

**M0325 015**

**WATER QUALITY TEST (MICROBIOLOGY) RESULTS FORM**

Client	Nippon Paint Myanmar		
Nature of Water	Wastewater (Outlet)		
Location	No 44, Ngwe Pin Lae 2 Road, Ngwe Pin Lae Industrial Zone.		
Date and Time of collection	6.3.2025		
Date and Time of arrival at Laboratory	6.3.2025		
Date and Time of commencing examination	6.3.2025		
Date and Time of completing	7.3.2025		

**Results of Water Analysis**


Total Coliform Count	5	CFU/100ml	Not detected
Thermotolerant (fecal) Coliform Count	Not detected (<1)	CFU/100ml	Not detected
pH	7.1		6.5 - 8.5
Turbidity	1	NTU	5 NTU
Colour (True)	Nil	TCU	15 TCU
Free Chlorine	Nil	mg/l	
Total Chlorine	Nil	mg/l	

**WHO Drinking Water Guideline  
(Geneva - 1993)**

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


: < - Less than

**Tested by**

Signature: 

Name: Zaw Hein Oo  
B.Sc (Chemistry)  
Sr.Chemist  
ISO Tech Laboratory

**Approved by**

Signature: 

Name: Thinzar Theint Theint  
B.E (Civil)  
Assistant Technical Officer  
ISO Tech Laboratory

(a division of WEG Co., Ltd.)

No.18, Lanthit Road, Nanthargone Quarter, Insein Township, Yangon, Myanmar.  
Ph: 01-640955, 09-880100172, 09-880100173, 01-644506, E-mail: isotechlaboratory@gmail.com, Website: weg-myanmar.com

**PRO LAB****ANALYTICAL LABORATORY**

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 : Nippon Paint Myanmar
- 2 Location : No. 44. Ngwe Pin Lae (2) Road, Ngwe Pin Lae Industrial Zone
- 3 Type of Sample : Waste Water (Outlet)
- 4 Sample No. : 00267/2025
- 5 Contact Person : Nippon Paint
- 6 Phone No. : 09-765421695
- 7 Date Received : 04.03.2025
- 8 Date of Test Performed : 04.03.2025
- 9 Date of Issued : 19.03.2025
- 10 Result :

No.	Parameter	Result	Unit	WHO STD 2018	Method
1	Chromium (Total)	0.01	mg/L	-	Hach DR 3900 Spectrophotometer, Alkaline Hypobromite Oxidation Method
2	Fluoride	< 0.02	mg/L	-	Hach DR 3900 Spectrophotometer, USEPA SPADNS2 Method
3	Lead	0.05	mg/L	-	AAS, Shimadzu AA-6200 Pb (283.3 nm)
4	Selenium	< 0.1	mg/L	-	Microwave Plasma Atomic Emission Spectroscopy Method
5	Silver	< 0.02	mg/L	-	Hach DR 3900 Spectrophotometer, Colorimetric 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 : SU THANDA BO  
 Position : Laboratory Technician  
 Signature : .....


**Approved By**

Name : THEMAR WINT  
 Position : Laboratory Manager  
 Signature : .....



LAB-FO-024-00

**ALARM Ecological Laboratory**  
**Water Testing Result Report**



**Report Number: EL-WR-25-04292**
**Date: March 18, 2025**



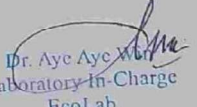
Client Information		Sample Information	
Client Name :	Nippon Paint Myanmar	Sample ID :	12567
Organization :	-	Sample Name :	Waste Water (Outlet)
Client ID :	-	Sample Type / Source :	-
Registration Date & Time :	4.3.2025	Sampling Date & Time :	3.3.2025
Contact :	09- 250282252	Sample Location :	No. 44 ,Ngwe Pin Lae 2 Road , Ngwe Pin Lae Industrial Zone.
Email :	kyi.kyi.nwe@nipponpaint.com.mm	Latitude :	-
Testing Purpose :	-	Longitude :	-

