



# EIA for the Development of New Yangon City Phase 1 Master Plan – Bridges

## Scoping Report

27 September 2019

Project No.: 0488716

<b>Document details</b>	<b>Environmental Impact Assessment for the Development of New Yangon City Phase 1 Masterplan – Bridges</b>
Document title	EIA for the Development of New Yangon City Phase 1 Master Plan – Bridges
Document subtitle	Scoping Report
Project No.	0488716
Date	27 September 2019
Version	2
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Client Name	New Yangon Development Company Ltd.

#### Document history

Version	Revision	Author	Reviewed by	ERM approval to issue		Comments
				Name	Date	
Draft	0.0	Various	Becky Summons	Craig Reid	26.02.2019	Draft to client
Draft	0.1	Various	Becky Summons	Craig Reid	19.03.2019	Update to client
Draft	0.2	Various	Becky Summons	Craig Reid	05.04.2019	Update to client
Draft	1	Various	Becky Summons	Craig Reid	10.04.2019	ECD submission
Final	2	Various	Becky Summons	Craig Reid	27.09.2019	ECD submission

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**Signature page**

27 September 2019

# **EIA for the Development of New Yangon City Phase 1 Master Plan – Bridges**

## **Scoping Report**

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		<ul style="list-style-type: none"> <li>• To include the consultants and related persons contact information.</li>   <li>• To include the following information at project description: <ul style="list-style-type: none"> <li>- Project information (for both bridges) are to be described phase by phase as summary.</li>   <li>- Detailed location of each bridge, project boundary figures and project layout figures are to be included.</li> </ul> </li>   <li>• To include the following for describing the surrounding environment <ul style="list-style-type: none"> <li>- Villages, wards, townships names near the project</li>   <li>- To describe and explain the summary of environment and social information.</li> </ul> </li> </ul>	<p>ERM, supported by local consultants, EQM and REM will undertake the EIA for this Project. This has been included in Section 1.1. Related persons contact information has been provided in Table 2.2.</p> <p>Section 1.4.1 and 1.4.2 have been added to provide the details of Bridge 1 and Bridge 2. Section 1.4.3.1 and 1.4.3.2 have been added to provide the summary of activities during construction and operational phase.</p> <p>Table 1.1 and Figure 1.1 have been added to show the coordinates and the locations of both bridges. The drawings of Bridge 1 and 2 are included in Appendix B and Appendix C.</p> <p>Nearby village tracts and townships of Bridge 1 and Bridge 2 have been included in Section 1.5.</p> <p>Table 1.3 in Section 1.5 summarises the environmental and social sensitive areas.</p>
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		<ul style="list-style-type: none"> <li>- The reason for defining study area (2 km buffer of phase 1 New Yangon City Area) and to describe whether it is sufficient or not for project area (2 bridges) to obtain information of the surrounding environment. If not, to revise and decide the study area.</li>   <li>- To include the following for environmental impact and impact assessment and mitigation measures section:</li> <li>- Environmental impact and risk assessment methods.</li>   <li>- Summary of key environmental and social impacts at each phase of project. (Impacts from 2 bridges may not be different due to different locations so that their summary of impacts are to be described at each phase of e project.)</li> </ul>	<p>The proposed Bridge 1 and Bridge 2 are respectively across Yangon River of Kye Myin Daing Township and Pan Hlaing River of Hlaing Tharyar and Twantay Township. The EIA will also consider impacts from the temporary auxiliary support infrastructure such as project site offices, construction workers camp, concrete batching plant with the Phase 1 area. As such, in order to have a robust assessment, the study area for the Project nearly covers the whole Phase 1 Development. This has been added in Section 1.5.</p> <p>The impact assessment methodology has been provided in Section 1.6.1.</p> <p>The scoped in impacts during construction and operational phase, and accidental events have been respectively included in Section 1.6.3, 1.6.4 and 1.6.5.</p>
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		<ul style="list-style-type: none"> <li>- Summary of cumulative impact assessment methods for 2 bridges.</li> <li>• To describe the summary of environmental management plan for Environmental impact assessment.</li> <li>• To include the following for Public Consultation and Disclosure <ul style="list-style-type: none"> <li>- Information disclosure methods to public</li> <li>- Future consultations and meetings</li> </ul> </li> <li>• To include a map for Sampling Plan from table (1.3).</li> </ul>	<p>Cumulative impact assessment methodology has been included in Section 1.6.2.</p> <p>The required Environmental Management Plans will be identified after the impact assessment and provided in the EIA Report.</p> <p>Disclosure information is included in Section 1.7</p> <p>Details on future consultations and meetings are included in Section 1.7.</p> <p>Figure 1.3 has been added to show the sampling plan.</p>
<b>2</b>	<b>Project Background</b>		
	<ul style="list-style-type: none"> <li>• The New Yangon Development Company, Ltd. will implement the project with the lead of Yangon Regional Government and phase 1 of the project will be implemented on 91.3 sq.km of land in Seikgyi Kanaungto, Twantay, Hlaing Tharyar and Kyee Myin Daing Townships to the West of Yangon. (Described at paragraph 2). Phase 1 of the project will include construction of bridge, road, water treatment plant, waste water treatment plant, power</li> </ul>	<ul style="list-style-type: none"> <li>• To describe the status of sign agreement or MOU agreement between project proposal person and Yangon Regional Government.</li> </ul>	<p>NYDC's company registration certification has been included in Appendix E. This has been mentioned in Section 2.2.</p>

	<p>distribution networks and substations and industrial zones as such (6) sectors. The submitted scoping report is for the construction of (2) bridges. (Described at page (8-10)). Project responsible person contact address is described at page 11. Third party report developing team are Environmental Resources Management (ERM)-Myanmar, Limited (ERM), Environmental Quality Management (EQM) and Resource and Environment Myanmar (REM) (described at page 2.3). Each professional's field of specialty from third party have been described at section 2.2. However it is found that status of sign agreement or MOU agreement between project proposal person and Yangon Regional Government is need to be described.</p>		
<b>3</b>	<b>Overview of the Policy, Legal and Regulatory Framework</b>		
	<ul style="list-style-type: none"> <li>Project related laws, legislations, regulations, international conventions and standards of EQEG are described at table 3.1, 3.2, 3.3, 3.4, 3.5 and 3.6. However environmental and social regulations of project owner has to be described.</li> </ul>	<ul style="list-style-type: none"> <li>To describe the environmental and social regulations of NYDC.</li> </ul>	The relevant policies of NYDC will be included in the EIA Report.
<b>4</b>	<b>Project Description and Alternatives</b>		
	<ul style="list-style-type: none"> <li>At section (4.1), page 21, bridge 1 will be located on the Yangon River of Kye Myin Daing Township and bridge</li> </ul>	<ul style="list-style-type: none"> <li>To describe the objective of scoping phase.</li> </ul>	This Scoping Report focuses on the issues that are most important for Project planning, decision-making, and stakeholder interests by mapping the potential interactions between Project activities,



	<p>2 will be located on the Pan Hlaing River of Hlaing Tharyar Township and Twantay Township. At section (4.3.1), page 21, bridge 1 connects Kyee Myin Daing Township (Bagaya Road and near connects Kyee Myin Daing Strand Road) and project area. Bridge 2 connects Hlaing Tharyar Township and project area. At page 25, table (4.1) and (4.2), design of the bridges, at figure (4.1), locations of bridges. At section (4.3), bridge 1 is 1465 meters long and bridge 2 is 570 meters long. At page 27, section (4.4.2), existing approach roads will be used as their existing situations. However, the objective of scoping phase, the objective of the project, detailed location each bridge/ project boundary figures, project layouts, descriptions for approach roads for each bridges are need to be described.</p> <ul style="list-style-type: none"> <li>• At Chapter 4, project description, section (4.4), page (26-31), project activities are described. However, all the project activities are need to be described so that which project activities are causing which impacts can be identified. Therefore at page (65), table 1, paragraph (1) Project activities, activities not described are need to be included.</li> </ul>	<ul style="list-style-type: none"> <li>• To describe the objective of project.</li> <li>• To describe the detailed location each bridge/ project boundary figures, project layouts</li> </ul>	<p>which have the potential to cause an impact, and environmental and social receptors. The scoping exercise consisted of desk-based studies, site visits, and engagement activities to inform the baseline of the Project. This Scoping Report also includes a Terms of Reference (ToR) that will help to determine the scope of the full EIA Report and Environmental Management Plan (EMP) including a description of the data gaps, further examination, studies, and actions required in order to obtain the required data to complete the EIA (Section 9). This has been included in Section 2.4.</p> <p>This project aims to connect the New Yangon City to the existing Yangon city, relieve the existing traffic congestion and city function saturation in the main city, and optimize the overall development structure of Yangon City. This has been included in Section 4.1.</p> <p>Bridge 1 and Bridge 2' coordinates have bene provided in Table 4.1 under Section 4.1. A close up of the two bridges has been shown in Figure 4.2. The drawings of Bridge 1 and Bridge 2 are respectively included in Appendix B and Appendix C. Please note that the layout / boundary may change during the development phase.</p>
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	<ul style="list-style-type: none"> <li>• Alignment and cross section of bridge 1 is described but not for bridge 2.</li> <li>• Need to describe the plan for getting raw materials for the project (From local or from foreign).</li> <li>• The machine (vehicle) / equipment list to use at project for each year are described at table 4.7 however expected number of machine (vehicle)/ equipment for each bridge for each phase are need to be described.</li> <li>• At section 4.4.6 and figure 4.5, it is described that (438) temporary building will be constructed for workers during construction phase at Dala and Seikgyi Kanaungto Townships.</li> </ul>	<ul style="list-style-type: none"> <li>• For the description of the location the project, coordinate points are needed to describe project boundary (about 6 points to cover the whole project area) and starting points, middle points and end points of the 2 bridges.</li> <li>• Approach roads for each bridges are to be described in detail. (In text and figures).</li> <li>• At page (65), table 1, paragraph (1) Project activities, activities not described are need to be included.</li> <li>• Alignment and cross section as such engineering designs of bridge 2 are need to be included.</li> <li>• To include the plan for getting raw materials for the project (From local or from foreign).</li> </ul>	<p>Coordinate points of the New Yangon City Phase 1 Area, Bridge 1 and Bridge 2 have been provided in Table 4.1 under Section 4.1.</p> <p>The description of Bridge 1 approach road is included in Section 4.3.1. The layout of approach roads for Bridge 1 and 2 are respectively included in Appendix B and C.</p> <p>Project activities that are mentioned in Section 4.4 have been included in the Project Activities column in Table 6.1.</p> <p>Bridge 2 layout plan has been attached in Appendix D. Please note that the layout / boundary might change during the development phase. Bridge 2's cross section is shown in Figure 4.8 under Section 4.3.2.</p> <p>Figure 4.9 (in Section 4.4.2) has been added to show the site access and roads plan.</p>
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		<ul style="list-style-type: none"> <li>• To describe the expected list of vehicles/ machine for each bridge at each project phase.</li> <li>• To include the indication that there will be accordance with existing laws and regulation and even with ILO standards concerning with working time for the labours. If there are night time construction activities, there need to consider local's impression and impacts.</li> <li>• The general plan for transporting the labours to the work site is need to be described.</li> </ul>	<p>Bridge 1 is a new bridge, therefore no traffic is anticipated during the construction phase. The projection of traffic load for both bridges during operational phase has been added in Table 4.10 (in Section 4.5). Further details on expected vehicles will be provided in the EIA Report.</p> <p>The statement of 'working hours will comply with Myanmar relevant laws and International Labour Organisation (ILO) standards' has been added in Section 4.4.7. The local communities' perceptions and suggestions of the construction activities during night time will be further discussed in the EIA report.</p> <p>The accommodation camp is located in Twantay Township (as Section 4.4.6 mentioned), within the New Yangon City Phase 1 Area. The general plan for transporting labourers to the work site will be provided in the construction management plan.</p>
	<p>Project Alternatives</p> <ul style="list-style-type: none"> <li>• For project alternatives, at section 4.8, local alternative for only bridge 1 is described and description is not clear. There is no alternatives for bridge 2</li> </ul>	<ul style="list-style-type: none"> <li>• Propose project (for each bridge) alternatives as location, design, approach road are to be considered and described.</li> <li>• Environmental, social, economic and cultural impacts from proposed project alternatives are calculated in advance and assessed. ( To consider the resettlement</li> </ul>	<p>Section 4.8.1 and Section 4.8.2 have been added to discuss the possible dredging methodology and piling methodology. More detail on the alternatives considered including environmental, social, economic and cultural aspects will be provided in the EIA Report.</p>

		<p>conditions of villages/ wards/ townships are to be prioritized at those points)</p> <ul style="list-style-type: none"> <li>• For the comparison of each bridge's alternatives, the reason why the alternative is chosen is need to be explained.</li> </ul>	<p>Comparison of alternatives has been listed in Table 4.11 in Section 4.8.3.</p>
<b>5</b>	<b>Description of the Surrounding Environment</b>		
	<p><b>Study Area and Area of Influence</b></p> <ul style="list-style-type: none"> <li>• It is found that it needs more description for Section Study Area and Area of Influence (AOI) at section 5.2, Defining the Study Area and Area of Influence</li> </ul>	<p><b>Study Area and Area of Influence</b></p> <ul style="list-style-type: none"> <li>• The reason for defining study area (2 km buffer of phase 1 New Yangon City Area) and to describe whether it is sufficient or not for project area (2 bridges) to obtain information of the surrounding environment.</li> <li>• To describe the study area for each bridge with text and map separately.</li> <li>• At page 37, section 5.1, only the definition of area of influence is explained and project (each bridge) related area of influence and possible impact locations are not described. So that extent of area of influence and possible impact locations (names) are to be described with text and those AOI location</li> </ul>	<p>The proposed Bridge 1 and Bridge 2 are respectively across Yangon River of Kye Myin Daing Township and Pan Hlaing River of Hlaing Tharyar and Twantay Township. The EIA will also consider impacts from the temporary auxiliary support infrastructure such as project site offices, construction workers camp, concrete batching plant with the Phase 1 area. As such, in order to have a robust assessment, the l study area for the Project nearly covers the whole Phase 1 Development.</p> <p>As mentioned above, the Study Area for Bridge 1 and Bridge 2 will be the same. The Study Area is shown in Figure 5.1.</p> <p>Description of the Aoi has been added in Section 5.2. The Aoi coordinates of Bridge 1 and Bridge 2 are provided in Table 5.1.</p>

		<p>are to be described in details at each bridge more than figure 5.1.</p> <ul style="list-style-type: none"> <li>• In order to know the existing land use conditions before the start of project, existing land use map of study area is need to be described.</li> </ul>	<p>Figure 5.2, under section 5.3.1 has been added to show the existing land use of the Study Area.</p>
	<p><b>Physical Characteristics</b></p> <ul style="list-style-type: none"> <li>• For physical characteristics, planned spatial boundaries, temporary boundary and study limits are not differentiated and described.</li> <li>• There are 2 points that governs the Yangon River system. Sea level rise and more of Ayeyarwady River water flows into Yangon River during rainy season. It is described that Spring tide for Yangon River is 5.9 meters and Neap tide us 2.6 meters and Spring tide of Hlaing River is 5.4 meters and Neap tide is 2.0 meters.</li> <li>• For air emission, for consideration of scope of the study area and area of influence, it is need to be based on wind direction.</li> </ul>	<ul style="list-style-type: none"> <li>• To describe the spatial boundaries, temporary boundary and study limits for physical characteristics with texts and figures.</li> <li>• For the scoping phase of the project, to include the previous flood information at the existing environment section and planning for EIA phase.</li> <li>• Based on the information from Royal Haskoning Flood Risk Assessment and AECOM flood risk assessment, to describe</li> </ul>	<p>The proposed Bridge 1 and Bridge 2 are respectively across Yangon River of Kyee Myin Daing Township and Pan Hlaing River of Hlaing Tharyar and Twantay Township. The EIA will also consider impacts from the temporary auxiliary support infrastructure such as project site offices, construction workers camp, concrete batching plant with the Phase 1 area. As such, in order to have a robust assessment, the physical study area for the Project nearly covers the whole Phase 1 Development, i.e. the ‘Study Area’ in Figure 5.1.</p> <p>Flooding information has been added in Section 5.3.3.2.</p> <p>Based on the flood assessment carried out by Royal Haskoning, the risk of flooding will be taken into consideration during EIA stage as mentioned in Section 5.3.3.2.</p>

		<p>whether there is flood, water entering the project area during high tide or not. To include how it will be assessed during the EIA phase.</p> <ul style="list-style-type: none"> <li>Greenhouse gas emission from the vehicle/ machine from project activities is to be describe and also to describe how greenhouse gas emission, climate change from proposed project will be assessed.</li> </ul>	<p>The statement of including greenhouse gas emission and climate change in the EIA report has been added in Section 4.6.2</p>
	<p><b>Biological Characteristics</b></p> <ul style="list-style-type: none"> <li>For each bridge’s biological characteristics, planned spatial boundaries, temporary boundary and study limits are not differentiated and described. At section 5.4, mangrove vegetation related species are described. Regarding with Fauna, a study has been done 2017 and there will be a survey for fauna.</li> </ul>	<ul style="list-style-type: none"> <li>To describe the spatial boundaries, temporary boundary and study limits for biological characteristics with texts and figures.</li> </ul>	<p>The proposed Bridge 1 and Bridge 2 are respectively across Yangon River of Kye Myin Daing Township and Pan Hlaing River of Hlaing Tharyar and Twantay Township. The EIA will also consider impacts from the temporary auxiliary support infrastructure such as project site offices, construction workers camp, concrete batching plant with the Phase 1 area. As such, in order to have a robust assessment, the biological study area for the Project nearly covers the whole Phase 1 Development, i.e. the ‘Study Area’ in Figure 5.1.</p>
	<p><b>Socio-Economic Characteristics</b></p> <ul style="list-style-type: none"> <li>In Page 47, it is stated that socioeconomic characteristics will be studied in Seikgyi Kanaungto, Kye Myin Daing, Dala, Ahlone, Twantay and Hlaing Thar Yar Townships. In 5.5.1, it is also stated that overview of information on the Townships in the study area based on information collected from local GADs, township GAD reports and census data.</li> </ul>	<p><b>Socio-Economic Characteristics</b></p> <ul style="list-style-type: none"> <li>In the project description, the consideration related with the resettlement of villages, wards and towns due to the Project (Bridges) is not included. Therefore, if there is resettlement plan, it is needed to include in this chapter.</li> <li>To describe the spatial boundaries, temporary boundaries and study limit of socioeconomic data with texts and map</li> </ul>	<p>The construction of Bridge 1 will have impacts on Set San Out Yone Alat Chaung Ward and Kye Myin Daing Township. Relevant information and figures have been added in Section 4.3.1. Resettlement memo will be provided in the EIA report.</p> <p>The proposed Bridge 1 and Bridge 2 are respectively across Yangon River of Kye</p>

	<p>However, if there is resettlement plan for the villages, wards and towns due to the Project (Bridges), it is needed to collect the information from them and include those in this chapter.</p>	<ul style="list-style-type: none"> <li>In order to know the impact on local communities, it is needed to collect the socioeconomic data from villages, wards and towns around the project area (By doing this, it will know how much study is needed for changes of socioeconomic characteristics during the EIA stage)</li> </ul>	<p>Myin Daing Township and Pan Hlaing River of Hlaing Tharyar and Twantay Township. The EIA will also consider impacts from the temporary auxiliary support infrastructure such as project site offices, construction workers camp, concrete batching plant with the Phase 1 area. As such, in order to have a robust assessment, the social study area for the Project nearly covers the whole Phase 1 Development, i.e. the 'Study Area' in Figure 5.1.</p> <p>Section 5.5 has been updated to state that socio-economic data will be collected during EIA phase to identify impacts on local communities, The scope is included in the TOR (Section 9.6).</p>
<p><b>6. Key Potential Impact and Mitigation Measures</b></p>			
	<ul style="list-style-type: none"> <li>In Page 62, it is stated that ERM will use the good industry practice as the methodology of impact assessment. However, it is found that good industry practice is needed to describe.</li> <li>In page 67, potential interactions that were not deemed not to result in a potentially significant impact have been scoped out with justification and will not be considered in the EIA study was described. It is found that it is needed to describe detail social and environmental scoped in impacts with</li> </ul>	<ul style="list-style-type: none"> <li>To include the good international industry practice of ERM that will be used as the methodology of impact assessment.</li> <li>To include the impact identification that can cause in each stages of the project</li> <li>To include the detail social and environmental scoped in impacts with their consideration factors for each phases of the project</li> </ul>	<p>ERM's Impact assessment methodology has been presented in Section 9.7.</p> <p>The impacts during construction phase, operational phase; from accidental events are respectively under Section 6.2.1, 6.2.2 and 6.2.3.</p> <p>Scoped in environmental and social impacts during construction and operational phases (Section 6.2.1 and 6.2.2) will be further discussed in the EIA report.</p>

	<p>their consideration factors for each phases of the project.</p>		
	<p><b>Impact Identification</b></p> <ul style="list-style-type: none"> <li>In Page 63, it is stated that potential impacts were identified based on the physical activity and hazard type. It is found that there is no statement about risk assessment method.</li> </ul>	<ul style="list-style-type: none"> <li>It is needed to include risk assessment method and to calculate potential risks by using that method</li> </ul>	<p>Unplanned / accidental events including vehicle collision, spills and leaks, and fire and explosion will be further discussed in the EIA report. The methodology for the impact (and risk) assessment is provided in the Terms of Reference. Scoping is the identification of all project activities and all environmental and social receptors and identifying any interactions. The impact and risk assessment will be presented in the EIA Report.</p>
	<ul style="list-style-type: none"> <li>In Paragraph 6.2, potential impacts that can cause during the construction and operation phase will be carried out in the EIA process is described.</li> <li>In Table 6.3, following potential mitigation measures are described. <ul style="list-style-type: none"> <li>Air quality deterioration</li> <li>Increase of noise level</li> <li>Surface water and groundwater deterioration</li> <li>Soil quality and topography deterioration</li> <li>Waste management</li> <li>Landscape and visual character deterioration</li> <li>Ecology</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>After this Yangon New City project, livelihoods of rural communities will be changed. Therefore, livelihood impact to be carried out as the priority and to include the livelihood restoration plan.</li> </ul>	<p>Noted, impacts to demographic pattern, economy and livelihood during construction and operational phase have been scoped in. It will be further discussed in the EIA report. A livelihood restoration plan will be provided in the EIA report.</p>



	<ul style="list-style-type: none"> <li>- Community health and safety affection</li> <li>- Demographic pattern, economy and livelihood affection</li> <li>- Occupational health and safety</li> <li>- Infrastructure services and deterioration</li> <li>- Accidental events</li> </ul>		
<b>7.</b>	<b>Cumulative Impacts</b>		
	<ul style="list-style-type: none"> <li>• In page 62, it is stated that cumulative impacts from the New Yangon City Development as a whole are likely to include; air emissions, noise generation, impacts to water and soil and livelihood impacts; these will be assessed in the EIA Report. However, it is needed to include the impact assessment method.</li> </ul>	<ul style="list-style-type: none"> <li>• To include the impact assessment method.</li> </ul>	Table 6.1 under Section 6.1.2 has been added to explain the cumulative impact assessment process.
<b>8.</b>	<b>Public consultation and disclosure</b>		
	<ul style="list-style-type: none"> <li>• In 7.1.3 - stakeholder mapping, farmers and local communities, vulnerable groups are considered as primary stakeholders. Government ministries, local authorities, NGOs and Civil Society Organizations are considered as secondary stakeholders.</li> <li>• In Table 7.5, stakeholder engagement plan is stated.</li> <li>• In Table 7.6, purpose and times of stakeholder engagement is described.</li> <li>• In page 91, responses for the key queries raised during consultation meetings are described as follows:</li> </ul>	<ul style="list-style-type: none"> <li>• In Page 91, according to the key questions, it is found that there is no clear statement about the knowledge, opinions, perceptions and attitudes of local communities (especially communities from Townships, Wards, Towns and Townships around the project area). Therefore it is needed to include the knowledge, opinions, perceptions and attitudes of local communities.</li> <li>• For the upcoming public consultation, it is needed to conduct meetings with local communities from the project related areas</li> </ul>	<p>Local communities' opinions of the project will be provided in the EIA report. Table 7.7 in Section 7.2.3 includes all queries raised and responses provided to local stakeholders.</p> <p>Noted, Figure 9.2 in Section 9.6.1 shows the public consultation meetings locations for the EIA phase.</p>

	<ul style="list-style-type: none"> <li>- There will be a separate EIA for bridge construction and operation for the whole project</li> <li>- The excavation of sand/sol from the Project Area will be considered in the EIA report in terms of the impact on the environment and people.</li> </ul> <ul style="list-style-type: none"> <li>• However, it is found that there is no carry out tasks for getting the knowledge, opinions, perceptions and attitudes of local communities related with the two bridges.</li> </ul>		
<b>9.</b>	<b>Terms of Reference</b>		
	<ul style="list-style-type: none"> <li>• Sampling plan and location of the sampling points are stated in Table 9.1 and Figure 9.1. In page 99, it is stated that the data for ambient air quality, ambient noise, ground water quality, surface water quality, soil quality and biodiversity (Birds and mammals, aquatic, marine, mangrove) will be collected and also described the data collection method. However, topics that will be collected by using the secondary data collection method and the data source for each related topics is needed to include.</li> </ul>	Topics that will be collected by using the secondary data collection method and the data source for each related topics is needed to include.	Detailed desktop study and data sources will be provided in the EIA report.
	<p><b>Ambient Air Quality</b></p> <ul style="list-style-type: none"> <li>• It is stated that <ul style="list-style-type: none"> <li>-baseline ambient air monitoring to be conducted within the Study Area (2 km buffer around the whole New Yangon City Phase 1 Development,</li> </ul> </li> </ul>	To include the sampling method of selecting the sampling location	Sample locations are selected by the nearest sensitive receptors locations off-site (e.g, houses, schools, monasteries, etc. that are close to the Project Area). PM <sub>10</sub> and PM <sub>2.5</sub> will be undertaken by using the direct reading of HAZ-SCANNER Environmental

	<p>encompassing the Townships neighboring the project area,          -air quality monitoring location were selected by identifying potentially affected communities, with consideration given to the prevailing wind conditions and project activities,          -a total of 27 air quality monitoring sites have been established at locations in the study area and these location are stated in figure 9.1,          -measurements of NO<sub>x</sub>, NO<sub>2</sub> and SO<sub>2</sub> will be taken using Palmes type diffusion tubes and measurements of PM<sub>10</sub> and PM<sub>2.5</sub> will be undertaken using the Environmental performance Assessment (EPA).</p> <ul style="list-style-type: none"> <li>• However, it is needed to include the sampling method for the selection of sampling location and analysis method.</li> </ul>		<p>Perimeter Air Station (EPA). They have been included in Section 9.5.2.1.</p>
	<p><b>Ambient Noise</b></p> <ul style="list-style-type: none"> <li>• It is stated that             <ul style="list-style-type: none"> <li>- Baseline ambient noise monitoring to be conducted within the study area</li> <li>- Noise monitoring (db (A)) will be conducted at selected locations that can reflect the exposure of the nearest local community's and sensitive locations and duration and frequency will be recorded for 24hrs continuously for (two) consecutive days at each site, covering a weekday and a</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• To include the sampling method of selecting the sampling location</li> </ul>	<p>Sample locations are selected by the nearest sensitive receptors locations off-site (e.g, houses, schools, monasteries, etc. that are close to the Project Area). This has been included in Section 9.5.2.2.</p>

	<p>weekend day, using the Sound level Meter (Model: SL-4023SD) along with SD card real time data recorder (USB/RS232).</p> <ul style="list-style-type: none"> <li>- The monitoring procedures, data analysis and interpretation are carried out in accordance with the guidelines of USEPA and the operational manufacture.</li> <li>• However, it is needed to include the sampling method of selecting the sampling location.</li> </ul>		
	<p><b>Surface water quality and ground water quality</b></p> <ul style="list-style-type: none"> <li>• In page 99, it is stated that water samples will be collected by using clean sampling dipper and all water sample will be sent to ALS Hong Kong Laboratory.</li> <li>• However, it is needed to include the statement of sampling location (24 places) and points for the surface water quality and ground water quality measurement.</li> <li>• However, it is needed to include sampling methods, collection methods and analysis methods for the surface water quality and ground water quality.</li> </ul>	<ul style="list-style-type: none"> <li>• To include the sampling methods, collection methods and analysis methods for the surface water quality and ground water quality.</li> </ul>	<p>Sampling collection method has been included in Section 9.5.2.3. United States Environmental Protection Agency (USEPA) (2002) standard method for chemical analysis of water and wastewater and American Public Health Association (APHA) (2005) Standard method for examination of water and wastewater will be used to analyse the surface and ground water quality. This has been included in Section 9.5.2.3.</p>
	<p><b>Soil Quality</b></p> <ul style="list-style-type: none"> <li>• It is stated that soil samples will be collected from drill-holed dug and will be sent to an internationally</li> </ul>	<ul style="list-style-type: none"> <li>• To include the sampling method and analysis method</li> </ul>	<p>Sampling collection method has been included in Section 9.5.2.4. Dutch Standards for Soil Quality will be used to analyse the data. This has been included in Section 9.5.2.4.</p>

	<p>accredited laboratory (ALS Hong Kong laboratory) in Hong Kong. However, it is needed to include the statement about the selection of soil quality measurement location and points. It is needed to include sampling method and analysis method.</p>		
	<p><b>Biodiversity</b>  <b>Terrestrial Flora (Wet Season)</b></p> <ul style="list-style-type: none"> <li>It is stated that transect surveys will be used to identify the aforementioned species, GPS reference locations are to be made for all individuals species identified, qualitative descriptions and a photographic record of the vegetation classes and conditions are to be provided based in field observations.</li> </ul>	<ul style="list-style-type: none"> <li>No comments.</li> </ul>	Noted
	<p><b>Birds and Mammals</b></p> <ul style="list-style-type: none"> <li>It is stated that surveys will be conducted within the study area, transect surveys will be used, surveys will determine the presence of any invasive species within the Project Area. However, it is not included the sampling method for selection of sampling locations. It is found that it is needed to include the sampling method.</li> </ul>	<ul style="list-style-type: none"> <li>It is needed to include the sampling method for selection of sampling locations</li> </ul>	The sampling locations will be selected in the field to cover the range of habitats in the Study Area (paddy / Woodland / mangroves etc.) This has been added in the sub section of 'birds and mammals' in Section 9.5.2.5.
	<p><b>Aquatic/ Marine/Mangrove</b></p> <ul style="list-style-type: none"> <li>In page 100, it is stated that Aquatic/Marine/Mangrove survey will be conducted at the bridge locations (9 points) and data on fish species will</li> </ul>	<ul style="list-style-type: none"> <li>To describe the sampling method for selecting the 9 locations</li> </ul>	The sampling locations will be selected in the field to cover the range of habitats in the Study Area (paddy / Woodland / mangroves etc.) This has been added in the sub section

	be collected from local community interviews.		of 'Aquatic/Marine/Mangrove' in Section 9.5.2.5.
	<p><b>Socio-economic Data</b></p> <ul style="list-style-type: none"> <li>In 9.6.1, it is stated that public consultation and disclosure will be undertaken across the various stakeholder groups identified and consultations were organized to ensure representation of potentially affected and interested stakeholders.</li> <li>In 9.6.2, village and household questionnaires, farmer's questions and women's questionnaire will be asked up to 300 households within the townships for the socioeconomic data. However, the socioeconomic data should represent for the project (two bridges) related local communities.</li> <li>It is stated that an outline of the proposed contents of the EIA Report is provided in Table 9.2 which follows the EIA Procedure (2015). However, it is found that the explanatory note of Table 9.2 is not completed as per requirements of EIA procedures.</li> </ul>	<ul style="list-style-type: none"> <li>For collecting the socioeconomic data, it is needed to include numbers of local communities from each Township.</li> <li>In the explanatory note of table 9.2, it is needed to include in details as per the requirement of EIA procedure (it means to include heading and sub-heading as per EIA procedure).</li> </ul>	<p>Socioeconomic data will be collected throughout the whole Phase 1 Development, apart from the local communities that are close to the two proposed bridges. Sampling distribution of the household surveys will be provided in the EIA report.</p> <p>The sub-headings have been shown in Table 9.2. under Section 9.8.</p>
<b>10.</b>	<b>General</b>		
	<ul style="list-style-type: none"> <li>To decide and describe how far there can be impact from proposed project area and how much it can impact to locals. (To identify scope of impact)</li> <li>To especially include information related to construction of 2 proposed bridges.</li> </ul>		<p>The AoI is out to 2 km from the Project Area. This scoped in and out impacts are listed in the Matrix in Table 6.2.</p> <p>Noted. Only relevant information has been included in this report.</p>

	<ul style="list-style-type: none"> <li>• To explain each bridge as a section / a part.</li>   <li>• To describe the project related information from Flood risk assessment report for New Yangon City Project.</li>   <li>• As per EIA procedure section (50), project information are to be disclosed to public and to receive suggestion by uploading onto project proposal person website, near project and at publically visible locations and sign boards and by advertising at news and medias.</li> </ul>	<p>Section 4.3.1 and Section 4.3.2 respectively provide the details of Bridge 1 and Bridge 2. The construction and operational activities for both bridges are similar, as such, their impacts and mitigation measures are also similar.</p> <p>Flood risk assessment information has been included in Section 5.3.3.2.</p> <p>Project information has been disclosed as per Article 50, this is mentioned in Section 7.3.2.</p>
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## Acronyms and Abbreviations

Name	Description
Aol	Area of Influence
CBD	Central Business District
DWIR	Directorate of Water Resources and Improvement of River Systems
ECC	Environmental Compliance Certificate
ECD	Environmental Conservation Department
EHS	Environmental, Health and Safety
EIA	Environmental Impact Assessment
ESIA	Environmental and Social Impact Assessment
EMP	Environmental Management Plan
EQEG	Environmental Quality (Emissions) Guidelines
EQM	Environmental Quality Management
ERM	Environmental Resources Management - Myanmar, Limited
FGD	Focus Group Discussions
IEE	Initial Environmental Evaluation
IFC	International Finance Corporation
ILO	International Labour Organization
JICA	Japan International Cooperation Agency
KPIs	Key Performance Indicators
kW	Kilowatt
MIC	Myanmar Investment Commission
MOALI	Ministry of Agriculture, Livestock and Irrigation
MOC	Ministry of Construction
MONREC	Ministry of Natural Resources and Environmental Conservation
MOPF	Ministry of Planning and Finance
MOTC	Ministry of Transport and Communications
MPA	Myanmar Port Authority
NYDC	New Yangon Development Company Ltd.
OHS	Occupational Health and Safety
PAP	Project Affected Peoples
PCU	Passenger per Unit
PM	Particulate Matter
PME	Powered Mechanical Equipment
ROW	Right of Way
Sq.km	Square kilometre
ToR	Terms of Reference
TSP	Total Suspended Particles
WHO	World Health Organization
YCDC	Yangon City Development Committee

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YESC	Yangon Electricity Supply Corporation
YRG	Yangon Region Government
YUTRA	Yangon Urban Transport Master Plan of the Project for Comprehensive Urban Transport Plan of the Greater Yangon

## 1. EXECUTIVE SUMMARY

### 1.1 Introduction

The **New Yangon Development Company, Ltd. (NYDC)**, incorporated under the Yangon Regional Government, plans to develop the New Yangon City.

The New Yangon City is located in a semi-urban to rural area in Seikgyi Kanaungto, Twantay, Hlaing Tharyar and Kyee Myin Daing Townships to the West of Yangon, and covers a total of 88.3 square kilometres (sq.km). The priority infrastructure projects (Stage 1 of Phase 1) are split into six groups based on the types of facilities: Bridges, roads, water, waste water, power and industrial zone. This Scoping Report covers the “Bridges” facilities.

**Environmental Resources Management (ERM)-Myanmar, Limited** (ERM) has been commissioned by the NYDC to undertake an Environmental Impact Assessment (EIA) for the Project. ERM will be supported by local Myanmar consultants, Environmental Quality Management (EQM) and Resource and Environment Myanmar (REM), to conduct the public consultation and environmental baseline surveys. This EIA will also consider social impacts. The EIA Report will be submitted to relevant Myanmar authorities for assessment in order to inform the decision to award an Environmental Compliance Certificate (ECC).

This Scoping Report focuses on the issues that are most important for Project planning, decision-making, and stakeholder interests by mapping the potential interactions between Project activities, which have the potential to cause an impact, and environmental and social receptors. The scoping exercise consisted of desk-based studies, site visits, and engagement activities to inform the baseline of the Project.

This Scoping Report will present the following information:

- An overview of the environmental and social policy, legal, and institutional framework related to the proposed Project (Section 3);
- Details on the Project description and alternatives considered (Section 4);
- A description of the baseline environment (Section 5);
- The methodology and approach to scoping, the key potential environmental and social impacts, as well as proposed mitigation measures (Section 6);
- The stakeholder identification, engagement plan, and disclosure plan for the Project (Section 7);
- Summary of the conclusions of the Scoping Study and recommendations for the EIA Study (Section 8); and
- A Terms of Reference (ToR) that will help to determine the scope of the full EIA Report and Environmental Management Plan (EMP) including a description of the data gaps, further examination, studies, and actions required in order to obtain the required data to complete the EIA (Section 9).

### 1.2 Policy and Regulatory Framework

Pursuant to 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, the Project is required to undertake an EIA in order to obtain an ECC as per the decision of the Ministry of Natural Resources and Environmental Conservation (MONREC).

Applicable guidelines which will also be considered in preparing the EIA include:

- International Finance Corporation (IFC) Performance Standards on Environmental and Social Sustainability (2012); and
- IFC Environmental, Health and Safety (EHS) guidelines, including:

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- General EHS Guidelines (2007);
- EHS Guidelines for Environmental, Health and Safety Guidelines for Toll Roads (2007).

### 1.3 New Yangon City Overview

The New Yangon City is located in a semi-urban to rural area in Seikgyi Kanaungto, Twantay, Hlaing Tharyar and Kyee Myin Daing Townships to the West of Yangon. The New Yangon City covers a total of 88.3 square kilometres (sq.km). For Stage 1 of Phase 1, the New Yangon City is split into the following six groups based on the types of facilities:

- Bridges:
  - Bridge 1: connecting Kyee Myin Daing Township (near Bagaya Road and Kyee Myin Daing Kanner Junction) to the Project Area; and
  - Bridge 2: connecting Hlaing Tharyar Township to the Project Area.
- Roads:
  - Permanent Auxiliary Support Infrastructure: Road 1, Road 2, Road 3, Sub-arterial roads, Collector roads, and
  - Storm water network.
- Water:
  - Water treatment plant;
  - Raw water pipeline;
  - Treated water distribution lines; and
  - Water intake point.
- Wastewater:
  - Wastewater pumping stations;
  - Wastewater pipe network;
  - Sewage water tanks; and
  - Wastewater treatment plant and its associated subsidiary facilities.
- Power:
  - Transformer substation (one 230 kV, two 66 kV) and switching station (one 33 kV);
  - Main Transmission lines (from National Grid / Independent Power Producer (IPP) to 230 kV substation); and
  - Distribution lines (internal transmission lines) including 66 kV, 33 kV and 11 kV lines.
- Industrial Zone:
  - Area for industrial facilities covering approximately 13 sq.km.

The overall Phase 1 Project Area would be 88.3 sq.km. The masterplan includes residential areas of 30.93 sq.km, commercial areas of 6.41 sq.km, industrial areas of 22.37 sq.km, transport and logistics of 1.51 sq.km, green spaces of 12.01 sq.km, villages of 11.97 sq.km, civic amenities of 2.33 sq.km, and utilities (physical infrastructure) of 0.77 sq.km. These will be considered in a Strategic Environmental Assessment (SEA) that will also cover the New Yangon City.

This Scoping Report covers the “Bridges” facilities (the ‘Project’). Separate Initial Environmental Examination (IEE) / Environmental Impact Assessments (EIAs) have been prepared to cover the



roads, water treatment, waste water treatment, power, and industrial zone facilities. Cumulative impacts of all facilities for the New Yangon City will be addressed in each IEE / EIA.

## 1.4 Project Description

The ground-breaking for New Yangon City is planned for January 2020. The estimated duration of construction is two years for Bridge 1 and three and a half years for Bridge 2. The target completion dates for Bridge 1 and Bridge 2 are respectively January 2022 and July 2023. The proposed Project will be composed of:

- Bridge 1 – The Yangon River Bridge; and
- Bridge 2 – The Pan Hlaing River New Bridge.

Bridge 1 will be located over Yangon River of Kyee Myin Daing Township and Bridge 2 will be located over Pan Hlaing River of Hlaing Tharyar Township and Twantay Township (Figure 1.1). The coordinate points of the New Yangon City Phase 1 Area, Bridge 1 and Bridge 2 are listed in Table 1.1. This project aims to connect the New Yangon City to the existing Yangon city, relieve the existing traffic congestion and city function saturation in the main city, and optimize the overall development structure of Yangon City.

**Table 1.1 Project Location Coordinate Points**

Item	Coordinates*
New Yangon City Phase 1 Area	96.033387°E 16.877042°N, 96.129981°E 16.825630°N, 96.150740°E 16.766533°N, 96.102184°E 16.731149°N, 96.020524°E 16.712643°N and 96.012471°E 16.792693°N.
Bridge 1	96.122182°E 16.805966°N (Starting Point) 96.117109°E 16.805935°N (Middle Point) 96.110355°E 16.805964°N (End Point)
Bridge 2	96.035927°E 16.862558°N (Starting Point) 96.035966°E 16.860271°N (Middle Point) 96.035988°E 16.857531°N (End Point)

\*There may be some deviation between these coordinated points as the areas are not straight lines between them.

### 1.4.1 Bridge 1 – The Yangon River Bridge

The Yangon River Bridge (Bridge 1) is a two-way six-lane with walkway extradosed bridge with a total length of 1,810 m that will connect the New Yangon City with the central Yangon. The bridge will consist of three sections:

- Main bridge crossing the channel in Yangon River. The span of the main bridge is proposed to be 240 m + 100 m + 220 m and will have adequate clearance to meet the navigation requirement;
- West Approach Bridge is 360 m connecting New Yangon City with the main bridge; and
- East Approach Bridge connecting central Yangon and the main bridge. It will consist of two main ramps (300 m and 590 m) single-way two lanes connecting to Bagaya Street and two ramps single-way one lane bridge reserved for planned Inner Ring Road in the future.

### 1.4.2 Bridge 2 – Pun Hlaing River New Bridge

The existing 10 m wide Pun Hlaing Bridge is a two-way two lane road (two lanes in total). The Pan Hlaing River New Bridge is proposed to be built to satisfy the additional traffic for the road 1 expansion in the New Yangon City. A clearance distance of 5 m will be adopted between the existing bridge and the new bridge for safety during the construction period.

Scoping Report

The new bridge will be a one-way two-lane with one sidewalk and will have a total length of 570 m with a span of 30 m.

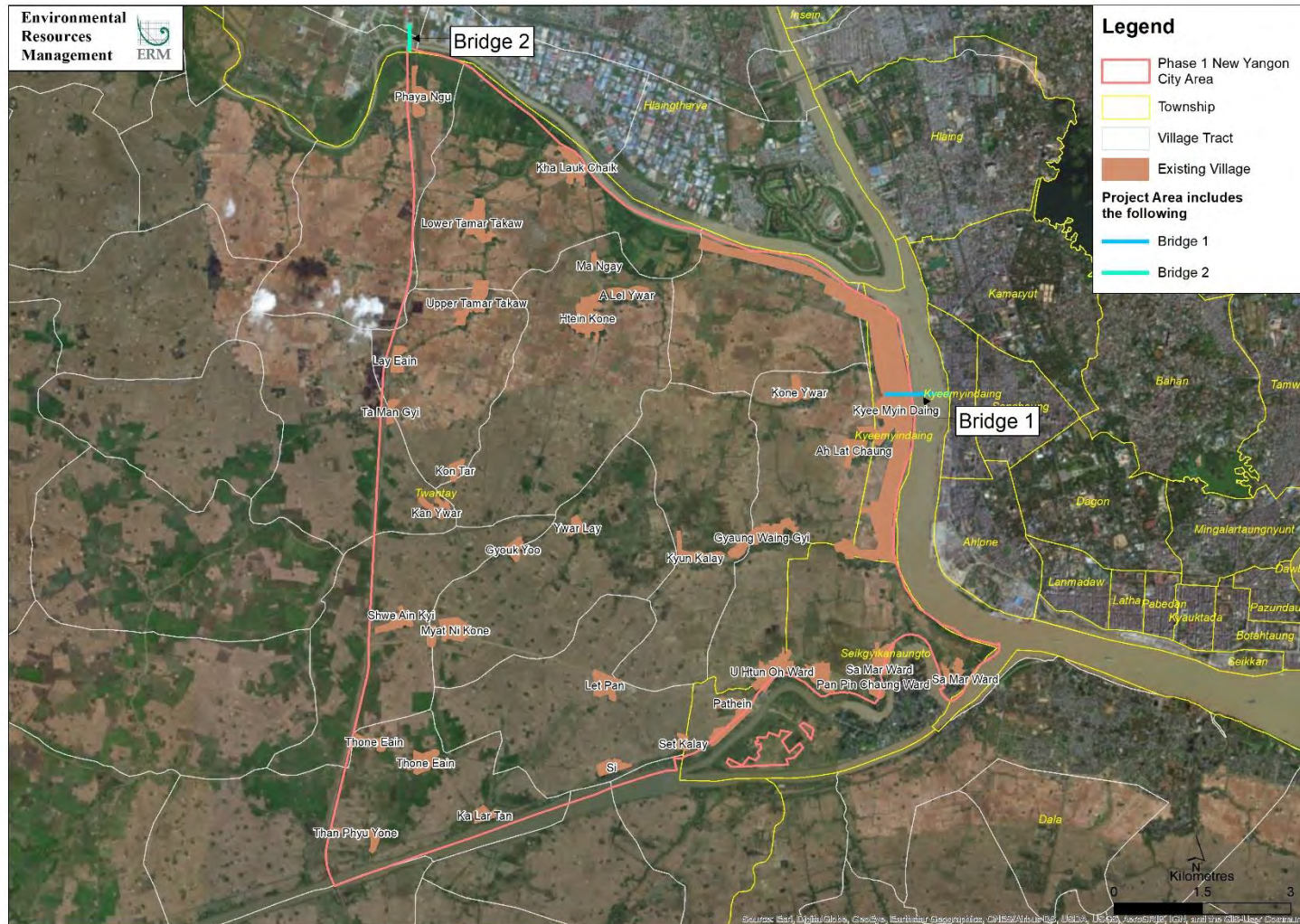


Figure 1.1 Project Location

### 1.4.3 Project Activities

#### 1.4.3.1 Construction Phase

The main construction methodology will include the following steps:

- Bored pile construction;
- Pile cap construction;
- Pier construction;
- Capping beam construction;
- Construction of bridges' superstructure;
- Construction of waterproof layer of bridge deck concrete; and
- Expansion joint installation.

