M.O.G.E.

MPRL E&P

Environmental Monitoring Report

for Redevelopment and Enhanced Oil Recovery (EOR) Programme

October 2022 – March 2023

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Acronym	Definition
ALARM	Advancing Life and Regenerating Motherland
API	American Petroleum Institute
Bcf	Billion Cubic Feet
BHA	Bottom-Hole Assembly
CSR	Corporate Social Responsibility
DNA	Deoxyribonucleic Acid
DWQS	Drinking Water Quality Standard
ECC	Environmental Compliance Certificate
ECD	Environmental Conservation Department
EIA	Environmental Impact Assessment
EMP	Environmental Management Plan
EMoR	Environmental Monitoring Report
EOR	Enhanced Oil Recovery
ERP	Emergency Response Plan
ETA	Estimated Time Arrival
GOCS	Gas and Oil Collecting Station
HoDs	Head of Departments
HSE	Health, Safety and Environment
IGC	International General Certificate
ISO	International Standard Organization
KPIs	Key Performance Indicators
LPG	Liquefied Petroleum Gas
MEDEVAC	Medical Evacuation
MFO	Mann Field Office
MYO	MPRL E&P Yangon Office
MMbbls	One Million Barrels of Oil
MOGE	Myanma Oil and Gas Enterprise
NDT	Non-Destructive Testing
NEBOSH	National Examination Board in Occupational Safety and Health
NEQEG	National Environmental Quality (Emission) Guidelines
PCC	Performance Compensation Contract
PPE	Planning and Production Engineering
PSD	Process Shut-Down
RO	Reverse Osmosis
SMC	Sludge Management Compound
WMC	Waste Management Compound

1. Executive Summary

In Myanmar's upstream energy sector, MPRL E&P is widely regarded as a frontrunner, having established itself as an expert in both onshore and offshore exploration and production since 1996.

MPRL E&P is committed to conducting business with the utmost integrity, transparency, and ethical standards, while remaining dedicated to our social and environmental responsibilities. We believe in empowering our employees as a means of driving the growth of our organization. To this end, we provide a supportive and collaborative environment that encourages continuous learning and improvement.

Our sixth environmental monitoring report covers the activities and progress of the performance of environmental implementation and monitoring during the six months from October 2022 to March 2023. It includes all the data from the monitoring activities, the progress of the environmental measures under the Environmental Management Plan (EMP), Air, Noise, Soil, and water quality monitoring conducted by regional ECD (Magway) team, reporting about some minor changes in Mann Field EIA report as per ECD comments and progress on, implementation progress based on comments from ECD, implementation on the regional ECD (Magway)'s comments made during their inspection tour to Mann Field, implications for decommissioning plan and challenges in actual operations. EMP together with its Eight sub-plans are implemented as per schedule.

Key Highlights within the monitoring periods (October 2022 to March 2023)

Environmental Performance

MPRL E&P submitted the notification letter to the regional ECD (Magway) on December 26, 2022 regarding the postponement of the third-party Environmental Monitoring Survey plan. The letter, with reference number MPRL E&P/Mann/LET-266/22, cited security concerns, restrictions on the transportation of monitoring devices, and COVID-19 related restrictions as reasons for the postponement.

Despite being unable to perform a third-party Environmental Monitoring Survey (Air Quality, Noise, Surface Water Quality, Groundwater Quality), and Soil Quality), we implemented a self-environmental monitoring plan.

On January 17, 2023, the regional ECD (Magway) conducted an inspection tour of the Mann Field, which included GOCS-2, WMC, concrete pad and additional cellar at M-16, produced water injection well M-573, and Air Quality monitoring at Z3AQN. Prior to the inspection tour, MPRL E&P conducted a discussion and presentation about Environmental Management in Mann Field at the MOGE (Mann GM) office for the field inspection team of regional ECD(Magway) and MOGE (Mann) personnel.

During November 2022 and January 2023, the Regional ECD (Magway) conducted Air and Noise Quality monitoring at point Z3AQN, Soil Quality monitoring at points Z3S1 & Z3S2, and water quality monitoring at seven locations.

Starting in 2021, due to recent security concerns, Mann Field operations have been limited to daytime with a minimum crew. As a result, we selected Z3AQN as the monitoring point of air, noise, and soil quality, as it is the nearest point to our recent operations, and other points are not feasible for monitoring due to security concerns and supportive measures. If conditions improve, we plan to conduct air, noise, and soil quality monitoring at other points, and surface water and groundwater quality monitoring at all points.

MPRL E&P submitted a notification letter with an attached list and explanation to the regional ECD (Magway) regarding some changes in the Mann Field EIA report, with reference to the Mann Field inspection report by the Regional ECD (Magway).

On 22 February 2023, MPRL E&P sent six sets of the approved EIA reports for the Re-development and Enhanced Oil Recovery (EOR) program of the Mann Oil Field to the ECD (NPT) through MOGE, as required by the ECD.

During our self-monitoring activities, MPRL E&P conducted tests on Drinking Water Quality, Discharged Water from the MPRL E&P Base Camp, Domestic Water from the Down-hole and Mechanical Workshop, Hydro-test Water from Warehouse, and ground water as per the planned schedule. Further details on these monitoring activities are described in Articles 8.6 and 8.8.

As per the comments received from ECD, MPRL E&P compared and presented the results of air, noise, and soil quality monitoring at Z3AQN with the baseline data from 2015.

Based on the monitoring results, some parameters have exceeded the NEQEG and Drinking Water Quality Standard (2019). The higher PM_{10} value in Z3AQN may be due to various factors such as transportation, industrial activities, natural sources, weather conditions, and human activities like animal farming and open burning. The BOD_5 value in hydro-test water may be accumulation of organic matter and chemicals during the testing process, and the water can pick up organic matter such as oil and greases, and other contaminants during the testing process. The higher value of Sulphate in tube-well water may be due to various reasons such as geological factors, human activities, microbial activity, etc.

All the lab results of air, noise, water and soil quality monitoring are presented as an attachment in the appendix section.

As part of environmental awareness sharing, the importance of ecosystem and biodiversity conservation, energy conservation, food waste and waste management systems were discussed with all staff members during the induction training.

All the formation water produced was 100% disposed into shut-in wells. The field operations continue to maintain the achievement of zero discharge of produced water since 24 August 2017.

MPRL E&P have been able to analyze and measure almost all parameters as committed in the EIA report except for Uranium. Unfortunately, there are no labs in Myanmar that can measure Uranium, but we will measure this parameter as soon as a lab with the necessary facilities becomes available in the country.

As part of the HSE awareness training for employees, the HSE department conducts Health, Safety and Environment related topics every month, alternating between in-house training and external sources based on availability, as per the training plan.

During the six-month period, only one oil spill case occurred and completed cleanup wellsite as per standard practices with minimal impact to the environment. Moreover, Spill Drill Tabletop Exercises were conducted with all stakeholders as per environmental action plan.

As part of its climate change mitigation efforts, MPRL E&P conducts annual plantations in various areas of the Mann Field, including the WMC, SMC, GOCS, Warehouse, Workshops, Schools, and Office Compounds. According to statistics from 2020-2022, over 300 indigenous plants have already been planted and nurtured.

MPRL E&P have distributed the approved EIA report and all environmental monitoring reports on MPRL E&P's website, to relevant departments, public meeting places, and at the project offices.

MPRL E&P is dedicated to fulfilling its obligations and commitments outlined in the ECC, EIA and will continue to closely monitor and assess the situation to ensure compliance with all relevant regulations and standards.

Social Performance

Dimensions of MPRL E&P's social performance for the second six months (October 2022 - March 2023) of Fiscal Year 2022-2023 include various strategic community investment initiatives: Community Infrastructure Development, Community Livelihood Development, Educational Partnership Program, Community Capacity Building, Community Healthcare Program, Community-led Waste Management Program, Operational Grievance Mechanism, Stakeholder Engagement, and Corporate Philanthropy.

Our experience has shown that working in partnership is the most effective means of ensuring that improvements are sustainable. Our community investment strategy identifies the need to work with communities through partnerships with the communities themselves and through like-minded local partners. The desire to ensure effective expenditure on social and community investment initiatives also leads us to work with partners and subject matter experts who are best positioned to offer what is

truly required. Throughout our CSR programs, we aim to use our funds wisely, to build social capital and make a contribution that lasts.

In the reporting period, the CSR Program accomplished six Community Infrastructure Development Initiatives which included renovating Mei Bayt Kone School Building, installing the shade structure construction in Let Pan Taw School, constructing the reinforced concrete pavement in Let Pan Ta Pin Village, renovating Auk Kyaung School Building, providing furniture to Kyar Kan School, and Nan U Village Library. The maintenance and cleaning of water filtration units and hand washing stations at local schools in Mann Field were regularly conducted and checked by the CSR Team. There were also gardening and knowledge sharing activities at Mei Bayt Kone and Let Pan Ta Pin Green Schoolyards.

The agriculture, livestock and vocational skills development was promoted with the partnership of the public and private organizations. Fish Amino Acid Hands-on Training, Disease and Pest Control in Tomato, Chili and Chickpea Farming Trainings and Organic Waste Management and Bokashi Composting Training were provided to the community members with the drive of enhancing in agricultural livelihoods. Monitoring visit to tomato, sunflower, chickpea and mushroom farms and providing technical support to farmers were carried out in a timely manner. Five community women were empowered with Advanced Training on Making Value-added Tomato Products in collaboration with the Incubation Center under Small-scale Industries Department (SSID - Magway).

Seven community youths completed the one-year training course at No.5 ITC (Magway) in this reporting time. The CSR Program continued offering the scholarship support to seven students at S.A.I (Pwint Phyu) and three students at GTHS (Magway). A medical student from Ywar Thar Village was awarded with the monthly stipend support for his studying at University of Medicine (Magway). Under the Educational Partnership Program, five laptops were donated to State Agriculture Institute (S.A.I - Pwint Phyu) for teaching-learning process.

The CSR Program focused on building community capacity development by delivering trainings for Community Volunteers, Village Administrators, Village Development Committee Members and CSR Field Staff in collaboration with Capacity Building Initiative (CBI Myanmar). In this reporting time, one-year Online English Learning Program was launched for community kids (Grade 2-4) with the collaboration of mangoSTEEMS Myanmar. The Outdoor Classroom Day Program was also conducted with the aim to reconnect children, teachers and parents with the great outdoor activities. Moreover, the campaign “Book Drive for Community Center” was organized in order to support the Mann Field Communities with better reading resources.

The Mobile Clinic Program was properly operated in five clinic sessions per week in six centrally located villages around Mann Field: Kywe Cha, Kyar Kan, Lay Eain Tan, Let Pan Ta Pin, Nan U and Aye Mya Villages. The Program offered free healthcare services to (7,630) community patients during (230) clinic sessions and home visits

since its first opening on 21 February 2022. Under the Community Healthcare Initiative, Mann Field Communities were empowered with "Health Education Talks on Hypertension" after Mobile Clinic sessions. The CSR Program launched "Eye Health Pilot Program: Clear Eyesight for Happy Life!" in collaboration with the Department of Public Health (Minbu) and delivered eye health education talks and eye screening activities to (1,847) students and (74) teachers at (10) schools. Besides, a total number of (48) students and teachers were provided with spectacles, eye supplements, eye drops and referral pathway as per the ophthalmologist's prescription.

The CSR Program kept supporting the Community-led Waste Management Program and Trash Hero Minbu's cleanup activities. The Program also empowered a total of (16) sessions of knowledge sharing on Water, Sanitation and Hygiene (WASH) and 5R's for (635) students at (10) schools in Mann Field Communities.

The Stakeholder Engagement and Information Disclosure Initiatives were conducted in all levels of field, community, local and regional stage. The CSR Program organized the first Biannual CSR Progress Review Meetings of FY 2022-2023 with MOGE representatives at Nay Pyi Taw and the Communities in Mann Field. There were also several meetings with the community stakeholders for discussion on community investment initiatives and the community needs assessment of FY 2023-2024 CSR Work Program. MPRL E&P offered Kahtain donation to (23) monasteries in Mann Field and contributed funds to community and social works through MOGE.

In this Fiscal Year, the OGM Campaign was successfully organized at Nan U, Kyar Kan, Mann Kyoe and Mei Bayt Kone Villages and received a total number of (788) attendees from the Mann Field Communities. A total of five OGM cases were received in the second six months of FY 2022 – 2023. The reported cases were inspected and repaired by MOGE Electrical Team and MPRL E&P Field Operations Team, and closed by the CSR Team, keeping all KPIs met. There is a total of (167) complaints since September 2014.

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2. Project Description and Production Information

The Mann Field, discovered in 1970 by MOGE, currently includes 674 wells of which 311 were producing as of February 2023 while the remaining wells were shut-in. The total produced oil and associated gas from the Production Enhancement Project is 15.6 MMbbls, including 9.8 MMbbls above the normal decline curve, and 17.96 Bcf gas as of February 2023.

2.1 Mann Field Operation Status

Under the PCC, MPRL E&P is undertaking a re-development operations activity of the Mann Field to improve the environmental performance of the operations.

The operation activity includes:

Infill well drillings – due to the current decline of the field, MOGE and MPRL E&P have been drilling infill wells in main Mann Field areas close to currently producing wells and outside of surrounding communities, however no infill well activity during the last six months.

Deepening Wells – to deepen tens to hundreds of feet from existing wellbore by drilling, no activity of deepening well during six months.

Chemical Treatment –to ensure that oil is maximized from the reservoir by using small amount of chemicals such as paraffin dispersant, paraffin inhibitor, and non-chemical GreenZyme. GreenZyme is a biological liquid enzyme that is not only harmless to any individual's health but also an environmentally friendly product.

Remedial and workover operations – maintain oil production by servicing such as swabbing, scraping and bailing of producing wells.

Improvement of Pumping Unit – pumping units will be / have been repaired to reduce the likelihood of spills in the surrounding areas.

Refurbishments of the Gas and Oil Collecting Stations (GOCS), Flow Pipes and Drain Pits – to ensure the health and safety to surrounding communities and reduce the risk of spills.

Rehabilitation of Shut-in Wells – sealing off shut-in wells to avoid contamination of surrounding and restoring surrounding areas to resemble their original state.

Re-perforations will be undertaken for better control of the well.

Development of Produced Water Management System – produced water will be injected into the shut-in wells.

2.2 Current Operations Summary

2.2.1 Remedial and Work Over Operations within 6 months

The following table shows the monitoring and tracking of the remedial and work-over operations activities within six months.

Table 1: Remedial and Work Over Operation Activities

No.	Service	Oct-22	Nov-22	Dec-22	Jan-23	Feb-23	Mar-23	Total
		Frequency of Activities						
1	Bailing	3					1	4
2	Bailing & Change Tubing	5	1	1	1	2	1	11
3	Bailing Inside Liner	1	1		1	1	1	5
4	Check BHA and Bailing	2	1	1	1	1	3	9
5	Check Rod String		1					1
6	Change Tubing		2		2			4
7	Change Tubing & S/Rod		3	3	2		1	9
8	Change Tubing Size				1			1
9	Clean out Bottom		1	3	5	2	4	15
10	Fishing & Pump Service				1			1
11	Fishing & Change all Tubing						1	1
12	Lower Down PSD & Pump Service			1		1		2
13	Lower Down P/sub for BHP/BHT Survey					1		1
14	Pump Service	28	24	18	23	25	26	144
15	Pumping Test						2	2
16	Raise Up PSD and Pump Service		2		1		1	4
17	Recover Injection String				1			1
18	Recover BHA	3	1	3			2	9
19	Recover S/Rod String	1	1	1	1	1		5
20	Reposition R-3 Packer					1		1
21	Re-pumping	1			1			2
22	Scraping, Bailing & Change Tubing	2	2	5	5	4		18
23	Swabbing & Bailing		2				1	3
24	Swabbing, Bailing & Change Tubing	2	4	1	4	2	3	16
25	Zone Isolation					1	1	2
	Total Serviced Wells (Monthly)	**48**	**46**	**37**	**50**	**42**	**48**	**271**

2.2.2 Mobile Power Generator Register Lists in Mann Field

The following Plant/ Equipment are being used in Mann Field.

Table 2: Mobile Power Generator Lists

No	Unit Name	Engine Type	Horse Power	Units
1	P-100	CAT-3408	365HP	1
2	P-82	CAT-3306	270HP	1
3	P-75	Cummins N855-P-236	235HP	1
4	P-70	Cummins N855-P-250	250HP	1
5	P-69	Cummins N855-P-250	250HP	1
6	P-65	Detroit 6V71	260HP	1
7	Tractors	KaSaLa	50HP	3
8	35Tons Tadano Crane	Nissan-RF8	340HP	1
9	416 Backhoe	CAT-4.236	85HP	1
10	950 Forklift	CAT-3304	160HP	1
11	966 Wheel Loader	CAT-3306	200HP	1
12	Grader	CAT-3306	200HP	1
13	D8K Dozer	CAT-D342	275HP	1
14	GD Mud Pump	CAT-3306	350HP	1
15	OPI Mud Pump	Detroit-6V71	365HP	1
16	JWS Mud Pump	Detroit-8V92	469HP	1
17	15PS King Power Swivel	CAT-3034(C6.6)	173HP	1
18	Power Pack	Deutz-F6L912	63HP	2
19	Welding Machine	Deutz-F3L912	25HP	2
20	Sullair Compressor	CAT-3054	85HP	1
21	55Tons Kato Crane	MITSUBISHI-8DC9 engine	320HP	1
22	Wire Line Unit	YAMAHA	10HP	1
23	Blue Truck	Cummins NTC-350	350HP	1
24	White Truck	Cummins NTC-350	350HP	1
25	Vehicle			26
26	Weed Cutting Machine	Honda	1.3 HP	5
27	Weed Cutting Machine	VHV	7.5 HP	1
28	Diesel Engine Water Pump	KEMAGE	4 HP	2

3. Environmental Management Organization

MPRL E&P is dedicated to allocating necessary resources for the execution and management of the EMP, which includes skilled human resources. The organizational structure responsible for environmental management and implementation of the EMP can be found in Table 3.

Table 3: Environmental Management Organization Roles and Responsibility

Position	Responsibility
MPRL E&P	
Deputy Chief Executive Officer and Executive Director	Oversee and coordinate all activities on the Project; ultimately responsible for environmental issues. Ensure delivery by the asset of its environmental, and operational targets. Ensure effective communication with all stakeholders.
Field Operations Manager	Technical aspects of the Project include contractor supervision during operations. Responsible for the execution of the Emergency Response Plan including the Oil Spill Contingency Plan. The Field Operations Manager has control over strategic project aspects and interaction with subcontractor staff where project activities take place.
Construction Manager	Technical aspects of the Project including subcontractor supervision during Project implementation.
Assistant HSE Manager / Site HSE Officer	Ensuring in cooperation with Environmental Officer, that the Project and subcontractors operate following applicable regulatory environmental requirements and plans. Monitor implementation of environmental protection measures, (on-behalf of Environmental Officer), and assist with technical input into oil spill requirements. The HSE Officer is monitoring the implementation of Health, Safety, and Environmental protection measures, including tracking, inspection, reporting, and assisting with technical input into emergency response procedures and implementation as per the EMP.
Community Liaison Officer	Liaise with local communities, farmers and government regulators on the Project's behalf. Implement environmental awareness and education programmes with communities.
Contractor	
Project Manager	Responsible for subcontractor technical performance and compliance
HSE Manager	Ensure that environmental regulatory requirements are met and that EMP requirements are properly implemented.

4. Highlights on HSE Key Performance Indicators

The field management team and HSE team have agreed to establish KPIs for the field operation team in order to achieve continual improvement and to integrate HSE as a vital part of the field operation.

Achievement vs. Failure based on Set KPIs

In this regard, the field operation team's KPIs are monitored throughout the fiscal year and reviewed to identify achievements and areas that need improvement at the end of the given timeframe. Based on the review, the following KPIs were successfully achieved despite facing very challenging situations.

For Fiscal Year 2022 – 2023

The Mann Field Production Enhancement Project has achieved an impressive milestone of 2 million man-hours without a lost time accident as of December 4th, 2022. This achievement demonstrates the dedication, commitment, and hard work of the field team and the support provided by the MOGE team. It is a significant accomplishment for MPRL E&P and a reflection of their commitment to safety and excellence in project management.

Maintaining safety standards in a high-risk environment such as an oil and gas field requires continuous effort, vigilance, and adherence to protocols and procedures. The project team has exhibited a strong safety culture, which is critical in preventing accidents, injuries, and incidents that can cause harm to personnel, damage equipment, and disrupt operations. By achieving this milestone, the Mann Field Production Enhancement Project has not only ensured the safety of its workers but has also demonstrated its ability to manage risks and execute projects effectively.

The achievement of this milestone is a cause for celebration and a recognition of the collective efforts of everyone involved in the project. It is a testament to the project's success in implementing best practices in health, safety, and environmental management. MPRL E&P is proud of the team's achievements and the project's positive impact on the company's reputation and overall performance.

In terms of reactive performance, no lost-time accidents occurred during the fiscal year. The total number of recordable cases met the established KPI, which is an achievement as it did not exceed the target number.

As proactive performances, the field team received (4,900) CARE Cards, which is remarkable as it exceeded far beyond the targeted quantity, 3,600 Ea. per year. Additionally, the trend of unsafe actions and conditions was analyzed using data from the submitted CARE cards. To enhance HSE knowledge and staff competency, the implementation of mandatory HSE training such as HSE Induction, General Safety Awareness Training, Hazard Identification and Risk Assessment Training, Chemical Safety Awareness Training, and Fire Safety Awareness & Fire Extinguisher Practical

Training was achieved 100% in comparison to the planned schedule. To identify potential problems and areas for improvement, Permit to Work audits were performed using a checklist, and these audits were carried out 100% in accordance with the plan. To ensure the safety of staff and assets, several inspections were conducted for Portable Gas Detectors, Lifting Gear, and Wheeled Spill Kits, among others. These inspections achieved 100% of the target and, in some cases, went beyond the target. As part of MPRL E&P's efforts to promote a positive HSE culture within the organization, several award programs have been implemented. The "Outstanding HSE Best Performance" award program has been developed to improve HSE culture, while the "Contribution Award in HSE Activity" is given to nominated personnel to stimulate involvement and enhance effectiveness. The "Best Quality Care Card Award" is aimed at promoting ownership and reducing property damage and loss.

HSE KPIs are set for individual workers in the field and are reviewed in their performance monitoring process to encourage effective participation. The HSE department plans to expand this process and liaise with other departments to set HSE KPIs for all staff in MPRL E&P.

Furthermore, as part of the implementation of the environmental action plan, the field team has successfully maintained the disposal of produced water at 100% back to the shut-in well. Additionally, the CARE Card Award program has been ongoing to motivate crews from MOGE and casual laborers.

We also experienced areas that need further refinement or improvement, and some failures were identified. The majority of the suspended or failed actions were due to COVID-19 restrictions and political crises across the country. The KPIs we were not able to achieve successfully were summarized below:

1. Some HSE inspections, such as weekly cross-inspection and weekly hazard hunt inspection with the field inspection team, were not completed.
2. Some muster drills were not conducted at base camp and work sites.
3. Some quality monitoring, such as Gas Emission Monitoring and Carbon Emission Monitoring, was not fully carried out.
4. The implementation of some programs, such as "Know It" HSE safety quiz program and safety talk by HoDs to other departments, was delayed or not fully executed.

Some corrective action items from incident investigation and audit reports, such as securing open casing wells and installing flare posts at vent gas wells, were not yet fully implemented.

5. Environmental Management Plan

The purpose of the Environmental Management Plan (EMP) is to ensure adherence to the Project's policies, as well as to the mitigation, monitoring, and other commitments outlined in the EIA Report. Although the EMP was considered a broad framework document, it was connected to several comprehensive management plans, as described below, which were established to establish the criteria for meeting specific environmental requirements.

The management plans, which were developed to ensure compliance with specific environmental elements, are described in detail in the EIA report. These plans outline the management and mitigation measures that must be implemented, the responsible parties and timeframe for implementation, and reporting requirements. MPRL E&P is currently implementing and monitoring these plans according to the schedule outlined in the EIA report.

- Waste Management Plan
- Emergency Response Plan (including Fire Risk Management Plan)
- Spill Response Plan
- Health and Hygiene Management Plan
- MEDEVAC Procedures
- Transportation Management Procedures
- Contractor's Environmental Management Plan(s)
- Environmental Monitoring Plan

5.1 Environmental Management System Framework

MPRL E&P's approach to environmental management is based on the ISO 14001 framework and incorporates internal policies, national regulations, and best practices from international sources. The company conducts regular environmental analysis and monitoring to ensure that its business activities have minimal negative impacts on the environment and the communities affected by its operations.

Figure 1: MPRL E&P Environmental Management System Framework

5.2 Waste Management Plan

The Waste Management Plan aims to effectively manage any surplus materials from the construction and operational activities in the Mann field, ensuring proper handling and disposal of waste.

The waste management plan aims to achieve the following objectives:

- Managing waste in a controlled and environmentally sound manner,
- Complying with all statutory and contractual requirements related to waste management,
- Recovering resources whenever possible and safe for re-use and recycling,
- Recording and tracking all generated waste appropriately.

The waste management plan has been implemented during the operation phases, dividing waste streams into four categories:

1. Hazardous recyclable,
2. Hazardous non-recyclable,
3. Non-hazardous recyclable, and
4. Non-hazardous non-recyclable.

The key steps in the waste management process are:

- Segregating waste into hazardous, general and recyclable categories using suitably labeled bins,
- Transporting bins/drums to approved disposal locations with the waste type clearly labeled on each one,
- Including each waste bin/drum sent on the backload manifest,
- Recording waste transportation in the waste database.

Brief Waste Management Process is described as follows:

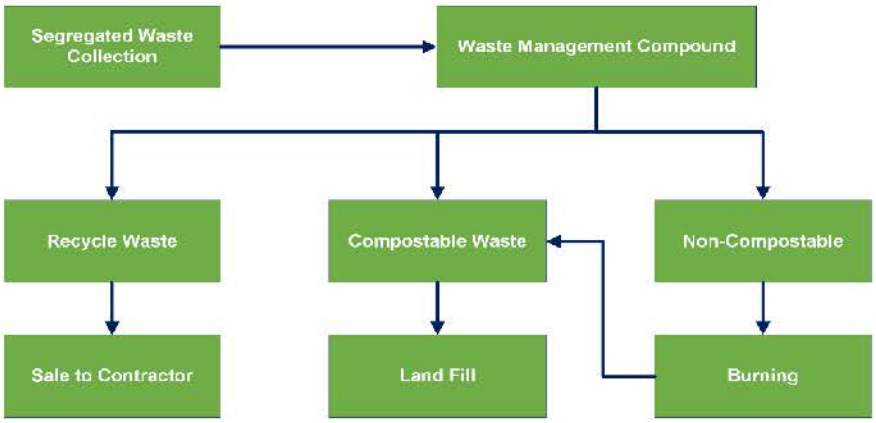

Figure 2: Waste Management Flowchart

5.2.1 Monitoring on Waste Management Status

During the monitoring period of October 2022 to March 2023, the waste management compound facilities remain unchanged from previous monitoring periods.

Existing Solid Waste Management System

The solid waste management framework implemented by MPRL E&P primarily encompasses waste collection, segregation, and recycling, with a limited emphasis on the principles of the 3Rs (Reduce, Reuse, Recycle) that have been introduced.

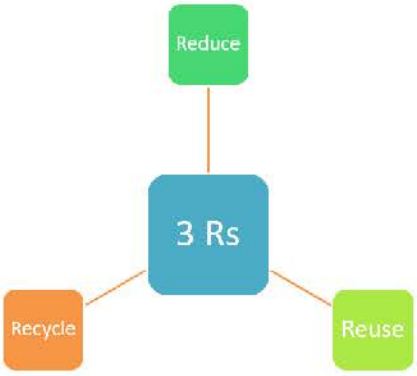

Figure 3: 3Rs

At Mann field, waste segregation has been implemented, which involves sorting and separating waste based on its characteristics. The waste materials are segregated at the source by providing bins that are marked with universal symbols and labelled in both English and Burmese, and are coloured for storing waste as follows:

- **Green** – General Wastes,
- **Yellow** – Recycle Wastes,
- **Red** – Hazardous Wastes,
- **Black** – Non-Hazardous Wastes,
- **Blue** – Paper

Bins were placed in all locations, including GOCS, offices, warehouses, workshops, construction sites, base camps, and clinics, for waste collection. The waste collection bins will not be allowed to overflow before they are emptied, and damaged waste storage receptacles will be promptly replaced. A sufficient number of bins were placed at each waste collection point for each type of waste, based on the expected variety and quantity of waste from that location.

Waste of any kind will not be stored permanently or for prolonged periods at the Waste Management Compound. The following procedure has been implemented for the temporary storage of all waste:

- The waste is properly stored in the designated area that is separated from storage areas for other materials/substances,
- The facilities are identified for each designated area, such as Recycle Area, Hazardous Area, etc.

5.2.2 Solid Waste Management in MPRL E&P

The management of waste is a crucial aspect of business operations, and all waste produced is recorded. MPRL E&P is monitoring and ensuring compliance with the National Environmental Quality (Emission) Guidelines and adhering to industry best practices.

Composting

Based on our self-monitoring records spanning six months from October 2022 to March 2023, the composting process has yielded approximately 1265 kg of compost. While the process is notably rapid during summer, the composting bacteria do not function optimally under neutral conditions in the rainy season.

Figure 4: Composting at WMC

Recycling

At our facility, we collect and sell recyclable materials such as glass, paper, cardboard, plastic bottles, and materials to third-party vendors. To ensure proper recycling, these materials are separated from general waste during the collection process.

General Waste is collected from all areas within the Mann Field Operations and temporarily stored at the Waste Management Compound. Waste collection is carried

out periodically every week using Jumbo big bags to reduce plastic bag usage, which can be reused multiple times. Additionally, the plastic bags used in the waste bins are also reused, except for the organic waste bin.

Figure 5: Recycle Waste Storage at WMC

General Waste Storage in WMC

After being re-sorted, packed and stored in the recycle waste storage area, the recycle materials are disposed of by an authorized third party.

The details of the type and quantity of recycle wastes have been registered using the 'Waste Register' form.

Figure 6: Waste Management Compound (WMC)

Recycle waste intended for disposal with an approved third-party vendor must be monitored using the "Waste Disposal Contractor Approval' form, which has been approved by the Field Operations Manager and/or the Site HSE Officer/ Environmental Officer.

Figure 7: Hazardous Waste Storage Area at WMC

A total of 20,495 kg of hazardous waste is collected from all work-related areas and is properly stored at the Waste Management Compound. The volume of hazardous waste collected was high in March 2023, with most of it being dry sludge from GOCSs. The dry sludge/ produced sand is temporarily stored at the Waste Management Compound, while the wet sludge is stored at the Sludge Management Compound. Sludge composition tests for both wet sludge and dry sludge/produced sand were conducted at Golden DOWA Ecosystem in 2022, and arrangements for the disposal of E-waste are being made for the first step in 2023.

5.2.3 Monitoring Data and Statistics

The Waste Statistics during the monitoring period from October 2022 to March 2023 are as follows:

Table 4: Monthly Waste Monitoring Record

Month	Hazardous Waste (kg.)	Non-hazardous Waste (kg.)	Composting (kg.)
October 2022	0	905	305
November 2022	0	712	250
December 2022	4,620	546	190
January 2023	3,760	800	130
February 2023	1,615	825	225
March 2023	10,500	1,359	165
Total	**20,495**	**5,147**	**1,265**

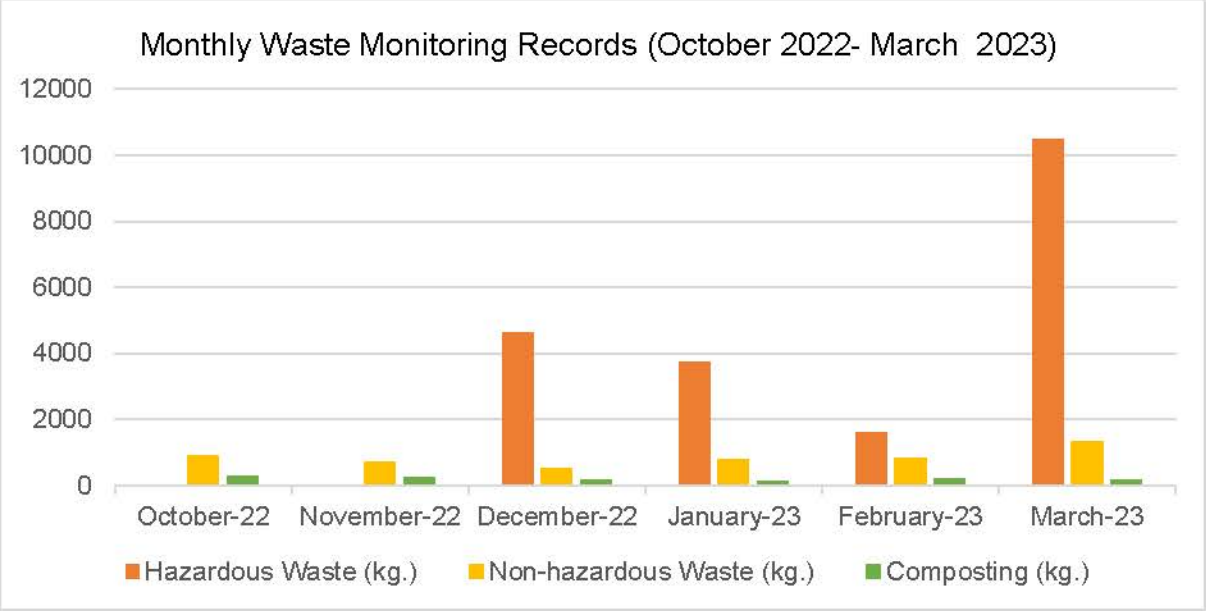

Figure 8: Monthly Waste Monitoring Records from Oct 2022 - Mar 2023

Table 5: Yearly Waste Monitoring Record

Year	Hazardous Waste (kg.)	Non-hazardous Waste (kg.)	Composting (kg.)
2020	1,470	16,267	1,204
2021	96	5,369	1,901
2022	48,113	9,000	2,880
2023	15,875	2,984	520

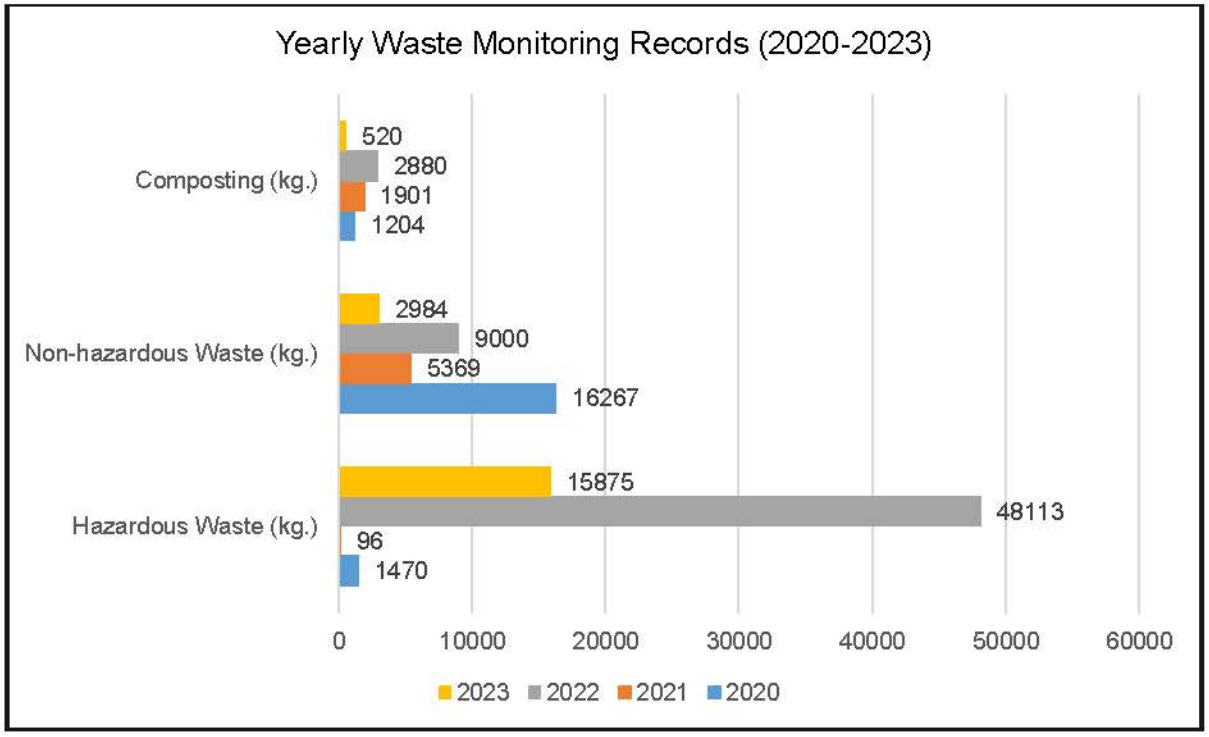

Figure 9: Yearly Waste Monitoring Record

5.3 Emergency Response Plan

MPRL E&P will develop plans and procedures to identify potential environmental accidents, health and safety emergencies, and adverse environmental and social impacts that may arise. These plans will include, but not be limited to, the following measures:

- Notification procedures,
- An emergency response organization with personnel trained to fulfill their roles and responsibilities,
- Adequate and appropriate emergency response equipment readily available to respond to minor incidents,
- Capability to quickly request additional assistance.

