DPG

Dawei Power Generating Company Limited

DAWEI POWER GENERATING COMPANY LIMITED

FINAL REPORT

VOLUME II

Environmental Management Plan (EMP)

on

15 MW Temporary Power Plant Project in Dawei District, The Republic of the Union of Myanmar

Prepared by

TEAM Consulting Engineering and Management Public Company Limited

TOTAL Business Solution Co., Ltd.

April 2018

FINAL REPORT

ENVIRONMENTAL MANAGEMENT PLAN FOR 15 MW TEMPORARY POWER PLANT

TABLE OF CONTENT

PAGE

PAGE

PAGE

CHAPTER 6 CONSTRUCTION PHASE EMP (CONT'D)

CHAPTER 7 OPERATIONAL AND DECOMMISSIONING PHASE EMP

PAGE

CHAPTER 7 OPERATIONAL AND DECOMMISSIONING PHASE EMP (CONT'D)

CHAPTER 8 IMPLEMENTATION BUDGET AND SCHEDULE

APPENDICES

LIST OF FIGURES

FIGURE **PAGE**

LIST OF TABLES

TABLE **PAGE**

ABBREVIATION

LIST OF ABBREVIATION

AEMR	Annual Environmental Management Report
CAR	Corrective Action Request
CCEMP	Contractor-CEMP
CEMS	Continuous Emission Monitoring System
CPMO	Contractor Project Management Office
DOEP	Department of Electric Power
ECC	Environmental Compliance Certificate
ECD	Environmental Conservation Department
EHS	Environmental, Health and Safety
EIF	Environmental Incident Form
EIR	Environmental Incident Register
EMP	Environmental Management Plan
EMS	Social Management System
EPC	Engineering Procurement Construction
ERR	Environmental Risk Management
ES	Environmental and Social
IFC	International Finance Corporation
LTIFR	Lost Time Injury Frequency Rate
MOECAF	Ministry of Environmental Conservation and Forestry
MONREC	Ministry of Natural Resources and Environmental Conservation
MOEP	Ministry of Electric Power
MTIFR	Medical Treatment Injury Frequency Rate
NOx	Nitrogen Oxide
OCEMP	Owner-CEMP
OSH	Occupational, Safety and Health
O&M	Operation and Maintenance
PDCA	Plan-Do-Check-Act
PMO	Project Management Office
TRIFR	Total Recordable Injury Frequency Rate

CHAPTER 1
INTRODUCTION AND CONTEXT OF THE EMP

CHAPTER 1

INTRODUCTION AND CONTEXT OF THE EMP

1.1 NEED FOR ENVIRONMENTAL MANAGEMENT PLANS

Results of an EIA study for a proposed development project (15 MW temporary power plant) will not lead to any practical outcomes if the proposed mitigation measures and monitoring program are not implemented in the construction and operational phases of the proposed project. Therefore, an EIA study will need to extend beyond impact assessment to planning for implementation of the proposed mitigation measures and monitoring program. In this regard, the results of the EIA study will need to cover preparation of two environmental management plans (EMPs): (i) one EMP for implementation by the contractor in the construction phase; and (ii) one EMP for implementation by the project proponent in the operational phase. Recognizing this fact, the EIA Procedure requires the EIA study to include preparation of a construction phase EMP (CEMP) and an operational phase EMP (OEMP).

The two EMPs are defined in the EIA Procedure as follows:

Construction Phase EMP *means a detailed and comprehensive Environmental Management Plan (EMP) for the pre-construction and construction phase of a Project. Such plan shall present all relevant commitments, Emission Limit Values, Environmental Quality Standards and other environmental requirements and include a description of the construction works, present an overview of Adverse Impacts, present mitigation measures and monitoring programs together with time schedules, overview maps, images, aerial photos, satellite images, site layout plans, cross-sections, transects, environmental management and monitoring sub-plans for each construction site, thematic sub-plans, and management procedures as appropriate.*

Operational Phase EMP *means a detailed and comprehensive EMP for the operational phase of a Project. Such plan shall present all relevant commitments, Emission Limit Values, Environmental Quality Standards and other environmental requirements. The plan shall include a description of the Project operations, installations, and infrastructure, and shall present an overview of Adverse Impacts, present mitigation measures together with time schedules, overview maps, images, aerial photos, satellite images, site layout plans, cross-sections, transects, environmental management and monitoring sub-plans for each Project site, thematic sub-plans, and management procedures as appropriate.*

The above definitions clearly indicate that the two EMPs required by Ministry of Natural Resources and Environmental Conservation (MONREC) will be comprehensive and have more details than conventional EMPs presented in EIA reports of the past. This requirement of MONREC is in line with current good EIA practices.

It should be noted that the CEMP also covers pre-construction phase, and decommissioning phase environmental management plan (DEMP) has been prepared in addition.

1.2 GENERIC SCOPE OF AN EMP

Environmental management is based on the basic principle of management known as the Deming cycle (PDCA cycle): Plan (P), Do (D), Check (C) and Act (A) (see ***Figure 1.2-1***). Environmental management thus consists of four (4) related tasks:

(i) plan (P)-what need to be done;

(ii) do (D)-implement the plan;

(iii) check (C)-monitor and evaluate the results of implementation

(iv) act (A)-taking corrective actions to improve the results, if found inadequate

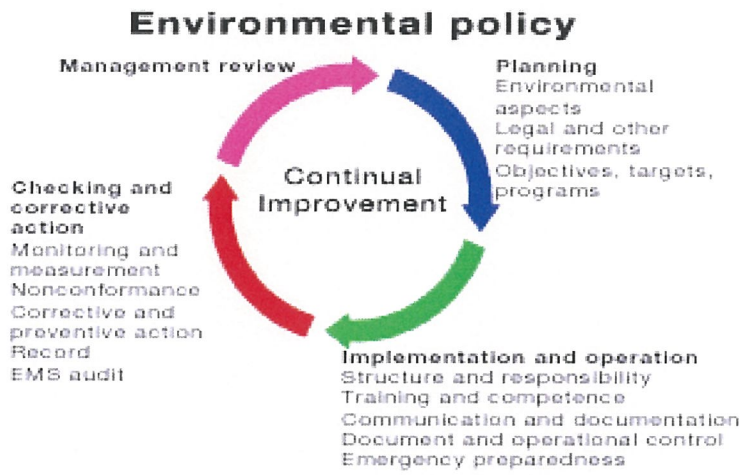


FIGURE 1.2-1 : PDCA CYCLE FOR ENVIRONMENTAL MANAGEMENT

Therefore, an EMP will need to cover the following subjects: (i) mitigation measures to be implemented; (ii) arrangements for the implementation of mitigation measures; (iii) monitoring, evaluating and reporting of the implementation of mitigation measures to provide feedback information on whether the environmental performance deviates from the prescribed benchmarks; (iv) corrective actions process if the environmental performance below the benchmarks, environmental incident response, and emergency plan; (v) arrangements for operating the EMS, including organizational structure, responsibilities, documentation, training, communication, and management review; and (vi) involvement of stakeholders or affected people in environmental management, including public grievance redress mechanism.

It should be noted that the context of the six (6) elements of environmental management during project construction will be different from those during project operation. Therefore, it is preferable to present a CEMP separate from an OEMP to facilitate their use and reference.

1.3 ORGANIZATION OF THIS EMP DOCUMENT

This EMP document is structured to follow the two outlines as appropriate within the environmental management context of this Project. The essence of each chapter following this introductory chapter is as follows:

Chapter 2 – Project Proponent's Environmental and Social Policies and Commitments

Chapter 3 – Institutional Arrangements

Chapter 4 – Legal Requirements

Chapter 5 – Summary of Impacts and Mitigation Measures

Chapter 6 – Construction Phase EMP

Chapter 7 – Operational and Decommissioning Phase EMP

Chapter 8 – Implementation Budget and Schedule

1.4 NEED FOR UPDATING THE EMPs

The CEMP, OEMP and DEMP presented in this Document are based on preliminary project designs and initial construction plans and schedules. Therefore, the two EMPs should be considered as framework plans. They are intended to provide framework and prescribe requirements for the preparation of detailed CEMP, OEMP and DEMP by the Engineering Procurement Construction (EPC Contractor). In this regard, the Project Proponent will require the EPC Contractor to prepare a detailed CEMP in due course before commencing the construction, and a detailed OEMP in due course before commercial operation of the hydropower plant.

The Contractor will use the CEMP presented in this Document as the basis to prepare a detailed CEMP based on the Contractor's final designs, construction plan and methods, and construction schedule. The scope and content of the Contractor's CEMP will not be less than the scope and content of the CEMP in this Document. The Contractor's CEMP shall be contractually binding. During the construction, the Contractor will implement the Contractor CEMP under the supervision of the Project Manager to be appointed by the Project Proponent (Owner).

As the Contractor will be responsible for the design, supply, installation, testing, and commissioning of the power plant and its associated facilities, the Contractor will use the OEMP presented in this Document as the basis for preparing a detailed OEMP based on the actual construction, results of plant commissioning, and final operational procedures. The Power Plant Management Team of the Project Proponent or Owner will review and revise the Contractor's OEMP as appropriate to prepare the Owner's OEMP and DEMP for implementation in the operational and decommissioning phases.

For clarity, the application of the EIA's EMPs as above described is shown as a diagram in ***Figure 1.4-1***.

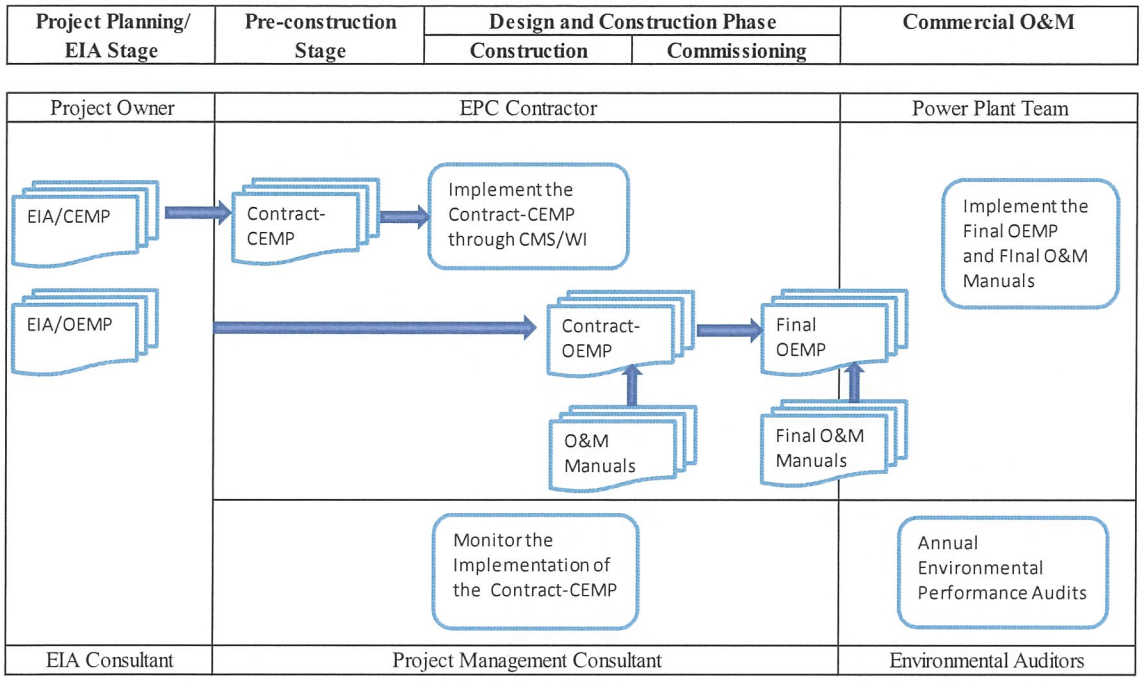


FIGURE 1.4-1 : APPLICATION OF THE EIA'S EMPS

CHAPTER 2
PROJECT PROPONENT'S ENVIRONMENTAL AND SOCIAL POLICIES AND COMMITMENTS

CHAPTER 2

PROJECT PROPONENT'S ENVIRONMENTAL AND SOCIAL POLICY AND COMMITTMENTS

2.1 CORPORATE ENVIRONMENTAL AND SOCIAL POLICIES

Dawei Power Generating Company Ltd. (DPG), the leader of the joint venture forming the Project Proponent, is committed to the sustainable development principle. In this regard, DPG will manage environmental aspects of the Project in accordance with the ISO 14001 environmental management system. Consequently, the Project Proponent will establish an environmental management system (EMS) for the project and will operate the EMS to meet the requirements of ISO 14001.

As the first step towards meeting the requirements of ISO 14001, DPG will formulate an environmental and social management policy to guide its environmental and social management during the construction phase and the operation phase of the Project. Such a policy will support the following activities:

- Develop a comprehensive Environmental, Health, and Safety (EHS) Management System for implementing the environmental management plan (EMP) to be prepared as part of the ESIA of the Project;
- Implement the EMP and as part of project and operational management with due diligence audit to be conducted at appropriate interval during the construction and operational phases of the Project;
- In implementing the EMP during the project construction, the nominated EPC contractors will be required to prepare and implement contract specific EHS measures for the construction of the 15 MW Temporary Power Plant Project;
- During the operational phase, EHS management will be an integral part of the operational management of the 15 MW Temporary Power Plant Project;
- Establish adequate environmental and social safeguards capabilities;
- Encourage public participation in the EHS management as related to the surrounding communities; and
- Maintain information generated in the EHS management and prepare EHS performance reports as required by the corporate management and the concerned authorities of the Government.

In line with this policy, the Project will commit to the following:

During Construction: The Project will endeavor to minimize environmental impacts and meet all EHS requirements during the construction. This will be achieved through adopting designs, construction methods, construction management practices, and impact mitigation measures. The Project's EHS performance will be measured and evaluated against applicable national or international standards and guidelines prescribed by MONREC or proposed in the CEMP. In addition, the Project will establish an environmental management system (EMS) for the Project construction.

During Operation and Decommissioning: The Project will endeavor to minimize environmental impacts and meet all EHS requirements of the gas-engine power plant's operation and maintenance (O&M). This will be achieved through adopting: (i) best available technologies in the hydropower plant design and operation; and (ii) effective impact mitigation measures proposed in the EIA, OEMP and and DEMP. The Project's EHS performance will be measured and evaluated against applicable national or international standards and guidelines prescribed by MONREC or proposed in the OEMP and DEMP. The Project will also establish an EMS specific to the power plant operation, which will follow principles and good practices in environmental management of power plants.

2.2 ENVIRONMENTAL AND SOCIAL MANAGEMENT SYSTEM

The Project Proponent will establish an environmental and social management system (ESMS) to support the implementation of the CEMP and the OEMP. The ESMS for the construction phase is described in the CEMP while that for the operational phase is described in the OEMP and DEMP.

In addition, the Project Proponent will require the EPC Contractor to establish its own ESMS to support its implementation of the detailed CEMP.

2.3 ENVIRONMENTAL AND SOCIAL PROCEDURES AND GUIDELINES

Health, Safety, Environmental Management General Guidelines, and Health, Safety and Environmental Risk Assessment for Site Activities will be established in accordance with the policy stated in ***Section 2.1***.

2.4 ENVIRONMENTAL AND SOCIAL COMMITMENTS

DPG's environmental and social commitments are clearly indicated in its policy statement in ***Section 2.1***. In this Project, DPG will make at most efforts to minimize environmental and social impacts that the Project may cause in its construction and operation, DPG recognizes the need for the Project to exist in harmony with all stakeholders, particularly the communities surrounding the Project site.

CHAPTER 3
INSTITUTIONAL ARRANGEMENTS

CHAPTER 3

INSTITUTIONAL ARRANGEMENTS

3.1 RESPONSIBILITIES OF THE PROJECT PROPONENT

The Project Proponent is legally responsible for environmental performance of the Project as prescribed in the Environmental Compliance Certificate (ECC) and other permits. The Project Proponent will report to Ministry of Natural Resources and Environmental Conservation (MONREC) on the Project's environmental and social performance, also to other authorities responsible for specific environmental and social issues relevant to the Project.

Specifically, the Project Proponent will have the following responsibilities:

Pre-Construction and Construction Phase

1) Ensure that the Contractor will update the CEMP presented in this document to prepare a detailed CEMP based on the results of detailed design, construction plan, and construction schedule.
2) Establish and operate an environmental and social management system (ESMS) containing elements outlined in this EMP.
3) Supervise the Contractor closely in implementing the Contractor CEMP as an integral part of its project implementation management and construction supervision.
4) Submit periodic monitoring and audit reports to MONREC as required in the EIA Procedure and concerned authorities.
5) Notwithstanding the periodic monitoring reports to be submitted to MONREC, keep MONREC and other concerned authorities informed of any serious environmental events and responses to the events.
6) Conducting periodic audit of environmental and social performances of the Contractor.

Operational Phase and Decommissioning Phase

1) Ensure that the Contractor will update the OEMP and DEMP presented in this document to prepare a detailed OEMP based on the results of detailed design, results of commissioning, and operational manuals.
2) Establish and operate an environmental and social management system (ESMS) containing elements outlined in this EMP. The ESMS will be part of the management system of the power plant.
3) Establish an environmental, health and safety (EHS) unit within the organization for operation and maintenance of the power plant. The EHS unit will be adequately staffed with qualified personnel.

4) Ensure that the Power Plant Manager will operate the ESH unit to comply with all ESH requirements prescribed in the ECC.

5) Submit periodic monitoring and audit reports to MONREC as required in the EIA Procedure and concern authorities.

6) Notwithstanding the periodic monitoring reports to be submitted to MONREC, keep MONREC and other concerned authorities informed of any serious environmental events and responses to the events.

7) Conducting annual audit of environmental and social performances of the 15 MW Temporary Power Plant.

3.2 RESPONSIBILITY OF THE CONTRACTOR

The Contractor, including its approved sub-contractors, is contractually responsible to the Project Proponent for environmental performance of the project construction as prescribed in the Contract.

Specifically, the Contractor will have the following responsibilities:

1) Prepare a detailed Contractor CEMP for review and approval by the Project Proponent. The Contractor CEMP should follow the outline prescribed by the Project Proponent as proposed in ***Appendix 6C***.

2) Implement the mitigation measures during the construction through construction method statements and work instructions in strict conformance with environmental conducts prescribed in the Contract.

3) Ensure that all process and environmental control equipment meet all technical specifications related to their environmental performance.

4) Conduct periodic monitoring and reporting of its compliance with the environmental and social performance prescribed in the Contract.

5) Ensure that its sub-contractors shall comply with the Contractor CEMP.

6) Consistently update the Contractor CEMP and submit the updated version to the Project Proponent for approval.

3.3 RESPONSIBILITY OF MONREC

MONREC is the key agency to monitor and evaluate environmental performance of the construction and operation.

Other concerned agencies will cooperate with MONREC in the monitoring and evaluation of project implementation and environmental performance of the Project during pre-construction, construction and operation.

3.4 RESPONSIBILITY OF STATE/REGION AND DISTRICT AUTHORITIES

Local government authorities are the regulator to monitor and evaluate environmental performance of the pre-construction, construction and operation.

3.5 RESPONSIBILITY OF THE EHS UNITS

In the construction phase, the Project Proponent will establish an EHS unit within its project management organization. In the operational phase, the Project Proponent will establish an EHS unit within the organization for Operation and Maintenance of the gas-engine power plant and its associated facilities. Functions and responsibilities of the two EMS units are described in the CEMP and OEMP.

Arrangements for Operating the EMS

There are three key groups with responsibility for environmental management of the Project:

- Project Proponent or Project Owner who manages the Project through a Project Manager;
- Contractor as the party undertaking the pre-construction and construction; and
- MONREC through Environmental Conservation Department (ECD) and other government agencies at the regional, township and community levels.

CHAPTER 4
LEGAL REQUIREMENTS

CHAPTER 4

LEGAL REQUIREMENTS

4.1 SUMMARY OF KEY LEGAL REQUIREMENTS

Environmental management of the Project will comply with legal requirements pertinent to the Environmental Management Plan (EMP) prescribed in the Electricity Law (2014), the Environmental Conservation Rule (2014), the EIA Procedure (2015) and National Environmental Quality (Emission) Guidelines (2015).

A. Electricity Law 2014

The Electricity Law 2014 aims at the development of the power sector in harmony with environmental conservation and development (Article 3 (a) and (b)). To realize this, the Electricity Law 2014 authorizes the relevant ministry to conduct EIA, implement the activities with minimal environment impact, compensate for the negative impacts and provide funds for environmental conservation in accordance with the Environmental Conservation Law (Article 10 (b)). It requires the permit holders of the electricity businesses to abide by the current rules, regulations, orders and directives of the relevant ministry in implementing the electricity works (Article 20). Therefore, the draft Electricity Law supports the Environmental Conservation Law, its rule and the related EIA Procedure.

B. Environmental Conservation Rules 2014

Chapter IX of Environmental Conservation Rules 2013, Articles 41 to 46 prescribes the tasks regarding waste management under the control of Ministry of Environmental Conservation and Forestry (MOECAF) and the Environmental Conservation Department (ECD). Waste management covers hazardous wastes, solid wastes, wastewater and emissions.

C. Environmental Impact Assessment Procedure 2015 (29/12/2015)

Articles in the EIA Procedure relevant to the preparation and implementation of the EMPs are summarized in ***Table 4.1-1***. Preparation and implementation of the two EMPs will need to comply with relevant articles in the table.

D. Environmental Impact Assessment Guidelines

MOECAF drafted the Environmental Impact Assessment Guidelines on 31 July 2014. The objectives of the EIA Guidelines are to provide a common framework for EIA reporting, to present project proponents and their environmental consultants with clear guidance on structure, content and scope of EIA reports and to ensure that EIA reporting is consistent with legal requirements, good practices and professional standards. It is noted that the EIA Guidelines will be revised after a trial period of 2 years in order to take account of new developments in EIA sector, possible modifications of environmental legislation, and comments from the EIA practitioners and Governmental Authorities.

In line with its objectives, the EIA Guidelines elaborates subjects in the EIA Procedure, including (i) characteristics of an EIA; (ii) legal requirements for EIA; (iii) the relation between the EIA process and the project planning cycle; (iv) outline of scoping report and information requirements; (v) terms of reference for EIA in the scoping report; (vi) outline of the EIA report and environmental management plan, and information and presentation requirements; (vii) public consultation requirements in the scoping and EIA stages; and (viii) reporting requirements.

TABLE 4.1-1

CONTENT OF THE EIA PROCEDURE RELEVANT TO THE EMPS

Subject	Relevant Articles
Content of the EMPs	63
Project Approval Requirements	
- Issuance of an ECC	70
- Conditions of the ECC	87,89,90,91,92,93,94,96,97,98
- Submission of an CEMP and OEMP	91, 94
Revision and updating the EMPs	94,97,98,99
Implementing the EMPs	103,104
Monitoring and Reporting	
- Responsibility for Monitoring	106,107
- Content of Monitoring Report	109
- Submission of Monitoring Report	108
- Disclosure of Monitoring Report	110
- Inspection by MOECAF	111-122

E. Myanmar National Environmental Quality (Emission) Guidelines (2015)

MONREC issued the National Environmental Quality (Emission) Guidelines on 29th December 2015. The objectives are to provide the basis for regulation and control of noise and vibration, air emissions, and liquid discharges from various sources in order to prevent pollution for purposes of protection of human and ecosystem health.

4.2 PROJECT STANDARDS

Environmental management of the Project during construction and operation will comply with the national or international environmental guidelines and standards as appropriate. The international guidelines and standards will be adopted only when the national guidelines and standards do not exist. In addition, the Project will control stack emissions following the standards which are specifically agreed in the drafted concession agreement of the Project.

Table 4.2-1 presents international ambient environmental quality standards to be adopted as the national ambient environmental quality standards have not yet been issued. ***Table 4.2-2*** presents national quality standards for emission. ***Table 4.2-3*** presents national quality standards for effluents to be discharged from construction site during construction phase.

TABLE 4.2-1

RELEVANT INTERNATIONAL ENVIRONMENTAL GUIDELINES AND STANDARDS

Subjects	Parameters	Values	References
Ambient Air Quality			
24-hour average	TSP NO_2 PM_{10} SO_2	230 µg/m^3 [a/] 150 µg/m^3 [a/] 150 µg/m^3 [a/,b/] 50 µg/m^3 [c/] 150 µg/m^3 [a/] 125 µg/m^3 [b/] 20 µg/m^3 [c/]	[a/] Thermal Power: Guidelines for New Plant, Pollution Prevention and Abatement Handbook WORLD BANK GROUP, 1998 [b/] Environmental, Health, and Safety Guidelines: Environment Air Emissions and Ambient Air Quality of International Finance Corporation, 2007 [c/] National Environmental Quality (Emission) Guidelines, Myanmar, 2015
1-hour average	NO_2	200 µg/m^3 [b/]	
Ambient Noise Levels			
- Industrial and commercial area - Residential areas	Leq (24 hrs) Leq (1 hr) Leq (1 hr)	70 dB(A) [a/,b/] 70 dB(A) daytime [d/] 70 dB(A) nighttime [d/] 55 dB(A) daytime [c/,d/] 45 dB(A) nighttime [c/,d/]	[a/] Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety, U.S. EPA (U.S. Environmental Protection Agency). 1974. [b/] Notification of Guidelines for Community Noise, World Health Organization (WHO), 1999. [c/] Environmental, Health, and Safety Guidelines: General EHS GUIDELINES: ENVIRONMENTAL NOISE MANAGEMENT of International Finance Corporation, 2007 [d/] National Environmental Quality (Emission) Guidelines, Myanmar, 2015
	Lmax	110 dB(A) [b/]	
Vibration			
- for industrial buildings and residential building	Peak Particle Velocity (PPV)	5 mm/s	DIN4150 Wiss, 1974
Groundwater Quality			
	pH at 25° C Nitrate-Nitrogen Nitrite-Nitrogen Cadmium Lead Arsenic Copper Mercury	6.5-8.5 ≤ 11 mg/L ≤ 0.9 mg/L ≤ 0.003 mg/L ≤ 0.01 mg/L ≤ 0.01 mg/L ≤ 2 mg/L ≤ 0.006 mg/L	WHO's Guidelines for Drinking Water Quality, 2011
Thermal Heat Flux			
	Safe level of exposure at the property line of storage facility	5 kW/m^2 (1,600 Btu/hr ft^2)	NFPA 59A (standards for the production facility)

TABLE 4.2-2
NATIONAL EMISSION STANDARDS

Parameter	Standard	Note
Combustion turbine/ Natural Gas		
Particulate matter, PM_{10}	-	
SO_2	-	
NO_X	100 mg/Nm^3	For natural gas (all turbine types; unit >50 MW)
Reciprocation engine/ Natural Gas		
Particulate matter, PM_{10}	-	
SO_2	-	
NO_X	200 mg/Nm^3	

Source: National Environmental Quality (Emission) Guidelines, Myanmar, 25 December 2015.

TABLE 4.2-3
NATIONAL EFFLUENT STANDARDS

Subjects	Parameters	Maximum Concentration
Site Runoff and Wastewater Discharges (Construction Phase)	Biological Oxygen Demand	30 mg/l
	Chemical Oxygen Demand	125 mg/l
	Oil and grease	10 mg/l
	pH	6-9
	Total coliform bacteria	400 cell/100 ml
	Total nitrogen	10 mg/l
	Total phosphorus	2 mg/l
	Total suspended solids	50 mg/l

Source: National Environmental Quality (Emission) Guidelines, Myanmar, 25 December 2015.

CHAPTER 5
SUMMARY OF IMPACTS AND MITIGATION MEASURES

CHAPTER 5
SUMMARY OF IMPACTS AND MITIGATION MEASURES

5.1 PROJECT DESCRIPTION

The Project will be comprised of power generation facility and gas distribution facility. The power generation facility will consist of a number, up to 15, of containerized 1 MW gas engine-generator, each gas engine generator has a generation capacity of 1,120 kilowatts (KW). Gas distribution facilities is including 16 of 45m^3 LNG storage tank, transfer pump, air vaporizer and associated control and safety system.

LNG is primary fuel to supply gas generator in the power plant. LNG is supplied from Thailand and transport to the power plant via ITD main road. No diesel fuel back up for this temporary power plant.

The project will be constructed on a land plot in DSEZ. The site location is approximately at KM.17 of the existing main road connecting DSEZ to Thai border. The area of the power plant is 25,000 m^2 or 6.25 acres. Eleven villages exist within a 5 kilometer radius from the Project site.

The power plant will be operative in order to support the construction period of DSEZ and will be removed after Boil-Off Gas Power Plant starts to operate.

5.2 IMPACTS DURING PRE-CONSTRUCTION AND CONSTRUCTION PHASE AND THEIR MITIGATION MEASURES

Major project activities during the pre-construction phase will be land acquisition, clearing of vegetation cover, excavation, filling and compaction while construction phase will be transport of construction materials and relevant equipments. These activities are to prepare the site ready for construction of the power plant and its associated facilities. The identified environmental disturbances and mitigation measures during pre-construction phase will include (i) air quality; (ii) noise; (iii) wastewater; (iv) construction waste; (iv) traffic load; (v) occupational health and safety and (vi) social management plan. ***Table 5.2-1*** present brief information on the impacts and mitigation measures of pre-construction and construction phase. However the Contractor will use this mitigation measures as the basis to prepare the Contractor's final detailed designs and pre-construction plan and schedule under the supervision of the Project Proponent.

The activities of these two phase is closely connected and overlap with pre-construction phase, details of mitigation measures and monitoring activities are presented in individual management plans which combine these two phase together, under the Construction EMP (CEMP), ***Appendix 6A***.

The Contractor will use this CEMP as the basis to prepare the detailed Contractor CEMP based on the Contractor's final designs, and construction plan, methods, and schedule. The scope and content of the Contractor CEMP will not be less than the scope and content of this CEMP. The Contractor CEMP shall be contractually

binding. During the pre-construction and construction, the Contractor will implement the Contractor CEMP under the supervision of the Project Manager to be appointed by the Project Proponent.

