



HAIC Project ESMP Construction and Operation Phases

ESMP Report

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ESMP REPORT



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Acronyms and Abbreviations

Name	Description
APMP	Air Pollution Management Plan
AOI	Area of Influence
AOX	Absorbable Organic Halogens
ASR	Air Sensitive Receiver
BOD5	5-day Biochemical Oxygen Demand
CAR	Corrective Action Report
CEO	Chief Executive Officer
CHSEMP	Contractors HSE Management Plan
CMP	Construction Management Plan
COD	Chemical Oxygen Demand
db	Decibels
ECD	Environmental Conservation Department
EQG	Environmental Quality Guideline
ERP	Emergency Response Plan
ERT	Emergency Response Team
EMP	Environmental Monitoring Plan
EPRP	Emergency Preparedness and Response Plan
ESIA	Environmental and Social Impact Assessment
ESMP	Environmental and Social Management Plan
ESMS	Environmental and Social Management System
EU	European Union
GIIP	Good International Industry Practices
HAIC	Hmawbi Agricultural Inputs Complex
HCN	Hydrogen Cyanide
HF	Hydrogen Fluoride
HMMP	Hazardous Materials Management Plan
HSE	Health, Safety and Environment
IFC	International Finance Corporation
KPI	Key Performance Indicator(s)
MONREC	Ministry of Natural Resources and Environmental Conservation
MSDS	Material Safety Data Sheet(s)
NCR	Non-Conformity Report
NEG	Myanmar National Environmental Quality (emissions) Guidelines
NMP	Noise Management Plan
NOX	Nitrogen Oxides
NSR	Noise Sensitive Receiver
PM	Particular Matter

Name	Description
PPE	Personal Protective Equipment
PS	Performance Standard
RTMP	Road Transport Management Plan
SEMP	Stakeholder Engagement Management Plan
SGWQMP	Surface and Ground Water Quality Management Plan
SOX	Sulfur Oxides
SRDMP	Site Runoff Drainage Management Plan
SHWMP	Solid and Hazardous Waste Management Plan
TOC	Total Organic Carbon
TSS	Total Suspended Solids
VDAC	Village(s) Development Advisory Committee
VOC	Volatile Organic Compounds
WBG	World Bank Group
WHO	World Health Organization
WMP	Waste Management Plan
WWMP	Wastewater Management Plan

1. INTRODUCTION

1.1 Project Background

Myanmar Awba Group (Awba), headquartered in Yangon, is Myanmar's largest manufacturer and distributor of agricultural inputs with a focus on crop protection products, crop nutrition (fertilizers) and high-quality seeds. Awba operates, among others, the Hmawbi Agricultural Inputs Complex (HAIC), located in the Hmawbi Township, north of Yangon City in the Yangon Region. The HAIC manufactures and formulates a variety of pesticides, herbicides, fungicides and foliar fertilizers. Awba has completed the first phase of HAIC in April 2018 which has been officially inaugurated/commissioned on August 19th, 2018.

Awba contracted Environmental Resources Management (ERM), under a proposal signed 10 April 2017, to undertake a supplementary Environmental and Social Impact Assessment (ESIA) against requirements for the HAIC Project expansion and Environmental Conservation Department (ECD) and International Finance Cooperation (IFC) requirements. The final supplementary ESIA report was submitted to Awba on 14 February 2018 and to MONREC on 26 March 2018 for approval. The supplementary ESIA is still being reviewed as at the date of writing this document.

ERM was subsequently requested by Awba to support the company in addressing the preparation of 11 Environmental and Social Management Plans (ESMP) to be implemented at the HAIC Project's premises.

1.2 Purpose of this ESMP – HAIC Construction and Operation Phases

As part of the updated ESIA Study prepared for the three phases of the HAIC project submitted to MONREC in March 2018, IFC requested to Awba to effectively develop and implement the 11 Environmental and Social Management Plans (ESMPs) which are further described into this ESMP document.

This ESMP has been developed to achieve the following purposes:

- To manage the Health, Safety and Environment (HSE) aspects related to the HAIC in accordance with good international industry practices (GIIPs);
- Recommend an organizational structure able to manage HSE aspects to abide by the requirements applicable to the HAIC ref. (terms and conditions defined in the Environmental License delivered by MONREC, IFC Performance Standards and applicable WBG HSE Guidelines); and
- Mitigate adverse impacts to the environment, and protect people working onsite and offsite the HAIC, and the people living around the HAIC or likely to be affected by the HAIC Project's activities.

The ESMP is a document that needs to be updated over time, in order to adapt to any changes that may arise in project design, equipment, and service procurement proceed. Should such changes occur, Awba will identify and assess the new impacts/risks and propose mitigation measures.

1.3 Policy, Legal and Institutional Framework

This section sets out the relevant international and national standards that the ESMP follows:

- Myanmar National Environmental Quality (emissions) (NEQ) Guidelines (2015);
- IFC Performance Standards (2012);
- World Bank Group Environmental Health and Safety General Guidelines (2007); and
- WBG HSE Guidelines for Pesticide Manufacturing, Formulation and Packaging (2007).

In addition, the ESMP is aligned with the following Awba's Corporate Policies:

- Awba Environmental Policy;
- Awba Stakeholders Engagement Policy;
- Awba Operation, Health and Safety Policy; and
- Awba Road Safety Policy.

1.4 Proposed Management Plans

The Environmental and Social Management Plans developed by ERM are the following:

- Air Pollution Management Plan;
- Road Transport Management Plan;
- Stakeholder Engagement Management Plan;
- Contractors HSE Management Plan;
- Solid and Hazardous Waste Management Plan;
- Emergency Preparedness and Response Plan;
- Hazardous Material Management Plan;
- Site Run-off and Drainage Management Plan;
- Wastewater Management Plan;
- Environmental Monitoring Plan; and
- Construction Management Plan.

2. AIR POLLUTION MANAGEMENT PLAN

Effective air pollution management is an essential element of the HAIC Project success and a key component of mitigating the HAIC Project potential social and environmental impacts. This Air Pollution Management Plan (APMP) has been developed to guide HSE staff actions to manage the stack and fugitive emissions from HAIC and minimize impacts on the HAIC Project's stakeholders.

2.1 Objectives

The prime objective of the APMP is to manage the emissions from the HAIC Project to the environment in accordance with the Awba Environmental Policy.

2.2 Sources of Impacts and Mitigation Measures

According to the ESIA and the site visit performed on September 6th 2018, the potential sources of stack emissions during operation phase are:

- Hazardous Chemicals storage area;
- Stack emissions from the Production Lines (Seven buildings); and
- Stack emissions from incinerator.

This program will be undertaken by Awba's HSE Department during the operation phase. The Table 2.1 details the measures to be taken:

Table 2.1 Measures for Air Pollution Management in Operation Phase

Source of Impact	Control Measures	Frequency	Responsible
Fugitive emissions from Hazardous Chemical Storage areas	<ul style="list-style-type: none"> ■ Storage management and control according to the Hazardous Material Management Plan (Chapter 8); ■ Hazardous material storage inspections; ■ Workers training; and ■ Work permit system. 	On monthly basic and ongoing	HSE Supervisor and WH/Production Manager
Stack emission for Production Line (seven buildings)	<ul style="list-style-type: none"> ■ Provision of local exhaust ventilation system connected to process stacks; ■ Provision of pollution control systems for process stacks; ■ Operation as per work instructions (WI); and ■ Regular maintenance and monitoring of scrubbers. 	<ul style="list-style-type: none"> ■ As per process design based on risk assessment; ■ Ongoing; ■ Ongoing; ■ Ongoing 	HAIC Factory Manager and HSE Manager
Stack emissions from incinerator (Note: The incinerator will be operated only as a backup, while for most part the waste will be sent to Thilawa hazardous waste	<ul style="list-style-type: none"> ■ Segregate waste to avoid the incineration of waste that contains metals and metalloids that may volatilize during combustion and be difficult to control through air emission technology; ■ Introduce wastes only after the optimum temperature is reached in the final combustion chamber of the incinerator and avoid operating conditions in excess of those that are required for the efficient combustion of waste; ■ Interlock the charging system with the temperature monitoring and control system to prevent further addition of waste if the operating temperature falls below the required limits; ■ Minimize planned and unplanned shutdowns by implementing and managing a robust maintenances program; 	Every time that incinerator is used.	HAIC Factory Manager and HSE Manager

Source of Impact	Control Measures	Frequency	Responsible
management facility).	<ul style="list-style-type: none"> ■ Optimise furnace and boiler geometry, combustion air injection, NOx control devices (if used), combustion temperature and level of distribution, and the control of raw gas residence time; ■ Use auxiliary burner(s) for start-up and shut-down and for maintaining the required operational combustion temperatures at all times when unburned waste is in the combustion chamber; ■ Provision of appropriate treatment system for control of air emissions from the incinerator; and ■ Operation of incinerator as per the Works Instructions and Work permit system. 		

2.3 Key Performance Indicators

- APMP1: Number of inspections performed in the chemicals storage area;
- APMP2: Stack emissions and ambient air quality monitoring data showing compliance with applicable requirements;
- APMP3: Number of non-compliances and corrective action implemented; and
- APM4: Number of accidents/incidents/Non-Conformity Reports (NCR) caused by chemical leaks.

2.4 Monitoring

The Awba's HSE Committee will be on charge of monitoring the compliance of this APMP. Any non-compliance and its recommended corrective action will be record by the HSE Committee in their meeting's minutes.

The air quality monitoring will be taken as part of the Environmental Monitoring Plan (Chapter 11).

2.5 Reporting Review

The HSE Supervisor will be tasked with monthly reporting on the stack emissions and air quality monitoring results to the HSE Manager or on an ad-hoc basis in case of major or repetitive minor issues. The HSE Manager will ensure these are reported to and discussed within the HSE Department within the regular HSE Committee meetings.

On an annual basis, Awba will keep relevant authorities (MONREC/ECD and Ministry of Labour) and financier (IFC) informed of the HAIC Project HSE performance with respect to air quality management. In addition, Awba is considering preparing an annual Sustainability/HSE report at Group-level (using Global Reporting Initiative/G-4 Guidelines).

3. ROAD TRANSPORT MANAGEMENT PLAN

This Road Transport Management Plan (RTMP) is designed to control and minimize potential negative impacts within HAIC area of influence that are associated with the flow of vehicles during operation phase. The Plan recognises that some adverse impacts will result from the movement of limited numbers of vehicles and sets out a systematic approach to minimize environmental and occupational health and safety risks through the implementation of good practice procedures, as identified within the ESIA.

3.1 Objectives

The objectives of this Road Transport Management Plan are to define the operational procedures, controls and mitigation measures for transportation; roles and responsibilities; monitoring; reporting procedures; and training requirements.

This Road Transport Management Plan (RTMP) is part of the suite of the ESMP. The plan covers all operation phase activities that have the potential to result in transport induced impacts.

3.2 Sources of Impact

The following types of transport vehicles are expected to be used at HAIC:

- Vehicles carrying personnel from/to the HAIC Yangon city;
- Trucks carrying agrochemical merchandise (incoming raw materials and outgoing finished products); and
- Trucks carrying waste from other Awba facilities, brought to HAIC for treatment and sent to outside of HAIC for disposal as per the environmental permit.

The unpaved access road to the HAIC (12 kilometres) is a public way that is currently used by general public and trucks, which haul red earth that extracted from the adjacent areas of the road in order to sell it in the construction industry. In addition, along the access road, there is the presence of tea shops, a monastery and a school. The latter represents a social receptor where specific measures should be implemented to decrease the risk of accident, considering the time of entry and exit of the children.

This Road Transport Management Plan seeks to minimize the potential impacts associated with an increase of HAIC Project vehicles on the access road that include:

- Increased risk of road traffic accidents resulting in spillage of fuel or another hazardous material;
- Increased risks of collisions with other vehicles, pedestrians or domestic animals resulting in injury or death;
- Dust generation; and
- Air emissions from combustion engines.