MPRL E&P is responsible for managing and responding to emergencies arising from the Project activities in Mann Field. The emergency response plan (ERP) which also covers fire risk management, includes:

- Hierarchy of protection,
- Preparedness and planning for emergencies,
- Employee responsibilities,
- Emergency response procedures,
- Medical emergencies including medevac procedures,
- Natural Disasters (e.g. floods, cyclones, earthquakes) related emergencies,

- Fire and electrical related emergencies, and
- Any other emergency response plan is required by the Republic of the Union of Myanmar Authorities.

5.3.1 Emergency Response Plan Implementation and Progress

MPRL E&P has prepared emergency response plans for potential scenarios that may arise during field operations. These plans effectively communicate with staff at all levels of the operation and allocate responsibilities based on their respective roles. MPRL E&P reviews and revises the emergency response plans within predefined timeframe. In the event of an incident, the related emergency response plan is reviewed and revised as necessary.

Figure 10: Fire Drill at GOCS-1 and GOCS-2

The aim to acquaint all employees with fire outbreak scenarios and enhance ties with local authorities was achieved through fire drills conducted at GOCS-2 on 24 February 2023 and GOCS-1 on 04 March 2023. The drills aimed to enable employees to proficiently execute the designated fire emergency response procedure.

5.4 Spill Response Plan

MPRL E&P has developed spill response plans and procedures to identify and respond to potential spills and prevent or mitigate any adverse environmental and social impacts that may arise. The plans include but are not limited to:

- Spill control hierarchy,
- Control measures to prevent spills such as proper engineering design, handling, storage and transportation guidelines on hazardous materials,
- Spill response training,
- Spill response organization and procedures as well as spill response PPE and drill requirements.

5.4.1 Spill Response Plan Implementation and Progress

MPRL E&P developed a comprehensive spill response plan that includes risk control measures such as using a consolidated, impermeable base for all facilities, segregating drainage systems, and setting up oil sumps and interceptors. Additionally, a zero-discharge wastewater recycling system is in place to reduce the potential for spills, secondary containments are added to well sites and the sludge compound is equipped to respond to spills.

Spill response drills are planned to help understand spill response procedures and emergency protocols. They also aim to clarify and break down respective team responsibilities and practices, and to increase awareness and efficiency in responding to actual spill incidents.

A spill drill (table-top exercise) was conducted on March 5, 2023, at the MPRL E&P Base Camp. The exercise involved a discussion of the spill response team's roles and responsibilities, as well as the usage of spill kits and tools, and the need to inform authorized personnel immediately.

Figure 11: Spill Drill (table-top exercise) on 05 March 2023

5.5 Health & Hygiene Management Plan

MPRL E&P has established a system to evaluate and manage risks associated with personal health and hygiene, and regularly assesses preventive measures that should be implemented.

MPRL E&P identified hazards as well as developed preventive and mitigation measures related to the health and hygiene of personnel working at Mann Field. The plan includes but is not limited to:

- Responsibility for implementation of the Health and Hygiene Management Plan,
- Identification, prevention, and responses to illnesses such as health-related illnesses and diseases such as those transmitted by insects and parasites,

- Pre-assignment immunization and health screening requirements,
- Preventive measures to avoid snake bites as well as sickness arising from general hygiene issues and travel to and from the Mann Field

5.5.1 Health & Hygiene Management Plan Implementation and Progress

MPRL E&P has established a comprehensive plan to evaluate and manage risks related to personal health and hygiene. The plan includes advice and resources provided by an MPRL E&P onsite Doctor, as well as control measures to mitigate risks associated with diseases that are prevalent in the operational area. The plan is regularly assessed and updated to ensure its effectiveness.

Figure 12: Canteen inspection and discussion with catering team at MPRL E&P Base Camp

To enhance safety, anticipate challenges, and minimize risks, weekly camp inspections are conducted. The findings from these inspections are documented, communicated, and appropriate actions are taken to address any issues.

Figure 13: Physical Exercise at MFO

5.6 MEDEVAC Procedures

To address the challenges posed by the remote location of the Mann field and the time required for medical evacuations, MPRL E&P has developed specific procedures that must be followed in the event of a medical evacuation (MEDEVAC). To ensure the health and safety of all personnel, anyone rotating to work at the Mann field undergoes a thorough medical examination before being engaged, and these examinations are repeated at two-year intervals.

MPRL E&P will continue to provide information about the Mann field's conditions and remoteness to the medical examiner. The medical examiner will assess whether individuals are suitable for working at the Mann Field, taking into account the potential health and safety risks. Any information obtained during the medical examination will be kept confidential between the employee and the medical examiner, unless the employee provides express written permission to share the information with MPRL E&P.

MPRL E&P is committed to providing medical evacuation (MEDEVAC) facilities to all personnel working on the MPRL E&P project in Mann Field, including sub-contracted personnel. This includes a field clinic located at the worker base camp, where emergency medical treatment can be provided by MPRL E&P's medical staff. In the event that additional medical support is required, MEDEVAC services are available to transport patients to appropriate medical facilities for further treatment.

5.6.1 MEDEVAC Procedure Implementation and Progress

To ensure the safety of personnel working in the Mann field project, MPRL E&P has developed procedures for medical evacuation (MEDEVAC) in the event of an injury or illness. The company is committed to providing MEDEVAC facilities to all staff, which include a field clinic with a site doctor at the worker base camp, an ambulance, and medical supplies for emergency treatment. The procedures are designed to minimize the time taken to transport patients to hospitals with appropriate medical standards.

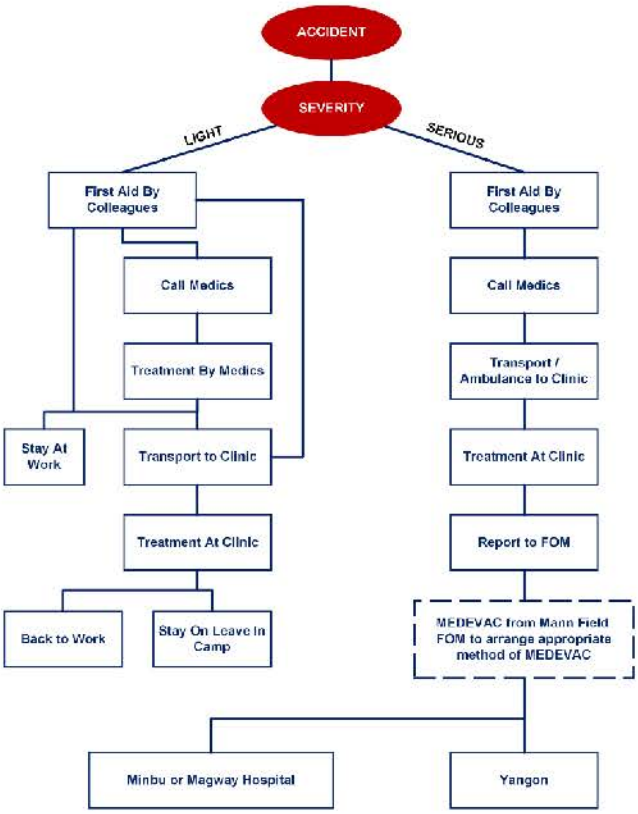

Figure 14: Medical Evacuation Flowchart

5.7 Transportation Management Procedures

The Transportation Management Procedures aim to establish strict controls over traffic routes, speed limits, road safety requirements, vehicle loading and maintenance measures, as well as response procedures to traffic-related emergencies. These measures are implemented to ensure the safe and efficient transportation of personnel and equipment.

The following management actions are covered under Transportation Management Procedures:

- Good practices on rest regime, timing routes and speed of driving,
- Safety rules related to MPRL E&P vehicles usage,
- Procedures for road risk assessment, and
- Procedures to rescue the driver and passenger(s) who fail to get to their check calls or destination by the ETA designated on the Journey Management Plan

5.7.1 Transportation Management Procedures Implementation and Progress

MPRL E&P has established a transport management procedure to control traffic routes, speed limits, road safety requirements, vehicle loading, and maintenance measures. The procedure also includes protocols for responding to traffic emergencies. To maintain high safety standards, MPRL E&P has outsourced transportation to its sister company, M&AS. M&AS follows the same safety rules and regulations as MPRL E&P regarding vehicle usage and practices good measures such as road risk assessments, rest regime, timing routes, speed of driving, and alcohol testing.

MPRL E&P performs safe crew change activities to achieve maximum reliability and safety. The vehicles are inspected to ensure they are safe to use, and a test drive is performed if needed. Driver behavior assessments are conducted on vehicle operators, and defensive driving and refresher training are provided twice each year. During the pandemic, MPRL E&P also conducts COVID-19 antigen testing for vehicle operators and passengers to prevent infections. Additionally, seating arrangements have been established in accordance with the guidelines of the Ministry of Health.

Figure 15: Safe Crew Change Activities

5.8 Contractor Environmental Management Plan(s)

The Project will sometimes require engaging contractors to carry out Project activities. The contractors are responsible for performing all work:

- In compliance with relevant national and international HSE legislation and regulations and with other requirements to which the project subscribes,
- In conformance with the Project's EMP, and
- By contractual technical and quality specifications

The Project will also provide a specification for environmental compliance and performance (through approved EIA and EMP and the associated plans) and, as a contractual requirement, the contractor will develop and provide to the Project its specific management plans demonstrating how they intend to comply with the stipulated requirements.

Contractors must also provide documentation detailing their plans for:

- Implementing the measures required in the EIA and this EMP,
- Local content,
- Logistics,
- Community relations

The contractor management plans must conform to the requirements of the Project's overarching plans. Contractor plans will be reviewed and approved by MPRL E&P and incorporated into, and form part of, the Project's overall EMP.

Contractors will be required to self-monitor against their plan and the contractor's compliance with the plan will be routinely monitored by MPRL E&P directly or by third parties. Contractors will be required to submit regular reports of monitoring activities and the Project will review these regularly. An external assurance process will be conducted on an annual basis the results of which will be disclosed after the process.

As a contractual requirement, the subcontractors are required to provide sufficient resources to manage HSE aspects of the work to be performed. This includes providing resources to ensure compliance of next-tier subcontractors and a process for emergency stop-work orders in response to monitoring triggers.

5.8.1 Contractor Environmental Management Plan(s) Implementation

At Mann Field, there may be contractors engaged in activities such as providing MPRL E&P with manpower services, logistic services, catering services, machinery maintenance and repairing of machines and instruments for the field operations. M&AS is one of the companies involved in the MPRL E&P camp rules and fulfilled the environmental-related management plans, including waste management procedures. If there are any contractors or third-party monitoring teams working in the Mann Field, also required to respect and obey MPRL E&P HSE rules and policies.

Figure 16: Toolbox Talk to Contractors concerning HSE

6. Environmental Monitoring Plan

The project will conduct monitoring activities to assess compliance with regulatory requirements and to evaluate the effectiveness of operational controls and other measures aimed at mitigating potential impacts.

As a minimum, the following monitoring of the physical environment will be undertaken:

Physical Environmental Monitoring:

- Ambient Air Quality,
- Noise,
- Groundwater quality,
- Surface-water quality,
- Soil Quality

Monitoring will be conducted during the following periods of the EOR and re-development program activities:

- At least two weeks before the construction activities for baseline data collection,
- Monthly monitoring for the first three months during both the construction and operation phases. After the three months, a review should be conducted to determine whether the collected data indicates an impact has occurred beyond what has been predicted within the EIA. Should no higher impacts be observed, monitoring can be reduced to a six-monthly or yearly programme. Should higher impacts be observed, monitoring should continue, and appropriate actions are taken to alleviate the impacts to prevent any further impacts from occurring.

In accordance with the EIA commitments, MPRL E&P has been regularly conducting environmental monitoring activities and submitting monitoring reports to the ECD bi-annually. This is the sixth monitoring report, and it follows the committed monitoring plan from the EIA Report, as stated in Table 7 of the Environmental and Social Monitoring Program (as shown in Table 8.3 of the EIA Report).

Ambient Air Quality and Noise Quality monitoring were conducted at Z3AQN, Water samples were collected at seven locations, and Soil Quality Monitoring was carried out at Z3S1 and Z3S2 by the regional ECD (Magway) team. In addition to this, self-monitoring activities were conducted and tested at Golden DOWA and ALARM labs, and their results were covered in this report.

In addition, self-monitoring activities are involved depending on the management plans and operational control. Based on the activities, the following are stated in Table 6 as MPRL E&P's self-monitoring activities scheduled from Mann Field:

- Vent Gas Monitoring,
- Drinking-Water Monitoring,
- Discharged from Sewage Treatment System,

- Hydro-test Water Quality,
- Monitoring on Wastes

Table 6: MPRL E&P's Self-Monitoring Plan and Schedule

No.	Self-Monitoring Activities	Purpose of Monitoring	Locations	Parameters to be monitored	Frequency
1.	Vent Gas Monitoring	Regular monitor the amount of vent gas connection line, measuring with Echo meter.	All Vent Gas Wells	Methane, CH_4	Monthly and Bi-Annual
2.	Hydrogen Sulfide (H_2S) Monitoring	To fulfill the obligation from the ECC and ensure the safety of operations & personnel living nearby.	All Operating Wells	H_2S(ppm), CO(ppm), O_2(%), and LEL%	Monthly and Bi-Annual
3	Drinking-Water Monitoring	Ensuring Safe Drinking Water for the health of personnel	MPRL E&P Base Camp	pH, Turbidity, Apparent Color, Hardness, Arsenic, Chloride, Lead, Total Dissolved Solids, Iron, Electrical Conductivity, Sulphate, Calcium, Magnesium, Nitrate-Nitrogen	Bi-Annual
4.	Discharged of Sewage Treatment System	To mitigate the pollution of soil and ground water, and environment	MPRL E&P Base Camp	pH, Temperature, TSS, BOD_5, COD, Total Phosphorous, Oil & Grease, Total Nitrogen, Turbidity, Electrical Conductivity, Total Coliforms	Bi-Annual
5.	Hydro-test Water Quality	to monitor the quality of water	Warehouse	BOD_5, COD, Chloride, Heavy Metals (Total), pH, Phenols, Sulfides, Total hydrocarbon content, Total suspended solids	Bi-Annual

No.	Self-Monitoring Activities	Purpose of Monitoring	Locations	Parameters to be monitored	Frequency
6.	Domestic water	to monitor the quality of water	Downhole Workshop & Mechanical Workshop	BOD_5, COD, Ammonia, Arsenic, Cadmium, Chlorine (Total residual), Chromium (hexavalent), Chromium (total), Copper, Cyanide (free), Cyanide (total), Fluoride, Heavy Metals (Total), Iron, Lead, Mercury, Nickel, Oil & Grease, pH, Phenols, selenium, Silver, Sulfides, Temperature increase, Total coliforms, Total phosphorous, Total suspended solids, Zinc	Bi-annual
7.	Ground water (Tube-well)	To monitor the quality of groundwater near wells of chemical treatment for EOR	Ko Win Maung & Ma Nyein (near #132)	pH, DO, Turbidity, Apparent Color, Alkalinity, Hardness, BOD_5, COD, total Nitrogen, total Phosphorous, Oil & Grease, TSS, E. coli, Total coliforms, Arsenic, Barium, Boron, Total Chromium, Flouride, Selenium, Uranium, Electrical Conductivity	Bi-annual
8.	Produced Water Monitoring	Zero discharge by injecting 100% to shut-in wells	All Operating Wells	produced volume and disposal volume	Daily
9.	Monitoring on Wastes	Implementing as per Waste Management Procedure	Waste Management Compound and Sludge Management Compound	General, Recyclable, Organic, Hazardous	Weekly

Table 7: Environmental and Social Monitoring Programme (Construction and Operation Phase)

Project Stage	Potential Impact	Parameters to be Monitored	Location	Measurements	Frequency	Responsibility
At least two weeks before the construction activities for baseline data collection. Construction and Operation	Air Quality	NOx, SO_2, $PM_{2.5}$, PM_{10}, CO. Check compliance with Myanmar National Environmental Quality (Emission) Guidelines (2015).	Z1AQN, Z2AQN, Z3AQN and Z4AQN, locations indicated on Table 5.1 and Figure 5.10	Sampling and analysis of ambient air pollutants to be conducted accordingly to the guidelines of Myanmar NEQEG. Haz-Scanner EPAS Wireless Environmental Perimeter Air Station to be used for measurement.	Monthly monitoring for the first three months during both the construction and operation phase. After the three month period, a review should be conducted to determine whether the collected data indicates an impact has occurred beyond what has been predicted within the EIA. Should no higher impacts be observed, monitoring can be reduced to a six-monthly or yearly programme. Should higher impacts be observed, monitoring should continue and appropriate actions be taken to alleviate the impacts with an aim to prevent any further impacts from occurring.	MPRL E&P HSE Coordinator

Project Stage	Potential Impact	Parameters to be Monitored	Location	Measurements	Frequency	Responsibility
At least two weeks before the construction activities for baseline data collection. Construction and Operation	Noise	Check compliance with Myanmar National Environmental Quality (Emission) Guidelines (2015)	Z1AQN, Z2AQN, Z3AQN and Z4AQN, locations indicated on Table 5.1 and Figure 5.10	24-hour noise monitoring using the portable sound meter (Lutron, SL-0423SD, unit: dB). Noise level (LAeq) measured and recorded at a ten-minute interval and averaged at an hourly and daily (i.e. 24-hour) interval.	As above	MPRL E&P HSE Coordinator
At least two weeks before the construction activities for baseline data collection. Construction and Operation	Groundwater Quality	In-situ measurements for transparency, temperature, pH, DO, turbidity, colour, alkalinity and hardness. Laboratory analysis of BOD_5, COD, Total Nitrogen, Total Phosphorus, Oil and grease, TSS, E. coli, Arsenic, Barium, Boron, Total Chromium, Floride, Selenium, Uranium	Z1GW, Z2GW, Z3GW and Z4GW, locations indicated on Table 5.11and Figure 5.14	In-situ measurements for transparency, temperature, pH DO, turbidity, colour, alkalinity and hardness. Laboratory analysis of BOD_5, COD, Total Nitrogen, Total Phosphorus, Oil and grease, TSS, E. coli, Arsenic, Barium, Boron, Total Chromium, Floride, Selenium, Uranium	As above	MPRL E&P HSE Coordinator

Project Stage	Potential Impact	Parameters to be Monitored	Location	Measurements	Frequency	Responsibility
At least two weeks before the construction activities for baseline data collection. Construction and Operation	Surface Water Quality	In-situ measurements for transparency, temperature, pH DO, turbidity, colour, alkalinity and hardness. Laboratory analysis of BOD_5, COD, Total Nitrogen, Total Phosphorus, Oil and grease, TSS, E. coli, Arsenic, Barium, Boron, Total Chromium, Fluoride, Selenium, Uranium	Z1SW, Z2SW, Z3SW and Z4SW, locations indicated on Table 5.7 and Figure 5.12	In-situ measurements for transparency, temperature, pH DO, turbidity, colour, alkalinity and hardness. Laboratory analysis of BOD_5, COD, Total Nitrogen, Total Phosphorus, Oil and grease, TSS, E. coli, Arsenic, Barium, Boron, Total Chromium, Fluoride, Selenium, Uranium	As above	MPRL E&P HSE Coordinator
At least two weeks before the construction activities for baseline data collection. Construction and Operation	Soil Quality	pH; Arsenic (As); Lead (Pb); Cadmium (Cd); Copper (Cu); Zinc (Zn); Manganese (Mn); and Iron (Fe). Comparison with the Dutch Standard 2000.	Z1S, Z2S, Z3S and Z4S, locations indicated on Table 5.13 and Figure 5.16	Follow sampling procedure, sample preservation and sample analysis recommended in Myanmar NEQEG. Laboratory analysis of pH; Arsenic (As); Lead (Pb); Cadmium (Cd); Copper (Cu); Zinc (Zn); Manganese (Mn); and Iron (Fe).	As above	MPRL E&P HSE Coordinator

Project Stage	Potential Impact	Parameters to be Monitored	Location	Measurements	Frequency	Responsibility
Construction and Operation	Discharge of treated wastewater and runoff	Check compliance with Myanmar National Environmental Quality (Emissions) Guidelines for site runoff and wastewater discharges (for BOD_5, COD, TSS, oil and grease, pH, total coliform bacteria, total nitrogen, total phosphorus) during construction. Check compliance with Myanmar National Environmental Quality (Emissions) Guidelines for Onshore Oil and Gas Development during operation.	Treated wastewater discharge points at discharge points such as worker camps, GOCS, shut in wells.	In-situ measurements for pH, temperature, dissolved oxygen (DO), electrical conductivity (EC), and turbidity. Laboratory analysis of BOD_5, COD, Total Suspended Solids, Total Nitrogen, Total Phosphorous, Oil and Grease	As above	MPRL E&P HSE Coordinator

Project Stage	Potential Impact	Parameters to be Monitored	Location	Measurements	Frequency	Responsibility
Operation	Vented gas	Check compliance with Myanmar National Environmental Quality(Emissions) Guidelines for Onshore Oil and Gas Development during operation (H_2S)	Three vented gas location (randomly selected)	Real-time measurement	Monthly monitoring for the first three months during operation phase. After the three months period, a review should be conducted to determine whether the collected data indicates an impact has occurred beyond what has been predicted within the EIA. Should no higher impacts be observed, monitoring can be reduced to a six-monthly or yearly programme. Should higher impacts be observed, monitoring should continue and appropriate actions be taken to alleviate the impacts with an aim to prevent any further impacts from occurring	MPRL E&P HSE Coordinator

7. Complying ECC Commitments and Follow-up Actions

MPRL E&P is closely collaborating with the Regional ECD Office, fulfilling and following their highlighted comments. Furthermore, we are continuing to engage with related departments and authorities to take the necessary actions.

As per our commitment to the approved EIA Report and ECC, MPRL E&P will continue to implement relevant activities and mitigation measures outlined in the Article 5 (Environmental Management Plan) and Article 6 (Environmental Monitoring Plan), and submit detailed Environmental Monitoring Reports on a regular basis, including self-monitoring activities and implementation during challenging periods.

To date, a total of five Bi-Annual Environmental Monitoring Reports have been regularly submitted to the Environmental Conservation Department – ECD. However, the planned environmental monitoring survey with a third-party survey team had to be postponed due to the sudden increase in the outbreak rate of COVID-19 pandemic, security concerns, and travel restrictions within the region. Despite this, regular environmental monitoring activities were conducted as per plan.

We had the opportunity to monitor the quality of air, noise, and soil by ECD (Magway) at Z3AQN, and the quality of water at 7 different locations. In addition, we conducted self-monitoring activities to the best of our ability and made every effort to fulfill our commitments and adhere to the planned monitoring schedule within the given time frame. We chose the Z3AQN for air and noise quality monitoring at this time due to the availability of security for the monitoring devices, power supply, and its proximity to our field operations.

On January 17, 2023, the regional ECD (Magway) team inspected Mann field operations, including GOCS-2, the Waste Management Compound, concrete pad and additional cellar at M-16, produced water management on injection well M-573, and Air and Noise Quality Monitoring activities at Z3AQN. Before commencing the inspection, we gave a presentation on environmental management at Mann Field to the ECD and MOGE team at the MOGE (Mann) office.

In February 2023, we presented five update points to the regional ECD (Magway) based on the findings and comments of their inspection team. These updates corresponded to the approved Mann Field EIA report and were presented with detailed attachments and explanations.

In February 2023, MPRL E&P sent six sets of approved Mann Field EIA reports (in hard copy and CD formats) to ECD (NPT) via MOGE, in compliance with their requirements.

In future, we are planning to conduct such air, noise, surface water, groundwater and soil quality monitoring based on socio-political and security concerns progress.

Figure 17 MOGE Guests Site Visit to Mann Field

Figure 18: Meeting with MOGE and regional ECD (Magway) on 17 January 2023

Figure 19: The Regional ECD (Magway) Inspection Tour to Mann Oil Field on 17 January 2023

Figure 20: Plantation in Mann Oil Field

Figure 21: Noise monitoring near community areas

Figure 22: Concrete pad and additional cellar at M-16 and M-80

Figure 23: Pumping Unit Fencing at Mann Field

Figure 24: Regular maintenance of machines

Figure 25: Fueling station at Mann Oil Field

Figure 26: Shut-in wells M-106 and M-184

Figure 27: Awareness Posters on HSE Notice Board

7.1 Water Flooding and Contractor Role on Decommissioning

MPRL E&P was originally planned for the chemical flooding for redevelopment and enhanced oil recovery program in Mann Field Production Enhancement Project. However, that program was cancelled, and MPRL E&P did not perform the chemical flooding or injection process to the wells but initiated with injection of produced water (Produced water management) to the shut-in wells by using injection pumps to maintain reservoir / formations energy for the enhanced oil recovery project.

Referring to the terms and conditions in our PCC, MOGE is the operator of the project and MPRL E&P is the contractor role. At the end of the PCC (including any extensions), MPRL E&P will transfer back the production operational activities to MOGE.

In addition, Mann Field is a mature field so that there always have opportunities to rejuvenate the field management plan by reentering or reactivating the old shut-in wells in order to unlock the bypass oil to be able to increase recoverable reserve. Therefore, as per Article 109 (C) of EIA Procedure, we would like to get an opportunity to mention in this monitoring report that decommissioning of the project is not required to be executed by MPRL E&P as the PCC's contractor, and MOGE or other contractors maybe carry out production operations once the field has been transferred back to MOGE at the end of the current PCC (including any extensions) between MOGE & MPRL E&P.

8. Monitoring Survey & Activities

Throughout the monitoring period spanning from October 2022 to March 2023, each article provides an extensive account of the monitoring surveys and activities carried out. The following is a summary of the conducted monitoring activities:

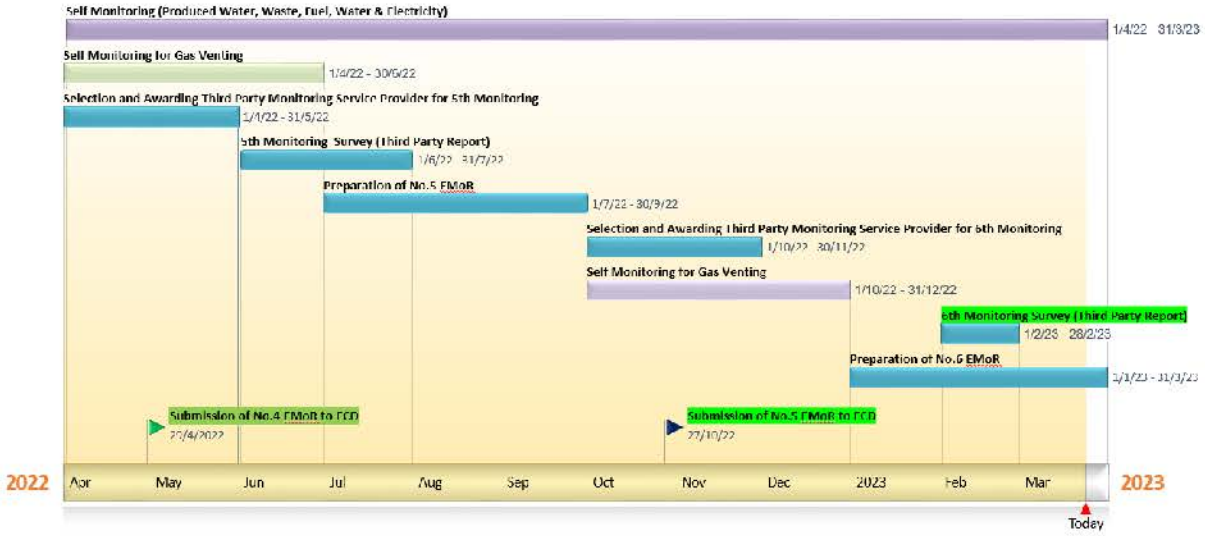

Figure 28: Time-line of Environmental Monitoring Plan (2022-2023)

Due to the COVID-19 pandemic and concerns regarding security and socio-political crises, our environmental survey plan with a third-party for monitoring air, noise, soil, surface water and groundwater quality was postponed. This plan was already communicated to the regional ECD (Magway) beforehand. Although the environmental monitoring survey with a third-party was not possible, we conducted air and noise quality monitoring at Z3AQN, soil quality monitoring at Z3S1 and Z3S2, and water analysis at seven locations with the help of the regional ECD (Magway).

Monitoring activities are conducted as much as possible during these situations, and MPRL E&P remains highly committed to monitoring as an obligation and commitment from the ECC and EIA if the situations permit.

8.1 Ambient Air Quality Monitoring

Ambient air pollutants were sampled and analyzed in accordance with NEQEG guidelines, using the Haz-Scanner EPAS Wireless Environmental Perimeter Air Station. This portable meter records real-time data, including ambient air quality measurements and climatological data. Table 8 and table 9 provide the locations and parameters for air and noise quality monitoring.

Table 8: Ambient Air Quality Monitoring Stations

Monitoring Stations	GPS Coordinate	Sampling Date (Baseline)	Sampling Date (Monitoring)
Z1AQN	20° 19' 39.0" N 94° 49' 18.4" E	8 - 9 May 2015	
Z2AQN	20° 15' 40.6" N 94° 50' 08.0" E	7 - 8 May 2015	
Z3AQN	20° 13' 21.5" N 94° 51' 19.6" E	6 - 7 May 2015	17 – 18 January 2023
Z4AQN	20° 11' 41.9" N 94° 52' 32.4" E	6 - 7 May 2015	

Table 9: Air Quality Monitoring Parameters

Parameters	Unit	Method and Duration
Air Quality		In situ reading for 24 hour
Sulphur Dioxide (SO_2)	ppm	
Carbon Monoxide (CO)	ppm	
Nitric Oxide (NO)	ppm	
Nitrogen dioxides (NO_2)	ppm	
Particulate Matter <2.5 µm ($PM_{2.5}$)	mg/m^3	
Particulate Matter <10 µm (PM_{10})	mg/m^3	
Meteorological Data		
Relative Humidity (R.H)	%	
Temperature	°C	
Wind Speed	kph	
Wind Direction	-	

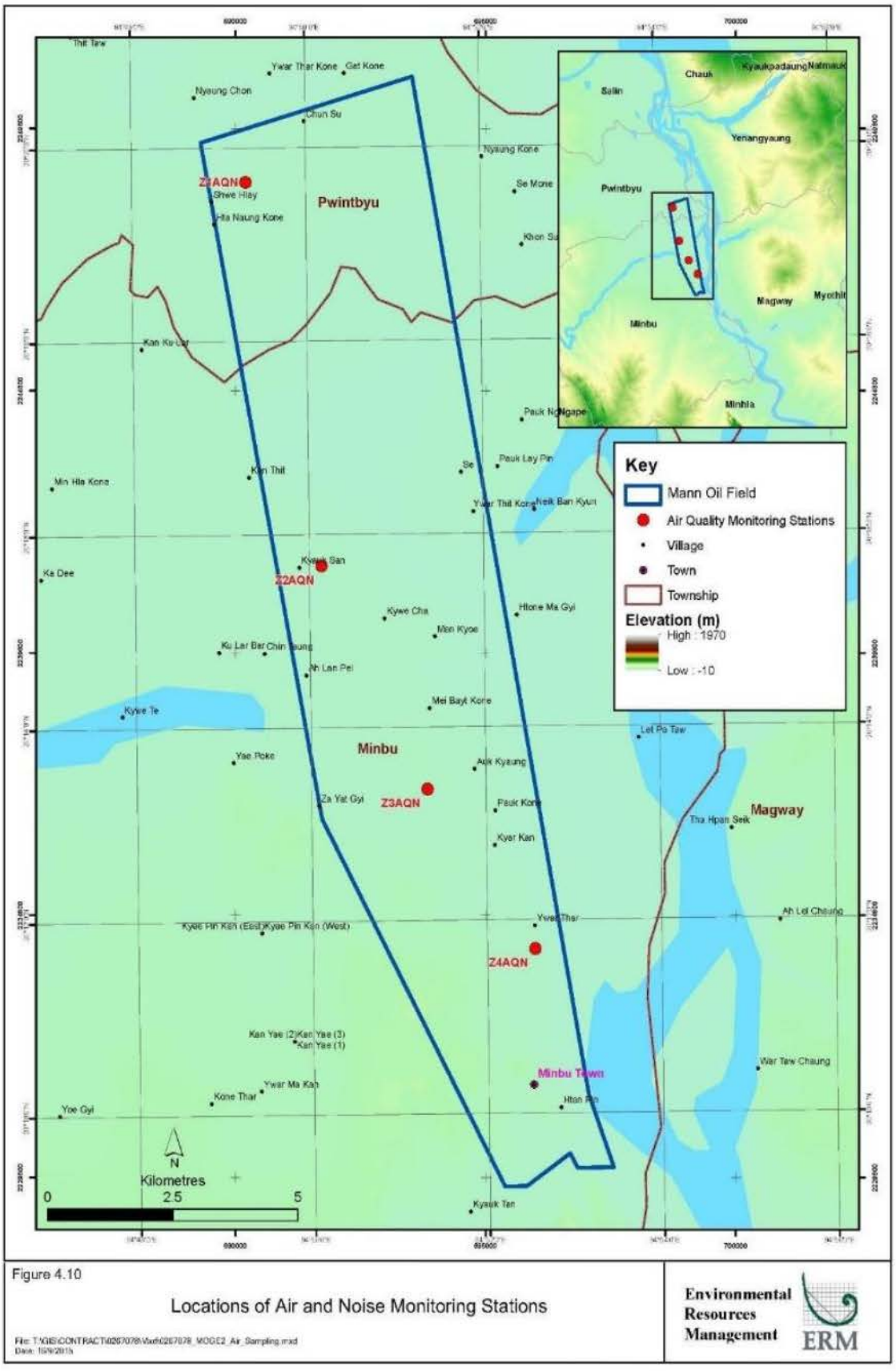

Figure 4.10

Locations of Air and Noise Monitoring Stations

Environmental Resources Management ERM

Figure 29: Location of Air and Noise Quality Monitoring Stations (Z3AQN)

Figure 30: Air & Noise Quality Monitoring at Z3AQN by the regional ECD (Magway)

Table 10: Summary of Air Quality Monitoring Results (January 2023)

Parameters	Monitoring Stations (Baseline May 2015)				Monitoring Stations (January 2023)			
	Z1AQN (ppm)	Z2AQN (ppm)	Z3AQN (ppm)	Z4AQN (ppm)	Z1AQN	Z2AQN	Z3AQN	Z4AQN
CO (24 - hr)	0.14	0.11	0.05	0.13			4.88 ppm	
NO_2 (1 - hr)	0.1	0.1	0.03	0.09			2.42 $\mu g/m^3$	
NO	0.31	0.07	<0.01	0.14			52.63 ppb	
$PM_{2.5}$ (24 - hr)	0.04	0.03	0.02	0.03			-	
PM_{10} (24 - hr)	0.05	0.04	0.04	0.04			97.74 $\mu g/m^3$	
SO_2 (10 min)	0.02	0.03	<0.01	0.01			0 $\mu g/m^3$	
Hydrogen Sulfide (H_2S)	-	-	-	-			0.00063 mg/Nm^3	
Temp (°C)	30.7	29	31.5	27.1				
Relative Humidity (%)	61	61	56	55			50.47	
Wind Speed (m/s)	0	0.015	0.081	0.85				
Wind Direction	-	Southwest	Southeast	Southeast				

Assessment Criteria: National Environmental Emission Guideline Value					
	O_3	NO_2	$PM_{2.5}$	PM_{10}	SO_2
24 - hr	-	-	25 $\mu g/m^3$	50 $\mu g/m^3$	20 $\mu g/m^3$
8 - hr	100 $\mu g/m^3$	-	-		-
1 - hr	-	200 $\mu g/m^3$	-		-
10 - min	-	-	-		500 $\mu g/m^3$

Due to security concerns, administrative and operational constraints, Mann Field operations are currently limited to daytime shifts with a limited crew. To optimize the monitoring station's accessibility and ensure reliable power supply and security, we selected Z3AQN as the location for 24-hour Air and Noise Quality monitoring in collaboration with ECD (Magway) staff. Z3AQN is the closest point to the producing wells and offers easy access to the monitoring station.