5.3 IMPACTS DURING OPERATION AND MITIGATION MEASURES

During operation of the 15 MW Temporary power plant, main impacts are air quality and traffic safety by LNG transportation. The mitigation measures will include control air emission especially NO_x from stack and management of LNG transportation and traffic safety. ***Table 5.3-1*** presents brief information on the impacts and mitigation measures. Details are presented in individual management plans under the Operation EMP (OEMP), ***Appendix 7A***.

However the Contractor will be responsible for the design, supply, installation, testing, and commissioning of the power plant and its associated facilities, the Contractor will use this OEMP presented in this Document as the basis for preparing the detailed Contractor OEMP based on the actual construction, results of plan commissioning and final operational procedures. The Power Plant Management Team to be established by the Project Proponent will review and revise the Contractor OEMP as appropriate to prepare the Power Plant OEMP for implementation in the operational phase.

5.4 IMPACTS DURING DECOMMISSIONING AND MITIGATION MEASURES

The decommissioning of the Project will be carried out at the end of power plant's life. Due to the temporary power plant is mainly structured by fabricated part, the decommissioning of the power plant will not create any significant environmental and social impacts. Therefore, the DEMP will require much less activities and a much simpler EMS compared to those of the CEMP. As the power plant, legal framework, technologies, and environmental and socioeconomic settings of the project area could significantly change over the working life of the power plant, the DEMP prepared at this EIA stage will not be applicable and will be replaced by the new DEMP based on the new EIA. Therefore, the DEMP is invariably conceptual in nature as its details would not serve any practical purposes.

During plant commissioning, key impacts will be related to health and safety of workers and the public, and waste contamination. The mitigation measures will include: (i) air quality; (ii) waste; and (iii) road traffic; (iv) occupational health and safety; and (v) social management plan. ***Table 5.5-1*** presents brief information on the impacts and mitigation measures. Details are presented in individual management plans as shown in ***Appendix 7B***.

TABLE 5.2-1

IMPACTS DURING PRE-CONSTRUCTION AND CONSTRUCTION PHASE AND MITIGATION MEASURES

Environmental and Social Issue	Impacts	Mitigation Measures
Air Quality	Increases in air pollutants caused by fugitive dust from site clearance transporting of filling materials and construction materials, and emissions from operation of trucks and heavy construction equipment.	• Spray water at and around the construction areas and access roads during site preparation and grading. • Enforce a speed limit for vehicles and trucks in the construction sites not to exceed 40 km/hr. Construction activities shall be kept as planned so that the disturbed areas will be minimized at any time. • Restore, resurface, and rehabilitate the disturbed areas as soon as practicable after completion of construction or disturbance. • Prohibit the open burning of waste in the construction area. • Dust masks should be provided (where applicable) to all construction workers. • Enforce speed limit for trucks not to exceed 40 km/hr when passing the communities. • Cover construction materials by canvas during transportation, materials should be dampened, if necessary, before transportation. • Establish a vehicle washing facilities to minimize the quantity of material deposition on public roads. • Establish a checkpoint at project gate to ensure the vehicles leaving the project site are following the measures prescribed to reduce dust emissions.

TABLE 5.2-1

IMPACTS DURING PRE-CONSTRUCTION AND CONSTRUCTION PHASE AND MITIGATION MEASURES (CONT'D)

Environmental and Social Issue	Impacts	Mitigation Measures
Air Quality (Cont'd)		• Adopt procedures to avoid construction vehicles idling for excessive periods (e.g. more than 5 minutes) if required to queue to enter the construction sites; • Maintain all construction equipment in proper working conditions according to the manufacturer's specifications. The engines of the construction equipment fleet must be routinely maintained by qualified mechanics to ensure their proper conditions during operations. • Provide adequate training to the equipment operators in the proper use of equipment. • Use the proper size of equipment for the job. • Use the equipment fitted engines with latest low emission technologies (repowered engines, electric drive trains). For example, the diesel generator set to be used must be equipped with modern pollution control equipment. **Proposed Monitoring** • Ambient air quality at the main construction site should be measured monthly starting when the construction becomes intensive.
Noise	Increase ambient noise level at the construction site and communities near the material transport routes.	• Major construction activities which generate loud noise should be limited to only during the day time. Activities that are necessary to be carried out at night time will need approval of the site engineers, and will need to have adequate noise control equipment or measures.

TABLE 5.2-1

IMPACTS DURING PRE-CONSTRUCTION AND CONSTRUCTION PHASE AND MITIGATION MEASURES (CONT'D)

Environmental and Social Issue	Impacts	Mitigation Measures
Noise (Cont'd)		• Speeds of vehicles in the construction site will not be more than 40 km/hr. • Noise performance requirements of construction equipment will need to be clearly stated in contract specifications. • Temporary sound barriers or shielding should be installed for non-mobile equipment. • The EPC contractor will be required to regularly monitor ambient noise levels at the receptors, particularly during the noise generation period such as piling. • The construction environmental management plan will need to include an efficient complaints redress procedure and an efficient corrective action procedure to address the non-compliance of noise performance. **Proposed Monitoring** • A proposed noise monitoring program is proposed in the construction phase EMP.

TABLE 5.2-1

IMPACTS DURING PRE-CONSTRUCTION AND CONSTRUCTION PHASE AND MITIGATION MEASURES (CONT'D)

Environmental and Social Issue	Impacts	Mitigation Measures
Wastewater from construction activities	Wastewaters from construction activities include: • Domestic sewage generated by daily living activities of about 70 construction personnel at peak of the construction • Wash waters in the construction site, mainly from truck wheel washing and concrete wash waters • Surface runoff	• The site preparation activities, including land clearing and site filling and compaction, should be carried out during the dry season to avoid the problem of surface runoff with high turbidity discharging into the nearby drainage channels, if exist. • Construct sedimentation ditch around construction area and retention pond to store stromwater for using in construction activities. • Toilet wastes will be discharged into a septic tank (or more than one septic tank), waste in septic will be collected and transported to dispose outside by authorized contractor. • Wash waters will be treated by removing suspended solids and neutralize, if necessary. The treated effluent will be reused for spreying on site to suppress dust without discharged outside. **Proposed Monitoring** • Surface water quality in nearby water courses will need to be monitored during the construction period. A water quality monitoring program is proposed in the construction phase EMP.

TABLE 5.2-1

IMPACTS DURING PRE-CONSTRUCTION AND CONSTRUCTION PHASE AND MITIGATION MEASURES (CONT'D)

Environmental and Social Issue	Impacts	Mitigation Measures
Construction waste	During the pre-construction and construction of Project facilities, the following waste materials will be generated: • Vegetation from site clearance • Spoils and excavated materials from earth works (rocks, soil) • Construction material debris (concrete, wood, scrap metal) • Hazardous waste (empty fuel drums, used oil filters, batteries, spent solvents, oils) • Domestic wastes from site workers (food waste, waste paper, packaging) The most concerned for this project is contamination of hazardous waste to soil and groundwater around construction site	**Waste Segregation** • An appropriate number of containers with adequate volume and appropriate materials will be provided at strategic locations to support the segregation. Each waste category will be segregated into recycling, reuse and disposal sub-categories. **Waste Collection and Storage** • Daily collection and transport will be and carried out for segregated wastes; • A roofed storage area with adequate space will be provided for the segregated wastes waiting for the on-site or off-site reuse or recycling; • The storage area for hazardous waste will need to be specially designed to prevent spills or leaks onto the soil. • Hazardous wastes will be handled by a licensed hazardous waste contractor. If this service is not available, the Contractor will need to find appropriate arrangements for incineration, safe permanent storage, or other appropriate methods of disposal. A Hazardous Waste Management System covering waste classification, separation, collection, storage, transfer and disposal should be set up and operated. The waste management system will comply with applicable regulation of the government, if any.

TABLE 5.2-1

IMPACTS DURING PRE-CONSTRUCTION AND CONSTRUCTION PHASE AND MITIGATION MEASURES (CONT'D)

Environmental and Social Issue	Impacts	Mitigation Measures
Traffic Load	Increasing of potential in traffic accident by transportation of construction wastes, construction materials, and plant equipment.	**Transportation of Hazardous waste or plant equipment** • Heavy trailer trucks transporting heavy and large plant equipment will have to be directed by a traffic police car. • Management of traffic signals on nominated spoil haulage along the routes. • Avoid haulage tasks during peak traffic periods as far as practicable. **Local Traffic** • Implement management measures to avoid, or minimize increase in traffic caused by the project works in local streets as practicable; • Avoid haulage tasks during peak traffic periods as far as practicable. • Notify the local community about proposed changes to local traffic access arising from construction activities, and provide clear signage of changed traffic conditions and take other measures to ensure safe traffic movement; • Provide traffic controls designed for the safe movement of cyclists and pedestrians near the worksites. **Traffic Management at the Intersection of ITD Main Road** • Investigate the capacity of intersections on haulage routes to minimize impact on intersection operations by heavy vehicles servicing the pre-construction worksites. • Notify the local community, and in particular, local schools, about changes to pedestrian and cycle access during construction near construction works; • Provide traffic controls designed for the safe movement of pedestrians and cyclists near the worksites.

TABLE 5.2-1

IMPACTS DURING PRE-CONSTRUCTION AND CONSTRUCTION PHASE AND MITIGATION MEASURES (CONT'D)

Environmental and Social Issue	Impacts	Mitigation Measures
Occupational Safety and Health	Pre-construction may have some impacts on worker health, safety and security.	• The Contractor will prepare an OHS management plan and implementation procedures specific to this Project and in line with its corporate OSH policy and procedures. • The Contractor will conduct necessary orientation and training to all construction personnel to ensure that the pre-construction personnel clearly understand the OSH plan and implementation procedures. • The OSH management plan and implementation procedures will cover but not limited to the following subjects: - Organization and responsibilities of OSH management - Training plan - Communication plan - Contractor responsibilities - Job-specific work requirements - Compliance monitoring and evaluation plan - Audit plan - Reporting system - Documentation system • Develop and implement safety measures for the construction works including treatment strategies that address fire and chemical hazard, communications, access for emergency services, response coordination and management. • Develop emergency response procedures, and implement in the event of accidents and emergencies. • Provide fire and life safety measures, including ventilation, smoke extraction and firefighting systems for the duration of the pre-construction phase.

TABLE 5.2-1

IMPACTS DURING PRE-CONSTRUCTION AND CONSTRUCTION PHASE AND MITIGATION MEASURES (CONT'D)

Environmental and Social Issue	Impacts	Mitigation Measures
		Proposed Monitoring • Monitoring of OSH performance of the Contractor will be made through: - Daily informal inspections (walk through of the construction sites) - Weekly formal inspections of the work place. - Audits - Corrective Action Reports • Monitoring results will be discussed in Project OSH monthly review meetings. • Monthly as part of the monthly monitoring reports except in case of an incident when reporting should occur immediately on completion of any investigation required to resolve the incident. • Report on OSH performance, and submission to MONREC.
Social Impact	The Project will cause inconvenience to living of villagers around project construction site and along the transportation route. The Project will cause conflict on land acquisition with villagers especially in Pagaw Zoon Village.	• Develop and practice mechanism to review complaints. • Consultation with villagers and related government agencies to finalized on compensation fee for land at Project area. • Consultation with villagers in order to support villagers who lose their farm land via livelihood restoration program.

TABLE 5.3-1

IMPACTS DURING OPERATION PHASE AND MITIGATION MEASURES

Environmental and Social Issue	Impacts	Mitigation Measures
Air Quality	• Affect to village due to gas emission from stack especially NO_2	• The reduction of NO_2 at source using the Low NO_2 burner will be adopted to meet the emission standard. • All equipment will be maintained according to Plant Operating Maintenance and Calibration Manuals, Procedures and Schedules. • Through operation phase of the Project, compliance monitoring of ambient air quality will be carried out twice a year. Each monitoring will collect air samples continuously for 24 hours at the sensitive receptors. The collected combined samples will be analyzed for NOx. The frequency of ambient air quality monitoring could be increased to quarterly or reduced to once a year depending on the results of ambient air quality monitoring. **Proposed Monitoring Program** • Routine periodic ambient air quality monitoring (AQM) by the contractor, not less than twice a year, at location in construction site and in sensitive areas through the Project life. Additional monitoring will need to be carried out if complaints are received from affected persons. • Ambient air sample will be analyzed for NO_X and particulate matter (PM_{10}). • Air quality management and monitoring reports will be submitted to MONREC every six months over the Project life.

TABLE 5.3-1

IMPACTS DURING OPERATION PHASE AND MITIGATION MEASURES (CONT'D)

Environmental and Social Issue	Impacts	Mitigation Measures
Waste Management	Operation of the power plant will generate the following waste which need properly manage: • Lubricating oil from the gas engine generator engines • Waste lube oil and spent coolant from maintenance of the power plant	• Liquid waste will need to be classified and sorted out at source for stored and shipped to Thailand for regeneration. • Haphazard disposal of liquid waste in or off the power plant area is strictly prohibited. • Provide adequate number of bins or containers with tight covers, collection of liquid waste. **Proposed Monitoring Program** • Groundwater monitoring by a third party will be carried out every six months or more frequent as necessary throughout the Project operation period. The sampling and analysis requirements will be similar to those of the survey conducted before the commissioning. • Twice a year reporting for submission to MONREC throughout the Project life.
Traffic Load	Increasing of potential in traffic accident by transportation of LNG via ITD Main Road.	**Local Traffic** • Enforce speed limit for transportation trucks not to exceed 40 km/hr when traveling on ITD main road. • Implement management measures to avoid, or minimize increase in traffic caused by the transportation of LNG practicable; • Notify the local community about proposed changes to local traffic access arising from power plant operation, and provide clear signage of changed traffic conditions and take other measures to ensure safe traffic movement; • Provide traffic controls designed for the safe movement of pedestrians and cyclists along transportation routes. • Provide traffic controls designed for the safe movement of cyclists near the Project site. • Record and report number of traffic accidents in the identified impact areas. **Proposed Monitoring Program** • Monitor number of traffic on ITD Main Road. Review the adequacy of traffic management plan if traffic congestion during operation phase is observed. • Monthly report on local traffic conditions, including any accidents involving LNG transportation. • Report to MONREC will be submitted twice a year.

TABLE 5.3-1

IMPACTS DURING OPERATION PHASE AND MITIGATION MEASURES (CONT'D)

Environmental and Social Issue	Impacts	Mitigation Measures
Occupational Safety and Health	Impacts on health and safety of operational personnel from excessive noise and temperature inside the power plant, fire and explosion risks.	• The contractor will design the power plant and associated facilities using equipment that will meet occupational safety and health (OSH) guidelines and standards prescribed in the contract. • The Contractor will prepare an OSH management plan and implementation procedures specific to the power plant of this Project and in line with the Owner's OSH policy and procedures. The plan will be submitted not later than one month before commissioning of the power plant and associated facilities. • The contractor will conduct necessary orientation and training to the Owner's power plant operational team to ensure that the operational team clearly understands the OSH plan and implementation procedures. • The OSH management plan and implementation procedures will cover but not limited to the following subjects: - Organization and responsibilities of OSH management - Training plan - Contractor responsibilities - Safety measures for the power plant's Operation and Maintenance (O&M), including safety in turbine operations, fire, explosion, and chemical hazards. - Emergency response procedures. - Task-specific work requirements Compliance monitoring and evaluation plan - Audit plan - Reporting system - Documentation system

TABLE 5.3-1

IMPACTS DURING OPERATION PHASE AND MITIGATION MEASURES (CONT'D)

Environmental and Social Issue	Impacts	Mitigation Measures
Occupational Safety and Health (Cont'd)		**Proposed Monitoring Program** • Monitoring of the Contractor will be made through: - Daily informal inspections - Weekly formal inspections of the work place. - Monthly formal inspections of the work place. - Audits - Corrective Action Reports • The daily inspection will observe: (i) adherence of the operational personnel to the OSH procedures such as wearing of protective equipment in high risk working areas; (ii) working conditions; and (iii) readiness of life safety system as relevant. • The daily inspections will be carried out by the Environmental, Health and Safety (EHS) Manager. The Plant Manager will occasionally join the daily inspections. The EHS Manager will prepare daily OSH inspection notes as part of the site inspection notes. • Report on OSH performance, and submission to MONREC.

TABLE 5.3-1

IMPACTS DURING OPERATION PHASE AND MITIGATION MEASURES (CONT'D)

Environmental and Social Issue	Impacts	Mitigation Measures
Local Communities	**Local Economy** - Cash injection into the local economy due to workers requirement on local services, particularly foods and sundries -Opportunities of local people to work during project construction **Environmental Disturbance by Project Operation** - Daily living of people in the surrounding communities may be disturbed or inconvenienced by environmental disturbances caused by the operation such as noise, air quality, not satisfaction with marine resources utilization.	**Local Economy** • The employment conditions will need to comply with the requirements in the national labor law, the social security law and standard wage rate, and other applicable laws and regulations. • The Project Proponent should establish good relationship with the locals and provide the locals with timely information about the project, likely impacts and mitigation measures, and procedures to address local concerns and grievances. • Disclose relevant information on operation period through such methods as: - Information billboard - Information disclosure via village headmen or village community leaders **Environmental Disturbance by Project Operation** • Liaise with key stakeholders and the community through a public consultation process to ensure insignificant impacts of the Project operation on community facilities, schools and monastery. • Establish the CSR Program to implement and support public relations and mitigation measures. **Proposed Monitoring Program** • Conduct attitude surveys to collect information on local concerns, issues, and problems of the communities (200 samples within 3 villages and one community). • Report immediately in case of compliant from a neighbor. • CSR Program will be reported: - Twice a year reports will be submitted to MONREC. • Annually report will be submitted to MONREC throughout the Project life

TABLE 5.4-1

IMPACTS DURING DECOMMISSIONING PHASE AND MITIGATION MEASURES

Environmental and Social Issue	Impacts	Mitigation Measures
Air Quality	Increases in air pollutants caused by fugitive dust from structure decommissioning and emissions from operation of trucks and heavy equipment.	• Spray water at and around the decommissioning areas and access roads during site preparation and grading. • Cover materials with canvas or equivalent during transportation in and out project area. • Limit speed for vehicles and trucks not to exceed 40 km/h. • Establish a vehicle washing facilities to minimize the quantity of material deposited on the roads. • Prohibit the open burning of waste in the decommissioning area. • Dust masks should be provided (where applicable) to all decommissioning workers. • Establish a checkpoint at project gate to ensure the vehicles leaving the project site are following the measures prescribed to reduce dust emissions. • Maintain all equipment in proper working conditions according to the manufacturer's specification. The engines of the decommissioning equipment must be routinely maintained by qualified mechanics to ensure their proper condition during operation. • Provide adequate training to the equipment operators in the proper use of equipment. • Restore, resurface, and rehabilitate the disturbed areas as soon as practicable after completion of decommissioning. **Proposed Monitoring Program** • Routine periodic ambient air quality (particulate matter (PM_{10}) and total suspended particulates (TSP)) monitoring (AQM) by the contractor, at location in decommissioning site and in sensitive areas over the duration of decommissioning operation. • Report for submission to MONREC.

TABLE 5.4-1

IMPACTS DURING DECOMMISSIONING PHASE AND MITIGATION MEASURES (CONT'D)

Environmental and Social Issue	Impacts	Mitigation Measures
Noise and Vibration	Increase ambient noise level and vibration at the Project site and communities near the material transport routes.	• Major activities which generate loud noise should be limited to only during the day time. Activities that are necessary to be carried out at night time will need approval of the site engineers, and will need to have adequate noise control equipment or measures. • Install the temporary metal sheet fence to block the noise emanating to the receptor. • Provide personal with protective equipment (ear muffs), as necessary. • Ensure proper maintenance of machinery. • The Engineering Procurement Construction (EPC) contractor will be required to regularly monitor ambient noise levels at the receptors. • The environmental management plan will need to include an efficient complaints redress procedure and an efficient corrective action procedure to address the non-compliance of noise performance. • Limit speed for vehicles and trucks not to exceed 40 km/h. **Proposed Monitoring Program** • Noise monitoring will be linked to the work schedule. The Contractor will be required to prepare a noise and vibration monitoring program based on the latest decommissioning schedule before commencing the decommissioning. • Noise and vibration monitoring will be carried out manually using a sound level meter following Noise Standard stated on Environmental, Health, and Safety Guidelines for Thermal Power Plant: Noise of International Finance Corporation (December 19, 2008) and National Environmental Quality (Emission) Guidelines (December 25, 2015). • Report for submission to MONREC.

TABLE 5.4-1

IMPACTS DURING DECOMMISSIONING PHASE AND MITIGATION MEASURES (CONT'D)

Environmental and Social Issue	Impacts	Mitigation Measures
Waste	Waste generated from decommissioning operation and workers	• Haphazard disposal of structure waste in or out the Project site will be prohibited. • Non-structure wastes will be disposed off with the structure wastes. • Provide adequate number of containers with tight covers, daily collection of disposal. • Dispose waste from the Project site at a suitable land fill site to be selected by contractors with approval of concerned authority. • Hazardous wastes will be handled by a licensed hazardous waste contractor. If this service is not available, the Contractor will need to find appropriate arrangements for incineration, safe permanent storage, or other appropriate methods of disposal. • A Hazardous Waste Management System covering waste classification, separation, collection, storage, transfer and disposal should be set up and operate. The waste management system will comply with applicable regulation of the government, if any. **Proposed Monitoring Program** • The operation will adopt the following practices to minimize waste quantities at sources: waste segregation, waste collection and storage, waste reuse and recycling, waste disposal, and on-site record keeping. • Report for submission to MONREC.

TABLE 5.4-1

IMPACTS DURING DECOMMISSIONING PHASE AND MITIGATION MEASURES (CONT'D)

Environmental and Social Issue	Impacts	Mitigation Measures
Traffic	• Traffic loads will be increased on existing ITD main road and the access road to the power plant decommissioning site. • The decommissioning phase would be congestion of local roads and increase risk of accidents.	• Avoid haulage tasks during peak traffic periods as far as practicable. • Control heavy vehicle movements on project related road to avoid interference with major events. • Investigate the capacity of intersections on haulage routes to minimize impact on intersection operations by heavy vehicles servicing the decommissioning worksites. • Management of traffic signals on nominated spoil haulage along the routes. • Maintain all vehicles transporting material to and from the decommissioning sites to a high standard (ADR28/01) with regards noise emissions, exhaust emissions, traffic safety and operational safety. • Notify the local community about proposed changes to local traffic access arising from decommissioning activities, and provide clear signage of changed traffic conditions and take other measures to ensure safe traffic movement. • Prepare and implement an employee parking policy for the decommissioning worksites. • Provide traffic controls designed for the safe movement of cyclists near the worksites. • Record and report number of traffic accidents in the identified impact areas. **Proposed Monitoring Program** • Monitor number of traffic on ITD Main Road. Review the adequacy of decommissioning traffic management plan if traffic congestion is observed. • Monthly report on local traffic conditions, including any accidents involving decommissioning traffic. • Report to MONREC will be submitted when completion of decommissioning operation.

TABLE 5.4-1

IMPACTS DURING DECOMMISSIONING PHASE AND MITIGATION MEASURES (CONT'D)

Environmental and Social Issue	Impacts	Mitigation Measures
Occupational Safety and Health	Impact on health and safety of operational personnel from excessive noise and accidents.	• The Contractor will design the power plant and associated facilities using equipment that will meet occupational safety and health (OSH) guidelines and standards prescribe in the contract. • The Contractor will prepare an OSH management plan and implementation procedures specific to the decommissioning operation and in line with the Owner's OSH policy and procedures. The plan will be submitted not later than one month before decommissioning operation. • The contractor will conduct necessary orientation and training to employees and workers to ensure that the working team clearly understands the plan and procedures. • Full surveillance and maintenance during the decommissioning operations shall be carried out. **Proposed Monitoring Program** • Monitoring of the Contractor will be made through: - Daily informal inspections - Weekly formal inspections of the work place. - Monthly formal inspections of the work place. - Audits - Corrective Action Reports • The daily inspection will observe: (i) adherence of the operational personnel to the OSH procedures such as wearing of protective equipment in high risk working areas; (ii) working conditions; and (iii) readiness of life safety system as relevant. • The daily inspections will be carried out by the Environmental, Health and Safety (EHS) Manager. The Plant Manager will occasionally join the daily inspections. The EHS Manager will prepare daily OSH inspection notes as part of the site inspection notes. • Report on OSH performance, and submission to MONREC.

TABLE 5.4-1

IMPACTS DURING DECOMMISSIONING PHASE AND MITIGATION MEASURES (CONT'D)

Environmental and Social Issue	Impacts	Mitigation Measures
Social Impact	Daily living of people in the surrounding communities, especially Pagaw Zoon may be disturbed or inconvenienced by environmental disturbances caused by the decommissioning such as dust, traffic inconveniences, noise and vibration	• Initiate consultation with nearest neighbors to decommissioning activities as soon as practicable before commencing the decommissioning. • Undertake and maintain a comprehensive community information program to inform residents, businesses, community groups and motorists of Project activities and potential impacts. Effective and accessible consultation measures are required including maintenance of a 24-hour contact line operated by a person with authority to stop works if goals and agreements with the community are not met. • Develop an effective and responsive system for receiving, handling and responding to complaints received during the decommissioning of project works. • Ensure complaints are received and responded to on a 24-hour per day basis for the duration of decommissioning. **Proposed Monitoring Program** • Report immediately in case of a safety incident or complaint from neighbor. • Report for submission to MONREC.

CHAPTER 6
CONSTRUCTION PHASE EMP

CHAPTER 6

CONSTRUCTION PHASE EMP

6.1 OBJECTIVES OF THE CEMP

For the Project Proponent, the objective of environmental management of Project construction is to ensure that the construction will not create significant impacts and will meet all applicable standards and guidelines and requirements prescribed as conditions for issuing an Environmental Compliance Certificate (ECC). The standards, guidelines and requirements will be prescribed in the Contract.

The key objective of the Owner-CEMP (OCEMP) is to establish a clear operational framework and requirements for environmental management during the construction phase of the Project. Based on the OCEMP, the Contractor will prepare a Contractor-CEMP (CCEMP) which will have operational details based on the detailed designs, construction methods, and construction schedule. The CCEMP will therefore be part of the Contract.

6.2 MAPS

Project construction will take place at one site. ***Figure 6.2-1*** is a base map of the main construction site and villages within 5 km radius. The site layout plan is shown in ***Figure 5.1-1*** of ***Chapter 5***.

6.3 IMPACTS AND MANAGEMENT PLANS

Types, magnitudes, durations, and locations of environmental impacts during construction vary as the construction progresses. ***Table 6.3-1*** shows anticipated environmental impacts at various months of the construction period.

The following issues will be managed during the construction phase: (i) general construction, (ii) air quality management, (iii) noise and vibration, (iv) wastewater disposal, (v) construction waste management; (vi) traffic management, (vii) Occupational, Safety and Health (OSH), (viii) social environment, and (ix) emergency management plan (flood and cyclone); The sub plans are presented in ***Appendix 6A***. Each sub-plan will be a working document and as such it will be reviewed and amended or updated as deemed necessary to reflect changes in construction schedule and management review changes.

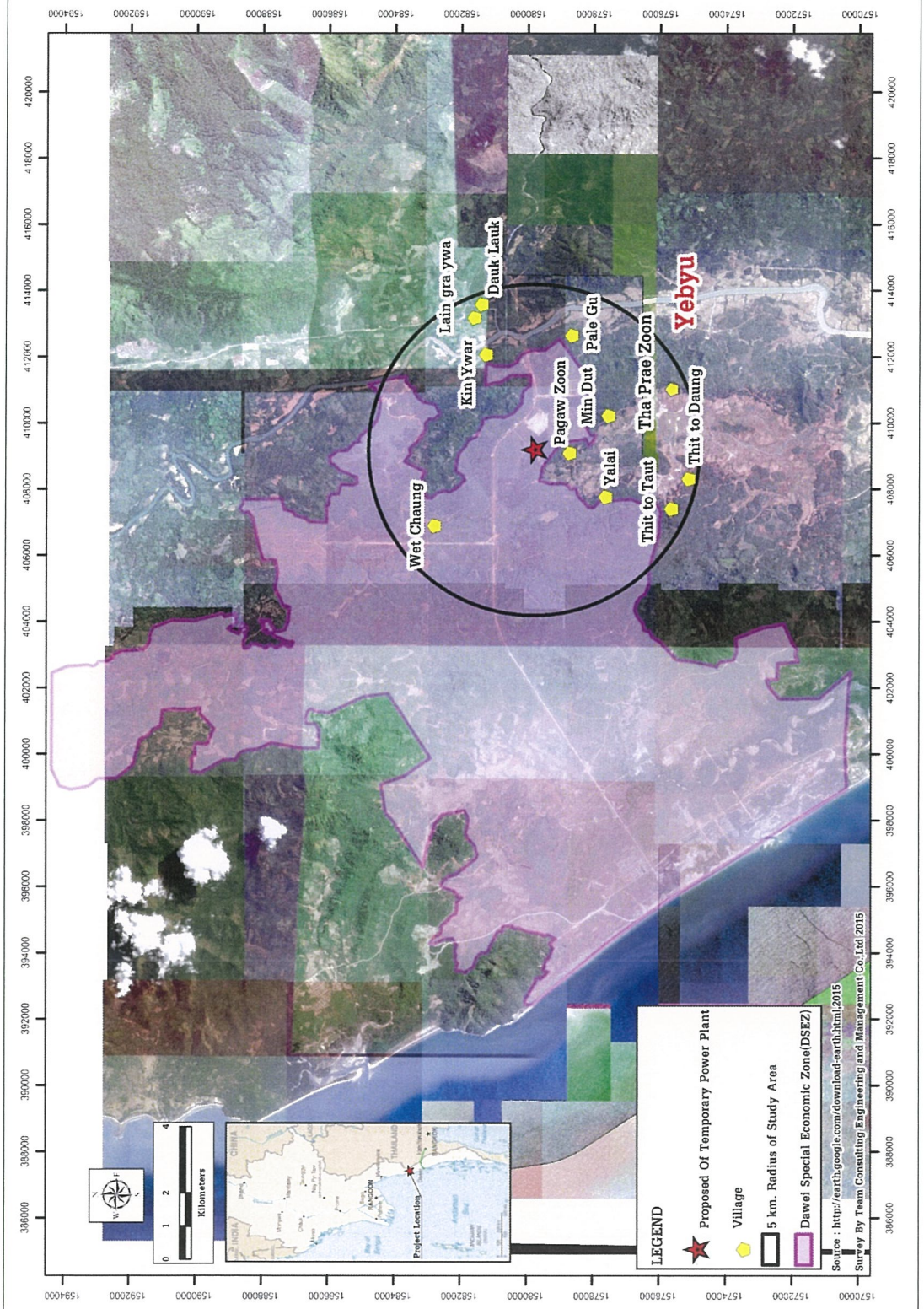


FIGURE 6.2-1 : THE PROJECT CONSTRUCTION SITE AND SURROUNDING VILLAGES

TABLE 6.3-1

ANTICIPATED IMPACTS AT VARIOUS PHASE OF THE CONSTRUCTION

Activities	Impacts
Site Preparation	Fugitive dust, Noise, Wastewater, Construction waste, Road traffic, Impacts on local communities, Occupational safety and health, Community health, safety and security, Risk management
Construction of 15 MW Temporary Power Plant	Noise, Wastewater, Construction waste, Road traffic, Impacts on local communities, Infrastructure and services, Occupational safety and health, Community health, safety and security, Risk management

Note: Duration of activities based on tentative project implementation schedule in ***Figure 4.6-1***, ***Chapter 4*** in main text.

