

SHWE TAUNG JUNCTION CITY DEVELOPMENT CO., LTD.



CONSTRUCTION AND OPERATION OF JUNCTION CITY MIXED-USED DEVELOPMENT PROJECT PHASE-I Yangon Region

Prepared By

ENVIRONMENTAL IMPACT ASSESSMENT (EIA) REPORT



June, 2026

ENDORSEMENT LETTER



SHWE TAUNG JUNCTION CITY
DEVELOPMENT CO., LTD

02030

Date: 29th January, 2026

We, Shwe Taung Junction City Development Company Limited (Junction City Mixed-Use Development Project (Phase-1) Project) refer to the captioned EIA Report, which was prepared and finalized by the third party, Unique Environment Myanmar (UEM) Limited. The project will follow and implement in accordance with the EIA Procedure (2015) in order to: a) develop an EIA; b) obtain an ECC; and c) take appropriate actions to mitigate adverse impacts in accordance with the law, the rules, and other applicable laws, especially, Myanmar Environmental Impact Assessment Procedure (2015) issued by the Ministry of Natural Resources and Environmental Conservation (MONREC). The project proponent will comply and implement the following commitments:

- the accuracy and completeness of the EIA Report;
- that the EIA Report has been prepared in strict compliance with applicable laws including this Procedure; and

We shall at all times comply fully with: (i) any and a commitments and obligations as set forth in the EIA Report, and (ii) any and all plans and the various components thereof, including without limitation, impact avoidance, mitigation, and remediation measures, and with respect to both (i) and (ii), including but not limited to such commitments, obligations, plans and maintenance of the project, and any circumstance in which work done or to be done, operation and closure of the project, and any circumstance in which work done or to be done, or services performed or to be performed, in connection with the project's development, operation and closure is carried out or intended or required to be carried out or intended or required to be carried out by any contractor, subcontractor or other party.

Sincerely,

Daw Sandar Htun

Director

Shwe Taung Junction City Development Company Limited

Date: January, 2026

Ahlong Tower, Strand Road
River View Garden Housing,
Ahlong Township,
Yangon, Myanmar

T: (95) 1 2314567,
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Registered No. 105582536



CONSULTANT DECLARATION

We, Unique Environment Myanmar, a local environmental consultant firm, conducted environmental impact assessment and support the professional implementation services to prepare the EIA Report for the Shwe Taung Junction City Development Company Limited (Junction City Mixed-Use Development (Phase-1) Project and in compliance with EIA Procedure and other relevant laws/rules and formally submitted to the Environmental Conservation Department (ECD) for approval.

We do state that we intend to advance the environmental management and monitoring activities during our services provision within our sphere of influence, and make a clear statement of this commitment to our stakeholders and general public.

1. We shall undertake all the activities of our consultation services confirming that:
2. the accuracy and completeness of the EIA Report and Term of Reference (TOR);
3. the EIA Report has been prepared in strict compliance with applicable laws including this procedure; and
4. the Project will at all times comply fully with the commitments, mitigation measures, and Term of Reference (TOR) in the EIA Report.

Sincerely,



Dr. Lai Lai Win (EIA-C 019/2023)

Managing Director

Unique Environment Myanmar (UEM) Limited (EIA-CO(A)012/ 2025)

Date: June, 2026

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ABBREVIATION AND ACRONYMS

ECD	Environmental Conservation Department
EIA	Environmental Impact Assessment
EMP	Environmental Management Plan
IEE	Initial Environmental Examination
EQ	Environmental Quality
TOR	Term of Reference
MONREC	Ministry of Natural Resources and Environmental Conservation
SHM	Stakeholders Meeting
IFC	International Finance and Cooperation
WHO	World Health Organization
JICA	Japan International Cooperation Agency
NEQG	National Environmental Quality Guideline
CO₂	Carbon dioxide
SO₂	Sulphur dioxide
NO₂	Nitrogen dioxide
VOC	Volatile Organic Compound
GHG	Greenhouse Gas

1. INTRODUCTION

The construction and operation of “Junction City Mixed-Use Development Project (Phase-1)” was developed by Shwe Taung Junction City Development Co., Ltd. with the joint venture of City Square Commercial Co., Ltd., City Square Tower Co., Ltd. and City Square Hotel Co., Ltd.

The Shwe Taung Junction City Development was leased 284,229 sqft (6.525 acre) of land in Pabedan Township of Yangon by the Yangon City Development Committee. The project site is located at Corner of Bo Gyoke Aung San Road and Shwe Dagon Pagoda Road. The validity of investment permit was 50 years.

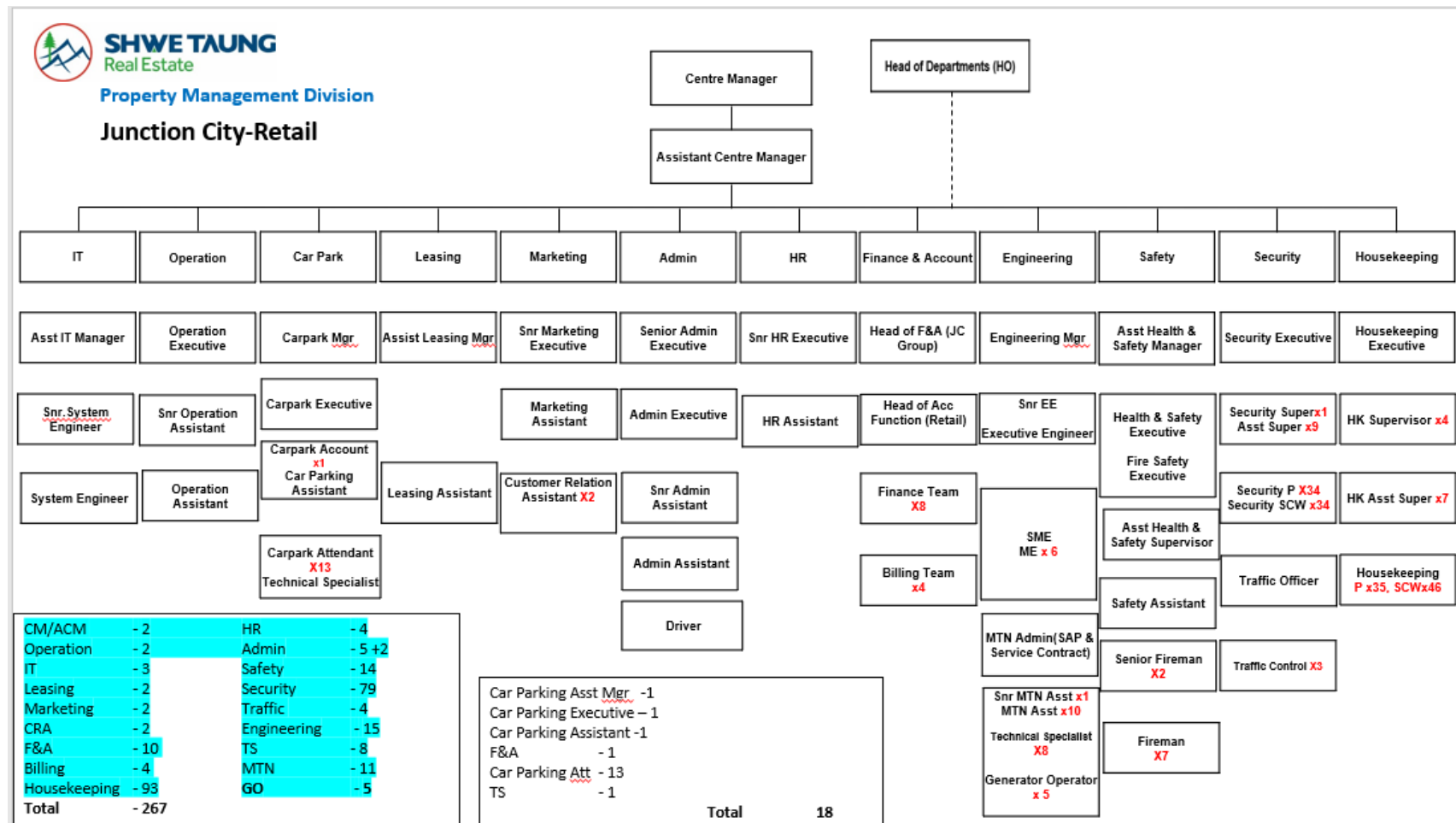
For the development Shwe Taung Junction City Development Company Limited was developed a “Junction City Mixed-Use Development Project (Phase-1)” comprising Hotel Tower, Office Tower and Shopping Center. This land was granted based on a fair and equitable open tendering process to make sure economic purpose is achieved.

1.1. Project Proponent

Table 1-1 Brief Information of Proposed Project

Project Proponent	Shwe Taung Junction City Development Company Limited
	Responsible and Contact Person Name: Daw Sandar Htun Position: Director Address: Alone Tower, River View Garden Housing, Strand Road, Sin Min Quarter, Ahlone Township, Yangon, Myanmar Phone: 01-2314616 Website: https://www.shwetaunggroup.com/heritage/junction-city/
Project Name	“Junction City Mixed-Use Development Project (Phase-1)” Site Office: Corner of Bo Gyoke Aung San Road and Shwe Dagon Pagoda Road, Pabedan Township, Yangon, Myanmar Website: https://www.shwetaunggroup.com/heritage/junction-city/
	Program: Hotel Tower, Office Tower, Retail Tower
Project Location	Corner of Bo Gyoke Aung San Road and Shwe Dagon Pagoda Road, Pabedan Township, Yangon, Myanmar
Contact Phone Numbers	01-2314616
Project Investment	Equivalent in Kyat of US\$ 67.68 Million

1.1.1 Organization Chart of Junction City and Hotel



Management Team Organization (Hotel)



1.2. Consultant Profile

The Unique Environment Myanmar (UEM) Limited has been commissioned by the Shwe Taung Junction City Development Company Limited to ensure that their “Construction and Operation of Junction City Mixed-Use Development Project” will be environmentally sound and acceptable to local communities and in full compliance with the environmental conservation laws, rules, guidelines and regulations issued by the Environmental Conservation Department of the MONREC, and in conformity with international standards and guidelines.

Unique Environment Myanmar (UEM) acts as a third-party consultant firm, bringing together professionals and experts from a variety of fields to carry out the Environmental Impact Assessments (EIAs), Initial Environmental Examinations (IEEs), Environmental Management Plans (EMPs), and Environmental Monitoring Reports (EMR) regarding the environmental and social impacts of the development projects under the contract agreement of project proponents in accordance with Article 76 of the Environmental Impact Assessment Procedure (2015).

The information of the consultant organization is described in the following.

	Name of Organization:	Unique Environment Myanmar (UEM) Limited
	Registration No.	118530047
	License No.	EIA-CO(A)012/2025
	Contact Person:	Dr. Lai Lai Win
	Affiliation	Managing Director
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	Phone No.	+95940009701, +959797241421
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Team Leader

Name	License No. by ECD	Organization	Area of Expertise	Responsibilities
Dr. Lai Lai Win	EIA-C 019/2023	Unique Environment Myanmar (UEM) Limited	- Water Pollution Prevention, Control, Monitoring and Prediction of Impacts - Ecology and Biodiversity - Solid Waste and Hazardous Waste Management - Risk Assessment and Hazard Management	Project Management and Team Leading

Team Member

Name	License No. by ECD	Organization	Area of Expertise	Responsibilities
U Min Min Oo	EIA-C 020/2023	UEM	- Air Pollution Prevention and Control - Meteorology, Air Quality Assessment and Forecast	Consultant
Daw Myat Thitsar Naing	EIA-C 021/2023	UEM	- Social Study and Analysis	Consultant
U Myo Thura	EIA-C 046/2023	UEM	- Geological Assessment - Soil Conservation	Consultant
Daw Aye Aye Soe	EIA-C 068/2024	UEM	- Landuse	Consultant
U Khin Maung Win	EIA-AC 028/2023	UEM	- Water Pollution Prevention, Control, Monitoring and Prediction of Impacts - Hydrology, Surface Water and Ground Water Conservation - General Environmental Management	Associate Consultant
Daw Ei Thet Mon	EIA-AC 017/2023	UEM	- Water Pollution Prevention, Control, Monitoring and Prediction of Impacts - Solid Waste and Hazardous Waste Management	Associate Consultant
U Htet Thiha Phone Myint	EIA-AC 032/2023	UEM	- Geological Assessment - Noise and Vibration	Associate Consultant
U Khin Maung Aye	EIA-AC 018/2023	UEM	- Archaeological and Cultural Heritage	Cultural Consultant
Dr. Phyu Phyu Myint	EIA-AC 020/2023	UEM	- Health Impact Assessment	Health Consultant
Daw Myint Myint Soe	Supportive Team Member	UEM	- Economic Analysis	-

1.3. Requirement of EIA

Based on the strong link between environmental sustainability and social economic development, the Ministry of Natural Resources and Environmental Conservation (MONREC) has prescribed that anyone who wants to implement a development project in Myanmar must first submit an Environmental Impact Assessment (EIA) of the proposed project which must be approved by the Ministry through its Environmental Conservation Department.

The immediate objectives of an EIA are:

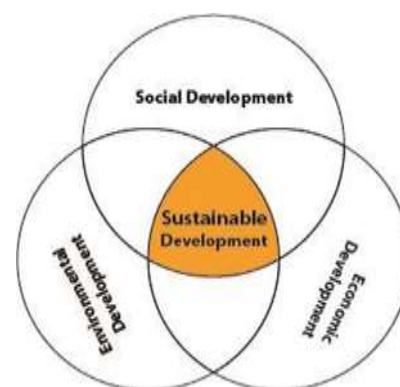
- to improve the environmental design of the project;
- to ensure that resources are used appropriately; and
- to identify appropriate measures for mitigating potential impacts of the proposed project.

In addition to these objectives, an EIA also encompasses specific long-term objectives. These objectives include:

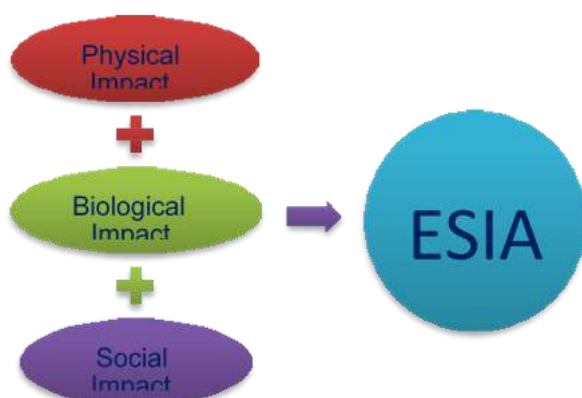
- avoidance of irreversible changes and serious damage to the environment; and
- safeguarding valued resources, natural and cultural heritage and ecosystems which are invaluable for future generations.

1.3.1. Conceptual Framework

The Government of Myanmar is working to achieve sustainable development of the country. The focus will be on three basic areas of development, namely, economic development, environmental development and social development. Economic growth which does not take into account environmental concerns will not prove to be sustainable in the long run. Therefore, sustainable development needs careful integration of environmental, economic and social needs in order to achieve both an increased standard of living in the short term and a net gain of equilibrium among human, natural and economic resources to support future generations in the long term.



1.3.2. Components of EIA



EIA refers to the systematic assessment of a proposed project, business, service or activity to determine whether it will significantly impact the physical environment and ecosystems, humans and other living beings (including negative health or socioeconomic impacts). The assessment has to measure physical, biological and social impacts in order to gauge the overall impact of a project.

1.3.3. Structure of EIA

This EIA report has been prepared through identification of potential impacts and effects caused by the project. At the same time, the report proposes mitigation measures for anticipated negative impacts and prepares an environmental management plan (EMP), a monitoring plan and a social assessment based on public disclosure and stakeholder meetings.

In accordance with the 2015 Environmental Impact Assessment Procedure, the structure of this EIA report will be as follows.

- 1) Executive Summary (Myanmar and English)
- 2) Chapter 1 Introduction
- 3) Chapter 2 Policy, Legal and Institutional Framework
- 4) Chapter 3 Project Description and Alternative Selection
- 5) Chapter 4 Description of the Surrounding Environment
- 6) Chapter 5 Impact and Risk Assessment and Mitigation Measures
- 7) Chapter 6 Cumulative Impact Assessment
- 8) Chapter 7 Environmental Management Plan
- 9) Chapter 8 Public Consultation and Disclosure

1.3.4. Methodology for EIA

In general, the research process for this EIA study essentially involves four stages. These stages are: (1) literature review, (2) preliminary site visit for scoping study, (3) detailed field data collection at project site, and (4) finally, after reviewing and systematic analysis of the data collected, the EIA reports have been prepared and an Environmental Management Plan and Mitigation Measures developed.



Stage 1: Literature Review

In the first stage, desktop study of all relevant information, data and documents was conducted for understanding the scope of the project, its nature and potential impacts. All related past experiences of similar projects in Myanmar and in foreign countries were also studied for research input for the EIA of the project.

Meanwhile, international standards and technical EIA guidance manuals for Junction City Mixed-Use Development Project were reviewed thoroughly to meet the requirements of study for this Project. In particular, applicable laws, regulations and guidelines to which Shwe Taung Junction City Development Company Limited must abide by in order to receive environmental approval in Myanmar were also reviewed for this study. Then, data collection requirements were identified at this stage. Then, the collected data were analyzed, which formed a major input for the preparation of this EIA report.

Stage 2: Preliminary Site Visit and Scoping Study

After the completion of the literature review, UEM's EIA team commenced on a preliminary study by visiting the project site and surrounding areas. The detailed scope for preparing

EIA for the project was then defined based on information gathered through the site visits and key informant interviews.

Stage 3: Site Visits and Baseline Data Collection

The field data collection for environmental assessment was conducted as follows:

i. Physical Component

- ✓ Overview of the study area
- ✓ Climate and Meteorology
- ✓ Topography
- ✓ Geology
- ✓ Hydrology
- ✓ Soil Condition
- ✓ Tectonic Setting
- ✓ Seismology
- ✓ Air quality
- ✓ Noise and Vibration
- ✓ Water quality
- ✓ Traffic Survey
- ✓ Land Use

ii. Biological Components

- ✓ Flora
- ✓ Fauna

iii. Socio-Economic Components

- ✓ Population and Demography
- ✓ Economic Activities
- ✓ Household Income and Cost of Livings
- ✓ Health Conditions
- ✓ Level of Education
- ✓ Cultural Components
- ✓ Religions
- ✓ Ethnicity
- ✓ Visual Components
- ✓ Tourist site, culture and religious properties

In the community near the Project, the socio-economic study was conducted in two formats - key informant interviews and stakeholder meetings.

Key Informant Interviews: The survey team met with key persons, such as community leaders, community elders, officials, township and ward authorities, etc., to obtain information about the livelihoods available in the project area, employment opportunities, economic and social conditions of the people living in their communities as well as their perceptions about the project development.

Stakeholder Meetings: The focus group discussions and stakeholder meetings with community members who are residing in the project area and its surroundings. The main objectives of the exercise are to explore their perceptions and attitudes toward the planned project; the implications of the project on their social life and livelihoods; and probable compensation issues if they have to give their land (housing areas, farmland, other agricultural

land, or any other property) for the implementation of the project and they themselves are to be relocated elsewhere.

Stage 4: Preparing EIA Report and Developing EMP

Identification of potential impacts due to the project

Potential impacts due to the project were identified and evaluated one by one for the development of planning construction and operation stages with ratings for environmental items (social environment, biological environment, physical environment). In addition to the direct and immediate impacts of the project, the derivative, secondary or cumulative impacts, as well as impacts associated with other projects in the area, were also assessed with regard to environmental and social considerations.

Significance of impacts were evaluated based on environmental quality guidelines, institutional, public and technological recognition. Risk assessment was undertaken.

In the evaluation, criteria prescribed by the IEMA (2004) Guideline were used.

Mitigation measures against anticipated negative impacts

Regarding the anticipated negative impacts, necessary steps were taken to examine the possible mitigation measures to avoid, reduce, minimize or eliminate the impacts.

Preparation of Environmental Management Plan (EMP) and Monitoring Plan

The Environmental Management Plan (EMP) was prepared for effectively implementing mitigation measures. The EMP includes various monitoring plans, which are necessary to confirm the significance of the impacts or the effectiveness of the mitigation measures. The concerns and suggestions from public consultations were taken into account in the preparation of the EMP.

The EMP and monitoring plan examined for options for construction and operation stages. Monitoring plan was prepared to be practical, considering the availability and appropriateness of the technology and budget.

2. POLICY, LEGAL AND INSTITUTIONAL FRAMEWORK

2.1 Introduction

This chapter contains information on relevant policies, legislations and institutional framework of Myanmar that are relevant to the environmental and socio-economic aspects of the project. The activities carried out under the project are subject to these legal requirements.

The chapter has been divided into sub-sections as follows:

- Policy and Legal Framework
- Environmental Policy of the Shwe Taung Junction City Development Company Limited
- Social Policy of the Shwe Taung Junction City Development Company Limited
- CSR Policy of the Shwe Taung Junction City Development Company Limited
- Contractual and Other Commitments
- Institutional Framework
- Departmental Legal Framework

2.1.1 The Constitution of the Republic of the Union of Myanmar (2008)

- The Union is the ultimate owner of all lands and all-natural resources above and below the ground, above and beneath the water and in the atmosphere in the Union.
- The Union shall permit citizens right of private property, right of inheritance, right of private initiative and patent in accord with the law.
- The Union guarantees the right to ownership, the use of property and the right to private invention and patent in the conducting of business if it is not contrary to the provisions of this Constitution and the existing laws.
- Every citizen has the duty to assist the Union in preserving and safeguarding the cultural heritage, conserving the environment, striving for the development of human resources, and protecting and preserving the public property.

2.1.2 Myanmar National Environment Policy (2019)

The Policy provides long-term guidance for government organizations, civil society, the private sector and development partners on the achievement of environmental protection and sustainable development objectives in Myanmar. This Policy builds on Myanmar's 1994 National Environment Policy, the 1997 Myanmar Agenda 21, the 2009 National Sustainable Development Strategy, the 2008 Constitution of the Republic of the Union of Myanmar, the 2012 Environmental Conservation Law, the 2015 National Comprehensive Development Plan and the 2018 Myanmar Sustainable Development Plan.

Vision

A clean environment, with healthy and functioning ecosystem, that ensures includes development and wellbeing for all people in Myanmar.

Mission

To establish national environmental policy principle for guiding environmental protection and sustainable development and for mainstreaming environmental consideration into all policies, laws, regulation, plans, strategic, programs and projects in Myanmar.

The project proponent commits to follow up the followings National Environmental Policy Principles,

- 1) Every person and citizen living in Myanmar has the right to access a clean and healthy environment, and the duty to protect the environment.
- 2) The complete value of Myanmar's environment is recognized and considered – both tangible and intangible values, including its significant spiritual values, ecological assets and cultural heritage, in addition to its direct benefits for humanity.
- 3) Environment and natural resource management will recognize the critical roles that Myanmar's natural capital and ecosystem services play in the country's society and economy.
- 4) Myanmar's ecosystems are to be protected and managed in a sustainable way in order to maintain their natural functions and resilience, and rich biodiversity.
- 5) Myanmar's natural resources are to be protected and managed in integrated and sustainable ways without diminishing their availability and quality for future generations.
- 6) The rights of indigenous people and ethnic nationalities to their lands, territories, resources and cultural heritage, and their roles in environmental conservation and natural resources management, are recognized and protected.
- 7) Environmental service provisioning (including waste management, wastewater treatment, drinking water purification, ambient air and water quality monitoring and management) will be included as necessary parts of infrastructure planning and development for urban and human settlement areas, with resource efficient and zero waste approaches used.
- 8) Environmental sustainability will always be a central objective in determining Myanmar's economic and social development strategies, which will priorities low-carbon and green economy pathways, through responsible investment and partnerships with the private sector and civil society.
- 9) Recognizing the inextricable link between environment and poverty, environmental considerations must be central to effective people-centered development and serve to guide development strategies so that sustainable and equitable approaches to improved prosperity.
- 10) Sustainable and renewable energy for the needs of people and for economic development in Myanmar will be secured, and utilized efficiently, through the use of existing technology and innovations in the generation, storage, supply and use of energy.
- 11) Climate smart approaches to development, including resilience, climate change adaptation and mitigation, and disaster reduction strategies, will be aligned to environmental protection and good natural resource management approaches in the pursuit of lowcarbon, sustainable development.

- 12) Economic values of environmental services will be recognised and incorporated in development policies so that these values are optimised and maintained to the extent possible.
- 13) Pollution and waste are to be avoided and minimised at the source as more cost effective than remediation, enterprises will be encouraged to adopt clean production principles and best practices.
- 14) Remediation of past environmental damage will be prioritised in development planning and decisionmaking to promote green outcomes and give effect to the polluter pays principle.
- 15) Institutional and legal frameworks for implementing and enforcing environmental laws and policies will be strengthened through clear definition of rights and responsibilities, and greater collaboration among different institutions within the government at all levels, as well as with nongovernment stakeholders.
- 16) All decisions on policies, plans, projects and activities that could have environmental impacts will be subject to prior comprehensive assessment of their potential impacts, applying the precautionary principle, systematic risk assessment and the mitigation hierarchy.
- 17) Environmental decision making at all levels will be inclusive, transparent and accountable to relevant stakeholders, with communities and citizens having the right to participate in decision making processes and access information that could affect their lives and property.
- 18) Gender equality and the empowerment of women and girls will be integrated into all aspects of environmental protection and management.
- 19) Environmental education, public awareness raising and quality research will be promoted to enhance respect for the country's environmental values, understanding of environmental challenges, and commitment to environmental conservation and sustainable development.
- 20) Environmental governance arrangements will be responsive to peace processes, and arrangements in States and Regions including self-administered areas, recognising that peaceful and just societies, and environmental conservation and sustainable development efforts are mutually beneficial.
- 21) Financial sustainability of environmental governance will be achieved through the application of the polluter pays principle and the use of green financial instruments.
- 22) International cooperation will be sought to strengthen environmental conservation and sustainable development in Myanmar, and to address regional and global challenges, through bilateral and multilateral agreements, experience sharing and implementation arrangements.

National environmental interests will be given thorough consideration before signing international and regional treaties, international investment treaties must recognise Myanmar's evolving environmental governance and honour previously ratified agreements and utilize the most environmentally sustainable methods.

2.1.3 National Land Use Policy (2016)

Objectives

- To promote sustainable land use management and protection of cultural heritage areas, environment, and natural resources in the interest of all people in the country;

- To strengthen land tenure security for the livelihood's improvement and food security of all people in both urban and rural areas of the country;
- To recognize and protect customary land tenure rights and procedures of the ethnic nationalities;
- To develop transparent, fair, affordable and independent dispute resolution mechanisms in accordance with the rule of law;
- To promote people centered development in land resources and accountable land use administration in order to support the equitable economic development of the country;
- To develop a National Land Law in order to implement the above objectives of the National Land Use Policy.

In Section 7, the guiding principles of the national land use policy are as follows,

- (a) To enhance sustainable land use in development and implementation of policies and legal framework related to land and natural resource management;
- (b) To ensure transparency, responsibility and accountability in land and natural resource governance;
- (c) To promote people's participation and collaboration particularly ethnic nationalities, women and smallholder farmers in decision making related to land and natural resource management;
- (d) To recognize and protect private and communal property rights of citizens as included in the constitution;
- (e) To make effort promoting appropriate international good practices in land and natural resource governance.

In Section 8, the basic principles of the National Land Use Policy are as follows,

- (a) To legally recognize and protect legitimate land tenure rights of people, as recognized by the local community, with particular attention to vulnerable groups such as smallholder farmers, the poor, ethnic nationalities and women;
- (b) To strengthen rule of law and good governance, including simplifying procedures, ensuring transparency, and increasing accountability and responsibility;
- (c) To promote effective land information management, including easy public access to information;
- (d) To adopt international best practices such as voluntary guidelines on the responsible governance of tenure of land, fisheries and forests in the context of national food security and human rights standards;
- (e) To promote inclusive public participation and consultation in decision making processes related to land use and land resource management;
- (f) To promote effective market-based solutions, such as formal recognition of land tenure rights or use of new tax mechanisms, to address land management issues such as discouraging land speculation; review and revise the National Land Use Policy to meet changing socioeconomic needs to the country as necessary;

- (g) To develop and implement fair procedures relating to land acquisition, compensation, relocation, rehabilitation, restitution, and reclaiming land tenure and housing rights of internal displaced persons and returning refugees caused by civil war, land confiscation, natural disasters and other causes;
- (h) To ensure easy access to judicial review or other dispute resolution mechanisms that are independent, fair, transparent and affordable;
- (i) To prioritize the interest of public citizens over private companies in land use decision making;
- (j) To ensure equal opportunities for men and women over land resources, tenure rights and participatory decision making;
- (k) permit freedom of crop selection and adoption of cultivation technologies in a way that will not negatively affect the environment;
- (l) To develop law and procedures for addressing the issues of landlessness and affordable housing;
- (m) To decentralize decision making related to land;
- (n) To strictly and transparently enforce contracts related to land in compliance to the law;
- (o) To address the impacts of climate change and natural disasters.

In Section 37, when land acquisition is done for social and economic development, sustainable land use for the future generations shall be taken into consideration.

In Section 38, when managing the relocation, compensation, rehabilitation and restitution related activities that result from land acquisition and allocation, unfair land confiscation or displacement due to the civil war, clear international best practices and human rights standards shall be applied, and participation by township, ward or village tract level stakeholders, civil society, representatives of ethnic nationalities and experts shall be ensured.

In Section 42, the following shall be carried out when resolving land disputes,

- (a) arranging the establishment of special courts that will hear special cases related to land law with specially trained judges and law officers if necessary;
- (b) establishing independent monitoring bodies with participation of all stakeholders and appointing monitors that have no direct interest, to observe settlement of land disputes;
- (c) determining the processes to settle land disputes between businessmen and farmers, or through independent arbitration;
- (d) establishing an independent tripartite arbitration process to settle land disputes, comprised of Government departments, organizations, farmers and private sectors;
- (e) establishing accurate and clear procedural processes in relevant departments and organizations to improve easy access to, and use of, independent arbitration tribunals, courts and other dispute resolution mechanisms by farmers and other land users in accordance with existing laws.

2.1.4 Myanmar Climate Change Policy (2019)

Vision

Myanmar's vision is to be a climate-resilient, low-carbon society that is sustainable, prosperous and inclusive, for the wellbeing of present and future generations.

Purpose

The purpose of this Policy is to provide long term direction and guidance to:

- (a) Take and promote climate change action on adaptation and mitigation in Myanmar;
- (b) Integrate climate change adaptation and mitigation considerations into Myanmar's national priorities and across all levels and sectors in an iterative and progressive manner; and
- (c) Take decisions to create and maximize opportunities for sustainable, low carbon, climate resilient development, ensuring benefits for all.

2.1.5 Myanmar Climate Change Strategy (2018-2030)

Myanmar's development Vision

Myanmar aims to become a "modern, developed and democratic nation" by 2030 (NCDP 2012-2031) by focusing on economic, social and environmental development. Policy direction under each pillar includes: economic, social and environmental development and climate change. The guiding vision of the MSDP is a 'Peaceful, Prosperous & Democratic Myanmar'. It will achieve this through the MSDP Implementation Matrix comprised of the Pillars, Goals, Strategies and Action Plans it contains, striking the right balance between economic development, social development and environmental protection and based firmly on the SDGs.

Strategic Vision

To ensure the country can continue to develop and maintain the conditions for the wellbeing and safety of its people, Myanmar as a society and country must adopt a strategic vision to transform Myanmar into a climate-resilient, low-carbon society that is sustainable, prosperous and inclusive, for the wellbeing of present and future generations. With this vision as a beacon over the next 13 years, Myanmar can organize and maximize the efforts of its government, regions, local communities, public and private sectors and civil society.

The project proponent has to-

- (a) Inclusive development that allows poor, landless, marginalised and vulnerable women, men and geographic regions to shape and benefit from opportunities provided by climate-resilient and low-carbon development;
- (b) Driving action to deliver resource-efficient development that will incentivise investment in a green economy to achieve growth targets with minimal environmental harm and carbon emissions;
- (c) Integrated development to direct government, development partners, civil society, private sector entities and communities to align, harmonise and coordinate policies and programmes to support the strategy's overall objectives; and

Supporting results-oriented development through a time-bound goal and objectives to achieve this vision and strategic priorities to help the priority sectors implement the strategy according to the Myanmar Climate Change Strategy (2018-2030).

2.1.6 Myanmar's National Waste Management Strategy and Master Plan (2018-2030)

Aim of Myanmar's National Waste Management Strategy and Master Plan (2018-2030) is to provide a conducive national policy framework and strategic direction moving from conventional waste management to sustainable waste management based on the 3Rs (reduce, reuse and recycling). Myanmar's National Waste Management Strategy and Master Plan is the country's first guiding document that aims to manage waste in a more comprehensive and integrated manner. The Strategy and Master Plan cover various types of waste (including solid waste, liquid waste/wastewater, and gaseous emissions). National Waste Management Strategy and Master Plan (2018-2030) is to formulate and implement an integrated waste management strategy based on the active participation of both producers and consumers, the reuse of all waste materials, achieving a completely pollution-free environment, and establishing a circular economy system in which all waste materials are recycled, in order to attain a greener, cleaner, better, and more equitable environmental condition in Myanmar. In accordance with the National Waste Management Strategy and Master Plan (2018-2030), the project proponent pledges to comply with and implement the relevant programs within its projects.

2.1.7 Environmental Policy of the Shwe Taung Junction City Development Company Limited

Purpose:

The purpose of this Green Initiative Policy is to define our commitment to environmental sustainability. As part of our Shwe Taung Junction City Development Company Limited responsibility, we aim to minimize our environmental impact by implementing eco-friendly practices in all areas of our operations in our services.

Policy:

Committed to promoting sustainable and environmentally responsible practices. We recognize our duty to minimize environmental impact through continuous improvement in resource efficiency, waste management, and community engagement.

Scope:

This policy applies to all departments, team members, vendors, contractors, and Junction City Mixed-Use Development.

Best Practices for Shwe Taung Junction City Development:

Management Commitment

Due to the extremely high cost of energy that we have to bear in mind in order to operate our hotel, it becomes a necessity for us to initiate this energy program so as to eliminate all wastes of energy such as:

- electricity
- air-conditioning

- water
- fuel and gas.

An Energy Control Officer (ECO) is to be elected among the department heads for a period of one month. Such appointment should take place during the first department heads meeting of each month. It is crucial that the following points be made clear right from the start to ensure the complete success of the program.

- all associates and executives should actively support the ECO in her/his efforts to have his/her responsibilities carried out
- it should be a continuing process and effort to ensure that maximum efficiency, irrespective of the results, is achieved.

ENERGY ACTION GROUP Aside from the ECO, an Energy Control Committee (ECC) is to be elected among the supervisory staff level from the following program:

ENERGY SURVEY First, everyone involved should know where energy is consumed in the building. Second, everyone should understand the terms that reused to describe energy consumption. Once you know how energy is brought into the building, you will have some basis to make judgements on how your consumption and save money.

Implementation

Duties of ECO:

- to select and assign duties for her/his team
- to explain and supervise the team's inspection
- to follow up on deficiencies of the department concerned
- to report the team's progress and make recommendations at the Operation Meeting.

Duties of ECC:

- to inspect the specified areas daily according to schedule
- to take note of each area inspected
- to consult with ECO on any problems
- Check gas pressure to appliances to assure that adequate pressure is available
- Plan menus to minimize energy usage
- Oven should not be opened during operation. Food will cook faster and lose less moisture if door is opened at scheduled times
- Install in-the-meat thermometer with a gauge outside the oven. This will reduce heat loss opening the oven to check roasting progress
- Whenever possible, huddle food on griddle close together and heat only portion of griddle being cooked on.

- Frozen food should be thawed in refrigerator. Food will thaw easily and help to reduce power demand for refrigerator. Thaw all food before cooking, unless product characteristics prohibits
- Always turn char broiler heat to medium after briquette is hot. Keep briquette clean
- Place kettle or pot close together on range tops
- When using a gas range for full heat conditions, the tip of flame should just touch the bottom of pan or kettle
- Electric range burners should always be smaller than the kettle or pot placed on it
- Use flat bottom pots and pans to maximize heat transfer
- Thoroughly clean all pots and pans, make certain there are no build-up of carbon
- Placing foil under range burners and griddles will improve operation efficiency and make equipment easier to clean.
- Fryers need to be cleaned and oil filtered at least once a day
- Operate fryers at frying temperature of 150 to 180 degrees
- Regularly inspect and clean interiors for grease and carbon deposits
- Repair all steam leaks promptly
- Check steam traps regularly and replace damaged steam line insulation
- Clean fan blades on convection ovens

Sanitation

- Drain and thoroughly clean water heater every 6 months. Ensure heating coils are free from scale
- Shut off electric booster heaters on dishwashers when kitchen is closed
- It goes without saying that the success of the program depends to a large extent on the initiative, interest, effort and dedication of each department head to instruct and train his staff to make him/her realises the importance of the progress.

MEASURE THE RESULTS The objectives of record-keeping are to find out:

- How much energy is being used
- How much energy can be saved.

At the end of each month, the duty ECO is instructed to complete the Energy Conservation Report for the General Manager. The information pertaining to this form will be provided by the Director of Technical Services/Chief Engineer, Food & Beverage manager and Director of Financial Management. From this form (Monthly Utilities Statistical Form), they will be able to measure the level of the success.

Public Spaces Lighting

- Lower all lighting levels during late night and daylight hours
- If possible, have shop owners reduce the amount of shop and display lighting. Although, in many cases, the shop owners are paying for the electrical consumption but the lighting load still have an overall effects on the developments' cooling system.

- Use colour coding or marking for all light switches operated by the Front Office. Stress the importance of turning on only what is required.
- Increase lighting efficiency by cleaning walls, ceilings for better light reflection
- Use lamp shades which permit light to pass through
- Set a routine lamp and light fixtures cleaning schedule. Clean fixture produce more light illumination
- Review lighting levels in public spaces in order to use the minimum light levels consistent with safety and guest comfort

Office space Lighting

- Turn off all unnecessary lights
- Instruct associates to use minimum lights during after hours clean-up and to turn off lights when they leave unoccupied areas
- When adequate natural light is available, avoid using electric lights
- Clean space during daylight hours when possible to reduce use of lights for this purpose
- Consider using fluorescent or energy saving lights where applicable
- Use single, larger, incandescent lamp instead of two smaller ones. E.g. One 100 watts lamp produces more light output than two 60 watts lamps (saving of 20% energy bill)
- Use lamp shades which permit light to pass through
- Install reflectors for light fittings where applicable
- Instruct associates to turn off cooling and heating units in unoccupied offices and areas
- Instruct associates to close outside doors and windows in unoccupied offices when they have completed cleaning the areas
- Repair door closing mechanism to ensure doors are closed properly
- Shut down elevators during off peak hours
- Use light colors on walls and ceilings for better light reflection

Heating, ventilation and air-conditioning

- Keep all doors and windows closed in air-conditioned spaces
- Caulk all windows and doors to stop air leakage
- Ensure all door closing mechanism is functioning
- Ensure air-conditioning units are serviced as scheduled
- Check temperature controls frequently to ensure proper operation
- Clean all supply and return air grilles as scheduled
- Introduction MVAC (Mechanical, Ventilating, Air Conditioning) System details operation and maintenance (O&M) information is in respect to the Chillers, Air handling units (AHU's), fan coil units (FCU's), fresh air and extract fans and associated ancillary equipments. The Systems will be utilized in Office, Retail and Hotel area of the Junction City.

Water

- Check all public and office toilets and report the following for repair: leaking valves on lavatories or sinks, leaking toilets

- Maintenance technicians should check all toilets flushometers and cistern type water closets for proper flow and water quantities
- Install flow controllers for all faucets
- Install urinal sensors for auto flushing
- Install spring loaded self closing faucets on sinks
- Investigate possibility of installing individual air handling units for shops, offices and lounges instead of from a central unit
- Installation of heat reflecting film on windows to reduce heat radiation
- Installation of revolving or double doors at main entrances
- Possibility of re-circuiting lighting so that only minimum of lighting is used during late hours
- Installation of a microprocessor for the control of heating, air-conditioning, lighting etc.
- Replace resistance type dimmers with transformer type
- Install photo cells for control of external lighting

GHG Reduction

The development's M&E systems are designed in accordance with GHA standards. The central water-cooled chiller plant provides higher efficiency compared to air-cooled chiller systems, and CO₂ sensors are installed to regulate outdoor air flow rates to maintain good indoor air quality (IAQ). For the ACMV system, VFD types are used, and all FCUs and AHUs are equipped with thermostats. All façade glass is double-glazed with proper sealing, and all 3-phase power drive motors are equipped with VFD drives. Approximately 90% of the building uses energy-efficient LED lighting. The central hot water system is equipped with a heat pump system. Walk-in chillers utilize closed-type heat exchanger systems. All sanitary ware is TOTO brand with eco-system features. Additionally, all elevators are energy-efficient regenerative lifts, providing up to 35% energy savings. Heat-reducing double-glazed façade glass with low emissivity is used throughout the building, and all AHU condensate is redirected to the cooling tower system.

Water Efficiency

Introduction of water saving techniques and / or use of water saving technology and equipment to reduce water consumption;

- All landscaping areas installed drip irrigation.
- All public areas to install automatic faucet or touch less tap.
- All guestrooms used TOTO eco faucet.
- Regular maintenance for water saving equipment
- Encouragement of the involvement of hotel Guest in water saving
- All the sanitary ware system installed TOTO sustainability eco product.
- Ensure the quality of water used in the development and monitoring water meter
Installed individual water meter on each floor and recorded daily.

2.1.8 Social Policy of the Shwe Taung Junction City Development Company Limited

Purpose:

The purpose of this Social Policy is to define Shwe Taung Junction City Development Company Limited commitment to social responsibility, inclusive practices, and community upliftment, ensuring fairness, safety, and dignity for all individuals the hotel impacts directly or indirectly.

Policy:

- **People's way of life:** Changes in how people live, work, interact, and access resources.
- **Culture:** Impacts on shared beliefs, customs, values, and tangible/non-tangible cultural heritage.
- **Community stability and services:** Effects on local services, facilities, social cohesion, and potential for in-migration of workers.
- **Political systems:** The extent to which communities can participate in decisions affecting their lives.
- **Health and well-being:** Potential impacts on physical, mental, and social health, including exposure to hazards like noise or air pollution.
- **Land and property rights:** Issues related to land acquisition, physical or economic displacement, and involuntary resettlement.
- **Vulnerable groups:** Special consideration for marginalized or disadvantaged populations (e.g., indigenous peoples, the elderly, women, children) to ensure their concerns are heard and their rights protected.

2.2 Policy and Legal Framework

The existing Myanmar laws and regulations relevant to environmental, health and safety issues for this project are listed in **Table 2-1**.

Table 2-1 Relevant Myanmar Laws and Regulations, Policies and Order

No.	Law Name	Enacted Year
1.	The Constitution of the Republic of the Union of Myanmar (2008)	2008
2.	National Environmental Policy	2019
3.	National Land Use Policy	2016
4.	Myanmar Climate Change Policy	2019
5.	Myanmar Climate Change Strategy	2018-2030
6.	Myanmar's National Waste Management Strategy and Master Plan	2018-2030
Environmental Conservation		
1.	Environmental Conservation Law	2012
2.	Environmental Conservation Rules	2014
3.	Environmental Impact Assessment Procedure	2015
4.	The Conservation of Biodiversity and Protected Areas Law	2018
5.	Forest Law	2012 (amended in 2018)
Pollution Control Guidelines		
4.	National Environmental Quality (Emission) Guidelines (NEQEG)	2015

5.	Myanmar National Drinking Water Quality Standards	2019
6.	National Surface Water Quality Standard	2024
7.	The Order on the Operation of Business Relating to Ozone Depleting Substances	2014
Health and Safety		
1.	Public Health Law	1972
2.	The Control of Smoking and Consumption of Tobacco Product	2006
3.	The Prevention and Control of Communicable Diseases Law	2021
4.	Occupational Safety and Health Law	2019
5.	Prevention of Hazard from Chemical and Related Substances Law	2013
6.	Prevention of Hazard from Chemical and Related Substances Rules	2016
7.	Explosive Substances Law	2018
8.	The Explosive Substances Act	1908
9.	Petroleum and Petroleum Products	2017
10.	The Petroleum Rules	1937
Surface and Groundwater		
1.	Conservation of Water Resources and River Law	2006, amended in 2017
2.	Conservation of Water Resources and River Rules	2013
3.	Underground Water Act	1930
Land Acquisition and Resettlement		
1.	Land Nationalization Act	1953
2.	Vacant, Fallow and Virgin Land Management Law	2018
3.	Registration of Deeds Law	2019
4.	The Boundaries Law	2019
Urban Development and Management		
1.	Condominium Law	2012
2.	Development Committee Law	2013
3.	Yangon City Development Law	2018
4.	Yangon Region Development Law	2013
5.	Myanmar Engineering Council Law	2013
6.	Myanmar National Building Code	2020
7.	The Electricity Law	2014
8.	The Telecommunications Law	2013
9.	Myanmar Fire Brigade Law	2015
10.	Vehicle Safety and Motor Vehicle Management Law	2020
11.	Road Safety and Motor Vehicle Management Law	2020
12.	Road Safety and Motor Vehicle Management Rules	2022
13.	Natural Disaster Management Law	2013
Labour		
1.	Labour Organization Law	2011
2.	The Employment and Skills Development Law	2013
3.	The Minimum Wage Law	2013
4.	Payment of Wage Law	2016

5.	The Settlement of Labour Dispute Law	2012
6.	Labor Dispute Resolution Law	2012
7.	The Leave and Holiday Act, 1951	Law Amended on July, 2014
8.	Social Security Law	2012
9.	The Rights of the Persons with Disabilities Law	2015
10.	Child Rights Law	2019
11.	Workment's Compensation Act	1923
Protection and Preservation		
1.	The Protection and Preservation of Cultural Heritage Region Law	2019
2.	The Protection and Preservation of Ancient Monument Law	2015
3.	Antiquities Protection and Conservation Law	2015
4.	Cultural Heritage Areas Protection and Conservation Law	2019
5.	Ancient Buildings Protection and Conservation Law	2015
Other Related Laws and Regulations		
1.	Myanmar Investment Law	2016
2.	Myanmar Investment Rules	2017
3.	Commercial Tax Law	2014
4.	The Union Tax Law	2019
5.	The Export and Import Law	2012
6.	Myanmar Insurance Law	1993
7.	Myanmar Insurance Rule	2017
8.	The Industrial Enterprise Law	1990
9.	The Ethnic Rights Protection Law	2015
10.	The Ethnic Rights Protection Rules	2019
International and National Policies, Guidelines and Standards		
1.	IFC's Standards and Guidelines	
2.	World Bank's Pollution Prevention and Abatement Handbook	1988
3.	Guidelines for High-Rise Building Construction Projects from Committee for Quality Control of High-Rise Building Construction Projects (CQHP)	2003

2.2.1 Environmental Policy and Framework

The following are government benchmark policies guiding the process of national legislation on social economic reforms, sustainable development, environmental issues, land use, etc.

2.2.1.1.1 The Framework for Economic and Social Reform (FESR 2013)

Since the start of its democratic transition in 2011, Myanmar has vigorously pursued social economic reforms for the social economic development of the country. In 2012, the Myanmar government announced, “a second stage of reforms” and the Framework for Economic and Social Reforms (FESR) was developed. The FESR is an essential policy tool for the Myanmar government to realize both the short-term and long-term goals of social economic development and for the implementation of the National Comprehensive Development Plan (NCDP 2011-2030). One of the main objectives of the FESR is to help achieve “sustained

economic growth and poverty reduction which, in turn, will facilitate further progress in the national reconciliation”.

2.2.1.1.2 Myanmar National Social Protection Strategic Plan (2014)

Myanmar’s social protection plan includes policies, legal instruments and programs for individuals and households that prevent and alleviate economic and social vulnerabilities, promote access to essential services and infrastructure and economic opportunities, and facilitate the ability to better manage and cope with shocks that arise from humanitarian emergencies and/or sudden loss of income.

2.2.1.1.3 Myanmar Economic Policy pronounced on 29 July 2016

State Counsellor Daw Aung Sann Suu Kyi presented the Union government’s economic policy to diplomats, business people and international development organizations on 29 July 2016.

The State Counsellor said: “The vision of the economic policy of the Union of Myanmar is people-centered and aims at inclusive and continuous development. It aims to establish an economic framework that supports national reconciliation, based on the just balancing of sustainable natural resource mobilization and allocation across the States and Regions.”

The State Counsellor highlighted, in particular, “the importance of national reconciliation and job creation as basic considerations for the policy which guarantees nationwide equitable development”.

Likewise, the very first point of the twelve objectives of this policy specifically states the government’s intention “to use a policy that will support national reconciliation and help make the country to become a united federal democratic union”.

Similarly, the second objective of this policy particularly prioritizes the creation of “good economic situations in which Regions and States will develop equally”.

More importantly, the State Counsellor also gave the assurance “to keep a balance between environmental conservation and the economic development of the country with the consent of the people”.

2.2.1.1.4 National Sustainable Development Strategy (2009)

The National Sustainable Development Strategy (NSDS) is part of a broader program of the UN Sustainable Development Commission set up after the World Summit on Sustainable Development in 2002. Every country, including Myanmar, that signed Agenda 21 at the Earth Summit in Rio de Janeiro in 1992, agreed to develop a NSDS by 2010 in line with the Millennium Development Goals (MDGs). The UN Environmental Program provided funding for Myanmar to develop its own NSDS. The main aim of the process was to develop a national NSDS in line with international standards by meeting the Millennium Development Goals and to ensure that the environmental and social impacts are mitigated when implementing development projects. Myanmar’s NSDS was published in August 2009.

The major three goals that are prescribed in Myanmar’s NSDS are: (1) sustainable management of natural resources; (2) integrated economic development; and (3) sustainable social development. In addition to these goals, specific strategies are outlined under each goal. For example, the goal for Sustainable Management of Natural Resources suggests strategies for forest resource management, sustainable energy production and consumption, biodiversity conservation, sustainable freshwater resources management, sustainable

management of land resources, sustainable management for mineral resources utilization, etc.

2.2.2 Environmental Conservation

2.2.2.1 Environmental Conservation Law (30th March 2012)

The project proponent commits to comply the followings,

- To compensate if there is environmental population by the project, to contribute a portion of the project profit as prescribed by the Ministry for environmental conservation activities according to Section 7 (o) of the Environmental Conservation Law 2012,
- To treat, discharge, dispose and accumulate the materials that cause environmental pollution in accordance with the specified environmental standards according to Section 14,
- To monitor, control, manage, reduce, or avoid by installing support equipment or control equipment, or dispose in accordance with the measures not to damage the environment the environmental pollutions according to Section 15.
- To carry out in accordance with the regulations or notify the relevant government department or government organization to inspect under section 24 of this law.
- To comply any prohibition contained in the rules, notifications, orders, instructions and procedures issued under 29 of this law.

2.2.2.2 Environmental Conservation Rules (5th June, 2014)

According to Environmental Conservation Rules (2014)'s Rule 69 (a) and (b), the project proponent commits to comply the followings,

- Not to emit, dispose and pile the hazardous waste or hazardous substances stipulated by rule.
- Not to carry out any activity which can damage the ecosystem and the natural environment, except for the permission of the Ministry.

2.2.2.3 Environmental Impact Assessment Procedure (29th December, 2015)

The project company commits to comply article 102 to 110, 113, 115, 117, 122 as per following.

- To take responsibility for all the adverse impacts occurred by the actions and omissions of project proponent, and the person and organizations authorized by the project proponent.
- To make the monitoring report publicly available on the project's website and office within ten days of submission to the Ministry and let anyone request the digital copy of the report and to send the report via proper way within ten days of receiving the

request.

- To give permission the representatives to enter the project site during working hours, and the
- Ministry, if necessary, to the project site and other project associates for purposes of monitoring and inspection in accordance with article 113.
- In the event of emergency, or fail of environmental and social requirements, to give immediate access to the representative at any time according to the article 115.
- To extend the access by the representatives to the project contractors and subcontractors in accordance with article 117.
- The project proponent commits to pay all costs for incurring by the Ministry in inspecting and monitoring in accordance with article 122.

2.2.2.4 The Conservation of Biodiversity and Protected Areas Law (2018)

According to subsection (a) of section 35, the project proponent commits to avoid the followings,

- (a) entering a prohibited area without permission;
- (c) digging on the land, cultivating or carrying out any activity;
- (d) extracting, collecting or destroying in any manner, any kind of wild flora or cultivated plant.

According to subsection (c) of section 39, the project proponent commits avoid breeding for commercial purposes, without permission, a protected and controlled wild animal that is in danger of extinction.

According to subsection (d) of section 39, the project proponent commits to avoid deliberately polluting soil, water, or air within a nature conservation area, damaging or poisoning watercourses, causing electrical disturbances, and using chemicals or explosives.

2.2.2.5 Forest Law (2012)

The project proponent has to obtain the permission of Ministry of Natural Resources and Environmental Conservation before starting the work if the project land is forest land or forest covered under sub- section (a) of section 12.

2.2.3 Pollution Control Guidelines

2.2.3.1 The Order on the Operation of Business Relating to Ozone Depleting Substances (2014)

According to paragraph (3) of this Order, the project proponent commits to apply to import or export the ozone depleting substance or designed product for use of ozone depleting substance for the Ministry with form (1) for import and form (2) for export stating facts completely in accord with stipulations for the necessary endorsement.

According to paragraph (6) of this Order, the project proponent commits to operate the relevant business after receiving and import license or an export license or permit issued by the Ministry of Commerce after receiving the endorsement issued by the Ministry.

According to paragraph (7) of this Order, the project proponent commits to apply the Department assigned by the Ministry with form (5) for application of registration in accord with stipulations.

According to paragraph (11) of this Order, the project proponent commits to report annually relating to actual import or export with the statistics to the Ministry not later 31st January in every year.

According to paragraph (15) of this Order, the project proponent commits the following to-

- (a) To inspected by the Ministry or the Department or the Organization assigned by the Ministry relating to his business.
- (b) To compile the statistics of annual information relating to his business and be inspected by the relevant authority for the statistics.
- (c) To state the registration number issued for his business on the container if he conducts the import, export or he is a manufacture of designed product for use of ozone depleting substance.
- (d) To obligate the conditions containing in the registration certificate issued under this order
- (e) To obligate the order and directive issued by the Ministry occasionally.

According to paragraph (16) of this Order, the project proponent commits to conduct the operation of business relating to ozone depleting substance without a registration certificate issued by the Department assigned by the Ministry under this Order.

According to paragraph (17) of this Order, the project proponent commits to avoid recycling any used ozone depleting substance without the permission of the Ministry.

According to paragraph (18) of this Order, the project proponent commits to avoid destroying any ozone depleting substances or designed products for use of ozone depleting substance other than in a facility that has been stipulated for that purpose by the Ministry.

According to paragraph (21) of this Order, the project proponent commits to cooperate with the Ministry, when necessary, inspection not that uses ozone depleting substance suitably and correctly.

According to paragraph (21) of this Order, the project proponent commits to receive the permission from the Ministry for recycling the used ozone depleting substance.

2.2.3.2 National Environmental Quality (Emission) Guidelines (NEQEG) (29th December, 2015)

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

The company commits to follow General and Industry specific Guidelines of the National Environmental Quality (Emission) Guidelines 2015 to control noise quality, air emissions and effluent discharges.

The project environmental management plan during construction, operation and decommissioning has to comply with Myanmar National Environmental Quality (Emission) Guidelines (2015) and the others as appropriate. Guidelines for parameters relevant to the project are shown in **Table 2-2** to **Table 2-7**, as follows:

Table 2-2 *National Guidelines on Air Quality*

Parameter	Averaging Period	Guideline Value (µg/ m ³)
Nitrogen dioxide	1-year 1-hour	40
		200
Ozone	8-hour daily maximum	100
Particulate matter PM ₁₀ ^a	1-year 24-hour	20
		50
Particulate matter PM _{2.5} ^b	1-year 24-hour	10
		25
Sulphur dioxide	24-hour 10 - minute	40
		500

a Particulate matter 10 micrometers or less in diameter

b Particulate matter 2.5 micrometers or less in diameter

Table 2-3 *National Guidelines on Noise Level*

Receptor	One Hour LAeq (dBA) ^a	
	Daytime 07:00-22:00 (10:00-22:00 for public holidays)	Night time 22:00-07:00 (22:00-10:00 for public holidays)
Residential, institutional, educational	55	45
Industrial, commercial	70	70

a Equivalent continuous sound level in decibels

Table 2-4 *Site Runoff and Wastewater Discharges (Construction Phase)*

Parameter	Unit	Guideline Value ^a
Biological oxygen demand	mg / L	30
Chemical oxygen demand	mg / L	125
Oil and grease	mg / L	10
pH	S.U. ^a	6-9
Total coliform bacteria ¹	100 mL	400
Total nitrogen	mg/l	10
Total phosphorus	mg/l	2
Total suspended solids	mg/l	50

¹ Coliforms refer to a group of bacteria which are found in the intestines of warm-blooded animals and therefore are present in sewage, and on/in soils, surface waters and vegetation. Total coliforms is an indicator organism which, although by itself is not considered to cause disease in man or animals, usually indicates the presence of pathogenic or disease-causing organisms. By measuring the number of total coliforms present in a sample a judgment can be made as to the water's usability for a given purpose.

a Standard Unit

Table 2-5 *National Guidelines for (Tourism and Hospitality Development)² Operation phase*

Parameter	Unit	Guideline Value ^a
5-day Biochemical oxygen demand	mg/l	50
Chemical oxygen demand	mg/l	250
Oil and grease	mg/l	10
pH	S.U. ^a	6-9
Total coliform bacteria	100 ml	400
Total Nitrogen	mg/l	10
Total phosphorus	mg/l	2
Total suspended solids	mg/l	50

a Standard Unit

2.2.3.3 Myanmar National Drinking Water Quality Standards (2019)

The Myanmar National Drinking Water Quality Standards (2019/MNDWQS) is serving as the *de facto* standards for drinking water quality in Myanmar as ECD requires comparing the tested water quality results against the standard values. For this project, it is considered necessary to be applied when measuring underground water. The values required under MNDWQS (2019) are shown below **Table 2-6**. In addition to the 16 items presented below, E. coli and Cadmium are normally required by ECD to be measured for underground water.

Table 2-6 *National Drinking Water Quality Standards*

Parameters	Unit	Standard Values*	WHO Guideline Values ³
Total Coliforms	acceptable/no objectionable	3	None specified (recommended median value – 0 per 100 ml)
Faecal Coliforms	acceptable/no objectionable	0	Must not be detectable in any 100 ml sample (recommended median value – 0 per 100 ml)
Taste	acceptable/no objectionable taste		Non set (recommended median value –3 DN)
Odor	acceptable/no objectionable odor		Non set (recommended median value –3 DN)
Color	True Color Unit (TCU)	15	None set (recommended median value – 15)
Turbidity	Nephelometric Turbidity Unit (NTU)	5	Non set (recommended median value – 5)
Arsenic	mg/L	0.05	0.01 mg/l
Lead	mg/L	0.01	0.01 mg/l
Nitrate	mg/L	50	50 mg/l
Manganese	mg/L	0.4	0.4 mg/l
Chloride	mg/L	250	Non set

² Environmental, health, and safety guidelines for tourism and hospitality development. 2007. International Finance Corporation, World Bank Group.

³ World Health Organization (WHO), 2018. A Global Overview of National Regulations and standards for Drinking-Water Quality

			(recommended median value- 250)
Hardness	mg/L as CaCO ₃	500	Non set (recommended median value-500)
Iron	mg/L	1	None set (recommended median value- 0.3)
pH	-	6.5 to 8.5	None set (recommended median value- 6.5 - 8.5)
Sulphate	mg/L	250	None set (recommended median value- 250)
Total Dissolved Solids (TDS)	mg/L	1,000	None set (recommended median value- 1,000)

2.2.3.4 National Surface Water Quality Standard (2024)

To conserve surface water quality for the protection of human health, aquatic life and the living environment, the following standard values of parameters for river water quality must be checked in National Surface Water Quality Standard (2024).

Table 2.7 National Surface Water Quality Standard

No.	Parameter	Unit	Class V
For Human Health			
1.	Boron	mg/L	2.4
2.	Cyanide	mg/L	0.07
3.	Fluoride	mg/L	1.5
4.	Nitrate nitrogen	mg/L	10
5.	Nitrite nitrogen	mg/L	1
6.	Benzene	mg/L	0.01
7.	Phenol	mg/L	0.05
8.	Polychlorinated Biphenyls (PCB)	µg/L	0.5
9.	Arsenic	mg/L	0.05
10.	Cadmium	mg/L	0.003
11.	Chromium (Hexavalent)	mg/L	0.05
12.	Lead	mg/L	0.01
13.	Mercury	mg/L	0.001
14.	Nickel	mg/L	0.07
15.	Selenium	mg/L	0.04
For Environmental Conservation			
1.	Total Suspended Solids	mg/L	150
2.	BOD	mg/L	30
3.	COD	mg/L	100
4.	DO	mg/L	>2
5.	pH	S. U	-
6.	Ammonium nitrogen	mg/L	0.9
7.	Oil & Grease	-	No noticeably seen
8.	Escherichia coli (E. coli)	MPN/100mL (or) CFU/100 mL	-
9.	Copper	mg/L	-

2.2.4 Health and Safety Laws

2.2.4.1 Public Health Law (1972)

This law was enacted by the Myanmar State and Revolution Council with the notification number 1/1972. Chapter 2 of the law describes about the protection of public health. There are six Sections under Chapter 2. Those Sections describe that the government was working to improve the public health, to protect the public health and the following devices to perform for advices, inspection, supervision, repair, prohibition. The project proponent commits to comply the said law.

- Environmental Health Services
- About the sell and produced food of the people
- About the usage of household and cosmetic products
- About the infectious diseases
- About the private hospital
- About the usage of medicine for the people

2.2.4.2 The Control of Smoking and Consumption of Tobacco Product (4th May, 2006)

According to section 9 of The Control and Consumption of Tobacco Product Law, the general manager of the project must to stand by the followings,

- a. keep the caption and mark referring that it is a non-smoking area at the place mentioned in section 6 in accordance with the stipulations;
- b. arrange the specific place where smoking is allowed as mentioned in section 7 and keep the caption and mark also referring that it is a specific place where smoking is allowed, in accordance with the stipulations;
- c. supervise and carry out measures so that no one shall smoke at the non-smoking area;
- d. accept the inspection when the supervisory body comes to the place for which he is responsible.

2.2.4.3 The Prevention and Control of Communicable Diseases Law (20th March, 1995)

This law was enacted by the State Law and Order Restoration Council with the notification no. 1/95 on 20th March, 1995. The main purpose of this law is to prevent the outbreak of Communicable Diseases. The Department of Health shall implement the following project activities in Section 3 and the project proponent commits to comply the said law.

- (a) Immunization of children by injection or orally;
- (b) Immunization of those who have attained majority, by injection or orally, when necessary;
- (c) Carrying out health educative activities relating to Communicable Disease.

In Section 4, it is stated that when a Principal Epidemic Disease or a Notifiable Disease occurs:

- (a) Immunization and other necessary measures shall be undertaken by the Department of Health, in order to control the spread thereof;
- (b) The public shall abide by the measures undertaken by the Department of Health under sub-Section (a).

Moreover, according to Section 11, in order to prevent and control the spread of a Principal Epidemic Disease, the Health Officer may undertake the following measures:

- (a) Investigation of a patient or any other person required;
- (b) Medical examination;
- (c) Causing laboratory investigation of stool, urine, sputum and blood samples to be carried out;
- (d) Causing investigation by injection to be carried out; and
- (e) Carrying out other necessary investigations.

2.2.4.4 Occupational Safety and Health Law (15th March, 2019)

According to section 12 of this law, the project proponent commits to comply the followings,

- a. In accordance with the specifications of the Ministry, an occupational safety and health officer shall be appointed to closely supervise the safety and health of workers in each type of work.
- b. In order to ensure a safe and healthy workplace, occupational safety and health committees consisting of equal numbers of employer and employee representatives by type of work shall be formed in accordance with the Ministry's specifications in enterprises with a minimum number of workers as determined by the Ministry. In forming such committees, the occupational safety and health of women shall be considered in light of the nature of the workplace.

According to section 14 of this law, the project proponent commits to comply with this law, the rules, orders, directives, and procedures issued under this law to ensure a safe and healthy workplace.

According to section 16 of this law, the project proponent commits to accept the inspecting by the Chief Inspector.

According to section 17 of this law, the project proponent commits to accept the authority of Inspectors for carry out the following activities for occupational safety and health in accordance with the code of conduct,

- (a) The right to enter, inspect and inquire at any workplace subject to this law at any time without a warrant upon presentation of an inspector's identification card;
- (b) The right to view, copy, and, if necessary, retain as evidence, records, documents, and evidence related to the workplace and processes;
- (c) The right to obtain photographic and video recordings of workplace conditions and processes that may pose a risk to occupational safety and health;

- (d) The right to assess and measure the amount and duration of exposure to noise, light, heat, cold, dust, fumes, and hazardous substances in the workplace, and to obtain records, if necessary, with the assistance of an expert in the relevant field;
- (e) The right to inquire during working hours of any person working in the workplace with the assistance of a recognized doctor regarding the occurrence or possible occurrence of an occupational disease;
- (f) The right to request from hospital and clinic officials to provide, with a specified level of security, medical information or information related to death, and autopsy reports, as requested in the form prescribed by the Department, regarding workers receiving medical treatment due to occupational injuries or occupational diseases.

According to section 18 of this law, the project proponent commits to follow up when directive by the Inspectors for the followings matters,

- (a) It is not advisable to continue working due to unsafe working conditions, unsafe working conditions of workers, the presence of hazardous materials and equipment in the workplace, or the location and operation of the workplace, machine parts or equipment;
- (b) It is not appropriate to continue operating due to violation or non-compliance with any provision of this law;
- (c) Any person who believes that his or her actions, omissions, negligence, or carelessness may cause danger to those working in the workplace;
- (d) The need to remove workers from the hazard due to the ongoing risk of occupational injury.

According to section 26 of this law, the project proponent commits to comply the followings,

- (a) Conduct risk assessments of workplaces, processes, and the materials and equipment used in them as necessary.
- (b) To take necessary measurement to assess the risk of occupational hazards.
- (c) To provide with medical examinations for workers by a recognized doctor in accordance with the requirements to determine whether they are suffering from occupational diseases
- (d) Based on the findings under subsections (a), (b) and (c), the workplace shall be managed to achieve a safe and healthy condition.
- (e) To provide with sufficient and appropriate personal protective clothing, equipment and support equipment as specified and approved by the Department, free of charge,
- (f) Preventive measures and emergency response plans must be in place.
- (g) To have a dispensary, appoint registered doctors and nurses, and provide necessary medicines and supplies
- (h) The relevant business type or department managers, workers, and members of the occupational safety and health committee, including themselves, must attend safety and health training courses specified by the Ministry.
- (i) If any worker encounters a workplace injury or a situation that is likely to endanger life or health, arrangements must be made to immediately report it to the occupational safety and health officer or a manager.
- (j) The workplace or process must be managed to ensure that the safety and health of those present in the workplace are not harmed by materials, equipment or waste materials used in the workplace or process.

- (k) If a situation arises that threatens to cause an occupational hazard, the process must be stopped immediately, workers must be evacuated and necessary life-saving and rescue measures must be taken. If possible, workers may be transferred to other suitable and safe workplaces.
- (l) To place in accordance with the specifications occupational safety and health instructions, hazard warning signs, bulletin boards, posters and directional signs.
- (m) Arrangements must be made to comply with advance warnings when entering and exiting restricted work areas where hazards may occur.
- (n) To ensure the acquisition of knowledge, technology, expertise, and skills, the occupational safety and health manuals and guidelines issued by the relevant ministries must distribute or made available to workers and those associated with the workplace, or to those who are aware of them.
- (o) Fire safety plans must be drawn up, and training must be provided to ensure the systematic use of fire-fighting equipment.
- (p) Permit to the Chief Inspector and Inspectors enter the workplace to inspect, make inquiries, request documents and evidence, or seize evidence
- (q) If employed in hazardous work or workplaces, they must be employed only during the specified working hours.
- (r) To pay for occupational safety and health costs.

According to section 27 of this law, the project proponent commits to avoid dismissing or demoting an employee for any of the following reasons,

- (a) Before obtaining a medical examination report from a registered doctor for an occupational injury or a medical examination report from a recognized doctor for an occupational disease,
- (b) Complaining about a matter that is unsafe or poses a health risk;
- (c) Carrying out the duties of the Occupational Safety and Health Committee;
- (d) Not continuing to work in conditions that are likely to cause occupational injury or occupational disease.

According to section 34 of this law, the project proponent has liable to carry out for the followings,

- (a) Inform the Department if a workplace injury, dangerous incident, or major workplace injury occurs;
- (b) If a worker contracts a specified occupational disease, or is poisoned or is likely to be poisoned by a substance or process used, the project proponent has to submit a report to the Department along with a medical examination report from a recognized doctor.

According to section 36 of this law, the project proponent commits comply the followings,

- (a) Inspectors shall investigate any occupational injuries, dangerous incidents, occupational diseases, or occupational poisonings that they become aware of.
- (b) No person shall remove, erase, add to, or modify any materials, equipment, tools, structures, or documents related to occupational injuries, hazardous incidents, occupational diseases, or occupational poisonings, in whole or in part, without the permission of the Chief Inspector.

- (c) The prohibition in subsection (b) shall not apply to activities necessary for the protection of life and property, safety, and rescue operations.
- (d) If the prohibition under subsection (b) is likely to cause adverse consequences, the Chief Inspector may permit the removal, dismantling, addition, or alteration of materials, equipment, tools, and the layout of the premises.

2.2.4.5 Prevention of Hazard from Chemical and Related Substances Law (26th August, 2013)

According to subsection (a) of section 15, the project proponent commits to allow to inspect by the relevant supervisory and inspection bodies for the safety and durability of the equipment.

According to subsection (b) of section 16, the project proponent has to

- Strictly follow the instructions,
- Personal protective equipment and clothing must be provided free of charge to those working in the industry,
- To provide with training, education, and instruction as necessary to ensure,
- To allow inspect by the relevant supervisory and inspection bodies,
- To allow the workers to work only after they have been medically examined and certified as fit to work in that industry and records of their medical examinations shall be systematically maintained,
- To send a permit is granted to the relevant Township General Administration Department.
- To obtain prior guidance and approval from the relevant Fire Department,
- To transport chemicals and related materials only permitted quantities,
- To obtain approval from the Central Supervisory Board for transporting from one licensed location to another.

According to section 17, The project proponent has to insurance in accordance with the requirements to provide compensation in the event of damage to people, animals or the environment in connection with the chemical and related products business.

According to section 22, the project proponent must comply the terms and conditions, orders and instructions issued by the Central Supervisory Board from time to time.

According to section 27, the project proponent has to

- a. Classification of hazard levels according to the properties of chemicals and related materials in order to prevent hazards;
- b. Display of safety level documentation and hazard warning signs;
- c. Provide safety equipment and personal protective equipment to prevent and reduce accidents, and provide training on their proper use;

Acting in accordance with the regulations regarding the transportation, possession, storage, use, and disposal of chemicals and related materials.

2.2.4.6 Prevention of Hazard from Chemical and Related Substances Rules (2016)

According to rule 17, the project proponent has to apply for the licence to the Central Supervisory Board for the business of chemical and related substances.

According to rule 24, the project proponent commits to comply the followings,

- (a) operate only chemical and related substances business which is permitted in licence;
- (b) operate it in accordance with the licence duration of registered substances;
- (c) pay the prescriptive fees for renewal of licence;
- (d) not make the incorrect advertising and selling the chemical and related substances in respect of their potency, quality and standard;
- (e) hang the licence at a conspicuous place in the occupational area;
- (f) hang the certificates and recommendation letters that the employees in chemical and related substances business have attended the training on prevention of hazard from chemical and related substances and systematic use of them at a conspicuous place;
- (g) hang distinctly the caution letter or pictogram which shows the hazard information at the storehouse where the chemical and related substances are stored and at the relevant occupational area;
- (h) store the chemical and related substances only at the place and types of building that are prescribed and allowed by the Central Supervisory Board;
- (i) carry out the required safety measures at the occupational area and building where the chemical and related substances are stored in accordance with the stipulations of the Central Supervisory Board;
- (j) pack the chemical and related substances safely and carry out the sticking of pictogram on the package in accordance with the stipulations;
- (k) carry out the safety measure for the chemical and related substances, equipment and machineries which are used in the occupational area;
- (l) instruct the name of hazardous chemical and related substances, maximum contact amount and other required information to the persons who contact and use chemical and related substances and practise for emergency situations;
- (m) do regular medical checkup for working people according to the timetable which is prescribed by the respective doctor, and keep these medical checkup records;
- (n) make the special treatment after being medical checkup by the respective doctor if the working people happen the suffering of hazard and the bad health by contacting the chemical and related substances;
- (o) allow the respective doctor to inspect at any place and any record in the occupational area in respect of health condition. The suitable health care shall be made according to the doctor's suggestions;

According to rule 26, the project proponent commits to submit the following facts in advance to the Central Supervisory Board to be able to store the chemicals and related substances

- (a) place, region and complete address for storing;
- (b) type of building for storing (roof, wall, floor);
- (c) area of building for storing (length, width, height);
- (d) name and complete address of a person, organizations which store and keep the chemical and related substances;
- (e) recommendation after inspection by the Department of Fire Brigade in respect of place and building to be stored in accordance with prescriptive provisions related to fire safety;
- (f) other facts which are to be submitted (if any).

According to rule 61, the project proponent has to abide the provisions in this rule.

According to rule 63, the project proponent has to –

- (a) use only the registered restricted or conditional chemical and related substances; not use the unregistered, without labeled, unknown, damaged or expired chemical and related substances.

2.2.4.7 Prevention and Control of Communicable Diseases Law (2021)

The project proponent has to build the housing in line with the health standards, distribute the healthful drinking water & using water and arrange to systematically discharge the garbage and sewage, under clause (9) of sub- section (a) of section 3 of said law.

The project proponent has to abide by any instruction or stipulation by Department of health and Ministry of Health, under section 4 of said law.

According to section 9 of this law, the project proponent has to inform promptly to the nearest health department or hospital if the following are occurred Mass death of animals included in birds or chicken;

- Mass death of mouse;
- Suspense of occurring of communicable disease or occurring of communicable disease;
- Occurring of communicable disease, this must be informed.

The project proponent has to allow any inspection, anytime, anywhere if it is need to inspect by health officer, under section 11 of said law.

2.2.4.8 Explosive Substances Law (2018)

Section 6 (c) If the Chief Inspector receives the Ministry's directive under subsection (b), he shall notify the applicant for land approval for the construction of a gunpowder depot to construct the gunpowder depot in accordance with the specifications specified on the land approved by the Office of the Commander-in-Chief (Army).

Section 7 (c) The Office of the Commander-in-Chief (Army) shall, after examining the findings and comments of the Sub-Committee on the Purchase, Storage, and Distribution of Explosives and finding them to be in accordance with the specifications, issue a permit to the applicant to import, transport, store, manufacture, use, possess, or transfer any one or more type of explosives for industrial use. A copy of the permit shall be sent to the Ministry.

Section 11 (b) If it is found to be in accordance with the specified ammunition specifications, a license shall be issued to the applicant with the approval of the Ministry.

Section 13. If the licensee wishes to continue to store explosive materials for industrial use, he/she may apply to the Chief Inspector for an extension of the license 30 days prior to the expiration date in accordance with the requirements.

Section 14 (b) If the applicant is found to be in compliance with the specified features, the license term may be extended with the approval of the Ministry.

(b) If the applicant is found to be in compliance with the specified features, the license term may be extended with the approval of the Ministry.

According to section 15, the project has to pay fee for the license as the rate determined by the Ministry.

According to section 16, the project proponent has to stored only in licensed ammunition depots.

According to section 18, the project proponent has to accept to an inspection by the Chief Inspector or an Inspector for inspecting.

According to section 19, the project proponent commits to avoid import, transport, store, manufacture, use, possess or transfer any explosive materials for industrial use without obtaining permission in accordance with this Law.

According to section 20, the project proponent commits to avoid storing explosive materials for industrial use without license.

According to section 21 (b), the project proponent has to inform to police station when incident occur.

2.2.4.9 The Explosive Substances Act (1908)

According to section (3) (4) (5) of this law, the project proponent commits to avoid the following,

- Unlawfully and maliciously causes by any explosive substance an explosion of a nature likely to endanger life, causing serious injury to property.
- Do any act with intent to cause by an explosive substance to endanger life, to cause serious injury to property.
- Making in possession or under control any explosive substance

Knowingly make in possession or under control any explosive substance, under such circumstances as to give rise to a reasonable suspicion.

2.2.4.10 Petroleum and Petroleum Products Law (2017)

According to section 8 of this law, the project proponent commits to comply the stipulations-

The Ministry shall carry out the following functions relating to any petroleum and petroleum product.

(a) Issuing licences relating to refining, transit, transport by pipeline, sale and distribution, inspection, and testing; issuing joint licence or compound licence for carrying out more than a type of business activities.

(c) Determining procedures and conditions relating to refining, transit, transport by pipeline, sale and distribution, inspection and testing.

According to sub-section (a) (e) of section 9 of this law, the project proponent commits to comply the stipulations-

The Ministry shall carry out the following functions relating to any petroleum and petroleum product.

(a) Issuing licence to vehicles, vessels and barges that carry any petroleum and petroleum product.

(e) Determining procedures and conditions to be abided by in carrying out transport business except transport by pipeline.

According to sub-section (a) (b) (d) (e) of section 10 of this law, the project proponent commits to comply the stipulations-

The Ministry of Natural Resources and Environmental Conservation shall carry out the following functions relating to any petroleum and petroleum product.

- (a) Issuing licence for the right to store for the storage tanks and warehouses;
- (b) Issuing transport permit for the vehicles, vessels and barges that shall carry any petroleum and petroleum product;
- (a) If it occurs environmental impacts in carrying out petroleum and petroleum product business activities, taking action, as necessary, in accordance with the existing laws of on-site inspection;
- (b) Determining, in coordination with ministries concerned, procedures and conditions relating to standard and quality of storage tanks and warehouse, and tanks of vehicles, vessels and barges that carry any petroleum and petroleum product.

According to section 11 of this law, the project proponent has to sign on all receptacles containing any dangerous petroleum and petroleum product, the warning sign of danger by stamping, embossing, painting, printing or any other means shall be expressed. If it is impossible to express as such, similar warning signs of the nature of danger of gasoline, spirit or petroleum shall be expressed in writing at the ostensible place in salient words or signs near to the receptacle.

2.2.4.11 The Petroleum Rules (1937)

The Project Proponent commits to comply the stipulations for

The import, transport or store of any petroleum that cannot be made save in accordance to the rules.

The needs and exemptions from licenses and authorize for the testing of petroleum by the President of the Union and rules that might issue rules on that regard.

2.2.5 Surface and Groundwater Laws

2.2.5.1 Conservation of Water Resources and River Law (2nd October, 2006, Amended in 2017)

According to section 30 of The Conservation of Water Resources and Rivers Law 2006, the company will obtain the approval of the relevant ministry if it is necessary to utilizing river water intake for the proposed project.

According subsection (a) of section 8, the project proponent commits to avoid of do anything with the intention of damaging water sources and rivers or altering the course of the water.

According section 11 of this law, the project proponent commits to avoid the followings,

- a. Discharge fuel, chemicals, toxic substances or other materials that may cause environmental damage or discharge explosive materials from the shore or from a vessel that is underway, moored, anchored, stranded or sunken.
- b. Captured in rivers, streams, or on the banks of rivers or in the banks of rivers by using any poisonous substance or explosives.

- c. Disposed of into rivers or into drainage channels that may flow into rivers of waste soil and other materials from gold panning, gold mining or natural resource extraction operations in rivers.

According to section 19 of this law, the project proponent commits to avoid throwing any object into a river or stream from a bank or from a vessel that is underway, moored, anchored, stranded or sunken, which may cause damage to the waterway or change the course of the water.

According to subsection (b) of section 21 of this law, the project proponent commits to avoid digging of wells or ponds or excavation of land shall be permitted without the permission of the Department.

According to section 22 of this law, the project proponent commits to avoid piling up sand, stones and other heavy objects for commercial purposes on the shoreline and in the coastal area, without the permission of the Department.

According to subsection (b) of section 24 of this law, the project proponent commits to comply the rules and regulations set by the Department to prevent water pollution in rivers and streams and to prevent water diversion.

According to section 30 of this law, the project proponent commits to apply to obtain the approval of the Ministry for construct drainage channels, extract river water, construct large bridges over rivers, connect underground pipelines, connect underground electricity lines, connect underground telephone lines.