The Air Quality monitoring results indicate that all the parameters are within NEQEG standards, except for the PM_{10} value. The increase in PM_{10} value could be due to various factors, including industrial activities, transportation emissions (especially from diesel vehicles) along G-20 main road near Z3AQN, natural sources such as dust, weather conditions (such as wind speed and direction, temperature and humidity), and human activities such as burning of solid fuels for cooking and open burning of trash and leaves. We observed open burning near Z3AQN during the monitoring period and have included a photo as evidence.

Figure 31: Smokes and open burning near Z3AQN

8.2 Noise Quality Monitoring

Table 11 presents the noise monitoring locations and parameters. According to the Noise Quality Monitoring conducted by the regional ECD (Magway) at Z3AQN, the LAeq value (dBA)a for both daytime and nighttime periods was found to be below the NEQEG limit. The comparison between the January 2023 Noise Quality Monitoring results and the 2015 baseline results is shown in table 12.

Table 11: Noise Monitoring Stations

Monitoring Stations	GPS Coordinate	Description	Land-use
Z1AQN	20° 19' 39.0" N 94° 49' 18.4" E	Located at south western part of Pauk Su village, Pwint Phyu Township	Residential
Z2AQN	20° 15' 40.6" N 94° 50' 08.0" E	Located at south eastern part of Kyauk San village, near monestary compound	Residential
Z3AQN	20° 13' 21.5" N 94° 51' 19.6" E	In the MPRL E&P office compound, south of staff housing, Minnbu Township	Commercial
Z4AQN	20° 11' 41.9" N 94° 52' 32.4" E	Located at eastern part of Minnbu Township, close to the west bank of Ayeyarwady River	Bare ground

Table 12: Noise Quality Monitoring Results

Receptor	One-hour LAeq (dBA)[a]			
	2015		January 2023	
	Daytime 07:00 - 22:00 (10:00 - 22:00 for public holidays)	Nighttime 22:00 - 07:00 (22:00 - 10:00 for public holidays)	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	55	45
Industrial, commercial	70	70	70	70
Average Test Result	**54**	**50**	**45.4**	**43.3**

8.3 Soil Quality Monitoring

The baseline soil sampling locations are listed in table 13. Although our third-party Environmental monitoring survey plan was postponed due to the COVID-19 pandemic and concerns regarding security and socio-political crises, we conducted soil quality monitoring at the regional ECD (Magway) lab in November 2022. We selected Z3S1 and Z3S2 as sampling points due to their proximity to our oil field operating wells and ease of access for sample collection. The soil quality monitoring results provided by the regional ECD (Magway) indicated that the levels were below the guideline values of the international agricultural soil standards as shown in Table 14.

Table 13: Baseline soil sampling locations

Sampling Station	Replicate	Coordinates	Description	Baseline Sampling Date	Sampling Date
Z1S	1	20° 19' 45.30" N 94° 49' 13.99" E	at west of Pauk Su village, Pwint Phyu Township	6 - 9 May 2015	15-Nov-22
	2	20° 19' 45.38" N 94° 49' 21.05" E	at Pauk Su village, Pwint Phyu Township	6 - 9 May 2015	15-Nov-22
Z2S	1	20° 15' 41.70" N 94° 50' 8.41" E	in the paddy field located at the east of Kyauk San village, Minbu Township	6 - 9 May 2015	15-Nov-22
	2	20° 15' 40.05" N 94° 50' 10.40" E	at east of Kyauk San village, Minbu Township	6 - 9 May 2015	15-Nov-22
Z3S	1	20° 13' 22.04" N 94° 51' 19.59" E	in the compound of MPRL E&P office, Minbu Township	6 - 9 May 2015	15-Nov-22
	2	20° 13' 2.60" N 94° 51' 14.86" E	in the compound of MPRL E&P office, Minbu Township	6 - 9 May 2015	15-Nov-22
Z4S	1	20° 11' 41.31" N 94° 52' 39.20" E	near western bank of Ayeyarwady River, north of Minbu Town	6 - 9 May 2015	15-Nov-22
	2	20° 11' 45.77" N 94° 52' 38.30" E	near western bank of Ayeyarwady River, north of Minbu Town	6 - 9 May 2015	15-Nov-22

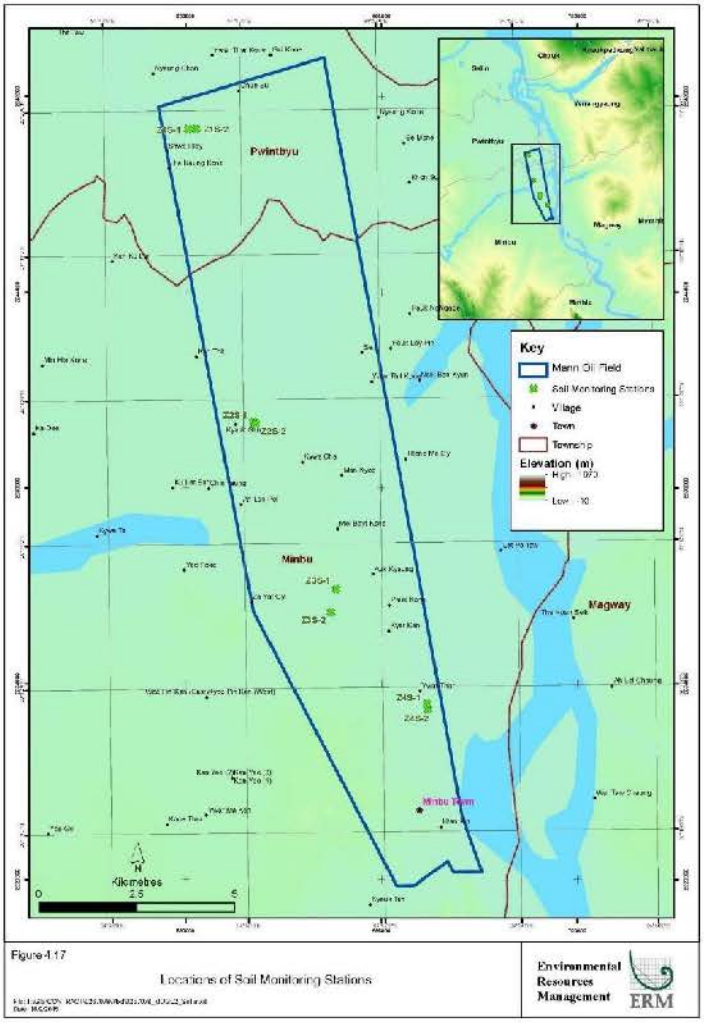

Figure 32: Location of Soil Monitoring Stations

Figure 33: Soil Quality Monitoring at Z3S1 and Z3S2

Table 14: Soil Quality Monitoring Results

Parameter	Unit	Baseline Data Sampling Station (May 2015)								Soil Analysis Result (November 2022)								International Agricultural Soil Standard
		Z1S1	Z1S2	Z2S1	Z2S2	Z3S1	Z3S2	Z4S1	Z4S2	Z1S1	Z1S2	Z2S1	Z2S2	Z3S1	Z3S2	Z4S1	Z4S2	
pH	-	6.8	6.8	6.7	6.7	6.8	6.8	6.9	6.9	-	-	-	-	7.18	6.97	-	-	6 - 7.5
Arsenic	mg/kg	ND	ND	ND	ND	ND	ND	ND	ND	-	-	-	-	-	-	-	-	
Lead	mg/kg	115	120	135	130	120	124	137	135	-	-	-	-	-	-	-	-	
Cadmium	mg/kg	0.009	0.008	0.009	0.007	0.007	0.007	0.006	0.007	-	-	-	-	-	-	-	-	
Copper	mg/kg	105	99	110	115	90	95	85	88	-	-	-	-	0.2	3.975	-	-	100
Zinc	mg/kg	75	80	72	69	65	70	75	78	-	-	-	-	3.169	7.011	-	-	250
Manganese	mg/kg	30	32	38	35	28	25	31	30	-	-	-	-	3.4	0.4	-	-	500
Iron	mg/kg	4850	4790	4900	4930	4870	4950	4700	4690	-	-	-	-	7.1	13.1	-	-	-
Soil Texture	-	Silty clay	Silty clay	Silty Sand	Silty Sand	Silty Sand	Silty Sand	Sandy silt with minor clay	Sandy silt with minor clay	-	-	-	-	-	-	-	-	-
Soil Color	-	Grey	Grey	Yellowish Brown	Yellowish Brown	Yellowish Brown	Yellowish Brown	Yellowish Grey	Yellowish Grey	-	-	-	-	-	-	-	-	-

8.4 Monitoring on Sludge Management Status

The Mann Field produces around 1800 BBL of produced water per day, which typically contains a mixture of inorganic compounds (such as dissolved salts, trace metals, suspended particles) and organic compounds (such as dispersed and dissolved hydrocarbons and organic acids). As a result of these compounds, produced water generates sludge. Improper discharge of this sludge can have potential impacts on the receiving environment, including soil, surface water, and groundwater, as well as community health, terrestrial, and aquatic ecological resources.

Dried sludge, weighing approximately 104 tons (estimated weight), is currently being stored temporarily at the Waste Management Compound. We have plans to construct a temporary storage area in the Sludge management compound. Currently, all the sludge is being stored properly in concrete pits.

Figure 34: Sludge Management Compound (SMC)

As part of our self-environmental monitoring, we discussed sludge disposal services with Golden DOWA Eco-System Myanmar Co., Ltd. As a first step, we conducted a sludge composition test on the produced sand, dry sludge, and wet sludge in their lab using available facilities and parameters, except for the oil content parameter.

The collected sludge is currently stored in concrete pits to ensure compliance with the NEQEG guideline levels for Onshore Oil and Gas Development. Any hazardous waste will be disposed of according to the commitments made in the ECC.

8.5 Monitoring on Produced Water Management Status

MPRL E&P to minimize environmental impact to Zero Discharge in produced water management. The team recording milestones on achievements of Zero Discharge on produced water management was implemented on 24 August 2017.

MPRL E&P is undertaking to inject all produced water (100%) into the shut-in wells by using 8 units of injection pumps to meet guideline levels in NEQEG for Onshore Oil and Gas Development.

Figure 35: Produced Water Management at GOCS-2

Figure 36: Produced Water Injection at M-197 and M-303

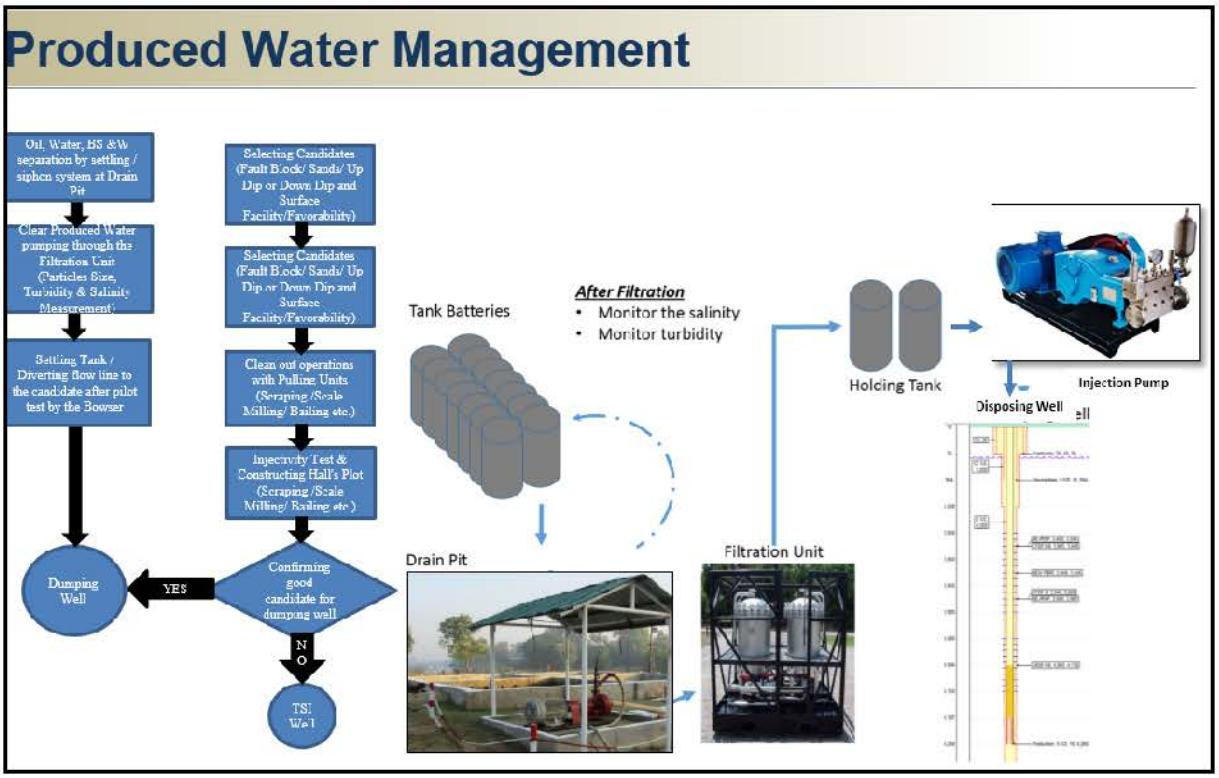

Figure 37: Produced Water Management Process

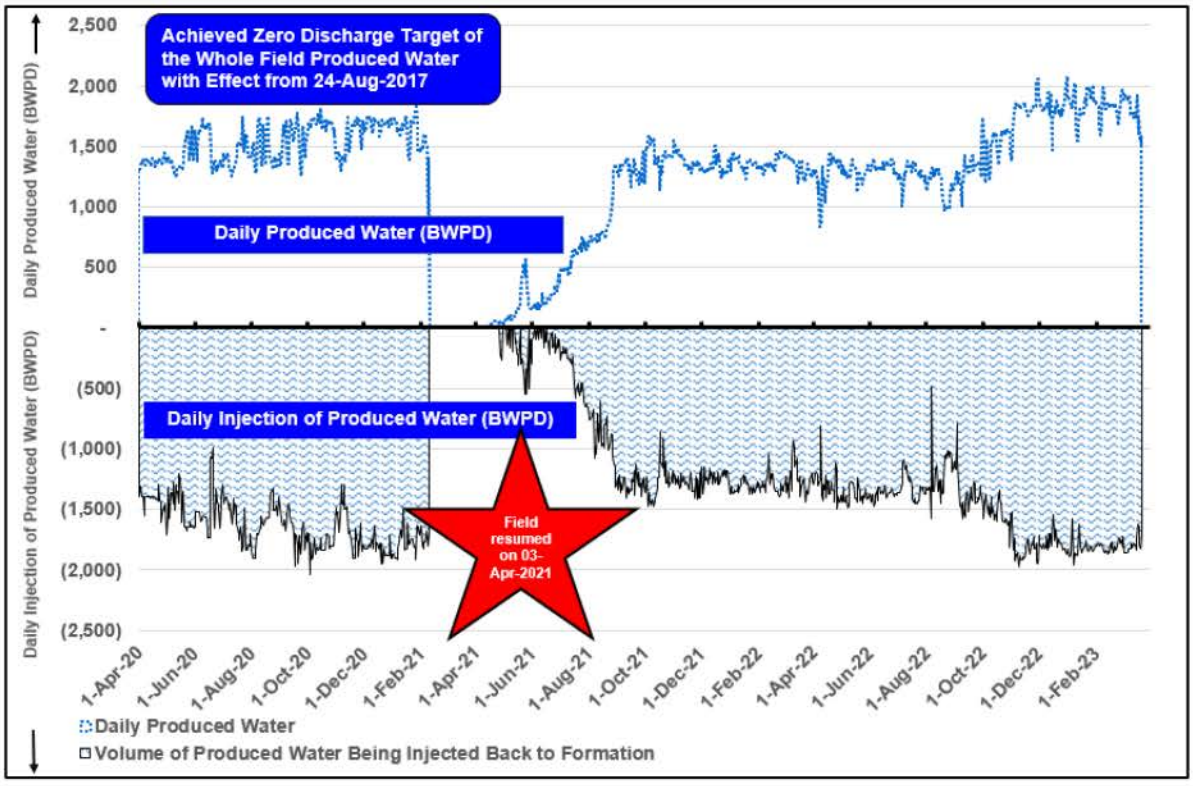

Figure 38: Produced Water Management

According to Table 7 in this report, as per table 8.3 Environmental and Social Monitoring Program of the approved EIA report, it is committed to testing the wastewaters from the discharged points. However, all the produced water from the GOCS is being disposed of back into the formation and thus there is no discharge to the environment. Again, there is no discharge from the hydro test activities and also from shut-in wells.

Therefore, wastewater monitoring will be continued with the parameters committed in table 8.3 of the approved EIA report on the treated discharged water of the base camp.

8.6 Monitoring on Discharge of Treated Wastewater and Runoff

MPRL E&P conducted self-monitoring activities to access the quality of discharged water from various sources, including domestic wastewater treated from Bio-filter water, hydro test water from warehouse, drinking water quality, domestic wastewater quality from Down-hole and Mechanical Workshop Zero Discharged Tank, and groundwater quality near the injection well. The monitoring was conducted according to the planned schedule.

8.6.1 Base Camp Water Discharge

Domestic-type wastewater and sewage are managed in the existing operational phase. Based on the camp water consumption monitoring results, approximately 10,000 liters of sewage and wastewater are generated per day from the base camp within the Mann Field, which can accommodate 80 – 100 workers.

Water consumption is monitored using water flow meters installed at the base camp, workshop, warehouse, and down-hole workshop. The team is also aware of the water consumption to minimize its volume.

Regular safety meetings and toolbox talks are held to raise awareness about water conservation, energy conservation, and water pollution among all crew members. Additionally, inspections are conducted to ensure that there are no leaks or wastage of water from pipelines and basins during routine camp inspections.

Figure 39: Desludging and third-party regular maintenance of Bio-Filter

Sanitary and domestic wastewater are managed in accordance with the mitigation plan. The following measures are in place:

- Sanitary wastewater is collected in septic holding tanks in the main camp, which are periodically serviced by a licensed firm. Currently, the wastewater is collected in a concrete pit, with no discharge outside.
- MPRL E&P has installed the wastewater treatment unit to treat sanitary wastewater in accordance with NEQEG guidelines. The field team monitors the discharge water parameters on a quarterly basis.
- Storm water run-off is directed to a pond to remove silt particles before being discharge via a storm drain.
- Surface runoff from potential sources of contamination is prevented.
- All discharge facilities and sediment control structures are regularly inspected and maintained to ensure proper and efficient operation, particularly during rainstorms. Deposited silt and grit are removed regularly.
- Runoff from areas without potential sources of contamination is minimized by reducing the area of impermeable surfaces and using vegetated swales and retention ponds to reduce the peak discharge rate.
- Oil-water separators and grease traps are constructed and maintained as appropriate at refueling facilities, workshops, parking areas, fuel storage, and containment areas.
- The location of the discharge point for treated sewage effluent into surface water is not confirmed based on the existing project design, but it will be located where there is adequate assimilative capacity of the surface waters.

8.6.2 Monitoring of Sewage Treatment System Water Quality

At Base Camp, we treated sewage discharge water using a bio-filter and collected it in a concrete tank. This water is now repurposed for watering the plants and controlling dust by spraying it on the ground.

Between November 2022 and January 2023, we collected water samples from the bio-filter treated system and sent them to the regional ECD (Magway) lab, ALARM, and DOWA lab for testing. We monitored a total of twelve parameters and discovered that the total coliform exceeded the NEQEG guideline. Regular maintenance is crucial to ensuring proper functioning of the bio-filter system. Failure to maintain the system properly can result in clogging or damage, leading to a decrease in treatment efficiency and an increase in total coliform counts. If the bio-filter's media fails to remove contaminants, including coliform bacteria, the system's ability to effectively treat sewage is compromised. Consequently, we contracted Wa Min, a third-party company, to provide annual bio-filtration unit service.

The monitoring results are presented in table - 15: Bio-filter outlet water quality monitoring (Sewage Treatment System).

Table 15: Bio-filter Outlet Water Quality Monitoring (Sewage Treatment System)

No	Quality Parameter	Units	Results (Dec 2020)	Results (Dec 2021)	Results (Aug 2022)	Results (Jan 2023)	NEQEG (2015)
1	BOD_5	mg/l	5	29	32	20	50
2	COD	mg/l	<30	78	65	31	250
3	Oil and Grease	mg/l	2	3	12	5	10
4	pH	S.U	7.7	7	7.2	8.08	6-9
5	Total Coliform Bacteria	MPN/100ml	-	1100	>1100	>1100	400
6	Total Nitrogen	mg/l	<5	0.7	32	18.2	-
7	Total Phosphorous	mg/l	0.5	1.8	3	<1.5	2
8	Total Suspended Solids (TSS)	mg/l	1	5	5	2	50
9	Arsenic	mg/l	-	-	-	0.003	0.1
10	Lead	mg/l	-	-	-	0.041	0.1
11	Manganese	mg/l	-	-	-	0.086	-
12	Iron	mg/l	-	-	-	-0.258	3.5

8.6.3 Hydro-test Water and Domestic Water

At the Mann field warehouse, the team previously conducted hydro tests on tubing in a designated pressure test area. However, the field team has since minimized water usage by implementing a recycling system that uses zero discharge recycled water for these tests.

Figure 40: Warehouse Tubular Section

8.6.4 Monitoring of Discharge Water from Warehouse (Tubular Section)

Figure 41: Water Sample Collection at Warehouse Zero Discharge Tank

The hydro-test water monitoring schedule was carried out between November 2022 and January 2023. The monitoring results revealed that all parameters complied with the NEQEG guidelines, except for the BOD_5 and TSS value. Hydro-testing involves using water to pressurize and verify the integrity of pipes, tanks, and other equipment. During this process, the water can absorb organic matter, oils, greases, and other contaminants. The high BOD_5 value in the hydro-test water is due to the accumulation of organic matter and chemicals during testing. The higher value of TSS may be many reasons such as residual debris in the system, corrosion and scale buildup, turbulence and high flow rates, and other environmental factors. To prevent contamination of natural water sources, we recycled the water using a zero-discharge tank instead of disposing of it after testing, and used appropriate filtration and settling systems.
The monitoring results are presented in Table – 16: Monitoring of Discharge Water from Warehouse (Tubular Section).

Table 16: Discharge Water from Warehouse (Tubular Section)

No	Quality Parameter	Units	Results (Dec 2020)	Results (Dec 2021)	Results (Aug 2022)	Results (Jan 2023)	NEQEG (2015)
1	BOD_5	mg/l	-	-	18	34	25
2	Arsenic	mg/l	-	-	0.005	0	-
3	Cadmium	mg/l	-	-	0.01	ND	-
4	COD	mg/l	-	-	33	27	125

No	Quality Parameter	Units	Results (Dec 2020)	Results (Dec 2021)	Results (Aug 2022)	Results (Jan 2023)	NEQEG (2015)
5	Chromium (Hexavalent)	mg/l	-	-	0.32	0.07	-
6	Copper	mg/l	-	-	0.1	0.1	-
7	TSS	mg/l	-		21	42	35
8	Chloride	mg/l	-		68	88	600
9	Lead	mg/l	-	-	ND	-0.031	-
10	Mercury	mg/l	-	-	0.32	0.001	-
11	Nickel	mg/l	-	-	<0.2	<0.2	-
12	pH	S.U	-	-	7.2	7.93	6-9
13	Phenols	mg/l	-	-	0.14	<0.1	0.5
14	Silver	mg/l	-	-	≤0.005	≤0.002	-
15	Sulfide	mg/l	-	-	<0.04	<0.04	1
16	Zinc	mg/l	-	-	<0.02	<0.02	-
17	Vanadium	mg/l	-	-	-	≤0.002	-
18	Manganese	mg/l	-	-	-	0.124	-
19	Iron	mg/l	-	-	-	-0.102	3.5

Down-hole Workshop: Down-hole tools servicing, cleaning, inspection, pressure testing and the cleaning process with steam are carried out in the Down-hole Workshop. The used water is disposed of at the zero discharge pits to preserve the environment.

8.6.5 Monitoring of Discharge Water from Down-hole Workshop

During the monitoring period from October 2022 to March 2023, two rounds of monitoring were conducted for the discharge of water from the equipment maintenance workshop (Down-hole Workshop) into the ZERO Discharge Tank. In November 2022 and January 2023, we monitored a total of thirty parameters, and all of them complied with the NEQEG, except for total coliform bacteria. The Down-hole workshop draws its raw water from Mann creek, which may be contaminated. Additionally, dry leaves, bird feces, and ripened fruits in the surrounding environment can introduce total coliform bacteria into the zero-discharge

Figure 42: Down-hole Workshop

tank. This may cause an accumulation effect due to storage conditions, which could explain why the total coliform count exceeded the limit.

The water used in the daily operation of the down-hole workshop was collected in a concrete tank via a drain line and reused for recycling, thus avoiding discharge to the environment.

The monitoring results are described in the following table – 17: Discharge Water from Equipment Maintenance Workshop (Down-hole Workshop).

Table 17: Discharge Water from Down-hole Workshop

No	Quality Parameter	Units	Results (Dec 2020)	Results (Dec 2021)	Results (Aug 2022)	Results (Jan 2023)	NEQEG (2015)
1	BOD_5	mg/l	14	34	40	24	50
2	Ammonia	mg/l	<0.02	<0.02	6.3	0.8	10
3	Arsenic	mg/l	0	0.025	≤0.010	0.011	0.1
4	Cadmium	mg/l	ND	ND	≤0.005	ND	0.1
5	COD	mg/l	<30	76	65	68	250
6	Chlorine (Total Residual)	mg/l	0.14	0.38	<0.02	<0.02	0.2
7	Chromium (Hexavalent)	mg/l	12	0	0.15	<0.02	0.1
8	Chromium (Total)	mg/l	-	<0.02	0.048	≤0.002	0.5
9	Copper	mg/l	ND	ND	0.112	0.2	0.5
10	Cyanide (Free)	mg/l	<0.01	-	<0.002	<0.002	0.1
11	Cyanide (Total)	mg/l	-	<0.01	0.004	<0.002	1
12	Fluoride	mg/l	0.33	0	0	0	20
13	Heavy Metals (Total)	mg/l	-	-	-	-	10
14	Iron	mg/l	0.24	0.26	0.3	3.5	3.5
15	Lead	mg/l	ND	ND	≤0.005	0.038	0.1
16	Mercury	mg/l	-	0	≤0.002	0.01	0.01
17	Nickel	mg/l	ND	<0.2	0.148	<0.2	0.5
18	Oil and Grease	mg/l	14	4	16	9	10
19	pH	S.U	7.4	7	7.3	7.9	6-9
20	Phenols	mg/l	<0.1	<0.1	<0.1	<0.1	0.5
21	Selenium	mg/l	-	≤0.01	0.1	≤0.010	0.1
22	Silver	mg/l	-	≤0.002	≤0.005	≤0.002	0.5

No	Quality Parameter	Units	Results (Dec 2020)	Results (Dec 2021)	Results (Aug 2022)	Results (Jan 2023)	NEQEG (2015)
23	Sulfide	mg/l	0.04	<0.04	<0.04	<0.04	1
24	Temperature increase	mg/l	24	25	27	27	<3
25	Total coliform bacteria	MPN/100 ml	-	>1100	>1100	>1100	400
26	Total Phosphorous	mg/l	0.18	<1.5	40	<1.5	2
27	Total Suspended Solids	mg/l	11	3	5	12	50
28	Zinc	mg/l	<0.02	0.02	<0.02	<0.02	2
29	Vanadium	mg/l				≤0.002	-
30	Manganese	mg/l				0.385	-

Mechanical Workshop: pulling units, work-over rigs, trucks, bulldozers, backhoes, tractors and pumps are serviced in the workshop, and large amounts of water are used in car washes and general cleaning. Water reclamation systems are employed in the workshop.

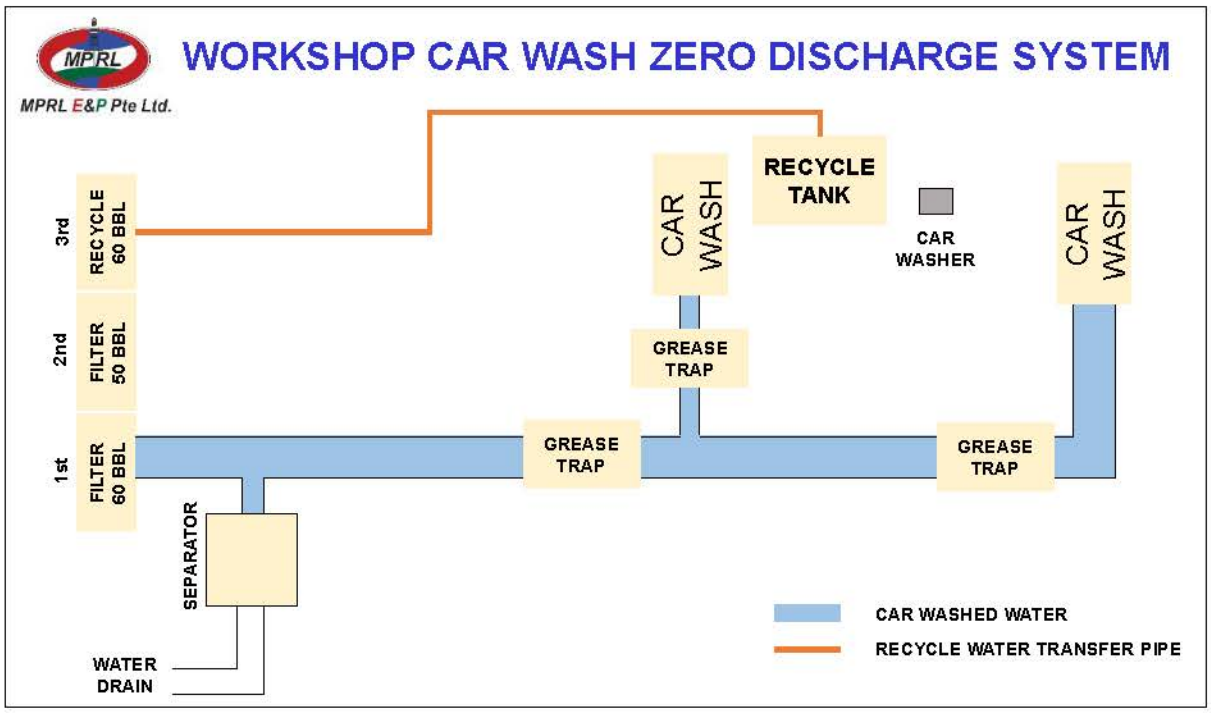

Figure 43: Recycle Water Usage System with Zero Discharge at Mechanical Workshop

8.6.6 Monitoring of Discharge Water from Mechanical Workshop

Vehicles and machine parts undergo maintenance and repair work at the mechanical workshop, and the water used in the workshop's daily operation is collected in a concrete tank and reused.

During the monitoring period from October 2022 to March 2023, two rounds of monitoring were conducted for water discharge from the Equipment Maintenance Workshop (Mechanical Workshop) of the Zero Discharge Tank. A total of 30 parameters were monitored, and among them, the total coliform parameter exceeded the guideline values.

The reason for the high levels of total coliform parameter may not only be due to the fact that the collecting tank's cover was made with iron rod mesh, allowing bird feces and other contaminants to enter through the drain line, but also the surrounding environment of the Zero Discharged Tank and its cumulative effect on the storage conditions.

The results of the monitoring are presented Table – 18: Discharge water from Equipment Maintenance Workshop (Mechanical Workshop).

Table 18: Discharge Water from Mechanical Workshop

No	Quality Parameter	Units	Results (Dec 2020)	Results (Dec 2021)	Results (Aug 2022)	Results (Jan 2023)	NEQEG (2015)
1	BOD_5	mg/l	12	36	18	18	50
2	Ammonia	mg/l	<0.02	<0.02	2.3	0.5	10
3	Arsenic	mg/l	0	0	≤0.010	0	0.1
4	Cadmium	mg/l	ND	ND	≤0.005	ND	0.1
5	COD	mg/l	<30	81	36	59	250
6	Chlorine (Total Residual)	mg/l	0.02	0.04	<0.02	<0.02	0.2
7	Chromium (Hexavalent)	mg/l	2	0	0.34	<0.02	0.1
8	Chromium (Total)	mg/l	-	<0.02	0.046	≤0.002	0.5
9	Copper	mg/l	0.02	ND	≤0.005	0.1	0.5
10	Cyanide (Free)	mg/l	<0.01		<0.002	<0.002	0.1
11	Cyanide (Total)	mg/l		<0.01	0.004	<0.002	1
12	Fluoride	mg/l	0.46	0	0.02	0	20
13	Heavy Metals (Total)	mg/l	-	-	-	-	10

No	Quality Parameter	Units	Results (Dec 2020)	Results (Dec 2021)	Results (Aug 2022)	Results (Jan 2023)	NEQEG (2015)
14	Iron	mg/l	0.12	0.11	0.6	1.087	3.5
15	Lead	mg/l	ND	ND	≤0.005	0.001	0.1
16	Mercury	mg/l	-	0	≤0.002	0.001	0.01
17	Nickel	mg/l	ND	<0.2	0.142	<0.2	0.5
18	Oil and Grease	mg/l	12	6	21	4	10
19	pH	S.U	7.7	6.9	7.4	7.87	6-9
20	Phenols	mg/l	<0.1	<0.1	<0.1	<0.1	0.5
21	Selenium	mg/l	-	≤0.01	0.104	≤0.010	0.1
22	Silver	mg/l	-	≤0.002	≤0.005	≤0.002	0.5
23	Sulfide	mg/l	<0.04	<0.04	<0.04	<0.04	1
24	Temperature increase	mg/l	24	25	27	26	<3
25	Total coliform bacteria	MPN/100 ml	-	460	>1100	>1100	400
26	Total Phosphorous	mg/l	0.3	<1.5	20	<1.5	2
27	Total Suspended Solids	mg/l	2	0	3	6	50
28	Zinc	mg/l	<0.02	0.02	<0.02	<0.02	2
29	Vanadium	mg/l				≤0.002	-
30	Manganese	mg/l				0.061	-

8.7 Use of Chemicals for EOR

During the EOR operation, chemicals were injected into the wells to alter the properties of oil for enhanced recovery. The chemicals that may be used for the project include alkaline and polymers. However, it is important to note that the injection of these chemicals into the well could potentially lead to groundwater contamination, which may have indirect impacts on the health of the community.

MPRL E&P has applied the GreenZyme® technology to treat the oil reservoir in a way that does not expose or discharge the chemicals into the environment. The company has followed standard operating procedures to prevent spills from occurring, ensuring that there are no environmental issues. As per the work program, MPRL E&P did not conduct any GreenZyme® treatment operations during fiscal year 2022-23, and is evaluating the outcomes of previous years' treatments.

GreenZyme® is not a chemical but a biological liquid enzyme which is a kind of environmentally friendly fluid. It is a protein-based non-living catalyst, which facilitates the completion of biological reactions, to enhance crude oil recovery from most oil

wells, both onshore and offshore EOR. GreenZyme® is produced by a proprietary process, which involves impregnating a high protein nutrient soup, with the DNA of selectively cultured microbes. The final product contains enzymes associated with the oil-eating microbe's DNA. Nearly all-living microbes are made inert at the end of the manufacturing process.

8.8 Monitoring of Camp Water Quality (Drinking Water Quality)

access to safe drinking water is crucial for everyone's wellbeing, which is why a Reverse Osmosis (RO) drinking water system has been installed in the base camp. This system ensures that there is sufficient purified water available for staff members to use for drinking water and food preparation. To maintain the quality of water, the team conducts quarterly water quality monitoring, and the site doctor and HSE team perform hygiene inspections and audits according to the planned schedule. Regular service and maintenance are also scheduled and implemented to ensure that the RO system continues to function properly.

Figure 44: Water sample collection at RO drinking water system

Monitoring Results of Drinking Water Quality

In November 2022, a sample of purified drinking water quality (RO system) was collected and tested at ECD (Magway) lab. In January 2023, additional parameter testing was conducted at ALARM and DOWA labs. The results indicate that all parameters were below the Drinking Water Quality Standard (DWQS) of 2019 and confirm that the water is safe to drink. However, taste testing was not available in the lab.