#### 1.4.3.2 Operational Phase

The target construction start-date of the two main arterial roads (Road 1 and Road 2) is scheduled to be from 2019 to 2022. Bridge 1, the Yangon River Bridge, will be a keystone in the long-term development of the New Yangon City to enable connectivity to existing Yangon. Bridge 2, the Pan Hlaing River New Bridge, will support the increased traffic load in the north south direction as part of the Outer Ring Road. Bridge 1 is expected to sustain a total volume of 76,000 passenger car units (pcu) per day from 2025, increasing in 2030 and decreasing in 2050 (Table 1.2). Bridge 2 is designed to sustain a lower volume of approximately 34,000 pcu per day in 2025.

The establishment of the industrial zone in New Yangon City will demand a higher volume of freight crossing both Bridge 1 and 2 in 2050. Both bridges are expected to operate at full capacity for the next 30 years.

**Table 1.2 Projection of Traffic Load for the Bridges**

Projection (Year)	ID	Volume (000 pcu/day)				Capacity (000 pcu/day)	Volume-to-Capacity Ratio
		Private	Public	Freight	Total		
2025	Bridge #01	52	12.7	12	76	66	1.1
	Bridge #02	25	5	3.4	34	72	0.5
2030	Bridge #01	97	10.8	14	122	96	1.3
	Bridge #02	54	21	5.8	81	72	1.1
2050	Bridge #01	60	0.8	26	87	96	0.9
	Bridge #02	70	13	8.5	92	86	1.1

Source: Oriental Consultants Co., Ltd., 2019

## 1.5 Description of the Surrounding Environment

The **Project Area** is defined as the location of the Bridges (Bridge 1 and Bridge 2). Bridge 1 will be located over Yangon River of Kyee Myin Daing Township and Bridge 2 will be located over Pan Hlaing River of Hlaing Tharyar Township and Twantay Township.

This section presents the physical, environmental, socio-economic, cultural and visual characteristics of the **Study Area**. The **Study Area** is defined as the wider area in which the environmental and social conditions are evaluated with the sources of risk, in order to determine interactions and the magnitude and significance of potential impacts resulting from the Project. For this Project, the **Study Area** is defined as a 2 km buffer around the whole New Yangon City Phase 1 Development; encompassing the Townships neighbouring the **Project Area**. The proposed Bridge 1 and Bridge 2 are respectively across Yangon River of Kyee Myin Daing Township and Pan Hlaing River of Hlaing Tharyar and Twantay Township. The EIA will also consider impacts from the temporary auxiliary support infrastructure such as project site offices, construction workers camp, concrete batching plant with the Phase 1 area. As such, in order to have a robust assessment, the Study Area for the Project nearly covers the whole Phase 1 Development. This area definition also facilitates the comparison of cumulative impacts between the individual Project components.

The '**Area of Influence**' (**Aoi**) is defined as the village tracts, wards and townships within or neighbouring the Project Area. Bridge 1's Aoi includes Kyee Myin Daing Township (east and west), while Bridge 2's Aoi includes Yae Kyaw village tract in Twantay Township, and Ah Pyin Pa Dan, Ah Twin Pa Dan, and Oke Kan Thaug Kyar village tracts in Hlaing Tharyar Township.

According to the desktop review, key environmental and social sensitivities of the proposed Project Area are summarised in the Table 1.3.

**Table 1.3 Key Sensitivities of the Study Area**

Receptor	Sensitivity
Terrestrial biodiversity	The Study Area is largely rural with small villages present. It is likely that there will be no natural forest of any significance in size in and around the Study Area. Mangrove vegetation could be present on the bank of the rivers and the Mangrove species expected to be present.
Ambient noise	There are no data currently available for ambient noise although as the Study Area is predominantly rural there are limited sources of noise pollution. Impacts of noise from construction and operation of the Project will need to be considered in the EIA Report.
Community and livelihoods	The Project is located in Kyee Myin Daing, Twantay and Hlaing Tharyar Township. Impacts to livelihoods of the neighbouring communities will need to be considered.
Water resources and drainage	Water resources are scarce in the Study Area particularly during the dry season. Local communities use water from the lakes/ ponds within Seikgyi Kanaungto and Twantay Townships which are filled in the rainy seasons. Water resources for the Project will need to be considered in the EIA Report.
Transport	Although the local community in the Project Area mostly travel by boat instead of by car to reach Yangon City, the Project may increase the current traffic levels in Hlaing Tharyar and Twantay Bridges. Impacts to the traffic need to be considered in the EIA Report.
Cultural heritage	There are known pagodas and monasteries within the Study Area which need to be considered in the EIA Report.

## 1.6 Key Potential Impact and Proposed Mitigation

The Scoping Report focused on the potential impacts associated with the construction and operation of the Project. Potential environmental impacts during construction are likely to be temporary and

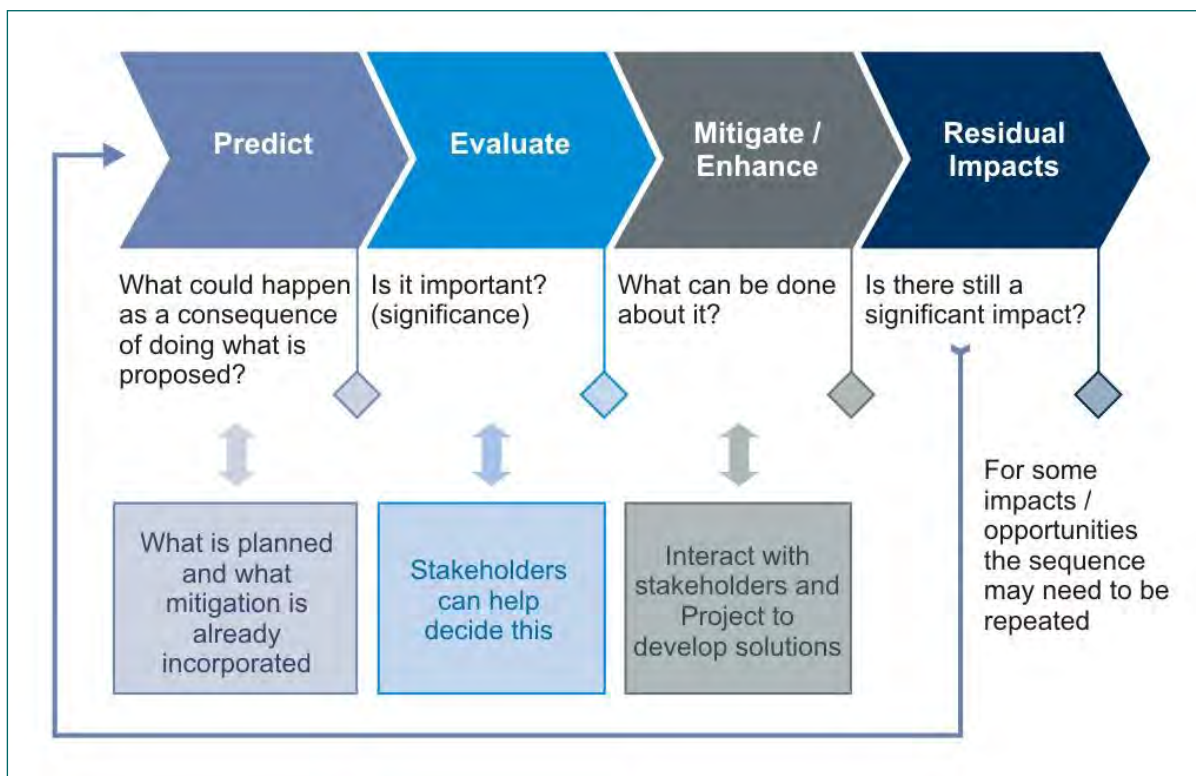
localised to the Study Area. Potential impacts during operation, include those related to noise, terrestrial fauna, community health and safety, and occupational health and safety. In the EIA Report, these impacts will be assessed in detail and appropriate mitigation measures will also be provided.

The following impacts which are anticipated to have potential to generate significant impacts from the proposed Project are defined as requiring further detailed assessment and are carried out to the next stage of the EIA process.

### 1.6.1 Impact Assessment Methodology

The principal impact assessment steps are summarised in Figure 1.2 and comprise:

- Impact prediction: to determine what could potentially happen to resources/receptors as a consequence of the proposed Project and its associated activities.
- Impact evaluation: to evaluate the significance of the predicted impacts by considering their magnitude or likelihood of occurrence (for unplanned events), and the sensitivity, value and/or importance of the affected resource/receptor.
- Mitigation and enhancement: to identify appropriate and justified measures to mitigate negative impacts and enhance positive impacts.
- Residual impact evaluation: to evaluate the significance of impacts assuming effective implementation of mitigation and enhancement measures. Major impacts are considered “significant” in Figure 1.2.



**Figure 1.2 Impact Assessment Process**

The above methodology will be used to predict, evaluate and assess potential impacts in the Report.

### 1.6.2 Cumulative Impacts

Cumulative impact assessment is an important component of this Project. The assessment considers the residual direct and indirect impacts reported for the Project and evaluates these alongside

potential impacts from other projects/activities/natural events that may affect common resources and receptors. The summary of cumulative impact assessment process is summarised in Table 1.4.

**Table 1.4 Cumulative Impact Assessment Process**

<b>Scoping</b>
<ul style="list-style-type: none"> <li>■ Identify key issues associated with the project and resources / receptors that may be affected utilising information from impact assessment</li> <li>■ Set temporal and geographical boundaries</li> <li>■ Conduct stakeholder engagement</li> <li>■ Define level of detail of assessment</li> <li>■ Identify and screen 'other projects, activities or natural events' for potential interactions with proposed Project</li> <li>■ Confirm or establish significance criteria utilising information from impact assessment</li> </ul>
<b>Baseline</b>
<ul style="list-style-type: none"> <li>■ Confirm the baseline (existing condition) of the Project receptors and resources utilising information from impact assessment</li> </ul>
<b>Cumulative Impact Assessment</b>
<ul style="list-style-type: none"> <li>■ Determine the magnitude and significance of potential cumulative impacts considering the vulnerability of the resources and receptors and their limits of acceptable change</li> </ul>
<b>Management and Monitoring Definition</b>
<ul style="list-style-type: none"> <li>■ Develop measures to avoid, minimise or mitigate significant 'Project-related' cumulative impacts</li> <li>■ Some measures already committed to in the impact assessment may suffice to control potential cumulative impacts – so it is important to refer back to these and distinguish between those measures and any additional required.</li> </ul>

The cumulative impacts from the New Yangon City Development as a whole are likely to include; air emissions, noise generation, impacts to water and soil, and livelihood impacts; these will be assessed in the EIA Report.

### 1.6.3 Construction Phase

The scoped-in impacts during the construction phase include the following:

- Impacts to ambient air quality from:
  - Site preparation, excavation, and filling works;
  - Bridge construction;
  - Transportation of equipment, supplies and workforce; and
  - Temporary auxiliary support infrastructure.
- Impacts to ambient noise from:
  - Site preparation, excavation, and filling works;
  - Bridge construction;
  - Transportation of equipment, supplies and workforce; and
  - Temporary auxiliary support infrastructure.
- Impacts to surface water and groundwater quality from:
  - Site preparation, excavation, and filling works;
  - Bridge construction;
  - Waste, fuel, chemical, oils, gas storage, handling and disposal; and
  - Temporary auxiliary support infrastructure.

- Impact on hydrology and hydrogeology from bridge construction.
- Impacts to soil quality and topography from:
  - Bridge construction;
  - Waste, fuel, chemical, oils, gas storage, handling and disposal; and
  - Temporary auxiliary support infrastructure.
- Impacts to landscape and visual character from:
  - Bridge construction; and
  - Temporary auxiliary support infrastructure.
- Impacts to terrestrial flora from site preparation, excavation, and filling works.
- Impacts to terrestrial fauna from site preparation, excavation, and filling works.
- Impacts to aquatic flora and fauna from:
  - Site preparation, excavation, and filling works;
  - Bridge construction; and
  - Temporary auxiliary support infrastructure.
- Impacts to community health and safety from:
  - Transportation of equipment, supplies and workforce;
  - Labour, equipment and services supply; and
  - Temporary auxiliary support infrastructure.
- Impacts to demographic pattern, economy and livelihood from site preparation, excavation, and filling works
- Impacts to occupational health and safety from:
  - Site preparation, excavation and filling works;
  - Bridge construction;
  - Transportation of equipment supplies and workforce;
  - Waste, fuel, chemical, oils, gas storage, handling and disposal; and
  - Temporary auxiliary support infrastructure.
- Impacts to infrastructure services from:
  - Bridge construction
  - Transportation of equipment, supplies and workforce;
  - Waste, fuel, chemical, oils, gas storage, handling and disposal; and
  - Temporary auxiliary support infrastructure.
- Impacts to cultural heritage from:
  - Site preparation, excavation and filling works;
  - Bridge construction; and
  - Transportation of equipment supplies and workforce.

#### **1.6.4 Operational Phase**

The scoped-in impacts during the operational phase include the following:



- Impacts to ambient air quality from traffic
- Impacts to ambient noise and vibration from traffic
- Impacts to landscape and visual character from the bridges' structure
- Impacts to community health and safety from traffic
- Impacts to demographic pattern, economy and livelihood from traffic
- Impacts to occupational health and safety from maintenance works.
- Impacts to cultural heritage from traffic.

### 1.6.5 Accidental Events

The unplanned or accidental events can be from incidents during construction and operation caused by the work force, equipment, or supplies. This also includes consequences of natural disasters (floods, cyclones, and/or earthquakes) that can lead to environmental or social impacts.

- Impacts on ambient air quality from fire and explosion.
- Impact to surface water and groundwater quality from spills and leaks.
- Impacts to soil quality from spills and leaks.
- Impacts to aquatic flora and fauna from:
  - Spills and leaks; and
  - Fire and explosion.
- Impacts to community health and safety from:
  - Traffic collision; and
  - Fire and explosion.
- Impacts to occupational health and safety from:
  - Traffic collision;
  - Spills and leaks; and
  - Fire and explosion.

These impacts will be assessed in detail in the EIA Report and appropriate mitigation measures will be provided.

## 1.7 Public Consultation and Disclosure

For the Scoping Phase, consultation meetings were held with various relevant stakeholders at the Kyee Myin Daing, Ahlone, Twantay, Seikgyi Kanaungto, and Hlaing Tharyar Townships. The consultation helped the Project to gather information on potentially affected people, and on potential data gaps and how these can be closed out in the EIA Report. Scoping consultation involved face-to-face meetings with a range of stakeholders in Yangon Region including a representative for the Chief Minister attended by other relevant Ministers, Regional level ECD and GAD, Members of Yangon Region Hluttaw, Member of Pyithu Hluttaw, Director from Department of Social Welfare, Township GADs, Ward and village administrators, Ward Patrons, CSOs/NGOs, related government departments and local communities and community representatives.

The date, time, location, stakeholder and purpose of each meeting undertaken during the Scoping Phase engagement is provided in Table 1.5.

**Table 1.5 Consultation Activities Undertaken during Scoping**

<b>Date, time</b>	<b>Location</b>	<b>Purpose of Engagement</b>
Wednesday 23 <sup>rd</sup> January, 2019	Chief Minister Office Meeting	<ul style="list-style-type: none"> <li>■ Present information on the Project</li> <li>■ Get approval for township/ward and village level meetings</li> <li>■ Gather concerns and suggestions from stakeholders</li> </ul>
Wednesday 30 <sup>th</sup> January, 2019	Twantay Township GAD Office , Seikgyi Kanaungto Township GAD office and Kyee Myin Daing Township GAD Office	<ul style="list-style-type: none"> <li>■ Meeting arrangements and approvals</li> </ul>
Thursday 31 <sup>st</sup> January, 2019	Ahlone Township GAD office and Hlaing Tharyar Township GAD Office	<ul style="list-style-type: none"> <li>■ Meeting arrangements and approvals</li> </ul>
Friday 1 <sup>st</sup> February, 2019	Ahlone Township	<ul style="list-style-type: none"> <li>■ Present Project information to local government, ward administrators, local communities and other interested parties</li> <li>■ Gather concerns and suggestions from stakeholders</li> <li>■ Undertake socio-baseline data collection</li> <li>■ Interview with Ward Administrators</li> </ul>
Saturday 2 <sup>nd</sup> February, 2019	Twantay Township	<ul style="list-style-type: none"> <li>■ Present Project information to local government, ward administrators, local communities and other interested parties</li> <li>■ Gather concerns and suggestions from stakeholders</li> <li>■ Undertake socio-baseline data collection</li> <li>■ Interview with Ward Administrators</li> </ul>
Saturday 2 <sup>nd</sup> February, 2019	Kyee Myin Daing Township	<ul style="list-style-type: none"> <li>■ Present Project information to local government, ward administrators, local communities and other interested parties</li> <li>■ Gather concerns and suggestions from stakeholders</li> <li>■ Undertake socio-baseline data collection</li> <li>■ Interview with Ward Administrators</li> </ul>
Sunday 3 <sup>rd</sup> February, 2019	Seikgyi Kanaungto Township	<ul style="list-style-type: none"> <li>■ Present Project information to local government, ward administrators, local communities and other interested parties</li> <li>■ Gather concerns and suggestions from stakeholders</li> <li>■ Undertake socio-baseline data collection</li> <li>■ Interview with Ward Administrators</li> </ul>
Sunday 3 <sup>rd</sup> February, 2019	Hlaing Tharyar Township	<ul style="list-style-type: none"> <li>■ Present Project information to local government, ward administrators, local communities and other interested parties</li> <li>■ Gather concerns and suggestions from stakeholders</li> <li>■ Undertake socio-baseline data collection</li> <li>■ Interview with Ward Administrators</li> </ul>

During the EIA Phase, there will be Village and Township level public consultation meetings in Ahlone, Kyee Myin Daing, Seikgyi Kanaungto, Twantay, Hlaing Tharyar, and Dala Townships in Yangon Region. The purpose and structure of these meetings will be the same as the Scoping Phase consultations. FGDs and interviews will be conducted among key stakeholders and survey questionnaires, as shown in the Appendix D. Social and environmental baseline data collection and results, stakeholder concerns during scoping consultations and preliminary identification of potential impacts and proposed mitigation measures will be presented during the EIA consultation meetings.

As per the requirements of the EIA Procedure, NYDC disclosed information on the Project in two newspapers (one in English and one in Myanmar). Project information will be available on NYDC's website and signboards will be posted at the site office.

In compliance with potential lenders requirements to undertake meaningful consultations, information on the findings of the EIA, mitigation and beneficial measures in the EMP will be disclosed to the public and project affected people. Community meetings will be held in directly affected wards and villages to explain how the impacts and risks will be managed by the Project.

The advertisements for the scoping stage that were announced in The Global New Light of Myanmar (English) and The Mirror (Burmese) are provided in Section 7.3.2.

## 1.8 Conclusions and Recommendations

The Scoping Study focused on the potential impacts associated with the construction and operation of the Bridges associated with the New Yangon City Phase 1. Potential environmental impacts during construction are likely to be temporary and localised to the Project Area. Impacts during construction include air (dust) and noise emissions, vegetation clearance, land use change, terrestrial flora and fauna, aquatic flora and fauna, and demographic pattern, economy and livelihood. Potential impacts during operation, include those related to noise, terrestrial fauna, community health and safety, and occupational health and safety. Impacts from accidental events have been considered in this scoping and all the impacts will be assessed in detail in the EIA Study.

From a social perspective, the Project is located in Twantay and Hlaing Tharyar Township. The scoping visit in January and February 2019 confirmed that the main concern from the communities in terms of environmental and social impacts were traffic, squatters, job opportunities and access to the new city.

Environmental baseline surveys for noise, ground water quality, and soil quality, surface water quality and terrestrial and aquatic biodiversity will be undertaken for the EIA study to inform the impact assessment. The sampling plan is provided in Table 1.6 and Figure 1.3 shows the sampling points location.

**Table 1.6 Sampling Plan**

Topic	Parameters	Total
Air Quality	NO <sub>2</sub> , SO <sub>2</sub> ,	27
Air Quality	PM <sub>10</sub> , PM <sub>2.5</sub>	18
Noise	Sound Level (LAeq in dB(A))	27
Ground Water Quality	pH value, Temperature, Biochemical Oxygen Demand (BOD), Chemical Oxygen Demand (COD), Oil and Grease, Total Nitrogen, Total Phosphorus (TP), Total Suspended Solids (TSS), Total Phenols, Mercury (Hg), Arsenic (As), Zinc (Zn), Copper (Cu), Total Chromium (Cr), Ammonia, Chlorine, Sulphide, Nitrate, Fluoride, Total Coliform.	72
Surface Water Quality	pH value, Temperature, Biochemical Oxygen Demand (BOD), Chemical Oxygen Demand (COD), Oil and Grease, Total Nitrogen, Total Phosphorus (TP), Total Suspended Solids (TSS), Total Phenols, Mercury (Hg), Arsenic (As), Zinc (Zn), Copper (Cu), Total Chromium (Cr), Ammonia, Chlorine, Sulphide, Nitrate, Fluoride, Total Coliform.	72
Soil Quality	pH, Iron (Fe), Cadmium (Cd), Lead (Pb), Zinc (Zn), Copper (Cu), moisture content	72

Topic	Parameters	Total
Biodiversity	Conduct habitat mapping and establish biodiversity indices, species inventory and identification of threatened species	9
	For Aquatic fauna, this will include interview of fishermen and local markets.	

As part of the EIA process, a detailed social baseline data collection will be undertaken to update the social baseline established in the Scoping Report and adequately assess the potential impacts from the Project on the local communities. This baseline will be established on the basis of Focus Group Discussions and interviews with local communities and other interested stakeholders in all Townships. Stakeholders will be asked questions using both checklists and informal interviews to find out the village and household level information on demographics, income, infrastructure, farming and livelihoods as per the following:

- **Village and Household Questionnaires:** Demographic profile, land holding; number of land owners and landless; types of school facilities; credit access; income sources; living standards; market access; health facility access; access to water source; cooking fuel type uses; fuelwood collection; type of diseases; electricity access; number of households with income; infrastructure; number of people by type of livelihood; number of people by type of livestock; number of members and meetings of support groups; and, type of support from and contribution to support group.
- **Farmers Questionnaire:** land holding size and shape; level of subsistence; role of men and women in agriculture; government agricultural scheme, credit source, reason amount, interest rate and payment method; use of hired labour; wage amount paid by gender; cost of labour, irrigation, fertilizers and transportation and land renting; market of cash crop; number of households by type of livestock raised, number of heads, percentage of home consumption and percentage for the market; source and issues of fodder acquisition; crop cycle by crop.
- **Women’s Questionnaire:** number of women in the village, number of women headed households; role of women in community; opinion on equality of gender opportunities; influence on household decision; problems of women; quality of life rating; women’s health problems; disease outbreaks; causes of death and affected gender group; women’s problem in employment; and percentage of women in farming.

Social baseline data collection (e.g. focus group discussions with farmers, women), and public consultation will be undertaken in Seikgyi Kanaungto, Twantay, Kye Myin Daing, Hlaing Tharyar, Dala and Ahlone Township to assess whether the Project is likely to have any adverse impact.

Information will be disclosed as per the EIA Procedure, on the NYDC’s website and Facebook page, in newspapers and at sign boards around the Project Area.



Figure 1.3 Sampling Points Location

## ၁ အကျဉ်းချုပ် အစီရင်ခံစာ

### ၁.၁ နိဒါန်း

ရန်ကုန်တိုင်းဒေသကြီးအစိုးရလက်အောက်၌ တရားဝင်ဖွဲ့စည်းထားသော **New Yangon Development Company, Ltd. (NYDC)** သည် ရန်ကုန်မြို့သစ်ကို တည်ဆောက်ရန် စီစဉ်နေပါသည်။

ရန်ကုန်မြို့သစ်သည် ရန်ကုန်မြို့အနောက်ဘက်ရှိ ဆိပ်ကြီးခရိုင်တို့၊ တွံတေး၊ လှိုင်သာယာ နှင့် ကြည့်မြင်တိုင် မြို့နယ်များ ၏ ဆင်ခြေဖုံးနယ်မြေ ဧရိယာမှ မြို့ပြ၏တစ်စိတ်တစ်ပိုင်းဖြစ်သည့်နယ်မြေဧရိယာတွင် တည်ရှိပြီး၊ စုစုပေါင်း ၈၈.၃ စတုဂံရန်း ကီလိုမီတာ (sq.km) မြေနေရာအကျယ်အဝန်းရှိပါသည်။ ဦးစားပေး အခြေခံအဆောက်အအုံစီမံကိန်းများ (စီမံကိန်းအဆင့် - ၁ ၏ လုပ်ငန်းအဆင့် - ၁) ကို အဆောက်အအုံနေရာအမျိုးအစားများဖြစ်သည့် တံတားများ၊ လမ်းများ၊ ရေ၊ စွန့်ပစ်ရေ၊ လျှပ်စစ်ဓာတ် အား နှင့် စက်မှုရန်တို့အပေါ်မူတည်၍ အုပ်စုခြောက်ခုအဖြစ် ခွဲပါသည်။ ဤနယ်ပယ်အတိုင်း အတာသတ်မှတ်ခြင်း အစီရင်ခံစာသည် "တံတားများ" နှင့် ပတ်သက်သည့် အဆောက်အအုံနေရာအတွက် ဖြစ်ပါသည်။

NYDC သည် စီမံကိန်းအတွက် ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်း (EIA) ကို ဆောင်ရွက်ရန် **Environmental Resources Management (ERM)-Myanmar, Limited (ERM)** အား တာဝန်ပေးအပ်ပြီး ဖြစ်ပါသည်။ ERM အဖွဲ့နှင့်အတူ ဒေသတွင်း အကြံပေးကုမ္ပဏီများ ဖြစ်ကြသော Environmental Quality Management (EQM) နှင့် Resource and Environment Myanmar (REM) တို့မှ ပူးပေါင်းပါဝင်ပြီး လူထုတွေ့ဆုံဆွေးနွေးပွဲများနှင့် သဘာဝပတ်ဝန်းကျင်ဆိုင်ရာအခြေခံအချက်အလက်များကောက်ယူခြင်းလုပ်ငန်းများကို ဆောင်ရွက်သွားမည်ဖြစ်ပါသည်။ ဤပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းတွင် လူမှုဆိုင်ရာသက်ရောက်မှုများကိုလည်း ထည့်သွင်းသွားမည် ဖြစ်ပါသည်။ ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းအစီရင်ခံစာကို ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဆိုင်ရာလိုက်နာဆောင်ရွက်မှုသက်သေခံလက်မှတ် (ECC) ကို ရရှိရန် ဆုံးဖြတ်ချက်များ ချမှတ်ရာ၌ ဆန်းစစ်ခြင်းအတွက် သက်ဆိုင်ရာ မြန်မာနိုင်ငံရှိ အာဏာ ပိုင်အဖွဲ့အစည်းများကို တင်ပြသွားမည် ဖြစ်ပါသည်။

ဤနယ်ပယ်တိုင်းတာသတ်မှတ်ခြင်း အစီရင်ခံစာသည် စီမံကိန်းရေးဆွဲရာတွင်လည်းကောင်း၊ ဆုံးဖြတ်ချက်များ ချမှတ်ရာတွင်လည်းကောင်း၊ စီမံကိန်းနှင့် ပတ်သက်ဆက်နွယ်သူများ၏ စိတ်ဝင်စားမှုများဖြစ်သည့် စီမံကိန်း၏လုပ်ငန်းအဆင့်ဆင့်များအတွင်း ပေါ်ပေါက်လာနိုင်သော လူမှုရေးဆိုင်ရာ၊ သဘာဝပတ်ဝန်းကျင်ဆိုင်ရာ အရေးကြီးသည့်ထိခိုက်နိုင်ခြေများပေါ် အဓိကထားပြီးရေးသားထားပါသည်။ ဤနယ်ပယ်တိုင်းတာသတ်မှတ်ခြင်းသည် ရှိရင်းစွဲသတင်းအချက်အလက်များနှင့် လေ့လာထားမှုများ၊ လုပ်ငန်းခွင်ကွင်းဆင်းလေ့လာမှုများ နှင့် စီမံကိန်း၏အခြေခံအကြောင်းအရာများအသိပေးပြောကြားသည့် တွေ့ဆုံပွဲများ ဖြင့် ပါဝင်ဖွဲ့စည်းထားသည်။

ဤနယ်ပယ်တိုင်းတာသတ်မှတ်ခြင်း အစီရင်ခံစာသည် အောက်ဖော်ပြပါသတင်းအချက်အလက်များအား ဖော်ပြပေးသွားမည်ဖြစ်ပါသည်။

- အဆိုပြုစီမံကိန်း၏ သဘာဝပတ်ဝန်းကျင်နှင့် လူမှုရေးဆိုင်ရာ မူဝါဒ၊ ဥပဒေနှင့် အဖွဲ့အစည်းဆိုင်ရာ မူဘောင်များ ခြုံငုံတင်ပြချက် (အခန်း - ၃)
- စီမံကိန်းအကြောင်းအရာဖော်ပြချက်နှင့် အခြားနည်းရွေးချယ်ခြင်း (အခန်း - ၄)
- ပတ်ဝန်းကျင်ဆိုင်ရာ အခြေခံအချက်အလက်များ ဖော်ပြချက် (အခန်း - ၅)
- နယ်ပယ်တိုင်းတာသတ်မှတ်ခြင်းအတွက် နည်းစနစ်နှင့် ချဉ်းကပ်နည်း - အဓိကဖြစ်နိုင်ခြေရှိသည့် သဘာဝ ပတ်ဝန်းကျင်နှင့် လူမှုရေးဆိုင်ရာ ထိခိုက်နိုင်ခြေများ နှင့်အတူ အဆိုပြုလျော့ချရေးအစီအမံများ (အခန်း - ၆)
- စီမံကိန်းနှင့်ပတ်သက်ဆက်နွယ်သူများသတ်မှတ်ခြင်း၊ တွေ့ဆုံဆွေးနွေးပွဲအစီအစဉ် နှင့် အများပြည်သူသို့ အသိပေးချပြမည့်အစီအစဉ်များ (အခန်း - ၇)

- နယ်ပယ်တိုင်းတာသတ်မှတ်မှုလေ့လာခြင်း၏အနှစ်ချုပ်နှင့် သဘာဝပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်း အစီရင်ခံစာအတွက် ထောက်ခံချက်များ (အခန်း - ၈) နှင့်
- EIA လုပ်ငန်းများ ပြီးပြည့်စုံရန် လိုအပ်သော အချက်အလက်များရရှိရန်အတွက် လုပ်ငန်းများ၊ လေ့လာမှုများ၊ စစ်ဆေးခြင်းများ နှင့် အချက်အလက်လစ်လပ်နေမှုများအပါအဝင် ပတ်ဝန်းကျင် စီမံခန့်ခွဲမှု အစီအစဉ် (EMP) နှင့် သဘာဝပတ်ဝန်းကျင်ထိခိုက်မှု ဆန်းစစ်ခြင်းအစီရင်ခံစာ (EIA Report) ပြင်ဆင်ရေးအတွက် လိုအပ်သည့် လုပ်ငန်းတာဝန်များပြုစုရန် လုပ်ထုံးလုပ်နည်း (Terms of Reference) (အခန်း - ၉)။

၁.၂ မူဝါဒနှင့်ကြီးကြပ်ရေးဆိုင်ရာ မူဘောင်

ပြည်ထောင်စုသမ္မတ မြန်မာနိုင်ငံ၏ ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဥပဒေ၏ ပုဒ်မ ၇ နှင့် ပတ်ဝန်းကျင်ထိန်းသိမ်းရေး နည်းဥပဒေ၏ ပုဒ်မ ၅၂ နှင့် ၅၃ တို့အရ၊ စီမံကိန်းသည် သယံဇာတ နှင့် သဘာဝပတ်ဝန်းကျင်ထိန်းသိမ်းရေး ဝန်ကြီးဌာန (MONREC) ၏ ဆုံးဖြတ်ချက်နှင့်အညီ ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဆိုင်ရာလိုက်နာဆောင်ရွက်မှု သက်သေခံ လက်မှတ် (ECC) ကို ရရှိရန် ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်း (EIA) ကို ပြုလုပ်ဆောင်ရွက်ရန် လိုအပ်ပါသည်။

ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းကို ပြင်ဆင်ရေးသားရာတွင် ထည့်သွင်းစဉ်းစားသွားမည့် သက်ဆိုင်ရာ လမ်းညွှန်ချက်များတွင် အောက်ပါတို့ ပါဝင်သည် -

- သဘာဝပတ်ဝန်းကျင် နှင့် လူမှုဘဝရေရှည်ဖွံ့ဖြိုးတိုးတက်ရေးနှင့်ပတ်သက်၍ အပြည်ပြည်ဆိုင်ရာ ဘဏ္ဍာရေး ကော်ပိုရေးရှင်း (IFC) ၏ လုပ်ဆောင်မှု စံသတ်မှတ်ချက်များ (၂၀၁၂) ၊ နှင့်
- အပြည်ပြည်ဆိုင်ရာ ဘဏ္ဍာရေး ကော်ပိုရေးရှင်း (IFC) ၏ ပတ်ဝန်းကျင်၊ ကျန်းမာရေး နှင့် ဘေးကင်းရေး (EHS) လမ်းညွှန်ချက်များ နှင့် အောက်ပါတို့အပါအဝင် ဖြစ်ပါသည် -
  - အထွေထွေ ပတ်ဝန်းကျင်၊ ကျန်းမာရေး နှင့် ဘေးကင်းရေး (EHS) လမ်းညွှန်များ (၂၀၀၇)၊
  - ဖြတ်သန်းခယူသောလမ်းများအတွက် ပတ်ဝန်းကျင်၊ ကျန်းမာရေး နှင့် ဘေးကင်းရေး လမ်းညွှန်များ အတွက် ပတ်ဝန်းကျင်၊ ကျန်းမာရေး နှင့် ဘေးကင်းရေး (EHS) လမ်းညွှန်များ (၂၀၀၇)။

၁.၃ ရန်ကုန်မြို့သစ်အကျဉ်း

ရန်ကုန်မြို့သစ်သည် ရန်ကုန်မြို့အနောက်ဘက်ရှိ ဆိပ်ကြီးခနောင်တို၊ တွံတေး၊ လှိုင်သာယာ နှင့် ကြည့်မြင်တိုင် မြို့နယ်များ ၏ ဆင်ခြေဖုံးနယ်မြေ ဧရိယာမှ မြို့ပြ၏တစ်စိတ်တစ်ပိုင်းဖြစ်သည့်နယ်မြေဧရိယာတွင် တည်ရှိပါသည်။ ရန်ကုန် မြို့သစ်သည် စုစုပေါင်း ၈၈.၃ စတုရန်း ကီလိုမီတာ (sq.km) မြေနေရာအကျယ်အဝန်းရှိပါသည်။ စီမံကိန်းအဆင့် (၁) ၏ လုပ်ငန်းဆင့် (၁) အနေဖြင့်၊ ရန်ကုန်မြို့သစ်ကို အောက်ပါ အဆောက်အအုံနေရာအမျိုးအစားများ အပေါ်မူတည်၍ အုပ်စုခြောက်ခုအဖြစ် ခွဲပါသည် -

- တံတားများ
  - တံတား (၁) - ကြည့်မြင်တိုင်မြို့နယ် (ဗားကရာလမ်းနှင့် ကြည့်မြင်တိုင် ကမ်းနားလမ်းဆုံ အနီး) မှ စီမံကိန်းနယ်မြေဧရိယာသို့ ဆက်ထားသော တံတားနှင့်
  - တံတား (၂) - လှိုင်သာယာမြို့နယ်မှ စီမံကိန်းနယ်မြေဧရိယာသို့ ဆက်ထားသော တံတား။
- လမ်းများ
  - အမြဲတမ်းအသုံးပြုမည့် ဆက်သွယ်ရေးလမ်းကြောင်းများ - လမ်းမကြီး ၁၊ လမ်းမကြီး ၂၊ လမ်းမကြီး ၃၊ ပင်မလမ်းမအခွဲများ၊ လမ်းသွယ်များ နှင့်
  - မိုးရေစီးဆင်းရာလမ်းကြောင်း

■ ရေ

- ရေသန့်စင်ရေးစက်ရုံ
- သဘာဝရေ ပိုက်လိုင်း၊
- သန့်စင်ထားသော ရေ ဖြန့်ဖြူးရေးလိုင်းများ၊ နှင့်
- ရေစတင်သွင်းသည့်နေရာ

■ စွန့်ပစ်ရေ

- စွန့်ပစ်ရေမောင်းတင်ပေးသည့်စက်ရုံများ၊
- စွန့်ပစ်ရေပိုက် လမ်းကြောင်း၊
- မိလ္လာကန်များ၊ နှင့်
- စွန့်ပစ်ရေ နှံစင်ပေးသည့်စက်ရုံ နှင့် ၎င်းနှင့်ဆက်စပ်နေသော အထောက်အကူပြု အဆောက်အအုံများ

■ လျှပ်စစ်ဓာတ်အား

- ထရန်စဖော်မာ ဓာတ်အားခွဲရုံ (၂၃၀ ကေဗီ ၁ ရုံ၊ ၆၆ ကေဗီ ၂ ရုံ)၊ ဓာတ်အားလွှဲပြောင်းရေးစက်ရုံ (၃၃ ကေဗီတစ်ရုံ)၊
- ပင်မလျှပ်စစ်ဓာတ်အားလိုင်းများ (မဟာဓာတ်အားလိုင်း/ Independent Power Producer (IPP) မှ ၂၃၀ ကေဗီ ဓာတ်အားခွဲရုံသို့)၊ နှင့်
- ၆၆ကေဗီ၊ ၃၃ ကေဗီ နှင့် ၁၁ ကေဗီလိုင်းများပါဝင်သော ဓာတ်အား ဖြန့်ဖြူးရေးလိုင်းများ (စီမံကိန်းအတွင်း လျှပ်စစ်ဓာတ်အားလိုင်းများ)

■ စက်မှုဇုန်

- ၁၃ စတုရန်းကီလိုမီတာခန့် ကျယ်ဝန်းသည့် စက်မှုအဆောက်အအုံနေရာများအတွက် နယ်မြေဧရိယာ။

စီမံကိန်းအဆင့်(၁) တစ်ခုလုံး၏ စီမံကိန်းနယ်မြေဧရိယာမှာ ၈၈.၃ စတုရန်းကီလိုမီတာရှိမည် ဖြစ်ပါသည်။ ပင်မစီမံချက် (Masterplan)တွင် စုစုပေါင်း လူနေအိမ်နေရာ ၃၀,၉၃ စတုရန်းကီလိုမီတာ၊ ကူးသန်းရောင်းဝယ်ရေးလုပ်ငန်းနေရာ ၆.၄၁ စတုရန်းကီလိုမီတာ၊ စက်မှုလုပ်ငန်းနေရာ ၂၂.၃၇ စတုရန်းကီလိုမီတာ၊ သယ်ယူပို့ဆောင်ရေးနှင့် ထောက်ပံ့ရေး ဧရိယာ ၁.၅၁ စတုရန်းကီလိုမီတာ၊ စိမ်းလန်းစိုပြေရေးဧရိယာ ၁၂.၀၁ စတုရန်းကီလိုမီတာ၊ ကျေးရွာမြေဧရိယာ ၁၁.၉၇ စတုရန်းကီလိုမီတာ၊ အများပြည်သူနှင့်ဆိုင်သောနေရာအတွက် ၂.၃၃ စတုရန်းကီလိုမီတာနှင့် ဝန်ဆောင်မှုလုပ်ငန်းနေရာ ၀.၇၇ စတုရန်းကီလိုမီတာတို့ ပါဝင်ကြပါသည်။ ဤသည်တို့ကို မဟာဗျူဟာမြောက် ပတ်ဝန်းကျင်ဆန်းစစ်ခြင်း (SEA) ၌ ထည့်သွင်းစဉ်းစားသွားမည်ဖြစ်ပြီး ၎င်းမှာ ရန်ကုန်မြို့သစ်လည်း ပါဝင်သွားမည် ဖြစ်ပါသည်။

ဤနယ်ပယ်အတိုင်းအတာသတ်မှတ်ခြင်းအစီရင်ခံစာသည် (စီမံကိန်း၏) "တံတားများ" တည်ဆောက်ရေးလုပ်ငန်းများ အတွက် ဖြစ်ပါသည်။ လမ်းများ၊ ရေသန့်စင်မှု၊ စွန့်ပစ်ရေသန့်စင်ခြင်း၊ လျှပ်စစ်ဓာတ်အား နှင့် စက်မှုဇုန်အဆောက် အအုံနေရာများအတွက် သီးသန့်ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းများ (EIAs)၊ နှင့် ကနဦးပတ်ဝန်းကျင်ထိခိုက်မှု ဆန်းစစ်ခြင်း (IEE) တို့ကို ပြင်ဆင်ပြုစုပြီးဖြစ်ပါသည်။ ရန်ကုန်မြို့သစ်အတွက် အဆောက်အအုံနေရာများအားလုံး၏ ဆက်စပ်သက်ရောက်မှုများကို ပတ်ဝန်းကျင်ထိခိုက်မှု ဆန်းစစ်ခြင်းတစ်ခုချင်းစီတွင် ဖော်ပြသွားမည် ဖြစ်ပါသည်။



### ၁.၄ စီမံကိန်းအကြောင်းအရာ ဖော်ပြချက်

ရန်ကုန်မြို့သစ်အတွက်ပန္နက်ချခြင်းဆောင်ရွက်မှုကို ၂၀၂၀ ခုနှစ်၊ ဇန်နဝါရီလအတွင်း စီစဉ်ထားပါသည်။ တည်ဆောက်ရေး အတွက် ခန့်မှန်းထားသည့်ကာလမှာ တံတား (၁) အတွက် ၂ နှစ် နှင့် တံတား (၂) အတွက် ၃ နှစ်ခွဲ ဖြစ်ပါသည်။ တံတား (၁) နှင့် တံတား (၂) တို့အတွက် ရည်မှန်းထားသည့် ပြီးမြောက်မည့် နေ့စွဲတို့မှာ ၂၀၂၂ ခုနှစ်၊ ဇန်နဝါရီလနှင့် ၂၀၂၃ ခုနှစ်၊ ဇူလိုင်လ အသီးသီးဖြစ်ကြပါသည်။ အဆိုပြုစီမံကိန်းတွင် အောက်ပါ တံတားစီမံကိန်းများ ပါဝင်ပါသည်။

- တံတား (၁) - ရန်ကုန်မြစ်တံတား နှင့်
- တံတား (၂) - ပန်းလှိုင်မြစ်တံတားသစ်။

တံတား (၁) သည် ကြည့်မြင်တိုင်မြို့နယ်အတွင်းရှိ ရန်ကုန်မြစ်အပေါ် မှ ဖြတ်သန်းတည်ဆောက်သွားမည်ဖြစ်ပြီး တံတား (၂) သည် ပန်းလှိုင်မြစ်အား ဖြတ်သန်း၍ လှိုင်သာယာမြို့နယ်မှ တွံတေးမြို့နယ်သို့ ဖြတ်သန်းသွယ်တန်း တည်ဆောက်သွားမည် ဖြစ်ပါသည် (ပုံ ၁.၁)။ ရန်ကုန်မြို့သစ်စီမံကိန်း အဆင့်(၁) ဧရိယာ၏ ကိုဩဒိနိတ်အမှတ်များ၊ တံတား (၁) နှင့် တံတား (၂)တို့၏ တည်နေရာပြ ကိုဩဒိနိတ်အမှတ်များအား ဇယား ၁.၁ တွင် ဖော်ပြထားပါသည်။ ယခုစီမံကိန်းသည်လက်ရှိရန်ကုန်မြို့နှင့် ရန်ကုန်မြို့သစ်တို့အား ဆက်သွယ်ပေးရန်ရည်ရွယ်ပြီး လက်ရှိဖြစ်ပေါ်နေသော ယဉ်ကြောပိတ်ဆို့မှု အခက်အခဲအား သက်သာစေရန်နှင့် လက်ရှိရန်ကုန်မြို့ကြီးအားလည်း မြို့တော်အင်္ဂါရပ်နှင့် ပြည့်စုံစေပြီး မြို့တော်တစ်ခုလုံး၏ ဖွံ့ဖြိုး တိုးတက်မှုကို ထိန်းညှိပေးနိုင်ရန် ရည်ရွယ်ပါသည်။

ဇယား ၁.၁ စီမံကိန်းတည်နေရာပြ ကိုဩဒိနိတ်အမှတ်များ

စီမံကိန်း	ကိုဩဒိနိတ်အမှတ်များ*
ရန်ကုန်မြို့သစ်စီမံကိန်းအဆင့် (၁) ၏ ဧရိယာ	96.033387°E 16.877042°N, 96.129981°E 16.825630°N, 96.150740°E 16.766533°N, 96.102184°E 16.731149°N, 96.020524°E 16.712643°N and 96.012471°E 16.792693°N.
တံတား (၁)	96.122182°E 16.805966°N (စမှတ်) 96.117109°E 16.805935°N (အလယ်မှတ်) 96.110355°E 16.805964°N (ဆုံးမှတ်)
တံတား (၂)	96.035927°E 16.862558°N (စမှတ်) 96.035966°E 16.860271°N (အလယ်မှတ်) 96.035988°E 16.857531°N (ဆုံးမှတ်)

\* ကိုဩဒိနိတ်အမှတ်များ တစ်ခုနှင့် တစ်ခု အကြားသည် မျဉ်းဖြောင့်ကဲ့သို့ ရှိမနေသော ကြောင့် ဧရိယာများမှာ အနည်းငယ် ကွဲလွဲမှု ရှိနိုင်ပါသည်။