3.3 Design and Management

The following measures are applicable for operation phase:

- Restrict vehicle speeds on the access road to a maximum of 40km/h;
- All vehicles will be selected and maintained to meet Myanmar Road Transport Authority standards and will be used and maintained vehicles/equipment in accordance with good international industry practices. For this purpose, own trucks and service providers will follow Awba's Vehicle Checklist;
- All drivers will attend an induction and a training program which specifies speed limits and critical social receptors identified over the access. Driver induction training will include: Emergency

response in case of an off-site accident resulting in spillage of hazardous substances or collision. The training will also include brief introduction about the hazardous material.

- All the incidents and accidents will be record through the incident/accident report form;
- All the vehicles have to be equipped with an emergency spill kit, list of emergency phone numbers, Material Safety Data Sheets, fire extinguisher and first aid kit;
- All drivers will attend safe driving awareness training;
- Awba is in the process of adopting a Safety Road Policy and a Transport Management Procedure which capture detailed instructions for drivers to safe transport agrochemical products including strict zero alcohol and drug policy for all drivers at all times;
- Minimize traffic during rush hours to reduce pressure on road infrastructure and at times of entry and exit of the school located next to the access road;
- Awba and General Contractor vehicles will inscribe in their chassis the logo of HAIC so the villagers will be able to recognize the vehicles of the Project and whom the vehicles can be associated with. A telephone number to call for any complaints /grievances about the way of the vehicle has been driven or the driver has been behaving (as part of the Community Grievance Mechanism) will be available on HAIC face book page and 6xGM Posts located in the village areas;
- All permanently employed drivers of the HAIC Project vehicles will hold appropriate driving licenses applicable to the type of vehicle that they drive and to undergo an annual health check-up as per AWBA medical program and practices; and
- The Community Grievance Coordinator will address any community concerns that may be raised related to increase of traffic and dust through the Grievance Mechanism (Chapter 04).

3.4 Key Performance Indicators

Awba will continue monitoring these KPIs through logistic department.

- RTMP1: Number of NCR of drivers and vehicles;
- RTMP2: Number of road traffic accidents involving injuries or spillages of hazardous material; and
- RTMP3: Number of complaints from the communities related to the transport fleet.

3.5 Monitoring

HSE Department and Logistic Department will be responsible for the implementation and monitoring of this plan. Any inspection results in NCR with the Road Transport Management Plan will be investigated by the HSE Department and Corrective Actions Reports (CAR) will be prepared and initiated.

3.6 Reporting

Non-compliances related to this Road Transport Management Plan will be reported to the HSE Department for investigation and record in the HSE committee meetings. Any social complaint received regarding safety and health on the road access will be reported to the HSE Supervisor and acted upon accordingly in coordination with the Community Grievance Coordinator.

4. STAKEHOLDERS ENGAGEMENT MANAGEMENT PLAN

This Stakeholders Engagement Management Plan (SEMP) contains the guidelines established to regulate the recommended communication from the HAIC Project with the different social stakeholders of the area of social influence. The methods and strategies proposed in this Plan will help Awba manage its interactions with the relevant governments and authorities, local villages and other social organizations that may be based in the area of influence of the HAIC Project.

4.1 Objectives

This Stakeholders Engagement Management Plan (SEMP) seeks to lay the foundations to maintain the highest standard of business conduct, the proactive communication and engagement with the stakeholders of the HAIC Project, in order to be able to transmit clear, timely and effective information to them and receive timely feedback, especially as it relates to the effective implementation of the ESMPs outlined in this document and overall HSE performance. This SEM also aims at meeting the following secondary objectives:

- Identify the main social stakeholders and propose specific dissemination strategies among them;
- Align the way to establish communication methods with affected local villages in an inclusive, structured, and culturally appropriate manner to ensure their free, prior, and informed participation;
- Implement bi-directional communication mechanisms, permanent and accessible to the villages and population within the AOI (Area of Influence), on the activities of the HAIC Project and the actions linked to social and environmental management plans and overall HSE performance, thus contributing to people's understanding, clarification of doubts and concerns; and
- Ensure key stakeholders are properly informed throughout the operation processes of the HAIC Project.

4.2 Sources of Impact

The potential risks and impacts of an insufficient or poor communication with the stakeholders are the following:

- Perception of lack of interest to collect and resolve the local concerns about possible dust pollution, traffic and road safety, air emissions from incinerators, noise, odour, water contamination, or any other discomfort that may be related to the HAIC Project activities that may lead in social conflicts, strikes and impact on the social image of Awba and its HAIC Project; and
- Lack of knowledge about the existence and compliance of environmental and social measures to mitigate the impacts of the HAIC Project.

4.3 Design and Management

Awba's HSE Department will comply with the following actions:

- Continue with the implementation of the Community Grievance Mechanism to record and attend all the complaints;
- Updated the stakeholder mapping on an annual basis. A stakeholder mapping and engagement has been done in February 2018 during the updated ESIA preparation process and another one was prepared on October 2018 by external consultancy service. This identify the following stakeholders' groups:
 - Government officials;
 - Neighbouring communities and monastery;
 - Employees and contractors; and

- NGO's and conservation organizations.
- Submit the executive summary of the ESIA Study in Myanmar language to MONREC and other relevant stakeholders.

The Stakeholders Engagement Management Plan proposes different communication mechanisms, which are grouped, for the purposes of this document, as follows:

4.3.1 Community Grievance Mechanism

Awba has established a Community Grievance Mechanism to provide a simple and effective means for interested and affected parties to communicate issues, concerns or grievances to Awba and to receive timely feedback about issue resolution.

Aggrieved stakeholders ("complainants") are able to file their grievances through a variety of channels (e.g. standard submission form, phone, in-person, etc.). Standard submission forms and submission collection boxes are available in a central location in all project affected communities. Community volunteers in each community monitor submissions collection box, collect, and hand over grievance reports to the Awba field team twice a week (every Wednesday and Friday). Complainant may submit forms to volunteers on any other day. If complainants wish to orally report a grievance, volunteers will record information on a standard submission form on behalf of a complainant; then explains what he or she has written, and the complainant provides a signature to confirm that it is correct. Complainant may inform to the field team about grievances directly by phone.

After receipt of a complaint, field team will make a register for the complaint and assign a case number. Field team will provide the Complainant with a brief description of the process that will be followed and a case number for reference. The purpose of the registration is to use the case number to reference for calculating the KPI, as well as monitoring and evaluating the process.

Awba field team will review the grievance reports to discuss, categorize and record them. The relevance of the issue being raised to the Awba's project can be categorized as follows:

- The complaint pertains to the project;
- The issues raised in the complaint fall within the scope of issues the grievance mechanism is mandated to address; and
- The complainant has standing or a valid reason to file.

After receipt of a complaint, field team, together with the volunteer, will visit the complainant to acknowledge that their grievance has been received, and collect and record any additional details the complainant wishes to communicate. The initial site visit and acknowledgement should be completed within one to seven days from date of receipt.

Awba field team will work closely with local authorities and community volunteers to investigate the grievance, initiate dialogue and negotiation to resolve the complaint. In more complex cases requiring negotiation or mediation, appropriate central or local government officials may be involved in support of the process. In all investigations, supporting evidence should include, as appropriate, measurements, photos, the compensation amount for the damages, etc. Findings of the field team shall also be included within the grievance report.

The grievance mechanism is responsible for communicating the proposed response back to the complainant within 14 days from the date of receipt. If the grievance is complex and the pre-determined deadline for providing feedback cannot be met, provide an interim response – an oral or written communication – that informs the person of the delay, explains the reasons, and offers a revised date for next steps.

Field team, together with the volunteer, will set up a face-to-face meeting to provide feedback to the complainant. The response will include a clear explanation of the results of the investigation, why the

response is being proposed, and what the response would be, and the next steps and actions to be taken for resolution, if any.

After the discussion on the complaint with the complainant has been made, if the complainant is satisfied, the field team shall record and confirm the complainant's satisfaction with the feedback provided. Both the complainant and the witness will sign the form for confirmation.

The deadline of the implementation shall be determined based on the scope of the case but generally within 45 days from the date of receipt. The volunteers shall monitor during the time of implementation and seek the confirmation of implementation with the complaints and inform the field team.

4.3.2 Workers Grievance Mechanism

Awba has established a Workers Grievance Mechanism to ensure that appropriate complaint procedures are in place for the fair effective and expeditious handling of workers' complaint alleging breach of the requirements of company policies and national labour law. This will be available also to contractor's workers.

All employees will receive training about the complaint procedure during their induction briefing and a complete set of Complaint Procedure provided by Group HR Department is handed to the joining employee. The worker/staff with a complaint shall have ability to have the matter addressed by bringing to attention of the proper authority as provided below;

- Immediate Superior;
 - Group HR Department; and
 - Labour Committee.
- The worker shall have right to be accompanied or represented by Members of Labour Committee during the complaint procedure and not be victimized;
 - Complaint shall be sought to be resolved at the lowest level possible; and only when the matter cannot be resolved to the satisfaction of both parties, shall it be elevated to the next level;
 - Anonymous complaints are allowed to be sent;
 - Notwithstanding above, the worker shall have the right to complain directly to the HR Department and where they consider it necessary, or to the Complaint Handling Officer of Township Labour Office;
 - In accordance with applicable Labour Law, the worker shall have 14 days from the date of the alleged occurrence of the labour grievance (complaint) to bring the matter to the labour's superior officer, and the head of HR Department, each of whom has a further step 7 days to bring about a solution to the grievance (complaint);
 - If the Head of Department is unable to resolve the matter, the worker shall have 7 days to bring it through the Group HR to the management team. However, if the complaint may be to the prejudice of the worker may complain directly to the labour worker committee. The company and the worker concerned shall have a period of 14 days to bring about conciliation; and
 - All complaints and the decision on them should be recorded and a copy provided to the worker concerned.

A Human Resource person has to be allocated on HAIC for monitoring the proper implementation of the Workers Grievance Mechanism.

4.3.3 Villages Development Advisory Committee Meetings

The Villages Development Advisory Committee (VDAC) is founded according to Myanmar Awba Group's development plan in order to implement the operations to improve the living standard of the

people from the surrounding villages, which includes having access to drinking water, road and transportation, health, education, fire prevention and having access to electricity.

The target of the VDAC is to suggest and carry out necessary improvements for the village according to the priority level on behalf of the local resident and to do so transparently and effectively, consequently raising the living standard of the local population from the neighbouring villages.

The VDAC will be established as the following with thirty-four members ranging from representatives from the villages and its governing committees as well as from HAIC. The VDAC's term will be the same as the governing committee of the villages.

The VDAC responsibilities are:

- Develop standard forms for consistency when submitting the development operation suggestions for the improvement of the village;
- Conduct field inspections on the necessities submitted by the villages, verify the priority level and submit to the company;
- Select transparently in front of all the members providing the situation analysis. The improvement operations will be managed and conducted by the company and the committee will be responsible for the daily supervision of said operations and to submit the monthly progress report to the company;
- Plan the budget for improvement projects that cannot be covered by the first year in order to be able to get it covered in the following year;
- Submit the expected expenses of the following year according to the projects latest by 31st January;
- Submit the yearly expenses to Myanmar Awba Audit and to provide suggestions and opinions through the committee; and
- Set the committee meeting records as classified and keep them.

Community volunteers from War Net Chaung, Nyaung Kone, Yae Tar Shey and Tha Pyay Kone villages have been selected during the ESIA, tasked with the mission to submit to Awba/HAIC all concerns related to potential impacts and for monitoring their proper record and response. The volunteers will thus held a social leadership role and are expected to participate in the regular meetings to be organised by Awba in relation to the HAIC Project progress and activities. These meetings are expected to be held on a monthly basis.

The Community Grievance Coordinator of Awba is the person in a charge of leading these meetings. All the matters discussed and agreements in each meeting will be minute in Myanmar language.