The results of the purified drinking water quality from RO system are described in Table 19: Drinking Water Quality Monitoring from MPRL E&P Base Camp (RO Outlet)

Table 19: Drinking Water Quality Monitoring from MPRL E&P Base Camp (RO Outlet)

No	Quality Parameter	Units	Results (Dec 2020)	Results (Dec 2021)	Results (Aug 2022)	Results (Jan 2023)	DWQS (2019)
1	pH	S.U	7.1	7.1	8.2	7.18	6.5-8.5
2	Turbidity	NTU	1	<5	<5	0	5
3	Colour	TCU	Nil	0	12	1	15
4	Hardness	mg/l as $CaCO_3$	28	6	17	8	500
5	Arsenic	mg/l	-	0	0.005	0.003	0.05
6	Chloride	mg/l	7	<0.5	42	24.2	250
7	Lead	mg/l	-	ND	ND	ND	0.01
8	Total Dissolved Solids (TDS)	mg/l	72	101	22	0.032	1000
9	Iron	mg/l	0.07	<0.1	0.2	0.014	1
10	Sulphate	mg/l	12	10.6	4.9	7.7	250
11	Manganese	mg/l	Nil	<0.2	0.2	-0.002	0.4
12	Nitrate	mg/l	-	1.4	≤0.067	<0.5	50
13	Total Coliform Count	MPN/100ml	-	>1100	0	0	0
14	Total Fecal Coliform Count	MPN/100ml	-	>1100	0	0	0
15	Odor	Acceptable	-	-	1	1	-
16	COD	mg/l	-	-	-	6	-

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8.9 Monitoring of Ground Water Quality

MPRL E&P did not perform the chemical flooding or injection processes on the wells, but instead initiated the enhanced oil recovery project by injecting produced water into the shut-in wells using injection pumps to maintain reservoir pressure.

As part of the Environmental monitoring plan, groundwater near the injection well was monitored bi-annually to assess any contamination or impact on the groundwater. There were two tube wells near shut-in well 132, named Ko Win Maung and Ma Nyein wells. The monitoring was conducted according to our self-monitoring plan, and the samples were tested twice at ECD (Magway) lab in November 2022 and at ALARM and DOWA labs in January 2023. However, taste parameters could not be tested due to the unavailability of labs. The monitoring results are presented in Tables 20 and 21.

Table 20: Groundwater Quality Monitoring near Injection Well 132 (Ko Win Maung)

No	Quality Parameter	Units	Results (Dec 2020)	Results (Dec 2021)	Results (Aug 2022)	Results (Jan 2023)	DWQS (2019)
1	pH	S.U	7.2	7.3	7.1	7.99	6.5-8.5
2	Turbidity	FAU/NTU	<5	<5	<5	3.9	5
3	Colour	HU	16	14	18	4	15
4	Hardness	mg/l as CaCO3	41	23	60	18	500
5	TDS	mg/l	-	-	1102	1	≤1000
6	Chloride	mg/l	-	-	67	9.2	250
7	Total Coliforms	MPN/100ml	-	460	>1100	0	0
8	Total Faecal Coliforms	MPN/100ml	-	-	460	0	0
9	Arsenic	mg/l	0	0	0.005	0.006	0.05
10	Iron	mg/l	-	-	0.3	0.1	1
11	Lead	mg/l	-	-	ND	0.004	0.01
12	Manganese	mg/l	-	-	0.8	0.02	0.4
13	Sulfate	mg/l	-	-	<2	706	250
14	Nitrate	mg/l	-	-	31.859	47.2	50
15	Odour	Acceptable	-	-	1	1	-
16	COD	mg/l	-	-	-	23	-

Table 21: Groundwater Quality Monitoring near Injection Well 132 (Ma Nyein)

No	Quality Parameter	Units	Results (Dec 2020)	Results (Dec 2021)	Results (Aug 2022)	Results (Jan 2023)	DWQS (2019)
1	pH	S.U	7.1	7.5	7.5	7.93	6.5-8.5
2	Turbidity	FAU/NTU	<5	<5	<5	0.41	5
3	Colour	HU	3	10	4	2	15
4	Hardness	mg/l as $CaCO_3$	147	47	95	39	500
5	TDS	mg/l	-	-	410	1.14	≤1000
6	Chloride	mg/l	-	-	120	61	250
7	Total Coliforms	MPN/100ml	-	23	93	9	0
8	Total Faecal Coliforms	MPN/100ml	-	-	0	0	0

No	Quality Parameter	Units	Results (Dec 2020)	Results (Dec 2021)	Results (Aug 2022)	Results (Jan 2023)	DWQS (2019)
9	Arsenic	mg/l	0	0	0.005	0.007	0.05
10	Iron	mg/l	-	-	0.3	0.622	1
11	Lead	mg/l	-	-	ND	ND	0.01
12	Manganese	mg/l	-	-	0.6	0.042	0.4
13	Sulfate	mg/l	-	-	152	516	250
14	Nitrate	mg/l	-	-	10.2	12.5	50
15	Odour	Acceptable	-	-	1	1	-
16	COD	mg/l	-	-	-	38	-

In November 2022 and January 2023, MPRL E&P conducted groundwater quality monitoring near well 132 (Ko Win Maung) and found that all parameters were within the Drinking Water Quality Standard (2019), except sulfate. The high sulfate levels may be due to geological factors, human activities, and microbial activity. The owner of the tube-well did not use the water for drinking purposes, but instead used it for bathing, watering plants and washing.

At the Ma Nyein Well, all the results were shown to be under the Drinking Water Quality Standard (2019), except for total coliforms and sulfate. It was observed that the discharge of water from animal farms, fertilizers, and the proximity to toilets may cause pollution to the groundwater source, as the well is not deep enough. The high sulfate levels may be due to geological factors, human activities, and microbial activity. The tube well is approximately 20 feet deep and is mainly used for watering plants, washing, and bathing purposes.

Figure 45: Ko Win Maung Tube-Well

Figure 46: Ma Nyein Tube-well

8.10 Monitoring on Gas Venting

As per the gas venting monitoring program, MPRL E&P's technical team is monitoring and measuring by using an Echo Meter to check for gas volume. Based on the results, if the gas volume is significantly higher than the previous measurement volume, use the orifice meter to confirm the gas volume measured within 24 hours. The team connected to the gas line after confirming gas volume is enough to collect to the existing facility of the gas supply lines to the LPG plant.

Location of the Gas Venting Wells

As per the planned monitoring program, the team randomly selected the six wells and measured by using an orifice meter on the wells as follows;

Table 22: Selected Gas Venting Wells Locations

Well No	Location	Gas Volume	Date
M 16	N 20°13'24.62" E 94°51'14.43"	0 – MMCFD	03 October 2022
M 59	N 20°11'30.41" E 94°51'50.65"	0 – MMCFD	10 November 2022
M 47	N 20°13'5.7" E 94°51'35.22"	0 – MMCFD	04 December 2022
M 289	N 20°13'32.88" E 94°51'15.54"	0 – MMCFD	08 January 2023
M 18	N 20°12'53.99" E 94°51'38.03"	0 – MMCFD	16 February 2023
M 40	N 20°13'1.48" E 94°51'12.17"	0 – MMCFD	01 March 2023

Location : Well – 16

Measurement : Gas Volume Measurement by using Orifice Meter

Date : 03 October 2022

Gas Volume : 0 MMCFD

Location : Well – 59

Measurement : Gas Volume Measurement by using Orifice Meter

Date : 10 November 2022

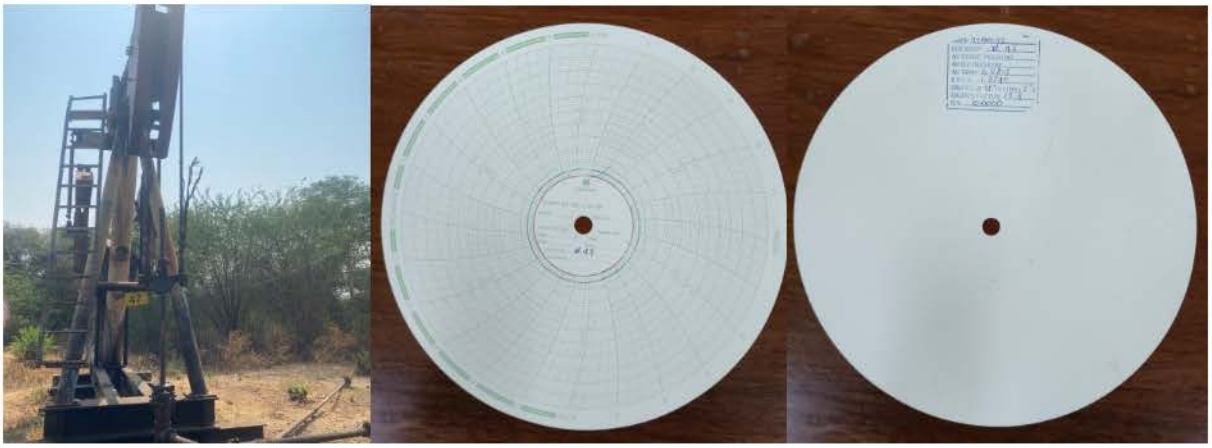
Gas Volume : 0 MMCFD

Location : Well – 47

Measurement : Gas Volume Measurement by using Orifice Meter

Date : 04 December 2022

Gas Volume : 0 MMCFD



Location : Well – 289

Measurement : Gas Volume Measurement by using Orifice Meter

Date : 08 January 2023

Gas Volume : 0 MMCFD

Location : Well – 18

Measurement : Gas Volume Measurement by using Orifice Meter

Date : 16 February 2023

Gas Volume : 0 MMCFD

Location : Well – 40

Measurement : Gas Volume Measurement by using Orifice Meter

Date : 01 March 2023

Gas Volume : 0 MMCFD

8.10.1 Monitoring of Hydrogen Sulphide (H_2S)

In accordance with our Environmental and Social Monitoring program and self-monitoring schedule, our Site HSE Officers monitor Hydrogen Sulphide (H_2S) levels on a monthly basis at randomly selected potential gas venting wells. From among these wells, we have provided detailed results for six (6) wells in Table 23.

Table 23: Monitoring Results on the Gas Venting Wells

Sr. No:	Location	Date	Measured time	H_2S (PPM)	CO (PPM)	O_2 %	LEL %
1	M-80	14 March 2023	16:13 PM	0	0	20.3	0
2	M-127	14 March 2023	16:19 PM	0	0	20.2	0
3	M-421	14 March 2023	16:24 PM	0	0	20.2	0
4	M-664	15 March 2023	16:18 PM	0	0	20.3	0
5	M-295	15 March 2023	16:20 PM	0	0	20.2	0
6	M-25	15 March 2023	16:31 PM	0	0	20.3	0

H_2S levels are monitored using an in-house portable gas detector (VENTIS MX4 Gas Detector), which has been calibrated as shown in Annex – 2 Equipment Calibration Certificate. This equipment can monitor four (4) parameters. As a result of monitoring, no H_2S was detected, and the results for each well are listed in the above Table 23.

H_2S Monitoring Activities

Figure 47: Monitoring at M-80

Figure 48: Monitoring at M-127

Figure 49: Monitoring at M-421

Figure 50: Monitoring at M-664

Figure 51: Monitoring at M-295

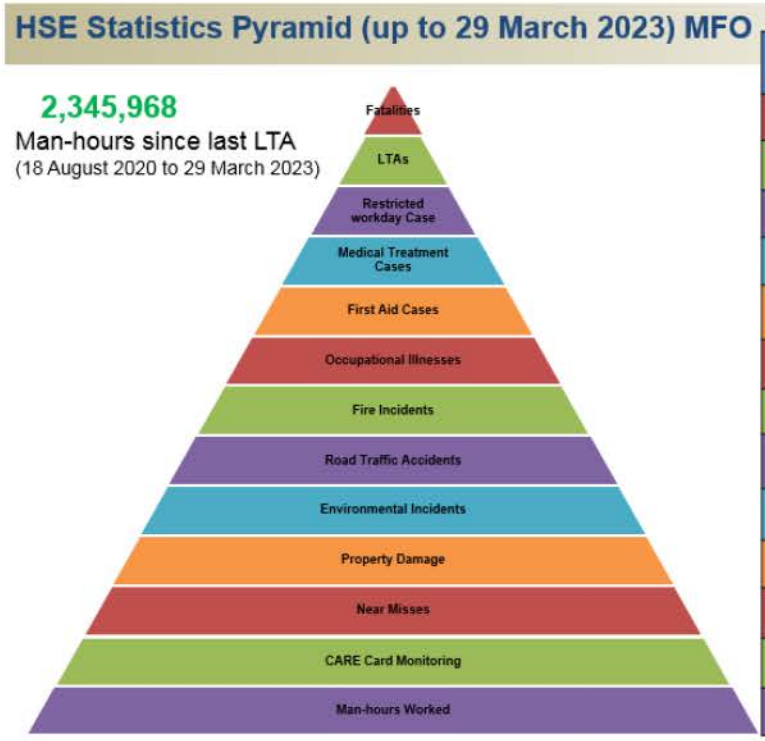
Figure 52: Monitoring at M-25

9 Occupational Health and Safety Performance

Occupational Health and Safety System Framework

As one of the flagship oil and gas exploration and production companies, MPRL E&P ensures that health and safety management is carried out by fulfilling international health and safety management system standards and requirements such as HSG 65 and ISO 45001:2018, as well as applicable local laws and international standards and industry best practices such as API requirements. These arrangements are monitored and improved whenever necessary.

9.1 HSE Statistics Pyramid



March 2023	Year 2023	Mann Field Project Life
NIL	NIL	NIL
NIL	NIL	29
NIL	NIL	1
NIL	NIL	7 (*)
NIL	NIL	115 (MPRL E&P)
NIL	NIL	NIL
NIL	NIL	32 (*)
NIL	NIL	38
1	1	42 (*)
NIL	NIL	83
NIL	NIL	53
972	2,424	50,278 (*)
86,558	263,118	31,515,058

Figure 53: HSE Statistics Pyramid for Mann field EOR Project

9.2 Incidents Status

In the fiscal year 2022-2023, there was only one incident in the Mann field operation, an oil spill resulting from well kick (an environmental incident). Apart from this spill, no other accidents occurred despite the expedited operation. This is a significant achievement that reflects the determination of the field operation team and the support of MOGE. The number of total recordable cases met the KPI target for 2022-23.

9.3 HSE Audits & Inspection

Following our previous EMoR submissions (4th and 5th), the MPRL E&P team participated in a regional ECD (Magway) site inspection tour of Mann Field. As part of our EMP, an 'Ambient Air & Noise Quality Survey' was also conducted for the upcoming EMoR report during the tour.

The areas included during their visitation are as follows:

1. GOCS-2
2. WMC
3. Well site M-16 (Construction of concrete pad and additional cellar)
4. Produce Water Injection Well SI-573, Z3AQN
5. Noise & Air Quality Monitoring @ Z3AQN by ECD (Magway)

Due to the severe COVID-19 pandemic and sociopolitical conditions, the HSE bi-annual audit for the fiscal year 2022-23 has been postponed. The audit will be conducted if saturation is permitted and with the approval of higher management.

A follow-up on the previous 'HSE bi-annual Remote Audit for the fiscal year 2020-21' has been conducted, and the recommendations have been implemented accordingly throughout the period.

Regular, surprise alcohol tests are conducted in the Mann Field to reinforce the concept of a dry field and to ensure that workers are free from the influence of alcohol while in the field.

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Figure 54: On 12 November 2022, third-party MIP inspector conducted "Crane Inspection & Recertification (3 Ton KS 303 & 55 Ton KATO)" in Mann Field

Figure 55: Vehicle and Workshop Safety Inspection in Mann Field (17 January 2023 to 19 Jan 2023)

Figure 56: Bi Annual Lifting Gear Inspection 5 January 2023

9.4 HSE Training

In the fiscal year 2022-2023, there was a total of (2,172) HSE training hours achieved.

Below are the topics covered, most of which were conducted internally by the HSE department. However, some health awareness training was conducted by trainers from Pun Hlaing Hospital.

To address the changing trends and consequences of the pandemic, a 'Post COVID-19' awareness session was conducted by the site doctor via Microsoft Teams.

Given the nature of oil and gas operations, identifying, listing, and characterizing different types of hazards in the workplace is critical to the health and safety of workers. To provide an overview of qualitative risk assessment, introduce the concept of risk management, and enhance the HSE knowledge of GoCs employees, the HSE

Department conducted a 'Hazard Identification and Risk Assessment' awareness session at MFO and MYO.

Since the Mann field operation is accelerated, understanding fatigue as a serious safety hazard is important for safe operation. To educate our crews on how to deal with fatigue in the workplace, the site doctor conducted a 'Fatigue Management' awareness training in Mann Field.

From the beginning of the pandemic, MPRL E&P has been proactive in raising awareness about COVID-19 among workers by providing them with accurate information. Training has been provided progressively, and up-to-date information is shared proactively.

Year 2022 – 2023 (Oct 22 ~ March 23) HSE training as per follow

- Fatigue Management Awareness
- HSE Induction and General Safety Awareness
- "Post COVID-19" Awareness
- Crane Operation and Safety Training
- Passenger Safety Awareness
- Safety Culture" & "Specific Hazardous Agents Awareness
- HSE Knowledge Sharing Group Activity
- Emergency Warden Awareness
- Chemical Safety Awareness
- Wasted Food Awareness
- Stretcher Handling Training
- Diabetes Mellitus Awareness
- Tabletop Exercise Emergency Warden Awareness
- Root Cause Analysis Training
- Hazard Identification and Risk Assessment
- Basic Fire Fighting Training
- Working at Height and Manual Handling Training
- Fire Safety Awareness & Fire Extinguisher Practical Training
- Headache Awareness
- A Roadmap to Burnout Recovery Awareness
- Food Poisoning Awareness
- The Best Investment for Your Future Health Awareness
- Health Awareness on Vaping
- Reproductive Health Awareness
- Understanding Blood Pressure Awareness
- Manage Your Weight Awareness
- Living Well with Diabetes Awareness
- First Aid Refresher Training

Figure 57: Chemical Safety Awareness 18 December 2022

Figure 58: Crane Operation And Safety Training (9, 10 & 11 November 2022)

Figure 59: Passenger Safety Awareness (28 & 29 November 2022)

Figure 60: "Safety Culture" & "Specific Hazardous Agents" (19 October 2022)

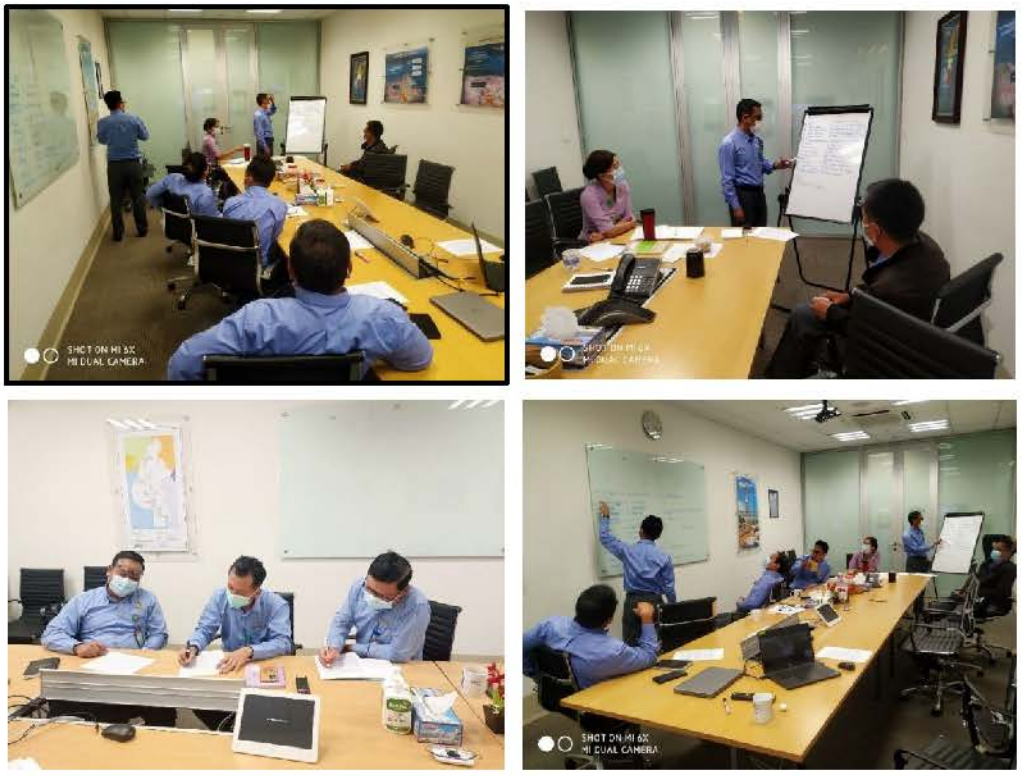

Figure 61: HSE Knowledge Sharing Group Activity (11 November 2022)

Figure 62: Evacuation Procedures of Emergency Wardens (8 & 9 December 2022)

Figure 63: Root Cause Analysis Knowledge Sharing Group Activity (16 December 2022)

Figure 64: Defensive Driving Training (21 October 2022)

Figure 65: Fire Safety & Extinguisher Practical Training (2 February 2023)

Figure 66: Hazard Identification and Risk Assessment (HIRA) In Mann Field (4 &18 February 2023)

Figure 67: Fatigue Management Awareness (2 October 2022)

Figure 68: Hazard Identification and Risk Assessment Training at Yangon Office (20, 21 & 22 February and 17 March 2023)

Figure 69: Post COVID-19 Awareness (15 & 16 October 2022)

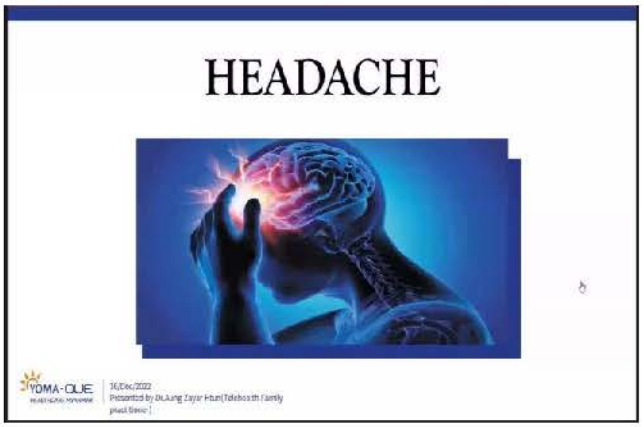

Figure 70: Headache Awareness Training (16 December 2022)

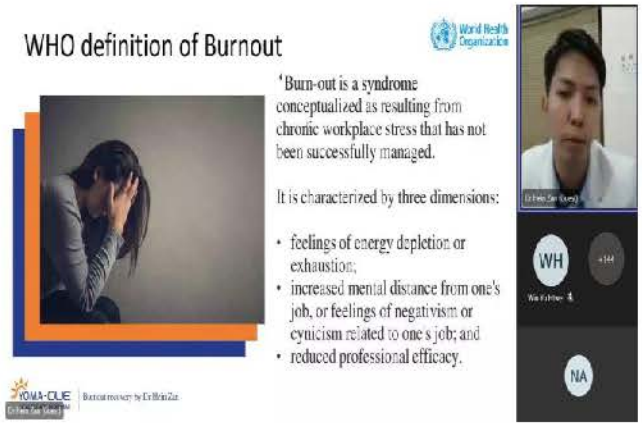

Figure 71: A Roadmap to Burnout Recovery Awareness Training (20 December 2022)

Figure 72: Food Poisoning Awareness Training (28 December 2022)

Figure 73: Diabetes Mellitus (23 January 2023)

Figure 74: The Best Investment for Your Future Health (19 January 2023)

Figure 75: Smoking Kills but Vaping Can Save lives? (26 January 2023)

Figure 76: Reproductive Health Plan Your Family, Plan Your Future (8 February 2023)

Figure 77: Understanding Blood Pressure and the Dash Diet (21 February 2023)

Figure 78: Wasting Food is Wasting Life

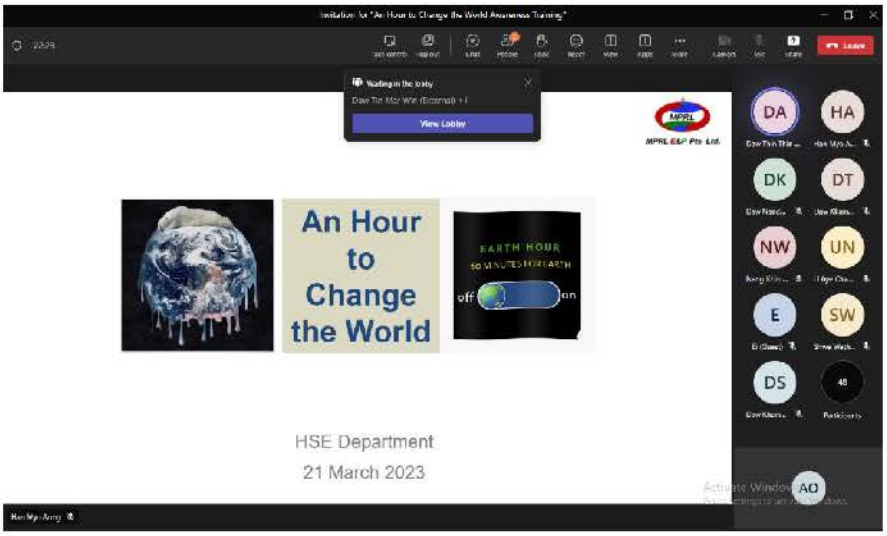

Figure 79: An Hour to change The World (21 March 2023)

Figure 80: Stretcher Training on 6 January and 4 February 2023

9.5 Effective Worker's Participation Towards HSE

MPRL E&P promotes a positive safety culture among its operation teams through various initiatives, including award programs. One such program is the "Outstanding HSE Best Performance" award, which aims to improve the organization's HSE culture. Additionally, the "Contribution Award in HSE Activity" recognizes nominated personnel for their participation and effectiveness in HSE activities, while the "Best Quality Care Card Award" promotes ownership and reduces property damage and loss.

HSE KPIs are set for individual workers in the field and are reviewed as part of their performance monitoring process to encourage effective participation. The HSE department is planning to expand this process by liaising with respective departments to set HSE KPIs for all staff in MPRL E&P.

To celebrate and show appreciation for achieving the milestone of 2 million man-hours without a lost time accident, each member of the MOGE and MPRL E&P field operations team was awarded an honorable trophy and memorable gifts.

Figure 81: 11 years without LTA and awarded to all nominees with HSE Performance Awards & Certificates

Figure 82: Best Quality CARE Card Award" & "Outstanding HSE Performance Awards" awarded for the months of July to September 2022 in Mann Field

Figure 83: Best Quality CARE Card Award July, August and September 2022 in MYO on 21 October 2022

Figure 84: "Best Quality CARE Card Award" was awarded for the last quarter of 2022 in MYO on 31 January 2023










M.O.G.E.

MPRL E&P

Social Performance Report

October 2022 – March 2023


Shared Value: Contributing to Inclusive Growth while Strengthening Competitive Advantage

10 Corporate Social Responsibility

10.1 Executive Summary

MPRL E&P remains a purpose-driven business organization operating in Myanmar's upstream energy sector. As a long-term investor in the country's energy sector, we strive to conduct our business operations in line with the highest standards in governance, social and environmental responsibility that reflects our values and expectations of our stakeholders including government, communities, and employees. Our sustainability business strategies will help us grow and thrive. In the same way, we contribute to solving the country's problems from employment to energy access to local development.

We have worked to embed this sustainability commitment into our strategy, our business processes and decision-making. We aim to be a good neighbour wherever we work, by contributing to the well-being of communities. We work closely with them to manage the social impacts of our business activities, address any concerns about our operations, and enhance the benefits that we are able to bring. We continue to adopt the UNGC's principles in the areas of human rights, labor, anti-corruption, and the environment. We remain highly committed to the global sustainability initiative from the world body.

Respectful engagement with local communities is critical to the success of project and long-term operations. We do this through mutually agreed, transparent and culturally appropriate consultation and impact management processes. MPRL E&P engages with government departments, government technical training schools, private training

centers, non-profit organizations and local welfare societies in order to leverage their capacity and create a multiplier effect of the CSR initiatives.

We understand the priorities and address the concerns or grievances people may have. It is important to us that people in communities are able to contact MPRL E&P, give feedback and receive a response or action from us. We have implemented the Operational Grievance Mechanism at Mann Field to receive, track and respond to concerns or grievances from community members before they can escalate.

10.2 Our Approach & Objectives

Our social investment strategy prioritizes the areas where we believe our investments will have the biggest potential to multiply our impact and achieve sustainable results for the 14 communities living near our operations in Mann Field. Our social investment themes have been:

- Community infrastructure
- Education, sanitation and basic health
- Livelihood development and economic empowerment
- Capacity building and partnerships
- Critical human needs and disaster response

In this regard, we continue to apply the community-led approach to our community initiatives in Mann Field in order promote inclusive and participatory decision-making, transparent and accountable village development, and strengthen grassroots level governance capacity.

At the department level, we are working to achieve the following goals which are ultimately tied to a set of Corporate Goals with regard to our Mann Field asset:

- Maintain a social license to operate from all key project stakeholders including community and regional government.
- Meet all legal requirements in compliance with the Myanmar EIA Procedures in Mann Field.
- Proactively build on our brand as a leading Myanmar national led upstream energy company to ensure both the government and general public are informed about the value we create as a business.

Our sustainability strategy is aligned with the UN Sustainable Development Goals, and we have an important role to play in supporting these ambitions. We can make the greatest contribution to six goals: Decent work and economic growth (Goal 8), Responsible Consumption and Production (Goal 12), Climate action (Goal 13), Life below water (Goal 14), Peace, justice and strong institutions (Goal 16) and Partnerships for the goals (Goal 17).

10.3 CSR Implementation Mechanism

The CSR & Communications Department implements its interventions in a combined method of direct implementation and through the involvement of communities as well as local and regional organizations, either private or public. The CSR and Communications Department carries out multi-stakeholder needs assessment activities in Mann Field on a yearly basis to develop a CSR work program. For the Fiscal Year 2022-2023, we have allocated USD 303,390 to fund CSR initiatives at Mann Field. The expenditure of MPRL E&P's CSR Program as of month-end closing data until February 2023 is USD 259,303.74.

The whole CSR work program outlines goals, rationales, timelines, and measurable parameters. Each CSR intervention has a set of key performance indicators. Pilots are designed and implemented in order to ensure community involvement, capacity development and sustainability of a project. Technical knowledge transfer is encouraged whenever possible in addition to input support to facilitate transformation of subsistence agriculture and livestock into a modern, productive one.

10.4 Community Investment Initiatives

The success of our Corporate Social Responsibility Program in Mann Field is the product of a local community partnership model which involves and empowers an array of stakeholders including Community Volunteers. Our CSR initiatives aim to raise rural living standards through increased investment in community infrastructure, human resources and services for employment and income generation. Our social investments are attuned to local needs, through needs assessment, where-in the local needs are identified, and the final design and outcomes of the project are decided. Each project aims to ultimately enable the beneficiaries to become change makers in their communities.

Community Investment Initiatives in FY 2022-2023

10.5 Key Performance Highlights

Our key performance highlights for the second six months (October 2022 – March 2023) of the Fiscal Year 2022-2023 are as follows:

Highlights for the Month of October

- Monitored the maintenance of water filtration units in Mann Field Schools.
- Provided Fish Amino Acid Hands-on Training at Kywe Cha Village.
- Organized agricultural knowledge sharing session on chickpea and sunflower in collaboration with Yetagon Farm Advisory Service.
- Paid monitoring visit to chickpea, sunflower and tomato farms in Mann Field Communities.
- Conducted Participatory Learning and Action Training for CSR Field Team and Community Volunteers.
- Initiated Training of Trainers (ToT) session and Basic Computer Skills Training for Online English Language Learning Program.
- Empowered (200) students with water, sanitation and hygiene (WASH) and 5R's (Refuse, Reduce, Reuse, Repurpose, Recycle) knowledge.
- Conducted the first Biannual CSR Progress Review Meeting of FY 2022-2023 with MOGE at Nay Pyi Taw.
- Facilitated the SSID (Magway) Director's visit to handicraft product making houses in Pauk Kone Village.
- Carried out the initial community needs assessment for FY 2023-2024 CSR Work Program.
- Supported regular waste collecting services and Trash Hero Minbu's cleanups.
- Submitted M&E Report for the second quarter of FY 2022–2023.
- Distributed Insight! Newsletter, Doh Mann Myay Newsletter and Quarterly CSR Progress Report to the regional stakeholders.

Highlights for the Month of November

- Monitored the renovation process of Mei Bayt Kone School Building.
- Supported the gardening activities at Mei Bayt Kone and Let Pan Ta Pin Green Schoolyards.
- Organized agricultural knowledge sharing sessions on chickpea and sunflower in collaboration with Yetagon Farm Advisory Service.
- Observed the farming progress of sunflower, chickpea and tomato farms in Mann Field.
- Launched Online English Learning Program in Mann Field Communities.
- Conducted the first Biannual CSR Progress Review Meeting of FY 2022-2023 with the Communities in Mann Field.
- Offered Free Healthcare Service to (5,350) Community Patients in Mobile Clinic Program.

- Conducted Water, Sanitation and Hygiene (WASH) and 5R's knowledge sharing session at Mei Bayt Kone School.
- Continued community needs assessment for FY 2023-2024 CSR Work Program.
- Offered Kahtain donation to the monasteries in Mann Field Communities.
- Supported regular waste collecting services and Trash Hero Minbu's cleanups.

Highlights for the Month of December

- Completed the Mei Bayt Kone School Building Renovation Project.
- Visited the designated areas of the Community Infrastructure Projects in Let Pan Taw, Let Pan Ta Pin and Auk Kyaung Villages.
- Organized "Book Drive for Community Center" campaign.
- Supported Online English Learning Program via MSU Platform.
- Monitored the progress updates of Farming Communities, Scholarship Trainees and Former Vocational Trainees.
- Announced No.5 ITC (Magway) Scholarship Program on the community noticeboards in Mann Field.
- Offered free healthcare services to (5,966) community patients in Mobile Clinic Program.
- Discussed Eye Healthcare Program with the ophthalmologist from Minbu General Hospital.
- Conducted a series of meetings with the respective stakeholders for the Community Investment Initiatives.
- Published Insight! Newsletter (Issue 33), Doh Mann Myay Newsletter (Issue 7) and third quarter OGM Progress Report.
- Provided necessary support to regular waste collecting services and Trash Hero Minbu's cleanups.
- Received and addressed one OGM case of water leakage.

Highlights for the Month of January

- Installed shade structure construction in Basic Primary School of Let Pan Taw Village.
- Completed the construction of reinforced concrete pavement in Let Pan Ta Pin Village.
- Organized agricultural knowledge sharing session for chickpea farming.
- Provided monthly stipend support to a medical student from Ywar Thar Village.
- Supported Online English Learning Program in Mann Field Communities.
- Offered free healthcare services and home visit to community patients under Mobile Clinic Program.
- Initiated Eye Health Pilot Program in collaboration with the Department of Public Health (Minbu).
- Monitored progress updates of agricultural farms, scholarship trainings and Trash Hero cleanups.

- Donated (MMK 2.5 million) cash to the Nursing Home (Minbu) through MOGE (Mann Field).
- Conducted a series of meetings with the respective stakeholders for the Community Investment Initiatives.
- Submitted the third quarter M&E report of FY 2022–2023.

Highlights for the Month of February

- Handed over the Shade Structure Construction Project to Let Pan Taw School Development Committee.
- Kicked off and monitored the Auk Kyaung School Building Renovation Project.
- Donated (5) Laptops to State Agriculture Institute (S.A.I - Pwint Phyu).
- Received Myittar Yaung Chi Saytanarshin Group supporting laptops to Online English Learning Program.
- Conducted the training progress test for the students and the performance evaluation for Community-based Education Facilitators under Online English Learning Program.
- Provided free healthcare services and home visit to community patients under Mobile Clinic Program.
- Supported the Eye Health examinations for students and teachers in collaboration with Department of Public Health (Minbu).
- Organized Community Development Training for VAs, VDCs and CSR Field Staff in Collaboration with CBI Myanmar.
- Released the Sustainability Report 2022 and published it on MPRL E&P's Website.

Highlights for the Month of March

- Completed renovating the Auk Kyaung School Building and providing furniture to Kyar Kan School.
- Conducted Organic (Bio) Waste Management and Bokashi Composting Training.
- Empowered local women with Advanced Training on Making Value-added Tomato Products.
- Supported (49) students and teachers with comprehensive eye care and one boy (age 8) who needed eye surgery.
- Organized OGM Awareness Raising Campaign and showcased community investment initiatives implemented for Mann Field Communities.
- Received and addressed one OGM case of oil leakage.
- Contributed (MMK 700,000) for the refreshment and paying homage ceremony to the elders in Thingyan event of MOGE (Mann Field).
- Contributed (MMK 5 million) to the Water Festival at the Ministry of Energy and MOGE (Nay Pyi Taw).
- Published Insight! Newsletter (Issue 34) and Doh Mann Myay Newsletter (Issue 8).
- Prepared the periodic reports for CSR Progress Updates in FY 2022–2023.