According to section 6, the project proponent commits to comply the provisions in section 6 of said law.

2.2.5.2 Conservation of Water Resources and River Rules (27th January, 2013)

According to rule 47 of The Conservation of Water Resources and Rivers Rules 2013, the company will obtain the approval of the relevant ministry if it is necessary to utilizing river water intake for the proposed project.

2.2.5.3 Underground Water Act (21st June, 1930)

- According to section 3 of this law, the project proponent commits to avoid sinking a tube for the purpose of obtaining underground water except under and in accordance with the terms of a licence granted by the water officer.
- According to section 3, the project proponent commits to apply to the water officer for a licence.
- According to section 5 of this law, the project proponent commits to pay the Governor to obtain underground water.

2.2.6 Land Acquisition and Resettlement

2.2.6.1 Land Nationalization Act (1953)

This Act stipulates that the government holds rights to take over land provided that compensation is made to the original land owner. There is no private ownership of land and that all land must be leased from the Union State, according to the law.

2.2.6.2 Vacant, Fallow and Virgin Land Management Law (2018)

In accordance with the Vacant, Fallow and Virgin Land Management Law (2018), the Central Committee shall make the following matters.

- If the person who has the right to cultivate or utilize submits that he has suffered from the dispute, obstruction, trespass or mischief by local cultivators in implementing the business, coordinate with relevant departments or organizations first. If the coordination does not lead to a settlement, the matter shall be brought up to the Court in accord with the law.
- If the land has previously been cultivated by local cultivators (i.e. local farmers) within the area of permitted vacant, fallow or virgin land, even if they do not have the legal rights to cultivate, negotiate or act by their own volition, their rights to cultivate will be respected.
- If there are local cultivators (i.e., local farmer) who already had the right to cultivate on the permitted vacant, fallow and virgin lands, cause to continue to carry out according to law with bilateral agreement.
- By the sub sections (a), (b) and (c), Central Committee shall make a decision to amend permission or to make suitable compensation based on the agreement of the both sides.

2.2.6.3 Registration of Deeds Law (20th March, 2019)

This law was enacted in Pyidaungsu Hluttaw notification number 9 on 20th March, 2019. Section 16 of the law states that the following deeds are defined as documents for which registration is compulsory according to this law:

- (a) Deeds which convey ownership of immovable property.
- (b) With regard to immovable property or attached items with a value of Ks 100,000 and above: their sale and *[furthermore]* non-testamentary documents that are made in order to create any right, title or interest by declaration, assignment, limitation, relinquishment or extinction; a judgment, decree or order made by a court with regard to the rights from such documents.
- (c) Mortgage deeds, with the exception of a mortgage by deposit of title deeds, with a value of Ks. 100,000 and above signed by the mortgagor and certified as correct by at least two witnesses; deeds that extinguish the mortgage.
- (d) Lease agreements for immovable property from year to year, or for any term exceeding one year, or reserving a yearly rent.
- (e) Deeds in which companies or organizations mortgage, transfer or convey by other means full or partial ownership of, or an interest in, immovable property to a trustee.
- (f) Deeds specified by the Union government from time to time.

According to section 18; deeds that are submitted for registration at the Registration of Deeds Office-

- (a) Shall be written in the Myanmar language.
 - (b) A translation signed by a notary public must be submitted if the deeds are not in the Myanmar language.
 - (c) Shall be written and signed (as opposed to: initiated) by the parties.
- Any amendment, addition, omission or deletion having been made to any contents of the deeds shall be signed or initiated by the parties.

2.2.6.4 The Boundaries Law (25th March, 2019)

This law was enacted in Pyidaungsu Hluttaw notification number 11 on 25th March, 2019. This law shall be called the boundaries law and be affected from the date of order by President of Republic of the Union of Myanmar. Aims of the law are described below.

- (a) To be carried out boundary survey, specify, amendment of paddy field, plot, village, village tract, town, township, district, autonomy region, state and division of Myanmar.
- (b) To maintain and protect of survey post or boundary post from damage or change.
- (c) To amend survey post or boundary post which damage by weather, disaster or any other causes.

2.2.7 Urban Development and Management

2.2.7.1 Condominium Law (2012)

This law shall be applicable only in the NayPyiTaw Development Committee territory, Yangon City Development Committee territory, Mandalay City Development Committee territory and in towns and areas prescribed by a notification of the Ministry of Construction with the approval of the Union Government. The objectives of this law are described below.

- a) To support plans of development urban areas and their surroundings;
- b) To enable the emergence of collectively owned buildings to ensure adequate human settlement and housing in proportion to the increase of population in urban areas;
- c) To enable coordination and collaboration among relevant government departments and organizations to contribute to urban development and beautification;
- d) To enable legal rights of ownership and transfer of Housing-Units of Condominiums; and,
- e) To foster collaboration with international organizations and regional organizations in the development of the housing sector.

2.2.7.2 Development Committee Law (2013)

Development Committees of the major cities mean the organizations formed to carry out development works within a specified time limit in respective regions and states except for Yangon City and Mandalay City where specific laws exist. That includes development committees either for a township or for additional townships collectively for the purpose of development works. Development Committees' duties and functions include among others:

- Carrying out works for disposal of sewage;

- Carrying out precautionary measures against fire, flood, storm and natural disasters;
- Administration of slow-moving vehicles;
- Construction and maintenance of roads and bridges;
- Demolition of squatter buildings;
- Executing other development works in the public interest; and
- Carrying out other duties assigned by the regional government from time to time

2.2.7.3 Yangon City Development Law (2018)

Objectives: to continuously develop the city and improve the living standards of the city's residents, taxes are fully collected and systematically, the city to become a clean, pleasant, beautiful, and livable city, to develop a people-centered management system that is responsible, accountable, and transparent regarding municipal development activities, to carry out municipal development activities more efficiently and effectively.

According to chapter (29), subsection (a) section 310, the project proponent commits to avoid constructing residential buildings, engage in industrial activities, engage in agricultural and livestock activities or carry out any other business within the city limits without obtaining a land lease agreement, license, permit, or approval.

According to subsection (m) of section 312, the project proponent commits to avoid advertising signboard without the permission of the Committee.

According to subsection (d) of section 318, the project proponent commits to avoid attempt to damage the wastewater treatment system.

According to subsection (a), (b), (c), (o) of section 322, the project proponent commits to avoid the following,

(a) No person shall engage in any activity within the city limits that may cause environmental damage such as land pollution, air pollution, water pollution, and noise pollution.

(b) No person shall dispose of any chemical or related materials, toxic materials, radioactive materials, or electronic waste within the city limits, except at a location permitted by the committee in accordance with the specified rules and regulations.\

(c) No owner or operator of any business, factory, workshop or hospital within the city limits shall discharge, cause to flow, accumulate, scatter, pour or dispose of any hazardous liquids, disgusting substances or hospital waste into any public place.

(o) No person shall release into the air any fumes that may cause air pollution from any factory, workshop or business without taking steps to purify them in accordance with the prescribed standards.

2.2.7.4 Yangon Region Development Law (2013)

According to subsection (g) of section 65, the project proponent commits to avoid doing anything that may cause soil pollution, water pollution, or air pollution that may damage the environment.

According to subsection (d) of section 66, the project proponent commits to avoid hanging sign or advertisements without approval.

According to subsection (a) of section 69, the project proponent commits to avoid constructing, modify, extend or demolish any building without approval.

According to subsection (b) of section 73, the project proponent commits to avoid dispose of Dead animals in accordance with the specifications.

2.2.7.5 Myanmar Engineering Council Law (28th November, 2013)

According to section 34, the project proponent commits to comply not to violate of any of the provisions of this Law, any prohibition of rules, orders and directives issued under this Law, or any condition mentioned in the register certificate by any person who has obtained the register certificate. If find the violate of any of the provisions of this Law by the Executive Committee, impose any of the following administrative penalties against on that person.

- (a) warning;
- (b) causing to pay the stipulated fine;
- (c) suspending the register certificate for a limited period;
- (d) cancelling the register certificate.

According to section 37 of this law, the project proponent commits to use on site only licensed engineers.

2.2.7.6 Myanmar National Building Code (2020)

This building code covers urban planning, environmental management, architecture and urban design, structural design (such as seismic), soils and foundations, building services (lighting, electrical and allied installations, installation of lifts and escalators, water supply, drainage and sanitation, fire), construction material, constructional practices and work safety).

2.2.7.7 The Electricity Law (27th October, 2014)

According to section 20 of this law, the project proponent commits to abide by the rules, regulations, bye-laws, notifications, orders, directives and procedures issued by the Ministry in carrying out the electrical business contained in the permit.

The project proponent has to be liable for damages to any person or enterprise by failure to abide by the quality standards or rules, regulation, by-law, order and directive issued under said law according to sub-section (a) of section 21 of said law

According to section 24 of this law, the project proponent commits to pay compensation for damages or losses due to negligence of any electric power user, in accord with the method prescribed by the Ministry for the value of damage or loss must be paid.

The project proponent has to inform promptly to chief-inspector and head officer of related office while occurring of accident in electricity generation, under section 27 of said law.

According to section 29, the project proponent has to allow when the Ministry ask for inspect of quality and standardizations.

According to section 33, the project proponent has to allow The Chief Inspector, Inspectors

and persons for inspecting any place or building to perform their duties in accord with stipulations.

The project proponent has to comply with the standards, rules and procedure. Moreover, will allow the inspection by respected governmental department and organization if it is necessary, under section 40 of said law.

According to section 44, the project proponent commits to avoid operating the electrical business without permit.

According to section 46, the project proponent commits to avoid operating the electrical installation and repair without obtaining the electrical professional certificate.

According to section 47, the project proponent commits to avoid operating the generation, transmission, connection of electric power without obtaining the electrical safety certificate.

According to section 67, the project proponent commits to avoid cutting off the transmission and distribution of electric power. If do so, commits to liable to pay damages the amount calculated equal to the loss amount of electric power as the means prescribed by the Ministry.

The project proponent commits to pay the compensation to anyone who is injured or caused to death in electric shock or fire caused by the negligence or omitting of the project owner or representative of project owner, under section 68 of said law.

2.2.7.8 The Telecommunications Law (8th October, 2013)

This law was enacted by the Pyidaungsu Hluttaw with notification No.31 on 8th October, 2013. This law shall be applied to: (a) any person, department and organization within the territory which includes the land, water and airspace of the Republic of the Union of Myanmar and (b) Myanmar citizens who are anywhere beyond the limits of the Republic of the Union of Myanmar. This law is composed of 19 chapters.

The objectives of the Telecommunications Law are described below.

- (a) To enable to support the modernization and development of the nation with telecommunications technology;
- (b) To enable to bring out Telecommunications Service that will be able to provide high quality and worth services to the users by allowing fair and transparent competitions from domestic and abroad in the telecommunications sectors which are developing;
- (c) To enable to give more opportunities to the general public to use Telecommunications Services by expanding the telecommunications network in the entire country along with the telecommunications technology which is developing;
- (d) To enable to protect the telecommunications service providers and users in accord with law;
- (e) To enable to supervise telecommunications service, network facilities and telecommunications equipment which require licence for national peace and tranquility and for public security.

According to this law, the holder of a licence must obey the law and rules, procedures, notifications, orders and directives issued under this law. Moreover, Section 65 states that whoever provides Telecommunications Services without a service license shall, on conviction, be punished with imprisonment for a term not exceeding five years and may also be liable to a fine.

2.2.7.9 Myanmar Fire Brigade Law (17th March, 2015)

The project proponent has to institute the specific fire services and provide materials and apparatuses for fire precaution and prevention in accord with the directive of the Department of Fire Services according to section 25.

2.2.7.10 The Vehicle Safety and Motor Vehicle Management Law (2020)

This law was enacted by Pyidaungsu Hluttaw No.6/2020 on May 26, 2020. The purposes of this law are;

- to inspect and register the vehicles in accordance with the law;
- to check whether the drivers of each type of vehicle meet the prescribed qualifications and issue a driver's license;
- to reduce air pollution, soil contamination, water contamination and noise which are caused by motor vehicles;
- to manage systematically to reduce accidents caused by motor vehicles;
- to be able to inspect and supervise in accordance with the stipulations for safe traffic.
- to reduce traffic congestion and to effectively use advanced technology transportation system to ensure vehicle safety.
- to reduce the loss of life and socio-economic loss and injuries of the people due to the risk of traffic accident and to facilitate the movement of road users.

2.2.7.11 Road Safety and Motor Vehicle Management Law (2020)

The project has to comply with the restrictions and restrictions on the use of domestic vehicles by the Ministry of Transport and Communications with the approval of the Union Government under sub-section (a) of section 9 of said law.

The project proponent has to comply with safety, environmental regulation, standards and regulations regarding the initial registration of vehicles issued by the Ministry under sub-section (c) of section 12 of said law.

The project proponent has to drive at the speed limit set by the Road Transport Directorate to ensure the safe movement of vehicles on public roads under sub-section (r) of section 14 of said law.

The project proponent has to maintain the vehicles in accordance with the standards set by the Department so that it can be driven safely under sub-section (a) of section 18 of said law.

The project proponent has to abide not to carry or transport hazardous materials in public places

in accordance with the regulations under sub-section (g) of section 81 of said law.

2.2.7.12 Road Safety and Motor Vehicle Management Rules (2022)

According to articles 252 of Road Safety and Motor Vehicle Management Rules, the project proponent commits to use the vehicle as a commercial vehicle unless it has obtained the relevant business license issued under the Ministry of Transport and Communications of the Union Government, which is not registered as a rental vehicle.

According to articles 253 of Road Safety and Motor Vehicle Management Rules, the project proponent commits not to carry more than the number of passengers or weight of cargo specified by the Department.

According to articles 254 of Road Safety and Motor Vehicle Management Rules, the project proponent commits to comply with the following,

(a) To operate only in accordance with the provisions of the relevant business license issued under the Road Transport Business Law.

(d) Passenger vehicles must stop at designated stops to allow passengers to board and alight. Do not obstruct the movement of other vehicles

(e) If there is a passenger vehicle stopped at a stop sign, the vehicle coming from behind must stop at least four feet (1.22 meters) away from the vehicle in front.

(f) Do not stop parallel to a passenger vehicle stopped at a stop sign.

According to articles 256 of Road Safety and Motor Vehicle Management Rules, the project proponent commits to instruct the drivers to take the names and license numbers, or both the driver and the assistant must be clearly displayed in the driver's compartment.

According to articles 261 of Road Safety and Motor Vehicle Management Rules, the project proponent commits to -

(a) Goods shall be loaded inside the vehicle.

(b) Goods carried in the vehicle shall not be spilled onto the public road.

According to articles 262 of Road Safety and Motor Vehicle Management Rules, the project proponent commits to-

(a) Comply with the Prevention of Hazard from Chemical and Related Substances Law, Rules and Regulations.

(b) Have a valid rental vehicle registration certificate and a relevant business license issued under Road Safety and Motor Vehicle Management law, as well as a complete certificate issued by the relevant government department or government body for the right to transport dangerous goods.

(c) The vehicle carrying dangerous goods shall be equipped with Vehicle Marking, Container Marking and Tank Marking to clearly identify it as a vehicle, and must be equipped with packaging, labeling, loading and unloading as specified by the Department.

(d) In the event of an accident while transporting hazardous goods, the necessary safety equipment and measures to be taken must be fully prepared in advance as specified by the Department.

According to articles 263, the project proponent has to obey instructions for the motor vehicles that will transport hazardous goods along mountain roads, and for those goods themselves, as well as for the drivers and assistants who accompany those vehicles.

According to articles 269 of Road Safety and Motor Vehicle Management Rules, the project proponent commits to equip with a ready-to-use spare tire, a toolbox with tools for repairing equipment, a fire extinguisher, a hammer or axe for breaking emergency exit windows, a crowbar, a warning triangle, and a first aid kit.

According to articles 271 of Road Safety and Motor Vehicle Management Rules, the project proponent commits to must apply to the relevant registration officer for changing the registered name or address.

2.2.7.13 Natural Disaster Management Law (2013)

According to section 14, the project proponent has to obey the provisions in this section.

- The project proponent has to obey the provision in section 15 of said law.
- The project proponent has to carry out other duties assigned by this law in relation to preventive activities under section 16 of this law.
- According to section 17, the project proponent has to perform other duties assigned by this law in relation to emergency response operations, including search and rescue.
- According to section 18 the project proponent has to carry out other duties assigned by this law in relation to rehabilitation and reconstruction activities.

2.2.8 Labour Laws

2.2.8.1 Labour Organization Law (11th October, 2011)

This law was enacted by the Pyidaungsu Hluttaw with the notification No. 7 in 11th October, 2011. Section 3 describes that “every worker, who has attained the age prescribed in respective existing law to work in any trade or activity shall have the right to:

- (a) Join as a member in a labour organization and to resign from a labour organization according to their own desire;
- (b) Join as a member only in a labour organization formed according to the category of trade or activity relating to them.”

Moreover, Section 18 prescribed “the labour organization has the right to demand the relevant employer to re-appoint a worker if such worker is dismissed by the employer and if there is cause to believe that the reasons of such dismissal were based on labour organization membership or activities, or were not in conformity with the labour laws.”

The duties of employer are described in the following Sections.

- According to Section 29, the employer shall recognize the labour organizations of his trade as the organizations representing the workers.
- According to Section 30, the employer shall allow the worker who is assigned any duty on the recommendation of the relevant executive committee to perform such duty not exceeding two days per month unless they have agreed otherwise. Such

period shall be deemed as if he is performing the original duty of his work.

- According to Section 31, the employer shall assist as much as possible if the labour organizations request for help for the interest of his workers. However, the employer shall not exercise any acts designed to promote the establishment or functioning of labour organizations under his domination or control by financial or other means.

2.2.8.2 The Employment and Skills Development Law (30th August, 2013)

According to Employment and Skill Development Law (2013) Section 14, 15, 30, the project proponent commits to –

- To carry out Skill Development of Workers and Training programs according to the section 14 and 15 of Employment and Skill Development Law, 2013.
- To compliance with the provisions of section 30.

2.2.8.3 The Minimum Wage Law (22nd March, 2013)

The project proponent has to pay the wages in line with section 12 of said law.

The project proponent has to notify the prescribed wages obviously in work place under sub-section (a) of section 13 of said law.

The project proponent has to record correctly the lists, schedules, documents, and wages, report these to the relevant department, and give if these are asked while inspecting, in accord with the stipulations under sub-section (b) (c) (d) of section 13 of said law.

2.2.8.4 Payment of Wage Law (25th January, 2016)

The project proponent has to-

- Pay wages to the workers employing in his business in local currency or foreign currencies stipulated by the Central Bank of Myanmar, paid in cash or cheque or deposit into the bank account of the worker with the agreement between the employer and the worker under sub-section (a) of section 3 of said law.
- If the worker is conscripted under the Public Military Service Law, the (60) days of wages must be paid as a special right under sub-section (c) of section 3 of said law.
- Pay wages at the end of the work or at the time agreed to pay to the worker for hourly, daily, weekly or other part time work, or temporary or piece work under sub-section (a) of section 4 of said law.
- No exceed one month than the period agreed with the worker under sub-section (a) to pay wages work under sub-section (b) of section 4 of said law.
- Pay the due wages within two working days from the date of termination, when the worker is terminated work under sub-section (d) of section 4 of said law.
- Pay the wages at the end of the period for payment of wages when the worker resigns on his own volition by sending prior written notice of resignation work under sub-section (e) of section 4 of said law.
- Pay the due wages to a legal heir within two working days after the decease when the worker is decease work under sub-section (f) of section 4 of said law.

- If an employer occurs difficulties, including natural disaster, any unexpected condition to make payment under sub-section (c) of the Section 4, the employer may submit that which date has been altered for the payment of wages with the consent of the workers to the Department on reasonable ground under section 5 of said law.
- The project proponent has to the right to enjoy overtime wages of worker stipulated by the law when worker works over time.
- The project proponent has to abide by the provisions of section 7 to 13 in chapter (3) in respect of deduction from wages.

2.2.8.5 The Settlement of Labour Dispute Law (28th March, 2012)

This law was enacted by the Pyidaungsu Hluttaw with the notification No.5/2012 in 28th March, 2012. The purpose of the law is to safeguard the right of workers or to have good relationship between employer and workers and to make peaceful workplace or to obtain the rights fairly, rightfully and quickly by settling the dispute of employer and worker justly.

- In Section 23, “A party, employer or worker, may complain individual dispute relating to his grievance to the Conciliation Body and if he is not satisfied with the conciliation of such body in accord with stipulated manners, may apply to the competent court in person or by the legal representative.” The prohibitions of the law are described in the following.
- According to Section 38, no employer shall fail to negotiate and coordinate in respect of the complaint within the prescribed period without sufficient cause.
- According to Section 42, no person shall prohibit the right to work independently of the workers who are not desirous to participate in the strike nor impede the right of a worker to strike.

2.2.8.6 Labor Dispute Resolution Law (2012)

According to section 38 of this law, the project proponent commits to attend, in person or through a representative, the date and time appointed by the mediation committee to discuss and resolve a claim or complaint without a valid reason.

According to subsection (a) of section 38 of this law, the project proponent commits to constitute a conciliation committee in accordance with the provisions of Section 3.

According to section 39 of this law, the project proponent commits to avoid suddenly changing the terms and conditions of employment applicable to the workers, while a dispute is being investigated by an arbitration panel or tribunal.

According to section 40 of this law, the project proponent commits to avoid locking out or strike without first seeking resolution of a dispute through negotiation, mediation, and arbitration in accordance with this law.

According to section 51 of this law, the project proponent commits to pay the full amount of the financial benefit determined by the arbitration panel or arbitration council during the resolution of a dispute, commits any act or omission that reduces the benefits of an employee

without sufficient cause.

2.2.8.7 The Leave and Holiday Act, 1951 (Law Amended on July, 2014)

The Leave and Holidays Act was firstly adopted on 1st January in 1952, by the International Labour Organization, Myanmar. Recently, the Act was amended in July 2014. The key objectives of this Act are to allow workers (daily wage worker/temporary worker/permanent worker) to have a leave and holiday allowances, religious or social activities with earn allowance, and health insurance allowances.

The rights of workers to leave and have a holiday are described below.

- Causal Leave (6 days)
- Earned Leave (10 days)
- Medical Leave (30 days)
- Maternity leave
- Public Holiday (21 days)
- Penalty for Violation

2.2.8.8 Social Security Law (31st August, 2012)

The project proponent has to register to the respected social security office, under sub-section (a) of section 11 of said law

The project proponent has to pay the social security fund for at least four types of social security included in sub-section (a) of section 15, under section 15 of said law.

The project proponent has to pay the fund, which has to be paid myself, and together with the fund which has to be paid from their salary by the employees. Moreover, the project owner will pay the cost for paying the above-mentioned fund only myself under sub-section (b) of section 18 of said law.

The project proponent has to pay the fund for accident, under sub-section (b) of section 48 of said law. (but this fund is not related to workmen compensation so if it is needed compensation must be separately paid by the Workmen compensation Act)

The project proponent has to make correctly and submit the list and record provided in section 75 to respected social security office, under section 75 of said law.

2.2.8.9 Workmen's Compensation Act (1923)

The project company commits to comply the provisions mentioned in Section 13 of Workmen's Compensation Act, 1923.

2.2.8.10 The Rights of the Persons with Disabilities Law (9th June, 2015)

This law was enacted by the Pyihtaungsu Hluttaw with the notification No.30/2015 in 5th June, 2015. The objective of the law is to protect and respect the rights of persons with disabilities in Myanmar in a way that is recognized internationally under the UN Convention. According to Article 14 of the law, the persons with disabilities shall:

- (a) Have the rights to access education, attain and use the information, and receive medical care;
- (b) Have the human rights and other fundamental freedoms such as freedom of speech, freedom to survive, and to worship on an equal basis with others;
- (c) Have the rights to own the legal money, properties and housing, buildings, right to inherit, and live in the housing of the public housing projects;
- (d) Have the right to request for the necessary arrangements for the rights to sue, to be sued, to defend, and to be investigated as a witness at the court;
- (e) Have the right to exemption from the office tax in suing for the rights and entitlement; and
- (f) Have the right to services and protection from the torture, discrimination, negligence, and bullying in prison due to the disability

With regards to mobility and accessibility, Article 28 stipulates that the National Committee shall carry out negotiation and implementation for easy accessibility and mobility for persons with disabilities by cooperating with relevant Union Ministries, Municipal Committee (or Township Development Committee), States and Regional

Governments, NGO and Private Organizations and entities which work on disability, as follows:

- (a) Laying down the directives on the production and renovation for easy access to public buildings and environments/surroundings for the persons with disabilities with physical and mental security;
- (b) Drawing models/structures and carrying out construction with the mobility aids and devices for easy access to public places without barriers for person with disabilities;
- (c) Arranging necessary measures for easy access to public transportation for the persons with disabilities;
- (d) Installing signs, symbols, sound devices, and other necessary devices at the traffic lights, pedestrian crossing, and roads with curves, ascending and descending points to provide easy access for the persons with disabilities; and
- (e) Making arrangements for the persons with disabilities to be able to easily access physical surroundings such as public housing, hospital and schools and communication, information and public communication sectors
- (f) In terms of job opportunities, Article 36 states that the employer shall:
- (g) Obey and implement the policies and plans set up by the National Committee regarding job opportunities of persons with disabilities;
- (h) Employ the persons with disabilities with employability for appropriate word depending on the type of employment in accordance with the quota for the number of people with disabilities specified by the National Committee;

- (i) Choose and employ the persons with disabilities registered at Employment Exchange Offices in relevant townships and departments in accordance with sub-Section (b);
- (j) Make appropriate arrangements including interviewing, the equal rights for salaries and opportunities, promotion, job security, access to free vocational education and training based on employability of the persons with disabilities;
- (k) Pay the amount of money to the funds related to the rights of the persons with disabilities when impossible to employ in accordance with the quota for the number of people with disabilities as specified in sub-Section (b); and
- (l) Submit the list of the employed staff or workers with disabilities and the vacant positions to the Department and the Employment Exchange Offices in the relevant township in accordance with sub-Section (b).

2.2.8.11 Child Rights Law (23rd July, 2019)

According to section 9, the project proponent commits to carry out the duties and responsibilities related to children's rights under the guidance and supervision of the relevant Region or State Government, Nay Pyi Taw Council, and the committee at all levels.

According to section 100, the project proponent commits to avoid the followings,

- Asking, selling, encouraging, or allowing anyone to drink alcohol or beer,
- Allowing children to enter a dance club (dayclub, nightclub), karaoke, or massage parlor without their parents or relatives present.
- Psychological violence,
- Punishment by beating,
- Physical abuse.
- Enticing, encouraging or assisting a child to gamble;
- Taking any property from a child, or encouraging or assisting a child to pawn property.
- Buying any item sold by a child, except for buying items from a child vendor as a good livelihood.

According to section 101, the project proponent commits to avoid the followings,

- Establishing and opening any charitable center or temporary care center without a permit to establish it;
- Violation of the provisions of section 96, subsection (d).
- Appointing, requiring, or permitting anyone to work in a business that sells alcohol or beer;
- Forcing or allowing someone to work in a place related to sexual activity, such as a dayclub, nightclub, karaoke, or massage parlor.
- According to section 103, the project proponent commits to avoid the followings,
- Violence, abuse, exploitation, or discrimination against children with disabilities;
- Forced to perform work that causes physical, psychological, or moral harm;
- Requiring or permitting anyone to perform hazardous work or work that is harmful to health;

- Compulsion to perform forced labor or services;
- Torture, cruel, inhuman or degrading treatment or punishment.
- Using, guiding, or otherwise using in support activities such as carrying food, weapons, or equipment;
- Psychological violence or physical violence.
- According to section 105, the project proponent commits to avoid the followings,
- Allowing a child under his/her guardianship to live with a person who makes a living through prostitution;
- Knowingly and willfully neglecting the fact that a child under his/her care is engaged in prostitution;
- Asking or allowing a child to engage in prostitution in a hotel, motel, guest house, boarding house, beauty salon or restaurant;
- Making, distributing, offering, selling, possessing, importing or exporting child pornography,
- Forced marriage or inducing marriage.

2.2.9 Protection and Preservation Laws

2.2.9.1 The Protection and Preservation of Cultural Heritage Region Law (28th February, 2019)

This law was enacted by the Pyidaungsu Hluttaw with the notification No.6/2019 on 28th February, 2019. The purpose of the law is to ensure protection of cultural heritage and the cultural heritage area from damages caused by natural and man-made disasters. Any cultural heritage located near the project area shall be protected as specified below.

According to Section 15, the project proponent commits to comply:

- Renovation of a building other than an ancient monument or extension of the boundary of its enclosure in the ancient monumental zone or an ancient site zone
- Within the protected and preserved zone, constructing, extending, renovating a building other than a hotel, motel, guest house, lodging house or industrial building or extending the boundary of its enclosure
- Digging well, pond and fish-breeding pond or extending the same within the cultural heritage region

According to Section 18 the project proponent commits to comply, without prior permission granted under this law, construct, extend, renovate a building or extend the boundary of its enclosure in the ancient monumental zone or ancient site zone.

According to Section 19 the project proponent commits to comply, without prior permission granted under this law, carry out construction, extension, renovation, or extension of the boundary of its enclosure with respect to a building within the protected and preserved zone.

According to Section 20 the project proponent commits to comply, no person shall carry out any of the following in the cultural heritage region.

- Destroying an ancient monument

- Willfully altering the original ancient form and structure or original ancient workmanship of an ancient monument
- Excavating to search for antiquities
- Exploring for petroleum, natural gas, precious stones or minerals

According to Section 21 the project proponent commits to comply, without prior permission granted under this law, carry out the following in the cultural heritage region.

- Carrying out renovation and maintenance work on an ancient monument
- Carrying out archaeological excavation
- Building road, constructing bridge, irrigation canal, embankment or extending the same
- Digging well, pond, fish-breeding pond or extending the same

According to Section 22 the project proponent commits to comply, no person shall construct a building which is not in conformity with the conditions prescribed region wise by the Ministry of Culture in the cultural heritage region.

According to Section 23 the project proponent commits to comply, no person shall plough and cultivate or carry out any activity which may cause damage to the cultural heritage within the boundary notified by the Department in the cultural heritage region.

2.2.9.2 The Protection and Preservation of Ancient Monument Law (26th August, 2015)

This law was enacted by the Pyidaungsu Hluttaw with the notification number 51/2015 on 26th August, 2015.

According to Section 12 the project proponent commits to comply, the person who found the ancient buildings over 100 years on the ground or under the ground or on the water or under the water to the owner or without maintained person that buildings may be known or assumed the ancient buildings must inform early to the respective ward administrator or village administrator.

According to Section 15 the project proponent commits to comply that the person who made the following things in the regarded area of the ancient buildings should apply to the department in advance allowance;

1. Extension of villages, wards and towns;
2. The new building construction or extensions or preparation or fencing or annexes including hotels, factories, residential buildings;
3. Oil and gas, gem or digging for mineral exploration, connecting to oil and gas pipe line, connection to grid lines, construction of communication tower, road construction, bridge construction, airport construction, dam like the construction or extension of principle buildings;
4. Connection of electric line in the ground, connection to communication and other underground workings;
5. Digging or extension of well, lake, channel, husbandry pond;

6. Surface damaging like gold bars, excavation, making bricks, digging of well, pond, creek, drain, chasm, valley, landfills, adjusting ground, mine explosion, mining, gravel, sand extraction, demolition of hill and mountain;
7. Fencing or installation of the private area or community;
8. Construction of unfix discipline building regarded by the ministry in each regionally near the ancient buildings and environmental view.

According to Section 20 (b) the project proponent commits to comply that nobody should not do without prior permission letter in the ancient building or historical heritage building to regarded area assumed to damage the ancient building due to causing vibration by using heavy machines or vehicle traffic in the regarded area near the historical ancient buildings.

2.2.9.3 Antiquities Protection and Conservation Law (2015)

According to section 12 of this law, the project proponent commits to immediately report it to the relevant ward and village tract administration office, when find any object is an antique.

2.2.9.4 Cultural Heritage Areas Protection and Conservation Law (2019)

According to subsection (b) of section 21, the project proponent commits to avoid Conducting archaeological excavation work without obtaining prior permission issued under this law.

2.2.9.5 Ancient Buildings Protection and Conservation Law (2015)

According to section 12 of this law, the project proponent commits to immediately report it to the relevant ward or village tract administrative office, when find an ancient building that is 100 years old or more, whether on land, under water, or under water.

According to section 15 of this law, the project proponent commits to apply to the Department for prior permission for the following affairs,

- (a) Expansion of cities, wards, and villages;
- (b) Construction or extension or renovation of new buildings, including hotels, factories, and residential buildings, or enclosure or expansion of premises;
- (c) Exploration for oil, natural gas, gems or minerals, laying oil or natural gas pipelines, building factories, laying power lines, constructing communication towers, building roads, building bridges, building airports, building or expanding infrastructure such as irrigation, dams, etc.
- (d) Undertaking underground electrical transmission lines, telecommunications transmission lines and other underground works;
- (e) Excavation or expansion of wells, lakes, canals, and breeding ponds;
- (f) Mining, earthworks, brick-making, digging wells, lakes, streams, ditches, ravines, gullies, grading, leveling, mining, quarrying, gravel and sand extraction, demolition of hills and mountains, which cause damage to the terrain,
- (g) Adding ancient buildings and fencing to privately owned areas and areas.
- (h) Construction of a building that does not comply with the regulations set by the Ministry for each region in the vicinity of an ancient building and in the surrounding landscape.

According to subsection (f) of section 20, the project proponent commits to avoid disposal of chemicals and waste that harm ancient buildings and the environment.

2.2.10 Other Related Laws and Regulations

2.2.10.1 Myanmar Investment Law (18th October, 2016)

According to Myanmar Investment Law, 2016 (Section 50, 51, 65, 73) the project proponent commits to

- To act in compliance with land use rights according to the section 50,
- To comply with the provisions on the appointment of staff and workers mentioned in section 51.

According to section 65, the project proponent commits to –

- Respect the customs, traditions, and traditional culture of the ethnic groups within the state.
- Register in accordance with the law,
- Comply with the existing laws and regulations issued under this law, notifications, orders and directives, procedures, contractual terms and conditions, and tax obligations, including the terms and conditions contained in the specialized licenses, permits and certificates of authorization issued to
- To inform when natural minerals, antiquities, or treasures not included in the original agreement are discovered on or under the surface of the land.
- Compensation is paid to the workers in accordance with existing laws for breach of employment contracts, closure of the investment, transfer and sale, suspension of investment activities, and reduction of the workforce.
- To paid wages and salaries in accordance with existing laws, rules, regulations, instructions, procedures, etc. during the period of closure.
- For workers who suffer injuries, loss of limbs, illness, or death due to work, the relevant worker the project proponent has to paid the appropriate compensation and indemnity in accordance with the existing law.
- Labor laws must be respected and followed.
- The right to sue and be sued in accordance with the law.
- To permit to enter and inspect any location if it receives prior notice to inspect investment activities.
- To obtain a permit or approval from the Commission before conducting the assessments under the Environmental Protection Law and the Environmental Impact Assessment Procedures
- According to section 73, the project proponent has to provide insurance in any types of insurance specified in the rules.

2.2.10.2 Myanmar Investment Rules (2017)

The project company commits to comply with rule 202, 203, 206 and 212 as follows.

- To comply with rule 202, all terms and conditions in permits and other applicable laws when the investment is carried out in accordance with Myanmar Investment Rule (2017).

- To fully assist the negotiation processes with the relevant government departments and government organizations for the affected persons due to proposed project according to Rule 203.
- To submit the application attached with reference documents to the Commission and obtain the approval if the company desires to appoint expert foreigner according to Rule 206.
- To ensure that Bodily Injury Insurance and Workmen Compensation Insurance at any insurance business entitled to carry out insurance business within the Union by the company in accordance with Rule 212.

2.2.10.3 Commercial Tax Law (24th March, 2014)

This law was prescribed on 31st March, 1990 and it was amended on 24th March, 2014, March 24. According to this law, section 4(a) of chapter II was shown in which Charging Tax and Having Responsibility to Pay Tax: “The tax shall be charged on the goods produced in the country as mentioned in the Schedule.” In section 5, the tax due under section 4 shall be responsible to be paid by the relevant producer, service provider or importer.

In the schedule 7, the tax percentage on the services including railways, waterway, airway, and road transport business are 5 percent based on the total receipts in respect of passenger fares.

2.2.10.4 The Union Tax Law (24th September, 2019)

This law was enacted in Pyidaungsu Hluttaw notification number 30 on 24th September, 2019. This law includes the following sectors;

(a) Changes to the income tax law

Key changes to the income tax law are as follows;

- Conditional amnesty
- Cash rewards received as a result of the seizure of unlawful property
- Powers granted to the ministry of planning and finance (ministry)

(b) Changes to the special commodity tax law

Under the Union Tax Law 2019, the special commodity list remains the same except for the following;

- Cigarettes and cheroots
- Alcoholic beverages
- Natural gas
- Gemstones

(c) Changes to the commercial tax law

(d) Gemstones tax

2.2.10.5 The Export and Import Law (17th September, 2012)

The project proponent has to commit not to violate the conditions contained in the license according to section 7 of said law.

2.2.10.6 Myanmar Insurance Law (1993)

If the project proponent uses the owned vehicles, the project owner has to insure the insurance for injured person under section 15 of said law.

The project proponent has to insure the insurance to compensate for general damages because the project may cause the damages to the environment and injury to public under section 16 of said law.

2.2.10.7 Myanmar Insurance Rule (2017)

This rule was prescribed by Ministry of Planning and Finance with notification 30/ 2017 in 30th Mar. 2017. In this law, the investor must comply with the conditions of the Permit and other applicable laws when making an Investment and shall fully assist while negotiating with the Authority for settling the grievances of the local community that have been affected due to Investments in Section 203.

According to Section 206, If the Investor is desirous to appoint a foreigner as senior management, technician expert or consultant according to Section 51.

- (a) the investor shall submit such foreigner's passport, expertise evidence or degree and profile to the Commission Office for approval.

Section 73 was described that every Investor that holds the Permit or Tax Incentives must have taken out the relevant insurance out of the following types of insurance at any insurance business that holds the license in the Union based on the nature of the business:

- (a) Property and Business Interruption Insurance;
- (b) Engineering Insurance;
- (c) Professional Liability Insurance;
- (d) Professional Accident Insurance;
- (e) Marine Insurance; and,
- (f) Workmen Compensation Insurance

2.2.10.8 The Industrial Enterprise Law (1990)

According to section 27 of The Private Industrial Enterprise Law (1990), the project proponent commits to comply the following,

- (a) The project proponent has to avoid not to distribute and sell the goods without a trade mark.
- (b) The project proponent commits to comply any provision of section 13.

The project proponent commits to comply not to fail with any order or decision passed by the Minister and the Director General.

2.2.10.9 The Ethnic Rights Protection Law (2015)

According to section 5, the project proponent commits to comply the matters of projects completely inform, coordinated and performed with the relevant local ethnic groups in the case of development works, major projects, businesses and extraction of natural resources.

2.2.10.10 The Ethnic Rights Protection Rules (2019)

According to article (a), (b), (c), (d) of rule 20, the project proponent has to -

- (a) The advantages and disadvantages of the project must be fully and accurately explained

in advance using languages and methods that the local people who are settled in the area where the project will be implemented can understand.

- (b) The policy directions of the Myanmar Sustainable Development Plan (MSDP); strategies; It must be carried out in accordance with the procedures.
- (c) In order to find out whether there is any impact on the environment and socio-economic life in the area, environmental impact analysis and socio-economic development impact analysis shall be carried out in accordance with the guidelines of the relevant department.
- (d) In all stages of the environmental impact assessment and socio-economic development impact assessment process, discussions and negotiations with indigenous peoples shall be carried out in an open manner.

The project proponent has to compliance with rule 20 shall be reported to the Ministry in full and submitted to the ministry before the project commences, according to article (a) of rule 21 of said law.

The project proponent has to submit the plan to the Ministry, after the implementation of the project, according to article (b) of section rule 21.

2.3 Institutional Framework

A number of institutions will have a regulatory and monitoring mandate directly or indirectly under their respective pieces of legislation. However, the following will be the key institutions whose requirements will need to be complied with.

- Ministry of Natural Resources and Environmental Conservation
- Environmental Conservation Department
- General Administration Department

Shwe Taung Junction City Development Company Limited takes on the responsibility for developing, reviewing, updating, and properly implementing the environmental management plan during construction, operation and decommissioning phases.

2.3.1 Arrangement at National and Sector Level

At national Level, National Environmental Conservation Committee (NECC) serves as a mechanism for inter-ministerial coordination. Authorities and functions of NECC are prescribed in Articles 7 to 13 of the EC Rules of the Republic of the Union of Myanmar.

One of NECC's main functions related to this project is to oversee the management of the EIA process by MOECF through ECD. ECD will serve as a coordinator among various departments in relevant sectors to ensure that the EIA and implementation of EMP will address environment and social issues of concerns by departments in relevant sectors.

The EIA process for this project will be administered by the central ECD in coordination with the regional ECD and various governmental organizations at the regional, township, and district levels.

2.3.1.1 Role of Yangon City Development Committee (YCDC)

An important institutional framework is the role played by the Yangon City Development Committee (YCDC) in approving development projects in Yangon.

The YCDC is the administrative body of Yangon City. It consists of 20 departments, with headquarters in the Yangon City Hall. The YCDC has township offices across the city.

On 14 May 1990, the Yangon City Development Law formally established the present YCDC, delegating wide responsibilities to this body, including city planning, land administration, tax collection and development. However, the YCDC is also responsible for duties stipulated in the 1922 Rangoon Municipal Act.

The YCDC is technically independent of the government and raises its own revenues through tax collection, fees, licenses and property development.

The YCDC is responsible for the city's:

- Waste management (including collection and treatment)
- Business licenses and registries
- Water supply
- Roads and bridges
- Environmental regulations
- Maintenance of public property (including parks, heritage sites)
- Street lighting
- Firefighting

These powers vested in the YCDC mean that no project, not even a house, could be built in Yangon City without approval from the YCDC.

The YCDC has laid down various guidelines and, to get its approval, strict compliance to them is required.

There are also laws, by-laws, guidelines, standards and orders issued by the departments under YCDC (Buildings, Roads and Bridges, Water and Sanitation), Fire Department, CQHP, YESC, etc., relating to the construction of high-rise building projects.

The YCDC has designated buildings from 9 to 12½ storeys as 'High-rise Buildings'.

Proposals to build high-rise building projects must first be approved by the YCDC which will ensure that the Overall Project Design meets with national and international environment-friendly construction standards and guidelines and whether public supplies of water and electricity could be extended to the new building projects. YCDC's own guidelines and criteria are a reflection of those guidelines and standards.

Approval Procedure for High-rise Buildings: The YCDC formed the High-rise Building Projects Inspection Committee (HIC) on 25 October 2012 to screen and approve applications for the construction of high-rise buildings in the areas under its administrative jurisdiction. HIC serves as the coordinating body for the various departments of the YCDC in deciding whether the applications for the construction of high-rise buildings are in compliance with their procedures and by-laws on the following issues:

- If the high-rise buildings are to be constructed in the restricted zone around the Shwedagon Pagoda, to ascertain whether their heights exceed or do not exceed the designated elevation above sea level which is based on the elevation of the Shwedagon Pagoda.
- Whether sufficient carparking have been provided.

- Whether water supply can be extended to the projects.
- Whether the projects' drains will allow smooth flow of liquid discharge.
- Whether there is good sanitary management.
- Whether there is good solid waste management and wastewater management.
- Electricity distribution system.

After ascertaining that the applications are in compliance with these departmental procedures and by-laws, the applications are put up with recommendations to the YCDC Chairman (Yangon Mayor) and then submitted to the Government of the Yangon Region to sanction the issuance of Building Permits.

Building Height Limitation: According to the YCDC's Committee for Quality Control of High- Rise Building Construction (CQHP), the height of buildings constructed in the Restricted Zone (immediate vicinity) of the Shwedagon Pagoda must not exceed 190 feet (58m) ASL, which is the elevation of the floor of the Shwedagon Pagoda.

However, high-rise buildings constructed outside the Restricted Zone could rise up to 417 feet (127.5m) ASL. According to CQHP, no building constructed outside the Restricted Zone could exceed the level of the base of the *nget pyaw phoo*⁴ part of the Shwedagon Pagoda which stands at 417 feet (127.5m) ASL.

With the exception of the lightning conductor installed on the topmost part of a building, this height limitation includes machine rooms and architectural decorations. The height of a building shall be measured from Mean Sea Level.

Building set-backs: Set-backs from roads for new high-rise buildings to be constructed have been designated as follows:

Downtown Area (six Inner City townships)

- 3' on the façade side
- 3' on left and right sides
- At the back, if there is B.D.S 3' and if there is no B.D.S 6'

Outside Downtown Area (including Shwedagon Pagoda's Restricted Zone)

On main roads like Pyay Road, Kaba Aye Pagoda Road, U Wisara Road, University Avenue

- 20' on the façade side
- 6' on left and right sides
- 6' at the back

On remaining roads and lanes

- 12' on the façade side
- 6' on left and right sides
- 6' at the back

⁴ Literal meaning is 'banana bud'. Dictionary definition is 'tapering, spire-like part of a pagoda immediately below the finial where its shape resembles a plantain bud'.

The YCDC shall approve the construction of buildings up to 12 storeys on land up to 50 feet in length and shall approve the construction of buildings with more than 12 storeys on land more than 50 feet in length.

In designating setbacks for buildings 13 storeys high and above, façade, sides and back setbacks will be designated based on the height of the concerned building.

Carparking requirement for High-rise Buildings:

Table 2-8 Minimum Carparking lots that must be furnished in High-rise Buildings

SN	Building	Carparking calculation based on Unit/Gross Floor Area	Remarks
1	Residential	1 Lot for 1 Unit To add 20%	
2	Commercial Premises		
	1) Office	1 Lot per 100m ² (1076ft ²)	Merchandise loading and unloading premises: To add 1 Lot per 10000m ² (107650ft ²)
	2) Shops	1 Lot per 100m ² (1076ft ²)	Merchandise loading and unloading premises: To add 1 Lot per 4000m ² (43060ft ²)
	3) F&B	1 Lot per 50m ² (539ft ²) To add 20%	
	4) Hotels	1 Lot per 200m ² (2153ft ²) To add 20%	Merchandise loading and unloading premises: To add 1 Lot per 8000m ² (86120ft ²)
3	Cinema halls Theatres	1 Lot per 10 Seats To add 20%	
4	Warehouse	Merchandise loading and unloading premises: To add 1 Lot per 800m ² (8612ft ²) To add 20%	
5	Factory	1 Lot per 350m ² (3768ft ²) To add 20%	Merchandise loading and unloading premises: To add 1 Lorry Parking Lot per 3000m ² (32295ft ²)
6	Swimming Pool	1 Lot per 40m ² (430ft ²) To add 20%	
7	Gym	1 Lot per 300m ² (3230ft ²) To add 20%	

Source: High-rise Building Projects Inspection Committee (HIC)

Carparking space must be inside the building to be constructed.

The floor-to-floor height of High-rise Buildings are designated by the YCDC as follows:

Table 2-9 Floor-to-Floor Height Limitation of High-rise Buildings

SN	Building	Designated Height (minimum)
1	Residential (Ground Floor) Residential (Other Floors)	10 ft 9 ft
2	Shops & Office	10 ft
3	Hotel restaurants (Ground Floor) Hotel/Motel (Other Floors)	12 ft 10 ft 6 in
4	Hospital & School auditorium	12 ft
5	Public recreation centers	12 ft
6	Workshops & factories	12 ft
7	Carparking floors	8 ft 6 in

CQHP (current HBPC) Water Supply & Sanitation Guidelines for High-rise Buildings

The Committee for Quality Control of High-rise Building Construction Projects, Republic of the Union of Myanmar (CQHP), has also issued Guidelines for High-rise Building Construction Projects with respect to Water Supply & Sanitation on 23 February 2017.

First of all, the Guidelines state that all designs on High-Rise Building (HRB) undertaken by a foreign firm/ company shall be duly endorsed/ countersigned by a Professional Engineer (PE) (Water Supply and Sanitation) when submitting HRB Project to CQHP.

Some key provisions of the Guidelines are presented below.

Geotechnical investigations

- To provide bearing capacity of soil at site of construction, where required, for the design and construction of reservoirs, water treatment plant and wastewater treatment plant. (M)
- To provide information on the type of soil at site of construction, preferably with respect to the AASHTO soil classification. (R)
- To provide result of Percolation Test where required. (R)

Water Demand

Water requirement of a project shall be calculated with respect to the estimated Population Equivalent (PE). Recommended water demand calculation is given below.

Table 2-10 Recommended water demand calculation

SN	Type of Premises/Establishment	Population Equivalent (PE) (recommended)
1	Residential	5-6 per apartment
2	Commercial (Includes entertainment/recreational centers, restaurants, cafeterias, theatres)	3-5 per 1000 ft ² gross area
3	Shopping Center	3-5 per 1000 ft ² gross area

SN	Type of Premises/Establishment	Population Equivalent (PE) (recommended)
4	Schools/Education Institutions Day schools/institutions Fully residential Partial residential	0.3 per Student 1 per Student 0.5 per Student
5	Hospitals	4 per bed
6	Clinic	0.5 per patient
7	Hotels (with dining and laundry facilities) Hotels (without dining or laundry facilities)	4 per room 2 per room
8	Market (wet type)	5-7 per 1000 ft ² gross area
9	Market (dry type)	3-5 per 1000 ft ² gross area
10	Beauty saloon	0.5 per client

Note: (1) 1 PE is equivalent to 40 gallons per capita per day (gpcd) or (180 liters/cap/day), (2) 30% of water supply is generally taken as soil water.

Treatment system

The system used for the on-site treatment of either soil water or a combination of soil and waste water to meet the recommended effluent quality given below shall be selected with due consideration to the environment of the premises.

Table 2-11 Recommend Effluent Quality

Items of Analysis		Sewer	Watercourse	Controlled Watercourse
		Units in milligram per liter or otherwise stated		
1	BOD (5 days at 20°C)	300	50	20
2	COD	450	100	60
3	Total Suspended Solids	300	50	30

Note: BOD value refers to 5-day incubation period at 20°C.

Soil water shall be treated before being discharged into a watercourse or public drain or municipal sewer. Any sewage treatment system meeting the above effluent quality requirement can be used. Effluent of treated soil water shall be disinfected with chlorine or by any other approved method where required. Where effluent is chlorinated, residual chlorine shall be between 0.1 and 0.2 mg/l.

Waste water disposal

- Wastewater from residences may be discharged directly after undergoing appropriate treatment followed by disinfection into public drain.
- However, wastewater from kitchen sinks shall first be discharged into a grease trap before its disposal into public drain after undergoing appropriate treatment.

Combined soil and waste water treatment and disposal

- Combined soil and wastewater shall be treated before being discharged into a watercourse or public drain.

- The effluent quality shall conform to that given above and disinfected as mentioned above.

Rain water collection and disposal

- Neither soil or waste water shall be discharged into rain water down pipes. Rain water shall be collected and disposed of in a separate system. Rain water can be discharged into roadside drain.

2.3.1.2 CQHP (Current HBPC) Guidelines for Garbage Collection

Solid waste generated from residential premises is classified into (1) Garbage, and (2) Rubbish. Garbage consists of wastes from preparation, cooking and serving of food, market wastes, wastes from handling, storage and sale of produce. Rubbish consists of combustible materials such as paper, cartons, boxes, wood and tree branches and non-combustible materials such as metals, tin cans, dirt, glass and broken crockery.

Any of the following systems is recommended for garbage collection: (1) Chute System, or (2) Service Lift Handling System.

Adequate number of bins for a minimum of two-day storage garbage volume shall be provided at the Bin Center which shall be easily accessible to the YCDC solid waste collection vehicle.

Garbage unit volume is designated as:

Residential (1.0 lb/cap/day) at (4.7 – 5.0) lb / cft density
Restaurant (2.0 lb per meal) at (6.2) lb / cft density

2.3.1.3 Institutional and Regulatory Framework for Electricity Supply

The Ministry of Electric Power (MOEP) is both supervisor and facilitator for the power sector in Myanmar. It assumes all operating and management responsibility relating to power generation, transmission and distribution.

Myanma Electric Power Enterprise (MEPE), a state-owned enterprise controlled by MOEP, purchases electricity from public and private producers and then sells it to various (decentralized) organizations for distribution. MEPE owns and operates the power grid.

Various Electricity Supply Boards, such as the Yangon Electricity Supply Board, complement MEPE's role as purchaser and distribution on a State and Regional level.

It is seen that Myanmar's regulatory framework is in a state of transition and will continue to evolve for some time to come.

The Electricity Law 2014 is fairly general in nature and distinguishes between generation, transmission, distribution and use of electricity, and requires that permission must be granted by the relevant authorities for these activities.

2.3.1.4 Fire safety rules for high-rise buildings

The Myanmar Fire Service Department and the YCDC have issued new safety instructions following a fire that engulfed the top of an incomplete condominium in Yangon in November 2015.

According to the Myanmar Fire Service Department, previously, high-rise buildings under construction did not require high-rising mains to be installed or fire extinguishers, but from then onwards they would have to do so. Department officials said that their department previously used to inspect completed buildings before tenants moved in, but from then onwards they would also inspect high-rise buildings (over 12 storeys) under construction as well.

2.4 International and National Policies, Guidelines and Standards

International and national policies, guidelines and standards relevant to environmental and social impacts of projects that are referred to by most countries are those issued by World Health Organization (WHO), the United States Environmental Protection Agency (USEPA), the World Bank, and the International Finance Corporation (IFC). The policies, guidelines and standards of the World Bank and IFC are cross referenced and complementary as the IFC is an organization of the World Bank Group. They are also adopted by most development organizations such as the Asian Development Bank, and Japan Bank for International Cooperation. It should be noted that the guidelines and standards recommended by the World Bank and IFC, especially those related to environmental pollution, also provide due consideration to the guidelines and standards of USEPA and WHO.

Only those international policies, guidelines and standards relevant to this Project are discussed.

2.4.1 IFC's Standards and Guidelines

IFC's standards and guidelines relevant to this project are described as follows;

- Performance Standards on Environmental and Social Sustainability (January 1, 2012)
- Environmental, Health and Safety-General Guidelines (April 30, 2007)

IFC describes eight Performance Standards (PS) on Environmental and Social Sustainability which Project proponent needs to comply throughout the IFC investment life. The eight PS are;

- (i) PS 1: Assessment and Management of Environmental and Social Risks and Impacts
- (ii) PS 2: Labor and Working Conditions
- (iii) PS 3: Resource Efficiency and Pollution Prevention PS 4: Community Health, Safety, and Security
- (iv) PS 5: Land Acquisition and Involuntary Resettlement
- (v) PS 6: Biodiversity Conservation and Sustainable Management of Living Natural Resources
- (vi) PS 7: Indigenous Peoples PS 8: Cultural Heritage

All the environmental and social aspects of development projects will be covered by the above eight PS.

2.4.2 World Bank's Pollution Prevention and Abatement Handbook (1988) Toward Clear Production

The World Bank's Pollution Prevention and Abatement Handbook (PPAH) is a comprehensive document providing guidelines for industrial pollution control, and it recommends emission and ambient quality standards to be applied in environmental management. These recommended standards have taken into account the standards enforced by U.S.EPA and those recommended by WHO. They are referred to in the IFC's EHS Guidelines.

2.4.3 Guidelines for High-Rise Building Construction Projects from Committee for Quality Control of High-Rise Building Construction Projects (CQHP)

The purpose of this committee guidelines are to provide and support for the systematic process of construction work and health, safety environment for every parameter.

The organized CQHP members are empowered to carry out the following responsibilities;

- Defining guidelines regarding the design of High-Rise Building in Myanmar.
- Drawing up guidelines for Quality control of the High-Rise Building Projects which must be duly observed by Project Supervisors and Site Engineer.
- Evaluating Proposed Project Designs, as submitted by designers, whether relevant guidelines and current international Codes of Practice are followed or not. Where correction, amendment or redress is required, appropriate advice shall be rendered.
- Conducting on-site inspection, either on a regular or need-to basis, of Construction projects to monitor whether relevant guidelines are observed or not. Advisory service on Quality Control shall be given when or where required.
- Collaborations with all concerned departments and organizations towards the achievement in constructing High-Rise Buildings of high-quality standard.

ACMV Guideline

Basic concepts and design considerations for car parks ventilation, basement level car park, smoke purging system, ductless jet fan systems, kitchen exhaust systems, exhaust duct structure, exhaust hoods, bathrooms, toilets and locker rooms, exit staircase, internal exit passage way, smoke-stop and firefighting lobbies, outdoor air intake, duct work design/fabrication and installation, fabrication and ducting material.

Electrical Guideline

Guideline 1) All designs on high-rise building by a foreign firm/company shall be duly endorsed/countersigned by a local professional engineer when submitting the project to CQHP

Guideline 2) Site Inspection (Field Works) Guideline 3) General Requirements for Design
Guideline 4) Testing of Electrical Installations

Guideline 5) Checking of Design and Testing for General Works

Guideline 6) Checking of Installation Design and Testing of Electric Elevators and Others

Guideline 7) Checking and Testing of A.C. Electric Generator

Guideline 8) Checking of External Electrical Installation Design and Testing

Guideline 9) Electrical Lighting and Illumination

Guideline 10) Checking and Testing of Temporary Electrical Installations at Construction Sites

Guideline 11) Checking and Testing of Building Lightning Arrester Installations

Guideline 12) Commissioning, Operation, Maintenance and Repairs of Completed Electrical Installation Works

Water Supply and Sanitation Guideline

All designs on high-rise building (HRB) undertaken by a foreign firm/company shall be duly endorsed/countersigned by a Professional Engineer (PE) (Water Supply and Sanitation) when submitting the project to CQHP.

To qualify for evaluating and endorsing designs by a foreign firm/company on Water Supply and Sanitation system for a HRB, a PE (Water Supply and Sanitation) must be duly registered with CQHP for National Counterpart (NCP) and be of full validity as issued by Myanmar Engineer Council (MEC).

- Guideline 1) Site Inspection
- Guideline 2) Geotechnical Investigations related to Sanitary Works
- Guideline 3) Cold and Hot Water Supply Guideline 4) Sanitation
- Guideline 5) Garbage Collection and Disposal
- Guideline 6) Design Concepts and Calculations for Water Supply
- Guideline 7) Design Concepts and Calculations for Sanitation
- Guideline 8) Water, Sanitation and Plumbing-Related Drawings
- Guideline 9) Operation and Maintenance

Structure Guideline

- Guideline 1) Project Organization Chart and Minimum Qualification Requirements for various positions
- Guideline 2) Geotechnical Investigations Guideline 3) Structural Design
- Guideline 4) Submission Documents Checklist

Architecture Guideline

- Architectural Design
- Preliminary Design (Schematic Design) Final Submission Design

Deep Excavation Design

- Submission Requirements for Earth Retaining or Stabilizing Structures for High Rise Buildings with basement construction Geotechnical Design.

2.4.4 International Environmental Conventions and Agreements

Myanmar has become party to various international treaties and conventions related to the environment and the following may have relevancy for the Project.

Table 2-12 *International and Regional Agreements and Conventions*

No.	Conventions	Year (Ratified/Acceded/Accepted)
Environment		
1	Plant Protection Agreement for the Southeast Asia and Pacific Region, Rome 1956	1959 (Ratified)
2	Vienna Convention for the Protection of the Ozone Layer, Vienna 1985	Accession 16 Sep 1998 (Vienna) and Accession 24 Nov 1993 (Montreal)
3	Montreal Protocol on Substances that Deplete the Ozone Layer, Montreal 1987	1993 (Ratification)
4	London Amendment to the Montreal Protocol on Substances that Deplete the Ozone Layer, London 1990	1993 (Ratification)
5	Copenhagen Amendment to Montreal Protocol on Substances that Deplete the Ozone Layer	Not available
6	United Nations Framework Convention on Climate Change (UNFCCC), New York 1992	1994 (Ratification)
7	Convention Concerning the Protection of the World Cultural and Natural Heritage, 1972	Acceptance 29.4.1994
8	ASEAN Agreement on the Conservation of Nature and Natural Resources, Kuala Lumpur 1985	1997 (Signatory)
9	Kyoto Protocol to the United Nations Framework Convention on Climate Change, Kyoto 1997	2003 (Accession)
Social, Labour and Health		
10	Universal Declaration of Human Rights (UNDHR)	Signed
11	Convention on the Rights of the Child	1991 (Acceded)
12	Convention on the Elimination of All Forms of Discrimination against Women (CEDAW)	1997 (Acceded)
13	Relevant ILO Conventions in force in Myanmar concerning - Hours of Work (Industry) - Weekly Rest (Industry) - Unemployment Convention, 1919 - Night Work of Young Persons (Industry) Convention, 1919 - Right of Association (Agriculture) Convention, 1921	

No.	Conventions	Year (Ratified/Acceded/Accepted)
	- Weekly Rest (Industry) Convention, 1921 - Workmen's Compensation (Accidents) - Workmen's Compensation (Occupational Diseases) Convention, 1925 - Equality of Treatment (Accident Compensation) - Minimum Wage-Fixing Machinery Convention - Forced Labour Convention - Workmen's Compensation (Occupational Diseases) Revised, 1934 - Holidays with Pay - Convention concerning Statistics of Wages and Hours of Work, 1938 - Freedom of Association and Protection of the Right to Organize - Worst Forms of Child Labour	

2.5 Commitments of Shwe Taung Junction City Development Company Limited

Table 2-13 List of Legal Commitments

No	Laws, Regulation, or Guidelines	Commitments
1	Environmental Conservation Law, 2012 Section 7 (o), 14, 15, 19	The company commits to comply - To compensate if there is environmental pollution by the project, to contribute a portion of the project profit as prescribed by the Ministry for environmental conservation activities according to Section 7 (o) of the Environmental Conservation Law 2012, - To treat, discharge, dispose and accumulate the materials that cause environmental pollution in accordance with the specified environmental standards according to Section 14, - To monitor, control, manage, reduce, or avoid by installing support equipment or control equipment, or dispose in accordance with the measures not to damage the environment the environmental pollutions according to Section 15, - To follow the rules, notice of order, order, instruction, and restriction in the procedure mentioned in Section 19 issued by Environmental Conservation Law.
2	Environmental Conservation Rules, 2014 Rule 69 (a, b)	According to Environmental Conservation Rules (2014)'s Rule 69 (a) and (b), the project proponent commits to comply

		- Not to emit, dispose and pile the hazardous waste or hazardous substances stipulated by rule. - Not to carry out any activity which can damage the ecosystem and the natural environment, except for the permission of the Ministry.
3	Environmental Impact Assessment Procedure, 2015	The project company commits to comply section 102 to 110, 113, 115, and 117 as per following. - To take responsibility for all the adverse impacts occurred by the actions and omissions of project proponent, and the person and organizations authorized by the project proponent. - To make the monitoring report publicly available on the project's website and office within ten days of submission to the Ministry and let anyone request the digital copy of the report and to send the report via proper way within ten days of receiving the request. - To give permission the representatives to enter the project site during working hours, and the Ministry, if necessary, to the project site and other project associates for purposes of monitoring and inspection in accordance with section 113. - In the event of emergency, or fail of environmental and social requirements, to give immediate access to the representative at any time according to the section 115. - To extend the access by the representatives to the project contractors and subcontractors in accordance with section 117.
4	National Environmental Quality (Emission) Guidelines, 2015	The company will follow General and Industry-specific Guidelines of the National Environmental Quality (Emission) Guidelines 2015 to control noise and vibration, air emissions and effluent discharges.
5	The Myanmar Investment Law, 2016 Section 50, 51, 72, 75	According to Myanmar Investment Law, 2016 (Section 50, 51, 72, 75), the project proponent commits to - To act in compliance with land use rights according to the section 50, - To comply with the provisions on the appointment of staff and workers mentioned in section 51, - To inform the commission if the permitted investment is transferred and rent to another one during the term of business mentioned in section 72, - To comply with the provisions of the income exemption mentioned in section 75.
6	Myanmar Investment Rules, 2017 Rule 202, 203, 206, 212	The project company commits to comply with rule 202, 203, 206 and 212 as follows. - To comply with rule 202, all terms and conditions in permits and other applicable laws when the investment is carried out in accordance with Myanmar Investment Rule (2017).

		- To fully assist the negotiation processes with the relevant government departments and government organizations for the affected persons due to proposed project according to Rule 203. - To submit the application attached with reference documents to the Commission and obtain the approval if the company desires to appoint expert foreigner according to Rule 206. - To ensure that Bodily Injury Insurance and Workmen Compensation Insurance at any insurance business entitled to carry out insurance business within the Union by the company in accordance with Rule 212.
7	The Conservation of Biodiversity and Protected Areas Law, 2018 Section 35 (a, c, d), 39 (d).	The company commits to comply with the provisions mentioned in the section 35 (a, c, d) and 39 (d) of The Conservation of Biodiversity and Protected Areas Law, 2018.
8	The Protection and Preservation of Antique Objects Law, 2015 Section 12.	If any known or suspected antique objects are found during the implementation of proposed project, the company will be promptly reported to the relevant Ward and Village-Tract Administration Office in accordance with section 12 of The Protection and Preservation of Antique Objects Law, 2015.
9	The Protection and Prevention of Ancient Monuments law, 2015, Section 15 (c, d), 20 (f)	According to the section 15 (c, d) of The Protection and Preservation of Ancient Monuments Law 2015, the company will apply to get prior permission to the Department if the proposed project is to be implemented within the specified area of an ancient monument. According to the section 20 (f), the company will not carry out discarding chemical substance and rubbish which can affect an ancient monument and the environment without a written prior permission.
10	The Public Health Law, 1972 Section 3, 5	The project company will cooperate with the authorized person or organization in line with the section 3 and 5 of the Public Health Law, 1972. - The project owner will abide by any instruction or stipulation for public health. - The project owner will accept any inspection, anytime, anywhere if it is needed.
11	The Prevention and Control of Communicable Diseases Law, 1995 Section 4, 9, 11	The project proponent commits to comply with the Section 4, 9, and 11 mentioned in the Prevention and Control of Communicable Diseases Law, 1995 as follows. - To comply with the measures undertaken by Ministry of Health and the Department of Health in respect of prevention of the occurrence and spread of communicable disease and control according to the section 4. - To report immediately to the nearest health department or hospital in accordance with the section 9.

		- To follow the instructions of Health Officer according to the section 11.
12	The Control of Smoking and Consumption of Tobacco Product Law, 2006 Section 9	The project owner commits to comply the provisions mentioned in section 9 of the Control of Smoking and Consumption of Tobacco Product Law, 2006.
13	The Labor Organization Law, 2011 Section 17 to 22	The project proponent commits to comply the provisions acted in the section 17 to 22 of the Labor Organization Law, 2011. <i>Section 17:</i> The project owner promises to allow the labor organization to negotiate and settle with the employer if the workers are unable to obtain and enjoy the rights of the workers contained in the labor laws and to submit demands to the employer and claim in accord with the relevant law if the agreement cannot be reached. <i>Section 18:</i> The project owner promises to demand the re-appointment of worker is dismissed by the employer without the conformity with the labour laws. <i>Section 19:</i> The project owner promises to send the representatives to the Conciliation Body in settling a dispute between the employer and the worker. <i>Section 20:</i> The project owner promises the labour organization to participate and discuss in discussing with the government, the employer and the complaining employees in respect of employee's rights or interest contained in the labour laws. <i>Section 21:</i> The project owner promises the labour organization to participate in solving the collective bargains of the employees in accord with the labour laws. <i>Section 22:</i> The project owner promises the labour organization to carry out the holding the meetings, going on strike and other collective activities in line with the labour laws.
14	The Settlement of Labor Dispute Law, 2012 Section 38, 39, 40, 51	The project proponent commits to comply the provisions acted in the section 38, 39, 40, and 51 of the Settlement of Labor Dispute Law, 2012.
15	Employment and Skill Development Law, 2013 Section 14, 15, 30	According to Employment and Skill Development Law, 2013 (Section 14, 15, 30), the project proponent commits - To carry out Skill Development of Workers and Training programs according to the section 14 and 15 of Employment and Skill Development Law, 2013. - To compliance with the provisions of section 30.
16	The Leave and Holiday Act, 1951; Amendment in 2014 Section 3, 4, 5, 7 (a)	The project company commits to comply the provisions mentioned in Section 3, 4, 5, and 7(a) of the Leave and Holiday Act, 1951; Amendment in 2014.

17	Workmen's Compensation Act, 1923 Section 13	The project company commits to comply the provisions mentioned in Section 13 of Workmen's Compensation Act, 1923.
18	The Social Security Law, 2012 Section 11(a), 15 (a), 18 (b), 48, 49, 75.	According to the Social Security Law, 2012's Section 11(a), 15(a), 18(b), 48, 49, and 75, the project proponent commits to comply - - the provisions of section 11 (a), - setting up the social security fund according to the Section 15 (a), - the provisions mentioned in Section 18 (b), 48, 49 and 75.
19	Occupational Safety and Health Law, 2019 Section 12, 14, 16, 17, 18, 26, 27, 36, 43.	Occupational Safety and Health Law, 2019, Section 12, 14, 16, 17, 18, 26, 27, 36 and 43, the project proponent commits to comply with - the provisions mentioned in the Section 12 and 14. - the instructions by the inspectors according to the Section 16. - the provisions mentioned in the Section 17 and 18. - the provisions for occupational safety in accordance with the Section 26. - the provisions mentioned in the Section 27, 36 and 43.
20	The Minimum Wage Law, 2013 Section 12, 13 (a, b, c, d, e, f, g), 18.	The project company commits to comply with the provisions of the Section 12, 13 (a, b, c, d, e, f, g), and 18 mentioned in the Minimum Wage Law, 2013.
21	The Payment of Wages Law, 2016 Section 3, 4, 5.	The project company commits to comply with the provisions of the section 3, 4 and 5 mentioned in The Payment of Wages Law, 2016.
22	The Prevention of Hazard from Chemical and Related Substances Law, 2013 Section 15, 16, 17, 27)	According to The Prevention of Hazard from Chemical and Related Substances Law, 2013, the company commits to comply with the provisions mentioned in the section 15 and 16. According to the section 17, the company will put the insurance in accordance with the prescriptive stipulations to be able to pay the compensation if the impact and damage is occurred. The company commits to follow the provisions mentioned in Section 27.
23	The Myanmar Fire Brigade Law, 2015 Section 25 (a, b)	According to The Myanmar Fire Brigade Law 2015, Section 25, the project company commits to follow the directive of the Department of Fire Services.
24	Traffic Safety and Motor Vehicle Management Law, 2020 Section 9 (a), 12 (c), 14 (d), 18 (a), 81 (g).	The project company commits to comply with the provision under Traffic Safety and Motor Vehicle Management Law, 2020 as follows. According to the section 9 (a), the company will follow the regulations and restrictions on the vehicles allowed to travel in the country. According to section 12 (c), the company will follow rules, standards and norms on safety and environmental

		protection in relation to the initial registration of motor vehicles issued by the Ministry. According to section 14 (d), the company will follow the speed limit for the safe movement of vehicles traveling on public roads. According to section 18 (a), the company will perform maintenance and repair in accordance with the standards set by the Department to drive the vehicle safely. According to section 81 (g), The company will not transport dangerous goods in public places without complying with the regulations.
25	The Conservation of Water Resources and Rivers Law, 2006 Section 30.	According to section 30 of The Conservation of Water Resources and Rivers Law 2006, the company will obtain the approval of the relevant ministry if it is necessary to utilizing river water intake for the proposed project.
26	The Conservation of Water Resources and Rivers Rules, 2013 Rule 47.	According to rule 47 of The Conservation of Water Resources and Rivers Rules 2013, the company will obtain the approval of the relevant ministry if it is necessary to utilizing river water intake for the proposed project.
27.	Yangon City Development Law, 2018	The project proponent has to comply with the - According to chapter (29), subsection (a) section 310, the project proponent commits to avoid constructing residential buildings, engage in industrial activities, engage in agricultural and livestock activities or carry out any other business within the city limits without obtaining a land lease agreement, license, permit, or approval. - According to subsection (m) of section 312, the project proponent commits to avoid advertising signboard without the permission of the Committee. - According to subsection (d) of section 318, the project proponent commits to avoid attempt to damage the wastewater treatment system. - According to subsection (a), (b), (c), (o) of section 322, the project proponent commits to avoid the following, (a) No person shall engage in any activity within the city limits that may cause environmental damage such as land pollution, air pollution, water pollution, and noise pollution. (b) No person shall dispose of any chemical or related materials, toxic materials, radioactive materials, or electronic waste within the city limits, except at a location permitted by the committee in accordance with the specified rules and regulations.\ (c) No owner or operator of any business, factory, workshop or hospital within the city limits shall discharge, cause to flow, accumulate, scatter, pour or dispose of any hazardous liquids, disgusting substances or hospital waste into any public place.

		(o) No person shall release into the air any fumes that may cause air pollution from any factory, workshop or business without taking steps to purify them in accordance with the prescribed standards.
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3. PROJECT DESCRIPTION AND ALTERNATIVES

3.1 Background of the project

The goal of the proposed project, "Construction and Operation of Junction City Mixed-Use Development Project" developed by Shwe Taung Junction City Development Company Limited is to improve the infrastructure in Yangon Region, Myanmar, which will raise living standards and economic growth while also providing employment opportunities for locals, particularly in Pabedan Township. The Company first proposed the Project to, and received approval from, the Myanmar Investment Commission.

The Junction City Mixed-Use Development Project was established by the joint venture of Shwe Taung Junction City Development Company Limited, City Square Commercial Co., Ltd., City Square Tower Co., Ltd. and City Square Hotel Co., Ltd. The Shwe Taung Junction City Development Company Limited was leased 284,229 ft² (6.525 acre) of land in Pabedan Township of Yangon by the Yangon City Development Committee. The project site is located at Corner of Bo Gyoke Aung San Road and Shwe Dagon Pagoda Road, Pabedan Township, Yangon, Myanmar. According to the MIC permits, the development will run for an initial term of 50 years with an option for the Shwe Taung Junction City Development Company Limited to renew it by mutual negotiation for further two periods of 10 years each for total further period of 20 years.

3.2 Planning Concept

Project planners have taken into account the high demand for fully-equipped modern office space, high-end hotel and retail space and have made a firm commitment to environmental sustainability and social sustainability.

The construction of the following buildings with stated functions had been established in 284,229 sqft (6.525 acre) with the components of:

1. 25 storeys - Hotel Tower
2. 23 storeys - Office Tower
3. 5 storeys - Shopping Center

3.3 Project Location

The proposed "Construction and Operation of Junction City Mixed-Use Development Project" is located at the Corner of Bo Gyoke Aung San Road and Shwe Dagon Pagoda Road, Pabedan Township, Yangon, Myanmar. The Bo Gyoke Aung San Market is located at the eastern part of the project and Holy Trinity Church is located at the northside of the project. At the western part of the project, Yangon General Hospital is located.

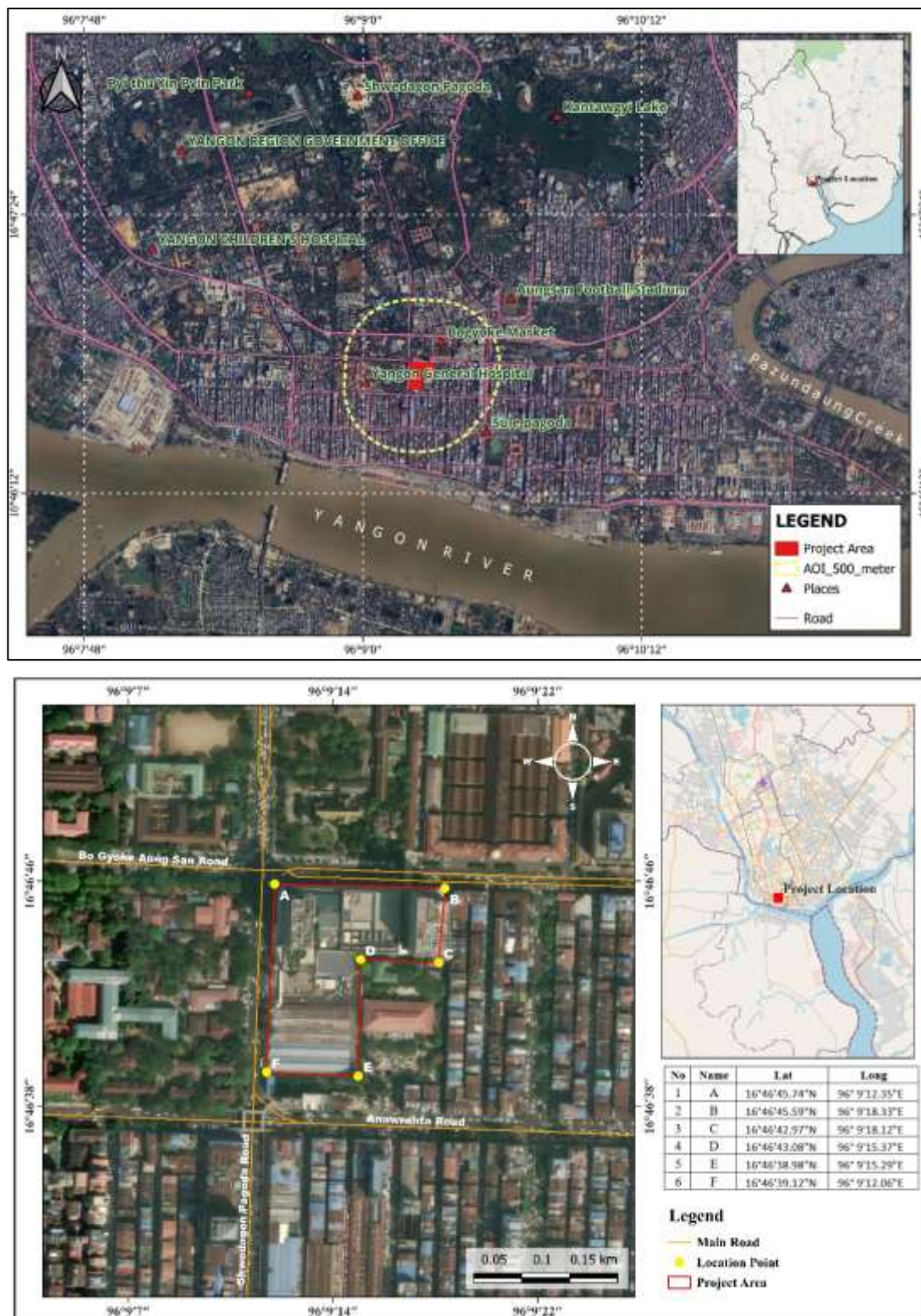


Figure 3-1 Project Location Map

The Project Site is set in a downtown area due to the concentration of residential areas, church, hospitals, high-rise apartments and commercial areas (e.g., restaurants, hotels, shopping malls and markets) in the area. the Junction City Mixed-Use Development Project encompasses the specific geographical region where the prominent urban location offering, close to Maha Bandula Park, Yangon General Hospital, Bogyoke Market, Sule Pagoda, Theingyi Market.

3.4 Project description

3.4.1 Project Visual Transformation

The project is designed to present an aesthetic appearance upon completion.