**Testing Results**  
This laboratory analysis report is based solely on the sample submitted by the client unless client took our sampling service.  
 This report shall not be reproduced except in full, without written approval of the laboratory

Sr.	Quality Parameters	Results	Units	Emission Standards	Remarks
1	Total Phosphorous <sup>3</sup>	1.0	mg/L	≤ 2 <sup>4</sup>	Normal
2	Cadmium <sup>1</sup>	ND	mg/L	≤ 0.1 <sup>4</sup>	LOD= 0.01 mg/L
3	Nickel <sup>2</sup>	0.2	mg/L	≤ 0.5 <sup>4</sup>	Above the Limit
4	Mercury	0.001	mg/L	≤ 0.01 <sup>4</sup>	Normal
5	Chromium (Hexavalent) <sup>3</sup>	0.01	mg/L	≤ 0.1	Above the Limit
6	Sulfide <sup>2</sup>	0.319	mg/L	≤ 1 <sup>4</sup>	Normal
7	Phenol <sup>2</sup>	<0.1	mg/L	≤ 0.5 <sup>4</sup>	Normal
8	Oil & Grease <sup>1</sup>	6	mg/L	≤ 10 <sup>4</sup>	Normal

"ND" = Not Detected


"LOD" = Lower limit of detection      " - " = No Reference Standard

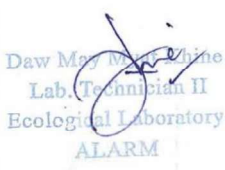

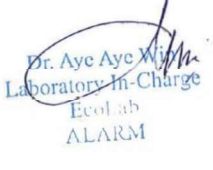
Tested by	Checked by	Approved by
 Daw Mya Aye Khine Lab. Technician II Ecological Laboratory ALARM	 Daw Lin Mya Lab. Technician Ecological Laboratory ALARM	 Dr. Aye Aye Win Laboratory In-Charge EcoLab ALARM

No.237, Corner of Shu Khin Thar Street & 7 Street, (3) Block, South Oakkalapa Township, Yangon.  
 Tel: 09-407496078, Email: [aclab.2022@gmail.com](mailto:aclab.2022@gmail.com)

## Appendix XIV Surface Water Testing Result Report

**ALARM Ecological Laboratory**  
**Water Testing Result Report**



<b>Report Number: EL-WR-25-04320</b>		<b>Date: March 22, 2025</b>			
<b>Client Information</b> Client Name : Nippon Paint (Myanmar) Co., Ltd Organization : Ma Hsu Pyae Hla Naing Client ID : - Registration Date & Time : 10.3.2025 Contact : 09-785221416 Email : - Testing Purpose : -		<b>Sample Information</b> Sample ID : 12591 Sample Name : မြစ်ရေ (Upper) Sample Type / Source : - Sampling Date & Time : 8.3.2025 Sample Location : ငွေပင်လယ်စက်မှုဇုန်၊ လှိုင်သာယာမြို့နယ်။ Latitude : - Longitude : -			
<b>Testing Results</b> <i>This laboratory analysis report is based solely on the sample submitted by the client unless client took our sampling service.</i> <i>This report shall not be reproduced except in full, without written approval of the laboratory</i>					
Sr.	Quality Parameters	Results	Units	Emission Standards	Remarks
1	pH <sup>1</sup>	8	S.U	6.0 - 9.0 <sup>d</sup>	Normal
2	TSS <sup>3</sup>	95	mg/L	≤ 50 <sup>d</sup>	Above the Limit
3	Ammonia- Nitrogen <sup>3</sup>	0.23	mg/L	-	-
4	Dissolved Oxygen <sup>2</sup>	4.36	mg/L	-	-
5	BOD <sub>5</sub> <sup>6</sup>	4.3	mg/L	≤ 50 <sup>d</sup>	Normal
6	COD <sup>3</sup>	<15	mg/L	≤ 250 <sup>d</sup>	Normal
7	Copper <sup>7</sup>	ND	mg/L	≤ 0.5 <sup>d</sup>	LOD=0.02 mg/L
8	Oil & Grease <sup>9</sup>	3	mg/L	≤ 10 <sup>d</sup>	Normal
"ND" = Not Detected      "LOD" = Lower limit of detection      " - " = No Reference Standard					
Tested by		Checked by		Approved by	
 Daw May Myat Thine Lab. Technician II Ecological Laboratory ALARM		 Daw Liza Myat Myat Aung Lab. Technician I Ecological Laboratory ALARM		 Dr. Aye Aye Win Laboratory In-Charge Ecological Laboratory ALARM	