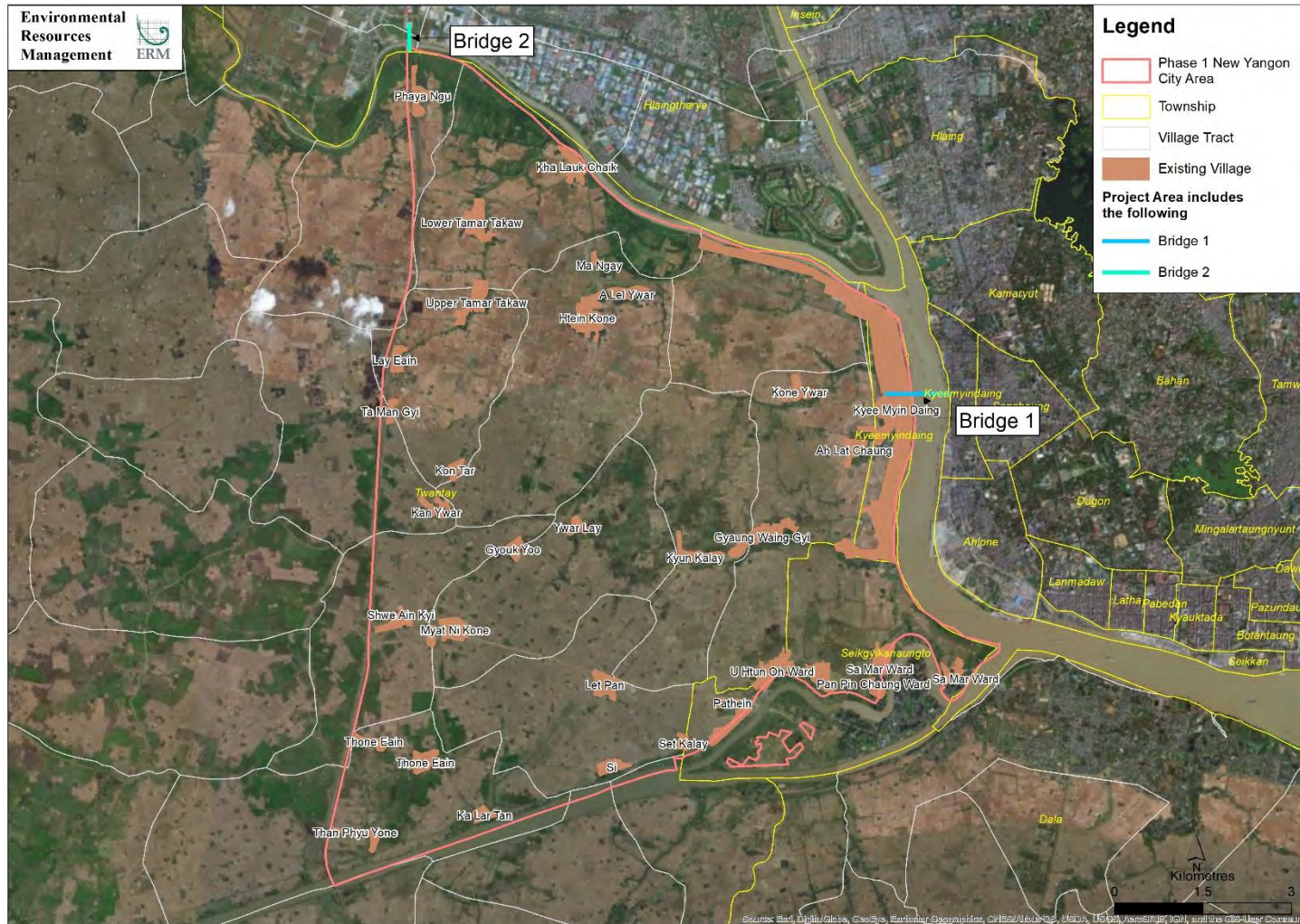
#### ၁.၄.၁ တံတား (၁) - ရန်ကုန်မြစ်ကူးတံတား

ရန်ကုန်မြစ်ကူးတံတား (တံတား - ၁) သည် လူကူးလျှောက်လမ်းပါ အသွားအပြန် (၆) လမ်းသွားတံတားဖြစ်ပြီး စုစုပေါင်း အရည် (၁၈၁၀ မီတာ) ရှည်လျားသော မြို့သစ်နှင့် ရန်ကုန်မြို့တွင်းကို ဆက်သွယ်ပေးသွားမည့် တံတားဖြစ်ပါသည်။ တံတားတွင် အပိုင်း (၃) ပိုင်းဖြင့်ဖွဲ့ စည်းထားပါသည်။

- ပင်မတံတားကိုယ်ထည်သည် ရန်ကုန်မြစ်အတွင်းတွင် ဖြတ်သန်းတည်ရှိပါသည်။ ပင်မတံတားကိုယ်ထည်တွင် ပိုင်း (၃) ပိုင်းပါရှိပြီး အရှည်မှာ ၂၄၀ မီတာ + ၁၀၀ မီတာ + ၂၂၀ မီတာတို့အသီးသီးရှိကြပါသည်။ ရေကြောင်း သွားလာရေးအတွက် လွတ်ကင်းသော အမြင့်နှင့် အကျယ်အဝန်းလည်း တည်ရှိမည်ဖြစ်ပါသည်။
- အနောက်ဖက် ချဉ်းကပ်တံတားသည် ရန်ကုန်မြို့သစ်ဖက်တွင်တည်ရှိပြီး ၃၆၀ မီတာရှည်လျားသည်။
- အရှေ့ဖက်ချဉ်းကပ်တံတားသည် လက်ရှိရန်ကုန်မြို့ဖက်တွင်တည်ရှိပါသည်။ ၎င်းချဉ်းကပ်တံတားတွင် အဓိက ဆင်ခြေလျှောလမ်း နှစ်ခုပါရှိပြီး (၃၀၀ မီတာ နှင့် ၅၉၀ မီတာ) တစ်လမ်းမောင်း၊ နှစ်လမ်းသွား စနစ်ဖြင့် ဗဟုကဏ္ဍလမ်းအား ဆက်သွယ်သွားမည့်အပြင် နောင်တစ်ချိန်တွင် အကောင်အထည်ဖော်မည့် အတွင်းပတ်လမ်းအတွက် တစ်လမ်းသွား၊ တစ်လမ်းမောင်း ဆင်ခြေလျှောလမ်း နှစ်ခုလည်း ပါရှိမည်ဖြစ်ပါသည်။

**၁.၄.၂ တံတား (၂) - ပန်းလှိုင်မြစ်ကူးတံတား**

ယခုလက်ရှိအသုံးပြုနေသော ပန်းလှိုင်မြစ်ကူးတံတားသည် ၁၀ မီတာ ကျယ်ဝန်းပြီး နှစ်လမ်းသွား၊ နှစ်လမ်းမောင်း တံတားဖြစ်ပါသည်။ တံတားအသစ်တည်ဆောက်ခြင်းသည် ရန်ကုန်မြို့သစ်စီမံကိန်း၏ လမ်းမကြီး အမှတ် (၁) ကြောင့်ဖြစ်ပေါ်လာနိုင်သည့် ယာဉ်ကြောကြပ်တည်းမှုအား ဖြေရှင်းပေးနိုင်ရန် ရည်ရွယ်ခြင်းဖြစ်ပါသည်။ တံတား တည်ဆောက်စဉ်ကာလအတွင်း ဘေးအန္တရာယ်ကင်းရှင်းရေးအတွက် တံတားအသစ်နှင့် လက်ရှိတံတားအကြားတွင် ၅ မီတာ ခြားထားမည်ဖြစ်ပါသည်။ တံတားအသစ်သည် လျှောက်လမ်းပါဝင်သည့် တစ်လမ်းသွား နှစ်လမ်းမောင်း တံတားဖြစ်ပြီး မြစ်ကူးပိုင်းအရှည် ၃၀ မီတာ နှင့် စုစုပေါင်းအရှည် ၅၇၀ မီတာ ရှည်လျားပါမည်။



ပုံ ၁.၁ စီမံကိန်းတည်နေရာပြမြေပုံ

၁.၄.၃ စီမံကိန်းလုပ်ငန်းများ

၁.၄.၃.၁ တည်ဆောက်ရေးကာလ

အဓိကတည်ဆောက်ရေး နည်းပညာပိုင်းဆိုင်ရာတွင် အောက်ပါအဆင့်များပါဝင်မည်ဖြစ်ပါသည်။

- တံတား ပိုင် ဆောက်လုပ်ရေး (Bored pile construction)
- ပိုင်ဖုံး ဆောက်လုပ်ရေး (Pile cap construction)
- တံတား တိုက်ခံ ဆောက်လုပ်ရေး (Pier construction)
- ပိုင်ကပ်ချုပ်ဆောက်လုပ်ရေး (Capping beam construction)
- တံတားအထက်ပိုင်း ဆောက်လုပ်ရေး (Construction of bridge's superstructure)
- ရေလုံ ကွန်ကရစ် ကုန်းပတ် ဆောက်လုပ်ရေး (Construction of waterproof layer of bridge deck)
- တံတားပိုင်း အဆက် ဆောက်လုပ်ရေး (Expansion joint installation)

၁.၄.၃.၂ တည်ဆောက်ရေးကာလ

လမ်းမကြီး (၁) နှင့် (၂) တည်ဆောက်ရန် ရည်ရွယ်ထားသော ကာလမှာ ၂၀၁၉ မှ ၂၀၂၂ အတွင်းဖြစ်ပါသည်။

တံတား (၁) ရန်ကုန်မြစ်ကူးတံတားသစ်သည် ရန်ကုန်မြို့သစ်စီမံကိန်း၏ ရည်ရှည်ဖွံ့ဖြိုးရေးအတွက် အဓိကအချက်အခြာ ဖြစ်ပြီး လက်ရှိရန်ကုန်မြို့နှင့် ဆက်သွယ်ပေးရန် အရေးပါလှသည်။ တံတား (၂) ပန်းလှိုင်မြစ်ကူးတံတားသစ်သည် အပြင်ပတ်လမ်းတွင် တည်ရှိမည့်ဖြစ်သောကြောင့် တောင်နှင့် မြောက် လားရာ အတွင်းရှိ ယာဉ်ကြောပိတ်ဆို့မှုများအား ကူညီဖြေရှင်းပေးနိုင်မည်ဖြစ်သည်။ တံတား(၁)သည် ၂၀၂၅ ခုနှစ်မှစတင်၍ နေ့စဉ် ၇၆,၀၀၀ (လူ နှင့် ယာဉ် နေ့စဉ် နှုန်း) ဖြတ်သန်းသွားလာမည်ဟု ခန့်မှန်းပြီး၊ ၂၀၃၀ ခုနှစ်တွင် ကိန်းဂဏန်းဆက်လက်မြင့်တက်လာပြီး၊ ၂၀၅၀ ခုနှစ်တွင် ပြန်လည်လျော့ကျသွားမည်ဟု ဇယား (၁.၂) အတိုင်း ခန့်မှန်းဖော်ပြထားပါသည်။ တံတား (၂) သည် နေ့စဉ်ဖြတ်သန်းသွားလာမှုမှာ လျော့နည်းနိုင်ပြီး ၂၀၂၅ ခုနှစ်တွင် ၃၄,၀၀၀ (လူ နှင့် ယာဉ် နေ့စဉ် နှုန်း) ဖြတ်သန်းသွားလာနိုင်မည် ဟု ခန့်မှန်းထားပါသည်။

ရန်ကုန်မြို့သစ် စက်မှုဇုန်မှလိုအပ်သော ကုန်ပစ္စည်းများအတွက် တံတား (၁) နှင့် (၂) အား ဖြတ်သန်းသယ်ဆောင်မည့် ကုန်ပမာဏမှာ များပြားမည် ဖြစ်ပါသည်။ တံတား (၂)စင်းစလုံးမှာ နောက်နှစ် (၃၀) အထိ ခံနိုင်ဝန် အပြည့်အဝ ရှိနေရန် မျှော်မှန်းထားပါသည်။

ဇယား ၁.၂ တံတားများ ယာဉ်ကြောပိတ်ဆို့မှု ခန့်မှန်းခြေ

ခန်းမှန်းခြေ (နှစ်)	အမှတ်	ပမာဏ (လူ၊ယာဉ် နှုန်း/ တစ်ရက်)				ခံနိုင်ဝန် (လူ၊ယာဉ် နှုန်း/ တစ်ရက်)	ပမာဏ နှင့် ခံနိုင်ဝန် အချိုး
		ကိုယ်ပိုင်များ	အများပြည်သူ	ကုန်	စုစုပေါင်း		
၂၀၂၅	တံတား (၁)	၅၂	၁၂.၇	၁၂	၇၆	၆၆	၁.၁
	တံတား (၂)	၂၅	၅	၃.၄	၃၄	၇၂	၀.၅
၂၀၃၀	တံတား (၁)	၉၇	၁၀.၈	၁၄	၁၂၂	၉၆	၁.၃
	တံတား (၂)	၅၄	၂၁	၅.၈	၈၁	၇၂	၁.၁
၂၀၅၀	တံတား (၁)	၆၀	၀.၈	၂၆	၈၇	၉၆	၀.၉

ခန်းမှန်းခြေ (နှစ်)	အမှတ်	ပမာဏ (လူယာဉ် နှုန်း/ တစ်ရက်)				ခံနိုင်ဝန် (လူယာဉ် နှုန်း/ တစ်ရက်)	ပမာဏ နှင့် ခံနိုင်ဝန် အချိုး
		ကိုယ်ပိုင်များ	အများပြည်သူ	ကုန်	စုစုပေါင်း		
တံတား (၂)	၇၀	၁၃	၈.၅	၉၂	၈၆	၁.၁	

ကိုးကား - Oriental Consultant ကုမ္ပဏီ၊ ၂၀၁၉

### ၁.၅ အနီးပတ်ဝန်းကျင်အကြောင်းအရာ ဖော်ပြချက်

စီမံကိန်းနယ်မြေဧရိယာ ကို တံတားများ (တံတား (၁) နှင့် တံတား(၂)) တည်နေရာအဖြစ် သတ်မှတ်ပါသည်။ တံတား (၁) သည် ကြည့်မြင်တိုင်မြို့နယ်၏ ရန်ကုန်မြစ်ပေါ်တွင်တည်ရှိသွားမည် ဖြစ်ပြီး၊ တံတား (၂) မှာ လှိုင်သာယာမြို့နယ် နှင့် တွံတေးမြို့နယ်တို့၏ ပန်းလှိုင်မြစ်ပေါ်တွင် တည်ရှိသွားမည် ဖြစ်ပါသည်။

ဤအပိုင်းသည် လေ့လာမှုနယ်မြေဧရိယာ ၏ သဘာဝမြေမျက်နှာပြင်၊ ပတ်ဝန်းကျင်၊ လူမှု-စီးပွား၊ ယဉ်ကျေးမှု နှင့် မြင်ကွင်းဆိုင်ရာ လက္ခဏာကို တင်ပြထားပါသည်။ စီမံကိန်းကြောင့် ဖြစ်ပေါ်လာနိုင်သော သက်ရောက်မှုများ၏ အပြန်အလှန်ချိတ်ဆက်မှုများ၊ ပမာဏ နှင့် အရေးပါမှုတို့ကို ဆုံးဖြတ်ရန် အန္တရာယ်အစိတ်တိုင်းဖြင့် ပတ်ဝန်းကျင် နှင့် လူမှုအခြေအနေများရှိနေသည့် ပိုမိုကျယ်ပြန့်သည့်နယ်မြေဧရိယာအဖြစ် လေ့လာမှုနယ်မြေဧရိယာ ကိုသတ်မှတ် ပါသည်။ ဤစီမံကိန်းနှင့်စပ်လျဉ်း၍ လေ့လာမှုနယ်မြေဧရိယာ ကို စီမံကိန်းနယ်မြေဧရိယာ အနီးဖြစ်သော မြို့နယ်များ ကို ထည့်သွင်းလျက် ရန်ကုန်မြို့သစ်တစ်ခုလုံးအဆင့်ကာလ (၁) ဆောင်ရွက်မှုတစ်ပိုက် ကြားခံ ၂ ကီလိုမီတာအဖြစ် သတ်မှတ်ပါသည်။ အဆိုပြု တံတား (၁) နှင့် တံတား (၂) တို့သည် ကြည့်မြင်တိုင်မြို့နယ်တွင် ရန်ကုန်မြစ်နှင့် လှိုင်သာယာမြို့နယ်နှင့် တွံတေးမြို့နယ်တို့တွင် ပန်းလှိုင်မြစ်တို့ကို အသီးသီး ဖြတ်သန်းတည်ဆောက်သွားမည် ဖြစ်ပါသည်။ ပတ်ဝန်းကျင်ထိခိုက်မှု ဆန်းစစ်ခြင်းအစီရင်ခံစာတွင်လည်း စီမံကိန်းအဆင့် (၁) ဧရိယာအတွင်းရှိ စီမံကိန်းလုပ်ငန်းခွင်ရုံးများ၊ ဆောက်လုပ်ရေးလုပ်သားများ နားနေဆောင်၊ နှင့် ကွန်ကရစ်ဖျော်စက်ရုံ စသည် ယာယီသုံးအထောက်အကူပြု ဆောက်လုပ်ရေးလုပ်ငန်းများကြောင့် ဖြစ်ပေါ်လာနိုင် သည့် ထိခိုက်နစ်နာမှုများအားလည်း ထည့်သွင်းစဉ်းစားသွားမည်ဖြစ်ပါသည်။ ဆန်းစစ်အကဲခတ်မှု အားကောင်းခိုင်မာစေရန်အတွက် လေ့လာမှု နယ်မြေ ဧရိယာသည် စီမံကိန်းအဆင့် (၁) ဧရိယာတစ်ခုလုံးနီးပါးအား လွှမ်းမိုးထားပါသည်။ ဤနယ်မြေဧရိယာသည် တစ်ခုချင်းစီမံကိန်းအစိတ်အပိုင်းများအကြား စပ်ဆက်သက်ရောက်မှု များ၏ နှိုင်းယှဉ်မှုကိုလည်းအထောက်အကူဖြစ်စေပါသည်။

'သက်ရောက်မှုရှိစေမည့်နယ်မြေဧရိယာ' (AoI) ကို စီမံကိန်းနယ်မြေဧရိယာအတွင်း သို့မဟုတ် အနီးရှိကျေးရွာအုပ်စုများ၊ ရပ်ကွက်များ နှင့် မြို့နယ်များအဖြစ် သတ်မှတ်ပါသည်။ တံတား(၁)၏ သက်ရောက်မှုရှိစေမည့် နယ်မြေဧရိယာ တွင် ကြည့်မြင်တိုင်မြို့နယ် (အရှေ့နှင့် အနောက်) ပါဝင်ပြီး တံတား (၂) တွင် တွံတေးမြို့နယ်အတွင်းရှိ ရေကျော်ကျေးရွာအုပ်စု၊ လှိုင်သာယာမြို့နယ်အတွင်းရှိ အတွင်းပဒံ၊ အပြင် ပဒံ နှင့် ဥက္ကံသောင်ကြားကျေးရွာအုပ်စုများ ပါဝင်ပါသည်။ ထုတ်ဝေပြီးသားစာတမ်းများသုံးသပ်မှု (desktop review) အရ၊ အဆိုပြုစီမံကိန်းနယ်မြေဧရိယာ၏ အဓိကပတ်ဝန်းကျင် နှင့် လူမှုထိခိုက်လွယ်မှုများကို ဇယား (၁.၃) တွင် အကျဉ်းတင်ပြထားပါသည်။

### ဇယား ၁.၃ လေ့လာမှုနယ်မြေဧရိယာ၏ အဓိကထိခိုက်လွယ်မှုများ

ပတ်ဝန်းကျင်နေရာ	ထိခိုက်လွယ်မှု
ကုန်းနေ ဇီဝမျိုး စုံမျိုး ကွဲများ	လေ့လာမှုနယ်မြေဧရိယာသည်ကျေးရွာငယ်များတည်ရှိမှုဖြင့် အဓိကကျေးလက်ဒေသ ဖြစ်ပါသည်။ လေ့လာမှုနယ်မြေဧရိယာအတွင်း နှင့် အနီးတစ်ဝိုက်တွင် အရွယ်အစားအားဖြင့် အရေးပါသောသဘာဝသစ်တောရှိမည် မဟုတ်ပါ။

ပတ်ဝန်းကျင်နေရာ	ထိခိုက်လွယ်မှု
	ဒီရေတောပေါက်ပင်များသည် မြစ်များ၏ ကမ်းပေါ်တွင် ရှိနေ နိုင်ပြီး၊ ဒီရေ တော တွင်နေထိုင်သော မျိုးစိတ်များရှိမည်ဟု မျှော်မှန်းပါသည်။
ပတ်ဝန်းကျင်ဆူညံသံ	လက်ရှိအနေအထားတွင် အနီးဝန်းကျင်ဆူညံသံအတွက် အချက်အလက်များမရှိနိုင်ပါ။ လေ့လာမှု နယ်မြေဧရိယာမှာ ကျေးလက်ဒေသ၏ အငွေ့အသက်များ လွှမ်းမိုးနေသောကြောင့် ဆူညံသံများမှာ အထိုက်အလျောက်ရှိနေပြီး ဖြစ်ပါသည်။ ပတ်ဝန်းကျင်ထိခိုက်မှု ဆန်းစစ်ခြင်း အစီရင်ခံစာတွင် စီမံကိန်း၏ တည်ဆောက်ရေး နှင့် လုပ်ငန်းလည်ပတ်ရေးတို့မှ ဆူညံသံသက် ရောက်မှုများကို ထည့်သွင်းစဉ်းစားရန် လိုအပ်မည် ဖြစ်ပါသည်။
ရပ်ရွာလူထု နှင့် အသက် မွေးဝမ်းကျောင်းများ	စီမံကိန်းသည် ကြည့်မြင်တိုင်၊ တွံတေး နှင့် လှိုင်သာယာ မြို့နယ်တို့တွင် တည်ရှိပါသည်။ အနီးအနားရှိ ရပ်ရွာများ၏ အ သက် မွေးဝမ်းကျောင်းအပေါ် သက်ရောက်မှုများကို ထည့်သွင်းစဉ်းစားရန် လိုအပ်ပါသည်။
ရေအရင်းအမြစ်များ နှင့် ရေနုတ်မြောင်း	လေ့လာမှုနယ်မြေဧရိယာတွင် ရေအရင်းအမြစ်များမှာ ရှားပါးသည်။ အထူးသဖြင့် ခြောက်သွေ့ ရာ သီတွင် ပို၍ရှားပါးသည်။ ဒေသခံရပ်ရွာလူထုသည် ဆိပ်ကြီးခနောင်တို နှင့် တွံတေးမြို့နယ်တို့ အတွင်းရှိ မိုးရာသီတွင် ရေစုထားသော ကန်များ/ရေကန်ငယ်များ မှ ရေကို အသုံးပြုကြပါသည်။ စီမံကိန်းအ တွက် ရေအရင်းအမြစ်များကို ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်း အစီရင်ခံစာတွင် ထည့်သွင်းစဉ်း စားသွားရန် လိုအပ်ပါသည်။
သယ်ယူပို့ဆောင်ရေး	စီမံကိန်းနယ်မြေဧရိယာရှိ ဒေသခံရပ်ရွာလူထုသည် ရန်ကုန်မြို့သို့ရောက်ရှိရန် ကားများထက် စက်လှေ များဖြင့် အဓိကသွားလာကြသော်လည်း၊ စီမံကိန်းကြောင့်လှိုင်သာယာ နှင့် တွံတေးမြို့နယ် တို့တွင် ယာဉ်ကြောပိတ်ဆို့မှုပိုမိုလာနိုင်ပါသည်။ ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းအစီရင်ခံစာတွင် ယာဉ်အသွား အလာအပေါ် သက်ရောက်မှုများကို ထည့်သွင်း စဉ်းစားရန် လို အပ်ပါသည်။
ယဉ်ကျေးမှု အမွေအနှစ်	လေ့လာမှုနယ်မြေဧရိယာအတွင်း၌ ထင်ရှားသော ဘုရားပုထိုးများ နှင့် ဘုန်းကြီးကျောင်းများ တည်ရှိနေသောကြောင့် ပတ်ဝန်းကျင်ထိခိုက်မှု ဆန်းစစ်ခြင်းအစီရင်ခံစာတွင် ထည့်သွင်း စဉ်းစားရန်လိုအပ်ပါသည်။

**၁.၆ အဓိက ဖြစ်ပေါ်လာနိုင်သည့် သက်ရောက်မှုနှင့် အဆိုပြုလျော့ချမှု**

နယ်ပယ်အတိုင်းအတာသတ်မှတ်ခြင်း အစီရင်ခံစာသည် စီမံကိန်း၏ တည်ဆောက်ရေး နှင့် လည်ပတ်ရေးတို့နှင့် ဆက်နွယ်သည့် ဖြစ်ပေါ်လာနိုင်သည့် သက်ရောက်မှုများအပေါ် အလေးပေးခဲ့ပါသည်။ တည်ဆောက်ရေးကာလ အတွင်း ဖြစ်ပေါ်လာနိုင်သော ပတ်ဝန်းကျင်ဆိုင်ရာ သက်ရောက်မှုများသည် လေ့လာမှုနယ်မြေဧရိယာ၌ ယာယီ ကွက်၍ ဖြစ်ပေါ်နိုင်ပါသည်။ လည်ပတ်ရေးကာလအတွင်း ဖြစ်ပေါ်လာနိုင်သော သက်ရောက်မှုများတွင် ဆူညံသံ နှင့်ဆက်နွယ်သောအရာများ၊ ကုန်းပေါ်ရှိ ဒေသရင်းသက်ရှိသတ္တဝါများ၊ အများပြည်သူကျန်းမာရေး

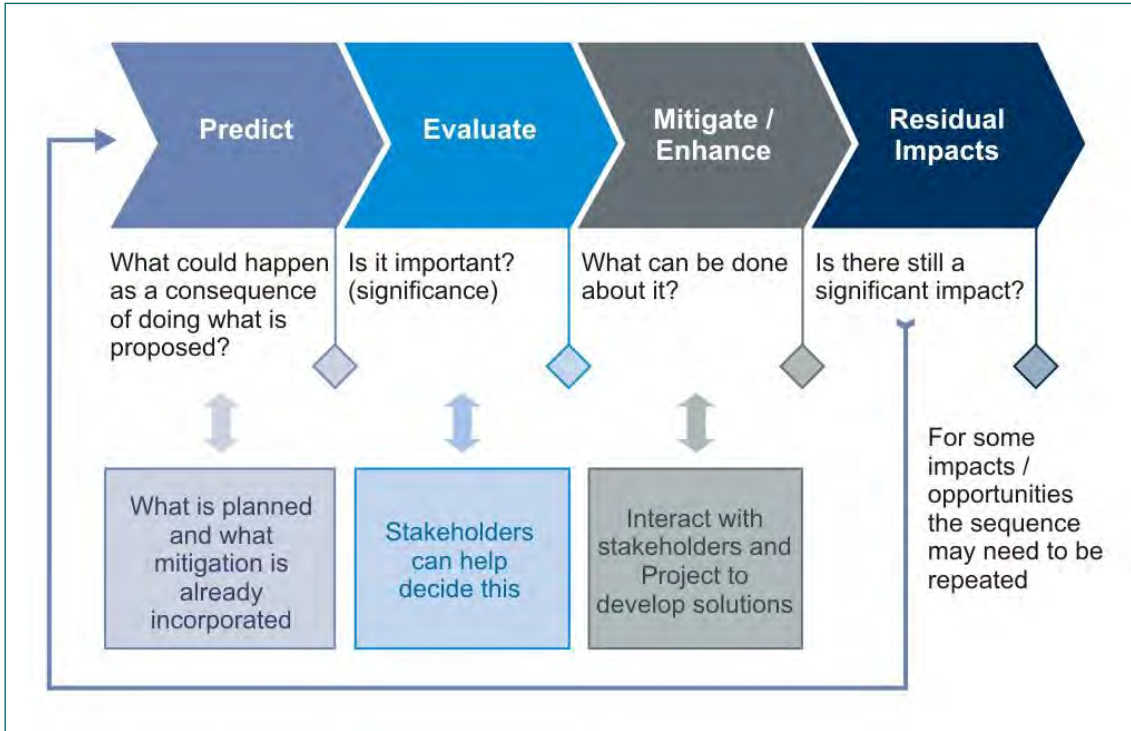
နှင့် ဘေးကင်း ရေး၊ နှင့် လုပ်ငန်းခွင်ကျန်းမာရေး နှင့် ဘေးကင်းရေးတို့ ပါဝင်ကြပါသည်။ ပတ်ဝန်းကျင်ထိခိုက်မှု ဆန်းစစ်ခြင်း အစီရင်ခံစာတွင် ဤသက်ရောက်မှုများကို အသေးစိတ် ဆန်းစစ်သွားမည် ဖြစ်ပြီး၊ သင့်လျော်သောလျော့ချရေး အစီအမံများကိုလည်း ဖော်ပြပေးသွားမည် ဖြစ်ပါသည်။

အောက်ဖော်ပြပါ အဆိုပြုစီမံကိန်းမှ ထွက်ရှိလာနိုင်သော သိသာထင်ရှားသည့် ထိခိုက်နိုင်ခြေများသည် နောက်တဆင့်ပြုလုပ်မည့် ပတ်ဝန်းကျင်ထိခိုက်မှု ဆန်းစစ်ခြင်း အစီရင်ခံစာတွင် အသေးစိတ် အကဲဖြတ် ဆန်းစစ်ရန် လိုအပ်ပါသည်။

**၁.၆.၁ ထိခိုက်မှုဆန်းစစ်ခြင်း နည်းစနစ်**

သက်ရောက်မှု ဆန်းစစ်ခြင်း နိယာမ အဆင့်ဆင့်များ ပုံ ၁.၂ တွင် စုစည်းဖော်ပြထားပါသည်။

- သက်ရောက်မှု ကြိုတင်ခန့်မှန်းခြင်း - အဆိုပြုစီမံကိန်းနှင့် ၎င်း၏ဆက်စပ်လုပ်ငန်းများမှ သဘာဝပတ်ဝန်းကျင်နှင့် လူတို့အပေါ်ထိခိုက်နိုင်ခြေ အလားအလာများအာ ဆုံးဖြတ်ရန်။
- သက်ရောက်မှုများ အကဲဖြတ်ခြင်း - ကြိုတင်ခန့်မှန်းထားသော သက်ရောက်မှုများအား တွေ့ရှိထားသည့် ဖြစ်နိုင်ခြေ သို့မဟုတ် ဖြစ်နိုင်မှု ပမာဏ (ကြို တင်စီစဉ်၍ မရသော)၊ ထိခိုက်လွယ်မှု၊ ထိခိုက်နစ်နာသော အရင်းအမြစ်(သို့)ထိခိုက်နစ်နာသူများ၏ တန်ဖိုး (နှင့်၊ သို့မဟုတ်) အရေးပါမှုအပေါ် ထည့်သွင်းစဉ်းစားပြီး အကဲဖြတ်ရန်။
- လျော့ချခြင်း နှင့် အားထည့်ဆောင်ရွက်ခြင်း - ထိခိုက်နစ်နာမှုများ လျော့ချရန် နှင့် ကောင်းမွန်သော သက်ရောက်မှုများအား အားပေးရန်အတွက် သင့်တော်ပြီး ချိန်ညှိနိုင်သော အစီအမံများ သတ်မှတ်ရန်
- ကြွင်းကျန်သက်ရောက်မှုများ အကဲဖြတ်ခြင်း - လျော့ချခြင်းနှင့် အားထည့်ဆောင်ရွက်ခြင်းအစီ အမံများ ဆောင်ရွက်ခြင်းကြောင့် ဖြစ်ပေါ်လာမည့် သိသာထင်ရှားသည့် သက်ရောက်မှုများအား အကဲဖြတ်ရန်။ ကြီးမားသော သက်ရောက်မှုများအား “သိသာထင်ရှားသည့် သက်ရောက်မှု” အဖြစ် ပုံ ၁.၂ တွင် ထည့်သွင်းစဉ်းစားထားပါသည်။



**ပုံ ၁.၂ သက်ရောက်မှုဆန်းစစ်ခြင်းအဆင့်အဆင့်**

အထက်ဖော်ပြပါနည်းစနစ်အား အစီရင်ခံစာထဲတွင် သက်ရောက်မှုများအား ကြိုတင်ခန့်မှန်းခြင်း၊ အကဲဖြတ်ခြင်း နှင့် ဆန်းစစ်ခြင်းများအတွက် အသုံးပြုသွားမည် ဖြစ်ပါသည်။

**၁.၆.၂ ဆက်စပ်သက်ရောက်မှုများ**

ဆက်စပ်သက်ရောက်မှုများအား ဆန်းစစ်ခြင်းသည် ဤစီမံကိန်း၏အရေးကြီးသောအစိတ်အပိုင်းတစ်ခု ဖြစ်ပါသည်။ ဆန်းစစ်ခြင်းလုပ်ငန်းစဉ်တွင် စီမံကိန်းအတွက် အစီရင်ခံစာအား တိုက်ရိုက် နှင့် သွယ်ဝိုက်ကြွင်းကျန် သက်ရောက်မှုများအား ထည့်သွင်းစဉ်းစားသွားမည်ဖြစ်ပြီး၊ သဘာဝအရင်းအမြစ် နှင့်လူတို့အပေါ်သက်ရောက်နိုင်သည့် အခြားသော စီမံကိန်းများ၊ လုပ်ငန်းများ၊ သဘာဝဖြစ်စဉ်များ၏ သက်ရောက်နိုင်ခြေများကိုလည်း ထည့်သွင်းအကဲဖြတ်သွားမည်ဖြစ်ပါသည်။ ဆက်စပ်သက်ရောက်မှုများ ဆန်းစစ်ခြင်းအဆင့်အဆင့်၏ အကျဉ်းချုပ်ကို ဇယား (၁.၄)တွင် ဖော်ပြထားပါသည်။

**ဇယား ၁.၄ လေ့လာမှုနယ်မြေဧရိယာ၏ အဓိကထိခိုက်လွယ်မှုများ**

**နယ်ပယ်သတ်မှတ်ခြင်း**

- သက်ရောက်မှုဆန်းစစ်ခြင်းမှ ရရှိလာသည့်သတင်းအချက်အလက်များအားအသုံးပြု၍ စီမံကိန်းနှင့် အရင်းအမြစ်များ/လူများနှင့် ပတ်သက်သည့် အဓိကသော့ချက်ဖြစ်မည့် ကိစ္စရပ်များအား သတ်မှတ်ရန်
- ယာယီအရ နှင့် ပထဝီသဘောအရ နယ်နိမိတ်များသတ်မှတ်ထားရန်
- စီမံကိန်းနှင့်ပတ်သက်ဆက်သွယ်သူအားလုံးအား တွေ့ဆုံဆွေးနွေးရန်
- ဆန်းစစ်ခြင်းလုပ်ငန်းအသေစိတ် အဆင့်များသတ်မှတ်ရန်
- အဆိုပြုစီမံကိန်းနှင့် သက်ရောက်မှုရှိလာနိုင်သည့် အခြားသော စီမံကိန်းများ၊ လုပ်ငန်းများ သို့မဟုတ် သဘာဝဖြစ်စဉ်များအား စိစစ် သတ်မှတ်ထား ရန်
- သက်ရောက်မှုဆန်းစစ်ခြင်းမှရရှိလာသော သတင်းအချက်အလက်များအား အသုံးပြု၍ ထင်ရှားမြင်သာသော သတ်မှတ်ချက် စံ များ စတင်ထားရန် သို့မဟုတ် အတည်ပြုရန်

**အခြေခံအချက်အလက်များ**



**နယ်ပယ်သတ်မှတ်ခြင်း**

- သက်ရောက်မှုဆန်းစစ်ခြင်းမှ ရရှိလာသည့်သတင်းအချက်များအား အသုံးပြုပြီး စီမံကိန်းအတွင်းရှိ လူနှင့် သဘာဝ အရင်းအမြစ်များ၏ အခြေခံ (လက်ရှိအခြေအနေ)အချက်အလက်များအား သေချာမှု ရှိစေရန်။

**ဆက်စပ်သက်ရောက်မှုများ ဆန်းစစ်ခြင်း**

- စီမံကိန်းအတွင်းရှိ သဘာဝအရင်းအမြစ်နှင့် လူပုဂ္ဂိုလ်တို့၏ အားနည်းချက် နှင့် ၎င်းတို့၏ လက်သင့်ခံနိုင်သော ပြောင်းလဲမှုအတိုင်းအတာအား ထည့်သွင်းစဉ်းစားပြီး ဆက်စပ်သက်ရောက်မှုများ၏ မြင်သာထင်ရှားမှု နှင့် ပမာဏအတိုင်းအတာများ ဆုံးဖြတ်ရန်

**စီမံခန့်ခွဲခြင်း နှင့် စောင့်ကြည့်ခြင်းများ အဓိပ္ပါယ်ဖွင့်ဆိုချက်**

- စီမံကိန်းနှင့် ပတ်သက်ဆက်နွယ်သော ဆက်စပ်သက်ရောက်မှုများအား ရှောင်ကျဉ်ရန်၊ အနည်းဆုံး သို့မဟုတ် လျော့ချပေးရန်အတွက် အစီအမံများ စီစဉ်ထားရှိရန်။
- သက်ရောက်မှုဆန်းစစ်ခြင်းတွင် ကတိကဝတ်ပြုထားသော အချို့သော အစီအမံများသည် ဆက်စပ်သက်ရောက်မှုဖြစ်နိုင်ခြေများအား ထိန်းချုပ်ရန် လုံလောက်နိုင်ပါသည်။ ထို့ကြောင့် ၎င်းအစီအမံများအား ပြန်လည်ရည်ညွှန်းကိုးကားနှင့် အစီအမံအသစ်များ ထပ်မံလိုအပ်မှု ရှိမရှိအား ခွဲခြားရန် အလွန်အရေးကြီးပါသည်။

ရန်ကုန်မြို့သစ်စီမံကိန်းတစ်ခုလုံး၏ ဆက်စပ်သက်ရောက်မှုများတွင် လေထဲသို့ထုတ်လွှင့်မှု၊ ဆူညံသံထွက်ပေါ်မှု၊ ရေထုနှင့် မြေထုအပေါ်သက်ရောက်မှုများ နှင့် အသက်မွေးဝမ်းကြောင်းအပေါ်သက်ရောက်မှုများ အားလုံး ပါဝင်နိုင်ပြီး ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းအစီရင်ခံစာတွင် ထည့်သွင်း ဆန်းစစ်သွားမည်ဖြစ်ပါသည်။

**၁.၆.၃ တည်ဆောက်ရေးကာလ**

တည်ဆောက်ရေးကာလအတွင်း အောက်ဖော်ပြပါ သက်ရောက်မှုများပါဝင်ပါသည်။

- လေထုအရည်အသွေးအပေါ် သက်ရောက်မှုများ
  - လုပ်ငန်းခွင်ပြင်ဆင်ခြင်း၊ မြေတူးဆွခြင်း နှင့် မြေဖြည့်ခြင်းအလုပ်များ
  - တံတား တည်ဆောက်ခြင်း၊
  - စက်ယန္တရားများ၊ ပစ္စည်းများ နှင့် လုပ်သားများ သယ်ယူပို့ဆောင်ရေး
  - ယာယီအထောက်အကူပြု တည်ဆောက်ရေးလုပ်ငန်းများ
- ဆူညံသံများအပေါ် သက်ရောက်မှုများ
  - လုပ်ငန်းခွင်ပြင်ဆင်ခြင်း၊ မြေတူးဆွခြင်း နှင့် မြေဖြည့်ခြင်းအလုပ်များ
  - တံတား တည်ဆောက်ခြင်း၊
  - စက်ယန္တရားများ၊ ပစ္စည်းများ နှင့် လုပ်သားများ သယ်ယူပို့ဆောင်ရေး
  - ယာယီအထောက်အကူပြု တည်ဆောက်ရေးလုပ်ငန်းများ
- မြေပေါ်ရေ နှင့် မြေအောက်ရေ အရည်အသွေးတို့အပေါ် သက်ရောက်မှုများ
  - လုပ်ငန်းခွင်ပြင်ဆင်ခြင်း၊ မြေတူးခြင်း နှင့် ဖြည့်ခြင်း၊
  - တံတားတည်ဆောက်ခြင်း၊
  - စွန့်ပစ်ပစ္စည်း၊ လောင်စာဆီ၊ ဓာတုပစ္စည်း၊ ဆီ နှင့် ဓာတ်ငွေ့တို့ သိုလှောင်ခြင်း၊ ကိုင်တွယ်ခြင်းနှင့် စွန့်ပစ်ခြင်း

- ယာယီထောက်ပံ့မှု အခြေခံအဆောက်အအုံ၊
- တံတားတည်ဆောက်ရေးမှ Hydrology နှင့် Hydrogeology အပေါ်သက်ရောက်မှု
- မြေဆီလွှာ အရည်အသွေး နှင့် မြေမျက်နှာသွင်ပြင်တို့အပေါ် သက်ရောက်မှုများ
  - တံတားတည်ဆောက်ရေး၊
  - စွန့်ပစ်ပစ္စည်း၊ လောင်စာဆီ၊ ဓာတုပစ္စည်း၊ ဆီ နှင့် ဓာတ်ငွေ့တို့ သိုလှောင်ခြင်း၊ ကိုင်တွယ်ခြင်းနှင့် စွန့်ပစ်ခြင်း
  - ယာယီထောက်ပံ့မှု အခြေခံအဆောက်အအုံ၊
- မြေယာရှုခင်း နှင့် မြင်ကွင်းပုံစံတို့အပေါ် သက်ရောက်မှုများ
  - တံတားတည်ဆောက်ရေး၊
  - ယာယီထောက်ပံ့မှု အခြေခံအဆောက်အအုံ။
- ကုန်းပေါ်ရှိ ဒေသရင်းအပင်များအပေါ် သက်ရောက်မှုများ (လုပ်ငန်းခွင်ပြင်ဆင်ခြင်း၊ မြေတူးခြင်း နှင့် ဖြည့်ခြင်း၊)
- ကုန်းပေါ်ရှိ ဒေသရင်း သက်ရှိသတ္တဝါများအပေါ် သက်ရောက်မှုများ (လုပ်ငန်းခွင်ပြင်ဆင်ခြင်း၊ မြေတူးခြင်း နှင့် ဖြည့်ခြင်း၊)
- ရေထဲရှိ ဒေသရင်းအပင်များနှင့် သက်ရှိသတ္တဝါများအပေါ် သက်ရောက်မှုများ
  - လုပ်ငန်းခွင်ပြင်ဆင်ခြင်း၊ မြေတူးခြင်း နှင့် ဖြည့်ခြင်း၊
  - တံတားတည်ဆောက်ရေး၊
  - ယာယီထောက်ပံ့မှု အခြေခံအဆောက်အအုံ။
- ရပ်ရွာလူထုကျန်းမာရေး နှင့် ဘေးကင်းရေးတို့အပေါ် သက်ရောက်မှုများ
  - ကိရိယာပစ္စည်း၊ ထောက်ပံ့မှုများ နှင့် အလုပ်သမားများ သယ်ယူပို့ဆောင်မှု၊
  - အလုပ်သမား၊ ကိရိယာပစ္စည်း နှင့် ဝန်ဆောင်မှုထောက်ပံ့မှုများ၊
  - ယာယီထောက်ပံ့မှု အခြေခံအဆောက်အအုံ။
- လူဦးရေဆိုင်ရာပုံစံ၊ စီးပွားရေး နှင့် အသက်မွေးဝမ်းကျောင်းတို့အပေါ် သက်ရောက်မှုများ (လုပ်ငန်းခွင်ပြင်ဆင်ခြင်း၊ မြေတူးခြင်း နှင့် ဖြည့်ခြင်း၊)
- လုပ်ငန်းခွင် ကျန်းမာရေး နှင့် ဘေးကင်းရေးတို့အပေါ် သက်ရောက်မှုများ
  - လုပ်ငန်းခွင်ပြင်ဆင်ခြင်း၊ မြေတူးခြင်း နှင့် ဖြည့်ခြင်း၊
  - တံတားတည်ဆောက်ရေး၊
  - ကိရိယာပစ္စည်း၊ ထောက်ပံ့မှုများ နှင့် အလုပ်သမားများ သယ်ယူပို့ဆောင်မှု၊
  - စွန့်ပစ်ပစ္စည်း၊ လောင်စာဆီ၊ ဓာတုပစ္စည်း၊ ဆီ နှင့် ဓာတ်ငွေ့တို့ သိုလှောင်ခြင်း၊ ကိုင်တွယ်ခြင်းနှင့် စွန့်ပစ်ခြင်း၊
  - ယာယီထောက်ပံ့မှု အခြေခံအဆောက်အအုံ နှင့်
- အခြေခံအဆောက်အအုံဝန်ဆောင်မှုတို့အပေါ် သက်ရောက်မှုများ
  - တံတားတည်ဆောက်ရေး၊

- ကိရိယာပစ္စည်း၊ ထောက်ပံ့မှုများ နှင့် အလုပ်သမားများ သယ်ယူပို့ဆောင်မှု၊
- စွန့်ပစ်ပစ္စည်း၊ လောင်စာဆီ၊ ဓာတုပစ္စည်း၊ ဆီ နှင့် ဓာတ်ငွေ့တို့ သိုလှောင်ခြင်း၊ ကိုင်တွယ်ခြင်းနှင့် စွန့်ပစ်ခြင်း။
- ယာယီထောက်ပံ့မှု အခြေခံအဆောက်အအုံ နှင့်
- ယဉ်ကျေးမှု အမွေအနှစ်များအပေါ် သက်ရောက်မှုများ
  - လုပ်ငန်းခွင်ပြင်ဆင်ခြင်း၊ မြေတူးခြင်း နှင့် ဖြည့်ခြင်း၊
  - တံတားတည်ဆောက်ရေး၊
  - ကိရိယာပစ္စည်း၊ ထောက်ပံ့မှုများ နှင့် အလုပ်သမားများ သယ်ယူပို့ဆောင်မှု။

### ၁.၆.၄ လည်ပတ်ရေးကာလ

လည်ပတ်ရေးကာလအတွင်း အောက်ဖော်ပြပါ သက်ရောက်မှုများပါဝင်ပါသည်။

- လေထုအရည်အသွေးအပေါ် သက်ရောက်မှုများ
- ဆူညံသံများအပေါ် သက်ရောက်မှုများ
- မြေယာရှုခင်း နှင့် မြင်ကွင်းပုံစံတို့အပေါ် သက်ရောက်မှုများ
- ရပ်ရွာလူထုကျန်းမာရေး နှင့် ဘေးကင်းရေးတို့အပေါ် သက်ရောက်မှုများ
- လူဦးရေဆိုင်ရာပုံစံ၊ စီးပွားရေး နှင့် အသက်မွေးဝမ်းကျောင်းတို့အပေါ် သက်ရောက်မှုများ
- လုပ်ငန်းခွင် ကျန်းမာရေး နှင့် ဘေးကင်းရေးတို့အပေါ် သက်ရောက်မှုများ
- ယဉ်ကျေးမှု အမွေအနှစ်များအပေါ် သက်ရောက်မှုများ

### ၁.၆.၅ မတော်တဆဖြစ်ရပ်များ

တည်ဆောက်ရေးကာလ နှင့် လည်ပတ်ရေးကာလအတွင်း လုပ်သားများ၊ စက်ယန္တရားများ သို့မဟုတ် ဆောက်လုပ်ရေးပစ္စည်းများကြောင့် မတော်တဆမှုများဖြစ်ပွားနိုင်ပါသည်။ ၎င်းမတော်တဆမှုများတွင် သဘာဝဘေးအန္တရာယ် (ရေကြီးနှစ်မြုပ်ခြင်းများ၊ ဆိုင်ကလုန်းမုန်တိုင်းများ နှင့် မြေငလျင်များ) ကြောင့် ဖြစ်ပေါ်လာမည့် အကျိုးဆက်များပါဝင်ပြီး သဘာဝပတ်ဝန်းကျင်နှင့် လူမှုပတ်ဝန်းကျင်များ အပေါ် သက်ရောက်မှုများ ဖြစ်ပေါ်စေနိုင်ပါသည်။