3.4.2 Construction Area Calculation



Figure 3-2 Project Data (Larger table of above Project Data Projection (Appendix))

Table 3-1 Detailed Project Information

COMPONENT	GFA (sq-ft)	REMARK	PHASE
Office Tower	460,652	23 STY+Mezzanine	PHASE 1
Hotel	277,242	25 Storeys	PHASE 1
Shopping Center and Entertainment Area	433,025	5 Storeys	PHASE 1
Common Area	109,663		PHASE 1 & 2
Units			
Hotel Tower	337 Rooms		
Room Type	Floor	Area	Quantity
Deluxe	L7m To L22	36.5 Sqm	241 Nos
Junior Suite	L7m To L22	65 Sqm	30 Nos
Premier King	L7m To L22	48 Sqm	14 Nos
Handicap Deluxe	L8 To L9	36.5 Sqm	4 Nos
Club	L23 To L25	36.5 Sqm	39 Nos
Club Junior Suite	L23 To L24	65 Sqm	4 Nos
Club Premier King	L23 To L25	48 Sqm	3 Nos
Presidential Suite	L25	268 Sqm	1nos
Office Tower	180 Units		
Shopping Center	317 Units		
SITE AREA	284,229 sqft (6.525 acre)		
BCR	72%		
FAR	8.42		

3.4.3 Land Use and Master Layout Plan

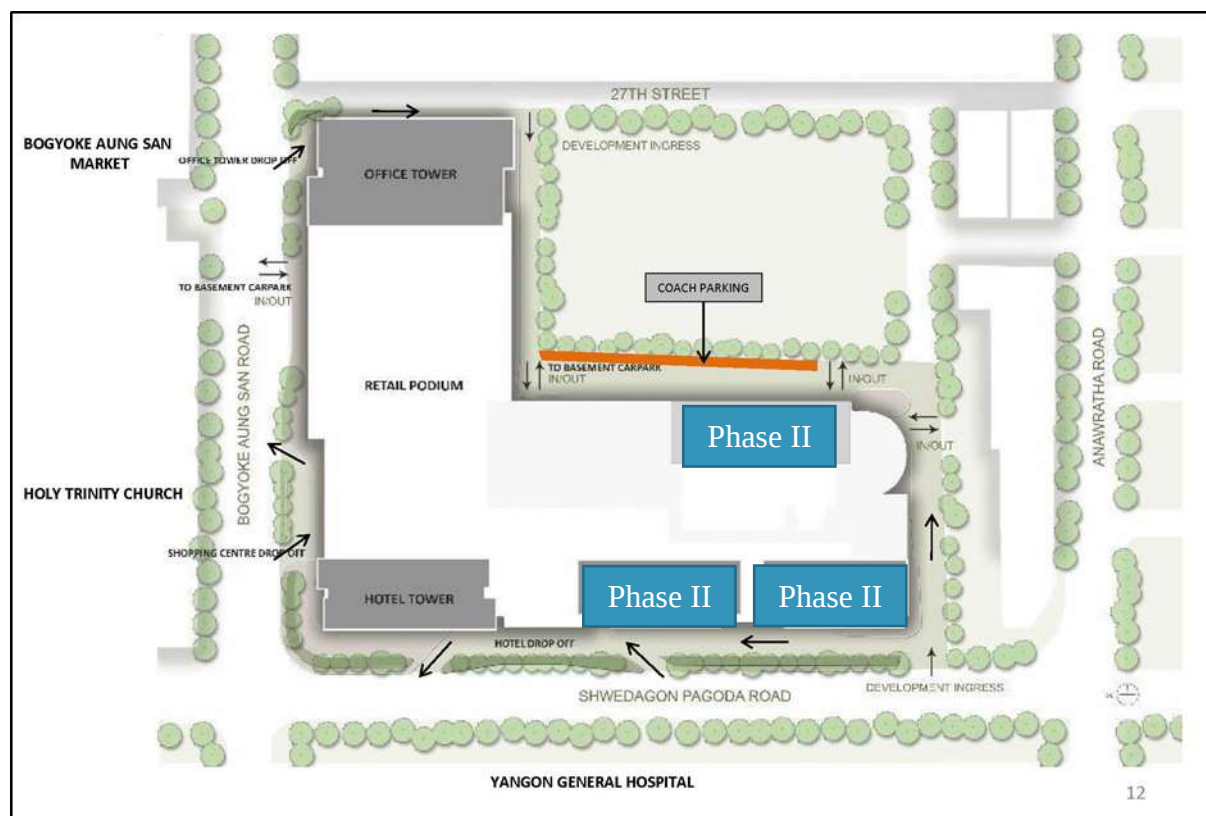


Figure 3-3 Master Layout Plan

The proposed Project is located in an urban, built-up environment. There is no agriculture land on or near it. In its immediate vicinity, there are residential, commercial and recreational area.

3.4.4 Building Setback and Height

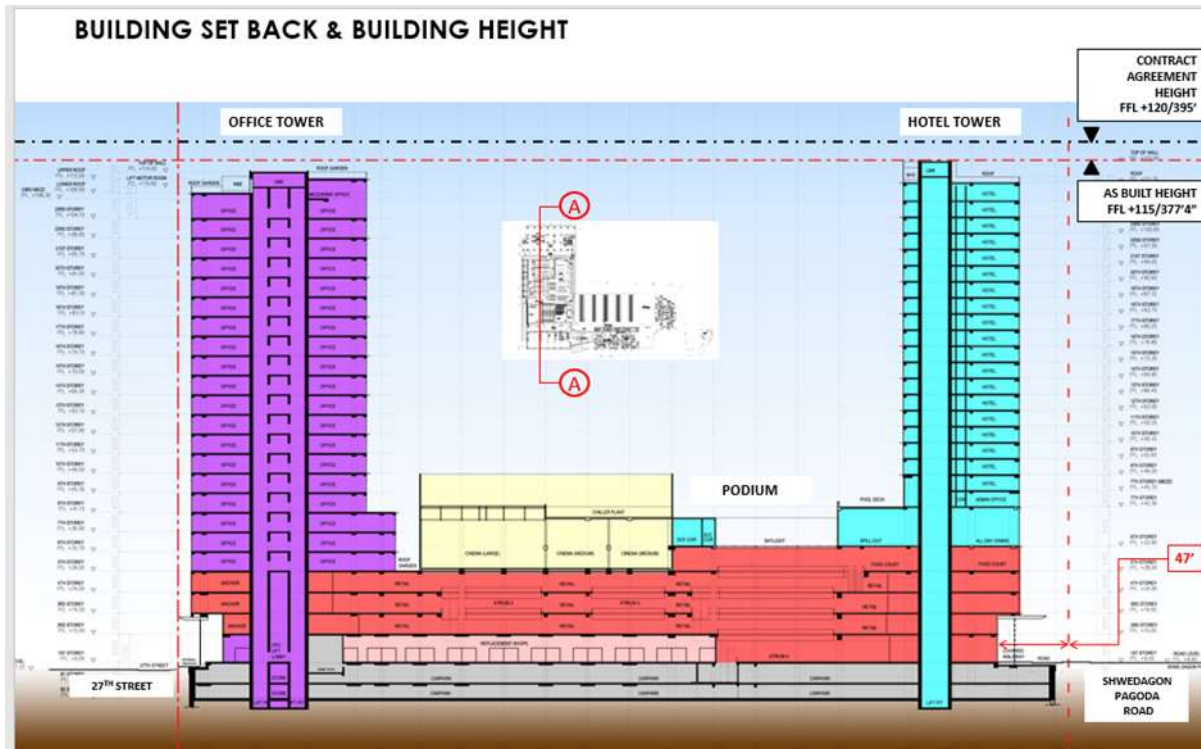


Figure 3-4 Building Setback and Height

3.4.5 Project Architectural Design



Figure 3-5 *Perspective Overview of Hotel*



Figure 3-6 *Perspective View of Office Tower*



Figure 3-7 *Perspective View of Shopping Center*

3.4.6 Land Lease

The owner of the land where the Project Site located is the Yangon City Development Committee. The Junction City Mixed-Use Development Project was established by the joint venture of Shwe Taung Junction City Development Company Limited, City Square Commercial Co., Ltd., City Square Tower Co., Ltd. and City Square Hotel Co., Ltd. The Shwe Taung Junction City Development Company Limited was leased 284,229 sqft (6.525 acre) of land in Pabedan Township of Yangon by the Yangon City Development Committee under a contract on 11 May 2013. The project site is located at Corner of Bo Gyoke Aung San Road and Shwe Dagon Pagoda Road, Pabedan Township, Yangon, Myanmar. According to the MIC permits, the development will run for an initial term of 50 years with an option for the Shwe Taung Junction City Development Company Limited to renew it by mutual negotiation for further two periods of 10 years each for total further period of 20 years.

3.5 Project Development and Implementation Time Schedules

Construction of the Junction City Mixed-Use Development Project (Phase - 1) was completed in March 2017, and commercial operations commenced on March 31, 2017.

3.6 Project Investment

Total project investment is equivalent in Kyat of Equivalent in Kyat of 149.28 Million.

3.7 Manpower

Table 3-2 Manpower

Hotel	Office Tower	Shopping Mall	MCST	Carpark
280	51	252	23	18

3.8 Infrastructure Development

3.8.1 Electricity Supply and Consumption

3.8.1.1 Electricity Supply Sources

The main electricity supply is provided from the national grid through the Yangon Electricity Supply Corporation (YESC). There are total of 14 transformers and 15 generators were placed for the whole project. The following Table 3-3, shown the numbers of transformers, generators and its loading for each building usage.

Table 3-3 Transformers and Generators Requirement

Total Number of Transformer			
NO	CATEGORY	RATINGS (MVA)	COUNT
1	RETAIL	1.5MVA	5 Nos
		1.5MVA	
		1.5MVA	
		1MVA	
		0.75MVA	
2	OFFICE	1.5MVA	4 Nos
		1.5MVA	
		1MVA	
		1MVA	

3	HOTEL	1.5MVA	2 Nos
		1.5MVA	
4	NBGZ(RS)	0.75MVA	1 Nos
5	KBZ	MVA	1 Nos
6	Construction	0.75MVA	1 Nos
Total			14 Nos
NO	Transformer	Transformer Load Size (MVA)	
1	No.1 TR-1 (Office)	1MVA (50/5A)	
2	No.2 TR-3 (Office)	1MVA (50/5A)	
3	No.3 TR-5 (Hotel)	1.5MVA (100/5A)	
4	No.4 TR-7 (NBGZ)	0.75MVA (50/5A)	
5	No.5 TR-8 (R,C,Carpark)	1MVA (50/5A)	
6	No.6 TR-11 (R,C,Carpark)	1.5MVA (100/5A)	
7	No.7 TR-10 (R,C,Carpark)	0.75MVA (50/5A)	
8	No.8 (KBZ)	(50/5A)	
9	No.9 TR-2 (Office)	1.5MVA (100/5A)	
10	No.10 TR-4 (Office)	1.5MVA (100/5A)	
11	No.11 TR-6 (Hotel)	1.5MVA (100/5A)	
12	No.12 TR-12 (R,C,Carpark)	1.5MVA (100/5A)	
13	No.13 TR-9 (R,C,Carpark)	1.5MVA (100/5A)	
14	No.14 (Construction)	0.75MVA (100/5A)	
Total Number of Generator			
NO	CATEGORY	RATINGS (MVA)	COUNT
1	RETAIL	1.5MVA	6 Nos
		1.5MVA	
		1.5MVA	
		0.75MVA	
		0.75MVA	
		0.5MVA	
2	OFFICE	1.5MVA	5 Nos
		1MVA	
		1MVA	
		1MVA	
		0.5MVA	
3	HOTEL	1MVA	3 Nos
		1MVA	
		1MVA	
4	BGZ(RS)	0.75MVA	1 Nos
Total			15 Nos

3.8.1.2 Renewable Energy Source

A rooftop solar array consisting of 450 panels, each with a 260-watt capacity, generated a total of 91,438.6 kWh in 2025. The electricity produced by this system was dedicated to powering the mechanical chillers load.

Table 3-4 Solar Panels Description

Sr	Description	Type & Quantity	Units	Remark:
1	Type of system	On-grid system		
2	Installed capacity	117 kW		
3	Purpose	Mechanical chiller load' Operation		
4	Solar Panel Type	Polycrystalline		
5	Panel capacity per each	260	Watts	
6	Numeber of panels	450	pcs	
7	Inverter type and capacity	25kW	4nos	SMA Sunny Tripower 25000TL-30 PV inverters
8	Battery sotrage (capacity in kWh)			NA
9	Charge controller specifications			
10	Expected annual electricity generation (kWh/year)			91438.6 kWh/year (in 2025)
11	Efficiency (%)			
12	Performance ratio			
13	Installation location			Roof Mounted
14	Land or roof area required			
15	Tilt angle and orientation			
16	Connection to grid (If applicable)			

3.8.1.3 Electricity Consumption

The electrical loading for consumption by the Project is given in table below.

Table 3-5 Electricity Consumption

No	Description	Connected Load (KVA)	Diversity Factor	Maximum Demand (KVA)	Total Transformer capacity (MVA)	Remarks
Office (Office Block)						
1	Office Area - 42000sqm @ 80W/sqm	3953	0.80	3162.35		
2	Office Passenger Lift (8 nos @ 20KVA Each)	160	0.65	104.00		
3	Office Fire/Service Lift (1 nos @ 20KVA Each)	20	0.70	14.00		
4	Office Car Park Lifts (2nos @ 18KVA Each)	36	0.70	25.20		
5	Fire Hosereel Pump - Office	5	1.00	0.00		To run incase of fire
6	Office Water -Cooled Chilled Water Air-conditioning System	930	0.75	697.50		
7	Domestic Transfer Pump-Office	15	1.00	15.00		
8	Domestic Booster Pump-Office	15	1.00	15.00		
9	MV System	30	1.00	30.00		
10	Wet riser pump - Office	55	1.00	0.00		To run incase of fire
11	Sprinkler Pump-Office	40	1.00	0.00		To run incase of fire
12	Elector Sump-Pump	15	1	15.00		
13	External Lightings and Signage	55	0.70	38.50		
14	Common Lighting & Power (8000sqn @ 30VA/sqm)	240	0.80	192.00		
	SUB - TOTAL			4116.55		
	Group Diversity (0.75)			3087.41		
	Design for 2 nos 1.5 MVA & 2 nos 1.0MVA TAX				5	Transformer loading 61.7%
Hotel (Hotel Block)						
1	340 rooms @ 4.125KVA/Room	1700	0.70	1190.00		
2	Hotel Passenger Lifts (4 nos @ 18 KVA Each)	72	0.65	46.80		
3	Hotel Fire/ Service Lifts (2nos @ 20KVA Each)	40	0.7	28.00		
4	Hotel Car Park Lifts (2nos @ 18KVA Each)	36	0.65	23.40		
5	Fire Hosereel Pump - Hotel Block	5	1.0	0.00		To run incase of fire
6	Chilled water Conditioning System	911	1	911.16		
7	Common Lighting & Power (2890sqm @ 30VA/sqm)	87	0.7	60.69		
8	Domestic Transfer Pump - Hotel	15	1	15.00		
9	Domestic Booster Pump - Hotel	15	1	15.00		
10	MV System	30	1	30.00		
11	Elector Sump Pump	15	1	15.00		
12	Sprinkler Pump - Hotel	40	1	0.00		To run incase of fire
13	Wet riser Pump - Hotel	55	1	0.00		To run incase of fire
14	Hot Water System	400	0.7	280.00		

No	Description	Connected Load (KVA)	Diversity Factor	Maximum Demand (KVA)	Total Transformer capacity (MVA)	Remarks
15	External Lightings and Signage	55	0.7	38.50		
16	Phase 2 SA air-con load	888	0.8	710.71		
	SUB TOTAL			3364.26		
	Group Diversity (0.75)			2523.19		
	Design for 2 nos 2.0MVA TX				4	Transformer loading 63.1%
Retail (Phase 1)						
	Retail area :					
1	41661 sqm (70% Retail @ 83KVA and 30% F&B @ 350VA)	6795	0.60	4076.95		
2	Retail Passenger /fire Lifts (4nos @ 18KVA Each)	72	0.65	46.80		
3	Escalators @ 8KW - 17Sets	120	0.70	84.00		
4	Fire Hosereel Pump - Retail Block	5	1.0	0.00		To run incase of fire
5	Air Conditioning System	1850	0.65	1202.50		
6	Common Lighting & Power (449sqm @ 30VA/sqm)	13	0.7	9.43		
7	Domestic Pump - Retail	15	1	15.00		
8	MV System	200	1	200.00		
9	Elector Sump - Pump	15	1	15.00		
10	Wet Riser Pump - Retail	55	0	0.00		To run incase of fire
11	Sprinkler Pump - Retail	45	0	0.00		To run incase of fire
12	Podium Smoke Engineering at 300KW	353	0	0.00		To run incase of fire
13	External Lightings and Signage	55	0.7	38.50		
Phase 1 Common Common area:						
1	Fire Hosereel Pump - Common	5	1.0	0.00		To run incase of fire
2	Domestic Pump - Common	15	1	15.00		
3	Common Lighting & Power (@ 30VA/sqm)	187	0.7	131.19		
4	Elector Sump Pump - Common	100	0.7	70.00		
5	Sprinkler Pump - Common	45	1	0.00		To run incase of fire
6	STP and 12x Tube Wells	200	0.7	140.00		
7	Common Area MV	100	1	100.00		
Carpark (Phase 1)						
1	Basement MV - 20VA/sqm @ 19000sqm	380	0.60	228.00		
2	MSCP MV - 10VA/sqm @ 6000sqm	60	0.60	36.00		
3	CP Lighting & Power (@ 15VA/sqm)	250	1	250.00		
	SUB-TOTAL			6658.36		
	Group Diversity (0.7)			4660.85		

No	Description	Connected Load (KVA)	Diversity Factor	Maximum Demand (KVA)	Total Transformer capacity (MVA)	Remarks
	Design For 3 nos 1.5MVA & 1no. 0.75MVA				5.25	Transformer loading 88.7%
						Loading a bit high during phase 1. But in phase 2 we will transfer the carpark and Common-common loads to separate transformers.
						*3Phase*hrs
Replacement Shops Components						
1	436 units @ 1KW/Units	513	0.60	307.76		
2	Fire Hosereel Pump -RS	5	1.0	5.00		
3	Air Conditioning System	507	0.65	329.38		
4	Common Lighting & Power (@ 30VA / sqm)	13	0.7	9.43		
5	Domestic Pump - RS	15	1	15.00		
6	Elector Sump Pump	15	1	15.00		
	SUB-TOTAL			681.58		
	Group Diversity (0.75)			511.18		
	Design For 1 nos 0.75MVA TX				0.75	Transformer loading 68.1%
	Total Max demand load KVA			10782.64	15.00	
	1 x 66KV incoming for phase 1	15.315 MVA		11.035MVA		Transformer loading 0.72%

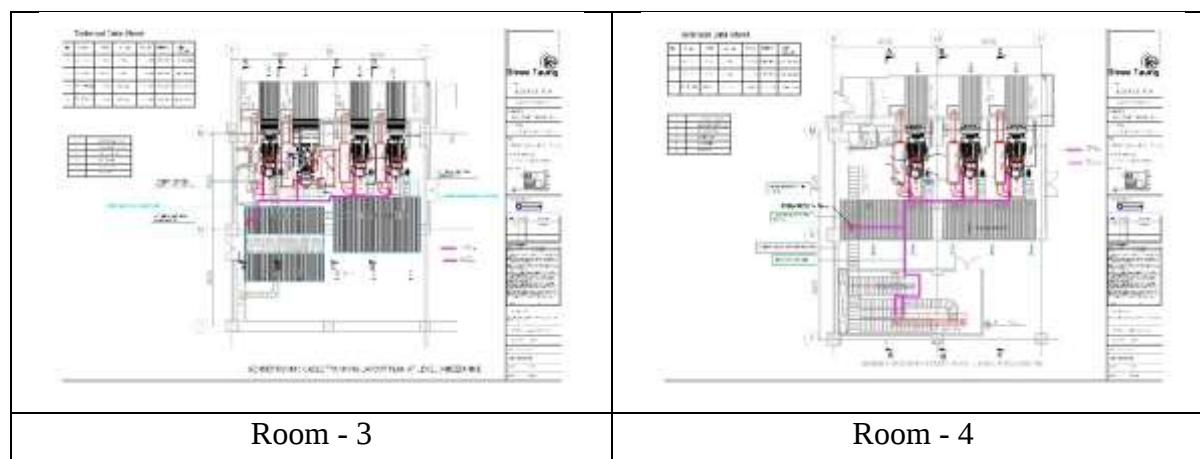


Figure 3-9 Locations of backup generators (Appendix)

3.8.2 Water Supply and Distribution System

3.8.2.1 Main Water Supply Source

The project involves offices buildings, hotel building and retail shops and basement car park. For the whole project, main water supply was provided by YCDC and other source such as tube well for 24 hours. Main water supply system is connected to every tower. Two ground tank with the capacity of 1473.9 m³ with 884.34 m³ for firefighting system and 589.56 m³ for domestic usage. Additional five roof tanks with a total storage capacity of 1,116 m³. This provides the project with approximately 3 days of total water autonomy. The water availability from YCDC is 81,400 gallons per day. The maximum water consumption for the hotel tower was 4,554.5 m³ per month and maximum water consumption for the office tower and retail shops was 1,113.8 m³ per month and 22,803.8 m³ per month.

Table 3-6 Water Storage Tank Locations and Capacity

Component	Location	Capacity (m ³)
Ground Tank	Basement	1473.9
RS Tank	Level 7 Roof	24
Retail Make-up Water Tank	Level 7 Roof	72
Retail Tank	Level 7 Roof	648
Office Transfer Tank / Office Make-up Water Tank	Level 7 Roof	264
Hotel Make-up Water Tank	Level 7 Roof	108

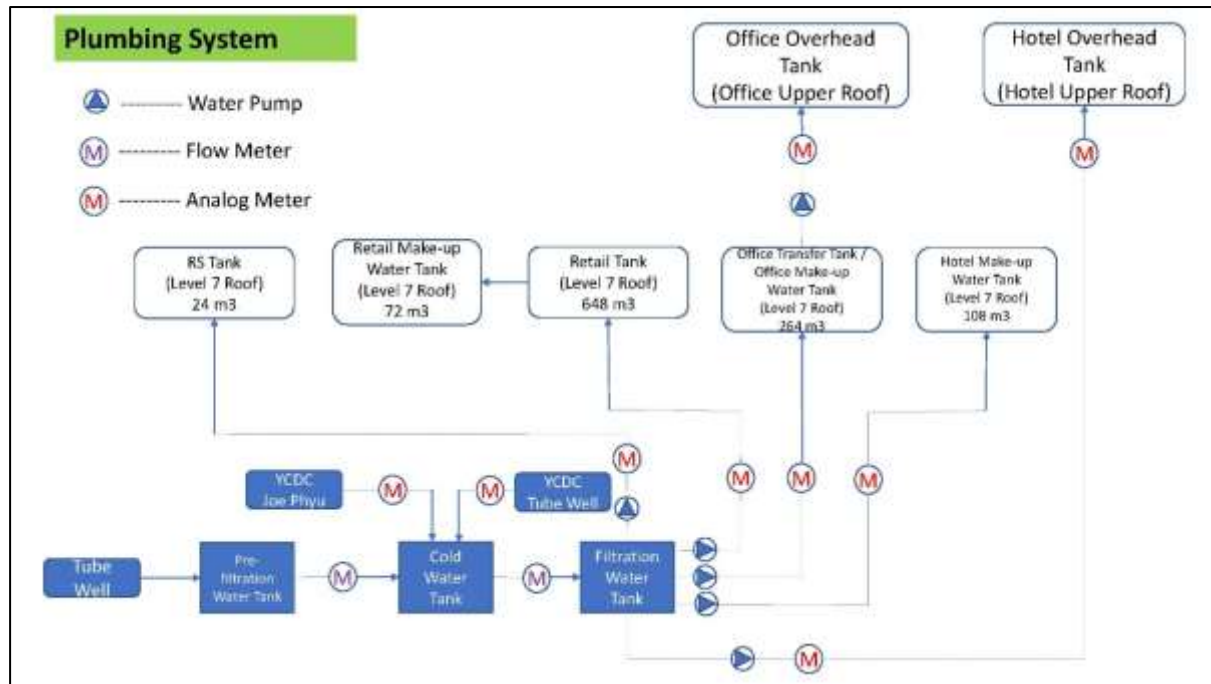


Figure 3-10 Water Distribution Plan

3.8.2.2 Secondary Water Supply

Back up water supply was provided for all buildings.

The sources of back up water will be as follows: -

- Treated deep bore well water was also used to augment water supply YCDC main's water supply is interrupted.
- Although 16 deep bore wells were excavated, groundwater is currently extracted from only six at a time. To prolong the service life and durability of the wells, a rotational operation schedule is employed instead of simultaneous usage.
- And extracted water were stored in pre-filtration water tank and transported to cold-water tank and transferred to filtration water tank.

Location of the Tube-wells were illustrated in **Figure 3-11**.

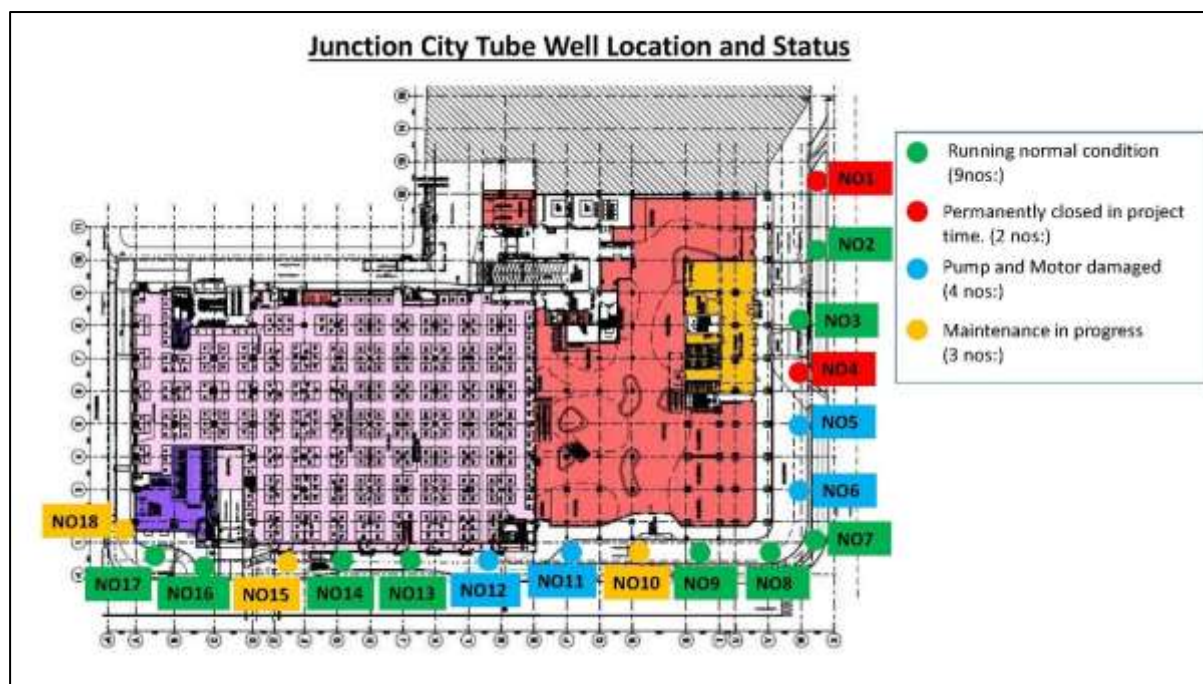
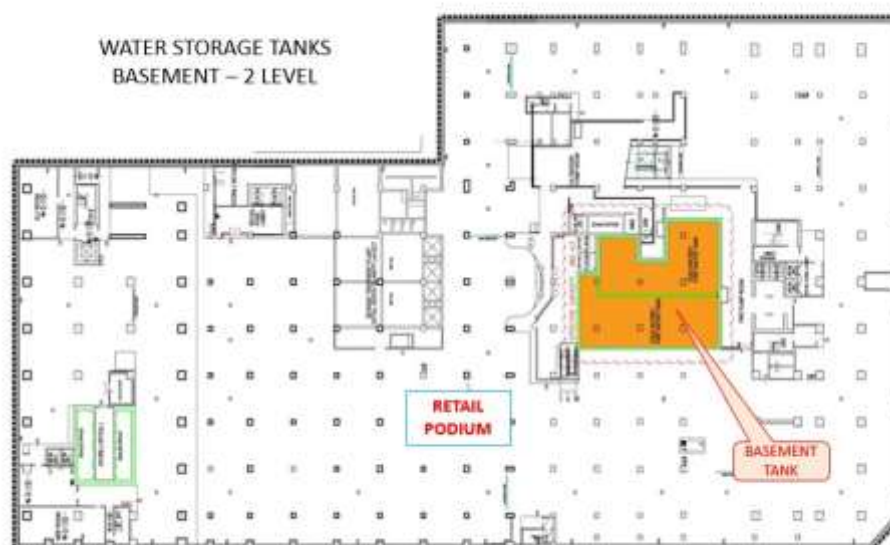


Figure 3-11 Tube-Well Locations

WATER SOURCE & STORAGE



WATER SOURCE & STORAGE

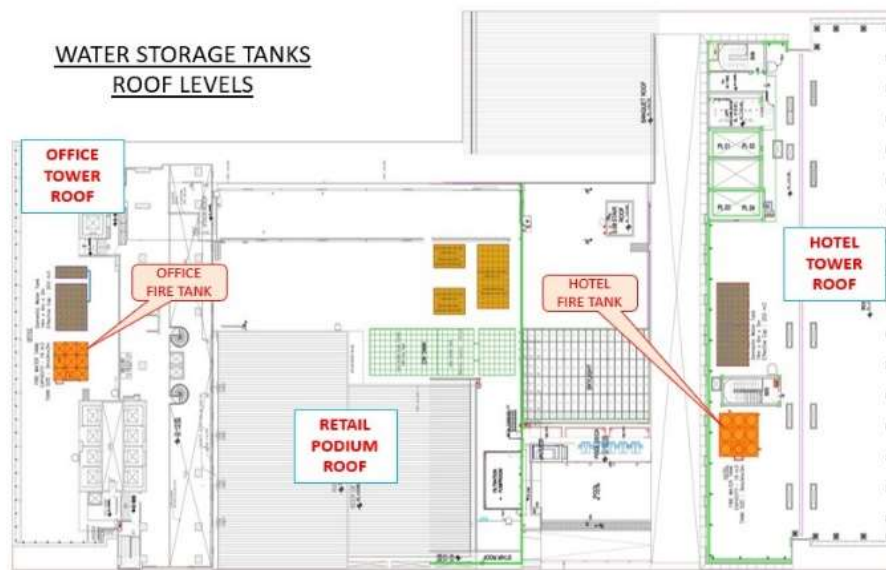


Figure 3-12 Water Storage Tank Locations

Table 3-7 Monthly Water Consumption

Monthly Raw Water Usage of Retail, Hotel, Office and Replacement Shop						
No	Month of Water Usage	Name of User	Previous month reading (m3)	Current month Reading (m3)	Consumption of the Month (m3)	Remark
1	Jan-25	Hotel	72579	77729	5150	
		Retail	1490100	1513290	23190	
		Office	1611	3997	2386	
			Total		30726	
2	Feb-25	Hotel	77729	82063	4334	
		Retail	1513290	1535670	22380	
		Office	3997	5680	1683	
			Total		28397	
3	Mar-25	Hotel	82063	86808	4745	
		Retail	1535670	1561290	25620	
		Office	5680	7380	1700	
			Total		32065	
4	Apr-25	Hotel	86808	91216	4408	
		Retail	1561290	1580240	18950	
		Office	7380	9045	1665	
			Total		25023	
5	May-25	Hotel	91216	95376	4160	
		Retail	1580240	1608630	28390	
		Office	9045	10704	1659	
			Total		34209	
6	Jun-25	Hotel	95376	100034	4658	
		Retail	1608630	1635420	26790	
		Office	10704	12239	1535	
			Total		32983	
7	Jul-25	Hotel	100034	104828	4794	
		Retail	1635420	1640420	5000	
		Office	12239	13525	1286	
			Total		11080	
8	Aug-25	Hotel	104828	109505	4677	

		Retail	1640420	1640420	0	
		Office	13525	13828	303	
			Total		4980	
9	Sep-25	Hotel	109505	113434	3929	
		Retail	1640420	1653230	12810	
		Office	13828	13852	24	
			Total		16763	
10	Oct-25	Hotel	113434	117962	4528	
		Retail	1653230	1676470	23240	
		Retail Make up	0	710	710	
		Office	13852	13858	6	
			Total		28484	
11	Nov-25	Hotel	117962	122679	4717	
		Retail	1676470	1690340	13870	
		Retail Make up	710	5580	4870	
		Office	13858	13863	5	
			Total		23462	
Monthly Make Up Water Usage of Hotel, Retail, Office						
No	Month of Water Usage	Name Of User	Previous month reading (m3)	Current month Reading (m3)	Consumption of the Month (m3)	Remark
1	Jan-25	Hotel Transfer pump	72802	77729	4927	
		Hotel Make up	25141	26032	891	
		Retail Make up	76853	80457	3604	
		Office Make up	30773	31879	1106	
			Total		10528	
2	Feb-25	Hotel Transfer pump	77729	82063	4334	
		Hotel Make up	26032	26951	919	
		Retail Make up	80457	83788	3331	
		Office Make up	31879	34138	2259	
			Total		10843	
3	Mar-25	Hotel Transfer pump	82063	86808	4745	

		Hotel Make up	26951	28217	1266	
		Retail Make up	83788	87432	3644	
		Office Make up	34138	36586	2448	
			Total		12103	
4	Apr-25	Hotel Transfer pump	86808	91216	4408	
		Hotel Make up	28217	29610	1393	
		Retail Make up	87432	94230	6798	
		Office Make up	36586	38974	2388	
			Total		14987	
5	May-25	Hotel Transfer pump	91216	95376	4160	
		Hotel Make up	29610	30948	1338	
		Retail Make up	94230	102282	8052	
		Office Make up	38974	42568	3594	
			Total		17144	
6	Jun-25	Hotel Transfer pump	95376	100034	4658	
		Hotel Make up	30948	32141	1193	
		Retail Make up	102282	106471	4189	
		Office Make up	42568	46224	3656	
			Total		13696	
7	Jul-25	Hotel Transfer pump	100034	104828	4794	
		Hotel Make up	32141	33434	1293	
		Retail Make up	106471	109350	2879	
		Office Make up	46224	48829	2605	
			Total		11571	
8	Aug-25	Hotel Transfer pump	104828	109505	4677	
		Hotel Make up	33434	34598	1164	
		Retail Make up	109350	112393	3043	
		Office Make up	48829	51879	3050	
			Total		11934	

9	Sep-25	Hotel	109505	113434	3929	
		Hotel Make up	34598	35671	1073	
		Retail Make up	112393	115099	2706	
		Office Make up	51879	54963	3084	
			Total		10792	
10	Oct-25	Hotel Transfer pump	113434	117962	4528	
		Hotel Make up	35671	36969	1298	
		Retail Make up	115099	118217	3118	
		Retail Transfer pump	0	710	710	
		Office	54963	58121	3158	
			Total		12812	
11	Nov-25	Hotel Transfer pump	117962	122679	4717	
		Hotel Make up	36969	38093	1124	
		Retail Make up	118217	120924	2707	
		Retail Transfer pump	710	5580	4870	
		Office Make up	58121	60821	2700	
			Total		16118	

3.8.2.3 Drainage System

The drainage system is integrated with the city's municipal infrastructure via the YCDC Drain.

Primary Perimeter Collection (Magenta Line): A 500-mm standard external drain encircles the southern and western perimeters. This acts as the first line of defense for runoff from the building's facade and the "Drop-off" areas (Taxi and Coach bays).

The "Summit" (Corner Buffers): At the southwest and southeast corners, the system features "Summit" pits. These are widened and deepened sections (1.2m Wide x 1.0m Deep) designed to prevent turbulence and overflow at points where the water changes direction at high velocity.

Heavy-Duty Collector (West Side): On the western boundary, a massive 1200mm x 1850mm Concrete Drain is installed. This suggests that the site's natural or designed slope directs a significant volume of water toward the west before it is piped toward the final discharge.

Operational Drainage (Loading Bays): Within the site, 1000mm x 1000mm Concealed Internal Drains manage waste runoff and rainwater from the heavy-duty loading areas and bin stores, keeping utility zones dry.

Northern Discharge (27th Street): The discharge point at the exiting toward the 27th Street and where water is funneled into the YCDC Municipal Drain located at the corner of 27th Street and Anawratta Road.

South Interface (Shwedagon Pagoda Rd): The site's perimeter drainage ensures that runoff from the vast podium roof (Junction City Mall) does not spill onto Shwedagon Pagoda Road, protecting the main traffic artery.

West Interface (Bogyoke Market): The 1200x1850mm concrete drain noted on the technical drawing is critical here to act as a barrier, ensuring that the development's runoff does not impact the lower-lying historical structures nearby.

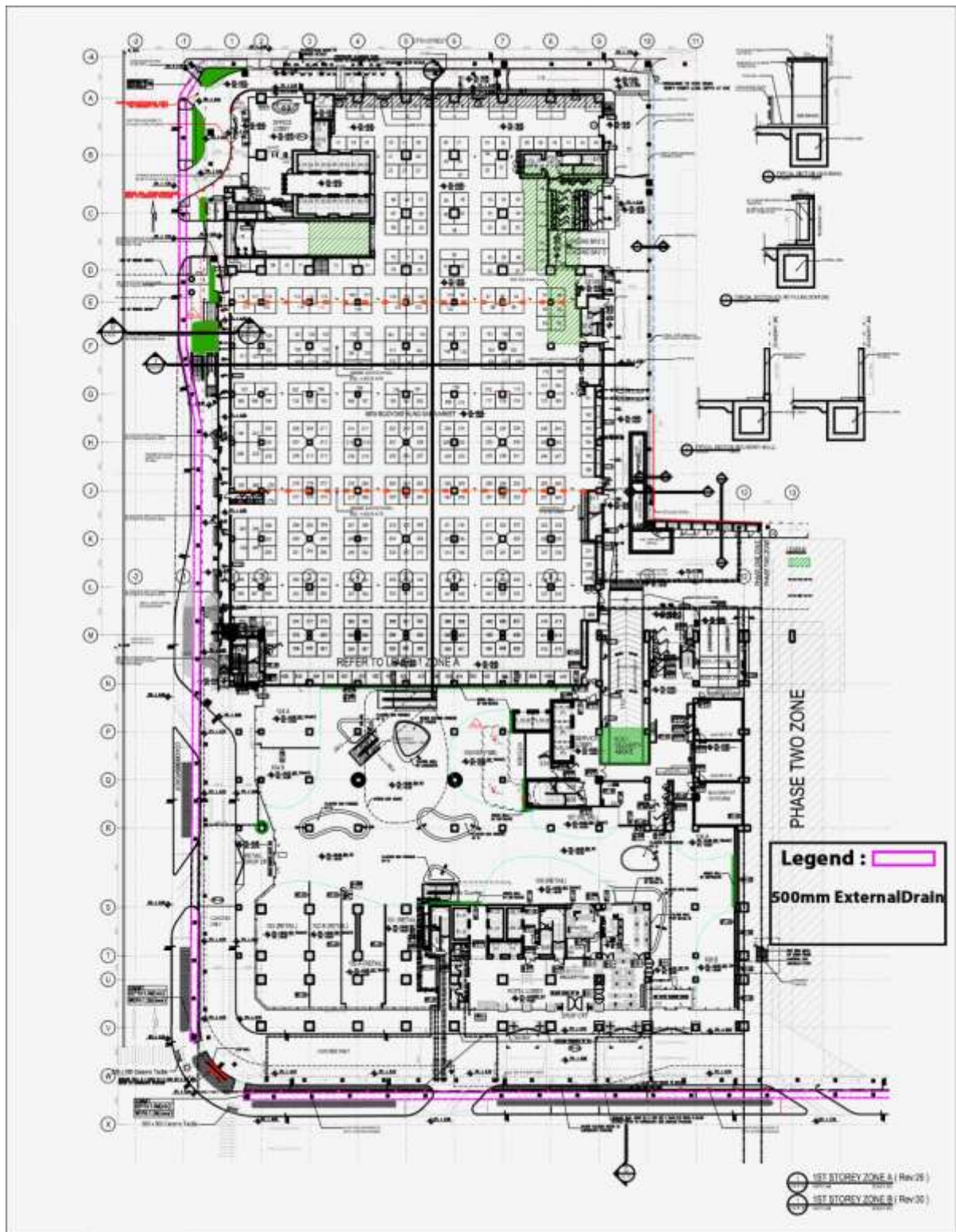


Figure 3-13 Internal and External Drainage System

3.8.3 Air Conditioning, Mechanical and Ventilation System

The Centralized Water-Cooled Chiller System was used in the project development. This is a high-efficiency cooling solution typically used in large-scale developments. The components of Centralized Water-Cooled Chiller System are Cooling Tower (900T)*4 nos, Chiller

(600T)*4 nos, Chiller (300T)*1 nos, Chilled water Pump * 7 nos, Condensor water pump * 5 nos, Makeup water pump * 2 nos, AHU - 76 nos, FCU- 44 nos.

- There are 12 sets of Water-Cooled Chillers installed in Chiller Plant Rooms and were manufactured by Carrier in China with Model No. 23XRV-5757ERW4090, 30kW-V310, 23XRV-5250 NRV 3190, Screw Type.
- There are 16 sets of Chiller Pumps in Chiller Plant Rooms, originated from SINGAPORE and manufactured by PARAGON with Model No. PA-150-32, PA-155-32, PA-150-26 V/H mounted split case type.
- There are a total of 92 units of AHU/PAHU at Office 7 units, Retail 66 units, cinema 10 units & Hotel 9 units. The approved brand is Carrier Malaysia with Series.
- There are 4 sets of Heat Exchanger in the building from Sondex of Denmark with Model No. S130-1516-340-TMTL5-Liquid, PHE type with 2,780KW.
- There are 10 sets of KUKEN Cooling Towers, SKB Series, Model SK-8608, SKB-1060R, SKB-1325R, mechanical-draft, cross flow, horizontal intake and horizontal discharge module unit type for Vattamac Capital Project.
- Fans are from Singapore with MASON Make with In-line AXIAL fan. There are around 422 sets of MV fans installed in the building.

	23XRV High-Efficiency Variable Speed Screw Chiller with PIC5 Controls 50/60 Hz HFC-134a
--	---



Figure 3-14 Centralized Water-Cooled Chiller System

Table 3-8 Common Air Conditioning Type, Location & Refrigerant Type

Sr	Aircon	Location	GAS TYPE
1	MDF Room 1	B2, MDF Room	R410
2	MDF Room 2	B2, MDF Room	R32
3	MDF Room 3	B2, MDF Room	R410
4	MDF Room 4	B2, MDF Room	R410
5	B1, ELV Room 1	B1, ELV Room	R32
6	B1, ELV Room 2	B1, ELV Room	R410
7	HT Control Room	HT Control Room	R410
8	FCC Room 1	FCC Room	R410
9	FCC Room 2	FCC Room	R410
10	FCC Room 3	FCC Room	R410
11	FCC Room 4	FCC Room	R410
12	Cold Room 1	Near Bin Center	R410
13	Cold Room 2	Near Bin Center	R410
14	B1, Feeder Room	B1, Feeder Room	R410

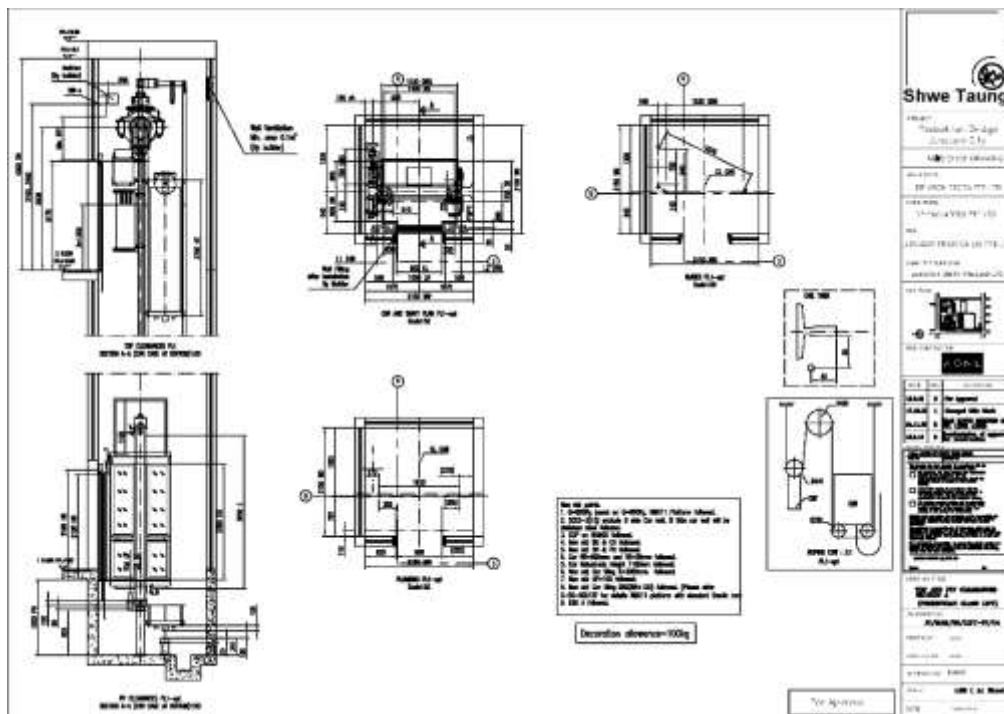
Table 3-9 Refrigerant Type & Capacity of Chillers

Group	Chiller Number	Ton	Gas	Lb	Power	Capacity
CSC	1	600	R134a	1430	381KW	2210KW
	2	600	R134a	1430	381KW	2210KW
	3	600	R134a	1430	381KW	2210KW
	4	600	R134a	1430	381KW	2210KW
	6	300	R134a	715	381KW	1105KW
CSH	1	500	R134a	1190	381KW	1759KW
	2	500	R134a	1190	381KW	1759KW
	3	500	R134a	1190	381KW	1759KW
CSO	1	600	R134a	1430	381KW	Total Capacity: 21,600,000 BTU
	2	600	R134a	1430	381KW	

	3	300	R134a	1430	381KW	
	4	300	R134a	1430	381KW	

3.8.4 Lift System

Feature	Specification
Load capacity	1600, 2000 kg
Speed	0.5 m/s
Max. travel	23 m
No. of floors	2 to 7, max. 12 for TTC
Control	Down or full collective
Group size	Simplex or duplex
Hoisting machine	Gearless KONE EcoDisc®
Doors	Automatic center opening
Car door height	2100 cm*
Code compliance	EU directive 95/16; EN81-1:1998



1. Wet Riser
2. Fire Hydrant/ Fire Hose Reel/ Hose Rack
3. Fire Extinguishers

Fire Alarm System

1. Smoke/ Heat Detector
2. Manual Call Point Electric Bell/ Fire Horn Strobe
3. Public Announcement (PA)

Others

1. Smoke curtain, Fire shutter
2. Staircase Pressurization Fans
3. Gas Detection System
4. Panic Alarm/ Handicap Alarm
5. EXIT/ Emergency Light

The quantity and configuration of the fire protection equipment were based on MFSD approval, and the quantity and configuration of the fire protection equipment are as follow:

Sr.No	Description	Make/Model	Qty	Remark
Automatic Sprinkler System				
1	Alarm check valve	Viking	1	
2	Flow meter at pump room	GLOBEL VISION	-	
3	Sprinkler	Viking	439	
4	Flow switch	Potter	1	
5	Gate valves	Viking	1	
6	Check valves	Viking	1	
7	Butterfly valves	Viking	1	
8	Landing valves	Kill Fire	2	
9	Supervisory switch	Potter	1	
10	Jockey pump	EBSRAY	1	
11	Fire pump control panel	TORNA	1	
12	Pipes	STS/Youfa	-	
13	Fitting (Threaded)	Bowling/Bon	-	
14	Automatic air released valve	Kill fire	-	
15	Flexible joint	Tozen	-	
16	Water Mist Control Panel	Honeywell	6	
Automatic Fire Alarm System				
1	Main fire alarm panel	Notifier	-	
2	MICMIC PANEL	Notifier	3	
3	Battery	Neuton Power	-	
4	Alarm bell	Notifier	4	
5	Smoke detector	Notifier	53	
6	FR cable	Wilson	-	
7	GI conduit	Smartr	-	
8	Metal Trunking	EKKO	4	
9	Break glass Manual Call point	M400KCH	4	
10	10 zones conventional control panel	Notifier	-	
11	Conventional heat detector	Notifier	-	
12	Modules	Notifier	67	

Sr.No	Description	Make/Model	Qty	Remark
13	Water Mist Fire Alarm Control Panel	Honeywell	6	
14	CO2 Alarm Control Panel	Zeta	1	
15	FM200 Control Panel	Zeta	4	
Portable Fire Extinguisher				
1	ABC fire extinguisher	Killfire	2	
2	CO2 fire extinguisher	Killfire	-	
Fire Hydrant System				
1	2-Ways Controls Pillar Hydrant	Killfire	-	
2	Fire Hose Reel	Killfire	2	
3	Jet Spray	Killfire	2	
4	Fire Hose Rack	Killfire	2	
5	Breeching Inlet-4ways	Killfire	-	

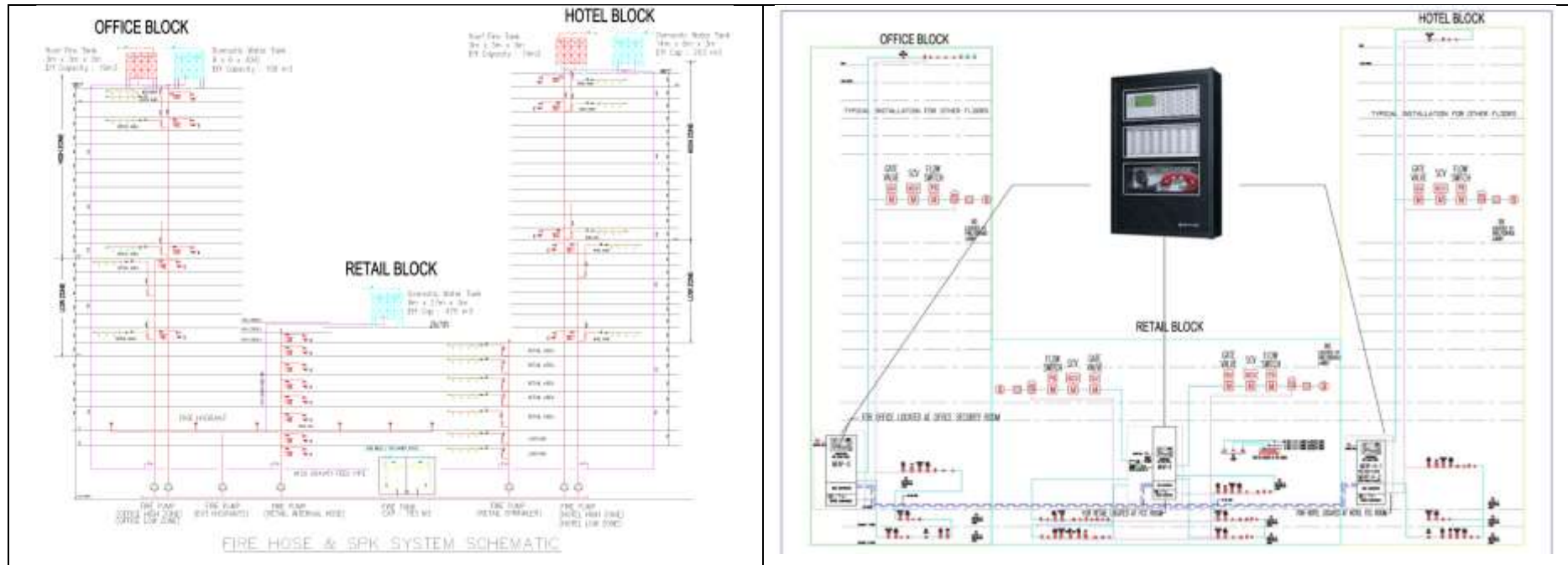
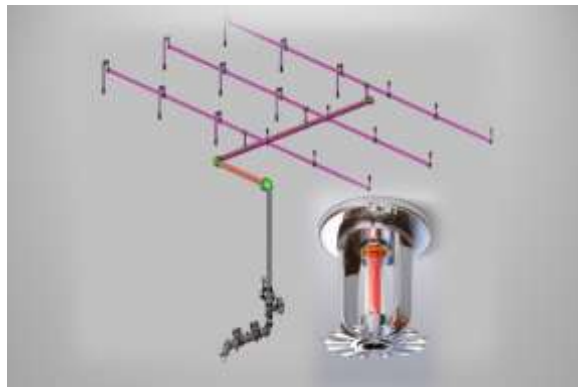


Figure 3-16 Firefighting System Schematic



Sprinkler system



Water Mist System



CO2 & Foam System



Gas Suppression System



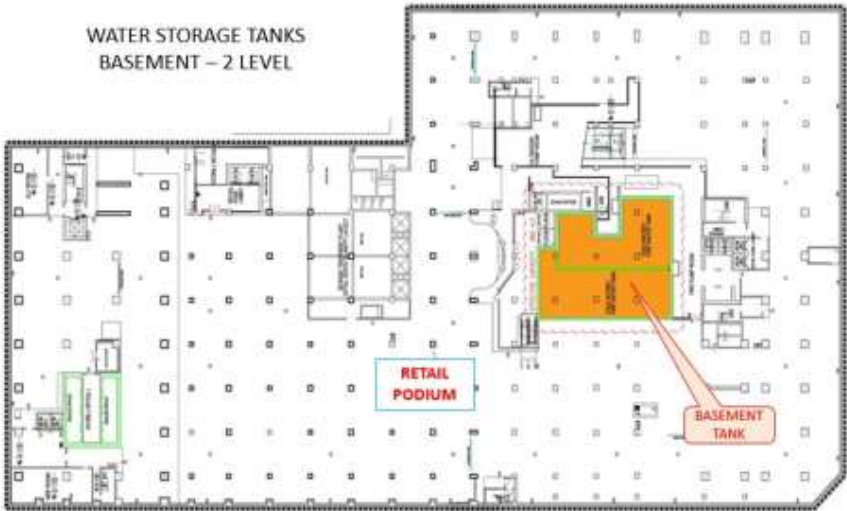
Wet Chemical System

Figure 3-17 Firefighting System



CO Detectors & Jet Fans

WATER SOURCE & STORAGE



WATER SOURCE & STORAGE



Figure 3-18 Fire Service Tank Location

3.9 Waste Management

3.9.1 Solid Waste Management

3.9.1.1 Waste Category and Waste Generation

Table 3-10 Waste Generation per Month

Waste Category	Waste Type	Quantity (kg/month)
Biodegradable Waste	Kitchen Waste	81,000
	Grease Waste	2,500
Subtotal		83,500
Non-Biodegradable Waste	Dry Waste (Paper, Plastic, PET Bottles, Cardboard, Residual Waste)	30,000-36,000
Subtotal		30,000-36,000
Hazardous Waste	WWTP Sludge	1,500
Subtotal		1,500
Total		115,000-121,000

3.9.1.1.1 Waste Categories and Distribution Pattern

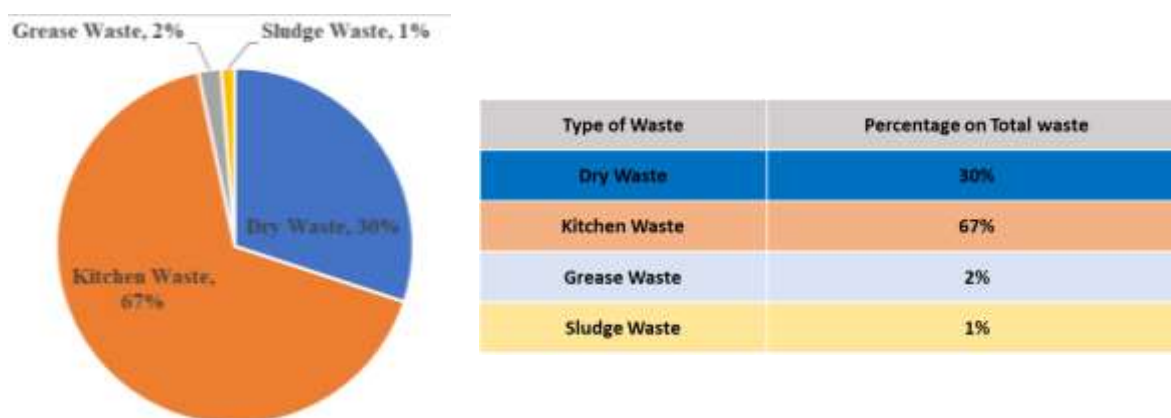


Figure 3-19 Waste Categories and Distribution Pattern

3.9.1.2 Waste Segregation System and Disposal

Solid waste generated within the development was segregated using a color-coded waste bin system installed throughout the Office Tower, Shopping Center, and Hotel Tower. The waste segregation categories consisted of:

- Dry Waste
- Kitchen Waste
- Grease Waste
- Sludge Waste



Figure 3-20 Waste Segregation System

3.9.1.2.1 Dry Waste

Dry waste generated from hotel rooms, the shopping center, office tower, and car parking areas was classified into two categories: Recyclable waste and Non-Recyclable Waste.

Recyclable Waste:

- Paper waste: loose paper scraps, office paper, and miscellaneous paper products.
- Cardboard: corrugated cartons and packaging materials.
- Plastic waste and PET bottles.
- Aluminum cans and other recyclable containers.

Residual waste unsuitable for recycling and subsequently processed using compactors prior to disposal. The average quantity of recyclable materials, including paper, plastic bottles, and cans, was approximately 2,500 kg per month. The total dry waste generated averaged 30,000-36,000 kg (30-36 tonnes) per month. Recyclable materials were collected and transported by Golden Dowa Eco-System Myanmar Co., Ltd. for recycling and recovery.





Figure 3-21 Recycle Waste Segregation and Recycle Process

To maximize storage efficiency and reduce transportation frequency, non-recyclable waste was compacted using a 12 m³ waste compactor prior to collection and disposal by Yangon City Development Committee (YCDC).



Figure 3-22 Non- Recycle Waste Segregation and Compacting Process

3.9.1.2.2 Kitchen Waste

Kitchen waste generated from hotel and shopping center food preparation areas was collected and transported to the designated Cool Room for temporary storage prior to disposal. The average quantity of kitchen waste generated was approximately 81,000 kg per month.



Figure 3-23 Kitchen Waste Segregation System

3.9.1.2.2.1 Environmental Management for Kitchen Waste

To prevent potential environmental impacts associated with kitchen waste, including odor generation, pest infestation, and public health concerns, the following measures have been implemented:

- Kitchen waste is segregated at source using designated waste bins.
- Waste is collected regularly and transferred to a designated Cool Room for temporary storage.
- The Cool Room maintains controlled storage conditions to minimize decomposition and odor generation.
- Waste bins and storage areas are cleaned and disinfected regularly.
- Storage areas are covered and protected from insects, rodents, and other pests.
- Kitchen waste is removed routinely through the approved waste collection system operated by YCDC.
- Housekeeping personnel conduct continuous monitoring to prevent waste accumulation in public areas.

3.9.1.2.3 Grease Waste

Grease waste generated from hotel and shopping center kitchens was collected in plastic-lined containers and temporarily stored at the Sewage Treatment Plant (STP) waste storage area prior to disposal. The average quantity of grease waste generated was approximately 2,500 kg per month. Grease waste was periodically collected and transported to designated disposal facilities through arrangements coordinated with YCDC.



Figure 3-24 Grease Waste Storage and Disposal

3.9.1.2.3.1 Environmental Management for Grease Waste

Grease waste generated from hotel and shopping center kitchens is managed separately to prevent contamination of soil, surface water, drainage systems, and wastewater treatment facilities. The following management measures have been implemented:

- Grease waste is collected separately from other waste streams.
- Waste grease is stored in sealed plastic bags and leak-proof containers.
- Containers are placed within designated storage areas at the STP facility.
- Storage areas are provided with impermeable flooring to prevent seepage into soil and groundwater.
- Direct discharge of grease waste into drainage systems or wastewater networks is strictly prohibited.
- Storage containers are inspected regularly to prevent leakage and spillage.
- Any accidental spills are cleaned immediately using appropriate housekeeping procedures.
- Grease waste is periodically collected and disposed of through YCDC-approved disposal arrangements.

3.9.1.2.4 Sludge Waste

Sludge generated from the wastewater treatment plant was collected in plastic bags, stored in designated containers within the STP area, and subsequently disposed of through YCDC-approved disposal arrangements. The average quantity of sludge generated was approximately 1,500 kg per month.



Figure 3-25 Sulfide Waste Storage and Disposal

3.9.1.2.5 Waste Management Processes

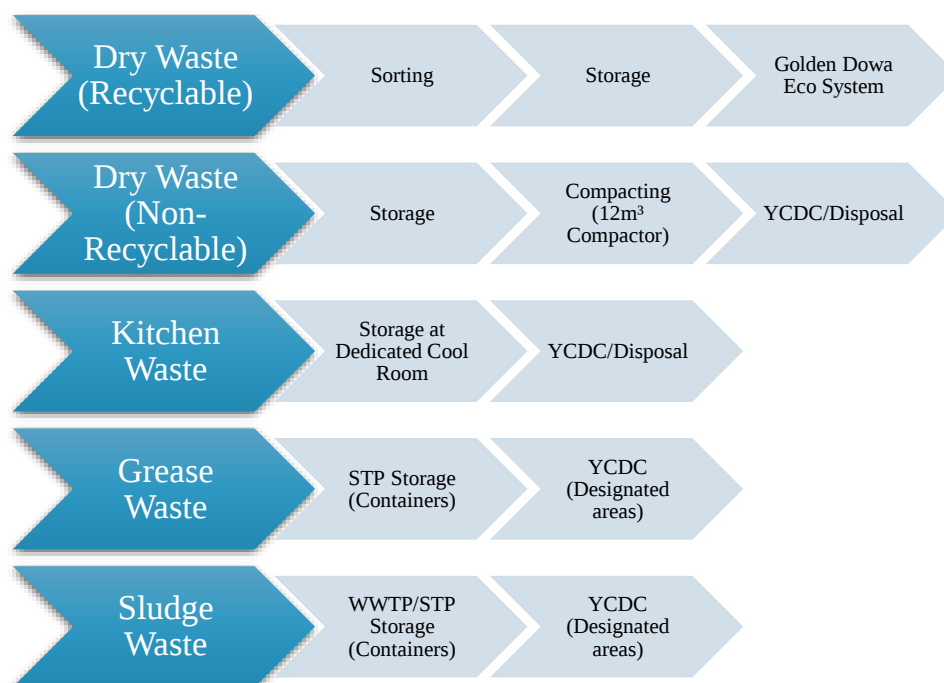


Figure 3-26 Waste Management Processes

3.9.1.2.6 Waste Disposal

According to the solid waste management plan adopted by the Project, the disposal system was manual.

- **Dry Waste:** A total number of (15) Plastic 660-liter (0.66m³) wheeled bins was used to collect Dry waste and at least 5 times to 6 times per month. Recyclable wastes were segregated accordingly to the processes and disposed with Golden Dowa Eco System Myanmar Co., Ltd. Non- recyclable wastes were compressed with compactor with 12 m³ capacity and collect & pick up by YCDC.
- **Kitchen Waste:** A total number of (10) Plastic 660-liter (0.66m³) wheeled bins was used to collect kitchen waste and temporarily disposed to Cool Room area and stored in designated cool Room and collect & pick up by YCDC.

- **Grease Waste:** Grease Waste from kitchen of Hotel and Shopping Center were collected (1) time per (2) weeks with Plastic bag and stored in STP with containers and (1) time per (2) month collected and disposed via YCDC.
- **Sludge Waste:** Sludge waste from wastewater treatment plant were collected with plastic bag and stored with containers in STP and collected and disposed via YCDC.
- Provided designated waste bin at each floor and regularly collected through shifts.

3.9.1.2.7 Waste Collection Schedule and Collection Points

The development operates a 24-hour waste collection and cleaning management system divided into three primary shifts. This ensures that waste does not accumulate in public areas, staircases, or perimeter streets, maintaining the project's high hygiene standards.

1. Morning Shift

A total of 11 personnel and 1 supervisor were appointed at Morning Shift. Four (4) personnel are dedicated strictly to the 17 staircases to ensure vertical waste transit is clear. Four (4) personnel manage the link bridges and external perimeters, while two (2) personnel are stationed at the Central Bin Centre to manage incoming loads and compactors. The detailed manpower allocation is as follows:

- Bin Centre (Main Waste Depot): 2 staff members are stationed here to handle waste segregation, sorting, and storage as it arrives.
- Primary Waste Collection Routes & Points:
 - 27th Street Side: 1 staff member
 - Link Bridge and Adjacent Area: 1 staff member
 - Main Entrance: 1 staff member
 - Shwe Dagon Pagoda Road Side: 1 staff member
 - Staircase Areas: A total of 17 staircases are covered by 4 staff members, distributed as follows:
 - Staircases 01, 03, and 10: 1 staff member
 - Staircases 11, 12, and 13: 1 staff member
 - Staircases 05 and 07: 1 staff member
 - Staircases 06 and 08: 1 staff member
- Supervisory Team: 1 Supervisor oversees the operations to ensure seamless workflow and compliance.

2. Afternoon Shift

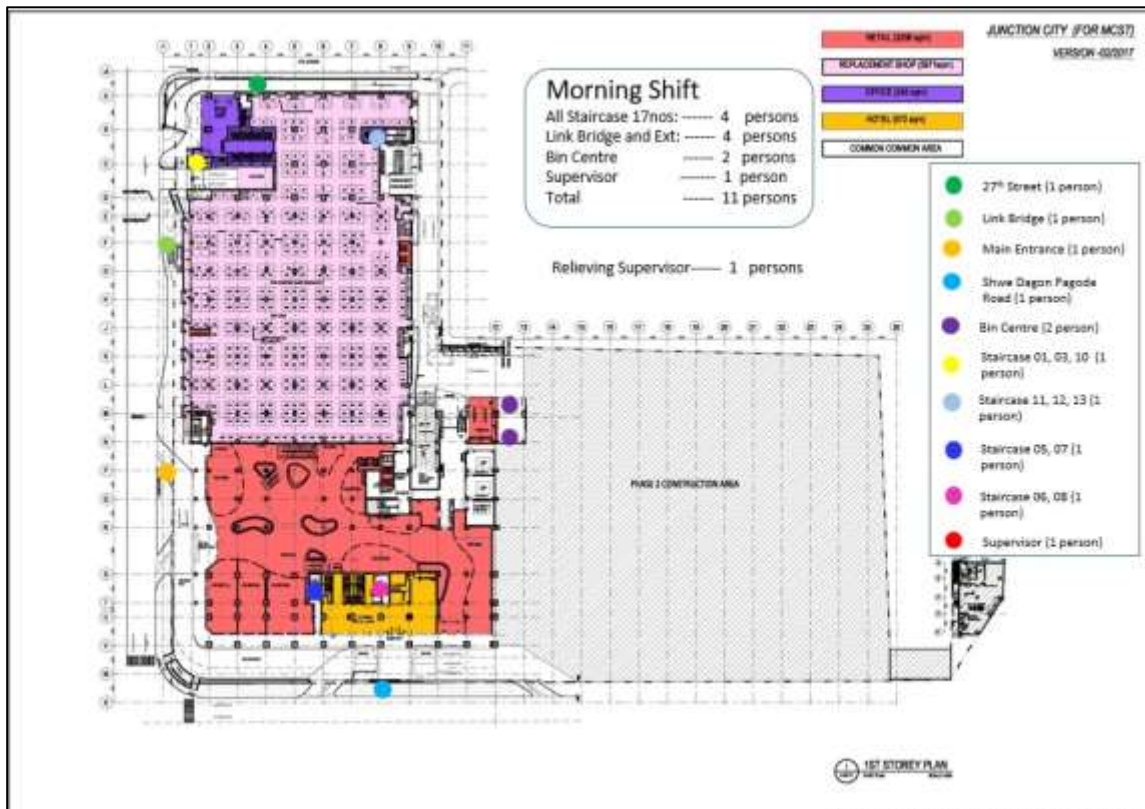
The afternoon shift scales operational deployment to match standard mid-day requirements, utilizing a total of 6 personnel. The allocation is as follows:

- Bin Centre (Main Waste Depot): 2 staff members remain stationed here to maintain regular waste management flow.
- Primary Waste Collection Routes & Points:
 - 27th Street Side: 1 staff member
 - Link Bridge and Adjacent Area: 1 staff member
 - Shwe Dagon Pagoda Road Side: 1 staff member
- Supervisory Team: 1 Supervisor is responsible for conducting routine site checks (round checks) and monitoring general cleanliness across the premises.

3. Night Shift

To optimize deep cleaning and heavy waste removal while public foot traffic is minimal or closed, the workforce is increased to 9 personnel. The assignments are handled as follows:

- Bin Centre (Main Waste Depot): Workforce is increased to 3 staff members to process the high volume of nightly accumulated waste.
- Primary Waste Collection Routes & Points:
 - 27th Street Side: 2 staff members
 - Link Bridge and Adjacent Area: 1 staff member
 - Main Entrance: 1 staff member
 - Shwe Dagon Pagoda Road Side: 1 staff member
- Supervisory Team: 1 Supervisor conducts close quality-control inspections across all collection points during the night clearing process.



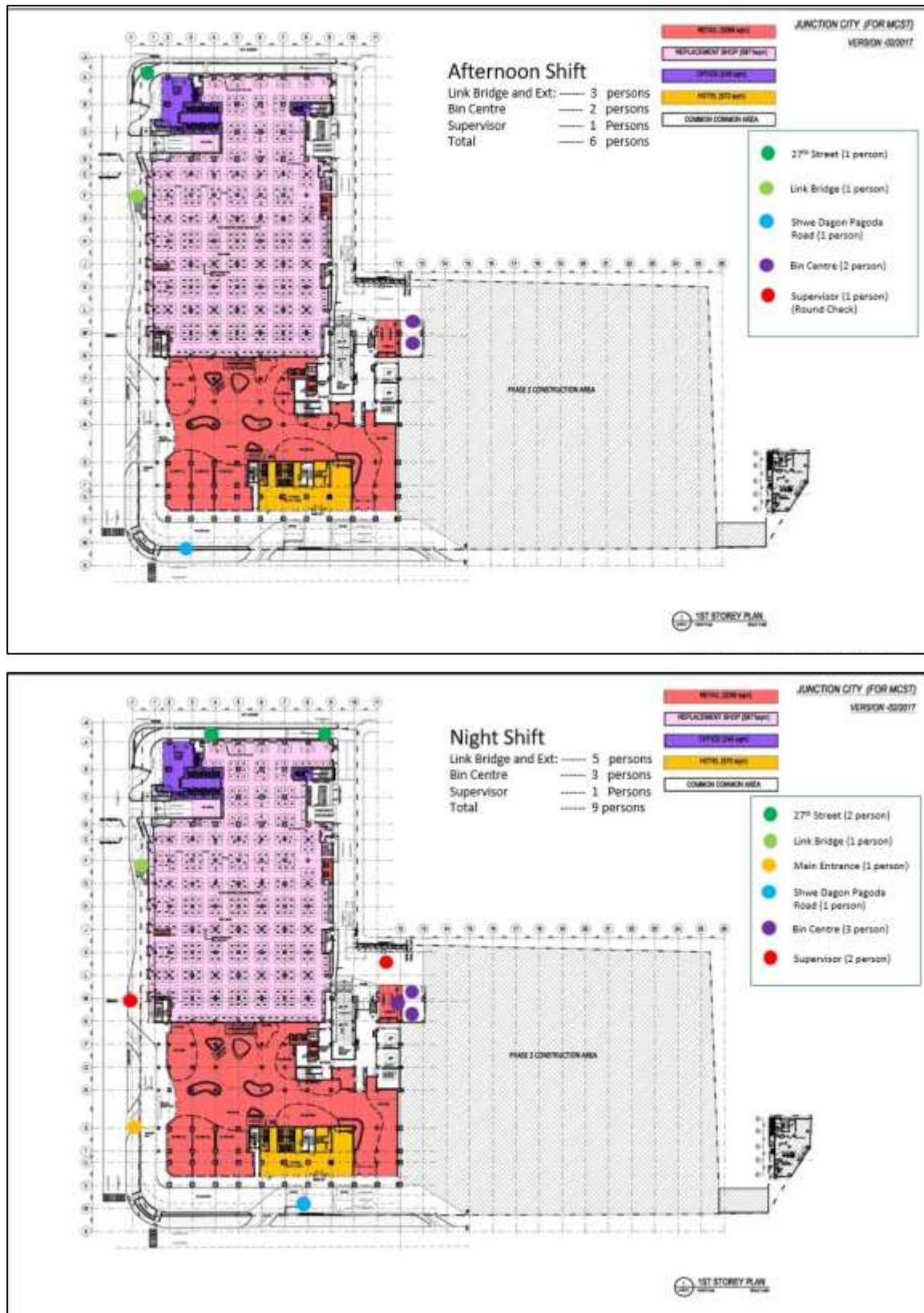


Figure 3-27 Waste Collection Schedule and Collection Points

3.9.1.3 Waste Storage Capacity Assessment

3.9.1.3.1 Dry Waste Compaction and Storage Adequacy Assessment

The peak monthly dry waste generation from the Project is approximately 36,000 kg/month, including around 2,500 kg/month of recyclables. Accordingly, the residual non-recyclable dry waste requiring compaction and disposal is estimated at 33,500 kg/month, equivalent to an average daily generation of approximately 1,117 kg/day.

The Project is equipped with fifteen (15) units of 660-Liter (0.66 m³) wheeled bins for Dry Waste collection, providing a total storage capacity of approximately 9.9 m³ and 12 m³ waste compactor for non-recyclable dry waste. Assuming a standard compacted municipal solid waste density of 450 kg/m³, the single-load holding capacity of the compactor is calculated as follows:

$$\text{Compactor capacity per load} = 12 \text{ m}^3 \times 450 \text{ kg/m}^3 = 5,400 \text{ kg per load}$$

With an assumed operational clearance frequency of approximately 30 collection cycles per month (daily or near-daily removal by YCDC), the theoretical monthly waste handling capacity is:

$$\text{Monthly waste handling capacity} = 5,400 \text{ kg/load} \times 30 \text{ loads/month} = 162,000 \text{ kg/month}$$

The ratio of available handling capacity to actual waste generation is **4.8 times** capacity safety factor. The dry waste compaction and storage system is assessed to be highly adequate, with no risk of overflow or capacity exceedance under current operational and collection arrangements. Regular YCDC collection ensures continuous clearance and prevents accumulation within the facility.

3.9.1.3.2 Kitchen Waste Volumetric Storage Adequacy Assessment

The peak monthly kitchen waste generation is approximately 81,000 kg/month, equivalent to an average daily generation of 2,700 kg/day.

Kitchen waste is temporarily stored in ten (10) units of 660-liter bins, providing a total static storage volume of:

$$10 \times 0.66 \text{ m}^3 = 6.6 \text{ m}^3$$

Given the high moisture content of kitchen waste, a representative bulk density of 600 kg/m³ is applied for volumetric assessment. The maximum theoretical storage capacity of the bin system is therefore:

$$\text{Maximum kitchen waste storage capacity} = 6.6 \text{ m}^3 \times 600 \text{ kg/m}^3 = 3,960 \text{ kg}$$

While comparing storage capacity with daily generation is equal to 1.46 days of storage capacity. This indicates that the system provides sufficient buffer capacity for approximately 1.5 days of kitchen waste generation under static conditions. The kitchen waste storage system is assessed to be adequate under operational conditions, as frequent transfer to the Cool Room and daily management practices ensure that waste does not remain in bins for extended periods. The system maintains an operational buffer of approximately 32% spare volumetric capacity under daily loading conditions, reducing risks of overflow, odor generation, and pest attraction.

3.9.2 Wastewater Treatment System

Volume of wastewater generation

The maximum water consumption for the hotel tower was 4,554.5 m³ per month and maximum water consumption for the office tower and retail shops was 1,113.8 m³ per month and 22,803.8 m³ per month. The estimated total volume of wastewater of the development is 436 m³/day. The wastewater treatment plant had a design capacity of 1,300 m³/day for the whole development. The system is currently working at approximately 40% of its design capacity, meaning the MBR technology is well-equipped to handle future occupancy increases or peak events. The breakdown of wastewater discharge for the individual phases is as follows:

	Wastewater discharge - 85% of water consumption (cu.m/day)	Wastewater discharge - 85% of water consumption (cu.m/month)
Hotel Tower	95.99	2,879.62
Office tower	3.30	98.91
Shopping Center	410.09	12,302.75
WWTP Capacity	1,300	39,000

The Wastewater Treatment System of Junction City Mixed-Use Development is MBR filter technology to treat 1300 m³/day domestic waste water and make sure the Discharge water BOD < 30 ppm. It is the latest technology to design the system and easy for further maintenance and parts replacement. The following diagram is the general domestic wastewater treatment process:

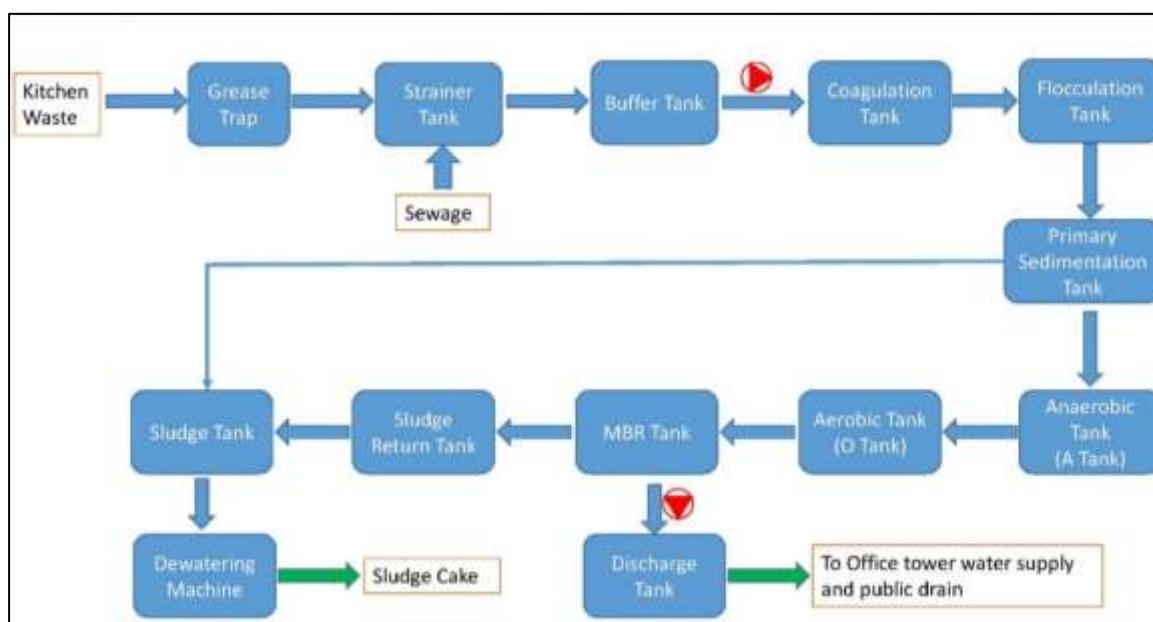


Figure 3-28 Wastewater Treatment Processes Flow Chart

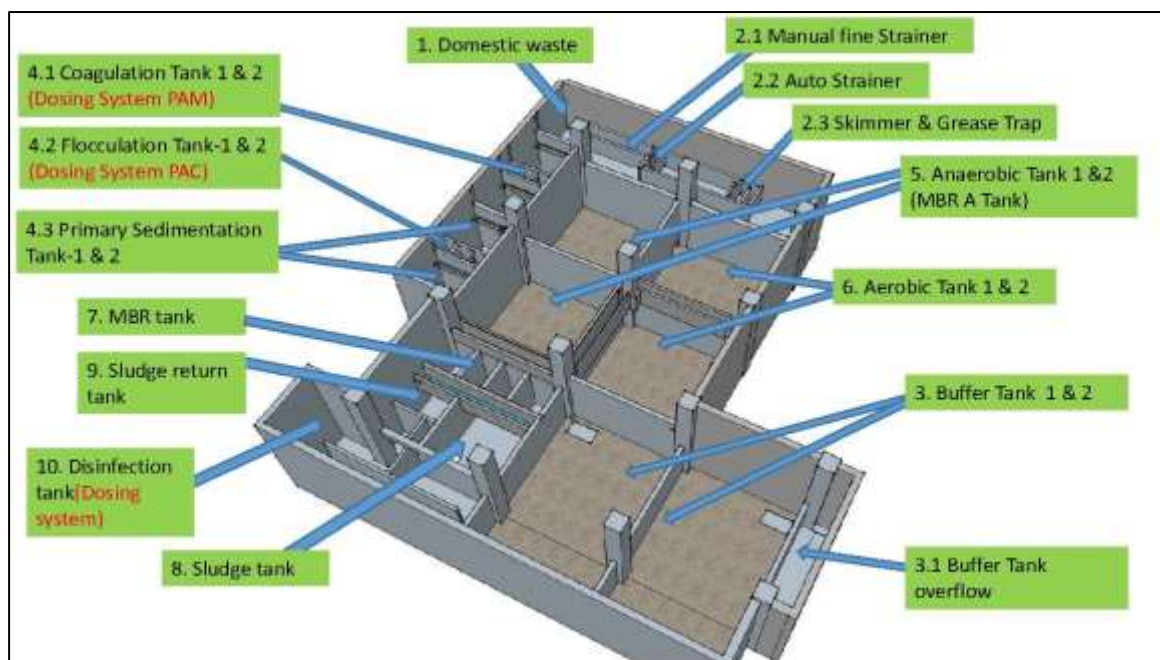


Figure 3-29 Wastewater Treatment System Design



Figure 3-30 Current Equipped Wastewater Treatment System

The step-by-step operational process is explained below:

1. Preliminary Treatment & Flow Equalization

Grease & Oil Separation: High-strength Kitchen Waste passes first through a Grease Trap (utilizing a skimmer mechanism) to remove floating fats, oils, and grease.