No.121, Corner of Shu Khin Thar Street & 7 Street, (3) Block, South Oakkalapa Township, Yangon.  
 Tel: 09-407496078, Email: aelab.2022@gmail.com



## ALARM Ecological Laboratory

## Water Testing Result Report



Report Number: EL-WR-25-04321

Date: March 22, 2025

## Client Information

Client Name : Nippon Paint (Myanmar) Co., Ltd  
 Organization : Ma Hsu Pyae Hla Naing  
 Client ID : -  
 Registration Date & Time : 10.3.2025  
 Contact : 09-785221416  
 Email : -  
 Testing Purpose : -

## Sample Information

Sample ID : 12592  
 Sample Name : မြစ်ရေ (Middle)  
 Sample Type / Source : -  
 Sampling Date & Time : 8.3.2025  
 Sample Location : ရွှေပင်လယ်စက်မှုဇုန်၊ လှိုင်သာယာမြို့နယ်။  
 Latitude : -  
 Longitude : -

## Testing Results

*This laboratory analysis report is based solely on the sample submitted by the client unless client took our sampling service.  
 This report shall not be reproduced except in full, without written approval of the laboratory*

Sr.	Quality Parameters	Results	Units	Emission Standards	Remarks
1	pH <sup>1</sup>	8.1	S.U	6.0 - 9.0 <sup>d</sup>	Normal
2	TSS <sup>3</sup>	85	mg/L	≤50 <sup>d</sup>	Normal
3	Ammonia- Nitrogen <sup>3</sup>	0.26	mg/L	-	-
4	Dissolved Oxygen <sup>2</sup>	4.41	mg/L	-	-
5	BOD <sub>5</sub> <sup>6</sup>	4.3	mg/L	≤ 50 <sup>d</sup>	Normal
6	COD <sup>3</sup>	<15	mg/L	≤ 250 <sup>d</sup>	Normal
7	Copper <sup>7</sup>	ND	mg/L	≤ 0.5 <sup>d</sup>	LOD=0.02 mg/L
8	Oil & Grease <sup>9</sup>	3	mg/L	≤ 10 <sup>d</sup>	Normal

"ND" = Not Detected

"LOD" = Lower limit of detection

" - " = No Reference Standard

Tested by

Checked by

Approved by

Daw May Aye Khine  
 Lab. Technician II  
 Ecological Laboratory  
 ALARM

Daw Lin Myat Aung  
 Lab. Technician I  
 Ecological Laboratory  
 ALARM

Dr. Aye Aye Win  
 Laboratory In-Charge  
 EcoLab  
 ALARM

No.121, Corner of Shu Khin Thar Street &amp; 7 Street, (3) Block, South Oakkalapa Township, Yangon.

Tel: 09-407496078, Email: aelab.2022@gmail.com

## ALARM Ecological Laboratory

## Water Testing Result Report



Report Number: EL-WR-25-04322

Date: March 22, 2025

## Client Information

Client Name : Nippon Paint (Myanmar) Co., Ltd  
 Organization : Ma Hsu Pyae Hla Naing  
 Client ID : -  
 Registration Date & Time : 10.3.2025  
 Contact : 09-785221416  
 Email : -  
 Testing Purpose : -

## Sample Information

Sample ID : 12593  
 Sample Name : မြစ်ရေ (Lower)  
 Sample Type / Source : -  
 Sampling Date & Time : 8.3.2025  
 Sample Location : ဓဉ္ဇပင်လယ်စက်မှုဇုန်၊ လွိုင်သာယာမြို့နယ်။  
 Latitude : -  
 Longitude : -