6.4 ENVIRONMENTAL MANAGEMENT SYSTEM (EMS)

The Project Proponent and the Contractor will both be involved in environmental management of the Project construction. The Contractor will select construction methods or practices that have least environmental impacts, thus meeting environmental performance targets prescribed in the Contract. During the construction, the Contractor will implement, under supervision of the Project Proponent, impact mitigation measures prescribed in the Contract.

The Project Proponent and the Contractor will have to establish and operate their own environmental management systems (EMS) for the Project construction. The two EMSs will be related and based on the same information base. The Project Proponent's EMS will be focused on monitoring and reviewing environmental compliance at the Project level as part of the Project management. The Contractor's EMS will be focused on environmental management at the task level as part of the construction management. The two EMSs will therefore be complementary and will enable the Contractor and the Project Proponent to complete the Project construction with no significant environmental impacts.

The EMS of the Project Proponent will adopt the following procedures:

6.4.1 Monitoring, Evaluation and Reporting

6.4.1.1 Scheduled Environmental Monitoring and Evaluation

Before commencing the construction, the Contractor will review and update existing data on relevant baseline environmental condition, particularly at locations expected to be affected by the construction.

Scheduled monitoring of environmental performance is required throughout the construction phase of the Project to evaluate compliance with legal requirements, the environmental management objectives, and relevant policies, standards and guidelines. The monitoring and evaluation will enable the overall effectiveness of the environmental controls to be determined and allow areas of non-compliance to be identified so corrective actions can be taken.The environmental monitoring plan for each issue to be managed is also presented in each sub-plan.

Environmental monitoring will be undertaken according to the following:

- The Contractor's Environmental, Health and Safety (EHS) Manager is responsible for implementing the monitoring plans, and arranging training and specialist consultants for the monitoring as required.
- The monitoring will be conducted by the Contractor using the approved methods stated in the Contract.
- Environmental results not meeting the required standards will be managed as per the corrective action process and issued with a non-compliance report.
- The EHS Manager will advise the Contractor Project Manager of any non-compliance from monitoring and will report these to the Owner's EHS Manager as required.

6.4.1.2 Site Inspections

In addition to scheduled environmental monitoring, the Contractor's EHS Manager will conduct daily, weekly, and monthly general inspections at the construction site. The objectives are to early identify or detect factors which, if unattended to, could result in major environmental events and/or non-compliance. A general scope of inspections is outlined below in ***Table 6.4-1*** and it will need to be updated when the detailed construction plan is made.

The daily inspections will be informal visual inspections to observe conditions of the construction sites. The focus will be on the power plant construction site where construction activities are concentrated.

The weekly inspections will be formal visual inspections in more details than the daily inspections.

The Contractor's EHS Manager will be responsible for the daily and weekly site inspections. The Owner's EHS Manager will participate in the weekly site inspections, and occasionally in the daily site inspections.

The monthly inspections will be conducted in more detail than the weekly inspections. The monthly inspections will also include risk triggers identified in the environmental risk management plan. The monthly inspections will be conducted jointly by personnel from both sides, including the Project Managers, the Construction Manager and the EHS Managers.

TABLE 6.4-1

OUTLINE OF SITE INSPECTION PLAN FOR CONSTRUCTION

Inspection Focus	Daily Inspection	Weekly Inspection	Monthly Inspection
1. Onshore			
1.1 Project Clearance	√	√	√
1.2 Land Leveling	√	√	√
1.3 Sanitation Condition of Construction Site		√	√
1.4 Storage of Construction Material and Hazardous Material		√	√
1.5 Fugitive Dust	√	√	√
1.6 Ambient Noise Level	√	√	√
1.7 Safety in Work Place	√	√	√
1.8 Drainage	√	√	√
1.9 Traffic Accident	√	√	√
1.10 Wastewater Disposal	√	√	√
1.11 Risk Trigger			√

6.4.2 Environmental Incidents

6.4.2.1 Definition of an Environmental Incident

In addition to scheduled environmental monitoring, the monitoring will also cover environmental incidents. An environmental incident during Project construction is an occurrence which has (or potentially could have had) a negative or adverse effect on the environment. An adverse effect is something that causes (or could have caused) environmental harm. An environmental incident can also be a deviation from a requirement or practice prescribed in this CEMP and the Contractor CEMP. This means there has been a failure to follow the established process or procedures that help the Project achieve best practice (e.g. failure to report a spill). Some environmental incident could create an emergency, i.e. its impact is so serious that it has to be promptly dealt with. Potential environmental incidents and emergencies are identified in the environmental risk assessment for the construction phase in ***Chapter 5***.

6.4.2.2 Environmental Incident Form

An environmental incident, once noted, has to be recorded in an Environmental Incident Form (EIF). A standard Environmental Incident Form (EIF) template will be used for all site specific activities throughout the construction of the Project. An Environmental Incident Form is proposed in ***Appendix 6B***.

6.4.2.3 Environmental Incident Register

The Contractor's EHS Manager will input all data from completed EIFs as soon as possible to generate an Environmental Incident Register (EIR). A standard Environmental Incident Register (EIR) will be controlled by the Contractor's EHS Manager. It will contain all environmental incidents occurring on the construction sites of the power plant, transmission line, gas pipeline, and access road. The EIR will be discussed regularly at the project environmental performance review meetings. These meetings will discuss the corrective actions taken, and the preventative measures that have been put in place.

6.4.3 Monitoring Reports

Two types of monitoring reports will be generated in the environmental monitoring and site inspections. The first type is reports generated for internal use to provide feedback to the EMS. The second type is reports generated for submission to Ministry of Natural Resource and Environmental Conservation (MONREC), which will be disclosed to public as prescribed in Chapter VII of the EIA Procedure.

6.4.3.1 Internal Monitoring Reports

Site Inspection Reports

The Contractor's EHS Manager will record results of the daily inspections in daily site inspection notes. The Contractor's EHS Manager and Construction Manager will review the daily site inspection notes on a weekly basis to confirm that the checks and subsequent required works are being carried out, and additional inspections are included as per construction progress.

For weekly inspections, the Contractor's EHS Manager will present results of the inspections in weekly site inspection reports for discussion in the weekly project review meetings. Both the daily inspection notes and weekly inspection reports will highlight factors or events that could lead to non-compliance and will need attention of the Contractor's Project Manager.

The Contractor's EHS Manager will prepare monthly site inspection reports as part of the monthly environmental monitoring reports.

Environmental Monitoring Reports

The Contractor's EHS Manager will prepare monthly environmental performance reports for submission to the Owner's Project Manager. The monthly environmental monitoring report will concisely present (i) results of scheduled environmental monitoring and site inspections carried out during the month; (ii) identified non-compliance, if any, and causes of the non-compliance; (iii) complaints received; (iv) environmental incidents; (v) associated investigations and corrective actions taken; (vi) proposed changes to the monitoring plan, if any; and (vii) work program for the following month.

The monthly environmental performance reports will be discussed in the monthly project status review meetings or in separate monthly environmental performance meetings as appropriate.

6.4.3.2 Monitoring Reports for Submission to MONREC

Based on the monthly internal monitoring reports and results of the monthly review meetings, the Owner's EHS Manager will prepare a project environmental monitoring report every six months for submission to MONREC. This report as prescribed in the EIA Procedure (Article 89) will contain the following:

- Documentation of compliance with all Conditions;
- Progress made to date on implementation of the EMP against the submitted implementation schedule;
- Difficulties encountered in implementing the EMP and recommendations for remedying those difficulties and steps proposed to prevent or avoid similar future difficulties;
- Number and type of non-compliance with the EMP and proposed remedial measures and timelines for completion of remediation;
- Accidents or incidents relating to the occupational and community health and safety, and the environment; and
- Monitoring data of environmental parameters and conditions as committed in the EMP or otherwise required.

The monitoring reports should also present the construction progress over the report period.

6.4.4 Corrective Actions

The Contractor will be instructed by the Owner Project Manager to take corrective actions for any identified non-compliance. Taking corrective actions in managing EHS aspect of the Project will have to be a part of project management and use the same procedure for taking corrective actions in managing other aspects of the Project.The procedure proposed in this CEMP will therefore have to be reviewed and revised as necessary to make it similar to the procedure for other aspects of the Project. A single procedure for taking corrective actions should be used in project management.

The Contractor is required to establish own procedure for corrective actions related to EHS non-compliances.

A. Categories of Non-Compliances

Non-compliances cover non-compliance with legal requirements, non-conformance with internal requirements of the Project, inadequate environmental performance, environmental incident, and complaints or grievances received from the public. Non-compliances could be identified from the following:

- External EHS audits;
- Internal EHS audits;
- Site inspection notes and reports;
- Schedule environmental monitoring;

- Complaints, grievance or inquiries registers;
- Environmental incident registers;
- Specific environmental studies and reports;
- Directives from MONREC/ECD or other government authorities;
- Review meetings;
- Recommendations from any project staff member, Contractor or visitors, which are considered by the EHS Manager and the Project Manager to warrant investigation.

EHS non-compliances can be identified, ranked and recorded at three levels. Once the level of a non-compliance has been established the appropriate tool shall automatically be selected for closing out the non-compliance. The actions required for each are detailed below; also a temporary work suspension for cause may be enforced in case of Level A or B non- compliances.

Level A: A critical non-compliance situation, typically including material damage to or a reasonable expectation of impending material damage to an ecologically or socially sensitive resource or has the potential for an extreme health and safety incident. Intentional disregard of project standards which may lead to a serious EHS incident is also classified as Level A.

Level B: A non-compliance situation that has not yet resulted in clearly identified damage or irreversible impact to sensitive important resource, or has the potential for a serious health and safety incident. It requires expeditious corrective action and site specific attention to prevent such effects. Repeated Level B non-compliance may become Level A non-compliance if left unattended or are continuously recurring.

Level C: A non-compliance situation not consistent with the original requirements but not believed to present an immediate threat to an identified important resource, community or employee health and safety. Repeated Level C non-compliance may become Level B non-compliance if left unattended.

The non-compliance may also be of a procedural nature where the Contractor has failed to implement specified requirements and actions. In this case, the Contractor may need to take actions to ensure the procedural requirements are effectively implemented.

B. Responsibilities and Process

The Owner's EHS Manager will be responsible for identifying and ranking EHS non-compliances. However, all Project management personnel are encouraged to help identify EHS non-conformance.

The Owner's EHS Manager will take actions according to the category of non-compliances.

For Level A Non-Compliances: The Owner's EHS Manager will report the identified non-conformances to the Project Manager with recommendations on corrective actions and instructions for the Contractor.

For Level B Non-Compliances: The Owner's EHS Manager will issue instructions to the Contractor in consultation with the Project Manager and the Resident Engineer as necessary.

For Level C Non-Compliances: The Owner's EHS Manager will instruct the Contractor to take appropriate corrective actions.

The Project Manager will be responsible for:

- Issuing instructions to the Contractor to take corrective actions within a given timeframe;
- Follow up on corrective actions taken by the Contractor;
- Evaluate the results of taking corrective actions;
- Prepare a non-compliance report to close the case.

The Contractor will be required to conduct an investigation of the non-compliance to determine its root causes and formulate effective actions to correct the root causes.

For Level B and C non-compliances, the Contractor will submit a brief note on corrective actions to be taken to the EHS Manager and the Resident Engineer, if the corrective actions are related to change in construction practices.

For Level A non-compliances, the Contractor will submit a brief report on the results of investigation and proposed corrective actions to the Project Manager through the EHS Manager and the Resident Engineer, if the corrective actions are related to change in construction method.

C. Corrective Action Request

Instructions to the Contractor will be in the form of Corrective Action Request (CAR). The CAR will contain: (i) information sources of non-compliance; (ii) description of non-compliance; (iii) category of non-compliance; (iv) originator; and (v) time frame for corrective actions.

The corrective action requirements will be included in the requirement tracking system of the project management information system.

D. Non-Compliance Report

The EHS Manager will prepare a brief non-compliance report based on the CAR and reports from the Contractor. The non-compliance report will contain: (i) information in the CAR; (ii) corrective actions taken by the Contractor; (iii) implementation period; (iv) results; and (v) recommendation for further actions, if any. The non-compliance report should be in one or two pages in a Form to be designed.

Each and every non-compliance report will be closed out on a progressive basis, until construction is completed.

Non Compliance Report Forms will be verified and closed out by the originator or his designee. Correspondence referring to a proposed course of action shall be referenced and attached to the Non Compliance Report Form as appropriate and stored within the Project Documentation System.

6.5 EMERGENCY RESPONSE PLAN

The Contractor will be required to prepare an emergency response plan to efficiently and effectively cope with accidents and emergencies which may occur during the construction period. Considering the nature and magnitude of the construction and the construction site, the emergency response plan would deal with work accidents and accidental fires. Natural emergency events such as earthquakes and floods would be very unlikely. Consequently, the emergency response plan during the construction would focus on procedures and facilities to deal with work accidents and accidental fires to minimize injuries and loss of lives, damage to properties, and construction delay. The emergency response plan will be a part of the OSH system. Facilities to be provided on site will contain at minimum the following: fully equipped first aid station, fire-fighting equipment, arranged access to emergency services of the local hospital, and direct communication link with local fire brigades and other relevant government authorities and the local police station.

6.5.1 Emergency Plan

The project will be responsible for providing emergency plan for unexpected case. The main objective of the plan is to mitigate impact on person in charge within the area of the project and damage to equipment and machinery. The emergency plan consists of:

- Map and diagram of each building's exit.
- Safety zone, evacuation route, and a mustering point.
- Diagram showing locations of fire extinguisher devices for example fire hose cabinet, chemical extinguisher, etc. of each building.
- Practice various emergency cases, for example, fire, electric leakage, storm, flood, demonstration, etc.
- Evacuation plan.
- First aid methods.
- Training on proper use of fire extinguishing devices.

The project manager will also be the emergency plan director. He/she will be responsible for controlling and instructing to evacuate all of workers and employees to safety place when emergency incident occurs. This director must well understand the emergency plan and be able to assess the situation. In addition, the director must determine degree of the situation whether it has necessity to evacuate either all people or some. He will also assess the necessity to divide zones for the situation control. The director will instruct workers and employees back to work after the situation is resolved and turned into normal stage. Thereafter, the director will take responsibility to prepare report, explaining in details which includes specific day, time, occurrence point, causes, severity level, damage to people and equipment, lost working hour, instruction program, employee's mentality recovery plan and machinery repairing plan. Furthermore, he will estimate working hour for repairing, number of employee concerns, cost of repairing equipment and spare part purchase, etc.

The project will conduct annual emergency practice and organize training for the power plant staff to have skill and specialization to mitigate impact from emergency situation at least once a year. Additionally, the project will be also responsible to examine equipment on weekly basis.

Emergency situation may causes by:

(1) Fire around the Power Plant

Fire may be expanded if strong wind is blown in period of dry climate, near to flammable substance and flammable origin. In addition, control of fire incident will be more difficult if fire occurs from flammable and explosive materials such as oil. However, trained employee's skill and quick response to fire is important factor to control fire. In addition, readiness of fire extinguisher devices, their positions, sufficiency of water pressure, readiness of fire pump with weekly examination and ready use condition are also important. These preparations, examination and emergency plan verification must be done regularly.

(2) Electric Leakage

In case electric leakage occurs, an assigned staff must be able to inform everyone to understand rescue practice to correctly save life of electric shock victim to safety.

(3) Accident

Accident such as falling from height, heavy weight falling during lifting, lost consciousness in confined space and traffic accident in particular have to be considered. Repeating accidents will cause substantial loss of working times and, consequently, solving the situation would become more difficult.

(4) Storm

An assigned staff must listen to news and climate forecast announcement from the Department of Meteorology for possible storm occurrence. Then, he will determine, instruct or prepare readiness in advance such as fixing equipment for protection, lifting up stuffs to high and safe place, warn workers or employees to stop working outdoor around the building, etc.

During working hour, a power plant manager will be responsible for controlling safety of workers and handling other emergencies.

During period of off-hour, periodic chief will be responsible for controlling emergency until the emergency is resolved or the power plant manager arrives at accident area and assumes the responsibility in place of the periodic chief.

6.5.2 Evacuation Plan

The Project will take a responsibility to designate a assemble point and evacuation route. The best route for safety will be decided to evacuate the people from accident area.

6.5.3 Recovery Plan

After any accident, recovery plan will be revised, improved and reported in all issues from real situation. The plan will place high priority on fire protecting plan, firefighting practicing plan, mitigation plan (must be immediately implemented after fire extinguishing complete) and provide relief for all employees who become disabled from the accident.

6.6 ARRANGEMENTS FOR OPERATING THE EMS

6.6.1 Responsibilities

There are three key groups with responsibility for environmental management of the Project:

- Project Proponent or Project Owner who manages the Project through a Project Manager;
- Contractor as the party undertaking the construction; and
- MONREC through Environmental Conservation Department (ECD) and other government agencies at the regional, township and community levels.

Responsibilities of each party in environmental management are as follows:

Project Proponent

The Project Proponent is legally responsible to MONREC and other line organizations responsible for specific environmental issues for environmental performance of the Project as prescribed as conditions in the ECC and other permits.

Specifically, the Project Proponent will have the following responsibilities:

- Supervise closely the Contractor in implementing the Contractor CEMP as an integral part of its project implementation management and construction supervision.
- Submit periodic monitoring reports to MONREC as required in the EIA Procedure.
- Notwithstanding the periodic monitoring reports to be submitted to MONREC, keep MONREC and other concerned authorities informed of any serious environmental events and responses to the events.
- Conducting periodic audit of environmental and social performances of the Contractor.

Contractor

The Contractor, including its approved sub-contractors, is contractually responsible to the Project Proponent for environmental performance of the construction as prescribed in the construction Contract.

Specifically, the Contractor will have the following responsibilities:

- Prepare a detailed Contractor CEMP for review and approval by the Project Proponent. The Contractor CEMP should follow the outline prescribed by the Project Proponent as proposed in ***Outline of Contractor's Environmental Management Plan***.

- Implement the mitigation measures during the construction through construction method statements and work instructions in strict conformance with environmental conducts prescribed in the Contract.

- Ensure that all process and environmental control equipment meet all technical specifications related to their environmental performance.

- Conduct periodic monitoring and reporting of its compliance with the environmental and social performance prescribed in the Contract.

- Ensure that its sub-contractors shall comply with the Contractor CEMP.

- Consistently update the Contractor CEMP and submit the updated version to the Project Proponent for approval.

6.6.2 Organizational Structure

As environmental management will be carried out as part of the Project management, it will be a functional unit in the project management organization. ***Figure 6.6-1*** shows a tentative organizational structure for Project construction consisting of an organizational structure of the Project Proponent and an organizational structure of the Contractor. The two organizational structures will need to be revised as appropriate as the Project moves from the planning stage to the design stage.

(1) Organizational Structure of the Project Proponent

The Project Proponent will establish a Project Management Office (PMO), headed by a Project Manager. The Project Manager will be responsible for the overall Project management to ensure that the Project construction will be completed on time and fully meet the requirements on scope, quality, budget and environmental performance of the Project construction. The PMO will have seven functional units: (i) Contract management and administration; (ii) construction quality control (civil works); (iii) quality control (mechanical and electrical works); (iv) system performance control; (v) environmental, health and safety management; (vi) stakeholder management; and (vii) administrative support.

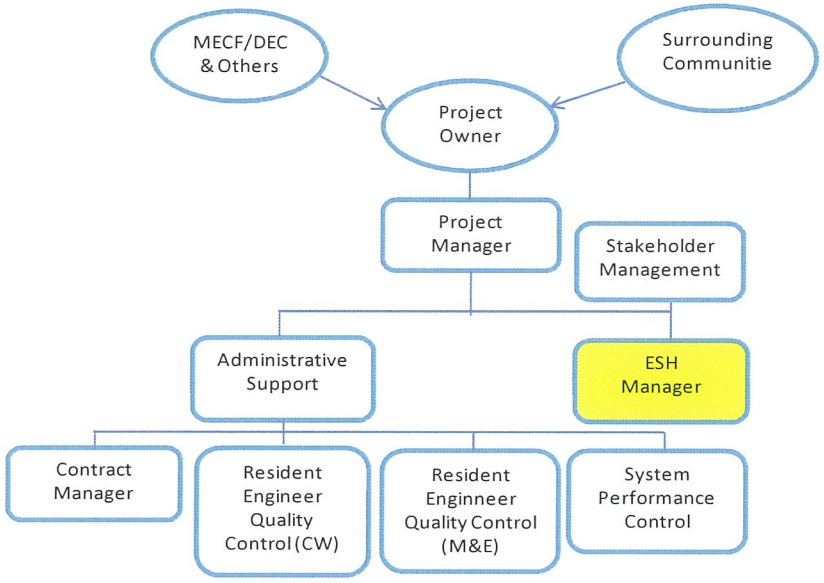
The EHS management and the stakeholder management functions are directly related to the implementation of the Project CEMP. The two functions cover the following tasks or activities:

EHS Management Function:

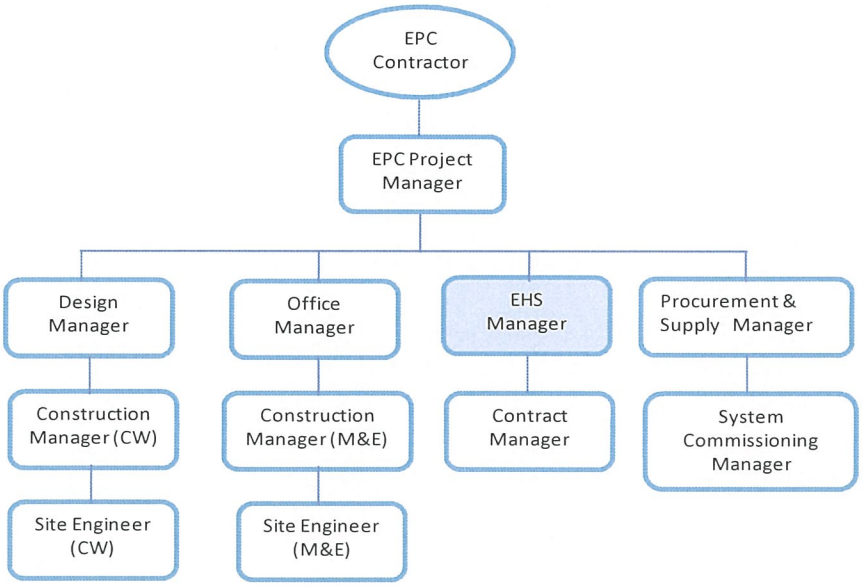
- Review the Contractor CEMP and environmentally-related construction method statements and work instructions prepared by the Contractor;
- Ensure that environmental monitoring activities of the Contractor are properly carried out and will generate reliable data;
- Inspect sites where environmental mitigation measures are implemented;
- Review periodic EHS reports submitted by the Contractor;
- Evaluate the Contractor's environmental performance;
- Prepare Project EHS performance reports;
- In consultation with the relevant quality control functional unit, prepare recommendations to the Project Manager on corrective actions related to environmental performance;
- Coordinating with MONREC/ ECD and other government agencies concerned regarding monitoring environmental compliance of the Project; and
- Make arrangements to facilitate site inspection by MONREC/ ECD and other agencies concerned.

Stakeholder Management Function:

- Design and implement an appropriate Corporate social responsibility (CSR) program for the Project;
- Process public complaints in accordance with the public grievance redress process;
- Carry out community and public relation activities to ensure acceptance of the Project by all key stakeholders of the Project; and
- Coordinate with the EHS Manager in making arrangements for site visit or inspection by the Project stakeholders.



PROJECT MANAGEMENT STRUCTURE



EPC CONTRACTOR'S PROJECT MANAGEMENT STRUCTURE

FIGURE 6.6-1 : ORGANIZATION FOR PROJECT CONSTRUCTION

(a) Construction Management Function

- Translate environmental mitigation measures into construction method statements and work instructions for engineers and foremen to carry out;
- Closely supervise construction activities with environmental impacts and implementation of mitigation measures to ensure residual environmental impacts will be within permissible limits;
- Ensure full compliance with all environmental management covenants in the Contract; and
- Coordinate and facilitate environmental monitoring activities of the EHS personnel.

(b) EHS Management Function:

- Review the Project CEMP and prepare a Contract specific CEMP;
- Update the Contractor-specific CEMP as needed to reflect the latest changes in construction plan or schedules;
- Prepare environmentally-related construction method statements and work instructions in consultation with the construction management functional unit;
- Carry out environmental monitoring of construction activities as prescribed in the monitoring schedules in the Contract-specific CEMP;
- Closely supervise the implementation of environmental mitigation measures in collaboration with the construction management functional unit;
- Prepare periodic EHS performance reports for submitting to the Project Proponent;
- Coordinate with the EHS management functional unit of the Project Proponent to facilitate site inspection or visits of officials from MONREC/ECD, other government agencies, and representatives of communities in the vicinities;
- Cooperate with the Project Proponent in investigations related to public complaints;
- In consultation with the construction management functional unit, prepare recommendations to the Contractor Project Manager on corrective actions related to environmental performance; and
- Carry out environmental monitoring during the commissioning of power plant system and prepare an environmental performance report of the power plant.

It should be noted that environmental management during the system commissioning will be included in the OEMP. The power plant operation and maintenance team will participate in the commissioning and will take over the power plant and associated facilities once the technical and environmental performance of the power plant is accepted.

The Project Management team will support the power plant O&M team during the transition phase between construction and operational phases. In particular, the Project Management team is responsible for the sign off construction and post construction resource consent and designation conditions, handover of environmental monitoring data and reports and compliance and audit reports before the Project is handed to the O&M team.

6.6.3 Documentation

All documents generated in environmental management and references used will be systematically filed and maintained as part of the Project documentation system. The Contractor is required to design and establish an appropriate documentation system for environmental management as an element of its project documentation system which is an integral element of its project management information system. The documentation system will include an appropriate document control procedure.

The Contractor will ensure that the Project Proponent will have a convenient access to its documentation system for environmental management. The documentation system will provide information for environmental audit of the Contractor. Details on the access to the documentation system and documentation control related to the Project Proponent will be worked out by the Contractor and presented in its CEMP.

6.6.4 Communication Plan

Environmental management of the Project construction will involve communication, both internally and externally. Clear, concise and timely communications are important to the achievement of the objectives of environmental management.

Internal communication will involve: (i) communications within PMO; and (ii) communications within CPMO; and (iii) communications between PMO and CPMO. External communication will involve communications between PMO and stakeholders and the public. Communications between CPMO and stakeholders will need to receive prior concurrence of PMO.

Communications relevant to environmental management of the Project construction will clearly be a part of the project communication.

(1) Objectives of Communication

Internal Communication

The objective of internal communication within PMO and CPMO is to ensure efficiency of environmental management of the Project construction.

The objective of internal communication between PMO and CPMO is to ensure efficiency in monitoring and control environmental management performance of the Contractor, which leads to efficient environmental management of the Project construction.

External Communication

The objective of external communication between PMO and MONREC and other concerned government authorities is to comply with the reporting requirements prescribed in the EIA Procedure.

The objectives of external communication between PMO and communities around the Project site as well as mass media and Non-Governmental Organizations (NGOs), if any, are to: (i) ensure adequate and correct understanding of environmental impacts of the Project; and (ii) keep the stakeholders closely informed of the Project's efforts in environmental management and environmental performance of the Project construction. The bottom line is to create trust among the stakeholders in the Project's determination and commitment to environmental management to enable the Project to exist in harmony with the environment and communities.

(2) Topics of Communication

Major topics of communication include:

- Scope of construction;
- Construction schedule;
- Environmental impacts and mitigation measures;
- Environmental policy, objectives, and targets;
- Environmental management roles and responsibilities;
- Legal requirements and environmental quality standards;
- OCEMP;
- CCEMP;
- Results of environmental monitoring and performance evaluation;
- Hazards and emergency situation; and
- Mechanisms for grievance redress, queries, comments, or complaints from stakeholders

As communication involves providing information, information requirements related to the above communication topics for various communicating parties will need to be identified. Internal and external communications will have different information requirements as they have different objectives. ***Table 6.6-1*** presents a tentative information requirements for the internal and external communications.