- မီးလောင်ကျွမ်းခြင်းနှင့် ပေါက်ကွဲမှုတို့မှ အနီးလေထုအရည်အသွေးအပေါ် သက်ရောက်မှုများ၊
- ယိုဖိတ်မှုများ နှင့် ယိုစိမ့်မှုများမှ မြေပေါ်ရေနှင့် မြေအောက်ရေတို့အပေါ် သက်ရောက်မှုများ၊
- ယိုဖိတ်မှုများ နှင့် ယိုစိမ့်မှုများကြောင့် မြေဆီလွှာ အရည်အသွေး နှင့် မြေမျက်နှာသွင်ပြင်တို့အပေါ် သက်ရောက်မှုများ၊
- ရေထဲရှိ ဒေသရင်းအပင်များနှင့် သက်ရှိသတ္တဝါများအပေါ် သက်ရောက်မှုများ
  - ယိုဖိတ်မှုများ နှင့် ယိုစိမ့်မှုများ၊
  - မီးလောင်ကျွမ်းခြင်း နှင့် ပေါက်ကွဲမှု။
- ရပ်ရွာလူထု ကျန်းမာရေး နှင့် ဘေးကင်းရေးတို့အပေါ် သက်ရောက်မှုများ၊

- ယဉ်တိုက်မိခြင်း
- မီးလောင်ကျွမ်းခြင်း နှင့် ပေါက်ကွဲမှု။
- လုပ်ငန်းခွင် ကျန်းမာရေး နှင့် ဘေးကင်းရေးတို့အပေါ် သက်ရောက်မှုများ
  - ယဉ်တိုက်မိခြင်း
  - မီးလောင်ကျွမ်းခြင်း နှင့် ပေါက်ကွဲမှု။

ဤသက်ရောက်မှုများကို ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းအစီရင်ခံစာတွင် အသေးစိတ် ဆန်းစစ်သွားမည် ဖြစ်ပြီး သင့်လျော်သော လျော့ချရေးအစီအမံများကို ထည့်သွင်းသွားမည် ဖြစ်ပါသည်။

**၁.၇ အများပြည်သူနှင့် တိုင်ပင်ဆွေးနွေးခြင်းနှင့် ထုတ်ဖော်တင်ပြခြင်း**

နယ်ပယ်အတိုင်းအတာသတ်မှတ်ခြင်းအဆင့်ကာလနှင့်ပတ်သက်၍ တိုင်ပင်ဆွေးနွေးမှုအစည်းအဝေးများကို ကြည့် မြင်တိုင်၊ အလုံ၊ တွံတေး၊ ဆိပ်ကြီးခနောင်တို၊ နှင့် လှိုင်သာယာ မြို့နယ်တို့တွင် အမျိုးမျိုးသော သက်ဆိုင်ရာ အကျိုး သက်ဆိုင်သူများနှင့် ကျင်းပခဲ့ပါသည်။ တိုင်ပင်ဆွေးနွေးမှုသည် ဖြစ်ပေါ်လာနိုင်သော ထိခိုက်ခံစားရနိုင်သူများနှင့် ဖြစ်ပေါ်လာနိုင်သည့် အချက်အလက်ကွာဟမှု၊ နှင့် ၎င်းတို့ကို ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းအစီရင်ခံစာတွင် မည်သို့ထည့်သွင်းဆောင်ရွက်သွားနိုင်သည်ဆိုသည့် အကြောင်းတို့နှင့်ပတ်သက်သော သတင်းအချက်အလက်များကို စုဆောင်း ရန် စီမံကိန်းအတွက် အထောက်အကူဖြစ်ခဲ့ပါသည်။

နယ်ပယ်အတိုင်းအတာသတ်မှတ်ခြင်းဆိုင်ရာ တိုင်ပင်ဆွေးနွေး မှုတွင် အခြားသက်ဆိုင်ရာ ဝန်ကြီးများက တက်ရောက်သည့် ဝန်ကြီးချုပ်အတွက် ကိုယ်စားလှယ်၊ တိုင်းဒေသကြီး အဆင့် ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဦးစီးဌာန နှင့် အထွေထွေအုပ်ချုပ်ရေး ဦးစီးဌာန၊ ရန်ကုန်တိုင်းဒေသကြီး လွတ် တော်ကိုယ်စားလှယ်များ၊ ပြည်သူ့လွှတ်တော် ကိုယ်စားလှယ်၊ လူမှုကယ်ဆယ်ရေးဦးစီးဌာနမှ ညွှန်ကြားရေးမှူး၊ မြို့ နယ် အထွေထွေအုပ်ချုပ်ရေးဦးစီးဌာနများ၊ ရပ်ကွက် နှင့် ကျေးရွာ အုပ်ချုပ်ရေးမှူးများ၊ ရပ်ကွက်နာယကများ၊ CSOs/ NGOs၊ သက်ဆိုင်ရာ အစိုးရဦးစီးဌာနများ နှင့် ဒေသခံရပ်ရွာလူထု နှင့် ရပ်ရွာကိုယ်စားလှယ်များအပါအဝင် ရန်ကုန် တိုင်းဒေသကြီးတွင် သက်ဆိုင်သူအများအပြားဖြင့် မျက်နှာချင်းဆိုင် အစည်းအဝေးများ ပါဝင်ခဲ့ပါသည်။

နယ်ပယ်အတိုင်းအတာသတ်မှတ်ခြင်းအဆင့်ကာလအတွင်း ဆောင်ရွက်ခဲ့သည့် အစည်းအဝေး တစ်ခုချင်းစီ၏ နေ့စဉ်၊ အချိန်၊ နေရာ၊ သက်ဆိုင်သူ နှင့် ရည်ရွယ်ချက်တို့ကို *ဇယား (၁.၅)* တွင် တင်ပြ ထားပါသည်။

**ဇယား ၁.၅ နယ်ပယ်အတိုင်းအတာသတ်မှတ်ခြင်းကာလအတွင်း ဆောင်ရွက်ခဲ့သည့် တိုင်ပင်ဆွေးနွေးမှုလုပ်ငန်းများ**

နေ့စွဲ၊ အချိန်၊ နေရာ	သက်ဆိုင်သူများ	ချိတ်ဆက်တိုင်ပင်ဆွေးနွေးမှု၏ ရည်ရွယ်ချက်
၂၀၁၉ ဇန်နဝါရီလ ၂၃ ရက် ဗုဒ္ဓဟူး နေ့	ဝန်ကြီးချုပ်ရုံးအစည်းအဝေး	<ul style="list-style-type: none"> <li>■ စီမံကိန်းဆိုင်ရာ သတင်းအချက်အလက်များ တင်ပြခြင်း</li> <li>■ မြို့နယ်/ရပ်ကွက် နှင့် ကျေးရွာအဆင့် အစည်း အဝေး များအတွက် ခွင့်ပြုချက်ရယူခြင်း</li> <li>■ သက်ဆိုင်သူများထံမှ စိုးရိမ်မှုများ နှင့် အကြံ ဉာဏ် များ ကောက်ယူစုဆောင်းခြင်း</li> </ul>
၂၀၁၉ ဇန်နဝါရီလ ၃၀ ရက် ဗုဒ္ဓဟူးနေ့	တွံတေးမြို့နယ် GAD ရုံး၊ ဆိပ်ကြီးခနောင်တိုမြို့နယ် GAD ရုံး နှင့်	<ul style="list-style-type: none"> <li>■ အစည်းအဝေးများ အစီအစဉ်ချခြင်း နှင့် ခွင့်ပြုချက်များ တောင်းခံခြင်း</li> </ul>

နေ့စွဲ၊ အချိန်၊ နေရာ	သက်ဆိုင်သူများ	ချိတ်ဆက်တိုင်ပင်ဆွေးနွေးမှု၏ ရည်ရွယ်ချက်
	ကြည့်မြင်တိုင်မြို့နယ် GAD ရုံး	
၂၀၁၉ ဇန်နဝါရီလ ၃၁ ရက် ကြာသပတေးနေ့	အလုံမြို့နယ် GAD ရုံး နှင့် လှိုင်သာယာမြို့နယ် GAD ရုံး	<ul style="list-style-type: none"> <li>■ အစည်းအဝေးများ အစီအစဉ်ချခြင်း နှင့် ခွင့်ပြုချက်များ တောင်းခံခြင်း</li> </ul>
၂၀၁၉ ဖေဖော်ဝါရီလ ၁ ရက် သောကြာနေ့	အလုံမြို့နယ်	<ul style="list-style-type: none"> <li>■ ဒေသအစိုးရ၊ ရပ်ကွက်အုပ်ချုပ်ရေးမှူးများ၊ ဒေသခံ ရပ်ရွာလူထု နှင့် အခြားစိတ်ဝင်စားသူအုပ်စုများထံသို့ စီမံကိန်းဆိုင်ရာ သတင်းအချက်အလက်များကို တင်ပြခြင်း</li> <li>■ သက်ဆိုင်သူများထံမှ စိုးရိမ်မှုနှင့်အကြံဉာဏ် များ ရယူခြင်း</li> <li>■ လူမှုအခြေခံအချက်အလက်များကောက်ယူမှု ဆောင်ရွက်ခြင်း</li> <li>■ ရပ်ကွက်အုပ်ချုပ်ရေးမှူးနှင့် အင်တာဗျူးဆောင်ရွက်ခြင်း</li> </ul>
၂၀၁၉ ဖေဖော်ဝါရီလ ၂ ရက် စနေနေ့	တွံတေးမြို့နယ်	<ul style="list-style-type: none"> <li>■ ဒေသအစိုးရ၊ ရပ်ကွက်အုပ်ချုပ်ရေးမှူးများ၊ ဒေသခံ ရပ်ရွာလူထု နှင့် အခြားစိတ်ဝင်စားသူအုပ်စုများထံသို့ စီမံကိန်းဆိုင်ရာ သတင်းအချက်အလက်များကို တင်ပြခြင်း</li> <li>■ သက်ဆိုင်သူများထံမှ စိုးရိမ်မှုနှင့်အကြံဉာဏ် များ ရယူခြင်း</li> <li>■ လူမှုအခြေခံအချက်အလက်များကောက်ယူမှု ဆောင်ရွက်ခြင်း</li> <li>■ ရပ်ကွက်အုပ်ချုပ်ရေးမှူးနှင့် အင်တာဗျူးဆောင်ရွက်ခြင်း</li> </ul>
၂၀၁၉ ဖေဖော်ဝါရီလ ၂ ရက် စနေနေ့	ကြည့်မြင်တိုင် မြို့နယ်	<ul style="list-style-type: none"> <li>■ ဒေသအစိုးရ၊ ရပ်ကွက်အုပ်ချုပ်ရေးမှူးများ၊ ဒေသခံ ရပ်ရွာလူထု နှင့် အခြားစိတ်ဝင်စားသူအုပ်စုများထံသို့ စီမံကိန်းဆိုင်ရာ သတင်းအချက်အလက်များကို တင်ပြခြင်း</li> <li>■ သက်ဆိုင်သူများထံမှ စိုးရိမ်မှုနှင့်အကြံဉာဏ် များ ရယူခြင်း</li> <li>■ လူမှုအခြေခံအချက်အလက်များကောက်ယူမှု ဆောင်ရွက်ခြင်း</li> <li>■ ရပ်ကွက်အုပ်ချုပ်ရေးမှူးနှင့် အင်တာဗျူးဆောင်ရွက်ခြင်း</li> </ul>
၂၀၁၉ ဖေဖော်ဝါရီလ ၃ ရက် တနင်္ဂနွေနေ့	ဆိပ်ကြီးခနောင်တို မြို့နယ်	<ul style="list-style-type: none"> <li>■ ဒေသအစိုးရ၊ ရပ်ကွက်အုပ်ချုပ်ရေးမှူးများ၊ ဒေသခံ ရပ်ရွာလူထု နှင့် အခြားစိတ်ဝင်စားသူအုပ်စုများထံသို့ စီမံကိန်းဆိုင်ရာ သတင်းအချက်အလက်များကို တင်ပြခြင်း</li> <li>■ သက်ဆိုင်သူများထံမှ စိုးရိမ်မှုနှင့်အကြံဉာဏ် များ ရယူခြင်း</li> <li>■ လူမှုအခြေခံအချက်အလက်များကောက်ယူမှု ဆောင်ရွက်ခြင်း</li> <li>■ ရပ်ကွက်အုပ်ချုပ်ရေးမှူးနှင့် အင်တာဗျူးဆောင်ရွက်ခြင်း</li> </ul>
၂၀၁၉ ဖေဖော်ဝါရီလ ၃ ရက် တနင်္ဂနွေနေ့	လှိုင်သာယာမြို့နယ်	<ul style="list-style-type: none"> <li>■ ဒေသအစိုးရ၊ ရပ်ကွက်အုပ်ချုပ်ရေးမှူးများ၊ ဒေသခံ ရပ်ရွာလူထု နှင့် အခြားစိတ်ဝင်စားသူအုပ်စုများထံသို့ စီမံကိန်းဆိုင်ရာ သတင်းအချက်အလက်များကို တင်ပြခြင်း</li> <li>■ သက်ဆိုင်သူများထံမှ စိုးရိမ်မှုနှင့်အကြံဉာဏ် များ ရယူခြင်း</li> <li>■ လူမှုအခြေခံအချက်အလက်များကောက်ယူမှု ဆောင်ရွက်ခြင်း</li> </ul>

နေ့စွဲ၊ အချိန်၊ နေရာ	သက်ဆိုင်သူများ	ချိတ်ဆက်တိုင်ပင်ဆွေးနွေးမှု၏ ရည်ရွယ်ချက်
		<ul style="list-style-type: none"> <li>ရပ်ကွက်အုပ်ချုပ်ရေးမှူးနှင့် အင်တာဗျူးဆောင်ရွက်ခြင်း</li> </ul>

ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းကာလအတွင်း ကျေးရွာအဆင့်နှင့် မြို့နယ်အဆင့် ပြည်သူလူထုနှင့် တွေ့ဆုံဆွေးနွေးပွဲများအား ရန်ကုန်တိုင်းဒေသကြီး၊ အလုံမြို့နယ်၊ ကြည့်မြင်တိုင်မြို့နယ်၊ ဆိတ်ကြီးခနောင်တိုမြို့နယ်၊ တွံတေးမြို့နယ်၊ လှိုင်သာယာမြို့နယ် နှင့် ဒလမြို့နယ်များတွင် ကျင်းပပြုလုပ် သွားမည်ဖြစ်ပါသည်။ အစည်းအဝေးများ၏ ရည်ရွယ်ချက်နှင့် အစီအစဉ်မှာ နယ်ပယ်သတ်မှတ်ခြင်း အဆင့်တွင် ပြုလုပ်သောအစည်းအဝေးများနှင့် အတူတူပင် ဖြစ်ပါမည်။ အစုအဝေးလိုက်တွေ့ဆုံ မေးမြန်းမှု၊ တစ်ဦးချင်းမေးမြန်းမှုတို့တွင် အသုံးပြုမည့် အဓိကပတ်သက်ဆက်နွယ်သူများ နှင့် ကွင်းဆင်းမေးမြန်းမည့် မေးခွန်းများအား နောက်ဆက်တွဲ (ဃ)တွင် ဖော်ပြထားပါသည်။ လူမှုပတ်ဝန်းကျင်နှင့် သဘာဝပတ်ဝန်းကျင်ဆိုင်ရာ အခြေခံအချက်အလက်များကောက်ယူခြင်းနှင့် ရလဒ်များ၊ နယ်ပယ်သတ်မှတ်ခြင်း တွေ့ဆုံပွဲများအတွင်း တင်ပြလာသော စိုးရိမ်ပူပန်မှုများ၊ ဖြစ်နိုင်ခြေရှိသော သက်ရောက်မှုများ၏အကြိုသတ်မှတ်ခြင်း နှင့် အဆိုပြုလျှော့ချရေးအစီအမံများအား ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းအစည်းအဝေးများတွင် တင်ပြသွားမည်ဖြစ်ပါသည်။

ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းလုပ်ထုံးလုပ်နည်းအရ ရန်ကုန်မြို့သစ်စီမံကိန်းအနေဖြင့် စီမံကိန်းနှင့် ပတ်သက်သော သတင်းအချက်အလက်များအား သတင်းစာ (၂) စောင်တွင် (မြန်မာဘာသာ တစ်ခု နှင့် အင်္ဂလိပ်ဘာသာတစ်ခု)ဖော်ပြပေးသွားမည်ဖြစ်ပါသည်။ စီမံကိန်းနှင့်ပတ်သက်သည့် သတင်းအချက်အလက်များအား ရန်ကုန်မြို့သစ်စီမံကိန်း ဝက်ဘ်ဆိုက် နှင့် လုပ်ငန်းခွင်ရုံး၏ ဆိုင်းဘုတ်များတွင်လည်း ထုတ်ပြန်ကြေငြာသွားမည်ဖြစ်ပါသည်။

ချေးငွေထုတ်ချေးပေးသည့်အဖွဲ့အစည်းများ၏ လိုအပ်ချက်အရ အဓိပ္ပါယ်ပြည့်ဝသော တွေ့ဆုံပွဲများပြုလုပ်ရန်၊ ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းအဆင့်တွင် တွေ့ရှိသော သတင်းအချက်အလက်များ၊ ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှုအစီအစဉ်ပါ လျှော့ချရေးအစီအမံနှင့် အကျိုးရှိမှုများ အား အများပြည်သူနှင့် စီမံကိန်းကြောင့်ထိခိုက်နစ်နာမည့်သူများထံ ချပြပေးသွားမည်ဖြစ်ပါသည်။ စီမံကိန်းမှ ကြီးကြပ်ဆောင်ရွက်မည့် သက်ရောက်မှုများ နှင့် အန္တရာယ်တို့အား တိုက်ရိုက်ထိခိုက်နစ်နာနိုင်သည့် ရပ်ကွက်၊ ကျေးရွာများသို့ ရှင်းလင်းတင်ပြရန် ရပ်ရွာလူထုအစည်းအဝေးပွဲများပြုလုပ်သွားမည်ဖြစ်ပါသည်။

နယ်ပယ်တိုင်းတာသတ်မှတ်ခြင်းအစီရင်ခံစာကြေငြာချက်အား ကြေးမုံသတင်းစာ (မြန်မာဘာသာ) နှင့် The Global New Light of Myanmar သတင်းစာ (အင်္ဂလိပ်)တို့တွင် ထည့်သွင်းကြေငြာထားပြီး ဤအစီရင်ခံစာ၏ အခန်း ၇.၃.၂ တွင် ဖော်ပြထားပါသည်။

**၁.၈ နိဂုံးနှင့်အကြံပြုချက်များ**

နယ်ပယ်အတိုင်းအတာသတ်မှတ်ခြင်းလေ့လာမှုသည် ရန်ကုန်မြို့သစ် အဆင့်ကာလ (၁) နှင့် ဆက်နွယ်သော တံတားများ၏ တည်ဆောက်ရေး နှင့် လည်ပတ်ရေးတို့ဖြင့်ပတ်သက်သည့် ဖြစ်ပေါ်လာနိုင်သည့် သက်ရောက်မှုများ အပေါ် အလေးပေးထားပါသည်။ တည်ဆောက်ရေးကာလအတွင်း ဖြစ်ပေါ်လာနိုင်သည့် ပတ်ဝန်းကျင်သက်ရောက်မှု များမှာ စီမံကိန်းနယ်မြေဧရိယာအတွင်း ယာယီကွက်၍ဖြစ်ပေါ်နိုင်ပါသည်။ တည်ဆောက်ရေးကာလအတွင်း သက် ရောက်မှုများတွင် လေ (ဖုန်မှုန့်) နှင့် ဆူညံသံထုတ်လွှတ်မှုများ၊ သဘာဝပေါက်ပင်များရှင်းလင်းမှု၊ မြေယာအသုံးပြုမှု ပြောင်း လဲခြင်း၊ ကုန်းပေါ်ရှိ ဒေသရင်းအပင်များနှင့် သက်ရှိသတ္တဝါများ၊ ရေထဲရှိ ဒေသရင်းအပင်များ နှင့် သက်ရှိ သတ္တဝါများ၊ နှင့် လူဦးရေအနေအထားပုံစံ၊ စီးပွားရေး နှင့် အသက်မွေးဝမ်းကျောင်းတို့ ပါဝင်သည်။ လည်ပတ်ရေး ကာလအတွင်း ဖြစ်ပေါ်လာနိုင်သည့် သက်ရောက်မှုများတွင် ဆူညံသံနှင့်ဆက်နွယ်သောအရာများ၊ ကုန်းပေါ်ရှိ ဒေသရင်းသက်ရှိသတ္တဝါများ၊ အများပြည်သူကျန်းမာရေး နှင့် ဘေးကင်းရေး၊ နှင့် လုပ်ငန်းခွင်ကျန်းမာရေး နှင့် ဘေး ကင်းရေးတို့ ပါဝင်ကြပါသည်။ မတော်တဆဖြစ်ရပ်များမှ သက်ရောက်မှုများကို ဤနယ်ပယ်အတိုင်းအတာ သတ်မှတ် မှုတွင် ထည့်သွင်းစဉ်းစားခဲ့ပြီး၊

သက်ရောက်မှုများအားလုံးကို ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းလေ့လာမှုတွင် အသေးစိတ်ဆန်းစစ်သွားမည် ဖြစ်ပါသည်။

လူမှုရေးရေထောင့်မှကြည့်လျှင်၊ စီမံကိန်းသည် တံတားနှင့် လှိုင်သာယာမြို့နယ်တို့တွင် တည်ရှိပါသည်။ ပတ်ဝန်းကျင်နှင့် လူမှုသက်ရောက်မှုများအရ ရပ်ရွာများမှ အဓိကစိုးရိမ်မှုမှာ ယာဉ်အသွားအလာ၊ ကျူးကျော်သူများ၊ အလုပ်အကိုင် အခွင့်အလမ်းများနှင့် မြို့သစ်သို့ သွားလာလက်လှမ်းမီမှုတို့ဖြစ်ကြကြောင်း ၂၀၁၉ ဇန်နဝါရီနှင့် ဖေဖော်ဝါရီတို့တွင် နယ်ပယ်အတိုင်းအတာသတ်မှတ်ခြင်းကွင်းဆင်းလေ့လာမှုမှ အတည်ပြုခဲ့ပါသည်။

ထိခိုက်မှုဆန်းစစ်ခြင်းတွင် ထည့်သွင်းဆောင်ရွက်ရန် ဆိုသည့်သံ၊ ရေအောက်ရေအရည်အသွေး၊ နှင့် မြေဆီလွှာအရည်အသွေး၊ မြေပေါ်ရေအရည်အသွေးနှင့် ကုန်းပေါ်နှင့် ရေထဲရှိ ဇီဝမျိုးစုံမျိုးကွဲများကို ပတ်ဝန်းကျင်ထိခိုက်မှု ဆန်းစစ်ခြင်း လေ့လာမှုအတွက် ပြုလုပ်ဆောင်ရွက်သွားမည် ဖြစ်ပါသည်။ နမူနာကောက်ယူမှုအစီအစဉ်ကို ဇယား (၁.၃) တွင် တင်ပြထားပြီး နမူနာကောက်ယူသည့်တည်နေရာများကို ပုံ (၁.၃) တွင် တင်ပြထားပါသည်။

**ဇယား ၁.၃ နမူနာကောက်ယူမှုအစီအစဉ်**

ခေါင်းစဉ်	ပါရာမီတာများ	စုစုပေါင်း
လေထု အရည်အသွေး	NO <sub>2</sub> , SO <sub>2</sub> ,	၂၇
လေထု အရည်အသွေး	PM <sub>10</sub> , PM <sub>2.5</sub>	၁၈
ဆူညံသံ	အသံအဆင့် (LAeq in dB(A))	၂၇
မြေအောက်ရေ အရည်အသွေး	pH တန်ဖိုး၊ အပူချိန်၊ ဇီဝဓာတ် အောက်ဆီဂျင် ပါဝင်မှု (BOD)၊ ဓာတ် အောက်ဆီဂျင်ပါဝင်မှု (COD)၊ ဆီ နှင့် အဆီ၊ နိုက်ထရိုဂျင်ပါဝင်မှု၊ ဗောဓဇရတ်ပါဝင်မှု (TP)၊ အစိုင်အခဲပါဝင်မှု (TSS)၊ ဖီနောပါဝင်မှု၊ ပြဒါး (Hg)၊ အာဆင်နစ်ဓာတ် (As)၊ သွပ်ဓာတ် (Zn)၊ ကြေးနီဓာတ် (Cu)၊ ထရိုမီယမ်ဒြပ်ပါဝင်မှု (Cr)၊ အမိုးနီးယားဓာတ်၊ ကလိုရင်းဓာတ်၊ ဆာလ ဖိုက်၊ နိုက်ထရိုဂျင်၊ ဖလိုရိုဂျင်၊ ကာလီဖောင်းပါဝင်မှု။	၇၂
မြေပေါ်ရေ အရည်အသွေး	pH တန်ဖိုး၊ အပူချိန်၊ ဇီဝဓာတ် အောက်ဆီဂျင် ပါဝင်မှု (BOD)၊ ဓာတ် အောက်ဆီဂျင်ပါဝင်မှု (COD)၊ ဆီ နှင့် အဆီ၊ နိုက်ထရိုဂျင်ပါဝင်မှု၊ ဗောဓဇရတ်ပါဝင်မှု (TP)၊ အစိုင်အခဲပါဝင်မှု (TSS)၊ ဖီနောပါဝင်မှု၊ ပြဒါး (Hg)၊ အာဆင်နစ်ဓာတ် (As)၊ သွပ်ဓာတ် (Zn)၊ ကြေးနီ (Cu)၊ ထရိုမီယမ်ဒြပ်ပါဝင်မှု (Cr)၊ အမိုးနီးယားဓာတ်၊ ကလိုရင်းဓာတ်၊ ဆာလ ဖိုက်၊ နိုက်ထရိုဂျင်၊ ဖလိုရိုဂျင်၊ ကာလီဖောင်းပါဝင်မှု။	၇၂
မြေဆီလွှာ အရည်အသွေး	pH၊ သံဓာတ် (Fe)၊ ကက်ဒမီယံ (Cd)၊ ခဲ (Pb)၊ သွပ် (Zn)၊ ကြေးနီ (Cu)၊ အစိုဓာတ်ပါဝင်မှု	၇၂
ဇီဝမျိုးစုံမျိုးကွဲ	နေရင်းဒေသပုံဖော်မှုများ ဆောင်ရွက်ခြင်းနှင့် ဇီဝမျိုးစုံမျိုးကွဲအညွှန်း များ တည်ဆောက်ခြင်း၊ မျိုးစိတ်များစာရင်းနှင့် ခြိမ်းခြောက်ခံ မျိုးစိတ်များသတ်မှတ်ခြင်း။  ရေထဲရှိ သက်ရှိသတ္တဝါများနှင့်စပ်လျဉ်း၍ တံငါသည်များနှင့် ဒေသ တွင်းဈေးရှိလူများနှင့် အင်တာဗျူးများ ဆောင်ရွက်မှုတို့ ပါဝင်မည် ဖြစ်ပါသည်။	၉

ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းလုပ်ငန်းစဉ်၏ အစိတ်အပိုင်းအနေဖြင့်၊ နယ်ပယ်အတိုင်းအတာသတ်မှတ်ခြင်း အစီရင်ခံစာတွင် တည်ဆောက်ထားသည့် လူမှုရေးအခြေခံအချက်အလက်များကို ခေတ်နှင့်အညီပြုလုပ်ရန် အသေးစိတ်လူမှုရေးအခြေခံအချက်အလက်များစုဆောင်းမှုကို ဆောင်ရွက်သွားမည် ဖြစ်ပါသည်။ ဤအခြေခံအချက်အလက်ကို မြို့နယ်များအားလုံးရှိ ဒေသခံရပ်ရွာလူထု နှင့် အခြားစိတ်ဝင်စားသည့် သက်ဆိုင်သူများနှင့် အုပ်စုအလိုက် ဆွေးနွေးခြင်း နှင့် အင်တာဗျူးတို့အပေါ် အခြေပြု၍ တည်ဆောက်သွားမည် ဖြစ်ပါသည်။ လူဦးရေဆိုင်ရာ၊ ဝင်ငွေ၊ အခြေခံအဆောက်အအုံ၊ စိုက်ပျိုးမွေးမြူမှု နှင့် အသက်မွေးဝမ်းကျောင်းတို့နှင့် ပတ်သက်၍ ကျေးရွာ နှင့် အိမ်ထောင်စု အဆင့်သတင်းအချက်အလက်များကို သိရှိရန် စစ်ဆေးစာရင်းလွှာများ နှင့် အင်တာဗျူးများ နှစ်ရပ်လုံးကိုအသုံးပြု လျက် သက်ဆိုင်သူများကို အောက်ပါတို့အရ မေးမြန်းသွားမည် ဖြစ်ပါသည် -

- **ကျေးရွာ နှင့် အိမ်ထောင်စုဆိုင်ရာ မေးခွန်းများ** - လူဦးရေဆိုင်ရာ အချက်အလက်များ၊ မြေယာပိုင်ဆိုင်မှု၊ မြေယာပိုင် ဆိုင်သူများ နှင့် မြေယာမပိုင်ဆိုင်သူများ၏ အရေအတွက်၊ စာသင်ကျောင်းအဆောက်အအုံနေရာ အမျိုးအစား များ၊ ချေးငွေရရှိမှု၊ ဝင်ငွေရင်းမြစ်များ၊ နေထိုင်မှုစံသတ်မှတ်ချက်များ၊ ဈေးသို့သွားလာနိုင်မှု၊ ကျန်းမာရေးအ ဆောက်အအုံနေရာရှိမှု၊ ရေရင်းမြစ်သို့ လက်လှမ်းမီမှု၊ ချက်ပြုတ်ရေးလောင်စာအမျိုးအစား အသုံးပြုမှုများ၊ ထင်းခွေမှု၊ ရောဂါဘယအမျိုးအစား၊ လျှပ်စစ်ဓာတ်အားရရှိမှု၊ ဝင်ငွေရှိအိမ်ထောင်စုများအရေ အတွက်၊ အခြေခံ အဆောက်အအုံ၊ သက်မွေးဝမ်းကျောင်းအမျိုးအစားအရ လူ အရေအတွက်၊ အိမ်မွေး တိရစ္ဆာန်အမျိုးအစားအရ လူအရေအတွက်၊ အထောက်အကူပြုရေးအဖွဲ့များ၏ အသင်းဝင်အရေအတွက် နှင့် အစည်းအဝေးများ၊ နှင့် အထောက်အကူပြုရေးအဖွဲ့မှ အထောက်အကူအမျိုးအစားနှင့် အထောက်အကူပြုရေး အဖွဲ့သို့ ထည့်ဝင်မှု။
- **တောင်သူများအတွက် မေးခွန်းများ** - မြေယာပိုင်ဆိုင်မှုအရွယ်အစား နှင့် ပုံသဏ္ဍာန်၊ ဝမ်းရေးဖူလုံမှုအဆင့်၊ စိုက်ပျိုးရေးတွင် အမျိုးသားများ နှင့် အမျိုးသမီးများ၏ အခန်းကဏ္ဍ၊ အစိုးရ၏ စိုက်ပျိုးရေးဆိုင်ရာစီမံချက်၊ ချေးငွေရင်းမြစ်၊ ရရှိသောပမာဏ၊ အတိုးနှုန်း နှင့် ပေးချေသည့်နည်းလမ်း၊ အငှားလုပ်အားအသုံးပြုခြင်း၊ ကျားမအပေါ် မူတည်၍ ပေးသည့် လုပ်အားပမာဏ၊ လုပ်အား၊ ရေသွင်းမှု၊ ဓာတ်မြေဩဇာ နှင့် သယ်ယူပို့ ဆောင်မှု နှင့် မြေယာငှားရသည့် ကုန်ကျစရိတ်၊ ဝင်ငွေရသီးနှံဈေးကွက်၊ အိမ်မွေးတိရစ္ဆာန်မွေးသည့် အမျိုးအ စား၊ အိမ်ထောင်ဦးစီးအရေအတွက်၊ အိမ်တွင်း စားသုံးမှုရာခိုင်နှုန်း နှင့် ဈေးအတွက် ရာခိုင်နှုန်းတို့အရ အိမ် ထောင်စု အရေအတွက်၊ ကျွဲစားစားစာသိုမှီးမှုရင်းမြစ်နှင့် ကိစ္စရပ်များ၊ သီးနှံဖြင့် သီးနှံလည်ပတ်မှု။
- **အမျိုးသမီးများအတွက် မေးခွန်းများ** - ကျေးရွာရှိ အမျိုးသမီးအရေအတွက်၊ အမျိုးသမီးအိမ်ထောင်ဦးစီးအရေ အတွက်၊ ရပ်ရွာတွင် အမျိုးသမီးများ၏ အခန်းကဏ္ဍ၊ ကျားမရေးရာအခွင့်အလမ်းဆိုင်ရာ ညီမျှမှုနှင့်ပတ်သက် ၍ အမြင်၊ အိမ်ထောင်စုဆုံးဖြတ်ချက်အပေါ် လွှမ်းမိုးမှု၊ အမျိုးသမီးများနှင့်ပတ်သက်သည့် ပြဿနာများ၊ ဘဝနေထိုင်မှုအရည်အသွေးနှုန်း၊ အမျိုးသမီးများ၏ ကျန်းမာရေးအခက်အခဲများ၊ ရောဂါဖြစ်ခြင်း၊ သေဆုံးမှု ဖြစ်ခြင်း နှင့် ကျားမဆိုင်ရာအပေါ် သက်ရောက်မှု၊ အမျိုးသမီးများ၏ အလုပ်ခန့်ခြင်းတွင် အမျိုးသမီးများ အတွက် အခက်အခဲ၊ နှင့် စိုက်ပျိုးမွေးမြူရာတွင် ပါဝင်သည့်အမျိုးသမီးများရာခိုင်နှုန်း။

စီမံကိန်းသည် ဆိုးကျိုးသက်ရောက်မှုရှိနိုင် မရှိနိုင်ကို ဆန်းစစ်ရန် လူမှုအခြေခံအချက်အလက်များကောက်ယူမှု (ဥပမာ - လယ်သမားများ၊ အမျိုးသမီးများ နှင့် အုပ်စုအလိုက်ဆွေးနွေးမှုများ) နှင့် အများပြည်သူနှင့်တိုင်ပင်ဆွေးနွေးမှု တို့ကို ဆိပ်ကြီးခနောင်တို၊ တွံတေး၊ ကြည့်မြင်တိုင်၊ လှိုင်သာယာ၊ ဒလ နှင့် အလုံမြို့နယ်တို့၌ ဆောင်ရွက်သွားမည် ဖြစ်ပါသည်။

ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းဆိုင်ရာ လုပ်ထုံးလုပ်နည်းအရ NYDC ၏ ဝက်ဘ်ဆိုက် နှင့် Facebook စာမျက်နှာ၊ သတင်းစာများ နှင့် စီမံကိန်းနယ်မြေဧရိယာတစ်ဝိုက်တွင် ဆိုင်းဘုတ်များဖြင့် သတင်းအချက်အလက်များကို ထုတ်ပြန်ကြေညာသွားမည် ဖြစ်ပါသည်။





ပုံ ၁.၃ နမူနာကောက်ယူသည့်တည်နေရာများ

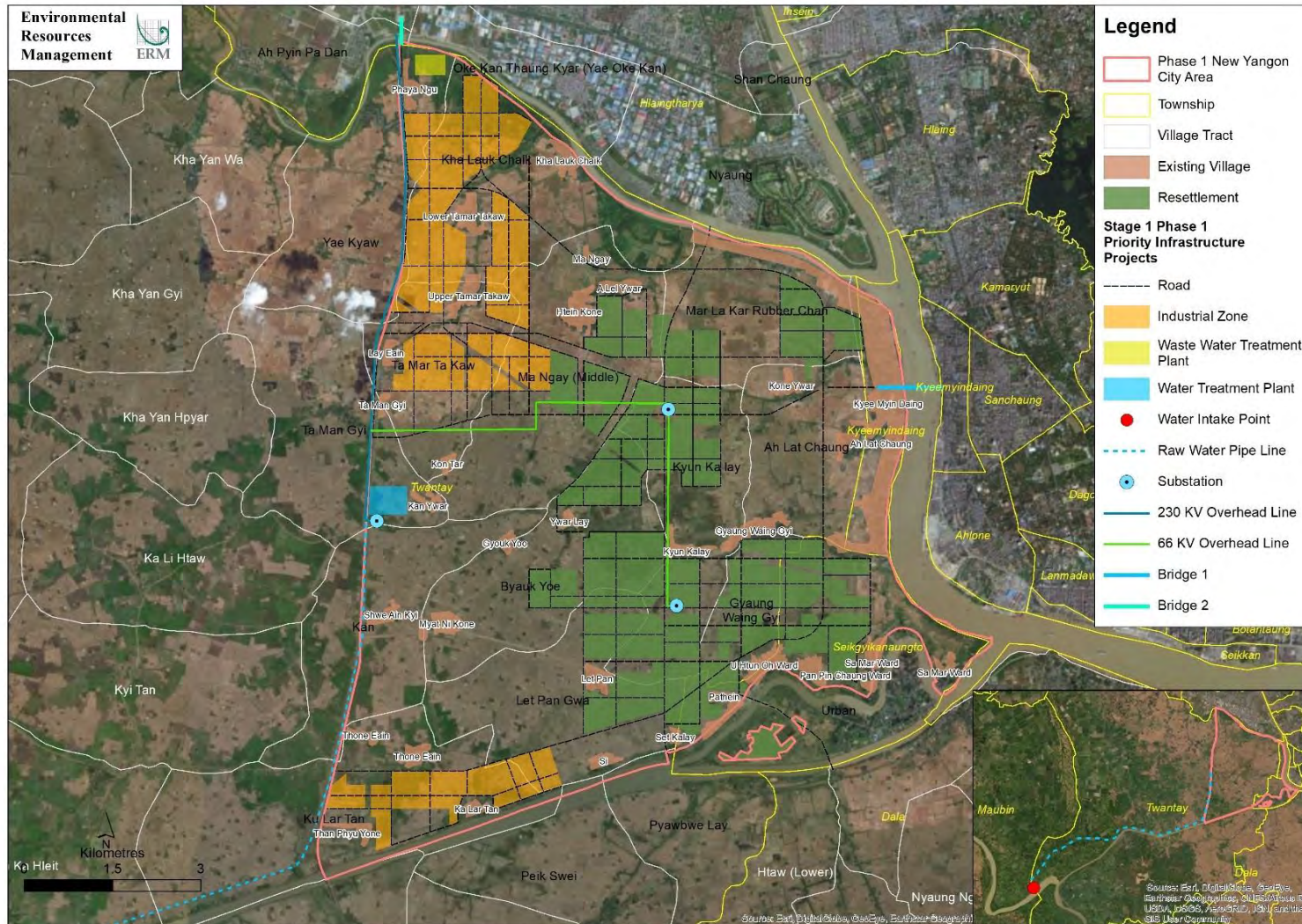
## 2. CONTEXT OF THE PROJECT

### 2.1 Project Background

The **New Yangon Development Company, Ltd.** (NYDC), incorporated under the Yangon Regional Government and The Special Companies Act, plans to develop the New Yangon City and its future extension area.

The New Yangon City is located in a semi-urban to rural area in Seikgyi Kanaungto, Twantay, Hlaing Tharyar and Kyee Myin Daing Townships to the West of Yangon. The New Yangon City covers a total of 88.3 square kilometres (sq.km). For Stage 1 of Phase 1, the New Yangon City is split into the following six groups based on the types of facilities (Figure 2.1):

- Bridges:
  - Bridge 1: connecting Kyee Myin Daing Township (near Bagaya Road and Kyee Myin Daing Kanner Junction) to the Project Area; and
  - Bridge 2: connecting Hlaing Tharyar Township to the Project Area.
- Roads:
  - Permanent Auxiliary Support Infrastructure: Road 1, Road 2, Road 3, Sub-arterial roads, Collector roads; and
  - Storm water network.
- Water:
  - Water treatment plant;
  - Raw water pipeline;
  - Treatment water distribution lines; and
  - Water intake points.
- Waste Water:
  - Wastewater pumping stations;
  - Wastewater pipe network;
  - Sewage water tanks; and
  - Wastewater treatment plant and its associated subsidiary facilities
- Power:
  - Transformer substation (one 230 kV, two 66 kV) and switching station (one 33 kV);
  - Main Transmission lines (from National Grid / Independent Power Producer (IPP) to 230 kV substation); and
  - Distribution lines (internal transmission lines) including 66 kV, 33 kV and 11 kV lines.
- Industrial Zone:
  - Area for industrial facilities covering approximately 13 sq.km.



**Figure 2.1 Overview of Stage 1 Phase 1 Priority Infrastructure Projects**

The overall Phase 1 Project Area would be 88.3 sq.km. The masterplan includes residential areas of 30.93 sq.km, commercial areas of 6.41 sq.km, industrial areas of 22.37 sq.km, transport and logistics of 1.51 sq.km, green spaces of 12.01 sq.km, villages of 11.97 sq.km, civic amenities of 2.33 sq.km, and utilities (physical infrastructure) of 0.77 sq.km. These will be considered in a Strategic Environmental Assessment (SEA) that will also cover the New Yangon City.

The construction periods for the abovementioned facilities are summarized in Table 2.1.

**Table 2.1 Construction Period for Six Groups of Facilities**

Item	Detail Items	Construction Period (Years)	Target Construction Start Date (Estimate)	Target Completion Date (Estimate)
Bridges	Yangon River Bridge (Bridge 1)	2	January 2020	January 2022
	Pan Hlaing River New Bridge (Bridge 2)	1.5	January 2022	July 2023
Roads	Road 1	2.5	July 2022	January 2025
	Road 2	2	January 2020	January 2022
	Road 3	2.5	July 2021	January 2024
	Sub-arterial road*	3 / 8	January 2020	January 2023 / January 2028
	Collector road #	3 / 8	January 2020	January 2023 / January 2028
Industrial Zone		8	January 2020	January 2028
Water	Water Treatment Plant	2.5	January 2020	July 2022
	Water Intake Facilities and Transmission Pipe	2.5	January 2020	July 2022
Wastewater	Wastewater Treatment Plant; and Wastewater and Storm Water Collection System	2.5	January 2020	July 2022
Power	Substations and Transmission Lines	3	January 2020	January 2023

\* The sub-arterial roads will be constructed in line with the development phasing of the Industrial Zone and Resettlement areas. As such, the target completion date depends on where the roads will be paved.

#The collector roads will be constructed in line with the development phasing of the Industrial Zone and Resettlement areas. As such, the target completion date depends on where the roads will be paved.

This Scoping Report covers the “Bridges” facilities (Project). Separate Initial Environmental Examination (IEE) / Environmental Impact Assessments (EIAs) have been prepared to cover the power, roads, water, waste water treatment and industrial zone facilities. Cumulative impacts of all facilities for the New Yangon City will be addressed in each IEE / EIA.

## 2.2 Name and Address of the Proponent

Contact details of the NYDC are provided below:

**Address:** New Yangon Development Company, 56 Chindwin Road, Kamayut, Yangon, Myanmar

**Telephone:** +95 (9) 402111525

**Email:** [comments@nydc.com.mm](mailto:comments@nydc.com.mm)

NYDC's company registration certificate has been included in Appendix E.

## 2.3 Environmental and Social Experts

**Environmental Resources Management (ERM)-Myanmar, Limited** (ERM) has been selected by NYDC to conduct the EIAs for the individual components of the New Yangon City Phase 1. The environmental and social consultants that will prepare the EIA Study are presented in Table 2.2. ERM will be supported by local Myanmar consultants, Environmental Quality Management (EQM) and Resource and Environment Myanmar (REM), to conduct the public consultation and environmental baseline surveys.

## 2.4 Purpose of the Scoping Report

This Scoping Report focuses on the issues that are most important for Project planning, decision-making, and stakeholder interests by mapping the potential interactions between Project activities, which have the potential to cause an impact, and environmental and social receptors. The scoping exercise consisted of desk-based studies, site visits, and engagement activities to inform the baseline of the Project.

This Scoping Report will present the following information:

- An overview of the environmental and social policy, legal, and institutional framework related to the proposed Project (Section 3);
- Details on the Project description and alternatives considered (Section 4);
- A description of the baseline environment (Section 5);
- The methodology and approach to scoping, the key potential environmental and social impacts, as well as proposed mitigation measures (Section 6);
- The stakeholder identification, engagement plan, and disclosure plan for the Project (Section 7);
- Summary of the conclusions of the Scoping Study and recommendations for the EIA Study (Section 8); and
- A Terms of Reference (ToR) that will help to determine the scope of the full EIA Report and Environmental Management Plan (EMP) including a description of the data gaps, further examination, studies, and actions required in order to obtain the required data to complete the EIA (Section 9).