10.6 Performance Progress (October 2022 – March 2023)

10.6.1 Community Infrastructure Development

MPRL E&P ensures that community infrastructure in the Mann Field Communities is provided in appropriate locations, responds to current needs, and remains adaptable to the needs of an evolving community. The company's community infrastructure development focuses around strengthening local capacity to address the need for infrastructure by involving local communities, by increasing the efficiency in terms of how infrastructure is planned, designed, implemented and maintained, and relying to the extent possible on locally available resources. The provision for community infrastructure development has been prioritized based on the results after community needs assessment.

There are a total of 11 public schools - one high school and the rest middle and primary schools - in the 14 surrounding villages in Mann Field. In this reporting period, MPRL E&P prioritized the necessary support to the school infrastructure development and learning environment of the children in Mann Field Communities. The CSR Program supported the schools on a needs basis and dedicated a portion of an annual infrastructural budget for school renovation and supply projects.

Performance Highlights

- Renovated the classroom building in Mei Bayt Kone School. The (40' x 24') building with two classrooms were renovated with the contribution of the CSR Program (MMK 11,155,900) and the Mei Bayt Kone Community (MMK 1,200,200).
- Installed the shade structure in Basic Primary School of Let Pan Taw Village in order to enhance the quality of the school playground, provide UV protection and give an ample space for outdoor teaching in January. The CSR Program provided the total amount of (MMK 4,672,350) contributions to the project.
- Contributed the amount of (MMK 1,600,200) cash to the construction project of the reinforced concrete pavement in Let Pan Ta Pin Village to stabilize erosion-prone area along the common access road connecting to Let Pan Ta Pin, Pauk Kone and Kyar Kan Villages.
- Completed the renovation of classroom building in Auk Kyaung School. The CSR Program contributed a total amount of (MMK 10,100,000) to the renovation project.
- Provided the necessary furniture to Kyar Kan School and Nan U Village Library in March.
- Explored the site visit to the designated areas of community infrastructure projects in Let Pan Taw, Let Pan Ta Pin and Auk Kyaung Villages.
- Shared the primary students about the gardening knowledge of growing tomatoes in raised garden beds at Green Schoolyards in Mei Bayt Kone and Let Pan Ta Pin Schools and conducted continuous monitoring and support to the school-led gardening activities under the Green Schoolyards Program.
- Cleaned the water filtration units in Mann Field Schools and monitored the water treatment maintenance in collaboration with the School Development Committees.

Figure 85: Before Renovation Stage of Mei Bayt Kone School Building

Figure 86: After Renovation Stage of Mei Bayt Kone School Building

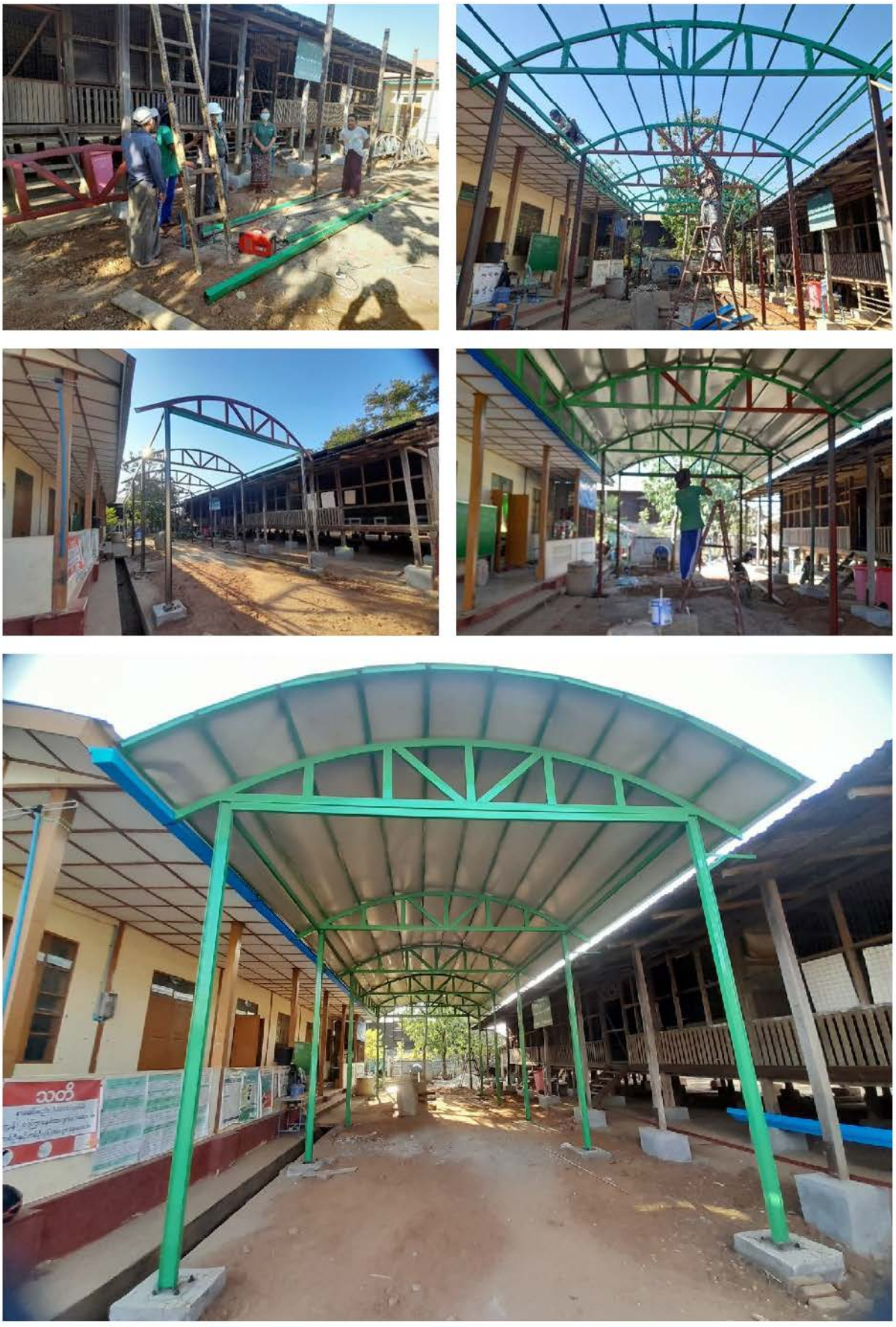

Figure 87: Installation of Shade Structure Construction in Let Pan Taw School






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လက်ပံတပင်ကျေးရွာ

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Figure 88: Construction of Reinforced Concrete Pavement in Let Pan Ta Pin Village

Figure 89: Before Renovation Stage of Auk Kyaung School Building

Figure 90: After Renovation Stage of Auk Kyaung School Building

Figure 91: Provision of Furniture to Kyar Kan School

Figure 92: In Progress of Making Furniture for Nan U Library

Figure 93: Site Visit to Designated Areas of Community Infrastructure Projects in Let Pan Taw, Let Pan Ta Pin and Auk Kyaung Villages

Figure 94: Cultivating Tomato Plants on Raised Garden Beds in Mei Bayt Kone and Let Pan Ta Pin Green Schoolyards

Figure 95: Monitoring the Gardening Activities at Mei Bayt Kone and Let Pan Ta Pin Green Schoolyards

Figure 96: Monitoring Maintenance of Water Filtration Units in Mann Field Schools

Case Study

Monitoring on Water Filtration Units and Hand Washing Stations

In Mann Field area, there are 11 schools and the main source of the school drinking water comes from Mann Creek, Ayeyarwady River and tube well. Except for students at Mei Bayt Kone School, the only school with a water filtration unit, students from remaining 10 schools had to drink that water without any treatment in the past. In order to solve this and provide school's need, MPRL E&P had provided water filtration unit to schools in Mann oil field area in early 2017. At the end of August 2017, 10 filtration units had been installed at the remaining 10 schools.

In order to enhance students' access to long-term quality drinking water, regular maintenance and cleaning are much needed. A cleaning and maintenance checklist has been developed and provided to every school, and the CI Field Coordinator has monitored closely the cleanliness with the assistance of community volunteers.

According to the monitoring data, all schools, with the exception of Let Pan Ta Pin and Pauk Kone schools, carry out the monthly water filtration unit cleaning process, provide students with access to clean water, and all water filtration units are in good condition. The water filtration unit at Let Pan Ta Pin School has been inoperable since October 2022 due to a lack of regular access to water from the MOGE water pipeline and the breakdown of the water motor engine. CI Field Coordinator discussed with Headmistress from Let Pan Ta Pin School to repair the water motor engine and it is expected that the water filtration unit has been operating in the next monitoring visit. For Pauk Kone School, the water filtration unit is being repaired and it is also expected to operate soon.

Additionally, the CSR Field Coordinator performed monthly monitoring of 10 hand washing stations that MPRL E&P installed in schools, checking for things like conditions of water pipes and water taps, cleanliness of the hand washing stations and their vicinity, and whether there is enough soaps and water. Only Makyee Chaung School is affected by the not enough water situation, because it receives water from the Minbu Municipal Pipeline and no one is in charge of filling the water tank when the water comes from it. To solve this issue, Headmistress from Makyee Chaung School said that tube well project may be requested to MPRL E&P's CSR Program in the next Fiscal Year. Then, all of the schools repaired any broken water taps and pipes. If additional cleaning was needed, our CSR Field Coordinator advised to the responsible person from schools to perform further cleaning.

10.6.2 Community Livelihood Development

MPRL E&P is committed towards improving the life of the Mann Field Communities and helping them achieve self-reliance, MPRL E&P's CSR Program undertakes focused interventions in agriculture, horticulture and livestock management. Such interventions have been designed to support the rural communities' livelihoods through increased agricultural and livestock production, improving household food security, alleviating poverty through better market participation as well as to improving farmers' access to resources, technologies, information and markets by characterizing and strengthening crop and livestock value chains. In addition, we conduct regular follow-up and support activities to ensure the goal is achieved.

Performance Highlights

- Organized Fish Amino Acid Hands-on Training at Kywe Cha Village and provided the training to a total number of (20) community members in October.
- Worked closely with Yetagon Farm Advisory Service for agricultural knowledge sharing session on chickpea and sunflower farming. The knowledge sharing session received a total number of (30) attendees at Kyar Kan Village in October.
- Conducted the knowledge sharing sessions on "Disease and Pest Control in Chickpea and Sunflower Farming" in collaboration with Yetagon Farm Advisory Service in Mann Kyoe and Auk Kyaung Villages in November.
- Prepared fish amino acid as the marketing gift for the OGM campaign.
- Organized the knowledge sharing session on "Disease and Pest Control in Chickpea Farming" for (40) local famers in collaboration with Yetagon Farm Advisory Service in Kyar Kan Village in January. A total of seven knowledge sharing sessions have been conducted for the total number of (226) attendees since July 2022.
- Paid regular monitoring visit to sunflower, chickpea and tomato farms, monitored the harvesting progress and provided technical support as required. Currently, a total of (27) farmers grow 7.3 acres of tomato at their farmland and harvested tomato volume of (51,465) visses as of March 2023.
- Continued monitoring the production and sale progress of mushroom seeds farm in Chin Taung Village monthly. The mushroom seeds production farm in Chin Taung Village has produced 7,100 bags of mushroom seeds in FY 2022-2023.
- Facilitated the Livestock Breeding and Veterinary Department (LBVD - Minbu) for the distribution of I-2 eye drop vaccines for chickens in Mann Kyoe, Lay Eain Tan, Mei Bayt Kone and Auk Kyaung Villages. A total of (1,433) chicken have been vaccinated in January.
- Organized Organic Waste Management and Bokashi Composting Training for total number of (25) community members at Mann Kyoe Village in March.
- Provided five community women with the three-day training of value-added tomato products in collaboration with the Incubation Center under Small-scale Industries Department (SSID - Magway) in March.

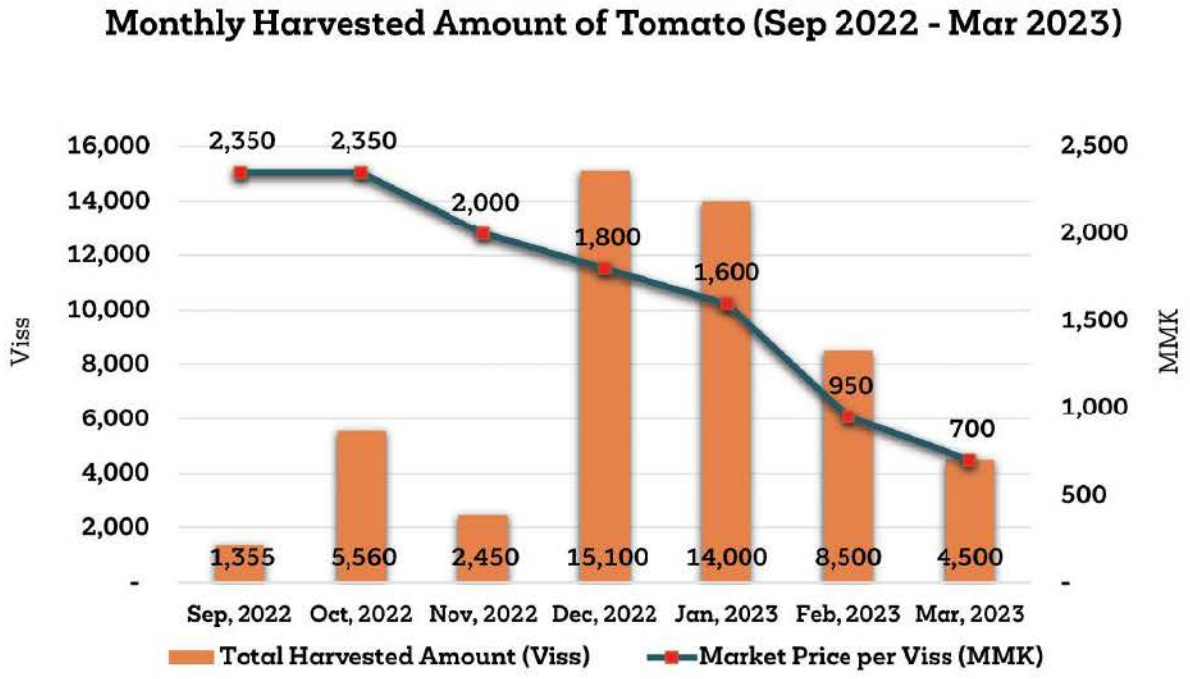
Figure 97: Organizing Fish Amino Acid Hands-on Training at Kywe Cha Village

Figure 98: Knowledge Sharing Sessions on "Disease and Pest Control in Chickpea and Sunflower Farming" in Collaboration with Yetagon Farm Advisory Service

Figure 99: Visit to Chickpea and Sunflower Farms in Mann Field Communities

Figure 100: Monitoring the Harvesting Progress of Tomato Farms in Mann Field Communities

Figure 101: Monitoring the Harvesting Progress of Tomato, Chickpea, Sunflower and Mushroom Farms



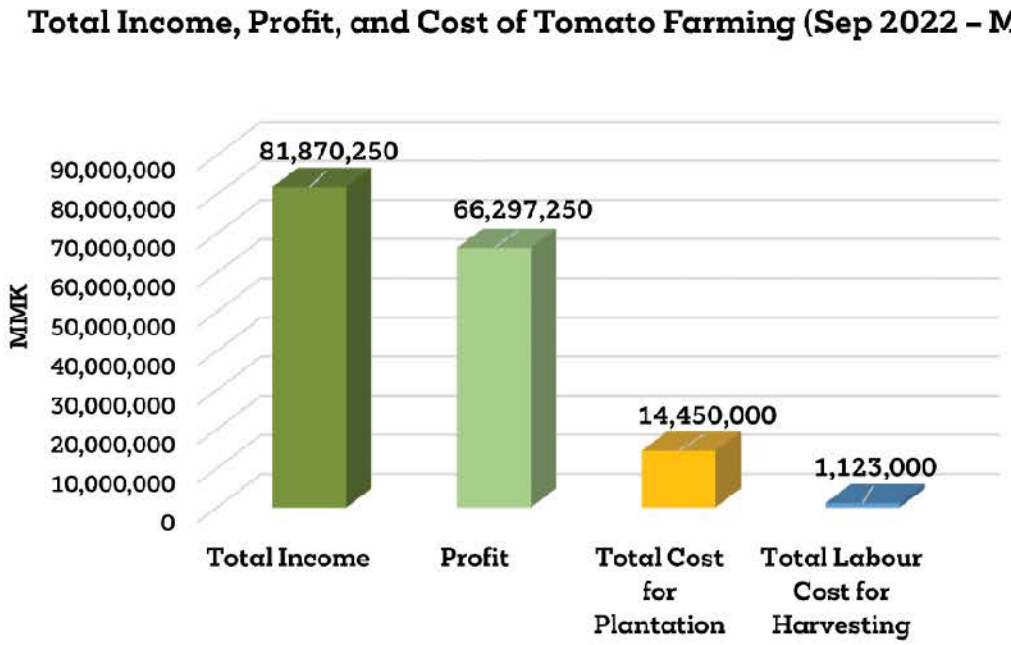


Figure 102: Monthly Progress of Harvesting, Income, Profit and Cost of Tomato Farming (September 2022 – March 2023)

- Tomato Farmers: 27 Pax (Female:13, Male:14)
- Farming Land: 7.3 Acres
- Total Harvested Amount (Sep 22 – Mar 23): 51,465 Visses
- Total Plastic Rolls Provided by MPRL E&P: 31 Rolls
- Total Tomato Seeds Provided by MPRL E&P: 50 Bags (5g/ Bag)
- Technical Support and Collaboration Support with Yetagon Farm Advisory Service

Figure 103: Making Fish Amino Acid as Giveaways for OGM Campaign

Figure 104: Distributing I-2 Eye Drop Vaccines to Mann Field Communities

Figure 105: Organizing Organic Waste Management and Bokashi Composting Training

Figure 106: Advanced Training on Making Value-added Tomato Products

Building New Vegetable Value Chains in Mann Field Communities

MPRL E&P has always been supportive of Mann Field Communities by consistently contributing to the significant growth of the area where the business operates, by investing in sustainable livelihood through enhancing technical know-how on agricultural practices and increasing employment opportunities. Since July 2019, MPRL E&P has actively provided hands-on horticulture training which underscored modern science-based techniques for growing high-valued local tomatoes, chilies, and mushrooms with optimized yields and sustainability of local ecosystems. Recently, enhancing good agricultural practices within Mann Field farming communities, and producing healthy organic fruits and vegetables by the growers are increasing at a steady rate.

Promoting Crop Items with Eco-friendly Agricultural Techniques

Tomato is considered an essential culinary crop and also an excellent source of many nutrients and secondary metabolites. In Myanmar, there are two categories of tomatoes: high-land and low-land tomatoes. The former is well known as Shan tomatoes and the latter is called Myanmar tomatoes among consumers and traders. The main production areas for low-land tomatoes are from several parts of Magway, Sagaing, and Bago regions.

Studies indicate that farmers in the Dry Zone face a wide range of constraints when growing vegetables. Infertile red clay soil and heat hinder vegetable production in these areas and water availability is a major challenge where clean water wells are not available or easily accessible. Tomatoes are grown in some villages in Mann Field which is located in the Dry Zone of Central Myanmar, and they are cultivated both in the summer and winter but those grown in winter are superior in quality. During the last crop season, 18 farmers from three surrounding villages in Mann Field cultivated 7.5 acres of tomatoes using new cultivation techniques that they had learned during the horticulture training provided by MPRL E&P with the support of East-West Seed (Myanmar) Co., Ltd. and as a result, improved outputs and increased profitability through the local market was significantly observed. During this crop season, the total of tomato growers grew to 27 and they cultivated 7.15 acres total in Mann Kyoe, Chin Taung, Let Pa Taw, and Kywe Cha Villages and they had harvested (51,465) visses as of March 2023.

Value Chain Performance for Tomatoes

Meanwhile, MPRL E&P's CSR Team recognized that value-added agriculture has attracted considerable attention in recent years as a means to increase and stabilize farm income and to minimize the loss of vegetable growers due to the perishable nature of tomatoes and lack of cold chain storage and processing units for high volumes in the region. Hence, in collaboration with Magway Regional Small Scale Industries Department (SSID), in September 2022, the team was able to organize the Value-added Tomato Products Making Training for enthusiasts within the communities. This 7-day training was conducted at Aye Mya Village in Mann Field from 5 to 11 September and a total of 20 trainees proactively joined the hands-on training and showed off their creations at the end. They were excited to showcase their tomato products which are delicious and versatile, from tomato jam, paste, and sauce to shampoo, shower, soap, and body scrub which are easy to use and contribute towards everyday needs in a cost-saving way.

Processing these locally grown tomatoes is beneficial to farmers, especially for the female farmers who are keen to make value-added products that contribute to their income and foster a "community entrepreneurial spirit" of a startup for small-scale entrepreneurs in rural areas like Minbu. Small holder farmers are key actors within the Mann Field Communities, and are primed to achieve a higher living standard through improvements within the value chain. Yet, farmers face several obstacles, including access to high-quality seeds, access to pest control technology and access to market knowledge and linkages. However, due to the improving livelihood and the rapid urbanization taking place in remote areas, consumption of value-added tomato products is expected to increase at a steady rate for years to come. Let's find out about these new and local entrepreneurs from Mann Field Communities who are thrilled to produce value-added tomato products and what their expectations are!

Daw San May

Kyar Kan Village

I started farming around 2018-2019, and my family's main business is agriculture. While working in agriculture, I attended three classes of training including value-added food making, horticulture, and value-added tomato products making classes which were all supported by the MPRL E&P's CSR Program. I never knew tomatoes can be this versatile, both in food and consumer products. After taking these classes, I am now able to make tomato-based products on my own. Customers also like the products I produce, they prefer shower gel, facial soap, shampoo, and body scrub. After using tomato-based facial soap myself, small bumps (blackheads) on my face disappeared, and it also helps smooth out the top layer of my damaged skin. These days, the price of these tomatoes is quite high in the region, and the return on investment for my new products is still low. I hope that if the price of raw materials gets cheaper and more profit could be made, my family's income would be in much better shape. I am also excited to produce more products and share my knowledge on making these products if there is anyone who wants to learn. Let me express my sincere thanks to MPRL E&P for this initiative.

Daw Htay Win
Kyar Kan Village

Among the courses provided by MPRL E&P, I attended the training on horticulture and the making of tomato-based products. In the traditional agricultural industry, value-added tomato products are rarely used within our reach and so, we don't know how we can earn money from making and selling them. At the moment, we can generate additional income by producing and selling the products on our own. Although I can make various tomato products, I mainly produce shampoo, shower gel, facial soap, and body scrub. Mann Field Communities welcomed the tomato-based products that are made by us and I am also glad to hear good feedback from them, especially for shampoo. I am also a big fan of some of these products and enjoy their side-effect-free benefits. According to my experience, tomato shampoo softens the hair and facial soap helps transform oily skin to smooth skin with a pimple-free effect. After taking the mentioned course, I wanted to learn more about the versatility of tomatoes. If we could increase production in the area, the locals can use it more often due to easy accessibility and we will also benefit from this. I also hope that we receive further support so that we can sustain our small business in the future.

Daw Toe Toe
Auk Kyaung Village

I have attended the value-added tomato product-making training provided by MPRL E&P, and I'm now starting to sell bodywash called "Pyae Sone" online. My small business is brisk due to popular recommendations from my friends and customers. Previously, I managed a small laundry operated with my own brand of laundry soap. Tomato-based body washes have become popular within our communities because it makes the skin smooth and moist. Before, tomatoes were only known for cooking, nowadays, they can be used in varieties for dishes and accompaniments. To be a better quality product, I look forward to any kind of advanced training. During the cold season in this dry region, when it comes to skin moisture, the tomato-based body wash helps moisturize and soothe dry skin. I am going to buy a mixer which is very much needed in making soaps as I intend to expand my little business soon. My friends who attended the training also asked me if they could assist in making bath soap so that they can become more proficient. I am so ready to share my knowledge with my friends. It's been a great opportunity for me and I am excited to continue learning about making these products! Thank you MPRL E&P.

Meet the Mushroom Farmer from Chin Taung Village

It has been eight years since MPRL E&P, a socially responsible business operator, has invested in its generous contributions to the sustainable development and livelihood opportunities of the host communities in Mann Field. MPRL E&P always tries its best to create meaningful and sustainable impacts in the local communities through various social investment activities.

As most of the communities in Mann Field derive their livelihoods from agriculture, MPRL E&P's CSR Program pays a keen focus and investment on agricultural development initiatives to ensure the sustainable livelihoods of the communities. Under those initiatives, a farmer from Chin Taung Village shared his straightforward story of how he benefited from the mushroom model farm project supported by the CSR Program. Let's meet the mushroom farmer and further explore this wonderful initiative together!

I am Nay Zaw, who lives in Ching Taung Village and works in mushroom farming. In 2019, I started working in the mushroom model farm after attending the Mushroom Cultivation Training course provided by the MPRL E&P's CSR Program along with 19 other trainees from Mann Field. In order to start up the model farm project, the MPRL E&P's CSR Program provided mushroom spawns worth MMK 750,000. For the development of mushroom farms, I received the CSR Program's support of MMK 800,000, and these start-up loans were repaid in monthly installments.

The building size of the pearl oyster mushroom farm is 30 feet long, 15 feet wide, and 15 feet high and the straw mushroom farm building is 18 feet long, 11 feet wide, and 10 feet high. The buildings were constructed in line with the number of mushroom spawns to be planted.

I am currently growing and selling pearl oyster mushrooms. In addition, I also produce mushroom spawns for those who want to cultivate mushrooms themselves. There is a difference between cultivating pearl oyster mushrooms and straw mushrooms. Pearl oyster mushroom is less profitable but lasts longer. For instance, if it isn't sold today, it can be kept until the next day. As for the straw mushroom, the cultivation steps are easier. It has a good price point, but it will not last long. It can also cause either more profit or more loss. Nevertheless, they are easier to grow and produce.

Straw mushrooms are more popular, there is an attractive demand and a good price tag. Due to recent findings of the benefits of pearl oyster mushrooms, which help control high blood pressure and diabetes, there is now more demand from consumers and increases market shares.

I was the only farmer in the mushroom farming business around this area, but recently a total of nine farmers - one from Taungdwingyi Township, one from Minbu Township, one from Kyauktan Village, one from Lay Eain Tan Village, two from Chin Taung Village and three from Mann Kyoe Village - purchased mushroom spawns from me, so the market has expanded.

In October 2022, we were able to produce 1,000 mushroom spawn bags, and each bag was sold at MMK 800. The rest of the unsold mushroom spawns were grown in the mushroom model farm. We can easily reap mushroom weight of 50 ticals per bag.

When the mushroom farming business started in 2019, there were some logistical problems. The mushroom spawns were damaged and losses were incurred. Later, after I got to understand the business nature, the loss decreased and I started to make a profit. The first difficulty I encountered when starting this business was market penetration. And nowadays, there are other problems that we are facing - the high prices of gasoline and raw materials.

In the first year of the business journey, we only got MMK 630,000 out of the capital MMK 750,000, but in the following years, we earned MMK 928,000 out of the capital MMK 330,000, so we earned some profit from our mushroom farms. The mushroom growing season is from July to April, and the price becomes higher in March when mushrooms are scarce. In the beginning, I managed the mushroom farming business together with my wife, but when customer orders started to multiply, we hired three women from our own village as day laborers to help out with our business.

I am happy that my business not only provides for my family's livelihood but also benefits my community. It can be said that mushroom farming is a valuable business because it not only generates income but also allows consumers to eat something with nutritional value. With the support of MPRL E&P's CSR Program, I had an opportunity to attend these agricultural training courses like Mushroom Cultivation Training, Fish Amino Acid Making Hands-on Training, Tomato Cultivation Training, Compost Making Training, Mushroom Spawn Training, etc. Besides, I had the opportunity to go on cross-learning visits to various farms in other communities under the support of the MPRL E&P's CSR Program.

In addition to the mushroom cultivation business, I also produce Fish Amino Acid organic fertilizer for my farms and also sold to local customers at a reasonable price. These training courses have been helpful to my personal business and growth.

Since this mushroom model farm can be done successfully with the support of the MPRL E&P's CSR Program, I do my best to help people who want to grow mushrooms. I have shared my knowledge and experience with the new farmers in terms of mushroom cultivation methods, linking market connections, and selling reliable mushroom spawns.

As the breadwinner in the family, I have to make sure I have a reliable source of income so that I can support my family and as a community member, I have a responsibility to do my best to fulfill the needs of the community. And as a community volunteer of MPRL E&P's CSR Program, I have to ensure there is a good balance between my personal business and community collaboration and development programs. I would like to express my heartfelt gratitude to MPRL E&P and its CSR Program for their continuous support and provision of various training opportunities that are beneficial for our sustainable livelihoods.

10.6.3 Educational Partnership Program

MPRL E&P acknowledges the role of the young generation in the nation's growth and development. Therefore, MPRL E&P's CSR Program has established educational partnership with government agencies and training institutes to support technical and vocational skills in order to improve employment opportunities in the communities surrounding Mann Field. Youth from the surrounding communities in Mann Field receive financial and other necessary supports to attend technical and vocational education, also called technical training or career education, so that they can enter the job market or set up a small business.

Figure 107: Training Completion of No.5 ITC (Magway) Scholarship Trainees

Performance Highlights

- Paid monitoring visit to scholarship trainees in No.5 Industrial Training Center (ITC - Magway), State Agriculture Institute (S.A.I - Pwint Phyu) and Government Technical High School (GTHS - Magway) to provide necessary support and to follow up their training progress monthly.
- Recognized the completion of the one-year training course at No.5 ITC (Magway) by (7) community youths under the support of MPRL E&P's Scholarship Program in November.
- Made an announcement for No.5 ITC (Magway) Scholarship Program on the community noticeboards in (14) Villages around Mann Field. A total of (8) community youths from different villages applied for the training and met with the CSR Team for interview session in December.
- Organized the knowledge sharing session of No. 5 ITC (Magway) former scholarship trainees.
- Provided the monthly stipend support to a student from Ywar Thar Village. He is currently attending in University of Medicine (Magway) and he is the first person from Mann Field Communities to pursue a profession in medicine.
- Donated (5) laptops with total value of MMK 4,354,000 to State Agriculture Institute (S.A.I - Pwint Phyu) for teaching-learning process.


Figure 108: Organizing Knowledge Sharing Session of No. 5 ITC (Magway) Former Scholarship Trainees


Figure 109: Announcing No.5 ITC (Magway) Scholarship Program on Mann Field Community Noticeboards


Figure 110: Monitoring Visit to Scholarship Trainees at S.A.I (Pwint Phyu)


Figure 111: Monitoring Visit to Scholarship Trainees at GTHS (Magway) and University of Medicine (Magway)

Figure 112: Donating Laptops to State Agriculture Institute (S.A.I - Pwint Phyu)

Case Study

Scholarship Students from No.5 ITC (Magway) Receive Job Offers after Training

MPRL E&P's CSR Program provided a full scholarship to seven students under the educational partnership with No.5 ITC (Magway). All of the scholarship trainees took the first quarter exam on March 2022, second quarter exam on May 2022, third quarter exam on August 2022 and the final exam on November 2022 respectively. All students passed all the subjects without failing or retaking the exam and received the particular certificates in November 2022. Among them, Mg Aung Paing Phyo received two awards from the No. 5 ITC: "First Prize of Batch 10" for the highest subject grades, and "Best Candidate" for involvement in school events and adherence to school rules among a total of 135 students from Batch 10.

Among seven graduates, Mg Aung Paing Phyo, Mg Ye Naung, Mg Khant Thu Tun and Mg Nyi Shin Thant received job offers respectively within 6 months after their graduation. Mg Aung Paing Phyo left the job in January, 2023 and he is now learning the Japanese language at JEC Japanese Language School, Mandalay to work in Japan. Mg Ant Mhue Naung is looking forward to the hiring announcement from MOGE, Minbu since he is willing to work there. Ma Ingyin Khaing and Ma Moe Hay Man Tun passed the exam held by "Myanmar Sankou Japanese Language Training School" to work in Japan and they are now learning the Japanese language in Yangon.

6.4 Community Capacity Building

Capacity building or knowledge sharing forms an important part of the CSR initiatives in Mann Field to develop community mobilization of the local resources and to ensure successful implementation and sustainability of development projects. The targeted beneficiaries of these capacity building activities include the Community Volunteers, Village Administrators, Village Development Committees (VDCs), households and schools. The CCB focuses on enabling all members of the community to develop skills and competencies so as to take greater control of their own lives and also contributes to inclusive local development. Not only can communities be more cohesive, but they can also be more resilient and better placed to confront economic and social challenges.

Performance Highlights

- Organized "Participatory Learning and Action Training" for Community Volunteers and CSR Field Staff in collaboration with Capacity Building Initiative (CBI Myanmar) at Min Min Hotel in Minbu for three days in October. It aims to develop skills and competences so as to take greater control of their own lives and also contributes to inclusive local development.
- Initiated Online English Learning Program with the collaboration of mangoSTEEMS Myanmar. As part of this Program, Training of Trainers (ToT) sessions for two community-based education facilitators and basic computer skills training for (17) community children (Grade 2 – 4) were conducted in October.
- Launched one-year Online English Learning Program for a total of (15) community kids (Grade 2-4) at mangoSTEEMS Universe Platform (MSU) in November.
- Conducted "Outdoor Classroom Day" at Let Pan Ta Pin School in November. The Outdoor Classroom Day Program included cooking competition, fun games for school children, knowledge sharing on the benefits of planting trees. The Program aimed to reconnect children, teachers and parents with the great outdoor activities.
- Organized the campaign "Book Drive for Community Center" to support the community center in Mann Field with better reading resources in December. The campaign received a total of (1,420) books on a variety of topics and a total of (MMK 230,000) funds. Among those books, (509) books were purchased with (MMK 1,630,000) cash contribution of the CSR Program and MPRL E&P Staff. The CSR Team handed over all the books to Aye Mya and Nan U Community Centers equally, along with the cash (MMK 115,000) each as the community center operating fund.
- Provided the necessary support to the Online English Learning Program at Aye Mya Community Center and monitored the training progress regularly.
- Conducted students' training progress test and community-based education facilitators' performance evaluation under Online English Learning Program in February.
- Organized Community Development Training in Collaboration with CBI Myanmar for Village Administrators, Village Development Committee Members and CSR Field Staff at Min Min Hotel in February.

Figure 113: Organizing Participatory Learning and Action Training for Community Volunteers and CSR Field Staff


OUTDOOR
CLASSROOM
DAY


We Love
MPRL

Figure 114: Organizing Outdoor Classroom Day Activities at Let Pan Ta Pin School

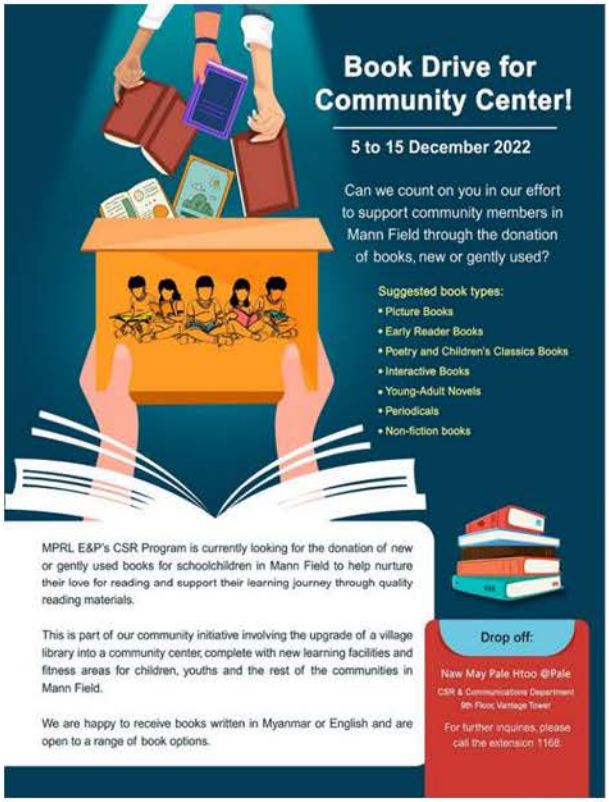

Book Drive for Community Center!
5 to 15 December 2022
Can we count on you in our effort to support community members in Mann Field through the donation of books, new or gently used?
Suggested book types:
• Picture Books
• Early Reader Books
• Poetry and Children's Classics Books
• Interactive Books
• Young-Adult Novels
• Periodicals
• Non-fiction books
MPRL E&P's CSR Program is currently looking for the donation of new or gently used books for schoolchildren in Mann Field to help nurture their love for reading and support their learning journey through quality reading materials.
This is part of our community initiative involving the upgrade of a village library into a community center, complete with new learning facilities and fitness areas for children, youths and the rest of the communities in Mann Field.
We are happy to receive books written in Myanmar or English and are open to a range of book options.
Drop off:
Naw May Pale Htoo @Pale
CSR & Communications Department
9th Floor, Vantage Tower
For further inquiries, please call the extension 1168.