TABLE 6.6-1

INFORMATION REQUIREMENTS FOR INTERNAL AND EXTERNAL COMMUNICATIONS IN ENVIRONMENTAL MANAGEMENT DURING CONSTRUCTION

Information	Communications	
	Internal	External
Basic Information		
Corporate's environmental policy on project construction	√	√
EIA Report	√	√
Owner-CEMP	√	√
MONREC's EHS requirements or conditions attached to the issuance of ECC	√	√
Contractor-CEMP	√	√
EHS's specification and clauses in the EPC contract	√	
Construction schedule	√	√
Project EMS	√	
Project management organization-Owner	√	√
Construction management organization-Contractor	√	√
Information Generated in EHS Management		
Daily, weekly and monthly site inspection reports	√	
Environmental monitoring results	√	
Minutes of project review meetings-EHS	√	
Monthly monitoring reports	√	
Minutes of Tripartite Committee's meetings	√	√
Complaints register and response	√	√
Reports on visits by media and stakeholders for environmental purposes	√	
Environmental incident reports	√	√
Corrective action reports	√	√
Biannual monitoring reports submitted to MONREC	√	

(3) Methods of Communication

The internal communication will use informal communication, formal communication through meetings, and formal correspondence in writing through e-mail or letters, notice boards, and formal notifications or instructions. The methods of communication will follow the methods of project communication.

The external communication will use a variety of methods depending on the purpose of communication and the stakeholders. The methods of communication will follow the methods of project communication.

(4) Responsibilities

Project Proponent

The EMS Manager of the Project Proponent is responsible for:

- Communicating the Project's environmental policy, commitments and procedures to all project management staff;
- Communicating roles and responsibilities for environmental management and the results of monitoring activities carried out by the Contractor;
- External communications with stakeholders under the supervision of the Project Manager;
- Preparing a list of information to be provided in external communication and persons with authority to release the information;
- Recording the external communication on an External Communication Log and tracking any pending matters; and
- Supporting the Project's public relation activities through providing environmentally related information.

The Contractor

The EMS Manager of the Contractor has the following responsibilities:

- Communicating the Project's environmental policy, commitments and procedures to all project management and construction personnel;
- Communicating roles and responsibilities for environmental management and the results of monitoring activities to all personnel;
- Providing information support to the Project Proponent's EMS Manager for use in external communication with stakeholders as well as in internal communication.

(5) Management Review

This CEMP will be consistently reviewed and updated by the EMS Manager or the Project Manager to ensure that it adequately responds to the construction progress and changes in the construction schedule and methods, if any.

6.7 REVIEW OF THE CONTRACTOR CEMP

The Contractor CEMP will be consistently reviewed and updated or amended to ensure that it remains adequately responsive to the construction progress and changes in the construction schedule and methods, if any.

The amendment of the Contractor CEMP could be initiated by the Contractor EHS Manager or Project Manager, or could be requested by the Owner Project Manager. The need for amending the Contractor CEMP will be triggered by the following:

- Environmental performance falls much below the benchmarks;
- Construction methods will be changed;
- Environmental quality standards and requirements have been upgraded by NDPCEI; and
- There will be changes in the scope of construction, design, or site

The review and updating or amendment of the Contractor CEMP will follow the following procedure:

A. The amendment is initiated by the Contractor

1) The Contractor will submit the proposed changes to the Owner Project Manager for review and approval. The Owner EHS Manager will support the Owner Project Manager in reviewing the proposed changes and their implications on environmental performance of the construction; and

2) The proposed amendments will be recorded in accordance with the established document control system. The Owner Project Manager will undergo the contract variation procedure to effect the changes in the Contractor CEMP.

B. The amendment is initiated by the Owner

1) The Owner ESH Manger or the Owner Project Manager could see the need for amending the Contractor CEMP. The EHS Manager will recommend the needed changes to the Project Manager;

2) The Power Plant Manager will review the recommendations and assess their implications on environmental performance of the construction. The Power Plant Manager will make a decision on the recommended revisions;

3) If the proposed amendment is approved, the Owner Project Manager will request the Contractor to amend the Contractor CEMP. The changes will be recorded in accordance with the document control system; and

4) A contract variation will be issued, if necessary. For minor changes, contract variation would not be necessary. An addendum signed by the owner and the contractor project managers will be added to the amended Contractor CEMP.

6.8 PUBLIC CONSULTATION AND DISCLOSURE

6.8.1 Organization for Public Consultation

A tripartite committee is proposed to be set up by the Project in consultation with the community heads and representatives of the national, regional, and township administrations. The committee should be represented by: (i) the government sector, including MONREC/ECD, Department of Electric Power (DOEP) of Tanintharyi Region, Dawei District including Yebyu Townships; (ii) villages nearest to the Project site; and (iii) the Project Proponent. Tentatively, the committee should not have more than 12 members; of which 3 represent the government sector, 4 represent the villages, and 3 represent the Project Proponent. The ECD official should be the chairperson and the Project Manager of the Project Proponent should serve as secretariat of the committee. The secretariat will be assisted by the EHS Manager of the Project Proponent as assistant secretariat of the committee. Representatives of the Contractor should participate in the committee meetings to support information.

The tripartite committee should have the following responsibilities:

- Review and comment on the Contractor CEMP submitted by the Contractor to ensure the Contractor CEMP adequately address key concerns or issues raised by the stakeholders;
- Review the periodic monitoring and evaluation reports and, if there are performance gaps, give advices on the most appropriate course of action to fill the gaps;
- Review the periodic reports on issue and grievance management;
- Appoint additional committee members as deemed appropriate;
- Organize public discussion forum for promoting understanding of the Project and the communities' needs, and cooperation among the three parties for mutual benefits; and
- Review and comments on community assistance initiatives of the Project as part of its CSR.

The tripartite committee may appoint two working groups, one on environmental management, and another on social management, to provide technical supports to the committee.

6.8.2 Information Disclosure

Information to be disclosed during the Project construction phase will be monitoring reports as required in Article 90 of the EIA Procedure shown below.

The Project Owner shall within ten (10) days of completing a monitoring report contemplated in Articles 88 and 89 in accordance with EMP schedule make the report publicly available on the Project's website, at a designated public office as agreed with the Ministry and at the Project offices. Any organization or person may request a digital copy of a monitoring report and the Project shall, within ten (10) days of receiving such request, submit a digital copy via email or as may otherwise be agreed upon with the requestor.

The Owner PMO will make arrangements for the disclosure of monitoring reports in compliance with the above legal requirements. In addition, information on environmental management will be disclosed to the proposed tripartite committee.

6.8.3 Grievance Redress

A grievance redress process will be established and implemented as part of project management by the PMO. The process is shown in a diagram in ***Figure 6.8-1.*** Each step of the process is clearly explained in the diagram. The process will enable efficient management of grievance redress or response to complaints related to EHS of the Project construction.

6.9 CORPORATE SOCIAL RESPONSIBILITY

Corporate Social Responsibility (CSR) is established in order to cooperate with the stakeholders for mutual understanding.

6.9.1 Objectives

The main objectives are as follows:

- To disseminate the project information to the stakeholders throughout the Project life.
- To monitor the Project impacts which may affect to the locals continuously.
- To be communication channel for the others to the Project.
- To support and promote communities' activities, including local authorities.

6.9.2 Approach

CSR will be implemented throughout the Project life, covering pre-construction, construction and operation phases. In principle, the Project will put all efforts to determine CSR program to match requests of the stakeholder, especially local communities. The following is a list of activities which could be included in the CSR program.

(1) Establishment of Community Participatory Committee

The Community Participatory Committee should be the same as a tripartite committee which represents by:(i) the government sector, including MONREC/ECD, Department of Electric Power (DOEP) of Tanintharyi Region, Dawei District from Yebyu Townships; (ii) villages nearest to the Project site; and (iii) the Project Proponent. This committee should be completely established before commencement of construction.

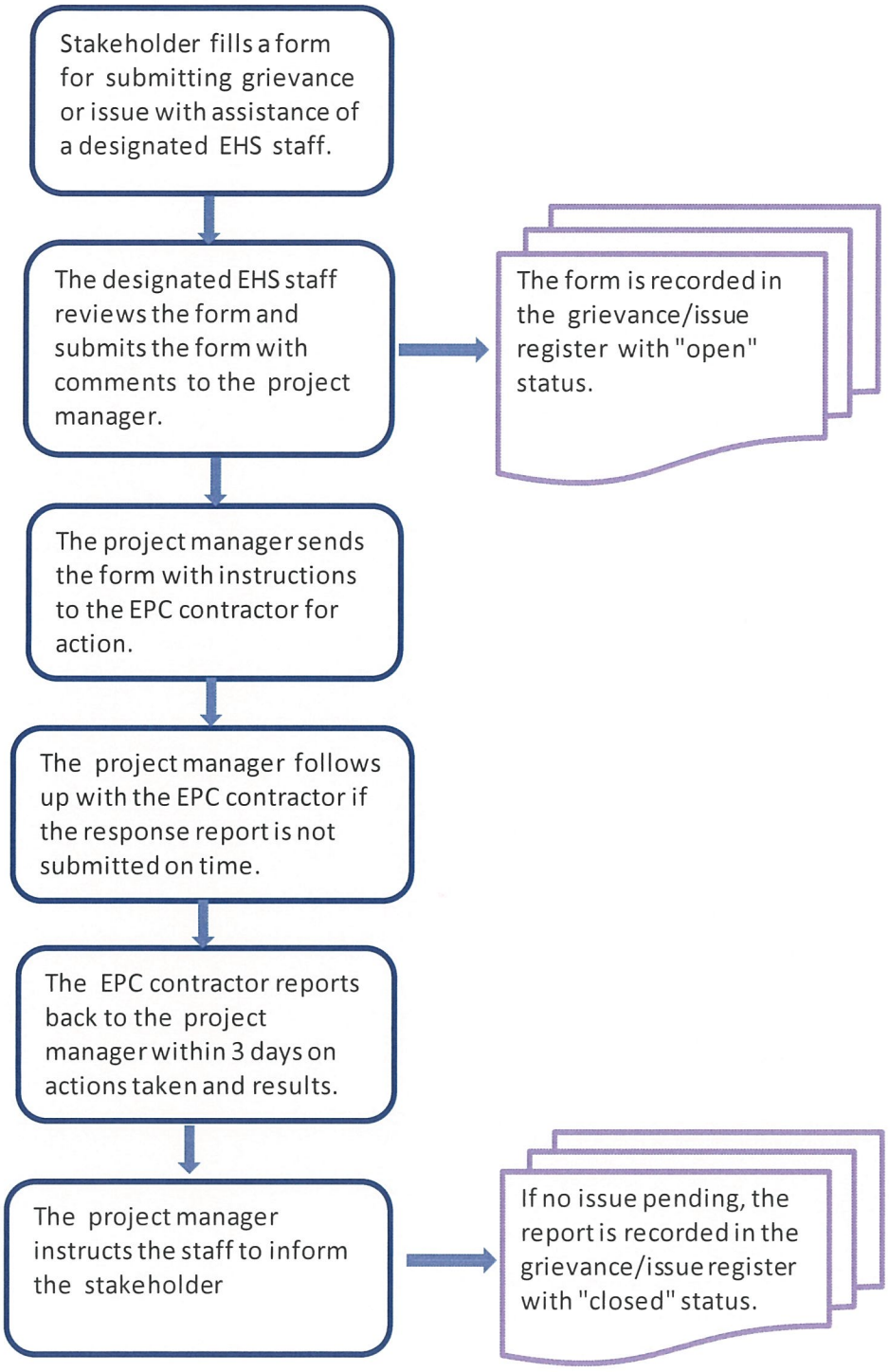


FIGURE 6.8-1 : GRIEVANCE MANAGEMENT PROCESS

The committee will involve in public relation for the Project, building understandings and good relationship between the Project and nearby communities, participation in monitoring the Project impacts, receiving complaints arisen from the project impacts and compromising conflicts between the Project and the locals.

One of the important roles is supporting communities' activities as appropriate in order to build up good relationship and social responsibility with the locals.

(2) Establishment of Channel for Public Relation and Information Disclosure

Public Relation and Information Disclosure will be developed and undertaken through several channels such as:

- Local media,
- Notice board at visible locations,
- Placement of leaflet at various places,
- Meeting,
- Participate local activities such as traditional festival,
- Visit the communities,
- Open house of the Project,
- etc.

(3) Involvement in Grievance Redress

A grievance redress process is illustrated in a diagram in ***Figure 6.8-1, Chapter 6 of EMP***. CSR will assist to manage the grievance redress or response to complaints related to the Project impacts.

(4) Establishment Good Relationship with Communities

The Project will establish good relationship with communities by supporting communities' activities, comprising:

1) Education

The Project will provide appropriate educational supports to the schools, particular in the responsible area of 5 km radius from the Project site. The support will be designed to match the needs to the locals.

2) Health Care and Sanitation

The Project will promote and support communities on environmental care, health care, sanitation system.

3) Religions and Culture

The Project will cooperate with local authorities, communities' leaders and villagers in the responsible area to support on religious, traditional and cultural festivals as identified by the locals.

4) Socio-Economic Condition

Support on socio-economic condition will be in form of:

Employment Opportunity

The Project will hire the qualified locals as many as possible. This aims to support the locals and boost up local economy.

Occupation Promotion

The Project will support on occupational trainings which are suitable to local circumstances. Therefore, agricultural training such as crop and livestock production or handicraft promotion will be organized for villagers in all villages within 5 km. radius from the Project.

Gender Development

The Project will support particular skill training to women and girls in the responsible area. Emphasis will be on food processing, food preservation and food preparation from local products of natural resources and agriculture. Hygiene and sanitation will be included in the training. These will not only assist them to have better nutrient value of the food, but also generate income by mean of selling processed and preserved food.

(5) Regular Meeting with Communities

Regular visit to the locals will provide opportunity to acknowledge problems arisen from the Project implementation, and build up mutual understandings in the responsible area.

(6) Reporting on Results the Project Implementation, Mitigation Measures and Monitoring

The Project will report these results to concerned authorities and communities.

(7) Involvement in Solving Problems As Promise to the Communities

This will encourage the stakeholders to have confidence in the Project.

(8) Continuation of Activities

The Project will review CSR plan and activities annually. Improvement and adjustment will be carried out as necessary for better efficiency of implementation.

6.10 ENVIRONMENTAL RISK MANAGEMENT

Environmental risk management is to be carried out as part of the Project risk management. ***Section 6.5.4*** in ESIA is described on environmental risk assessment identifies and assesses environmental risks during the construction phase. Each major environmental risk will be documented in an Environmental Risk Register (ERR). The ERR is to be maintained and regularly updated and reassessed to allow all significant aspects to be identified. The Risk Register will allow the Project team to monitor risk factors, update the risk assessment, and make changes to the risk mitigation measures and controls accordingly to ensure efficient risk management. It should be noted that an emergency plan is essentially a risk mitigation measure.

6.11 AUDIT

External EHS audits will be undertaken at the end of first year of the construction period and at physical completion of the construction. These two audits will be undertaken by external Environmental Auditing Consultants to review the overall implementation and effectiveness of the CEMP, related site specific plans, procedures and associated documentation and overall standard of onsite compliance with legislative requirements.

Audit reports, action plans and any other documentation stemming from the audit process shall be kept for a minimum of five years. The EHS Manager will be responsible for site filing of these documents.

CHAPTER 7

OPERATIONAL AND DECOMMISSIONING PHASE EMP

CHAPTER 7

OPERATIONAL AND DECOMMISSIONING PHASE EMP

7.1 OBJECTIVES OF THE OEMP AND DEMP

Environmental management in the operational phase and decommissioning will be carried out by a power plant Operation and Maintenance (O&M) organization to be established by the Project Proponent. The objective of environmental management of Project operation is to ensure that O&M of the power plant and its associated facilities will not create significant impacts and will meet all applicable standards and guidelines and requirements prescribed as conditions for issuing an Environmental Compliance Certificate (ECC) and the operation permit.

The key objective of the Operation EMP (OEMP) and decommissioning EMP (DEMP) presented in this section is to establish a clear operational framework for environmental management during these two phases of the Project. The Engineering Procurement Construction (EPC) Contractor will then use this OEMP and DEMP to prepare a more detailed OEMP and DEMP which will be based on the detailed designs of the power plant, results of the commissioning, and O&M details. The detailed OEMP and DEMP will be reviewed and revised as appropriate by the power plant O&M team to reflect actual conditions during commercial operation.

7.2 MITIGATION MEASURES AND PLANS

The EIA study (Volume 1-EIA Report in Chapter 6) confirms that O&M of the power plant and its associated facilities will not create any significant environmental impacts. Environmental management in the operational phase will cover the following tasks: (i) scheduled monitoring of air quality; (ii) waste management; (iii) changing of traffic condition by LNG transportation; (iv) occupational safety and health; (v) local communities issues; (vi) operation staff management and (vii) emergency management (flood and cyclone). ***Appendix 7A*** presents sub-plans of the five tasks.

Environmental management during the decommissioning phase will cover the following tasks: (i) monitoring of air quality; (ii) monitoring of noise and vibration; (iii) waste management; (iv) traffic management; (v) OSH management; and (vi) Social Management Plan. ***Appendix 7B*** presents sub-plans of the six tasks.

The sub-plans will be working documents and as such they will be reviewed and amended or updated as deemed necessary.

7.3 ENVIRONMENTAL MANAGEMENT SYSTEM (EMS)

The power plant O&M organization will set up an EMS for its O&M activities. The final OEMP and DEMP will therefore be the core document of the EMS. The OEMP and DEMP will be implemented by the power plant O&M team as part of the O&M of the power plant. During the operational and decommissioning phases, environmental management activities will be routine and the power plant organization will be responsible for environmental performance of the power plant.

7.3.1 Monitoring, Evaluation and Reporting

7.3.1.1 Scheduled Environmental Monitoring and Evaluation

Before commencing the commissioning of Project facilities, the Contractor will review and update existing data on relevant baseline environmental condition, particularly at locations expected to be affected by the power plant operation and decommissioning.

Scheduled monitoring of environmental performance is required throughout these two phases of the Project, including the commissioning, to evaluate compliance with legal requirements, the environmental management objectives, and relevant policies, standards and guidelines. The monitoring and evaluation will enable the overall effectiveness of the environmental controls to be determined and allow areas of non-compliance to be identified so that corrective actions can be taken. The environmental monitoring plan is included in each sub-plan.

Environmental monitoring will be undertaken according to the following:

- The power plant's EHS Manager will be responsible for implementing the monitoring plans, and arranging training and specialist consultants for the monitoring as required.
- The monitoring will be conducted by the power plant's EHS Manager using the generally accepted methods shown in the monitoring plan.
- Environmental results not meeting the required standards will be managed as per the corrective action process.
- The Power Plant's EHS Manager will report the non-compliances to the Power Plant Manager and will advise the Power Plant Manager corrective actions to eliminate the non-compliances.

7.3.1.2 Site Inspections

In addition to scheduled environmental monitoring, the EHS Manager will conduct daily, weekly and monthly general inspections of the power plant site and facilities, including the gas distribution facilities. The objectives are to early identify or detect factors which, if unattended to, could result in major environmental events and/or non-compliances. A general scope of inspections is outlined in ***Table 7.3-1*** and ***Table 7.3-2***, and it will need to be updated by the EHS Manager before commencing the commercial operation.

TABLE 7.3-1

OUTLINE OF SITE INSPECTION PLAN IN OPERATION PHASE

Inspection Focuses	Daily Inspections	Weekly Inspections	Monthly Inspections
Cleanliness	√	√	√
Tidiness	√	√	√
Sanitation conditions of toilets	√	√	√
Condition of green areas		√	√
Condition of drainage system		√	√
Condition of gas leak detection system	√	√	√
Storage of hazardous materials	√	√	√
Noise level in the working areas	√	√	√
Temperature in the working areas	√	√	√
Operator's use of protective equipment	√	√	√
Conditions of emergency response equipment	√	√	√
Compliance with OHS requirements			√
Risk Triggers	√	√	√

TABLE 7.3-2

OUTLINE OF SITE INSPECTION PLAN IN DECOMMISSIONING PHASE

Inspection Focuses	Daily Inspections	Weekly Inspections	Monthly Inspections
Cleanliness	√	√	√
Tidiness	√	√	√
Sanitation conditions of worker accommodation (if any)		√	√
Storage of hazardous materials		√	√
Fugitive dust	√	√	√
Ambient noise level	√	√	√
Safety in work places	√	√	√
Operator's use of protective equipment	√	√	√
Compliance with OHS requirements			√
Refuse disposal	√	√	√
Drainage	√	√	√
Waste disposal	√	√	√
Risk triggers			√

The daily inspections will be informal visual inspections to observe conditions of the power plant and its associated facilities. For operational phase, the focus will be on the noise and temperature in the working areas, functioning of the wastewater treatment facilities, and conditions of fire and safety equipment. For decommissioning phase, the focus will be on the air quality, noise, waste and traffic in the working areas, including conditions of safety equipment.

The weekly inspections will be formal visual inspections in more details than the daily inspections.

The EHS Manager will be responsible for the daily and weekly site inspections. The Operation Manager will participate in the weekly site inspections, and occasionally in the daily site inspections.

The monthly inspections will be conducted in more detail than the weekly inspections. The monthly inspections will also include risk triggers identified in the environmental risk management plan. The monthly inspections will be conducted jointly by the EHS Manager and the Operation Manager.

7.3.2 Environmental Incidents

7.3.2.1 Definition of an Environmental Incident

In addition to scheduled environmental monitoring, the monitoring will also need to include environmental incidents. An environmental incident during Project operation and decommissioning is an occurrence which has (or potentially could have had) a negative or adverse effect on the environment. An adverse effect is something that causes (or could have caused) environmental harm. An environmental incident can also be a deviation from a requirement or practice prescribed in the operation manual or the detailed OEMP and DEMP. The occurrence of an environmental incident indicates a failure to follow the established process or procedures that help the Project achieve best practice (e.g. failure to report a spill). Some environmental incident could create an emergency, i.e. its impact is so serious that it has to be promptly dealt with. Potential environmental incidents and emergencies are identified in the environmental risk assessment for the operational and decommissioning phases in ***Chapter 6 of ESIA report***.

7.3.2.2 Environmental Incident Form

An environmental incident, once noted, has to be recorded in an Environmental Incident Form (EIF). A standard Environmental Incident Form (EIF) template will be used for all site specific activities throughout the operation of the Project. An Environmental Incident Form is proposed in ***Appendix 7C***.

7.3.2.3 Environmental Incident Register

The EHS Manager will input all data from completed EIFs as soon as possible to generate an Environmental Incident Register (EIR). A standard Environmental Incident Register (EIR) will be controlled by the EHS Manager. It will contain all environmental incidents occurring during the operations and decommissioning of the power plant, and gas pipeline. The EIR will be discussed regularly at the monthly environmental performance review meetings. The meetings will discuss the corrective actions taken and the preventative measures that have been put in place.

7.3.3 Monitoring Reports

Two types of monitoring reports will be generated in the environmental monitoring and site inspections. The first type is reports generated for internal use to provide feedback to the EMS. The second type is reports generated for submission to MONREC.

7.3.3.1 Internal Monitoring Reports

Site Inspection Reports

The EHS Manager will record results of the daily inspections in daily site inspection notes. The EHS Manager and the Operation Manager will review the daily site inspection notes on a weekly basis to confirm that the checks and subsequent required works are being carried out, and additional inspections are included.

For weekly inspections, the EHS Manager will present results of the inspections in weekly site inspection reports for discussion in the weekly operation review meetings. Both the daily inspection notes and weekly inspection reports will highlight factors or events that could lead to non-compliance and will need attention of the Plant Manager.

The EHS Manager will prepare monthly site inspection reports as part of the monthly environmental monitoring reports.

Environmental Monitoring Reports

The EHS Manager will prepare monthly environmental performance reports for submission to the Plant Manager. The monthly environmental monitoring report will concisely present (i) results of scheduled environmental monitoring and site inspections carried out during the month; (ii) identified non-compliance, if any, and causes of the non-compliance; (iii) complaints received; (iv) environmental incidents; (v) associated investigations and corrective actions taken; (vi) proposed changes to the monitoring plan, if any; and (vii) work program for the following month.

The monthly environmental performance reports will be discussed in the monthly operation review meetings.

7.3.3.2 Monitoring Reports for Submission to MONREC

Based on the monthly internal monitoring reports and results of the monthly review meetings, the EHS Manager will prepare a project environmental monitoring report of OEMP every six months for submission to MONREC while only once for DEMP when completion of the decommissioning. This report as prescribed in the EIA Procedure (Article 109) will contain the following:

- Documentation of compliance with all Conditions;
- Progress made to date on implementation of the EMP against the submitted implementation schedule;
- Difficulties encountered in implementing the EMP and recommendations for remedying those difficulties and steps proposed to prevent or avoid similar future difficulties;
- Number and type of non-compliance with the EMP and proposed remedial measures and timelines for completion of remediation;
- Accidents or incidents relating to the occupational and community health and safety, and the environment; and
- Monitoring data of environmental parameters and conditions as committed in the EMP or otherwise required.

7.3.4 Corrective Actions

The Operational Manager or the EHS Manager will be instructed by the Plant Manager to take corrective actions if EHS non-compliances are identified. Taking corrective actions in managing EHS aspect of the power plant operation will be a part of power plant operation management and use the same procedure for taking corrective actions in managing other aspects of the power plant operation. The procedure proposed in these OEMP and DEMP will therefore have to be reviewed and revised as necessary to make it similar to the procedure for other aspects of the power plant management. A single procedure for taking corrective actions should be used in the power plant management.

A. Categories of Non-Compliances

Non-compliances cover non-compliance with legal requirements, non-conformance with internal requirements of the Project, inadequate environmental performance, environmental incident, and complaints or grievances received from the public. Non-compliances could be identified from the following:

- External EHS audits;
- Internal EHS audits;
- Site inspection notes and reports;
- Scheduled environmental monitoring;
- Complaints, grievance or inquiries registers;
- Environmental incident registers;

- Specific environmental studies and reports;
- Directives from MONREC/ECD or other government authorities;
- Review meetings;
- Recommendations from any power plant personnel and stakeholders, which are considered by the EHS Manager and the Plant Manager to warrant investigation.

EHS non-compliances can be identified, ranked and recorded at three levels. Once the level of a non-compliance has been established the appropriate tool shall automatically be selected for closing out the non-compliance. The actions required for each are detailed below; also a temporary work suspension for cause may be enforced in case of Level A or B non- compliances.

Level A: A critical non-compliance situation which has the potential for an extreme health and safety incident, significant impacts on ambient air quality and water quality, and disregard of conditions attached to the operation permit. Intentional disregard of plant operation and maintenance procedures and standards which may lead to a serious ESHS incident is also classified as Level A.

Level B: A non-compliance situation not consistent with the original requirements but not believed to present an immediate threat to an identified important resource, community or employee health and safety.

The non-compliance may also be of a procedural nature where the operational personnel have failed to implement specified requirements and actions. In this case, the Plant Manager, the Operation Manager, or the EHS Manager, depending on the nature of non-compliance, may need to take actions to ensure the procedural requirements are effectively implemented.

B. Responsibilities and Process

The EHS Manager will be responsible for identifying and ranking EHS non-compliances. However, all plant personnel are encouraged to help identify EHS non-conformance.

The EHS Manager will take actions according to the category of non-compliances.

For Level A Non-Compliances: The EHS Manager will report the identified non-conformances to the Plant Manager with recommendations on corrective actions and instructions for taking the corrective actions.

For Level B Non-Compliances: The EHS Manager or the Operation Manager will take appropriate corrective actions.

The Plant Manager will be responsible for:

- Issuing instructions to the EHS Manager or the Operation Manager to take corrective actions within a given timeframe;
- Follow up on the progress of corrective actions; and
- Evaluate the results of corrective actions.

The EHS Manager or the Operation Manager will conduct an investigation of the non-compliance under their responsibility to determine its root causes and formulate effective actions to correct the root causes.

For Level B non-compliances, the EHS Manager or the Operation Manager will submit a brief note on corrective actions to be taken to the Plant Manager.

For Level A non-compliances, the EHS Manager and the Operation Manager will submit a brief report on the results of investigation and proposed corrective actions to the Plant Manager.

The EHS Manager will prepare a non-compliance report to close the case.

C. Corrective Action Request

Instructions to the EMS Manager or the Operation Manager will be in the form of Corrective Action Request (CAR). The CAR will contain: (i) information sources on non-compliance; (ii) description of non-compliance; (iii) category of non-compliance; (iv) originator; and (v) time frame for corrective actions.

The corrective action requirements will be included in the requirement tracking system of the power plant management information system.

D. Non-Compliance Report

The EHS Manager will prepare a brief non-compliance report based on the CAR and results of taking corrective actions. The non-compliance report will contain: (i) information in the CAR; (ii) corrective actions taken; (iii) implementation period; (iv) results; and (v) recommendation for further actions, if any. The non-compliance report should be in one or two pages in a Form to be designed.

Each and every non-compliance report will be closed out on a case by case basis.

Non Compliance Report Forms will be verified and closed out by the EHS Manager or his designee. Correspondence referring to a proposed course of action shall be referenced and attached to the Non Compliance Report Form as appropriate and stored within the power plant documentation system.

7.4 EMERGENCY RESPONSE PLAN

Although the power plant O&M is considered safe, it is probable that emergency situations could occur such as fast spreading fires, explosions, bursting of gas or steam pipes, gas leakage, including natural disaster of storm or flood. These emergency situations could seriously affect the power plant's operation, and could result in damages to properties and injuries of plant personnel. The emergency situations therefore need prompt and effective response to return the power plant to normal operation as early as possible and minimize damages to properties and injuries of personnel.

The Project Proponent has already prepared the Emergency Response Plan since an early stage of the Project, at pre-construction and construction phases. The plan also covers the operational and decommissioning phases. Details are shown in ***Chapter 6, Section 6.5*** of EMP report.

7.4.1 Prevention Plan and Fire Restrain Causing by Natural Gas

(1) Objectives

- To prevent fire and explosion due to natural gas leaked and explosion
- To effectively prepare and operate during fire

(2) Basic Data should be Known

To secure safe natural gas operation, gas properties which may cause danger should be known. They are:

- Property of natural gas which cause danger
- Danger causing by natural gas
- Practices when entering into danger zone
- Precaution for a case of gas leakage
- Examination of probable gas leaking position
- Repairing and maintenance of gas flowing equipment and pipe

7.4.2 Fire Fighting Plan

The gas leaked could cause fire and/or explosion. Precise firefighting plan including regular practice of fire escape will be necessary and helpful to control and resolve the situation back to normal. These include:

(1) Practice during Working Hours

The power plant manager will determine the level of emergency whether it is level 1 or level 2. Emergency cause is classified into two levels as follows:

Emergency Level 1

A case occurs in the areas of the Project site that the Project can control the situation and limit the damage with support of employees and workers, available fire extinguisher devices until the situation turns to normal stage.