**Table 2.2 Key Environmental and Social Consultants for the Project**

Name	Organisation	Academic Experience	Years' Experience	Area of Expertise	MONREC Consultation Registration Scheme	Responsibility	Contact Details
Craig Reid	ERM	BSc (Hons) Marine Biology	20	Ecology and Biodiversity. Risk Management and Hazard Identification.	ERM (No. 0016)	Overall accountability for EIA documentation	Craig.Reid@erm.com
Rebecca Summons	ERM	MSc Marine Environmental Protection	8	Ecology and Biodiversity. Risk Management and Hazard Identification.	ERM (No. 0016)	Senior review of EIA documentation Writing the environmental baseline and impact assessment chapters	Becky.Summons@erm.com
Myat Mon Swe	ERM	M.Eng Energy and Environmental Management	>10	Socio-economic. Facilitation of Meeting. Environmental Engineer.	Applied for under ERM (No. 0016)	Review the public consultation materials and social baseline write up	MyatMon.Swe@erm.com
Khin Su Su Naing	ERM	MA International and Community Development	>10	Socio-economic. Facilitation of Meeting	Applied for under ERM (No. 0016)	Leading public consultation and stakeholder engagement	Khinsusu.Naing@erm.com
Aung Myo Win	ERM	BA English	3	Socio-economic. Facilitation of Meeting	Applied for under ERM (No. 0016)	Assisting with public consultation activities and social baseline write up	Aung.Myowin@erm.com
Sandi Auung Moe	ERM	B.Agr.Sc (Agribusiness Management), M.Agr.Sc	5	Socio-economic. Facilitation of Meeting	Applied for under ERM (No. 0016)	Assisting with public consultation activities and social baseline write up	Sandi.Auung@erm.com

Name	Organisation	Academic Experience	Years' Experience	Area of Expertise	MONREC Consultation Registration Scheme	Responsibility	Contact Details
		(Agricultural Economics)					
Zinthaw Oo	ERM	BSc Engineer and Safety	3	Socio-economic. Facilitation of Meeting	Applied for under ERM (No. 0016)	Assisting with public consultation activities and social baseline write up	Zinthaw.Oo@erm.com
Thapye Myo	ERM	BSc Renewable Energy Engineering Diploma in Law	5	Legal Chapter	Applied for under ERM (No. 0016)	Writing the legal chapter of the EIA documentation	Thapye.Myo@erm.com
Zoe To	ERM	BA Anthropology, MSc Anthropology	2	Socio-economy	Applied for under ERM (No. 0016)	Writing the social baseline and impact assessment chapters of the EIA documentation	Zoe.To@erm.com
Tom Glenwright	ERM	PhD Marine Ecology	16	Water Pollution Control, Ground water and Hydrology	ERM (No. 0016)	Writing the physical (water) baseline and impact assessment chapters of the EIA documentation	Tom.Glenwright@erm.com
Stuart Mackenzie	ERM	BSc Environmental Geography	10	Waste Management	ERM (No. 0016)	Writing the waste impact assessment chapter and Management Plan of the EIA documentation	stuart.mackenzie@erm.com
Piers Touzel	ERM	MA Business Administration	15	Socio-Economy, Land use	ERM (No. 0016)	Reviewing the social baseline, impact	Piers.Touzel@erm.com

Name	Organisation	Academic Experience	Years' Experience	Area of Expertise	MONREC Consultation Registration Scheme	Responsibility	Contact Details
						assessment, and management plans	
Man Ping To (Mandy To)	ERM	MSc Environmental Management	20	Noise and Vibration	ERM (No. 0016)	Writing the physical (noise) baseline and impact assessment chapters of the EIA documentation	Mandy.To@erm.com
Herve Bonnel	ERM	M.En Mechanical Engineer	19	Environmental Engineer	ERM (No. 0016)	Reviewing the Project Description chapter provided by NYDC	Herve.Bonnel@erm.com
Chi Hung Wan (Frank Wan)	ERM	MSc Waste Management	30	Geology and Soil, Waste Management,	ERM (No. 0016)	Reviewing the physical baseline and impact assessment chapters of the EIA documentation	Frank.Wan@erm.com
Tam Man Chong (Jovy Tam)	ERM	MA Marine Science and Ecology	10	Fisheries. Marine Ecology	ERM (No. 0016)	Reviewing the environmental baseline and impact assessment chapters of the EIA documentation	Jovy.Tam@erm.com
Ohnmar Tin May	EQM	PhD Environmental Toxicology, Technology and Management	14	Socio-economic baseline and impact assessment, Facilitation of Meeting	EQM (No. 0009)	Lead sub-consultant support for public consultation and stakeholder engagement deliverables	ohnmarmay@gmail.com



Name	Organisation	Academic Experience	Years' Experience	Area of Expertise	MONREC Consultation Registration Scheme	Responsibility	Contact Details
Thiha Htut	EQM	BSc Microbiology	5	Public Consultation	EQM (No. 0009)	Lead in field sub-consultant support for public consultation and stakeholder engagement deliverables	
No No Lwin	EQM	BE Nautical Architecture	4	Public Consultation	EQM (No. 0009)	Support in field sub-consultant support for public consultation and stakeholder engagement deliverables	
Thet Paing Phyo	EQM	BSc Forestry	6	Public Consultation	EQM (No. 0009)	Support in field sub-consultant support for public consultation and stakeholder engagement deliverables	
Myat Myitzu	EQM	BSc Forestry	6	Public Consultation	EQM (No. 0009)	Support in field sub-consultant support for public consultation and stakeholder engagement deliverables	
Soe Yu Htun	REM	BSc (Geology)	5	Public Consultation	REM (No 0002)	Undertaking the noise baseline surveys and write up of survey reports	thura@enviromyanmar.net

Name	Organisation	Academic Experience	Years' Experience	Area of Expertise	MONREC Consultation Registration Scheme	Responsibility	Contact Details
De Hlaing Zaw	REM	M.Res. (Geology)	4	Environmental Baseline Surveys	REM (No 0002)	Undertaking the noise baseline surveys and write up of survey reports	
Myo Thura	REM	BSc (Geology)	6	Environmental Baseline Surveys	REM (No 0002)	Undertaking the noise baseline surveys and write up of survey reports	
Lwin Moe	REM	BA (Geography)	6	Environmental Baseline Surveys	REM (No 0002)	Undertaking the noise baseline surveys and write up of survey reports	
Nay Min Aun	REM	BSc (Geology)	7	Environmental Baseline Surveys	REM (No 0002)	Undertaking the water and soil baseline surveys and write up of survey reports	
Thandar Tun	REM	MSc (Geology)	3	Environmental Baseline Surveys	REM (No 0002)	Undertaking the water and soil baseline surveys and write up of survey reports	
Chan Thar	REM	BSc (Geology)	4	Environmental Baseline Surveys	REM (No 0002)	Undertaking the water and soil baseline surveys and write up of survey reports	
Kyaw Bala	REM	BSc (Geology)	1	Environmental Baseline Surveys	REM (No 0002)	Undertaking the water and soil baseline surveys and write up of survey reports	

Name	Organisation	Academic Experience	Years' Experience	Area of Expertise	MONREC Consultation Registration Scheme	Responsibility	Contact Details
Thet Naing Aung	REM	BSc (Zoology)	11	Environmental Baseline Surveys	REM (No 0002)	Undertaking the ornithology (birds) baseline surveys and write up of survey reports	
Myat Ko Ko Hein	REM	BSc (Forestry)	5	Environmental Baseline Surveys	REM (No 0002)	Undertaking the flora and habitat mapping baseline surveys and write up of survey reports	
Wai Phyto Han	REM	MSc (Environmental Planning & Management)	3	Environmental Baseline Surveys	REM (No 0002)	Undertaking the flora baseline surveys and write up of survey reports	
Swe Wut Hmone	REM	MSc (Botany)	4	Environmental Baseline Surveys	REM (No 0002)	Undertaking the flora baseline surveys and write up of survey reports	
Naing Naing Win	REM	MSc (Zoology)	9	Environmental Baseline Surveys	REM (No 0002)	Undertaking the mammal and reptile baseline surveys and write up of survey reports	
Than Than Htay	REM	MSc (Zoology)	6	Environmental Baseline Surveys	REM (No 0002)	Undertaking the entomology (insects) baseline surveys and write up of survey reports	

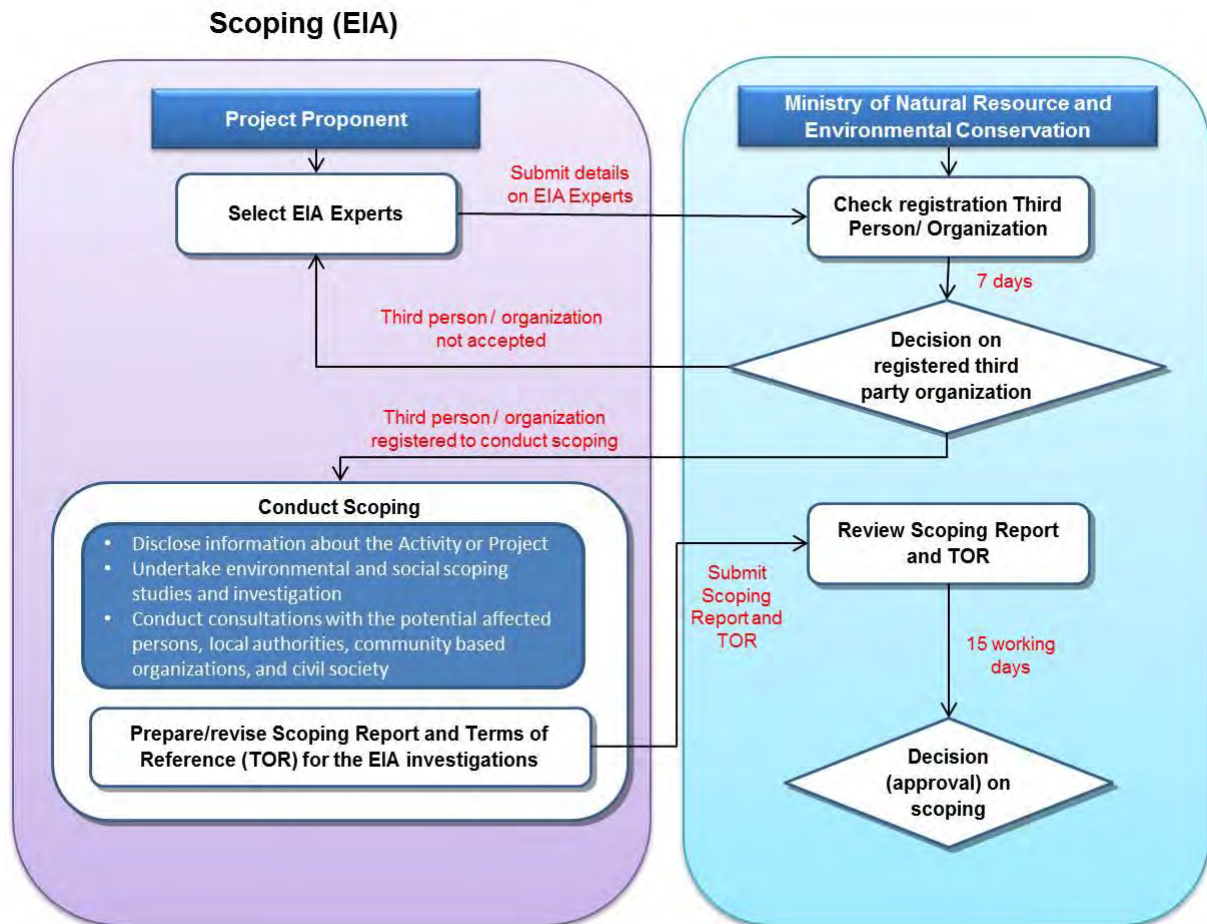
Name	Organisation	Academic Experience	Years' Experience	Area of Expertise	MONREC Consultation Registration Scheme	Responsibility	Contact Details
Myat Thet Khaing	REM	M.Res (Zoology)	4	Environmental Baseline Surveys	REM (No 0002)	Undertaking the aquatic baseline surveys and write up of survey reports	
Nyan Linn Maung	REM	BSc (Microbiology)	5	Environmental Baseline Surveys	REM (No 0002)	Support the fauna baseline surveys and write up of survey reports	

### 3. OVERVIEW OF THE POLICY, LEGAL AND REGULATORY FRAMEWORK

The following section presents a summary of the regulatory requirements applicable to the EIA, Myanmar and international regulations, conventions, and guidelines relevant to the Project.

#### 3.1 Overview of the Scoping Procedure in Myanmar

Figure 3.1 outlines the scoping phase of the EIA Process according to the EIA Procedure (2015).



Source: EIA Procedure, 2015

**Figure 3.1 Scoping within the Myanmar EIA Procedure**

#### 3.2 Overview of Myanmar Regulatory Framework

##### 3.2.1 Myanmar Regulatory Authorities

Key ministries, agencies, and state-owned enterprises that have jurisdiction or are typically involved in environmental and social impact assessment related to the Project include the following:

- **Ministry of Natural Resources and Environmental Conservation (MONREC):** The ECD of MONREC has ultimate responsibility in the environmental impact assessment process in Myanmar.
- **Ministry of Transport and Communications (MOTC):** The Road Transport Administration Department and Road Transport Department are responsible for the operation of bridges and major roads.

- **Ministry of Construction (MOC):** The Department of Highways, Department of Bridges, and Department of Rural Road Development are responsible for the construction of bridges and major roads.
- **Ministry of Agriculture, Livestock and Irrigation (MOALI):** The Department of Agriculture, Department of Agricultural Land Management and Statistics, Department Irrigation and water utilization management and Department of Rural Development are responsible for land management and livelihood of the community.
- **Ministry of Planning and Finance (MOPF):** The Planning Department is involved in direct communication and coordination with various levels of different government agencies for planning related issues.
- **Myanmar Port Authority (MPA) & Directorate of Water Resources and Improvement of River Systems (DWIR):** Bridge 1 and 2 will be respectively built across Yangon River and Pan Hlaing River. MPA and DWIR will be responsible for overseeing their construction and operation.
- **Yangon Region Government (YRG):** YRG is the cabinet of Yangon Region. It is responsible for overseeing the development of new Yangon City project.
- **Yangon City Development Committee (YCDC):** YCDC is the administrative body of Yangon. It is responsible for the city's waste management, business licences and registries, water supply, roads and bridges, and environmental regulations.

### **3.2.2 Myanmar Legislation Relevant to the Project**

Pursuant to 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, the Project is required to undertake an EIA in order to obtain an ECC as per the decision of the Ministry of Natural Resources and Environmental Conservation (MONREC).

Laws relating to environmental and social issues related to the Project and hence their relevance to the EIA Study are included in Table 3.1. NYDC commit to follow the laws and regulations stated in Table 3.1.

**Table 3.1 Myanmar Legislation and Relevance to Project**

Relevant Laws, Rules and Regulations	Relevant Articles	Commitments
<b>The National Environment Policy, 1994</b>		<p>Under this policy, the main environmental body was the National Commission for Environmental Affairs (NCEA). Prior to the establishment of MONREC, environmental conservation was undertaken by various ministries and departments. In 1990, the NCEA was established to advise the government on environmental policy, to act as a focal point, as a coordinating body for environmental affairs, and to promote environmentally sound and sustainable development. The NCEA's main mission is to ensure sustainable use of environmental resources and to promote environmentally sound practices in industry and other economic activities, objectives and mandates.</p>
<b>The Constitution of the Republic of the Union of Myanmar, 2008</b>	Article 37 (a)(b) , 45, 390	<p>The Constitution of the Union of Myanmar is the supreme law of the country and has provisions regarding the protection of the environment in Myanmar. The Project Proponent commits to comply as these three Articles in the Constitution provide a basis for legalising and institutionalising environmental health impact assessment and social impact assessment. They stipulate that:</p> <ul style="list-style-type: none"> <li>■ 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 enact necessary law to supervise extraction and utilization of State owned natural resources by economics forces;</li> <li>■ The Union shall protect and conserve natural environment.</li> <li>■ Every citizen has the duty to assist the Union in carrying out the following matters:                         <ul style="list-style-type: none"> <li>(a) preservation and safeguarding of cultural heritage;</li> <li>(b) environmental conservation;</li> <li>(c) striving for development of human resources;</li> <li>(d) protection and preservation of public property.</li> </ul> </li> </ul>
<b>Environmental Conservation Law, 2012</b>	Clause 7(o), 14,15, 29	<p>The Project Proponent commits to comply with the following:</p> <ul style="list-style-type: none"> <li>■ That MONREC has the right to manage a proponent to (1) provide compensation for environmental impact and contribute funds, (2) the need for prior permission from MONREC for businesses that have been categorized for potentially causing impact on the environment and (3) the right to issuing permit with terms and conditions relating to environmental conservation.</li> <li>■ To treat, emit, discharge and deposit substances which cause pollution in the environment in accordance with stipulated environmental quality standards.</li> <li>■ That the owner or occupier of any business, material or place which causes a point source of pollution have to install or use an on-site facility or controlling equipment in</li> </ul>

Relevant Laws, Rules and Regulations	Relevant Articles	Commitments
		<p>order to monitor, control, manage, reduce or eliminate environmental pollution. If it is impracticable, it has to be arranged to dispose the wastes in accordance with environmentally sound methods.</p> <p>To not violate any prohibition contained in the rules, notifications, orders, directives and procedures under the Environmental Conservation Law.</p>
<p><b>Environmental Conservation Rules, 2014</b></p>	<p>Rule 69(a) (b)</p>	<p>The Project Proponent commits:</p> <ul style="list-style-type: none"> <li>■ Not to emit, cause to emit, dispose, by any means, the pollutants and the hazardous waste or material (stipulated as such under the Law) at any place which may affect the public directly or indirectly.</li> <li>■ Not to damage the ecosystem and the natural environment which is changing due to such system, except for carrying out with the permission of MONREC in the interest of the people.</li> </ul>
<p><b>Environmental Impact Assessment Procedure, 2015</b></p>	<p>Clause 87, 102(a)(b),103, 104, 105, 106, 107, 108, 110, 113, 115, 117</p>	<p>The EIA Procedure sets out the procedures for completing an IEE, EIA and/or Environmental Management Plan (EMP) in Myanmar. This includes information on project categorisation, responsibilities of project developers and ministries, EIA review, monitoring and auditing, amongst other issues.</p> <p>The Project Proponent commits to bear full legal and financial responsibility:</p> <ul style="list-style-type: none"> <li>■ For their actions and omissions and those of its contractors, subcontractors, officers, employees, agents, representatives, and consultants employed, hired, or authorised by the Project acting for or on behalf of the Project, in carrying out work on the Project; and</li> <li>■ To support programs for livelihood restoration and resettlement in consultation with the Project Affected Peoples (PAP), related government agencies, and organizations and other concerned persons for all Adverse Impacts until PAPs have achieved socio-economic stability at a level not lower than that in effect prior to the commencement of the Project.</li> </ul> <p><b>For EMP</b>, the Project Proponent commits:</p> <ul style="list-style-type: none"> <li>■ To implement the EMP, all Project commitments, and conditions,</li> <li>■ To ensure that all contractors and subcontractors of the Project comply fully with all applicable Laws, the Rules, this Procedure, the EMP, Project commitments and conditions when providing services to the Project.</li> <li>■ To be responsible for, and to fully and effectively implement the requirements set forth in Environmental Compliance Certificate (ECC), applicable Laws, Rules, EIA Procedure and standards.</li> <li>■ Project commitments and conditions when providing services to the Project and inform the Ministry with detailed information as to the propose project’s potential adverse impacts.</li> </ul> <p><b>For monitoring and reporting</b>, Project Proponent commits:</p>



Relevant Laws, Rules and Regulations	Relevant Articles	Commitments
		<ul style="list-style-type: none"> <li>■ To notify and identify in writing to the Ministry, providing detailed information as to the proposed Project's potential Adverse Impacts.</li> <li>■ To engage in continuous, proactive, and comprehensive self-monitoring of the Project and activities related thereto, all Adverse Impacts, and compliance with applicable laws, the Rules, this EIA Procedure, standards, the ECC, and the EMP during all phases of the Project (pre-construction, construction, operation, decommissioning, closure and post-closure).</li> <li>■ To notify and identify in writing to the Ministry for any breaches of his obligations or other performance failures or violations of the ECC and EMP as soon as reasonably possible and in any event, in respect of any breach which would have a serious impact or where the urgent attention of the Ministry is or may be required, to undertake within not later than twenty-four (24) hours, and in all other cases within seven (7) days of the Project Proponent becoming aware of such incident.</li> <li>■ To submit monitoring reports to the Ministry not less frequently than every six (6) months, as provided in a schedule in the EMP, or periodically as prescribed by the Ministry.</li> <li>■ To make a monitoring report as contemplated in Article 108 and Article 109 in accordance with the EMP schedule, (except as may relate to National Security concerns) publicly available on the Project's website, at public meeting places (e.g. libraries, community halls) and at the Project offices within ten (10) days of completing</li> <li>■ To submit a digital copy of a monitoring report within ten (10) days of receiving such request via email or as may otherwise be agreed upon with the requestor for the request of any organisation or person.</li> </ul> <p>For the purposes of monitoring and inspection, the event of emergency, the Project Proponent commits to</p> <ul style="list-style-type: none"> <li>■ Grant the ministry and/or its representatives, at any time during normal working hours, access to the Project's offices and to the Project site and any other location at which the Project activities or activities related to the Project are performed;</li> <li>■ Grant, from time to time as and when the Ministry may reasonably require, the Ministry access to the Project's offices and to the Project site and any other location at which the Project activities or activities related to the Project are performed.</li> <li>■ Grant full and immediate access to the Ministry at any time as may be required by the Ministry in the event of an emergency, or where, in the opinion of the Ministry, there is or may exist a violation or risk of violation of the compliance by the Project with all applicable environmental and social requirements.</li> <li>■ Ensure that the Ministry's rights of access can extend to access by the Ministry to the Project's contractors and subcontractors.</li> </ul>

Relevant Laws, Rules and Regulations	Relevant Articles	Commitments
		<p>For the Conditions and Revisions to Conditions prescribed in ECC, the Project Proponent commits to commence the implementation of the Project in accordance with the conditions attached to the ECC and including the EMP, within such time as may be prescribed by the Ministry upon receipt of the written approval from the relevant authority.</p>
<p><b>Environmental Quality (Emissions) Guidelines (EQEG), 2015</b></p>		<p>The Project Proponent commits to comply with the EQEG guidelines and its setting out for emission standards for air, noise, and effluent discharges for sector specific operations. The Project Proponent considers this emissions standards in its environment impact assessment and environmental management plan.</p>
<p><b>Myanmar Climate Change Policy, 2019</b></p>	<p>Article 12</p>	<p>In actions to achieve the purpose of this Policy, Myanmar will be guided, inter alia, by the following guiding principles:</p> <ul style="list-style-type: none"> <li>(a) Sustainable development - Develop sustainably to meet the needs of the present without compromising the ability of future generations to meet their own needs, by ensuring the promotion of an economically, socially and environmentally sustainable future and a fair and equitable society;</li> <li>(b) Precaution - Take cost-effective measures to avoid, minimise and protect from environmentally harmful consequences where there are threats of serious or irreversible damage even if there is a lack of full scientific certainty;</li> <li>(c) Prevention - Take anticipatory action to prevent or minimise environmental damage before it occurs by avoiding, prohibiting or controlling threatening activities;</li> <li>(d) Environmental integrity - Promote, protect and conserve the natural environment and recognise its complete and intrinsic value, whether tangible or non-tangible, economic or non-economic, to the natural, cultural and spiritual heritage of Myanmar;</li> <li>(e) Shared responsibility and cooperation - Encourage, support and embrace the common and shared responsibility of all people for the protection, conservation, and equitable sharing of benefits and resources of the environment, and encourage wide cooperation across sectors and stakeholders at all levels, including the private sector.</li> <li>(f) Inclusiveness - Engage all people at all levels in decision-making and action, by supporting and embracing their diverse social, economic and cultural perspectives, participation and contributions without discrimination, particularly with respect to gender, ethnicity and age, in order to equitably share the benefits and opportunities of climate change adaptation, mitigation and low-carbon, climate-resilient development;</li> </ul>

Relevant Laws, Rules and Regulations	Relevant Articles	Commitments
	<p>Article 13 (b), (c), (d)</p>	<p>(g) Good governance - Adopt transparent, participatory, and responsive processes to ensure that decision-making at all levels is inclusive, equitable, and accountable to all people in Myanmar, in accordance with the rule of law;</p> <p>(h) Climate justice and equity - Promote and protect the rights of the people of Myanmar, in particular the poorest, most vulnerable and marginalised segments of society, including indigenous peoples, all ethnic groups, local communities, women, children, the elderly, and persons with disabilities to live in a healthy environment and a fair, equitable and sustainable society;</p> <p>(i) Gender equality and women’s empowerment - Promote and protect gender equality and women’s equal rights through strengthening gender-responsive climate change policy concerning adaptation, mitigation, finance, technology development and transfer and capacity building, and ensuring full and equal participation of women in decision-making.</p> <p>The Government of the Republic of the Union of Myanmar will take sector-relevant measures to implement this Policy and achieve its purpose by taking the following actions primarily in the six sectoral clusters listed below:</p> <p><b>Healthy ecosystems;</b></p> <p>i. Ensure that actions undertaken under Myanmar’s national policies on environment, land use and forestry, including Myanmar’s National Environmental Policy integrate climate change adaptation and mitigation considerations and are complementary to and/or support actions under this Policy;</p> <p>ii. Promote sustainable natural resource management, preserve, conserve, and rehabilitate biodiversity and natural ecosystems in order to ensure the provision of ecosystem services, recognising their contribution to climate change adaptation and mitigation, the benefits they generate to the people and Myanmar’s high dependence on the quality and availability of ecosystem services;</p> <p>iii. Adopt environmentally sound technologies and good management practices, including ecosystem-based adaptation interventions, to improve and maintain the health and resilience of all ecosystems, including forest, water, land, coastal ecosystems and air quality in the face of future climate change impacts;</p>

Relevant Laws, Rules and Regulations	Relevant Articles	Commitments
		<p>iv. Enhance greenhouse gas sinks and reservoirs, and promote the reduction of greenhouse gas emissions from deforestation and forest degradation through sustainable management of forests and land use planning, based on the best available science;</p> <p><b>Low-carbon and resilient growth;</b></p> <p>i. Ensure that actions undertaken under Myanmar’s Green Economy Framework and energy policies integrate climate change adaptation and mitigation considerations, are complementary to and/or support actions under this Policy, and encourage public-private partnerships to support a green economy;</p> <p>ii. Ensure that the energy, transport and industry sectors, including infrastructure, are well-integrated among each other, reliable, sustainable and resilient to current and future climate change impacts, recognising that they are vital to Myanmar’s economic growth;</p> <p>iii. Decouple Myanmar’s continued growth from increasing greenhouse gas emissions and contribute to the global climate change mitigation effort through sustainable, low-carbon energy, transport, industrial, and waste management systems, while ensuring that Myanmar’s social and economic development needs are met; iv. Promote and prioritise sustainable and renewable energy sources and energy efficiency, in order to meet Myanmar’s growing energy needs and ensure energy security in a low-carbon manner;</p> <p>v. Ensure equitable access to affordable, reliable, sustainable, and modern energy for all as a pathway to inclusive and sustainable development and eradicating poverty;</p> <p>vi. Promote sustainable natural resource extraction through transparent and responsible investments which are consistent with climate change adaptation and mitigation priorities, while generating local employment and economic benefits and protecting the environment and public health;</p> <p>vii. Ensure that urban and inter-city transportation networks and infrastructure are sustainable, low carbon and climate-resilient for all modes of transport, in particular for mass transit;</p> <p>viii. Increase the productivity and resource-efficiency of the industrial sector, an important sector for Myanmar’s economy, through low-carbon growth and by developing competitive and innovative green industries, recognising the relative importance of this sector for Myanmar’s economy, including its potential for job creation</p> <p><b>Resilient urban and rural settlements:</b></p>

Relevant Laws, Rules and Regulations	Relevant Articles	Commitments
		<p>i. Ensure that actions undertaken under Myanmar’s national, sub-national, and local policies and plans on urban and rural settlements, including national building regulations, township and local development plans and land-use plans, integrate climate change adaptation and mitigation considerations and are complementary to and/or support actions under this Policy;</p> <p>ii. Ensure that human settlements are planned and developed in a climate-resilient manner and incentivise low-carbon approaches, while promoting long-term inclusivity, liveability, economic development and a high quality of life in rural and urban areas, recognising the interdependencies between urban and rural areas and the potential impact of climate change on rural urban migration, food security, water supply and livelihoods;</p> <p>iii. Ensure the active involvement of city, township and village stakeholders in identifying climate change challenges at local level, and devise plans, strategies and practical actions to adapt to climate change, mitigate its effects, and develop in a sustainable low carbon manner;</p> <p>iv. Ensure that territorial spatial planning at regional, district, city, township and village level fully addresses current and future climate-related risks and opportunities, and regularly assess and mitigate these risks in a timely and equitable manner through inclusive and participatory assessment and planning processes which take into account and strengthen local knowledge and capacities, including in land-use planning, rural and urban planning and city or township specific disaster risk management plans and actions</p>
<p><b>National Land Use Policy, 2016</b></p>		<p>The Project Proponent commits to comply the key provisions:</p> <ul style="list-style-type: none"> <li>■ To recognise and protect customary land tenure rights and procedures of the ethnic nationalities</li> <li>■ To complete an EIA before considering a grant for individual land use right or lease of land;</li> <li>■ To protect natural resources and ecological system that provide shared livelihood and socioeconomic development benefits to the surrounding communities;</li> <li>■ To conduct, through public consultation, negotiation and participatory decision making if physical displacement is to be undertaken.</li> </ul> <p>It should be noted that the provisions of this policy serve as a set of rules that guide the government and are not legally binding as other laws, such as the Land Acquisition Act. However, one of the aims of this policy was to guide the development and enactment of a</p>

Relevant Laws, Rules and Regulations	Relevant Articles	Commitments
		National Land Law and allow for harmonization and implementation of the existing laws related to the land.
<b>The Land Acquisition Act, 1894 (Amended in 1954)</b>		Yangon Regional Government (YRG) on behalf of the Project Proponent commits to comply with the stipulations: <ul style="list-style-type: none"> <li>■ For specifying a systematic approach for acquisition and compensation of land and other properties for development Projects,</li> <li>■ For actions related to notifications, surveys, acquisition, and compensation and entitlements, along with disputes resolution, penalties and exemptions.</li> <li>■ For disclosure of information on land ownership surveys to affected persons.</li> </ul>
<b>The Farmland Law, 2012</b>	Clause 30 (a) (b)	YRG on behalf of the Project Proponent commits to comply the stipulations: To utilise the farmland for other purposes in the interest of the public in respect of the application: <ul style="list-style-type: none"> <li>■ The Central Farmland Management Body to give permission to utilise the paddy land for other purposes, with the recommendation of the Region or State Farmland Management Body;</li> <li>■ The respective Region or State Government shall give permission to utilise the farmland for other purposes except paddy land, with the recommendation of the Region or State Farmland Management Body;</li> </ul>
<b>The Law of Protection of the Farmer Rights and Enhancement of their Benefits, 2013</b>	Clause 20 (f)	The Project Proponent commits to comply the stipulation for the Leading Body, in respect of agriculture and livestock breeding, to carry out the following: <ul style="list-style-type: none"> <li>■ To guarantee in production, import, preparation, package, and sales of fertiliser and pesticides that they meet with the standards and are safe for use and to aware farmers the defects of fertiliser and pesticides without guarantee in time.</li> </ul>
<b>Vacant, Fallow and Virgin Land Management Act, 2012</b>	Clause 16, 19	The Project Proponent commits to comply the stipulation: <ul style="list-style-type: none"> <li>■ for Person who is granted the right to use the vacant, fallow and virgin lands has to comply the conditions:                             <ol style="list-style-type: none"> <li>(a). Land granted will use for the purpose granted and in relation to economic enterprise;</li> <li>(b). To carry out within four years from the date of grant according to the purpose granted (can revise by the Central Committee for lost time due to natural disaster and unstable security conditions);</li> <li>(c). Not to mortgage, give, sell, lease or otherwise transfer or divide without the permission of the Cabinet of the Union Government;</li> <li>(d). To fully pay the land revenue;</li> <li>(e). To comply the conditions prescribed by the Central Committee</li> </ol> </li> </ul>

Relevant Laws, Rules and Regulations	Relevant Articles	Commitments
		<ul style="list-style-type: none"> <li>(f). To not explore other natural resources below and above ground except the purpose granted;</li> <li>(g). To surrender the natural resources found in the authorised land should the Government desire to extract.</li> <li>■ That the Central Committee can resume the area required in the authorised land, if one of the following situation arises:-                             <ul style="list-style-type: none"> <li>(a). If ancient cultural heritage are found;</li> <li>(b). If infrastructure project or Special project are desired to be constructed, in the interest of the State;</li> </ul>                             Except the permitted minerals, if other natural resources are found , which are permitted for production of mining;                              If natural resources are found in the authorised land which are permitted for the purposes described in Section 4, Sub-section (a),(b), and (d);                         </li> </ul>
<p><b>Myanmar Investment Law, 2016</b></p>	<p>Clause (50)(d), (51), (65),</p>	<p>The Project Proponent commits to comply with:</p> <ul style="list-style-type: none"> <li>■ The stipulation to register the land lease contract at the office of Registry of Deeds in accordance with the Registration Act.</li> <li>■ To mention appointment, replacement, providing employment of staff and workers, ensuring to comply the entitlements and rights in the labour laws and rules, settling dispute regarding human rights issues.</li> <li>■ The stipulation:                             <ul style="list-style-type: none"> <li>(a). To respect and comply with the customs, traditions, and traditional culture of the ethnic groups;</li> <li>(e). To inform to the Commission if natural mineral resources or antique objects are found that are not related to the investment permitted;</li> <li>(f). Not to make any significant alteration of topography or elevation of the land on which is entitled to lease or to use, without the approval of the Commission;</li> <li>(g). To abide by applicable laws, rules, procedures and best standards practiced internationally for this investment so as not to cause damage, pollution, and loss to the natural and social environment and not to cause damage to cultural heritage;</li> <li>(h). To list and keep proper records of books of account and financial statement and necessary financial matters relating to the investments performed by permit or endorsement in accordance with internationally and locally recognised accounting standards;</li> <li>(i). To close and discontinue the investment only after the payment of compensation to employees in accordance with applicable laws for any breach of employment</li> </ul> </li> </ul>

Relevant Laws, Rules and Regulations	Relevant Articles	Commitments
		<p>contracts, closure of investment, sale and transfer of investment, discontinuation of investment, or reduction of workforce;</p> <p>(j). To pay wages and salaries to employees in accordance with applicable laws, rules, procedures, directive and so forth during the period of suspension of investment for a credible reason;</p> <p>(k). To pay compensation and indemnification in accordance with applicable laws to the relevant employee or his successor for injury, disability, disease or death due to the work;</p> <p>(l). To supervise foreign experts, supervisors and their families, who employ in their investment, to abide by the applicable laws, rules, orders and directives, and the culture and traditions of Myanmar;</p> <p>(m). To respect and comply with the labour laws;</p> <p>(n). To have the right to sue and to be sued in accordance with the laws;</p> <p>(o). To pay effective compensation for loss incurred to the victim, if there are damage to the natural environment and socioeconomic losses caused by logging or extraction of natural resources which are not related to the scope of the permissible investment, except from carrying out the activities required to conduct investment in a permit or an endorsement;</p> <p>(p). To allow the Commission to inspect in any places, when the Commission informs the prior notice to inspect the investment;</p> <p>To take in advance permit or endorsement of the Commission for the investments which need to obtain prior approval under the Environmental Conservation Law and the procedures of environmental impact assessment, before undertaking the assessment, and shall submit the situation of environmental and social impact assessment to the Commission along the period of activities of the investments which obtained permit or endorsement of the Commission.</p>
<p><b>Myanmar Investment Rules, 2017</b></p>	<p>Clause 202, 203, 206, 212,</p>	<p>The Project Proponent commits:</p> <ul style="list-style-type: none"> <li>■ To comply with all terms and conditions in the permit and other applicable laws when the investment is carried out.</li> <li>■ To fully assist while negotiating with the Authority for settling the grievances of the local community that have been effected due to Investments.</li> <li>■ To appoint expert foreigner as senior manager, technical and operational expert or advisor according to subsection (a) of the section 51 of the Law.</li> </ul> <p>To obtain the permit or tax exemption or relief to insure the relevant insurance out of the following types of the insurance at any insurance business entitled to carry out insurance business within the Union based on the nature of the business: Property and Business Interruption Insurance; Engineering Insurance; Professional Liability Insurance; Bodily</p>



Relevant Laws, Rules and Regulations	Relevant Articles	Commitments
		Injury Insurance; Marine Insurance; or Workmen Compensation Insurance; Life Insurance; Fire Insurance.
<b>The Import and Export Law, 2012</b>	Clause 7	The Project Proponent, as a license holder, commits to comply not to violate the conditions contained in the license.
<b>The Protection of Preservation of Cultural Heritage Region Law, 1998</b>	Clause 13, 15, 22	The Project Proponent commits: <ul style="list-style-type: none"> <li>■ To apply for prior permission and must abide by provisions of existing laws for certain land-based construction works.</li> <li>■ To comply the stipulation for the person desirous of carrying out construction works to abide by the provisions of other existing laws and also apply in accordance with the stipulations to the Department to obtain prior permission under this law.</li> <li>■ To conform to conditions prescribed by the Ministry of Culture for Buildings in cultural heritage regions.</li> </ul>
<b>Conservation of Water Resources and Rivers Law, 2006</b>	Clause 10, 11(a), 19	The Project Proponent commits to comply prohibitions for the following activities: <ul style="list-style-type: none"> <li>■ No person shall anchor the vessels where vessels are prohibited from anchoring in the rivers and creeks.</li> <li>■ No person shall dispose of engine oil, chemical, poisonous material and other materials which may cause environmental damage, or dispose of explosives from the bank or from a vessel which is plying, vessel which has berthed, anchored, stranded or sunk.</li> <li>■ No one shall dispose of any substance into the river creek that may cause damage to waterway or change of watercourse from the bank or vessel.</li> </ul>
<b>The Protection of Biodiversity and Conservation Areas Law, 2018</b>	Clause 39 (a) (g) (h) (i), 40 (a) (b), 41 (a) (b) (c)	The Project Proponent commits to comply the stipulation that there may be charge with fine or imprisonment or both if guilty of: <ul style="list-style-type: none"> <li>■ Hunting without a license</li> <li>■ Dishonestly altering, adding or counterfeiting any documents, marks, facts and figures issued by the person designated as the Management Authority of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES);</li> <li>■ Altering, destroying or damaging the mark made on animals, plants or their specimens which are regulated for international trade</li> <li>■ Importing, breeding, farming or possession of alien wild animal and wild plant species or any parts, derivatives or products without permission thereof</li> <li>■ Killing or selling a protected wildlife species or possessing, transporting or transferring any part without permission thereof</li> <li>■ Extracting, collecting or destroying in any manner protected wild plants within a subscribed area, without permission</li> </ul>

Relevant Laws, Rules and Regulations	Relevant Articles	Commitments
		<ul style="list-style-type: none"> <li>■ Killing, hunting, wounding, collecting, selling, or transferring a completely protected wildlife species or wild animal regulated for international trade, or possessing or transporting any part or blood derivative or product without permission thereof</li> <li>■ Extracting, collecting or destroying in any way without permission a completely protected wild plant or a wild plant regulated for international trade or collecting, possessing, selling, transporting or transferring in anyway without permission such wildlife plant or any derivative product thereof;</li> <li>■ Import, export or re-export wildlife and wild plants regulated for international trade without the endorsement prescribed under subsection (a) and (b) of section 23.</li> </ul>
<p><b>The Protection and Preservation of Cultural Heritage Regions Law, 1998</b></p>	<p>Clause 13, 15, 22</p>	<p>The Project Proponent commits:</p> <ul style="list-style-type: none"> <li>■ To apply for prior permission and must abide by provisions of existing laws for certain land-based construction works.</li> <li>■ To comply the stipulation for the person desirous of carrying out construction works to abide by the provisions of other existing laws and also apply in accordance with the stipulations to the Department to obtain prior permission under this law.</li> <li>■ To conform to conditions prescribed by the Ministry of Culture for buildings in cultural heritage region.</li> </ul>
<p><b>The Protection and Preservation of Antique Objects Law, 2015</b></p>	<p>Clause 12, 13</p>	<p>Project Proponent commits to comply the stipulation:</p> <ul style="list-style-type: none"> <li>■ For person who finds any object which has no owner or custodian, needs to inform the relevant Ward or village-tract administrator if he knows or it seems reasonable to assume that the said object is an antique object.</li> <li>■ For a procedure to inform and the responsibility to inspect whether it is a real ancient monument or not and keep or cause to protect as may be necessary in accordance with the stipulation</li> </ul>
<p><b>The Protection and Preservation of Ancient Monuments Law, 2015</b></p>	<p>Clause 12, 13, 15, 20</p>	<p>Project Proponent commits to comply the stipulations:</p> <ul style="list-style-type: none"> <li>■ For a person who finds an ancient monument over one hundred years old under the water or above ground to promptly inform the relevant Ward or Village-Tract Administrative Office.</li> <li>■ For procedure to inform and the responsibility to inspect whether it is a real ancient monument or not and keep or cause to protect as may be necessary in accordance with the stipulation.</li> <li>■ To apply prior permission from the Department before implementing                         <ul style="list-style-type: none"> <li>(a). extending towns, wards and villages;</li> <li>(b). constructing or extending or repairing new buildings including hotels, factories and residential buildings or fencing or extending a fence;</li> <li>(c). digging to search petroleum, natural gas, gem or mineral, piping petroleum and natural gas, constructing factories, connecting national grid, constructing</li> </ul> </li> </ul>

Relevant Laws, Rules and Regulations	Relevant Articles	Commitments
		<p>communication tower, constructing or extending infrastructures such as road, bridge, airfield, irrigation and embankment;</p> <p>(d). connecting underground electric cable, communication cable and other underground works;</p> <p>(e). digging or extending wells, lakes, cannels and ponds;</p> <p>(f). gold sieving, digging, burning bricks, digging well, lake, creek, ditch, gully, pit digging, refilling, levelling, mining, quarry, gravel digging and unearthing sand, removing the mounds and hills which can damage the physical feature of the land;</p> <p>(g). placing and fencing ancient monuments in a private compound and area;</p> <p>(h). constructing a building which is not consistent with the terms and conditions stipulated according to the region by the Ministry near and at the surrounding of an ancient monument.</p> <p>■ For prohibitions not to damage to an ancient monuments within the specified area of an ancient monument without a written prior permission by carrying out:</p> <p>(a). taking photo, video, film or copying and modeling an ancient monument stipulated as a listed ancient monument for commercial purposes;</p> <p>(b). using machines which causes vibration within the specified place of an ancient monument and running various types of vehicles;</p> <p>(c). cultivating, gardening, breeding, fencing by blocking nearby an ancient monument or doing any other act which can affect an ancient monument;</p> <p>(d). emission of gas such as hot-air balloon which can affect an ancient monument;</p> <p>(e). landing and taking off and, flying airplane and helicopter which can directly or indirectly affect an ancient monument;</p> <p>(f). discarding chemical substance and rubbish which can affect an ancient monument and the environment.</p>
<p><b>Myanmar Fire Force Law, 2015</b></p>	<p>Clause 25</p>	<p>The Project Proponent commits:</p> <p>■ To obtain the opinion of the Fire Services Department for the purpose of fire precaution and prevention, when laying down plans for construction for town, village and downtown or village development plans.</p> <p>■ To comply the stipulations for the factory, workshop, highway bus, airport, jetty, hotel, motel, guest house, collective-owned building, market, work-site or business exposed to fire hazard of the owner or manager;</p> <p>(a). Not fail to form a reserve fire brigade</p> <p>(b). Not fail to provide materials and apparatuses for fire safety; in conformity with the directive of the Fire Services Department.</p>
<p><b>Motor Vehicle Law, 2015</b></p>	<p>Chapter 1, 2(v)</p>	<p>The Project Proponent commits to comply the stipulations:</p> <p>■ for reducing environmental pollution caused by motor vehicles</p>

Relevant Laws, Rules and Regulations	Relevant Articles	Commitments
		<ul style="list-style-type: none"> <li>■ for the right of the Department to issue directives, the standards, guidelines for the purposes of importing, manufacturing, assembling, maintaining to be safe in accident and environment conservation.</li> <li>■ To take actions to conserve the green environment and the reduction in pollution of air, water, land and noises caused by motor vehicles.</li> </ul>
<b>Public Health Law, 1972</b>	Clause 3, 5	<p>The Project Proponent commits to cooperate with the authorized person or organization in line with the stipulations:</p> <ul style="list-style-type: none"> <li>■ To abide by any instruction or stipulation for public health.</li> <li>■ To accept any inspection, anytime, anywhere if it is needed.</li> </ul>
<b>The Protection and Prevention of Communicable Disease Law, 1995</b>	Clause 3(a), 9, 11	<p>The Project Proponent commits to comply the stipulations:</p> <ul style="list-style-type: none"> <li>■ For the Department of Health to carry out immunisations and health education activities related to communicable diseases</li> <li>■ For all responsible persons to prepare report for an outbreak of a communicable disease to the nearest Health Officer.</li> <li>■ For Health Officer to undertake investigations and medical examinations to prevent the control the spread of Principal Epidemic Disease.</li> </ul>
<b>Employment and Skill Development Law, 2013</b>	Clause 5, 14, 15, 30	<p>The Project Proponent commits to comply the stipulation</p> <ul style="list-style-type: none"> <li>■ For the agreement, training and probation period as prescribed in:                             <ol style="list-style-type: none"> <li>1. If the employer has appointed the employee to work for an employment, the employment agreement shall be made within 30 days. But it shall not be related with government department and organization for a permanent employment.</li> <li>2. If pre training period and probation period are stipulated before the appointment the said trainee shall not be related with the stipulation of sub-section (1).</li> </ol> </li> <li>■ For particulars to be included in the employment agreement:                             <ol style="list-style-type: none"> <li>1. the type of employment;</li> <li>2. the probation period;</li> <li>3. wage, salary;</li> <li>4. location of the employment;</li> <li>5. the term of the agreement;</li> <li>6. working hour;</li> <li>7. day off, holiday and leave;</li> <li>8. overtime;</li> <li>9. meal arrangement during the work hour;</li> <li>10. accommodation;</li> <li>11. medical treatment;</li> <li>12. ferry arrangement to worksite and travelling;</li> <li>13. regulations to be followed by the employees;</li> </ol> </li> </ul>

Relevant Laws, Rules and Regulations	Relevant Articles	Commitments
		<ul style="list-style-type: none"> <li>14. if the employee is sent to attend the training, the limited time agreed by the employee to continue to work after attending the training;</li> <li>15. resigning and termination of service;</li> <li>16. termination of agreement;</li> <li>17. the obligations in accord with the stipulation of the agreement;</li> <li>18. the cancellation of employment agreement mutually made between employer and employee;</li> <li>19. other matters;</li> <li>20. specifying the regulation of the agreement, amending and supplementing;</li> <li>21. Miscellaneous.</li> </ul> <ul style="list-style-type: none"> <li>■ For the worksite regulations contained in the employment agreement to be in compliance with any existing law and the benefits of the employee not to be less than those of the any existing law.                         <ul style="list-style-type: none"> <li>(a). For the employment agreement, the Ministry can issue the notification for paying the stipulated compensation to the employee by the employer, if the work is completed earlier than the stipulated period or the whole work or any part of it have to be terminated due to unexpected condition or the work has to be terminated due to various conditions.</li> <li>(b). For the employment agreement made under sub-section (a) to be related with daily wage workers, piece rate workers who are appointed temporarily in the government department and organization.</li> <li>(c). For the worksite regulations and benefits contained in the employment agreement mutually made between the employer and employee or among the employees to be amended as necessary, in accord with the existing law.</li> <li>(d). For the employer to send a copy of the employment agreement made between the employer and employee, to the relevant employment and labour exchange office within the stipulated period and to get the approval of it.</li> <li>(e). For the employment agreement made before the enforcement of this law has to be confirmed up to the end of the term of the original agreement.</li> </ul> </li> <li>■ To carry out the training program in accordance with the work requirement in line with the policy of the skill development team to develop the skill relating to the employment for the workers who are proposed to appoint and working at present.</li> <li>■ To carry out the training for each work or compounding the work individually or group-wise by opening on-job training, training systematically at worksite, sending outside training and training by using information technology system, for arranging the training program to enhance the employment skill of the workers;</li> <li>■ For appointing the youths of 16 years as apprentices, to arrange the training for technology relating to the employment systematically in accord with the regulations prescribed by the skill development team.</li> </ul>