Below is the proposed agenda for each meeting (noting that it is not necessarily to be limited to this):

- HAIC should provide continuous information to local stakeholders on its ESMPs implementation progress, including E&S Action Plan (ESAP) agreed upon with IFC at appraisal;
- Response status of any concerns/questions recorded during the previous meeting;
- Report of the results of the stack air emissions from incinerator, noise and water quality monitoring carried out during the previous month (if applicable). If the maximum permissible limit of any parameter has been exceeded, the corrective measures that are intended to be performed will be explained;
- Communicate the mitigation measures defined in the Emergency Preparedness and Response Plan, especially related to firefighting and major hazardous materials spills;
- Inform the measures implemented during the previous month to mitigate any adverse impacts to the environment (e.g. noise, dust pollution, odour, traffic and road safety, etc) in the HAIC Project area of influence;

- Inform about any unforeseen operation activity that may generate an unexpected impact and explain the planned mitigation actions;
- Inform about the social responsibility activities performed during the previous month and disclose KPIs;
- Include doctor or nurses involve in the VDAC meeting in order to support village communities for acknowledging potential health impacts;
- Register any new concern related to a possible environmental impact (noise, dust pollution, odour, traffic and road safety, etc.) or social (alteration of public order, health, etc.) and addressed it through the Grievance Mechanism; and
- Continuously socialize the Community Grievance Mechanism and jointly review any grievances registered in the log books.

HAIC Project site visits with Yangon and Naypyido based stakeholders should be organised, when required. These information is going to be delivery by Awba volunteers and through the Villages Development Advisory Committee (VDAC).

4.3.4 Notice Boards

To reinforce the communication activities, information should be posted once a month on the villages' notice boards within the area of influence, including takeaway material like brochures and flyers, to disclose on matters, such as:

- Recent social responsibility activities developed and disclose KPIs;
- Emergency response procedure in case of a fire and/or significant hazardous waste spill;
- Publication of phone contact number for channelling community grievances;
- Main environmental mitigation measures implemented; and
- Hiring practices and local job opportunities given.

A summary of these information will be published on Awba website and updated on a regular basis.

4.4 Key Performance Indicators

The effectiveness of the management measures described above will be assessed using the following Key Performance Indicators (KPIs):

- SEMP1: Number of community and workers complains received by each channel (phone, email, one-on-one interview, labour union, etc);
- SEMP2: Percent of Satisfied on GM process and outcome;
- SEMP3: Number of workshops, surveys and focus group meetings conducted;
- SEMP4: Number of VDAC's meetings performed;
- SEMP5: Number of issues noted and addressed in the VDAC's meeting minutes; and
- SEMP6: Number of activities disclosed in the notice boards.

4.5 Monitoring

To evaluate how the objectives of this SEMP are being met, the Community Grievance Coordinator will assess progress towards the key performance indicators listed above on a monthly basis. In cases where monitoring identifies significant divergence from the terms of this SEMP, the HSE Manager will be notified and remedial actions taken as necessary.

4.6 Reporting

To facilitate satisfaction of the commitments set out in this SEMP, the HSE Manager will report the progress of the grievance mechanisms to top management monthly and annually to the Board.

5. CONTRACTORS HSE MANAGEMENT PLAN

This Contractors HSE Management Plan (CHSEMP) seeks to ensure that Awba's General Contractor, its subcontractors, and service providers comply with labour and safe working conditions in accordance with the IFC Performance Standards 2 (PS2) requirements and its Good Practices Note (GPN) on managing Contractor's E&S Performance.

This plan is developed based on standards of contract work in Myanmar under relevant authorities such as Ministry of Labour, Health as well as good international industry practices summarized in the above mentioned IFC' GPN 2017.

5.1 Objectives

This Contractors HSE Management Plan aims to provide the HSE requirements to be included in the contract with the General Contractor. The main objectives of this Plan are the following:

- Assists Awba in defining HSE and Labour requirements for the contractors to comply with the requirements of the IFC Performance Standards and Myanmar National Guidelines;
- Provide contractor's workers safe working conditions and labour benefits; and
- Provide contractor's workers, and those of their sub-contractors, with access to a Workers Grievance Mechanism.

This Plan covers the following potential types of services providers working for HAIC Project, as from time to time applicable: General Contractor and its subcontractors.

5.2 Sources of Impact

The risks and potential impacts of a lack of Contractors HSE Management Plan for Awba includes the following:

- General Contractor, its subcontractors, and service providers hiring for the HAIC Project do not have a management system which establishes HSE requirements so may not commit to Awba's expected HSE requirements at the HAIC Project; and
- Lack of a contract and/or legal resources between Awba, General Contractor and subcontractors HSE may result non-compliance by contractors for the labour and safety requirements.

5.3 Design and Management

HSE Department shall ensure that this Plan is undertaken as required and shall support the Top Management in the approval of the contract with General Contractor and developing necessary HSE/labour guidelines as part of the contract.

General Contractor's Contract requirements shall include the following:

- Abide by employment and labour laws and international agreements and conventions (e.g. International Labour Organization) Myanmar is a signatory to;
- Abide by employment and labour laws and international agreements and conventions Myanmar is a signatory to;
- Appoint an HSE Coordinator who will be responsible to oversee all contractor's/ subcontractor's HSE matters and for liaising with Awba's HAIC HSE supervisor;
- Implement a Worker Grievance Mechanism;
- Comply with the following plans from this ESMP: Solid and Hazardous Waste Management Plan, Emergency Preparedness and Response Plan, Occupational Health and Safety Management Plan, Site Runoff and Drainage Management Plan and Construction Management Plan (these plans will be contractual requirements);

- All new contractor's employee, subcontractors and maintenance contractors must go through Awba's HSE induction training;
- All the works are required to get "Permit to Work", one day before starting the any task;
- Report, maintain and keep available for Awba's review, the necessary and relevant HSE records and a documentation system; and
- Report HSE compliance and non-compliance to Awba on a monthly basis and attend the HSE Committee meetings; report any major non-compliance issues on an ad-hoc basis.

5.4 Key Performance Indicators

The effectiveness of the management measures described above will be assessed using the following Key Performance Indicators (KPIs):

- CHSEMP1: Number of HSE non-compliances of the General Contractor, its subcontractors and service providers; and
- CHSEMP2: Number of HSE clauses written in the General Contractor Contract.

5.5 Monitoring

To evaluate how the objectives of this CHSEMP are met, the HSE Department will implement HSE and labour inspections and meetings with the General Contractor's Coordinator. All the gaps against the standards will be record in NCR. Detailed instructions to attend the findings and deadlines for its implementation will be submitted for the HSE Department to the General Contractor through corrective and preventive actions records.

5.6 Reporting

The monitoring outcomes of major issues or repetitive minor issues of this CHSEMP will be reported to and discussed within the regular HSE Committee meetings.

6. SOLID AND HAZARDOUS WASTE MANAGEMENT PLAN

This document is the Solid and Hazardous Waste Management Plan (SHWMP) of the HAIC Project. This Plan incorporates the recommendations of the Environmental and Social Impact Assessment (ESIA) of HAIC Project (2018). This document aims to guide Awba on how to implement these recommendations in a practical manner given the context of HAIC Project's premises (i.e. warehouses, incinerator plant, testing laboratory, offices, etc.).

6.1 Objectives

The purpose of this document is to provide general guidance to employees, contractors, subcontractors and, generally, anyone generating, handling, collecting and managing solid and hazardous waste at any of HAIC Project facilities, on responsible waste management.

The overall objective of responsible waste management is to avoid or, when avoidance is not feasible, minimize, reuse and recycle waste when it is generated, handled, collected (i.e. sorted) for transfer to collection points where it should be treated, recycled or disposed of in a manner that protects HAIC Project's workforce (own and contractors), as well as surrounding villages and natural environment. This objective can be achieved through the following targets:

- Awba will comply with the Myanmar law and regulation related to waste management: Environmental Conservation Law (2012), The Factories Act 195174 Amended by law No 12/2016 and Yangon City Development Committee (YCDC) Law (2018);
- Awba will apply to each waste stream the principles of the waste hierarchy in the most responsible manner (reduce, reuse, recycle, reclaim, dispose);
- Awba will adopt responsible methods for collection, storage, transportation and treatment/disposal of all waste streams; and
- Awba will put in place the procedures and training proposed in this plan to ensure monitoring, verification and continuous improvement are carried out throughout the lifetime of HAIC Project's activities to enable responsible waste management practices.

6.2 Sources of Impact

During the operation phase of the HAIC it is foreseen to generate the following types of solid waste:

- Hazardous waste: Sludge from the wastewater treatment plant, plastic packaging and paper packaging with residuals of chemicals, metal drums, ash and activated carbon, spent oil/lubricants; and
- Non-hazardous waste: Paper and cardboard, plastic, metal and food waste.

6.3 Design and Management

The Table 6.1 details the different types of non-hazardous solid waste, current quantity and future quantity to be generated, control measures, actions requirement, frequency and responsible to conduct every action proposed:

Table 6.1 Solid Waste of Operation Phase

Type	Currently Quantity	Future Quantity	Stream	Control Measures	Remark
<i>Hazardous</i>					
Sludge	1 tons/month	2 tons/month	Wastewater treatment plant	<ul style="list-style-type: none"> ■ Segregate the waste in the temporary storages; ■ Once it is segregated and has a relevant quantity, deliver it to the central storage at HAIC (see Section 6.3.2) ■ Before central storage be in its 80% of capacity, waste must be sent to a license contractor. 	■
Plastic Packaging	0.7 ton/month	1 ton/month	Production line		■
Paper Packaging	0.3 ton/month	0.6 ton/month	Production line		■
Metal drums	0.2 ton/month	0.5 ton/month	Production line		■ These drums are small (under 220 kg) size. Large size (220 kg) drums are reused in production.
Bottom ash ^a	1 ton/month	2 ton/month	Incinerator		■ If incineration system not operate, ash also will not come out.
Activated Carbon	1 ton/ 6 months	2 ton/6 months	Production line		■
Oil/lubricants	400 lit/month	600 lit/month	Machinery and equipment maintenance		■
<i>Non-hazardous</i>					
Paper, cardboard	27kg/month	54 kg/month	Production line, offices	■ To be sent to the municipal	■ Estimated from 30 office workers
Plastic	240 Plastic Bottles/ month	480 Plastic Bottles / month	Production line		■ Estimated from 30 office workers
Metal and cans	1 ton/month	2 ton/month	Production line		■ Estimated from 30 office workers
Food Waste	525 kg/moth	1050 kg/month	Canteen		■ Estimated from 50 employee

^a The ash together with others hazardous waste is send to license contractor in Thilawa and the onsite incinerator is used only as backup. No fly ashes are generated by the incinerator because it has a dust collector.

6.3.1 Waste Handling

All HAIC Project's workers are responsible for ongoing good housekeeping practices for waste handling as per the work instruction and procedure manual. All workers receive training on these topics as part as the workers induction. These include avoiding over-ordering, poor storage and maintenance, mishandling or improper operating procedures.

Good waste handling practices generally reduce waste that can be generated at all HAIC Project's premises. All contaminated surface water run-off are collected and treated it as hazardous waste.

Only trained personnel is authorized to handle hazardous waste. Handling of waste requires a work permit. In case of hazardous material leak and spill, should be follow the measures detailed in the Emergency Preparedness and Response Plan (Chapter 7).





6.3.2 Storage

There are two kinds of solid waste storages. The temporary storages or waste collection sites at the point of waste generation and a central storage.

For the storage of solid waste at the generation point, called "Waste Collection and Classification Points", solid waste is segregated accordingly with the colour code showed in Table 6-2. Once the waste bins are filled, the solid waste is transported to the central storage area, which keeps the same colour code.

Solid waste is stored in clearly labelled containers/skips. Colour code receptacles labels state the waste types in Myanmar language, which is easily understandable by the workforce, and any coding system that is used is also presented on the labels.

Table 6.2 Waste Colour Code

Type of Waste	Colour Code
Non-hazardous waste: domestic, plastics, papers, bottles (not including packaging or from process).	
Hazardous waste from packaging and process: <ul style="list-style-type: none"> ■ Disposed containers, drums, cardboard, bags or equipment contaminated with chemicals, pesticides; ■ Wastes from clinic; ■ Expiry product, and ■ Waste generated from spillage 	
Other types of hazardous waste: <ul style="list-style-type: none"> ■ Drums, sludge from WTTS; and ■ Spent lubricating oil/hydraulic oil 	
<ul style="list-style-type: none"> ■ Contaminated soil, debris, or matter resulting from spill. ■ Industrial waste (drums, sludge from WTTS) 	

Containers are allocated depending on the waste type. Lightweight waste articles such as light plastics or paper/cardboard are stored in enclosed skips and kept securely closed at all times to prevent such waste from flying around.