Emergency Level 2

A case occurs both inside and outside the Project site. In case the Project manager determines that supporting plan of emergency level 1 cannot be used. He must request support both manpower and equipment from other agencies to control the situation.

The manager will instruct to control the situation and protect equipment, machinery including evacuate people to safety zone. Official instructions which are frequently used include contacting fire brigade station, prepare to transport injured persons to the hospital, operation firefighting team, evacuation people from accident to assembly point, closing of traffic, closing entrance-exit of the power plant, etc. In addition, trained employees of each team will work together as follows:

- **Standby Employee**

Employee working during working hours will be responsible for maintaining fire extinguishing devices and preparing firefighting fire when instruction announce.

- **Fire Fighting Chief**

Firefighting chief will be responsible for controlling and instructing firefighting team to practice effectively. Therefore, the chief must report fire situation to an emergency director to request for support and coordinate with standby employees. However, an assigned staff must inform an emergency director to request manpower support or announce when situation becomes at emergency level 2.

- **Fire Fighting Team**

Firefighting Team consists of employees who are well trained on using fire hydrant and chemical fire extinguishing tank. The team will be responsible for squirting water or chemicals after receiving an instruction from an assigned staff. The team will take function to support firefighting officer in the area where fire arises severely.

- **Fire Fighting Device Team**

Firefighting device team consists of employees who are trained on using fire extinguisher devices such as opening fire hose cabinet, releasing fire hose, connecting fire hose with fire hydrant, preparing chemical extinguisher and firefighting materials such as helmet, shirt, gloves, shoes and communicating devices. Therefore, this team will be responsible for examining fire extinguishing device to be ready for use during working hours.

- **Water Fire Extinguishing Team**

Water fire extinguisher team consists of employees who are trained on using fire pump such as pump controller, electric motor fire pump and engine fire pump.

- **Survey and Evacuation Team**

Evacuation team consists of employees responsible for counting number of employees, taking them to safety zone (an assembly point), surveying injuries and taking the injuries to first aid team.

- **First Aid Team**

First aid team consists of employees responsible for first aid treatment, first aid device preparation, spinal board preparation, preparing to transport injured persons to the hospital, contact the hospital, moving patient by using spinal board, conducting temporary splint first aid treatment for patient before taking to hospital.

- **Security Team**

The security team during fire will control traffic within the power plant site by setting barriers, managing route for fire trucks approaching accidental place by clearing obstructing vehicles, preventing property of the power plant; prohibiting unauthorized people to enter into accidental area and managing obstructing vehicles.

(2) Practice during Off-Hour

Workers or employees facing an accident must determine whether he himself can resolve the accident or not. If not, the workers or employees must inform a central controlling building and emergency director to request for support immediately. A periodic chief will be an emergency director determining the accident when low number of employee works during off-hour. In case an accident is determined at emergency level 2, the director must immediately inform fire brigade station. Then, the director will also inform employees who are working, firefighting team and first aid team. He will instruct to perform the same as practicing. If there are injuries, the director must inform the hospital and transport them there. In addition, the director will cut off electricity around water squirting areas. Then, the director will report the situation of accident to a power plant manager and employees concerned as follows:

- **Standby Employee**

An employee working in irregular hours will be responsible for maintaining fire extinguishing devices and preparing for firefighting when a periodic chief gives instruction to him.

- **Fire Fighting Chief**

Firefighting chief will be responsible for receiving instruction from emergency director and collaborating with firefighting team. In addition, the chief will report fire situation to the emergency director for requesting support and coordinating with standby employee. In case fire is expanded and unable control, an assigned staff will inform the emergency director for requesting manpower support or announcing the situation become emergency level 2.

- **Fire Fighting Team**

Firefighting team consists of employees who are well trained on using fire pump, chemical fire extinguishing tank. The team will receive instruction from an assigned person and assume a function to support firefighting officer in the area.

- **Security Team**

Normally, the mission of security team is controlling entrance-exit door, preventing violators, protecting property of the power plant. In case fire occurs at night time, security team will prepare fire extinguishing devices such as opening fire hose cabinet, releasing fire hose, connecting fire hose to fire hydrant, preparing gloves, communicative devices and supporting fire extinguishing activities of the local fire extinguishing officer.

- **Emergency Supporting Team**

Emergency supporting team consists of employees who are trained on controlling fire at night time. They will coordinate with firefighting team and security team after both teams arrive at the accidental area. Therefore, the emergency supporting team must have telephone numbers of all employees, officers and agency concerned in hand.

- **Communication**

When emergency takes place in the power plant, the manager has to control a situation. In case it is beyond the ability, the manager has to call for assistance from other agencies. These will include, but not limit to

- Local authority of Yebyu Township.
- Police station in Yebyu.
- Yebyu station hospital and Dawei general hospital to prepare and support for injuries.

7.4.3 Gas Distribution Facilities Monitoring Measure

Safety and impact mitigation measures for gas distribution facilities under responsibility of the power plant will cover LNG storage tank, Ambient Air Vaporizer, gas pipeline laid in the project area. The proposed measures consist of an inspection of gas leakage at the possible leaking point on the pipeline, such as connecting point laid on ground near LNG storage tank and vaporizer, at least once a week.

7.5 ARRANGEMENTS FOR OPERATING THE EMS

7.5.1 Responsibilities

Environmental management will be part of the power plant management. Environmental management measures will be implemented by the plant operation team.

The Operation Manager will be primarily responsible for operation of environmental management facilities and implementing mitigation measures. He will therefore be responsible for EHS performance of the power plant.

The EHS Manager will be responsible for monitoring, evaluating, and reporting EHS performance of the power plant. He will work closely with the Operation Manager in formulating corrective actions to resolve non-compliance issues.

The Project Manager will supervise the Operation Manager and the EHS Manager in environmental management of the power plant operation.

MONREC through ECD and other government agencies at the regional, township and community levels will monitor and evaluate compliance of the power plant with legal requirements and prescribed conditions in the Environmental Compliance Certificate (ECC) or the permit for operation.

7.5.2 Organizational Structure

As environmental management will be carried out as part of the power plant management, it is a functional unit in the power plant management organization. ***Figure 7.5-1*** shows a tentative organizational structure for power plant management, including the EHS unit. The organizational structure will be revised as appropriate in due course by the Project Proponent before the commissioning.

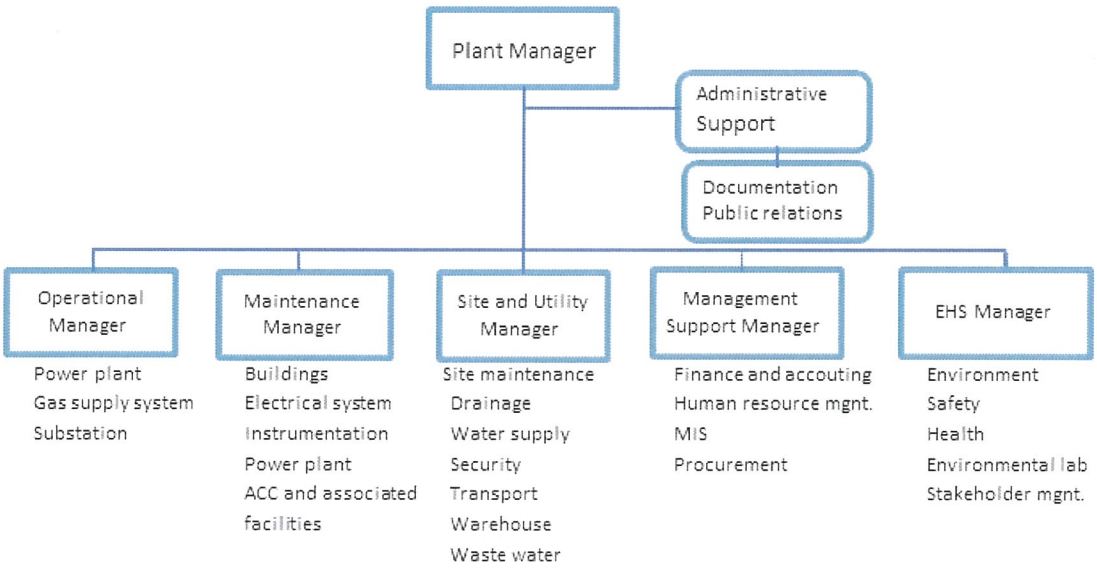


FIGURE 7.5-1 : TENTATIVE ORGANIZATION FOR POWER PLANT O&M AND ENVIRONMENTAL MANAGEMENT

The EHS management function will involve the following activities:

- Prepare the operation manuals for the wastewater treatment system, continuous emission management system (CEMS), and all scheduled environmental monitoring;
- Operate the CEMS and analyze the data generated by the CEMS for emission monitoring;
- Carry out scheduled monitoring as prescribed in the monitoring plan;
- Collaborate with the Operation Manager to ensure efficient operation of environmental management facilities and implementation of impact mitigation measures;
- Prepare periodic EHS performance reports for submitting to the Plant Manager;
- Coordinate with the Plant Manager and the Construction Manager to facilitate site inspection or visits of officials from MONREC/ECD, other government agencies, and representatives of communities in the vicinities;
- Cooperate with the Operation Manager in investigations related to public complaints;

- In consultation with the Operation Manager, prepare recommendations to the Plant Manager on corrective actions related to environmental performance;
- Prepare monthly monitoring reports for internal use as feedback to the EMS;
- Prepare bi-annual monitoring reports for submitting to MONREC; and
- Supervising environmental management during the commissioning period.

7.5.3 Documentation

All documents generated in environmental management and references used will be systematically filed and maintained as part of the power plant documentation system. The environmental management documentation system will provide information for environmental audit of the power plant operation.

The Power Plant Manager will design and establish an appropriate documentation system for environmental management as an element of the documentation system for the power plant operation which is an integral element of the power plant management information system. The documentation system will include an appropriate document control procedure.

7.5.4 Communication Plan

Environmental management of the power plant operation will involve communication, both internally and externally. Clear, concise and timely communications are important to the achievement of the objectives of environmental management.

Internal communication will involve: (i) communications within the EMS unit; and (ii) communications within the power plant organization. External communication will involve communications between power plant organization and MONREC as well as other stakeholders. Public communications between the EMS unit and stakeholders will need to receive prior concurrence of Power Plant Manager.

(1) Objectives of Communication

Internal Communication: The objective of internal communication is to ensure efficient environmental management of the power plant operation.

External Communication: The objective of external communication between the power plant organization and MONREC and other concerned government authorities is to comply with the reporting requirements prescribed in the EIA Procedure. The objectives of external communication with other stakeholders, especially communities around the power plant as well as mass media and NGOs, if any, are to: (i) ensure adequate and correct understanding of environmental aspect of the power plant operation; and (ii) keep the stakeholders closely informed of the power plant's efforts in environmental management and environmental performance. The bottom line is to create trust among the stakeholders in the power plant's determination and commitment to environmental management to enable the power plant to exist in harmony with the environment and communities.

(2) Topics of Communication

Major topics of communication include:

- Power plant operation;
- Environmental impacts and mitigation measures;
- Environmental policy, objectives, and targets;
- Environmental management roles and responsibilities;
- Legal requirements and environmental quality standards;
- OEMP, DEMP and EMS;
- Results of environmental monitoring and performance evaluation;
- Hazards and emergency situation; and
- Mechanisms for grievance redress, queries, comments, or complaints from stakeholders.

As communication involves providing information, information requirements related to the above communication topics for various communicating parties will need to be identified. Internal and external communications will have different information requirements as they have different objectives. ***Table 7.5-1*** presents a tentative information requirements for the internal and external communications.

TABLE 7.5-1

INFORMATION REQUIREMENTS FOR INTERNAL AND EXTERNAL COMMUNICATIONS IN ENVIRONMENTAL MANAGEMENT DURING OPERATION AND DECOMMISSIONING

Information	Communications	
	Internal	External
Basic Information		
Corporate EHS policy on power plant operation	√	√
EIA Report	√	√
MOEP	√	√
MONREC's EHS requirements or conditions attached to the Issuance of ECC	√	√
Operation manuals	√	
EMS	√	√
Power plant management organization	√	√
Various operational procedures related to EHS/OSH	√	

TABLE 7.5-1

INFORMATION REQUIREMENTS FOR INTERNAL AND EXTERNAL COMMUNICATIONS IN ENVIRONMENTAL MANAGEMENT DURING OPERATION AND DECOMMISSIONING (CONT'D)

Information	Communications	
	Internal	External
Information Generated in EHS Management		
Daily, weekly and monthly site inspection reports	√	
Environmental monitoring results	√	√
Minutes of EHS review meetings	√	
Monthly monitoring reports	√	√
Minutes of Tripartite Committee's meetings	√	√
Complaints register and response	√	√
Reports on visits by media and stakeholders for environmental purposes	√	√
Environmental incident reports	√	√
Corrective action reports	√	√
Biannual monitoring reports submitted to MONREC	√	√

(3) Methods of Communication

The internal communication will use informal communication, formal communication through meetings, and formal correspondence in writing through e-mail or letters, notice boards, and formal notifications or instructions. The methods of communication will follow the methods used in communication in the power plant organization.

The external communication will use a variety of methods depending on the purpose of communication and the stakeholders. The methods of communication will follow the methods of project communication.

(4) Responsibilities

The EMS Manager is responsible for:

- Communicating the environmental policy, commitments and procedures to all power plant operational personnel;
- Communicating results of monitoring activities;
- External communications with stakeholders under the supervision of the Power Plant Manager;
- Preparing a list of information to be provided in external communication and persons with authority to release the information;

- Recording the external communication on an External Communication Log and tracking any pending matters;
- Supporting the public relation activities through providing environmentally related information; and
- Providing information support to the Power Plant Manager for use in external communications with stakeholders as well as in internal communications.

The Power Plant Manager is responsible for:

- Communicating with MONREC and other government agencies;
- Communicating roles and responsibilities for environmental management to all personnel; and
- Communicating with public and other stakeholders as authorized by the company.

(5) Management Review

This OEMP will be consistently reviewed and updated by the EMS Manager or the Power Plant Manager to ensure that it adequately responds to the actual operation of the power plant.

7.6 PUBLIC CONSULTATION AND DISCLOSURE

7.6.1 Organization for Public Consultation

A tripartite committee is proposed to be set up by the Project in consultation with the community heads and representatives of the national, regional, and township administrations. The committee should be represented by: (i) the government sector, including MONREC/ECD, Department of Electric Power (DOEP) of Tanintharyi Region, Dawei District (Yebyu Townships); (ii) villages nearest to the Project site; and (iii) the Project Proponent. Tentatively, the committee should not have more than 12 members; of which 3 represent the government sector, 6 represent the villages, and 3 represent the Project Proponent. The ECD official should be the chairperson and the Project Manager of the Project Proponent should serve as secretariat of the committee. The secretariat will be assisted by the EHS Manager of the Project Proponent as assistant secretariat of the committee. Representatives of the Contractor should participate in the committee meetings to support information.

The tripartite committee should have the following responsibilities:

- Review the periodic monitoring and evaluation reports and, if there are performance gaps, give advices on the most appropriate course of action to fill the gaps;
- Review the periodic reports on issue and grievance management;
- Appoint additional committee members as deemed appropriate;

- Organize public discussion forum for promoting understanding of the Project and the communities' needs, and cooperation among the three parties for mutual benefits; and
- Review and comments on community assistance initiatives of the Project as part of its CSR.

The tripartite committee may appoint two working groups, one on environmental management, and another on social management, to provide technical supports to the committee.

7.6.2 Information Disclosure

Information to be disclosed during the Project operation phase will be monitoring reports as required in Article 110 of the EIA Procedure shown below.

The Project Owner shall within ten (10) days of completing a monitoring report contemplated in Articles 108 and 109 in accordance with EMP schedule make the report publicly available on the Project's website, at a designated public office as agreed with the Ministry and at the Project offices. Any organization or person may request a digital copy of a monitoring report and the Project shall, within ten (10) days of receiving such request, submit a digital copy via email or as may otherwise be agreed upon with the requestor.

The Owner PMO will make arrangements for the disclosure of monitoring reports in compliance with the above legal requirements. In addition, information on environmental management will be disclosed to the proposed tripartite committee.

7.6.3 Grievance Redress

A grievance redress process will be established and implemented as part of project management by the PMO. The process is shown in a diagram in ***Figure 7.6-1.*** Each step of the process is clearly explained in the diagram. The process will enable efficient management of grievance redress or response to complaints related to EHS of the Project operation.

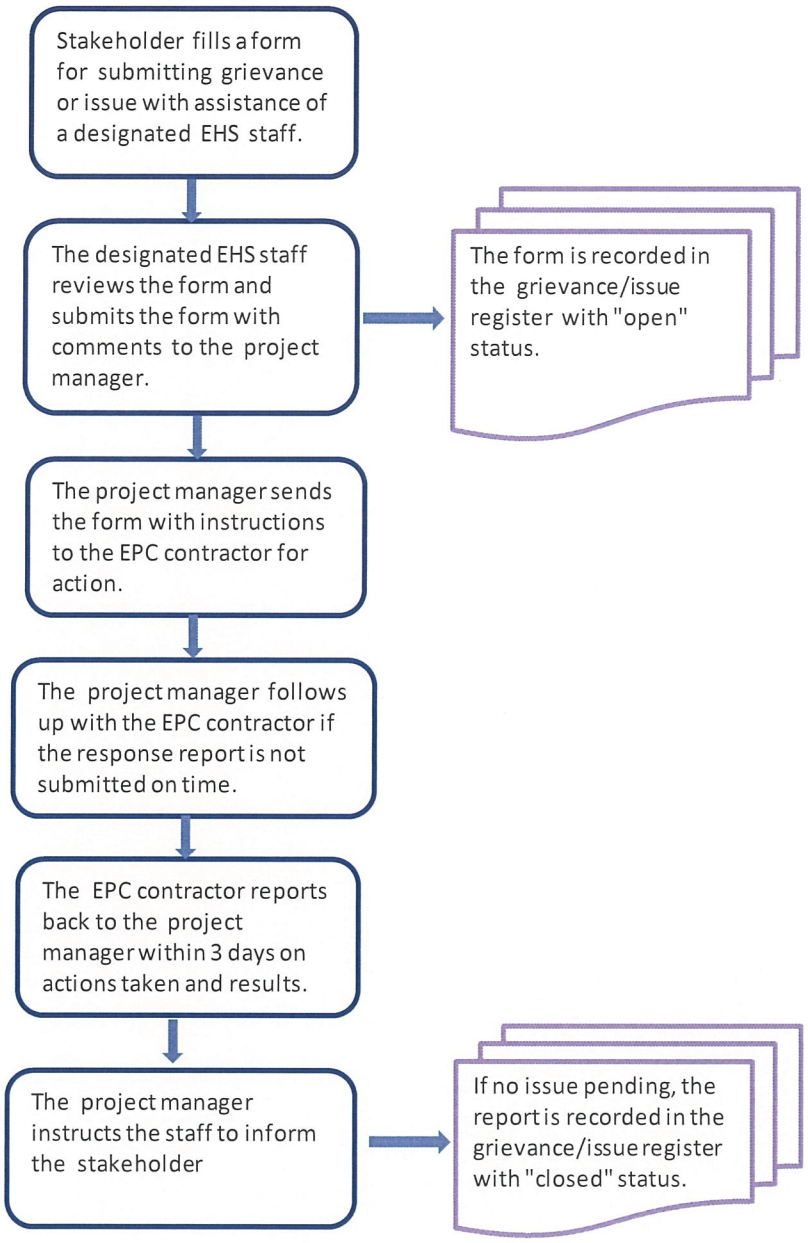


FIGURE 7.6-1 : GRIEVANCE MANAGEMENT PROCESS

7.7 CORPORATE SOCIAL RESPONSIBILITY

As Corporate Social Responsibility (CSR) will be implemented throughout all phases of the Project, the CSR program has to be prepared since an early stage of pre-construction and construction phases.

Its preparation has been carried out in line with needs/request of stakeholder, especially the local communities. Details are shown in ***Chapter 6, Section 6.8*** of EMP report. The activities to be implemented include:

- Establishment of Community Participatory Committee with participation of Myanmar authorities and the locals.
- Establishment of various channels for public relation and information disclosure such as local media, notice board, leaflet, meeting and visit the communities, participate local activities; e.g. traditional festival, open house of the Project, etc.
- Involvement in Grievance Redress in order to response the complaints related to the Project impacts.
- Establishment good relationship with local communities by supporting activities such as education, health care and sanitation, religions and culture, socio-economic condition by means of offering employment opportunity, occupation promotion on agriculture production, value added on agricultural and fishery products, handicraft including activities related to gender development.
- Regular meeting with communities in order to acknowledge problems arisen from the Project implementation and build up mutual understandings in the responsible area.
- Reporting results of the Project implementation, mitigation measures and monitoring to concerned authorities and communities.
- Involvement in solving problems as promise to the communities, aiming to encourage the stakeholders to have confidence in the Project.
- Continuation of activities by improvement and adjustment activities as necessary for better efficiency of implementation.

7.8 ENVIRONMENTAL RISK MANAGEMENT

Environmental risk management is to be carried out as part of the power plant risk management. ***Chapter 6, Section 6.5.4*** of ESIA report on environmental risk assessment identifies and assesses environmental risks during the operational and decommissioning phases. Each major environmental risk will be documented in an Environmental Risk Register (ERR). The ERR is to be maintained and regularly updated and reassessed to allow all significant aspects to be identified. The Risk Register will allow the Environmental, Health and Safety (EHS) Manager to monitor risk factors, update the risk assessment, and make changes to the risk mitigation measures and controls accordingly to ensure efficient environmental risk management. It should be noted that an emergency plan is essentially a risk mitigation measure.

7.9 AUDIT

External EHS audits will be undertaken every year through the Project life. These audits will be undertaken by external Environmental Auditing Consultants to review the overall implementation and effectiveness of the OEMP and DEMP, related site specific plans, procedures and associated documentation and overall standard of onsite compliance with legislative requirements.

Audit reports, action plans and any other documentation stemming from the audit process shall be kept for a minimum of five years to demonstrate ongoing OSH monitoring and improvement. The EHS Manager will be responsible for site filing of these documents.

CHAPTER 8

IMPLEMENTATION BUDGET AND SCHEDULE

CHAPTER 8

IMPLEMENTATION BUDGET AND SCHEDULE

8.1 BUDGET

8.1.1 Cost of Mitigation Measures

Pre-Construction and Construction Phases

The proposed measures for mitigation of environmental impacts on air quality, noise level, wastewater, construction wastes and biomass waste, traffic load, occupation health and safety and some social issues such as priority for local employment during the pre-construction and construction phases will not require capital investment in permanent facilities. Most of the measures are established good construction management practices and temporary facilities. The EPC Contractor normally includes these costs in the Contract cost as they are too small to be presented as separate cost items. In overall, expenses or costs in implementing the measures during the pre-construction and construction phases would be only a very small percentage of the total construction contract cost.

Operational Phase

Mitigation measures to be implemented in the operation will be included in the EPC contract cost are air quality, traffic safety by LNG transportation, and occupation health and safety. As most mitigation measures are operational control measures, it is not possible to estimate their costs.

Decommissioning Phase

All mitigation measures to be implemented in the demolition and dismantle will be included in the EPC contract cost. As most mitigation measures are operational control measures, it is not possible to estimate their costs.

8.1.2 Monitoring

Pre-construction and Construction Phases

During the pre-construction and construction phase, a budget will be allocated for monitoring and evaluation of the Project's environmental and social performance. At present, it is estimated that a budget of approximately 25,080 US$ should be adequate for this phase. Exact amount of budget will be determined in order to fulfill an actual implementation program.

Scheduled monitoring of environmental performance is required throughout the construction phase of the Project to evaluate compliance with legal requirements, the environmental management objectives, and relevant policies, standards and guidelines. The monitoring and evaluation will enable the overall effectiveness of the environmental controls to be determined and allow areas of non-compliance to be identified so corrective actions can be taken.

Therefore, the monitoring will be linked to the work schedule. The Contractor will be required to prepare environmental monitoring program based on the latest construction schedule before commencing the construction.

Monitoring by the third party will be officially carried out for air quality, noise and vibration measurement, surface water quality and traffic load. This aims to check correctness of mitigation measures compliance and impacts which might be occurred.

Operation Phases

During operation phase, monitoring of environmental performance will be carried out through the project life. Internal monitoring will be performed frequently as required. Monitoring by the third party will be officially undertaken throughout the project life as well as social support programme.

A budget will be allocated for monitoring and evaluation of the Project's environmental and social performance. At present, it is estimated that a budget of approximately 33,880 US$ per year should be adequate. Exact amount of budget will be determined each year in order to fulfill an actual annual implementation program.

Implementation budget and schedule are shown in ***Appendix 8A***.

8.2 SCHEDULE

The schedule for implementing the Construction EMP (CEMP) and Operation EMP (OEMP) will be linked to the project schedule. After the Contractor completes the detailed designs and detailed construction plan and schedule, the Contractor should prepare a detailed CEMP within one month.

The Contractor should prepare a detailed OEMP within two weeks after commissioning of the power plant and its associated facilities.

The prepared emergency response plan will be a guideline for the contractor to imply.

The prepared emergency response plan will be a guideline for the contractor to imply.

APPENDIXES

APPENDIX 6A

SUB-PLAN OF CONSTRUCTION PHASE EMP

APPENDIX 6A-1

GENERAL-CONSTRUCTION

APPENDIX 6A-1

GENERAL-CONSTRUCTION

Element	Content
Objective	• Manage construction in accordance with the Construction EMP and CEMP sub-plans to avoid or minimize impacts on the environment and the community.
Performance Criteria	• Worksites prepared in accordance with designs providing for the management and mitigation of construction impacts. • Construction works are managed to avoid, or mitigate and manage impacts on the amenity and environmental conditions prevailing in the vicinity of the worksites. • Non-compliance with guidelines and standards established in this EMP are avoided or minimized. • Maintain safe and efficient access near worksites for emergency vehicles. • Take reasonable measures to minimize potential construction risks to construction workers, to the general public in adjacent areas and to the environment.
Mitigation Measures	**Hours of work:** • Works which may generate excessive levels of noise, vibration, dust or traffic movements should only be undertaken between 6.30 am and 6.30 pm Monday to Saturday and at no time on Sundays or Public Holidays except for special circumstances where the works should be conducted outside these days and hours. • Special circumstances include works on transport of heavy and large process equipment to the construction sites, transport of materials for site filling, and transport of large construction equipment to the construction sites. • Collection, loading and haulage of spoil from construction worksites by truck would be undertaken between 6.30 am Mondays and 6.30 pm Saturdays; • Notify local communities of duration and timing of works to be conducted outside of usual working hours. **Construction worksites:** • To be designed and constructed for the minimization, management and mitigation of construction impacts; • The main construction site will include canteen with adequate space and facilities for eating and washing, decent worker accommodation, adequate number of hygienic toilets and baths, adequate clean piped water supply, drainage, wastewater disposal facilities, solid waste disposal facilities, material storage, equipment sheds, vehicle washing areas and project management offices.

Element	Content
	• To conduct spoil handling, storage and loading at all times within enclosures designed and constructed to achieve environmental objectives and performance criteria for noise and air quality as set out in the CEMP; • To have night lighting, including security lighting and avoid light spill onto adjoining premises, in excess of 8 lux measured at the common boundary; • To include fencing to worksite boundaries to ensure site security and public safety.
Monitoring	• Site inspections will be conducted as outlined in this CEMP.
Reporting	• Results of site inspections will be included in the environmental monitoring reports.
Area	• Areas within the project site.
Responsible Agency	• Project developer and construction contractor.
Estimate Cost	• Include on pre-construction and construction cost

APPENDIX 6A-2

AIR QUALITY MANAGEMENT PLAN

APPENDIX 6A-2

AIR QUALITY MANAGEMENT PLAN

<table>
<tr><th>Element</th><th>Content</th></tr>
<tr><td>Objective</td><td>• Ambient air quality in the construction sites and at the identified sensitive receptors meets the prescribed standards throughout the construction period.
• Community concerns and complaints about air quality are addressed quickly and effectively.</td></tr>
<tr><td>Performance Indicators</td><td>• Number of complaints filed through the complaint response channel.
• Number of times that the local ambient air quality is below the prescribed standards related to dust and exhaust emissions.</td></tr>
<tr><td>Sources</td><td>The construction could adversely affect local air quality in and near the construction sites. The issues will be:
• Fugitive dust generated in soil compaction, and vehicle movements in the construction sites and along the transport routes;
• Exhaust emissions from trucks and heavy construction equipment powered by diesel engines.</td></tr>
<tr><td>Applicable Standards</td><td>Applicable ambient air quality standards related to fugitive dust and exhaust emissions are as follows:
Table 1 – Construction Air Quality Goals
<table>
<tr><th>Pollutant</th><th>Not to be Exceeded</th></tr>
<tr><td>Particulate as PM_{10}</td><td>150 μg/m^3 (24 hr average)[a/,b/]</td></tr>
<tr><td></td><td>50 μg/m^3 (24 hr average)[c/]</td></tr>
<tr><td></td><td>20 μg/m^3 (annual average)</td></tr>
<tr><td>Total Solid Particulates</td><td>230 μg/m^3 (24 hr average)</td></tr>
</table>
Remark: [a/] Ambient Air Quality in Power Plant "Thermal Power: Guidelines for New Plant", Pollution Prevention and Abatement Handbook WORLD BANK GROUP, Effective July 1998
[b/] WHO Ambient Air Quality Guidelines stated on Environmental, Health, and Safety Guidelines: Environmental Air Emission and Ambient Air Quality of International Finance Corporation, April 30, 2007
[c/] National Environmental Quality (Emission) Guidelines, December 29, 2015</td></tr>
<tr><td>Mitigation Measures</td><td>The Contractor will conduct air quality surveys at the construction sites and identified sensitive receptors to update the baseline data established in the Final EIA Report.
Fugitive Dust Control
• For construction site including spoil placement sites:
- Use watering or other effective techniques on unsealed areas to minimize wheel generated or wind-generated dust;
- As soon as the land becomes available, engage in the progressive rehabilitation of construction sites and spoil placement sites with landscaping.</td></tr>
</table>

Element	Content
	• Take measures (e.g. rumble bars and wheel wash bays) to ensure dust-creating material (earth or similar material) is not transported from the construction sites to roads or other areas in the public domain. • Ensure all trucks carrying spoil or other loose material are covered, and if necessary, treated (e.g. mist sprays) prior to leaving the construction sites. • Ensure all loose earth and similar material spilled or otherwise deposited within the construction sites and the transport routes is cleared and removed from trafficked areas as soon as practicable. • At the construction sites and spoil placement sites, monitor meteorological conditions, particularly wind speed and direction and where necessary take measures to avoid impacts of dust on adjacent properties. Such measures may include: - Modification of construction methods; - Increase in dust suppression measures; or - Cessation of work when no other reasonable or practical measure is available. **Diesel Exhaust Emissions** • Take measures to manage the movement of construction vehicles entering and leaving the construction sites to avoid, or mitigate and manage the potential for vehicle emissions impacting on adjacent properties, except where such residential or sensitive activities in front an arterial road to be used for access to or from the construction site. Measures for construction fleet management are to be provided in the construction vehicle management plan and the construction traffic management plan. Such measures may include avoiding or minimizing queuing on streets approaching the worksites or adjacent to other sensitive activities; • Adopt procedures to avoid construction vehicles idling for excessive periods (e.g. more than 5 minutes) if required to queue to enter the construction sites; • For stationary plant and equipment powered by diesel motors, take measures to avoid or mitigate and manage the potential impacts of exhaust emissions on adjacent residential or other sensitive activities. For example, ensure all construction vehicles and stationary plant and equipment powered by diesel motors are fitted with emission control measures, and are regularly maintained to manufacturers' specifications.