Relevant Laws, Rules and Regulations	Relevant Articles	Commitments
		<ul style="list-style-type: none"> <li>■ For the employer of the industry and service business to put in to the fund monthly as put in fees without fail for the total wages of the subordinates and the supervisors' salary for not less than 0.5%;</li> <li>■ To put in money paid under sub-section (a) not to be deducted from the wage and salary of the employees.</li> </ul>
<b>The Settlement of Labour Dispute Law, 2012</b>	Clause 38, 39, 40, 51	The Project Proponent commits to comply: <ul style="list-style-type: none"> <li>■ Not to fail to negotiate and coordinate in respect of a complaint within the prescribed period without sufficient cause</li> <li>■ Not to alter the conditions of service of workers involved in disputes prior to investigation by tribunals</li> <li>■ For no party to strike or lock-out without negotiation, conciliation and arbitration by Arbitration Body. For the employer if commits acts without sufficient cause, to be liable to pay full compensation to workers as determined by Arbitration Body or Tribunal.</li> </ul>
<b>The Workmen Compensation Act, 1923 (amended in 1955, 1957, 2005)</b>	Clause 3	The Project Proponent commits to comply the stipulations: <ul style="list-style-type: none"> <li>■ For the payment by certain classes of employers to their workmen of compensation for injury by accident.</li> <li>■ For the liability for compensation of employer's, amount of compensation, compensation to be paid when due and penalty for default, method of calculating wages, review, commutation of half-monthly payments, payment of a lump sum amount, distribution of compensation, compensation not to be assigned, attached or charged, notice and claim, power to require from employers statements regarding fatal accidents, reports of fatal accidents and serious bodily injuries, medical examination, contracting, remedies of employer against stranger, compensation to be first charge on assets transferred by employer, special provisions relating to masters and seamen.</li> <li>■ For any updating for revising the monetary amount as per the amendment law.</li> </ul>
<b>Labour Organisation Law, 2011</b>	Clause 17, 18, 19, 20, 21, 22	This Law was enacted, to protect the rights of the workers, to have good relations among the workers or between the employer and the worker, and to enable to form and carry out the labour organizations systematically and independently. Project Proponent commits to comply the stipulations as there mentions: <ul style="list-style-type: none"> <li>■ That Labour Organisations are free to organise and negotiate workers' rights if not meeting labour laws.</li> <li>■ That Labour Organisations may demand re-appointment of worker if cause of dismissal is related to labour organisation membership or activities or not conform to labour laws.</li> <li>■ That Labour Organisations have the right to send representatives to conciliation tribunals.</li> <li>■ That Labour Organisations have the right to participate and discuss workers' rights and interests with government and employers</li> </ul>

Relevant Laws, Rules and Regulations	Relevant Articles	Commitments
		<ul style="list-style-type: none"> <li>■ That Labour Organisation have the right to participate in collective bargaining in accordance with labour laws.</li> <li>■ That Labour Organisation may take collective actions in accordance with the relevant procedures, regulations and law.</li> </ul>
<b>Minimum Wages Law, 2013</b>	Clause 12 (a-e), 13 (a-g)	<p>This Law was enacted to meet with the essential needs of the workers, and their families, who are working at the commercial, production and service, agricultural and livestock breeding businesses and with the purpose of increasing the capacity of the workers and for the development of competitiveness.</p> <p>Project Proponent commits to comply the stipulations:</p> <ul style="list-style-type: none"> <li>■ For the employer not to pay wage less than the minimum wage stipulated, do not have the right to deduct any other wage</li> </ul> <p>For the employer to inform rates of minimum wage relating to the business, allow the entry and inspection of the inspection officer, give the sick worker holiday for medical treatment in accord with stipulation and give holiday for the matter of funeral of the family of worker without deducting from the minimum wage.</p>
<b>Payment of Wages Law, 2016</b>	Clause 3, 4, 5, 7 (ii), 8, 9, 10, 14	<p>The Project Proponent commits to comply the stipulations:</p> <ul style="list-style-type: none"> <li>■ That salaries are to be paid at the end of the month or, depending on the size of the employing enterprise, between 5-10 days before the end of the month. The employer is permitted and required to withhold income tax and social security payments. Other deductions, e.g. for absence, may only be withheld in accordance with the law.</li> <li>■ For the employer (a) to pay for salary either Myanmar Kyats or Foreign Cash permitted by National Bank of Myanmar. When delivery the salary (b) If the employer needs to pay the other opportunities or advantages, he can pay cash together with other materials according employee's attitude.</li> <li>■ For finishing the contract, employer need to pay the salary (not more than one month) to employees. For the permanent worker, need to pay per monthly. If more than 100 employees, need to pay within the 5 days from the end of month. If fire the employees, need to pay salary within two days after fire. When employee dies due to the accident, need to pay money as an insurance to employee's family within two days.</li> <li>■ For the employer to report to the Department with evidence of payment at later date agreed with the employee if the employer has difficulties to pay wages on time because of significant events (e.g. natural disaster).</li> <li>■ For the employer to deduct expense which are allowance for accommodation and ferry service arranged by the employer, meal allowance, electricity charges, water service charges and income taxes liable to be paid by workers and cash paid in excess under mistake, which are not included in the expression of wages under this Law and not to deduct from the wages of the worker except the deduction as per clause 7.</li> </ul>

Relevant Laws, Rules and Regulations	Relevant Articles	Commitments
		<ul style="list-style-type: none"> <li>■ For any deducting from the salary due to the employees' absence, the total cut salary not to be more than 50 % of his salary.</li> <li>■ For overtime work, to allow the presiding overtime rate as set by the Law.</li> </ul>
<b>Leaves and Holidays Act, 1951</b>	Clause 4	<p>The Project Proponent commits to comply with the stipulations:</p> <ul style="list-style-type: none"> <li>■ For employee to be granted to pay public holidays as announced by the Government in the Myanmar Gazette. On average, Myanmar has 26 public holidays per year, depending on the date of the variable holidays.</li> <li>■ For additional rules to apply in accordance with other laws, such as the Social Security Law (2012) for employees contributing to the Social Security Fund.</li> <li>■ To grant earned leave with average wages or average pay for a period of ten consecutive days by his employer during the subsequent period of twelve months to every employee who has completed a period of twelve months continuous service.</li> </ul>
<b>Social Security Law, 2012</b>	Clause 11 (a)(b), 15(a), 16 (a), 18(b), 48(a), 49(a)(b), 51(a)(b), 53(a), 54(a)(b), 75	<p>The Project Proponent commits to comply the stipulations:</p> <ul style="list-style-type: none"> <li>■ For compulsory registration for social security system and benefits, the following establishments can be applied if they employ minimum number of workers and above determined by the Ministry of Labour in co-ordination with the Social Security Board:                         <ol style="list-style-type: none"> <li>i. Production industries doing business whether or not they utilize mechanical power or a certain kind of power, works of production, repairing or services, or engineering works, mills, warehouses, establishments;</li> <li>ii. Government departments, Government organizations and regional administrative organizations doing business;</li> <li>iii. Development organizations;</li> <li>iv. Financial organizations,</li> <li>v. Companies, associations, organizations and their subordinate departments and branch offices doing business;</li> <li>vi. shops, commercial establishments, public entertaining establishments;</li> <li>vii. Government departments and Government organizations doing business or transport businesses owned by regional administrative body, and transport businesses carried out with the permission of such department, body or in joint venture with such department or body;</li> <li>viii. Construction works carried out for a period of one year and above under employment agreement;</li> <li>ix. Works carried out with foreign investment or citizen investment or joint ventured businesses;</li> <li>x. Works relating to mining and gemstone contained in any existing law;</li> <li>xi. Works relating to petroleum and natural gas contained in any existing law;</li> <li>xii. Ports and out-ports contained in any existing law;</li> <li>xiii. Works and organizations carried out with freight handling workers;</li> <li>xiv. Ministry of Labour and its subordinate departments and organizations;</li> </ol> </li> </ul>



Relevant Laws, Rules and Regulations	Relevant Articles	Commitments
		<p>xv. Establishments determined by the Ministry of Labour from time to time, in co-ordination with the Social Security Board and with the approval of the Union Government; that they shall be applied with the provisions of compulsory registration for Social Security System and benefits contained in this Law.</p> <ul style="list-style-type: none"> <li>■ For provisions of compulsory registration under sub-section (a) to continue to be applied by this Law even though any of the following situations occurs if it continues to carry out such work:                         <ul style="list-style-type: none"> <li>i. carrying out work by employing under stipulated minimum number of workers but more than one worker;</li> <li>ii. changing the employer or changing the type of business.</li> </ul> </li> <li>■ For the Social security fund, to include the funds for health and social care, family assistant, invalidity benefit, superannuation benefit and survivors' benefit, unemployment benefit, other social security fund for social security system of compulsory registration and contribution stipulated by the Ministry of labour, other social security fund and social security housing plan fund.</li> <li>■ For arranging insurance for the workers to enable to enjoy social security benefits by contributing to the social security fund.</li> <li>■ For the employer to deduct contributions to be paid by worker from his wages together with contribution to be paid by him and pay to the social security fund and in such case he can incur the expense.</li> <li>■ For the employer to effect insurance by registering for employment injury benefit insurance system contained in section 45 at the relevant township social security office and pay contribution to employment injury benefit fund in accord with stipulations in order that workers applied to provisions of compulsory registration may obtain the employment injury benefits.</li> <li>■ For the inapplicability to the Workmen's compensation act.</li> <li>■ For the employer (a) to pay contribution monthly to Employment Injury Benefit Fund at the rates stipulated under section 50. Moreover he shall also bear the expenses for paying as such; (b) to pay defaulting fee stipulated under section 88, in addition to the contribution if fails to contribute after effecting insurance for employment injury benefit.</li> <li>■ For the employers and workers (a) to co-ordinate with the Social Security Board or insurance agency in respect of keeping plans for safety and health in order to prevent employment injury, contracting disease and decease owing to occupation and in addition to safety and educational work of the workers and accident at the establishment;</li> <li>■ For the employer (a) to report to the relevant township social security office immediately if a serious employment accident occurs to his insured worker. There shall not be any delay without sufficient cause to report as such. (b) A team of officers and other staff who inspect the establishments, if it is found out the employment injury, death, and</li> </ul>

Relevant Laws, Rules and Regulations	Relevant Articles	Commitments
		contracting disease, shall report to the relevant township social security office in accord with the stipulations. ■ For keeping records of work and lists.
<b>Yangon City Development Committee Law, 2014 (amended in 2018)</b>		It has stated that the committee has the right to: ■ To incorporate for the inspection with the concerning authority and ■ To stipulate orders for the carriage, storage of chemical and related substances for not harming to public health and life ■ To manage the waste regarding for the hazardous. There it has been prohibited for disposing chemical and its related substances in areas, which are not being allowed in the City Development area and mentioned offenses and penalties. The Project Proponent commits to comply the stipulations and undertake the necessary proceeding as per this law and notification issued by the committee.
<b>Myanmar National Building Code, 2016</b>	Clause 1.B.1 (code no 1.3.1.1), code no 1.3.1.4	The Project Proponent as a land use development project, including new construction, extension, retrofitting, increase of floor area, and changes in usage of buildings/land, commits: ■ To comply the stipulations for the requirement of “Planning Permit” to be granted by “The Development Planning and Building Authority”, as in accordance with Section 1.B.1 of this Code (1.3.1.1) ■ To abide by the Myanmar Environmental Conservation Law of 2012 and to be in conformity with other land bylaws of the regional authorities.
<b>National Energy Policy, 2014</b>	Chapter 3, Clause 4	The national energy policy aims to systematically explore the available energy resources of the country in order to supply the demand of the country and to export as value added products for surplus resources, thus ultimately targeting to sustainably improve the living standard of the country people. There mentions national energy policy, energy sector development plan, energy and electric power sector restructuring program, energy sector framework and strategy and work program. The Project Proponent commits to implement the project to support this policy.
<b>The Electricity Law, 2014</b>	Clause 3(e) (f) (h), 8(a), 11, 14, 22(a), 30, 37, 41, 42, 44, 45, 48	The Project Proponent commits to comply with the stipulations: ■ That with the approval of the Union Government, the Ministry shall have the right to carry out businesses related to the large scale electric power exploration, construction, generation, transmission, distribution, trading and exchanging which the Union have the right to manage;

Relevant Laws, Rules and Regulations	Relevant Articles	Commitments
		<ul style="list-style-type: none"> <li>■ For carrying out the electrical business, the Ministry, relevant Region or State Government and Leading Bodies of Self-Administered Division or Self-Administered Zones have the right to obtain the required amount of land to use in accord with the existing laws;</li> <li>■ For the person from local or foreign who desires to invest and operate in any electrical business to apply to obtain the permit to the authorized person to issue permit in accord with the stipulations.</li> <li>■ For the right of the Ministry allow or refuse an application after scrutinizing, if the permit holder desires to sell electric power to the national grid.</li> <li>■ For the permit holder to be liable for causing any damage or loss due to the negligence by him to any person or entity.</li> <li>■ For the right of Ministry to inspect of electrical business and electrical equipment.</li> <li>■ For the right of Ministry to issue required standardizations and techniques of inspection for electrical business.</li> <li>■ That the Ministry has the right to determine regarding the specification of rates of electric power fee and service charges from the users of electric power the appropriate rates of respective region with the approval of the Union Government. Such rates of electric power fee may be adjusted from time to time.</li> <li>■ For any person not to operate the electrical business without permit.</li> <li>■ For permit holder not to operate any other electrical business except the business contained in the permit.</li> <li>■ For any person not to operate the importing, manufacturing in the country, exporting, distributing and selling of the electrical equipment which are not consistent with the prescribed norm and standard.</li> </ul>
<p><b>Law protecting Ethnic Right, 2015</b></p>	<p>Clause 5</p>	<p>The Project Proponent commits to comply the stipulations</p> <ul style="list-style-type: none"> <li>■ For the Equal right between the Ethnic living in Myanmar. It enacted that if an ethnic loose the right, he can complain to the Regional or State Government to get the equal chance and find the equal right.</li> <li>■ That project matters shall be informed, coordinated and undertaken in consultation with ethnic groups if projects are in areas with ethnic groups.</li> </ul>

### 3.3 Myanmar Environmental Quality (Emissions) Guidelines

MONREC's Environmental Quality (Emissions) Guidelines (EQEG) were enacted in 2015. The standards that are applicable to this Project are presented in Table 3.2 to Table 3.5 and provide the basis for regulation and control of effluent discharges in order to prevent pollution and protect the environment and people.

**Table 3.2 EQEG Air Emissions Parameters**

Parameter	Unit	Guideline Value ( $\mu\text{g}/\text{m}^3$ )
Nitrogen dioxide	1 year	40
	1 hour	200
Ozone	8 hour (daily) maximum	100
Particulate Matter ( $\text{PM}_{10}$ ) <sup>a</sup>	1 year	20
	24 hour	50
Particulate Matter ( $\text{PM}_{2.5}$ ) <sup>b</sup>	1 year	10
	24 hour	25
Sulphur Dioxide	24 hour	20
	10 minute	500

*a Particulate matter in diameter  $\leq 10\mu\text{m}$*

*b Particulate matter in diameter  $\leq 2.5\mu\text{m}$*

**Table 3.3 EQEG Noise Levels Parameters**

Receptor	One hour LAeq (dBA) <sup>a</sup>	
	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 (at the nearest sensitive receptor)*

**Table 3.4 EQEG Non-ionized Radiation Emissions**

Frequency	Electric Field ( $\text{V}/\text{m}^{\text{a}}$ )	Magnetic Field ( $\mu\text{T}^{\text{b}}$ )
50 Hz <sup>c</sup>	5000	100
60 Hz <sup>c</sup>	4150	83

*<sup>a</sup> volts per meter; <sup>b</sup> micro tesla; <sup>c</sup> Hertz*

**Table 3.5 EQEG Site Runoff and Effluent Levels**

Parameter	Unit	Guideline Value
5-day Biochemical oxygen demand	mg/l	50
Ammonia	mg/l	10
Arsenic	mg/l	0.1
Cadmium	mg/l	0.1
Chemical oxygen demand	mg/l	250
Chlorine (total residual)	mg/l	0.2
Chromium (hexavalent)	mg/l	0.1
Chromium (total)	mg/l	0.5
Copper	mg/l	0.5
Cyanide (free)	mg/l	0.1
Cyanide (total)	mg/l	1
Fluoride	mg/l	20
Heavy metals (total)	mg/l	10
Iron	mg/l	3.5
Lead	mg/l	0.1
Mercury	mg/l	0.01
Nickel	mg/l	0.5
Oil and grease	mg/l	10
Ph	S.U. <sup>a</sup>	6-9
Phenols	mg/l	0.5
Selenium	mg/l	0.1
Silver	mg/l	0.5
Sulphide	mg/l	1
Temperature increase	°C	<3 <sup>b</sup>
Total coliform bacteria	100 ml	400
Total phosphorus	mg/l	2
Total suspended solids	mg/l	50
Zinc	mg/l	2

<sup>a</sup> Standard unit

<sup>b</sup> At the edge of a scientifically established mixing zone which takes into account ambient water quality, receiving water use, potential receptors and assimilative capacity; when the zone is not defined, use 100 meters from the point of discharge

### 3.4 Relevant International Regulations and Guidelines

This section shows the International Agreements and Conventions which will have relevance to the Project and the Good International Industry Practice Guidelines that NYDC will consider in the process of the EIA preparation.

### 3.4.1 International Agreements and Conventions

Myanmar is a signatory to the international conventions listed in Table 3.6, which will have relevance to the proposed Project. A full list of international conventions, treaties, and agreements of relevance to the Project will be provided in the EIA Report.

**Table 3.6 International Agreements and Conventions**

Legislation	Relevance to the Project	Ratification Status (in Myanmar)
Vienna Convention for the Protection of the Ozone Layer 1988 and Montreal Protocol on Substances that Deplete the Ozone Layer 1989	The Project may use or generate ozone depleting substances.	Accession 16 <sup>th</sup> Sep 1998 (Vienna) & Accession 24 <sup>th</sup> Nov 1993 (Montreal)
Convention on Biological Diversity 1992	The Project will be located in terrestrial habitats.	Ratified 25 <sup>th</sup> Nov 1994
Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal	The Project may generate hazardous wastes (e.g. used oils).	Entered into force 6 <sup>th</sup> April 2015
United Nations Framework Convention on Climate Change 1992 (UNFCCC) and Kyoto Protocol 1997	The Project construction will form part of Myanmar's total emissions output. However, there will be limited emissions during operation.	Entered in force 23 <sup>rd</sup> Feb 1995 (UNFCCC) and 16 <sup>th</sup> Feb 2005 (Kyoto Protocol)
Workmen's Compensation (Accidents) Convention 1925	The Project has risks to occupational health and safety.	Entered in force 16 February 1956
Workmen's Compensation (Occupational Diseases) Convention 1925 and its Revision 1934	The Project has risks to occupational health and safety.	Entered in force 30 Sept 1927; Revision entered in force 17 May 2016

### 3.4.2 Good International Industry Practice Guidelines

NYDC will undertake the impact assessment study and Project activities in a manner guided by good international industry practice (GIIP). Applicable guidelines which NYDC will consider in preparing the EIA include:

- International Finance Corporation (IFC) Performance Standards on Environmental and Social Sustainability (2012); and
- IFC Environmental, Health and Safety (EHS) guidelines, including:
  - General EHS Guidelines (2007); and
  - EHS Guidelines for Environmental, Health and Safety Guidelines for Toll Roads (2007).

## 4. PROJECT DESCRIPTION

### 4.1 Project Location

The **Project Area** is defined as the location of the Bridges (Bridge 1 and Bridge 2). Bridge 1 will be located over Yangon River of Kyee Myin Daing Township and Bridge 2 will be located over Pan Hlaing River of Hlaing Tharyar Township and Twantay Township (Figure 4.1 and Figure 4.2). The coordinate points of the New Yangon City Phase 1 Area, Bridge 1 and Bridge 2 are listed in Table 4.1. This project aims to connect the New Yangon City to the existing Yangon city, relieve the existing traffic congestion and city function saturation in the main city, and optimize the overall development structure of Yangon City.

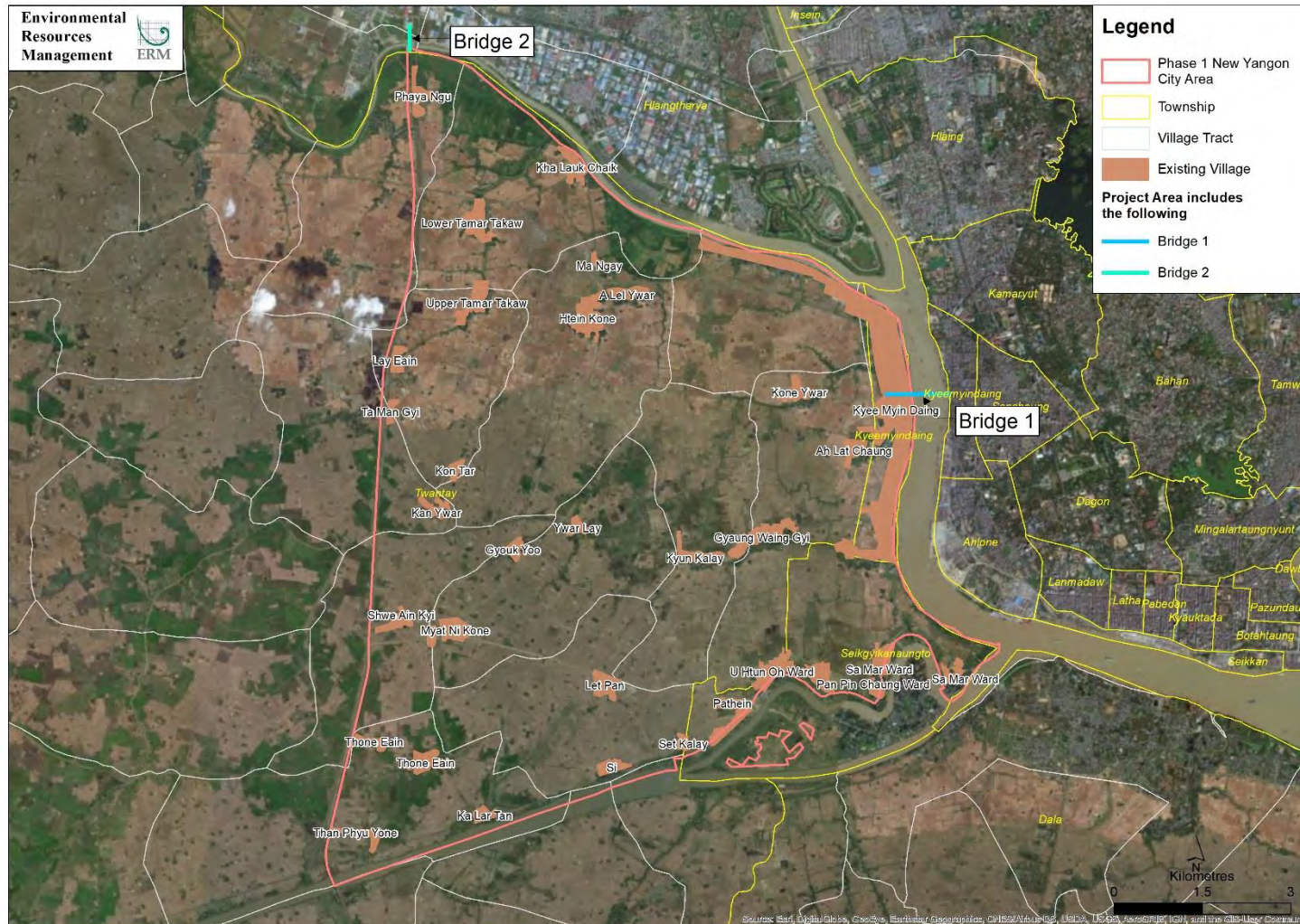
**Table 4.1 Project Location Coordinate Points**

Item	Coordinates*
New Yangon City Phase 1 Area	96.033387°E 16.877042°N, 96.129981°E 16.825630°N, 96.150740°E 16.766533°N, 96.102184°E 16.731149°N, 96.020524°E 16.712643°N and 96.012471°E 16.792693°N.
Bridge 1	96.122182°E 16.805966°N (Starting Point) 96.117109°E 16.805935°N (Middle Point) 96.110355°E 16.805964°N (End Point)
Bridge 2	96.035927°E 16.862558°N (Starting Point) 96.035966°E 16.860271°N (Middle Point) 96.035988°E 16.857531°N (End Point)

*\*There may be some deviation between these coordinated points as the areas are not straight lines between them.*

### 4.2 Schedule

Ground-breaking for New Yangon City is planned for January 2020. The estimated duration of construction is two years for Bridge 1 and three and a half years for Bridge 2. The target completion dates for Bridge 1 and Bridge 2 are respectively January 2022 and July 2023.



**Figure 4.1 Project Location**





Figure 4.2 Close Up of Proposed Bridges to be built under the New Yangon City Phase 1 Project

### 4.3 Project Components

The proposed Project will be composed of:

- Bridge 1 – The Yangon River Bridge; and
- Bridge 2 – The Pan Hlaing River New Bridge.

#### 4.3.1 Bridge 1 – The Yangon River Bridge

The Yangon River Bridge (Bridge 1) is a two-way six-lane with walkway extradosed bridge with a total length of 1,810 m that will connect the New Yangon City with the central Yangon. The bridge will consist of three sections:

- Main bridge crossing the channel in Yangon River. The span of the main bridge is proposed to be 240 m + 100 m + 220 m and will have adequate clearance to meet the navigation requirement;
- West Approach Bridge is 360 m connecting New Yangon City with the main bridge; and
- East Approach Bridge connecting central Yangon and the main bridge. It will consist of two main ramps (300 m and 590 m) single-way two lanes connecting to Bagaya Street and two ramps single-way one lane bridge reserved for planned Inner Ring Road in the future.

According to NYDC’s ‘New Yangon City Project – Bridge No.1 Construction Impacted Area’ document (as of May 2019), the construction of Bridge 1 will have impacts on Set San Out Yone Alat Chaung Ward (West of Yangon River) and Kyee Myin Daing Township (East of Yangon River). For Set San Out Yone Alat Chaung Ward (Figure 4.5), the total construction impacted area is 6.5 acre. It is estimated that a total of 134 structures will be impacted during the construction of Bridge 1 (Table 4.3) (NYDC, 2019). For Kyee Myin Daing (East) (Figure 4.6), the total construction impacted area is 4.1 acre. It is estimated that a total of 150 existing structures will be impacted during the construction of Bridge 1 (NYDC, 2019) (Table 4.4) (Figure 4.7).

Table 4.2 summarises Bridge 1 design specification. The layout plan of Bridge 1 and its approach roads are included in Appendix B.

The construction and operation of Bridge 1 will result in the relocation of a Myanmar Port Authority (MPA) jetty and related structures. Figure 4.3 shows the arrangement of Bridge 1, while Figure 4.4 shows the relocation plan of the above-mentioned structures. At the time of writing (September 2019), the discussion with MPA and Myanmar Boat Association on the final location and design is still on going. The relocation of the MPA jetty and related structures is not covered under this EIA.

According to NYDC’s ‘New Yangon City Project – Bridge No.1 Construction Impacted Area’ document (as of May 2019), the construction of Bridge 1 will have impacts on Set San Out Yone Alat Chaung Ward (West of Yangon River) and Kyee Myin Daing Township (East of Yangon River). For Set San Out Yone Alat Chaung Ward (Figure 4.5), the total construction impacted area is 6.5 acre. It is estimated that a total of 134 structures will be impacted during the construction of Bridge 1 (Table 4.3) (NYDC, 2019). For Kyee Myin Daing (East) (Figure 4.6), the total construction impacted area is 4.1 acre. It is estimated that a total of 150 existing structures will be impacted during the construction of Bridge 1 (NYDC, 2019) (Table 4.4) (Figure 4.7).

**Table 4.2 Bridge 1 Design Specification**

Road Type (Main Route)	A two-way six-lane with walkway
Bridge lifetime	100 years
Design traffic speed (main route)	60 km/h
Bridge deck pavement	Asphalt concrete
Number of lanes	Two-way six-lane with walkway

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Navigation clearance	80 m x 12 m (width and height) and 43m height with hydraulic
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Source: CCCC, 2019

**Table 4.3 Impacted Structures in Set San Out Yone Alat Chaung Ward**

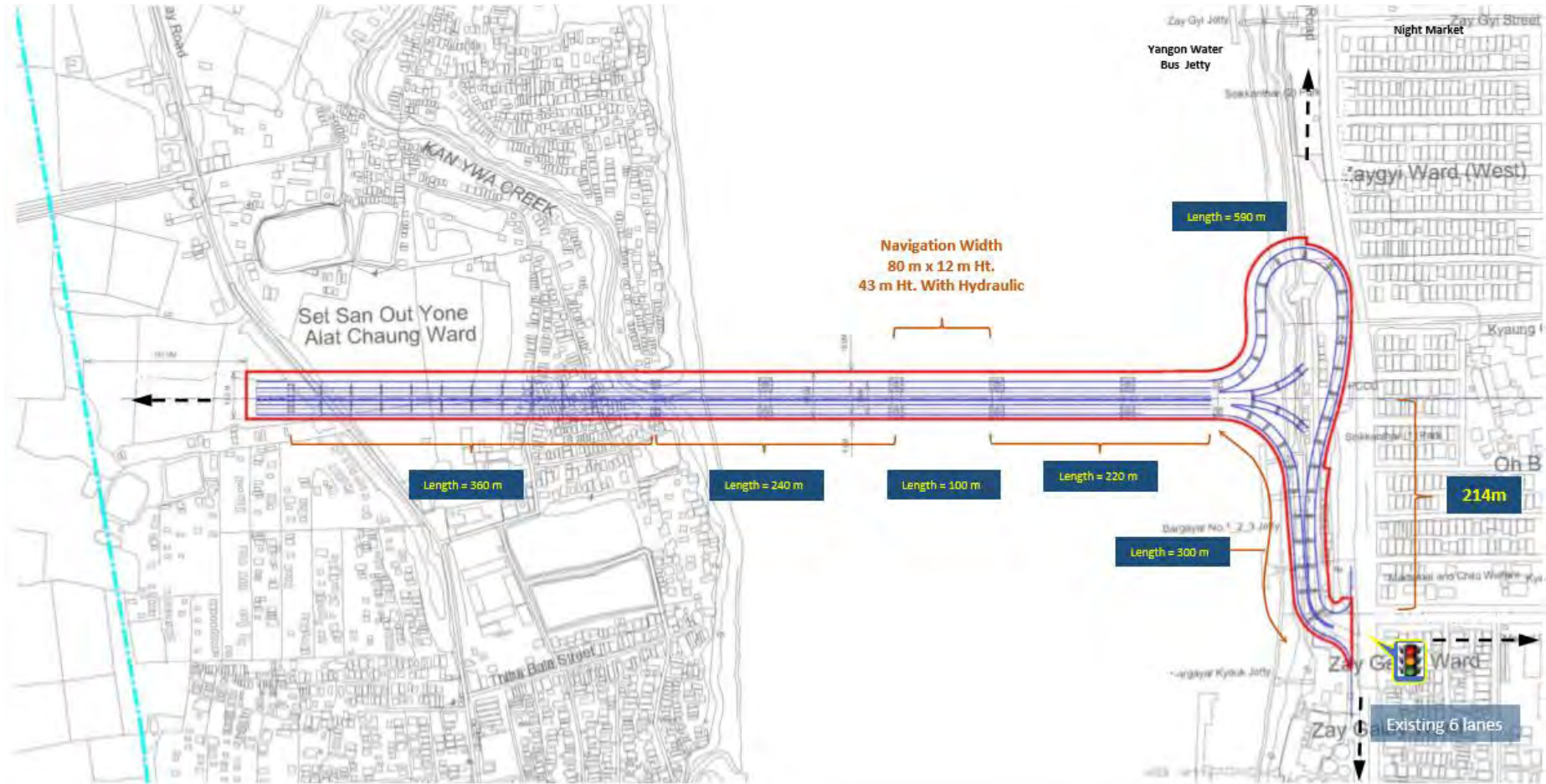
Existing Impacted Structure	Number
Land with house	117
Land without house	12
House without land	3
Pond	1
Monastery and its related structure	1
<b>Total</b>	<b>134</b>

Source: NYDC, 2019

**Table 4.4 Impacted Structures in Kye Myin Daing (East)**

Existing Impacted Structure	Number
Banana / Coconut Shop	126
Guava / Mango Shop	1
Shop	7
Restaurant	2
MPA Port Office and Police Station	1
Loading / Unloading Committee Office	1
Bridge Supervision Office	1
Two-Storey Building	1
Jetty	3
Quay	2
Public Toilet	2
Seik Kanthar Park	1
Seik Kanthar Park Office	1
YCDC Office	1
<b>Total</b>	<b>150</b>

Source: NYDC, 2019



Source: NYDC, 2019

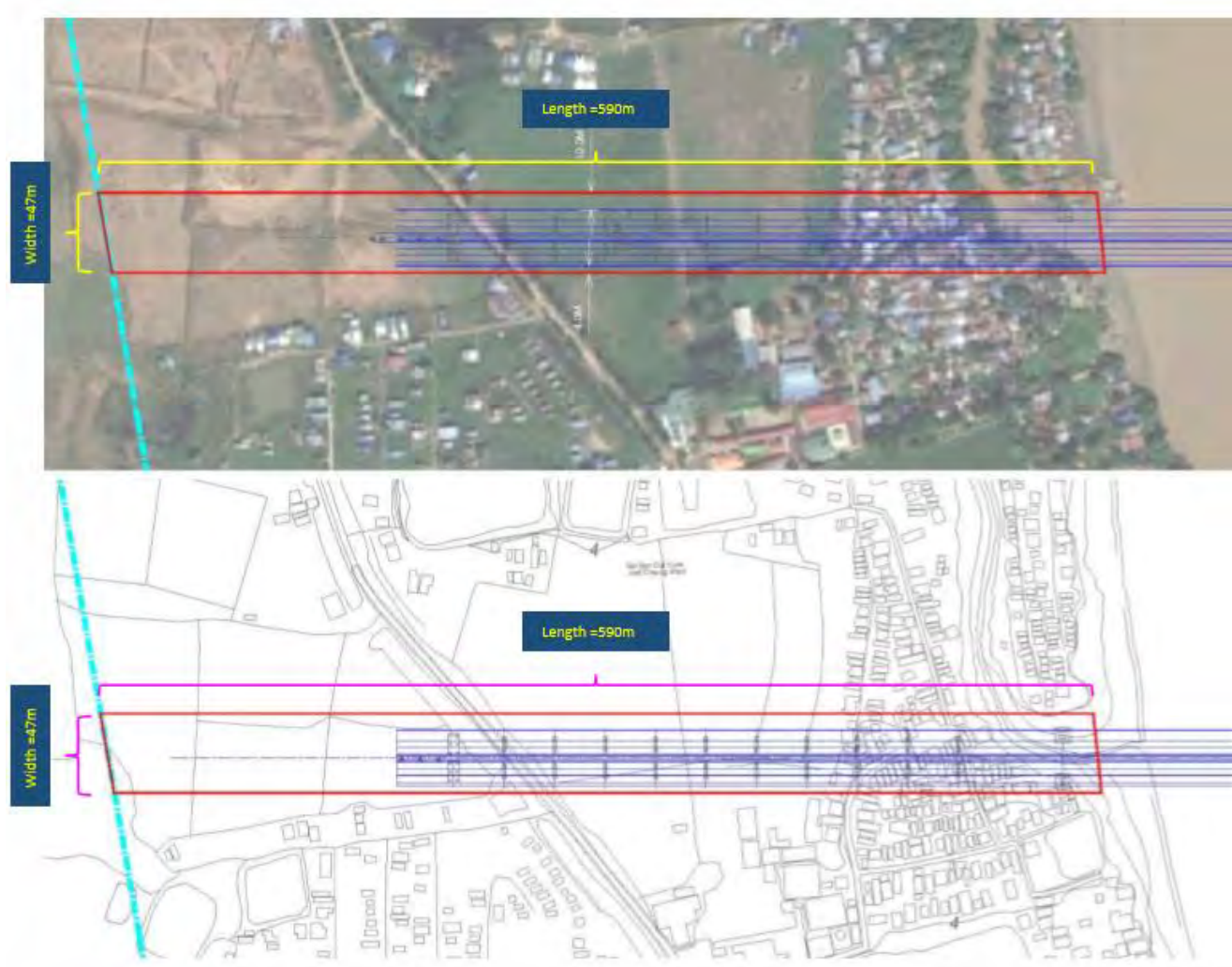
Figure 4.3 Bridge 1 Alignment



Note: The turquoise lines (next to the planned ramp) are indicative, showing the existing MPA Jetty and related structures to be located to the north.

Source: NYDC, 2019

**Figure 4.4 Bridge 1 - Relocation Plan for MPA Jetty and Related Structures**



Source: NYDC, 2019

**Figure 4.5 Close-up of Impacted Area in Set San Out Yone Alat Chaung Ward (Bridge 1)**



Source: NYDC, 2019

**Figure 4.6 Close-up of Impacted Area in Kye Myin Daing (East) (Bridge 1)**



## 6 BRIDGE 1 – THE YANGON RIVER ( Existing Impacted Structure )

*MPA Port Office + Police Station*



*Banana / Coconut Shop*



*Loading / Unloading Committee Office*



*Jetty & Quay*



*Bridge Supervisoin Office*



## 7 BRIDGE 1 – THE YANGON RIVER ( Existing Impacted Structure )

Seik Kanthar Park Office & YCDC office



Restaurant



Seik Kanthar Park



Public Toilet



Guavea/Mango Shop



Source: NYDC, 2019

Figure 4.7 Impacted Structures in Kyee Myin Daing (Bridge 1)

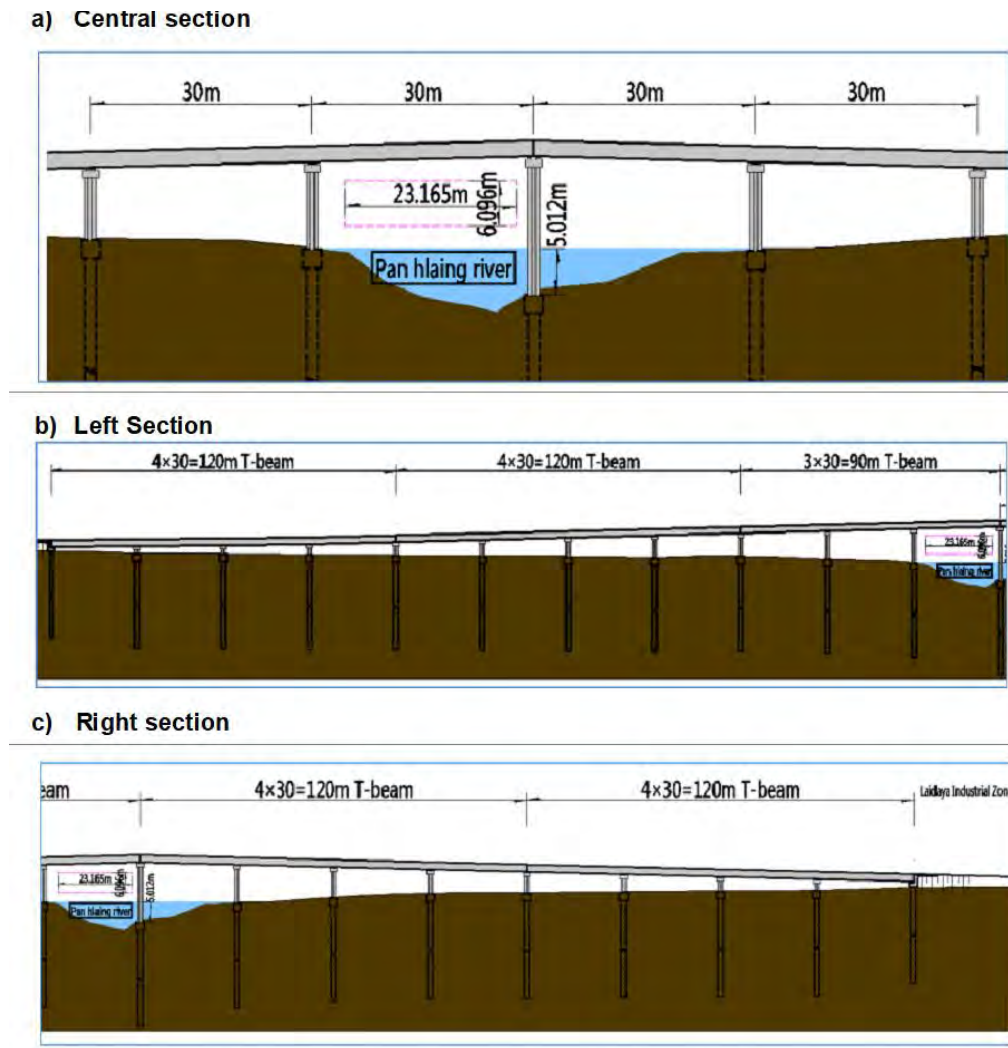
### 4.3.2 Bridge 2 – Pun Hlaing River New Bridge

The existing 10 m wide Pun Hlaing Bridge is a two-way two lane road (two lanes in total). The Pan Hlaing River New Bridge is proposed to be built to satisfy the additional traffic for the road 1 expansion in the New Yangon City. A clearance distance of 5 m will be adopted between the existing bridge and the new bridge for safety during the construction period.

The new bridge will be a one-way two-lane with one sidewalk and will have a total length of 570 m with a span of 30 m. Table 4.5 summarise the design specifications of Bridge 2. The span arrangement for Bridge 2 is shown in Figure 4.8. The layout plan of Bridge 2 and its approach roads are included in Appendix C.

**Table 4.5 Design Specification of Bridge 2**

Road Type (Main Route)	A two-way six-lane with walkway
Bridge lifetime	100 years
Design traffic speed (main route)	60 km/h
Bridge deck pavement	Asphalt concrete
Number of lanes	One-way two lane



Source: CCCC, 2019

**Figure 4.8 Span Arrangement for Bridge 2**

## 4.4 Project Activities

### 4.4.1 Main Construction Methodology

The main construction methodology will include the following steps:

- Bored pile construction;
- Pile cap construction;
- Pier construction;
- Capping beam construction;
- Construction of bridges' superstructure;
- Construction of waterproof layer of bridge deck concrete; and
- Expansion joint installation.

#### *4.4.1.1 Bored Pile Construction*

The piles will be excavated by rotary drilling rigs (or drop chisel hammer), with electric winch and core drilling hammer (or drop chisel hammer) set up on the temporary platform. The pile bore will be kept filled with water and the hammer is lifted by a piling rig and free dropped from height.

The steel cages for the foundation will be fabricated in a bending yard. The reinforcement cages will be installed by a crane barge or a crawler crane into an inspected bore hole.

Concrete will be delivered by a truck mixer from the batching plant to the piling location, where it will be discharged into skips and carried on vessels for concreting. If land access is available, a land plant will be used for concreting. A derrick or a crane will be used for installation.

#### *4.4.1.2 Pile Cap Construction*

For the pile cap construction, a caisson will be installed and a temporary ship and work platform will be constructed. The caisson will be pre-fabricated to fit the working space's dimensions. Once the installation of caisson is complete, divers will check the caps are installed correctly. Reinforcement will be included and pre-cast cover blocks will be used. An experienced steel fixer will be present to ensure that all the reinforcement works are being carried out properly. Concrete truck mixers will deliver the ready mixed concrete to the site. A bucket with an excavator or a concrete pump car will be used to pour the concrete. The concrete will be placed in layers of 300mm thick and thoroughly compacted by vibrator.

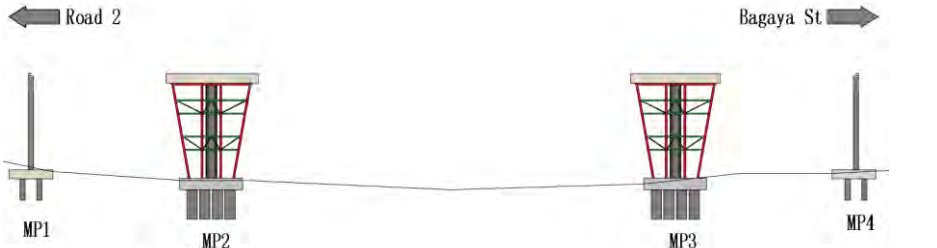

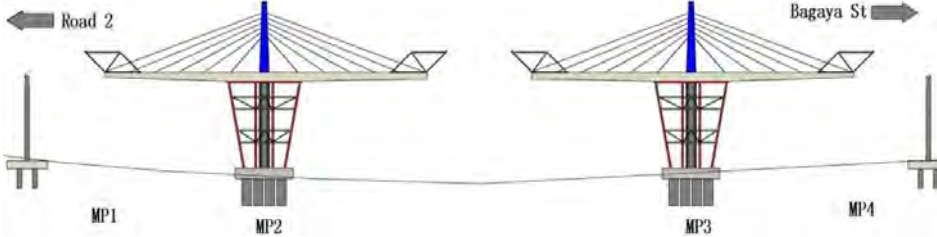
#### *4.4.1.3 Pier Construction*

The pier construction scaffold shall be set up first, and then the reinforcement shall be installed. After installation and inspection works, a concrete truck mixer will deliver the ready mixed concrete to the site. Either one of the following equipment: a bucket with an excavator; a concrete pump car; or a tower crane with bucket; will be used to pour the concrete.

#### *4.4.1.4 Construction of Bridges' Superstructure*

For the construction of superstructure components of Bridge 1, the construction methodology is outlined in Table 4.6.

**Table 4.6 Steel Extradosed Cable Bridge (Bridge 1) Superstructure Construction**

Procedure	Description
Erection of initial section of steel box girder	 <p>The floating crane is used to set up the supporting for the initial section, and the supporting shall be fixed with the pier.</p>
Erection of steel tower	 <p>The steel pylon and initial steel box are installed by the floating crane, and the erection equipment for the steel box is set up.</p>
Erection of steel box girder of standard section	 <p>The steel box girders for the cantilever sections are assembled and the cables are hung and stretched along step by step.</p>

Source: CCCC, 2019

#### 4.4.1.5 Construction of Waterproof Layer of Bridge Deck Concrete

The joint concrete of precast beam, and the tensioning and grouting of pre-stressed cable shall be completed before the installing a waterproof layer of bridge deck concrete. The concrete shall be mixed in a batch plant and transported by a concrete truck. A frame levelling machine will be used for vibrating and levelling the concrete.

#### 4.4.1.6 Expansion Joint Installation

Before the expansion joint is installed, the surface concrete shall be cleaned. After installation, the electric welding fixing, formwork installation, and concrete pouring will be carried out. Special personnel shall be assigned to take charge of the concrete pouring compaction.