Screening / Straining: The de-greased kitchen water combines with raw domestic Sewage in the Strainer Tank. This tank utilizes a Manual Fine Strainer and an Auto Strainer to mechanically catch and remove large solid debris that could damage downstream pumps.

Flow Buffer: The screened wastewater accumulates in Buffer Tank 1 & 2 (equipped with an overflow protection line) to balance variable daily hydraulic surges and equalize chemical concentrations.

2. Physicochemical Treatment (Coagulation & Sedimentation)

Coagulation: Wastewater is pumped from the buffer tank into the Coagulation Tank, where a dosing system introduces Polyacrylamide (PAM) to destabilize suspended colloidal particles.

Flocculation: The water then enters the Flocculation Tank, where Polyaluminum Chloride (PAC) is dosed. This chemical agent causes the destabilized particles to clump together into larger, heavier masses called flocs.

Primary Sedimentation: In the Primary Sedimentation Tank, these heavy chemical flocs naturally settle out by gravity. The separated heavy sediment is funneled directly out of the bottom to the Sludge Tank, while the clarified liquid flows onward from the top.

3. Biological Degradation & Membrane Filtration (A/O + MBR)

Anaerobic Stage (A Tank): The clarified effluent moves into the Anaerobic Tank (MBR A Tank). Here, specialized bacteria break down complex organic compounds and prepare nutrients for removal in the absence of dissolved oxygen.

Aerobic Stage (O Tank): The water shifts to the Aerobic Tank, where continuous aeration injects oxygen into the system. Aerobic micro-organisms rapidly consume remaining organic pollutants and convert ammonia into nitrates.

Membrane Bioreactor (MBR) Separation: The mixture enters the MBR Tank. Submerged microfiltration or ultrafiltration membranes act as an absolute physical barrier, allowing completely clear, purified water to pass through while keeping all biological biomass trapped inside the tank.

4. Disinfection & Clean Water Reuse / Discharge

Disinfection: A suction pump extracts the clean permeate from the MBR membranes and channels it into the Discharge / Disinfection Tank, which features an active chemical disinfectant dosing system to eliminate potential pathogens.

Final Output Allocation: The treated, high-quality reclaimed water is split into two pathways:

- Recycled back To Office tower water supply for non-potable uses like toilet flushing and cooling towers.
- Safely discharged off-site into the public drain in compliance with environmental standards.

5. Solid Sludge Management

Sludge Collection: Heavy particulates from the Primary Sedimentation Tank and excess biological mass from the MBR tank (routed via a Sludge Return Tank) are collected in the centralized Sludge Tank.

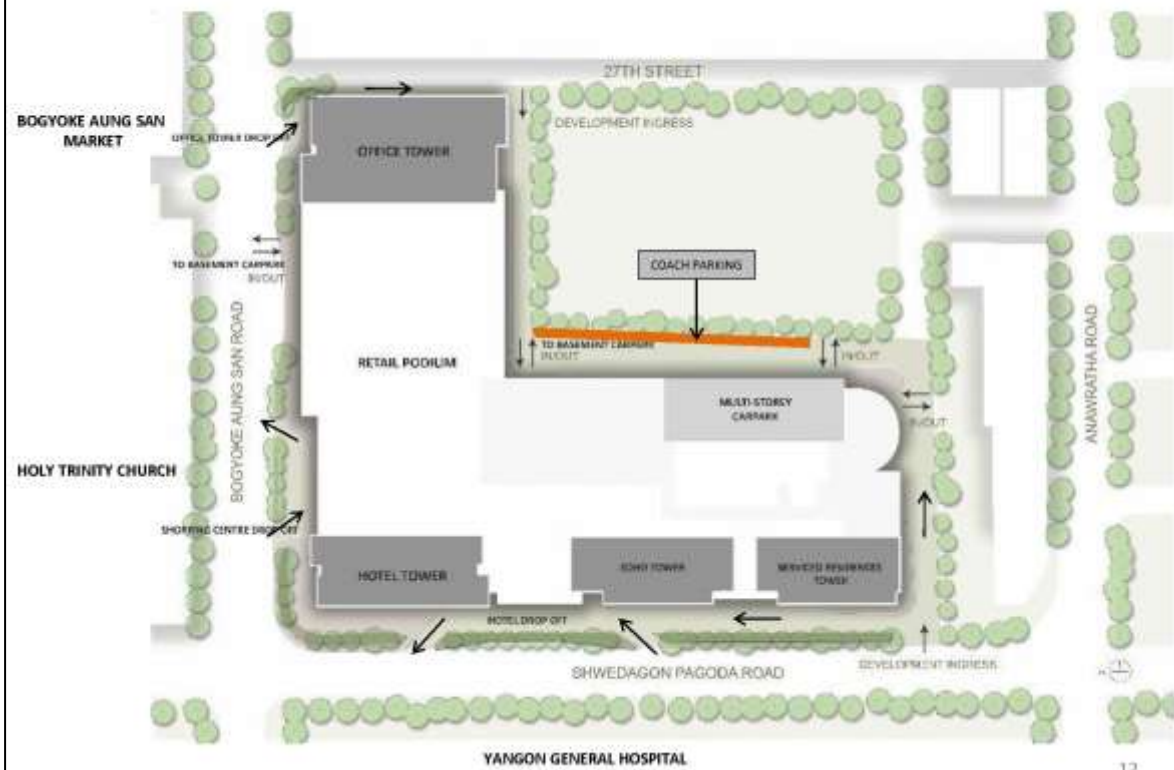
Dewatering & Disposal: The liquid sludge is pumped into a mechanical Dewatering Machine. This machine presses out the residual water content, turning loose slurry into a highly compressed, solid Sludge Cake that can be easily transported and disposed of off-site.

3.9.2.1 System Components & Equipment

System Stage	Description / Process	Key Equipment
1.1 Strainer	Initial removal of large items to protect pumps.	Manual Fine strainer, Auto Strainer, Oil skimmer
1.2 Buffer Tank	Adjusts water quality/quantity; 10-hour retention.	2 Tanks, 4 lifting pumps, flow meter, 2 sets of Mixers
1.3 Coagulation	PAC dosing and mixing.	2 Tanks, 1 set of Mixer on each
1.4 Flocculation	PAM dosing and mixing.	2 Tanks, 1 set of Mixer on each
1.5 Primary Sedimentation	Sludge removal via motorized control valve.	Motorized control valve, Sludge Tank
1.6 MBR A Tank	Parallel "Antivirus" maintenance operation.	2 Tanks, 1 set of Mixer on each
1.7 MBR O Tank	Aeration stage.	2 Tanks, 3 sets of air blowers
1.8 MBR Units	Solid-liquid separation (4 units, 37.5% capacity each).	4 MBR units, 3 Suction pumps, Flow meter, 1 Dosing system
1.9 Sludge Tank	Stores primary sludge; pumps to dewatering machine.	2 Lifting pumps, Flow meter, Motorized Valve
1.10 Sludge Return	Recirculates overflow sludge.	Circulation Pump to MBR A1 tank
1.11 Discharge Tank	Storage for treated water and disinfection.	2 Discharge pumps, 1 Dosing system
Key Treatment Features	The four MBR units are designed at 37.5% capacity each, providing a total of 150% theoretical capacity (providing built-in redundancy).	

3.10 Traffic Flow

Traffic Strategy



12

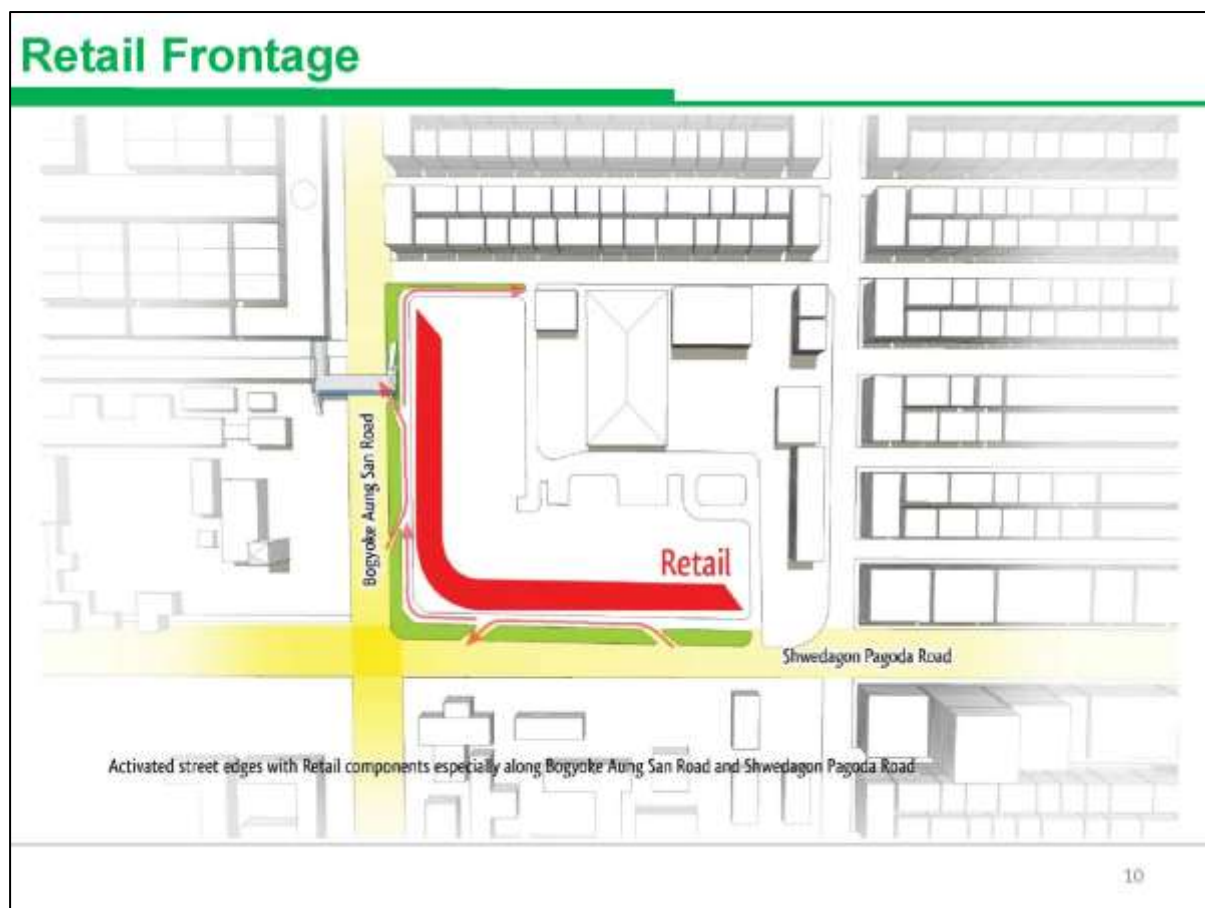


Figure 3-31 Project Traffic Flow Diagram (Large copy of above diagram is attached as Appendix)

According to the Project Traffic Flow Diagram, vehicle access within the development is controlled to separate and manage two principal traffic streams: (a) vehicles serving the Shopping Centre and Hotel Tower, and (b) vehicles serving the Office Tower. This segregation reduces internal conflicts between long-stay/commuter office traffic and short-stay retail/hotel drop-offs, and improves pedestrian safety along the activated retail frontages.

3.10.1 Access Road for Buildings

The Project has three entry points for two access road, one from Shwedagon Pagoda Road Entrance to Hotels, Shpping Center and one from Bogyoke Aung San Road to direct basement Carparking for Office Building.

3.11 Emergency Response Plan

This plan ensures the safety of Junction City Development (JCD) guests, staff, and assets through standardized response protocols for fire and natural disasters. All teams are expected to maintain "Zero-Panic" communication using the established emergency call signs.

1. Prepared the policy and procedure of the Emergency Response Team for prevention and preparedness.
2. Organized the Emergency Response team - They can respond within 3 minutes to the area where the incident occurred. ERT practice one time per month.
3. To ensure that all employees understand, we trained all the Hotel employees.

4. Junction City Development are using the Code of contact numbers to avoid causing panic among guests.
5. Junction City Development organized the emergency teams as follows,
 - Crisis Management Team (CMT)
 - Emergency Response Team (ERT)
 - Emergency Support Team (EST)
 - Emergency Warden Team (EWT)

Purpose: To have an ever-alert team with a first point of contact and to provide spontaneous response to the accidents which may endanger the hotel guests, associates and reduce the potential risks through the efforts of this (ERT).

Policy:

4. The Emergency Response Team which consists of the following on-duty team members from certain departments and they have to handle any emergency situation and report back to the management team during and after taking action. The emergency team is formed as below;
 - Duty Manager (Leader)
 - Telephone Operator (Member)
 - Security Supervisor (Member)
 - Duty Engineer (Member)
 - Duty Housekeeping (Member)
5. The Leader will be either one depending on the time of the day: Duty Manager for morning & afternoon and night time.
6. The Emergency Response Team will report to Crisis Management Team members for certain functional decision and support.
 - a) General Manager
 - b) Director of Human Resources (for cases with associate)
 - c) Director of Rooms (for cases with guests)
 - d) Head of Security & Safety
7. The daily ERT Chart with contact numbers will be prepared by Security and Safety Department and distributed to know every employees via information bulletin board.

Procedures:

1. Any associate whoever finds the accidents with guests, associates, property, will immediately inform duty manager / operator / Control Room whoever is accessible.
2. Upon receiving the information, members of ERT will communicate each other and arrive the spot of scene within 3-minutes.
3. The Leader of the ERT will assess the situation and instruct the other members for necessary action.
4. The Leader will report to the Crisis Management Team Members for further advise from Head of Security & Safety as according to the line of function, case with associates to DHR, with guests to DOR / Front Office Manager.
5. If the case is critical, the leader of ERT will inform GM accordingly.

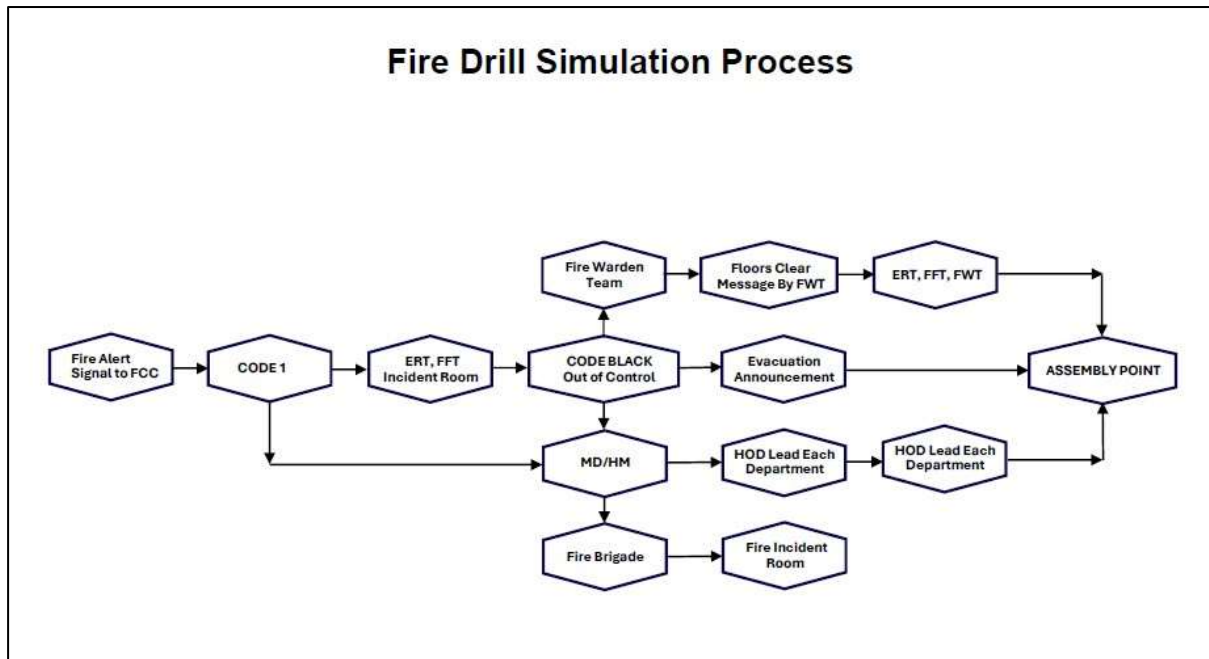
6. The further action to respond to the certain cases such as fire will be in line with separate established policy & procedure and the case will be referred to the established expert leaders of such cases.

Definition of Codes

EMERGENCY CALL SIGN	CALL SIGN SIGNAL
CODE ONE	Fire Alarm Activated
CODE TWO	Real Fire
CODE THREE	REAL EVACUATION
CODE ORANGE	EVACUATION DRILL
CODE ZERO	Unknown Cause of Alarm (Normal)
MAMA INDIA	Medical Incident
MAMA INDIA CHARLIE19	Medical Case COVID19
CODE BLUE	Death
SIERA SIERA	Fighting / Assault
CODE ROMEO	Robbery
CHARLIE PAPA	Civil Disturbance / Protest / Strike
CODE DELTA	Drowning Incident
CODE ECHO	Elevator Stuck
CODE - FOXTROT	Flooding
QUEBAC QUEBAC	Earthquake
PAPA CHARLIE	Police Car / Policemen
CODE ARROW	Ambulance
BABY FACE	Joiner / Prostitute

CMT Team Member

1. General Manager - Leader
2. Manager On Duty – MOD (if GM is not available)
3. Director of Rooms / FOM
4. Director of Engineering / CE
5. Director of Finance / ADOF
6. Director of Government Affairs - DGA
7. Head of Security & Safety - HOSS / ASM
8. Executive Chef / Exec. Sous Chef
9. Director of Sale & Marketing / DOSM
10. Executive Housekeeper - EHK
11. Director of F&B / F&B Manger
12. Director of P&C / P&C Manager
13. Director of Events Operations
14. Director of Marketing & Communication/Marcom. Manager



Emergency Response Team (ERT)

1. Duty Manager - ERT Leader
2. Security Supervisor - ERT Leader (if DM is not available –Day / Night)
3. Security Guard (Day / Night)
4. Duty Engineer (24 hrs)
5. Engineering Staff (24 hrs)
6. Housekeeping PA (Day)
7. Laundry Staff (Day)
8. Operator Staff (Day / Night)

The Procedures of ERT (FIRE)

Responding to various alarms including fire;

- Have to reach incident area within (3) minutes and check the situation of alarm location
- If unknown alarm, CODE ZERO, ERT Leader or a member of ERT to inform FCC
- If real fire alarm, CODE 2, ERT Leader instruct FFT & FWT to follow
- If fire out of control, CODE 3 to inform CMT Leader immediately as fire situation (Same Procedures for CODE ORANGE for evacuation drill exercise)
- ERT Leader to instruct FCC duty associate to raise continuous fire alarm signal 3 – 5 minutes (Get approval of GM / CMT Leader to call 191 if necessary)
- ERT leader to get approval of CMT Leader for evacuation of all staff and guests if fire is out of control
- Upon CMT Leader's order for evacuation, ERT Leader bring back Fire Fighting Team and all team members to go assembly point.

Fire Fighting Team (FFT) and Responsibilities

FFT Members List

1. Duty Manager
2. Duty Security Supervisor
3. Duty Engineer

4. Duty Housekeeper

The Procedures of FFT

- FFT members dress FFT suite when CODE 1 is alerted then proceed to fire scene
- Engineer and Housekeeping wear fire protection suite properly and go to incident area right way
- Next two staff have to bring fire axe, smoke masks
- Support ERT, fight the fire by possible techniques

Fire Warden Team (FWT) and Procedures

FWT Members List

1. Myat Yamone Phoo – FO
2. Kyaw San Oo, Min Sadar Naing – DM
3. Phyo Wai Aung / Khatti Ya San – F&B
4. Aung Zayar Oo / Ingyin Mhwe – F&B
5. Tin Ma Ma / Nyi Nyi Saw – Finance
6. Saw Aung – Revenue & Reservation
7. Phyu Hnin That – People & Culture
8. Zwe Lei Toe Wai – Marketing & Communication

The Procedures of FWT

- FWT members to check assigned floors and all the rooms
- Ensure nobody left at the rooms, offices, shops or workplace
- All of the staff contractors, visitors and everyone must be evacuated
- If any injury or disable person found use the structure as required
- Report DOSS/ASM when floors checking completed

“If Any Emergency”

If someone find smoke or fire or suspect on unsafe situation, call and inform Operator or Security. Operator “0”, Security “151”.

Require 4 things to inform;

- Your name
- Department
- Smoke or Fire and their size, volume
- Location

Nearest Hospital

- Yangon General Hospital
 - Location: Bogyoke Aung San Road, Latha Township, Yangon, Myanmar
 - Phone: 01-256112, 01-256131

Training

Organized the emergency response team (ERT). They can action within 3 minutes at incident area as standard. ERT practices one time per month.

3.11.1 Natural Disaster Management and Response Plan

Disaster is an abrupt adverse or unfortunate extreme event, which causes severe damage to human beings, plants, and animals. The emergency response plan is considered because of the buildings in the project area. The project proponent has to be aware of the natural disasters that may affect on lives by physical and emotional and loss of productivity.

Earthquake (Call Sign: Quebac Quebac)

Given the seismic nature of the region, JCD follows the MNBC (Myanmar National Building Code) guidelines.

Phase 1: Preparedness (Before)

- Secure heavy furniture, kitchen appliances, and IT server racks to walls/floors.
- Maintain emergency go-bags (flashlights, batteries, water) at every security post.
- Identify "safe pockets" in guest rooms and offices away from glass facades.
- Quarterly structural inspections of the Special Moment-Resisting Frames and seismic joints for any signs of fatigue.
- Ensure all floor wardens are trained in "Drop, Cover, and Hold On" leadership for guest areas.

Phase 2: Immediate Response (During - Shaking)

- **Instruction:** Automatic activation of Seismic Alarms. Voice instructions in Burmese, English, and Chinese. "Drop, Cover, and Hold On." Stay away from windows and mirrors.
- **ERT Action:** Duty Engineer to manually verify automatic gas shut-off valves and prepare to isolate main electrical breakers if required.
- **Lifts:** All elevators will automatically home to the nearest floor and doors will open. DO NOT use lifts.

Phase 3: Stabilization (After-Shaking Stops)

- **Evacuation:** **Once shaking stops**, ERT Leader initiates evacuation to Assembly Points via stairs only.
- **Assessment:** CMT Leader coordinates with local authorities and structural engineers for a damage assessment. No re-entry permitted until a Green Label (Safe for Entry) is issued.
- **Infrastructure Restoration:** Restore essential utilities (water, gas, electricity) only after thorough pressure testing of lines to check for fractures.

Flooding (Call Sign: Code Foxtrot)

Secure lower-level infrastructure (Retail/Carpark) and ensure Guest/Associate safety from waterborne hazards.

Phase 1: Prevention & Preparedness

- **Hardware Readiness:** Inspect and service all submersible pumps and sump pits. Maintain a stockpile of sandbags at the B1/B2 entry points.
- **Drainage Clearing:** Two times a month flushing of internal horizontal drainage pipes to prevent debris accumulation.

Phase 2: Spontaneous Response (During Flood)

- **Zone Containment:** Deploy sandbags at all pedestrian and vehicular entrances. Activate high-capacity sump pumps in low-lying utility areas.
- **Vertical Evacuation:** Move residents and high-value assets to identified Safe Zones (Floor 5 and above).
- **Communication:** Continuous real-time water level updates via PA System (Burmese, English, Chinese).
- **Safety Kits:** Distribution of waterproof emergency supplies to residents in affected areas.

Phase 3: Recovery & Decontamination (Post-Flood)

- **Water Safety:** Immediate decontamination of water storage tanks to prevent waterborne diseases (Cholera, Typhoid).
- **Systems Audit:** Inspect all underground electrical transformers and cabling for water damage before full power restoration.
- **Environmental Compliance:** Dispose of silt and flood debris in accordance with Myanmar's Environmental Conservation Rules.

Cyclone / High Winds

Protocols for extreme weather warnings issued by local authorities.

Priority Actions

- **Rooftop Security:** Engineering to secure or dismantle all loose equipment and signage.
- **External Perimeter:** Security to clear all outdoor seating, umbrellas, and temporary retail stalls.
- **Safe Haven:** Designate internal ballrooms/foyer areas away from glass as temporary refuges for staff/guests caught in transit.

Assembly Point



Figure 3-32 Emergency Assembly Point & Emergency Access Routes Plan

○ OFFICE TOWER	PASSANGER LIFT	PL - 1 TO 8	(L1 TO L23)
	FIREMAN LIFT	FL - 1	(B2 TO L23)
	SERVICE LIFT	SL - 1	(B2 TO L23)
	CAR PARK LIFT	CP - 1 & 2	(B2 TO L1)
○ RETAIL PODIUM	PASSANGER LIFT	PL - 1 TO 4	(L1 TO L5)
	FIREMAN LIFT	FL - 1	(B2 TO L5)
	SERVICE LIFT	SL - 1 & 2	(L1 TO L5)
○ HOTEL TOWER	PASSANGER LIFT	PL - 1 TO 4	(L 1 TO L25)
	FIREMAN LIFT	FL - 1	(B2 TO L25)
	SERVICE LIFT	SL - 1	(B2 TO L25)
	CAR PARK LIFT	CP - 1 & 2	(B2 TO L1)
All lifts shall home upon confirmed alarm.			

Figure 3-33 Fire Lift

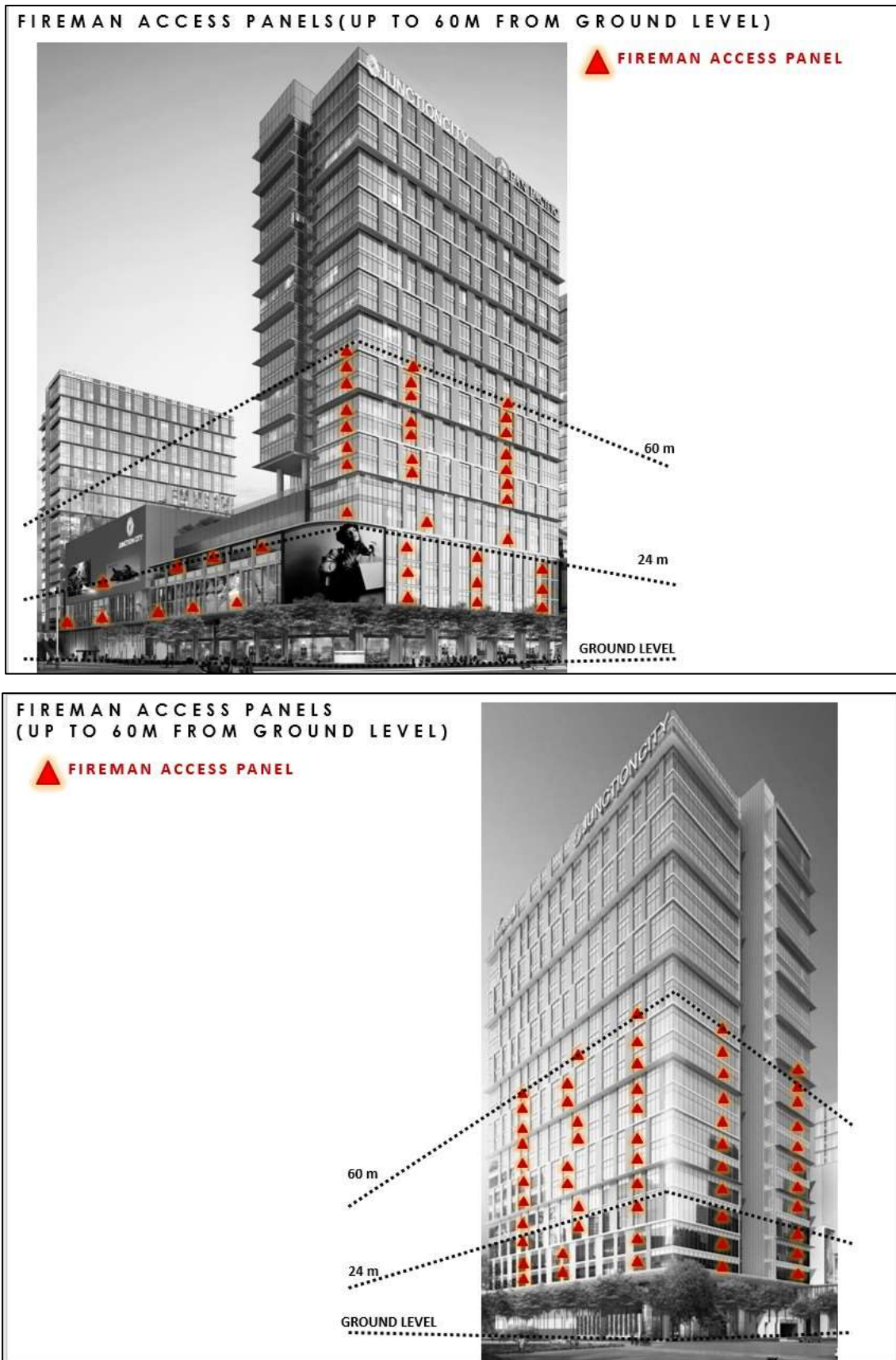


Figure 3-34 Fireman Access

3.12 Calculation with design safety and Natural Disaster Resilience Design Structure of Development

The development incorporates structural safety and natural disaster resilience into its design in accordance with established practices and national guidelines. Risk assessment and structural integrity are ensured through adherence to the Myanmar National Building Code (MNBC).

Codes of Practice / Technical Guidelines		Checked
ACI 318-14	Structural Use of Concrete	Yes
MNBC 2020	Structural Design & Loadings	Yes
HPBC	Structural Guidelines	Yes

Key provisions followed include:

Part 3 - Structural Design:

- Ensures the overall stability and integrity of the building structure.

Part 4 - Soil and Foundation to ensure safety and serviceability:

- Addresses safety and serviceability of foundation systems, accounting for site-specific geotechnical conditions.

Natural Disaster Resilience Measures:

Seismic and Wind Loads:

Structural design includes provisions for earthquake and storm resistance based on:

- Section 3.3 - Wind Design Criteria
- Section 3.4 - Seismic Design Criteria and Design Requirements for Buildings

Flood Resilience:

Stability against hydrostatic pressure and soil loads due to flooding is verified in accordance with:

- Section 3.2.2.2 - Soil Loads and Hydrostatic Pressure

Regarding seismic protection, when considering the lateral load resisting system for the highrise building, dual System with Special Moment-Resisting Frames system which is capable of resisting at least 25% of prescribed seismic force and vertical loadings will be considered in the design scheming process.

3.13 Project Alternatives

3.13.1 No Project Option

The 'No Project' option for the present site implies that the pre-existing condition of the site is maintained. This option is the most suitable alternative from an extreme environmental perspective as it ensures non-interference with the existing conditions. This option will however involve losses both to the Landowner and to the community as a whole. The Landowner will continue to lose rent for the plot while the plot remains idle, hence without generating any income to the owner. The 'No Project' option is the least preferred from the socio-economic and partly environmental perspective due to the following factors:

- The economic status of the Myanmar people and the local community would remain unchanged.
- Local skills will remain under-utilized.
- Reduced investing due to lack of office space and recreational space in the Pabeldan area where the project is proposed.
- Reduced interaction both at local, national and international levels.
- Employment opportunities will be denied to hundreds of Myanmar people who will work in the proposed development area.
- Non-reduction of urban poverty and crime in Yangon.
- A discouragement for investors in development projects.
 - Non-growth of office and accommodation space in the Pabeldan area.
 - No contribution to the economic development of the locality, Yangon Region and Myanmar as a whole.

From the analysis above, it becomes apparent that the ‘No Project’ alternative to the proposed project is not a good alternative for the local Pabeldan community, people of Yangon, the Yangon Region and the Myanmar government.

3.13.2 Location Alternative

Currently, neither the Landowner (i.e., the Government) nor the Developer has identified an alternative site for the project. Securing a new location would require the Developer to find a plot of land sufficiently large to accommodate the project’s scale, which presents a significant challenge with no assurance of success. Furthermore, the project is already fully developed and in commercial operation, making relocation impractical.

3.13.3 Infrastructure Alternatives

3.13.3.1 No alternative to proposed quality investment

The project buildings have been designed using modern, energy-efficient technologies and include adequate parking provisions. The total constructed floor area is 284,229 sqft (6.525 acre). The Building Coverage Ratio (BCR) stands at 72%, with a Floor Area Ratio (FAR) of 8.42. Shwe Taung Junction City Development Company Limited is dedicated to responsible investment, adhering to a code of conduct that prioritizes employee health and well-being, as well as ethical and sustainable development principles. All project management activities will align with international standards, incorporating globally recognized best practices. Finding feasible alternatives to the proposed high-quality investment and development approach would be highly challenging.

3.13.3.2 Electricity sources

Due to the geographical location, hydropower generation can be ruled out as an alternative electricity source.

Presently, the only power supply source options for the proposed project are electricity generators and the national grid supply. Electricity supply from the national grid will be obtained via substations of the YESC and a substation was built in the Project. Electricity from the YESC substations will be obtained by underground cables. The electricity generators will be kept as a back-up source and should not be depended on for regular supplies as air quality could be polluted by their emissions and soil quality by oil spills. Another source of energy

available to the proposed Project is solar power. It could be used to power security lighting inside the Project which do not need too much electricity.

3.13.3.3 Water supply and distribution

The water supply for the proposed Project is sourced in tube-well and the YCDC supply system. There are no other options for the proposed Project regarding water supply. The proposed internal water distribution system has utilized the latest modern technology. When the time becomes necessary, alternative technology to the proposed system will be considered.

3.13.3.4 Storm water disposal

It is believed that the presently proposed storm water disposal system for the Project will work efficiently. Therefore, an alternative system is not needed.

3.13.3.5 Liquid waste management

The proposed liquid waste management system has utilized the latest modern technology.

3.13.3.6 Solid waste management

The proposed solid waste management plan is comprehensive and meets CQHP requirements. Due consideration will be given if better solid waste management ideas emerge.

3.13.3.7 Wastewater management alternatives

There are several alternatives (use of stabilization ponds/lagoons, use of constructed/artificial wetlands and septic tanks) to the wastewater treatment plant but all of them suffer, one or the other, from the constraints of needing too much space, emitting unpleasant smell, time consuming or being costly.

A wastewater treatment plant involves the construction of a plant and use of chemicals to treat the effluents to locally and internationally accepted environmental standards before it is discharged into the public sewer system. It is usually expensive to construct and maintain, but it is the most reliable, efficient and cost-effective in the long term.

The Junction City Development installed a wastewater treatment plant for both wastewater and sewage water due to its positive qualities mentioned above. The wastewater treatment plant had a design capacity of 1,300 m³/day for the whole development. The system is currently working at approximately 40% of its design capacity, meaning the MBR technology is well-equipped to handle future occupancy increases or peak events.

The Junction City Development will treat the effluents with both chemicals and biological treatment in the Project's wastewater before discharging them into the existing drainage line.

3.13.3.8 Solid waste management alternatives

Solid wastes were segregated through color coded waste bins provided at office tower, shopping center and hotel tower. Dry Waste from Hotel Rooms, Shopping Center, Office Tower and Carparking were divided into 2 types of Dry Wastes.

- Recycle items (Water Bottles, Cottons box and cans).
- Non-recyclable items will compress with compactors.

Non-recyclable items are compress with compactors and collected and disposed via YCDC. Kitchen Waste from kitchen of Hotel and Shopping Center were disposed to Cool Room area

and stored in designated cool Room. Grease Waste from kitchen of Hotel and Shopping Center were collected with Plastic bag and stored in STP with containers and dispose to Government Designated area. Sludge waste from wastewater treatment plant were collected with plastic bag and stored with containers in STP and dispose to Government Designated area. According to the solid waste management plan adopted by the Project, the disposal system was manual.

Dry Waste: A total number of (15) Plastic 660-liter (0.66m³) wheeled bins was used to collect Dry waste and at least 5 times to 6 times per month compressed with compactor and collect & pick up by YCDC.

Kitchen Waste: A total number of (10) Plastic 660-liter (0.66m³) wheeled bins was used to collect kitchen waste and temporarily disposed to Cool Room area and stored in designated cool Room and collect & pick up by YCDC.

Grease Waste: Grease Waste from kitchen of Hotel and Shopping Center were collected (1) time per (2) weeks with Plastic bag and stored in STP with containers and (1) time per (2) month collected and disposed via YCDC.

Sludge Waste: Sludge waste from wastewater treatment plant were collected with plastic bag and stored with containers in STP and dispose to Government Designated area.

3.13.4 Environmentally Friendly Design and Concept

Management Commitment

Due to the extremely high cost of energy that we have to bear in mind in order to operate our hotel, it becomes a necessity for us to initiate this energy program so as to eliminate all wastes of energy such as:

- electricity
- air-conditioning
- water
- fuel and gas.

An Energy Control Officer (ECO) is to be elected among the department heads for a period of one month. Such appointment should take place during the first department heads meeting of each month. It is crucial that the following points be made clear right from the start to ensure the complete success of the program.

- all associates and executives should actively support the ECO in her/his efforts to have his/her responsibilities carried out
- it should be a continuing process and effort to ensure that maximum efficiency, irrespective of the results, is achieved.

ENERGY ACTION GROUP Aside from the ECO, an Energy Control Committee (ECC) is to be elected among the supervisory staff level from the following program:

ENERGY SURVEY First, everyone involved should know where energy is consumed in the building. Second, everyone should understand the terms that reused to describe energy consumption. Once you know how energy is brought into the building, you will have some basis to make judgements on how your consumption and save money.

Implementation

Duties of ECO:

- to select and assign duties for her/his team
- to explain and supervise the team's inspection
- to follow up on deficiencies of the department concerned
- to report the team's progress and make recommendations at the Operation Meeting.

Duties of ECC:

- to inspect the specified areas daily according to schedule
- to take note of each area inspected
- to consult with ECO on any problems
- Check gas pressure to appliances to assure that adequate pressure is available
- Plan menus to minimize energy usage
- Oven should not be opened during operation. Food will cook faster and lose less moisture if door is opened at scheduled times
- Install in-the-meat thermometer with a gauge outside the oven. This will reduce heat loss opening the oven to check roasting progress
- Whenever possible, huddle food on griddle close together and heat only portion of griddle being cooked on.
- Frozen food should be thawed in refrigerator. Food will thaw easily and help to reduce power demand for refrigerator. Thaw all food before cooking, unless product characteristics prohibits
- Always turn char broiler heat to medium after briquette is hot. Keep briquette clean
- Place kettle or pot close together on range tops
- When using a gas range for full heat conditions, the tip of flame should just touch the bottom of pan or kettle
- Electric range burners should always be smaller than the kettle or pot placed on it
- Use flat bottom pots and pans to maximize heat transfer
- Thoroughly clean all pots and pans, make certain there are no build-up of carbon
- Placing foil under range burners and griddles will improve operation efficiency and make equipment easier to clean.
- Fryers need to be cleaned and oil filtered at least once a day
- Operate fryers at frying temperature of 150 to 180 degrees
- Regularly inspect and clean interiors for grease and carbon deposits
- Repair all steam leaks promptly
- Check steam traps regularly and replace damaged steam line insulation
- Clean fan blades on convection ovens

Sanitation

- Drain and thoroughly clean water heater every 6 months. Ensure heating coils are free from scale
- Shut off electric booster heaters on dishwashers when kitchen is closed
- It goes without saying that the success of the program depends to a large extent on the initiative, interest, effort and dedication of each department head to instruct and train his staff to make him/her realise the importance of the progress.

MEASURE THE RESULTS The objectives of record-keeping are to find out:

- How much energy is being used
- How much energy can be saved.

At the end of each month, the duty ECO is instructed to complete the Energy Conservation Report for the General Manager. The information pertaining to this form will be provided by the Director of Technical Services/Chief Engineer, Food & Beverage manager and Director of Financial Management. From this form (Monthly Utilities Statistical Form), they will be able to measure the level of the success.

Public Spaces Lighting

- Lower all lighting levels during late night and daylight hours
- If possible, have shop owners reduce the amount of shop and display lighting. Although, in many cases, the shop owners are paying for the electrical consumption but the lighting load still have an overall effects on the developments' cooling system.
- Use colour coding or marking for all light switches operated by the Front Office. Stress the importance of turning on only what is required.
- Increase lighting efficiency by cleaning walls, ceilings for better light reflection
- Use lamp shades which permit light to pass through
- Set a routine lamp and light fixtures cleaning schedule. Clean fixture produce more light illumination
- Review lighting levels in public spaces in order to use the minimum light levels consistent with safety and guest comfort

Office space Lighting

- Turn off all unnecessary lights
- Instruct associates to use minimum lights during after hours clean-up and to turn off lights when they leave unoccupied areas
- When adequate natural light is available, avoid using electric lights
- Clean space during daylight hours when possible to reduce use of lights for this purpose
- Consider using fluorescent or energy saving lights where applicable
- Use single, larger, incandescent lamp instead of two smaller ones. E.g. One 100 watts lamp produces more light output than two 60 watts lamps (saving of 20% energy bill)
- Use lamp shades which permit light to pass through
- Install reflectors for light fittings where applicable

- Instruct associates to turn off cooling and heating units in unoccupied offices and areas
- Instruct associates to close outside doors and windows in unoccupied offices when they have completed cleaning the areas
- Repair door closing mechanism to ensure doors are closed properly
- Shut down elevators during off peak hours
- Use light colors on walls and ceilings for better light reflection

Heating, ventilation and air-conditioning

- Keep all doors and windows closed in air-conditioned spaces
- Caulk all windows and doors to stop air leakage
- Ensure all door closing mechanism is functioning
- Ensure air-conditioning units are serviced as scheduled
- Check temperature controls frequently to ensure proper operation
- Clean all supply and return air grilles as scheduled
- Introduction MVAC (Mechanical, Ventilating, Air Conditioning) System details operation and maintenance (O&M) information is in respect to the Chillers, Air handling units (AHU's), fan coil units (FCU's), fresh air and extract fans and associated ancillary equipments. The Systems will be utilized in Office, Retail and Hotel area of the Junction City.

Water

- Check all public and office toilets and report the following for repair: leaking valves on lavatories or sinks, leaking toilets
- Maintenance technicians should check all toilets flushometers and cistern type water closets for proper flow and water quantities
- Install flow controllers for all faucets
- Install urinal sensors for auto flushing
- Install spring loaded self closing faucets on sinks
- Investigate possibility of installing individual air handling units for shops, offices and lounges instead of from a central unit
- Installation of heat reflecting film on windows to reduce heat radiation
- Installation of revolving or double doors at main entrances
- Possibility of re-circuiting lighting so that only minimum of lighting is used during late hours
- Installation of a microprocessor for the control of heating, air-conditioning, lighting etc.
- Replace resistance type dimmers with transformer type
- Install photo cells for control of external lighting

GHG Reduction

The development's M&E systems are designed in accordance with GHA standards. The central water-cooled chiller plant provides higher efficiency compared to air-cooled chiller systems, and CO₂ sensors are installed to regulate outdoor air flow rates to maintain good indoor air quality (IAQ). For the ACMV system, VFD types are used, and all FCUs and AHUs are

equipped with thermostats. All façade glass is double-glazed with proper sealing, and all 3-phase power drive motors are equipped with VFD drives. Approximately 90% of the building uses energy-efficient LED lighting. The central hot water system is equipped with a heat pump system. Walk-in chillers utilize closed-type heat exchanger systems. All sanitary ware is TOTO brand with eco-system features. Additionally, all elevators are energy-efficient regenerative lifts, providing up to 35% energy savings. Heat-reducing double-glazed façade glass with low emissivity is used throughout the building, and all AHU condensate is redirected to the cooling tower system.

Water Efficiency

Introduction of water saving techniques and / or use of water saving technology and equipment to reduce water consumption;

- All landscaping areas installed drip irrigation.
- All public areas to install automatic faucet or touch less tap.
- All guestrooms used TOTO eco faucet.
- Regular maintenance for water saving equipment
- Encouragement of the involvement of hotel Guest in water saving.
- All the sanitary ware system installed TOTO sustainability eco product.
- Ensure the quality of water used in the development and monitoring water meter
Installed individual water meter on each floor and recorded daily.

Waste Reduction

To systematically minimize plastic waste generation and enhance the project's overall sustainability profile, a comprehensive single-use plastic reduction framework has been established across all operational towers. The development actively replaces single-use plastics with reusable, environmentally friendly alternatives as detailed below:

Hotel Tower Initiatives

- Replacement of single-use plastic bottles with reusable glass bottles in guest rooms, office areas, and selected service areas where applicable.
- Installation of refillable dispensers for toiletries (e.g., shampoo, body wash, and hand soap) in hotel rooms and common sanitation facilities, reducing the need for individually packaged plastic containers.
- Use of bulk dispensing systems for water, beverages, and cleaning agents in operational areas to minimize packaging waste.
- Encouragement of suppliers and service providers to adopt eco-friendly and reduced-packaging delivery systems.

Office Tower & Shopping Center Initiatives

Centralized Water Refill Stations: Dedicated “Water Refill Stations” will be installed on every floor of the Office Tower and at primary high-traffic nodes within the Shopping Center. Tenants and visitors will be actively encouraged to bring their own reusable tumblers or bottles.

Tenant Environmental Awareness: Encourage to progressive reduction of plastic-based disposable items (such as straws, cutlery, and packaging materials) in food and beverage operations, where operationally feasible. Retail outlets within the shopping center will encourage to promote the utilization of reusable canvas or cloth bags over plastic carrier alternatives to minimize public refuse streams.

4. DESCRIPTION OF THE SURROUNDING ENVIRONMENT

The chapter describes the surrounding environments such as physical environment, biological environment and socioeconomic profile that characterize the potential area of influence of the present project. More details information on the baseline environmental and social conditions in the Study Area, including the results of primary baseline surveys conducted for the Project are provided in this section.

4.1 Study Area

Shwe Taung Junction City Development Co., Ltd is currently implementing the Junction City Mixed-Use Development project at the sites of the New Bogyoke Market and Lahar Pyin Market in Pabedan Township, Yangon Region. The establishment of the Area of Influence (AoI) for the project is intended to ensure that the Environmental Impact Assessment (EIA) focuses on issues that are important for design, decision-making, and stakeholder interests. The project includes activities related to the operation, and decommissioning of the proposed “The Junction City Mixed-Use Development Project”. In the EIA study, it is necessary to establish baseline information on the environmental and socio-economic conditions of the project area that may be subject to direct and indirect impacts from project implementation. Baseline information for Pabedan Township was collected from township data published by the General Administration Department in 2019. The study area for the Junction City Mixed-Use Development Project encompasses the specific geographical region where the prominent urban location offering, close to Maha Bandula Park, Yangon General Hospital, Bogyoke Market, Sule Pagoda, Theingyi Market.

Key components of the study area include:

Environmental Features: The project site is situated within the residential and downtown area of Pabedan Township. It is strategically located near several green spaces and recreational areas, including Maha Bandula Park, (0.7 km away) and Bogyoke Aung San Football Stadium.

Socioeconomic: The nearest townships are Kyaukdata Township, Latha Township, Dagon Township and Mingalar Taung Nyunt Township, all of which are located in downtown Yangon. Pabedan Township is located within the Yangon Region and is a commercially developed area. It is situated at the crossroads of major land routes, the township enjoys excellent transportation and connectivity.

An AoI of 500m from the project site boundary has been established for proposed project. The AoI for a particular resource/receptor may vary depending on the nature of the change caused by the project activities and the type of effect being considered, but in each case, it is defined to include all the area within which it is likely that impacts could result.

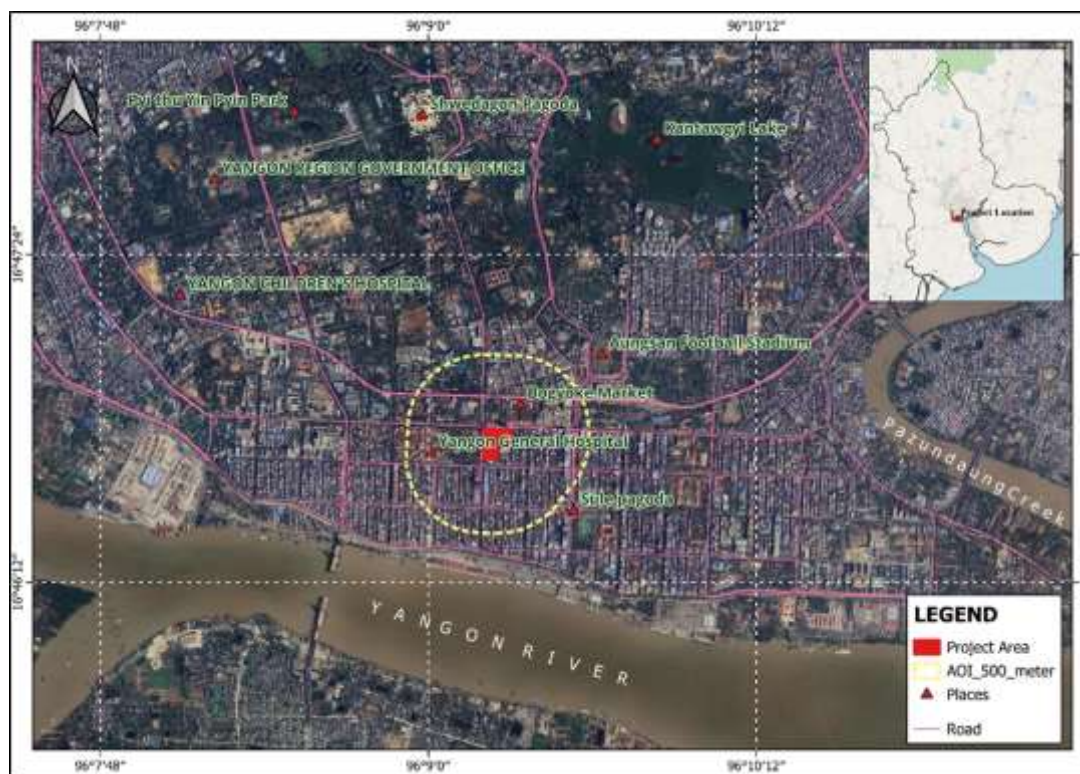


Figure 4-1 Area of Influence 500 m (AoI) for the project

4.2 Geographical Study Limit

The geographical study limit is defined as an area surrounding the project site from which the baseline information should be collected. The total area of the site is approximately (284,229 sqft (6.525 acre)), located in the downtown area of Pabedan Township. The study area should cover sensitive receptors of environmental impacts of the project during operation phases. The study area is urban area of Pabedan Township. In this study area, there are mostly residential areas, commercial areas, hospitals, monasteries, schools and government buildings. Bogyoke Aung San Market and Holy Trinity Catholic Church is also located near the project site.

4.2.1 Contextual Study Limit

The EIA guidelines have defined the contextual study limit for project surrounding environment to consist of five groups of components: (i) physical environment, (ii) biological environment, (iii) socio-economic components and (iv) cultural components. The details of the contextual study limits are provided in the following table.

Table 4-1 Details of Contextual Study Limit

No	Contextual Study Limit			
	Physical Environment	Biological Environment	Socio-Economic Components	Cultural Components
1	Climate and Meteorology	Flora	Demographic Profile	Cultural Heritage and Spiritual Sites
2	Natural Hazards	Fauna	Economy	

3	Topography		Education	
4	Geology		Infrastructure and Services	
5	Forest Cover		Community Health and Safety	
6	Soil		Land Use	
7	Surface Water and Ground Water			
8	Air Quality			
9	Noise			
10	Vibration			

4.3 Physical Environment

4.3.1 Pabedan Township

The proposed project site is located in Pabedan Township, which total area is about 0.7 square kilometers. A brief regional profile is presented Table 1-2. Total population is 33,336 and it is surrounded by Kyaukdata Township in the east, Latha Township in the west, Dagon Township in the north and Seikkan Township in the south. The topography of Pabedan Township is generally flat, with only a few areas of low. There are no major rivers within the township. An average elevation of 30 feet above sea level.

Table 4-2 Details of Contextual Study Limit

Capital	Pabedan Township
Number of wards	11
Total population	33336
Area	0.7 square kilometers
Latitude	16° 48' N to 16°48' N
Longitude	96°30' E to 96°18' E
Ethnicities	Kachin, Kayah, Kayin, Chin, Mon, Burma, Rakhine and Shan
Main economic activities	Services

Source: General Administrative Department, Pabedan Township (2019)

4.3.2 Climate and Meteorology

Pabedan Township has a hot and humid tropical climate, with temperatures and rainfall patterns that vary throughout the year. According to the Pabedan Township General Administration Department, the highest recorded temperature in the past four years was 40°C, while the lowest

was 12°C. The rainfall and temperature data from 2016 to 2019, obtained from the Pabedan Township records, are presented in the following table.

Table 4-3 Annual Rainfall and Temperature of Pabedan Township

No.	Year	Rainfall		Temperature	
		Raining Day	Total Rainfall (Inches)	Highest Temperature (°C)	Lowest Temperature (°C)
1	2016	106	100	39	12
2	2017	105	100	39	12
3	2018	21	19.2	38	12
4	2019	82	105	40	12

Source: General Administrative Department, Pabedan Township (2019)

The meteorological profile for Pabedan Township indicates a significant upward shift in thermal baselines over the 1979-2025 assessment period. According to the fifth-generation ECMWF atmospheric reanalysis, the mean annual temperature exhibits a positive linear trend, as evidenced by the upward slope of the climate change trend line. This warming is visually quantified through "warming stripes," which illustrate a transition from cooler anomalies (blue stripes) in the early decades to intense warm anomalies (red stripes) in recent years, particularly accelerating from 2015 to 2025. The following figure shows mean yearly temperature, trend and anomaly of Pabedan Township in Yangon Region.

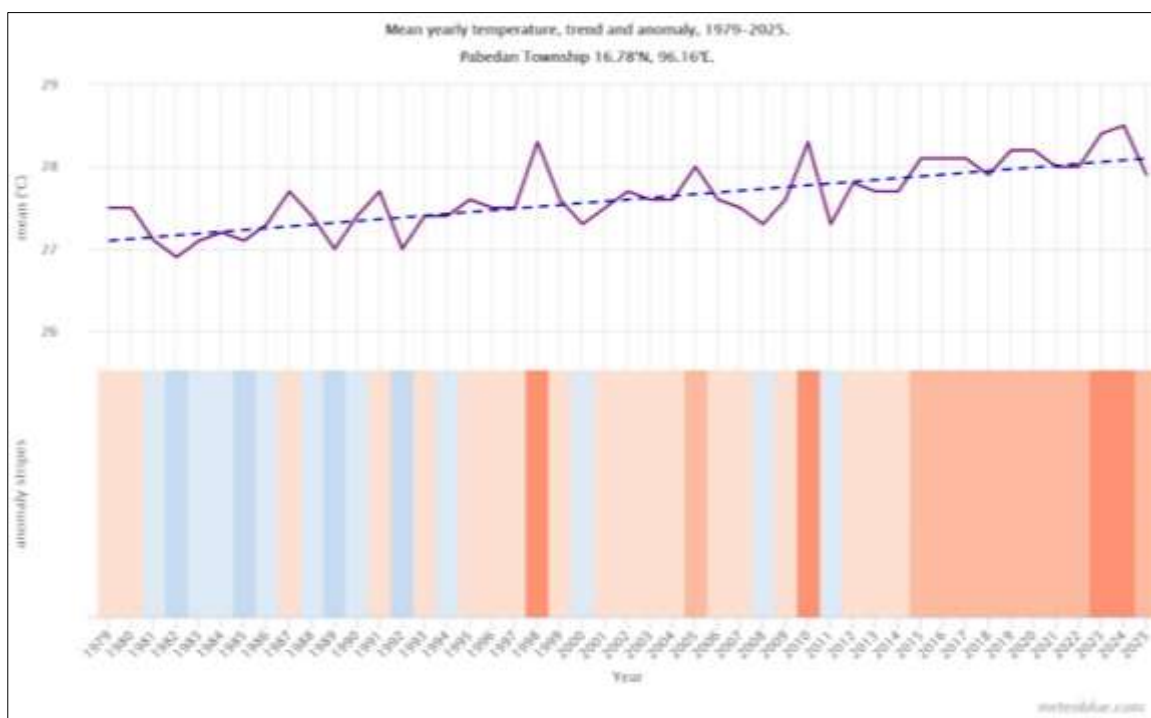


Figure 4-2 Mean Yearly Temperature Trend and Anomaly Stripes for Pabedan Township (1979-2025) (Source: Meteoblue)

The following graph shows an estimate of mean total precipitation for the larger region of Pabedan Township. The dashed blue line is the linear climate change trend. If the trend line is going up from left to right, the precipitation trend is positive and it is getting wetter in Pabedan

Township due to climate change. If it is horizontal, no clear trend is seen and if it is going down conditions are becoming drier in Pabedan Township over time. In the lower part the graph shows the so called precipitation stripes. Each coloured stripe represents the total precipitation of a year - green for wetter and brown for drier years.

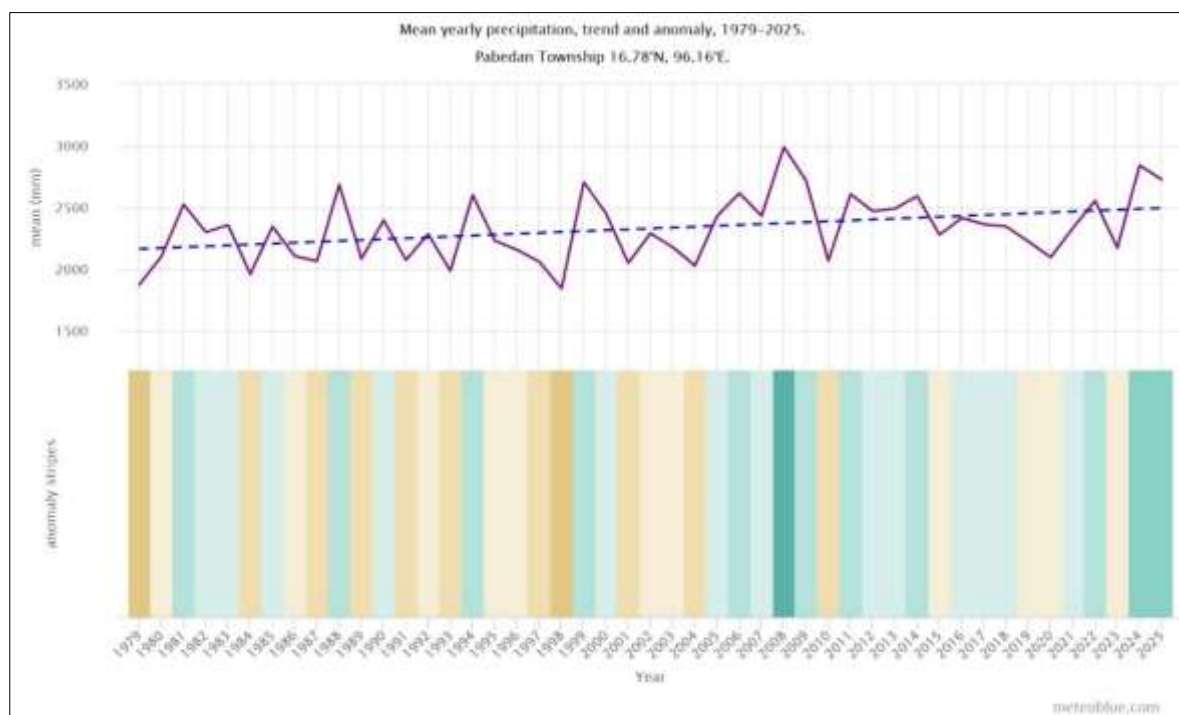


Figure 4-3 Mean Yearly Precipitation Trend and Anomaly Stripes for Pabedan Township (1979-2025) (Source: Meteoblue)

Table 4-4 Annual Mean Temperature and Mean Precipitation of Pabedan Township (1979-2025)

No	Township	Year	Mean Temperature	Temperature Anomaly	Mean Precipitation	Precipitation Anomaly
1	Pabedan	1979	27.5	0.1	1876.7	-428.9
2		1980	27.5	0.0	2104.8	-200.8
3		1981	27.1	-0.3	2527.6	219.0
4		1982	26.9	-0.5	2302.5	0.0
5		1983	27.1	-0.3	2360.3	60.8
6		1984	27.2	-0.3	1961.9	-334.6
7		1985	27.1	-0.4	2348.2	42.6
8		1986	27.3	-0.2	2107.9	-194.7
9		1987	27.7	0.2	2068.3	-273.2
10		1988	27.4	-0.1	2688.8	383.2
11		1989	27.0	-0.5	2086.6	-216.0
12		1990	27.4	-0.1	2399.9	94.3

13		1991	27.7	0.2	2077.5	-231.2
14		1992	27.0	-0.5	2287.3	-9.1
15		1993	27.4	0.0	1989.2	-304.2
16		1994	27.4	-0.1	2603.7	298.1
17		1995	27.6	0.1	2232.6	-70.0
18		1996	27.5	0.0	2159.6	-149.0
19		1997	27.5	0.0	2062.2	-231.2
20		1998	28.3	0.8	1846.3	-441.0
21		1999	27.6	0.1	2707.1	392.4
22		2000	27.3	-0.1	2454.6	149.0
23		2001	27.5	0.0	2053.1	-246.4
24		2002	27.7	0.2	2293.4	-15.2
25		2003	27.6	0.1	2180.9	-127.8
26		2004	27.6	0.1	2031.8	-267.7
27		2005	28.0	0.6	2433.3	124.7
28		2006	27.6	0.1	2618.9	307.2
29		2007	27.5	0.0	2433.3	127.8
30		2008	27.3	-0.1	2993.0	672.2
31		2009	27.6	0.1	2719.3	404.5
32		2010	28.3	0.8	2071.4	-222.0
33		2011	27.3	-0.1	2609.8	301.1
34		2012	27.8	0.3	2472.9	164.2
35		2013	27.7	0.2	2494.2	191.6
36		2014	27.7	0.2	2594.5	285.9
37		2015	28.1	0.6	2281.2	-21.3
38		2016	28.1	0.6	2418.1	118.6
39		2017	28.1	0.6	2366.4	60.8
40		2018	27.9	0.5	2348.2	42.6
41		2019	28.2	0.7	2226.5	-73.0
42		2020	28.2	0.7	2098.8	-203.8
43		2021	28.0	0.6	2336.0	36.5
44		2022	28.0	0.5	2558.0	237.3
45		2023	28.4	0.9	2174.8	-130.8
46		2024	28.5	1.0	2844.0	535.3

47		2025	27.9	0.4	2728.4	413.7
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(Source: Meteoblue.com)

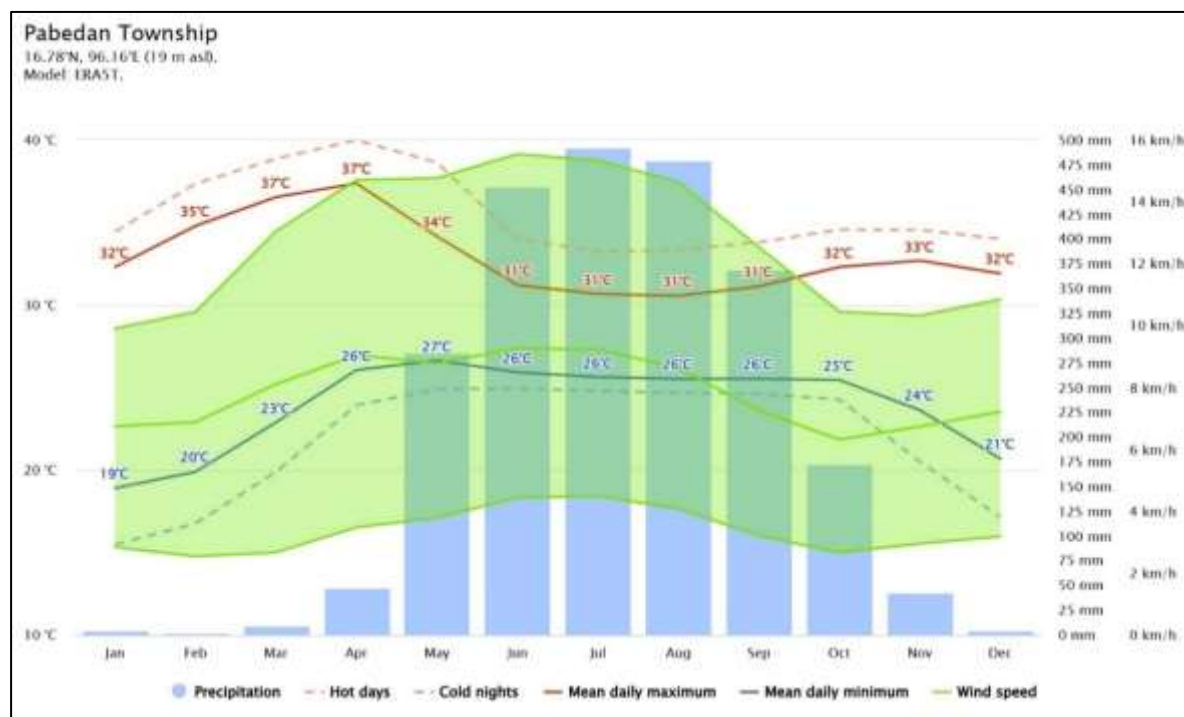


Figure 4-4 30 years of hourly weather model simulations for Pabedan Township (Source: Meteoblue)

The weather model simulations were estimated for Pabedan Township based on historical data from 1995 onwards, producing a continuous 30-year dataset with hourly weather information (Source: meteoblue). The highest temperature in Pabedan Township reaches up to 37°C, while the lowest recorded temperature drops to 19°C. The mean daily maximum temperature is generally around 33°C, peaking in March and April at around 37°C, indicating extremely hot conditions during these months. On the other hand, the mean daily minimum temperature ranges from 19°C to 20°C, reflecting warm nights for most of the year, with slightly cooler nights in the dry season.

Precipitation in Pabedan Township is highest between June and August, with July showing the peak rainfall, reaching over 485 mm. This marks the core of the rainy season, characterized by heavy and frequent downpours. The dry season spans from November to April, with significantly lower rainfall. The township receives little to no rain in January and February, highlighting a clear seasonal variation in precipitation. Wind speeds in Pabedan Township are relatively modest, generally staying below 8 km/h throughout the year. The strongest winds occur between June and July, coinciding with the monsoon season, while the calmest conditions are seen in the cooler months of January and February.

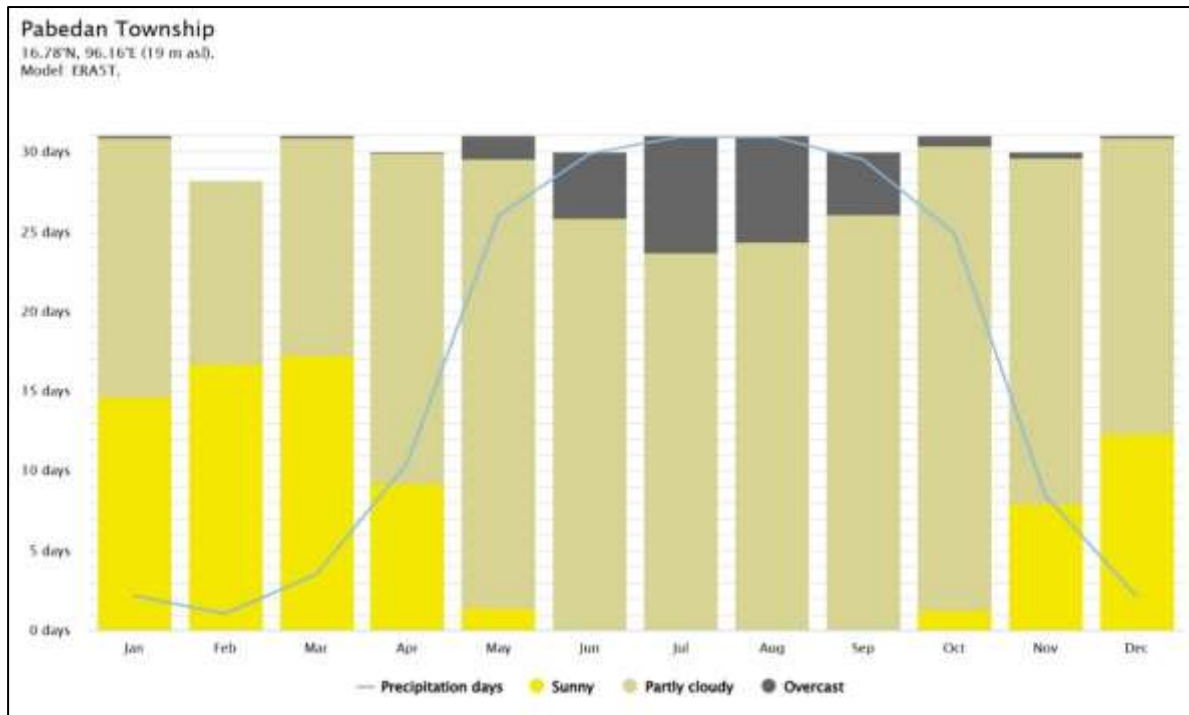


Figure 4-5 Cloudy, Sunny, and Precipitation days of 30 years of hourly weather model simulations for Pabedan Township (Source: Meteoblue)

The graph shows the monthly number of sunny, partly cloudy, overcast and precipitation days. Days with less than 20% cloud cover are considered as sunny, with 20-80% cloud cover as partly cloudy and with more than 80% as overcast.

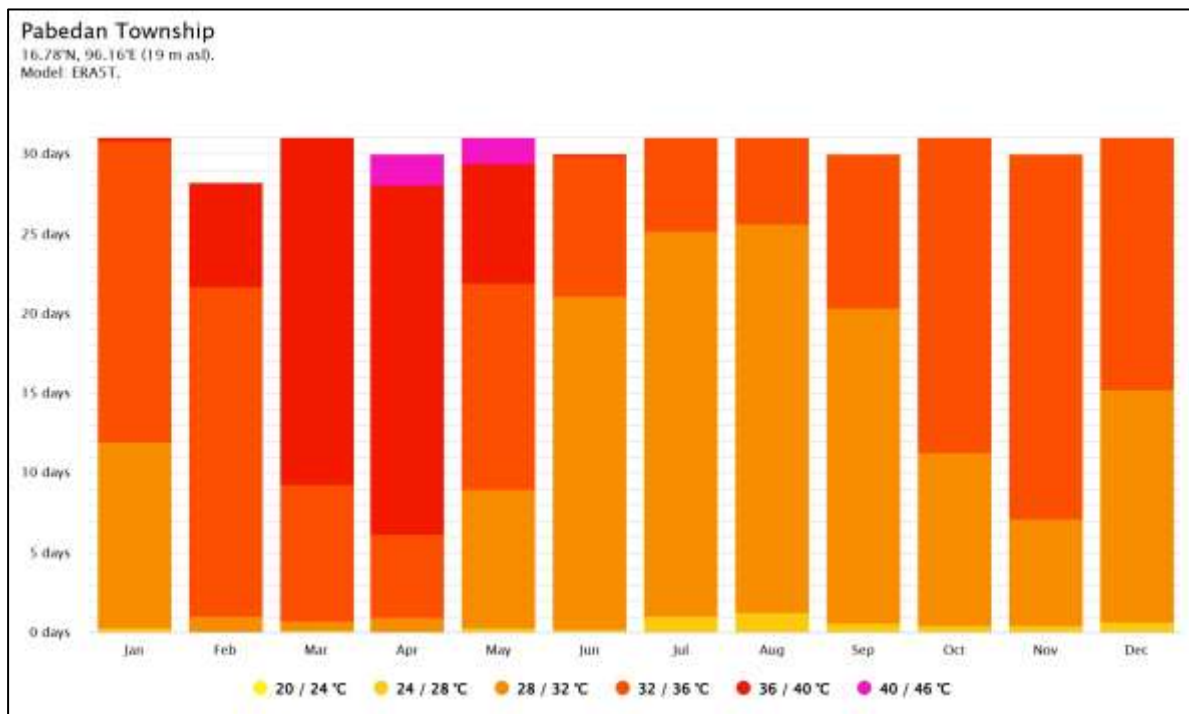


Figure 4-6 Maximum Temperatures of 30 years of hourly weather model simulations for Pabedan Township (Source: Meteoblue)

The graph shows the maximum temperature diagram for Pabedan Township displays how many days per month reach certain temperatures.

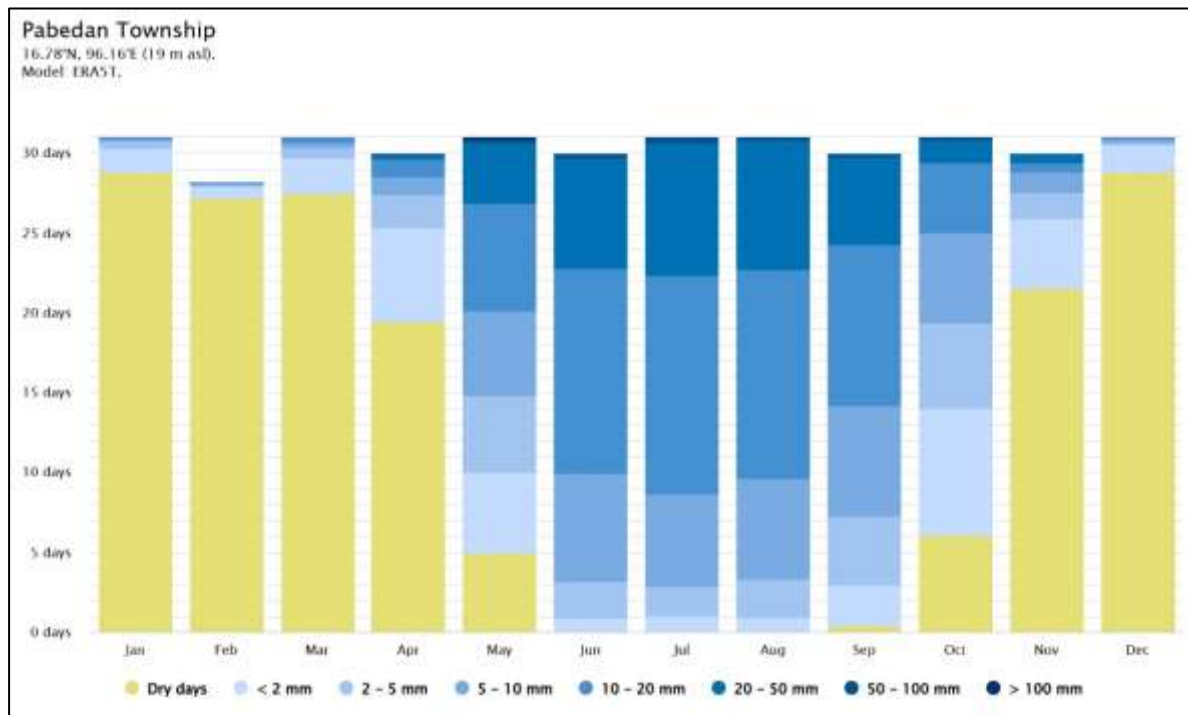


Figure 4-7 Precipitation amounts of 30 years of hourly weather model simulations for Pabedan Township (Source: Meteoblue)

The precipitation graph for Pabedan Township shows on how many days per month, certain precipitation amounts are reached. In tropical and monsoon climates, the amounts may be underestimated.

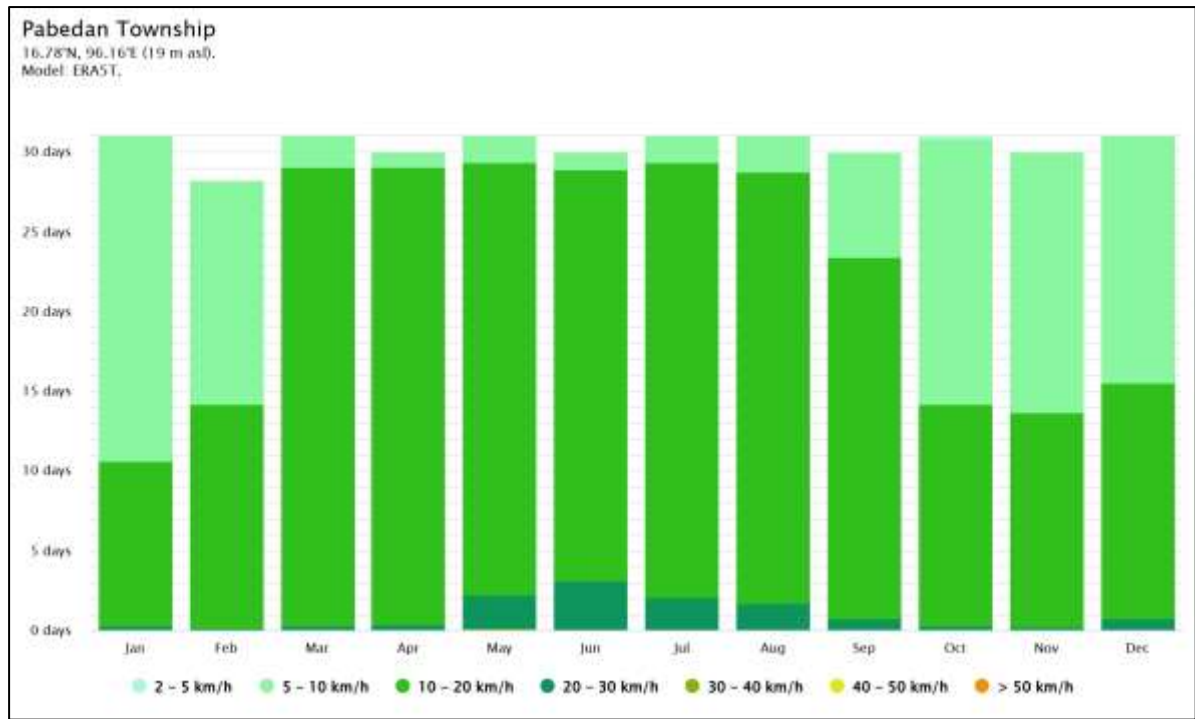


Figure 4-8 Wind Speed of 30 years of hourly weather model simulations for Pabedan Township (Source: Meteoblue)

The graph for Pabedan Township shows the days per month, during which the wind reaches a certain speed.

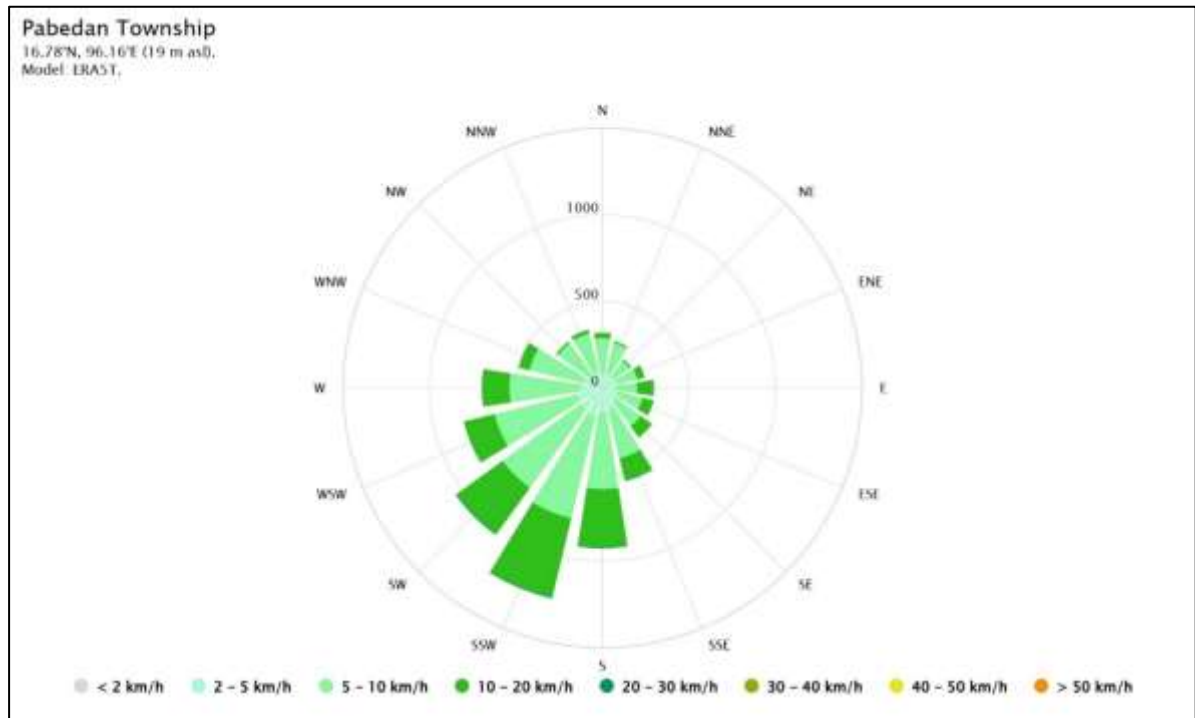


Figure 4-9 Wind Rose of 30 years of hourly weather model simulations for Pabedan Township (Source: Meteoblue)

The wind rose for Pabedan Township shows how many hours per year the wind blows from the indicated direction. Example SW: Wind is blowing from South-West (SW) to North-East (NE).