Element	Content
Monitoring	**Ambient Air Quality** • Undertake routine periodic ambient air quality monitoring (AQM) by the contractor, not less than once a month, at locations in the construction site and in sensitive areas over the duration of construction works. Additional monitoring will need to be carried out if complaints are received from affected persons. The AQM during construction will cover at least 24 hour continuous sampling and will cover: - Total suspended particulates - Particulates (PM 10) • Monitor and manage the incidence of dust deposition and manage construction vehicle emissions in relation to ambient air quality. **Dust** • Monitor regularly (weekly minimum) by inspection or other effective sampling: • The performance of dust filtration systems on construction shed ventilation systems; • Spillage or deposition of loose material on roads leaving a construction site. • Monitor performance of mitigation measures in relation to the construction air quality goals in the above table. • Monitor twice a year or more frequently if weather conditions required, construction sites, stockpiles, vehicles and roads leaving the construction sites for evidence of dust generation or loose, unstable material with potential for dust. **Vehicle Emissions** • Monitor construction vehicle management with regards to: - Queuing in streets other than those in which arrangements have been made for such action in the construction traffic management plan (on-going); - Vehicle motors idling for periods exceeding 5 minutes while in queues to access construction sites (on-going) • Inspect the position of stationary plant and equipment powered by diesel motors to ensure exhaust emissions are directed away from sensitive activities and neighboring properties (initially on establishment).
Reporting	• Twice during pre-construction and construction period each. If more than one complaint is received in the preceding more frequently. • Two reports for submission to MOECAF, during pre-construction and construction period.

Element	Content
Area	• Project sites. • Closest villages (sensitive receptors include Pagaw Zoon and Pale Gu Villages).
Responsible Agency	• Project developer. • Air quality monitoring agency • Construction contractor.
Estimate Cost	• 800 USD/station/time

APPENDIX 6A-3

NOISE AND VIBRATION MANAGEMENT PLAN

APPENDIX 6A-3

NOISE AND VIBRATION MANAGEMENT PLAN

<table>
<tr><th>Element</th><th>Content</th></tr>
<tr><td>Objective</td><td>• To minimize noise and vibration of construction activities.
• To ensure that the noise and vibration levels at the identified sensitive receptors will not exceed the maximum limits prescribed by MOECAF as a condition of the ECC and will be acceptable to the sensitive receptors.</td></tr>
<tr><td>Performance Indicators</td><td>• The incremental increases in noise and vibration levels during the construction works compared to the targets.
• Net ambient noise and vibration levels compared to the applicable ambient noise and vibration standards.</td></tr>
<tr><td>Sources</td><td>Noise and vibration will be managed at the power plant sites. The power plant construction site will be where construction activities causing noise and vibration will be most intensive and concentrated.
Construction activities creating noise and vibration at the power plant site are shown in the table below:
<table>
<tr><th>Construction Activities</th><th>Power Plant Site</th></tr>
<tr><td>Percussive piling</td><td>Most intensive</td></tr>
<tr><td>Operation of heavy construction equipment</td><td>Removal of vegetation, site compaction</td></tr>
<tr><td>Erection and installation of equipment (only noise)</td><td>Most intensive</td></tr>
</table></td></tr>
<tr><td>Applicable Standards</td><td>Noise and vibration performance will be evaluated against the following standards:
National Ambient Noise Level Standards:
- Ambient noise level standard, Myanmar National Environment Quality (Emission) Guidelines, December 2015
Noise Standards: World Health Organization (WHO), 1999
- Guidelines for Community Noise, World Health Organization (WHO), 1999
Standard
Noise impacts should not exceed the levels presented in Table below, or result in a maximum increase in background levels of 3 dB at the nearest receptor location off-site.
<table>
<tr><th></th><th colspan="2">One Hour L_{Aeq} (dBA)</th></tr>
<tr><th>Receptor Daytime</th><th>Daytime
07:00 - 22:00</th><th>Nighttime
22:00 - 07:00</th></tr>
<tr><td>Residential; institutional; educational</td><td>55</td><td>45</td></tr>
<tr><td>Industrial; commercial</td><td>70</td><td>70</td></tr>
</table></td></tr>
</table>

Element	Content
	U.S. EPA Standard: Noise level not higher than 70 dB(A) $L_{eq\text{-}24\ hour}$ **Vibration Standards :** - Deutsches Institut für Normung, Berlin, Germany, DIN 4150-3, Structural Vibration Part 3: Effects of Vibration on Structures, 1999
Mitigation Measures	**Design** • The Contract will require the Contractor and his sub-contractors to use construction equipment that generate low levels of noise and vibrations. The Contractor will present alternative construction equipment to demonstrate that the selected equipment adopts best available technologies to minimize noise and vibration. • Before commencing the construction, the Contractor will conduct a noise and vibration survey covering the identified sensitive receptors to update the existing baseline data in the Final EIA Report. The noise survey will be manually conducted using a sound level meter following Noise Standard stated on Environmental, Health, and Safety Guidelines for Thermal Power Plant: Noise of International Finance Corporation (December 19, 2008). • Demonstrate through predictive modelling of the proposed construction techniques and monitoring ambient noise and vibration readings prior to construction to establish pre-disturbance levels, the likely levels of noise and vibration due to construction works throughout the construction period. **Construction Noise** • The Contractor will be allowed to carry out construction works, which generate excessive levels of noise and vibration, only during the period between 6.30 am to 6.30 pm Mondays to Saturdays. Such construction works on Sundays or public holidays will need approval from the Resident Engineer of the Project Proponent. • For construction works beyond standard construction hours, the Contractor shall take reasonable and practical measures to protect the affected sensitive receptors. For example, acoustic screens or noise barriers would be required. • Reasonable and practicable measures to achieve the construction noise targets may include, for example: – Commence advanced notification of works and undertake on-going consultation with potentially affected property owners and occupants. – Establishing temporary noise barriers between construction worksites and sensitive receptors (e.g. residential, schools, community facilities). – Fitting noise-reduction measures to all plant and equipment engaged in the construction works;

Element	Content
	– Designing worksites to minimize potential noise impacts on nearby sensitive places. – With the consent of owners and occupants of potentially-affected premises, undertake mitigation actions such as temporary modifications to nearby buildings, temporary relocation during construction or other measures to achieve reasonable environmental conditions. • For the power plant construction site, the duration of construction works with excessive noise will be 72 month in total for all phases. The Contractor will undertake predictive modelling of potential construction noise and vibration impacts based on the proposed construction methods, the proximity of sensitive places, and the applicable standards. • Where construction noise impacts are predicted due to specific construction activities, reasonable and practicable mitigation and management measures must be adopted and notified in advance to potentially affected owners and occupants of adjacent properties. If such activities are to occur often during the construction works, a program for a regular, scheduled occurrence should be devised and implemented in consultation with the owners and occupants of nearby properties. • Potentially affected property owners and occupants are to be notified well in advance (7 days or more) as to the scale, extent and duration of construction works, as required by the consultation and communications program. **Construction Vibration** • Develop predictive models for construction vibration at the various identified sensitive receptors. If the predicted vibration will exceed the maximum limits for property damage or human comfort, commence advanced consultation with potentially affected property owners and occupants and implement mitigations measures to minimize the impacts.
Monitoring	**Construction Noise Monitoring** • Noise and vibration monitoring will be carried out during the construction works identified as noise and/or vibration sources are taking place. Therefore, the monitoring will be linked to the work schedule. The Contractor will be required to prepare a noise and vibration monitoring program based on the latest construction schedule before commencing the construction. • Noise and vibration monitoring will be carried out manually using a sound level meter following Noise Standard stated on Environmental, Health, and Safety Guidelines for Thermal Power Plant : Noise of International Finance Corporation (December 19, 2008). • The monitoring locations will be at the construction site and the identified sensitive receptors.

Element	Content
	• In addition, compliance monitoring by a third party will be carried out at least twice a year over the construction period. During the construction period, the compliance monitoring should focus on the day on which the construction activities with maximum noise and vibration will be carried out. **Noise Monitoring of Construction Equipment and Trucks** • Before commencing the construction, the Contractor will conduct noise testing of trucks to be used in the construction. Subsequently, the Contract will conduct noise testing of the trucks every six months. The Contractor will ensure that the trucks that did not pass the noise test will be replaced by new trucks with less noise, or will be fixed as soon as possible. The Contractor will submit reports of the noise testing to the EHS Manager of the Project Proponent. **Monitoring in Response to Noise/Vibration Complaint** • The Contractor is to implement measures to receive and respond to complaints about construction noise and vibration made at any time during the construction phase of the Project. Such measures may include a complaints management and correction action system developed and incorporated in this CEMP. Key requirements for the system include: - On receipt of a complaint, implement a complaint response procedure for tracking and responding to the issue(s) and the complaint; - Identify the relevant construction activity at which the complaint is directed; - As soon as practicable, investigate and measure the level of noise and/or vibration from that activity; - Respond to the complainant as soon as practicable upon completion of the investigation and describe the corrective action taken; and - Report to the Proponent on the complaint, the activity, the corrective action and the response.
Reporting	• Twice, during pre-construction and construction period each. If more than one complaint is received in the preceding more frequently. • Two reports for submission to MOECAF, during pre-construction and construction period.
Area	• Project sites. • Closest villages (sensitive receptors include Pagaw Zoon and Pale Gu Villages).
Responsible Agency	• Project developer • Contractor • Sub-contractors
Estimate Cost	• 700 USD / station/time

APPENDIX 6A-4

WASTEWATER MANAGEMENT PLAN

APPENDIX 6A-4

WASTEWATER MANAGEMENT PLAN

Element	Content
Objective	To ensure that all wastewaters generated during the construction will be adequately treated before discharging outside.
Performance Indicators	Qualities of the treated effluent compared with the applicable effluent quality standards.
Sources	• Domestic wastewater generated by living activities of about 50 persons at peak of construction, estimated volume about 3.2 m^3/d. • Construction wastewater, estimated volume about 22 m^3/d. • Storm water with a return period of 5 years.
Applicable Standards	**Effluent quality standards:** • Wastewater treatment standard, Myanmar National Environment Quality (Emission) Guidelines (December 25, 2015). • International Finance Corporation (IFC) Environmental, Health and Safety Guidelines for Thermal Plant, (December 19, 2008).
Mitigation Measures	**Design Concept** The Contractor will prepare detailed design of a wastewater management system for the power plant construction site. The wastewater management system will consist of a collection system and a simple treatment system. The proposed design concept is based on the principle of wastewater segregation, treatment and reuse as briefly described below: • **Storm Water** - A temporary drainage ditch will be constructed to collect and drain the storm water or surface runoff outside. To prevent contamination of storm water, potential contamination sources will be covered with roof. The storm water would contain solids washed out from unpaved surface. • **Domestic Wastewater** - Toilet wastes will be separated from grey water or sullage. - Toilet wastes will be discharged into a septic tank (or more than one septic tanks) with a hydraulic retention time of about 5 days. The volume of toilet wastes is estimated at about 20% of the total volume of domestic wastewater, or about 0.65 m^3/d. The septic tank effluent (septage) will be discharged into the retention pond. Alternatively, toilet wastes will be treated in a package treatment plant using anaerobic process. - Grey water will be discharged into temporary drainage ditch.

Element	Content
	• **Construction Wastewater** - Construction wastewater will be mainly wash water. It may contain oil and grease and chemicals. The wash water that contains oil will be treated in a simple oil removal tank before combining with wash water from other sources. The wash water will be discharged into temporary drainage ditch. **During Construction** - Water in temporary drainage ditch will be used for dust suppression on unpaved areas in the construction site, and also for watering of the green area. - The remaining volume will be discharged through a sewer pipe to outside area.
Monitoring	• Monitoring of effluent to be discharged from the construction site will be weekly carried out by the contractor over the construction period. Two grab water samples, at nearby water courses will be analyzed to determine magnitudes of various quality parameters prescribed in the effluent standards. The wastewater treatment performance of the contractor will be assessed from the monitoring data. • Compliance monitoring of wastewater management will also be carried out by a third party once during pre-construction phase and again during construction phase.
Reporting	• The results of monitoring will be presented in the monitoring reports. • Twice reporting on wastewater performance, at pre-construction and construction period, and submit to MONREC.
Area	• Project site and Nearby water courses (2 Station)
Responsible Agency	• Project developer • Construction workers • Sub-contractors (wastewater management company)
Estimate Cost	• 300 USD/station/time

APPENDIX 6A-5

WASTE MANAGEMENT PLAN

APPENDIX 6A-5

WASTE MANAGEMENT PLAN

Element	Content
Objective	To minimize all types of wastes generated at the construction sites, particularly the power plant construction site, that will have to be disposed. To minimize environmental impacts of waste disposal.
Performance Indicators	Number of complaints related to waste disposal.
Sources	Wastes will be divided into three categories: • Construction, demolition, and land-clearing (CDL) waste: Includes all non-hazardous solid wastes resulting from site clearing, excavation, concrete works, steel works, piping works, installation of equipment, and construction of buildings. CDL wastes for this Project will consist of vegetation removed from the site before site preparation works, excavated materials particularly top soil, construction debris, remnants of steel bars and beams, packaging materials, broken roofing materials and tiles, and remnants of pipes, glasses, and other inert building materials. • Non-construction waste: Includes wastes generated by worker such as paper, food and beverage containers, food wastes, and other domestic items. • Hazardous waste: Includes such wastes as spent lubricating oil, paints, and chemicals used in the construction. Most of the hazardous wastes are in liquid form.
Applicable Standards	Applicable guidelines and standards regarding the management and disposal of the three categories of wastes as prescribed by MOECAF or enforced by the local government, whichever are more stringent.
Mitigation Measures	**Design and Planning before Commencing the Construction** • The Contractor will consult with the EHS Manager of the Project Proponent, ECD, SWB and the township governments the possibility of using existing waste disposal facilities managed by the regional or local governments. If this not possible, the Contractor will need to develop its own disposal facility preferably within the construction site, if possible. • The Contractor will ensure that the design and the proposed construction methods will generate the least amount of wastes. • Based on the construction plan, methods, and schedule, The Contractor will prepare estimates of the quantity of each waste category to be generated in each quarter of the construction period. The estimates will be monthly updated.

Element	Content
Mitigation Measures (Cont'd)	• The Contractor will propose methods for waste reuse and recycling and prepare estimates of the remaining quantity of each waste category that will be disposed. • The Contractor will propose methods of waste transport and disposal. • The Contractor will then prepare an action plan for waste management for the of the construction period containing all the above estimates and proposals. The action plan will be submitted to the EHS Manager of the Project Proponent not later than three weeks before commencing the construction. • Consider using materials and products that have a recycled content wherever cost/performance competitive, and where environmentally preferable to the non-recycled alternative; • Arrangements with suppliers to return any unused construction materials; • Where possible, goods to be ordered in bulk to minimize packaging waste and packaging material returned to the supplier wherever practicable; and ***During Construction*** **Waste Segregation** • The Contractor will design and implement a waste segregation system and procedure and communicate it to all construction personnel to strictly adhere to the segregation procedure. • An appropriate number of containers with adequate volume and appropriate materials will be provided at strategic locations to support the segregation. Each waste category will be segregated into recycling, reuse and disposal sub-categories. **Waste Collection and Storage** • Daily collection and transport will be organized and carried out for each sub-category of segregated wastes. • A roofed storage area with adequate space will be provided for storing the segregated wastes waiting for the on-site or off-site reuse or recycling. • The storage area for hazardous waste will need to be specially designed to prevent spills or leaks onto the soil. **Waste Reuse and Recycling** • Chipping and mulching of vegetation cleared during construction and reuse of mulched material for landscaping purposes; • Reuse of excavated material as fill at approved fill sites; • Topsoil free of weeds to be stockpiled and stored for re-use, if possible; • Collection and return of packaging materials (e.g. pallets) to suppliers wherever practicable;

Element	Content
Mitigation Measures (Cont'd)	• Use of recycled materials to the limits of design in concrete, road base, asphalt and other construction materials; • Remove any contamination inadvertently deposited in recyclable waste material containers. Provide cleanup of excessive contamination at recycling vendor locations when such contamination is not controlled at the project site. • Collection and recycling of used oils by a licensed contractor; • Collection by a licensed contractor of empty oil and fuel drums and other containers for return to recycling facilities; **Waste Disposal** • Disposal of the remaining wastes that are unable to be reused or recycled in the approved land fill site(s). • Preferably, inert wastes such as broken tiles, bricks, plastics should be used for filling the site in areas planned to be vacant space. • No burning of wastes will be allowed. • Non-construction wastes will be contracted to the existing municipal services, if possible. If not, they will need to be disposed of in a small sanitary land fill to be located within the power plant site in designated green areas. • Decomposable wastes such as food wastes and vegetation may be disposed of by composting. • Hazardous wastes will be handled by a licensed hazardous waste contractor. If this service is not available, the Contractor will need to find appropriate arrangements for incineration, safe permanent storage, or other appropriate methods of disposal. **On-site Record Keeping** The Contractor will design and maintain record keeping procedures with provisions for: • Tracking collections of waste materials at the sites and deliveries to recycling, reuse, salvage, and landfill facilities. • Maintaining on-site logs that include for each load of materials removed from the site: type of material, load weight, recycling/hauling service, and date accepted by recycling service or landfill. • Accessibility to the EHS Manager of the Project Proponent for verification of construction waste recycling. Legible copies of on-site logs, manifests, weight tickets, and receipts. Manifests shall be from recycling and disposal site operators that can legally accept the materials for the purpose of recycling, reuse, salvage, or disposal.

Element	Content
Monitoring	Monitoring of the waste management performance will be carried out through quick daily site inspections and detailed weekly site inspections. Daily site inspections will include observation of the collection and storage of waste materials in the construction sites and waste disposal areas, and reviewing the daily records. The focusses will be on efficiency of the collection, storage, and disposal; and on the quality of the records. The EHS Managers of the Project Proponent and the Contractor will jointly inspect the sites. In weekly site inspections, the EHS Manager will be participated by the Resident Engineer of the Project Proponent and the Construction Manager of the Contractor. The inspection will cover verification of the records, disposal activities, discussion on the performance of the past week, and identification of problems, if any, that affect the waste management performance.
Reporting	• Report immediately to the relevant authorities any incident where harmful waste material is accidentally released to the environment. • In the event of an environmental incident, take such corrective or remedial action as is required to render the area safe and avoid or minimize environmental harm. • Monthly reports on the waste management results as part of the monthly monitoring reports. • Twice reports for submission to MOECAF, one for pre-construction and another for construction phase.
Area	• Project sites.
Responsible Agency	• Project developer • Construction workers • Sub-contractors (waste management agency)
Estimate Cost	• include on cost for pre-construction and construction

APPENDIX 6A-6

TRAFFIC MANAGEMENT PLAN

APPENDIX 6A-6
TRAFFIC MANAGEMENT PLAN

Element	Content
Objective	• Manage construction traffic and transport issues to minimize potential impacts on the communities and the operation of the road network
Performance indicators	• Number of traffic accidents in the identified impact areas • Number of traffic on ITD Main Road during the construction period.
Sources	• Traffic disturbances could be caused by haulage of spoil, fill materials, construction materials and plant equipment. • Potential impact areas: ITD Main Road.
Management guidelines	• Take reasonable and practicable measures to avoid, or mitigate and manage the potential construction traffic impacts on communities near the worksites. • Minimize as far as reasonably practicable, potential traffic disruptions to the operation of the road network and the public transport network due to the transport of materials to and from the construction sites. • Maintain safe access near all project work areas for road users, including pedestrians and cyclists. In particular, develop local access strategies in consultation with stakeholder groups to maintain safe, convenient and efficient access to community facilities such as schools and monastery, if any. • Implement traffic management measures near worksites and other project works to avoid conflicts between construction traffic, and pedestrians and cyclists. • Take reasonable and practicable measures to inform the local and broader communities about the timing and scale of changes to traffic conditions on roads in the vicinity of worksites and construction works. • Monitor traffic flows near construction works site and take corrective action in response to traffic impacts as a consequence of construction works.
Mitigation Measures	**Truck routes and access road to construction site** • In consultation with the concerned authorities at the regional, and township levels, develop and implement a Construction Traffic Management Plan to address the following issues: - Avoid haulage tasks during peak traffic periods as far as practicable. Where haulage in peak periods is unavoidable, such activities are to be managed in accordance with specific traffic management sub-plans provided to the relevant agencies in advance. - Control heavy vehicle movements on project related road to avoid interference with major events, if any; - Investigate the capacity of intersections on haulage routes to minimize impact on intersection operations by heavy vehicles servicing the construction worksites;

Element	Content
Mitigation Measures (Cont'd)	- Prepare and implement a comprehensive construction traffic management plan to control truck movements to avoid, or mitigate and manage the impacts of heavy vehicle traffic on the road network. • Measures to manage the operation of the construction truck fleet for incorporation into a Construction Vehicle management sub-plan to include: - Monitoring of truck position, speed, route and performance in relation of traffic conditions and schedule requirements; - Management of truck speed and position to avoid queuing on the approaches to the spoil handling and loading facilities; - Management of traffic signals on nominated spoil haulage along the routes; - Maintain all vehicles transporting material to and from the construction sites to a high standard (ADR28/01) with regards noise emissions, exhaust emissions, traffic safety and operational safety; - Ensure all vehicles leaving a construction site pass over or through devices designed and maintained to remove soil and other materials. **Transportation of Hazards Materials** • Heavy trailer trucks transporting heavy and large plant equipment will have to be directed by a traffic police car. **Local Traffic** • Implement management measures to avoid, or minimize increase in traffic caused by the project works in local streets as practicable; • Notify the local community about proposed changes to local traffic access arising from construction activities, and provide clear signage of changed traffic conditions and take other measures to ensure safe traffic movement; • Prepare and implement an employee parking policy for the construction worksites. **Traffic Management at the ITD Main Road** • Provide a traffic police or relevant officer to control traffic at the intersection during the transport period. **Pedestrians and Cyclists** • Maintain safe pedestrian and cycle access near construction works (particularly for elderly and children), including to community facilities, such as schools, monastery, open space and particularly: • Notify the local community, and in particular, local schools, about changes to pedestrian and cycle access during construction near construction works; • Provide traffic controls designed for the safe movement of cyclists near the worksites.

Element	Content
Monitoring	• Traffic monitoring will be carried out during transportation activities of the construction works. Therefore, the monitoring will be linked to the work schedule. The Contractor will be required to prepare a traffic monitoring program based on the latest construction schedule before commencing the construction. • Record and report number of traffic accidents in the identified impact areas. • Monitor number of traffic on Nga Pitat Road. Review the adequacy of construction traffic management plan if traffic congestion is observed. • In general, monitoring traffic flows by a third party will be carried out twice a year during peaks of construction-related transportation.
Reporting	• Monthly report on local traffic conditions, including any accidents involving construction traffic. • Two reports on traffic performance, and submission to MOECAF during pre-construction and construction phase.
Area	• ITD main roads (at km.18) and Project Site.
Responsible Agency	• Project developer • Relevant authorities (police)
Estimate Cost	• 500 USD/station/time for monitoring number of vehicles throughout pre-construction and construction phase • Cost for monitoring vehicles accident situation related to the project include on cost for pre-construction and construction

APPENDIX 6A-7

OSH MANAGEMENT PLAN

APPENDIX 6A-7
OSH MANAGEMENT PLAN

Element	Content
Objective	To establish best practicable OSH conditions to ensure work related health and safety of construction personnel.
Performance Indicators	• Total Recordable Injury Frequency Rate (TRIFR) • Lost Time Injury Frequency Rate (LTIFR) • Medical Treatment Injury Frequency Rate (MTIFR) • Duration rate • Incident rate
Sources	Public safety related to construction traffic will be managed in the traffic management plan. The issues of concern in this OSH plan are worker safety in construction site.
Applicable Standards	OSH guidelines and standards enforced by the Ministry of Health and proposed for this Project as follows: "To safeguard public health and to take necessary measure and respect of environmental health"
Mitigation Measures	**Design and Planning before Commencing the Construction** • The Contractor will prepare an OHS management plan and implementation procedures specific to this Project and in line with its corporate OSH policy and procedures. The OSH management plan and implementation procedures will be submitted not later than one month before commencing the construction for approval of the Project Manager of the Project Proponent and relevant authorities, if so required. • The Contractor will conduct necessary orientation and training to all construction personnel to ensure that the construction personnel clearly understand the OSH plan and implementation procedures. • The OSH management plan and implementation procedures will cover but not limited to the following subjects: - Organization and responsibilities of OSH management - Training plan - Communication plan - Contractor responsibilities - Job-specific work requirements - Compliance monitoring and evaluation plan - Audit plan - Reporting system - Documentation system • Develop and implement safety measures for the construction works including treatment strategies that address fire and chemical hazard, communications, access for emergency services, response coordination and management.

Element	Content
Mitigation Measures (Cont'd)	• Develop emergency response procedures, and implement in the event of accidents and emergencies. • Provide fire and life safety measures, including ventilation, smoke extraction and firefighting systems for the duration of the construction phase. **During Construction** • The implementation of the OSH plan will be integrated with construction supervision. • The Contractor will implement the OSH plan and procedures as part of its construction supervision. The Contractor's site engineers and foremen will supervise the implementation of OSH procedures to comply with relevant requirements. • The Contractor's EHS Manager will monitor the OSH performance.
Monitoring	• Monitoring of OSH performance of the Contractor will be made through: - Daily informal inspections (walk through of the construction sites) - Weekly formal inspections of the work place. - Audits - Corrective Action Reports • The daily inspections will observe: (i) adherence of the construction workers to the OSH procedures such as wearing of protective equipment in high risk working areas; (ii) working conditions; (iii) readiness of fire and life safety systems as relevant; and (iv) potential new hazards. The daily inspections will be carried out by the Contractor's EHS Manager and Construction Manager, Site Managers, and relevant foremen. The Project EHS Manager will occasionally join the daily inspections. The Contractor's EHS Manager will prepare daily OSH inspection notes as part of the site inspection notes. • The weekly formal inspections will be carried out at weekly intervals and shall be documented using appropriate "Weekly OSH Inspection Checklists". The Contractor's Construction Manager, EHS Manager, and Site Engineers will carry out the weekly inspections. The Owner's EHS Manager will jointly undertake the weekly inspections. Subcontractors will also be required to participate in the weekly inspections. The weekly inspections will include plant, substances, equipment and temporary structures used by subcontractors.

Element	Content
Monitoring (Cont'd)	• Internal audits will be carried out annually or more frequent if the OSH performance is significantly below established targets. The internal auditor or team will be engaged by the Contractor with concurrence of the Project Proponent. • Monitoring results will be discussed in Project OSH monthly review meetings.
Reporting	• Monthly as part of the monthly monitoring reports except in case of an incident when reporting should occur immediately on completion of any investigation required to resolve the incident. • Two reports on OSH performance during pre-construction and construction phase, and submission to MONREC.
Area	• Project sites.
Responsible Agency	• Project developer • Construction workers • Sub-contractors (waste management)
Estimate Cost	• include on cost for pre-construction and construction

APPENDIX 6A-8

SOCIAL ENVIRONMENTAL MANAGEMENT PLAN

APPENDIX 6A-8

SOCIAL ENVIRONMENTAL MANAGEMENT PLAN

Element	Content
Objective	Avoid or mitigate and manage construction impacts on the social environment. *Note: The social environment includes residential and neighborhood amenity, connectivity, community health, community diversity, social infrastructure provision, livelihood and safety.*
Performance Indicators	Number of grievances or complaints filed with the Project Management Office of the Project Proponent Number of complaints successfully responded
Sources	Daily living of people in the surrounding communities may be disturbed or inconvenienced by environmental disturbances caused by the construction such as dust, traffic inconveniences, noise, vibration, and workers' misconduct. The management of social environment will cover all villages within radius of five (5) km. from the Project site, all are under administration of Yebyu Township.
Applicable Standards	The target for the entire construction period is all complaints are responded by the EPC and filed with the Project Management Office.
Mitigation Measures	Mitigation measures for minimizing physical impacts on the social environment are prescribed in relevant sub-plans, such as noise and vibration, traffic, air quality and waste management. Mitigation measures in this sub-plan are community measures designed to support the implementation of the physical measures. The basic requirement is that the communities have access to the communication and complaints process to address and respond to their complaints related to the construction impacts on their daily living and properties. **Amenity and Community Life** • Liaise with key stakeholders and the community through a public consultation process to ensure insignificant impacts of the construction on community facilities, schools and monastery. • As soon as its practicable after the completion of construction, the Contractor shall reinstate community facilities affected by the works, if any. **Social Infrastructure** • Consult with managers of community facilities in neighborhoods adjacent to worksites to develop effective mitigation strategies and maintain regular communication with these facility managers.