Waste receptacles are installed at key areas on HAIC Project's premises. Waste receptacles are placed on impermeable surfaces to prevent the contamination of ground conditions in the case of an accidental release, such as on paved areas not prone to flooding.

Waste segregation helps with reducing, reusing and recycling the different waste streams on-site and off-site. The HSE Department ensures that all workers, employees and contractors are well trained and provided enough information to recognize the types of waste being generated at HAIC Project's premises. The HSE Department also ensures ongoing communication on responsible waste segregation practices (e.g. posters in canteens, offices, laboratory, etc.).

The central waste storage should comply with the following requirements:

- It has a concrete slab to avoid leachate contact with the ground;
- It is implemented with a roof to protect waste against rain;
- It is not close to places where food is handled, consumed and stored;

- It is not close to sources of heat and watercourses;
- It has an easy access for the licensed contractor fleet;
- It has a water supply system for cleaning;
- Non-hazardous waste and hazardous waste are separated, labelled and with containers demarcated;
- Keep bunded areas are locked and access is restricted to not trained personnel;
- For hazardous waste the central waste storage is equipment with shelves which are fitted with a leak-proof sill or spill catcher trays in its base to retain the capacity of the largest container or 20% of the total storage capacity in that shelf (whichever is the greater volume) and a ventilation holes of 30mm diameter located at the top and bottom (above the sill) of the side panels of the cabinet/cupboard.

Temporary and central waste storages are inspected and monitored on a weekly basis. These inspections are documented and reported to the HSE Director.

6.3.3 Solid Waste Transport and Disposal

A licensed contractor transports the solid waste from the HAIC's central waste storage to its final disposal site (certified and managed in accordance with good international practices).

The licensed contractor delivers a copy of the Waste Discharge/Disposal Record (manifest) to the Awba's HSE Supervisor/Admin and Logistic Department. This record indicates the type of waste to be transported, weight, number of packages, the name of the transporter, plus of the name of the responsible supervisor who performed the verification.

The hazardous waste shall be disposed at a licensed contractor/authorized waste facility. Awba has entered into an annual contract with DOWA for the transport and disposal of the hazardous waste listed in the Table 6.1.

The solid waste are to be dispose towards waste disposal sites (Licensed third party / Authorized waste facility) by using the guide line stated in Waste management Procedure Manual.

6.3.4 Design and Emergency Preparedness

The central waste storage has measures in place to cater for cases of accidental releases of waste likely to have adverse impacts, such measures to be in accordance with the Emergency Preparedness and Response Plan (Chapter 7):

- Spill kits;
- Absorbents;
- Firefighting equipment; and
- Cleaning equipment.

6.3.5 Process Dust Collected via Baghouses /Dust Waste from the Cleaning Process

Process dust is collected via baghouses. Baghouses are periodically washed and the resulting wastewater leachate collected to be treated via the onsite wastewater treatment plant. Baghouse filters that need to be replaced are aggregated on site and stored in dedicated covered areas. Baghouses that cannot be reused or sold are disposed through the licensed contractor. Wastewater leachate containing dust waste from maintenance cleaning process (e.g. from boiler tubes, refractory bricks, etc.) are collected to be treated via the onsite wastewater treatment plant.

6.3.6 Medical Waste

Medical waste should be disposed through the licensed contractor as a hazardous waste authorized facility.

6.4 Key Performance Indicators

The following Key Performance Indicators (KPI's) should be used:

- SHWMP1: Annual volume of waste (per waste stream – i.e. hazardous and non-hazardous) disposed through the licensed contractor;
- WHMP2: Annual volume of waste (per waste stream – i.e. hazardous and non-hazardous) reused or recycled; and
- WHMP3: Annual per cent change of volume of waste reused, recycled and disposed of compared to the previous year.

6.5 Monitoring

HAIC Project has a duty of care to ensure that appropriate disposal of hazardous waste streams takes place. HSE staff will retain copies of all records of disposal at HAIC Project's premises (manifests) for the purpose of internal and external audits.

Any regulatory reporting to the relevant authorities must be delivered in the form and at intervals stipulated by the relevant authorities, as applicable.

6.6 Reporting

Operation Department maintains inventory records of waste streams and associated quantities of waste generated, recycled, reused, disposed of at the locations under their responsibility. This is reviewed by the HSE Department. The inventory shall comprise of:

- Type of waste;
- Generation source;
- Quantity (kg);
- Disposal method; and
- Disposal destination and manifest.

The waste generation data is generated on a monthly basis. The HSE Director ensures these data and records are discussed within the HSE Committee meetings.

7. EMERGENCY PREPAREDNESS AND RESPONSE PLAN

This Emergency Preparedness and Response Plan (EPRP) is designed to provide a high-level overview of the procedures to mitigate and control the impacts on occupational health and safety, the environment and the HAIC Project premises in the event of emergency situations. Each facility and warehouse has its own EPRP.

7.1 Objectives

The purpose of this Plan is to provide guidelines for emergency preparedness and response, and documents methods for the HAIC Project to help protect employees, contractors and visitors in the event of an emergency situation associated with the activities and facilities. This Plan provides directions for a coordinated and effective response to an emergency by:

- Identifying potential emergency scenarios that could occur;
- Identifying the procedures which apply to emergency events and the tactical response plans to be used in the event of an incident;
- Defining the roles and responsibilities of personnel in an emergency event;
- Determining resources, tools and equipment required in an emergency event; and
- Describing training, practices, inspections and monitoring required to ensure site emergency procedures are effective.

7.2 Sources of Impact

Potential emergency events that could impact HAIC Project-related activities might include:

- Fire (contained and conflagration);
- Heavy rainstorm/typhoon/thunderstorm;
- Road incident or road obstruction;
- Workers injury; and
- Spillage of hazardous or potentially-hazardous materials (on or off-site).

7.3 Design and Management

The HSE Manager leads the development and annual review of this Emergency Preparedness and Response Plan. The below paragraphs describe the general emergency response procedures to be undertaken for each of the main potential emergency events that may occur at the HAIC Project.

HAIC Project's premises are divided into emergency wards. For each wards, emergency area wardens are identified by the HSE Department and provided with dedicated training and materials to enable the implementation of this Plan. HSE Manager retains an updated list of area wardens and area deputy wardens, and ensure that at least one of them is onsite at all times.

The area deputy warden act as the area warden when the area warden is not available to do so. They both are trained as first aiders and received refresher training as recommended by good international practices.

7.3.1 General Fire Emergency Response

Step 1:

- Move away from immediate danger;
- Raise the alarm by manually activating the nearest fire alarm "pull station";
- Raise a vocal alarm to alert nearby persons and get help;

- Advise your area warden and line manager supervisor immediately;

Step 2:

- If it is a small fire, attempt to use a portable fire extinguisher to control the fire from spreading;
- Check for casualties/injured persons;
- Attempt to help, if it does not pose any danger to you, surrounding people;

Step 3:

- Evacuate using the emergency exits;
- Follow the instructions from your area warden;
- Do not re-enter the site until the HAIC Factory Manager or HSE Supervisor gives the all clear;
- When in doubt, evacuate.

If you are trapped in smoke or heat:

- Before you open any door, feel the doorknob with the back of your hand: if the doorknob is warm to the touch, do not attempt to open the door;
- Stuff the cracks around doors with towels, rags, clothing or tape, and cover vents to keep out smoke;
- Stay low to the floor, and if possible, cover your mouth and nose with a damp cloth or dust mask to help you breathe;
- If there is a phone in the room where you are trapped, call control room/outside to tell them exactly where you are located, even if you hear or see emergency services nearby.

Fire safety briefing is given to all new staff, contractor and visitors (likely to be present on site for more than 1 day). A refresher fire safety briefing is provided to all staff at least once a year. The content of fire safety briefing cover:

- The general concept of fire prevention;
- Response to a fire alarm;
- Emergency exits and evacuation routes;
- Use of fire extinguishers; and
- Current fire services installations.

All HAIC Project's workers present at the site participate in fire drills in order to familiarize themselves with the escape routes and gain experience from a planned evacuation. HSE Supervisor informs the time and date of the fire drill in advance for all staff, at least one week before.

The HSE Manager and HSE Supervisor review the result of the fire drill and evacuation procedures. During the fire drill, HSE Supervisor facilitates the planned evacuation and gather the total number of staff and contractors involved that counted by each fire wardens. Fire drills at HAIC Project's premises are carried out at least once a year.

7.3.2 General Chemical Release Response

If you spot chemical spillage:

- Move people in immediate danger to safety;
- Close or, where immediate closure is not possible, isolate by appropriate catchment provisions the source of the spill;
- If safe to do so, assist and care for injured personnel and call for first aid assistance;

- Inform your area warden and Line Manager immediately;
- Restrict access to the area; and
- Wait for instructions from your area warden or HSE personnel (HSE Supervisor).

The HSE Supervisor should carry out a brief first assessment of the quantity spilt; the environment affected (e.g. confined within site, spillage to surrounding land, etc.); and the type of oil or chemical (e.g. hazardous or non-hazardous, poisonous, explosive, etc.).

The spilt material will be contained using booms, earthen dams, or other techniques. Oil-free product should be recovered as technically feasible. Absorbent material, such as sawdust or synthetic sorbents, may be used to soak the free oil for small-scale spills. For hazardous materials/chemical spills appropriate PPE requirements will be assessed and implemented. Contaminated materials will be removed to the waste management facility and stored in impermeable containment (lined pits or compactable containers as necessary).

Chemical spill emergency response briefing and drill shall be given to relevant staff and contractors. A refresher briefing shall be provided at least once a year. The content of the chemical spill emergency response briefing shall cover, at a minimum:

- The general concept of safe chemical storage, different kinds of spill containment, the materials' characteristics and storage requirements, compatibility and reactions, etc.;
- Response to spills for different materials;
- Area containment/cordon;
- Evacuation of irrelevant people from the area;
- Use of spill control and clean-up kits;
- PPE requirements; and
- Disposal of clean up materials.

7.3.3 General Worker Injuries Response

If you witness a worker injury:

- Raise alarm by shouting "Help! Help! Help!";
- Inform your Line Manager and your area warden immediately;
- Warn other people to stay away; and
- If safe to do so, provide assistance to any injured personnel.

7.3.4 General Heavy Rainstorm/Typhoon/Thunderstorm Response

For personnel outdoors in exposed areas at the time of general heavy rainstorm/ typhoon/ thunderstorm, they should:

- Suspend all outdoor activities;
- Take shelter in a safe place until heavy rain, wind, and thunderstorm has passed.

If you are driving off-site the HAIC Project:

- Turn-off the motor;
- If a safe shelter is not available, stay in the car and close all the windows;
- Avoid parking on hilltops or near any highly conductive objects such as masts, aerials, water taps, pipes, wire fences and similar metal installations; and
- Avoid using the telephone or other plugged-in electrical appliance, including computers.

7.3.5 General Vehicle Accident Response

If you are involved in a vehicle accident:

- Ensure the safety of staff and passengers from your and the other vehicle involved first;
- Activate the emergency communication flow (Figure 7.1);
- Warn other people to stay away from the vehicle(s); and
- If safe to do so, provide assistance to any injured personnel.

7.3.6 Responsibilities

To effectively handle an emergency, an Emergency Preparedness and Response Team (ERT) must be organized and remain appointed at all times (replaced by appointed substitutes when required), aware of and able to carry out its responsibilities should an emergency event occurs, at all times. In addition, all staff members should be aware of their respective roles to ensure safety, efficiency and communication in the event of an emergency.