#### 4.4.2 Access Roads

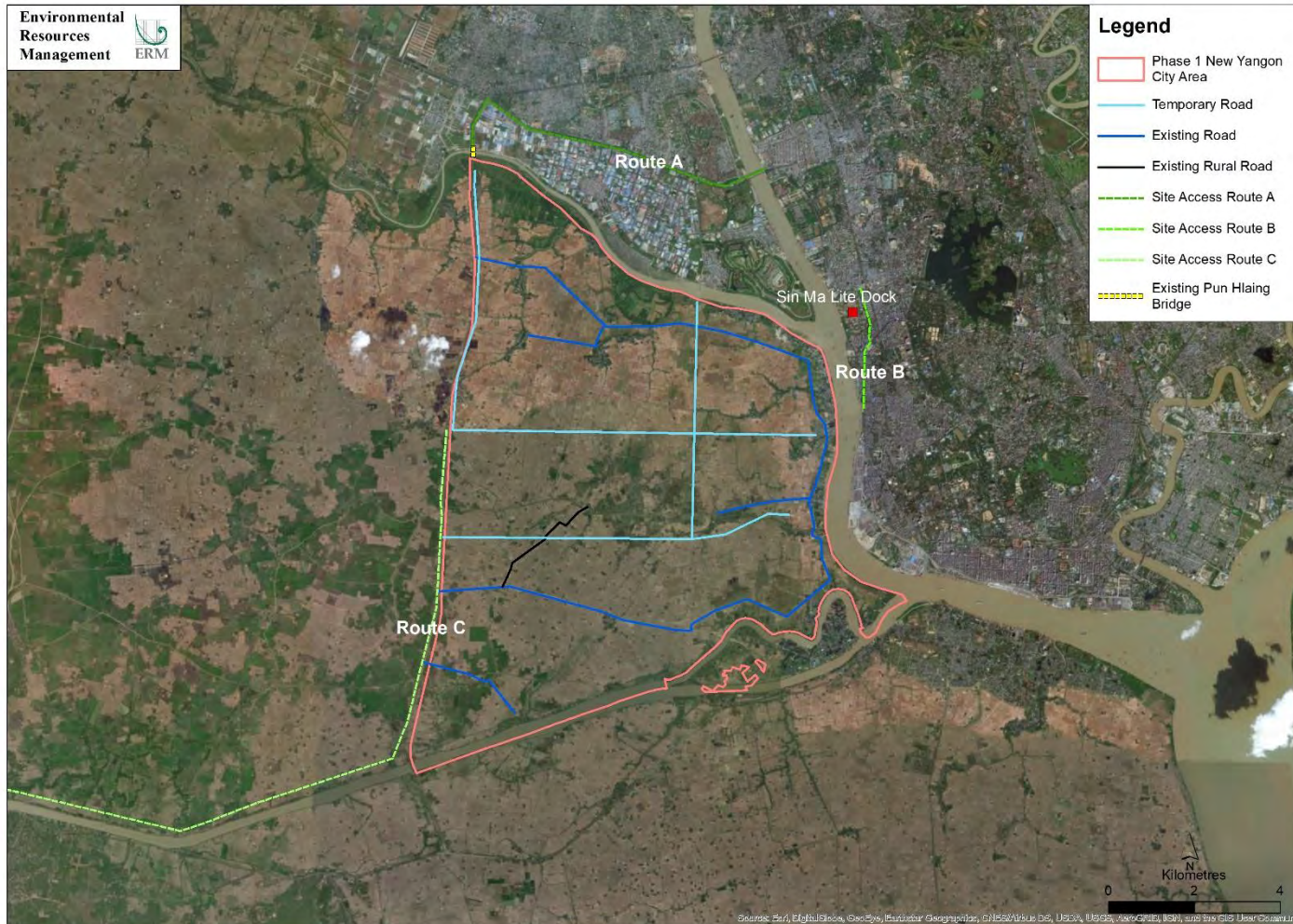
The site access to the project includes terrestrial and maritime routes as described below and shown in Figure 4.9.

- Route A, B, and C will be the three main terrestrial access route in and out the project

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- Existing Pan Hlaing Bridge and Sin Ma Lite Dock from where the main sand and aggregate / rock will mainly be transported by vessels in the temporary wharf.

The existing roads within the project area will remain and will be kept in their current condition. Temporary roads will be built during the construction site will be paved with gravel.



Source: CCCC, 2019

Figure 4.9 Site Access and Roads



### 4.4.3 Power Supply and Demand

Power will be supplied from the municipal electricity and diesel generators. Diesel generators shall be used as power supply partially during the construction of the transmission lines and substations. Main generators will generate 70 – 400 kW, depending on the construction organisation in the future. Discussions are ongoing with YESC for provision of construction power supply.

### 4.4.4 Water Supply and Demand

Water will come from Yangon River, rain water and municipal water supply. Water tank will also be prepared on site. The water from Yangon River will be used for environmental protection after water treatment. Municipal water supply or rainwater will be used for concrete production, cement stabilised base material and domestic water. Drinking water will be supplied by barrelled water or treated water from municipal water supply.

During the construction phase of Stage 1 Phase 1 of New Yangon City, the average water demand will be 14,200 tons, in which about 700 tons will be used for concrete production and cement stabilised base material.

### 4.4.5 Fuel Consumption

Diesel and petrol will be supplied from the local market. Equipment and machinery that will be used in the construction phase of Stage 1 Phase 1 of New Yangon City are listed in Table 4.7.

**Table 4.7 Details of Equipment and Machinery**

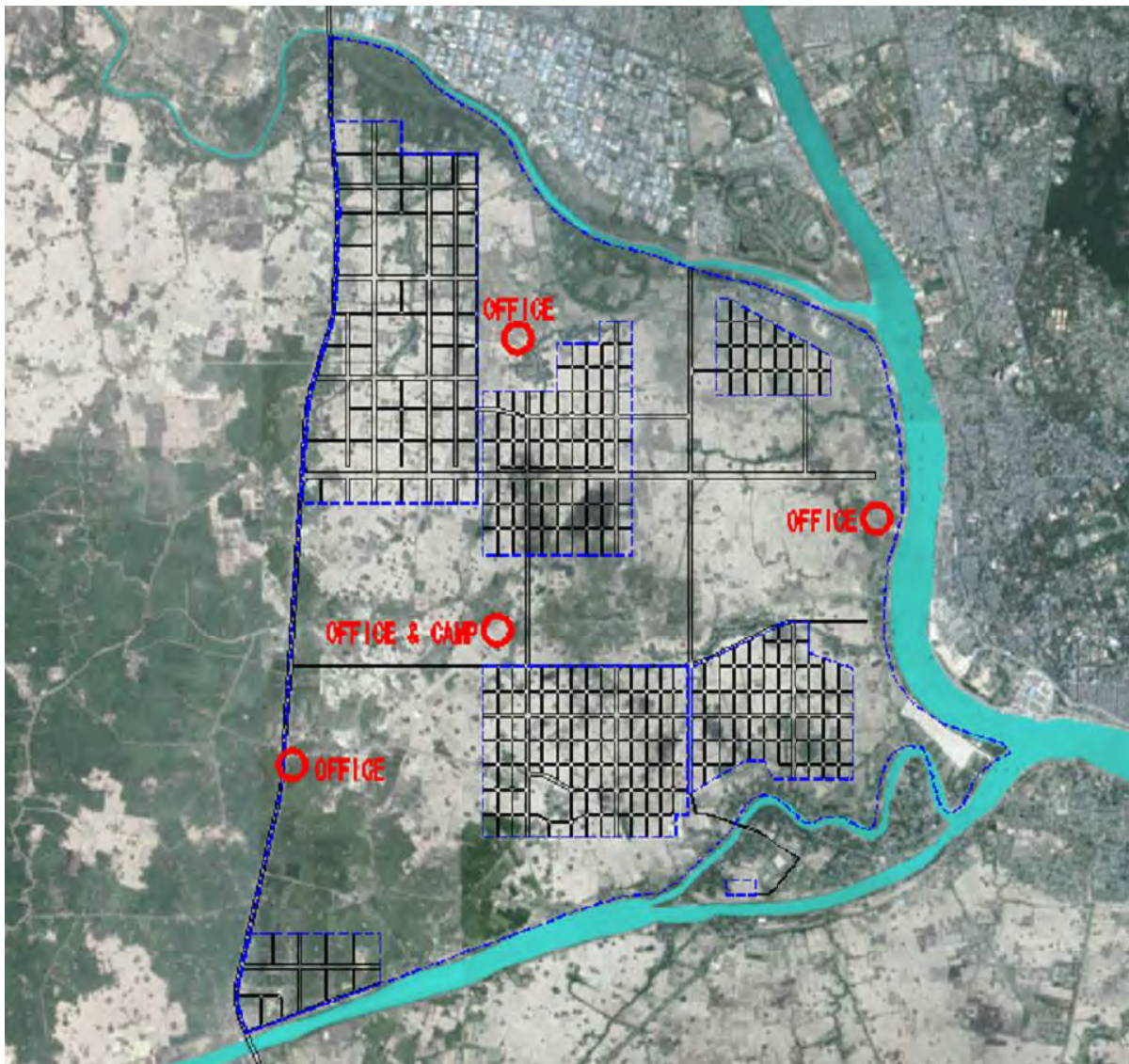
Equipment & Machinery	Details / Model
Roller	25 ton vibration
Roller	Twin steel wheel; 18 ton vibration
Excavator	PC 220
Dozer	TY 160
Loader	ZL 50
Dump truck	30 ton
Water truck	10m <sup>3</sup>
Forklift	3 ton
Motor Grader	GR 165
Dozer	TY160
Truck crane	25 ton
Generator	400 Kilowatt (kW)
Generator	200 kW
Generator	150 kW
Generator	120 kW
Generator	Mobile 70 kW
Flat truck	13 meter
Truck crane	25 ton
Water pump	10 kW
Crawler hydraulic piling machine	BY-VH 250

Equipment & Machinery	Details / Model
Hydraulic rammer compactor	Excitation Force 700 KN
Hydraulic piling machine	YZY320
Tower crane	60
Sprinkler	10 ton
Tank truck	10 ton

Source: CCCC, 2019

#### 4.4.6 Accommodation Camps

Around 438 units will be set up for temporary accommodation camps. The camps are anticipated to be set up in Twantay Township (Figure 4.10). The accommodation camps will comply with International Labour Organisation (ILO) and Myanmar guidelines.



Source: CCCC, 2019

**Figure 4.10 Location of Accommodation Camps**

#### 4.4.7 Workforce

Table 4.8 shows the estimate number of workers required for the Stage 1 Phase 1 of New Yangon City. Subjected to mitigation measures, construction will be carried out during night time and holidays. Working hours will comply with Myanmar relevant laws and International Labour Organisation (ILO) standards.

**Table 4.8 Breakdown of Number of Workers from 2020 to 2026**

Year	Average Worker at Site	Workers from Neighbouring Townships	Worker Living Within the Staff Housing	Workers from New Yangon City Residents
2020	3,950	68%	27%	5%
2021	3,540	68%	27%	5%
2022	3,350	68%	27%	5%
2023	1,900	68%	27%	5%
2024	2,150	68%	27%	5%
2025	1,400	68%	27%	5%
2026	1,500	68%	27%	5%

Source: CCCC, 2019

#### 4.4.8 Transportation

Table 4.9 shows the estimate volume of construction vehicles per year between 2020 and 2026. The daily average calculation of traffic flow is three vehicles.

**Table 4.9 Volume of Construction Vehicles per year between 2020 and 2026**

Year	Average Vehicle Number at Site
2020	2,530
2021	2,470
2022	2,380
2023	1,780
2024	1,886
2025	1,320
2026	1,428

Source: CCCC, 2019

### 4.5 Operation and Maintenance Activities

The Yangon Regional Government shall be responsible for all subsequent operation and maintenance of bridges according to the standards agreed with the Project Joint Venture (Joint Venture).

The details of employment during operation and maintenance activities are not yet known. The arrangement will be handed over to Ministry of Construction (MOC).

The target construction start-date of the two main arterial roads (Road 1 and Road 2) is scheduled to be from 2019 to 2022. Bridge 1, the Yangon River Bridge, will be a keystone in the long-term development of the New Yangon City to enable connectivity to existing Yangon. Bridge 2, the Pan Hlaing River New Bridge, will support the increased traffic load in the north south direction as part of

the Outer Ring Road. Bridge 1 is expected to sustain a total volume of 76,000 passenger car units (pcu) per day from 2025, increasing in 2030 and decreasing in 2050 (Table 4.10). Bridge 2 is designed to sustain a lower volume of approximately 34,000 pcu per day in 2025.

The establishment of the industrial zone in New Yangon City will demand a higher volume of freight crossing both Bridge 1 and 2 in 2050. Both bridges are expected to operate at full capacity for the next 30 years.

**Table 4.10 Projection of Traffic Load for the Bridges**

Projection (Year)	ID	Volume (000 pcu/day)				Capacity (000 pcu/day)	Volume-to-Capacity Ratio
		Private	Public	Freight	Total		
2025	Bridge #01	52	12.7	12	76	66	1.1
	Bridge #02	25	5	3.4	34	72	0.5
2030	Bridge #01	97	10.8	14	122	96	1.3
	Bridge #02	54	21	5.8	81	72	1.1
2050	Bridge #01	60	0.8	26	87	96	0.9
	Bridge #02	70	13	8.5	92	86	1.1

Source: Oriental Consultants Co., Ltd., 2019

## 4.6 Emissions and Discharges

### 4.6.1 Wastewater Generation

The site runoff wastewater discharge limits during the construction phase are provided in Section 3.1.3, as per the EQEG. The Project will not generate wastewater during operation. However, there will be storm water and run-off from the site which require good management. Solid Waste

The solid waste generated from construction will be disposed of at a designated facility including hazardous materials. All solid waste shall be managed through a waste management plan. Solid waste generated from the operation of the Project is limited to wastes from maintenance of the bridges. Solid wastes during operation will only be generated during periodic and or emergency maintenance. Wastes will include steel components, concrete/ civil material among others.

### 4.6.2 Noise and Air Emission

During construction and operation, noise and dust emissions may be generated by vehicle use, site works, and maintenance works. Additionally during construction phase, traffic increase in the project area may lead to an increase in carbon dioxide emissions, and outdoor air pollution; greenhouse gas emitted by construction vehicles will be further discussed in the EIA Report.

The emissions will comply with Environmental Quality (Emission) Guidelines (EQEG).

## 4.7 Concurrent Projects

Yangon Outer Ring Road and Yangon Express Way (previously known as Inner Ring Road) are currently being proposed by Yangon Regional Government in line with JICA's Yangon Urban Transport Master Plan of the Project for Comprehensive Urban Transport Plan of the Greater Yangon (YUTRA) recommendations. The cumulative impacts will be evaluated in the EIA report.

## 4.8 Project Alternatives

### 4.8.1 Dredging Methodology Selection

Dredging is expected to occur during site preparation for boring and piling. The two most common methods are Grab on Barge or Trailing Suction Hopper Dredgers (TSHD).

Brief descriptions are given below for two methods:

- A Trailing Suction Hopper Dredgers (TSHD) is a self-propelled hydraulic dredger that moves without anchor lines, pipelines and barges. The TSHD combines dredging, transport and disposal. The largest TSHDs are equipped with two suction pipes. At the end of each suction arm a drag head is connected. For dredging the drag heads are lowered to the seabed. The dredger trails slowly and fills the hopper by pumping of the material. TSHDs are ideal for dredging large volumes of sand and silt. Modern trailing hopper suction dredgers equipped with drag head with high-pressure water jets are also suitable for dredging cohesive soils. Nevertheless, a hopper is not suitable for dredging rock. TSHD's have a maximum dredging depth up to ~155 m.
- A Grab Dredger (GD) is a hydraulic excavator mounted/positioned on a barge that is fixed/positioned by means of spuds or a system of winches, wires and anchors which load dredged material into barges moored alongside. These types of dredgers can dredge to depths of ~60m providing suitable hydro-mechanical hoisting equipment is available, but their rate of production is normally relatively low compared to other dredgers. The sediment collected by grab, is stocked in the Split Dump Barge and towed to the temporary loading jetty for unloading. If the dredged material is as hard as the clay-till, it has to be pre-treated to excavate it efficiently.

As the method for dredging is unknown at the moment, both methods will be assessed for impact when addressing the impacts from construction.

### 4.8.2 Piling Methodology Selection

Two possible methods can be applied in marine construction works:

- Diesel Hammer: the auxiliary pile is inserted into the space provided within the pile-driving guide and lowered through the guide onto the inclusion pile. The floating crane will lift off the hydraulic impact hammer and position on top of the auxiliary pile to perform piling operation through with auxiliary pile.
- Hydro Hammer: the floating crane will lift off the hydraulic impact hammer and position on top of the pile-driving guide. The guide frame of the hammer will be positioned along the guides of the pile driving guide. The hammer will be lowered along the pile-driving guide until the anvil sits firmly on top of the pile top.

The diesel hammer has low installation requirements but produces ambient and underwater noise.

As the method for piling is unknown at the moment, both methods will be assessed for impact when addressing the impacts from construction.

### 4.8.3 Bridge Alignment Selection

Four alternatives of Bridge 1 have been considered. Their details are summarised in Table 4.11. The alternatives' alignment of Bridge 1 are shown in Figure 4.11 – Figure 4.14.

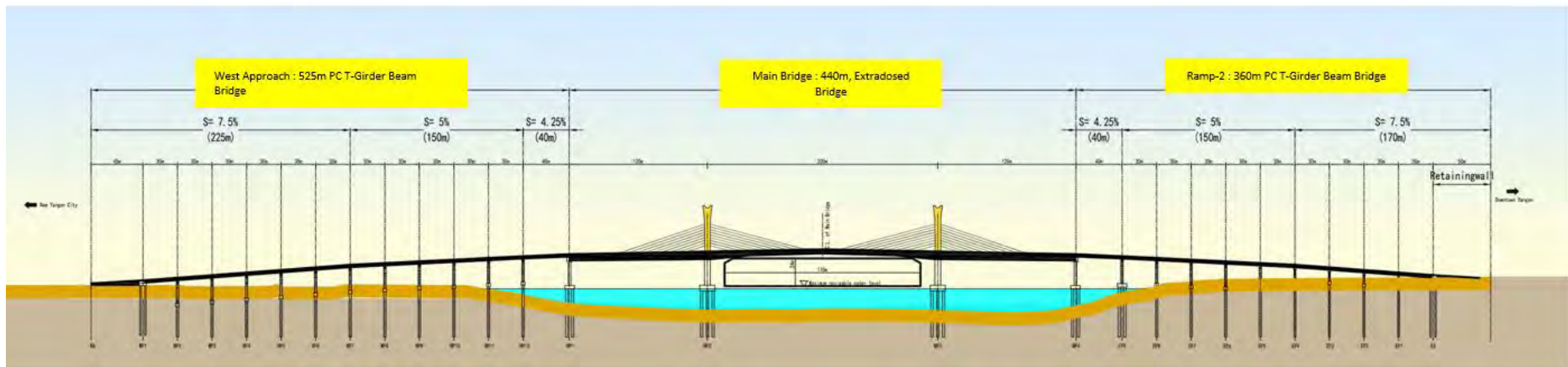
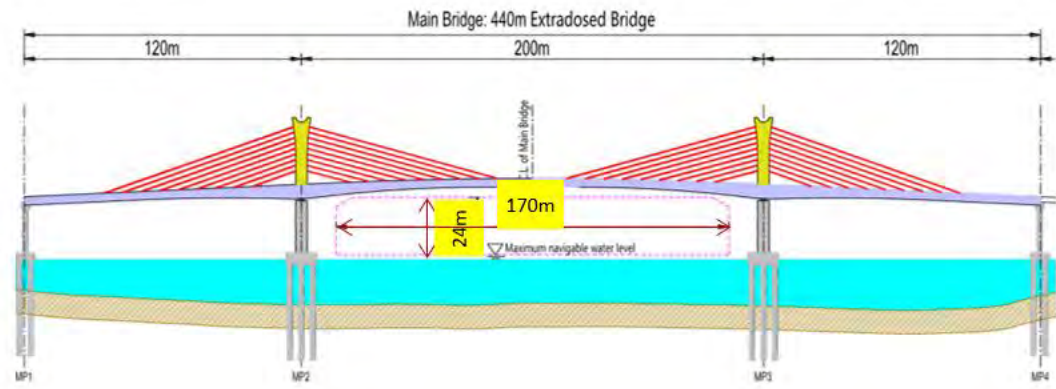
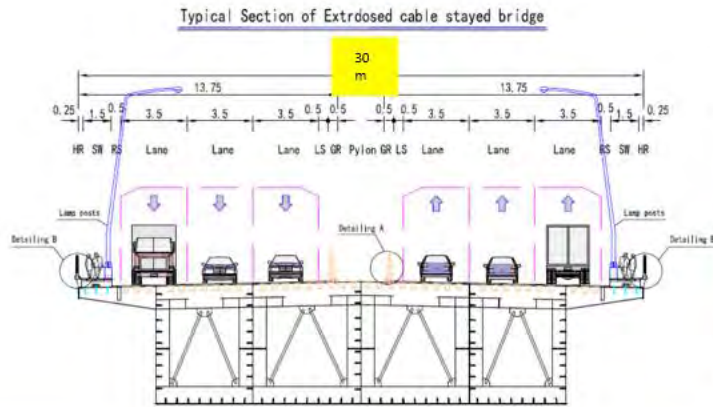
Regarding Bridge 2, the Pan Hlaing New Bridge, no alternative alignment was designed. The current configuration is based on the existing bridge, and required to be parallel and of similar size. The new bridge enhances the traffic capacity, rather than providing a new access point to New Yangon City.

**Table 4.11 Project Alternatives of Bridge 1**

Alternatives	Details	Reasons of not adopting the option
Option 1 – 24m height off and off to Bagaya Road	<ul style="list-style-type: none"> <li>■ A 6-lanes bridge located at the intersection of Bagaya Road and Kyee Min Daing Kannar Road</li> <li>■ 170m wide and 24m high navigation clearance</li> <li>■ Total bridge length: 1,610m</li> </ul>	<p>24m height (with no hydraulic option) is not acceptable to Myanmar Port Authority.</p> <p>Traffic impact of bridge landing directly onto Bagaya Road.</p> <p>Possible relocation impact on existing oil tanks to the south of the bridge.</p>
Option 2 – 43m height and off to Kannar Road	<ul style="list-style-type: none"> <li>■ Including: West Approach Bridge (740m long) , Main Bridge (530m), Ramp 1 (450m) and Ramp 2 (450m)</li> <li>■ Total bridge length: 2,170m</li> </ul>	<p>Traffic impact of bridge landing directly onto Bagaya Road.</p> <p>Possible relocation impact on existing oil tanks to the south of the bridge.</p>
Option 3 – 24m height and off to Bagaya Road	<ul style="list-style-type: none"> <li>■ A 6-lanes bridge landing on Bagaya Street</li> <li>■ 260m wide and 43m high</li> <li>■ Including: West Approach Bridge (800m), Main Bridge (520m) and East Approach Bridge (780m)</li> <li>■ Total bridge length: 2,100m</li> </ul>	<p>For a 43m high bridge, its landing will be to the east of the Control Point (Figure 4.13) and that has additional impacts (such as relocation requirements) to the existing facilities, including rail line, rail station and property along Bagaya Street. The same scenario applies for the underground tunnel. Landing on Bagaya Street is not recommended.</p>
Option 4 – Ahlone Road	<ul style="list-style-type: none"> <li>■ A 6-lanes bridge landing on Ahlone Road</li> <li>■ 260m wide and 49m high</li> <li>■ Including: West Approach Bridge (940m), Main Bridge (600m), and East Approach Bridge (770m)</li> <li>■ Total bridge length: 2,310m</li> </ul>	<p>Demolition works at Ahlone Road (Figure 4.15) and Asia World Terminal (Figure 4.16) will be required. The expansion of existing Toll Road will also be required. Therefore, option 4 is not recommended.</p>

Source: NYDC, 2019



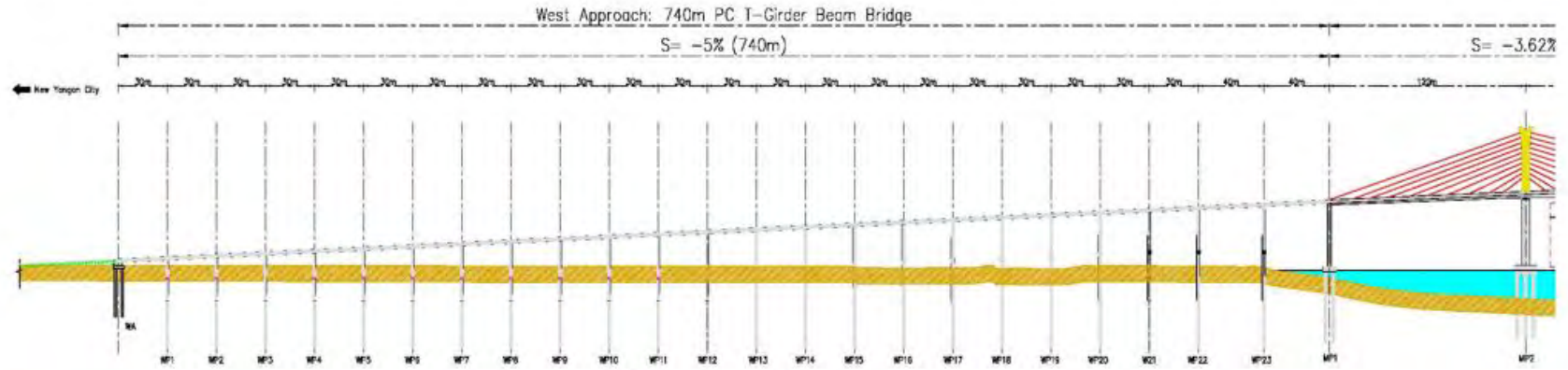


Source: NYDC, 2019

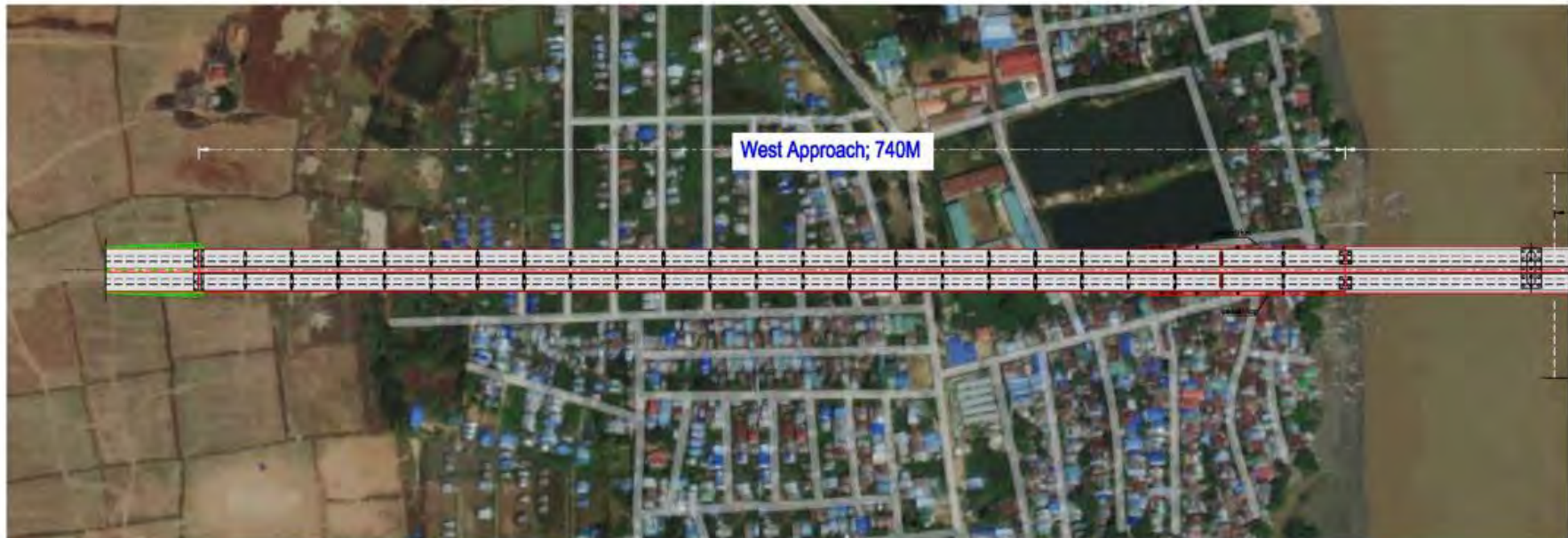
Figure 4.11 Option 1 Alignment

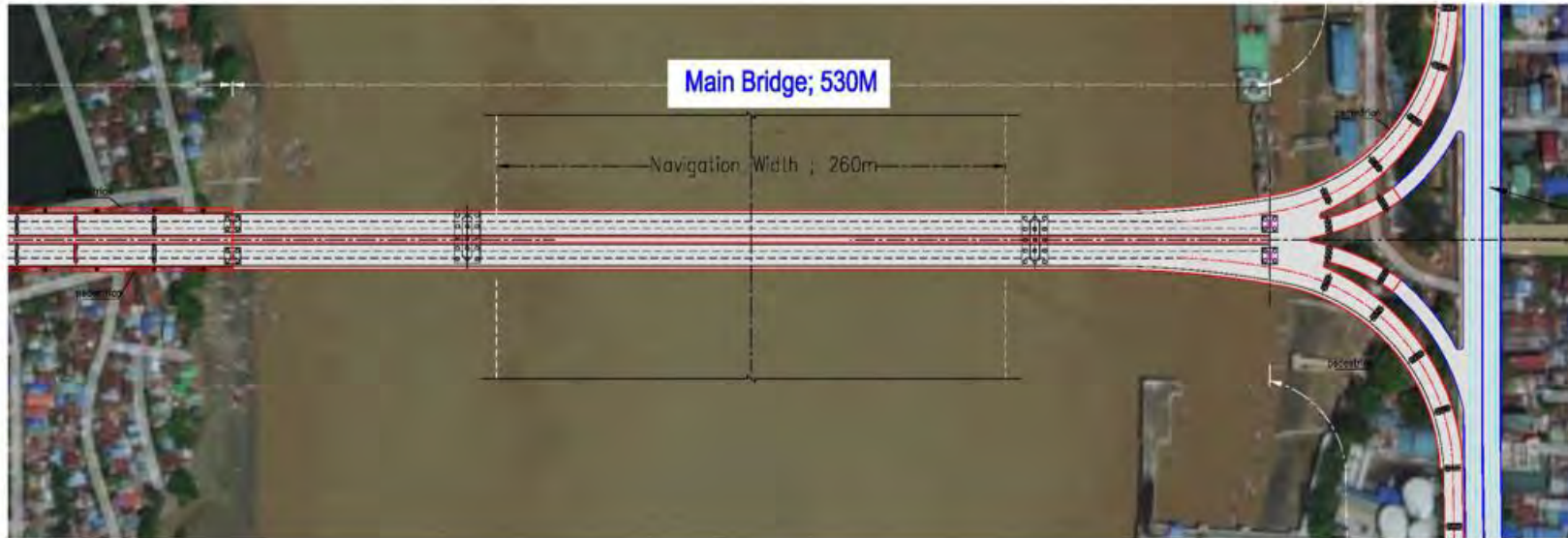
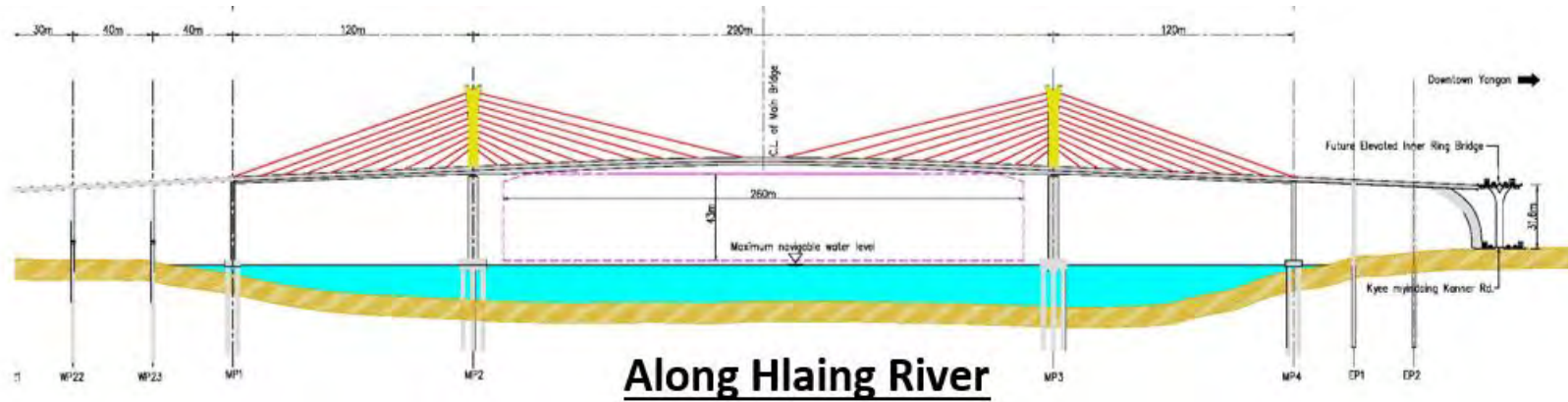






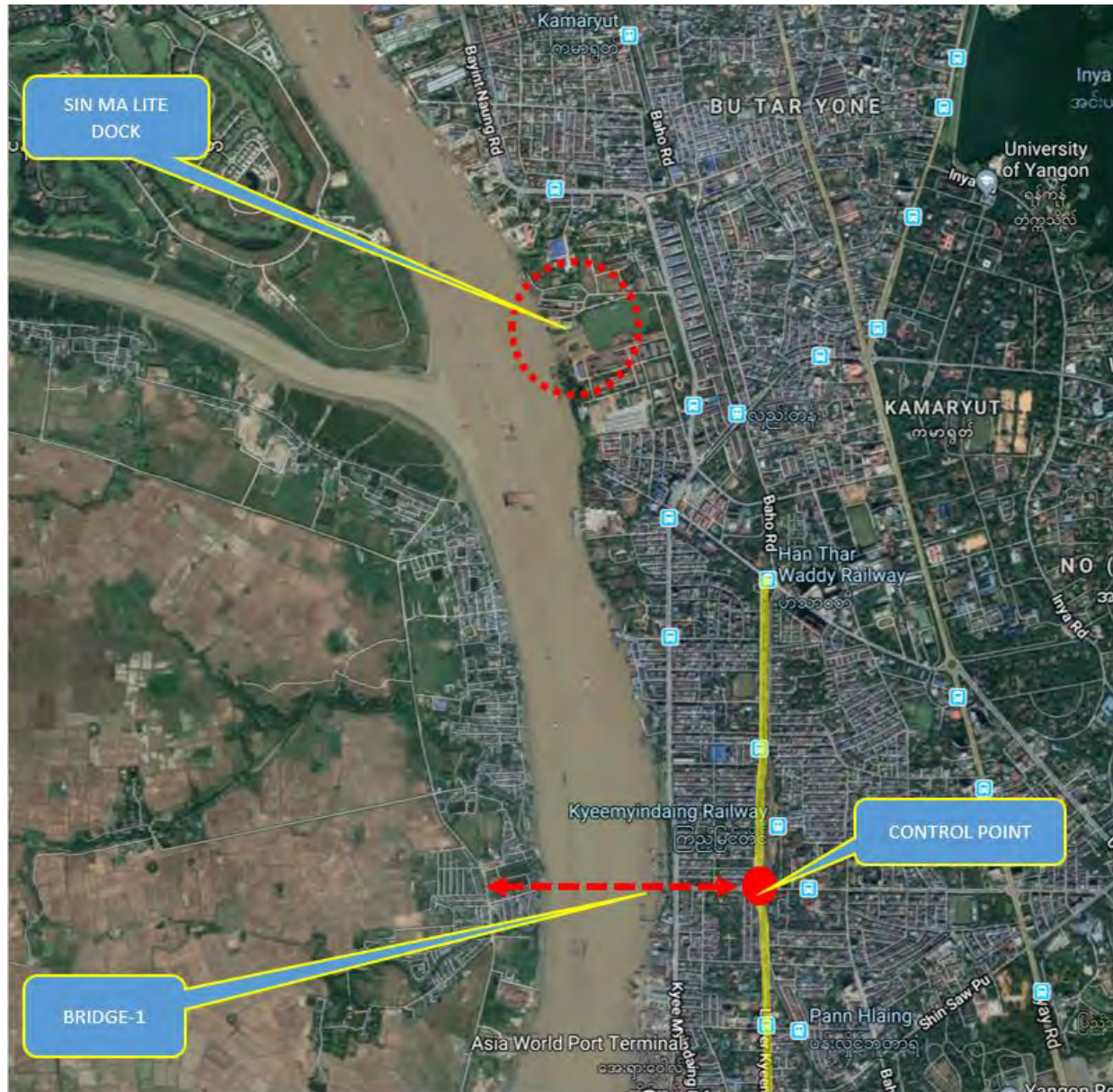
## West of Hlaing River





Source: NYDC, 2019

Figure 4.12 Option 2 Alignment





Source: NYDC, 2019

**Figure 4.13 Option 3 Alignment**



Source: NYDC, 2019

Figure 4.14 Option 4 Alignment



Source: NYDC, 2019

**Figure 4.15 Current Situation of Ahlone Road (as of March 2019)**

Scoping Report



Source: NYDC, 2019

Figure 4.16 Current Situation of Asia World Terminal



## 5. DESCRIPTION OF THE SURROUNDING ENVIRONMENT

### 5.1 Introduction

This Section describes the physical, biological, and social environment of the Study Area (as defined in Section 5.2). The information provided is based on a review of published information, as well as a review of available literature from NYDC and from ERM’s in-house library.

The purpose of reviewing the baseline conditions is to present an understanding of the potential environmental and social sensitivities of the Study Area. Reviewing the baseline conditions allows NYDC to make an informed judgement on the appropriate level of impact assessment for the Project. More detailed information on the baseline environmental and social conditions in the Study Area, including the results of primary baseline surveys conducted for the Project will be provided in the EIA Report.

### 5.2 Defining the Study Area and Area of Influence

The **Project Area** is defined as the locations of Bridge 1 and Bridge 2. Bridge 1 will be located over Yangon River of Kyee Myin Daing Township and Bridge 2 will be located over Pan Hlaing River of Hlaing Tharyar Township of Twantay Township.

This section presents the physical, environmental, socio-economic, cultural and visual characteristics of the **Study Area**. The **Study Area** is defined as the wider area in which the environmental and social conditions are evaluated with the sources of risk, in order to determine interactions and the magnitude and significance of potential impacts resulting from the Project. For this Project, the **Study Area** is defined as a 2 km buffer around the whole New Yangon City Phase 1 Development; encompassing the Townships neighbouring the **Project Area**. This area definition also facilitates the comparison of cumulative impacts between the individual Project components.

The ‘**Area of Influence**’ (**Aoi**) is defined as the village tracts, wards and townships within or neighbouring the Project Area. Bridge 1’s Aoi includes the whole Kyee Myin Daing Township (east and west), while Bridge 2’s Aoi includes Yae Kyaw village tract in Twantay Township, and Ah Pyin Pa Dan, Ah Twin Pa Dan, and Oke Kan Thaug Kyar village tracts in Hlaing Tharyar Township.

The **Study Area** and **Area of Influence** are shown in Figure 5.1.

The coordinate points of Study Area and Aoi are listed in Table 5.1.

**Table 5.1 Coordinate Points of Study Area and Area of Influence**

Area	Coordinate Points*
Study Area	Between 96.027049°E, 16.712000°N and 96.034108°E, 16.877409°N Between 96.011538°E, 16.764273°N and 96.150617°E, 16.768930°N
Bridge 1’s Aoi	96.028056°E 16.875809°N, 96.073161°E 16.856601°N, 96.066049°E 16.841737°N, 96.043563°E 16.857632°N, 96.035010°E 16.817588°N, 96.015028°E 16.818442°N
Bridge 2’s Aoi	96.108044°E 16.821974°N, 96.126227°E 16.817268°N, 96.128813°E 16.795208°N, 96.120604°E 16.795170°N, 96.113558°E 16.782047°N, 96.107027°E 16.782885°N

*\*There may be some deviation between these coordinated points as the areas are not straight lines between them.*

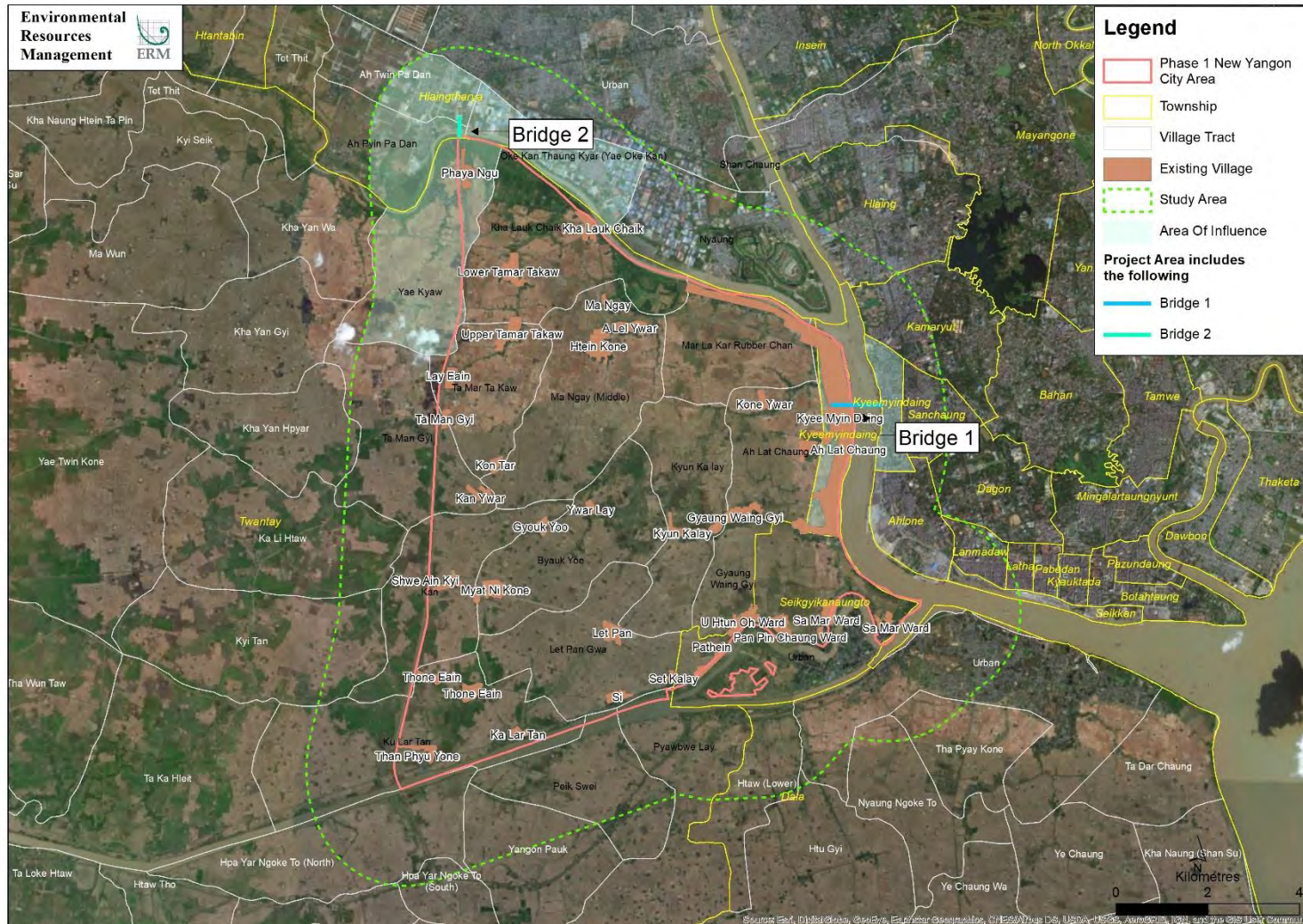


Figure 5.1 Study Area and Area of Influence

### 5.3 Physical Characteristics

Bridge 1 will be located over Yangon River of Kyee Myin Daing Township and Bridge 2 will be located over Pan Hlaing River of Hlaing Tharyar Township of Twantay Township.

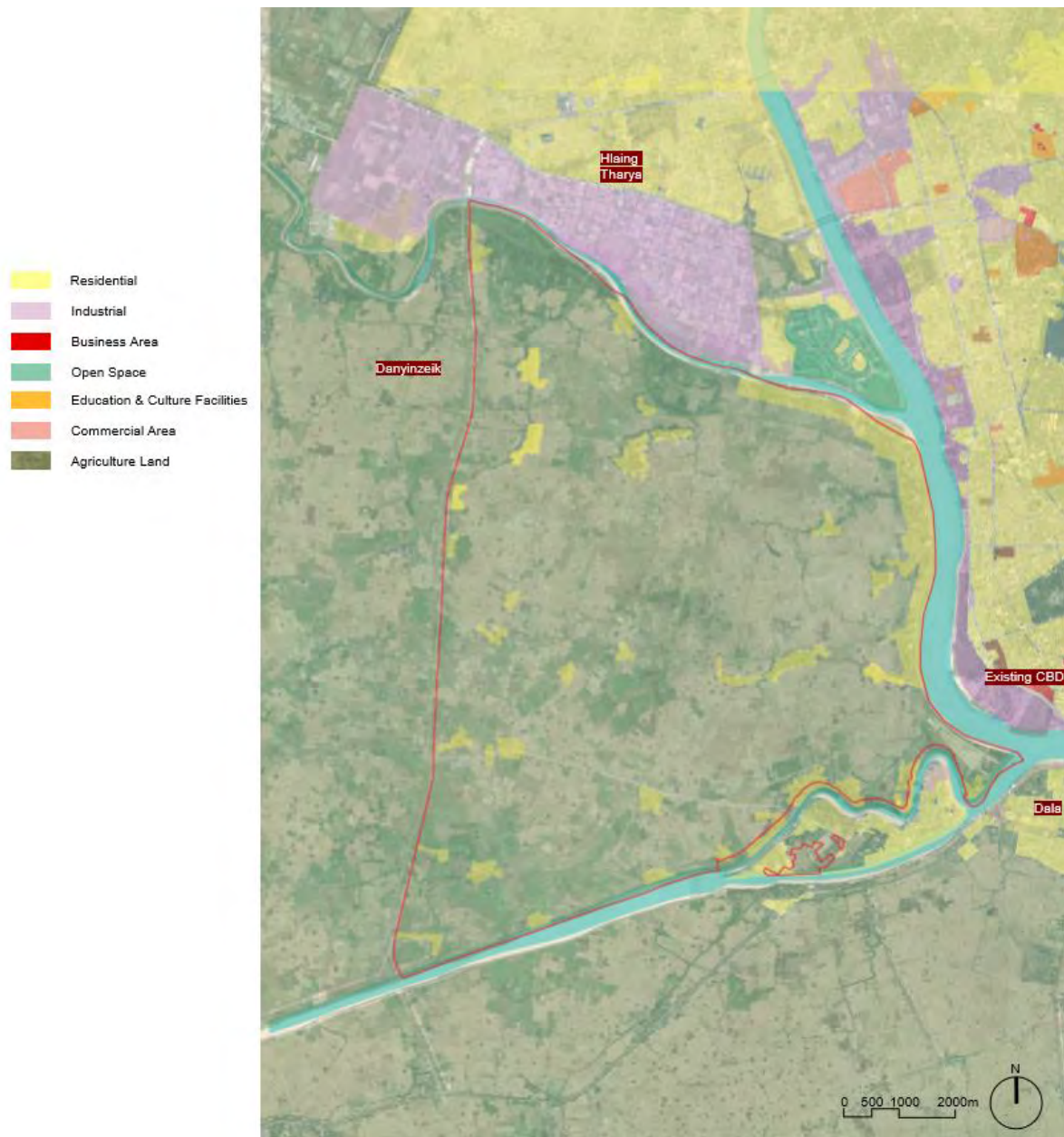
Baseline information on physical environment at the Study Area is summarised in the following sections.