Element	Content
	Complaints and Corrective Actions • Develop an effective and responsive system for receiving, handling and responding to complaints received during the construction of project works. • Ensure complaints are received and responded to on a 24-hour per day basis for the duration of the construction phase. • Provide reporting on complaints received, responses provided, timeliness of responses, and corrective actions taken on a monthly basis. • Raise community awareness of the complaints systems and procedures through public notifications and website facilities. **Early Consultation** • Initiate consultation with owners and occupants of directly affected properties and nearest neighbors to construction activities as soon as practicable before commencing the construction. • Conduct consultation and community information strategies in conjunction with the public or community consultation process. • Establish a tripartite committee to provide mechanism and channel for the committees to participate in the project environmental management. **Community Consultation Program** • Undertake and maintain a comprehensive community information program to inform residents, businesses, community groups and motorists of Project activities and potential impacts. Effective and accessible consultation measures are required including maintenance of a 24-hour contact line operated by a person with authority to stop works if goals and agreements with the community are not met. • Ensure medical facilities, community centers, monastery and schools in the area have access to construction updates and community education during the construction. **Regional Communication** • Monitor traffic volumes and traffic congestion affecting the district and township population during construction and if necessary adopt travel demand and signal stage management strategies.

Element	Content
Monitoring	• Evaluate effectiveness of consultation, liaison and mitigation outcomes. • Cases of conflicts between the construction workers and local people. • Survey and report on actual impacts of the construction on community amenities and infrastructure. • Report community consultation's activities and on consultation, liaison and environmental compliance and public transport access in work site neighborhoods.
Reporting	• Results of the social management will be included in the monthly monitoring reports and the report for submission to MONREC during pre-construction and construction phase. • Report immediately in case of a safety incident or complaint from a neighbor.
Area	• All surrounded 12 village within radius of 5 km. from Project site
Responsible Agency	• Project developer
Estimate Cost	• 10,000 USD for public consultation.

APPENDIX 6A-9

EMERGENCY MANAGEMENT PLAN (FLOOD AND CYCLONE)

APPENDIX 6A-9

EMERGENCY MANAGEMENT PLAN (FLOOD, AND CYCLONE)

Element	Content
Objectives	• To minimize impacts in case of emergency during construction phase. • To acknowledge and raise awareness of construction workers to evacuate, shelter or lockdown can save lives.
Performance Indicator	• Number of employees/workers/staff understand about emergent situation and know how to minimize/survive from the hostile situation (flood, and cyclone). • Conduct a test (pre-test and post-test) to evaluate their understanding.
Mitigation Measures	• Provide training program about emergency plan before commencing construction activities.
Monitor	• Results of pre-test and post-test of construction workers.
Reporting	• Results of pre-test and post-test directly reporting to project developer.
Area	• Project sites.
Responsible Agency	• Project developer • Construction workers
Estimate Cost	• include cost for pre-construction and construction.

APPENDIX 6B

TENTATIVE ENVIRONMENTAL INCIDENT REPORT FORM CONSTRUCTION PHASE

APPENDIX 6B
TENTATIVE ENVIRONMENTAL INCIDENT REPORT FORM
CONSTRUCTION PHASE

Date of Incident				
Time of Incident				
Construction Site	☐ Power Plant		☐ Transmissin Line	☐ Gas Pipe Line
TYPE OF INCIDENT				
On-sites			Off-sites	
☐ Fugitive dust ☐ Noise and vibration ☐ Exhaust emissions ☐ Wastewater ☐ Construction wastes ☐ Hazardous waste storage ☐ Non-compliance with com-plaint redress requirements	☐ Work related accidents ☐ Fire ☐ Explosion ☐ Non-compliance with safety regulations ☐ Non-compliance with monitoring requirements		☐ Transport accident ☐ Transport noise ☐ Transport vibration ☐ Commmunity's conflicts with construction workers ☐ Noise and vibration ☐ Waste disposal	☐ ☐ ☐ ☐
TYPE OF IMPACT ☐ General environmental and social effects (to be used where other categories do not apply) ☐ Local air pollution ☐ Land contamination ☐ Excessive noise and vibration at sensitive receptors ☐ Pollution of the receiving waters ☐ Local insanitary condition ☐ Disturbances and discomforts to the communities ☐ Public safety risk ☐ Health and safety of construction workers ☐ Breach of conditions in the ECC ☐ Project's image ☐ Legal liabilities ☐ Financial-fine, liabilities, legal cost, construction cost				
NUMBER OF PEOPLE AFECTED BY THE INCIDENT				
DETAILS OF THE INCIDENT Person who reported the incident				
Place of incident and related construction activity				
Area affected by the incident				
Actual or Suspected Cause				
Estimated cost incurred by the incident				
CLASSIFICATION OF THE INCIDENT ☐ High severity level ☐ Medium severity level ☐ Low severity level				
INCIDENT INVESTIGATION DETAILS Incident investigation undertaken		☐ Yes		☐ No
Details of actions taken				
COMPLETED BY				
Name	Signature		Position	Date

APPENDIX 6C

OUTLINE OF CONTRACTOR'S ENVIRONMENTAL MANAGEMENT PLAN (FOR GUIDANCE ONLY)

APPENDIX 6C
OUTLINE OF CONTRACTOR'S ENVIRONMENTAL MANAGEMENT PLAN[1]
(for guidance only)

1. INTRODUCTION

The introduction of the Contractor's EMP should include:

- A brief description of the project and the contract
- The contractor's environmental objectives
- An explanation of the role of the Contractor's EMP and how it will be used during construction to achieve the project's environmental and social (ES) objectives.

2. ENVIRONMENTAL MANAGEMENT SYSTEM

The contractor shall provide details of the ES management system (ESMS) to apply during the contract.

The basic elements of the contractor's ESMS to be detailed are likely to include:

2.1 Contractor's ES policy

Include a copy of the policy document and an explanation of how the policy will apply to the project.

2.2 Project organisation chart

An organisational chart showing the reporting/responsibility relationships, position titles and personnel, including subcontractors, should be included. The personnel with specific site ES management responsibility should be highlighted.

2.3 Training, awareness and competence

Describe how the organisation training policy will apply to this contract to ensure that all employees and subcontractors are aware of and adequately trained to discharge their environmental responsibilities. A specific site briefing prior to commencement of works shall occur.

[1] Modified from Appendix A, Contractor's Environmental Management Plan Guidelines for Construction-Road, Rail and Marine Facilities, Government of South Australia Government, Revision 2 February 2009

2.4 ESMS documentation

Provide documented details of the system, if available, including any manuals, standard report sheets, checklists, etc.

2.5 Document control

Describe the document control system to apply to the contract.

2.6 Checking and corrective action

Describe the procedures to apply to inspection, monitoring and auditing including non-conformance and corrective action.

Procedures applicable for these basic elements should be documented. Existing quality assurance procedures may already respond to issues such as document control and corrective action.

3. CONTRACTOR'S EMP SCHEDULE

Schedules may be presented under two categories, namely:

- Specific response to the Project EMP
- Best practice response.

Best practice responses should be detailed, particularly when a project-specific Project EMP is not developed.

Plans can either be issue based or activity based. The Project ESMP is issue based with headings such as construction wastes, labour and working condition, and fugitive dust.

An activity based plan would be likely to have headings such as vegetation clearance, excavation, topsoil removal, demolition, dredging and drainage works, etc.

The contractor shall include an inspection, monitoring and audit plan based on the Contractor's EMP Schedules. These are essential in order to establish if the contractor's performance has achieved the project objectives. The Contractor's EMP must be relevant to the site activities and effectively implemented and managed. Inspections, monitoring and auditing will provide the basis to implement corrective action and to ensure the environmental outcomes are achieved. Resultant action may involve upgrading the Contractor's EMP, changing procedures, training staff or providing additional or repositioning controls.

APPENDIX 7A

SUB-PLAN OF OPERATION PHASE EMP

APPENDIX 7A-1

AIR QUALITY MANAGEMENT PLAN

APPENDIX 7A-1

AIR QUALITY AND MANAGEMENT PLAN

<table>
<tr><th>Element</th><th>Content</th></tr>
<tr><td>Objective</td><td>• To minimize the emissions from the power plant, particularly NOx.
• To ensure the emissions are within the limits prescribed as a condition of the ECC prescribed by MOECAF.</td></tr>
<tr><td>Performance indicators</td><td>• Concentrations of NOx in the stack gas as percentage of the permissible maximum concentrations.
• No complaint on ambient air quality in sensitive receptor areas.</td></tr>
<tr><td>Sources</td><td>Stack gas</td></tr>
<tr><td>Operational level criteria</td><td>Emission characteristics at GE Jenbacher JGS 320 Engine (1 Unit)
<table>
<tr><th>Parameter</th><th>Units</th><th>Magnitude</th></tr>
<tr><td>Exit velocity</td><td>m/s</td><td>0.014</td></tr>
<tr><td>Temperature</td><td>°C</td><td>460</td></tr>
<tr><td>NOx-Concentration
Emission rate</td><td>g/s</td><td>0.0002</td></tr>
</table></td></tr>
<tr><td>Applicable Standards</td><td>Applicable ambient air quality standards related to exhaust emissions are as follows:
<table>
<tr><th>Pollutant</th><th>Not to be Exceeded</th></tr>
<tr><td>PM-10</td><td>150 µg/m^3 (24 hr average)</td></tr>
<tr><td></td><td>50 µg/m^3 (annual average)</td></tr>
<tr><td>SO_2</td><td>125 µg/m^3 (24 hr average)</td></tr>
<tr><td>NO_2</td><td>150 µg/m^3 (24 hr average)</td></tr>
<tr><td>CO</td><td>200 µg/m^3 (1 hr average)</td></tr>
<tr><td></td><td>43,200 µg/m^3 (1 hr average)</td></tr>
</table></td></tr>
<tr><td>Mitigation measures</td><td>Design and Commissioning
• The gas engine featured lean burn gas technology which meet the most demanding emission guideline;
• The Contractor and his supplier will complete the testing and tuning program on the engine before operational handover to ensure efficient operation of plant.</td></tr>
</table>

Element	Content
Mitigation measures (Con'td)	**Management Controls** • Ensure that the power plant personnel will be suitably qualified for their assigned tasks; • The Contractor with support of the equipment suppliers shall provide appropriate training to plant operation personnel to enhance their competency in operation and control of gas engine generator. The Contractor will propose a training program for plant operators not later than three months before the commissioning, and conduct the training as part of the overall training in parallel with the commissioning; • Regular periodic review of air quality monitoring data (monthly) with comparison of monitoring data with that assumed and predicted in the documents listed under Condition of the Project Approval. **Operational Controls** The gaseous emission control will be complied with IFC Environmental, Health, and Safety Guidelines Thermal Power Plants (2008) and National Environmental Quality (Emission) Guidelines (2015).
Monitoring	**Ambient Air Quality** • Undertake local, 2 times per year monitoring of ambient air quality in Villages (closest sensitive receptors include Pagaw Zoon and Pale Gu village throughout operation phase, and in response to complaints, based on the following parameters: - Particulates (PM 10) - Nitrogen Dioxide (NO_2) - Carbon Monoxide (CO)
Reporting	• Air quality management and monitoring reports will be submitted to MONREC every six months throughout the Project life.
Area	• Closest sensitive receptors include Pagaw Zoon and Pale Gu village
Responsible Agency	• Project developer (Monitoring Team)
Estimate Cost	• 700 USD/station/time

APPENDIX 7A-2

WASTE MANAGEMENT PLAN

APPENDIX 7A-2

WASTE MANAGEMENT PLAN

Element	Content
Objective	To minimize all types of wastes generated by the Project operation particularly oil and lubricant agent, that will have to be disposed. To minimize environmental impacts of waste disposal.
Performance Indicators	Number of complaints related to waste disposal.
Sources	Wastes will be divided into two categories: • Non-demolished waste: Includes wastes generated from daily use at office work such as paper, food and beverage containers, food wastes, and other domestic items. • Hazardous waste: Includes such wastes as spent lubricating oil, and chemicals used in the generator. Most of the hazardous wastes are in liquid form.
Applicable Standards	Applicable guidelines and standards regarding the management and disposal of the three categories of wastes as prescribed by MOECAF or enforced by the local government, whichever are more stringent.
Mitigation Measures	**Design and Planning before Commencing the Operation** • The Contractor will consult with the EHS Manager of the Project developer, ECD, SWB and the township governments the possibility of using existing waste disposal facilities managed by the regional or local governments. If this not possible, the Contractor will need to develop its own disposal facility preferably within the operation site, if possible. • The Contractor will ensure that the design and the proposed operation methods will generate the least amount of wastes. • Based on the operation plan, methods, and schedule, the project developer will prepare estimates of the quantity of each waste category to be generated in each quarter of the operation phase. The estimates will be monthly updated. • The project developer/contractor will propose methods for waste reuse and recycling and prepare estimates of the remaining quantity of each waste category that will be disposed off. • The project developer/contractor will propose methods of waste transport and disposal. • The project developer/contractor will then prepare an action plan for waste management for the first quarter of the operation phase containing all the above estimates and proposals. The action plan will be submitted to the EHS Manager of the Project developer not later than three weeks before commencing the operation.

Element	Content
Mitigation Measures (Cont'd)	• The subsequent quarterly action plans will be prepared by updating or revising the preceding plans as appropriate to reflect cumulative results of the previous quarters. The next quarterly action plan will be submitted to the EHS Manager not later than two weeks before the end of the current quarter. • Consider using materials and products that have a recycled content wherever cost/performance competitive, and where environmentally preferable to the non-recycled alternative; • Arrangements with suppliers to return any unused operation materials; • Where possible, goods to be ordered in bulk to minimize packaging waste and packaging material returned to the supplier wherever practicable; and **<u>During Operation phase</u>** **Waste Segregation** • The Project would design and implement a waste segregation system and procedure and communicate it to all staff personnel to strictly adhere to the segregation procedure. • An appropriate number of containers with adequate volume and appropriate materials will be provided at strategic locations to support the segregation. Each waste category will be segregated into recycling, reuse and disposal sub-categories. **Waste Collection and Storage** • Daily collection and transport will be organized and carried out for each sub-category of segregated wastes. • A roofed storage area with adequate space will be provided for storing the segregated wastes waiting for the on-site or off-site reuse or recycling. • The storage area for hazardous waste will need to be specially designed to prevent spills or leaks onto the soil. **Waste Reuse and Recycling** • Remove any contamination inadvertently deposited in recyclable waste material containers. Provide cleanup of excessive contamination at recycling vendor locations when such contamination is not controlled at the project site. • Collection and recycling of used oils by a licensed contractor; • Collection by a licensed contractor of empty oil and fuel drums and other containers for return to recycling facilities;

Element	Content
Mitigation Measures (Cont'd)	**Waste Disposal** • Disposal of the remaining wastes that are unable to be reused or recycled in the approved land fill site(s). • No burning of wastes will be allowed in Project area. • Decomposable wastes such as food wastes and vegetation may be disposed of by composting. • Hazardous wastes will be handled by a licensed hazardous waste contractor. If this service is not available, the Contractor will need to find appropriate arrangements for incineration, safe permanent storage, or other appropriate methods of disposal.
Monitoring	Monitoring of the waste management performance will be carried out through quick daily site inspections and detailed weekly site inspections. Daily site inspections will include observation of the collection and storage of waste materials and waste disposal areas, and reviewing the daily records. The focusses will be on efficiency of the collection, storage, and disposal; and on the quality of the records. The EHS Managers of the Project Proponent and the Contractor will jointly inspect the sites. In weekly site inspections, the EHS Manager will be participated by the Resident Engineer of the Project Proponent and the Contractor. The inspection will cover verification of the records, disposal activities, discussion on the performance of the past week, and identification of problems, if any, that affect the waste management performance.
Reporting	• Report immediately to the relevant authorities any incident where harmful waste material is accidentally released to the environment. • In the event of an environmental incident, take such corrective or remedial action as is required to render the area safe and avoid or minimize environmental harm. • Monthly reports on the waste management results as part of the monthly monitoring reports. • Report to MONREC at every six month throughout the Project life.
Area	• Project site
Responsible Agency	• Sub-contractor (Waste management agency)
Estimate Cost	• Include of operation cost.

APPENDIX 7A-3

TRAFFIC MANAGEMENT PLAN

APPENDIX 7A-3

TRAFFIC MANAGEMENT PLAN

Element	Content
Objective	• Manage traffic and transport issues to minimize potential impacts on accident to local communities and the operation of the road network during operation period
Performance indicators	• Number of traffic accidents in the identified impact areas • Traffic condition on ITD main road during operation period.
Sources	• Traffic disturbances could be caused by transportation of LNG. Number of truck trip is estimated to be 8 trip/day on ITD main road linked DSEZ to Thai border. LNG is supplied by PTT which is based in Thailand. Other sources of LNG such as Kan Bauk, 60 km. in the north of the Project site could not fully provided LNG as the Project requirement. • Potential impact areas:-ITD main road
Management guidelines	• Take reasonable and practicable measures to avoid, or mitigate and manage the potential traffic impacts on communities along transportation routed. • Minimize as far as reasonably practicable, potential traffic disruptions to the operation of the road network and the public transport network due to the transportation of LNG. • Implement traffic management measures near the Project sites to avoid conflicts between decommissioning traffic, and pedestrians and cyclists. • Take reasonable and practicable measures to inform the locals communities about the schedule of LNG transportation and estimated arrival time of LNG carrier truck to each community along transportation route. • Monitor traffic flows near the Project site and apply appropriate action in response to traffic impacts as a consequence of LNG transportation.
Mitigation Measures	**LNG Carrier Truck** • LNG Carrier truck must obtain the permission from Department of Land transportation as fuel carrier truck. It must be equipped with basic safety equipment as stated in NFPA 385 (Standard for Tank Vehicles for Flammable and Combustible Liquids) included portable fire extinguisher. • LNG Carrier truck must be equipped with GPS. • LNG Carrier truck must turn on the head lamp at all time during transportation • At each transportation trip, at least two (2) LNG Carrier truck must be assigned to travel together. It would stay at a distance of 200 m to each other while on duty. • All drivers must pass the training program and obtained the license of heavy vehicle.

Element	Content
Mitigation Measures (Cont'd)	**Transportation route** • In consultation with the concerned authorities at the regional, and township levels, Traffic Management Plan for LNG transportation should address the following issues: - Avoid transport of LNG during peak traffic periods as far as practicable. In case of unavoidable, LNG transportation are to be managed by local traffic police. - Strictly control transportation of LNG in only designated routed; - Investigate the capacity of intersections on transportation routes to minimize impact on intersection operations by LNG carrier truck; - Prepare a comprehensive traffic management plan to cope with accident in order to mitigate and manage the impacts of the accident on traffic condition of the transportation routes. - In case of accident, Emergency Response Plan for Road Tanker Emergencies is required to implement. • Measures to manage the operation of the truck fleet for incorporation into a vehicle management sub-plan to include: - Monitoring of truck position, speed, route along transportation routes; - Management of LNG carrier truck speed not exceed 40 km./h. to reduce the dispersion of dust and avoid accident to local pedestrians and cyclist; - Management of traffic signals along the transportation routes especially in communities area; - Maintain all LNG carrier truck to meet a high standard (ADR28/01) with regards noise emissions, exhaust emissions, traffic safety and operational safety; **Local Traffic** • Notify the local community about proposed changes to in traffic access condition from LNG transportation, • Provide clear traffic signal and traffic notice board to warn locals for safe traffic movement; **Traffic Management at the Intersection of ITD main road and Highway N0.8** • Provide a traffic police or relevant officer to control traffic at the intersection during the transport period.
Monitoring	• Record and report number of traffic accidents in the identified impact areas. • Monitor number of traffic on ITD main road. Review the adequacy of traffic management plan if traffic congestion is observed.
Reporting	• Monthly report on local traffic conditions, including any accidents involving transportation of LNG to the Project site. • Report submitted to MONREC at every six month throughout the Project life.

Element	Content
Area	• Project site and ITD main road at km.17
Responsible Agency	• Project developer
Estimate Cost	• 500 USD/station/time throughout operation phase • Cost for monitoring vehicle accident situation related to the project include on cost for operation.

APPENDIX 7A-4

OSH MANAGEMENT PLAN

APPENDIX 7A-4

OSH MANANGEMENT PLAN

Element	Content
Objective	To establish best practicable OSH conditions to ensure work related health and safety of operational personnel.
Performance Indicators	• Total Recordable Injury Frequency Rate (TRIFR) • Lost Time Injury Frequency Rate (LTIFR) • Medical Treatment Injury Frequency Rate (MTIFR) • Duration rate • Incident rate
Sources	Issues of concern: excessive noise and temperature inside the power plant, fire and explosion risks.
Applicable Standards	OSH guidelines and standards enforced by the Ministry of Health and proposed for this Project as follows:
Mitigation Measures	**Plant Design and Equipment Selection** • The Contractor will design the power plant and gas distribution facilities using equipment that will meet OHS guidelines and standards prescribed in the contract. • The Contractor will prepare an OSH management plan and implementation procedures specific to the power plant of this Project and in line with the Owner's OSH policy and procedures. The OSH management plan and implementation procedures will be submitted not later than one month before commissioning of the power plant and associated facilities. • The Contractor will conduct necessary orientation and training to the Owner's power plant operational team to ensure that the operational team clearly understands the OSH plan and implementation procedures. • The OSH management plan and implementation procedures will cover but not limited to the following subjects: - Organization and responsibilities of OHS management - Training plan - Communication plan - Contractor responsibilities - Safety measures for the power plant's O&M, including safety in turbine operations, fire, explosion, and chemical hazards. - Emergency response procedures. - Task-specific work requirements Compliance monitoring and evaluation plan - Audit plan - Reporting system - Documentation system

Element	Content
	During Operation • The implementation of the OSH plan will be integrated with operational control. • The Plant Manager will implement the OSH plan and procedures as part of his operational management. • The EHS Manager will monitor the implementation of OSH procedures to comply with relevant requirements.
Monitoring	Monitoring of OSH performance of the Contractor will be made through: • Daily informal inspections (walk through of the work place) • Weekly formal inspections of the work place. • Monthly formal inspections of the work place. • Audits • Corrective Action Reports The daily inspections will observe: (i) adherence of the operational personnel to the OSH procedures such as wearing of protective equipment in high risk working areas; (ii) working conditions; (iii) readiness of fire and life safety systems as relevant; and (iv) potential new hazards. The daily inspections will be carried out by the EHS Manager, the Operational Manager, and relevant unit heads. The Plant Manager will occasionally join the daily inspections. The EHS Manager will prepare daily OSH inspection notes as part of the site inspection notes. The weekly formal inspections will be carried out at weekly intervals and shall be documented using appropriate "Weekly OSH Inspection Checklists". The EHS Manager and the Operational Manager will carry out the weekly inspections. The weekly inspections will include the same issues as the daily inspections but will be in more details and quantitative. The monthly formal inspections will review the OSH performance of the month based on results of the weekly inspections. Progress in addressing issues or problems identified in the precedent weekly inspections will be evaluated. Internal audits will be carried out annually or more frequent if the OSH performance is significantly below established targets. The internal auditor or team will be engaged by the power plant company's Board of Directors. Monitoring results will be discussed in monthly review meetings on power plant performance.

Element	Content
Reporting	• Monthly as part of the monthly monitoring reports except in case of an incident when reporting should occur immediately on completion of any investigation required to resolve the incident. • Results of OSH monitoring will be reported: - Twice a year reports will be submitted to MONREC throughout the Project life
Area	• Project site
Responsible Agency	• Project developer (OSH Team)
Estimate Cost	• include operation cost

APPENDIX 7A-5

SOCIAL ENVIRONMENTAL MANAGEMENT PLAN

APPENDIX 7A-5

SOCIAL ENVIRONMENTAL MANAGEMENT PLAN

Element	Content
Objective	Avoid or mitigate and manage operation impacts on the social environment. *Note: The social environment includes residential and neighborhood amenity, connectivity, community health, community diversity, social infrastructure provision, livelihood and safety.*
Performance Indicators	• Number of grievances or complaints filed with the Project Management Office of the Project Proponent • Number of complaints successfully responded
Sources	Daily living of people in the surrounding communities may be disturbed or inconvenienced by environmental disturbances caused by the operation such as noise, air quality and transportation of LNG. The management of social environment will cover all village within radius of 5 km. from the Project site. All villages are under administration of Yebyu Township.
Applicable Standards	The target for the entire operation period is all complaints are responded by the EPC and filed with the Project Management Office.
Mitigation Measures	Mitigation measures for minimizing physical impacts on the social environment are prescribed in relevant sub-plans, such as air quality, waste management and LNG transportation. Mitigation measures in this sub-plan are community measures designed to support the implementation of the physical measures. The basic requirement is that the communities have access to the communication and complaints process to address and respond to their complaints related to the construction impacts on their daily living and properties. Establish the CSR Program to implement and support public relations and mitigation measures. **Amenity and Community Life** • Liaise with key stakeholders and the community through a public consultation process to ensure insignificant impacts of the Project during operation phase on community facilities, schools and monastery. **Social Infrastructure** • Consult with managers of community facilities in neighborhoods adjacent to the Project sites to develop effective mitigation strategies and maintain regular communication with these facility managers.

Element	Content
Mitigation Measures (Cont'd)	**Complaints and Corrective Actions** • Develop an effective and responsive system for receiving, handling and responding to complaints received throughout the Project life. • Ensure complaints are received and responded to on a 24-hour per day basis for the duration of the operation phase. • Provide reporting on complaints received, responses provided, timeliness of responses, and corrective actions taken on a monthly basis. • Raise community awareness of the complaints systems and procedures through public notifications and website facilities. **Early Consultation** • Initiate consultation with nearest neighbors to Project site as soon as practicable before commissioning the power plant. • Conduct consultation and community information strategies in conjunction with the public or community consultation process. • Establish a tripartite committee to provide mechanism and channel for the committees to participate in the project environmental management. **Community Consultation Program** • Undertake and maintain a comprehensive community information program to inform residents, businesses, community groups and motorists of Project activities and potential impacts. Effective and accessible consultation measures are required including maintenance of a 24-hour contact line operated by a person with authority to stop works if goals and agreements with the community are not met.
Monitoring	• Evaluate effectiveness of consultation, liaison and mitigation outcomes. • Survey and report on actual impacts of the operation on community amenities. • Report community consultation's activities and on consultation, liaison and environmental compliance and public transport access in work site neighborhoods.
Reporting	• Report immediately in case of complaint from a neighbor. • CSR Program will be reported: - Twice a year reports will be submitted to MOECAF throughout the Project life.
Area	• Villagers (PAPs)
Responsible Agency	• Project developer
Estimate Cost	• 10,000 USD lump sump for group interview or village forum at 4 village groups throughout operation phase • 1,000 USD / year for development fund throughout operation phase

APPENDIX 7A-6

OPERATION STAFF MANAGEMENT PLAN

APPENDIX 7A-6

OPERATION STAFF MANAGEMENT PLAN

Element	Content
Objective	• To manage human resources throughout the life of project. • To ensure that sufficient staff processing the correct skill sets and experience to ensure a successful project completion.
Performance Indicator	• Operation staffs obtained the target/goal of proposed plan (percentage). • Results/products meet the standard requirement used for the Small Port Project.
Mitigation Measures	• Organization of training program for operational staff. • Incentive idea for achieving goals.
Monitoring	Set Key Performance Indicators (KPIs) for operation staff (individual or department).
Reporting	• Results will be included in the environmental monitoring reports and submitted to MONREC.
Area	• Project site/or outside.
Responsible Agency	• Project developer (HR Team)
Estimate Cost	• include on operation cost

APPENDIX 7A-7

EMERGENCY MANAGEMENT PLAN (FLOOD AND CYCLONE)

APPENDIX 7A-7

EMERGENCY MANAGEMENT PLAN (FLOOD, AND CYCLONE)

Element	Content
Objectives	• To minimize impacts in case of emergency during operation phase. • To acknowledge and raise awareness of operation staffs to evacuate, shelter or lockdown can save lives.
Performance Indicator	• Number of staff understand the emergent situation and know how to minimize/survive from the hostile situation (flood, and cyclone). • Conduct a test (pre-test and post-test) to evaluate their understanding.
Mitigation Measures	• Organized training program related to emergency plan in orientation program. • Practice emergency plan yearly by experts.
Monitor	• Results of pre-test and post-test of construction workers (understanding and application of knowledge).
Reporting	• Results of pre-test and post-test/yearly emergency practice, directly reporting to project developer.
Area	• Project sites.
Responsible Agency	• Project developer • Operation staff
Estimate Cost	• include on operation cost

APPENDIX 7B

SUB-PLAN OF DECOMMISSIONING PHASE EMP

APPENDIX 7B

SUB-PLAN OF DECOMMISSIONING PHASE EMP

APPENDIX 7B-1

AIR QUALITY MANAGEMENT PLAN

APPENDIX 7B-1

AIR QUALITY MANAGEMENT PLAN

<table>
<tr><th>Element</th><th>Content</th></tr>
<tr><td>Objective</td><td>• Ambient air quality in the Project site and at the identified sensitive receptors meets the prescribed standards throughout the decommissioning period.
• Community concerns and complaints about air quality are addressed quickly and effectively.</td></tr>
<tr><td>Performance Indicators</td><td>• Number of complaints filed through the complaint response channel.
• Number of times that the local ambient air quality is below the prescribed standards related to dust and exhaust emissions.</td></tr>
<tr><td>Sources</td><td>Activities related to decommissioning could adversely affect local air quality in and near the Project site. The issues will be:
• Fugitive dust generated from demolition, and vehicle movements in the Project site and along the transport routes;
• Exhaust emissions from trucks and heavy construction equipment powered by diesel engines.</td></tr>
<tr><td rowspan="2">Applicable Standards</td><td>Applicable ambient air quality standards related to fugitive dust and exhaust emissions are as follows:
Table 1 – Construction Air Quality Goals
<table>
<tr><th>Pollutant</th><th>Not to be Exceeded</th></tr>
<tr><td>Particulate as PM_{10}</td><td>150 $\mu g/m^3$ (24 hr average)[a/,b/]</td></tr>
<tr><td></td><td>50 $\mu g/m^3$ (24 hr average)[c/]</td></tr>
<tr><td></td><td>20 $\mu g/m^3$ (annual average)</td></tr>
<tr><td>Total Solid Particulates</td><td>230 $\mu g/m^3$ (24 hr average)</td></tr>
</table>
Remark: [a/] Ambient Air Quality in Power Plant "Thermal Power: Guidelines for New Plant", Pollution Prevention and Abatement Handbook WORLD BANK GROUP, Effective July 1998
[b/] WHO Ambient Air Quality Guidelines stated on Environmental, Health, and Safety Guidelines: Environmental Air Emission and Ambient Air Quality of International Finance Corporation, April 30, 2007
[c/] National Environmental Quality (Emission) Guidelines, December 29, 2015</td></tr>
<tr><td>The Contractor will conduct air quality surveys at the construction sites and identified sensitive receptors to update the baseline data established in the Final EIA Report.</td></tr>
</table>

Element	Content
Applicable Standards (Cont'd)	**Fugitive Dust Control** • For construction site including spoil placement sites: - Use watering or other effective techniques on unsealed areas to minimize wheel generated or wind-generated dust; - As soon as the land becomes available, engage in the progressive rehabilitation of the Project site and spoil placement sites with landscaping. • Take measures (e.g. rumble bars and wheel wash bays) to ensure dust-creating material (earth or similar material) is not transported from the Project site to roads or other areas in the public domain. • Ensure all trucks carrying spoil or other loose material are covered, and if necessary, treated (e.g. mist sprays) prior to leaving the Project sites. • Ensure all loose earth and similar material spilled or otherwise deposited within the Project site and the transport routes is cleared and removed from trafficked areas as soon as practicable. • At the Project site and spoil placement sites, monitor meteorological conditions, particularly wind speed and direction and where necessary take measures to avoid impacts of dust on adjacent properties. Such measures may include: - Modification of demolishing methods; - Increase in dust suppression measures; or - Cessation of work when no other reasonable or practical measure is available. **Diesel Exhaust Emissions** • Take measures to manage the movement of vehicles entering and leaving the Project site to avoid, or mitigate and manage the potential for vehicle emissions impacting on adjacent properties, except where such residential or sensitive activities in front an arterial road to be used for access to or from the Project site. Measures for management are to be provided in the vehicle management plan and the traffic management plan. Such measures may include avoiding or minimizing queuing on streets approaching the worksites or adjacent to other sensitive activities; • Adopt procedures to avoid vehicles idling for excessive periods (e.g. more than 5 minutes) if required to queue to enter the Project site; • For equipment powered by diesel motors, take measures to avoid or mitigate and manage the potential impacts of exhaust emissions on adjacent residential or other sensitive activities. For example, ensure all vehicles and equipment powered by diesel motors are fitted with emission control measures, and are regularly maintained to manufacturers' specifications.