## Testing Results

This laboratory analysis report is based solely on the sample submitted by the client unless client took our sampling service.  
 This report shall not be reproduced except in full, without written approval of the laboratory

Sr.	Quality Parameters	Results	Units	Emission Standards	Remarks
1	pH <sup>1</sup>	7.8	S.U	6.0 - 9.0 <sup>d</sup>	Normal
2	TSS <sup>2</sup>	80	mg/L	≤50 <sup>d</sup>	Normal
3	Ammonia- Nitrogen <sup>3</sup>	0.21	mg/L	-	-
4	Dissolved Oxygen <sup>2</sup>	4.10	mg/L	-	-
5	BOD <sub>5</sub> <sup>4</sup>	4.8	mg/L	≤ 50 <sup>d</sup>	Normal
6	COD <sup>4</sup>	<15	mg/L	≤ 250 <sup>d</sup>	Normal
7	Copper <sup>7</sup>	0.02	mg/L	≤ 0.5 <sup>d</sup>	Normal
8	Oil & Grease <sup>9</sup>	3	mg/L	≤ 10 <sup>d</sup>	Normal

"ND" = Not Detected

"LOD" = Lower limit of detection

"- " = No Reference Standard

Tested by	Checked by	Approved by
 Daw May Aye Khine Lab. Technician II Ecological Laboratory ALARM	 Daw Lin Myat Myat Aung Lab. Technician I Ecological Laboratory ALARM	 Dr. Aye Aye Win Laboratory In-Charge Ecological Laboratory ALARM

No.121, Corner of Shu Khin Thar Street &amp; 7 Street, (3) Block, South Oakkalapa Township, Yangon.

Tel: 09-407496078, Email: aelab.2022@gmail.com



## ALARM Ecological Laboratory

## Water Testing Result Report



Report Number: EL-WR-25-04323

Date: March 22, 2025

## Client Information

Client Name : Nippon Paint (Myanmar) Co., Ltd  
 Organization : Ma Hsu Pyae Hla Naing  
 Client ID : -  
 Registration Date & Time : 10.3.2025  
 Contact : 09-785221416  
 Email : -  
 Testing Purpose : -

## Sample Information

Sample ID : 12594  
 Sample Name : သောက်သုံးရေကန်  
 Sample Type / Source : -  
 Sampling Date & Time : 8.3.2025  
 Sample Location : ငွေပင်လယ်စက်မှုဇုန်၊ လှိုင်သာယာမြို့နယ်။  
 Latitude : -  
 Longitude : -

## Testing Results

*This laboratory analysis report is based solely on the sample submitted by the client unless client took our sampling service.  
 This report shall not be reproduced except in full, without written approval of the laboratory.*

Sr.	Quality Parameters	Results	Units	Drinking Standards	Remarks
1	pH <sup>1</sup>	7.8	S.U	6.5 - 8.5 <sup>c</sup>	Normal
2	TSS <sup>3</sup>	34	mg/L	-	-
3	Ammonia- Nitrogen <sup>3</sup>	<0.2	mg/L	≤1.5 <sup>c</sup>	Normal
4	Dissolved Oxygen <sup>2</sup>	2.88	mg/L	-	-
5	BOD <sub>5</sub> <sup>6</sup>	4.1	mg/L	-	-
6	COD <sup>7</sup>	<15	mg/L	-	-
7	Copper <sup>7</sup>	0.02	mg/L	≤2 <sup>b</sup>	Normal
8	Oil & Grease <sup>9</sup>	3	mg/L	-	-

"ND" = Not Detected

"LOD" = Lower limit of detection

"- " = No Reference Standard

Tested by	Checked by	Approved by
 Daw May Myat Khine Lab. Technician II Ecological Laboratory ALARM	 Daw Lin Myat Myat Aung Lab. Technician I Ecological Laboratory ALARM	 Dr. Aye Aye Win Laboratory In-Charge EcoLab ALARM

No.121, Corner of Shu Khin Thar Street & 7 Street, (3) Block, South Oakkalapa Township, Yangon.  
 Tel: 09-407496078, Email: aelab.2022@gmail.com