4.3.3 Natural Hazards

The Yangon Region, located in the southern part of Myanmar, is the country's most populous and economically significant area. Despite its strategic importance, Yangon is vulnerable to a range of natural hazards that pose significant risks to its population, infrastructure, and environment. The region's low-lying deltaic terrain, tropical monsoon climate, and proximity to geological fault lines contribute to its exposure to hazards such as flooding, earthquakes, droughts, extreme heat, cyclones, and occasional landslides. The following are detailed description of natural hazards in the Yangon Region, including flooding, earthquakes, cyclones, extreme heat and droughts.

Flooding: Flooding is one of the most common and significant natural hazards in the Yangon Region, especially during the monsoon season from June to September. Yangon lies in a low-lying deltaic area with a complex river and drainage network, including the Yangon, Bago, and Hlaing rivers. Intense and prolonged rainfall, coupled with poor drainage infrastructure and rapid urbanization, often causes flash floods and waterlogging in many townships. The following figure shows flood risk percentage of townships in Yangon Region.

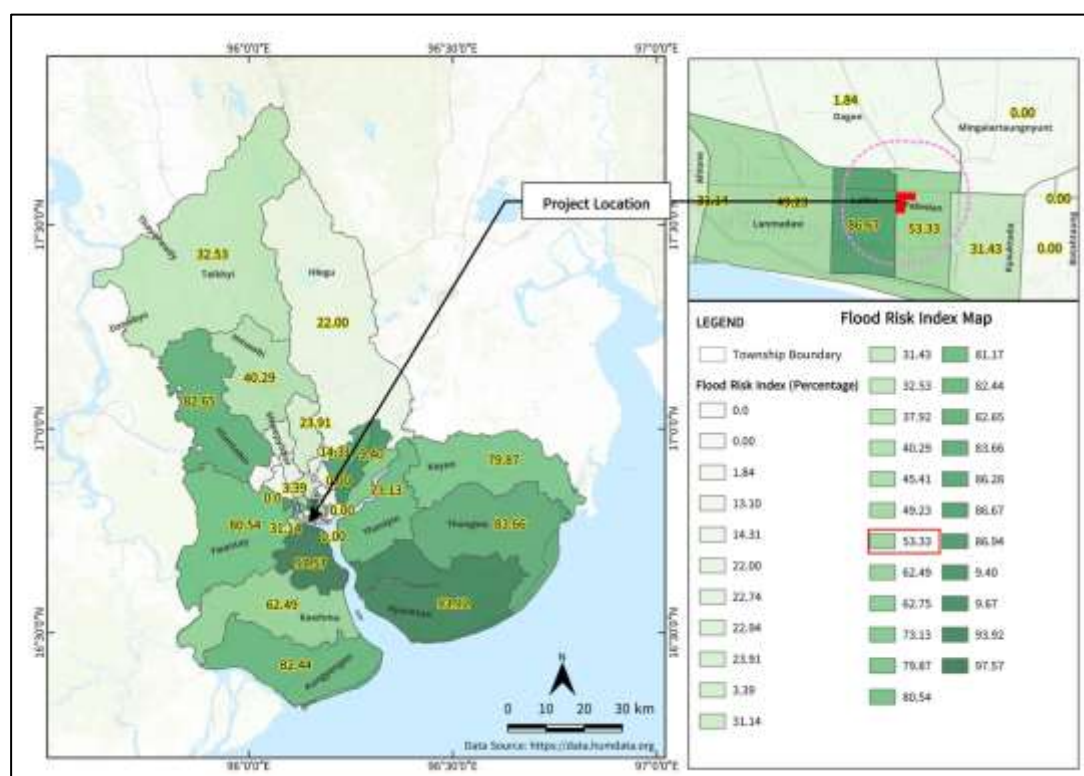


Figure 4-10 Flood Risk Percentage of Townships in Yangon Region (Source: <https://data.humdata.org>)

The Yangon Region demonstrates varying levels of flood risk across its townships, with Flood Risk Index (FRI) values ranging from 0.00% to 97.57%. Townships in the southern and western parts of the region generally face higher flood risk, while urban central areas tend to have lower flood risk.

The project area lies within the Pabedan Township, located in the downtown zone of Yangon. According to the map, this township has a flood risk index of 53.33% in this location. It is surrounded by other high-risk urban townships such as Ahlone (31.14%), Lanmadaw (49.23%), Latha (86.67%), Kyauktada (31.43%).

Earthquakes: Although Yangon is not located directly on a major fault line, Myanmar is a seismically active country. The Sagaing Fault, a major strike-slip fault, runs north-south through the country and poses a significant earthquake threat. Tremors from nearby seismic activity can be felt in Yangon, and the city remains at moderate risk of damage from earthquakes due to its aging infrastructure and lack of earthquake-resistant buildings.

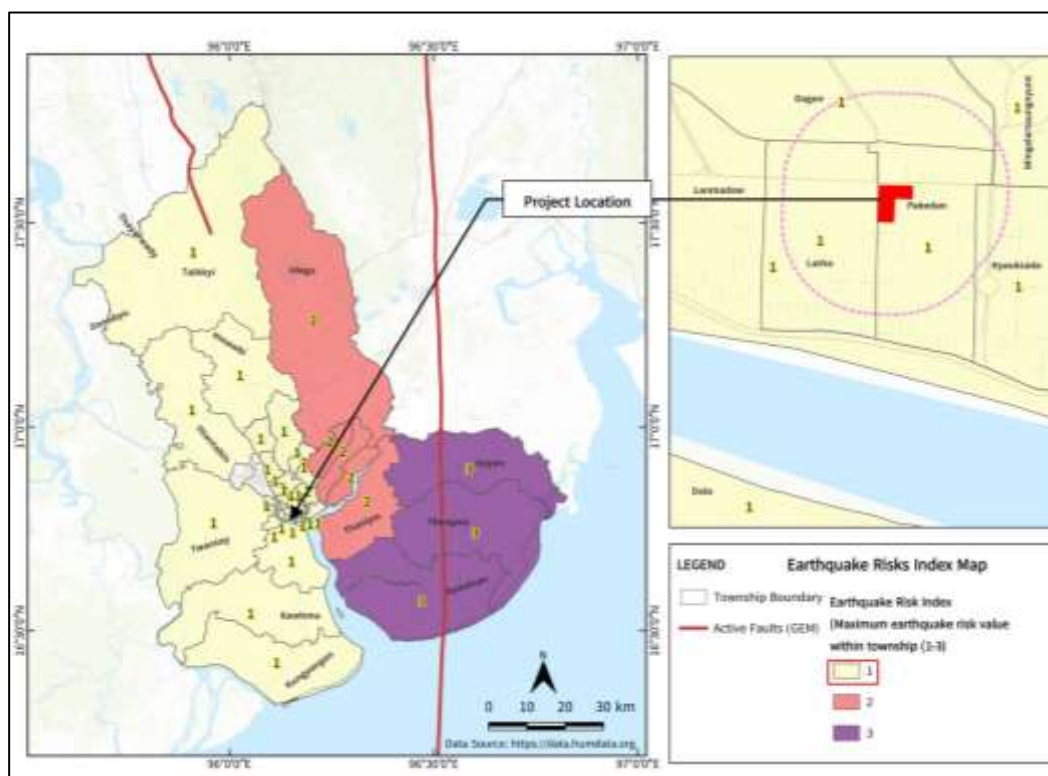


Figure 4-11 Earthquake Risk of Townships in Yangon Region (Source: <https://data.humdata.org>)

The figure shows the earthquake risk across townships in the Yangon Region is categorized into three levels: Low (1), Medium (2), and High (3), based on the Earthquake Risk Index. The project area, located near Pabedan Township, is within the 500 m AOI (Area of Interest) and is considered a low-risk zone (1) based on the Earthquake Risk Index. However, it is situated in close proximity to an active fault line, marked in red on the map. This proximity to a fault zone warrants careful consideration in construction, planning, and infrastructure design, despite its current low-risk classification, due to the potential for increased seismic impact in future events.

Cyclones: Cyclones, particularly tropical storms from the Bay of Bengal, also pose a significant threat to Yangon. These storms are most prevalent during the pre-monsoon and post-monsoon periods. When cyclones strike, they bring heavy rains, strong winds, and storm surges, leading to widespread damage. Cyclones can cause coastal flooding, destroy buildings and roads, and lead to significant loss of life. The most devastating example in recent history is Cyclone Nargis in 2008 showing in Figure 4-12 which caused widespread devastation in the

southern regions of Myanmar. Yangon, being a coastal city, is vulnerable to the impacts of cyclones, especially in areas along the coastline and near the Yangon River.

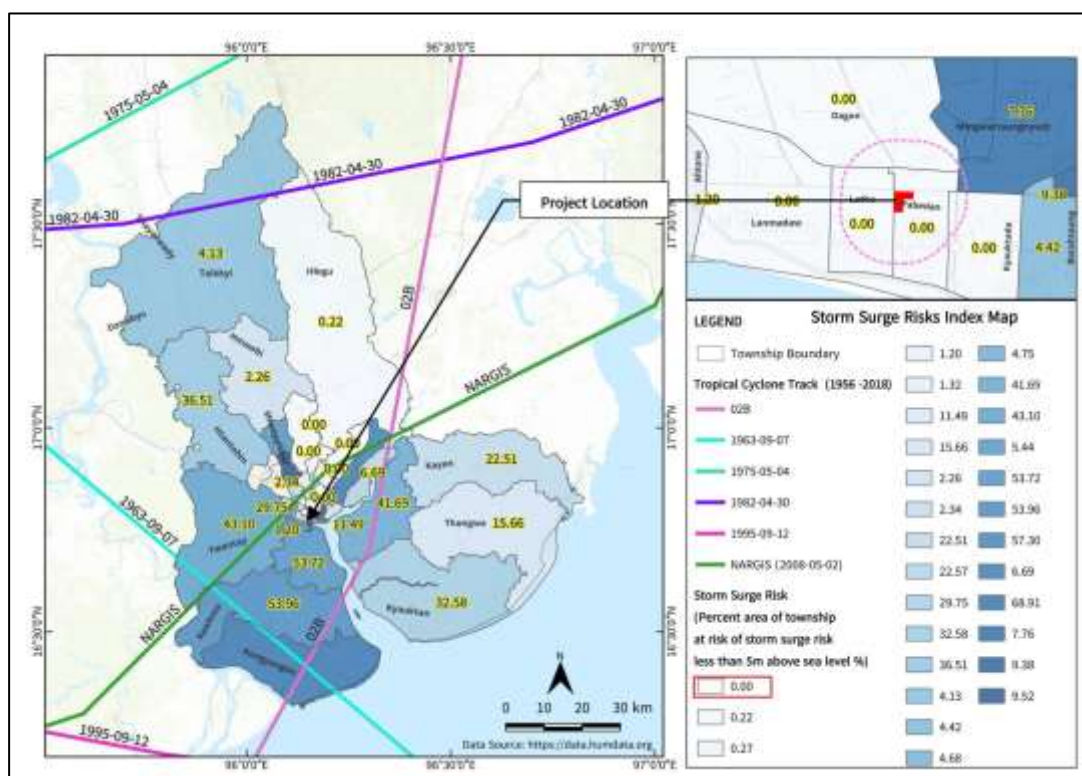


Figure 4-12 Storm Surge Risk of Townships in Yangon Region (Source: <https://data.humdata.org>, UNISYS)

The Yangon Region demonstrates varying levels of storm surge risk across its townships, with risk values ranging from 0.00% to 68.91%. Townships in the southern and coastal parts of the region generally face higher storm surge risks, while urban central areas tend to have lower risk levels.

The project area lies within the central part of the region, where it is situated within a township that experiences a storm surge risk of approximately 0.00%. Surrounding areas, such as Ahlone, Lanmadaw, Latha, Kyauktada Township, show significantly lower storm surge risks and Thanlyin, Dala, Seikgyikanaungto, Twantay, show significantly higher storm surge risks, with Dala alone reaching 53.72%. In contrast, urban areas like Dagon, Bahan, Kyauktada and Thaketa demonstrate much lower risk levels, with values ranging from 0.00% to 9.38%.

Extreme Heat: Extreme heat events are becoming more frequent in Yangon due to global climate change and urbanization. The phenomenon known as the urban heat island effect, where urban areas become significantly warmer than their rural surroundings due to human activities and infrastructure, is particularly pronounced in densely populated areas of the city. During heatwaves, the temperature in Yangon can rise significantly, posing health risks to vulnerable populations, especially the elderly and those with pre-existing medical conditions.

Droughts: Droughts occur when there is an extended period of low rainfall, which can result in water shortages and affect agriculture. While droughts are less frequent in Yangon compared to other natural hazards, they still pose a significant risk to the region's water supply and agricultural productivity. These natural hazards are typically seasonal, and the risk can vary depending on the severity of weather patterns and geological events.

4.3.4 Topography

The topography of Yangon, Myanmar's largest city and commercial hub, is shaped by a combination of river systems, coastal plains, and hilly ridges. The region has a diverse landscape that includes flat alluvial plains, river deltas, and more elevated ridges, with each of these features influencing the development of the city and its surrounding areas.

Yangon lies at the mouth of the Yangon River, near the Andaman Sea, giving it access to both freshwater and saltwater ecosystem. This coastal location, coupled with the region's low-lying position, makes the topography of Yangon heavily influenced by both river and sea dynamics. The downtown area of Yangon, where the majority of the city's population lives and where the main economic and commercial activities take place, is primarily characterized by flat, low-lying terrain. This urban area is surrounded by areas of natural elevation, such as ridges and hilltops, which contribute to the diversity of the region's topography.

4.3.4.1 Ridges

Ridges in the Yangon region are primarily found on the outskirts, particularly in the eastern and northern parts of the city. These elevated landforms, formed by tectonic forces and erosion, are characterized by hilly terrain and are a result of the region's geological history, including sedimentary rock layers and fault lines. The ridges act as natural barriers and offer scenic views of the city and surrounding areas. They are covered with vegetation, such as tropical forests, which help stabilize soil and reduce erosion risks, especially during heavy rains. These ridges also present opportunities for residential and recreational development, though their steep slopes and geological conditions can pose challenges for construction.

4.3.4.2 Alluvial Plains

The alluvial plains surrounding Yangon, especially in the downtown area, are a key feature of the region's topography. These flat areas, formed by the deposition of sediment from the Yangon River and its tributaries, are characterized by fertile soil and proximity to river systems. The fertile plains have supported agriculture, particularly rice production, for centuries. In urban areas like downtown Yangon, these plains are covered by infrastructure but continue to influence the city's drainage systems and flood risks. While the plains offer easy access to water, essential for daily life and economic activities, their low-lying nature makes Yangon vulnerable to flooding, especially during the monsoon season.

The project area in the map is situated near the Yangon River and the elevation in the project area is approximately 12 meters above sea level, placing it in a relatively low-lying region compared to other parts of the Yangon downtown area. The area's proximity to the Yangon River means that the project area is part of an alluvial plain, characterized by flat terrain formed by river sediment deposition.

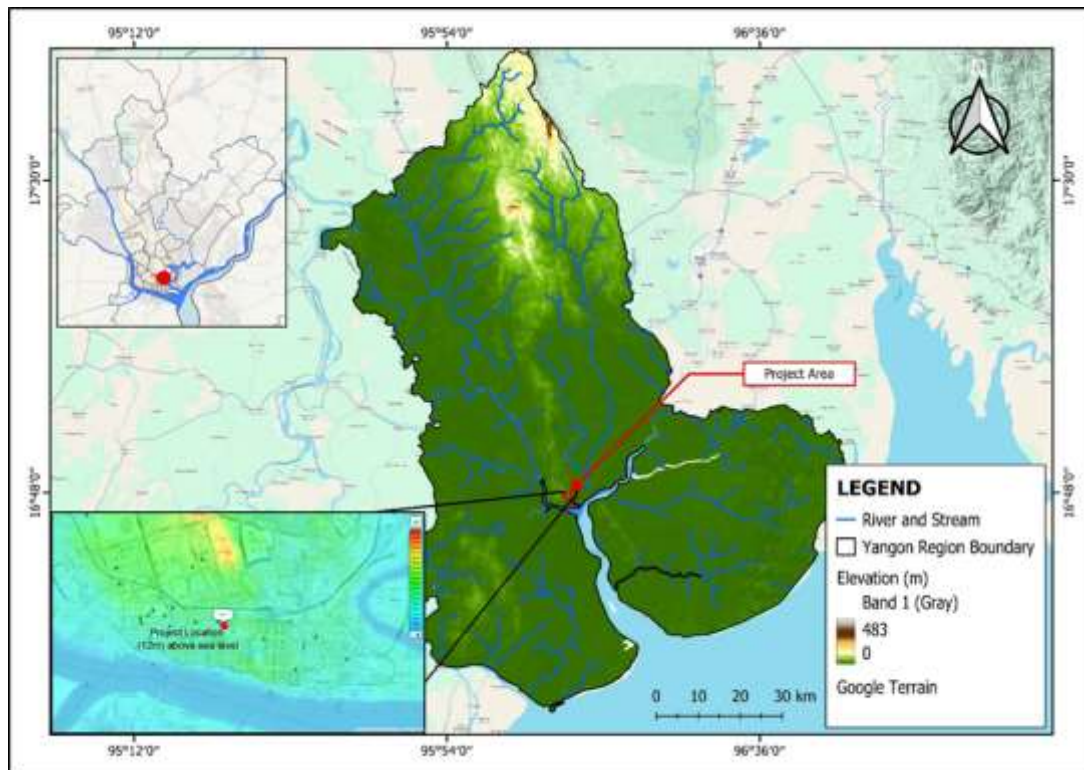


Figure 4-13 Topography and Drainage Map of Yangon Region

Figure 4-13 shows the topography and drainage map of Yangon Region and contour and details elevation map of project area and its surrounding area are presented in following Figure 4-14.

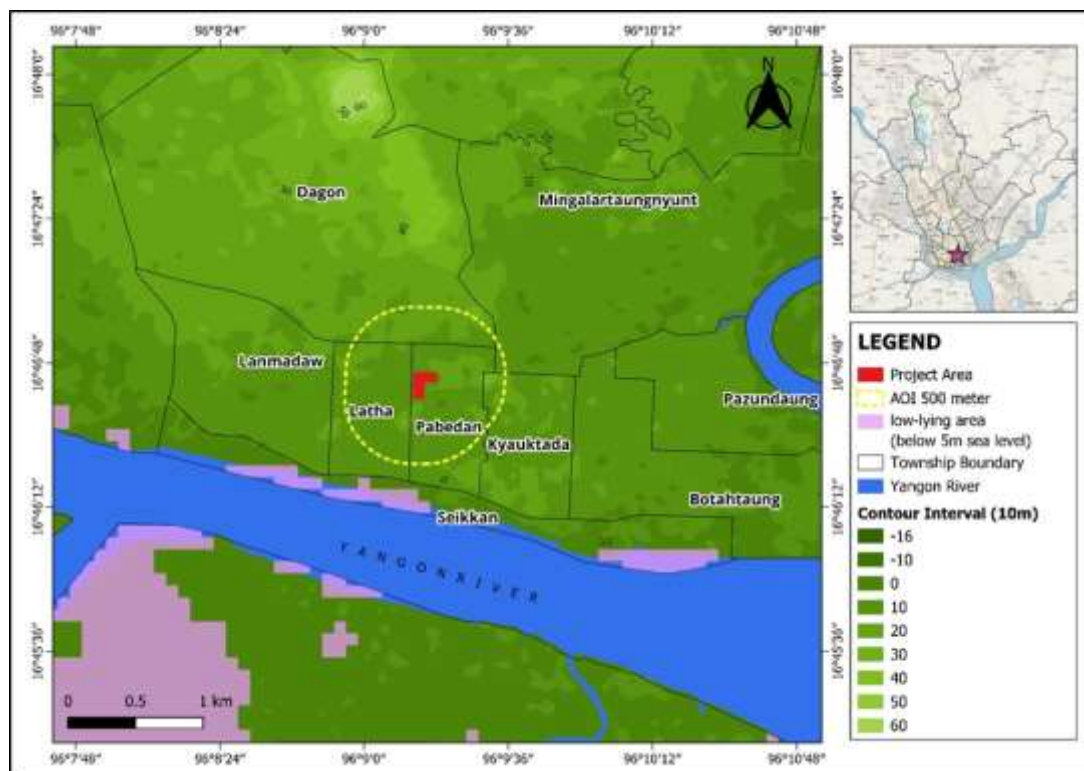


Figure 4-14 Contour and Elevation Map of Project Area and its surrounding

4.3.5 Geology

The geology of the Yangon region is characterized by a mix of alluvial deposits and older sedimentary rock formations. According to the geological maps, the area consists primarily of alluvium (Q2), which includes a mixture of sand, gravel, clay, and silt deposited by the Yangon River and its tributaries. These alluvial plains are vital for agricultural activities due to their fertility. The region also contains elements of the Irrawaddy formation (Tm-Tp), with sedimentary rocks such as sandstone, shale, and conglomerates, which form part of the underlying geological structure. These deposits provide a strong foundation for construction, though the soft and loose nature of the alluvial soils can present challenges for heavy infrastructure development.

The Yangon region is also marked by several active fault lines, indicated in red on the map, which suggest that the area is geologically active. The active fault lines are particularly concentrated to the north and northeast of Yangon, corresponding to the boundary between the alluvial deposits and the older, more stable sedimentary rock layers. The geological map is shown in the following **Figure 4-15** and Geological Profile in the Yangon Region Area is shown in **Table 4-5**.

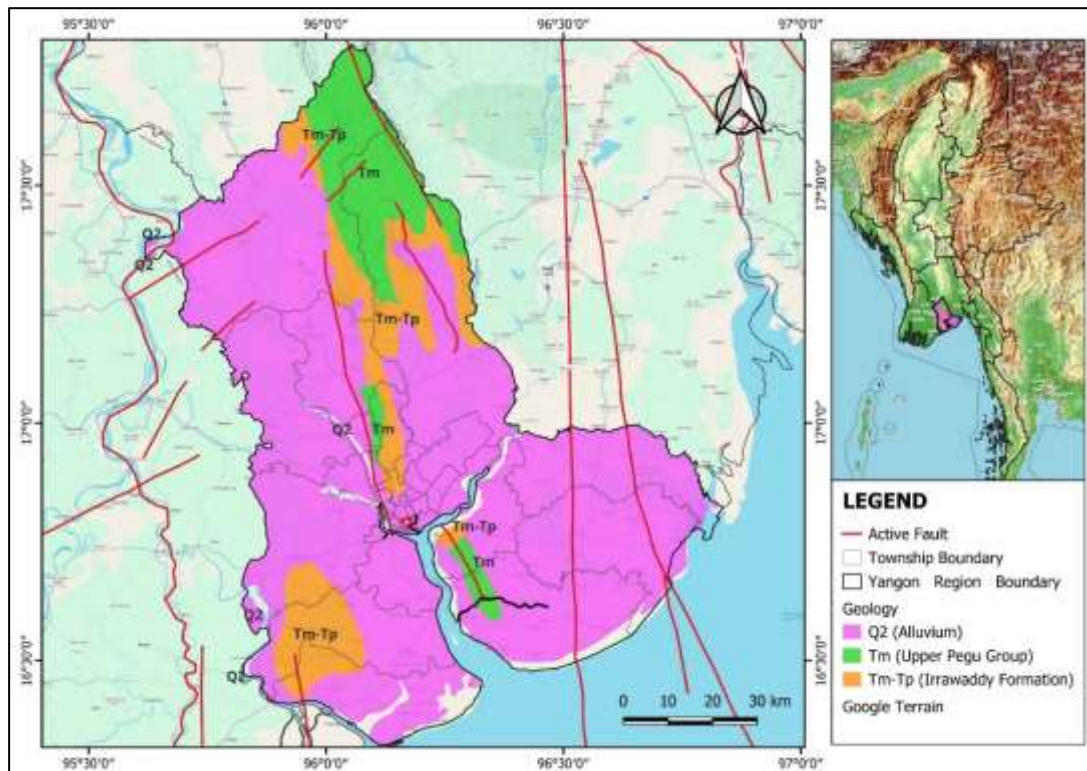


Figure 4-15 Geology Map of Yangon Region

Table 4-5 Geological Profile in the Yangon Region Area

Formation	Litho-stratigraphic Units	Approximate Thickness (m)	Geological Age	Physical Characteristics
	Young alluvium	0-1.5	Quaternary	Clay and silts with trace sand.
	Valley-filled deposits	20-100	Pleistocene	Clay, silt, sand and very coarse gravels.
IRRAWADDY GROUP	Danyingon clays	Unrecorded	Pliocene	Reddish brown, grey to blue, laminated clays, with interbedded sand-rocks.
	Arzanigon sand-rocks	Unrecorded	Pliocene	Yellowish grey to bluish grey sand rocks, fine to coarse-grained, sometimes very coarse-grained, sometimes very coarse to gritty with intercalated clays and mudstone/siltstones.
PEGU GROUP	Besapet alternations	2,500	Miocene	Alternation of shale and argillaceous sandstones.
	Thadugan sandstone	2,000 (?)	Miocene	Well consolidated, jointed argillaceous sandstones.
	Hlawga shales	Unrecorded	Oligocene (?)	Generally indurated shales.

4.3.5.1 Seismicity

Based on the historical record of significant seismic activity, the Yangon Region can be classified as a region with low to medium seismic risk. Tectonically, it is situated between two major geological features: the subduction zone between the Indian Plate and the Burma Plate to the west, and the right-lateral Sagaing Fault to the east. The most notable earthquakes affecting this region were the Bago earthquake on May 5, 1930, with a magnitude of 7.3 on the Richter scale, and the earthquake on March 28, 2025, which registered a magnitude of 7.1. Both events originated from the Sagaing Fault, highlighting its role as a key seismic source in the region. The Figure 1-17 shows map of the previous magnitude of >7.0 events that took place around Yangon Region (Source: Myanmar Geoscience Society and UN-Habitat)

According to the probabilistic seismic hazard assessment of Yangon conducted by UN-Habitat in collaboration with the Myanmar Geoscience Society, seismic hazards for Yangon Region calculated using grid intervals of 0.1 x 0.1 with a 10% probability of exceedance over 50 years. The results are represented in terms of peak ground acceleration (PGA). Based on this method, the project site within Pabedan Township is located in a moderate to strong seismic hazard zone, with a PGA value ranging from 0.31 to 0.4, as shown in **Figure 4-16**.

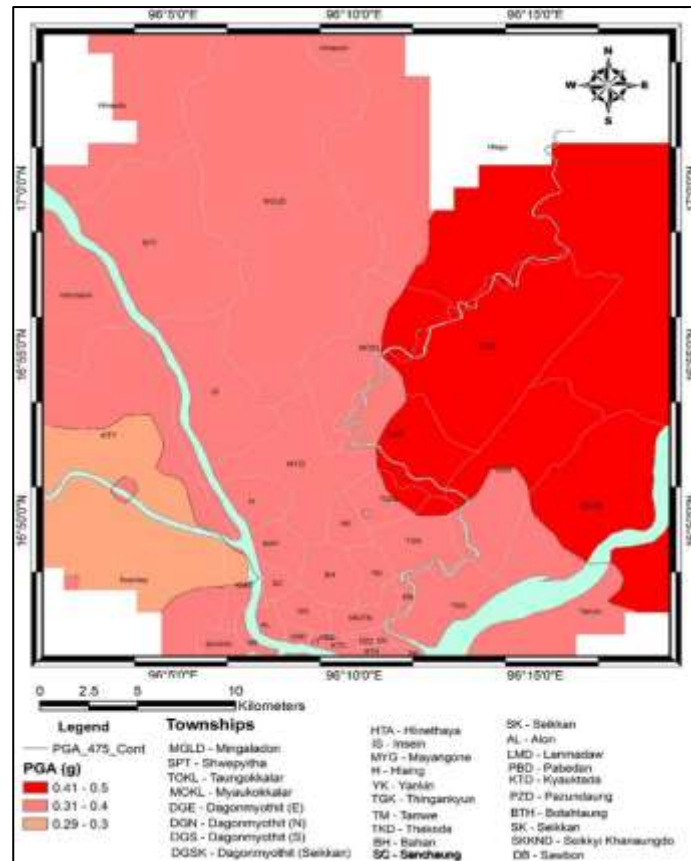


Figure 4-16 Probabilistic Seismic Hazard Map of Yangon with 10% probability of exceedance in 50 years, in PGA (Source: Myanmar Geoscience Society and UN-Habitat)

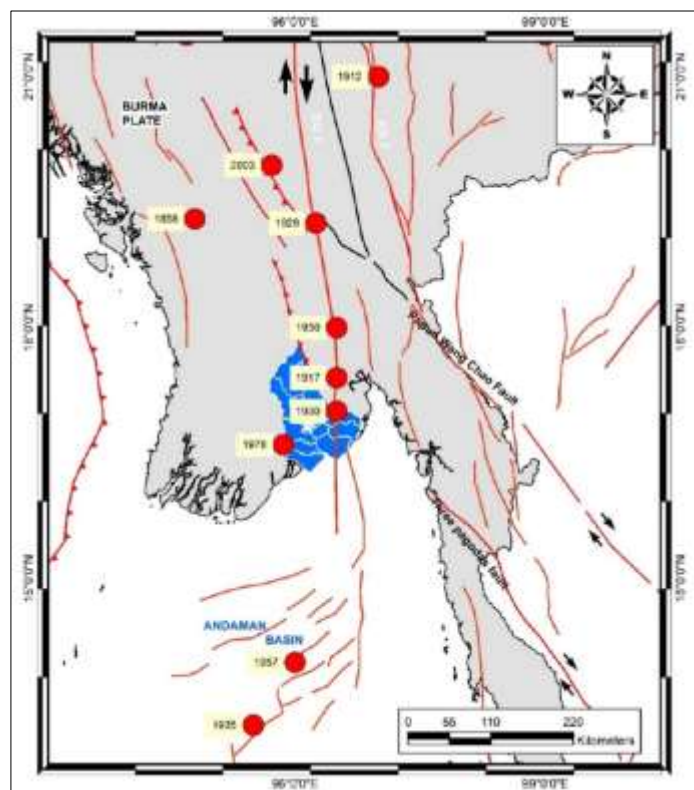


Figure 4-17 Map of the previous magnitude of >7.0 events that took place around Yangon (Source: Myanmar Geoscience Society and UN-Habitat)

4.3.6 Forest Cover with Protected Area

Yangon Region, encompassing both urban and rural landscapes, has experienced significant changes in forest cover over the years. In 2000, the region's forest cover was approximately 72,750.24 hectares, which declined to about 68,890.86 hectares by 2005. More recently, data from 2020 indicates that natural forests accounted for 11% of the land cover in Yangon, with an additional 0.56% covered by non-natural tree plantations.

4.3.6.1 Reserved Forests

Reserved Forests (RFs) in Myanmar are protected areas established under the Forest Law to safeguard valuable forest resources and biodiversity. Managed by the Forest Department, these forests are typically closed to the public for exploitation. In Yangon Region, a key example is the Hlawga Reserved Forest in Mingaladon Township, established in 1982. Covering 6.23 km², it serves as a sanctuary for various species, including deer and monkeys, and is an important site for environmental education and research.

4.3.6.2 Protected Public Forests

Protected Public Forests (PPFs) in Myanmar are designated conservation areas under the Forest Law, enabling sustainable use by local communities while ensuring the protection of biodiversity and ecosystems. In Yangon Region, several PPFs, particularly along the coast, have been established to safeguard mangrove ecosystems. The Ministry of Natural Resources and Environmental Conservation (MONREC) has designated seven protected public mangrove forests covering 23,855 acres. These forests are part of a green belt initiative designed to enhance coastal protection and promote biodiversity conservation.

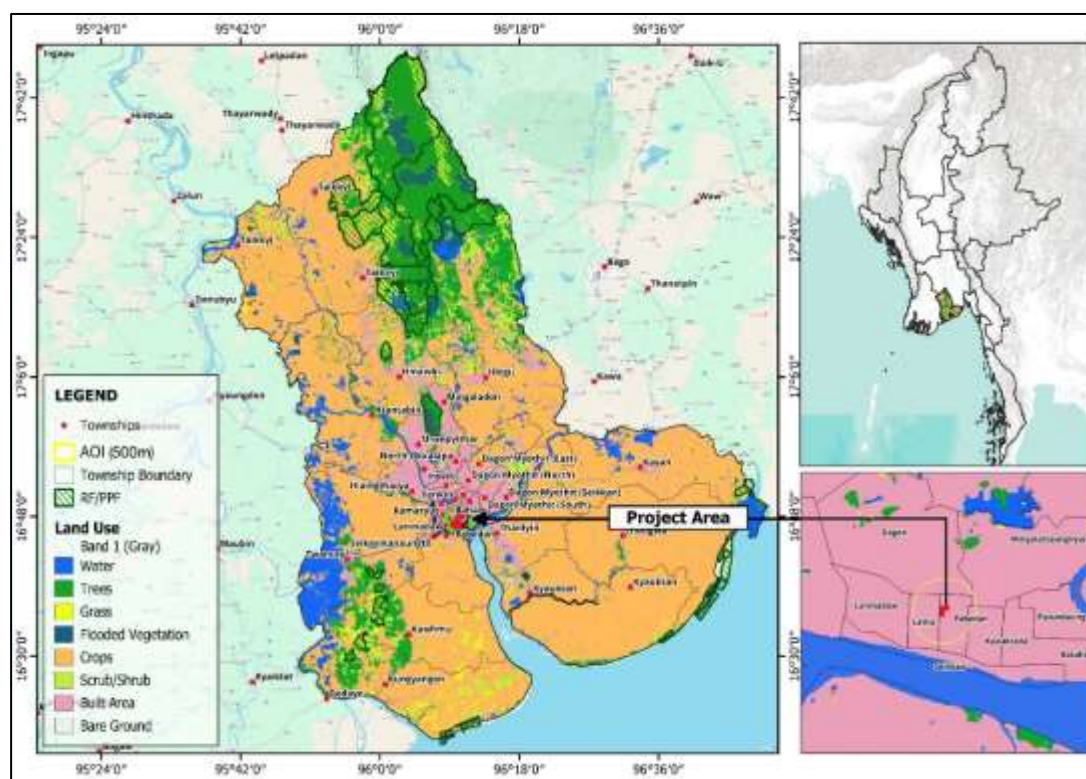


Figure 4-18 Reserved Forest and Protected Public Forests Areas Map of Yangon Region

Hlawga National Park is located 21.70 kilometers northwest of the project site, while Kandawgyi Garden is situated 1.96 kilometers to the north-east and Inya Lake is situated 5.47

kilometers to the northwest. Kandawgyi Lake is a man-made reservoir in Yangon, originally constructed in the 1880s to supply clean water to the city. It serves as a vital urban green space, surrounded by the 110 acre Kandawgyi Nature Park, the Yangon Zoological Gardens, and Bogyoke Aung San Park. Despite its urban setting, Kandawgyi Lake supports a variety of flora and fauna. The lake is home to various aquatic plants, such as water lilies, which contribute to the ecosystem's balance by providing oxygen and serving as habitats for aquatic life. The surrounding Kandawgyi Nature Park boasts towering banyan and rain trees, offering shade and a peaceful retreat for both wildlife and visitors. Avian species frequent the lake, including migratory birds like egrets and kingfishers during the winter months, as well as resident species such as herons and cormorants. These birds contribute to the park's rich biodiversity and make it a popular spot for birdwatching. Figure 1-18 shows the areas of Reserved Forests (RF) and Protected Public Forests (PPF) along with the land use and land cover classification of Yangon Region. The following table describes the area and percentage of land use and land cover in Yangon Region.

No	Land Use (Yangon Region)	Area	Percentage
1	Water	155240	6.4 %
2	Trees	350104	14.5 %
3	Grass	27112	1.1 %
4	Flooded Vegetation	44850	1.9 %
5	Crops	1416695	58.7 %
6	Scrub/Shrub	164329	6.8 %
7	Built Area	254996	10.6 %
8	Bare Ground	1952	0.1 %
		2415278	100%

4.3.7 Soil

The project area is located within Pabedan Township in Yangon Region, primarily characterized by Meadow & Meadow Alluvial Soils (Dark Green). These soils are typically found in floodplains and low-lying areas, often associated with river or stream deposits. They are highly fertile, making them suitable for agricultural activities, especially for growing crops that require rich, well-drained soils. The alluvial nature of the soil means it is constantly replenished with fresh nutrients, enhancing its productivity. This soil type in the project area presents favorable conditions for development, with its natural fertility supporting both agricultural and potential infrastructure growth. These varied soil types in the project area are shown in the following **Figure 4-19**.

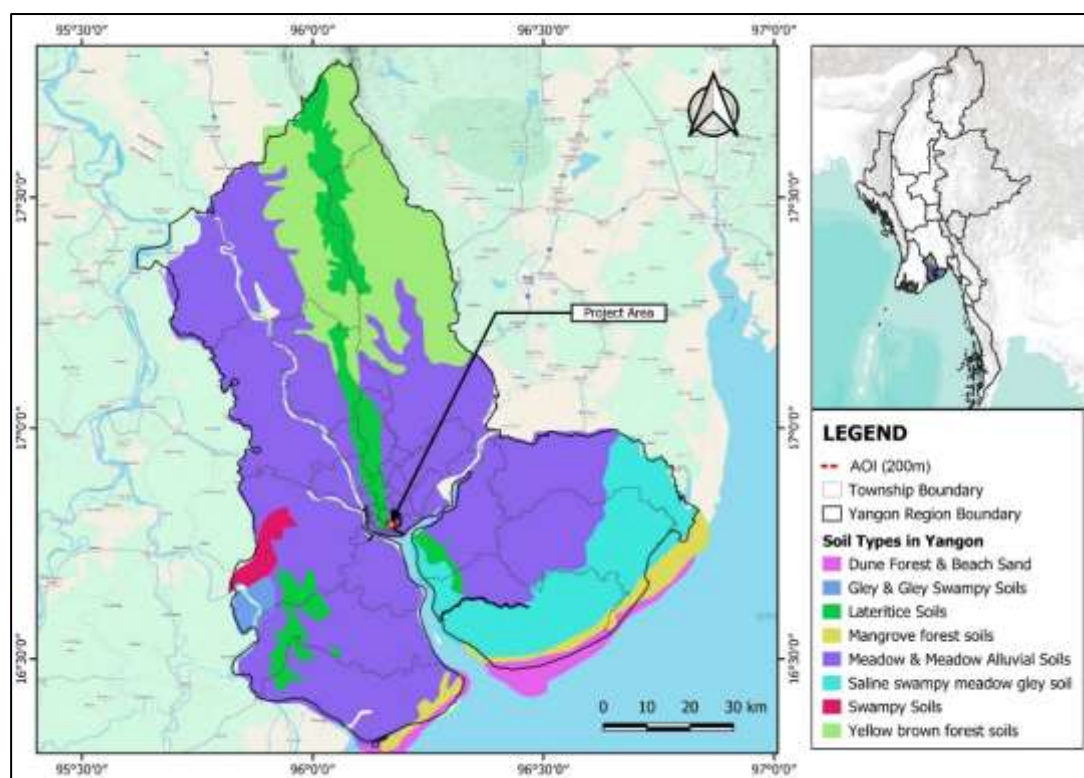


Figure 4-19 Soil Map of Yangon Region

4.4 Physical Baseline Environment

Unique Environment Myanmar (UEM) Limited was conducted the physical environmental baseline survey for the Junction City Mixed-Use Development project (Shwe Taung Junction City Development Co., Ltd). In this project, physical environmental baseline survey monitored for three locations of air quality, noise level and vibration level and one location for traffic survey and then, groundwater quality and discharge water quality were collected. Summary of physical baseline survey was shown in Table 1-6.

Table 4-6 Summary of physical baseline monitoring surveys

Air Quality	Parameter	1) Nitrogen dioxide, 2) carbon monoxide, 3) particulate Matter PM10, 4) Particulate Matter PM 2.5, 5) Sulphur Dioxide, 6) Wind Speed, and Wind Direction, 7) Ozone
	Period	Three locations for one time within 24 hours continuous
	Location	Within Project site and residential area
Noise Level	Parameter	LAeq (A-weighted loudness equivalent)
	Period	Three locations within 24 hours continuous
	Location	Within Project site and residential area
Traffic Volume	Parameter	Volume of traffic and travelling velocity of vehicles
	Period	8 hours in one location
	Location	Junction of Bo Gyoke Aung San Road,
Groundwater Quality	Parameter	1) pH, 2) Color, 3) Turbidity, 4) TDS, 5) Chloride, 6) Hardness, 7) Ammonia-Nitrogen 8) Free Cyanide 9) Nitrite 10) Nitrate 11) Aluminium 12) Arsenic 13) Iron 14) Lead 15) Copper 16) Cadmium 17) Manganese 18) Zinc 19) Nickel 20) Mercury 21) Chromium 22) Sulfide 23) Sulfate 24) Fluoride 25) Calcium 26) Total Coliform Bacteria 27) Total Faecal Coliform

	Location	At the ground water pipe line which is the project site
	Period	One time at one location
Discharge Water Quality	Parameter	1) 5-day Biological oxygen demand, 2) Total Phosphorous, 3) Oil & Grease, 4) Total Coliform Bacteria, 5) Ammonia, 6) Total Chlorine 7) Arsenic 8) Cadmium 9) Chemical oxygen demand 10) Chromium (hexavalent) 11) Copper 12) Cyanide (free) 13) Iron (total) 14) Lead 15) Mercury 16) Nickel 17) Oil and grease 18) pH 19) Sulfide 20) Phenols 21) Temperature 22) Total suspended soils 23) Zinc
	Location	At the drainage within the project site
	Period	One time at one locations

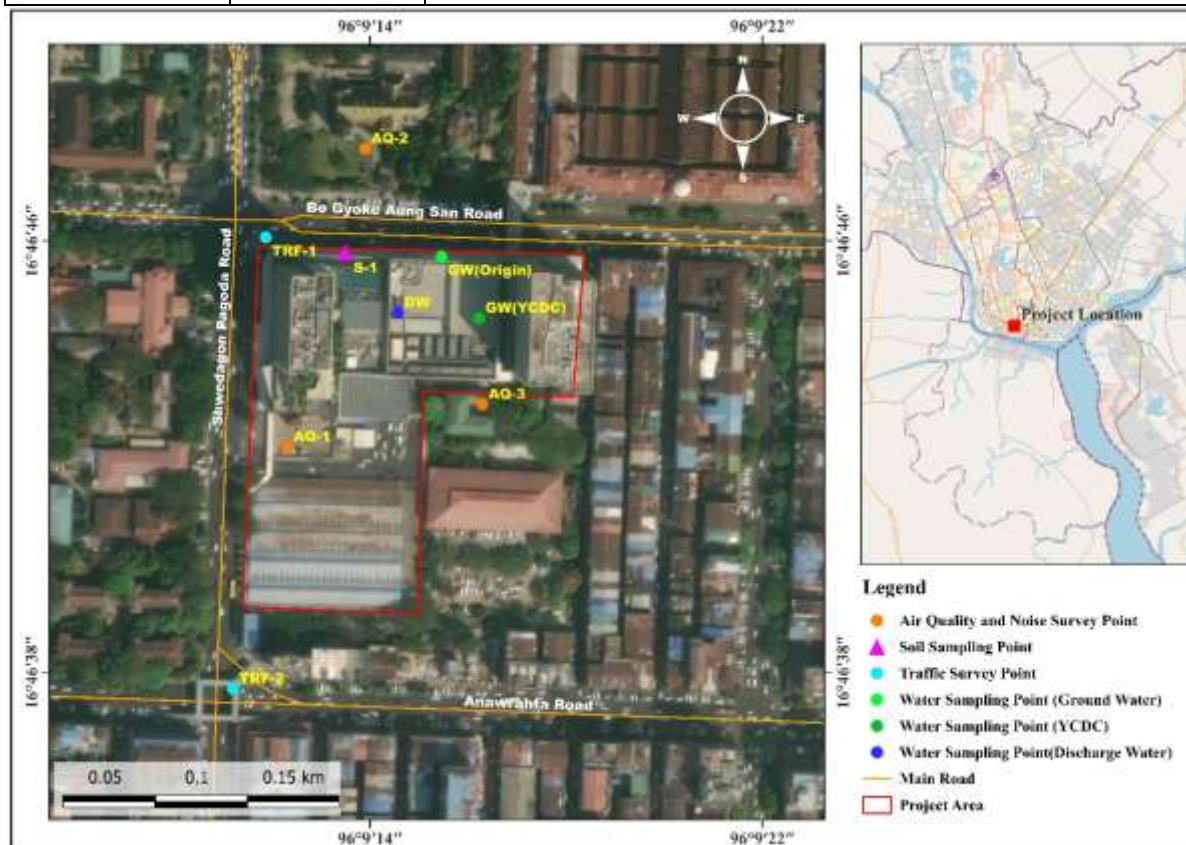


Figure 4-20 Physical baseline survey points

4.4.1 Air Quality

4.4.1.1 Survey Item

The survey area of the air quality parameters was determined by referring environmental quality standard in National Environmental Quality (Emission) Guidelines 2015, were announced on 29th December 2015.

4.4.1.2 Survey Period

Air quality monitoring was conducted 24 hours during 13th – 15th February, 2025. The measurement duration is shown the following table.

Sampling Point	Period	Remark
----------------	--------	--------

AQN-1	13 th – 14 th February, 2025	Air and Noise Station is Same Location
AQN-2	13 th – 14 th February, 2025	Air and Noise Station is Same Location
AQN-3	14 th – 15 th February, 2025	Air and Noise Station is Same Location

4.4.1.3 Survey Location

There are three locations for air quality monitoring were conducted around the project site within 500m areas of interest.

Sampling Point	Coordinates	Description of Sampling Point
AQ-1	16°46'42.06"N, 96° 9'12.88"E	Project Site
AQ-2	16°46'47.53"N, 96° 9'14.31"E	Holy Trinity Anglican Church
AQ-3	16°46'42.84"N, 96° 9'16.46"E	No (3), Basic Education Primary School

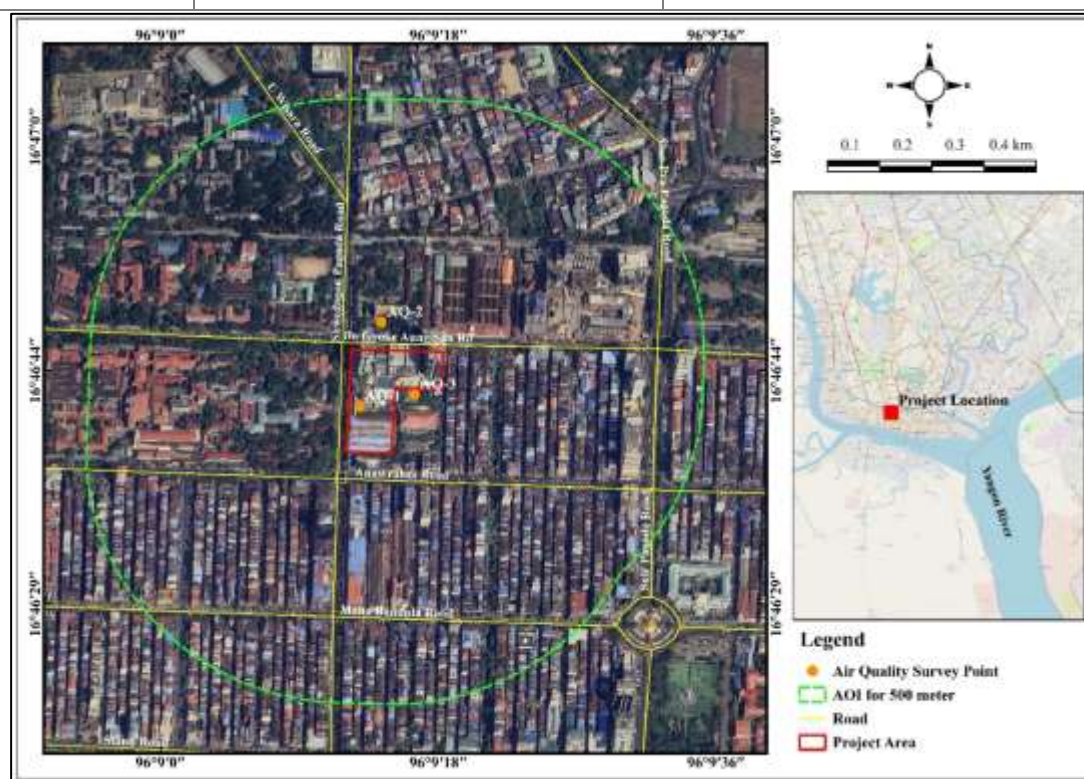


Figure 4-21 Air Quality Survey Locations

AQ-1

The air quality station AQ-1 was measured near car parking at the project site area, about 0.04 km from the west Shwedagon Pagoda Road, Bo Gyoke new market, Pabedan Township, Yangon Region. It was measured at the project site, and knowing the ambient level of the air quality around the project site. The survey activities of AQ-1 are shown in **Figure 4-22**.



Figure 4-22 Air Quality Survey Point AQ-1

AQ-2

AQ-2 was measured at Holy Trinity Anglican Church, about 0.05 km from the south of the Bo Gyoke Aung San Road, 0.10 km from the north of the project site, Bo Gyoke new market, Pabedan Township, Yangon Region. It was measured due to being located within 1 kilometer of the project area and knowing the ambient level of the air quality. There was a residential area around the air quality station. The survey activities of AQ-2 are shown in the **Figure 4-23**.



Figure 4-23 Air Quality Survey Point AQ-2

AQ-3

It was measured at the No (3) Basic Education Primary School, 0.25 km from the south of the near the project boundary, Bo Gyoke new market, Pabedan Township, Yangon Region. It was measured due to being located within 1 kilometer of the project area and knowing the ambient level of the air quality. The **Figure 4-24** describes the survey activities of AQ-3. The Figure 1-24 describes the survey activities of AQ-3.



Figure 4-24 Air Quality Survey Point AQ-3

4.4.1.4 Survey Method

AQM-09 air quality monitoring system is used to measure the gases (SO_2 , NO_2 , O_3 , etc.) and particulate matter PM_{10} , $\text{PM}_{2.5}$ and TSP. Meteorological parameters such as temperature, humidity, wind speed and wind direction can measure at the same time. This monitoring system, along with gas sensors, can detect maximum, minimum, and time-weighted average levels continuously per second up to the duration concerned (e.g., 1 day) with high sensitivity (ppb & $\mu\text{g}/\text{m}^3$ level).



Figure 4-25 Air Quality Monitoring Station (AQM-09)

4.4.1.5 Survey Results

The average values of ambient gaseous levels of all air quality monitoring for 24 hours show in Table 1-6. According to the survey results, the average 24-hour period for $\text{PM}_{2.5}$, PM_{10} and SO_2 concentrations are within the National Environmental Quality (emission) Guideline, 2015. The daily 8-hour maximum ozone level is within the $100 \mu\text{g}/\text{m}^3$ standard. The concentration of NO_2 was referred to the one-hour standard in NEQEG (2015). According to the hourly results, the concentration of NO_2 is lower than the applied standard.

Table 4-7 Ambient Air Quality Results

Sampling No.	CO (24-hour)	Ozone (8-hours)	NO ₂ (1-hour)	SO ₂ (24-hour)	PM _{2.5} (24-hour)	PM ₁₀ (24-hour)	RH	Temp (°C)
	ppm	µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	%	Deg. C
AQ-1	0.29	29.05	40.84	14.15	14.54	18.92	67.42	31.02
AQ-2	0.30	24.33	38.04	6.58	11.91	26.18	62.46	31.18
AQ-3	0.46	25.07	44.25	12.19	10.29	24.17	54.17	32.41
NEQEG, 2015	-	100	200	20	25	50	-	-

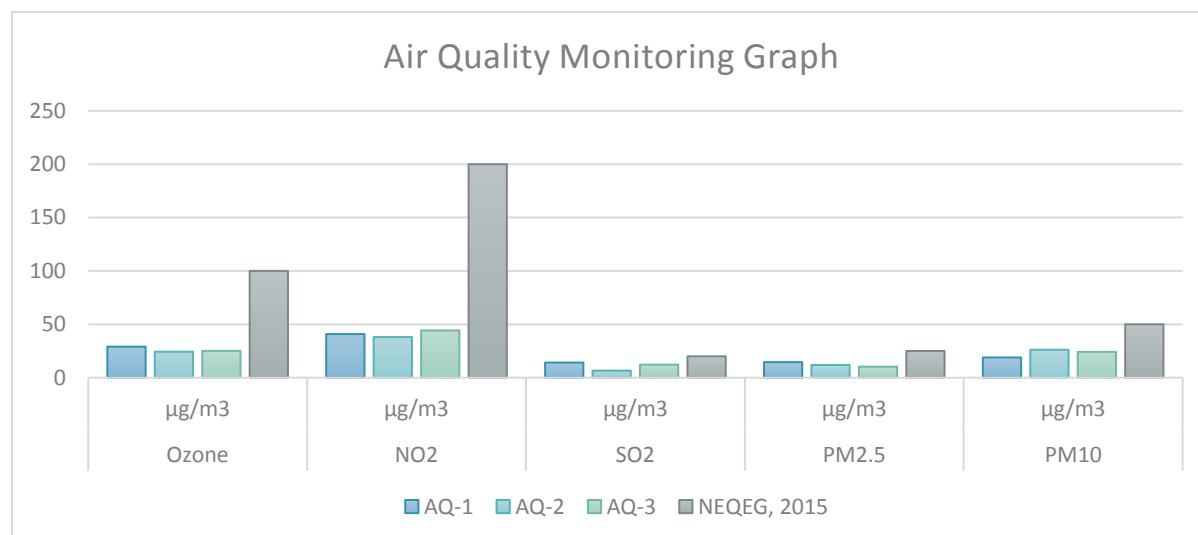


Figure 4-26 24 hourly Air Quality Monitoring Graph for AQ-1 and AQ-2 and AQ-3

4.4.1.6 Wind Speed and Direction

The following table describes the meteorological measurement along the Junction City Mixed Use Development Project from 13^h - 15th February 2025. Drawing method was by Lake Environmental Software and modeler was third party consultant⁵, UEM. Wind speed and direction diagrams are shown in following figures.

Table 4-8 Ambient Air Quality Results

Date and Time	Sampling Point	Description	Result value
13 ^h - 14 th February 2025	AQ-1	Relative Humidity, RH %	67.42 (%)
		Temperature	31.02°C

13 ^h - 14 th February 2025	AQ-2	Wind Speed	1.23 m/s
		Wind Direction	NW and W
		Relative Humidity, RH %	62.46 (%)
		Temperature	31.18 °C
		Wind Speed	1.23 m/s
14 ^h - 15 th February 2025	AQ-3	Wind Direction	NW and W
		Relative Humidity, RH %	54.17 (%)
		Temperature	32.41 °C
		Wind Speed	0.07 m/s
		Wind Direction	NE

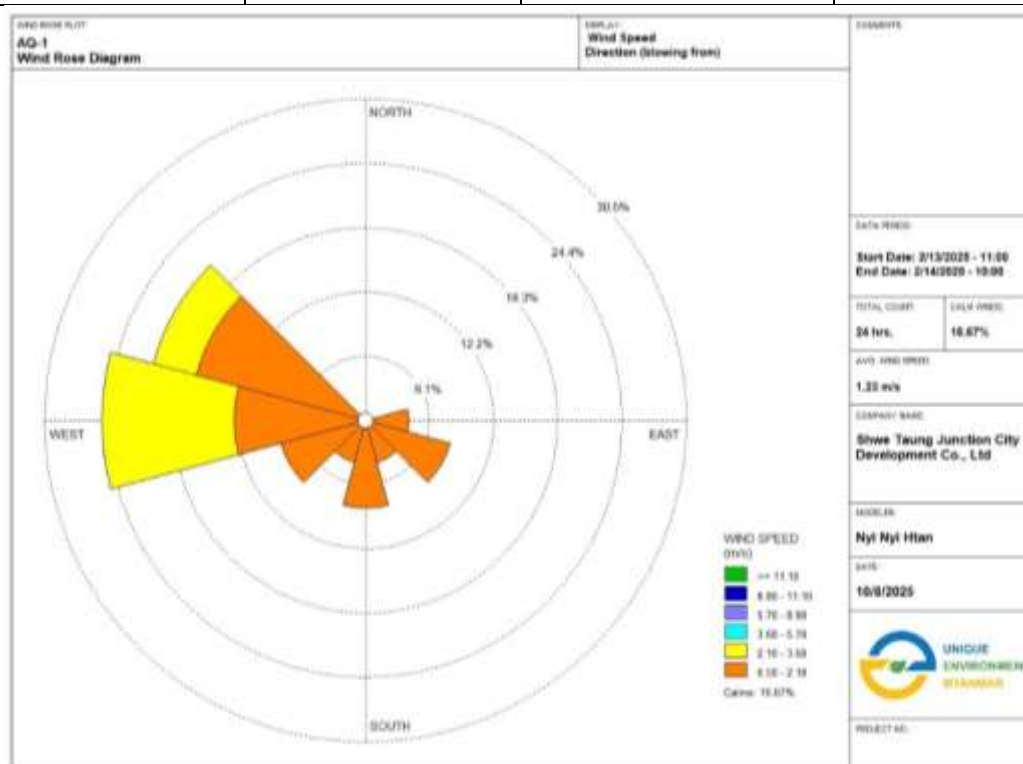




Figure 4-28 Wind Rose Diagram at AQM-2



Figure 4-29 Wind Rose Diagram at AQM-3

4.4.2 Noise

4.4.2.1 Survey Item

The survey area of the noise level was determined by referring Myanmar National Environmental Quality (Emission) Guidelines, were announced on 29th December 2015.

Receptor	One Hour LAeq (dBA) ^a	
	Daytime 07:00 - 22:00 (10:00 - 22:00 for public holidays)	Nighttime 22:00 - 07:00 (22:00 - 10:00 for public holidays)
Residential, institutional, educational	55	45
Industrial, commercial	70	70

4.4.2.2 Survey Period

Noise levels were monitored 24 hours from 13th-15th February, 2025. The measurement duration is shown in the following table.

Sampling Point	Period	Remark
NL-1	13 th – 14 th February, 2025	Air and Noise Station is Same Location
NL-2	13 th – 14 th February, 2025	Air and Noise Station is Same Location
NL-3	14 th – 15 th February, 2025	Air and Noise Station is Same Location

4.4.2.3 Survey Location

There are three locations for noise level monitoring were conducted around the project site within 500m areas of interest.

Sampling Point	Coordinates	Description of Sampling Point
NL-1	16°46'42.06"N, 96° 9'12.88"E	Project Site
NL-2	16°46'47.53"N, 96° 9'14.31"E	Holy Trinity Anglican Church
NL-3	16°46'42.84"N, 96° 9'16.46"E	No (3), Basic Education Primary School

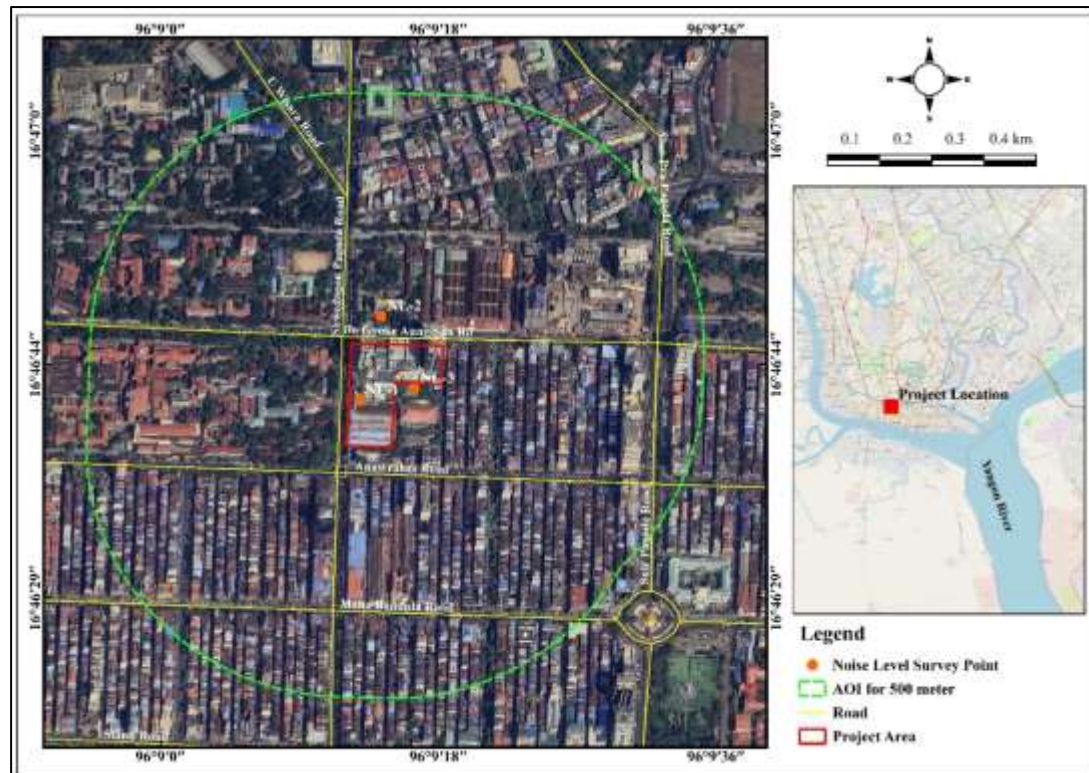


Figure 4-30 Noise Quality Survey Locations



Noise Level Monitoring Point (NL-1)



Noise Level Monitoring Point (NL-2)



Noise Level Monitoring Point (NL-3)

Figure 4-31 Noise Quality Survey Activities

4.4.2.4 Survey Method

Sampling and monitoring of surrounding sound were conducted by using following instrument for 24 hours/1-day measurement. The instrumentation used for noise quality survey is shown in the following figure. Noise meter was set up to record the log as five minutes intervals during an hour for one consecutive day. Day time and night time was calculated by using the following array formula in the excel sheet. This formula is firstly used for hourly LAeq and then for the 24 hours LAeq.

Table 4-9 Instrument for Noise Survey

Instrumentation	Description
Sound level meter	Digital Sound Level Meter (GM1356-0/GM1356)



Figure 4-32 Digital Sound Level Meter (GM 1356)

4.4.2.5 Survey Result

Noise quality measurements at point NL-1, NL-2 and NL-3 were conducted at the project site from 13th – 15th February, 2025. Based on the averages calculated, the noise levels NL-1 (Industrial) measured in the project site recorded during both daytime and nighttime periods are the National Environmental Quality (Emission) Guidelines 2015, indicating that the noise levels are acceptable and do not exceed the permissible limits, NL-2 (Residential) results recorded during both daytime and nighttime periods do not exceed the standard values. NL-3 (Residential) results recorded during both daytime and nighttime periods are exceed the standard values.

Table 4-10 Noise Level Results of NL-1 and NL-2 and NL-3

Time	Receptor			Noise Level (NEQEG, 2015)		Remark
	One Hour LAeq (dBA)			Residential	Industrial	
	NL-1	NL-2	NL-3			
7:00-8:00	60	52	64	55	70	The project is located in residential area and thus the guideline value was compared with the residential, institutional and educational area.
8:00-9:00	63	52	64			
9:00-10:00	73	73	70			
10:00-11:00	75	68	64			
11:00-12:00	73	46	58			
12:00-13:00	68	46	62			

13:00-14:00	73	47	68			
14:00-15:00	74	48	67			
15:00-16:00	75	57	66			
16:00-17:00	70	46	68			
17:00-18:00	70	65	71			
18:00-19:00	59	48	62			
19:00-20:00	55	43	59			
20:00-21:00	53	48	57			
21:00-22:00	51	42	59			
22:00-23:00	49	42	53			
23:00-24:00	44	42	51	45	70	
24:00-1:00	51	42	52			
1:00-2:00	46	42	53			
2:00-3:00	47	43	49			
3:00-4:00	50	46	48			
4:00-5:00	48	43	48			
5:00-6:00	52	39	49			
6:00-7:00	69	40	48			
Average (Day Time)	66	52	64	55	70	NL-1 (Industrial) and NL-2 (Residential) measured under the daytime/ nighttime guideline value. NL-3 (Residential) measured daytime and nighttime are exceeding the guideline value.
Average (Night Time)	51	42	50	45	70	

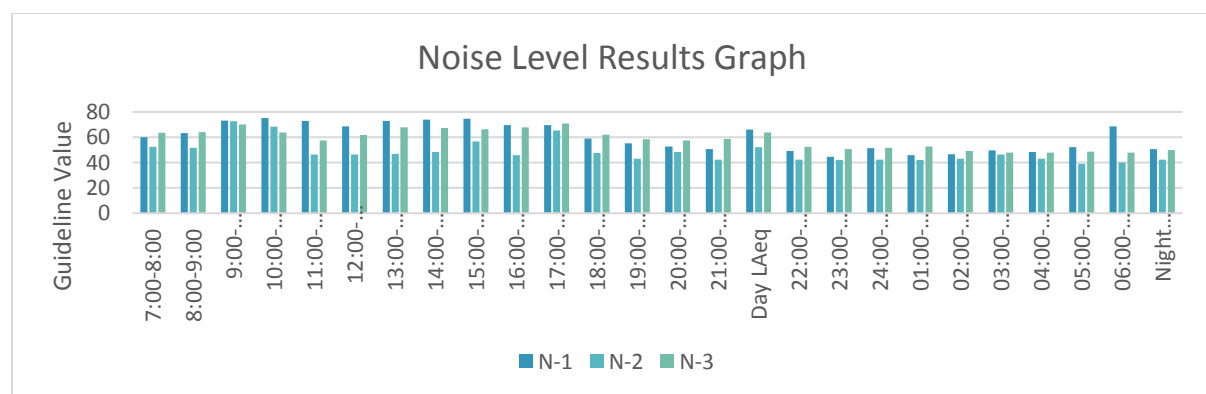


Figure 4-33 24 Hours Noise Graph for NL-1, NL-2 and NL-3

4.4.3 Discharge Water and Ground Water Quality

4.4.3.1 Survey Item

Parameters for water quality survey are determined to cover the parameters of environmental standards of Myanmar. The results of water quality measurements will be compared with the Myanmar National Environmental Quality (Emission) Guidelines (2015) and National Drinking Water Quality Guidelines, MOH (2019). The parameters will be analyzed in a certified laboratory.

4.4.3.2 Survey Period

Water quality sampling was conducted on 14th February, 2025.

Sample ID	Period
GW (Ground Water) (Supply YCDC)	14 th February, 2025
GW (Ground Water)	
DW (Discharge Water)	

4.4.3.3 Survey Location

There are three locations for water quality sampling were conducted around the project site within 500m areas of interest.

Sampling Point	Latitude	Longitude	Description of Sampling Points
GW (Supply YCDC)	16°46'44.42"N	96° 9'16.40"E	At the underground water tank which is the project site
GW	16°46'45.55"N	96° 9'15.71"E	At the ground water pipe line which is the project site
DW	16°46'44.52"N	96° 9'14.92"E	At the discharged of MBR system

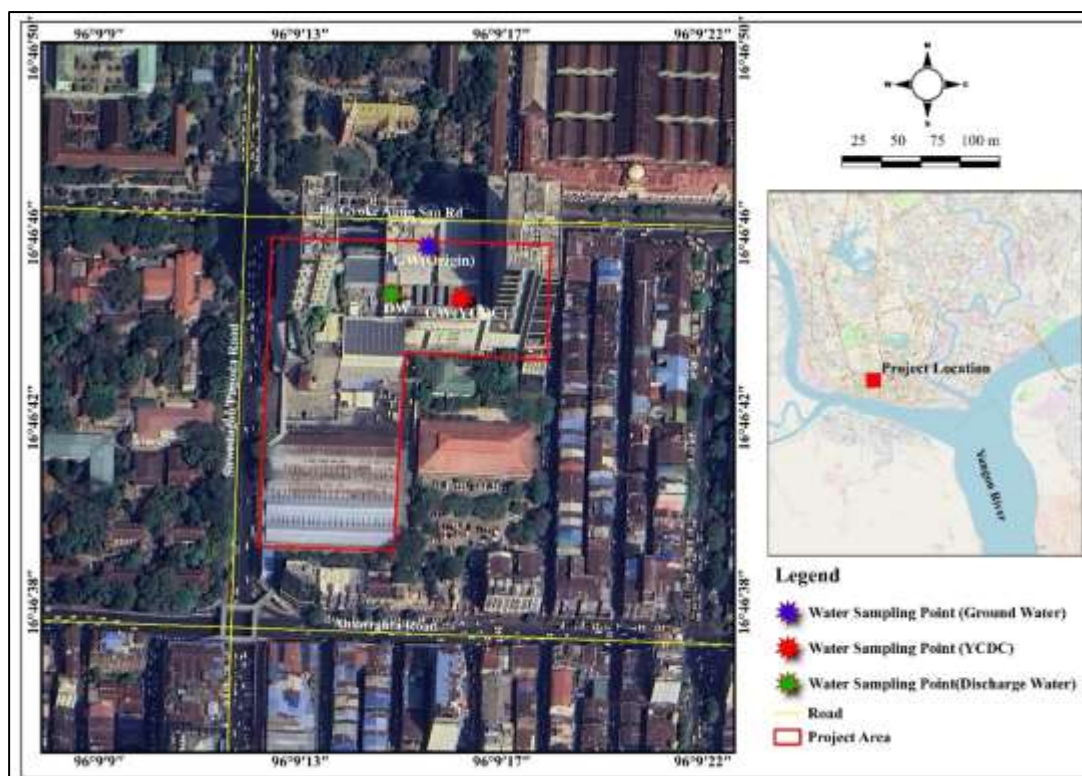


Figure 4-34 Water Quality Survey Locations

GW

The ground water sampling point GW is taken within the project site. It is tube well and about 150 m depth, about 144 meters to the northeast of the Bo Gyoke Aung San Market, about 320 meters to the west of the Thein Gyi Market. The transparency of water is high and colorless. It is utility for domestic use.



Figure 4-35 Ground Water Quality Survey at Tube well

GW (Supply YCDC)

The ground water sampling point GW (Supply YCDC) is taken underground water tank within the project site, 164 meters to the northeast of the Bo Gyoke Aung San Market, about 389

meters to the west of the Thein Gyi Market. The transparency of water is high and colorless. It is utility for domestic use.



Figure 4-36 Water Quality Survey Activities at Water Supply - YCDC

DW

The discharged water sampling point DW was collected at the final outlet wastewater treatment system within the project site. The discharge water from processing operations, such as the residential tower, hotel tower, office tower, is treated by the wastewater treatment plant.



Figure 4-37 Water Quality Survey Activities at Wastewater Drainage

4.4.3.4 Survey Method

Water samples were collected in plastic and sterilized glass sample containers. All sampling was in strict accordance with recognized standard procedures. The parameters as pH, temperature including the odor and color in visual analyzing were measured at each site concurrently with sample collection. All samples were kept in iced boxes and were transported to the laboratory within 24 hours.

4.4.3.5 Survey Results

4.4.3.5.1 Laboratory Analysis Results

The water samples sent to ALARM Ecological Laboratory. Groundwater quality results were compared by National Drinking Water Quality Guidelines, MOHS (2019) and Discharge Water

quality results were compared with Myanmar National Environmental Quality (Emission) Guidelines (2015). Most of the water results are lower than the applicable guidelines. Laboratory analysis results for surface water and groundwater is attached in Appendix-4.

Table 4-11 Discharge Water Quality Results

No.	Parameter	Discharge Water	Units	NEQEGs (Tourism and Hospitality Development)	Remarks
1	5-day Biochemical oxygen demand	12.5	S.U.	50	Normal
2	Chemical oxygen demand	31	mg/L	250	Normal
4	Oil and grease	6	mg/L	10	Normal
5	pH	7.6	mg/L	6-9	Normal
6	Total coliform bacteria	<1100	mg/L	400	Normal
7	Total phosphorus	1.85	mg/L	2	Normal

According to the discharge water quality is compared to the Myanmar National Environmental Quality (Emission) Guidelines (2015) and the results meet the standard values.

Table 4-12 Groundwater Quality Results (Supply YCDC)

No.	Parameter	Results GW (Supply YCDC)	Units	National Drinking Water Quality Standards by Ministry of Health, 2019	Remark
1	pH	6.9	S.U	6.5-8.5	Normal
2	Colour	<10	HU	15	Normal
3	Turbidity	<5	FAU	5	Normal
4	TDS	354	mg/l	1000	Normal
5	Chloride	620	mg/l	250	Above the limit
6	Hardness	50	mg/l	500	Normal
7	Ammonia-Nitrogen	<0.2	mg/l	1.5	Normal
8	Free Cyanide	0.047	mg/l	0.07	Normal
9	Nitrite	0.56	mg/l	3	Normal
10	Nitrate	0.450	mg/l	50	Normal

No.	Parameter	Results GW (Supply YCDC)	Units	National Drinking Water Quality Standards by Ministry of Health, 2019	Remark
11	Aluminium	0.161	mg/l	0.2	Normal
12	Arsenic	0.005	mg/l	0.05	Normal
13	Iron	0.32	mg/l	1	Normal
14	Lead	ND	mg/l	0.01	Normal
15	Copper	0.07	mg/l	2	Normal
16	Cadmium	ND	mg/l	0.003	Normal
17	Manganese	0.31	mg/l	0.4	Normal
18	Zinc	0.02	mg/l	3	Normal
19	Nickel	0.06	mg/l	0.07	Normal
20	Mercury	0.001	mg/l	0.001	Normal
21	Chromium (Hexavalent)	0.16	mg/l	0.05	Above the limit
22	Sulfide	0.021	mg/l	0.05	Normal
23	Sulfate	4.6	mg/l	250	Normal
24	Fluoride	<0.1	mg/l	1.5	Normal
25	Calcium	21	mg/l	-	Normal
26	Total Coliform Bacteria	4	(MPN/100ml)	-	Normal
27	Total Faecal Coliform	0	(MPN/100ml)	-	Normal

“ND”=Not Detected

“LOD”=Lower limit of detection

“-”=No Reference Standard

According to the ground water quality, GW (Supply YCDC) is compared to the Myanmar National Drinking Water Quality Standards, Ministry of Health (MOH), 2019 and the results meet the standard values except chloride and Chromium (Hexavalent) exceed the standard values.

Table 4-13 Groundwater Quality Results

No.	Parameter	Results GW	Units	National Drinking Water Quality Standards by Ministry of Health, 2019	Remark
1	pH	6.5	S.U	6.5-8.5	Normal
2	Colour	16	HU	15	Normal
3	Turbidity	<5	FAU	5	Normal
4	TDS	2100	mg/l	1000	Above the limit
5	Chloride	830	mg/l	250	Above the limit
6	Hardness	518	mg/l	500	Above the limit
7	Ammonia-Nitrogen	0.3	mg/l	1.5	Normal
8	Free Cyanide	0.039	mg/l	0.07	Normal
9	Nitrite	0.62	mg/l	3	Normal
10	Nitrate	0.030	mg/l	50	Normal
11	Aluminium	0.158	mg/l	0.2	Normal
12	Arsenic	0.005	mg/l	0.05	Normal
13	Iron	0.31	mg/l	1	Normal
14	Lead	ND	mg/l	0.01	Normal
15	Copper	0.1	mg/l	2	Normal
16	Cadmium	ND	mg/l	0.003	Normal
17	Manganese	0.7	mg/l	0.4	Normal
18	Zinc	0.05	mg/l	3	Normal
19	Nickel	0.04	mg/l	0.07	Normal
20	Mercury	0.001	mg/l	0.001	Normal
21	Chromium (Hexavalent)	0.18	mg/l	0.05	Above the limit
22	Sulfide	0.024	mg/l	0.05	Normal
23	Sulfate	2.1	mg/l	250	Normal

No.	Parameter	Results GW	Units	National Drinking Water Quality Standards by Ministry of Health, 2019	Remark
24	Fluoride	<0.1	mg/l	1.5	Normal
25	Calcium	85	mg/l	-	Normal
26	Total Coliform Bacteria	0	(MPN/100ml)	-	Normal
27	Total Faecal Coliform	0	(MPN/100ml)	-	Normal

“ND”=Not Detected

“LOD”=Lower limit of detection

“-”=No Reference Standard

According to the ground water quality, GW is compared to the Myanmar National Drinking Water Quality Standards, Ministry of Health (MOH), 2019 and the results meet the standard values except TDS, Hardness, chloride and Chromium (Hexavalent) exceed the standard values.

4.3.1.1.1 Rationale for Exceedance of Groundwater Quality Parameters

The observed exceedances in Total Dissolved Solids (TDS), hardness, chloride, and hexavalent chromium (Cr^{6+}) are considered to be associated with a combination of hydrogeological conditions and intense urban anthropogenic influence typical of a highly developed downtown environment.

1. Elevated TDS and Hardness

The exceedance of TDS and total hardness is primarily attributed to:

Natural geochemical dissolution processes, where groundwater interacts with subsurface mineral strata (e.g., limestone, clay minerals, and alluvial sediments), resulting in increased concentrations of calcium, magnesium, and other dissolved ions. Long groundwater residence time in deeper aquifers and allowing prolonged water-rock interaction and progressive mineral enrichment. Urban recharge influence, where infiltrating water may carry dissolved solids from surface activities, including construction runoff and urban drainage leakage. These factors collectively contribute to increased ionic strength and hardness in groundwater systems within densely built urban environments.

2. Elevated Chloride Concentration

Chloride exceedance is commonly associated with anthropogenic contamination and urban salinization processes, including:

Leakage from sewage and wastewater infrastructure, particularly in aging or densely developed urban drainage networks. Infiltration of contaminated surface water during rainfall events in areas with limited permeable soil cover. Possible influence of saline intrusion or connate water, depending on local hydrogeological connectivity and groundwater abstraction intensity. Given the project's location in central Yangon, anthropogenic sources are considered the dominant contributor.

3. Hexavalent Chromium Exceedance

The presence of elevated hexavalent chromium is typically linked to industrial and urban pollution sources, such as:

Leaching from industrial activities, including metal plating, tanning, dyeing, and chemical handling processes in the wider urban area. Disposal of electronic waste and construction materials, which may contain chromium-bearing compounds. Oxidation of naturally occurring trivalent chromium (Cr^{3+}) to Cr^{6+} under specific geochemical conditions (high oxygen availability and alkaline pH environments), enhancing mobility in groundwater. In dense urban settings, Cr^{6+} is generally considered an indicator of anthropogenic contamination rather than natural background levels.

The exceedances observed in groundwater quality parameters are consistent with typical characteristics of shallow to medium-depth urban aquifers in highly developed commercial zones. The combined influence of:

- Intense urban land use,
- Aging underground infrastructure,
- Limited natural recharge areas,
- And long-term anthropogenic loading, has likely contributed to gradual deterioration of groundwater quality.

Despite these exceedances, the water remains visually clear; however, the chemical exceedances indicate that it is not suitable for direct potable use without appropriate treatment and should be subject to regular monitoring and risk-based water management measures.

4.4.4 Soil

4.4.4.1 Survey Item

Parameters for soil quality survey are determined to cover the parameters of existing available environmental standards. Soil sample was taken by the manual hand auger.

4.4.4.2 Survey Period

Soil quality survey was conducted on 14th February, 2025 at project site.

Sample ID	Period
SQ	14 th February, 2025

4.4.4.3 Survey Method

For soil sampling, the standard environmental sampler (soil auger) was applied. The sampler is a stainless-steel tube that is sharpened on one end and fitted with a long, T-shaped handle. This tube is approximately three inches inside diameter. In order to refrain from contamination, about 00-30 cm of top soil was removed by the sampler before sampling. Most of samples were taken and collected from 30-50 cm depth. During sample collection, wear the glove, rinse glove and soil auger with clean water. Then sample was taken and collected in cleaned plastic bag. Field equipment used on site also show in the Table 1-13.

Table 4-14 Field Equipment for Soil Quality Survey

Equipment	Originate Country	Model
Soil Auger (Hand held) 	U. S. A	AMS

4.4.4.4 Survey Location

This locations for soil sampling were conducted around the project site within 500 meters areas of interest.