The Emergency Response Team (ERT) is appointed by the HSE Department as prime personnel to implement emergency preparedness and response plans at HAIC Project. The ERT includes, but not be limited to, HAIC Factory Manager, relevant supervisors, area wardens, HSE Manager, HSE Supervisor, trained personnel for responding in different emergency situations (such as fire and explosions, confined space, rescue from heights, etc.), medical (doctor, nurse and first-aiders as available on site), security personnel and other representatives from different relevant departments.

The ERT is headed by the HSE Department. The ERT is responsible for executing emergency response actions, setting up emergency evacuation assembly areas for each operational location, site or area, activation of an emergency alarm and organizing the evacuations. The ERT is also in charge of coordinating the rescue of personnel and cooperating with the Line Managers, Firefighting Team, ambulance and First Aid Team to do so, and external local emergency agencies (firefighting department, ambulance, health and medical centres).

7.3.6.1 HSE Department

- Lead the development and maintain the Emergency Response Plans;
- Keep the risk map published in each HAIC area;
- Schedule coordination meetings with the ERT;
- Plan and implement emergency response training/drills;
- Set up a field incident command post;
- Lead the emergency evacuation at the site;
- Lead the review of ERP post training/drills;
- Report the emergency response training/drill findings and ERP review outcomes to the HAIC Factory Manager and the CEO on a regular basis;
- Prepare the report of emergency response after 24 hours from the emergency;
- Ensure emergency response equipment/installations are maintained, up-to-date and inspected as required (perform fire extinguishers, hydrants and first aid kit inspections and keep records) through a checklist;
- Establish specific evacuation routes;
- Publish an emergency telephone contact list of main staff, area wardens, doctor, HSE Department team and emergency numbers (including ambulance and the nearest hospital) in each HAIC's area;

- Post in key areas of HAIC Project's premises such as staff canteen, health centre, main offices, main staff entrance, or any other places deemed relevant, the emergency telephone contact list;
- Delineate, on a map, the best route to the nearest medical facilities (on site and off site) to be posted on the safety bulletin board;
- Ensure all relevant emergency response forms and records are maintained and up-to-date in accordance with HSE management system requirements;
- Ensure the availability of relevant and up-to-date Material Safety Data Sheets (MSDS) in prominent locations;
- Ensure emergency response teams (area wardens, doctor, nurses, first aiders, fire safety managers, site security, divers as well as managers and contractors) receive regular training that enables each of their members to fulfil their respective roles under this plan: inform and re-instruct and retrain as deemed necessary the HAIC Project's emergency response team for each emergency assembly areas;
- Set up an Incident/Accident Reporting Procedure in order to record all incidents including injury, damage, environmental damage, non-conformance, as well as near misses, regardless of severity; and
- Elaborate monthly incident, accident and near-misses statistics.

7.3.6.2 Area Wardens

Area wardens are responsible for overseeing and ensuring the safe and complete evacuation of staff, contractors and visitors in their respective operational locations, sites or areas during an emergency situation under HSE Department personnel (manager or supervisor, depends on who is at the HAIC's Project site at the moment of the emergency). The responsibilities of area wardens are:

- Evacuate all personnel from their respective work areas (operational location, site or area) upon activation of the emergency alarm, assist any person who requires any help, assemble their personnel at their relevant emergency assembly area;
- Perform headcount at their respective areas;
- Perform a methodical sweep of their areas to check all persons have evacuated;
- Direct the evacuation of the persons in their respective areas should an evacuation be ordered by HSE personnel;
- Prevent unauthorized entry into the incident scene; and
- Report all information after an emergency or a drill.

7.3.6.3 Medical Team

It shall be the responsibilities of the doctor to:

- Provide medical aid to the serious cases;
- Establish the casualty collection point or medical post or first aid area;
- Manage triage situation, if any;
- Provide medical status updates to the HSE Manager;
- Provide professional medical advice and training in First Aiders;
- Assess the medical needs, determine outside emergency support requirements and establish first aid area, with the support of the nurse on site; and
- Coordinate, direct and report to the external professional medical personnel any injured personnel.

7.3.6.4 First Aiders

Qualified first-aiders are responsible for administering first-aid operations in an event of medical emergencies or injuries, render first-aid to any injured personnel (employees, workers, contractors, visitors, etc.), where applicable under the supervision of doctor or nurse. The First Aiders receive regular and dedicated training that enables them to fulfil their role under this procedure.

7.3.6.5 HAIC Security Team

The responsibilities of the HAIC Security team are:

- Establish perimeter security to prevent unauthorized entry into the incident scene;
- Control and monitor the movement of vehicles and people coming in or out of HAIC Project's premises, of keeping a count of the contractors manpower on site at all times, and of informing the HSE Manager on such number in case of an emergency situation; and
- Stop all personnel/ vehicles from entering HAIC Project's premises in the event of an emergency.

The HAIC Security members receive regular and dedicated training that enables them to fulfil their respective roles under this plan.

7.3.7 Emergency Response Equipment and Installations

All the HAIC Project's premises have a detection and firefighting alarm system equipment, which works with both diesel and electricity. There is also an underground fire protection tank with a holding capacity of 550 Kg of water, one concrete pond with a holding capacity of 24 m³ of water and a second pond with a holding capacity of 720 m³ of water. All these water reservoirs were built as part of the first stage of the construction phase and are currently filled. In addition, HAIC Project has the following equipment, on site at key areas of the HAIC Project's premises, at all times and in good working order:

- First-aid boxes;
- Oxygen bottle;
- Chemical spill emergency equipment; and
- Personal Protective Equipment (PPE).

7.3.8 Emergency Categorization

The Emergency Response Plan is a tiered system that will activate different levels of response and responsibilities, depending on the nature and severity of the medical emergency.

The plan establishes three levels of emergency that will require different answers, detailed in this Plan. The HAIC Project's doctor is the HAIC Project's representative responsible to execute the triage method to determine the urgency of medical/specialized care for both common and occupational accidents and illnesses.

Any incident that occurs within or outside the HAIC Project will be notified to the HSE Department in accordance with the established emergency communication flowchart presented in this Plan.

7.3.8.1 Level 1- Green Code

- Mild work or illness accidents;
- Medical cases that can be treated on an outpatient basis; and
- Patients under observation and/or hospitalized for 24-48 hours.

Destination: Evacuation to the HAIC Project's onsite medical centre.

7.3.8.2 Level 2- Yellow Code

- Occupational accident potentially invalidating (according to the doctor's triage), requires evacuation provided to Yangon city;
- Patient requires evaluation/ treatment in a hospital,

Destination: Evacuation to a Yangon's Hospital.

7.3.8.3 Level 3-Red Code

- Serious work accident, with risk of invalidating life that requires immediate evacuation to a Yangon city hospital with facilities appropriate to the case and to the patient's condition.

Destination: Evacuation to a Yangon's Hospital

7.3.9 Communications

In the case of incident or accident the following emergency communication flowchart will be followed:

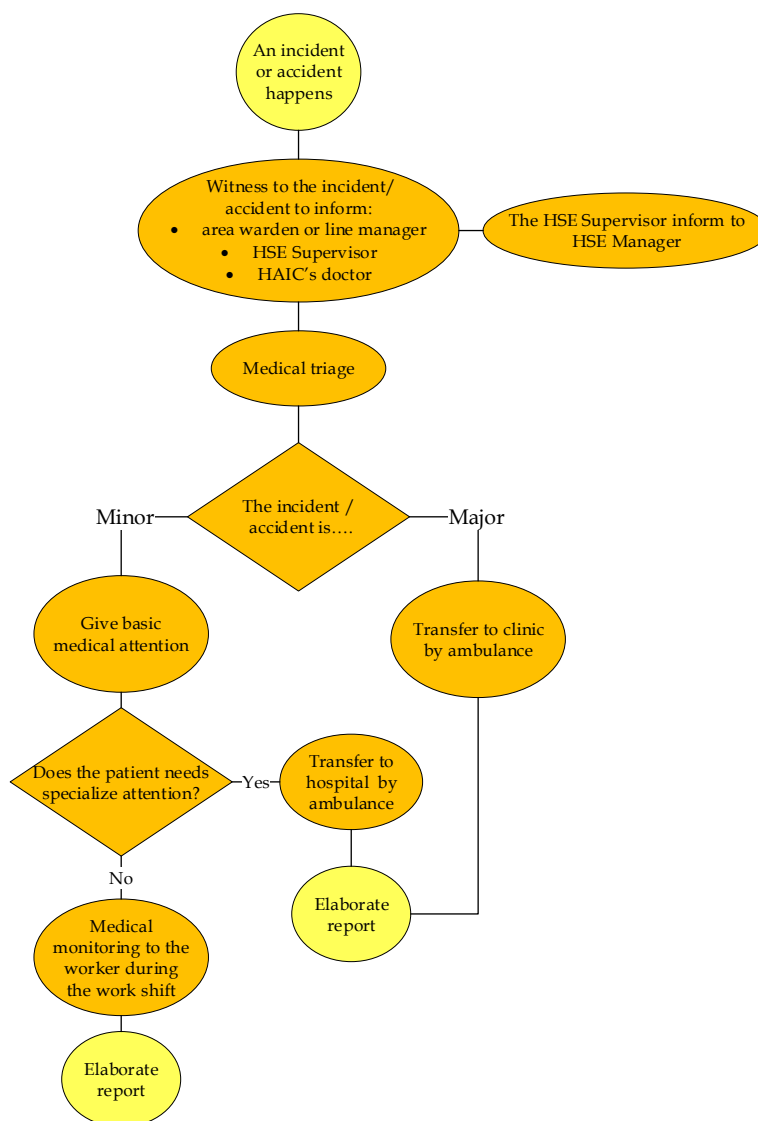


Figure 7.1 Emergency Communication Flow Chart

The Head of Corporate Affairs is in charge of external communication, including contacting families of injured person(s) and media communication (it is suggested to have protocols, including when and what to communicate with which media).

7.4 Key Performance Indicators

Key Performance Indicators (KPIs) for the emergency preparedness and response are presented below:

- EPRP1: Number of drills and training conducted;
- EPRP2: Number of wardens and first aiders selected;
- EPRP3: Number of accidents occurred;
- EPRP4: Number of NCR and CAR; and
- EPRP4: Number of times that discharging water exceeded standard norm.

7.5 Monitoring

A key part of preparedness for emergencies is to ensure that all preparations and emergency equipment are in place and functioning as intended. There are four tools to this:

- Routine site inspections;
- HSE coordination meetings;
- Emergency response drills; and
- Specific First Aiders training.

HSE Supervisor is in charge of such monitoring and should record monitoring activities.

7.6 Reporting

HSE Department maintains inventory records of all emergency response inspections, drills and trainings performed at the HAIC Project. This information is analysed and systemized periodically in order to get monthly and annual statistics: in particular, this information is reported to and discussed within the HSE Department within the regular HSE Committee meetings. Non-compliances related to this Plan are systematically reported to the HSE Committee, investigated and resolved with the implementation of corrective actions.

8. HAZARDOUS MATERIAL MANAGEMENT PLAN

The purpose of this Hazardous Material Management Plan (HMMP) is to provide the user and handler of hazardous materials at HAIC Project' premises with general guidelines on safe storage, handling, use and disposal of such hazardous materials in compliance with local regulatory requirements and with reference to international best practices such as the UN Globally Harmonized System of Classification and Labelling of Chemicals (GHS). These general guidelines aim to enable good practices of hazardous materials management at HAIC Project's premises.

8.1 Objectives

The overall objective of hazardous materials management is to protect the workers who are handling hazardous materials and to allow safe uses and storage practices to avoid or, when avoidance is not feasible, minimize uncontrolled releases of hazardous materials or accidents (including explosion and fire) during their handling, storage and use so as to protect both the workforce and the environment. This objective can be achieved by:

- Establishing hazardous materials management priorities based on hazard analysis of risky operation activities identified through ongoing Hazard Identification and Risk Assessments (HIRA);
- Preventing uncontrolled releases of hazardous materials to the environment or uncontrolled reactions that might result in fire or explosion;
- Using engineering controls (containment, automatic alarms) commensurate with the nature of hazards to control; and
- Implementing management controls (inspections, communications, training and drills) to address residual risks that have not been prevented or controlled through engineering measures.