Element	Content
Monitoring	**Ambient Air Quality** • Undertake routine periodic ambient air quality monitoring (AQM) by the contractor, not less than once a month, at locations in the Project site and in sensitive areas over the duration of decommissioning works. Additional monitoring will need to be carried out if complaints are received from affected persons. The AQM during will cover at least 24 hour continuous sampling and will cover: - Total suspended particulates (TSP) - Particulates (PM_{10}) • Monitor and manage the incidence of dust deposition and manage vehicle emissions in relation to ambient air quality. **Dust** • Monitor regularly (weekly minimum) by inspection or other effective sampling: • The performance of dust filtration systems on decommissioning shed ventilation systems; • Spillage or deposition of loose material on roads leaving the Project site. • Monitor performance of mitigation measures in relation to the construction air quality goals in the above table. **Vehicle Emissions** • Monitor vehicle management with regards to: - Queuing in streets other than those in which arrangements have been made for such action in the traffic management plan (on-going); - Vehicle motors idling for periods exceeding 5 minutes while in queues to access the Project site (on-going) • Inspect the position equipment powered by diesel engines to ensure exhaust emissions are directed away from sensitive activities and neighboring properties.
Reporting	Report to MOECAF will be submitted when completion of decommissioning operation.
Area	• Project sites. • Closest villages (sensitive receptors include Pagaw Zoon and Pale Gu Villages).
Responsible Agency	• Project developer. • Air quality monitoring agency • Construction contractor.
Estimate Cost	• 800 USD

APPENDIX 7B-2

NOISE AND VIBRATION MANAGEMENT PLAN

APPENDIX 7B-2

NOISE AND VIBRATION MANAGEMENT PLAN

<table>
<tr><th>Element</th><th>Content</th></tr>
<tr><td>Objective</td><td>• To minimize noise and vibration of decommissioning activities.
• To ensure that the noise and vibration levels at the identified sensitive receptors will not exceed the maximum limits prescribed by MOECAF as a condition of the ECC and will be acceptable to the sensitive receptors.</td></tr>
<tr><td>Performance Indicators</td><td>• The incremental increases in noise and vibration levels during the decommissioning works compared to the targets.
• Net ambient noise and vibration levels compared to the applicable ambient noise and vibration standards.</td></tr>
<tr><td>Sources</td><td>Noise and vibration will be managed at the Project site. The Project site where decommissioning activities causing noise and vibration will be most intensive and concentrated.
Decommissioning activities creating noise and vibration at the Project site will be:
• Demolishing structure
• Operation of heavy construction equipment</td></tr>
<tr><td>Applicable Standards</td><td>Noise and vibration performance will be evaluated against the following standards:

National Ambient Noise Level Standards:
- Ambient noise level standard, Myanmar National Environment Quality (Emission) Guidelines, December 2015

Noise Standards: World Health Organization (WHO), 1999
- Guidelines for Community Noise, World Health Organization (WHO), 1999
Standard
Noise impacts should not exceed the levels presented in Table below, or result in a maximum increase in background levels of 3 dB at the nearest receptor location off-site.

<table>
<tr><th></th><th colspan="2">One Hour L_{Aeq} (dBA)</th></tr>
<tr><th>Receptor Daytime</th><th>Daytime
07:00 - 22:00</th><th>Nighttime
22:00 - 07:00</th></tr>
<tr><td>Residential; institutional; educational</td><td>55</td><td>45</td></tr>
<tr><td>Industrial; commercial</td><td>70</td><td>70</td></tr>
</table>
</td></tr>
</table>

Element	Content
	Vibration Standards : - Deutsches Institut für Normung, Berlin, Germany, DIN 4150-3, Structural Vibration Part 3: Effects of Vibration on Structures, 1999
Mitigation Measures	**Design** • The Contract will require the Contractor to use decommissioning equipment that generates low levels of noise and vibrations. The Contractor will present alternative decommissioning equipment to demonstrate that the selected equipment adopts best available technologies to minimize noise and vibration. • Before commencing the decommissioning, the Contractor will conduct a noise and vibration survey covering the identified sensitive receptors to update the existing baseline data in the Final EIA Report. The noise survey will be manually conducted using a sound level meter following Noise Standard stated on Environmental, Health, and Safety Guidelines for Thermal Power Plant: Noise of International Finance Corporation (December 19, 2008). • Demonstrate through predictive modelling of the proposed decommissioning techniques and monitoring ambient noise and vibration readings prior to decommissioning to establish pre-disturbance levels, the likely levels of noise and vibration due to decommissioning works throughout the decommissioning period. **Decommissioning Noise** • The Contractor will be allowed to carry out decommissioning works, which generate excessive levels of noise and vibration, only during the period between 6.30 am to 6.30 pm Mondays to Saturdays. Such construction works on Sundays or public holidays will need approval from the Resident Engineer of the Project Proponent. • For decommissioning works beyond standard decommissioning hours, the Contractor shall take reasonable and practical measures to protect the affected sensitive receptors. For example, acoustic screens or noise barriers would be required. • Reasonable and practicable measures to achieve the decommissioning noise targets may include, for example: – Commence advanced notification of works and undertake on-going consultation with potentially affected property owners and occupants. – Establishing temporary noise barriers between decommissioning worksites and sensitive receptors (e.g. residential, schools, community facilities). – Fitting noise-reduction measures to all plant and equipment engaged in the decommissioning works; – Designing worksites to minimize potential noise impacts on nearby sensitive places. • During decommissioning operation, the Contractor will undertake predictive modelling of potential decommissioning noise and vibration impacts based on the proposed decommissioning methods, the proximity of sensitive places, and the applicable standards.

Element	Content
	• Where decommissioning noise impacts are predicted due to specific decommissioning activities, reasonable and practicable mitigation and management measures must be adopted and notified in advance to potentially affected owners and occupants of adjacent properties. If such activities are to occur often during the decommissioning works, a program for a regular, scheduled occurrence should be devised and implemented in consultation with the owners and occupants of nearby properties. • Potentially affected property owners and occupants are to be notified well in advance (7 days or more) as to the scale, extent and duration of decommissioning works, as required by the consultation and communications program. **Decommissioning Vibration** • Develop predictive models for decommissioning vibration at the various identified sensitive receptors. If the predicted vibration will exceed the maximum limits for property damage or human comfort, commence advanced consultation with potentially affected property owners and occupants and implement mitigations measures to minimize the impacts.
Monitoring	**Decommissioning Noise Monitoring** • Noise and vibration monitoring will be carried out during the decommissioning works identified as noise and/or vibration sources are taking place. Therefore, the monitoring will be linked to the work schedule. The Contractor will be required to prepare a noise and vibration monitoring program based on the latest decommissioning schedule before commencing the construction. • Noise and vibration monitoring will be carried out manually using a sound level meter following Noise Standard stated on Environmental, Health, and Safety Guidelines for Thermal Power Plant : Noise of International Finance Corporation (December 19, 2008). • The monitoring locations will be at the Project site and the identified sensitive receptors. • In addition, compliance monitoring by a third party will be carried out at least twice a year over the construction period. During the construction period, the compliance monitoring should focus on the day on which the construction activities with maximum noise and vibration will be carried out.- Should be cut off? **Noise Monitoring of Decommissioning Equipment and Trucks** • Before commencing the decommissioning, the Contractor will conduct noise testing of trucks to be used in the construction. The Contractor will ensure that the trucks that did not pass the noise test will be replaced by new trucks with less noise, or will be fixed as soon as possible. The Contractor will submit reports of the noise testing to the EHS Manager of the Project Proponent.

Element	Content
Monitoring (Cont'd)	**Monitoring in Response to Noise/Vibration Complaint** • The Contractor is to implement measures to receive and respond to complaints about decommissioning noise and vibration made at any time during the decommissioning phase of the Project. Such measures may include a complaints management and correction action system developed and incorporated in this DEMP. Key requirements for the system include: - On receipt of a complaint, implement a complaint response procedure for tracking and responding to the issue(s) and the complaint; - Identify the relevant decommissioning activity at which the complaint is directed; - As soon as practicable, investigate and measure the level of noise and/or vibration from that activity; - Respond to the complainant as soon as practicable upon completion of the investigation and describe the corrective action taken; and - Report to the Proponent on the complaint, the activity, the corrective action and the response.
Reporting	Report to MOECAF will be submitted when completion of decommissioning operation.
Area	• Project sites. • Closest villages (sensitive receptors include Pagaw Zoon and Pale Gu Villages).
Responsible Agency	• Project developer • Contractor • Sub-contractors
Estimate Cost	• 700 USD

APPENDIX 7B-3

WASTE MANAGEMENT PLAN

APPENDIX 7B-3

WASTE MANAGEMENT PLAN

Element	Content
Objective	To minimize all types of wastes generated by the Project operation particularly oil and lubricant agent, that will have to be disposed. To minimize environmental impacts of waste disposal.
Performance Indicators	Number of complaints related to waste disposal.
Sources	Wastes will be divided into three categories: • Demolished waste: Includes wastes generated from demolish of structure and basement part of the power plant such as • Non-demolished waste: Includes wastes generated from daily use at office work such as paper, food and beverage containers, food wastes, and other domestic items. • Hazardous waste: Includes such wastes as spent lubricating oil, and chemicals used in the generator. Most of the hazardous wastes are in liquid form.
Applicable Standards	Applicable guidelines and standards regarding the management and disposal of the three categories of wastes as prescribed by MOECAF or enforced by the local government, whichever are more stringent.
Mitigation Measures	**Waste Segregation** • The Project would design and implement a waste segregation system and procedure and communicate it to all staff personnel to strictly adhere to the segregation procedure. • An appropriate number of containers with adequate volume and appropriate materials will be provided at strategic locations to support the segregation. Each waste category will be segregated into recycling, reuse and disposal sub-categories. **Waste Collection and Storage** • Daily collection and transport will be organized and carried out for each sub-category of segregated wastes. • A roofed storage area with adequate space will be provided for storing the segregated wastes waiting for the on-site or off-site reuse or recycling. • The storage area for hazardous waste will need to be specially designed to prevent spills or leaks onto the soil. **Waste Reuse and Recycling** • Remove any contamination inadvertently deposited in recyclable waste material containers. Provide cleanup of excessive contamination at recycling vendor locations when such contamination is not controlled at the project site. • Collection and recycling of used oils by a licensed contractor; • Collection by a licensed contractor of empty oil and fuel drums and other containers for return to recycling facilities;

Element	Content
Mitigation Measures (Cont'd)	**Waste Disposal** • Disposal of the remaining wastes that are unable to be reused or recycled in the approved land fill site(s). • No burning of wastes will be allowed in Project area. • Decomposable wastes such as food wastes and vegetation may be disposed of by composting. • Hazardous wastes will be handled by a licensed hazardous waste contractor. If this service is not available, the Contractor will need to find appropriate arrangements for incineration, safe permanent storage, or other appropriate methods of disposal.
Monitoring	Monitoring of the waste management performance will be carried out through quick daily site inspections and detailed weekly site inspections. Daily site inspections will include observation of the collection and storage of waste materials and waste disposal areas, and reviewing the daily records. The focusses will be on efficiency of the collection, storage, and disposal; and on the quality of the records. The EHS Managers of the Project Proponent and the Contractor will jointly inspect the sites. In weekly site inspections, the EHS Manager will be participated by the Resident Engineer of the Project Proponent and the Contractor. The inspection will cover verification of the records, disposal activities, discussion on the performance of the past week, and identification of problems, if any, that affect the waste management performance.
Reporting	• Report immediately to the relevant authorities any incident where harmful waste material is accidentally released to the environment. • In the event of an environmental incident, take such corrective or remedial action as is required to render the area safe and avoid or minimize environmental harm. • Report to MOECAF at the end of decommissioning phase.
Area	• Project sites.
Responsible Agency	• Project developer • Construction workers • Sub-contractors (waste management company)
Estimate Cost	• include on cost for decommissioning Power Plant

APPENDIX 7B-4

TRAFFIC MANAGEMENT PLAN

APPENDIX 7B-4

TRAFFIC MANAGEMENT PLAN

Element	Content
Objective	• Manage traffic and transport issues to minimize potential impacts on the communities and the operation of the road network during decommissioning period
Performance indicators	• Number of traffic accidents in the identified impact areas • Traffic condition on ITD main road during the decommissioning period.
Sources	• Traffic disturbances could be caused by haulage of spoil, fill materials, construction materials and plant equipment. • Potential impact areas:- ITD main road
Management guidelines	• Take reasonable and practicable measures to avoid, or mitigate and manage the potential traffic impacts on communities near the worksites. • Minimize as far as reasonably practicable, potential traffic disruptions to the operation of the road network and the public transport network due to the transport of materials to and from the Project sites. • Maintain safe access near all project work areas for road users, including pedestrians and cyclists. In particular, develop local access strategies in consultation with stakeholder groups to maintain safe, convenient and efficient access to community facilities such as schools and monastery, if any. • Implement traffic management measures near worksites and other project works to avoid conflicts between decommissioning traffic, and pedestrians and cyclists. • Take reasonable and practicable measures to inform the local and broader communities about the timing and scale of changes to traffic conditions on roads in the vicinity of the Project Site. • Monitor traffic flows near decommissioning works and take corrective action in response to traffic impacts as a consequence of decommissioning works.
Mitigation Measures	**Truck routes and Project site access** • In consultation with the concerned authorities at the regional, and township levels, develop and implement a Decommissioning Traffic Management Plan to address the following issues: - Avoid haulage tasks during peak traffic periods as far as practicable. Where haulage in peak periods is unavoidable, such activities are to be managed in accordance with specific traffic management sub-plans provided to the relevant agencies in advance. - Control heavy vehicle movements on project related road to avoid interference with major events, if any;

Element	Content
Mitigation Measures (Cont'd)	- Investigate the capacity of intersections on haulage routes to minimize impact on intersection operations by heavy vehicles servicing the decommissioning worksites; - Prepare and implement a comprehensive decommissioning traffic management plan to control truck movements to avoid, or mitigate and manage the impacts of heavy vehicle traffic on the road network. • Measures to manage the operation of the truck fleet for incorporation into a vehicle management sub-plan to include: - Monitoring of truck position, speed, route and performance in relation of traffic conditions and schedule requirements; - Management of truck speed and position to avoid queuing on the approaches to the spoil handling and loading facilities; - Management of traffic signals on nominated spoil haulage along the routes; - Maintain all vehicles transporting material to and from the construction sites to a high standard (ADR28/01) with regards noise emissions, exhaust emissions, traffic safety and operational safety; - Ensure all vehicles leaving a construction site pass over or through devices designed and maintained to remove soil and other materials. **Transportation of heavy/hazardous material** • Heavy trailer trucks transporting heavy and large equipment will have to be directed by a traffic police car. **Local Traffic** • Implement management measures to avoid, or minimize increase in traffic caused by the project works in local streets as practicable; • Notify the local community about proposed changes to local traffic access arising from decommissioning activities, and provide clear signage of changed traffic conditions and take other measures to ensure safe traffic movement; • Prepare and implement an employee parking policy for the construction worksites. **Traffic Management at the Intersection of ITD main road and Highway No.8** • Provide a traffic police or relevant officer to control traffic at the intersection during the transport period.

Element	Content
Mitigation Measures (Cont'd)	**Pedestrians and Cyclists** • Maintain safe pedestrian and cycle access near decommissioning works (particularly for elderly and children), including to community facilities, such as schools, monastery, open space and particularly: • Notify the local community, and in particular, local schools, about changes to pedestrian and cycle access during decommissioning near decommissioning works; • Provide traffic controls designed for the safe movement of cyclists near the worksites.
Monitoring	• Traffic monitoring will be carried out during transportation activities of the decommissioning works. Therefore, the monitoring will be linked to the work schedule. The Contractor will be required to prepare a traffic monitoring program based on the latest decommissioning schedule before commencing the decommissioning. • Record and report number of traffic accidents in the identified impact areas. • Monitor number of traffic on Nga Pitat Road. Review the adequacy of decommissioning traffic management plan if traffic congestion is observed.
Reporting	• Monthly report on local traffic conditions, including any accidents involving decommissioning traffic. • Report to MOECAF will be submitted when completion of decommissioning operation.
Area	• ITD main road (at KM.17) and Project Site.
Responsible Agency	• Project developer • Relevant authorities (police)
Estimate Cost	• 500 USD/station/time for monitoring number of vehicles throughout decommissioning phase • Cost for monitoring vehicles accident situation related to the project include on cost for pre-construction and construction

APPENDIX 7B-5

OSH MANAGEMENT PLAN

APPENDIX 7B-5

OSH MANANGEMENT PLAN

Element	Content
Objective	To establish best practicable OSH conditions to ensure work related health and safety of operational personnel.
Performance Indicators	• Total Recordable Injury Frequency Rate (TRIFR) • Lost Time Injury Frequency Rate (LTIFR) • Medical Treatment Injury Frequency Rate (MTIFR) • Duration rate • Incident rate
Sources	Issues of concern: excessive noise and accident.
Applicable Standards	OSH guidelines and standards enforced by the Ministry of Health and proposed for this Project as follows:
Mitigation Measures	**Planning before Commencing the Decommissioning** • The Contractor will conduct necessary orientation and training to the Owner's power plant operational team to ensure that the operational team clearly understands the OSH plan and implementation procedures of decommissioning. **During Decommissioning Operation** • The implementation of the OSH plan will be integrated with decommissioning operation. • The Plant Manager will implement the OSH plan and procedures as part of his operational management. • The EHS Manager will monitor the implementation of OSH procedures to comply with relevant requirements.
Monitoring	Monitoring of OSH performance of the Contractor will be made through: • Daily informal inspections (walk around of the decommissioning sites) • Weekly formal inspections of the work place. • Monthly formal inspections of the work place. The daily inspections will observe: (i) adherence of the operational personnel to the OSH procedures such as wearing of protective equipment in high risk working areas; (ii) working conditions; and (iii) readiness of fire and life safety systems as relevant. The daily inspections will be carried out by the EHS Manager and the contractor. The Plant Manager will occasionally join the daily inspections. The EHS Manager will prepare daily OSH inspection notes as part of the site inspection notes.

Element	Content
Monitoring (Cont'd)	The weekly formal inspections will be carried out at weekly intervals and shall be documented using appropriate "Weekly OSH Inspection Checklists". The EHS Manager and the Operational Manager will carry out the weekly inspections. The weekly inspections will include the same issues as the daily inspections but will be in more details and quantitative. The monthly formal inspections will review the OSH performance of the month based on results of the weekly inspections. Progress in addressing issues or problems identified in the precedent weekly inspections will be evaluated. Monitoring results will be discussed in monthly review meetings on power plant performance.
Reporting	• Monthly as part of the monthly monitoring reports except in case of an incident when reporting should occur immediately on completion of any investigation required to resolve the incident. • Report to MOECAF will be submitted when completion of decommissioning operation.
Area	• Project sites.
Responsible Agency	• Project developer • Construction workers • Sub-contractors (waste management)
Estimate Cost	• include on cost for decommissioning the Power Plant

APPENDIX 7B-6

SOCIAL ENVIRONMENTAL MANAGEMENT PLAN

APPENDIX 7B-6

SOCIAL ENVIRONMENTAL MANAGEMENT PLAN

Element	Content
Objective	Avoid or mitigate and manage decommissioning impacts on the social environment. *Note: The social environment includes residential and neighborhood amenity, connectivity, community health, community diversity, social infrastructure provision, livelihood and safety.*
Performance Indicators	Number of grievances or complaints filed with the Project Management Office of the Project Proponent; Number of complaints successfully responded
Sources	Daily living of people in the surrounding communities may be disturbed or inconvenienced by environmental disturbances caused by the decommissioning such as dust, traffic inconveniences, noise and vibration. The management of social environment will cover all villages located within radius of 5 km. from the Project site. All village are under administration of Yebyu Township.
Applicable Standards	The target for all complaints during decommissioning period are responded by the Project and filed with the Project Management Office.
Mitigation Measures	Mitigation measures for minimizing physical impacts on the social environment are prescribed in relevant sub-plans of noise and vibration, traffic and air quality. Mitigation measures in this sub-plan are community measures designed to support the implementation of the physical measures. The basic requirement is that the communities have access to the communication and complaints process to address and respond to their complaints related to the decommissioning impacts on their daily living and properties. **Amenity and Community Life** • Liaise with key stakeholders and the community through a public consultation process to ensure insignificant impacts of the decommissioning on community facilities, schools and monastery. • As soon as its practicable after the completion of decommissioning, the EHS manager shall reinstate community facilities affected by the works, if any. **Social Infrastructure** • Consult with managers of community facilities in neighborhoods adjacent to worksites to develop effective mitigation strategies and maintain regular communication with these facility managers.

Element	Content
Mitigation Measures (Cont'd)	**Complaints and Corrective Actions** • Develop an effective and responsive system for receiving, handling and responding to complaints received during the decommissioning of project works. • Ensure complaints are received and responded to on a 24-hour per day basis for the duration of decommissioning. • Provide reporting on complaints received, responses provided, timeliness of responses, and corrective actions taken on a monthly basis. **Community Consultation Program** • Initiate consultation with nearest neighbors to decommissioning activities as soon as practicable before commencing the decommissioning. • Undertake and maintain a comprehensive community information program to inform residents, businesses, community groups and motorists of Project activities and potential impacts. Effective and accessible consultation measures are required including maintenance of a 24-hour contact line operated by a person with authority to stop works if goals and agreements with the community are not met. **Regional Communication** • Monitor traffic volumes and traffic congestion affecting the district and township population during decommissioning.
Monitoring	• Evaluate effectiveness of consultation, liaison and mitigation outcomes. • Report community consultation's activities and on consultation, liaison and environmental compliance and public transport access in work site neighborhoods.
Reporting	• Report immediately in case of a safety incident or complaint from a neighbor. • Results of the social management will be included in the monthly monitoring reports. • Report to MOECAF will be submitted when completion of decommissioning operation.
Area	• All villages within radius of 5 km. from Project site
Responsible Agency	• Project developer
Estimate Cost	• Cost include in the budget for decommissioning the Power Plant

APPENDIX 7C

TENTATIVE ENVIRONMENTAL INCIDENT REPORT FORM OPERATION PHASE

APPENDIX 7C

TENTATIVE ENVIRONMENTAL INCIDENT REPORT FORM OPERATION PHASE

Date of Incident			
Time of Incident			
☐		☐	
TYPE OF INCIDENT			
In-Plant OHS		Environment	
☐ Noise ☐ Vibration ☐ Temperature ☐ Fire ☐ Explosion	☐ Work related accidents ☐ Gas or chemical leaks ☐ Non-compliance with safety regulations	☐ Wastewater management ☐ Non-compliance with monitoring requirements ☐ Noise and vibration at sensitive receptors	☐ Hazardous waste ☐ Non-compliance with complaint redress requirements ☐ Condition of CEMS ☐ NOx reduction

TYPE OF IMPACT

☐ General environmental and social effects (to be used where other categories do not apply)
☐ Local air pollution
☐ Land contamination
☐ Excessive noise and vibration at sensitive receptors
☐ Pollution of the receiving waters
☐ Disturbances and discomforts to the communities
☐ Public safety risk
☐ Health and safety of operational staff
☐ Breach of conditions in the ECC
☐ Power plant company's image
☐ Legal liabilities
☐ Financial-fine, liabilities, legal cost, construction cost

NUMBER OF PEOPLE AFECTED BY THE INCIDENT

DETAILS OF THE INCIDENT
Person who reported the incident

Place of incident and related operational activity

Area affected by the incident

Actual or Suspected Cause

Estimated cost incurred by the incident

CLASSIFICATION OF THE INCIDENT
☐ High severity level
☐ Medium severity level
☐ Low severity level

INCIDENT INVESTIGATION DETAILS
Incident investigation undertaken ☐ Yes ☐ No

Details of actions taken

COMPLETED BY

Name	Signature	Position	Date

APPENDIX 8A

COST ESTIMATION OF MONITORING

APPENDIX 8A

BUDGET AND SCHEDULE DURING PRE-CONSTRUTCION /CONSTRUCTION PHASE

A. Budget for environmental monitoring during Pre-construction and Constrution Phase

No.	COST ITEMS	Unit Cost		Frequency	Sampling Station	Total Cost (US$)
		US$	Units			
1	Environmental monitoring during the pre- construciton/ construction period					
	air quality (3 stations)	800	Station	2 time during pre-construction/construction Phase)	3 stations at project site, Pagaw Zoon and Pale Gu Village	4,800
	noise and vibration measurement (3 stations)	700	Station	2 time during pre-construction/construction Phase)	3 stations at project site, Pagaw Zoon and Pale Gu Village	4,200
	surfacewater measurement (3 stations)	300	Station	2 time during pre-construction/construction Phase)	1 station at project site and 2 station at nearby water courses	1,800
	traffic flows measurement (1 stations)	500	Station	2 time during pre-construction/construction Phase)	2 station at access road to project site and ITD main road (KM.17)	2,000
2	OSH Management Plan*	-	Include Construction Cost	Every day	Cosntruction Site and Surrounding Area	**a**
3	Village Forum (Public consultation)	10,000	Lumpsum	2 time during pre-construction/construction Phase)	At 12 villages within radius of 5 km. from Project site	10,000
TOTAL						**22,800**
CONTINGENCY (APPROX. 10%)						**2,280**
GRAND TOTAL						**25,080**

Remark: **a** = include on construction cost prepared by sub-contractor

* included Waste management and Emergency management Plan

BUDGET AND SCHEDULE DURING OPERATION PHASE

B. Annual Budget during Operation Phase (2 years)

No.	COST ITEMS	Unit Cost		Frequency	Sampling Station	Annual Budget During Operation Phase (US$)
		US$	Units			
1	Environmental monitoring during the operation period					
	air quality (2 stations)	700	Station	twice a year	2 stations at project site, Pagaw Zoon and Pale Gu Village	2,800
	traffic measurement (2 stations)	500	Station	twice a year	2 station at access road to project site and ITD main road (KM.17)	2,000
2	OSH Management Plan*	-	Include Operation Cost	Everyday	Project Site	**b**
3	Social development and livelihood support for PAPs					
3.1	Development Fund	1,500	time	Throughout opration phase	At 4 village groups within radius of 5 km. from Project site	6,000
3.3	Village forum	10,000	Lumpsum	1 times per year throughout operation phase	At 12 villages within radius of 5 km. from Project site	20,000
TOTAL						30,800
CONTINGENCY (APPROX. 10%)						3,080
GRAND TOTAL						**33,880**

Remark: **b** = include operation cost prepared by project proponent

* included Waste management and Emergency management Plan