Sample ID	Latitude	Longitude	Description of Sampling Point
SQ	16°47'7.05"N	96°10'9.05"E	Within the project boundary

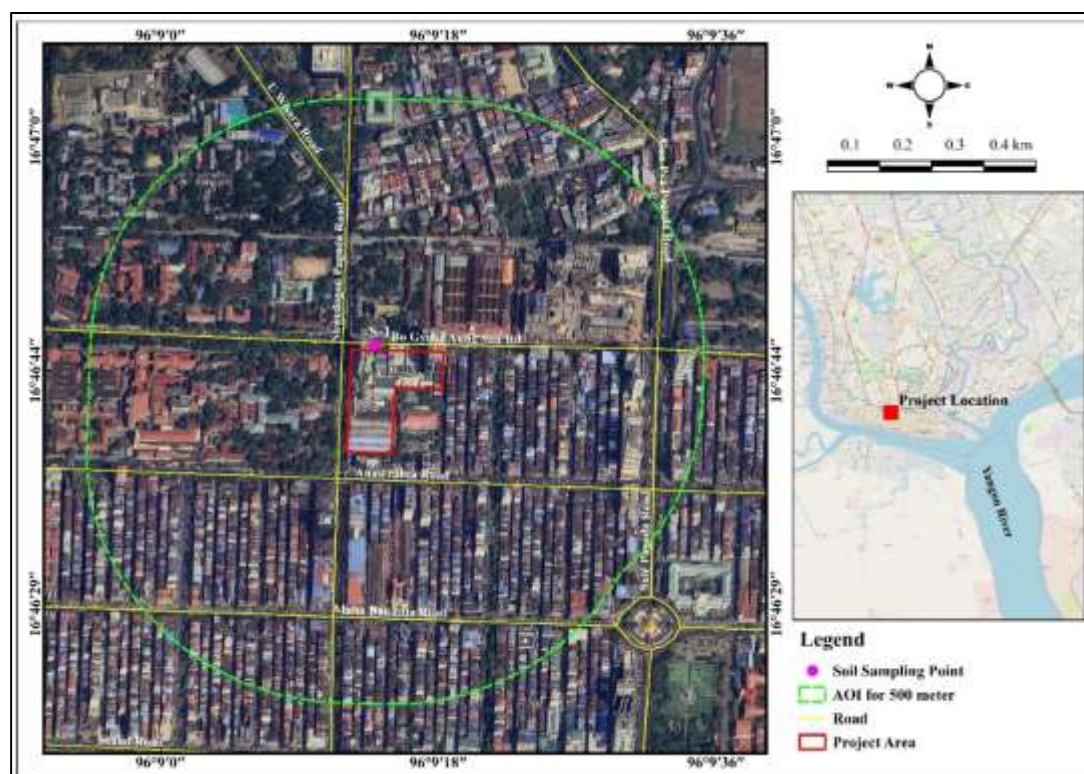


Figure 4-38 Soil Survey Point

SQ

The soil sample was taken at the project boundary area, about 1.3m to the west of the Bo Gyoke Aung San Road. When the soil samples collected, three locations as the triangle shape were taken by composite sampling method. The top soil was removed 00-30cm and taken from 30-50 cm.



Figure 4-39 Soil Survey Activities

4.4.4.5 Survey Results

Chemical analysis for soil quality was tested in the laboratory of Land Use Department of Yangon Region. The soil results were compared with available international guidelines. The soil results were within the guidelines and laboratory analysis results is attached in Appendix-4.

Table 4-15 Soil Survey Results

Parameter	Unit	Result	Guidelines		
		SQ	Japan	Thailand	Vietnam
pH		7.4	-	-	-
Zinc (Zn)	ppm	1.87	150	-	300
Copper (Cu)	ppm	0.64	125	-	100
Manganese (Mn)	ppm	3.49	-	-	-
Boron(B)	ppm	1.8			
Iron (Fe)	ppm	1.821	-	-	-
Lead (Pb)	ppm	3.03	150	750	300
Cadmium (Cd)	ppm	0.0057	-	-	-

Nickel (Ni)	ppm	ND	-	-	-
Chromium (Cr)	ppm	ND	-	-	-
Cobalt (Co)	ppm	ND			
Arsenic (As)	ppm	10.79	150	27	12
Mercury (Hg)	ppm	ND	-	-	-

Remark: ND: Non-detectable

Source: Japan: Ministry of Environment, Government of Japan (2002), “Regulation for Implementing the Law on Soil Contamination Countermeasures”

Thailand: Notification of National Environmental Board No.25, B.E. Thailand (2004), “other purpose”

Vietnam: QCVN 03:2008/BTNMT, Applied “industrial land”, Vietnam.

4.4.5 Traffic

4.4.5.1 Survey Period

The traffic volume survey was number of vehicles, types of vehicles and direction of vehicle movement when vehicles pass through the survey point. Direct observation was done for (7:00-11:00) to (13:00-20:00) period to determine the average condition. In the traffic sampling points, number of vehicles and average weight loaded were collected on the bases of for (7:00-11:00) AM, (13:00-20:00) PM period. Traffic data were identified as volume of vehicle traffic by types of vehicles.

Survey Point	Survey Period
TRF-1	16 th Feb 2025
TRF-2	17 th Feb 2025

4.4.5.2 Survey Location

Traffic survey point was counted (Traffic Volume) on the Bo Gyoke Aung San Road and Shwedagon Pagoda Road it is in front of the project site.

Sample ID	Latitude	Longitude	Description of Sampling Point
TRF-1	16°46'45.90"N	96° 9'12.48"E	Junction of Bo Gyoke Aung San Road
TRF-2	16°46'37.62"N	96° 9'11.88"E	Junction of Shwedagon Pagoda Road

The traffic survey point and transportation network of the area are shown in Figure.

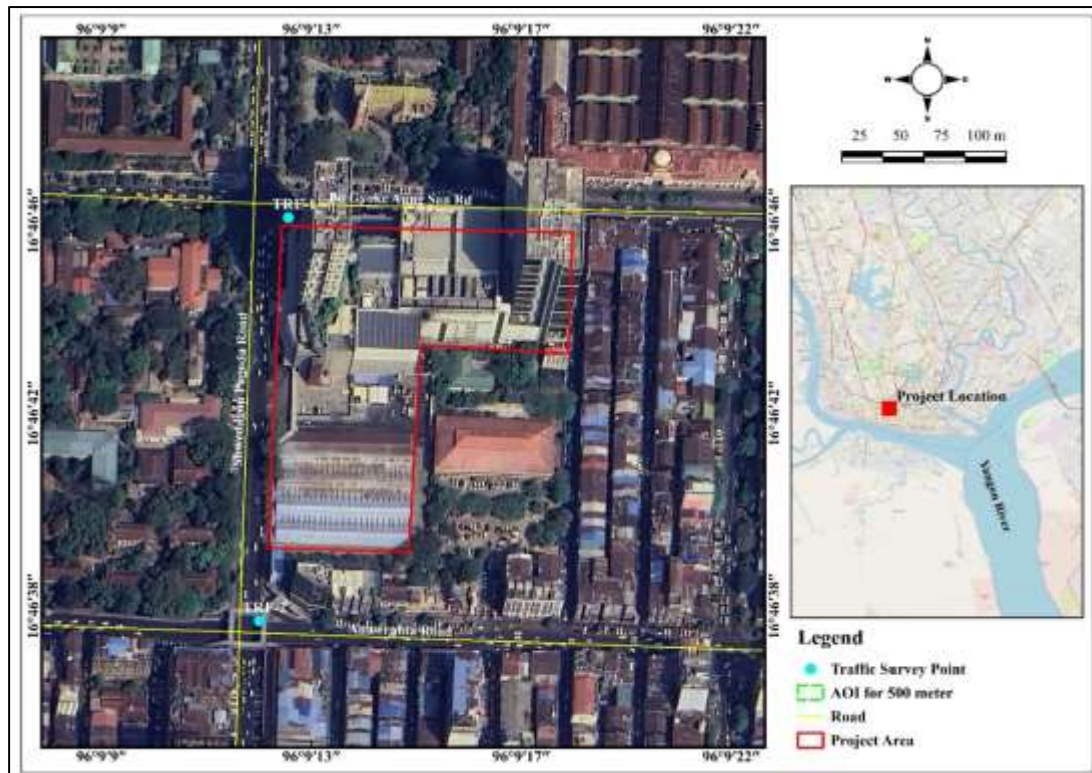


Figure 4-40 Location of Traffic Survey Point



TRF-1



TRF-2

Figure 4-41 Traffic Survey Activities

4.4.5.3 Survey Method

Traffic volume counting method is used to obtain the type of vehicle usage in the project area and to record current traffic volume entering and vehicles crossing on Bo Gyoke Aung San Road and Shwedagon Pagoda Road. The traffic volume was recorded by using standard form and tally counters. The traffic survey is to calculate the traffic volume percent before the construction period of the project site.

Table 4-16 Classification of the vehicle type

No	Classification	Description
1	Four-wheel Light vehicle	Pick-up car, Jeep, Taxi, Saloon car, Light truck (under 3 tons)
2	Four-wheel Heavy vehicle	Medium bus, Express, Big bus, medium truck, Heavy truck vehicle (above 3 tons)

4.4.5.4 Survey Results

TRF-1 survey point was counted (Traffic Volume) on the Bo Gyoke Aung San Road, it is in front of the project site. Four-wheels light vehicles (Sedan/Pickups/Small trucks (2-axies), and minibuses) are used mainly to transport city taxi, city bus and commuter ferries were recorded 96.54% the local goods. Heavy vehicles (truck and trailer trucks) were recorded 3.45% in the project area during the survey period.

TRF-2 survey point was counted (Traffic Volume) on the Shwedagon Pagoda Road, it is in front of the project site. Four-wheels light vehicles (Sedan/Pickups/Small trucks (2-axies), and minibuses) are used mainly to transport city taxi, city bus and commuter ferries were recorded 97.35% the local goods. Heavy vehicles (truck and trailer trucks) were recorded 2.75% in the project area during the survey period. The details data are described in the following Table and Figure.

Table 4-17 Detail Record Traffic Volume at TRF-1 and TRF-2

Vehicle Category	Bo Gyoke Aung San Road TRF-1	Volume (%)
Four Wheels light Vehicles	6483	96.54
Heavy Vehicle	232	3.45
Total	6715	100 %
Vehicle Category	Shwedagon Pagoda Road TRF-2	Volume (%)
Four Wheels light Vehicles	5552	97.35
Heavy Vehicle	157	2.75

Total	5709	100 %
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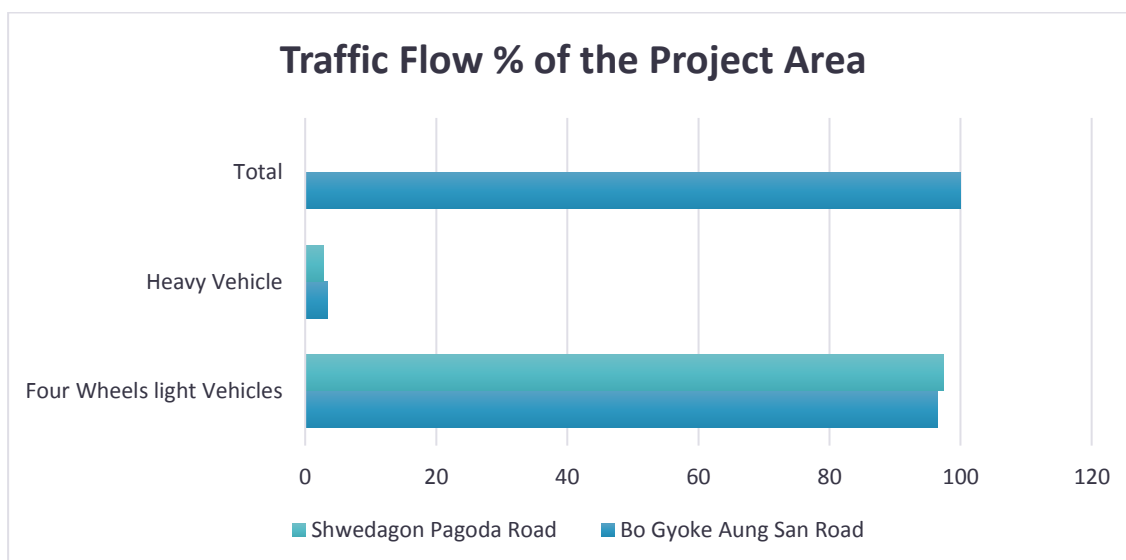


Figure 4-42 Vehicle Composition at TRF-1 and TRF-2

4.5 Biological Environment

As the Junction City Mixed-Use Development Project is located in a densely developed urban area, biodiversity in the immediate surroundings is limited. The project site lies within a heavily built-up zone characterized by residential, commercial, and recreational infrastructure, leaving minimal space for natural habitats. There are no forested areas, wetlands, or designated wildlife habitats within or near the project boundary. No rare or ecologically significant flora and fauna have been identified in the vicinity. The majority of the area surrounding the project consists of urban development and landscaped green spaces such as sports grounds and ornamental trees. Wildlife presence is extremely low due to human activity and urbanization.

Biodiversity Baseline Data Collection

4.5.1 Scope and Purpose of the baseline study

The scope and purpose of the biodiversity baseline study are:

- To provide comprehensive and accurate information on the biodiversity baseline;
- To identify and predict potential biodiversity impacts;
- To evaluate the significance of the impacts identified;
- To recommend effective and practicable alternatives and mitigation measures; and
- To recommend the need for and the scope of an appropriate monitoring and audit programmed.

4.5.2 Site Reconnaissance

A targeted site reconnaissance was conducted from 13th to 17th February, 2025 to ground-truth information gathered and supplements it with site observations, data and photographs. The site reconnaissance targeted the following specific ecological objectives:

- To name, describe and map vegetation communities and habitats present within the Project Area at a suitable scale, using existing community nomenclature where possible;
- To identify, describe and map other ecologically sensitive areas within the Project Area such as springs, watercourses and other water bodies;
- To the extent possible within the survey time frame and season, determine if species of conservation significance known or predicted likely to be present in the Study Area are actually present within the Project Area;
- To identify opportunities for future ecological monitoring and enhancement within the framework of the proposed project.

4.5.3 Methodology

The methodologies used in the baseline study were discussed below.

Desktop Survey

Publicly available sources of information were analyzed to build an outline of known and likely ecological values for the Study Area. Aerial imagery was used to build a more complete spatial understanding of the pattern of vegetation communities and human uses on the site, and to map access routes and internal tracks. In addition, ecologists with experience of the Study Area were consulted where possible to obtain information about species known to be present or previously recorded from the site, and other ecological values considered by them to be relevant.

Field Observation

(1) Flora

A Global Positioning System was used to navigate and mark coordinates between sample points in/around the study area. Field observation was conducted within boundary of each project area. During the field survey period, transect sampling method was used. Transect is a long, thin quadrat that are used to sample or to get better averages. In addition, all trees, shrubs, herbs and cultivated crops were recorded and listed. Identification of plants and animal species was conducted with assistances of skilled local people. The identified species and families were translated to scientific name with assistance of a checklist of trees, shrubs, herbs and climbers of Myanmar.

(2) Fauna

i. Bird

Random Point count method was used for the bird survey and took the photograph of birds. Birds were observed with binoculars and identified aided with field guide. Nocturnal birds were observed when it becomes dusk. Point count and opportunistic methods were used to census the species richness and point counting was used to get the relative measure of bird abundance.

ii. Mammal

Survey was performed using two methods. These are tracks and signs surveys and interview survey method. Direct observations of tracks and signs was applied mainly on existing trails and following route across the forest identified by local people. The team collected and recorded animal tracks and signs in a systematic manner. Direct survey method includes direct

sightings and hearings. Indirect survey includes observing of tracks and signs such as footprints/spoors, faeces/ scats/ dungs, resting sites, scratching places, eating signs etc. Records of structure and the measurements of footprints were also made for identification. The surveys were mainly conducted on the jungle paths and animal trails. Salt lick and small streams were also investigated during survey period. In addition, a number of local people such as hunter or ex hunter were interviewed from village near survey area. Verbal reports by reliable persons and old records from the area were also recorded. The mammals were identified with the references to John W. K. Parr., U Tin Than., 2000. *A Field guide to the Large Mammals of Myanmar*. Yon Kyi Chat Sarpe Publisher, Myanmar, 274 pp and Francis, C. M. (2008). *A field guide to the mammals of South-East Asia*. Asia Books, Bangkok, 392 pp. All data on the presence and species composition of mammal species were compiled.

iii. Herpes

Surveys were conducted during the survey period. Specimens were observed by visual encounter surveys (Heyer et. al. 1994) supplemented with acoustic searching, turning rocks and logs, peeling bark, digging through leaf litter, and excavating burrows. Specimens were collected by hand or rubber ring and snake tongs were used to capture poisonous snakes. All species encountered are recorded during the survey period

iv. Entomology (Butterfly)

Survey applying standard method was conducted randomly around the survey area and along the trails or footpath in the survey area. Identification of Butterfly species was primarily made directly in the field. At the camp, collected specimens were observed and recorded for their morphological characters such as patterns, spots, stripes and colour. The mouth parts were carefully examined and the body and wing's length, measured. The specimens were taken picture and released back into the field. Insects and other small invertebrates were taken voucher specimens although familiar species and some others were only taken picture.

Interview survey

In addition to the field observation, secondary data was also surveyed by interviewing from local residents and literature reviewing. In the interview survey, the surveyor visited the residents in and around the survey area and interviewed the name of plants and animals existing in and around the area. Also, the past situation of flora and fauna, and the change on biodiversity and ecosystem in the area was interviewed for examination.

4.5.4 Survey Area

The biodiversity observation points are shown in Figure 4-43. The coordinate of sampling points is described in the Table 4-18.

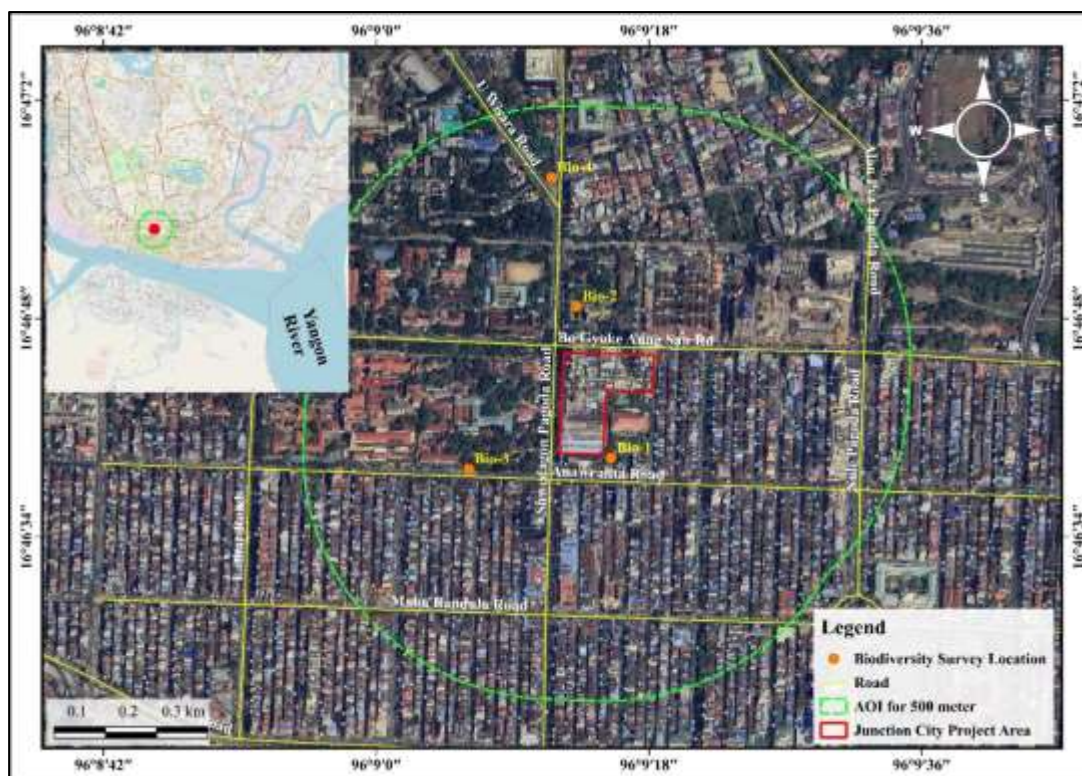


Figure 4-43 Location of Biodiversity Survey Areas

Table 4-18 Coordinate Locations of Biodiversity Survey Points

Name of sampling points	Coordinate locations	
	Latitude	Longitude
Bio-1	16°46'38.80"N	96° 9'15.48"E
Bio-2	16°46'48.80"N	96° 9'13.22"E
Bio-3	16°46'38.06"N	96° 9'6.09"E
Bio-4	16°46'53.86"N	96° 9'10.72"E

4.5.5 Survey Result

4.5.5.1 Flora

Flora surveys were conducted to obtain an understanding of the diversity of flora taxa groups. A total of 34 flora species were identified during the survey. (12) species of least concern, (1) Data Deficient and 21 species of Not Evaluated on the IUCN Red List. There were no endemic species in this area.

Table 4-19 List of plant species recorded in survey area

Sr. no	Family Name	Scientific Name	Common Name	Habitat	Distribution	IUC N
1	Combretaceae	<i>Terminalia catappa</i>	Banda	T	Cultivated	LC
2	Moringaceae	<i>Moringa aleifera</i>	Dantalon	T	Cultivated	NE
3	Passifloraceae	<i>Adenia cardiophylla</i>	Kinmon	Cr	Yangon, Sagaing	NE

4	Convolvulaceae	<i>Ipomoea batatas</i>	Kazun	Cl/Cr	Cultivated	NE
5	Anacardiaceae	<i>Mangifera indica</i>	Thayet	T	Wide	DD
6	Myrtaceae	<i>Psidium guajava</i>	Malaka	ST	Cultivated	LC
7	Moraceae	<i>Ficus glomerata</i>	Thapan	T	Bago, Kachin, Mandalay, Yangon	NE
8	Moraceae	<i>Ficus obtusifolia</i>	Nyaung-gyat	T	Wide	LC
9	Rhamnaceae	<i>Ziziphus jujuba</i>	Zi	T	Cultivated	LC
10	Myrtaceae	<i>Syzygium mytifolium</i>	Thabye	ST	Cultivated	NE
11	Rubiaceae	<i>Ixora coccinea</i>	Ponna-yeik	S	Cultivated	NE
12	Amaranthaceae	<i>Achyranthes aspera</i>	Kyet-mauk-pyan	H	Magway, Yangon	NE
13	Asteraceae	<i>Chromolaena odorata</i>	Bizat	S	Wide	NE
14	Malvaceae	<i>Urena lobata</i>	Kat-sine	S	Bago, Chin, Mandalay, Taninthayi, Yangon	LC
15	Caesalpiniaceae	<i>Bauhinia acuminata</i>	Swe-daw	ST	Wide	LC
16	Mimosaceae	<i>Mimosa pudica</i>	Htikayon	H	Wide	LC
17	Bignoniaceae	<i>Oroxylum indicum</i>	Kyaung-sha	T	Wide	NE
18	Solanaceae	<i>Solanum indicum</i>	Khayan-kazaw	S	Bago, Mandalay, Shan, Yangon	NE
19	Poaceae	<i>Cynodon dactylon</i>	Mye-sa-myet	G	Wide	NE
20	Poaceae	<i>Mnesithea striata</i>	Kaing	G	Reported from Myanmar	NE
21	Vitaceae	<i>Cayratia trifolia</i>	Taw-sabyit	Cl/Cr	Bago, Mandalay, Yangon, Unknown	NE
22	Convolvulaceae	<i>Operculina turpethum</i>	Kyahin-bin	Cl/Cr	Wide	NE
23	Convolvulaceae	<i>Ipomoea turbinate</i>	Kazun-nwe	Cr	Yangon	NE
24	Asteraceae	<i>Sphagneticola calendulaceae</i>	Nay-kyar-gale	H	Reported from Myanmar	NE
25	Malvaceae	<i>Sida acuta</i>	Shwe-dadaing	H	Reported from Myanmar	NE
26	Euphorbiaceae	<i>Bridelia retusa</i>	Seik-chi	T	Wide	LC
27	Mimosaceae	<i>Acacia pruinescens</i>	Kinnum-gyin	Cl/Cr	Kachin, Mandalay, Sagaing	NE
28	Poaceae	<i>Bambusa bambos</i>	Kyakat-wa	B	Reported from Myanmar	NE

29	Caesalpiniaceae	<i>Cassia angustifolia</i>	Pwegaing	S	Cultivated	NE
30	Fabaceae	<i>Tadehagi triquetrum</i>	Lauk-thay	S	Chin, Kachin, Kayin, Mandalay, Sagaing, Shan, Yangon	LC
31	Asteraceae	<i>Acilepis squarrosa</i>	Taw-kyet-mauk	H	Wide	NE
32	Mimosaceae	<i>Albizia lebbekoides</i>	Kokko	T	Reported from Myanmar	LC
33	Mimosaceae	<i>Acacia auriculiformis</i>	Malaysia-padauk	ST	Cultivated	LC
34	Amaranthaceae	<i>Alternanthera sessilis</i>	Pazun-sar	H	Yangon	LC

T = Tree, ST = Small Tree, S = Shrub, H = Herb, Cl = Climber, B = Bamboo

G = Grass, NE = Not Evaluated, LC = Least Concerned, NT = Near Threatened, EN = Endangered

4.5.5.2 Fauna

Habitat

The wildlife groups of the survey area consist of 5 groups of animals: mammals, birds, insects, Herpet and Fish. Fauna species habitat was found in small pools at the lower elevation, paddy field and low plain and in potential hiding places such as among leaf litter, inside holes and under stones and logs within the study area. Habitat Map of project area was already shown in Figure 2-2 and Sceneries of the Survey Area are shown in Figure 2-3.

Mammals

A total of 2 mammal species 1 family were recorded in survey sites, during the survey period. Base on globally threatened status of IUCN Red List, all species were least concerned (LC). There was no threatened species in survey area. All species were recorded by interviewed information from local people who live in this survey area.

Table 4-20 Mammal Species List recorded around the survey area

No	Family Name	Common Name	Scientific Name	IUCN	Observation
1	Muridae	House Rat	<i>Rattus rattus</i>	LC	Interview
2	Muridae	Greater Bandicoot Rat	<i>Bandicota indica</i>	LC	Interview

LC – Least concerned

Herpet

A total of 7 species 5 families were recorded in survey sites during the survey period. Base on globally threatened status of IUCN Red List, there was no threatened species and no endangered species in this area. All species were recorded by interviewed information from local people who live in this survey area.

Indian Rat Snake (*Ptyas mucosa*) - Rat snake was found common in survey area. Rat snakes are diurnal and semi arboreal. They inhabit forest floors, wetlands, rice paddies, farmland, and suburban areas where they prey upon small reptiles, amphibians, birds, and mammals. Adults,

unusually for a colubrid, prefer to subdue their prey by sitting on it rather than by constricting, using body weight to weaken prey.

Table 4-21 Reptiles Species List recorded around the survey area

No	Family Name	Common Name	Scientific Name	Observation	IUCN
Snake					
1	Colubridae	Indian rat Snake	<i>Ptyas mucosa</i>	Interview	Not Evaluated
2	Viperidae	Russell's Viper	<i>Daboia russelii</i>	Interview	LC
3	Colubridae	Chequered Keelback Water Snake	<i>Xenobrophis piscator</i>	Interview	LC
Lizard					
4	Agamidae	Garden Lizard	<i>Calotes versicolor</i>	Observed	Not Evaluated
Skink					
5	Scincidae	Common Sun Skink	<i>Eutropis multifasciata</i>	Observed	Not Evaluated
Gecko					
6	Gekkonidae	Common House Gecko	<i>Hemidactylus frenatus</i>	Observed	Not Evaluated

NE-Not Evaluated LC-Least concerned



Figure 4-44 Photo of Reptiles species recorded in all survey areas

Butterfly

A total of 9 species with 3 families were recorded. The family Nymphalidae and Pieridae were found dominant and 1 species of Libellulidae. According to the IUCN Red List of (2025-1), all species were Not Evaluated in this project.

Table 4-22 Butterfly species list in the survey area

No	Family Name	Common Name	Scientific Name	Observation	IUCN

1	Pieridae	Common Grass Yellow	<i>Eurama hecabe</i>	Observed	N E
2	Pieridae	Three spot Grass Yellow	<i>Eurama blanda</i>	Observed	N E
3	Pieridae	Mottled Emigrant	<i>Cathosia pyranthe</i>	Observed	N E
4	Pieridae	Common Emigrant	<i>Cathosia pomona</i>	Observed	N E
5	Pieridae	Yellow Orange Tip	<i>Ixias pyrene</i>	Observed	N E
6	Nymphalidae	Common Crow	<i>Euploea core</i>	Observed	N E
7	Nymphalidae	Grey Pansy	<i>Junonia atlites</i>	Observed	N E
8	Nymphalidae	Grey Count	<i>Tanaecia lepeidea</i>	Observed	N E
9	Libellulidae	Scarlet Skimmer	<i>Crocothemis servilia</i>	Observed	N E

NE=Not Evaluated

**Grey Pansy (*Junonia atlites*)****Yellow Orange Tip (*Ixiaspyrene*)**

Figure 4-45 Photo of butterfly species recorded in all survey areas

Bird

A total of 20 bird species recorded in the proposed project area. The two bird species were also observed Red-vented Bulbu (*Pyconotus cafer*) and Red-whiskered Bulbul (*Pycnonotus jocosus*) were also noted as forest birds.

Table 4-23 Birds species list in survey area

No	Scientific Name	Common Name(s)	Family	IUCN Status

1	<i>Milvus migrans govinda</i>	Black kite	Accipitridae	Least Concern
2	<i>Eudynamys scolopacea</i>	Asian Koel	Cuculidae	Least Concern
3	<i>Centropus sinensis</i>	Greater Coucal	Cuculidae	Least Concern
4	<i>Coracias benghalensis</i>	Indian Roller	Coraciidae	Least Concern
5	<i>Megalaima haemacephala</i>	Coppersmith Barbet	Ramphastidae	Least Concern
6	<i>Merops orientalis</i>	Little green bee-eater	Meropidae	Least Concern
7	<i>Oriolus chinensis</i>	Black- naped Oriole	Oriolidae	Least Concern
8	<i>Cypsiurus balasiensis</i>	Asian Palm-Swift	Apodidae	Least Concern
9	<i>Streptopelia chinensis</i>	Spotted Dove	Columbidae	Least Concern
10	<i>Streptopelia tranquebarica</i>	Red collared Dove	Columbidae	Least Concern
11	<i>Columba livia</i>	Rock Pigeon	Columbidae	Least Concern
12	<i>Corvus splendens</i>	House Crow	Corvidae	Least Concern
13	<i>Corvus macrorhynchos</i>	Large-billed Crow	Corvidae	Least Concern
14	<i>Passer domesticus</i>	House Sparrow	Passeridae	Least Concern
15	<i>Passer montanus</i>	Eurasian Tree-sparrow	Passeridae	Least Concern
16	<i>Dicrurus macrocercus</i>	Black Drongo	Dicruridae	Least Concern
17	<i>Aegithina tiphia</i>	Common Iora	Aegithinae	Least Concern
18	<i>Pyconotus cafer</i>	Red-vented Bulbul	Pycnonotidae	Least Concern
19	<i>Pycnonotus jocosus</i>	Red-whiskered Bulbul	Pycnonotidae	Least Concern

LC-least concerned



Common Myna (*Acridotheres tristis*)



House Crow (*Corvus splendens*)



Spotted Dove (*Streptopelia chinensis*)



Black kite (*Milvus migrans govinda*)

Figure 4-46 Photo of Bird species around the survey area

4.6 Socioeconomic Components

The socio-economic component of Pabedan Township is based on secondary data from the General Administration Department (2019), including demographic, religious, economic, educational, infrastructure services, and community health and safety information.



Figure 4-47 Pabedan Township Map

4.6.1 Demographic Profile

Pabedan Township is a fully urbanized administrative area characterized by an extremely high population density, typical of Yangon's central business district. Based on the 2014 Census and 2024 provisional data, the township supports a resident population of approximately 25,353 individuals within a land area of roughly 0.59 km². This results in a population density exceeding 42,000 persons per km², one of the highest in the Republic of the Union of Myanmar. The demographic trend shows a slight decline in permanent residents over the last decade, primarily due to the conversion of residential tenements into commercial storage and retail spaces to support the high-intensity trade activities surrounding Bogyoke Aung San Market.

4.6.1.1 Household and Population

Housing, Household, Population, Population Increment and Gender Ratio and Foreigner Population data of Pabedan Township till March 2019 are shown in following.

Table 4-24 *Housing and Household in Pabedan Township (GAD,2019)*

No	Particular	Housing	Household	Ward	Village Tracts	Villages
1	Town	1,078	5,356	11	-	-
2	Village	-	-	-	-	-
Township		1,078	5,356	11	-	-

Source: General Administrative Department, Pabedan Township (GAD,2019)

Table 4-25 *Population in Pabedan Township (GAD,2019)*

No	Rural/ Urban	Above 18 years			Below 18 years			Total		
		M	F	Total	M	F	Total	M	F	Total
1	Urban	10,817	12,642	23,459	3,506	3,417	6,923	14,323	16,059	30,382
2	Rural	-	-	-	-	-	-	-	-	-
Total		10,817	12,642	23,459	3,506	3,417	6,923	14,323	16,059	30,382

Source: General Administrative Department, Pabedan Township (GAD,2019)

Table 4-26 *Population Increment and Gender Ratio (GAD,2019)*

Township/ Town	Population	Population (2017)	Increase Population	Increment	Gender Ratio		
					Male	Female	Ratio
Pabedan	30,536	30,382	(-) 154	0.50	14,323	16,059	1:1

Source: General Administrative Department, Pabedan Township (GAD,2019)

Table 4-27 *Foreigner Population (GAD,2019)*

No	Foreigner	Live Population	Township Population	Percentage of Township Population
1	Chinese	2,092	30,382	6.90
2	India	8,382	30,382	27.58
3	Pakistan	842	30,382	2.77
4	Bangladesh	744	30,382	2.44
5	other	6,990	30,382	23.01
Township		19,050	30,382	62.70

Source: General Administrative Department, Pabedan Township (GAD,2019)

4.6.1.2 Religion

The different kinds of religion present in Pabedan Township are as shown in Table 1-28.

Table 4-28 *Population in Pabedan Township (GAD,2019)*

Township	Buddhist	Christian	Hindu	Muslim	Others	Total
Pabedan Township	13,883	627	1,539	14,333	-	30,382

Source: General Administrative Department, Pabedan Township (GAD,2019)

4.6.2 Economy

Pabedan Township, located in the heart of downtown Yangon, plays an important role in the city's economy largely through commerce and service activities rather than agriculture or manufacturing. The township is home to major traditional markets like Bogyoke Aung San Market and Theingyi Market, which serve as key hubs for retail trade and attract both local residents and visitors, contributing significantly to local business turnover. Numerous small enterprises, from fashion shops and hardware merchants to optical goods and jewellery stalls, operate within Pabedan, reflecting a diverse mix of micro-enterprises and informal economic activity. According to labour data, Pabedan's labour force participation rate is around 57.6 %, with relatively low unemployment of about 4.3 %, indicating active employment in trade, services, and other urban economic sectors.



Figure 4-48 *Economy of Pabedan Township*

4.6.3 Education

Pabedan Township has a relatively strong education status compared to many other urban areas in Myanmar due to its central location and concentration of schools and educated residents. According to the 2014 Myanmar Population and Housing Census, the township has a network of basic education institutions, including three primary schools, two middle schools, and three high schools, which provide formal education from primary to upper secondary levels. Education levels among residents are generally high, with an overall literacy rate of about 97.6 % for people aged 15 and above, which is higher than both the Yangon Region average (96.6

%) and the national average (89.5 %), indicating strong access to basic education and schooling. Additionally, a significant proportion of adults have completed high school or tertiary education, reflecting the township's urban and socio-economic advantages, although a small percentage of residents have never attended school.



Figure 4-49 The distribution map of primary, middle and high school location in Pabedan Township (Source: MIMU)

Table 4-29 Education Status of Pabedan Township (GAD,2019)

No.	Basic/Higher	No. of school/Uni	No. of Teachers	No. of Students	Ratio of Teacher and Student
1.	Primary School	3	15	319	1:11
2.	Middle School	2	25	220	1:05
3	High School	3	96	1037	1:18
	Total	8	136	1576	3:29

4.6.4 Infrastructure and Services

4.6.4.1 Energy and Infrastructure Development

Pabedan Township, as part of central Yangon, benefits from well-developed urban infrastructure compared with many other areas in Myanmar. According to data from urban service assessments, electrical power coverage in Pabedan is effectively universal (100 %), indicating that nearly all households and businesses have access to electricity supply, which supports commercial activities, lighting, transportation, and communications infrastructure. Additionally, basic urban utilities such as telephone access and solid waste collection are high in the township, reflecting investment in infrastructure that supports dense urban living and

economic activity. Water supply coverage is also high, with over 86 % piped water service availability reported, aligning Pabedan with other central Yangon townships in terms of basic utility access and urban infrastructure development.

4.6.4.2 Water Use

In Pabedan Township, demand for water reflects both residential and commercial needs characteristic of inner-city areas. Studies of Yangon's water usage show that domestic water consumption per month has been increasing in central urban townships like Pabedan, indicating rising demand as population density and commercial activities grow. The Yangon City Development Committee (YCDC) has implemented extensive water supply projects, including zonal water transmission networks designed to ensure sufficient drinking water supply across central townships, including Pabedan. These projects aim to expand capacity such that piped water coverage reaches close to full saturation, helping to meet both household water use and business-related demands.

4.6.4.3 Sanitation and Water Management

Sanitation coverage in Pabedan Township is notably high relative to regional and national averages. Household survey data indicate that up to **99.8 %** of households in Pabedan have access to improved sanitation facilities, such as flush toilets and water-seal improved pit latrines, with only about **0.1 %** lacking any toilet facilities at all. This high level of access demonstrates effective basic sanitation infrastructure in the township compared with the broader Yangon Region and the national average. Meanwhile, wastewater management in Yangon, including Pabedan, is supported through centralized and decentralized treatment systems: Yangon's centralized wastewater treatment plant serves Pabedan and several other downtown townships, though it currently treats a relatively small share of the city's total wastewater, and most households rely on onsite septic tanks that require ongoing management to meet environmental standards.

4.6.4.4 Waste Management

Waste management in Pabedan Township is administered under the broader Yangon City Development Committee (YCDC) waste and sanitation services, which oversee solid waste collection, disposal systems, and environmental protection across Yangon's municipal area, including downtown townships like Pabedan. The YCDC's Urban Pollution Control and Cleansing Department operates regular waste collection systems that include designated dust bins, brick tank collection points, "bell-rung" collection routes, and scheduled street sweeping to gather household and commercial waste, with fees collected on a quarterly basis for services in business, residential, and mixed areas. Waste is subsequently transported to final disposal sites such as the rehabilitated Htein Bin landfill, with external support from projects like those of UN-Habitat to improve landfill safety, reduce hazards, and enhance solid waste management practices City-wide.

4.6.5 Community Health and Safety

Community health and safety in Pabedan Township is supported by basic health services and local safety infrastructure typical of urban Yangon. Numerous clinics, pharmacies, and medical service points including general health clinics, dental offices, and even mental health services operate throughout Pabedan, providing residents with access to everyday medical care without needing to travel far from home. These services support general health needs and help with

early detection and treatment of illnesses in the community. Additionally, during the COVID-19 pandemic, public health activities such as community disinfection campaigns were organized in Pabedan to reduce transmission risk, and elderly vaccination programmes were carried out locally as part of broader Yangon Region health efforts.

4.6.5.1 Health Status

The general health status in Pabedan Township reflects relatively favorable health outcomes compared with broader regional and national averages, supported by access to basic health services and positive child survival indicators. According to official township data, infant mortality in Pabedan stands at about 24 deaths per 1,000 live births and under-five mortality at about 27 per 1,000 live births, both lower than the Yangon Region and national averages, indicating better early-childhood health outcomes in this central urban area. The common diseases are as shown in Table 4-30.

Table 4-30 Common Diseases in Pabedan Township

No	Township	Type of Disease									
		Malaria		Diarrhea		TB		Dysentery		Hepatitis	
		Occur	Dead	Occur	Dead	Occur	Dead	Occur	Dead	Occur	Dead
1	Pabedan Township	-	-	34	-	88	-	-	-	-	-

Source: General Administrative Department, Pabedan Township (GAD,2019)

Table 4-31 HIV/AIDS cases and deaths in Pabedan Township

No.	Township	2018 April – September		2018 -2019	
		Occur	Dead	Occur	Dead
1	Pabedan Township	-	-	86	13

Source: General Administrative Department, Pabedan Township (GAD,2019)

Table 4-32 List of Township Clinics

No.	No of Clinics	Location	Government/Private	Type of Disease
1	55	Pabedan Township	Private	General

Source: General Administrative Department, Pabedan Township (GAD,2019)

4.6.6 Land Use

Land Use of Pabedan Township are shown in following table.

Table 4-33 Land Use of Pabedan Township

No	Type of Land	Area (Acre)
1	Total Agricultural Land	-
	a) Farm Land	-
	b) Ya	-
	c) Kine/Kyun	-
	d) Horticultural Land	-
2	Total Vacant Land	-

	a) Farmland	-
	b) Ya Land	-
	c) Kine/Kyun	-
	d) Horticultural Land	-
3	Grazing Land	-
4	Industrial Land	-
5	Urban Land	187
6	Rural Land	-
7	Others Land	-
8	Reserved Forest/ Public Protected Forest Area	-
9	Wild Forest	-
10	Uncultivated Land	-
	Total	187 Ac

4.7 Cultural Components

Pabedan Township in downtown Yangon is culturally rich and reflects the city's diverse heritage through its historic architecture, religious diversity, and traditional markets. The township's built environment includes many colonial-era buildings from the British period, some of which are protected as heritage sites and help preserve Yangon's urban history. Important cultural landmarks in Pabedan include the Bogyoke Aung San Market, a major bazaar known for Burmese handicrafts, traditional art, and antique shops that attract both locals and tourists, highlighting Yangon's commercial and cultural life. The community also reflects religious pluralism, with places of worship such as Arulmigu Kali Amman Kovil (a Tamil Hindu temple) and several mosques serving different faith groups, illustrating the township's multicultural social fabric. Additionally, the presence of institutions like the Yangon National Library in Pabedan contributes to the cultural and intellectual life of the area, preserving literary and historical collections for public learning and engagement. The distance between project site and prominent cultural heritage and spiritual sites are shown in the table and figure.

Table 4-34 Cultural Heritage and Spiritual Sites around the Project Area

No.	Cultural Components	Distance from the Project Site (km)
1	Shwe Da Gon Pagoda	2.16
2	Sule Pagoda	0.6
3	Bogyoke Aung San Museum	2.86
4	National Museum of Myanmar	1.56
5	National Theatre of Yangon	0.66
6	Ministers' Building	1.20
7	Catholic Home For The Aged	1.69
8	Maha Wizaya Pagoda	1.75
9	Maha Satkya Atulamanaung Ngarhtatgyi	3.34

10	Bogyoke Aung San Market	0.13
11	Shwe Bone Pwint Pagoda	1.86
12	Botataung Pagoda	2.13
13	Chaukhtatgyi Buddha Temple	3.71
14	St Mary's Cathedral	1.11
15	Emmanuel Baptist Church	0.76

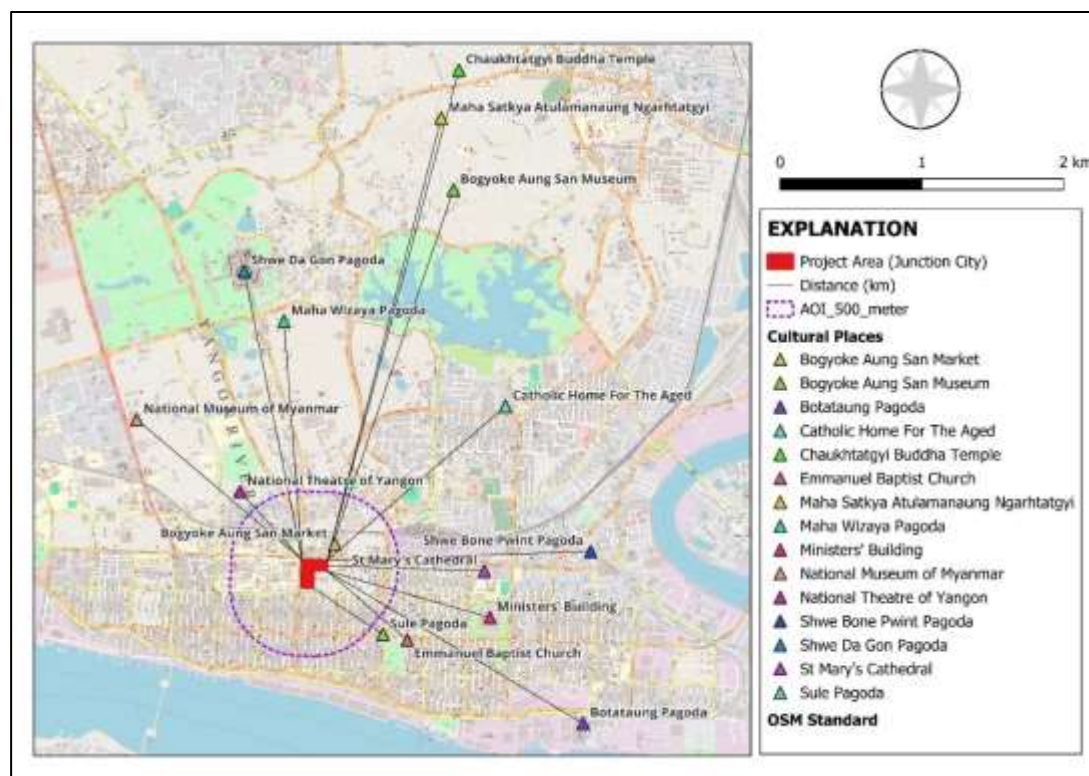


Figure 4-50 Cultural Heritage and Spiritual Sites around the Project Area

5. IMPACT ASSESSMENT AND MITIGATION MEASURES

In this EIA report, in order to assess the significance of the potential impacts of the proposed project, the appropriate approach and methodology will be used. It also provides the consideration, preliminary identification and assessment of likely impacts on the environment and social status associated with the proposed project development. There will be three categories for assessment in the EIA report, and these are physical environment assessment, biological environment assessment and socio-economic environment assessment. The scoping process is based on the site surveys, interviewing with project proponent and literature review.

5.1 Impact Assessment Methodology

5.1.1 Identification of potential impacts

The assessment of each impact is based on consideration of the magnitude, duration, spatial and frequency of activities, which are going to be carried out during phases and characteristics of the project site. The significance (quantification) of potential environmental impacts identified during the Basic Assessment has been determined using a ranking scale. Potential impact on the environment and mitigation measures are identified by their relevant significance in line with the requirements set out by international guidelines for Environmental Impact Assessment (IEMA, 2004)

The following methodology has been applied to assess the environmental impacts of the project mainly on air, water, land, biodiversity including human beings. Each source of impact has been assessed by four parameters, magnitude, duration, extent and probability and each assess have five scales as mentioned below:

Table 5-1 *Impact Assessment Parameters and Its scale*

Assessment	Scale				
	1	2	3	4	5
Magnitude (M)	Insignificant	Small and have no effect on environment	Moderate and will result in minor changes on environment	High and will result in minor changes on environment	Very High and will result in permanent change on environment
Duration (D)	0-1 year	2-5 year	6-15 year	Life of operation	Post closure
Extent (E)	Limited to the site	Limited to local area	Limited to region	National	International
Probability (P)	Very improbable	Improbable	Probable	Highly probable	Definite

Then, the Significant Point (SP) is calculated by following formula.

Significant Point (SP) = (Magnitude+ Duration+ Extent) * Probability

Impact Significance: Based on calculated significant point, impact significance can be categorized as follows:

Explanation

Significant Point (SP) = (Magnitude+ Duration+ Extent) * Probability

Table 5-2 *Impact Significance*

Significant Point (SP)	Impact Significance
<15	Very Low
15-29	Low
30-44	Moderate
45-59	High
>60	Very High

According to the assessment methodology, very low and low significance impacts can be regarded as negligible impact to the environment, in which there is no significant impact on the environment. However, moderate impact can have little effect on the environment. So, some mitigation measures must be considered. High impact can have significant changes in the environment. Therefore, mitigation measures must be done. Very high impact can be permanent changes in the environment. To reduce and control the impacts and disadvantages on the environment, mitigation measures must be performed.

Identification of Impact

There may be some positive and negative impacts in the surrounding environment of the proposed site due to the implementation of the project. The possible environmental impacts are identified based on the analysis of environmental baseline information and project activities. Most of the identified impacts have been quantified to the extent possible on the professional judgment. Each of the environmental issues has been examined in terms of their current conditions, likely impacts during operation and decommissioning.

Impact and Significance

The project activities, their impacts and significance of impact are provided in the following table (5.3). According to the results of analysis, it can be concluded that most of the project activities have the low significance on environment while some show high and moderate significance which needs to improve for environmental performance.

5.1.2 Spatial and Temporal Boundaries for Impact Identification

Defining these boundaries is crucial for a focused and effective environmental and social impact assessment.

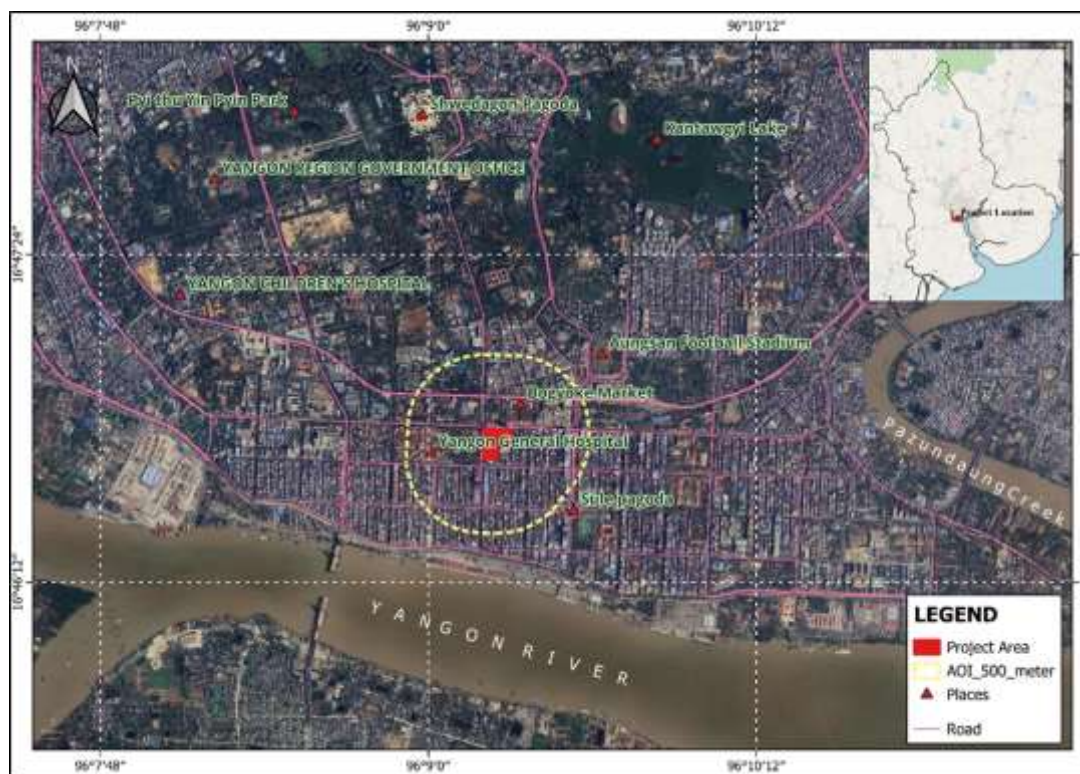


Figure 5-1 Study Area

5.1.2.1 Spatial Boundaries

The proposed “Junction City Mixed-Use Development Project” is located at the Corner of Bo Gyoke Aung San Road and Shwe Dagon Pagoda Road, Pabedan Township, Yangon, Myanmar. The Bo Gyoke Aung San Market is located at the eastern part of the project and Holy Trinity Church is located at the northside of the project. At the western part of the project, Yangon General Hospital is located.

The project site is situated within the residential and downtown area of Pabedan Township. It is strategically located near several green spaces and recreational areas, including Maha Bandula Park, (0.7 km away) and Bogyoke Aung San Football Stadium.

5.1.2.2 Temporal Boundaries

Construction Phase: All the infrastructure of the project had already completed.

Operation Phase: The Shwe Taung Junction City Development Company Limited was leased 284,229 sqft (6.525 acre) of land in Pabedan Township of Yangon by the Yangon City Development Committee. The project site is located at Corner of Bo Gyoke Aung San Road and Shwe Dagon Pagoda Road, Pabedan Township, Yangon, Myanmar. According to the MIC permits, the development will run for an initial term of 50 years with an option for the Shwe Taung Junction City Development Company Limited to renew it by mutual negotiation for further two periods of 10 years each for total further period of 20 years.

Decommissioning Phase: According to the MIC permits, the development will run for an initial term of 50 years with an option for the Shwe Taung Junction City Development Company Limited to renew it by mutual negotiation for further two periods of 10 years each for total further period of 20 years.

5.1.3 Operation Phase

5.1.3.1 Negative Impacts on Physical Environment

5.1.3.1.1 Air pollution

Impact Assessment

During the operation phase, due to the vehicles used by the residents, visitors and people who are using different buildings of the project, increase in traffic within the vicinity leads to emissions of air pollutants such as carbon monoxide (CO), nitrogen oxides (NO_x), sulfur oxides (SO_x), and particulate matter (PM_{2.5} and PM₁₀). Operation of HVAC (Heating, Ventilation, and Air Conditioning) systems and generators releases pollutants, including greenhouse gases (GHGs) like CO₂, and local air pollutants. Regular movement in parking areas and roads may generate resuspended dust, affecting local air quality. Activities in open areas, including loading/unloading operations, can create particulate matter emissions. In case of power failure, the diesel back-up generators will be used, and it will impact the air quality by emitting NO_x, CO, SO₂, PM₁₀, PM_{2.5} and total volatile organic compounds (TVOC). The significance level of impact is low.

Mitigation Measures

- ✓ Keep all doors and windows closed in air-conditioned spaces
- ✓ Caulk all windows and doors to stop air leakage
- ✓ Ensure all door closing mechanism is functioning
- ✓ Ensure air-conditioning units are serviced as scheduled
- ✓ Check temperature controls frequently to ensure proper operation
- ✓ Clean all supply and return air grilles as scheduled
- ✓ Use MVAC (Mechanical, Ventilating, Air Conditioning) System, in respect to the Chillers, Air handling units (AHU's), fan coil units (FCU's), fresh air and extract fans and associated ancillary equipments. The Systems was utilized in Office, Retail and Hotel area of the Junction City.
- ✓ Ensure all internal roads and parking areas are paved and regularly cleaned to minimize dust emissions.
- ✓ Spray water in open areas where dust generation is high during windy conditions.

5.1.3.1.2 Greenhouse gases emissions

The greenhouse gas (GHG) assessment was undertaken in accordance with the 2006 IPCC Guidelines for National Greenhouse Gas Inventories and the 2019 Refinement to the 2006 IPCC Guidelines. The assessment considered direct emissions (Scope 1) from diesel-fired emergency generators and fugitive emissions from refrigerant leakage associated with the chilled-water air-conditioning system. Indirect emissions (Scope 2) from purchased electricity were estimated using the grid emission factor approach recommended by the GHG Protocol and IPCC.

5.1.3.1.2.1 GHG Emissions Calculation using IPCC Methodology

The Junction City Mixed-Use Development's GHG emissions are mainly calculated in two parts:

Scope 1 (Direct Emissions): Emissions directly from owned or controlled sources (e.g., diesel combustion from generators and R134a refrigerant leakage from chillers).

Scope 2 (Indirect Emissions): Emissions generated from the production of purchased grid electricity.

The general equation applied is:

$$\text{GHG}_{\text{Emission}} = \text{Activity Data} \times \text{Emission Factor}$$

Where:

- Activity Data = Fuel consumption, electricity consumption, or refrigerant loss
- Emission Factor = IPCC default emission factor
- GHG Emission = Annual greenhouse gas emissions

a. Diesel Generator Emissions (Scope 1)

According to IPCC Volume 2, Chapter 3 (Stationary Combustion), emissions from diesel combustion were estimated using:

$$E_i = FC \times EF_i$$

Where:

- E_i = Emission of gas i (kg/year)
- FC = Fuel Consumption (L/year)
- EF_i = Emission Factor

Annual diesel consumption:

FC = 302,761 litres/year

IPCC Default Emission Factors:

Gas	Emission Factor
CO ₂	2.68 kg/L
CH ₄	0.0001 kg/L
N ₂ O	0.00006 kg/L

Therefore;

Gas	Emission
CO ₂	811.4 tCO ₂ /year
CH ₄	30.28 kg CH ₄ /year
N ₂ O	18.17 kg N ₂ O/year

Conversion to CO₂ Equivalent

Following IPCC AR6 Global Warming Potentials (GWP100):

Gas	GWP
-----	-----

CH ₄	29.8
N ₂ O	273

The conversion equation is:

$$\text{CO}_2\text{e} = \text{Emission} \times \text{GWP}$$

Therefore;

Gas	Emission
CO ₂	811.4 tCO ₂ /year
CH ₄	0.90 tCO ₂ e/year
N ₂ O	4.96 tCO ₂ e/year
Total Diesel Generator Emissions	817.26 tCO₂e/year

b. Refrigerant Leakage Emissions (Fugitive Emissions)

IPCC Volume 3, Chapter 7 recommends estimating refrigerant emissions using refrigerant inventory and annual leakage rates.

Equation:

$$E = M \times LR \times GWP$$

Where:

- E = Annual CO₂ equivalent emission
- M = Refrigerant charge (kg)
- LR = Leakage rate
- GWP = Global Warming Potential

Total Refrigerant Inventory;

CSC	6,435 lb
CSH	3,570 lb
CSO	5,720 lb
Total	15,725 lb

Conversion:

$$15,725 \times 0.453592 = 7,133 \text{ kg}$$

Leakage Assumption:

For large commercial chillers:

- Annual leakage rate = 10% (IPCC and US EPA default range 5-15%)
- Annual Refrigerant Loss: $7,133 \times 10\% = 713 \text{ kg/year}$

R134a Global Warming Potential: GWP = 1,300 (IPCC AR5)

Therefore:

$$713 \times 1,300 = 926,900 \text{ kgCO}_2\text{e/year} = 927.3 \text{ tCO}_2\text{e/year}$$

c. Scope 2 Electricity Emissions

Purchased electricity emissions were estimated using:

$$\text{CO}_2 = \text{Electricity Consumption} \times \text{Grid Emission Factor}$$

Where:

- Electricity Consumption = 50,980 MWh/year
- Myanmar Grid Emission Factor = 0.55 tCO₂/MWh

Therefore:

$$50,980 \times 0.55 = 28,039 \text{ tCO}_2\text{e/year}$$

$$\text{Annual Solar Generation} = 91,438.5 \text{ kWh/year}$$

$$\text{Myanmar Grid EF} = 0.55 \text{ kgCO}_2\text{/kWh}$$

Avoided Emission

$$\text{CO}_2 \text{ Reduction} = \text{Electricity}_{\text{Solar}} \times \text{EF}_{\text{Grid}}$$

Therefore;

$$91,438.5 \times 0.55 = 50,291 \text{ kgCO}_2\text{/year} = 50.3 \text{ tCO}_2\text{e/year}$$

Total GHG Emission:

Source	GHG Emissions (tCO ₂ e/year)
Grid Electricity	28,039
Diesel Generators	817
Refrigerant Leakage	927.3
Avoided Emission	50.3
Total	29,733.3

Impact Assessment

Greenhouse gas emissions were estimated in accordance with the 2006 IPCC Guidelines and the 2019 Refinement using activity data for electricity consumption, diesel fuel use and refrigerant inventory. The total operational GHG emissions are estimated at approximately 29,733.3 tCO₂e/year, of which purchased electricity contributes approximately 94.3%, refrigerant leakage contributes 3.1%, and diesel generator operation contributes 2.7%. Based on the gross floor area of the development, the resulting carbon intensity is estimated at approximately 145 kgCO₂e/m²/year. Comparison with the IFC EDGE baseline indicates that commercial buildings and mixed-use developments in tropical climates typically exhibit carbon intensities ranging from approximately 180 to 300 kgCO₂e/m²/year depending on building use, operating schedules and cooling demand. The Project's estimated carbon intensity of approximately 145 kgCO₂e/m²/year is below these baseline values, indicating comparatively efficient operational performance. Compared with similar mixed-use developments, the estimated emissions are within the normal range for large commercial and mixed-use developments and are therefore considered low in significance.

Mitigation Measures

- ✓ Erecting the information board of greenhouse gases sources, impacts and mitigation in the project compound to raise the community awareness (including vehicles' drivers);
- ✓ Encouraging the residents and other users of the project buildings to use the environmentally friendly electrical appliances (which are Environmental Compliance Certified appliances);
- ✓ Using low-sulphur fuel for back-up generators;
- ✓ The development's M&E systems are designed in accordance with GHA standards.
- ✓ The central water-cooled chiller plant provides higher efficiency compared to air-cooled chiller systems, and CO₂ sensors are installed to regulate outdoor air flow rates to maintain good indoor air quality (IAQ).
- ✓ For the ACMV system, VFD types are used, and all FCUs and AHUs are equipped with thermostats. All façade glass is double-glazed with proper sealing, and all 3-phase power drive motors are equipped with VFD drives.
- ✓ Approximately 90% of the building uses energy-efficient LED lighting. The central hot water system is equipped with a heat pump system.
- ✓ Walk-in chillers utilize closed-type heat exchanger systems. All sanitary ware is TOTO brand with eco-system features.
- ✓ Additionally, all elevators are energy-efficient regenerative lifts, providing up to 35% energy savings. Heat-reducing double-glazed façade glass with low emissivity is used throughout the building, and all AHU condensate is redirected to the cooling tower system.

5.1.3.1.3 Surface water quality

Impact Assessment

The maximum water consumption for the hotel tower was 4,554.5 m³ per month and maximum water consumption for the office tower and retail shops was 1,113.8 m³ per month and 22,803.8 m³ per month. The estimated total volume of wastewater of the development is 436 m³/day.

If the wastewater and the solid waste generated during the operation phase of the project cannot be well managed and these can be dispersed into the surface water in different means and consequently the quality of surface water would be degraded. The significance level of impact is low.

Mitigation Measures

The wastewater treatment plant had a design capacity of 1,300 m³/day for the whole development. The system is currently working at approximately 40% of its design capacity, meaning the MBR technology is well-equipped to handle future occupancy increases or peak events.

5.1.3.1.4 Ground water quality

Impact Assessment

The improper management of solid waste, spillage of lubricants, fuels and oils would lead to the degradation of ground water quality. Over-extraction of groundwater could lower the water table, affecting nearby wells and ecosystems. Prolonged water extraction may lead to soil

subsidence or ground instability. Improper drilling or maintenance may lead to contamination of groundwater by surface pollutants. Alteration of local hydrology could affect nearby water bodies and wetlands. The significance level of impact is medium.

The project involves offices buildings, hotel building and retail shops and basement car park. For the whole project, main water supply was provided by YCDC and other source such as tube well for 24 hours. Main water supply system is connected to every tower. Two ground tank with the capacity of 1473.9 m³ with 884.34 m³ for firefighting system and 589.56 m³ for domestic usage. Additional five roof tanks with a total storage capacity of 1,116 m³. This provides the project with approximately 3 days of total water autonomy. Groundwater extraction is currently limited and managed through rotational operation to preserve well performance to reduce ground water extraction and grey water was reused. The maximum water consumption for the hotel tower was 4,554.5 m³ per month and maximum water consumption for the office tower and retail shops was 1,113.8 m³ per month and 22,803.8 m³. Back up water supply was provided for all buildings. The sources of back up water will be as follows:

-

- Treated deep bore well water was also used to augment water supply YCDC main's water supply is interrupted.
- Although 16 deep bore wells were excavated, groundwater is currently extracted from only six at a time. To prolong the service life and durability of the wells, a rotational operation schedule is employed instead of simultaneous usage.
- The extracted water is stored in pre-filtration water tank and transported to cold-water tank and transferred to filtration water tank.

Although the ground water extraction will be limited in order to avoid the excessive water extraction, the project site was located at the densely populated area and surrounded by commercial buildings, the significance level of impact is regarded as medium.

Mitigation Measures

- ✓ Solid waste management system was applied.
- ✓ The back-up generator/transformers were placed in a room of concrete paving with impervious underlying layer.
- ✓ The oil, fuels and lubricant for different purposes of operation will be transported, handled and stored with care.
- ✓ The concrete paving with impervious underlying layer will be provided for the area of oil and lubricant storage and changing.
- ✓ Although 16 deep bore wells were excavated, groundwater is currently extracted from only six at a time. To prolong the service life and durability of the wells, a rotational operation schedule is employed instead of simultaneous usage.
- ✓ Groundwater extraction is currently limited and managed through rotational operation to preserve well performance to reduce ground water extraction and grey water was reused.

5.1.3.1.5 Generation of solid waste

Impact Assessment

The project is expected to generate solid waste during its operation phase. The solid waste generated during the operation of the project consists of office waste, domestic waste,

kitchen waste and waste from retail shops and supermarkets. The waste from maintenance work of the project will also be generated. The total amount of solid waste generation is 115,00 kg/month. The significance level of impact is high.

Mitigation Measures

Solid wastes were segregated through color coded waste bins provided at office tower, shopping center and hotel tower. Dry Waste from Hotel Rooms, Shopping Center, Office Tower and Carparking were divided into 2 types of Dry Wastes.

- Recycle items (Water Bottles, Cottons box and cans).
- Non-recyclable items will compress with compactors.

Non-recyclable items are compress with compactors and collected and disposed via YCDC. Kitchen Waste from kitchen of Hotel and Shopping Center were disposed to Cool Room area and stored in designated cool Room. Grease Waste from kitchen of Hotel and Shopping Center were collected with Plastic bag and stored in STP with containers and dispose to Government Designated area. Sludge waste from wastewater treatment plant were collected with plastic bag and stored with containers in STP and dispose to Government Designated area. According to the solid waste management plan adopted by the Project, the disposal system was manual.

- **Dry Waste:** A total number of (15) Plastic 660-liter (0.66m³) wheeled bins was used to collect Dry waste and at least 5 times to 6 times per month. Recyclable wastes were segregated accordingly to the processes and disposed with Golden Dowa Eco System Myanmar Co., Ltd. Non- recyclable wastes were compressed with compactor with 12 m³ capacity and collect & pick up by YCDC. The ratio of available handling capacity to actual waste generation is 4.8 times capacity safety factor.
- **Kitchen Waste:** A total number of (10) Plastic 660-liter (0.66m³) wheeled bins was used to collect kitchen waste and temporarily disposed to Cool Room area and stored in designated cool Room and collect & pick up by YCDC. While comparing storage capacity with daily generation is equal to 1.46 days of storage capacity. This indicates that the system provides sufficient buffer capacity for approximately 1.5 days of kitchen waste generation under static conditions.
- **Grease Waste:** Grease Waste from kitchen of Hotel and Shopping Center were collected (1) time per (2) weeks with Plastic bag and stored in STP with containers and (1) time per (2) month collected and disposed via YCDC.
- **Sludge Waste:** Sludge waste from wastewater treatment plant were collected with plastic bag and stored with containers in STP and collected and disposed via YCDC.
- Provided designated waste bin at each floor and regularly collected through shifts.

5.1.3.2 Negative Impacts on Social Environment Community grievances

The community still can have grievances arisen from different operational activities. These grievances are related to increased traffic, water use, electricity consumption and community health and safety. The significance level of impact is low.

5.1.3.2.1 Increased Traffic congestion

Existing Traffic Survey Results

TRF-1: Bo Gyoke Aung San Road (6 lanes)

Total traffic volume recorded: 6,715 vehicles/day

Vehicle composition:

- Four-wheel light vehicles: 6,483 vehicles (96.54%)
- Heavy vehicles: 232 vehicles (3.45%)

TRF-2: Shwedagon Pagoda Road (4 lanes)

Total traffic volume recorded: 5,709 vehicles/day

Vehicle composition:

- Four-wheel light vehicles: 5,552 vehicles (97.35%)
- Heavy vehicles: 157 vehicles (2.75%)

Road	Existing Traffic (PCU/h)	Capacity (PCU/h)	Utilization (%)
Bo Gyoke Aung San Road	573	12,000	4.8%
Shwedagon Pagoda Road	485	8,000	6.1%

Peak-Hour Trip Generation Assumptions

Peak-hour trip generation for the Junction City Mixed-Use Development was estimated based on:

- Comparable urban mixed-use developments in downtown Yangon
- Observed vehicle composition from TRF-1 and TRF-2 (over 96% light vehicles)
- The project's functional mix, which distributes trips across different time periods

Traffic Projection by Project

Road	Added PCU/h	Existing PCU/h	New Total PCU/h	Capacity (PCU/h)	Utilization (%)
Bo Gyoke Aung San Rd (6 lanes)	160	573	733	12,000	6.1%
Shwedagon Pagoda Rd (4 lanes)	105	485	590	8,000	7.4%

Although traffic congestion is visually observed along Bo Gyoke Aung San Road and Shwedagon Pagoda Road, particularly during peak periods, this condition is primarily attributable to signal control, roadside activities, pedestrian movements, and short-term operational disturbances, which are characteristic of dense downtown environments. The capacity-based assessment applied in this study evaluates whether traffic demand exceeds the structural carrying capacity of the road network. Results indicate that, even under the 2030 forecast scenario, traffic volumes remain well below theoretical capacity limits.

Traffic Mitigation Measures

- ✓ Implement comprehensive directional signage, parking guidance systems, speed limit signs (e.g., 15-20 km/h), and pavement markings to guide drivers safely and efficiently.
- ✓ Use speed bumps, raised tables, and distinct pedestrian crossings to enforce slow speeds and protect pedestrians.

- ✓ Ensure the parking spaces and internal traffic to flow smoothly to prevent circling and internal queues.
- ✓ Use sensors and digital displays to direct drivers to available parking spots, reducing search time and internal congestion.
- ✓ Clearly mark parking areas for different user groups (office, visitors, retail, hotel).
- ✓ Ensure internal roads and drop-off zones can handle the increased traffic volume without spillover onto public roads.
- ✓ Continuous focus on safe pedestrian crossings within the site, given the higher number of people moving between offices, hotel and shopping center.
- ✓ Ensure retail and service deliveries do not create bottlenecks during peak operational hours.
- ✓ Periodically review the traffic situation.

Internal Site Traffic Circulation Design:

- ✓ Implement clear directional signage and road markings for vehicle movement, parking, and pedestrian pathways within the site.
- ✓ Incorporate traffic calming measures (e.g., speed bumps, narrower lanes, chicanes) in pedestrian-heavy areas.
- ✓ Separate pedestrian and vehicular traffic where possible.

Parking Management:

- ✓ Install systems that indicate available parking bays to reduce searching time and congestion.
- ✓ Designate specific zones for residents, visitors, retail customers, and staff.
- ✓ Implement clear rules and enforcement for illegal parking or blocking traffic/pedestrian routes.

5.1.3.2.2 Increased Water Use

Impact Assessment

Activities in the operation phase of the project involved the use of large quantities of water as a result of activities that take place and the large number of people that stay there. Water will be used for daily normal household and general housekeeping functions. The increased amount of water usage may have an impact on the surrounding community's water availability. Over-extraction of groundwater could lower the water table, affecting nearby wells and ecosystems. Prolonged water extraction may lead to soil subsidence or ground instability. The project is located in downtown area which high population density and commercial building. The significance level of impact is medium.

Mitigation Measures

- ✓ Untreated well water was transported to prefiltration tank and YCDC water and prefiltered water were transported to cold water tank. Water from cold water tank were passed through the filtration tank and distributed to each tower building's roof tank.
- ✓ Construction of permeable road at the project inner ring road to allow storm water to recharge ground water;

- ✓ Equipped with main water meter at each building and water meters for each dwelling including retail shops, hotel, restaurants and all other project components;
- ✓ Treating grey water (wastewater from sinks, showers, baths, clothes washing machines or dish washers) in sewage treatment plant and reusing for toilet flushing, landscape or other non-potable uses;
- ✓ Check all public and office toilets and report the following for repair: leaking valves on lavatories or sinks, leaking toilets;
- ✓ Check all toilets flushometers and cistern type water closets for proper flow and water quantities;
- ✓ Install flow controllers for all faucets;
- ✓ Install urinal sensors for auto flushing;
- ✓ Regular checking, fixing and maintenance of water pipes and accessories to avoid leakages.

5.1.3.2.3 Increased Electricity Use

Impact Assessment

The project will consume large amounts of electricity due to the number of the commercial, office and hotel tower and shopping center development units. The large amount of electricity consumption may impact on the power distribution to the surrounding community and the stability of power system. The significance level of impact is Low.

Public Spaces Lighting

- ✓ Lower all lighting levels during late night and daylight hours
- ✓ Use colour coding or marking for all light switches operated by the Front Office. Stress the importance of turning on only what is required.
- ✓ Increase lighting efficiency by cleaning walls, ceilings for better light reflection
- ✓ Use lamp shades which permit light to pass through
- ✓ Set a routine lamp and light fixtures cleaning schedule.
- ✓ Clean fixture produce more light illumination
- ✓ Review lighting levels in public spaces in order to use the minimum light levels consistent with safety and guest comfort.
- ✓ A rooftop solar array consisting of 450 panels, each with a 260-watt capacity, generated a total of 91,438.6 kWh in 2025. The electricity produced by this system was dedicated to powering the mechanical chillers load.

Office space Lighting

- ✓ Turn off all unnecessary lights
- ✓ Instruct associates to use minimum lights during after hours clean-up and to turn off lights when they leave unoccupied areas
- ✓ When adequate natural light is available, avoid using electric lights
- ✓ Clean space during daylight hours when possible to reduce use of lights for this purpose
- ✓ Consider using fluorescent or energy saving lights where applicable

- ✓ Use single, larger, incandescent lamp instead of two smaller ones. E.g. One 100 watts lamp produces more light output than two 60 watts lamps (saving of 20% energy bill)
- ✓ Use lamp shades which permit light to pass through
- ✓ Install reflectors for light fittings where applicable
- ✓ Instruct associates to turn off cooling and heating units in unoccupied offices and areas
- ✓ Instruct associates to close outside doors and windows in unoccupied offices when they have completed cleaning the areas
- ✓ Repair door closing mechanism to ensure doors are closed properly
- ✓ Shut down elevators during off peak hours
- ✓ Use light colors on walls and ceilings for better light reflection

5.1.3.2.4 Community Health and Safety

Impact Assessment

Due to the project operations, the water quality, water availability, traffic safety can be affected and consequently, the surrounding community health and safety would be threatened. The significance level of impact is low.

Mitigation Measures

- ✓ Wastewater generated from project operation was treated before disposal to the drainage channel. The effluent will be in compliance with the National Environmental Quality (Emission) guidelines.
- ✓ Solid waste management system was implemented.
- ✓ Traffic safety measures and mitigation measures were applied.
- ✓ Abstraction of groundwater and/or surface water will be done without compromising the availability of water for personal hygiene needs and potential future increases in demand of the community nearby.
- ✓ Grievance Redress Mechanism (GRM) will be developed to address resident and community concerns.

5.1.3.2.5 Occupational Health and safety

Impact Assessment

Physical injuries may occur in workplaces such as fall on slippery floors, accidents from the improper use of machines and tools, electricity shock and improper product loading and unloading in store. The significance level of impact is low. (the detail mitigations were mentioned in chapter 3 and appendix)

Mitigation Measures

- ✓ Provision of safety gadgets to the workers
- ✓ Raising awareness of safety guidelines to the workers
- ✓ Conduct regular inspection and maintenance for the buildings area.

5.1.3.3 Positive Impacts on Social Environment Revenue to Union and Region Governments

Through payment of relevant taxes such as properties tax, income tax and other fees to local authorities, revenue department and other related offices, the Union and Region governments will earn the revenue.

5.1.3.3.1 Development of local Area

The developer is committed to spend 2% of the project net profit every year on different sectors as CSR: health, education, infrastructure, disaster prevention and other social sectors. The public voice will be taken into account and prioritized for spending money on the CSR sector. Optimal use of land

Containing the state-of-the-art office, serviced apartment and residential towers interconnected with podiums, the project will see optimal use of land. Implementation of the proposed project will ensure optimal use of land to the great benefit of the region (also the country) and its people.

5.1.3.3.2 Increase in office, hotel and housing stock

In Myanmar cities, the housing/office space demand outstrips by far the supply. This has led to the scramble for the few available spaces, which are usually very expensive. The greatest positive thing with the project is that it will contribute to the housing stock. These will add to the supply of housing, office, hotel and parking space which is currently a major socio-economic problem for Yangon Metropolis and its vicinity.

5.1.3.3.3 Increased property value

The proposed development together with its associated facilities will enhance the general look of the surrounding and this will have an impact on the neighboring land and property value. The proposed development will generally increase the property value of the neighboring premises.

5.1.3.3.4 Creation of Landmarks

The Developer will adopt modern international design that captures the essence of latest international trend of Real Estate complexes to create a landmark on its own. The interior design of the structures will be a fusion of international designs and motifs with locally favoured colors and materials.

5.1.3.3.5 Employment opportunities

Employment opportunities are one of the long-term major impacts of the development project that will be realized during the operation and maintenance of all the towers and associated facilities. These will involve security personnel, solid waste management staff, businesses that will be located within the project. Other sources of employment will involve direct service provision to the office services, property management and many operations in the project. The GDP growth of the country will also be contributed. Increased opportunities for the small-scale business sector

The owners of small restaurants, tea shops, grocery stores adjacent to the project can increase their income because of residents, and staff from the project. This can have a positive impact on livelihood and living of the owners of small-scale businesses.

5.1.3.3.6 Improved security in the surrounding area

With the installation of CCTVs, night time lighting and recruitment of security attendants, the general security of Pabedan area will be greatly improved with the project implementation.

Table 5-3 Evaluation and Prediction of Significant Impacts for Operation Phase

Item	Environmental Impacts	Project Activities	Components	Significance of Potential Environmental Impacts					Impact Significance	Summary of Mitigation Measures	Rresidual Impacts					Residual Significance
				M	D	E	P	SP			M	D	E	P	SP	
A	Operation phase															
1.	Air Quality	- Vehicular emissions and HVAC system outputs affecting ambient air quality. - Dust from landscaped areas or uncovered open spaces.	CO2, NO2, CO, O3, PM10, PM2.5, SO2	2	4	2	3	24	Low	Regular HVAC servicing & paved roads.	1	4	2	2	14	Very Low
2.	Surface Water Quality	- Discharge of untreated wastewater from offices, shopping center and hotel buildings as well as effluent discharge to the nearby waterbodies can cause water pollution. - Risk of groundwater contamination from untreated wastewater or leachate. - Pollution of stormwater runoff with oil, grease, or sediments.	BOD, COD, Oil and Grease, Total Nitrogen (TN), Total Phosphorous (TP), Total solid (TS), Total coliform bacteria	3	4	2	3	27	Low	MBR WWTP (100% treatment of collected wastewater).	2	4	2	1	8	Very Low
3.	Ground Water Quality	- The improper management of solid waste, spillage of lubricants, fuels and oils would lead to the degradation of ground water quality. - Over-extraction of groundwater could lower the water table, affecting nearby wells and ecosystems.	Water table changes, underground water contamination	3	4	2	4	36	Moderate	Rotational well use & secondary containment.	2	4	2	2	16	Low

		- Prolonged water extraction may lead to soil subsidence or ground instability. - Improper drilling or maintenance may lead to contamination of groundwater by surface pollutants.														
4.	Noise and vibration affect	- Noise from vehicles, generators, and recreational activities. - Vibrations from HVAC systems and emergency generators.	Nearby residents and sensitive receptors	3	4	2	3	27	Low	Acoustic enclosures.	1	4	1	2	12	Very Low
5.	Solid Waste Generations	- Municipal solid waste from infrastructure (organic, recyclables, non-recyclables). - Hazardous waste (e-waste, batteries, cleaning agents).	General wastes and hazardous wastes	4	4	3	5	55	High	Compaction and Dowa Recycling, Solid waste management plan, Waste reduction program.	2	4	3	2	18	Low
7.	Occupational Health and Safety	- Physical hazards such as exposure to chemicals and electric shock from maintenance works. - Infectious disease; such as AIDS/HIV, Hepatitis B/C, etc.	Incidents and accidents	2	4	2	2	16	Low	PPE provision & regular safety audits.	1	4	1	1	6	Very Low
8.	Increased Traffic Congestion	Increased in traffic from offices, visitors and workers	Traffic congestion around residential and recreational areas.	2	4	3	4	36	Moderate	Parking guidance & digital sensors.	2	4	3	2	18	Low
9.	Increased Water Use	Groundwater Extraction	Dispute of water availability Over-extraction of groundwater	3	4	3	4	40	Moderate	MBR Greywater Recycling & sensor taps.	2	4	3	2	18	Low
10 .	GHG Emission	- Cooling Refregrants - Disel Combustion	GHG emission	3	4	2	2	18	Low	Solar array & regenerative lifts. Optimize the central water-cooled chiller plant	2	4	2	2	16	Low

11	Community Health and Safety	- Noise from vehicles, generators, and recreational activities. - Vibrations from HVAC systems and emergency generators. - Increase in traffic volume by residents and visitors - Stress in resources	Disputes over resource usage, such as water or energy. Traffic congestion around residential and recreational areas.	3	4	2	3	27	Low	GRM & traffic safety enforcement.	2	4	2	1	8	Very Low
12	Socio-economic Condition	- Job opportunities for local people - Development of local area - Increase in office, hotel and housing stock - Increased property value - Creation of Landmarks	Job and business opportunities and improve the living standard	-	-	-	-	-	Positive Impact							

5.1.4 Decommissioning phase

The decommissioning phase mainly contains the demolition and site clearing activities (more or less the same as construction phases). These activities can have impacts on physical, biological and social environment. Some impacts are positive while some are not. The significance level of each impact can be seen in the following Table 5-4.