Figure 115: Organizing "Book Drive for Community Center" Campaign

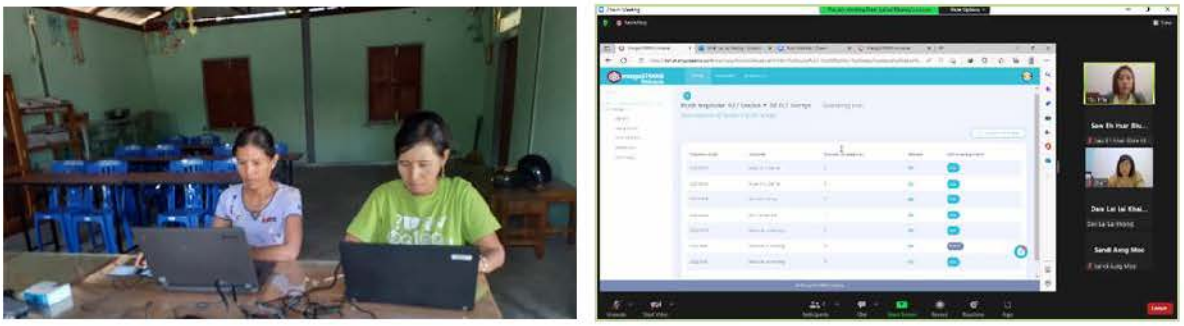


Figure 116: Training of Trainers (ToT) Session to Two Community-based Education Facilitators

Figure 117: Computer Basic Skills Training for Online English Learning Program


3 in 1 GAMES


SING
PLAY
MAKE
LEARN


SING
PLAY
MAKE
LEARN

Figure 118: Offering Online English Learning Program via mangoSTEEMS Universe Platform (MSU)

Figure 119: Receiving Mann Field Staff's Laptop Donation to Online English Learning Program

Figure 120: Organizing Community Development Training for Village Administrators, Village Development Committee Members and CSR Field Staff

Case Study

Book Drive: Equipping the Community Center with Better Reading Resources

MPRL E&P, a socially responsible business committed to making a difference in communities through Community Investment Programs, recently conducted a book drive as part of its Community Infrastructure Development initiatives. The initiative aims to help equip Aye Mya Community Center and Nan U Library with better reading resources for local kids and adults and support the community's access to quality reading materials, nurturing the joy of reading.

Books play a vital role in our lives, providing us with knowledge, entertainment, and a sense of companionship. They can also offer peace of mind during difficult times. Unfortunately, many children and young people living in underserved communities across Myanmar face significant development challenges due to a lack of access to quality books. Many people in low-income families have limited access to books, making them a rare commodity. Libraries, community centers, and information hubs are often insufficient in these areas, and many families lack consistent internet access and basic technology infrastructure. As a result, these communities miss out on the benefits of reading and struggle to access educational opportunities.

To solve this issue in Mann Field communities, MPRL E&P's CSR Department engaged in a book drive to support literacy and give back to the communities. The campaign was part of the Community Center Pilot Project in Fiscal Year 2022-2023, which aimed to provide conducive learning environments in the Mann Field area. Under this project, the CSR Program upgraded the local library in Aye Mya Village into the very-first community center in Mann Field, complete with library furniture, a fitness area, and some workout equipment. The CSR Program also collaborated with iGroup's mangoSTEEMS Myanmar to offer an Online English Learning Program for young children.

MPRL E&P prioritizes sustainable development in all of our corporate practices and promotes collective efforts from all stakeholders to ensure a sustainable journey. In December 2022, MPRL E&P Group of Companies (GoCs) staff were invited to support the community members in Mann Field by donating new or gently used books through the "Book Drive for Community Center" campaign. The campaign ran for ten days and collected a total of 1,420 new and gently used books written in Myanmar or English. Employees' contributions, both in monetary and book donations, made a big impact on the youth in Mann Field, sparking their curiosity and instilling a love of learning in the earliest learners.

On 19 December 2022, the CSR Team organized the book donation events at Aye Mya and Nan U Villages, where they handed over all the books and a cash value of MMK 115,000 each to Aye Mya Community Center and Nan U Library equally as the center operating fund. The event was attended by the Village Administrators, Village Development Committees, Women Groups, and community children.

The book drive is a meaningful event as it not only helps fulfill the community's needs but also fosters a new learning environment for the community members, serving as a sustainable action to help the next generation in underserved communities.

Celebrating Outdoor Classroom Day in Mann Field Communities

Spending time outdoors is not just enjoyable — it is also necessary. Many researchers agree that children who play and learn outside are happier, healthier, and less anxious than those who spend more time indoors. Being outdoors and interacting with each other and nature not only fosters a greater connection with Mother Nature, it also promotes teamwork and creativity. These days, children are attached to digital devices, and it is evident that technology use contributes to poor self-esteem and insolation at a younger age.

Spending time outdoors offers many benefits, one of them is responsibility. For example, if the children are in charge of watering plants, they learn that they are responsible for keeping them alive. Being outside gets children moving, too. Regardless of what they are doing, there is usually more exercise involved than sitting on the couch watching TV or playing on a tablet. Not only physical activity promotes overall health and wellness, it also improves mental health and stress reduction.

MPRL E&P acknowledges the importance of capacity-building initiatives as part of its social management activities in Mann Field Communities, through its CSR Program implemented by CSR & Communications Department. On 29 November 2022, an Outdoor Classroom Day for school children in Mann Field was organized by CSR Team with prior discussions made with the Head of School and School Development Committees including parents, teachers, and students of Let Pan Ta Pin School. The goal was for the school children to benefit from learning experiences in the outdoor environment such as the Green Schoolyard and playground areas on the school campus. The initiative also promotes awareness for Mann Field Communities about how spending time outdoors is essential for overall health and wellness.

CSR Team led the program by providing help in making this outdoor classroom day activity happen through the provision of knowledge-sharing sessions on Planting and Gardening, Games, Vegetable Tempura and Tomato Salad Making competitions. There were five teams – each team consisted of one teacher, twelve students, and three parents. A local Let Pan Ta Pin School together with the Green Schoolyard Program was selected for this year's event on 29 November 2022, and throughout this collaborated learning time, the school children were made aware of what "Outdoor Classroom Day" was about and they were given priorities to choose activities that are meaningful and relevant to them, driven by their interests. The schoolchildren enjoyed visiting different stations and participating in mental and physical activities that allowed them to actively mingle with each other in the outdoor environment.

The second part of the activities was to compete in the making of two well-known traditional dishes called the "Vegetable Tempura" and "Tomato Salad" where local produce was used. As part of building community spirit and supporting anything local,

the initiative ensures that all produce comes from the local community. Additionally, this collaborative activity enhances team spirit among the children and engagement between the adults and kids where creativity and personal development skills are explored and tested. The competing five teams namely Shwe Nyar Thu, Moe Ma Kha, Than Yaw Zin, Poe Thar Phyu, and Pann Pyo Latt participated in the competition. Three out of five teams were awarded First, Second, and Third Prizes respectively, and the rest of the participants were gifted by MPRL E&P's CSR Team.

We hope that this outdoor classroom day allows the schoolchildren in Mann Field to explore without restraint from the confinement of indoors while extending their learning and knowledge. Outdoor Classroom Days strengthen social skills especially for younger schoolchildren by providing opportunities to collaborate, share, take turns, lead, and follow. Kudos to everyone involved in this special day who helped make this event a success!

MPRL E&P Holds PLA Training for Community Volunteers

Pursuing effective capacity building is essential to strengthening Community Volunteers by allowing them to develop the necessary skills and knowledge to meet community needs. Instead of relying on external solutions, volunteering helps the community feel more empowered to tackle the local issues themselves, resulting in community sustainability over time. As a strong supporter of Community Capacity Building, MPRL E&P actively promotes and takes part in many initiatives and Social Management Programs in Mann Field as part of its long-term vision.

In October 2022, MPRL E&P introduced a learning event for Community Volunteers from 14 villages surrounding Mann Field with the support of Capacity Building Initiative (CBI), a nationally recognized organization providing quality training, facilitation, consultancy, and other services to individuals and organizations working for the development of Myanmar. The Participatory Learning and Action (PLA) Training was provided by MPRL E&P's CSR & Communications Department as part of Capacity Building Initiatives for the Community Volunteers. The training was conducted with a group of Community Volunteers and CSR Field Staff from October 1 to 3 at Min Min Hotel in Minbu Township. The three-day training course aimed to enhance personal development and interpersonal skills among the Community Volunteers and successful engagement in the communities.

"The goal of this training was to improve relationships between the Community Volunteers within the communities while tackling the local challenges for development programs. Also, it was conducted to further enhance personal development and to make sure the volunteers are fit to act as intermediaries to build the trust between the company and the communities," said Saw Eh Hsar Blue Htoo, Senior CSR Officer from the MPRL E&P's CSR Team. In total, 12 volunteers and three CSR Field Staff participated in the PLA training which was led by two certified trainers, Daw Nilar Lin Aung and Daw Mai Tin Tin Maw, from the Capacity Building Initiative (CBI) organization.

So what does PLA do? The PLA Training provides Community Volunteers with a one-stop shop for all forms and tools needed to start volunteering, including information on volunteer expectations, risk management, self-care resources, best practices, community engagement, and leadership opportunities. Volunteers will also learn more about the diversity, strengths, history, and needs of the Mann Field Communities through our CSR initiatives. As part of the training, participants are asked to read through the program information, complete the required assessment forms, and respond to the questions embedded throughout the training.

Further, these training sessions are extensively participated in and discussed, and at the end of the training, the volunteers have a clear understanding of the importance of the volunteer role in helping an organization achieve its goals and objectives of a program. They are also able to measure the success of a program that is being carried out. During the training course, storytelling and vibrant communication regarding relevant information about particular issues are discussed which stands as the highlight of these training sessions.

Another benefit of PLA is that the Community Volunteers can explore, expand, and share their knowledge of sustainable livelihood and local conditions as well as make informed decisions and plan and carry out actions to bring effective change within the communities. PLA uses a wide range of methods and techniques, and can thus adapt to which group is being consulted, or to which issue is being addressed. It is a creative learning process that equips local people with the skills and confidence to work as equal partners with the stakeholders. It can be particularly effective in breaking down barriers between community representatives and professionals and promoting a shared understanding of each other's priorities and constraints.

After the training session, the trainees are introduced to various CSR Program as well as volunteer networks where they have a chance to implement what they had learned during the training through practical work by communicating and engaging with community members and other stakeholders. During this training session in October, the newly trained volunteers from 14 different communities engaged in various advocacy visits and MPRL E&P's CSR Program like the Operational Grievance Mechanism, Community Healthcare Program, and Community-led Waste Management Program including other volunteering activities around Mann Field.

We hope that through the PLA training, the Community Volunteers become more equipped and capable of analyzing their current situations and examining their problems which leads to setting their own goals and monitoring their own achievements. In essence, PLA is based on the power of empowerment - the commitment to helping people take more control over their lives.

MPRL E&P and CBI Myanmar Empower Community Leaders through Training Programs

Over the course of two days, from February 18 to 19, 2023, Village Administrators and members of Village Development Committees from 14 villages in Mann Field participated in a training course designed to build the capacity of community leaders. The program aims to build the capacity of community leaders to manage the sustainable development of their communities provided by MPRL E&P's CSR Program in collaboration with Capacity Building Initiative (CBI Myanmar).

The two-day training sessions were held at the Min Min Hotel in Minbu and led by certified trainers Daw Nilar Lin Aung and U Aung Naing from CBI Myanmar. The program focuses on four critical areas—Community Mobilization, Community Leadership, Accessing Local Needs and Resources and Analyzing Community Problems. The participants engaged in group discussions and exercises on the existing challenges faced by their respective villages, with the aim of better understanding how to manage sustainable development in their communities. A total of 29 trainees including Village Administrators, Village Development Committee Members and CSR Field Staff Members participated in this course.

One member of the Village Development Committee from Ywar Thar Village reflected on the training, "Through these training sessions, I learned about leadership, mobilization, and communication skills, which are critical areas of implementing community development projects."

Another participant, the Village Administrator from Nan U Village, shared that the course had helped them improve their administrative skills and gain new knowledge on how to contribute to community development while building better relationships with community members and stakeholders. "From this course, I have improved in terms of administrative skills and new knowledge of understanding of what we are capable of. I am now confident in contributing to community development and building better relationships with community members and respective stakeholders."

MPRL E&P has been running its CSR Program in Mann Field Communities in collaboration with the government, local authorities, and local stakeholders including Village Administrators, Village Development Committee Members, Community Volunteers, and Community Members since 2014. The program has implemented social investment activities with full support and social license to operate from local stakeholders in 14 surrounding communities.

CBI Myanmar is a nationally recognized organization providing quality training, facilitation, consultancy, and other services to individuals and organizations working for the development of Myanmar. In October 2022, MPRL E&P's CSR Program also organized the Participatory Learning and Action Training for Community Volunteers from Mann Field in collaboration with CBI Myanmar.

Online English Learning Program Launched for Children in Mann Field Communities

Nowadays, digital technology plays an essential role in the development of basic education and knowledge through formal education or non-formal education programs, and it can also help close the education gap between rural and urban communities. Yet, digital transformation in the communities can reach success in a wider new environment.

In the third quarter of FY 2022-2023, MPRL E&P successfully launched the "Online English Learning Program" as a pilot project for the education development of primary school students in Mann Field Communities. In September 2022, the CSR Team coordinated the pilot project with mangoSTEEMS Myanmar, which is a member of iGroup (Asia Pacific) Limited, a multinational corporation with more than 30 years of expertise in the knowledge management and education industry.

The strategic collaboration offers and supports the children in Mann Field with new learning experiences through mangoSTEEMS Universe (MSU) online learning platform. They also received the iGroup's donation of the one-year subscription fee for the learning package of the school children, free of charge. The Online English Learning Program is intended to help young students to learn the English language from the basics and to engage digitally in learning practices.

Before launching the learning program, mangoSTEEMS Myanmar delivered the Training of Trainers (ToT) sessions for the two Community-based Education Facilitators so that they would be familiar with the MSU platform and the program lessons. The program initially started with 17 community students, aged 10 and below, receiving the two-week basic computer skills training provided by the Community-based Education Facilitators at Aye Mya Community Center from 24 October 2022 to 6 November 2022. Among them, a total of 15 students have been recruited and enrolled in the Online English Learning Program, and each of the five students from Grade 2, 3, and 4 classes began their online class on 07 November 2022.

In the initial stage of the program, MPRL E&P's CSR Program provided five laptops for five students per online training session. The CSR Team will be monitoring the training progress regularly to ensure the quality and success of this online learning program in hopes that the program can be further extended to other host communities around Mann Field in the near future.

Myittar Yaung Chi Saytanarshin Group Supports Online English Learning Program with Laptop Donation

On February 20, 2023, Myittar Yaung Chi Saytanarshin Group, a charitable organization founded by employees of the Field Operations Department of MPRL E&P, donated four brand new laptops to the Online English Learning Program. This program was initiated by the CSR & Communications Department in collaboration with mangoSTEEMS Myanmar, a member of iGroup (Asia Pacific) Limited, to support the program's sustainability and local students in their English language learning journey.

The donation of these laptops, which are Dell Latitude (7390, 7290, 7490 series) 8th Generation and Dell 5200U i5, totaling MMK 4,160,000 in value, was presented by Field Operations Manager U Myo Win during a handover ceremony. Daw Lai Lai Khaing, the Field CSR Coordinator from the CSR & Communications Department, received the laptops on behalf of the program's participants.

The laptops will be used by students in the Online English Learning Program, which is being implemented at the Aye Mya Community Center with the support of two Community-based Educational Facilitators. During the pilot program, there are three training classes with each accommodating 5 students only to optimize quality online learning experience and each student has been provided with a laptop loaded with the application. Up to February 2023, a total of 14 laptops are accessible for the program. MPRL E&P's CSR Team played a critical role in making the initiative a success, and they are now exploring the possibility of expanding their training programs to other Community Centers in the surrounding villages at Mann Field.

The Myittar Yaung Chi Saytanarshin Group was formed in 2016 with the aim of supporting local school children in Mann Field. The organization collects charity funds monthly to make donations and provide support to underserved students. This donation of laptops is a clear demonstration of MPRL E&P's commitment to supporting sustainable development through education in the communities where it operates.

The company looks forward to continuing its efforts to improve access to education and provide essential tools to young students in the area.

10.6.5 Community Healthcare Program

MPRL E&P's CSR Program has established Mobile Clinic Program since September 2018 to delivery of primary health care services in Mann Field Communities and focused for children, senior citizens and poor people who require medical care on a regular basis and would otherwise not seek medical care. The mobile clinic opened in four main locations as scheduled until the end of March 2020, and clinics were closed starting in April 2020 due to COVID-19 spreading across the country. On January 2022, the CSR Team conducted a community survey for the resumption of mobile clinics that will be reinstalled in a pandemic-safe model, and relaunched the Mobile Clinic Program with effect from 21 February 2022. In July 2022, the CSR Program extended two more clinic sessions of Mobile Clinic Program at Nan U and Aye Mya Villages in the response to the community's request in healthcare service needs. It is currently running five clinic sessions per week in six centrally located villages around Mann Field: Kywe Cha, Kyar Kan, Lay Eain Tan, Let Pan Ta Pin, Nan U and Aye Mya Villages.

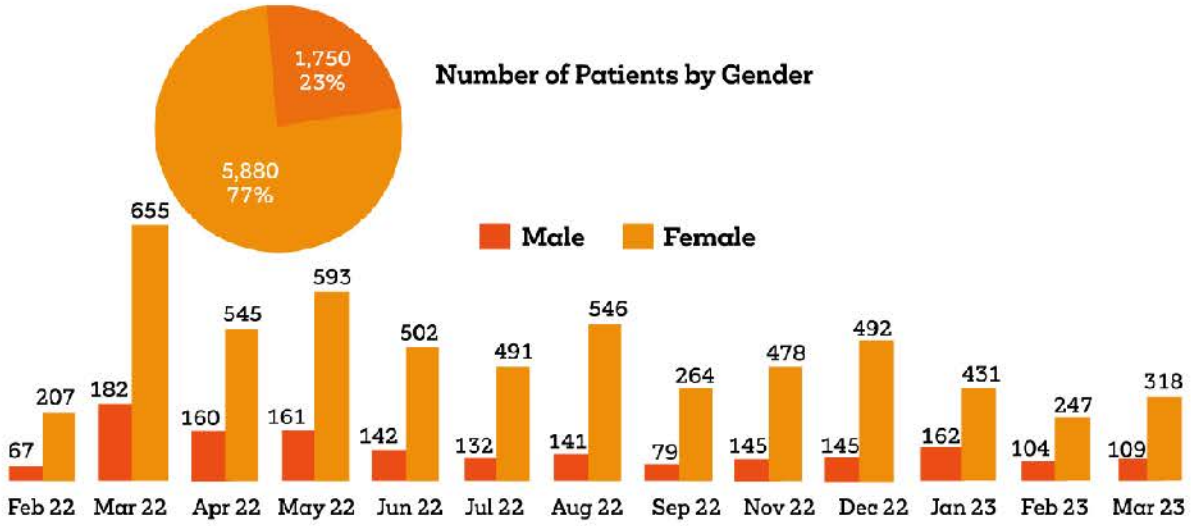
Performance Highlights

- Resumed Mobile Clinic Program on 1 November 2022 as per the COVID-19 prevention guidelines. Mobile clinics were temporarily suspended from 19 September 2022 to 31 October 2022 due to the COVID-19 resurgence in the country.
- Provided free healthcare and home visit services to Mann Field Communities under Mobile Clinic Program for five days per week.
- Contributed necessary support to Mobile Clinic Program and monitored the program progress daily.
- Offered free healthcare services to (7,630) community patients during (230) clinic sessions and home visits since its first opening on 21 February 2022.
- Empowered Mann Field Communities with "Health Education Talks on Hypertension" in December.
- Met with the ophthalmologist from Minbu General Hospital for Eye Healthcare Pilot Program in December.
- Launched "Eye Health Pilot Program: Clear Eyesight for Happy Life!" in the collaboration with the Department of Public Health (Minbu) in January.
- Provided eye health education talks and eye screening activities to (1,847) students and (74) teachers at (10) schools in Mann Field.
- Supported a total number of (48) students and teachers with spectacles, eye supplements, eye drops and referral pathway as per the ophthalmologist's prescription.
- Donated CHIGO air conditioner to the eye surgery room in Minbu General Hospital.
- Accomplished the eye surgery referral case and provided necessary care and support to the child and the Mann Field community members in Yangon.

Figure 121: Mobile Clinic Program in Mann Field Communities

Number of Patients (21 February 2022 – 27 March 2023)

Village	Session	Male	Female	Total
Kyar Kan	50	330	1,416	1,746
Kywe Cha	50	422	1,205	1,627
Lay Eain Tan	50	378	1,406	1,784
Let Pan Ta Pin	50	349	1,267	1,637
Aye Mya	15	148	321	469
Nan U/ Auk Kyaung	15	97	270	367
Total	**230**	**1,750**	**5,880**	**7,630**



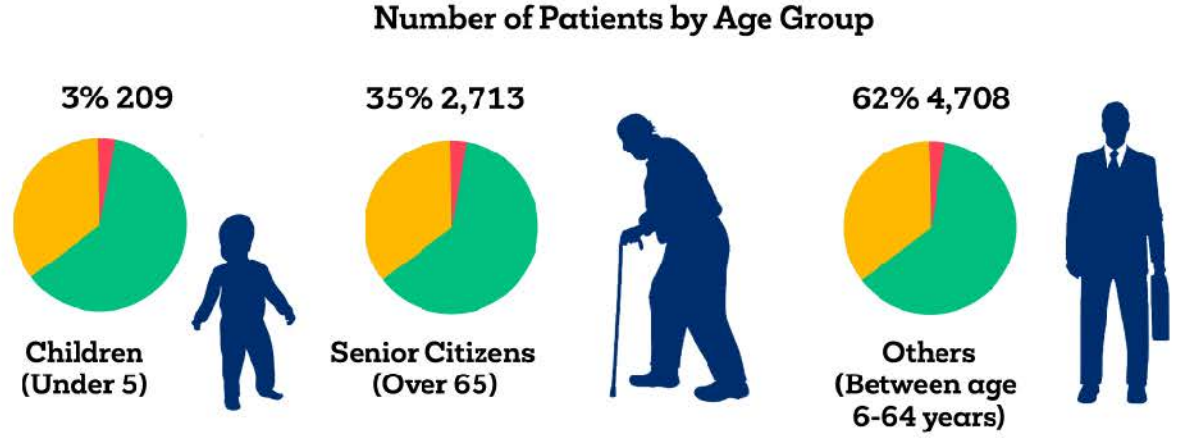


Figure 122: Statistics of Patients' Visit to Mobile Clinics around Mann Field

Figure 123: Empowering Mann Field Communities with Health Education on Hypertension

Figure 124: Meeting with Ophthalmologist from Minbu General Hospital for Eye Healthcare Pilot Program in Mann Field

Figure 125: Donating CHIGO Air Conditioner to Eye Surgery Room in Minbu General Hospital

Figure 126: Initiating Eye Healthcare Pilot Program: Clear Eyesight for Happy Life!

Figure 127: Providing Eye Health Education Talks and Eye Screening Activities at Schools in Mann Field Communities

Figure 128: Conducting Eye Health Examinations and Providing Spectacles, Eye Supplements and Referral Pathway

Case Study

Clear Eyesight for Happy Life: Launching Eye Health Pilot Program in Mann Field Communities

Our world is a beautiful place, filled with colors, patterns, and shapes that are brought to life by our eyesight and vision. These precious senses are essential for our everyday activities, and they allow us to connect with our surroundings in meaningful ways. Sight and vision, while distinct, are interdependent and essential for our daily lives. Our eyes collect up to 80% of the information our brain receives from our environment, highlighting the critical role they play. Therefore, it is imperative that we prioritize the protection and preservation of our eyesight and vision, as they are fundamental to our overall well-being and happiness.

However, despite their importance, according to the World Health Organization (WHO), at least 2.2 billion people worldwide are visually impaired, and nearly half of them suffer from preventable or treatable conditions due to lack of access to eye care. The Myanmar National Eye Health Plan (2017-2021) also mentions that visual impairment and blindness are serious public health issues, particularly in rural areas where nearly 70% of the population resides in Myanmar.

MPRL E&P's Mann Field is situated in the central dry zone of Myanmar, characterized by hot, dry, and dusty conditions and limited access to water. This makes the area prone to blindness, which is a common health issue in rural communities across the country. While we have not conducted a rapid needs assessment on health issue in the Mann Field area, patients who have visited our Mobile Clinic sessions have reported experiencing blurred vision and hearing impairment. As such, it is crucial for us to provide appropriate healthcare services and consultation to the community to ensure their well-being.

As part of our CSR initiative, MPRL E&P has launched the eye health pilot program named as "Clear Eyesight for Happy Life!" in 14 Mann Field Communities with the monetary support of an expatriate from our company and the budget of the CSR Program. The program aims to reduce the prevalence of avoidable blindness and visual impairment among local school children and communities. The CSR Team has partnered with the Department of Public Health (Minbu) to deliver cost-effective eye health services to the area.

After conducting a series of meetings and discussions with stakeholders in December 2022, the program began providing access to basic eye healthcare services, including treatment and referral for local school children attending schools in ten Mann Field villages - Mann Kyoe, Chin Taung, Let Pan Taw, Lay Eain Tan, Mei Bayt Kone, Let Pan Ta Pin, Auk Kyaung, Pauk Kone, Kyar Kan, and Ywar Thar villages. The CSR Team organized school eye screening and education activities in January and February 2023, where health officials from the Trachoma Control and Prevention of Blindness Program under the Department of Public Health (Minbu) educated

schoolchildren, teachers, and parents on general eye health and common eye problems.

The educational sessions aimed to raise awareness among the targeted beneficiaries about various topics related to eye health such as blurred vision, types of vision problems, diabetic retinopathy, symptoms of eye problems, treatable eye diseases, and dos and don'ts for maintaining good eye health. The ultimate objective of the sessions was to provide knowledge about eye structures, common eye problems, risk factors, and methods for sustaining optimal eye health.

Furthermore, during the vision screening, a total of 1,847 schoolchildren and 74 teachers had their vision checked, and 52 individuals were identified as experiencing vision problems and needing eyeglasses. Most of the symptoms included blurred vision, eyestrain, headaches, and squinting. The eye health program ensured that vision screening services were accessible with a particular focus on children in local schools.

In mid-February 2023, the CSR Team escorted students and teachers who showed signs of vision problems, based on the initial screening results, to the Minbu General Hospital. There, Dr. Ei Ei Aung, an ophthalmologist from the Department of Public Health of Minbu General Hospital, conducted eye health examinations on a total of 48 students and teachers. Of these, 29 were prescribed spectacles, 15 were provided with eye drops, one needed to take eye supplements, and two required eye surgery. The program provided the necessary support according to the doctor's prescriptions, and it is hoped that the students and teachers with poor vision will now have clear eyesight and improved vision with the use of spectacles and other aids.

The "Clear Eyesight for Happy Life!" program is a commendable healthcare initiative that has made a significant impact in the Mann Field Communities. The program's success is a testament to the CSR Program's commitment to sustainable efforts and dedication to improving the quality of life for community members. Going forward, the eye health program is expected to expand its services to include elder members of the community, who are at heightened risk for age-related eye diseases and problems. The impact of this program will undoubtedly extend beyond the vision of young community members, enriching their lives and enhancing their connection to the world around them.

Contributing to the Betterment of Our Communities

Employees are one of the most pivotal stakeholders of an organization because they can be influenced by—and also influence—the organizational activities, thus playing an essential role in organizational effectiveness. MPRL E&P's Site Doctors continue providing essential healthcare services not only to all Field Operations Team members as part of their main responsibilities but also to the Mann Field Communities because they believe in CSR activities and Community wellbeing. The following is an interview with two Site Doctors from MPRL E&P's HSE Department who share their experiences regarding the Mobile Clinic Program and health talk sessions for Mann Field Communities.

Dr. Kyaw Ye Htut
Site Doctor/ HSE Officer
HSE Department

Before I started my employment as a Site Doctor at MPRL E&P in 2021, I was working for Asia Drilling Pte Ltd. for about three years as an HSE Officer at Drilling Site. My responsibilities are mainly HSE-related, plus First Aid and supportive medical treatment for all kinds of illnesses for Field Operations crews. Also, I am tasked to share health knowledge on seasonal and common diseases as well as pandemic-related diseases with vulnerable communities. I check and inspect the health and hygiene status at Field Camp every week. Besides, I conduct as a trainer for First Aid Training, Stretcher Team Training, and other work-related training sessions, and participate in Health and Safety Campaign like Heat Stroke Knowledge Sharing sessions, and many more at the Field Camp.

As a responsible employee working in the oil and gas industry, I am interested to learn more about the Company's CSR Program. I want to be a part of the solution through my contributions to the company as well as the respective communities. With the full support of the CSR & Communications Team, I am proud to perform as a medical practitioner for Mobile Clinics in Mann Field Communities.

"As a result, the number of community members is increasing at our Mobile Clinics as they look forward to health consultations with the Site Doctors."

I am now one of the health care providers running five Mobile Clinics at six locations in Mann Field on a weekly basis. Although Mobile Clinics reopened on 21 February 2022 after twenty-two-month hiatus, I have joined the clinic sessions starting from 22 June coupled with another Site Doctor. Before we participated in this program, a local medical doctor and other health assistances took responsibility for running all clinics. Based on my general practices within the Mann Field Communities, we noticed that there are common health problems such as hypertension, diabetes, and joint and back pain in local elderly patients. To solve this matter efficiently, we discussed with the CSR Team to provide health education along with necessary healthcare assistance to Mann Field Communities. My colleague and I provided (21) health talk sessions on common diseases like "Hypertension" and "Diabetes" before starting each clinic session from August to mid-December 2022 and a total of (428) participants had already joined the sessions.

To make this initiative happen, CSR Team provided necessary IEC materials such as pamphlets that indicate dos and don'ts for each disease and other worth-to-know facts. We would go into detail about the nature of the diseases, how to deal with and manage the symptoms in their daily lives, and what medications to take along with how to maintain a healthy lifestyle with simple examples. We also do Q&A sessions to access their understanding and how they make use of their newfound knowledge after the health talk sessions. Each Mobile Clinic has an average of 30 patients from the clinic-located village and other adjacent villages daily. We see that most of the patients respond well after getting their first treatment and show interest in changing their lifestyle and participating in health talk sessions. As a result, the number of community members is increasing at our Mobile Clinics as they look forward to health consultations with the Site Doctors.

Dr. Hlaing Min Htet Kyaw
Junior Site Doctor
HSE Department

After reaching a nearly two-year stint with MPRL E&P, I am now helping as a medical practitioner in Community Healthcare Program initiated by the CSR & Communications Department apart from my routine duties at the Field Camp. MPRL E&P's Mobile Clinic Program is so crucial and beneficial for these kinds of communities where medical assistance and knowledge are limited. I am so delighted to be part of this program in helping the vulnerable community through my provision of health talks and real-life care. Along with my colleague Dr. Kyaw Ye Htut, CSR Team, Community Volunteers, and other health assistants, we are glad to witness sustainable and healthy outcomes in these communities.

"I think that Mobile Clinic and its free-of-charge services have reduced many barriers to efficient healthcare access and services."

During my clinical experiences, most of the elderly clients come to the clinics with back pain and multiple joint pains, including spondylosis and osteoarthritis due to old age and their working behavior and environment. But the most significant problems among elderly clients is hypertension and diabetes if they take it lightly, it could lead to hospitalization and serious complication in near future. We always ensure that they are taking their medication regularly. We also make sure to provide necessary health information and knowledge whenever we encounter a new patient with diabetes or hypertension, especially those who are not taking the treatment regularly or seriously. To prevent further serious health problems, our team would prepare health talks with the patients. We need to make sure we are creating two-way communication with the communities who are encouraged to participate and ask questions on the practical subject matter. I think that Mobile Clinic and its free-of-charge services have reduced many barriers to efficient healthcare access and services. Overall, I am glad to be contributing to the betterment of the community.

10.6.6 Community-led Waste Management Program

MPRL E&P helped upgrade the cargo bike with a bigger waste collection vehicle to accommodate the growing number of participating villages in the program and corresponding high volumes of waste as the sustainability of the community-led waste management program rests with regular operations and community participation. Our aims are to raise awareness on the importance of proper waste management for a better environment and sustainable development, and to motivate all concerned to take collective actions on proper waste management.

Performance Highlights

- Organized (16) sessions of knowledge sharing on Water, Sanitation and Hygiene (WASH) and 5R's for (635) students at (10) schools in Mann Field Communities.
- Observed the handwashing facilities and washing practices of school children in Mann Field Communities.
- Monitored the community-led waste collecting service in Mann Field Communities and conducted discussion with Volunteers and Service Provider monthly.
- Discussed the improvement of waste collecting services with the respective Village Administrators, Village Development Committees and Community Volunteers.
- Supported Trash Hero Minbu cleanups which conducted a total of (208) cleanup sessions with a total number of (3,346) Heroes and collected (8,730) kg of trash snice its first launch in September 2017.

Figure 129: Trash Hero Minbu Cleanup Statistics since September 2017

Figure 130: Organizing Trash Hero Minbu's Cleanup Activities in Mann Field Communities

Figure 131: Organizing Knowledge Sharing Sessions on Water, Sanitation and Hygiene (WASH) and 5R's in Mann Field Schools

Figure 132: Monitoring Handwashing Facilities and Washing Practices of School Children in Mann Field Communities

Figure 133: Monitoring Community-led Waste Collecting Service in Mann Field

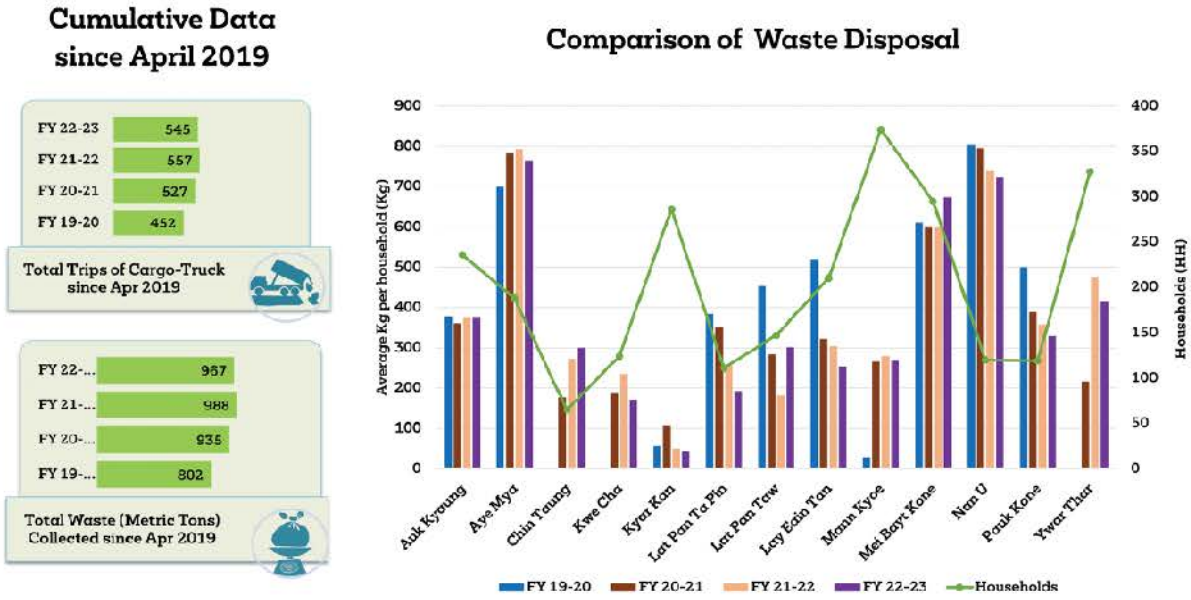


Figure 134: Comparison of Waste Disposal (Quarterly)

10.6.7 Operational Grievance Mechanism (OGM)

We value our host communities and see disclosing information and providing platforms to promote two-way communications as important factors in partnership formation, trust building and maintaining a social license to operate. We have developed a multi-stakeholder approach in designing an Operation Grievance Mechanism (OGM) in Mann Field. This is the first mechanism in Myanmar that has been led by MPRL E&P, host communities and Myanmar Oil and Gas Enterprise (MOGE). The OGM completes the Mann Field Social Management Plan.