8.2 Sources of Impact

The following hazardous material are used in the production line:

Table 8.1 Current and Future Amount of Hazardous Material

Type of hazardous material	Current /month	After expansion
Solvent (Kg)	70,000	90,000
Active Ingredients (Kg)	40,000	60,000
Surfactant (Kg)	30,000	50,000
Absorbent/Carrier (Drum)	600	1,000
Fuels (Lit)	2,000	4,000
Oils and Lubricants (Lit)	400	600
Batteries and accumulators (kg)	0.05	0.1

8.3 Design and Management

8.3.1 Characterization

The level of risk associated with the storage and handling of hazardous materials is established through an ongoing assessment process based on the following information:

- Name and description (e.g. composite of a mixture) of the hazardous material;
- Classification (e.g. code, class or division) of the hazardous material; and

- Characteristic(s) that make(s) the material hazardous (e.g. flammability, toxicity, corrosively, reactivity).

Table 8.2 Characterization and Control Measures of Hazardous Material

Type of hazardous material	Description	Classification	Control measure	Frequency	Storage
Solvent	Xylene, Solvent 100		As per the manufacture MSDS		
Active Ingredients	Organo-phosphate and Pyrethroid	Class II, III and IV			
Surfactant	Emulsifier, Sticker, Antifreeze				
Preservative	Biocide				
Absorbent/Carrier	Carbon White, Kaolin and Silica				
Fuels	Diesel				
Oils and Lubricants	Engine oil and Lubricants				

8.3.2 Hazardous Material Handling

Material Safety Data Sheets (MSDS) for all hazardous materials handled at HAIC Project's premises are readily available in English and Myanmar language in each relevant facilities and areas.

MSDS provides important hazardous information about the materials and chemicals, including the chemical constituents, hazards, safe storage and handling procedures, first-aid measures and emergency response procedures. Reference shall be made to the GHS guidance on preparing material safety data sheets.

All personnel handling chemical and hazardous materials (including drivers) are trained on chemical hazards and safe handling.

HAIC Project workers, employees, visitors and contractor/subcontractors use adequate and appropriate safety equipment when handling chemicals and hazardous materials. PPE requirements for each material are specified in the MSDS.

Minimum PPEs while handling chemicals and hazardous materials at the HAIC Project's premises include safety goggles and gloves, cotton clothing and non-porous safety shoes. These minimum PPEs apply unless otherwise specified under the MSDS:

- Safety spectacles or vented goggles are worn when handling chemicals/hazardous materials. Scratched or defective safety spectacles are replaced without delay because they may affect visibility and cause strain to the eyes or fail to serve their protective purpose. Dirty safety spectacles should be cleaned with detergent or disinfectant as appropriate;
- Chemical resistant gloves made of appropriate materials, such as nitrile, are worn when handling chemicals. Users check the integrity of gloves by visual inspection or inflating them with air before usage; damaged gloves are replaced immediately;
- Cotton clothing (including long trousers and sleeved shirts) and non-porous safety shoes are worn for body protection; and
- Non-porous shoes are worn while handling chemical/hazardous materials to prevent slipping and provide protection for the feet in case of any spills.

8.3.3 Hazardous Material Storage

All hazardous materials, including chemicals, are stored in locked rooms and locked cupboards in dedicated Hazardous Material Storage areas:

- All hazardous materials and chemicals are kept in a container appropriate to each type clearly marked with the names and hazard warning symbols of the hazardous materials and chemicals, including date-stamped on the date of arrival to enable a hazardous materials and chemicals management of 'first in, first out';
- Incompatible hazardous materials, chemicals and hazardous wastes are identified and stored separately;
- Flammable hazardous materials and chemicals are storage away from any heat source and near to a fire extinguisher;
- Storage areas for hazardous materials and chemicals are provided with sufficient fresh air and ventilation;
- Hazardous materials and chemicals in containers are regularly checked to spot any signs of change, leakage or spillage: once detected, damaged container is replaced by a proper undamaged one; and
- Inventory of the types and quantities of hazardous materials and wastes being stored are kept and regularly updated by designated staff and checked and copies kept by HSE Supervisor.

8.3.4 Chemical Spills

HSE Supervisor, with the support of the HSE Manager, establish and implement effective emergency measures to handle and clean up spillage of hazardous materials and chemicals. Methods of safe handling of hazardous materials and chemicals and of dealing with spillages are provided in the Material Safety Data Sheets (MSDS). Adequate safety equipment (e.g. spill control kits, barrier tape, etc.) and personal protective equipment (e.g. protective gloves, respirators, safety goggles, etc.) are available in the central material storage.

Guidelines on clean-up of some chemical spills are as detailed in Table 8.3

Table 8.3 Clean-up in Case of Spillage

Nature of Spillage	Clean-up
Acids	Cover with solid sodium carbonate to completely neutralize the acids. Mop up with water.
Alkalis	Cover with solid sodium hydrogen sulphate or citric acid to completely neutralize the alkalis. Mop up with water.
Organic Liquids: Flammable, Non-Flammable	Emulsify with detergent. Mix with water. Mop up. Absorb in sand or mineral absorbent. Shovel into a metal bucket and dispose of as chemical waste.

The Emergency Preparedness and Response Plan (Chapter 7) should be followed in incidents where the spillage may result in significant contamination of an area or where there is a risk of pollution.

Standard equipment for handling any emergencies or spill is kept in good working conditions and at hand in the central material storage and include the following:

- Fire extinguishers;
- Dustpan and brush;
- Dry soft sand;

- Mop and bucket;
- Paper tissue and towels;
- Plastic bags, empty containers or drums;
- Absorbent e.g. vermiculite, sawdust, sand etc.;
- Scoop; and
- Tweezers or forceps.

8.3.5 Hazardous Disposal

Hazardous waste is primarily collected in stream points and then temporarily disposed in the central storage. In the stream points called "Waste Classification Points", hazardous waste is segregated accordingly with the color code. Once the waste bins are filled, the solid waste is transported to the central storage area, which keeps the same colour code. Colour code is detailed in the Solid and Hazardous Waste Management Plan (Chapter 6).

A licensed contractor transports the hazardous waste from the HAIC's central waste storage to its final disposal site (certified and managed in accordance with good international practices).

The licensed contractor delivers a copy of the Waste Discharge Record (manifest) to the Awba's HSE Supervisor. This record indicates the type of waste to be transported, weight, number of packages, the name of the transporter, plus of the name of the responsible supervisor who performed the verification.

8.4 Key Performance Indicators

Key Performance Indicators (KPIs) to assess its hazardous materials management are presented in:

- HMMP1: Number of inspections, NCR and CAR with the mitigation controls identified in this Management Plan; and
- HMMP2: Number of incidents of hazardous material releases leading to actual or potential (i.e. near-misses) harm to humans or the environment.

8.5 Monitoring

This Plan will be reviewed annually by the HSE Committee to ascertain the progress it has made in achieving the set aim. Any significant changes made to the Plan will be communicated to all staff, and training provided to ensure relevant staff are made aware of updates.

8.6 Reporting

Annually reports will be prepared by HSE Department. Reporting shall include:

- A summary of activities undertaken during the reporting period;
- Any material deviations or non-compliances to this Management Plan, with their respective corrective action, implemented;
- Planned activities during the next reporting period; and
- Any other issues of concern.

The reports will be provided to and discussed within the HSE Committee meetings.

9. SITE RUNOFF DRAINAGE MANAGEMENT PLAN

The Site Runoff Drainage Management Plan (SRDMP) seeks to prevent and avoid uncontrolled runoff contaminated with wastewater, at the site, that may affect the surface water quality of watercourse near HAIC's Project.

9.1 Objectives

The overall objectives of responsible site runoff drainage management recommended under this SRDMP are the following:

- All runoff is adequately drained without causing any significant impacts on the surface water resources (Sabagyi creek);
- Awba develops a drainage system; and
- Awba conducts inspections activities relevant to site runoff drainage management, including the identification and reporting of non-compliances to this RDMP and the proposed related corrective actions.

9.2 Sources of Impact

Contaminated rainwater runoff is the main source to impact. The rainwater runoff and surface water can get contaminated with process chemicals or wastes if any uncontrolled discharge from the operations reaches the storm water drains and ultimately reaches the surface water bodies.

The Sabagyi creek was identified during the Environmental and Social Impact (ESIA) process. The Sabagyi is a seasonal creek and it is located at the north-west corner of the HAIC (Figure 9.1). This creek runs through the lowest points of the site and is subjected to wastewater runoff from the HAIC Project. The stream flows northwest and into the villages of Nyaung Kone and Wah Net Chaung. Villagers does not use the water resource of the Sabagyi creek.

Treated wastewater from the company is stored in a wastewater lagoon. In rainy season, this may get mixed up with rainwater and reach the surface water body. This part is not covered by the SRDMP but is covered under wastewater management plan.



Figure 9.1 Sabagyi Creek Location

9.3 Design and Management

At the time of writing this Plan, the HAIC has a drainage system in place which covers all the existing premises (Figure 9.2). Awba foresees to expand its drainage system to the new facilities that will be built as part of the second and third stages of the construction phase. The pipes and culverts will conduct the water into the main channel that is installed along the periphery of the HAIC.

In addition to water quality monitoring activities (detailed in Chapter 13), the following mitigation measures are implemented:

- Expand and maintain an effective permanent site drainage system during the operation phase that should cover all existing and future HAIC's premises. The drainage system should reduce flow velocity and sediment load;
- Regularly, and particularly following rainstorms, inspect drainage systems and erosion control measures to ensure the drainage system is operating properly and efficiently at all times;
- Install and maintain in working order oil water separators and grease traps at refuelling facilities, workshops, parking areas, fuel storage and containment areas; and
- Provide bounded hardstand in operational areas to prevent absorption of spillages.

CONSTRUCTION LAYOUT PLAN FOR HAIC PROJECT

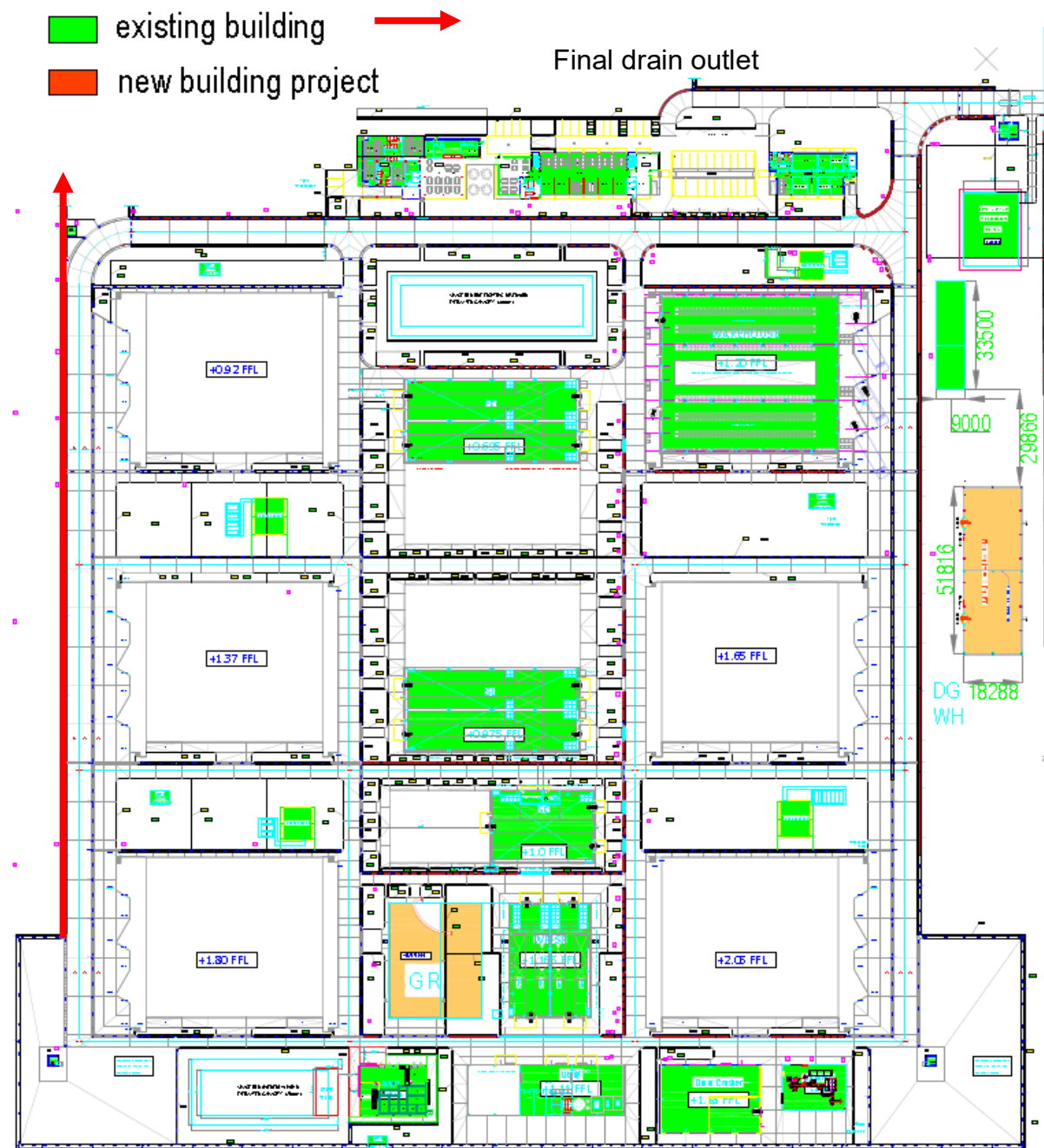


Figure 9.2 Site Run off and Drainage Layout

9.4 Key Performance Indicators

The following Key Performance Indicators (KPI's) should be used for this Plan:

- RDM1: number of maintenances done to the drainage system; and
- RDM2: number of inspections reports performed, NCR and CAR proposed and attended.

9.5 Monitoring

Awba ensures that appropriate measures have been implemented by its own and contractor workers' in order to avoid/minimize runoff. Inspections and coordination meetings will be undertaken in order to identify in time non-compliances and propose corrective actions.

9.6 Reporting

Reporting is done in the HSE Committee meetings.

10. WASTEWATER MANAGEMENT PLAN

This Wastewater Management Plan (WWMP) outlines the recommended wastewater management measures (treatment and associated infrastructure and services) to be implemented during operation phase of the HAIC Project and identifies plans for the future development, expansion or upgrade of wastewater systems to accommodate changing needs. This ESMP is required by Hwmabi ESIA study. This plan falls under Awba Environmental Policy. The performance based wastewater requirement in this Management Plan is Myanmar National Guidelines and WBG HSE Guidelines for Pesticide Manufacturing, Formulation, and Packaging (Table 2).

10.1 Objectives

During the operation phase of the HAIC Project, Awba ensures that the industrial and domestic effluents receive treatment before being discharged to a receiving body. The overall objectives of responsible wastewater management are the following:

- All wastewater is adequately treated prior to discharge, in compliance with Myanmar legal requirement and WBG HSE Guidelines and without causing any significant adverse impacts to the biophysical environment or surrounding communities;
- Awba monitors the quality, quantity, frequency and sources of liquid effluents of all operation activities and workers facilities. This includes knowledge of the exact locations, routes and integrity of internal drainage systems and discharge points (lowest point); and
- Awba plans and implements the segregation of liquid effluents principally along industrial, utility, sanitary, and drainage water categories, in order to limit the volume of water requiring specialized treatment and makes measurable efforts to reduce its generation.

10.2 Sources of Impact

The sources of potential adverse impacts to watercourses are the following:

- Operation line; and
- Domestic wastewater (from sanitation worker facilities, sinks and showers).

10.3 Wastewater Management

10.3.1 Production Line

Wastewater generated from washing of formulation lines (~20 m³ / day), laundry (~1m³ / day) and cleaning of process area (~3 m³ / day) in the HAIC is treated by an on-site wastewater treatment plant. The process of the wastewater treatment plant is shown in the Figure 10.1

Wastewater is firstly collected in the collection basin and then passed into the fine screen where large solids and trashes are screened out before entering the equalization tank. In the equalization tank, air diffusers are used for even mixing of the wastewater. The water is subsequently transferred via submersible pumps into the fast mixing tank where pH adjustment and chemical coagulation will be conducted. The sludge formed is settled in the chemical sludge sedimentation tank while water pass as overflow into the activated sludge aeration tank. In this tank, aerobic bacteria is used to digest organic matters to reduce the biological oxygen demand (BOD) with the aid of oxygen supplied through air diffusers.

Next, the overflow passed into the second sedimentation tank where the sludge is settled and transferred into the sludge tank while the water is forced through the membrane filter. Thereafter, the water is passed through activated carbon filters to remove odour and colour and then temporarily stored in the effluent tank where water samples is taken and analysed before being discharged into the pond next to the treatment facility. Awba disposes the sludge from the wastewater through license hazardous waste management facility in Thilawa.

Source: Myanmar Awba Group

Figure 10.1 Flow Chart of the Wastewater Treatment Process

There are two types of ponds in this area. The first pond is able to hold seven days of treated effluent from the waste water treatment system. It is a water proof concrete pond. The second pond is more natural which has enough capacity to hold over one and half years of effluent. This pond is developed to include natural flora and fauna (e.g., fishes and lotus flowers). The final discharge is done via the factory main drainage system which could maintain ~1015470 litre can be recycled for internal use and only if overflow will leads to the nearest stream.

In order to be sure that there will be no impact on downstream water quality and no harmful substances in wastewater (e.g., pesticides and fertilizer wastes.), in case the treated wastewater content is unsuitable to be discharged into the pond, water will be directed into the emergency storage tank and then recirculated back to the equalization pond for re-treatment. In addition, water quality monitoring will be conducted as part of the Environmental Monitoring Plan (Chapter 11).

10.3.2 Domestic Wastewater

The wastewater from sanitary facilities is channelled to a septic tank, while the wastewaters generated in the dining room and showers is discharged into the main and peripheral culvert. Then, drain waters join with the runoff rainwater waste and directly discharge to the Sabagyi creek.

Additional recommended mitigation measures to follow include:

- Wastewater collected from basins, sinks and floor drains, is discharged into foul sewers via grease traps;
- Separate storm-water runoff channels from the sewerage system have been constructed during phase 1, additional drainage channel will be constructed during phase 2 and 3; and
- Sewage from the operation workforce is expected to be generated at a rate of 10 m³ / day, which will be treated on-site by a septic tank and seepage field.

10.4 Key Performance Indicators

The following Key Performance Indicators (KPI's) are used for this Plan:

- WWMP1: Number of m³ of wastewater treated in the wastewater treatment system;
- WWMP2: Number of domestic wastewater discharged to the septic tank; and
- WWMP3: Number of inspections performed, corrective actions proposed and attended.

10.5 Monitoring

Regular inspections will be carried out by the HSE Supervisor in order to identify non-compliances and propose corrective actions.

10.6 Reporting and Internal Audit

The HSE Supervisor is tasked with undertaking and reporting regular supervision of onsite wastewater management system. The HSE Manager ensures these are reported to and discussed within the HSE Committee meetings. Internal audit department will conduct an audit after completion of this ESMP (or annually as needed) to ensure satisfactory compliance.

11. ENVIRONMENTAL MONITORING PLAN AND AUDIT

The Environmental Monitoring Plan and Audit (PMPA) has been prepared to provide an outline of the EM&A requirements for the HAIC, highlighting the environmental parameters to be monitored, timing of the monitoring work and the frequency of the monitoring and audit work. The Project must be carried out during the construction and operation phases to comply with the standards established by the NEQ and WBG.

11.1 Objectives

The prime objective of this EMPA is to ensure that the air, noise and water emissions monitoring of the Project comply with the requirements set up by the Myanmar National Environmental Quality (emissions) (NEQ) Guidelines (2015), World Bank Group Environmental Health and Safety General Guidelines (2007) and WBG HSE Guidelines for Pesticide Manufacturing, Formulation and Packaging (2007).

11.2 Sources of Impact

The sources of impacts by each physical compound are described in Table 11.1.

Table 11.1 Sources of Impact

Physical compound	Sources
Air	Stack from each building (seven) plus incinerator; Ambient air emissions; and Fugitive emissions from solvents and another chemical.
Noise	Equipment and machinery from line production; and Vehicles that transport material and workforce.
Water	Industrial wastewater.

11.3 Design and Management

11.3.1 Air

The Table 11.2 details the parameters, unit, guidelines, type of measurement, sampling location, frequency and responsible to conduct the air quality monitoring.

11.3.2 Noise

The Table 11.3 details the parameters, unit, guidelines, type of measurement, sampling location, frequency and responsible to conduct the noise quality monitoring.

11.3.3 Water

The Table 11.4 details the parameters, unit, guidelines, type of measurement, sampling location, frequency and responsible to conduct the wastewater effluents quality monitoring.

Table 11.2 Air Emissions Monitoring

Parameter	Unit	Guideline Value WBG	Guideline Value NEG2015	Type of measurement	Sampling Locations	Frequency	Responsible
PM	µg/m ³	20, 5 ^a	20, 5 ^c	Fence Line Monitoring	Fence Line Monitoring Corner Points	Quarterly, If not detected, change to biannually	HSE & Community Manager, Operations Manager
Benzene	µg/m ³	9		Fence Line Monitoring (AWBA's Specific Monitoring Parameter)	Fence Line Monitoring Corner Points	Quarterly, If not detected, change to biannually	
Xylene	µg/m ³	50		Fence Line Monitoring (AWBA's Specific Monitoring Parameter)	Fence Line Monitoring Corner Points	Quarterly, If not detected, change to biannually	
PM Total dust Respirable fraction	mg/m ³	20, 5 ^a	20, 5 ^c	Workplace Air Quality Monitoring	Workplace Air Quality Monitoring Points assigned in Facility Area	Quarterly	
Naphthalene	mg/m ³	50		Workplace Air Quality Monitoring	Workplace Air Quality Monitoring Points assigned in Facility Area	Quarterly	
Xylene	mg/m ³	435		Workplace Air Quality Monitoring	Workplace Air Quality Monitoring Points assigned in Facility Area	Quarterly	
PM	mg/m ³	30	20, 5 ^c	Incineration Emission	Incineration Chimney	Quarterly	
SO ₂	mg/m ³	400	20(24Hr),500(10min)	Incineration Emission	Incineration Chimney	Quarterly	
NO _x	mg/m ³	600		Incineration Emission	Incineration Chimney	Quarterly	
HCl	mg/m ³	10	30	Incineration Emission	Incineration Chimney	Quarterly, If not detected, change to biannually	

Parameter	Unit	Guideline Value WBG	Guideline Value NEG2015	Type of measurement	Sampling Locations	Frequency	Responsible
TOC	mg/m3	10	50	Incineration Emission	Incineration Chimney	Quarterly, If not detected, change to biannually	
Dioxins-furans	mg TEQ/m3	0.1		Incineration Emission	Incineration Chimney	Biannually, If not detected, change to biannually	
PM	mg/m3	5	20, 5 ^c	Process Emission	Process Emission Outlets	Quarterly	
TOC	mg/m3	50	50	Process Emission	Process Emission Outlets	Quarterly, If not detected, change to biannually	
VOC	mg/m3	20	20	Process Emission	Process Emission Outlets	Quarterly, If not detected, change to biannually	
Chloride	mg/m3	5	5	Process Emission	Process Emission Outlets	Quarterly, If not detected, change to biannually	
Xylene	mg/m3	N/A		Process Emission	Process Emission Outlets	Quarterly, If not detected, change to biannually	

^a Where very toxic compounds are present.

Source: WBG HSE Guidelines for Pesticide Manufacturing, Formulation and Packaging, 2007; Myanmar National Environmental Quality (emissions) Guidelines, 2015, for Pesticide Manufacturing, Formulation and Packaging.