5.1.4.1 Negative Impacts on Physical Environment

5.1.4.1.1 Air Pollution

Impact Assessment

The activities during decommissioning phase, like demolishing existing buildings will generate dust at the site and surrounding. The source of emission will also include vehicles for transportation of building demolished debris and management vehicles. The diesel combustion of demolition machineries and equipment, and vehicles will emit NO₂, and fine particulate matters (PM 2.5 and PM 10). The significance level of impact is moderate.

Mitigation Measures

- ✓ Using best technology for demolition process;
- ✓ Scheduling demolition during periods of low winds;
- ✓ Watering the site areas;
- ✓ Spraying water over the building that is going to be demolished;
- ✓ Spraying water onto debris before it goes down a debris chute;
- ✓ Covering or sprinkling demolished materials and stockpiles;
- ✓ Covering all trucks hauling demolished materials;
- ✓ Sweeping daily (with human sweepers) all paved access roads, parking areas and staging areas at site; and
- ✓ Implementation of demolition in phases to cushion the cumulative effects of dust which would be great in case the demolition is done at once.

5.1.4.1.2 Noise and Vibration

Impact Assessment

The demolition activities will be using machineries and vehicles, and these will produce noise and vibration within the site and surrounding area. Elevated noise level within the site can affect the workers, and other persons in vicinity of the project site. The significance level of impact is moderate.

Mitigation Measures

- ✓ The drivers and operators of demolition vehicles and machineries will be trained how to reduce the noise from their operations, and the demolition activities will be restricted in night times.
- ✓ The regular maintenance of vehicles and machineries will be done following the original manufactures' specifications and manuals to avoid excessive noise and vibration. If the work producing excessive noise and vibration will need to be carried out, the surrounding community would be informed in advance and discussed to avoid any impact on them.

- ✓ The demolition workers will be provided with ear protection if they need to work in the high noise level work environment.
- ✓ Drop heights will be minimized when loading vehicles with rubble. Vehicles will be prohibited from waiting within the site with their engines running or alternatively, located in waiting areas away from sensitive receptors.
- ✓ Local hoarding, screens or barriers would be erected to shield particularly noisy activities.

5.1.4.1.3 Water Contamination

Impact Assessment

The improper management of solid waste, wastewater and sewage generation, improper handling, and storing of lubricants, oils, fuels and chemicals can also cause water contamination. The maintenance and repairing work of vehicles and demolition machineries and washing the vehicles are also sources of water contamination. The significance level of impact is moderate.

Mitigation Measures

- ✓ Wastewater from demolition process will be treated with treatment plant and then discharged to the drainage.
- ✓ Portable toilets will be provided for workers. Regular maintenance and check of the machineries, vehicles and sources which can cause oil spill and hazardous chemical spills (if found, the immediate repair and cleansing will be conducted), systematic storage of fuels in project compound, handling and disposal of new oil and used oil waste, systematic waste management will be done.
- ✓ The systematic stacking and piling of materials on site, regular solid waste disposal at the dumping site designated by YCDC.
- ✓ Regular maintenance and check of the machineries, vehicles and sources which can cause oil spill and hazardous chemical spills (if found, the immediate repair and cleansing will be conducted), systematic storage of fuels in project compound, and handling and disposal of new oil and used oil waste are the mitigation measures for the project to avoid the ground water contamination. Mobile toilets will be provided, and regular collection of sewage will be made by YCDC.

5.1.4.1.4 Generation of Solid Waste

Impact Assessment

The waste of concrete, brick, wood, glass, metal, plastic, roofing will be produced from demolition of existing buildings. Also, waste from workers will also be produced. Such solid waste will be injurious to the environment through blockage of drainage system, choking of water bodies, and have negative impact on human and animal health. The significance level of impact is high.

Mitigation Measures

- ✓ Conducting training to raise awareness of workers on solid waste management, avoidance of unnecessary cutting and removing of vegetation plants, providing different dust bins and skips at appropriate places for hazardous and non-hazardous waste, and recyclables and non-recyclables.

- ✓ The demolished recyclable wastes then will be transferred to recyclers and other wastes which cannot be recycled will be disposed at YCDC disposal site by either company's own arrangement or YCDC's garbage truck.
- ✓ Hazardous wastes would always be segregated from non-hazardous wastes. If generation of hazardous waste cannot be prevented through the implementation of the above general waste management practices, the following additional measures will be taken for hazardous waste management.

5.1.4.2 Negative Impacts on Social Environment Involuntary Resettlement

Impact Assessment

The residents of the real estate development have to move due to the demolition of residential towers. Offices and other uses, such as retail shops, and restaurants will also be moved. Consequently, the displaced people may have grievances and complaints on that. The significance level of impact is negligible.

5.1.4.2.1 Community grievances

Impact Assessment

The local community may have some complaints and grievances due to the demolition activities. These complaints may be related to dust emission, drainage blockage, traffic congestion and possible accidents, and noise etc. The significance level of impact is negligible.

5.1.4.2.2 Worker grievances

Impact Assessment

Grievances could be experienced by workers over the course of their employment and these grievances can cover a broad range of concerns, from potentially illegal actions such as unethical recruitment, workplace discrimination, sexual harassment or victimization, to concerns about wages, or how a poor relationship between two employees has been managed. The significance level of impact is negligible.

5.1.4.2.3 Community Health and Safety

Impact Assessment

The dust emission, air pollution, noise and vibration, solid waste generation, surface water and ground water degradation, traffic congestion are the threats for community health and safety. The influx of construction workers may spread the infectious diseases among the local community. The improper use of construction machineries may also threaten the safety of local community and passers-by. The significance level of impact is moderate.

The mitigation measures for community health and safety in will be followed.

5.1.4.2.4 Occupational Health and safety

Impact Assessment

The nature of work can get the workers injured and unsafe. Noise from the demolition machineries can also cause pollution for the workers. The significance level of impact is low.

Mitigation Measures

Company's Health and Environment Plan including Occupational Health Control and Environmental Protection Plan and minimum Personal Protective Equipment (PPE) provision will be applied. The Occupational Health Control covers periodic medical check-ups for all workers to ensure that they are physically and mentally capable for their job positions, treatment for all workers of small injuries and illness, system to diagnose epidemic risks at their early stage of development and undertake all necessary actions in accordance with the advice of the designated hospital or local authority, and education and training to all workers on the relevant health hazards, safe work practices and proper use of PPE.

The Environmental Protection Plan shall be amended as necessary and further developed as work progresses. This plan will incorporate the conditions and mitigation measures contained in the final Environmental Impact Assessment Report. Some important items that shall be considered to minimize the environmental impacts are as follows, but not limited to: dust control, noise control, wastewater quality control, waste management control, pollutants spillage control, etc.

Responsibilities are also allocated for different positions such as Project Manager/Construction Manager, HSE Manager, and Engineers/ Supervisors/ Storekeeper/Security. Project Environmental Management System includes Environmental Policy and Objectives, Environmental Organization to ensure that the project Environmental objectives are met through implementation of technical activities and procedures, compliance with legal requirements, environmental aspects identification and assessment, evaluation, selection and control of contractors, environment meeting and committee, environmental training, emergency preparedness, environmental incident investigation and analysis, environmental inspection, environmental audit, environmental improvement plan, dust control plan, noise control plan, wastewater control plan, waste control plan, and pollutants spillage control plan. The minimum Personal Protective Equipment (PPE) provision includes head protection, clothing, safety shoes, eye protection, hearing protection, respirators, gloves, safety belts, and safety harnesses.

Table 5-4 Evaluation and Prediction of Significant Impacts for Decommissioning Phase

Item	Environmental Impacts	Project Activities	Components	Significance of Potential Environmental Impacts					Impact Significance	Summary of Mitigation Measures	Residual Impacts					Residual Significance
				M	D	E	P	SP			M	D	E	P	SP	
B	Decomissioning Phase															
1.	Air Quality	- Dust emits from the crushing and breaking of concrete, drywall, and other materialsdemolition activities. - Gaseous emissions from vehicle movements, heavy machinerys and generators.	PM10, PM2.5, NOx, SOx, and CO	4	2	2	4	32	Moderate	Watering, debris chutes, and phased demolition.	4	2	2	3	24	Low
2.	Water Contamination	Water used for dust suppression can mix with dust, chemicals, oils, and heavy metals on the site.	Water turbidity, chemical contamination, alteration of ground water	3	2	2	4	28	Low	Treatment of demo-water and portable toilets.	3	2	2	2	14	Low
3.	Noise and vibration affect	- Emits high level noise from use of heavy machinery such as hydraulic breakers, wrecking balls, and excavators. - Ground vibration from demolition processes.	Nearby residents and sensitive receptors	4	2	2	4	32	Moderate	Hoarding, noise screens, and ear protection. Restriction of high-noise activities to daytime hours, Advance notification to nearby communities.	4	2	2	2	16	Low
4.	Solid Waste Generations	Landfill overload by generating large amount of C&D waste.	General wastes and hazardous wastes	4	2	3	5	45	High	On-site sorting and recycling partnership. Proper handling of hazardous waste streams.	4	2	1	3	18	Low
5.	Energy Consumption	High energy consumption from	GHG emission	2	2	3	3	21	Low	Efficient machinery use and optimized hauling.	1	2	3	2	12	Very Low

Item	Environmental Impacts	Project Activities	Components	Significance of Potential Environmental Impacts					Impact Significance	Summary of Mitigation Measures	Residual Impacts					Residual Significance
				M	D	E	P	SP			M	D	E	P	SP	
		powering heavy machinery. • Transportation of debris to disposal site.														
6.	Occupational Health and Safety	- Physical hazards from structural collapse, falls from height, "Struck-By" incidents, electrical shock, Fire and explosion. - Biological Hazards from inhales of toxic fumes, constant exposure to highlevel noise from machineries,	Incidents and accidents NIHL, MSDs, HAVS Respiratory issues.	4	2	1	3	21	Low	Comprehensive PPE and HSE Management System.	4	2	1	2	14	Low
7.	Community Health and Safety	- Dust emission from the demolition activities. - High level noise generates from demolition activities. - Ground vibration emits from demolition activities. - High chances of injuries from the site.	Respiratory issues. Stress from constant noise. Distruption to daily life. Affect the structural strength of nearby building and damage to pipelines, cables etc.	4	2	2	4	32	Moderate	GRM and site access security controls.	4	2	2	2	16	Low

5.2 Risk Assessment

In general terms, risk assessment comprises the scientific methods of confronting and expressing uncertainty in predicting the future. This is a procedure in which the risks posed by inherent hazards involved in processes or situations are estimated either quantitatively or qualitatively.

5.2.1 Risk Assessment Methodology

Use of Risk Assessment

Risk Assessment method is used to determine the significance considering the following factors:

- Probability of an adverse event;
- Consequences of an adverse event; and
- Probability of detection of the effect or the degradation which results from loss of control.

Risk is calculated as the product of all three factors. The effects which are having highest risk factor are considered to be most significant. Those effects which are governed by regulations are to be regarded as most significant.

Risk Calculation

Table 5-5 Factors for Risk Calculation

Probability of occurrence					
Criteria	Scale	Criteria	Scale	Criteria	Scale
Very low	1	Low	5	Negligible	1
Low	2	Moderate	4	Low	2
Moderate	3	High	3	Moderate	3
High	4	Very high	2	High	4
Very high	5	Certain	1	Very high	5

Table 5-6 Categories of Probability of occurrence

Level	Definition
Very low	An unlikely probability of occurrence
Low	A remote probability of occurrence
Moderate	A moderate probability of occurrence
High	A high probability of occurrence
Very high	A very high probability of occurrence

Table 5-7 Factors of Risk Calculation for Detection

Criteria	Scale (D)	Criteria	Scale (D)	Criteria	Scale (D)
Certain	1	Very high	5	Negligible	1
Very high	2	High	4	Low	2
High	3	Moderate	3	Moderate	3
Moderate	4	Low	2	High	4
Low	5	Very low	1	Very high	5

Table 5-8 Categories of Probability of Detection

Level	Definition
Low	Low or no detectability
Moderate	Moderate degree of detectability (Fair detectability)
High	Good/high degree of detectability
Very high	Very high degree of detectability
Certain	Definite detectability

Table 5-9 Categories of Severity of degradation

Level	Risk Score	Definition
Negligible	1	The severity of degradation is no impact and can be neglected
Low	2	The severity of degradation is low and the impact is almost negligible
Moderate	3	The severity of degradation is sensible enough to be taken into account
High	4	The severity of degradation is high enough for causing any damages
Very high	5	The severity of degradation is very high and the damages will be enormous

RISK =	PROBABILITY OF OCCURRENCE	X	PROBABILITY OF DETECTION	X	SEVERITY OF DEGRADATION
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Evaluation of Risks*Table 5-10 Evaluation of Risk*

Risk		
Scale	Scale if 'Probability of Detection' is NA	Evaluation
1 – 25	1 – 5	Very low
26 – 50	6 – 10	Low
51 – 75	11 – 15	Moderate
76 – 100	16 – 20	High
101 – 125	21 – 25	Very high

Table 5-11 Categories of Risk Evaluation level

Risk Evaluation level	Definition
Very low	A risk at this level – if it occurs – will have little or no impact on achieving outcome objectives.
Low	A risk at this level – if it occurs – will have a minor impact on achieving desired results, to the extent that one or more stated outcome objectives will fall below goals but well above minimum acceptable levels.
Moderate	A risk at this level – if it occurs – will have a moderate impact on achieving desired results, to the extent that one or more stated outcome objectives will fall well below goals but above minimum acceptable levels.
High	A risk at this level – if it occurs – will have a significant impact on achieving desired results, to the extent that one or more stated outcome objectives will fall below acceptable levels.
Very high	A risk at this level – if it occurs – will have a severe impact on achieving desired results, to the extent that one or more of its critical outcome objectives will not be achieved.

5.2.1.1 Risk Evaluation for Operation Phase*Table 5-12 Risk Evaluation for Operation Phase*

Impact	Probability of occurrence	Probability of detection	Severity of degradation	Scale	Level
Physical Environment					
Air Pollution	3	3	3	27	Low
Surface Water Quality	3	1	4	12	Very Low

Impact	Probability of occurrence	Probability of detection	Severity of degradation	Scale	Level
Ground Water Quality	3	3	3	27	Low
Generation of Solid Waste	4	3	4	60	Moderate
Greenhouse Gases Emissions	3	3	5	45	Low
Social Environment					
Community grievances	3	1	4	12	Very low
Increased Traffic congestion	4	3	3	36	Low
Increased water use	5	3	4	60	Moderate
Increased electricity use	5	3	4	60	Moderate
Community Health and Safety	3	2	5	30	Low
Occupational Health and safety	3	1	4	12	Very Low

5.2.1.2 Risk Evaluation for Decommissioning Phase

Table 5-13 Risk Evaluation for Decommissioning Phase

Impact	Probability of occurrence	Probability of detection	Severity of degradation	Scale	Level
Physical Environment					
Air Pollution	5	4	3	60	Moderate
Noise and vibration	5	4	3	60	Moderate
Surface Water Quality	3	3	4	36	Low
Ground Water Quality	3	3	3	27	Low
Soil Contamination	3	3	3	27	Low
Generation of Solid Waste	5	4	4	80	High
Greenhouse Gases Emissions	3	3	4	36	Low
Social Environment					
Involuntary Resettlement	3	1	4	12	Very Low

Impact	Probability of occurrence	Probability of detection	Severity of degradation	Scale	Level
Community grievances	3	1	4	12	Very Low
Worker grievances	5	1	4	20	Very Low
Traffic congestion	5	1	5	25	Very Low
Community Health and Safety	3	3	5	45	Low
Occupational Health and safety	3	1	5	15	Very Low

5.2.2 Mitigation Measures

This section outlines the necessary mitigation measures that will be adopted to prevent or minimize significant negative environmental impacts associated with the activities of the project during Operation and Decommissioning Phases.

5.2.2.1 Operation Phase

Mitigation Measures for Physical Environmental Impacts

5.2.2.1.1 Air pollution

Residents will be encouraged to use the unleaded petrol (low sulphur content fuel) and the back-up generators bought from Environmental Compliance Certificate holding company to avoid the air pollution caused by them.

5.2.2.1.2 Surface Water Quality

The project will have a Solid Waste Management System for its operation phase. The design of Solid Waste Management system contains disposal system, quantity of waste and bin center, (Details mentioned in Generation of solid waste section below).

Sewage wastewater treatment plant was constructed for wastewater treatment. All soil and wastewaters were treated by means of an activated sludge system with extended aeration system incorporating the followings:

- ✓ The Wastewater Treatment System of Junction City Mixed-Use Development is MBR filter technology to treat 1300 m³/day domestic waste water and make sure the Discharge water BOD < 30 ppm.

5.2.2.1.3 Ground Water Quality

Solid waste management system will be applied (Details mentioned in Generation of solid waste section). The back-up generator/transformers were placed in a room of concrete paving with impervious underlying layer. The oil, fuels and lubricant for different purposes of operation will be transported, handled and stored with care. The concrete paving with impervious underlying layer will be provided for the area of oil and lubricant storage and changing.

5.2.2.1.4 Soil Contamination

The wastewater and solid waste management, and proper management of lubricants, fuels and oils mentioned in the above sections would mitigate the soil contamination.

5.2.2.1.5 Generation of solid waste

Solid waste were segregated through color coded waste bins provided at office tower, shopping center and hotel tower. Dry Waste from Hotel Rooms, Shopping Center, Office Tower and Carparking were divided into 2 types of Dry Wastes.

- Recycle items (Water Bottles, Cottons box and cans).
- Non recyclable items will compress with compactors.

Non-recyclable items are compress with compactors and collected and disposed via YCDC. Kitchen Waste from kitchen of Hotel and Shopping Center were disposed to Cool Room area and stored in designated cool Room. Grease Waste fromfrom kitchen of Hotel and Shopping Center were collected with Plastic bag and stored in STP with containers and dispose to Government Designated area. Sludge waste from wastewater treatment plant were collected with plastic bag and stored with containers in STP and dispose to Government Designated area. According to the solid waste management plan adopted by the Project, the disposal system was manual.

- **Dry Waste:** A total number of (15) Plastic 660-liter (0.66m³) wheeled bins was used to collect Dry waste and at least 5 times to 6 times per month. Recyclable wastes were segregated accordingly to the processes and disposed with Golden Dowa Eco System Myanmar Co., Ltd. Non- recyclable wastes were compressed with compactor with 12 m³ capacity and collect & pick up by YCDC. The ratio of available handling capacity to actual waste generation is 4.8 times capacity safety factor.
- **Kitchen Waste:** A total number of (10) Plastic 660-liter (0.66m³) wheeled bins was used to collect kitchen waste and temporarily disposed to Cool Room area and stored in designated cool Room and collect & pick up by YCDC. While comparing storage capacity with daily generation is equal to 1.46 days of storage capacity. This indicates that the system provides sufficient buffer capacity for approximately 1.5 days of kitchen waste generation under static conditions.
- **Grease Waste:** Grease Waste fromfrom kitchen of Hotel and Shopping Center were collected (1) time per (2) weeks with Plastic bag and stored in STP with containers and (1) time per (2) month collected and disposed via YCDC.
- **Sludge Waste:** Sludge waste from wastewater treatment plant were collected with plastic bag and stored with containers in STP and collected and disposed via YCDC.
- Provided designated waste bin at each floor and regularly collected through shifts.

5.2.2.1.6 Greenhouse gases emissions

The Information board of greenhouse gases sources, impacts and mitigation will be erected in the project compound to raise the community awareness (including vehicles' drivers). The residents and other users of the project buildings will be encouraged to use the environmentally friendly electrical appliances (which are Environmental Compliance Certified appliances). The low-sulphur fuel will be used for back-up generators.

As a general practice, the community of the project will be encouraged to adopt the following aspects:

- ✓ Erecting the information board of greenhouse gases sources, impacts and mitigation in the project compound to raise the community awareness (including vehicles' drivers);
- ✓ Encouraging the residents and other users of the project buildings to use the environmentally friendly electrical appliances (which are Environmental Compliance Certified appliances);
- ✓ Using low-sulphur fuel for back-up generators;
- ✓ The development's M&E systems are designed in accordance with GHA standards.
- ✓ The central water-cooled chiller plant provides higher efficiency compared to air-cooled chiller systems, and CO₂ sensors are installed to regulate outdoor air flow rates to maintain good indoor air quality (IAQ).
- ✓ For the ACMV system, VFD types are used, and all FCUs and AHUs are equipped with thermostats. All façade glass is double-glazed with proper sealing, and all 3-phase power drive motors are equipped with VFD drives.
- ✓ Approximately 90% of the building uses energy-efficient LED lighting. The central hot water system is equipped with a heat pump system.
- ✓ Walk-in chillers utilize closed-type heat exchanger systems. All sanitary ware is TOTO brand with eco-system features.
- ✓ Additionally, all elevators are energy-efficient regenerative lifts, providing up to 35% energy savings. Heat-reducing double-glazed façade glass with low emissivity is used throughout the building, and all AHU condensate is redirected to the cooling tower system.

Mitigation Measures for Social Environmental Impacts

5.2.2.1.7 Community grievances

Prior to the commencement of construction, a mechanism is to be put in place to ensure that the following are available for community complaints for the life of the project:

- ✓ a 24-hour telephone number on which complaints about construction and operational activities at the site may be registered;
- ✓ a postal address to which written complaints may be sent;
- ✓ an email address to which electronic complaints may be transmitted and
- ✓ a focal person to whom the community may directly lodge their complaints.

The telephone number, postal address, e-mail address and the focal person shall be informed to the participants at the public consultation(s). The telephone number, the postal address, the email address and the focal person shall be displayed on a sign near the entrance to the site(s), in a position that is clearly visible to the public.

The procedure of Community Grievances Mechanism (CGM) consists of 7 basic steps: Receive, Acknowledge, Assess and assign, Investigate, Respond, Recourse or appeal, and Follow up and close out.

Receive: Complainants will be provided with a variety of access points (by phone, by email, by letter, face-to-face with company staff) so that they can lodge a grievance in a manner

convenient to them. When the complaint is received, the complainant will be explained to understand the timelines for the remaining steps in the procedure, how the complaint will be handled and the types of remedy the company can, or cannot, provide. The complainant confidentiality will be maintained, and grievance details would be provided only to those directly involved in the investigation.

Acknowledge: Once a complaint has been registered, a timely acknowledgement will be made to the complainant that their case is in the system. The acknowledgement will be in a culturally appropriate manner, such as a letter, a telephone call, a visit or an email.

Assess and assign: A grievance officer (HR or Administration staff) will quickly assess the nature of grievance once it is logged. And, if needed, some other relevant staff will be assigned to do the assessment. In practice, the grievance officer will be mandated to directly address relatively minor, easily resolvable grievances (for e.g. paying compensation for a small matter) to minimize bureaucracy.

Investigate: Many complaints can be addressed quickly by a grievance officer or other company staff. Nevertheless, severe or technically complex complaints will require more thorough investigation to provide evidence for analysis and to support the resolution. This process will begin by seeking to understand the complainant's perception of the issue and what should be done about it. The process then typically calls for examination of the circumstances of the case, which can be done by speaking with involved parties and conferring with relevant stakeholders.

Respond: As soon as the investigation is complete, a provisional response will be developed that is reasonable and proportional to the grievance and takes account of any cultural norms. The final agreement will be made both verbally and in writing and it will be specific, time bound and agreed by both parties.

Recourse or appeal: The CGM will consider a recourse or appeals mechanism for complaints where the complainant and the operation cannot reach agreement. If access to judicial process is complex, very expensive or unavailable, a recourse mechanism gives both company and community the opportunity to explore all resolution options or to demonstrate good intent.

Follow up and close out: Once a resolution has been agreed or a decision made, the final stage is to implement the decision, monitor outcomes and close out the grievance. Follow-up also may be needed to address problems that develop during implementation of the response.

A Complaints Register shall record, but not necessarily be limited to:

1. the date and time of the complaint;
2. the means by which the complaint was made (telephone, mail, email or in person);
3. any personal details of the complainant that were provided, or if no details were provided, a note to that effect;
4. the nature of the complaint; and
5. any action(s) taken by the Proponent in relation to the complaint, including timeframes for implementing the action.

The Complaints Register shall be made available for inspection by the Ministry or any other concerned authority upon request.

5.2.2.1.8 Worker grievances

Company also established a mechanism to resolve complaints of workers and the worker grievances mechanism procedure includes the followings.

All employees are given equal and fair opportunity to voice out their sentiments and grievances towards particular occasions or situations, including Disciplinary Actions served to them. In any case, the following procedure is to be observed at all times:

Level 1: Superior – An employee should first discuss an issue with his/her immediate superior. The superior will give his/her disposition within five (5) days upon the receipt of the issue/concern.

Level 2: Human Resources Department - If the employee is not satisfied with the decision rendered by superior, the case is then referred to Level 2, the HR Department. The HR Department is required to give its decision within five (5) days from the receipt of the issue/grievance.

Level 3: Senior Management - If the employee is not satisfied with the decision rendered by the HR Department, the case is then referred to Level 3, the Senior Management. The Senior Management is required to give his/her decision within five (5) days from the receipt of the issue/grievance.

Level 4: Conciliation Committee - If the employee is still not satisfied with the decision rendered by Senior Management, the concerned Employee may then refer the case of Level 4, the Conciliation Committee, which shall be formed in accordance with the provisions of the Settlement of Dispute Law. The conciliation committee shall, within five (5) working days, from receipt of the grievance by the Employee negotiate and resolve the issue. The conciliation committee shall keep a record of the proceedings of the negotiations.

Level 5: Conciliation Body - If the employee is still not satisfied with the result of the discussions with the Conciliation Committee, the Employee may file a complaint to the Conciliation Body. The Conciliation Body shall upon receipt of the complaint conciliate for settlement within three (3) working days. If both parties have arrived at an agreement, the parties shall sign an agreement in the presence of the Body.

- ✓ If the Employee is still not satisfied with the decision of the Conciliation Body it may further file a case, by himself or through a representative on his/her behalf, at a court of law of relevant jurisdiction.

Across all levels, due process must be afforded the employee and the procedures stated must be undertaken. Appeals must be made by the employee in writing within three (3) working days from the receipt of the decision in each level. If an appeal is not received within the period, it is understood that the employee accepts the disciplinary action without question.

5.2.2.1.9 Increased Traffic congestion

Existing Traffic Survey Results

TRF-1: Bo Gyoke Aung San Road (6 lanes)

Total traffic volume recorded: 6,715 vehicles/day

Vehicle composition:

- Four-wheel light vehicles: 6,483 vehicles (96.54%)
- Heavy vehicles: 232 vehicles (3.45%)

TRF-2: Shwedagon Pagoda Road (4 lanes)

Total traffic volume recorded: 5,709 vehicles/day

Vehicle composition:

- Four-wheel light vehicles: 5,552 vehicles (97.35%)
- Heavy vehicles: 157 vehicles (2.75%)

Although traffic congestion is visually observed along Bo Gyoke Aung San Road and Shwedagon Pagoda Road, particularly during peak periods, this condition is primarily attributable to signal control, roadside activities, pedestrian movements, and short-term operational disturbances, which are characteristic of dense downtown environments. The capacity-based assessment applied in this study evaluates whether traffic demand exceeds the structural carrying capacity of the road network. Results indicate that, even under the 2030 forecast scenario, traffic volumes remain well below theoretical capacity limits.

Traffic Mitigation Measures

- ✓ Implement comprehensive directional signage, parking guidance systems, speed limit signs (e.g., 15-20 km/h), and pavement markings to guide drivers safely and efficiently.
- ✓ Use speed bumps, raised tables, and distinct pedestrian crossings to enforce slow speeds and protect pedestrians.
- ✓ Ensure the parking spaces and internal traffic to flow smoothly to prevent circling and internal queues.
- ✓ Use sensors and digital displays to direct drivers to available parking spots, reducing search time and internal congestion.
- ✓ Clearly mark parking areas for different user groups (office, visitors, retail, hotel).
- ✓ Ensure internal roads and drop-off zones can handle the increased traffic volume without spillover onto public roads.
- ✓ Continuous focus on safe pedestrian crossings within the site, given the higher number of people moving between offices, hotel and shopping center.
- ✓ Ensure retail and service deliveries do not create bottlenecks during peak operational hours.
- ✓ Periodically review the traffic situation.

Internal Site Traffic Circulation Design:

- ✓ Implement clear directional signage and road markings for vehicle movement, parking, and pedestrian pathways within the site.
- ✓ Incorporate traffic calming measures (e.g., speed bumps, narrower lanes, chicanes) in pedestrian-heavy areas.
- ✓ Separate pedestrian and vehicular traffic where possible.

Parking Management:

- ✓ Install systems that indicate available parking bays to reduce searching time and congestion.

- ✓ Designate specific zones for residents, visitors, retail customers, and staff.
- ✓ Implement clear rules and enforcement for illegal parking or blocking traffic/pedestrian routes.

5.2.2.1.10 Increased Water Use

The measures to control the water use of the project (as Water Use Management Plan) are mentioned below:

- ✓ Untreated well water was transported to prefiltration tank and YCDC water and prefiltered water were transported to cold water tank. Water from cold water tank were passed through the filtration tank and distributed to each tower building's roof tank.
- ✓ Construction of permeable road at the project inner ring road to allow storm water to recharge ground water;
- ✓ Equipped with main water meter at each building and water meters for each dwelling including retail shops, hotel, restaurants and all other project components;
- ✓ Treating grey water (wastewater from sinks, showers, baths, clothes washing machines or dish washers) in sewage treatment plant and reusing for toilet flushing, landscape or other non-potable uses;
- ✓ Check all public and office toilets and report the following for repair: leaking valves on lavatories or sinks, leaking toilets;
- ✓ Check all toilets flushometers and cistern type water closets for proper flow and water quantities;
- ✓ Install flow controllers for all faucets;
- ✓ Install urinal sensors for auto flushing;
- ✓ Regular checking, fixing and maintenance of water pipes and accessories to avoid leakages.

5.2.2.1.11 Increased Electricity Use

The following measures will be adopted to efficiently use electricity as Energy Saving Plan and Procedures:

Public Spaces Lighting

- ✓ Lower all lighting levels during late night and daylight hours
- ✓ Use colour coding or marking for all light switches operated by the Front Office. Stress the importance of turning on only what is required.
- ✓ Increase lighting efficiency by cleaning walls, ceilings for better light reflection
- ✓ Use lamp shades which permit light to pass through
- ✓ Set a routine lamp and light fixtures cleaning schedule.
- ✓ Clean fixture produce more light illumination
- ✓ Review lighting levels in public spaces in order to use the minimum light levels consistent with safety and guest comfort

Office space Lighting

- ✓ Turn off all unnecessary lights

- ✓ Instruct associates to use minimum lights during after hours clean-up and to turn off lights when they leave unoccupied areas
- ✓ When adequate natural light is available, avoid using electric lights
- ✓ Clean space during daylight hours when possible to reduce use of lights for this purpose
- ✓ Consider using fluorescent or energy saving lights where applicable
- ✓ Use single, larger, incandescent lamp instead of two smaller ones. E.g. One 100 watts lamp produces more light output than two 60 watts lamps (saving of 20% energy bill)
- ✓ Use lamp shades which permit light to pass through
- ✓ Install reflectors for light fittings where applicable
- ✓ Instruct associates to turn off cooling and heating units in unoccupied offices and areas
- ✓ Instruct associates to close outside doors and windows in unoccupied offices when they have completed cleaning the areas
- ✓ Repair door closing mechanism to ensure doors are closed properly
- ✓ Shut down elevators during off peak hours
- ✓ Use light colors on walls and ceilings for better light reflection

5.2.2.1.12 Community Health and Safety

Due to the arrangements and mitigation measures mentioned in the above respective sections (for e.g., wastewater treatment system, mitigation measures in Traffic Impact Assessment and assigning staff to ease traffic flow) the impacts on community health and safety will be reduced. Wastewater generated from project operation will be treated before disposal to the drainage channel and receiving water. The effluent will be in compliance with the National Environmental Quality (Emission) guidelines. Solid waste management system will be in place. Traffic safety measures and mitigation measures mentioned in Traffic Analysis will be applied. Following YCDC's guidelines and abstraction of groundwater and/or surface water will be done without compromising the availability of water for personal hygiene needs and potential future increases in demand of the community and hospital nearby.

5.2.2.1.13 Occupational Health and safety

Company's Occupational Health and Safety Plan and minimum Personal Protective Equipment (PPE) provision will be applied. The Occupational Health Control covers periodic medical check-ups for all workers to ensure that they are physically and mentally capable for their job positions, treatment for all workers of small injuries and illness, system to diagnose epidemic risks at their early stage of development and undertake all necessary actions in accordance with the advice of the designated hospital or local authority, and education and training to all workers on the relevant health hazards, safe work practices and proper use of PPE.

Some important items that shall be considered to minimize the environmental impacts are as follows, but not limited to: dust control, noise control, wastewater quality control, waste management control, pollutants spillage control, etc. Responsibilities are also allocated for different positions such as Project Manager, HSE Manager, and Engineers/ Supervisors/ Telephone Operator/Security.

Project Environmental Management System includes Environmental Policy and Objectives, Environmental Organization to ensure that the project Environmental objectives are met through implementation of technical activities and procedures, compliance with legal requirements, environmental aspects identification and assessment, evaluation, selection

and control of contractors, environment meeting and committee, environmental training, emergency preparedness, environmental incident investigation and analysis, environmental inspection, environmental audit, environmental improvement plan, dust control plan, noise control plan, wastewater control plan, waste control plan, and community health and safety plan, GRM. The minimum Personal Protective Equipment (PPE) provision includes head protection, clothing, safety shoes, eye protection, hearing protection, respirators, gloves, safety belts, and safety harnesses.

5.2.2.2 Decommissioning Phase

Mitigation Measures for Physical and Social Environmental Impacts

5.2.2.2.1 Air Pollution

The air pollution mitigation measures which will be adopted by the project are regular maintenance of demolition vehicles and machineries, prohibiting unnecessary driving and moving at site and idling of vehicles, strictly prohibition of open fire burning of materials or wastes, turning off of engine when the vehicle is parking, using low sulphur diesel in all machines and vehicles, developing and practicing demolition management procedures including the efficient use of vehicles and machineries. The workers working on the project will be trained prior to starting demolition work on methods for minimizing air quality impacts. Workers who have to work in the dusty area have to wear masks. Dust emissions will be controlled by the following measures:

- ✓ Using best technology for demolition process;
- ✓ Scheduling demolition during periods of low winds;
- ✓ Watering the site areas;
- ✓ Spraying water over the building that is going to be demolished;
- ✓ Spraying water onto debris before it goes down a debris chute;
- ✓ Covering or sprinkling demolished materials and stockpiles;
- ✓ Covering all trucks hauling demolished materials;
- ✓ Sweeping daily (with human sweepers) all paved access roads, parking areas and staging areas at site; and
- ✓ Implementation of demolition in phases to cushion the cumulative effects of dust which would be great in case the demolition is done at once.

5.2.2.2.2 Noise and vibration

The drivers and operators of demolition vehicles and machineries will be trained how to reduce the noise from their operations, and the demolition activities will be restricted in night times. The regular maintenance of vehicles and machineries will be done following the original manufactures' specifications and manuals to avoid excessive noise and vibration. If the work producing excessive noise and vibration will need to be carried out, the surrounding community would be informed in advance and discussed to avoid any impact on them. The demolition workers will be provided with ear protection if they need to work in the high noise level work environment. Drop heights will be minimized when loading vehicles with rubble. Vehicles will be prohibited from waiting within the site with their engines running or alternatively, located in waiting areas away from sensitive receptors. Local hoarding, screens or barriers would be erected to shield particularly noisy activities.

5.2.2.2.3 Surface Water Hydrology

The demolished materials will be systematically piled and stored in a temporary place in the project site which is away from the drains to avoid the drain blockage and consequent impact on surface water hydrology. If needed, the piled debris will be covered with appropriate materials. The disposal of demolished materials will be done on a regular basis.

5.2.2.2.4 Surface Water Quality

Wastewater from demolition process will be treated with treatment plant and then discharged to the drainage. Portable toilets will be provided for workers. Regular maintenance and check of the machineries, vehicles and sources which can cause oil spill and hazardous chemical spills (if found, the immediate repair and cleansing will be conducted), systematic storage of fuels in project compound, handling and disposal of new oil and used oil waste, systematic waste management will be done.

5.2.2.2.5 Ground Water Quality

The systematic stacking and piling of materials on site, regular solid waste disposal at the dumping site designated by YCDC, regular maintenance and check of the machineries, vehicles and sources which can cause oil spill and hazardous chemical spills (if found, the immediate repair and cleansing will be conducted), systematic storage of fuels in project compound, and handling and disposal of new oil and used oil waste are the mitigation measures for the project to avoid the ground water contamination. Mobile toilets will be provided, and regular collection of sewage will be made by YCDC.

5.2.2.2.6 Soil Contamination

The existing vegetation will be left uncut. The systematic stacking and piling of materials on site, regular solid waste disposal at the dumping site designated by YCDC, regular maintenance and check of the machineries, vehicles and sources which can cause oil spill and hazardous chemical spills (if found, the immediate repair and cleansing will be conducted), systematic storage of fuels in project compound, and handling and disposal of new oil and used oil waste are the mitigation measures for the project to avoid the ground water contamination. Mobile toilets will be provided, and regular collection of sewage will be made by YCDC.

5.2.2.2.7 Generation of Solid Waste

The following practices will be exercised as mitigation measures: conducting training to raise awareness of workers on solid waste management, avoidance of unnecessary cutting and removing of vegetation plants, providing different dust bins and skips at appropriate places for hazardous and non-hazardous waste, and recyclables and non-recyclables. The demolished recyclable wastes then will be transferred to recyclers and other wastes which cannot be recycled will be disposed at YCDC disposal site by either company's own arrangement or YCDC's garbage truck.

Hazardous wastes would always be segregated from non-hazardous wastes. If generation of hazardous waste cannot be prevented through the implementation of the above general waste management practices, the following additional measures will be taken for hazardous waste management.

Waste Collection: Workers would be firstly educated on the potentially hazardous wastes which can be encountered during the demolition phase and their risks. Workers would wear PPE for handling of waste and if needed, special equipment will be used.

Waste Temporary Storage: Hazardous waste would be stored so as to prevent or control accidental releases to air, soil, and water resources in area location where:

- ✓ Waste is stored in a manner that prevents the commingling or contact between incompatible wastes and allows for inspection between containers to monitor leaks or spills. e.g., sufficient space between incompatibles or physical separation such as walls or containment curbs Store in closed containers away from direct sunlight, wind and rain
- ✓ Provide adequate ventilation where volatile wastes are stored
- ✓ Provision of readily available information on chemical compatibility to employees, including labeling each container to identify its contents
- ✓ Limiting access to hazardous waste storage areas to employees who have received proper training

Waste Transportation and Disposal: All waste containers designated for off-site transportation to YCDC dump site for disposal would be secured and labeled with the contents and associated hazards. These waste containers will be properly loaded on YCDC garbage truck before leaving the site.

5.2.2.2.8 Greenhouse Gases Emissions

The mitigation measures for reducing greenhouse gas emissions are conducting training for drivers, operators and concerned staff on greenhouse emissions and mitigation measures, prohibiting unnecessary driving and moving at site and idling of vehicles and demolition machineries as well, and regular maintenance of vehicles and machineries.

Mitigation Measures for Social Environmental Impacts

5.2.2.2.9 Involuntary Resettlement

In order to avoid the involuntary resettlement, a resettlement plan and procedures will be prepared by the developer and agreed by the affected persons (residents/owners of the different project buildings and components like offices, shopping centers and restaurants). The resettlement plan will include time-bound actions and a budget. The compensation, and resettlement packages would be designed to generally improve or at least restore the social and economic base of those to be relocated. The contents and level of detail of resettlement plans will generally include a statement of objectives, policies, and strategy and will cover the following essential elements: (i) organizational responsibilities, (ii) community participation and integration with host populations, (iii) socioeconomic survey, (iv) legal framework including mechanisms for resolution of conflicts, (v) identification of alternative locations and selection, (vi) valuation of and compensation for lost assets, (vii) infrastructure and social services, (viii) environmental protection and management, and (ix) implementation schedule, monitoring and evaluation.

5.2.2.2.10 Community Grievances

The company's community grievances mechanism mentioned in the above sections will be applied.

5.2.2.2.11 Worker Grievances

The company's worker grievances mechanism mentioned in the above sections will be applied.

5.2.2.2.12 Traffic Congestion

The disposal of demolished materials by truck to YCDC's disposal site will be made at night times according to YCDC's approval. The collection of demolished recyclables will be made by local recyclers on weekends to reduce traffic congestion.

5.2.2.2.13 Emergency Risk

Company's emergency plan and procedures for fire risk and other scenarios (including natural disasters) mentioned in above sections will be adopted.

5.2.2.2.14 Community Health and Safety

The mitigation measures for community health and safety in will be followed.

5.2.2.2.15 Occupational Health and safety

Company's Health and Environment Plan including Occupational Health Control and Environmental Protection Plan and minimum Personal Protective Equipment (PPE) provision will be applied. The Occupational Health Control covers periodic medical check-ups for all workers to ensure that they are physically and mentally capable for their job positions, treatment for all workers of small injuries and illness, system to diagnose epidemic risks at their early stage of development and undertake all necessary actions in accordance with the advice of the designated hospital or local authority, and education and training to all workers on the relevant health hazards, safe work practices and proper use of PPE.

The Environmental Protection Plan shall be amended as necessary and further developed as work progresses. This plan will incorporate the conditions and mitigation measures contained in the final Environmental Impact Assessment Report. Some important items that shall be considered to minimize the environmental impacts are as follows, but not limited to: dust control, noise control, wastewater quality control, waste management control, pollutants spillage control, etc. Responsibilities are also allocated for different positions such as Project Manager/Construction Manager, HSE Manager, and Engineers/ Supervisors/ Storekeeper/Security. Project Environmental Management System includes Environmental Policy and Objectives, Environmental Organization to ensure that the project Environmental objectives are met through implementation of technical activities and procedures, compliance with legal requirements, environmental aspects identification and assessment, evaluation, selection and control of contractors, environment meeting and committee, environmental training, emergency preparedness, environmental incident investigation and analysis, environmental inspection, environmental audit, environmental improvement plan, dust control plan, noise control plan, wastewater control plan, waste control plan, and pollutants spillage control plan. The minimum Personal Protective Equipment (PPE) provision includes head protection, clothing, safety shoes, eye protection, hearing protection, respirators, gloves, safety belts, and safety harnesses.

5.2.3 Flood Risk Assessment

Flooding is one of the most common and significant natural hazards in the Yangon Region, especially during the monsoon season from June to September. Yangon lies in a low-lying deltaic area with a complex river and drainage network, including the Yangon, Bago, and Hlaing rivers. Intense and prolonged rainfall, coupled with poor drainage infrastructure and rapid urbanization, often causes flash floods and waterlogging in many townships. The following figure shows flood risk percentage of townships in Yangon Region.

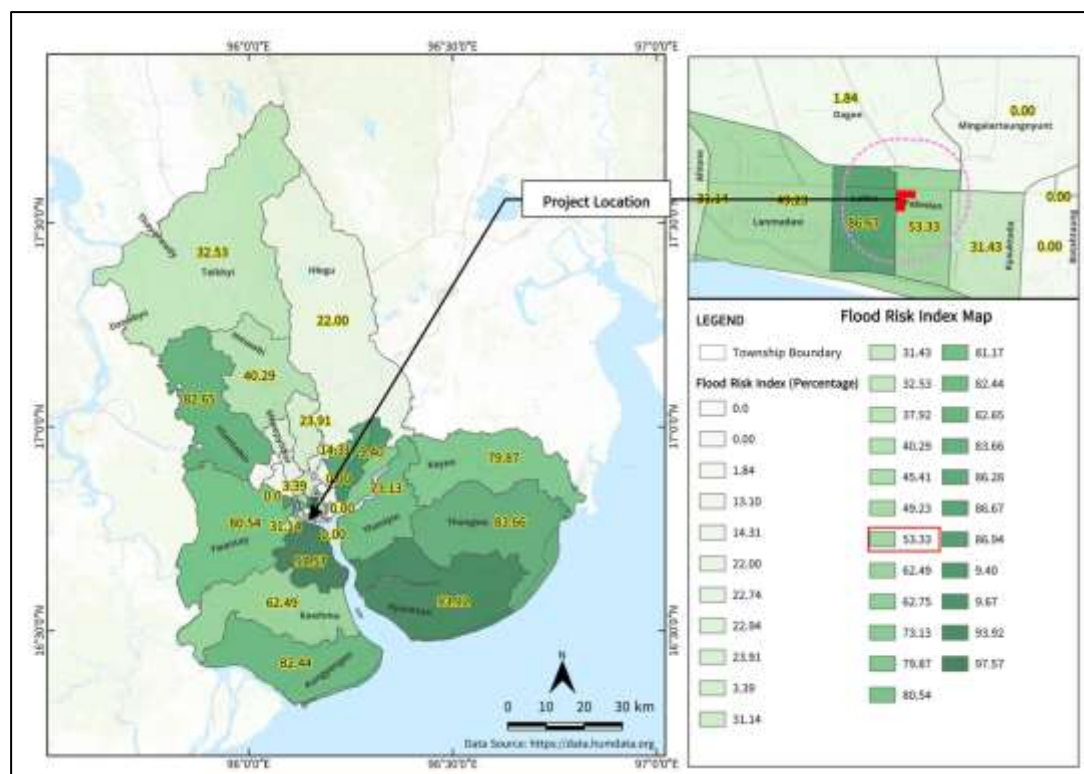


Figure 5-2 Flood Risk Percentage of Townships in Yangon Region (Source: <https://data.humdata.org>)

The Yangon Region demonstrates varying levels of flood risk across its townships, with Flood Risk Index (FRI) values ranging from 0.00% to 97.57%. Townships in the southern and western parts of the region generally face higher flood risk, while urban central areas tend to have lower flood risk.

The project area lies within the Pabedan Township, located in the downtown zone of Yangon. According to the map, this township has a flood risk index of 53.33% in this location. It is surrounded by other high-risk urban townships such as Ahlong (31.14%), Lanmadaw (49.23%), Latha (86.67%), Kyauktada (31.43%).

This suggests that the risk index of the project is determined as moderate. The project's construction period was already completed and the project's internal drainage network (surface drains, culverts, and outlet channels) were designed in compliance with the Yangon City Development Committee (YCDC) standards. Therefore, the drainage was adequately sized, sloped, and connected to municipal drains, the likelihood of waterlogging or overflow will be minimal.

The proposed project was built on following Flood Resilience:

Stability against hydrostatic pressure and soil loads due to flooding is verified in accordance with:

- Section 3.2.2.2 - Soil Loads and Hydrostatic Pressure

Response Measure for Flood

The Junction City's ERT will prepare and respond according to the emergency response plan.

Secure lower-level infrastructure (Retail/Carpark) and ensure Guest/Associate safety from waterborne hazards.

Phase 1: Prevention & Preparedness

- **Hardware Readiness:** Inspect and service all submersible pumps and sump pits. Maintain a stockpile of sandbags at the B1/B2 entry points.
- **Drainage Clearing:** Two times a month flushing of internal horizontal drainage pipes to prevent debris accumulation.

Phase 2: Spontaneous Response (During Flood)

- **Zone Containment:** Deploy sandbags at all pedestrian and vehicular entrances. Activate high-capacity sump pumps in low-lying utility areas.
- **Vertical Evacuation:** Move residents and high-value assets to identified Safe Zones (Floor 5 and above).
- **Communication:** Continuous real-time water level updates via PA System (Burmese, English, Chinese).
- **Safety Kits:** Distribution of waterproof emergency supplies to residents in affected areas.

Phase 3: Recovery & Decontamination (Post-Flood)

- **Water Safety:** Immediate decontamination of water storage tanks to prevent waterborne diseases (Cholera, Typhoid).
- **Systems Audit:** Inspect all underground electrical transformers and cabling for water damage before full power restoration.
- **Environmental Compliance:** Dispose of silt and flood debris in accordance with Myanmar's Environmental Conservation Rules.

5.2.4 Earthquake Risk Assessment

Although Yangon is not located directly on a major fault line, Myanmar is a seismically active country. The Sagaing Fault, a major strike-slip fault, runs north-south through the country and poses a significant earthquake threat. Tremors from nearby seismic activity can be felt in Yangon, and the city remains at moderate risk of damage from earthquakes due to its aging infrastructure and lack of earthquake-resistant buildings.

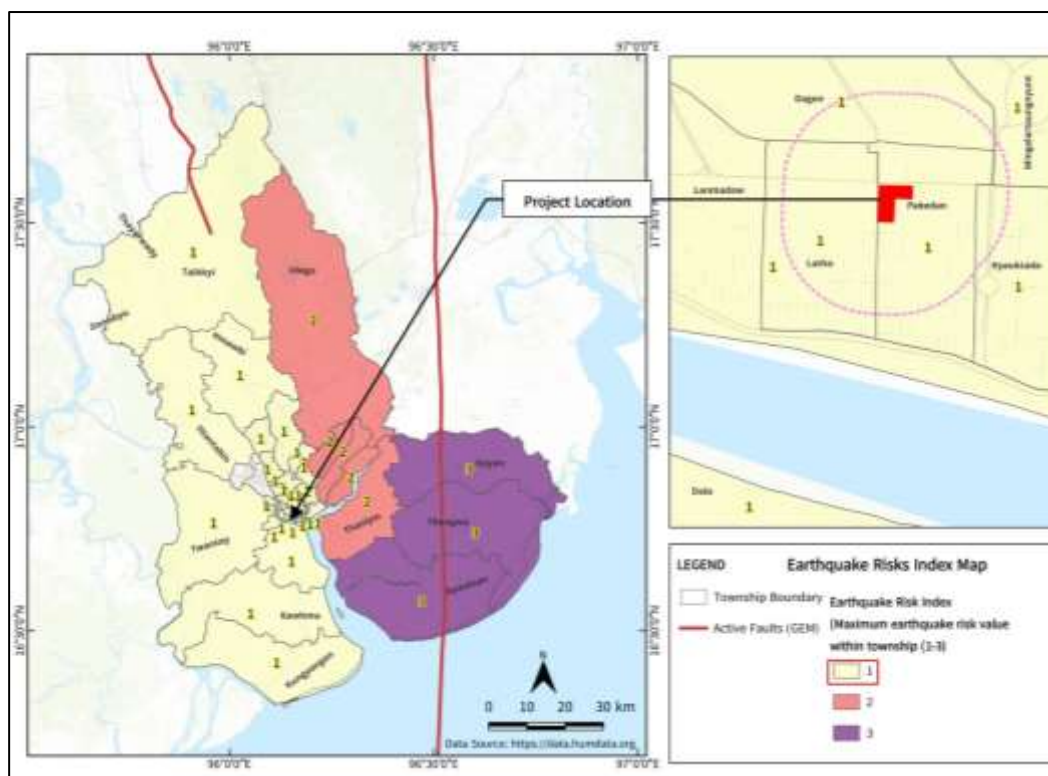


Figure 5-3 Earthquake Risk of Townships in Yangon Region (Source: <https://data.humdata.org>)

The figure shows the earthquake risk across townships in the Yangon Region is categorized into three levels: Low (1), Medium (2), and High (3), based on the Earthquake Risk Index. The project area, located near Pabedan Township, is within the 500 m AOI (Area of Interest) and is considered a low-risk zone (1) based on the Earthquake Risk Index. However, it is situated in close proximity to an active fault line, marked in red on the map. This proximity to a fault zone warrants careful consideration in construction, planning, and infrastructure design, despite its current low-risk classification, due to the potential for increased seismic impact in future events.

The development incorporates structural safety and natural disaster resilience into its design in accordance with established practices and national guidelines. Risk assessment and structural integrity are ensured through adherence to the Myanmar National Building Code (MNBC).

Codes of Practice / Technical Guidelines

Checked

ACI 318-14	Structural Use of Concrete	Yes
MNBC 2020	Structural Design & Loadings	Yes
HPBC	Structural Guidelines	Yes

Key provisions followed include:

Part 3 - Structural Design:

- Ensures the overall stability and integrity of the building structure.

Part 4 - Soil and Foundation to ensure safety and serviceability:

- Addresses safety and serviceability of foundation systems, accounting for site-specific geotechnical conditions.

Natural Disaster Resilience Measures:

Seismic and Wind Loads:

Structural design includes provisions for earthquake and storm resistance based on:

- Section 3.3 - Wind Design Criteria
- Section 3.4 - Seismic Design Criteria and Design Requirements for Buildings

Regarding seismic protection, when considering the lateral load resisting system for the highrise building, dual System with Special Moment-Resisting Frames system which is capable of resisting at least 25% of prescribed seismic force and vertical loadings will be considered in the design scheming process.

Response Measure for Earthquakes

Disaster is an abrupt adverse or unfortunate extreme event, which causes severe damage to human beings, plants, and animals. The emergency response plan is considered because of the buildings in the project area. The project proponent has to be aware of the natural disasters that may affect on lives by physical and emotional and loss of productivity. The Shwe Taung Junction City Development's ERT will prepare and respond according to the emergency response plan.

Earthquake (Call Sign: Quebec Quebec)

Phase 1: Preparedness (Before)

- Secure heavy furniture, kitchen appliances, and IT server racks to walls/floors.
- Maintain emergency go-bags (flashlights, batteries, water) at every security post.
- Identify "safe pockets" in guest rooms and offices away from glass facades.
- Quarterly structural inspections of the Special Moment-Resisting Frames and seismic joints for any signs of fatigue.
- Ensure all floor wardens are trained in "Drop, Cover, and Hold On" leadership for guest areas.

Phase 2: Immediate Response (During - Shaking)

- **Instruction:** Automatic activation of Seismic Alarms. Voice instructions in Burmese, English, and Chinese. "Drop, Cover, and Hold On." Stay away from windows and mirrors.
- **ERT Action:** Duty Engineer to manually verify automatic gas shut-off valves and prepare to isolate main electrical breakers if required.
- **Lifts:** All elevators will automatically home to the nearest floor and doors will open. DO NOT use lifts.

Phase 3: Stabilization (After-Shaking Stops)

- **Evacuation:** Once shaking stops, ERT Leader initiates evacuation to Assembly Points via stairs only.
- **Assessment:** CMT Leader coordinates with local authorities and structural engineers for a damage assessment. No re-entry permitted until a Green Label (Safe for Entry) is issued.
- **Infrastructure Restoration:** Restore essential utilities (water, gas, electricity) only after thorough pressure testing of lines to check for fractures.

To reduce emotional stress and physical productivity loss, Junction City implements the following:

Multi-Lingual Communication: All alerts and instructions are delivered in three languages to accommodate the diverse guest profile.

Redundancy Systems: Dual water pumps and dual power feeds ensure that local township failures do not immediately impact the project's residents.

24/7 ERT Presence: A specialized Emergency Response Team is on-site at all times, capable of initiating the first point of contact within 3 minutes for any disaster category.

5.3 Characterization and Assessment of Residual Impacts

Through careful design, planning, and implementation, supported by a robust Environmental Management and Monitoring System (EMMS), the project has been structured to minimize potential adverse impacts on the physical, biological, and socio-economic environments.

All project components, from site development and drainage design to biodiversity conservation and community engagement have incorporated mitigation measures consistent with the IEMA (2004) and EIA procedures and guidelines.

It is anticipated that routine operational activities will not cause significant negative environmental consequences, except for solid waste generation, which remains the most notable ongoing environmental concern. In addition, resource consumption (including electricity, water, and fuel use) and traffic congestion is expected to exert moderate impacts on the environment due to the project's operational requirements. These impacts, however, are considered manageable and reversible through the implementation of appropriate mitigation and management strategies.

Solid waste will be effectively managed through source segregation, systematic collection, and environmentally sound disposal, in accordance with the Yangon City Development Committee (YCDC) Solid Waste Management Regulations. Traffic congestion impacts will be minimized by implementing traffic management plans, optimizing entry and exit flow to ensure safe and efficient vehicle movement during peak hours.

The evaluation of residual impacts has been conducted based on professional judgment and established environmental impact assessment criteria, taking into account the magnitude, duration, probability, and receptor sensitivity of each potential impact.

Following implementation of the proposed mitigation and monitoring measures, all remaining (residual) impacts are expected to be minor, short-term, and not significant under the IEMA (2004) significance classification framework.

6. COMULATIVE IMPACT ASSESSMENT

As part of the Environmental Impact Assessment (EIA) process, the Cumulative Impact Assessment (CIA) evaluates the collective environmental impact of the proposed project in combination with other existing and reasonably foreseeable developments. In accordance with the EIA Procedure (2015), this section includes the following:

- Brief description and map of relevant existing and future private and public projects and developments.
- Identification and assessment of the potential cumulative impacts on the components in the surrounding environment and the Project's contribution to such impacts.
- Determination of the leverage and influence that the Project may have over the significant and project related cumulative impacts.
- Description of measures to mitigate the Project's contribution to the cumulative impacts.

6.1 Objective

The objective of this Cumulative Impact Assessment (CIA) is to evaluate and address the combined impacts of Junction City Mixed-Use Development Project alongside other private and public developments in the vicinity area of the project site. This assessment focuses on Valued Environmental and Social Components (VECs) that may be affected by industrial activities, with the aim of developing strategies to mitigate Junction City Muxed-Use Development Project's contributions to cumulative impacts on air quality, noise levels, water resources, waste management, traffic flow, public services (utilities, healthcare, education) near the project area.

6.2 Methodology and Approach: Rapid Cumulative Impact Assessment (RCIA)

The CIA employs the RAPID Cumulative Impact Assessment (RCIA) method, which provides a streamlined approach to assess cumulative impacts in a focused yet efficient manner. This method emphasizes evaluation of the interactions between multiple projects and their impacts on VECs. RCIA involves identifying relevant VECs, assessing cumulative impacts based on existing and future developments, and recommending mitigation measures.

- Brief descriptions and maps of relevant existing and future private and public projects and developments
- Identification and assessment of the potential cumulative impacts on the components in the surrounding environment and the Project's contribution to such impacts
- Determination of the leverage and influence that the Project may have over the significant and project- related cumulative impacts
- Description of measures to mitigate the Project's contribution to the cumulative impacts'

Cumulative impacts on VECs will be assessed as follows:

- Identification of VECs and Boundaries
- Relevant Existing and Future Private and Public Project Development
- Assessment of Cumulative Impacts on VECs
- Design of the Management Strategies: Measures to Mitigate the Project's Contribution to the Cumulative Impacts

Full-fledged CIA requires a multi-party coordination of data collection and assessment efforts including the (local, responsible) government unit as a key agent in order to assess collective and time-consuming assessment of key environmental and social impacts of a range of projects in the past, present and in the near future in the broader areas of influence beyond an area of direct influence of a particular project. Thus, it is beyond the scope of an EIA assessor of an EIA study team.

6.3 Spatial and temporal Boundaries

The cumulative impacts should be assessed as the successive, incremental and/or combine effects arising from the project together with other existing and/or future projects, other development activities within a defined spatial and temporal framework in two aspects:

- i. the surrounding natural and social environments
- ii. on the project itself

6.3.1 Spatial Boundaries

The Area of Interest (AoI) for a resource or receptor is defined based on the nature of the changes caused by project activities and the type of impact being assessed. It includes all areas where the project's effects are likely to occur. Environmental and social components within the AoI, as well as a 1 km radius around the project, will be studied. If significant impacts are anticipated, the study area may be expanded to include additional environmental and social components that could be significantly affected by the project.

6.3.2 Temporal Boundaries

The proposed Junction City Muxed-Use Development Project is located is located at the Corner of Bo Gyoke Aung San Road and Shwe Dagon Pagoda Road, Pabedan Township, Yangon, Myanmar. The Bo Gyoke Aung San Market is located at the eastern part of the project and Holy Trinity Church is located at the northside of the project. At the western part of the project, Yangon General Hospital is located. In particular, the Project Site lies within the Junction City Mixed-Use Development influence area, which represents one of Yangon's most prominent urban cores. The site is strategically located close to major city landmarks and activity generators, including:

- Maha Bandula Park
- Bogyoke Aung San Market
- Sule Pagoda
- Theingyi Market

The project itself was already developed. Therefore, operation phases impacts will be considered in this section, the project is expected to air quality, noise levels, water resources, waste management, traffic flow, public services (utilities, healthcare, education) near the project area. Positive socio-economic changes are also anticipated during these phases. Therefore, the temporal boundaries will encompass the operation, and decommissioning phases to assess the project's environmental and socio-economic impacts.



Figure 6-1 The existing infrastructure 500 m vicinity of the project area

The co-existence and continued development of diverse infrastructures within a 1 km vicinity have both positive and negative cumulative impacts. There were four types of co-existence and diverse infrastructure were observed within the 1 km vicinity of the project site.

- Bogoyoke Aung San Market (cultural/commercial hub)
- Holy Trinity Church
- St. Mary's Cathedral
- Yangon General Hospital (highly sensitive)
- Sule Pagoda (cultural heritage)
- National Theatre of Yangon

Table 6-1 *Impacts Significant for the Cumulative Impact Assessments*

Valued Environmental Component (VEC)	Spatial AOI	Baseline Condition	Other Contributing Activities	Potential Cumulative Impact	Significance (Pre-Mitigation)	Mitigation & Management Measures	Residual Impact
Air Quality	500 m (primary) / 2 km (secondary)	Ambient PM _{2.5} , PM ₁₀ , NO ₂ elevated but within NEQEG due to traffic	Traffic congestion, nearby commercial buildings, generators, construction activities	Incremental increase in PM, NOx during construction and peak operation	Moderate (urban-sensitive receptors)	Dust suppression, low-emission generators, traffic management, covered material transport	Minor
Noise & Vibration	500 m	Baseline noise high (urban traffic); hospital and religious sites sensitive	Road traffic, commercial loading, nearby construction	Short-term construction noise; operational traffic noise	Moderate	Restricted working hours, noise barriers, equipment mufflers, vibration monitoring near hospital	Minor
Traffic & Accessibility	500 m - 1 km	Congested arterial roads	Market traffic, buses, taxis, pedestrians	Increased congestion during peak hours	Moderate	Traffic Impact Assessment (TIA), staggered deliveries, traffic marshals	Minor
Water Quality & Drainage	500 m - 2 km	Urban stormwater drains under pressure	Nearby developments, road runoff	Increased pollutant load during construction runoff	Moderate	Sediment traps, oil separators, drainage system	Minor
Solid Waste	Site + municipal AOI	Existing municipal waste burden	Commercial centers, markets	Increased municipal waste volume	Moderate	Waste segregation, recycling contracts, licensed disposal	Minor
Cultural Heritage	500 m	High density of protected cultural assets	Tourism, traffic vibration	Visual intrusion, vibration risk	Moderate	Design controls, vibration limits, heritage authority coordination	Minor

Community Health & Safety	500 m	High pedestrian density	Traffic, street vendors	Accident risk during construction	Moderate	Hoarding, signage, pedestrian safety plans	Low
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7. ENVIRONMENTAL MANAGEMENT PLAN

This document provides the Environmental Management Plan (EMP) for the “Junction City Mixed-Use Development Project”. It aims to provide an environmental and social management framework by outlining the compliance requirements, mitigation measures and monitoring programs to be undertaken throughout the project implementation.

With the proper application of appropriate impact and risk management techniques and by implementing prescribed mitigation measures by appropriately trained and experienced individuals, most environmental and social impacts can be avoided or reduced to a lower level of probability.

7.1 Scope of EMP

This EMP is the means by which the findings of the environmental impact assessment are implemented during the construction, operation and decommissioning phase of the development. The scope of the EMP covers all of the project activities as described in CHAPTER 3 of the EIA, with the objective of demonstrating compliance with relevant national and international legislation.

The EMP lists the obligations and responsibilities of each party involved in the project; stipulates methods and procedures that will be followed, and outlines the environmental and social management actions that will be implemented.

7.2 Purpose and Objective of EMP

This EMP has been prepared based on the finding of the impact assessment and describes management measures designed to mitigate potential environmental and social impacts of the proposed project. Mitigation strategies have been considered according to a series of responses that address impacts to avoid, prevent or reduce any potential impact on the identified sensitive receptors.

The objectives of the ESMP are to:

- Demonstrate continuing compliance with the relevant Myanmar environmental legislation and occupational health and safety
- Describe the mechanism for implementing identified control, monitoring and management measures to mitigate potentially adverse impacts
- Provide assurance to regulators and stakeholders that their requirements with respect to environmental and social performance will be met
- Undertake monitoring to provide assurance that the control and management measures are being implemented and
- Combine all of the above in a systematic framework of monitoring, reporting and management that will measure the successful implementation of the project in accordance with Myanmar National Building Code for social and environmental performance, and respond as needed to maintain those objectives.

7.3 Project's Environmental, Socio-economic Policies and Commitments, Legal Requirements and Institutional Arrangements

7.3.1 Legal Requirements

Under Section 7 of the Environmental Conservation Law and Articles 52 and 53 of the Environmental Conservation Rules of the Republic of the Union of Myanmar, Shwe Taung Junction City Development Company Limited is required to undertake an EIA to obtain an Environmental Compliance Certificate (ECC) for the “Junction City Mixed-Use Development Project”. The project is undertaken in line with a number of national and local standards and laws. Local laws relating to EIA include: Environmental Conservation Law (2012); Environmental Conservation Rules (2014); National Environmental Quality (Emission) Guidelines (2015); and Environmental Impact Assessment Procedure (2015). A full list of laws and their relevance to the Project is provided in Section 2. With the published of the final Myanmar EIA Procedure in December 2015, the National Environmental Quality (Emissions) Guidelines were also published. These Guidelines provide the basis for regulation and control of noise and air emissions and effluent discharges from projects in order to prevent pollution and protect the environment and public health. These standards are noted to be based on the standards as recommended by the IFC General EHS Guidelines (2007 & 2015).

7.3.2 Responsibilities of Implementation of EMP for Compliance

In order to ensure the sound development and effective implementation of the EMP, it will be necessary to identify and define the responsibilities. The environmental management practices, procedures, and responsibilities defined herein to get full compliance with the existing environmental policy, laws, rules, and regulations of the Republic of the Union of Myanmar. The following entities should be involved in the implementation of this EMP:

1. Shwe Taung Junction City Development Company Limited
2. Environmental Conservation Department
3. Third-Party Organization

Shwe Taung Junction City Development Company Limited- Shwe Taung Junction City Development Company Limited is committed to providing resources essential to the implementation and control of the EMP. Resource includes appropriate human resources and specialized skills. The structure for the organization responsible for environmental and social management and implementation of the ESMP is depicted in Table 7-1.

7.3.3 EIA Implementation Team

Table 7-1 *Organizational Tasks and Responsibility of Implementation Team*

Role	Responsibility
Top management (Safety and Health Committees)	set the policy, rules and regulations for safety and environment programs
SOD manager	Management of CSR, Environmental Team, Safety Team
CSR team	Communities relation, Government Relation, Communities Development programs, Education, Religions and other correspondent activities
Environment Team	inbound and outbound monitoring process, plantation, waste management
Safety team	employees' and workplace safety such as fire safety, workplace safety, vehicles and road safety
Liaison Officer	-To liaise with the different stakeholders from government offices, communities and other associated organization like consultants, NGOs, etc. -To receive the grievances/complaints related with the project activities via suggestion box, on call, email or by person and address and close the complaints according with the adequate communication and management actions

ECD - The responsibility of ECD is to exercise general supervision and coordinating over all matters relating to the environment and to be instrumental in providing guidance for recognized regulatory frameworks.

Third Party Environmental Consultant - The environmental consultant will have to ensure that the proposed EMP is up to date and is being followed properly by the proponent. Periodic audits of the EMP will have to be done to ensure that its performance is as expected, by comparing with operating standards so that any corrective actions can be taken.

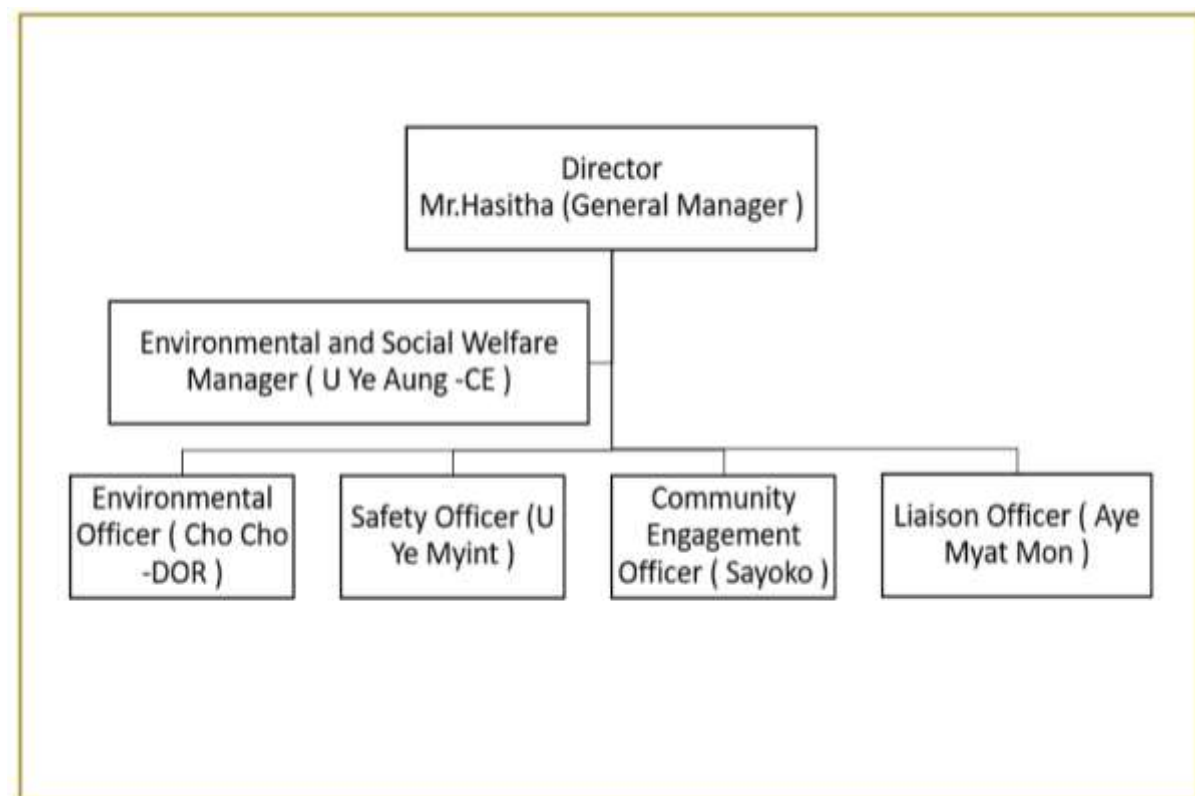


Figure 7-1 EIA Implementation Team

7.3.4 Capacity Building Programs for Staff Implementation of EMP

Fire Drill and tool box meeting are already in place and other training programs for capacity building of staff members who will be implementing EMP will be arranged as necessary. The trainings organized for the EMP staff including but not limited to:

- ✓ Environmental Protection Awareness Training
- ✓ Environmental Health and Safety Training
- ✓ Environmental Protection & Hazardous Waste Management Training
- ✓ Waste Management Training
- ✓ Emergency Preparedness Training

7.4 Environmental Management Plan

7.4.1 Operation Phase

Potential Impacts	Location	Mitigation Measures	Timeframe	Estimated Cost (MMK)	Implementing Organization	Residual Impact	Responsible Organization
Physical Environment							
Air Pollution	Generators, Hotel, Office, recreational area such as retail shops and restaurants, vehicle movement	✓ Keep all doors and windows closed in air-conditioned spaces ✓ Caulk all windows and doors to stop air leakage ✓ Ensure all door closing mechanism is functioning ✓ Ensure air-conditioning units are serviced as scheduled ✓ Check temperature controls frequently to ensure proper operation ✓ Clean all supply and return air grilles as scheduled ✓ Use MVAC (Mechanical, Ventilating, Air Conditioning) System, in respect to the Chillers, Air handling units (AHU's), fan coil units (FCU's), fresh air and extract fans and associated ancillary equipments. The Systems was utilized in Office, Retail and Hotel area of the Junction City. ✓ Ensure all internal roads and parking areas are paved and regularly cleaned to minimize dust emissions.	Throughout the lifespan of project	1,200,000/year	EIA Implementation Team	Negligible	Shwe Taung Junction City Development

Potential Impacts	Location	Mitigation Measures	Timeframe	Estimated Cost (MMK)	Implementing Organization	Residual Impact	Responsible Organization
		✓ Spray water in open areas where dust generation is high during windy conditions.					
Wastewater	Drainage system, waste disposal area, treated water discharge area	✓ Applying Solid Waste Management System covering disposal system, quantity of waste, bin center which was approved by YCDC (Details can be seen in Operation Phase, Mitigation Measures for Physical Environment, Generation of Solid Waste); and Mitigation Measures. ✓ The wastewater treatment plant had a design capacity of 1,300 m³/day for the whole development. The system is currently working at approximately 40% of its design capacity, meaning the MBR technology is well-equipped to handle future occupancy increases or peak events.	Throughout the lifespan of project	1,200,000/year	EIA Implementation Team	Negligible	Shwe Taung Junction City Development
Ground water quality	Water usage, solid waste disposal area, fuel storage area and chemical storage area	✓ Solid waste management system was applied. ✓ The back-up generator/transformers were placed in a room of concrete paving with impervious underlying layer. ✓ The oil, fuels and lubricant for different purposes of operation will be transported, handled and stored with care.	Throughout the lifespan of project		EIA Implementation Team	Minor	Shwe Taung Junction City Development

Potential Impacts	Location	Mitigation Measures	Timeframe	Estimated Cost (MMK)	Implementing Organization	Residual Impact	Responsible Organization
		✓ The concrete paving with impervious underlying layer will be provided for the area of oil and lubricant storage and changing.					
Generation of Solid Waste	Residential area, recreational area	✓ Solid wastes were segregated through color coded waste bins provided at office tower, shopping center and hotel tower. ✓ Dry Waste from Hotel Rooms, Shopping Center, Office Tower and Carparking were divided into 2 types of Dry Wastes. ✓ Dry Waste: A total number of (15) Plastic 660-liter (0.66m³) wheeled bins was used to collect Dry waste and at least 5 times to 6 times per month. Recyclable wastes were segregated accordingly to the processes and disposed with Golden Dowa Eco System Myanmar Co., Ltd. Non-recyclable wastes were compressed with compactor with 12 m³ capacity and collect & pick up by YCDC. The ratio of available handling capacity to actual waste generation is 4.8 times capacity safety factor. ✓ Kitchen Waste: A total number of (10) Plastic 660-liter (0.66m³) wheeled bins was used to collect kitchen waste and temporarily	Throughout the lifespan of project	6,000,000/year	EIA Implementation Team	Minor	Shwe Taung Junction City Development

Potential Impacts	Location	Mitigation Measures	Timeframe	Estimated Cost (MMK)	Implementing Organization	Residual Impact	Responsible Organization
		disposed to Cool Room area and stored in designated cool Room and collect & pick up by YCDC. While comparing storage capacity with daily generation is equal to 1.46 days of storage capacity. This indicates that the system provides sufficient buffer capacity for approximately 1.5 days of kitchen waste generation under static conditions. ✓ Grease Waste: Grease Waste from kitchen of Hotel and Shopping Center were collected (1) time per (2) weeks with Plastic bag and stored in STP with containers and (1) time per (2) month collected and disposed via YCDC. ✓ Sludge Waste: Sludge waste from wastewater treatment plant were collected with plastic bag and stored with containers in STP and collected and disposed via YCDC. ✓ Provided designated waste bin at each floor and regularly collected through shifts.					
Greenhouse gas emissions	Residential area, recreational area and	✓ Erecting the information board of greenhouse gases sources, impacts and mitigation in the project compound to raise the community	Throughout the lifespan of project	5,000,000/year	EIA Implementation Team	Negligible	Shwe Taung Junction City Development

Potential Impacts	Location	Mitigation Measures	Timeframe	Estimated Cost (MMK)	Implementing Organization	Residual Impact	Responsible Organization
	vehicle movements	awareness (including vehicles' drivers); ✓ Encouraging the residents and other users of the project buildings to use the environmentally friendly electrical appliances (which are Environmental Compliance Certified appliances); ✓ Using low-sulphur fuel for back-up generators; ✓ The development's M&E systems are designed in accordance with GHA standards. ✓ The central water-cooled chiller plant provides higher efficiency compared to air-cooled chiller systems, and CO₂ sensors are installed to regulate outdoor air flow rates to maintain good indoor air quality (IAQ). ✓ For the ACMV system, VFD types are used, and all FCUs and AHUs are equipped with thermostats. All façade glass is double-glazed with proper sealing, and all 3-phase power drive motors are equipped with VFD drives. ✓ Approximately 90% of the building uses energy-efficient LED lighting.					