Performance Highlights

- Received five OGM cases in the second six months of FY 2022 – 2023. The reported cases were inspected and repaired by MOGE Electrical Team and MPRL E&P Field Operations Team, and closed by the CSR Team, keeping all KPIs met. There are a total of (167) complaints since September 2014.
- Organized OGM Campaign at Nan U, Kyar Kan, Mann Kyoe and Mei Bayt Kone Villages and received a total number of (788) attendees from the Mann Field Communities in March.

Addressed Grievance Cases

1) On 29 September 2022, Daw San Wai from Chin Taung Village reported that there was an electric wire shock due to a palm tree falling on the MOGE electric power line in the west of Ching Taung/ Kywe Cha Village Monastery. She asked for an investigation and any necessary repairs. The community volunteer reported the case to CSR Field Coordinator. CSR Field Coordinator reported the case to MPRL E&P Field Operations Team and then to the MOGE Electrical Department. The representatives from MOGE Electrical Department inspected the case and fixed the issue on 30 September 2022. The case was closed on 30 September 2022. The complaint was satisfied with the process and outcome.

2) On 07 October 2022, Daw San Wai from Chin Taung Village reported that the MOGE power line was close to the house's roof as a result of a palm tree falling on the power line on 29 September 2022 and she concerned about an electrical hazard. She requested to inspect it and erect an electric pole as necessary. The Community Volunteer reported the case to CSR Field Coordinator. CSR Field Coordinator reported the case to MPRL E&P Field Operations Team and then to the MOGE Electrical Department. The representatives from MOGE Electrical Department inspected the case and fixed the issue by erecting a new electric pole on 11 October 2022. The case was closed on 12 October 2022. The complaint was satisfied with the process and outcome.

3) On 07 October 2022, U Tun Wai from Chin Taung Village reported that the neem branches near Well No. 52 were overhanging the MOGE power line and there could be an electrical hazard if there was a strong wind. He requested to inspect and repair it as necessary. The community volunteer reported the case to CSR Field Coordinator. CSR Field Coordinator reported the case to MPRL E&P Field Operations Team and then to the MOGE Electrical Department. MOGE Electrical Department representatives inspected the case and supervised U Tun Wai's hired labor in cutting the neem branches on 11 October 2022. The case was closed on 12 October 2022. The complaint was satisfied with the process and outcome.
4) On 12 December 2022, U Tin Thaung from Mei Bayt Kone Village reported that well #25, located next to his farmland, was leaking water and, that water leakage was flowing to his farmland. He concerned that cows and goats would be harmful

if they drank the water. He requested to inspect and repair it as soon as possible. The community volunteer reported the case to the CSR Field Coordinator and then the CSR Field Coordinator reported the case to the MPRL E&P's Field Operations Team. The Field Operations Team made an inspection and cleared the water from U Tin Thaung's farmland and repaired the well #25 on the same day. The case was closed on 13 December 2022, and the complainant was satisfied with the process and outcome.

5) On 16 March 2023, U Aung Min and Ma Ohnmar from Mei Bayt Kone Village reported that well #267(old well) located near their farmlands, was leaking significant oil by naturally and, that leakage oil was spreading within their farmlands. They requested to inspect and repair it as necessary. The community volunteer reported the case to the CSR Field Coordinator and then the CSR Field Coordinator reported the case to the MPRL E&P's Field Production Team and Field Operations Team. The spilled area was cleaned, and refilled by Field Production Team. The case was closed on 21 March 2023, and the complainants were satisfied with the process and outcome.

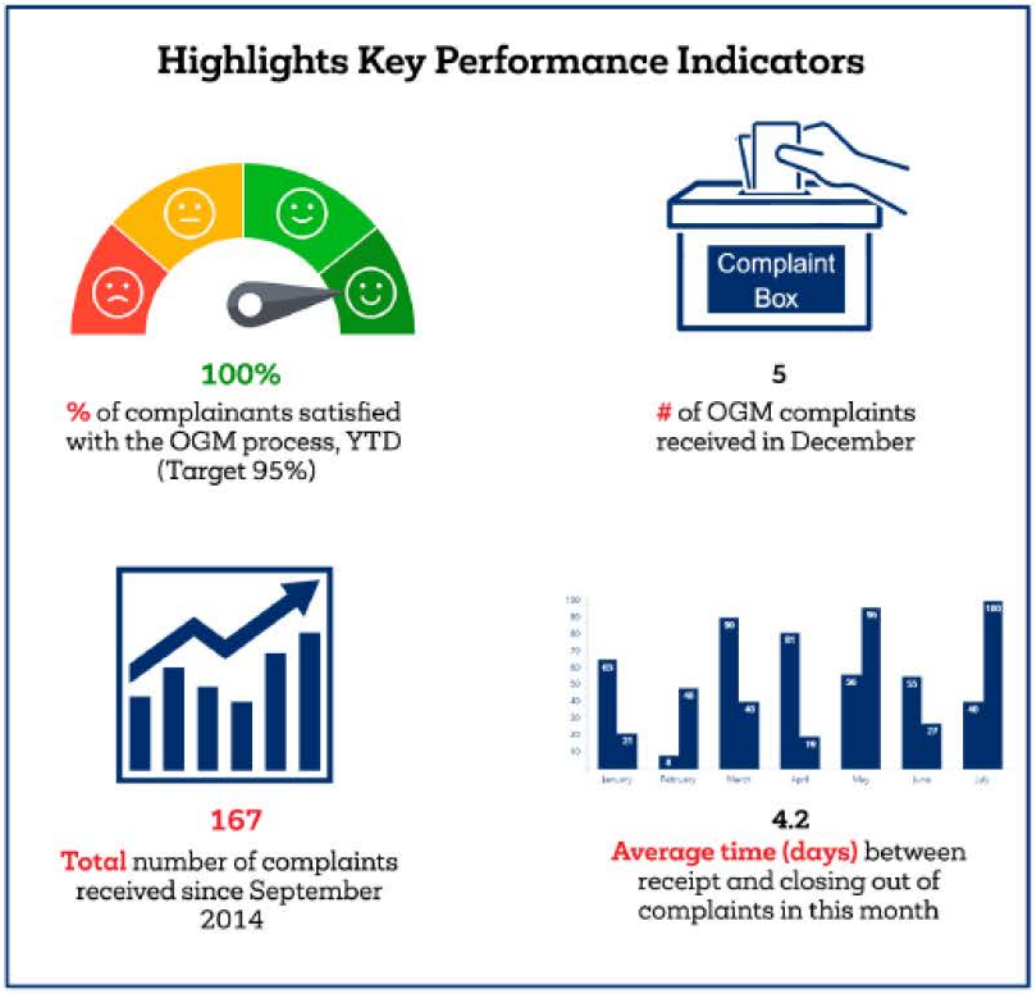


Figure 135: Key Performance Indicators of OGM

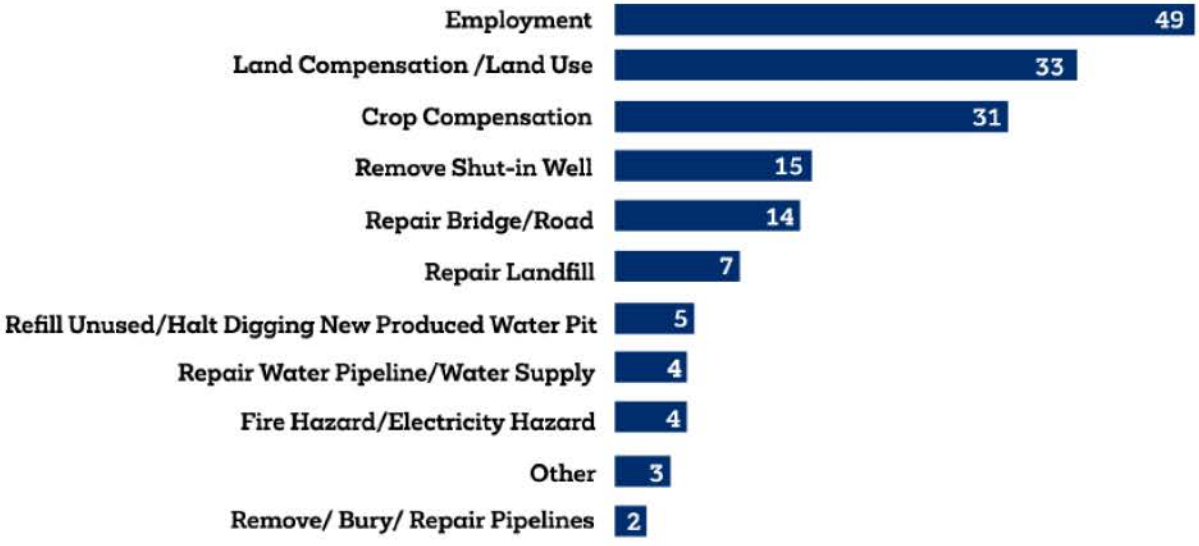


Figure 136: Received and Closed Cases, by quarter, 2014-to-date

Figure 137: MPRL E&P's Operational Grievance Mechanism (OGM) Pamphlet

Figure 138: Organizing OGM Campaign in Mann Field Communities

10.6.8 Stakeholder Engagement and Information Disclosure

Stakeholder engagement is an important part of our approach to managing human rights and providing access to remedy. Timely and regular engagement with our key stakeholders is a cornerstone in our CSR Program in Mann Field. We engage our stakeholders at field level, community level, local and regional levels to ensure a two-way communication channel exists.

Performance Highlights

- Attended the first Biannual CSR Progress Review Meeting of FY 2022-2023 with MOGE representatives at Nay Pyi Taw in October. In the meeting, the CSR & Communications Manager presented social management updates for the period of April – September 2022.
- Conducted several meetings with the community members for school infrastructure development initiatives and the initial community needs assessment of FY 2023-2024 CSR Work Program.
- Facilitated the visit of the Director of Small Scale Industries Department (SSID - Magway) to handicraft product making houses in Pauk Kone Village.
- Distributed Insight! Newsletter (Issue - 32), Doh Mann Myay Newsletter (Issue - 6) and the quarterly CSR Progress Report to the regional stakeholders.
- Organized the first Biannual CSR Progress Update Meeting with Village Administrators, VDCs and Community Volunteers and received a total number of (54) attendees in November.
- Met with community members to address OGM cases, to discuss Outdoor Classroom Day activities, and to follow up the progress of value-added tomato products.
- Published Insight! Newsletter (Issue 33), Doh Mann Myay Newsletter (Issue 7) and Community Grievance Mechanism Reports for third quarter of FY 2022-2023 (English and Myanmar Versions), and submitted the periodic reports to the respective stakeholders in December.
- Conducted a series of meetings with the respective stakeholders for the Community Investment Initiatives in Mann Field. There were also some discussions with Seed Bank Committee for the updates of seeds management process and future plan in January.
- Published Insight! Newsletter (Issue 34), Doh Mann Myay Newsletter (Issue 8) and Community Grievance Mechanism Reports for the fourth quarter of FY 2022-2023 (English and Myanmar Versions), and submitted the periodic reports to the respective stakeholders in March.
- Released the Sustainability Report 2022 and published it on MPRL E&P's Website.

Figure 139: First Biannual CSR Progress Review Meeting of FY 2022-2023 with MOGE Representatives in Nay Pyi Taw

Figure 140: First Biannual CSR Progress Review Meeting of FY 2022-2023 with Community Members in Mann Field

Figure 141: Facilitating SSID (Magway) Director's Visit to Handicraft Product Making Houses in Pauk Kone Village

Figure 142: Meeting with Parents and Teachers for Outdoor Classroom Day

Figure 143: Meeting with Stakeholders for Community Needs Assessment of FY 2023-2024 CSR Work Program

Figure 144: Conducting Community Needs Assessment of FY 2023-2024 CSR Work Program

Figure 145: Meeting with Stakeholders for Community Investment Initiatives

Figure 146: Distributing Canvas Gifts to Photo Models of Community Photo Shooting

Figure 147: Distributing Doh Mann Myay Newsletter in Mann Field Communities

Figure 148: Publishing Insight! Newsletters and Doh Mann Myay Newsletters

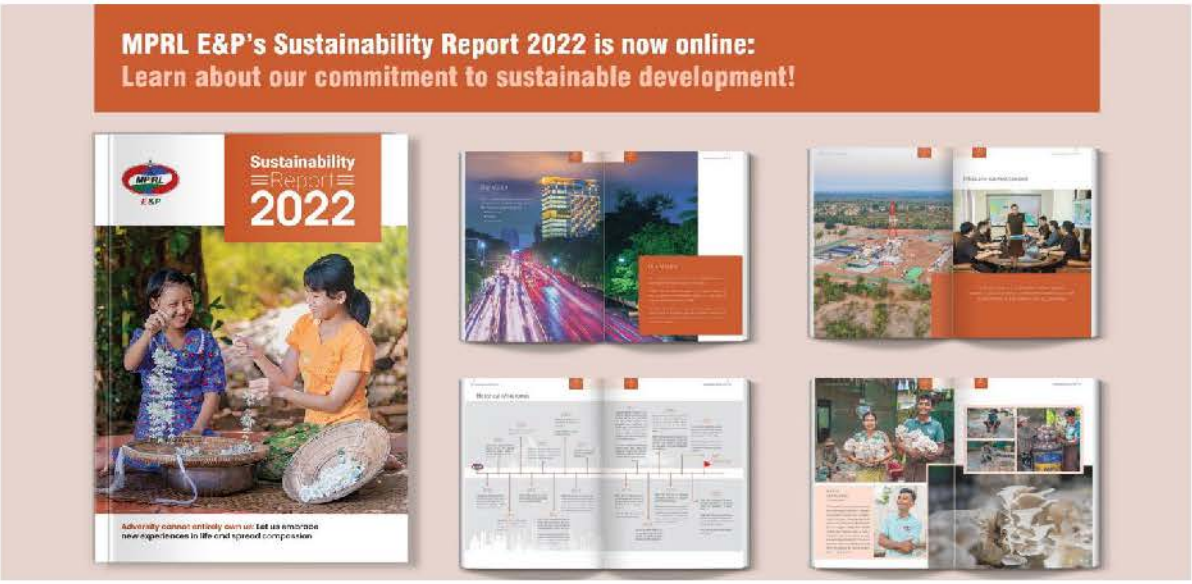


Figure 149: Publishing MPRL E&P's Sustainability Report 2022

Figure 150: Submitting Quarterly CSR Progress Reports to Respective Stakeholders

Case Study

MPRL E&P's Sustainability Report 2022 Highlights Shifting Priorities in Pandemic Era

As the world is emerging from the shadow of the coronavirus pandemic, attention to the importance of corporate transparency has been renewed. This entails two key aspects of how companies have responded to the daily priorities and how they are contributing to "build back better". MPRL E&P's Sustainability Report 2022 – now available on the website – came out to fulfill these twin objectives.

The second edition of this report adheres to the Global Reporting Initiative's (GRI) recommended three-step methodology, with a focus on materiality assessments and stakeholder engagement as fundamental components. Our materiality assessment has been extensively revised to examine the areas where sustainability impacts and business risks have converged in light of the COVID-19 pandemic.

In the materiality refresh survey, social and governance topics have taken precedence, indicating MPRL E&P's internal stakeholders' belief that the company has the greatest potential impacts on these theatres. They are also viewed as topics that have the greatest potential to impact the company's day-to-day operations and future growth plans.

It's important to highlight that while the GRI Oil and Gas Sector Standard 2021 identifies topics such as "Climate Change" and "GHG emissions" as potential material, MPRL E&P's 2020 assessment and 2022 review have concluded otherwise. This is primarily due to the influence of ratings provided by internal stakeholders during the review process. In general, the sustainability reporting landscape has seen companies shifting towards a greater inward focus in their evaluation of business risks and opportunities.

In terms of content, this report details information on MPRL E&P's approach to preparing, responding to and recovering from the impact of the coronavirus pandemic and domestic socio-economic challenges during the reporting period, Myanmar Financial Years 2020-2021 and 2021-2022 in line with its business continuity framework. The events created significant disruptions to business operations, as a result, the company undertook an extensive reprogramming exercise in real-time by refocusing its fund and programs towards safeguarding the health, safety, and security of its employees and communities, demonstrating its responsiveness to the top priorities of the day.

To meet some of the reporting criteria including consistency, completeness, and accountability, the report provides comparable year-on-year data and strives for the same level of coverage on sustainability performance as the first report prior to

COVID-19. It also sheds light on critical decisions made during the period and provides explanations and future plans where relevant, leaving no stone unturned.

We are pleased to be able to evaluate and disclose MPRL E&P's material topics and sustainability performance for the Financial Years 2020-2021 and 2021-2022 with the use of Global Reporting Initiative (GRI) Standards after a delay on the ground of the pandemic. The report will also become our sixth Communication on Progress to the UN Global Compact in line with its new policy. As we prepared the report and engaged in a moment of introspection, we have come to acknowledge the numerous ways our world has changed over the past two years and how a non-financial issue like COVID-19 can shake the very core of the financial foundation of businesses. Additionally, it illustrates that environmental, social, and governance (ESG) risks extend beyond a wide range of social and environmental areas.

By extension, our world today is confronting complex geopolitical, social, and governance issues – one of the spillover effects from the outbreak of the Russo-Ukrainian military confrontation in early 2022. It will be increasingly challenging for businesses to thrive in a divided world where political risks have elevated to a new level, and change is no longer predictable and transparent elsewhere. Worst, the divided world may end up forcing countries to take a side and eventually companies to do the same.

On the economic front, some developing countries are expected to fall behind their developed counterparts due to a combination of the cost-of-living crisis and the impending economic recession in 2023. Furthermore, if the world continues to witness a lack of progress in global climate action, as was the case at COP27, any disorderly shift towards sustainable practices would only serve to exacerbate social inequalities and governance risks. This could result in an unpredictable policy environment, creating the potential for frivolous litigation.

Businesses, at some point, will find themselves in the crossfires as the fundamental elements of human society have increasingly come under attack from all directions, a fait accompli. As suggested by some ESG experts, it is important to keep building on business resiliency by leveraging the tools of scenario thinking and planning well ahead in the face of growing sustainability challenges in the years to come. We are indeed recovering, but we cannot afford to be complacent.

10.6.9 Corporate Philanthropy

MPRL E&P believes that our corporate responsibility is to give back to our communities, and our philanthropic focus is designed to make a meaningful impact in the communities we serve. Our corporate philanthropic activities include donations and contributions to community works, employee volunteering, disaster relief program and any other business arrangements which aim to support a social cause.

Performance Highlights

- Offered Kahtain donation of MPRL E&P to (23) monasteries in Mann Field Communities in the month of November.
- Donated a total cash of (MMK 2.5 million) contribution to the Nursing Home (Minbu) through the MOGE (Mann Field) in January.
- Contributed (MMK 700,000) for the refreshment and paying homage ceremony to the elders in Thingyan event of MOGE (Mann Field).
- Contributed (MMK 5 million) to the Water Festival at the Ministry of Energy and MOGE (Nay Pyi Taw).

Figure 151: Offering Kahtain Donation to Monasteries in Mann Field Communities

11 Conclusion

The sixth submission of the Environmental Monitoring Report for the Mann Field EOR Project, covering field activities and the self-environmental monitoring during the six months from October 2022 to March 2023, has been accomplished after obtaining ECC in 2019. Self-environmental monitoring was carried out during this period, including Air & Noise Quality Monitoring at Z3AQN, and Soil Quality Monitoring at Z3S1 & Z3S2, with assistance from the regional ECD (Magway) team although our third-party environmental monitoring survey plan was postponed due to COVID-19 pandemic and security concerns. We had the opportunity to discuss and present our environmental management efforts at Mann Oil Field to the regional ECD (Magway) inspection team.

We encountered opportunities and threats to our business sustainability, including increased security measures in the Mann Oil Field resulting in daytime-only operations with minimal crews. Additionally, we faced challenges such as depleted oil field, production targets impacted by pilfering cases, and maintenance and logistics issues. Despite the challenges, we have monitored the environmental aspects of our business activities, taken corrective actions to minimize adverse effects, conducted self-environmental monitoring, engaged in CSR activities, participated in HSE movements, and held numerous awareness sessions. We have especially focused on conducting various awareness sessions to promote a culture that empowers and rewards everyone for acting in accordance with our Environmental policy. By adhering to our commitments in ECC, MPRL E&P is actively complying with all requirements, implementing established plans to achieve our goals, and continuously striving for improvement.

12 Annex

Annex – 1 Laboratory Results

Annex – 2 Equipment Calibration Certificate

Annex – 1
Laboratory Results

မဏ္ဍိုးတိုင်းဒေသကြီး

ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဦးစီးဌာန၊

ညွှန်ကြားရေးမှူးရုံး

လေအရည်အသွေးတိုင်းတာမှုရလဒ်

Air Quality Result Form

Name : MPRL E&P Pte. Ltd၏ ရေနံပြန်လည်ဖွံ့ဖြိုးတိုးတက်ရေးအစီအစဉ်

Location : မင်ဘူးခရိုင်၊ မန်းရေနံမြေ

(Z3AQN - 20°13'21.5"N၊ 94°51'19.6"E)

Analytical Date : 17-1-2023 to 18-1-2023

No.	Parameter	Unit	Result	National Environmantal Quality (Emission) Guideline	Remark
1	PM_{10}	$\mu g/m^3$	97.74	50	
2	Carbon Monoxide(CO)	ppm	4.88	-	
3	Hydrogen Sulfide(H_2S)	mg/Nm^3	0.00063	5	
4	Nitrous Oxide(NO)	ppb	52.63	-	
5	Nitrogen Dioxide(NO_2)	$\mu g/m^3$	2.42	200	
6	Sulfur Dioxide(SO_2)	$\mu g/m^3$	0	20	
7	Relative Humidity	-	50.47	-	

Analysis By, Khin Tint Tint Aung

Approved By, Ohnmar Myint

မလွေးတိုင်းဒေသကြီး

ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဦးစီးဌာန၊ ညွှန်ကြားရေးမှူးရုံး

ဆူညံသံတိုင်းတာမှုရလဒ်

Noise Analysis Result Form

Customer Name: MPRL E&P Pte ltd ၏ရေနံပြန်လည် ဖွံ့ဖြိုးတိုးတက်ရေးအစီအစဉ် **Analytical Date:** 17-1-2023

Receiving Date: 18-1-2023 **Reporting Date:** 30-1-2023

Receptor	One Hour LA eq (dBA)*	
	Day Time 0:70-22:00 (10:00-22:00 For Public Holidays)	Night Time 22:00-07:00 (22:00-10:00 For Public Holidays)
Residential In Education	55	45
Industrial Commercial	70	70
Average Test Result	45.4	43.3

Analysis By, Khin Tint Tint Aung

Approved By, Ohnmar Myint

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မြေအရည်အသွေးတိုင်းတာမှုရလဒ်

Soil Analysis Result Form

Customer Name:	MPRL E&P Pte. Ltd	**Sample Name :**	Fresh Soil(Z3S1)
Sample Location:	20°13'22.04"N၊ 94°51'19.59"E	**Sampling Date:**	15-11-2022
Receiving Date:	15-11-2022	**Sampling Time:**	10:45AM
		Reporting Date:	8-12-2022

No.	Analytical date	Parameter	Unit	Result	International Agricultural Soil Standard	Remark
1	22-11-2022	pH	-	7.18	6-7.5	
2	22-11-2022	Copper (Cu)	mg/l	0.2	100	
3	8-12-2022	Zinc (Zn)	mg/kg	3.169	250	
4	22-11-2022	Manganese (Mn)	mg/l	3.4	500	
5	22-11-2022	Iron (Fe)	mg/l	7.1	-	

Analysis By, Khin Tint Tint Aung

Approved By, Ohnmar Myint

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မြေအရည်အသွေးတိုင်းတာမှုရလဒ်

Soil Analysis Result Form

Customer Name:	MPRL E&P Pte. Ltd	**Sample Name :**	Fresh Soil(Z3S2)
Sample Location:	20°13'2.60"N၊ 94°51'14.86"E	**Sampling Date:**	15-11-2022
Receiving Date:	15-11-2022	**Sampling Time:**	11:30AM
Analytical Date:	22-11-2022	**Reporting Date:**	8-12-2022

No.	Parameter	Unit	Result	International Agricultural Soil Standard	Remark
1	pH	-	6.97	6-7.5	
2	Copper (Cu)	mg/kg	3.975	100	
3	Zinc (Zn)	mg/	7.011	250	
4	Manganese (Mn)	mg/l	0.4	500	
5	Iron (Fe)	mg/l	13.1	-	

Analysis By, Khin Tint Tint Aung

Approved By, Ohnmar Myint

ပတ်ဝန်းကျင်ဂေဒေသဓာတ်ခွဲခန်း
Ecological Laboratory

ဝိဉ်းလန်းအမိမြေဖွံ့ဖြိုးတိုးတက်ရေးအသင်း (Advancing Life and Regenerating Motherland, ALARM)

No.121, Corner of Shu Khin Thar Street & 7 Street, (3) Block, South Oakkalapa Township, Yangon Tel - 09-407496078

စာအမှတ်/Reference Number: EL (M)-R / 935

ဖန့်ဖွဲ့/Date: 7th February, 2023

ဓာတ်ခွဲစစ်ဆေးမှုအစီရင်ခံစာ/Laboratory Analysis Report

နမူနာရာဇဝင် /Sample Profile

နမူနာအမည် /Sample Name	Biofilter Outlet (Sewage Discharged)	နမူနာအမှတ် / Sample ID	935	
နေရာ (မြို့နယ်) Location (Township)	Minbu Township	လတ္တီကျွဒ် Latitude		
နေရာ (တိုင်း/ပြည်နယ်) Location (Region/State)	Magwe	လောင်ဂျီကျွဒ် Longitude		
ပေးပို့သူအမည် /Sender Name	Ko Han Myo Aung	နမူနာတောင်းယူရှိနိုင် (နေ့၊ နာရီ) Sampling Time (Date, Time)	25.1.2023	9:03 AM
အဖွဲ့အစည်း /Organisation	MPRL E & P Pte. Ltd.			
ဆက်သွယ်ရန် /Contact	095177819	နမူနာရောက်ရှိမှုနိုင် (ခန့် နာရီ) Arriving Time (Date, Time)	25.1.2023	10:10 AM

(This laboratory analysis report is based solely on the sample submitted by the customer)

(ဤဓာတ်ခွဲစစ်ဆေးမှုအစီရင်ခံစာသည် ဖောက်သွယ်မှုဆောင်ခဲ့သည့်နမူနာတို့သာအခြေခံထားပါသည်)

Analysis Results/စမ်းသပ်ချက်အဖြေ

စဉ် Sr.	အရည်အသွေးညွှန်းကိန်း Quality Parameter	ရလဒ် အဖြေ Results	နည်းစဉ် Method	စံသတ်မှတ်ချက် Drinking Standard	မှတ်ချက် Remarks
1	Total plate count (CFU/ml)		Total plate count method	0	
2	Total coliform count (MPN/100 ml) (Presumption test)	>1100	Most Probable Number method	0	
3	Total faecal coliform count (MPN/100ml) (Presumption test)		Most Probable Number method	0	
4	Total coliform count (CFU/ml) (Confirm test)		Eosin Methyl blue agar plate test	0	
5	Complete test for coliform bacteria		Gram staining test	-	
6	Total coliform count (CFU/ml)		3M Pate count method	0	
7	Total E.coli count (CFU/ml)		3M Pate count method	0	

Note: The target sample needs to test some additional tests to confirm total coliform and total faecal coliform.

စမ်းသပ်ပြီး Tested by	စစ်ဆေးပြီး Checked by	တာဝန်ခံ Approved by
May Myat Nyein	May Zaw	Ni Tar Nwe
Research Assistant	Research Assistant	Research Scientist
ALARM	ALARM	ALARM

ALARM Ecological Laboratory

Water Testing Result Report

Report Number: EL-WR-23-01136 Date : February 8, 2023

Client Information

Client Name	:	Ko Han Myo Aung
Organization	:	MPRL E&P Pte Ltd
Client ID	:	-
Registration Date & Time	:	26.1.2023 ; 10:10 AM
Contact	:	09-5177819
E - Mail	:	han.m.aung@mprlexp.com
Testing Purpose	:	For Monitoring

Sample Information

Sample ID	:	9149
Sample Name	:	Biofilter Outlet (Sewage Discharged)
Sample Type / Source	:	Treated
Sampling Date & Time	:	25.1.2023 ; 9:03 AM
Sample Location	:	Minbu Township
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	TSS[a]	2	mg/L	≤50 [d]	Normal
2	BOD_5 [c]	20	mg/L	≤ 50 [d]	Normal
3	Total Phosphorous[2]	< 1.5	mg/L	≤2 [d]	Normal
4	Oil & Grease [a]	5	mg/L	≤ 10 [d]	Normal
5	Total Nitrogen[3]	18.2	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

မကွေးတိုင်းဒေသကြီး
ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဦးစီးဌာန၊ ညွှန်ကြားရေးမှူးရုံး
ရေအရည်အသွေးတိုင်းတာမှုရလဒ်

Water Analysis Result Form

Customer Name: MPRL E&P Pte. Ltd
Sample Location: Warehouse
Receiving Date: 15-11-2022
Sample Name: Domestic Water
Sampling Date: 15-11-2022
Sampling Time: 8:14 AM
Reporting Date: 8-12-2022

No.	Analytical date	Parameter	Unit	Result	Environmental Quality Emission (EQEG) Guidelines	Remark
1	21-11-2022	Chemical Oxygen Demand (COD)	mg/l	27	250	
2	21-11-2022	pH	-	7.93	6-9	
3	21-11-2022	Arsenic	mg	0	0.1	
4	6-12-2022	Lead (Pb)	mg/l	-0.031	0.1	
5	5-12-2022	Manganese (Mn)	mg/l	0.124	-	
6	5-12-2022	Iron (Fe)	mg/l	-0.102	3.5	

Analysis By, Khin Tint Tint Aung

Approved By, Ohnmar Myint

ALARM Ecological Laboratory

Water Testing Result Report

Report Number: EL-WR-23-01141 Date : February 8, 2023

Client Information

Client Name	:	Ko Han Myo Aung
Organization	:	MPRL E&P Pte Ltd
Client ID	:	-
Registration Date & Time	:	26.1.2023 ; 10:10 AM
Contact	:	09-5177819
E - Mail	:	han.m.aung@mprlexp.com
Testing Purpose	:	For Monitoring

Sample Information

Sample ID	:	9154
Sample Name	:	Warehouse (Tubo Section)
Sample Type / Source	:	Domestic Wastewater
Sampling Date & Time	:	25.1.2023 ; 8:44 AM
Sample Location	:	Minbu Township
Latitude	:	-
Longitude	:	-

Testing Results

This laboratory analysis report is based solely on the sample submitted by the client unless client took our sampling service.

Sr.	Quality Parameters	Results	Units	Emission Standards	Remarks
1	TSS[1]	42	mg/L	≤50 [a]	Normal
2	Chloride[2]	88	mg/L	-	-
3	BOD_5[3]	34	mg/L	≤ 50 [b]	Normal
4	Copper[4]	0.1	mg/L	≤ 0.5 [d]	Normal
5	Cadmium[5]	ND	mg/L	≤ 0.1 [a]	LOD = 0.01 mg/L
6	Zinc[6]	< 0.02	mg/L	≤ 2 [c]	Normal
7	Nickel[7]	< 0.2	mg/L	≤ 0.5 [a]	Normal
8	Sulfide[8]	< 0.04	mg/L	≤ 1 [c]	Normal
9	Phenol[9]	< 0.1	mg/L	≤ 0.5 [a]	Normal
10	Chromium (Hexavalent)[10]	0.07	mg/L	≤ 0.1	Normal
11	Mercury	0.001	mg/L	≤ 0.01 [d]	Normal

"ND" = Not Detected "LOD" = Lower limit of detection "-" = No Reference Standard

Tested by	Checked by	Approved by
Daw May [illegible] Khine Lab. Technician II Ecological Laboratory ALARM	Daw Lin Myat Myat Aung Lab. Technician I Ecological Laboratory ALARM	Dr. Ave [illegible] 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

GOLDEN DOWA ECO-SYSTEM MYANMAR CO., LTD.
Lot No E1. Thilawa SEZ Zone A, Yangon Region, Myanmar.
Phone No Fax No: (+95) 1 2309051

Report No. : GEM-LAB-202302014
Revision No. : 1
Report Date : 14 February, 2023
Application No. : 0064-C001

Analysis Report

Client Name : MPRL E & P Pte Ltd.
Address : 623, Pyay Road , Vantage Tower, Kamayut.
Project Name : Mann Field
Sample Description
Sample Name : Hydrotest Water
Sample No. : W-2301124
Waste Profile No. : -

Sampling Date : 26 January, 2023
Sampling By : Customer
Sample Received Date : 26 January, 2023
Analytical Date : 26/01-14/02/2023

No.	Parameter	Method	Unit	Result	LOQ
1	Vanadium	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	mg/l	≤0.002	0.002
2	Silver	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	mg/l	≤0.002	0.002

Remark : LOQ - Limit of Quantitation
APHA - American Public Health Association (APHA), the American Water Works Association (AWWA), and the Water Environment Federation (WEF), Standard Methods for the Examination of Water and Wastewater, 22nd edition

Analysed By :

Ni Ni Aye Lwin
Manager

LAB
Feb 14,2023
GEM

Approved By :

Hideki Yomo Feb 14,2023
Managing Director

မကွေးတိုင်းဒေသကြီး
ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဦးစီးဌာန၊ ညွှန်ကြားရေးမှူးရုံး
ရေအရည်အသွေးတိုင်းတာမှုရလဒ်

Water Analysis Result Form

Customer Name:	MPRL E&P Pte. Ltd	**Sample Name:**	Domestic Water
Sample Location:	Downhole Workshop	**Sampling Date:**	15-11-2022
Receiving Date:	15-11-2022	**Sampling Time:**	8:21AM
		Reporting Date:	8-12-2022

No.	Analytical date	Parameter	Unit	Result	Environmental Quality Emission (EQEG) Guidelines	Remark
1	21-11-2022	Chemical Oxygen Demand (COD)	mg/l	68	250	
2	21-11-2022	pH	-	7.90	6-9	
3	21-11-2022	Arsenic	mg	0.011	0.1	
4	6-12-2022	Lead (Pb)	mg/l	- 0.038	0.1	
5	5-12-2022	Manganese (Mn)	mg/l	0.385	-	
6	5-12-2022	Iron (Fe)	mg/l	- 0.200	3.5	

Analysis By, Khin Tint Tint Aung

Approved By, Ohnmar Myint

ပတ်ဝန်းကျင်ရေးရာဓာတ်ခွဲခန်း
Ecological Laboratory

စိမ်းလန်းအဓိမြေဖွံ့ဖြိုးတိုးတက်ရေးအသင်း (Advancing Life and Regenerating Motherland, ALARM)

No.121, Corner of Shu Khin Thar Street & 7 Street, (3) Block, South Oakkalapa Township, Yangon Tel: - 09-407496078

စာအမှတ်/Reference Number: EL (M)-R / 934

နေ့စွဲ/Date: 7th February, 2023

ဓာတ်ခွဲစစ်ဆေးမှုအစီအရင်ခံစာ/Laboratory Analysis Report

နမူနာရာဇဝင် /Sample Profile

နမူနာအမည် /Sample Name	Downhole Workshop	နမူနာအမှတ် / Sample ID	934	
နေရာ (မြို့နယ်) Location (Township)	Minbu Township	လတ္တီတွဒ် Latitude		
နေရာ (တိုင်း/ပြည်နယ်) Location (Region/State)	Magwe	လောင်ဂျီတွဒ် Longitude		
ပေးပို့သူအမည် /Sender Name	Ko Han Myo Aung	နမူနာကောက်ယူချိန် (နေ့၊ နာရီ) Sampling Time (Date, Time)	25.1.2023	8:54 AM
အဖွဲ့အစည်း /Organisation	MPRL E & P Pte, Ltd.			
ဆက်သွယ်ရန် /Contact	095177819	နမူနာရောက်ရှိချိန် (နေ့၊ နာရီ) Arriving Time (Date, Time)	26.1.2023	10:10 AM

(This laboratory analysis report is based solely on the sample submitted by the customer)

(ဤဓာတ်ခွဲစစ်ဆေးမှုအစီရင်ခံစာသည် ပေးပို့သူမှပို့ဆောင်ခဲ့သည့်နမူနာကိုသာအခြေခံထားပါသည်။)

Analysis Results/စမ်းသပ်ချက်အဖြေ

စဉ် Sr.	အရည်အသွေးညွှန်းကိန်း Quality Parameter	ရလဒ် အခြေ Results	နည်းစဉ် Method	စီသတ်မှတ်ချက် Drinking Standard	မှတ်ချက် Remarks
1	Total plate count (CFU/ml)		Total plate count method	0	
2	Total coliform count (MPN/100 ml) (Presumption test)	>1100	Most Probable Number method	0	
3	Total faecal coliform count (MPN/100ml) (Presumption test)		Most Probable Number method	0	
4	Total coliform count (CFU/ml) (Confirm test)		Eosin Methyl blue agar plate test	0	
5	Complete test for coliform bacteria		Gram staining test	-	
6	Total coliform count (CFU/ml)		3M Pate count method	0	
7	Total *E.coli* count (CFU/ml)		3M Pate count method	0	

Note: The target sample needs to test some additional tests to confirm total coliform and total faecal coliform.