Table 11.3 Noise Levels Monitoring

Parameter	Unit	Guideline Value NEG 2015 ^a				Type of measurement	Sampling locations	Frequency	Responsible
		Residential; institutional; educational		Industrial; commercial					
		Daytime 07:00 - 22:00	Night time 22:00 - 07:00	Daytime 07:00 - 22:00	Night time 22:00 - 07:00				
One Hour LAeq (dBA)	db	55	45	70	70	Point Source	Production line	Quarterly (Construction and Operation)	HSE & Community Manager, Operations Manage

^a NEG has the same value as Guideline Value WBG.

Source: World Bank Group Environmental Health and Safety General Guidelines, 2007; Myanmar National Environmental Quality (emissions) General Guidelines, 2015.

Table 11.4 Wastewater Effluents Monitoring

Parameter	Unit	Guideline Value WBG 2007	Guideline Value NEG2015	Type of measurement	Sampling locations	Frequency	Responsible
pH	S.U.	6 to 9	6 to 9	Point Source	HAIC Wastewater outlet	Daily	HSE & Community Manger, Operations Manager, QA Manager
5-day Biochemical Oxygen Demand	mg/l	30	50	Point Source	HAIC Wastewater outlet	Weekly	
Chemical Oxygen Demand	mg/l	150	150	Point Source	HAIC Wastewater outlet	Weekly	
Total Suspended Solids	mg/l	10 to 20 ^a	10 to 20	Point Source	HAIC Wastewater outlet	Weekly	
Oil and Grease	mg/l	10	10	Point Source	HAIC Wastewater outlet	Weekly	
Total Phosphorus	mg/L	2	2	Point Source	HAIC Wastewater outlet	Quarterly, If not detected, change to biannually	
Phenol	mg/l	0.5	0.5	Point Source	HAIC Wastewater outlet	Quarterly, If not detected, change to biannually	
AOX	mg/L	1	1	Point Source	HAIC Wastewater outlet	Biannually If not detected, change to annually	
Chlorinated Organics	mg/L	0.05	0.05	Point Source	HAIC Wastewater outlet	Biannually If not detected,	

Parameter	Unit	Guideline Value WBG 2007	Guideline Value NEG2015	Type of measurement	Sampling locations	Frequency	Responsible
						change to annually	
Nitroorganics	mg/L	0.05	0.05	Point Source	HAIC Wastewater outlet	Biannually If not detected, change to annually	
Active Ingredient (each)	mg/l	0.05	0.05	Point Source	HAIC Wastewater outlet	Biannually If not detected, change to annually	
Bioassays Toxicity: Fish, Daphnia, Algae, Bacteria	TU	2	NA	Point Source	HAIC Wastewater outlet	Biannually If not detected, change to annually	
		8		Point Source	HAIC Wastewater outlet	Daily	
		16		Point Source	HAIC Wastewater outlet	Weekly	
		8		Point Source	HAIC Wastewater outlet	Weekly	

Source: WBG HSE Guidelines for Pesticide Manufacturing, Formulation and Packaging, 2007; Myanmar National Environmental Quality (emissions) Guidelines, 2015, for Pesticide Manufacturing, Formulation and Packaging.

11.4 Key Performance Indicators

The effectiveness of the management measures described above are assessed using the following KPIs:

- EMP1: Number of environmental quality monitoring performed per year;
- EMP2: Number of values that exceeded the maximum permissible limit;
- EMP3: Number of corrective actions taken; and
- EMP4: Number of environmental quality monitoring conducted accordingly with the schedule.

11.5 Monitoring and Audit

The Awba internal audit team will ensure an environmental permanence of the project. It used to assist Myanmar Awba Group in accomplishing its objectives by bringing a systematic and disciplined approach to evaluate and improve the effectiveness of the organization's governance, risk management, internal control.

11.5.1 Roles and Responsibilities of the Audit Team

The internal audit activity is established by the Board of Directors and the internal audit activity's responsibilities are defined by the board as part of their oversight role. The internal audit activity, with strict accountability for confidentiality and safeguarding records and information, is authorized full, free, and unrestricted access to any and all of organization records, physical properties, and personnel pertinent to carrying out any engagement. All employees are requested to assist the internal audit activity in fulfilling its roles and responsibilities. The internal audit activity will also have free and unrestricted access to the Board.

Table 11.5 Internal Audit Team Structure

Position	Number
Head of Internal Audit	1
Audit Team Leader	2
Audit Team Members	6
Total	9

11.5.2 Internal Audit Reporting

A written report will be prepared and issued by the Head of Internal audit or designee following the conclusion of each internal audit engagement and will be distributed as appropriate. Internal audit results will also be communicated to the Board. The internal audit report may include management's response and corrective action taken or to be taken in regard to the specific findings and recommendations. Management's response, whether included within the original audit report or provided thereafter (i.e. within thirty days) by management of the audited area should include a timetable for anticipated completion of action to be taken and an explanation for any corrective action that will not be implemented.

The internal audit activity will be responsible for appropriate follow-up on engagement findings and recommendations. All significant findings will remain in an open issues file until cleared. The Head of Internal Audit will periodically report to senior management and the Board on the internal audit activity's purpose, authority, and responsibility, as well as performance relative to its plan. Reporting will also include significant risk exposures and control issues, including fraud risks, governance issues, and other matters needed or requested by senior management and the Board.

11.6 Reporting

The HSE Manager reports the environmental monitoring results and findings to the HSE Director. The HSE Director ensures non-compliances are reported to and discussed within the HSE Committee meetings.

On an annual basis, Awba keeps relevant authorities (MONREC/ECD) and to the financier (IFC) informed by the IFC/Annual Monitoring Reporting Format. In addition, Awba is considering preparing an annual Sustainability/HSE report at Group-level (using Global Reporting Initiative/G-4 Guidelines or format agreed by Awba).

12. CONSTRUCTION MANAGEMENT PLAN

This Construction Management Plan (CMP) has been elaborated to give an action frame to properly conduct impacts from the second and third stages of the construction phase. The second phase is planned to start in November of 2018 and is expected to be finished in the third quarter of 2019. The second stage will involve a building area of 7,594 m² composed of two warehouses and one liquid formulation building. Finally, the third phase is planned for between 2020 and 2021, with a building area of 11,575 m² composed of four warehouses and two liquid formulation building.

12.1 Objectives

The prime objective of this CMP is to address all the potential impacts from construction activities.

12.2 Sources of Impact

The main sources of potential contamination are:

- Dust and noise by the use of construction machinery and equipment;
- Vehicles transporting material and workforce;
- Risk of road accident;
- Solid waste by the use of oil/lubricants and rest of concrete; and
- Wastewater from workers facilities.

12.3 Design and Management

12.3.1 Dust Control Measures

- Vehicles transporting dusty materials shall be covered with clean tarps in good condition or plastic canvas. The tarps and canvas shall be properly fastened;
- Stockpiling of material, for example, rocks, sand and soils will be minimized;
- Stockpiles of materials shall be sited in sheltered areas away from sensitive environmental areas and areas with a high concentration of personnel. When necessary, stockpiles of material or debris shall be dampened during storage and prior to their movement, except where this is contrary to the material construction specifications, and which, in this case, shall be stored in a manner to prevent dispersion of materials due to winds;
- Windbreaks should be erected around the seasonal stream which is located in the north-west of the Hwmabi during construction; and
- Complaints related to dust or fugitive emissions will be addressed through the Community Grievance Mechanism (see Stakeholders Engagement Management Plan in Chapter 4).

12.3.2 Transport Risks Measures

- All General Contractor drivers have to adopt Awba's Safety Road Policy which capture detailed instructions for drivers to safe transport material and workforce including restrict vehicle speeds on the access road to a maximum of 40km/h;
- A training program will be initiated to encourage drivers to follow the measures of this Plan. The program will be part of the driver's induction and reinforced on a regular basis by the HSE Supervisor; and
- General Contractor vehicles will inscribe in their chassis the logo of HAIC so the villagers will be able to recognize the vehicles of the Project and whom the vehicles can be associated with. A sticker will also be inscribed in the chassis with a telephone number to call for any complaints

about the way of the vehicle has been driven or the driver has been behaving (as part of the Community Grievance Mechanism).

12.3.3 Noise Control Measures

- Significant noise generating equipment will be regularly maintained to meet manufacturer's specifications, Myanmar standards and good international industry practices;
- Required hearing protection equipment (head earmuffs) to be worn by employees working in environments where noise exposure is found to exceed 85 dB(A) Leq, 8 hours;
- Hearing protection signs and posters will be posted in areas of excessive noise and at the entrance of every construction area;
- Noise awareness training will be included in the worker inductions and as part of regular toolbox talks including appropriate application and fitting of hearing protection equipment; checks will be done during the daily morning meetings;
- Noisy activities during the construction phase that need to be undertaken during night periods will be minimized to decrease the risk transference of noise emissions; and
- Complaint about noise annoyance by the population in the area of influence are expected to be addressed through the Community Grievance Mechanism.

12.3.4 General Management Measures

- Waste concrete or concrete overspill should be allowed to dry prior to being reused on HAIC Project's premises to the extent possible, for landscaping or reinforcing soil areas to prevent erosion and runoff (as sedimentation control mitigating factor). Waste concrete or concrete overspill that cannot be recycled onsite may be marketable or donated locally as fill. If all other avenues for recycling have been exhausted, waste concrete or concrete overspill should be disposed of at licensed contractor landfill;
- Waste lubricants and oils will be stored in dedicated containers prior to disposal. The container storage area should be bonded with a capacity of 110% of the largest container stored within. Waste lubricants and oils should be kept away from non-compatible waste types to prevent any chemical reaction during storage;
- Oil contaminated solids will be stored in dedicated containers prior to disposal. Waste oils should be kept away from non-compatible waste types to prevent any chemical reaction during storage. The high calorific value of this waste type is ideally suited for onsite disposal through an energy recovery process. If all other avenues for recycling have been exhausted, oil contaminated solids should be disposed of at Licensed contractor landfill, though this remains the least preferred disposal option as oil contaminants may leach out into local watercourses.
- Waste oils will be skimmed routinely from oily wastewater through waste-oil separators. These will be put in place, in particular, at the Heavy Mechanical Equipment and fuel storage areas. Filtered waste oils should be stored in onsite waste oil tanks for recycling. Oily water interceptors will be pumped out periodically using a vacuum tanker and should be treated via the on-site wastewater treatment systems (WWTS). The resultant sludge from the WWTS should be dewatered and can be reused onsite in an energy recovery process, or disposed of at Licensed contractor landfill;
- The General Contractor should prepare detailed procedures for the possible emergency events for the construction phase;
- Onsite stockpiles of construction materials or construction wastes should be covered with a tarpaulin or similar fabric, especially prior to and to be kept during rainstorms;

- Exposed soil surfaces should be protected by paving or fill material as soon as possible to reduce the potential of soil erosion;
- Provide mitigation measures to reduce the ingress of site drainage into excavations. If trenches have to be excavated during the wet season, excavate and backfill them in short sections wherever practicable. Discharge any water pumped out from trenches or foundation excavations into storm drains via silt removal facilities;
- Implement mulch to stabilize exposed areas, where practicable and appropriate;
- Re-vegetate uncovered areas promptly; and
- General Contractor will construct for phase 2 and 3 a proper septic tank which will ensure that no direct sewage release to surface water occurred.

12.4 Key Performance Indicators

The effectiveness of the management measures described above are assessed using the following KPIs:

- EMP1: Number of community complaints related to construction activities or to general contractor's workers behaviour;
- EMP2: Number of inductions and trainings conducted to general contractor's workers;
- EMP3: Number of maintenance done to the vehicles and PME;
- EMP4: Number of PPE allocated to the general contractor's workers; and
- EMP5: Number of checklist done to the vehicles and PME.

12.5 Monitoring

The HSE Manager will identify in time non-compliances and propose corrective actions.

12.6 Reporting

Through weekly inspections the HSE Supervisor reports the non-compliance and findings of the General Contractor and their subcontractors to the HSE Manager. The HSE Manager ensures non-compliances are reported to and discussed within the HSE Committee meetings.

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