Potential Impacts	Location	Mitigation Measures	Timeframe	Estimated Cost (MMK)	Implementing Organization	Residual Impact	Responsible Organization
		The central hot water system is equipped with a heat pump system. ✓ Walk-in chillers utilize closed-type heat exchanger systems. All sanitary ware is TOTO brand with eco-system features. ✓ Additionally, all elevators are energy-efficient regenerative lifts, providing up to 35% energy savings. Heat-reducing double-glazed façade glass with low emissivity is used throughout the building, and all AHU condensate is redirected to the cooling tower system.					
Social Environment							
Community grievances	All operation area	✓ Implementing the established community grievances mechanism consisting of 7 basic steps for solving the grievances: Receive, Acknowledge, Assess and assign, Investigate, Respond, Recourse or appeal, and Follow up and close out.	Throughout the lifespan of project	5,000,000/year	EIA Implementation Team	Minor	Shwe Taung Junction City Development
Increased traffic congestion	Carpark, Ingress and Egress	✓ Implement comprehensive directional signage, parking guidance systems, speed limit signs (e.g., 15-20 km/h), and pavement markings to guide drivers safely and efficiently.	Throughout the lifespan of project	1,200,000/year	EIA Implementation Team	Minor	Shwe Taung Junction City Development

Potential Impacts	Location	Mitigation Measures	Timeframe	Estimated Cost (MMK)	Implementing Organization	Residual Impact	Responsible Organization
		✓ Use speed bumps, raised tables, and distinct pedestrian crossings to enforce slow speeds and protect pedestrians. ✓ Ensure the parking spaces and internal traffic to flow smoothly to prevent circling and internal queues. ✓ Use sensors and digital displays to direct drivers to available parking spots, reducing search time and internal congestion. ✓ Clearly mark parking areas for different user groups (office, visitors, retail, hotel). ✓ Ensure internal roads and drop-off zones can handle the increased traffic volume without spillover onto public roads. ✓ Continuous focus on safe pedestrian crossings within the site, given the higher number of people moving between office, retail, and hotel areas. ✓ Ensure retail and service deliveries do not create bottlenecks during peak operational hours. ✓ Periodically review the traffic situation.					
Increased Water Use	All operation area	✓ Construction of permeable road at the project inner ring road to allow storm water to recharge ground water;	Throughout the lifespan of project	1,200,000/year	EIA Implementation Team	Minor	Shwe Taung Junction City Development

Potential Impacts	Location	Mitigation Measures	Timeframe	Estimated Cost (MMK)	Implementing Organization	Residual Impact	Responsible Organization
		✓ Equipped with main water meter at each building and water meters for each dwelling including retail shops, hotel, restaurants and all other project components; ✓ Treating grey water (wastewater from sinks, showers, baths, clothes washing machines or dish washers) in sewage treatment plant and reusing for toilet flushing, landscape or other non-potable uses; ✓ Check all public and office toilets and report the following for repair: leaking valves on lavatories or sinks, leaking toilets; ✓ Check all toilets flushometers and cistern type water closets for proper flow and water quantities; ✓ Install flow controllers for all faucets; ✓ Install urinal sensors for auto flushing; ✓ Regular checking, fixing and maintenance of water pipes and accessories to avoid leakages.					
Increased Electricity Use	All operation area	Public Spaces Lighting ✓ Lower all lighting levels during late night and daylight hours ✓ Use colour coding or marking for all light switches operated by the Front	Throughout the lifespan of project		EIA Implementation Team	Negligible	Shwe Taung Junction City Development

Potential Impacts	Location	Mitigation Measures	Timeframe	Estimated Cost (MMK)	Implementing Organization	Residual Impact	Responsible Organization
		Office. Stress the importance of turning on only what is required. ✓ Increase lighting efficiency by cleaning walls, ceilings for better light reflection ✓ Use lamp shades which permit light to pass through ✓ Set a routine lamp and light fixtures cleaning schedule. ✓ Clean fixture produces more light illumination ✓ Review lighting levels in public spaces in order to use the minimum light levels consistent with safety and guest comfort Office space Lighting ✓ Turn off all unnecessary lights ✓ Instruct associates to use minimum lights during after hours clean-up and to turn off lights when they leave unoccupied areas ✓ When adequate natural light is available, avoid using electric lights ✓ Clean space during daylight hours when possible to reduce use of lights for this purpose ✓ Consider using fluorescent or energy saving lights where applicable ✓ Use single, larger, incandescent lamp instead of two smaller ones. E.g. One					

Potential Impacts	Location	Mitigation Measures	Timeframe	Estimated Cost (MMK)	Implementing Organization	Residual Impact	Responsible Organization
		100 watts lamp produces more light output than two 60 watts lamps (saving of 20% energy bill) ✓ Use lamp shades which permit light to pass through ✓ Install reflectors for light fittings where applicable ✓ Instruct associates to turn off cooling and heating units in unoccupied offices and areas ✓ Instruct associates to close outside doors and windows in unoccupied offices when they have completed cleaning the areas ✓ Repair door closing mechanism to ensure doors are closed properly ✓ Shut down elevators during off peak hours ✓ Use light colors on walls and ceilings for better light reflection					
Community Health and Safety	All operation area	✓ Implementation of wastewater treatment system, solid waste management system; ✓ Implementation of mitigation measures for increased traffic and associated risks (as mentioned in Traffic Analysis); ✓ Following guidelines of Committee for Quality Control of High-Rise Building Construction Projects	Throughout the lifespan of project	5,000,000/year	EIA Implementation Team	Negligible	Shwe Taung Junction City Development

Potential Impacts	Location	Mitigation Measures	Timeframe	Estimated Cost (MMK)	Implementing Organization	Residual Impact	Responsible Organization
		(CQHP), Yangon City Development Committee namely, Mechanical Guideline, ACMV Guideline, Electrical Guideline, Water Supply & Sanitation Guideline, Structure Guideline, Safety Guideline and Deep Excavation Guideline; ✓ Following the standards, norms and guidelines of Myanmar Fire Brigade (Myanmar Fire Services Department) and incorporating project buildings with fire protection and safety system; ✓ Following Company's Emergency Plan and Procedures for Fire and Emergency Plan; ✓ Following YCDC's guidelines and according to their approval, abstraction of groundwater and/or surface water will be done without compromising the availability of water for personal hygiene needs and potential future increases in demand of the community nearby.					
Occupational Health and safety	All operation area	✓ Use standardized incident reporting forms for documentation of hazard observations. ✓ Immediately report hazards to the Property Manager for evaluation and action.	Throughout the lifespan of project	6,000,000/year	EIA Implementation Team	Negligible	Shwe Taung Junction City Development

Potential Impacts	Location	Mitigation Measures	Timeframe	Estimated Cost (MMK)	Implementing Organization	Residual Impact	Responsible Organization
		✓ Isolate affected areas and contain hazards using trained housekeeping or engineering staff. ✓ Shut down and repair equipment as required by the engineering team. ✓ Conduct regular monitoring and audits by Property Officers or Building Services Engineers.					
Total = 31,800,000							

7.4.2 Decommissioning Phase

Potential Impacts	Location	Mitigation Measures	Time Frame	Estimated Cost (MMK)	Implementing Organization	Residual Impact	Responsible Organization
Physical Environment							
Air Pollution	All demolition site and activities	✓ Regular maintenance of demolition vehicles and machineries; ✓ Prohibiting unnecessary driving and moving at site and idling of vehicles; ✓ Strictly prohibition of open fire burning of materials or wastes; ✓ Turning off of engine when the vehicle is parking; ✓ Using low sulphur diesel in all machines and vehicles;	Throughout the decommissioning Phase	2,000,000/year	HSE Team	Minor	Shwe Taung Junction City Development

Potential Impacts	Location	Mitigation Measures	Time Frame	Estimated Cost (MMK)	Implementing Organization	Residual Impact	Responsible Organization
		✓ Developing and practicing demolition management ✓ procedures including the efficient use of vehicles and machineries; ✓ Conducting training for the workers on methods for minimizing air quality impacts prior to demolition work; ✓ Workers wearing masks who have to work in the dusty area; ✓ Using best technology for demolition process; ✓ Scheduling demolition during periods of low winds; ✓ Watering the site areas; ✓ Spraying water over the building that is going to be demolished; ✓ Spraying water onto debris before it goes down a debris chute; ✓ Covering or sprinkling demolished materials and stockpiles; ✓ Covering all trucks hauling demolished materials; ✓ Sweeping daily (with human sweepers) all paved ✓ access roads, parking areas and staging areas at site; and ✓ Implementation of demolition in phases to cushion the cumulative effects of dust which would be					

Potential Impacts	Location	Mitigation Measures	Time Frame	Estimated Cost (MMK)	Implementing Organization	Residual Impact	Responsible Organization
		great in case the demolition is done at once.					
Noise and vibration	All demolition site and activities	✓ Training the drivers and operators of demolition ✓ vehicles and machineries how to reduce the noise from their operations; ✓ Restriction of the demolition activities in night times; ✓ Regular maintenance of vehicles and machineries following the original manufactures' specifications and manuals to avoid excessive noise and vibration; ✓ Informing and discussing with the surrounding community in advance to avoid any impact on them, if ✓ the work producing excessive noise and vibration will need to be carried out; ✓ Providing the demolition workers with ear protection if they need to work in the high noise level work environment; ✓ Minimizing drop heights when loading vehicles with ✓ rubble;	Throughout the decommissioning Phase	3,000,000/year	HSE Team	Minor	Shwe Taung Junction City Development

Potential Impacts	Location	Mitigation Measures	Time Frame	Estimated Cost (MMK)	Implementing Organization	Residual Impact	Responsible Organization
		✓ Prohibiting vehicles from waiting within the site with their engines running or alternatively, located in waiting areas away from sensitive receptors; and ✓ Erecting local hoarding, screens or barriers to shield particularly noisy activities.					
Surface Water Hydrology	All demolition site and activities	✓ Piling and storing the demolished materials systematically in a temporary place in the project site which is away from the drains to avoid the drain blockage and consequent impact on surface water hydrology; ✓ Covering the piled debris with appropriate materials, if needed; ✓ Disposing the demolished materials on a regular basis; and ✓ Storing wastewater in detention tank for treatment and ✓ avoidance of the excessive direct flow of wastewater into the drains and receiving water.	Throughout the decommissioning Phase	3,000,000/year	HSE Team	Negligible	Shwe Taung Junction City Development
Water Contamination	All demolition site and activities	✓ Treating wastewater from demolition process with sewage treatment plant before discharging to the drainage; ✓ Providing portable toilets for workers;	Throughout the decommissioning Phase		HSE Team	Minor	Shwe Taung Junction City Development

Potential Impacts	Location	Mitigation Measures	Time Frame	Estimated Cost (MMK)	Implementing Organization	Residual Impact	Responsible Organization
		✓ Regular maintenance and checking the machineries, ✓ vehicles and sources which can cause oil spill and hazardous chemical spills (if found, the immediate repair and cleansing will be conducted); ✓ Systematic storage of fuels in project compound, handling and disposal of new oil and used oil waste; and ✓ Applying systematic waste management. ✓ Systematic stacking and piling of materials on site; ✓ Regular solid waste disposal at the dumping site designated by YCDC; ✓ Regular maintenance and check of the machineries, ✓ vehicles and sources which can cause oil spill and hazardous chemical spills (if found, the immediate repair and cleansing will be conducted); ✓ Systematic storage of fuels in project compound, and handling and disposal of new oil and used oil waste; and					

Potential Impacts	Location	Mitigation Measures	Time Frame	Estimated Cost (MMK)	Implementing Organization	Residual Impact	Responsible Organization
		✓ Providing mobile toilets and regular collection of sewage will be made by YCDC.					
Soil Contamination	All demolition site and activities	✓ Leaving existing vegetation uncut; ✓ Systematic stacking and piling of materials on site; ✓ Regular solid waste disposal at the dumping site designated by YCDC; ✓ Regular maintenance and check of the machineries, vehicles and sources which can cause oil spill and ✓ hazardous chemical spills (if found, the immediate repair and cleansing will be conducted); ✓ Systematic storage of fuels in project compound, and handling and disposal of new oil and used oil waste; and Providing mobile toilets and regular collection of sewage made by YCDC.	Throughout the decommissioning Phase	2,000,000/year	HSE Team	Negligible	Shwe Taung Junction City Development
Generation of Solid Waste	All demolition site and activities	✓ Conducting training to raise awareness of workers on solid waste management; ✓ Avoidance of unnecessary cutting and removing of vegetation plants; ✓ Providing different dust bins and skips at appropriate places for	Throughout the decommissioning Phase	6,000,000/year	HSE Team	Minor	Shwe Taung Junction City Development

Potential Impacts	Location	Mitigation Measures	Time Frame	Estimated Cost (MMK)	Implementing Organization	Residual Impact	Responsible Organization
		hazardous and non-hazardous waste and ✓ recyclables and non-recyclables; ✓ Transferring the demolished recyclable wastes to recyclers and the wastes which cannot be recycled to YCDC disposal site by either company's own ✓ arrangement or YCDC's garbage truck; and ✓ Practicing hazardous waste management including procedures for waste collection, waste temporary storage and waste transportation and disposal.					
Greenhouse Gases Emissions	All demolition site and activities	✓ Conducting training for drivers, operators and concerned staff on greenhouse emissions and mitigation measures; ✓ Prohibiting unnecessary driving and moving at site and ✓ idling of vehicles and demolition machineries as well; and ✓ Regular maintenance of vehicles and machineries.	Throughout the decommissioning Phase	3,000,000/year	HSE Team	Negligible	Shwe Taung Junction City Development
Social Environment							
Involuntary Resettlement	All demolition	✓ Preparing a resettlement plan and procedures by the developer and agreed by the affected persons	Throughout the decommissioning Phase	According to the mitigation measures plan.	HSE Team	Minor	Shwe Taung Junction City Development

Potential Impacts	Location	Mitigation Measures	Time Frame	Estimated Cost (MMK)	Implementing Organization	Residual Impact	Responsible Organization
	site and activities	(residents/owners of the different project buildings and components like offices, shopping centers and restaurants). ✓ The resettlement plan will include time-bound actions and a budget. The compensation, and resettlement ✓ packages would be designed to generally improve or at least restore the social and economic base of those to be relocated. The contents and level of detail of resettlement plans will generally include a statement of objectives, policies, and strategy and will cover the following essential elements: (i) organizational responsibilities, (ii) community participation and integration with host populations, (iii) socioeconomic survey, (iv) legal framework including mechanisms for resolution of conflicts, (v) identification of alternative locations and selection, (vi) valuation of and compensation for lost assets, (vii) infrastructure and social services, (viii) environmental protection and					

Potential Impacts	Location	Mitigation Measures	Time Frame	Estimated Cost (MMK)	Implementing Organization	Residual Impact	Responsible Organization
		management, and (ix) implementation schedule, monitoring and evaluation.					
Community grievances	All demolition site and activities	✓ Following Company's grievances mechanism mentioned in above sections.	Throughout the decommissioning Phase	3,000,000/year	HSE Team	Negligible	Shwe Taung Junction City Development
Worker grievances	All demolition site and activities	✓ Following Company's worker mechanism mentioned in above sections.	Throughout the decommissioning Phase		HSE Team	Negligible	Shwe Taung Junction City Development
Community Health and Safety		✓ Adopting mitigation measures for community health and safety	Throughout the decommissioning Phase	5,000,000/year	HSE Team	Negligible	Shwe Taung Junction City Development
Occupational Health and safety		✓ Following Company's Occupational Health and Safety Plan, Emergency Response and Preparedness Plan. ✓ Periodic medical check-ups for all workers to ensure that they are physically and mentally capable for their job positions, treatment for all workers of small injuries and illness, system to diagnose epidemic risks at their early stage of development and undertake all necessary actions in accordance with the advice of the designated hospital or local authority, and	Throughout the decommissioning Phase		HSE Team	Negligible	Shwe Taung Junction City Development

Potential Impacts	Location	Mitigation Measures	Time Frame	Estimated Cost (MMK)	Implementing Organization	Residual Impact	Responsible Organization
		education and training to all workers on the relevant health hazards, safe work practices and proper use of PPE) and Environmental Protection Plan (conditions and mitigation measures contained in the final Environmental Impact Assessment Report, ✓ Assigning duties and responsibilities for different positions, Project Environmental Management System including Environmental Policy and Objectives, Environmental Organization to ensure that the project Environmental objectives are met through implementation of technical activities and procedures, compliance with legal requirements, environmental aspects identification and assessment, evaluation, selection and control of contractors, environment meeting and committee, environmental training, emergency preparedness, environmental incident investigation and analysis, environmental inspection,					

Potential Impacts	Location	Mitigation Measures	Time Frame	Estimated Cost (MMK)	Implementing Organization	Residual Impact	Responsible Organization
		environmental audit, environmental improvement plan, dust control plan, noise control plan, wastewater control plan, waste control plan, and pollutants spillage control plan); and ✓ Following minimum Personal Protective Equipment (PPE) provision including head protection, clothing, safety shoes, eye protection, hearing protection, respirators, gloves, safety belts, and safety harnesses.					
Total = 27,000,000							

7.5 Environmental Monitoring Plan and Budget

7.5.1 Operation Phase

Potential Impact	Monitoring Item	Monitoring Means	Frequency of Monitoring	Responsible and Implementing Organization	Allocated budget per year (MMK)
Physical Environment					
Air Pollution	Content of PM2.5, PM10, NO2, SO2, Ozone, CO in air	AQ-1 16°46'42.06"N, 96° 9'12.88"E- Project Site AQ-2 16°46'47.53"N, 96° 9'14.31"E- Holy Trinity Anglican Church AQ-3 16°46'42.84"N, 96° 9'16.46"E- No (3), Basic Education Primary School	Two times per year	Shwe Taung Junction City Development	6,000,000
Noise	Noise level	NL-1 16°46'42.06"N, 96° 9'12.88"E- Project Site NL-2 16°46'47.53"N, 96° 9'14.31"E- Holy Trinity Anglican Church NL-3 16°46'42.84"N, 96° 9'16.46"E- No (3), Basic Education Primary School	Two times per year	Shwe Taung Junction City Development	1,200,000
Water Quality	pH, TSS, BOD, COD, Total Nitrogen, Total Phosphorus, Oil & Grease (NEQEG Guideline- 2.6.4)	DW 16°46'44.52"N 96° 9'14.92"E At the final discharged within the project site	Two times per year	Shwe Taung Junction City Development	1,000,000

Potential Impact	Monitoring Item	Monitoring Means	Frequency of Monitoring	Responsible and Implementing Organization	Allocated budget per year (MMK)
Ground Water Quality	pH, Colour, Turbidity, TDS, Total Hardness, Magnesium, Chloride, Free Chlorine, Nitrate, Arsenic, Iron, Lead, Manganese, Sulfate, Mercury, Fluoride	GW (Supply YCDC)- 16°46'44.42"N 96° 9'16.40"E- At the underground water tank which is the project site GW- 16°46'45.55"N 96° 9'15.71"E- At the ground water pipe line which is the project site	Two times per year	Shwe Taung Junction City Development	1,000,000
Generation of Solid Waste	Monitoring of mitigation measures Amount and kind of solid waste generated	Inspection, observation and recording	Monthly	Shwe Taung Junction City Development	3,000,000
Greenhouse Gases Emissions	Content of CO2 and HCFs in air	Measurement	Two times per year	Shwe Taung Junction City Development	2,000,000
Sub Total					14,200,000
Social Environment					
Community grievances	Monitoring of mitigation measures Number of community complaints	Inspection and recording	Monthly	Shwe Taung Junction City Development	3,000,000
Community Health and Safety	Monitoring of mitigation measures Number of traffic accidents, deaths and injuries	Inspection and recording	Monthly	Shwe Taung Junction City Development	

Potential Impact	Monitoring Item	Monitoring Means	Frequency of Monitoring	Responsible and Implementing Organization	Allocated budget per year (MMK)
Increased traffic congestion	Monitoring of mitigation measures	Inspection	Yearly	Shwe Taung Junction City Development	5,000,000
Increased Water Use	Monitoring of mitigation measures	Inspection and observation	Monthly	Shwe Taung Junction City Development	2,000,000
Increased Electricity Use	Monitoring of mitigation measures	Inspection and observation	Monthly	Shwe Taung Junction City Development	2,000,000
Occupational Health and safety	Number of work-related accidents	Inspection and recording	Monthly	Shwe Taung Junction City Development	2,000,000
				Sub Total	14,000,000

7.5.2 Decommissioning Phase

Potential Impact	Monitoring Item	Monitoring Means	Frequency of Monitoring	Responsible and Implementing Organization	Allocated budget per year (MMK)
Physical Environment					
Air Pollution	Content of PM2.5, PM10, NO2, SO2 in air	AQ-1 16°46'42.06"N, 96° 9'12.88"E- Project Site	Once per during decommissioning phase	Shwe Taung Junction City Development	6,000,000

Potential Impact	Monitoring Item	Monitoring Means	Frequency of Monitoring	Responsible and Implementing Organization	Allocated budget per year (MMK)
		AQ-2 16°46'47.53"N, 96° 9'14.31"E- Holy Trinity Anglican Church AQ-3 16°46'42.84"N, 96° 9'16.46"E- No (3), Basic Education Primary School			
Noise and vibration	Noise and vibration level	NV-1 16°46'42.06"N, 96° 9'12.88"E- Project Site NV-2 16°46'47.53"N, 96° 9'14.31"E- Holy Trinity Anglican Church NV-3 16°46'42.84"N, 96° 9'16.46"E- No (3), Basic Education Primary School	Once per during decommissioning phase	Shwe Taung Junction City Development	1,200,000
Surface Water Quality	pH, TSS, Ammonia-Nitrogen, Dissolved Oxygen, BOD, COD, Cyanide, Nitrate-Nitrogen, Nitrite, Arsenic, Lead, Copper, Cadmium, Nickel, Mercury, Chromium, Hexavalent), Phenol, Boron, Fluoride, Oil & Grease (National Surface Water Quality Standard, 2024 (Class V)	SW 16°46'44.52"N 96° 9'14.92"E- Surface water from the final outlet	Once per during decommissioning phase	Shwe Taung Junction City Development	2,000,000
Ground Water Quality	pH, Colour, Turbidity, TDS, Total Hardness, Magnesium, Chloride, Free Chlorine, Nitrate, Arsenic, Iron, Lead, Manganese, Sulfate, Mercury, Fluoride	GW (Supply YCDC)- 16°46'44.42"N 96° 9'16.40"E- At the underground water tank which is the project site	Once per during decommissioning phase	Shwe Taung Junction City Development	1,000,000

Potential Impact	Monitoring Item	Monitoring Means	Frequency of Monitoring	Responsible and Implementing Organization	Allocated budget per year (MMK)
	(National Drinking Water Quality Standards by Ministry of Health, 2019)	GW- 16°46'45.55"N 96° 9'15.71"E- At the ground water pipe line which is the project site			
Soil Contamination	Monitoring of mitigation measures	Inspection and observation	Once per during decommissioning phase	Shwe Taung Junction City Development	2,500,000
Generation of Solid Waste	Monitoring of mitigation measures Amount and kind of solid waste	Inspection and observation	Monthly	Shwe Taung Junction City Development	3,000,000
Greenhouse Gases Emissions	Monitoring of mitigation measures	Inspection and observation	Once per during decommissioning phase	Shwe Taung Junction City Development	2,000,000
				Sub Total	17,700,000
Social Environment					
Involuntary Resettlement	Monitoring of the implementation status of the resettlement plan, procedures and assistance package	Observation at Relocation Site	After implementation of each stage in the plan and as needed	Shwe Taung Junction City Development	According to the agreement mentioned in Resettlement Plan
Community grievances	Monitoring of mitigation measures Number of community complaints	Inspection and recording	Once per during decommissioning phase	Shwe Taung Junction City Development	3,000,000

Potential Impact	Monitoring Item	Monitoring Means	Frequency of Monitoring	Responsible and Implementing Organization	Allocated budget per year (MMK)
Community Health and Safety	Monitoring of mitigation measures Number of traffic accidents, deaths and injuries Number and types of accidents and infectious and vector-borne diseases related to the community	Inspection and recording	Monthly	Shwe Taung Junction City Development	
Worker grievances	Monitoring of mitigation measures Number of worker complaints	Inspection and recording	Monthly	Shwe Taung Junction City Development	2,000,000
Traffic congestion	Monitoring of mitigation measures	Inspection	Once per during decommissioning phase	Shwe Taung Junction City Development	5,000,000
Emergency Risk	Monitoring of mitigation measures Number of fire outbreaks Number and types of natural disasters occurred	Inspection and recording	Monthly	Shwe Taung Junction City Development	2,000,000
Occupational Health and safety	Number of work-related accidents	Inspection and recording	Monthly	Shwe Taung Junction City Development	3,000,000
				Sub Total	12,000,000

Table 7-2 Total Budget Allocation per year for EMP implementation

Phase	Budget Allocation (MMK)	
	EMP Implementation	EMR Implementation

Operation Phase (per year)	31,800,000	28,200,000
Decommissioning Phase (per year)	27,000,000	29,700,000

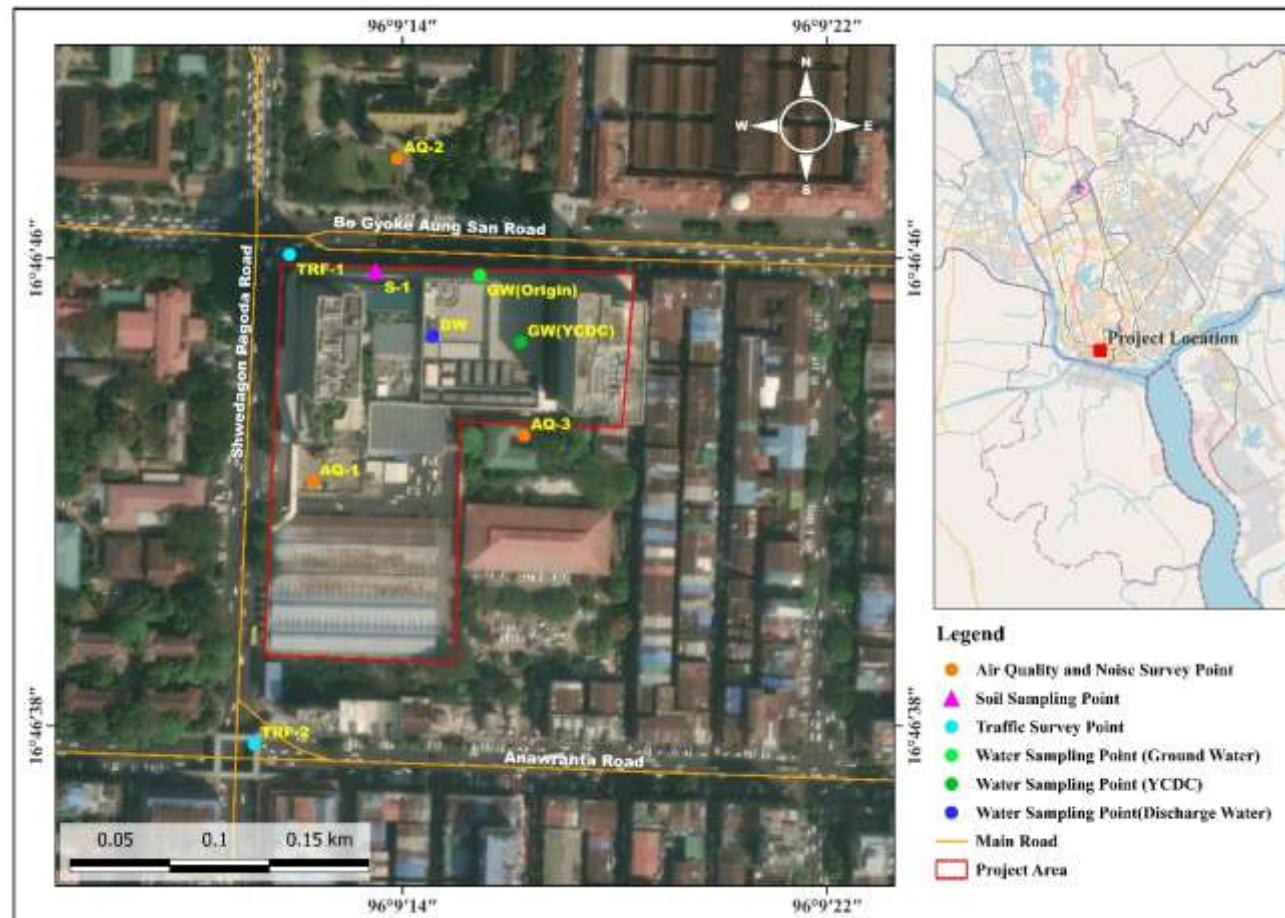


Figure 7-2 Environmental Monitoring Points

7.6 Monitoring and Management Sub Plans

The management and monitoring of air, noise, wastewater, water quality, occupational and community health and safety have been considered in the EIA. Table 7-2 presents the EMP table for the project including mitigation, management, responsibility, and reporting schedule of all project commitments. The following plans will be prepared as they are considered the most applicable to the activity.

- ✓ Air Quality Management Sub Plan
- ✓ Wastewater Quality Management Sub Plan
- ✓ Water Management Sub Plan
- ✓ Hazardous Waste and Solid Waste Management Sub Plan
- ✓ Occupational Health and Safety Sub Plan
- ✓ Community Health and Safety Sub Plan
- ✓ Emergency Preparedness and Response Plan
- ✓ Community Grievance Redress Mechanism Plan
- ✓ Corporate Social Responsibilities Plan

7.6.1 Air Quality Management Sub Plan

Objectives

The purpose of the air quality management sub plan is

- To minimize emission from the project
- To sustain ambient air quality of the project

Legal Requirement

The project shall adopt the requirement of local and international legislation as provided in Chapter 2.

Action Plan

During Operation Phase

- ✓ Keep all doors and windows closed in air-conditioned spaces
- ✓ Caulk all windows and doors to stop air leakage
- ✓ Ensure all door closing mechanism is functioning
- ✓ Ensure air-conditioning units are serviced as scheduled
- ✓ Check temperature controls frequently to ensure proper operation
- ✓ Clean all supply and return air grilles as scheduled
- ✓ Use MVAC (Mechanical, Ventilating, Air Conditioning) System, in respect to the Chillers, Air handling units (AHU's), fan coil units (FCU's), fresh air and extract fans and associated ancillary equipments. The Systems was utilized in Office, Retail and Hotel area of the Junction City.
- ✓ Ensure all internal roads and parking areas are paved and regularly cleaned to minimize dust emissions.
- ✓ Spray water in open areas where dust generation is high during windy conditions.

During Decommissioning Phase

- ✓ Regular maintenance of demolition vehicles and machineries;
- ✓ Prohibiting unnecessary driving and moving at site and idling of vehicles;
- ✓ Strictly prohibition of open fire burning of materials or wastes;
- ✓ Turning off of engine when the vehicle is parking;
- ✓ Using low sulphur diesel in all machines and vehicles;
- ✓ Developing and practicing demolition management procedures including the efficient use of vehicles and machineries;
- ✓ Conducting training for the workers on methods for minimizing air quality impacts prior to demolition work;
- ✓ Workers wearing masks who have to work in the dusty area;
- ✓ Using best technology for demolition process;
- ✓ Scheduling demolition during periods of low winds;
- ✓ Watering the site areas;
- ✓ Spraying water over the building that is going to be demolished;
- ✓ Spraying water onto debris before it goes down a debris chute;
- ✓ Covering or sprinkling demolished materials and stockpiles;
- ✓ Covering all trucks hauling demolished materials;
- ✓ Sweeping daily (with human sweepers) all paved access roads, parking areas and staging areas at site; and
- ✓ Implementation of demolition in phases to cushion the cumulative effects of dust which would be great in case the demolition is done at once.

Monitoring:

- Regular monitor fuel usage and premium quality diesel should be used to promote efficiency of engine and reduce emission to air
- Use of renewable energy sources, such as solar power to reduce reliance on fossil fuel-based energy and lower emission
- Regular monitor air quality parameters stated in NEQ(E)G to assess the air quality impact of building operations.

Awareness and Education:

- Provide education and training programs to employee and workers on fuel efficient practices, including proper equipment operation and maintenance, training for construction workers working on the project prior to pre-construction work on methods for minimizing air quality impacts (Specific training will be focused on minimizing dust and exhaust gas emissions from heavy construction vehicles)
- Train site staff on best practices for waste handling, spill response and proactive control measures

Implementation Schedule

This management sub plan will be conducted throughout the lifespan of the project.

Monitoring Plan

Table 7-3 Monitoring Plan for Air Quality

Environmental Aspect	Monitoring Measures	Reporting	Location	Frequency
Operation Phase				
Air Quality	PM2.5, PM10, NO2, SO2, Ozone, CO	Environmental Monitoring Report	AQ-1 16°46'42.06"N, 96° 9'12.88"E- Project Site AQ-2 16°46'47.53"N, 96° 9'14.31"E- Holy Trinity Anglican Church AQ-3 16°46'42.84"N, 96° 9'16.46"E- No (3), Basic Education Primary School	2 times per year
Decommissioning Phase				
Air Quality	PM2.5, PM10, NO2, SO2, Ozone, CO	Environmental Monitoring Report	AQ-1 16°46'42.06"N, 96° 9'12.88"E- Project Site AQ-2 16°46'47.53"N, 96° 9'14.31"E- Holy Trinity Anglican Church AQ-3 16°46'42.84"N, 96° 9'16.46"E- No (3), Basic Education Primary School	Once per during decommissioning phase

Budget Allocation

Estimated budget allocation for management sub plan is already include in EMPs.

7.6.2 Wastewater Quality Management Sub Plan

Objectives

The objectives of wastewater quality management sub plan are

- To ensure that wastewater quality treatment is properly done
- To ensure proper implementation and compliance, including disposal method and treatment system

Legal Requirement

The project shall adopt the requirement of local and international legislation as provided in Chapter 2.

Action Plan

During Operation Phase

The project will have a Solid Waste Management System for its operation phase. The design of Solid Waste Management system contains disposal system, quantity of waste, bin center, sewage treatment plant will be constructed for wastewater treatment. All soil and waste waters will be treated by means of an activated sludge system with extended aeration system incorporating the followings:

- ✓ Applying Solid Waste Management System covering disposal system, quantity of waste, bin center which was approved by YCDC (Details can be seen in Operation Phase, Mitigation Measures for Physical Environment, Generation of Solid Waste); and Mitigation Measures.
- ✓ The wastewater treatment plant had a design capacity of 1,300 m³/day for the whole development. The system is currently working at approximately 40% of its design capacity, meaning the MBR technology is well-equipped to handle future occupancy increases or peak events. The sewage treatment plant design criterion will be considered depending on the NEQEG (2015).

During Decommissioning Phase

- ✓ Piling and storing the demolished materials systematically in a temporary place in the project site which is away from the drains to avoid the drain blockage and consequent impact on surface water hydrology;
- ✓ Covering the piled debris with appropriate materials, if needed;
- ✓ Disposing the demolished materials on a regular basis; and
- ✓ Storing wastewater in detention tank for treatment and avoidance of the excessive direct flow of wastewater into the drains and receiving water.
- ✓ Treating wastewater from demolition process with sewage treatment plant before discharging to the drainage;
- ✓ Providing portable toilets for workers;
- ✓ Regular maintenance and checking the machineries, vehicles and sources which can cause oil spill and hazardous chemical spills (if found, the immediate repair and cleansing will be conducted);
- ✓ Systematic storage of fuels in project compound, handling and disposal of new oil and used oil waste; and Applying systematic waste management.
- ✓ Systematic stacking and piling of materials on site;
- ✓ Regular solid waste disposal at the dumping site designated by YCDC;

- ✓ Regular maintenance and check of the machineries, vehicles and sources which can cause oil spill and hazardous chemical spills (if found, the immediate repair and cleansing will be conducted);
- ✓ Systematic storage of fuels in project compound, and handling and disposal of new oil and used oil waste; and
- ✓ Providing mobile toilets and regular collection of sewage will be made by YCDC.

Implementation Schedule

This wastewater/ effluent management sub plan will be conducted throughout the lifespan of the project.

Monitoring Plan

The environmental monitoring report will include the items listed in the following table.

Table 7-4 Monitoring Plan for Wastewater Quality

Environmental Aspect	Monitoring Measures	Reporting	Location	Frequency
Operation Phase				
Wastewater Quality	pH, TSS, BOD, COD, Total Nitrogen, Total Phosphorus, Oil & Grease	Environmental Monitoring Report (NEQEG Guideline- 2.6.4)	DW 16°46'44.52"N 96° 9'14.92"E At the final discharged within the project site	2 times per year
Ground Water Quality	Color, Turbidity, pH, Total Dissolved Solid, Sulphide, coliforms, phenols, chlorine, Zinc, Arsenic, Copper, Mercury, Lead, Manganese, Magnesium, Total Hardness, Nitrate, Electro conductivity etc.	Environmental Monitoring Report	GW (Supply YCDC) 16°46'44.42"N 96° 9'16.40"E At the underground water tank which is the project site GW- 16°46'45.55"N 96° 9'15.71"E- At the ground water pipe line which is the project site	2 times per year
Decommissioning Phase				
Surface water Quality	pH, TSS, Ammonia-Nitrogen, Dissolved Oxygen, BOD, COD, Cyanide, Nitrate-Nitrogen, Nitrite, Arsenic, Lead, Copper, Cadmium,	Environmental Monitoring Report (National Surface Water Quality Standard, 2024 (Class V)	SW 16°46'44.52"N 96° 9'14.92"E- Surface water from the final outlet	2 times per year

	Nickel, Mercury, Chromium, Hexavalent), Phenol, Boron, Fluoride, Oil & Grease			
Ground Water Quality	Color, Turbidity, pH, Total Dissolved Solid, Sulphide, coliforms, phenols, chlorine, Zinc, Arsenic, Copper, Mercury, Lead, Manganese, Magnesium, Total Hardness, Nitrate, Electro conductivity etc.	Environmental Monitoring Report	GW (Supply YCDC) 16°46'44.42"N 96° 9'16.40"E At the underground water tank which is the project site GW 16°46'45.55"N 96° 9'15.71"E At the ground water pipe line which is the project site	2 times per year

Budget Allocation

Estimated budget allocation for management sub plan is already include in EMPs.

7.6.3 Water Management Plan

Objectives

- Ensure sustainable water usage during construction and operational phases.
- Minimize water wastage and promote water reuse/recycling.
- Prevent water pollution from construction activities and operational discharge.
- Ensure compliance with local water quality standards and regulations.

Legal Requirement

The project shall adopt the requirement of local and international legislation as provided in Chapter 2.

Action Plan

- ✓ Untreated well water was transported to prefiltration tank and YCDC water and prefiltered water were transported to cold water tank. Water from cold water tank were passed through the filtration tank and distributed to each tower building's roof tank.
- ✓ Construction of permeable road at the project inner ring road to allow storm water to recharge ground water;
- ✓ Equipped with main water meter at each building and water meters for each dwelling including retail shops, hotel, restaurants and all other project components;
- ✓ Treating grey water (wastewater from sinks, showers, baths, clothes washing machines or dish washers) in sewage treatment plant and reusing for toilet flushing, landscape or other non-potable uses;

- ✓ Check all public and office toilets and report the following for repair: leaking valves on lavatories or sinks, leaking toilets;
- ✓ Check all toilets flushometers and cistern type water closets for proper flow and water quantities;
- ✓ Install flow controllers for all faucets;
- ✓ Install urinal sensors for auto flushing;
- ✓ Regular checking, fixing and maintenance of water pipes and accessories to avoid leakages.

7.6.4 Hazardous Waste and Waste Management Sub Plan

Objectives

The objectives of the solid waste management sub plan are

- To ensure that solid waste management is properly done
- To ensure proper implementation and compliance, including disposal method and treatment system

Legal Requirement

The project shall adopt the requirement of local and international legislation as provided in Chapter 2.

Action Plan

During Operation Phase

Solid wastes were segregated through color coded waste bins provided at office tower, shopping center and hotel tower. Dry Waste from Hotel Rooms, Shopping Center, Office Tower and Carparking were divided into 2 types of Dry Wastes.

- Recycle items
 - Paper waste: loose paper scraps, office paper, and miscellaneous paper products.
 - Cardboard: corrugated cartons and packaging materials.
 - Plastic waste and PET bottles.
 - Aluminum cans and other recyclable containers.
- Non-recyclable items will compress with compactors.

Non-recyclable items are compress with compactors and collected and disposed via YCDC. Kitchen Waste from kitchen of Hotel and Shopping Center were disposed to Cool Room area and stored in designated cool Room. Grease Waste from kitchen of Hotel and Shopping Center were collected with Plastic bag and stored in STP with containers and dispose to Government Designated area. Sludge waste from wastewater treatment plant were collected with plastic bag and stored with containers in STP and dispose to Government Designated area. According to the solid waste management plan adopted by the Project, the disposal system was manual.

- **Dry Waste:** A total number of (15) Plastic 660-liter (0.66m³) wheeled bins was used to collect Dry waste and at least 5 times to 6 times per month. Recyclable wastes were segregated accordingly to the processes and disposed with Golden Dowa Eco System

Myanmar Co., Ltd. Non- recyclable wastes were compressed with compactor with 12 m³ capacity and collect & pick up by YCDC. The ratio of available handling capacity to actual waste generation is 4.8 times capacity safety factor.

- **Kitchen Waste:** A total number of (10) Plastic 660-liter (0.66m³) wheeled bins was used to collect kitchen waste and temporarily disposed to Cool Room area and stored in designated cool Room and collect & pick up by YCDC. While comparing storage capacity with daily generation is equal to 1.46 days of storage capacity. This indicates that the system provides sufficient buffer capacity for approximately 1.5 days of kitchen waste generation under static conditions.
- **Grease Waste:** Grease Waste from kitchen of Hotel and Shopping Center were collected (1) time per (2) weeks with Plastic bag and stored in STP with containers and (1) time per (2) month collected and disposed via YCDC.
- **Sludge Waste:** Sludge waste from wastewater treatment plant were collected with plastic bag and stored with containers in STP and collected and disposed via YCDC.
- Provided designated waste bin at each floor and regularly collected through shifts.

During Decommissioning Phase

- ✓ Conducting training to raise awareness of workers on solid waste management;
- ✓ Avoidance of unnecessary cutting and removing of vegetation plants;
- ✓ Providing different dust bins and skips at appropriate places for hazardous and non-hazardous waste and recyclables and non-recyclables;
- ✓ Transferring the demolished recyclable wastes to recyclers and the wastes which cannot be recycled to YCDC disposal site by either company's own arrangement or YCDC's garbage truck; and
- ✓ Practicing hazardous waste management including procedures for waste collection, waste temporary storage and waste transportation and disposal.

Hazardous Waste Management Plan

Hazardous wastes would always be segregated from non-hazardous wastes. If generation of hazardous waste cannot be prevented through the implementation of the above general waste management practices, the following additional measures will be taken for hazardous waste management.

Waste Collection: Workers would be firstly educated on the potentially hazardous wastes which can be encountered during the pre-construction phase and their risks. Workers would wear PPE for handling of waste and if needed, special equipment will be used.

Handling Procedure

- ✓ 1. Wearing personal protective equipment (PPE)
- ✓ 2. Pack them individually in the designated plastic bag and seal them securely.
- ✓ 3. Dispose of separately in designated Biohazard bin,
- ✓ 4. After use, remove PPE carefully and wash hands thoroughly.
- ✓ 5. After finishing, report to the concerned health authority or YCDC immediately.

Remark -Never dispose of biohazardous waste in general trash. It must be collected and handled by a licensed and trained professional waste management company that specializes in biohazard disposal.

Waste Temporary Storage: Hazardous waste would be stored so as to prevent or control accidental releases to air, soil, and water resources in area location where:

- ✓ Waste is stored in a manner that prevents the commingling or contact between incompatible wastes and allows for inspection between containers to monitor leaks or spills. e.g., sufficient space between incompatibles or physical separation such as walls or containment curbs
- ✓ Store in closed containers away from direct sunlight, wind and rain
- ✓ Provide adequate ventilation where volatile wastes are stored
- ✓ Provision of readily available information on chemical compatibility to employees, including labeling each container to identify its contents
- ✓ Limiting access to hazardous waste storage areas to employees who have received proper training

Waste Transportation and Disposal: All waste containers designated for off-site transportation to YCDC dump site for disposal would be secured and labeled with the contents and associated hazards. These waste containers will be properly loaded on YCDC garbage truck before leaving the site.

This plan should be periodically reviewed and updated to reflect changes in waste generation, regulations and best practices.

Implementation Schedule

This management sub plan will be conducted throughout the lifespan of the project.

Monitoring Plan

The environmental monitoring report will include the items listed in the following table.

Table 7-5 Monitoring Plan for Solid Waste

Environmental Aspect	Monitoring Measures	Reporting	Location	Frequency
Operation Phase				
Solid waste generation	Amount and type of solid waste generated from each activity	Environmental Monitoring Report	Temporary Waste Disposal Site	Monthly
Decomissioning Phase				
Solid waste generation	Amount and type of solid waste generated from each activity	Environmental Monitoring Report	Temporary Waste Disposal Site	Monthly

Budget Allocation

Estimated budget allocation for management sub plan is already include in EMPs.

7.6.5 Occupational Health and Safety Plan

Objectives

The objectives of Occupational Health and Safety sub plan are

- ✓ Identify and assess potential hazards during operation and decommissioning.
- ✓ Establish comprehensive safety measures to prevent accidents, injuries, and illnesses.
- ✓ Provide training, monitoring, and communication to ensure compliance with health and safety requirements.
- ✓ Promote a safe work culture and minimize occupational risks.

Legal Requirement

The project shall adopt the requirement of local and international legislation as provided in Chapter 2.

Action Plan

During Operation Phase

To promote and maintain a safe, healthy, and sustainable environment for residents, employees, contractors, and visitors across all properties managed by Junction City Mixed-Use Development's Management.

The OHSE Plan for operation phase applies to all developments' - managed properties, including retail spaces, and hotel and offices facilities. It covers employees, contractors, visitors, and equipment operating within these premises. The key goals of the project are:

- Achieve zero workplace incidents or accidents.
- Strengthen hazard identification, reporting, and mitigation.
- Enhance readiness for effective emergency responses.
- Foster sustainable practices in waste management and energy conservation.

During Decommissioning Phase

- ✓ Following Company's Occupational Health and Safety Plan, Emergency Response and Preparedness Plan.
- ✓ Periodic medical check-ups for all workers to ensure that they are physically and mentally capable for their job positions, treatment for all workers of small injuries and illness, system to diagnose epidemic risks at their early stage of development and undertake all necessary actions in accordance with the advice of the designated hospital or local authority, and education and training to all workers on the relevant health hazards, safe work practices and proper use of PPE) and Environmental Protection Plan (conditions and mitigation measures contained in the final Environmental Impact Assessment Report,
- ✓ Assigning duties and responsibilities for different positions, Project Environmental Management System including Environmental Policy and Objectives, Environmental Organization to ensure that the project Environmental objectives are met through implementation of technical activities and procedures, compliance with legal requirements, environmental aspects identification and assessment, evaluation, selection and control of contractors, environment meeting and committee, environmental training, emergency preparedness, environmental incident investigation and analysis, environmental inspection, environmental audit, environmental improvement plan, dust control plan, noise control plan, wastewater control plan, waste control plan, and pollutants spillage control plan); and
- ✓ Following minimum Personal Protective Equipment (PPE) provision including head protection, clothing, safety shoes, eye protection, hearing protection, respirators, gloves, safety belts, and safety harnesses.

Implementation Schedule

This management sub plan will be conducted throughout the lifespan of the project.

Monitoring Plan

The environmental monitoring report will include the items listed in the following table.

Table 7-6 *Monitoring Plan for OHSE Plan*

Environmental Aspect	Monitoring Measures	Reporting	Location	Frequency
Operation Phase				
OHSE	- Provide appropriate first aids kits - Emergency Contact - Investigate and Records - Implement corrective and preventive measures - Periodic medical examination,	- Incidents and Accidents Report - Environmental Monitoring Report	Workers working at Risk areas (chemical handling, regular maintenance)	- If occurs within the project site - Two time per year
Decommissioning Phase				
OHSE	- Site inspection, toolbox meeting	- HSE Manager	Project Site	- Weekly
	- Provide appropriate first aids kits - Emergency Contact - Investigate and Records - Implement corrective and preventive measures - Periodic medical examination, - Safety training for workers	- Incidents and Accidents Report - Emergency contact - Environmental Monitoring Report	Workers working at Risk areas (noisy workplace, height places)	- If occurs within the project site - Two time per year
Training and Awareness	First Aids Training Firefighting Training Emergency and disaster response Training	Environment and Social Manager	All operational staff	Yearly

Budget Allocation

Estimated budget allocation for management sub plan is already include in EMPs.

7.6.6 Emergency Preparedness and Response Plans

Objective

The objectives of Emergency Preparedness and Response sub plan are

- ✓ Establish robust protocols for managing emergencies such as fires, floods, or accidents.
- ✓ To identify potential emergencies and develop specific response strategies.
- ✓ To minimize impacts on human health, property, and the environment.
- ✓ To ensure effective communication and coordination during emergency situations.
- ✓ To implement training and drills to improve preparedness and response capabilities.

This procedure will apply to an emergency response situation. This procedure shall apply to all areas within the Junction City Mixed-Use Development's facility, and may be implemented.

Legal Requirement

The project shall adopt the requirement of local and international legislation as provided in Chapter 2.

Responsibilities

EIA Implementation Team will be prepared an emergency preparedness plan to prevent the consequences of natural disasters such as fire, earthquake, storm and man-made disasters. The purpose of the Emergency Plan is to minimize the danger to life and property in the event of disasters in the proposed project. An emergency response plan will be developed by the project proponent and trained to all employees according to the proposed training schedule. All the people who live around the project compound have to leave the site as soon as possible for all emergency cases.

Action Plan

Enacted the company's Emergency Preparedness and Response Plan that mentioned in Chapter (3) and follow the mitigation measures of each activity.

Implementation Schedule

This Emergency Preparedness and Response sub plan will be conducted throughout the lifespan of the project.

Monitoring Plan

The environmental monitoring report will include the items listed in the following table.

Table 7-7 Monitoring Plan for Emergency Preparedness and Response Plans

Environmental Aspect	Monitoring Measures	Reporting	Location	Frequency
First Aids	Provide training to workers and employee	Training records and Environmental Monitoring Report	Assigned personnel	Once per year
Emergency Response	Train workers and employee in disaster response protocols. Conduct quarterly drills to simulate emergencies	Training records and Environmental Monitoring Report	Employee	Twice per year

	(earthquakes, floods, and fires).			
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Budget Allocation

Estimated budget allocation for management sub plan is already include in EMPs.

7.6.7 Community Health and Safety Plan

Objectives

The objectives of Community Health and Safety sub plan are

- Minimize risks to community health, safety, and quality of life during project implementation.
- Mitigate adverse effects such as noise, air pollution, traffic congestion, and safety hazards.
- Engage with the community to raise awareness and build trust.

Legal Requirement

The project shall adopt the requirement of local and international legislation as provided in Chapter 2.

Action Plan

- ✓ Wastewater generated from project operation was treated before disposal to the drainage channel. The effluent will be in compliance with the National Environmental Quality (Emission) guidelines.
- ✓ Solid waste management system was implemented.
- ✓ Traffic safety measures and mitigation measures were applied.
- ✓ Abstraction of groundwater and/or surface water will be done without compromising the availability of water for personal hygiene needs and potential future increases in demand of the community nearby.
- ✓ Grievance Redress Mechanism (GRM) will be developed to address resident and community concerns.

Implementation Schedule

- ✓ This Community Health and Safety sub plan will be conducted throughout the lifespan of the project.

Monitoring Plan

- ✓ The environmental monitoring report will include the items listed in the following table.

Table 7-8 Monitoring Plan for Community Health and Safety

Environmental Aspect	Monitoring Measures	Reporting	Location	Frequency
Operation Phase				
Environmental Quality Monitoring	Inspection and observation	Environmental Monitoring Report	Project site	According to the EMRs

Environmental Aspect	Monitoring Measures	Reporting	Location	Frequency
GRM	GRM implementation and records	Environmental Monitoring Report	Project site and local community	According to the EMRs
Environmental Quality Measurement and Traffic Survey	Implement EMP and EMR	Environmental Monitoring Report	Survey Points	According to the EMRs
Decommissioning Phase				
Environmental Quality Monitoring	Inspection and observation	Environmental Monitoring Report	Project site	According to the EMRs
GRM	GRM implementation and records	Environmental Monitoring Report	Project site and local community	According to the EMRs
Traffic Safety	Inspection and observation	Environmental Monitoring Report	Project site and vicinity area	According to the EMRs
Environmental Quality Measurement and Traffic Survey	Implement EMP and EMR	Environmental Monitoring Report	Survey Points	According to the EMRs

Budget Allocation

Estimated budget allocation for management sub plan is already include in EMPs.

7.6.8 Community Grievance Redress Mechanism

7.6.8.1 Overview

Grievances are complaints or comments received by “Junction City Mixed-Use Development Project” from stakeholders. Implementing a Grievance Mechanism for projects is stipulated under the IFC guidelines.

Grievance Mechanisms has to be proportionally scaled to the project and potential impacts and should consider local cultures and contexts. The mechanism is a living process- this means that it should be appropriately staffed, monitored and take necessary action, and be adjusted and improved over the life of the project where necessary.

According to the preliminary feedback system, stakeholders were able to phone, email or postal mail to Shwe Taung Junction City Development. A Grievance Mechanism is required for the project's construction and operations phases, and this is presented.

Disclosure of the Grievance Mechanism to stakeholders is required, and this is to be undertaken in a manner appropriate to the scale of the project, potential impacts, the local context, and cultures.

Disclosure channels include:

- Community Liaison Officer to attend the pre-operation meetings with government officials
- Provide posters and fact sheets at community places
- Make local FM radio announcements (prior to and during the survey)

- Display documents via the proponent's website, if any prior to and during the survey.

7.6.8.2 Key elements

Receive

Shwe Taung Junction City Development will be engaged a Myanmar National Community Liaison Officer (CLO) to manage the grievance mechanism for the project. Grievances can be lodged to the CLO by stakeholders via a number of channels including:

- Telephone to Shwe Taung Junction City Development in site.
- Written correspondence by postal mail to Shwe Taung Junction City Development's Office in Yangon/Site.
- Through community leaders / traditional authorities e.g., Township Administrator.
- Direct contact with the CLO during meetings prior to and during the survey.

Assess and Assign

The CLO will register the grievance on Shwe Taung Junction City Development Grievance Register and make an initial assessment of the complaint and assign a Complaint Owner. For straightforward complaints, the Complaint Owner may be the CLO. For complex issues, the Complaints Owner may be other personnel/Departments within Shwe Taung Junction City Development's Senior Management, Grievance Committee, Third Party Mediation, etc.

Acknowledge

Grievances will be acknowledged by Shwe Taung Junction City Development via written response to the complainant within 48 hours of receiving the complaint. The acknowledgment will be via email or letter- whichever mode is most appropriate to the communication requirements of the stakeholders. All communications (written and verbal) should be conducted in a language which is understood completely by the Complainant e.g. Myanmar Language.

Investigate

The Complaint Owner investigates the complaint and proposes options to resolve the issue, in consultation with other personnel as required. The identity of the complainant should only be disclosed to the extent necessary internally and should not be shared with any third parties.

Solutions may be determined by:

- The proponent proposes a solution.
- Community and proponent agree on a solution.
- The third party defines solutions, or
- Traditional or customary defined solutions.

The grievance will be resolved within five (5) working days, however complex complaints may take longer to resolve. For complex complaints, the CLO will notify the stakeholder of the delay and the expected timeframe for resolution. Provision should be made for instances where there are an individual or group claims of loss of assets, etc.

The process will be recorded in the SShwe Taung Junction City Development's Grievance Register. The database should capture:

- Record number.
- Stakeholder name and contact details.
- Date received.
- Responsible personnel within Shwe Taung Junction City Development
- Nature of grievance (details).
- Response and any associated documentation.
- Date of close-out

Respond

The Complaint Owner and the CLO will agree on a response. The response should communicate the findings of the investigation, set out the proposed corrective actions, define timeframes, responsible parties, monitoring requirements and seek feedback from the Complainant.

The Complaint Owner and CLO determine the next steps based on feedback from the Complainant. If the Complainant accepts the resolution, Shwe Taung Junction City Development will precede to implement to the relating agency. If the Complainant does not accept the resolution, the complaint will be escalated to the Relating Committee consisting of Yangon Region ECD, FD, YCDC, for review and development of a final resolution. The Complainant's response will be documented in the Grievance Register.

Resolve

If the complainant accepts the response, the agreed actions are then implemented. The Complaint Owner is responsible for assigning action parties, actions and timeframes to implement the resolution. The Complaint Owner informs the CLO once the resolution has been implemented.

Review

Shwe Taung Junction City Development will seek to reach a resolution with the complainant that is satisfactory to both sides. If Shwe Taung Junction City Development and the Complainant are unable to agree on a solution, the Complaint may be sent to receive for review and sent to the Shwe Taung Junction City Development's Representative for review and final decision.

Closed-out

A Complaint is closed out when no further action can be or needs to be taken. The closure status of the complaint and any other final information is recorded in the Grievance Register.

Monitoring, Reporting, and Improvement

The Grievance Mechanism is a living process, which should be reviewed, updated and improved as the project progresses. Shwe Taung Junction City Development will develop KPIs, gather data and report on performance, which will enable the organization to analyze trends in complaints received and identify any underlying systemic issues. A grievance report is completed once a month during the operations period and submitted to the Shwe Taung Junction City Development's representative.

7.6.8.3 Worker grievances

Company also established a mechanism to resolve complaints of workers and the worker grievances mechanism procedure includes the followings.

All employees are given equal and fair opportunity to voice out their sentiments and grievances towards particular occasions or situations, including Disciplinary Actions served to them. In any case, the following procedure is to be observed at all times:

Level 1: Superior – An employee should first discuss an issue with his/her immediate superior. The superior will give his/her disposition within five (5) days upon the receipt of the issue/concern.

Level 2: Human Resources Department - If the employee is not satisfied with the decision rendered by superior, the case is then referred to Level 2, the HR Department. The HR Department is required to give its decision within five (5) days from the receipt of the issue/grievance.

Level 3: Senior Management - If the employee is not satisfied with the decision rendered by the HR Department, the case is then referred to Level 3, the Senior Management. The Senior Management is required to give his/her decision within five (5) days from the receipt of the issue/grievance.

Level 4: Conciliation Committee - If the employee is still not satisfied with the decision rendered by Senior Management, the concerned Employee may then refer the case of Level 4, the Conciliation Committee, which shall be formed in accordance with the provisions of the Settlement of Dispute Law. The conciliation committee shall, within five (5) working days, from receipt of the grievance by the Employee negotiate and resolve the issue. The conciliation committee shall keep a record of the proceedings of the negotiations.

Level 5: Conciliation Body - If the employee is still not satisfied with the result of the discussions with the Conciliation Committee, the Employee may file a complaint to the Conciliation Body. The Conciliation Body shall upon receipt of the complaint conciliate for settlement within three (3) working days. If both parties have arrived at an agreement, the parties shall sign an agreement in the presence of the Body.

- ✓ If the Employee is still not satisfied with the decision of the Conciliation Body it may further file a case, by himself or through a representative on his/her behalf, at a court of law of relevant jurisdiction.
- ✓ Across all levels, due process must be afforded the employee and the procedures stated must be undertaken. Appeals must be made by the employee in writing within three (3) working days from the receipt of the decision in each level. If an appeal is not received within the period, it is understood that the employee accepts the disciplinary action without question.

7.6.8.4 Grievance Redress Representative Information

Employee Representative		Employer Representative	
Name	Contact Number	Name	Contact Number
U Kyaw Zin Htet	09255100256	U Ko Ko Maung	09255100600
U Myo Htet Aung	09255100352	U Aung Myat Htut	092500100296

Daw Moe Moe Aye	09255100300	Daw Myat Kay Khine	09255100374
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7.6.9 Coporate Social Responsibility Plan

7.6.9.1 Life quality and families as well as society and local community at large

- Provide Medical Insurance to all associates with Grand Guardian Insurance Public Co., Ltd.
- Childbirth Gift.
- Get well soon basket (Sick/Accident/Hospitalization).
- Provide the assistance (Cash) to associate's family on associate's funeral (passed away).
- Provide the assistance (Cash) to team member's immediate relative pass away.

7.6.9.2 Social Activities & Facilities

- Birthday Celebration
- Dormitory room for associates



7.6.9.3 No Bin Day at Associate Canteen)

- Pan Pacific Yangon embarked on a "No Bin Day" campaign to promote the reduction of food wastage at our associates' canteen by urging associates not to bin any food. Beyond cost savings, reducing the amount of food waste at our hotel is our way of minimizing our carbon footprint and impact on the environment.

7.6.9.4 Employee meals



7.6.9.5 Development and Sustainability of enterprise, people and society

Training program for Deaf Students: Pan Pacific Yangon proudly collaborates with the Rotary Club of Greater Yangon to support twenty deaf trainees from Mary Chapman School. Led by our Culinary Team and other support team, this training program aims to empower students to develop professional skills and open doors to future career opportunities in the hospitality industry. Following the training, participants joined specialized classes - Culinary Class, Barista & Cookie-Making Training – culminating in a heartfelt Award Ceremony celebrating their achievements.

Culinary Class:



Barista & Cookie-Making Training:



Award Ceremony:



7.6.9.6 Development and Sustainability of enterprise, people and society:

Donation to Myitar Nanda Monastic Education and Youth Development: Pan Pacific Yangon donated 170 dozens of exercise books and 70 dozens of pencils. Associates also bring medicines, clothing, blankets and snacks for 220 orphanage children.



Shwe Taung Junction City Development: Donated the Swing and slide to Basic Primary School No (3) Pabedan Township.



Shwe Taung Junction City Development: Donation of Lunch to Basic Primary School No (3) Pabedan Township.



Pan Pacific Ka Htain:



7.6.9.7 Commitment to Community and Cultural Sustainability

As part of our commitment to community and cultural sustainability, Pan Pacific Yangon organized a meaningful lighting ceremony at the sacred Shwedagon Pagoda, where our associates collectively donated and lit 1,000 oil lamps. This act of merit-making symbolized unity, gratitude, and hope while preserving Myanmar's rich Buddhist traditions. Through this initiative, our team not only contributed to spiritual well-being but also strengthened our bond with the local community, reflecting Pan Pacific's dedication to nurturing both people and society in harmony with cultural heritage.

Shwe Taung Junction City Development: Donated the decoration light installation at Church.



7.6.9.8 Holy Trinity Church Repainting Progress



7.6.9.9 Join UN Global Compact

In the evening, lights were switched off in Pan Pacific Yangon's public areas, including Façade lighting, Saan All-Day-Dining Restaurant, Teak Bar, St. Gregory Spa, Lobby Areas and some common areas for 1 hour. During the hour, guests were also invited to enjoy candlelight dancing performed by our lovely associates. A total of 249 kilowatts were saved during Earth Hour!

7.6.9.10 Improving Human Capital (Adequate Staff Training)

This section lists the various training programs provided to employees:

- Service Excellent Training
- Bringing the Brands to Life Training
- Service Recovery Training
- Grooming, Hygiene and Presentation Training
- Delegation Training
- Time Management Training
- Engagement with the Guest Training
- Advance Excel Training
- On-The-Job Training
- English Language Training

7.6.9.11 Water Conservation Efforts

- Water Efficient Fitting
- Irrigation System and Landscaping
- Water Consumption of Cooling Tower
- Water Usage and Leak Detection

8. PUBLIC CONSULTATION AND DISCLOSURE

8.1 Necessity of Public Consultation Meeting

According to the Environmental Impact Assessment Procedure (2015), stakeholder meeting is one of the necessities processes to perform EIA study. Public disclosure is required to hold in the EIA stage of Junction City Mixed Used Development Project of EIA process through the local media and public notification at the project site and arrangements for consultation meetings with all project stakeholders. The public consultation indicated the transparency of proposed project to local people.

Junction City Development Company Limited conducted a public consultation meeting for EIA stage and disclosure process for Junction City Mixed Used Development Project, on 14 October 2025, with the help of third party, Unique Environment Myanmar (UEM).

8.2 Objectives of Public Consultation Meeting

Public consultation and information disclosure concerning with the environmental and social impact assessment (ESIA) for the proposed project. The main objective of the Public Consultation Meeting (PCM) is to incorporate the opinion and suggestions of the all stakeholders including but not limited to potential Project Affected Persons (PAPs), government officials, local communities, and other interested persons. The key objectives of the PCM are as follows:

- 1) To disclose and inform well about the project information, potential positive and negative impacts due to project activities to the stakeholder in the earliest stage of the implementation of the project
- 2) To ensure that consultation meetings are undertaken in a meaningful, effective way by actively participation of PAPs, stakeholders and local communities.
- 3) To ensure that the concerns of, and issues raised by the PAPs, stakeholders and local communities are incorporated and adequately addressed in the further ESIA study.

8.3 Define Project Stakeholders

Public Consultation meeting was held at the meeting room of Junction City, located at Bogyoke Aung San Road, corner of Shwedagon Pagoda Road, Pabedan Township, Yangon Region with various stakeholders including government organizations, administrative and local people. Considering the project stage, the legal and institutional framework for environmental and social impact management applicable to the project, the following project stakeholders were invited:

- 1) Township General Administrative Department
- 2) Environmental Conservation Department
- 3) Yangon City Development Committee
- 4) Department of Public Health and Medical Services
- 5) Fire Services Department
- 6) Hotel and Tourism Supervising Department
- 7) Ward Administrator (Pabedan Township)
- 8) Locals (Pabedan Township)

8.4 Pre-engagement Meeting

On 12 October 2025, the UEM consultant team conducted a pre-engagement meeting with representatives from Shwe Taung Junction City Development Company Limited for the proposed project to discuss the environmental impact assessment process. During this meeting, representatives from the proposed project were given information about the processes of the project, and the consultant team was briefed on the environmental impact assessment procedures, baseline survey, and public consultation meetings.

8.5 Public Consultation Meeting

8.5.1 Pre-meeting with Government Officials

On 14 October 2025 Shwe Taung Junction City Development Company Limited, together with the third-party consulting firm Unique Environment Myanmar (UEM), met with relevant government officials from Pabedan Township and received advice and suggestions regarding the public consultation meeting for the EIA stage of the proposed project.

8.5.2 Consultation Meeting with Project Stakeholders

On 14 October 2025, Shwe Taung Junction City Development Company Limited conducted the stakeholder consultation meeting for the EIA stage of the proposed project. The meeting

was held at the meeting room of Junction City, located at the Bogyoke Aung San Road, corner of Shwedagon Pagoda Road, Pabedan Township, Yangon Region.

According to the meeting agenda, Daw Lai Lai Win, Managing Director and Consultant from UEM, presented information about the project, the purpose of conducting the consultation meeting, the EIA requirements for the proposed project, the potential environmental and social impacts, and the upcoming survey plans.

Opinions, suggestions and recommendations were discussed during the meeting. Government officials, the Ward Administrator, local residents, and other interested persons attended and raised their concerns and issues related to the proposed project

All the opinions and suggestions in the meetings were carefully recorded. PCM attendant list and Power Point presentation are described in **Appendix-5**. The meeting details are as the followings.

Venue:	Meeting Room of Junction City, Pabedan Township
Date:	14-10-2025
Time:	10:00 am – 11:00 am
Attendees:	41 persons
Agenda:	i. Greeting and introduction ii. Presentation of project information iii. Presentation of project process iv. Presentation of EIA process by third-party consultant v. Q&A session vi. Closure

There were 41 attendees in total, and the attendant lists are described in the following table.

Table 8.1 Attendant List

Government Official

No.	Name	Position/Employment	Department/Address
1	Daw Myat Thu Thu	Head Clerk	Hotel and Tourism Supervising Department
2	Daw Lai lai Pyae Phyo Han	Junior Clerk	Hotel and Tourism Supervising Department
3	U Zay Yar Win	Staff Officer	Environmental Conservation Department
4	U Thet Zaw	Deputy Staff Officer	Environmental Conservation Department
5	Daw Than Than Myaing	Deputy Staff Officer (Law)	Planning Department, Pabedan Township
6	U Than Myint	Cleaning Supervisor	28 th Street (Upper)

7	U Thein Zaw	Ward Supervisor	EO Office, Pabedan Township
8	U Zaw Naing Win	No.2 Ward, Administrator	Pabedan Township
9	Daw Tin Tin Win	Member	Pabedan Township
10	Daw Win Sandar Htun	Member	Pabedan Township
11	U Thant Htut Aung	Junior Clerk	General Administrative Department
12	U Myo Min Htet	Staff Officer	Fire Services Department
13	U Myo Zaw Aung	Deputy Staff Officer	Fire Services Department
14	U Van Hta Htaung	Fire Sergeant	Fire Services Department
15	Dr. Kyu Kyu Thin	Township Medical Officer	Department of Health
16	Daw San Yin Hmwe	Deputy Staff Officer	General Administrative Department
17	Daw Kay Zin Htun	Deputy Staff Officer	Department of Health
18	Daw Mi Ko	Dresser	Department of Health

Project Proponent

No.	Name	Position/Employment	Department/Address
1	U Aung Myat Htut	Common Area Manager	Junction City MCST
2	U Ye Nyi Htwe	Executive Engineer	Junction City MCST
3	U Thwin Lin Htet	Senior Maintenance Engineer	Junction City MCST
4	U Htun Min Latt	Maintenance Assistant	Junction City MCST
5	U Zay Yar Than Oo	Duty Engineering	Pan Pacific Hotel
6	Daw Myat Noe Thu	Engineering Manager	Junction City Tower
7	Daw Thiri Lwin	Senior Building Executive	Junction City Tower
8	U Honey Nyein	Engineering Manager	JC (Retail)
9	U Tun Aung Kyaw	Security Executive	Junction City MCST
10	Daw Aye Thet Phoo	Assistant Account	Junction City MCST

11	Daw Kyawt Zin Khaing	Account Executive	Junction City MCST
12	U Chan Phone Kyaw	Senior Maintenance Engineer	Junction City MCST
13	U Zon Min Oo	Admin Assistant	Junction City MCST
14	U Nyi Min Lwin	Technical Specialist	Junction City MCST
15	U Min Khant Kyaw	Technical Specialist	Junction City MCST
16	U Myat Min Thant	Technical Specialist	Junction City MCST
17	Daw Ei Mon	Operation Executive	Junction City MCST
18	U Zay Yar	Center Manager (JC)	Junction City MCST

Third Party

No.	Name	Position/Employment	Department/Address
1	Dr.Lai Lai Win	Managing Director	UEM
2	U Min Min Oo	Project Director	UEM
3	U Nyan Lin Maung	Project Director	UEM
4	U Chan Nyein Htet	GIS & Operation Associate	UEM
5	Daw Yuzana Aye Minn	Operation Associate	UEM

8.6 Summarized Outcomes of the PCM

According to the activities conducted during consultation process of the EIA stage, some comments and suggestions were recorded as follows.

No.	Comment and Suggestion	Response
1.	U Zay Yar Win, Staff Officer, Environmental Conservation Department - I would like to recommend using eco-friendly products to reduce ozone layer depletion.	Dr.Lai Lai Win, Managing Director, UEM - I am grateful for your recommendation. If a discussion arises, please participate.
2.	U Zaw Win Naing, No. (2) Ward Administrator, Pabedan Township - Since it's the downtown area, the air quality will constantly be changing because of generators and vehicles. - Due to irregular electricity supply, generators have to be used. I see that generators are regularly maintained and operated, and the project proponent fully complies with all procedures. - Water supply is a significant challenge in this downtown area. As a solution, Junction City or Shwe Taung Group could	Dr.Lai Lai Win, Managing Director, UEM - We kindly request to Junction City to connect with the relevant departments to help resolve local issues. - We can resolve social and environmental matters. However, for anything related to the project, you can ask the Junction City.

	provide either a water purification system or financial support to assist in connection the pipeline to the YCDC water supply network.	
3.	U Myo Min Htet, Staff Officer, Fire Services Department - Due to the frequent usage of the wells and the presence of earthquakes, groundwater depletion can occur. - How can the distance and quantity of the tube wells be managed? Alternatively, can river water be utilized? - We are concerned that the tube wells will not withstand an earthquake, as they were previously dug both without and with official permission.	Dr.Lai Lai Win, Managing Director, UEM - Tube wells are managed under the instructions of YCDC. - Even though tube wells affect the groundwater, using Yangon River water requires very high treatment costs nationwide because it contains a high level of E. coli and collects all sewage. - This would be possible only if a wastewater treatment plant is built. - However, it is not justifiable for the project to use the river water due to the high treatment cost. - Although using purified river water would be the most ideal solution, it is completely unsuitable for drinking because when it rains, all the rainwater, wastewater, and solid waste flow into the river. - Earthquakes, which are natural disasters caused by faults, cannot be predicted. - An emergency response plan for a natural disaster has not been prepared in advance; it will be developed immediately after the event occurs. - We kindly request the project proponent that lightning arresters be installed when installing the solar panels. - And the usage of national electricity supply and generators be reduced by utilizing renewable energy sources as much as possible for electrical appliances. - And traffic congestion, water supply and generator usage are issues. - And please ensure the effective management of garbage to prevent odor. U Aung Myat Htut, Common Area Manager, Junction City MCST - The well drilling was commissioned to and carried out by YCDC. There are a total of six wells. Dr.Lai Lai Win, Managing Director, UEM - We also welcome suggestions from other departments, so please provide any necessary feedback.

		- We will also check and confirm whether the licenses are up to date.
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Figure 8-1 Public Consultation Activities

There were 41 attendees in total and 13 suggestion forms were collected. The participants made the comment and suggestions that to ensure the ongoing success of the company, and to have significantly contribution to the community and economic development.

1. Environmental Concerns

- Air pollution protection and reduction can be more effective if the project proponent implements proper management. It can protect against diseases caused by air pollution. I suggest that it would be better if the gas emitted from generators could be reduced, and if air-con output device could also lower air pollution.
- It would be more effective if waste could be segregated before disposal. It is crucial to handle wastewater systematically for greater effectiveness. It would be better to segregate and dispose of waste using designated trash bins due to the daily production of different types of solid waste including wet waste, dry waste and kitchen waste.
- If enough trash bins are provided, it would help smell. And it is better if there is no excessive waste around the trash bins.
- To address traffic congestion effectively, prevent hazards and maintain cleanliness within the Junction City compound area all the time.
- To use refrigerants with low Ozone Depletion Potential (ODP) in air conditioners.
- To collect and dispose of the waste properly.

- To prioritize occupational safety and fire safety.
- It is recommended to ensure no environmental impact and heightened attention to cleanliness.
- To describe separately the seismic resilience measures (Disaster Management Plan) within the environmental and social management plan section, as the office and hotel are located in a high-rise building.
- To specify the types of refrigerants and the plan for mitigating their impact on the ozone layer within the environmental management plan.
- To describe the plans implemented to prevent traffic congestion given that the location is a high-traffic intersection.
- To describe the type of fire extinguisher designated for EV fire incidents within the fire safety management plan.
- To include the waste segregation method, the placement of waste bins, and the records of disposal coordinated with YCDC, as the project is a high waste generation area.
- To dispose of and recycle solid waste systematically.
- To continue maintenance work to prevent air pollution.
- To treat wastewater properly and discharge to the designated drainage area
- To supervise drainage pipes for leaks
- Even though Junction City may not regularly rely on its groundwater tube wells, what is the estimated available volume that could be used in the event of a disaster? How long can a tube well be used? And please recommend what difficulties can occur.
- To continuously monitor air quality and facilitate drinking water distribution in the township.

2. Social and Community Concerns

- Can support be provided for the well-being of the ward if there is a need? Residents of the small neighborhood on 27th Street, on the Junction City side, are facing difficulties with water availability due to the relocation of the water pipeline. Please contribute as much as possible.
- The presentation and implementations are excellent and complete. There is no suggestion.
- To provide smooth traffic movement and sufficient car parking.
- As a local resident, I would like to know about the company's CSR activities regarding social, environmental and community welfare responsibilities and current implementing plans.

3. Governance, Compliance, and Management

To submit EMP reports according to the specified frequency and timeframe. To ensure the EIA report is submitted by the deadline.

8.6.1 Actions Taken and Future Commitments in Response to Public Consultation Comments

The Project Proponent acknowledges and appreciates the valuable comments, concerns, recommendations, and suggestions raised by stakeholders during the public consultation

meeting. The feedback received has been carefully reviewed and incorporated into the environmental and social management framework of the Project where applicable.

In response to concerns regarding air quality, the Project has already implemented regular maintenance programs for backup generators, HVAC systems, and mechanical equipment to minimize emissions and improve energy efficiency. All central chiller units utilize HFC-134a. Unlike older CFC/HCFC refrigerants, R134a has an Ozone Depletion Potential (ODP) of exactly 0, and its impact is limited strictly to Global Warming Potential, which is mitigated through leak-detection sensors and a 10% maximum annual leakage control protocol. The Project will continue periodic air quality monitoring and explore opportunities to further reduce emissions through energy-efficient technologies and environmentally friendly refrigerants with low Ozone Depletion Potential (ODP) and Global Warming Potential (GWP).

Regarding solid waste management, a waste segregation system has already been established using color-coded bins for dry waste, kitchen waste, grease waste, sludge waste, and recyclable materials. Recyclable waste is collected by licensed recycling contractors, while residual waste is disposed of through approved YCDC disposal systems. The current infrastructure provides a 4.8×safety factor for total dry waste. All kitchen waste bins are now stored within a designated Cool Room to halt organic fermentation. In response to stakeholder recommendations, the Project will continue improving waste segregation practices, maintain sufficient waste bins throughout the development, strengthen housekeeping activities to prevent waste accumulation, and maintain proper disposal records.

For Wastewater, Drainage, and Groundwater Resources, the Project currently operates an on-site wastewater treatment plant utilizing Membrane Bioreactor (MBR) technology prior to discharge. In the event of a municipal water failure, the Proponent can utilize 16 deep bore wells and a 2,589.9 m³ combined tank storage. This provides the project with approximately 3 days of total water autonomy. Groundwater extraction is currently limited and managed through rotational operation to preserve well performance to reduce ground water extraction and grey waters were reused. Routine monitoring and maintenance of drainage systems, pipelines, and wastewater treatment facilities will continue to ensure compliance with environmental requirements and prevent leakage or contamination.

To address traffic-related concerns, the Project has already implemented internal traffic circulation management, directional signage, parking guidance systems, designated loading and unloading areas, and pedestrian safety measures. Future traffic monitoring will be conducted periodically to evaluate traffic conditions and identify opportunities for further improvement.

With respect to occupational health, safety, and fire protection, comprehensive health and safety management systems, emergency response procedures, and fire protection systems are currently in place. In response to stakeholder recommendations, the Project will further strengthen emergency preparedness measures, including the incorporation of earthquake preparedness and seismic resilience procedures within the Disaster Management Plan. Fire safety procedures will also be updated to include response measures for electric vehicle (EV) battery fire incidents where applicable.

Regarding community welfare and Corporate Social Responsibility (CSR), the Project remains committed to supporting surrounding communities through health, education, environmental conservation, disaster response, infrastructure improvement, and community development

initiatives. The concerns raised regarding local water supply issues and community support will be considered during future CSR planning and stakeholder engagement activities.

Finally, the Project commits to maintaining continuous stakeholder engagement, implementing the Environmental Management Plan (EMP), submitting environmental monitoring and compliance reports according to regulatory requirements, and ensuring that environmental and social performance is continuously improved throughout the Project lifecycle.

The Project Proponent will continue to review stakeholder feedback and incorporate reasonable and practical recommendations into future environmental and social management activities to ensure sustainable project operation and positive community relations.

8.7 Disclosure

Disclosure is a formal way of making information accessible to interested and affected parties. Communicating such information that is understandable to the stakeholders is an important step in the process of stakeholder engagement. All other activities, from consultation and informed participation to negotiation and resolution of grievances, will be more constructive if stakeholders, including affected communities, have accurate and timely information about the project, its impacts, and any other aspects that may have an effect on them.

Disclosure process was carried out in terms of consultation. Discussion, suggestions and recommendation were performed effectively. Meeting duration was based on the comments and suggestions and attendants can participate without worrying time limitation. Feedback forms are also delivered at the meeting for the ones who don't want to talk. Document of project summary were put the administrative offices attached with feedback forms and everyone can give feedbacks and suggestions by reading the document of project summary. Everyone can read about the project and give feedbacks on the project. The full Environmental Impact Assessment (EIA) Report was publicly disclosed on the Shwe Taung Junction City Development's official website: <https://www.shwetaunggroup.com/heritage/junction-city/> ensuring broader accessibility for interested parties.

9. CONCLUSION AND RECOMMENDATION

9.1 Conclusion

This Environmental Impact Assessment (EIA) Report has been prepared for Shwe Taung Junction City Development to evaluate the environmental implications of “Junction City Muxed Use Development Project”. Shwe Taung Junction City Development, developed a high-rise, mixed-use development in Pabedan Township. The proposed project will include Office Tower, Hotel Tower and Shopping Center.

The primary aim of this study is to assess the environmental impacts associated with the project’s activities and to design mitigation strategies and management plans to address identified risks. The EIA has been conducted in compliance with the Myanmar Environmental Conservation Law, Environmental Conservation Rules, and Environmental Impact Assessment Procedure.

The assessment focuses on key environmental aspects, including air quality management, water quality management, waste management, traffic management, and resource utilization. Baseline environmental quality measurements and impact analyses reveal that the project activities may have adverse impact of waste generation, water pollution, resource consumption, and traffic congestion. To address these concerns, the project proponents are required to implement a comprehensive Environmental Management Plan (EMP) and specific sub-plans, such as wastewater treatment, waste management, traffic management, and resource management plans. Incorporating feedback and suggestions from public consultations, particularly regarding environmental quality monitoring and Corporate Social Responsibility (CSR) initiatives, this EIA report reflects a thorough consideration of the EMP, Environmental Monitoring Plan, and all related sub-plans.

In conclusion, the potential environmental impacts of the proposed project are considered to be minor and manageable, while the project will bring significant socio-economic benefits including improved housing, infrastructure development, and local employment opportunities, contributing positively to the sustainable development of the project area.

Therefore, the project is considered environmentally acceptable for implementation, provided that all proposed mitigation and monitoring measures are properly undertaken in accordance with the approved ESMMP.

9.2 Recommendation

The following recommendations have been made for efficient and effective implementation of environmental conservation, health and safety and social responsibilities through the lifespan of the proposed project.

- ✓ Follow the comments and suggestions made by ECD after reviewing this EIA report.
- ✓ Once EIA is approved by concerned authority, the efficient and effective implementation is recommended.
- ✓ Regular monitoring and adaptive management should be integral to the project's implementation to ensure that the mitigation measures remain effective over time.
- ✓ The management's responsibilities for the safety and health of workers and providing adequate amount of budget.
- ✓ To support skill development of the employee and workers, necessary and skill development training will be provided by management body.
- ✓ Monitoring and stakeholder engagement further enhance transparency and accountability.
- ✓ Strictly follow the GRM and collaborating with local communities.
- ✓ Abide environmental policy, laws, rules and instructions of the Republic of the Union of Myanmar.

Finally, the proponent should follow the comments and suggestions made by ECD after reviewing this EIA report. Once scoping EIA is approved by concerned authorities, effective implementation of EIA by the project proponent is essential. The proponent should abide environmental policy, laws, rules and instructions of the Republic of the Union of Myanmar. It can be concluded that all of the anticipated adverse impacts of the project can be minimized by the proper mitigation measures described in this report.