စမ်းသပ်ပြီး Tested by	စစ်ဆေးပြီး Checked by	တာဝန်ခံ Approved by
May Myat Nyein Research Assistant ALARM	May Zaw Research Assistant ALARM	Ni Tar Nwe

ALARM Ecological Laboratory

Water Testing Result Report

Report Number: EL-WR-23-01135 Date : February 8, 2023

Client Information

Client Name	:	Ko Han Myo Aung
Organization	:	MPRL E&P Pte Ltd
Client ID	:	-
Registration Date & Time	:	26.1.2023 ; 10:10 AM
Contact	:	09-5177819
E - Mail	:	han.m.aung@mprlexp.com
Testing Purpose	:	For Monitoring

Sample Information

Sample ID	:	9148
Sample Name	:	Downhole Workshop
Sample Type / Source	:	Domestic Wastewater
Sampling Date & Time	:	25.1.2023 ; 8:54 AM
Sample Location	:	Minbu Township
Latitude	:	-
Longitude	:	-

Testing Results

This laboratory analysis report is based solely on the sample submitted by the client unless client took our sampling service.

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Sr.	Quality Parameters	Results	Units	Emission Standards	Remarks
1	Temperature[2]	27	°C	±3° [c]	-
2	TSS[1]	12	mg/L	≤50 [d]	Normal
3	Ammonia[3]	0.8	mg/L	≤ 10 [d]	Normal
4	BOD_5 [3]	24	mg/L	≤ 50 [d]	Normal
5	Total Chlorine[3]	< 0.02	mg/L	-	-
6	Total Phosphorous[2]	< 1.5	mg/L	≤2 [e]	Normal
7	Cadmium[1]	ND	mg/L	≤ 0.1 [d]	LOD = 0.01 mg/L
8	Copper[3]	0.2	mg/L	≤ 0.5 [d]	Normal
9	Zinc[3]	< 0.02	mg/L	≤ 2 [c]	Normal
10	Nickel[3]	< 0.2	mg/L	≤ 0.5 [d]	Normal
11	Sulfide[3]	< 0.04	mg/L	≤ 1 [c]	Normal
12	Phenol[4]	< 0.1	mg/L	≤ 0.5 [d]	Normal
13	Fluoride[3]	0	mg/L	≤ 20 [d]	Normal
14	Oil & Grease [3]	9	mg/L	≤ 10 [d]	Normal
15	Chromium (Hexavalent)[3]	< 0.02	mg/L	≤ 0.1	Normal
16	Mercury	0.01	mg/L	≤ 0.01 [d]	Normal

"ND" = Not Detected "LOD" = Lower limit of detection "-" = No Reference Standard

Tested by	Checked by	Approved by
Dawl May Myat Khine Lab. Technician II Ecological Laboratory ALARM	Daw Lin Myat Myat Aung Lab. Technician 1 Ecological Laboratory ALARM	Dr. Aye Aye Win Laboratory In-Charge EcoLab ALARM

No.121,Corner of Shu Khin That Street & 7 Street, (3) Block, South Oakkalapa Township,Yangon.
Tel: 09-407496078, Email: aelab.2022@gmail.com

GOLDEN DOWA ECO-SYSTEM MYANMAR CO., LTD.
Lot No E1, Thilawa SEZ Zone A, Yangon Region, Myanmar.
Phone No Fax No: (+95) 1 2309051

Report No. : GEM-LAB-202302009
Revision No. : 1
Report Date : 14 February, 2023
Application No. : 0064-C001

Analysis Report

Client Name : MPRL E & P Pte Ltd.
Address : 623, Pyay Road , Vantage Tower, Kamayut.
Project Name : Mann Field
Sample Description
Sample Name : Downhole Workshop
Sample No. : W-2301119
Waste Profile No. : -

Sampling Date : 26 January, 2023
Sampling By : Customer
Sample Received Date : 26 January, 2023
Analytical Date : 26/01-14/02/2023

No.	Parameter	Method	Unit	Result	LOQ
1	Cyanide	HACH 8027 (Pyridine -Pyrazalone Method)	mg/l	<0.002	0.002
2	Total Cyanide	Distillation Process: APHA 4500-CN- C. Total Cyanide after Distillation, Determine Cyanide Concentration Process: HACH 8027 (Pyridine -Pyrazalone Method)	mg/l	<0.002	0.002
3	Chromium	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	mg/l	≤0.002	0.002
4	Selenium	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	mg/l	≤0.010	0.010
5	Vanadium	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	mg/l	≤0.002	0.002
6	Silver	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	mg/l	≤0.002	0.002

Remark : LOQ - Limit of Quantitation
APHA - American Public Health Association (APHA), the American Water Works Association (AWWA), and the Water Environment Federation (WEF), Standard Methods for the Examination of Water and Wastewater, 22nd edition

Analysed By :

Ni Ni Aye Lwin
Manager

LAB
Feb 14, 2023
GEM

Approved By :

Hideki Yomo Feb 14, 2023
Managing Director

မကွေးတိုင်းဒေသကြီး
ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဦးစီးဌာန၊ ညွှန်ကြားရေးမှူးရုံး
ရေအရည်အသွေးတိုင်းတာမှုရလဒ်

Water Analysis Result Form

Customer Name: MPRL E&P Pte. Ltd
Sample Location: Mobile Workshop
Receiving Date: 15-11-2022
Sample Name: Domestic Water
Sampling Date: 15-11-2022
Sampling Time: 9:20 AM
Reporting Date: 8-12-2022

No.	Analytical date	Parameter	Unit	Result	Environmental Quality Emission (EQEG) Guidelines	Remark
1	21-11-2022	Chemical Oxygen Demand (COD)	mg/l	59	250	
2	21-11-2022	pH	-	7.87	6-9	
3	21-11-2022	Arsenic	mg	0	0.1	
4	4-12-2022	Lead (Pb)	mg/l	0.001	0.1	
5	4-12-2022	Manganese (Mn)	mg/l	0.061	-	
6	4-12-2022	Iron (Fe)	mg/l	1.087	3.5	

Analysis By, Khin Tint Tint Aung

Approved By, Ohnmar Myint

ပတ်ဝန်းကျင်ရေးရာဓာတ်ခွဲခန်း
Ecological Laboratory

စိမ်းလန်းအမိမြေပြန့်ဖြိုးတိုးတက်ရေးအသင်း (Advancing Life and Regenerating Motherland, ALARM)

No.121, Corner of Shu Khin Thar Street & 7 Street, (3) Block, South Oakkalapa Township, Yangon.Tel: - 09-407496078

စာအမှတ်/Reference Number: EL (M)-R / 933

နေ့စွဲ/Date: 7th February, 2023

ဓာတ်ခွဲစစ်ဆေးမှုအစီအရင်ခံစာ/Laboratory Analysis Report

နမူနာရာဇဝင် /Sample Profile

နမူနာအမည် /Sample Name	Mobile Workshop	နမူနာအမှတ် / Sample ID	933	
နေရာ (မြို့နယ်) Location (Township)	Minbu Township	လတ္တီတွဒ် Latitude		
နေရာ (တိုင်း/ပြည်နယ်) Location (Region/State)	Magwe	လောင်ဂျီတွဒ် Longitude		
ပေးပို့သူအမည် /Sender Name	Ko Han Myo Aung	နမူနာကောက်ယူချိန် (နေ့ နာရီ) Sampling Time (Date, Time)	25.1.2023	9:28 AM
အဖွဲ့အမည် /Organisation	MPRL E & P Pte, Ltd.			
ဆက်သွယ်ရန် /Contact	095177819	နမူနာရောက်ရှိချိန် (နေ့ နာရီ) Arriving Time (Date, Time)	26.1.2023	10:10 AM

(This laboratory analysis report is based solely on the sample submitted by the customer)

(ဤဓာတ်ခွဲစစ်ဆေးမှုအစီရင်ခံစာသည် ပေးပို့သူမှပို့ဆောင်ခဲ့သည့်နမူနာကိုသာအခြေခံထားပါသည်။)

Analysis Results/စမ်းသပ်ချက်အဖြေ

စဉ် Sr.	အရည်အသွေးညွှန်းကိန်း Quality Parameter	ရလဒ် အဖြေ **Results**	နည်းစနစ် Method	စံသတ်မှတ်ချက် Drinking Standard	မှတ်ချက် Remarks
1	Total plate count (CFU/ml)		Total plate count method	0	
2	Total coliform count (MPN/100 ml) (Presumption test)	>1100	Most Probable Number method	0	
3	Total faecal coliform count (MPN/100ml) (Presumption test)		Most Probable Number method	0	
4	Total coliform count (CFU/ml) (Confirm test)		Eosin Methyl blue agar plate test	0	
5	Complete test for coliform bacteria		Gram staining test	-	
6	Total coliform count (CFU/ml)		3M Pate count method	0	
7	Total *E.coli* count (CFU/ml)		3M Pate count method	0	

Note: The target sample needs to test some additional tests to confirm total coliform and total faecal coliform.

စမ်းသပ်ပြီး Tested by	စစ်ဆေးပြီး Checked by	တာဝန်ခံ Approved by
May Myat Nyein	May Zaw	Ni Tar Nwe
Research Assistant	Research Assistant	Research Scientist
ALARM	ALARM	ALARM

ALARM Ecological Laboratory

Water Testing Result Report

Report Number: EL-WR-23-01134 Date : February 8, 2023

Client Information

Client Name	:	Ko Han Myo Aung
Organization	:	MPRL E&P Pte Ltd
Client ID	:	-
Registration Date & Time	:	26.1.2023 ; 10:10 AM
Contact	:	09-5177819
E - Mail	:	han.m.aung@mprlexp.com
Testing Purpose	:	For Monitoring

Sample Information

Sample ID	:	9147
Sample Name	:	Mobile Workshop
Sample Type / Source	:	Domestic Wastewater
Sampling Date & Time	:	25.1.2023 ; 9:28 AM
Sample Location	:	Minbu Township
Latitude	:	-
Longitude	:	-

Testing Results

This laboratory analysis report is based solely on the sample submitted by the client unless client took our sampling service.

Sr.	Quality Parameters	Results	Units	Emission Standards	Remarks
1	Temperature[2]	26	°C	±3[a,d]	-
2	TSS[3]	6	mg/L	≤50[d]	Normal
3	Ammonia[3]	0.5	mg/L	≤ 10[c]	Normal
4	BOD_5[4]	18	mg/L	≤ 50[d]	Normal
5	Total Chlorine[3]	< 0.02	mg/L	-	-
6	Total Phosphorous[3]	< 1.5	mg/L	≤2[d]	Normal
7	Cadmium[3]	ND	mg/L	≤ 0.1[d]	LOD = 0.01 mg/L
8	Copper[3]	0.1	mg/L	≤ 0.5[d]	Normal
9	Zinc[3]	< 0.02	mg/L	≤ 2[d]	Normal
10	Nickel[3]	< 0.2	mg/L	≤ 0.5[d]	Normal
11	Sulfide[3]	< 0.04	mg/L	≤ 1[d]	Normal
12	Phenol[3]	< 0.1	mg/L	≤ 0.5[d]	Normal
13	Fluoride[3]	0	mg/L	≤ 20[d]	Normal
14	Oil & Grease [3]	4	mg/L	≤ 10[d]	Normal
15	Chromium (Hexavalent)[3]	< 0.02	mg/L	≤ 0.1	Normal
16	Mercury	0.001	mg/L	≤ 0.01[d]	Normal

"ND" = Not Detected "LOD" = Lower limit of detection " - " = No Reference Standard

Tested by	Checked by	Approved by
Daw Ma [illegible] 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

GOLDEN DOWA ECO-SYSTEM MYANMAR CO., LTD.
Lot No E1, Thilawa SEZ Zone A, Yangon Region, Myanmar.
Phone No Fax No: (+95) 1 2309051

Report No. : GEM-LAB-202302008
Revision No. : 1
Report Date : 14 February, 2023
Application No. : 0064-C001

Analysis Report

Client Name : MPRL E & P Pte Ltd.
Address : 623, Pyay Road , Vantage Tower, Kamayut.
Project Name : Mann Field
Sample Description
Sample Name : Mechanical Workshop
Sample No. : W-2301118
Waste Profile No. : -

Sampling Date : 26 January, 2023
Sampling By : Customer
Sample Received Date : 26 January, 2023
Analytical Date : 26/01-14/02/2023

No.	Parameter	Method	Unit	Result	LOQ
1	Cyanide	HACH 8027 (Pyridine -Pyrazalone Method)	mg/l	<0.002	0.002
2	Total Cyanide	Distillation Process:APHA 4500-CN- C. Total Cyanice after Distillation, Determine Cyanide Concentration Process: HACH 8027 (Pyridine -Pyrazalone Method)	mg/l	<0.002	0.002
3	Chromium	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	mg/l	≤0.002	0.002
4	Selenium	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	mg/l	≤0.010	0.010
5	Vanadium	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	mg/l	≤0.002	0.002
6	Silver	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	mg/l	≤0.002	0.002

Remark : LOQ - Limit of Quantitation
APHA - American Public Health Association (APHA), the American Water Works Association (AWWA), and the Water Environment Federation (WEF), Standard Methods for the Examination of Water and Wastewater, 22nd edition

Analysed By :

Ni Ni Aye Lwin
Manager

LAB
Feb 14, 2023
GEM

Approved By :

Hideki Yomo Feb 14, 2023
Managing Director

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ရေအရည်အသွေးတိုင်းတာမှုရလဒ်

Water Analysis Result Form

Customer Name: MPRL E&P Pte. Ltd
Sample Location: Base Camp of RO outlet
Receiving Date: 15-11-2022
Sample Name: Drinking Water
Sampling Date: 15-11-2022
Sampling Time: 8:54 AM
Reporting Date: 8-12-2022

No.	Analytical date	Parameter	Unit	Result	World Health Organization (WHO)	Remark
1	21-11-2022	Chemical Oxygen Demand (COD)	mg/l	6	10	
2	21-11-2022	pH	-	7.18	6.5-8.5	
3	21-11-2022	Turbidity	NTU	0	5	
4	21-11-2022	Total Dissolved Solids (TDS)	g/l	0.032	1	
5	21-11-2022	Arsenic	mg	0.003	0.01	
6	29-11-2022	Lead (Pb)	mg/l	0.079	0.01	
7	29-11-2022	Manganese (Mn)	mg/l	-0.002	0.05	
8	29-11-2022	Iron (Fe)	mg/l	0.014	0.1	

Analysis By, Khin Tint Tint Aung

Approved By, Ohnmar Myint

ပတ်ဝန်းကျင်ရေးရာဓာတ်ခွဲခန်း
Ecological Laboratory
စိမ်းလန်းအမိမြေနှင့် ဖြိုးတိုးတက်ရေးအသင်း (Advancing Life and Regenerating Motherland, ALARM)
No.121, Corner of Shu Khin Thar Street & 7 Street, (3) Block, South Oakkalapa Township, Yangon.Tel: - 09-407496078

စာအမှတ်/Reference Number: EL (M)-R / 974

နေ့စွဲ/Date: 27th February, 2023

ဓာတ်ခွဲစစ်ဆေးမှုအစီရင်ခံစာ/Laboratory Analysis Report

နမူနာရာဇဝင် /Sample Profile

နမူနာအမည် /Sample Name	Base Camp of RO Outlet	နမူနာအမှတ် / Sample ID	974	
နေရာ (မြို့နယ်) Location (Township)	Minbu Towinship	လတ္တီကျွဒ် Latitude		
နေရာ (တိုင်း/ပြည်နယ်) Location (Region/State)	Magwe	လောင်ဂျီကျွဒ် Longitude		
ပေးပို့သူအမည် /Sender Name	Ko Han Myo Aung	နမူနာကောက်ယူချိန် (နေ့၊ နာရီ) Sampling Time (Date, Time)	16.2.2023	3:45 PM
အဖွဲ့အစည်း /Organisation	MPRL E & P Pte Ltd.			
ဆက်သွယ်ရန် /Contact	09-5177819	နမူနာရောက်ရှိချိန် (နေ့၊ နာရီ) Arriving Time (Date, Time)	17.2.2023	10:15 AM

(This laboratory analysis report is based solely on the sample submitted by the customer)

(ဤဓာတ်ခွဲစစ်ဆေးမှုအစီရင်ခံစာသည် ပေးပို့သူမှပို့ဆောင်ခဲ့သည့်နမူနာကိုသာအခြေခံထားပါသည်။)

Analysis Results/စမ်းသပ်ချက်အဖြေ

စဉ် Sr.	အရည်အသွေးညွှန်းကိန်း Quality Parameter	ရလဒ် အဖြေ **Results**	နည်းစနစ် Method	စံသတ်မှတ်ချက် Drinking Standard	မှတ်ချက် Remarks
1	Total plate count (CFU/ml)		Total plate count method	0	
2	Total coliform count (MPN/100 ml) (Presumption test)	0	Most Probable Number method	0	
3	Total faecal coliform count (MPN/100ml) (Presumption test)	0	Most Probable Number method	0	
4	Total coliform count (CFU/ml) (Confirm test)		Eosin Methyl blue agar plate test	0	
5	Complete test for coliform bacteria		Gram staining test	-	
6	Total coliform count (CFU/ml)		3M Pate count method	0	
7	Total *E.coli* count (CFU/ml)		3M Pate count method	0	

Note: The target sample needs to test some additional tests to confirm total coliform and total faecal coliform.

စမ်းသပ်ပြီး Tested by	စစ်ဆေးပြီး Checked by	တာဝန်ခံ Approved by
May Zaw Research Assistant ALARM	May Myat Nyein Research Assistant ALARM	Ni Tar Nwe Research Scientist ALARM

ALARM Ecological Laboratory

Water Testing Result Report

Report Number: EL-WR-23-01139 Date : February 8, 2023

Client Information

Client Name	:	Ko Han Myo Aung
Organization	:	MPRL E&P Pte Ltd
Client ID	:	-
Registration Date & Time	:	26.1.2023 ; 10:10 AM
Contact	:	09-5177819
E - Mail	:	han.m.aung@mprlexp.com
Testing Purpose	:	For Monitoring

Sample Information

Sample ID	:	9152
Sample Name	:	RO Outlet Drinking Water
Sample Type / Source	:	Treated
Sampling Date & Time	:	25.1.2023 ; 9:11 AM
Sample Location	:	Minbu Township
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	Colour[2]	1	HU	≤15 [5]	Normal
2	Chloride[3]	24.2	mg/L	≤250 [5]	Normal
3	Hardness[3]	8	mg/L	≤500 [5]	Normal
4	Lead[7]	ND	mg/L	≤0.01 [6]	LOD = 0.1 mg/L
5	Sulfate[4]	7.7	mg/L	≤ 250 [5]	Normal

"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

DOWA

GOLDEN DOWA ECO-SYSTEM MYANMAR CO., LTD.
Lot No E1, Thilawa SEZ Zone A, Yangon Region, Myanmar.
Phone No Fax No: (+95) 1 2309051

Report No. : GEM-LAB-202302012
Revision No. : 1
Report Date : 14 February, 2023
Application No. : 0064-C001

Analysis Report

Client Name : MPRL E & P Pte Ltd.
Address : 623, Pyay Road , Vantage Tower, Kamayut.
Project Name : Mann Field
Sample Description
Sample Name : RO Outlet Drinking Water
Sample No. : W-2301122
Waste Profile No. : -

Sampling Date : 26 January, 2023
Sampling By : Customer
Sample Received Date : 26 January, 2023
Analytical Date : 26/01-14/02/2023

No.	Parameter	Method	Unit	Result	LOQ
1	Nitrate	HACH Method 10072 (TNT Persulfate Digestion Method) (APHA 4500N C)	mg/l	<0.5	0.5
2	Odor	APHA 2150 B (Threshold Odor Test)	mg/l	1	-

Remark : LOQ - Limit of Quantitation
APHA - American Public Health Association (APHA), the American Water Works Association (AWWA), and the Water Environment Federation (WEF), Standard Methods for the Examination of Water and Wastewater, 22nd edition

Analysed By :

Ni Ni Aye Lwin
Manager

LAB
Feb 14,2023
GEM

Approved By :

Hideki Yomo Feb 14,2023
Managing Director

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ရေအရည်အသွေးတိုင်းတာမှုရလဒ်

Water Analysis Result Form

Customer Name: MPRL E&P Pte. Ltd
Sample Location: Ko Win Mg (#132)
Receiving Date: 15-11-2022

Sample Name: Ground Water
Sampling Date: 15-11-2022
Sampling Time: 7:59 AM
Reporting Date: 8-12-2022

No.	Analytical date	Parameter	Unit	Result	World Health Organization (WHO)	Remark
1	21-11-2022	Chemical Oxygen Demand (COD)	mg/l	23	18-49	
2	21-11-2022	pH	-	7.99	6.5-8.5	
3	21-11-2022	Turbidity	NTU	3.9	5	
4	21-11-2022	Total Dissolved Solids (TDS)	g/l	1.00	1	
5	21-11-2022	Arsenic	mg	0.006	0.01	
6	4-12-2022	Lead (Pb)	mg/l	0.004	0.01	
7	4-12-2022	Manganese (Mn)	mg/l	0.020	0.05	
8	4-12-2022	Iron (Fe)	mg/l	0.141	0.1	

Analysis By, Khin Tint Tint Aung

Approved By, Ohnmar Myint

ပတ်ဝန်းကျင်ရေးရာဓာတ်ခွဲခန်း
Ecological Laboratory

စိမ်းလန်းအမိမြေဖွံ့ဖြိုးတိုးတက်ရေးအသင်း (Advancing Life and Regenerating Motherland, ALARM)

No.121, Corner of Shu Khin Thar Street & 7 Street, (3) Block, South Oakkalapa Township, Yangon Tel - 09-407496078

စာအမှတ်/Reference Number: EL (M)-R / 936

နေ့စွဲ/Date: 7th February, 2023

ဓာတ်ခွဲစစ်ဆေးမှုအစီရင်ခံစာ/Laboratory Analysis Report

နမူနာရာဇဝင် /Sample Profile

နမူနာအမည် /Sample Name	Ko Win Mg	နမူနာအမှတ် / Sample ID	935	
နေရာ (မြို့နယ်) Location (Township)	Minbu Township	လတ္တီတွဒ် Latitude		
နေရာ (တိုင်း/ပြည်နယ်) Location (Region/State)	Magwe	လောင်ဂျီတွဒ် Longitude		
ပေးပို့သူအမည် /Sender Name	Ko Han Myo Aung	နမူနာကောက်ယူချိန် (နေ့ နာရီ) Sampling Time (Date, Time)	25.1.2023	8:26 AM
အဖွဲ့အစည်း /Organisation	MPRL E & P Pte, Ltd.			
ဆက်သွယ်ရန် /Contact	095177819	နမူနာရောက်ရှိချိန် (နေ့ နာရီ) Arriving Time (Date, Time)	26.1.2023	10:10 AM

(This laboratory analysis report is based solely on the sample submitted by the customer)

(ဤဓာတ်ခွဲစစ်ဆေးမှုအစီရင်ခံစာသည် ပေးပို့သူမှပို့ဆောင်ခဲ့သည့်နမူနာကိုသာအခြေခံထားပါသည်။)

Analysis Results/စမ်းသပ်ချက်အဖြေ

စဉ် Sr.	အရည်အသွေးညွှန်းကိန်း Quality Parameter	ရလဒ် အဖြေ Results	နည်းစဉ် Method	စံသတ်မှတ်ချက် Drinking Standard	မှတ်ချက် Remarks
1	Total plate count (CFU/ml)		Total plate count method	0	
2	Total coliform count (MPN/100 ml) (Presumption test)	0	Most Probable Number method	0	
3	Total faecal coliform count (MPN/100ml) (Presumption test)	0	Most Probable Number method	0	
4	Total coliform count (CFU/ml) (Confirm test)		Eosin Methyl blue agar plate test	0	
5	Complete test for coliform bacteria		Gram staining test	-	
6	Total coliform count (CFU/ml)		3M Pate count method	0	
7	Total *E.coli* count (CFU/ml)		3M Pate count method	0	

Note: The target sample needs to test some additional tests to confirm total coliform and total faecal coliform.

စမ်းသပ်ပြီး	စစ်ဆေးပြီး	တာဝန်ခံ
Tested by	Checked by	Approved by
May Myat Nyein	May Zaw	Ni Tar Nwe
Research Assistant	Research Assistant	Research Scientist
ALARM	ALARM	ALARM

ALARM Ecological Laboratory

Water Testing Result Report

Report Number: EL-WR-23-01137 Date : February 8, 2023

Client Information

Client Name : Ko Han Myo Aung
Organization : MPRL E&P Pte Ltd
Client ID : -
Registration Date & Time : 26.1.2023 ; 10:10 AM
Contact : 09-5177819
E - Mail : han.m.aung@mprlexp.com
Testing Purpose : For Monitoring

Sample Information

Sample ID : 9150
Sample Name : Ko Win Mg
Sample Type / Source : Ground
Sampling Date & Time : 25.1.2023 ; 8:26 AM
Sample Location : Minbu Township
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	Colour[2]	4	HU	≤15 [c]	Normal
2	Chloride[3]	9.2	mg/L	≤250 [c]	Normal
3	Hardness[2]	18	mg/L	≤500 [c]	Normal
4	Iron[1]	0.1	mg/L	≤1[c]	Normal
5	Sulfate[3]	706	mg/L	≤ 250 [c]	Above the limit

"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 [illegible] 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

DOWA

GOLDEN DOWA ECO-SYSTEM MYANMAR CO., LTD.
Lot No E1, Thilawa SEZ Zone A, Yangon Region, Myanmar.
Phone No Fax No: (+95) 1 2309051

motivate our planet

Report No. : GEM-LAB-202302010
Revision No. : 1
Report Date : 14 February, 2023
Application No. : 0064-C001

Analysis Report

Client Name : MPRL E & P Pte Ltd.
Address : 623, Pyay Road , Vantage Tower, Kamayut.
Project Name : Mann Field
Sample Description
Sample Name : Ko Win Maung
Sample No. : W-2301120
Waste Profile No. : -

Sampling Date : 26 January, 2023
Sampling By : Customer
Sample Received Date : 26 January, 2023
Analytical Date : 26/01-14/02/2023

No.	Parameter	Method	Unit	Result	LOQ
1	Nitrate	HACH Method 10072 (TNT Persulfate Digestion Method) (APHA 4500N C)	mg/l	42.2	0.5
2	Odor	APHA 2150 B (Threshold Odor Test)	mg/l	1	_

Remark : LOQ - Limit of Quantitation
APHA - American Public Health Association (APHA), the American Water Works Association (AWWA), and the Water Environment Federation (WEF), Standard Methods for the Examination of Water and Wastewater, 22nd edition

Analysed By :

Ni Ni Aye Lwin
Manager

LAB
Feb 14, 2023
GEM

Approved By :

Hideki Yomo Feb 14, 2023
Managing Director

မဏ္ဍိုးတိုင်းဒေသကြီး
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ရေအရည်အသွေးတိုင်းတာမှုရလဒ်

Water Analysis Result Form

Customer Name: MPRL E&P Pte. Ltd
Sample Location: Ma Nyein (#132)
Receiving Date: 15-11-2022

Sample Name: Ground Water
Sampling Date: 15-11-2022
Sampling Time: 7:55 AM
Reporting Date: 8-12-2022

No	Analytical date	Parameter	Unit	Result	World Health Organization (WHO)	Remark
1	21-11-2022	Chemical Oxygen Demand (COD)	mg/l	38	18-49	
2	21-11-2022	pH	-	7.93	6.5-8.5	
3	21-11-2022	Turbidity	NTU	0.41	5	
4	21-11-2022	Total Dissolved Solids (TDS)	g/l	1.14	1	
5	21-11-2022	Arsenic	mg	0.007	0.01	
6	4-12-2022	Lead (Pb)	mg/l	0.038	0.01	
7	4-12-2022	Manganese (Mn)	mg/l	0.042	0.05	
8	4-12-2022	Iron (Fe)	mg/l	0.622	0.1	

Analysis By, Khin Tint Tint Aung

Approved By, Ohnmar Myint

ပတ်ဝန်းကျင်ရေးရာဓာတ်ခွဲခန်း
Ecological Laboratory

စိမ်းလန်းအမိမြေပြန့် ဖြိုးတိုးတက်ရေးအသင်း (Advancing Life and Regenerating Motherland, ALARM)

No.121, Corner of Shu Khin Thar Street & 7 Street, (3) Block, South Oakkalapa Township, Yangon Tel: 09-407496078

စာအမှတ်/Reference Number: EL (M)-R / 937

နေ့စွဲ/Date: 7th February, 2023

ဓာတ်ခွဲစစ်ဆေးမှုအစီအရင်ခံစာ/Laboratory Analysis Report

နမူနာရာဇဝင် /Sample Profile

နမူနာအမည် /Sample Name	Ma Nyein	နမူနာအမှတ် / Sample ID	937	
နေရာ (မြို့နယ်) Location (Township)	Minbu Township	လတ္တီတွဒ် Latitude		
နေရာ (တိုင်း/ပြည်နယ်) Location (Region/State)	Magwe	လောင်ဂျီတွဒ် Longitude		
ပေးပို့သူအမည် /Sender Name	Ko Han Myo Aung	နမူနာကောက်ယူချိန် (နေ့၊ နာရီ) Sampling Time (Date, Time)	25.1.2023	8:18 AM
အဖွဲ့အစည်း /Organisation	MPRL E & P Pte, Ltd.			
ဆက်သွယ်ရန် /Contact	095177819	နမူနာရောက်ရှိချိန် (နေ့၊ နာရီ) Arriving Time (Date, Time)	26.1.2023	10:10 AM

(This laboratory analysis report is based solely on the sample submitted by the customer)

(ဤဓာတ်ခွဲစစ်ဆေးမှုအစီရင်ခံစာသည် ပေးပို့သူမှပို့ဆောင်ထားသည့်နမူနာကိုသာအခြေခံထားပါသည်။)

Analysis Results/စမ်းသပ်ချက်အဖြေ

စဉ် Sr.	အရည်အသွေးညွှန်းကိန်း Quality Parameter	ရလဒ် အဖြေ Results	နည်းစနစ် Method	စံသတ်မှတ်ချက် Drinking Standard	မှတ်ချက် Remarks
1	Total plate count (CFU/ml)		Total plate count method	0	
2	Total coliform count (MPN/100 ml) (Presumption test)	9	Most Probable Number method	0	
3	Total faecal coliform count (MPN/100ml) (Presumption test)	0	Most Probable Number method	0	
4	Total coliform count (CFU/ml) (Confirm test)		Eosin Methyl blue agar plate test	0	
5	Complete test for coliform bacteria		Gram staining test	-	
6	Total coliform count (CFU/ml)		3M Pate count method	0	
7	Total *E.coli* count (CFU/ml)		3M Pate count method	0	

Note: The target sample needs to test some additional tests to confirm total coliform and total faecal coliform.

စမ်းသပ်ပြီး
Tested by

May Myat Nyein
Research Assistant
ALARM

စစ်ဆေးပြီး
Checked by

May Zaw
Research Assistant
ALARM

တာဝန်ခံ
Approved by

Ni Tar Nwe
Research Scientist
ALARM

ALARM Ecological Laboratory

Water Testing Result Report

Report Number: EL-WR-23-01138 Date : February 8, 2023

Client Information

Client Name	:	Ko Han Myo Aung
Organization	:	MPRL E&P Pte Ltd
Client ID	:	-
Registration Date & Time	:	26.1.2023 ; 10:10 AM
Contact	:	09-5177819
E - Mail	:	han.m.aung@mprlexp.com
Testing Purpose	:	For Monitoring

Sample Information

Sample ID	:	9151
Sample Name	:	Ma Nyein
Sample Type / Source	:	Ground
Sampling Date & Time	:	25.1.2023 ; 8:18 AM
Sample Location	:	Minbu Township
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	Colour[3]	2	HU	≤15 [c]	Normal
2	TDS[4]	1423	mg/L	≤1000 [c]	Above the limit
3	Chloride[5]	61	mg/L	≤250 [c]	Normal
4	Hardness[3]	39	mg/L	≤500 [c]	Normal
5	Iron[7]	0.1	mg/L	≤1[c]	Normal
6	Lead[7]	ND	mg/L	≤0.01 [c]	LOD = 0.1 mg/L
7	Sulfate[3]	516	mg/L	≤ 250 [c]	Above the limit

"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 Ye Khin Laboratory In-Charge EcoLab ALARM

No.121,Corner of Shu Khin That Street & 7 Street, (3) Block, South Oakkalapa Township,Yangon.
Tel: 09-407496078, Email: aelab.2022@gmail.com

GOLDEN DOWA ECO-SYSTEM MYANMAR CO., LTD.
Lot No E1, Thilawa SEZ Zone A, Yangon Region, Myanmar.
Phone No Fax No: (+95) 1 2309051

Report No. : GEM-LAB-202302011
Revision No. : 1
Report Date : 14 February, 2023
Application No. : 0064-C001

Analysis Report

Client Name : MPRL E & P Pte Ltd.
Address : 623, Pyay Road , Vantage Tower, Kamayut.
Project Name : Mann Field
Sample Description
Sample Name : Ma Nyein
Sample No. : W-2301121
Waste Profile No. : -

Sampling Date : 26 January, 2023
Sampling By : Customer
Sample Received Date : 26 January, 2023
Analytical Date : 26/01-14/02/2023

No.	Parameter	Method	Unit	Result	LOQ
1	Nitrate	HACH Method 10072 (TNT Persulfate Digestion Method) (APHA 4500N C)	mg/l	12.5	0.5
2	Odor	APHA 2150 B (Threshold Odor Test)	mg/l	1	-

Remark : LOQ - Limit of Quantitation
APHA - American Public Health Association (APHA), the American Water Works Association (AWWA), and the Water Environment Federation (WEF), Standard Methods for the Examination of Water and Wastewater, 22nd edition

Analysed By :

NI NI Aye Lwin
Manager

LAB
Feb 14,2023
GEM

Approved By :

Hideki YomoFeb 14,2023
Managing Director

Annex – 2

Equipment Calibration Certificate

Calibration Certificate

Instrument SN: 170917Z-001
Calibration Date: 3/13/2023
Part Number: VTS-K1232110111
Job Number: 170913
Setup Date: 9/19/2017
Setup Technician: MB
Created By: iNet
Battery: Dual-cell lithium-ion battery pack
Assigned User: MPRL E&P PTE LTD.

Pangolin Protective Equipment Company Limited. No: ..... Date: 13 March 2023

Sensor SN	Sensor Type	Gas Type	Span Gas	Span Reserve	Passed/Failed	Gas Alert	Alarm Low	Alarm High	Alarm TWA	Alarm STEL
17090Q1049	CO	Carbon Monoxide	200.00	197.00%	Passed	0.00	35.00	70.00	35.00	200.00
20030CT087	H2S	Hydrogen Sulfide	25.00	125.50%	Passed	0.00	10.00	20.00	10.00	15.00
20030JL068	LEL	Pentane	25.00	164.00%	Passed	0.00	10.00	20.00	N/A	N/A
21120NF306	O2	Oxygen	20.90	153.59%	Passed	0.00	19.50	23.50	N/A	N/A

Sensor SN	Sensor Type	Cal Date/Time	Cylinder ID	Cylinder Exp	Zero Cylinder Id	Zero Cylinder Exp
17090Q1049	CO	3/13/2023 1:30:01 PM (GMT+06:30)	2752108C509893	12/29/2024	Fresh Air	N/A
20030CT087	H2S	3/13/2023 1:29:31 PM (GMT+06:30)	2752108C509893	12/29/2024	Fresh Air	N/A
20030JL068	LEL	3/13/2023 1:30:31 PM (GMT+06:30)	2752108C509893	12/29/2024	Fresh Air	N/A
21120NF306	O2	3/13/2023 1:28:39 PM (GMT+06:30)	Fresh Air	N/A	Fresh Air	N/A

: Remark: All Sensors are Good.Next Calibration Due Date is September 2023.Calibrated By : Pangolin Protective Equipment Co.,Ltd.

MPRL

Build through Excellence
Lead with Integrity

E&P

MPRL E&P Pte Ltd.

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