#### 5.3.1 Geology and Topography

The geological landscape in this part of Myanmar is characterised by the Indo-Burman Ranges which branch southwards from the eastern Himalayas and the Irrawaddy Valley Basin also known as the Inner Myanmar Tertiary Basin.

Areas within the New Yangon City are prone to flooding due to the elevation relative to its surroundings. Pluvial flood can occur due to the runoff to low elevated points in the area with limited drainage capacity. Fluvial flooding can occur when the surroundings are lower than the water in the surrounding river or canal (Royal Haskoning DHV, 2019).

Figure 5.2 shows the existing land use of the Project Area.



Source: AECOM, 2019

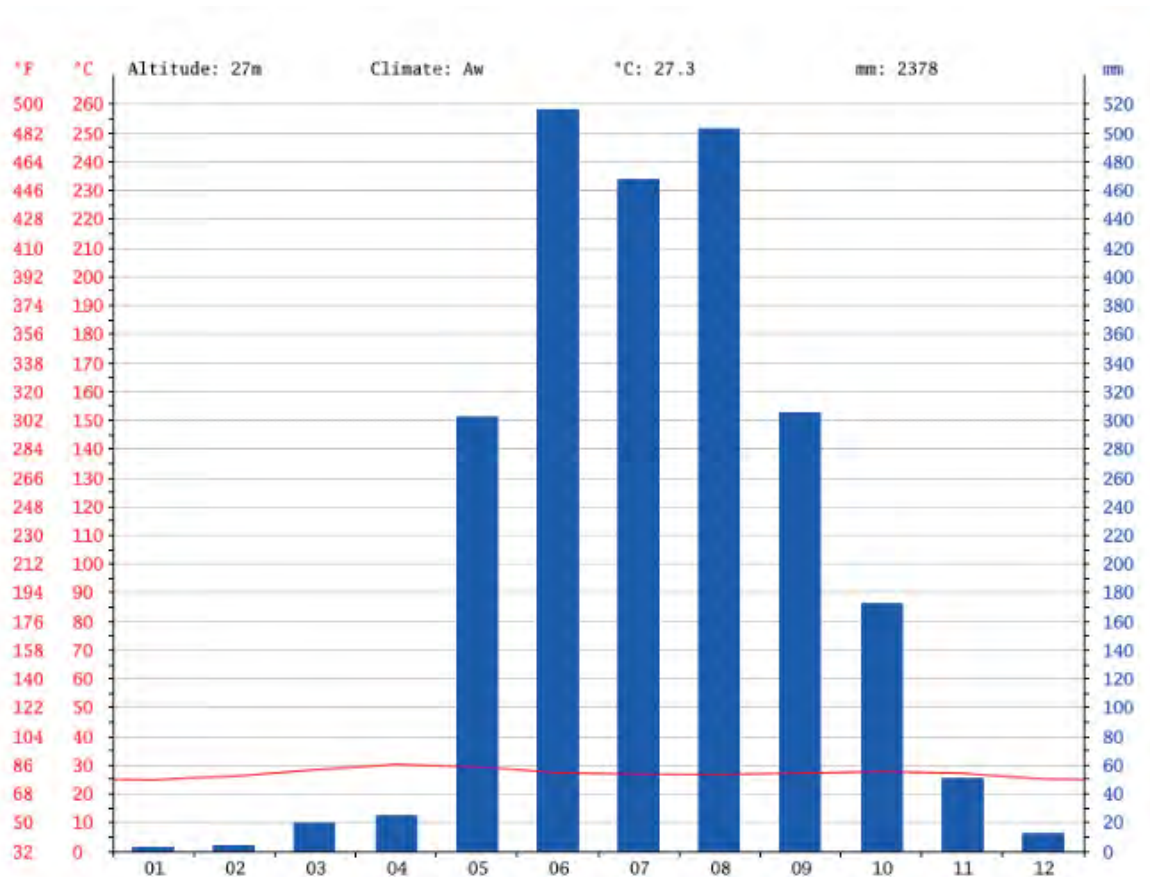
**Figure 5.2 Surrounding Land Use of the Project Area**

### 5.3.2 Climate

Myanmar is characterised by a tropical to subtropical monsoon climate with three well defined seasons: hot, dry inter-monsoonal (mid-February to mid-May); rainy southwest monsoon (mid-May to late October); and cool relatively dry northeast monsoon (late October to mid-February) (Ministry of Environmental Conservation and Forestry, 2012).

The southwest monsoon starts in late March or early April with local turbulence that includes cyclones, bringing winds that can reach up to 200 – 300 km/h. From October to mid-March the northeast monsoon brings a dry and cool climate. Due to widely differing topographical profiles throughout Myanmar and its range of latitudes, its climate conditions differ widely from one place to another (Ministry of Forestry, 2005).

In Yangon, as with Myanmar in general, there is much less rainfall in summer. The average maximum temperature is 29°C while average annual rainfall is 2,378 mm (Figure 5.3). The driest month is January, with 3 mm of rainfall and June is the wettest month with an average of 516 mm. The warmest month is April, with an average temperature of 30°C. January has the lowest average temperature of the year; 25 °C. During the year, the average temperatures vary by 5.5 °C (Climate Data Website, 2018).



Source: Climate Data website, 2018

**Figure 5.3 Average Monthly Temperature and Rainfall Chart of Yangon, Myanmar**

### 5.3.3 Natural Hazards

Myanmar is exposed to multiple natural hazards including cyclones, earthquakes, and flooding. These are discussed in the following sections.

#### 5.3.3.1 Storms and Cyclones

Gale force winds ( $17.2 \text{ m s}^{-1}$  or over) are mainly associated with local rain squalls and with severe tropical storms or cyclones. The central region off the coast receives the worst buffeting during the summer monsoon. The threat of cyclones with winds above  $32.7 \text{ m s}^{-1}$  affects different areas at different times of the year, affecting all areas though the major tracks do not pass over the Andaman Sea (OCHA, 2011). They are most frequent from mid-May to early December.

#### 5.3.3.2 Flooding

Areas within the New Yangon City are prone to flooding due to the elevation relative to its surroundings. Pluvial flooding can occur due to the runoff to low elevated points in the area with limited drainage capacity. Fluvial flooding can occur when the surroundings are lower than the water in the surrounding river or canal (Royal Haskoning DHV, 2019).

The average tidal range of the Yangon River is about 5.9 m at spring tide and 2.6 m at neap tide. Modelling of the discharge of Yangon River indicates discharges ranging from  $<500 \text{ m}^3/\text{s}$  in April to approximately  $7,000 \text{ m}^3/\text{s}$  in August, with tidal water level variations of around 1 m to 6 m based on water level measurements at Monkey Point downstream of Study Area (De Koning & Janssen, 2015). In the Ayeyarwady Delta, which includes the Yangon River, drainage, salt intrusion, and flood protection are the main concerns (EO Earth Website, 2016).

Two main forces dominant the Yangon river system that can result in fluvial floods (Royal Haskoning DHV, 2019). These have been considered in the Project design:

- **Increased water levels from the sea:** the area knows a strong tide that comes from the Gulf of Martaban. The spring tide range is approximately 5.4 metre in the Hlaing River, and the neap tide range is approximately 2.0 metre. In addition, storm surges can increase the offshore water levels.
- **Increased discharges during the monsoon period:** the Irrawaddy River is feeding the Yangon rivers with rainfall from the Irrawaddy River Basin and water levels increase with an additional (approximate) 0.7 metre.

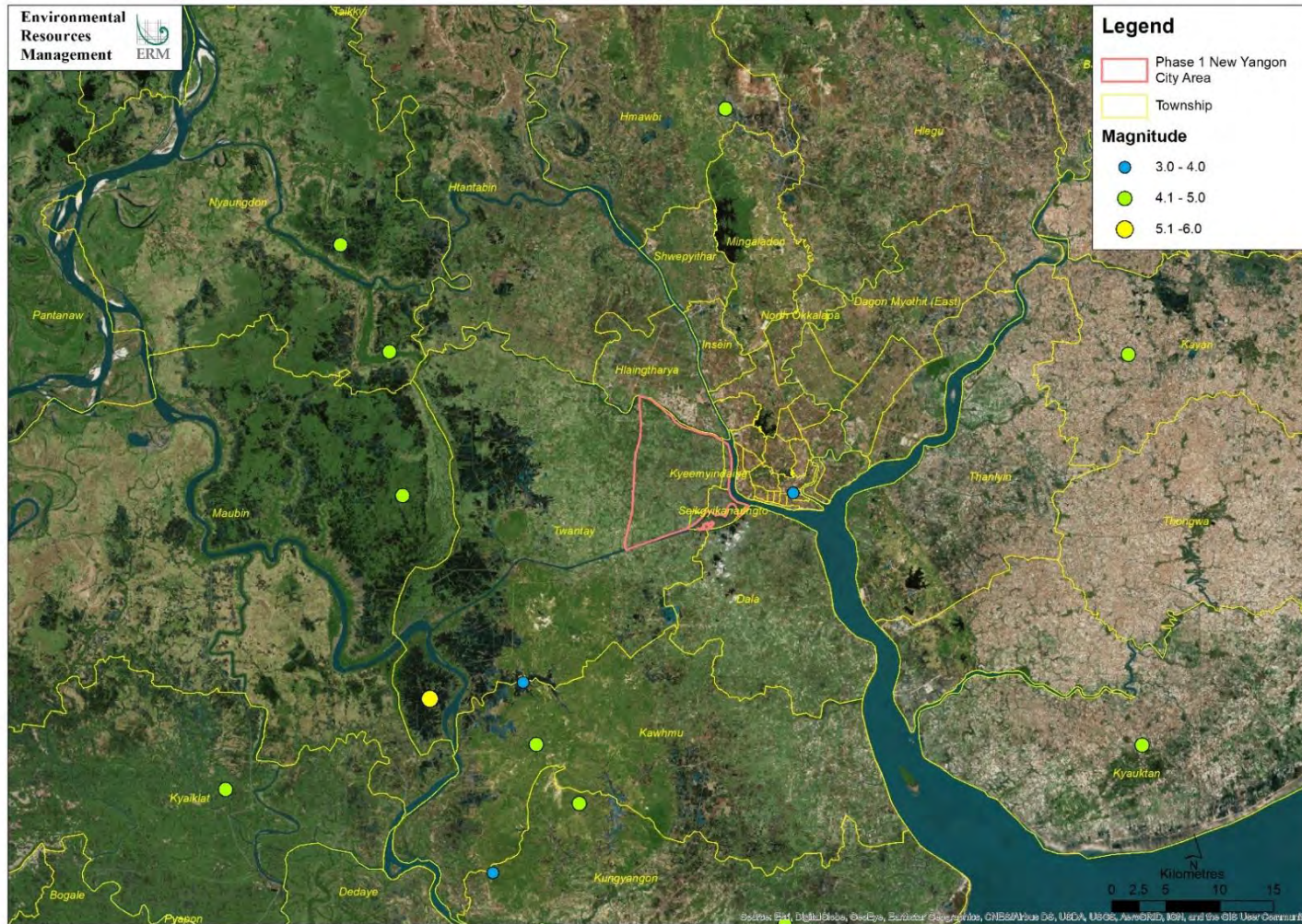
As part of the Phase 1 development, NYDC initiated a strategic flood risk assessment to ensure that the proposed development takes account of flood risk. Royal Haskoning DHV (RHDHV) were selected as the consultant to conduct New Yangon City's flood risk assessment for Phase 1. The following are some of the main conclusions can be drawn from the flood risk assessment.

- The New Yangon City is prone to flooding due to the following three flood sources: tide and storm surge (coastal), river discharge (fluvial), and rainfall (pluvial). Among the three flood sources, coastal flood (in terms of days) is usually with shorter duration than fluvial flood (in terms of weeks).
- The flood risk profile for New Yangon City shows that the flood risk in the existing situation without flood protection is fairly high. Sea level rise will strongly impact the flood risk profile of New Yangon City in terms of economic risk as well as loss-of life. Implementation of flood risk reduction measures is recommended (Royal Haskoning DHV, 2019).

Based on the flood risk assessment carried out by Royal Haskoning, the risk of flooding will be taken into consideration during EIA stage. The EIA report will consider the likelihood of river bank erosion based on the amount of water intake from Toe River. River flows and ecology of Toe River will also be observed.

### 5.3.3.3 Earthquake Risk

A review of available literature has shown that Myanmar is seismologically unstable and vulnerable to earthquakes due to its location in the active Alpide seismotectonic belt and the young Alpine Himalayan-Sumatran orogenic belt (Willige et al., 2009). Historic records show that at least 15 major earthquakes with magnitudes  $M \geq 7.0$  RS have occurred in Myanmar in the last hundred years. These earthquakes occurred within Myanmar in the last century, in Yangon Region, these include on 27 March, 16 May, and 21 May 1931 and 1970. Figure 5.4 presents the locations of historic earthquakes in Yangon.



Source: USGS Website

**Figure 5.4 Historic Earthquakes in Yangon**



### 5.3.4 Water Quality and Water Resources Management

In Yangon city, municipal water supply can only reach 38% of the population. For the rest of the population, they often find alternatives in other sources such as groundwater, tube wells, and private water vendors etc., which are untreated and unlikely to meet the bacteriological guidelines for drinking (Another Development & East Asia Institute 2018).

#### 5.3.4.1 Surface Water Quality

A study carried out in 2013 (Hiroshi Sakai, et al, 2013) sampled river waters within ~12 km upstream and ~3 km downstream in proximity to the New Yangon City. The total coliform level of the river waters in Yangon was close to 50 total coliforms ml<sup>-1</sup>, indicating that river can be used for drinking water after advanced treatment. Amongst the sampling points on the Yangon River, the sampling point downstream of the Project Site has significantly higher (21 fold higher) total coliform level than those sampling points in the centre of the river.

Analysis of chemical levels in river water samples indicated that the dissolved organic carbon (DOC) was less than 3mg C L<sup>-1</sup>. Levels of the Chlorine (Cl<sup>-</sup>) ion increased downstream. The levels of Bromine (Br) ion and Arsenic (As) displayed a similar trend, although the increase was not as marked. In contrast to the elemental measurements, DOC, dissolved total nitrogen (DTN), and nitrate were stable along the river flow. It was therefore assumed that the sources of Cl<sup>-</sup>, Br<sup>-</sup> and As were different from those of carbon and nitrogen. Overall, lake and river water quality were considered good in terms of their chemical parameters, but levels of bacterial contamination are concerns (Hiroshi Sakai, et al, 2013).

#### 5.3.4.2 Groundwater Utilization

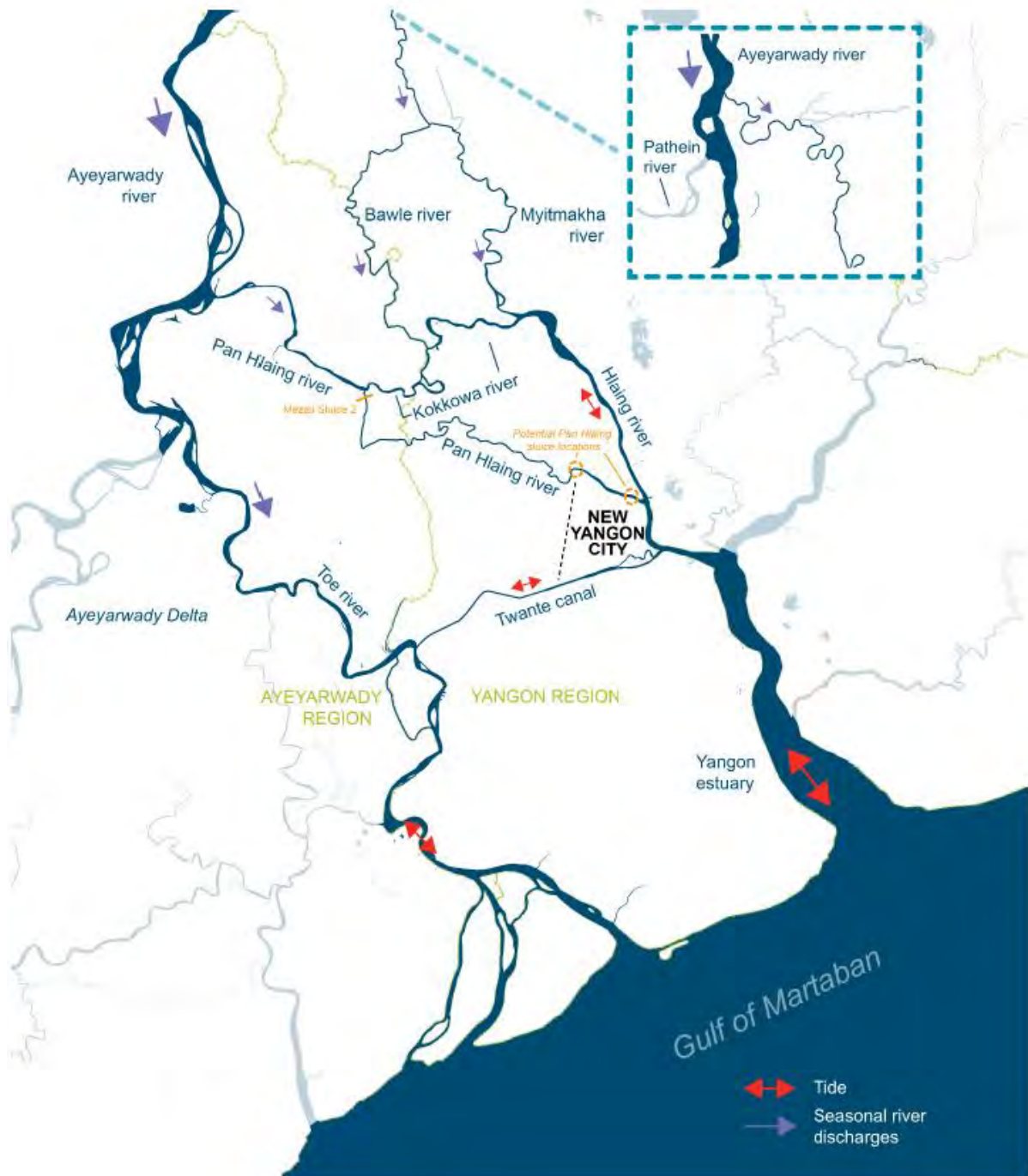
Ground water is an important source of water supply for various uses and is used to meet the needs of city dwellers. Ground water is especially important for Yangon City, as many local communities rely on groundwater for domestic purposes. The number of tube wells increased from 17 in 1983 to 442 in 2014, operated solely by YCDC (Another Development & East Asia Institute, 2018).

Consequently, ground water depletion is progressing at a fast rate given the conditions in Yangon city. Population dynamics, rural-urban migration, urban area expansion, industrialization, improved living standard and insufficient water supply account for the increasing ground water usage in Yangon. Although 85% of the city is covered by high potential area, it mainly depends on the long term rechargeable value. This implies that the more groundwater extraction exceeds the rate of rechargeable value, the more the potential ground water source decreases (Another Development & East Asia Institute, 2018).

#### 5.3.4.3 Fluvial-Coastal System

New Yangon City is surrounded by the Pan Hlaing River in the north, the Hlaing River in the east and the Twantay Canal in the south. These three channels are part of a larger hydraulic system in Yangon Region (Figure 5.5).

The Twantay Canal is a manmade canal to create a shortcut between Yangon and the Irrawaddy region for navigation. As the river system is morphologically active, the outer bend of the Yangon River started to erode, creating the possibility of a direct shortcut between the Hlaing and the Twantay Canal and loss of land. Therefore, the river bend was stabilised by the river bank protection which was completed in 1914. The Pan Hlaing River used to be the main navigation route towards Nyaungdone, however, the river siltated and vessels were rerouted through the Kokkova River. To regulate water inflow into the Pan Hlaing River, gate Mezali Sluice 2 was constructed in 2014 to 2016 (Royal Haskoning DHV, 2019).



Source: Royal Haskoning DHV, 2019.

**Figure 5.5 Overview of the Hydraulic System around New Yangon City**

#### 5.3.4.4 Drainage System

Precipitation that falls within the New Yangon City will infiltrate in the ground or runoff through natural creeks and manmade ditches and drainage canals. The natural creeks are connected to the hydraulic river system and they are therefore tidal. These creeks can speed up the infiltration of fluvial flood water into the area. However, when properly designed, they could function as a drain and add value to the liveability of the area by bringing water and nature into the city (Royal Haskoning DHV, 2019).

### 5.3.5 Ambient Air Quality

Air quality monitoring was first conducted in Yangon in 2007 by the Department of Medical Research and Yangon City Development Committee (YCDC). The monitoring results indicated that particulate matter (as Total Suspended Particles (TSP) and PM<sub>10</sub>) were the main pollutants of concern. The PM<sub>10</sub> levels in Yangon are two to three times higher than the guideline value set by the World Health Organization (WHO) of 50 µg/m<sup>3</sup>. Comparison between the residential, commercial, and industrial areas of Yangon showed that the commercial areas typically have higher levels of TSP and PM<sub>10</sub> compared to residential and industrial sites.

### 5.3.6 Soil Quality

Soil characteristics in Yangon are classified as predominantly Gleysol. The Study Area is located on Meadow (Gleysol) and Meadow Alluvial soil (Fluvic Gleysols). The Meadow soil distributes near the river plains where occasional tidal floods occur and are typically non-carbonate, and they usually contain large amount of salts. Meadow Alluvial soil can be found in the flood plains. They have the texture of silty clay loam and are rich in plant nutrients (Union of Myanmar, 2009).

### 5.3.7 Ambient Noise

Ambient noise levels (LA<sub>eq</sub>) may have the potential to exceed the EQEG limits for the night time noise standards and daytime noise standards, depending on the effect of noise emission sources in the area e.g., cars, motorcycles. However, as the Project Area is predominantly rural there can be expected to be limited sources of noise pollution.

## 5.4 Biological Characteristics

### 5.4.1 Terrestrial Flora and Habitats

The Study Area is largely rural with small villages present. It is likely that there will be no natural forest of any significance in size in and around the Project Area. Mangrove vegetation could be present on the bank of the rivers and the Mangrove species expected to be present may include *Acanthus ilicifolius*, *Aegiceras corniculatum*, *Albizia lebbek*, *Albizia procera*, *Alternanthera sessilis* and etc. Primary data on mangrove, and other flora and habitats will be collected during the EIA baseline study.

### 5.4.2 Fauna

Based on a survey ERM carried out in 2017, the species previously recorded in and around the Study Area include a range of common farmland, urban, and wetland species. Previous studies have recorded a range of bird, mammal, invertebrate, reptile, and fish species from both direct observation and interviews with local community members. As part of the Project, surveys will be conducted to confirm the terrestrial and aquatic fauna presents, particularly the presence of any protected or threatened species. Some examples of fauna found in the Study Area are shown in Figure 5.6. Primary data on fauna will be collected during EIA baseline study.



Oriental Garden Lizard *Calotes versicolor*



Oriental Garden Lizard *Calotes versicolor*



Blue Crested Lizard *Calotes mystaceus*



East Indian Brown Mabuya *multifasciata*

Source: ERM (2017)

**Figure 5.6 Examples of Fauna in Study Area**

### 5.4.3 Protected and Sensitive Areas

Protected areas and key biodiversity areas and their distance to the Project Area is summarised in Table 5.2.

**Table 5.2 Protected and Key Biodiversity Areas and Distance to the Project Area**

Protected Area / Key Biodiversity Areas	Details and Key Species	Nearest Distance from the Project Area
Hlawga National Wildlife Park	<ul style="list-style-type: none"> <li>■ Area: 6km<sup>2</sup></li> <li>■ Year Designed: 2012</li> <li>■ Columba punicea (Pale-capped pigeon) (VU)</li> </ul>	19 km north
Hlawga Reservoir KBA	<ul style="list-style-type: none"> <li>■ Area: 23 km<sup>2</sup></li> <li>■ Year Designated: 2012</li> <li>■ Dalbergia cultrata (Yin-daik) (EN), Dipterocarpus alatus (Kanyin-byu) (EN), Hopea odorata (Thingan) (VU).</li> </ul>	14 km north
Payagyi Terrestrial KBA	<ul style="list-style-type: none"> <li>■ Area: 2 km<sup>2</sup></li> <li>■ Year Designated: 2012</li> <li>■ Grus Antigone (Sarus crane) (VU), Congregatory waterbirds</li> </ul>	18 km west
Maletto Inn fresh water KBA	<ul style="list-style-type: none"> <li>■ Area: 386 km<sup>2</sup></li> <li>■ Year Designated: 2012</li> <li>■ Grus Antigone (Sarus crane) (VU), Emberiza aureola (Yellow-breasted Bunting) (EN), Congregatory water birds</li> </ul>	17 km west

Source: Myanmar Biodiversity, Myanmar Key Biodiversity Areas

## 5.5 Socio-Economic Characteristics

The following sections provide an overview of the social setting of the Study Area. The Study Area from a social perspective includes the Townships of Seikgyi Kanaungto, Kyee Myin Daing, Dala, Ahlone, Twantay, and Hlaing Tharyar. The information was based data collected from scoping consultation, a review of published information and ERM's in-house library.

During the EIA baseline study, primary socio-economic data will be collected in the Study Area in order to identify the Project's impacts to local communities. Social baseline survey will be carried out before the Project in order to identify its impacts to socio-economic conditions.

### 5.5.1 Overview of Townships in Study Area

The following is an overview of information on the Townships in the Study Area based on information collected from local GADs, Township GAD reports and Census data.

#### 5.5.1.1 Seikgyi Kanaungto

Seikgyi Kanaungto (Figure 5.7) is located in the Southern District of Yangon and lies about eight feet above sea level. The total area of the township is three square miles. It is bordering with Dala Township, Twantay Township, Kyee Myin Daing Township and, Yangon River. Seikgyi Kanaungto Township experiences high and low tide and 90% of the township experiences temporary flooding during the rainy season. Twantay Canal and Kanaungto Creek cross east to west. Most of the water sources in the area are salty and cannot be used for agriculture and drinking water purposes. There are nine wards and all of them live in urban areas. 96% of population are Myanmar and Karen, Chin and Rakhine people share the other 4%.



Source: ERM (2019)

**Figure 5.7 Seikgyi Kanaungto Township**

### *5.5.1.2 Twantay*

Twantay (Figure 5.8) is located in the Southern District of Yangon and about 15 feet above sea level. The total area of the township is 279 square miles. It is bordering with Kye Myin Daing Township, Dala Township and Seikgyi Kanaungto Township to the east, Maubin Township and Nyaung Tone Township to the west and Htantapin and Hlaing Tharyar Township to the north. 90% of township is covered by flat land there are plenty of rivers and creeks; Pan Hlaing River flows from west to east, Twantay canal flows west to east, Toe River and Kattiya creek flows from north to south. There are eight townships and 65 village tracts and about 19% of them live in urban and 81% of them in rural area. 60% of the Township is covered by the forest and 20% out of 60% are reserved forest area. 76% of population are Bamar, 22% are Karen and other 2% are Chin, Mon and Rakhine.



Source: ERM (2019)

**Figure 5.8 Twantay Township**

### *5.5.1.3 Kye Myin Daing*

Located 35 feet above sea level, Kye Myin Daing Township is split by the Yangon River. The total area of the township is five square miles. The Township is bordering with Sanchaung Township to the east, Ahlone and Seikgyi Kanaungto Townships to the south, Twantay Township to the west and Kamayut and Hlaing Tharyar Township to the north. The water from the river is salty and not suitable for drinking and agriculture purposes. There are 22 wards and all live in urban area. 97% of population are Bamar and other 4% share to Kachin, Kayah, Kayin, Chin, Mon, Rakhine, Shan and others.

### *5.5.1.4 Hlaing Tharyar*

Hlaing Tharyar Township (Figure 5.9) is located in Northern District of Yangon and about 100 feet above sea level. The total area of the township is 23 square miles. It is bordering with Insein Township to the east, Htantapin Township to the west, Twantay Township to the south and Shwepyi Thar Township to the north. Pan Hlaing River crosses from west to east and flows into Hlaing River which crosses from north to south. There are 20 wards and nine Village Tracts and about 80% live in urban and 20% in rural area. 94% of population are Bamar and other 6% share to Kachin, Kayah, Kayin, Chin, Mon, Rakhine and Shan.





Source: ERM (2019)

## Figure 5.9 Hlaing Tharyar Township

### 5.5.1.5 Ahlone

Ahlone Township is located in Western District of Yangon and about eight feet above sea level. The total area of the township is 1 square mile. The Township is bordering with Dagon Township to the east, Yangon River in the west, Lanmataw Township and the Port to the south and Kye Myin Daing to the north. There are 11 wards and all live in urban area. 79% of population are Bamar, 6% Kayin and 15% are Kachin, Kayah, Chin, Mon, Rakhine and others.

### 5.5.1.6 Dala

Dala Township is located in Southern District of Yangon and about 12 feet above sea level. The total area of the township is 86.51 square miles. The Township is bounded by the Yangon River in the north and east, Kauk Hmuu Township in the South and Twantay Township in the West. There are 24 wards, 23 village tracts and 54 villages in this township. 96% of population are Bamar, 1% Kayin and others.

## 5.5.2 Overview of Villages in Study Area

A total of 44 villages fall within the Study Area. Their respective distances to Bridge 1 and Bridge 2 are summarised in Table 5.3.

**Table 5.3 Distances between Bridges 1 and 2 and Villages within Study Area**

Village	Distance to Bridge 1	Distance to Bridge 2
Phaya Ngu	9100 m northwest	300 m south
Htin Su	9400 m west	1000 m south
Ah Pyin Pa Dan	10700 m northwest	700 m west
Ah Twin Pa Dan	10500 m northwest	1400 m north
Ma Myo Su	9100 m northwest	2200 m south
Lower Tamar Takaw	7300 m northwest	2800 m south
Oke Kan	6900 m northwest	3000 m east
Kha Lauk Chaik	6400 m west	3200 m east
Kha Lauk Kha Lu	9500 m west	3500 m south
Upper Tamar Takaw	6800 m northwest	3700 m southeast
Ma Ngay	5100 m northwest	4650 m southeast
Htein Kone	4900 m west	5100 m southeast
A Lel Ywar	4400 m west	5200 m southeast
Lay Eain	8100 m west	5000 m south
Nyaung	4000 m northwest	5800 m east
Ta Man Gyi	8100 m west	6000 m south
Ta Khun Taing	8800 m west	6000 m south
Wa Yone Seik	2700 m northwest	7300 m east
Kon Tar	7100 m west	6900 m south
Daing Su	4100 m north	7100 m east
Kan Ywar	7600 m west	7500 m south
Kone Ywar	1280 m west	8610 m southeast
Ywar Lay	5500 m west	8400 m southeast
Gyok Yoo	6500 m west	8500 m southeast
Aye	1500 m north	9000 m southeast
Shwe Ain Kyi	8800 m southwest	9400 m southeast
Kyun Kalay	4000 m west	9700 m southeast
Myat Ni Kone	8000 m west	9700 m south
Ah Lat Chaung	800 m west	11000 m southeast
Gyaung Waing Gyi	3000 m west	9700 m southeast
Let Pan	6600 m southwest	10800 m southeast
Kyi Tan	11000 m southwest	11100 m southwest
U Htun Oh Ward	4700 m south	12000 m southeast
Thone Eain	9700 m southwest	11800 m south
Pathein	5700 m south	12400 m southeast
Set Kalay	1000 m north	9400 m southeast
Si	8700 m southwest	12700 m south

Village	Distance to Bridge 1	Distance to Bridge 2
Sa Mar Ward	4300 m south	12900 m southeast
Ka Lar Tan	9700 m southwest	12700 m south
Hpa Yar Gyi Su	9100 m southwest	13200 m south
Let Pan Kone	7100 m southwest	13200 m southeast
Than Phyu Yone	11400 m southwest	13100 m south
Pyawbwe Lay	6800 m south	13500 m southeast
Hpa Yar Ngoke To	13000 m southwest	15300 m south

### 5.5.3 Population and Demographics

Population information from Townships in the Study Area encompassing the Townships neighbouring of the whole New Yangon City Phase 1 Development are included in Table 5.4.

**Table 5.4 Overview of the Demographics of the Study Area**

District/Township	Total Population	Percentage of Urban Population	Household	Number of women per 100 men
Twantay	227,953	19%	52,307	103
Seikgyi Kanaungto	33,944	100%	7,778	102
Kyee Myin Daing	101,287	100%	22,551	114
Hlaing Tharyar	414,209	77%	80,701	110
Ahlon	54,843	100%	10,928	118
Dala	150,564	69%	35,223	105

Source: Township General Administration Department, 2017

The birth rate has been noticeably declining in the Study Area since the last 10 years (Department of Population, 2018). Most people are Bamar, followed by Kayin and Mon. The dominant religion is Buddhism, although Christianity, Islam and Hinduism are also reported in the area.

### 5.5.4 Livelihood and Economy

Although Seikgyi Kanaungto and Twantay Township are within the Yangon Region, the business development rate is slow compared to the Townships across the river. Businesses include agriculture, river transportation, and casual workers (i.e. workers who provide services according to the fluctuating demands) who work in Yangon. In addition, in the Study Area, there is small scale fishing and dredging activities. The majority of the dredging is undertaken in Dala Township. Dredging vessels observed in the Yangon River and stockpiles of dredged materials in Dala are shown in Figure 5.10 and Figure 5.11.



Source: ERM (2017)

**Figure 5.10 Sand Dredger**



Source: ERM (2017)

**Figure 5.11 Stockpiles of dredged material in Dala Township**

There are 63 small scale businesses with 254 labours, one private dry and wet dockyard with 210 labours, one private rice mill with 59 labours in Seikgyi Kanaungto and there are 55 small scale businesses with 270 labours, two private car maintenance workshops with 10 labours and 68 private businesses with 288 labours in Twantay Township.

Hlaing Tharyar Township is one of the biggest and most populated townships in Yangon Region. There are a few government and company staff, and most of the labourers work in industries. As the town is located on Yangon – Patheingyi Highway road, it has good transportation facility and can trade goods from Ayeyarwaddy Township. There are 92 small scale businesses with 287 labours, one state owned garment factory with 596 staffs and 802 private companies with 126,475 labours (2017 Township General Administration Department Reports).

Kyee Myin Daing and Ahlone Townships are located in the economically important area and most of the residents in the area rely on service-related business. There are 16 small scale businesses with 184 labours, six private businesses with 194 labours and two state owned saw mills with 346 labours in the Kyee Myin Daing Township. There are also 11 small scale businesses with 67 labours, two private businesses with 141 labours, one state owned electricity distribution service with 94 staffs and one state owned furniture factory with 365 staffs in Ahlone Township (2017 Township General Administration Department Reports).

Dala Township is one of the economically important areas in Yangon Region. In Dala Township, there are 2 government industries with 380 labours, 14 private industries with 75 labours and 27 small scale businesses with 38 labours (2017 Township General Administration Department Reports).

A breakdown of the common livelihood types for Townships in the Study Area is presented in Table 5.5.

**Table 5.5 Livelihoods in the Study Area**

Township	Livelihood
Kyee Myin Daing	Cultivation, Fishing, Casual Labour, Government Service, Private Companies, Casual Labour, Self Employed, Dock Service, Business (Shop)
Hlaing Tharyar	Business (Shop), Industrial Workers, Casual labour, Government Service, Private Companies
Twantay	Cultivation, Business (Sewing Robe for monks/shops), Government Service, Private Company, Industrial Workers, Agricultural labourers, Fishing
Seikgyi Kanaungto	Cultivation, fishing, Casual labour, Sampan Service, Government Service, Company Staff
Dala	Casual Labour, Government Service, Services and Trading, Agriculture, Others
Ahlone	Casual Labour, Company Staff, Government Service, Self Employed, Business (Shop)

Source: ERM Field Data (2019)

Hlaing Tharyar Township is one of the biggest and most populated townships in Yangon Region and the population is mostly comprised of migrant workers from Ayeyarwaddy Region (ERM data collection, 2019). The migrant workers work in the Hlaing Tharyar industrial zone particularly in garment factories and food processing factories. In Hlaing Tharyar Township, the proportion of employed persons working in manufacturing is the highest compared to other types of employment; at 29 %.

### 5.5.5 Agriculture and Livestock

There are a number of agricultural plots grown by the local villagers from Seikgyi Kanaungto and Twantay Township. Paddy is the main crop and grown only during the rainy season (Figure 5.12). There are other seasonal crops grown such as black gram and green gram. No agricultural activities are reported in Hlaing Tharyar Township. There are 118,523 acres of agricultural land in Twantay Township, 87 acres in Seikgyi Kanaungto Township, and 1,767 acres in Kyee Myin Daing Township and 46,294 acres in Dala Township but there is no agricultural land in Ahlone and Hlaing Tharyar Townships. For livestock rearing, the community raise pigs, sheep, goats, chickens, ducks and

cows/buffalos for domestic use. However, agriculture is not the main source of income in the Study Area.



Source: ERM (2019)

**Figure 5.12 Paddy Field in Twantay Township**

## **5.5.6 Infrastructure and Public Services**

### **5.5.6.1 Education**

The Study Area has access to good education as primary school enrolment rate in Seikgyi Kanaungto, Hlaing Tharyar, Kyee Myin Daing, Ahlone and Dala Townships are 100% and Twantay is 97% and literacy rate in Ahlone, Kyee Myin Daing, Hlaing Tharyar, Twantay and Dala Townships are 100% and Seikgyi Kanaungto Township is 99%. There are respectively three schools and one school within 500 m of the western and eastern side of Bridge 1. The number of schools from townships in the Study Area are summarised in Table 5.6. A typical Basic Education High School is shown in Figure 5.13.

**Table 5.6 Number of Schools in the Study Area**

Township	University	High School	Middle School	Primary School	Nursery School	Monastic Education
Seikgyi Kanaungto	-	2	1	14	1	-
Twantay	-	8	22	183	2	1
Kyee Myin Daing	-	7	5	11	13	2
Hlaing Tharyar	1	8	18	32	16	16
Ahlone	-	7	1	6	2	-
Dala	-	11	-	53	3	29

Source: 2017 Township General Administration Department Reports



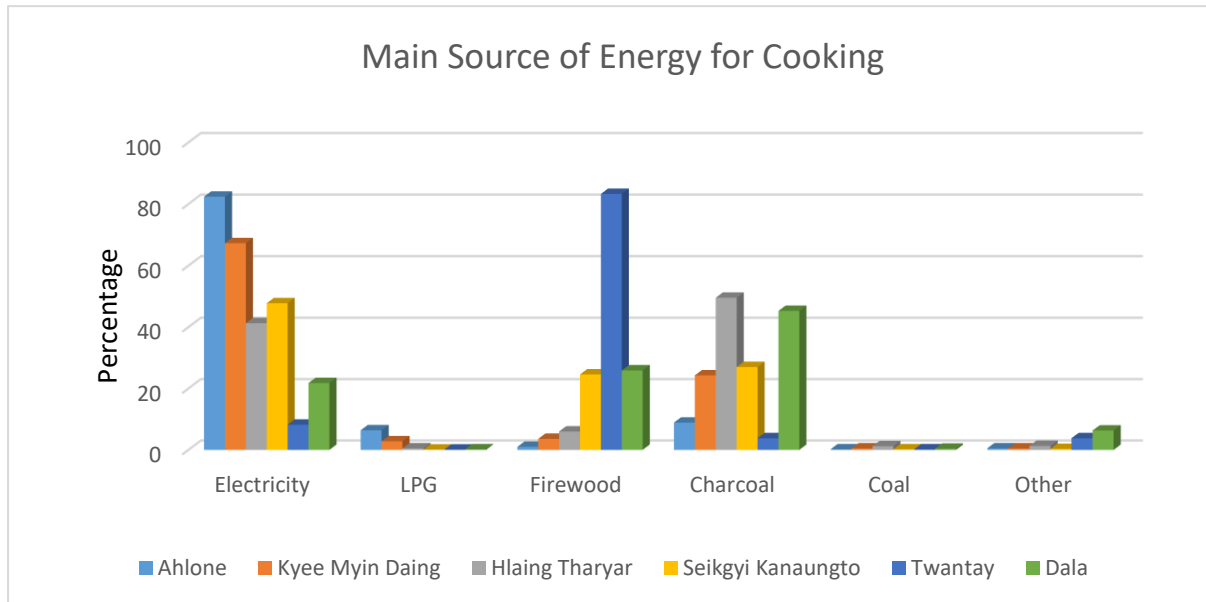
Source: ERM (2019)

**Figure 5.13 High School in Seikgyi Kanaungto Township**

### 5.5.6.2 Electricity and Energy

Most of the households in the Study Area have access to electricity. According to Township Census Reports, all townships in the Study Area have access to National Grid. Ahlone township residents use electricity as main source for cooking while Twantay township residents use firewood as main source for cooking. Residents from Kyee Myin Daing use more than 60% from electricity and the other 40% shared to firewood and charcoal for cooking activities. Hlaing Tharyar township residents use electricity and charcoal for cooking. Seikgyi Kanaungto residents use electricity, fire and charcoal for cooking. Dala township residents use electricity, firewood and charcoal for cooking. Figure 5.14 shows the percentages of energy sources used for cooking from Townships in the Study Area (Department of Population, 2018).

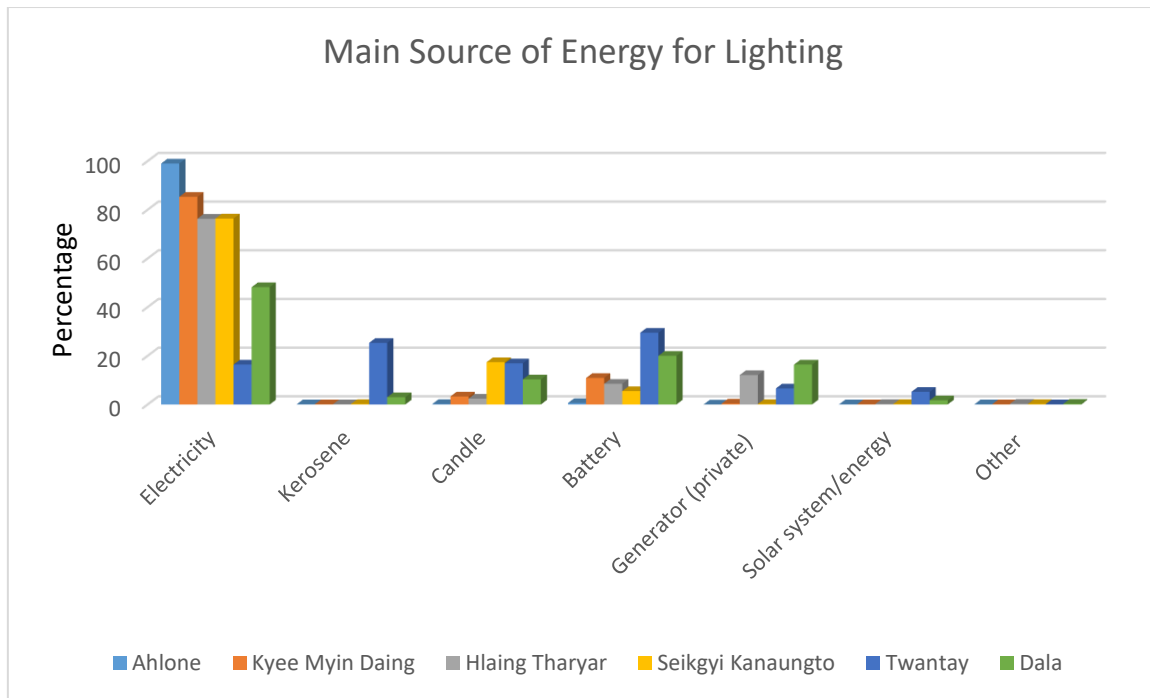
About 80% of Ahlone Township residents use electricity as the main source of lighting while Twantay residents have less than 10% to access to electricity for lighting and they mainly have to depend on battery and candle for lighting. Kye Myin Daing, Hlaing Tharyar and Seikgyi Kanaungto residents have access to electricity from 60% to 80% and about 50% of Dala residents have access to electricity as main source of lighting. Figure 5.15 shows the percentages of energy sources used for lighting from Townships in the Study Area.



Source: The 2014 Myanmar Population and Housing Census, Township Report

**Figure 5.14 Energy Sources use for Cooking from Townships in the Study Area**





Source: The 2014 Myanmar Population and Housing Census, Township Report

**Figure 5.15 Energy Sources use for Lighting from Townships in the Study Area**

### 5.5.6.3 Water Source

Most households in the vicinity of the Study Area use water from the lakes/ ponds within Seikgyi Kanaungto, Twantay and Dala Townships which are filled in the rainy seasons. These water sources may be scarce in the dry season. The local community in Hlaing Tharyar Township buy drinking water as well as from improved water sources (public water utility). Ahlone and Kyee Myin Daing Townships have access to public water utility and also have access to tube wells.

For domestic water (i.e., washing/cooking), the community from Seikgyi Kanaungto, Twantay and Dala Townships use the water from lakes and ponds whereas the households from Hlaing Tharyar, Ahlone and Kyee Myin Daing Townships use tube wells, public assets and borehole.

### 5.5.6.4 Transportation

Around 500 boats have been observed within Seikgyi Kanaungto Township (Figure 5.16). Around 100 boats cross to Yangon daily between 5:30 am to 8:00 pm and the journey takes around 15 minutes. Travelling to Yangon by car can take around two hours (depending on traffic; Figure 5.17). Therefore, the local community depends on boat transport to reach Yangon City. The community in Twantay Township mostly use the ferry boat from Dala crossing the Yangon River, which takes about 10 minutes. A bridge is also being constructed connecting Yangon to Dala which will have entrances in downtown Yangon’s Phoneygi Road and in the town of Dala, which will provide a quicker alternative to crossing the Yangon River by ferry or using the more remote existing bridge. In Dala Township, the local community mostly use bicycle and motorcycle for transportation.

Hlaing Tharyar Township has bridge access to Yangon. As it is closely bordered with Ayeyarwaddy Region, there is one highway bus terminal, Dagon Ayeyar Highway Bus Terminal which is mainly for the buses going to that Region.



Source: ERM (2017)

**Figure 5.16 Water Transport in Seikgyi Kanaungto Township**



Source: ERM (2019)

**Figure 5.17 Road Transport in Hlaing Tharyar Township**

### 5.5.6.5 Health

The villages in the Study Area have good access to public health services. Hlaing Tharyar Township has two public and two private hospitals and 133 private clinics for health services. Table 5.7 shows the number of health facilities from townships in the Study Area. Table 5.8 shows the health care rate in the Study Area and nearby. A small clinic in Seikgyi Kanaungto Township is shown in Figure 5.18.

**Table 5.7 Health Facilities from Townships in the Study Area**

Township	Hospital		Clinic	Rural Health Centre
	Public	Private		
Seikgyi Kanaungto	1	-	6	4
Twantay	3	-	-	41
Kyee Myin Daing	3	-	65	5
Hlaing Tharyar	2	2	133	2
Ahlonge	-	2	48	-
Dala	3	-	3	6

Source: GAD Township Profile, 2017

**Table 5.8 Health Care Rate in the Townships in the Study Area**

Township	Medical doctor and total populations ratio	Nurse and total population ratio	Rural Health Assistant and total population ratio
Seikgyi Kanaungto	1:4,849	1:5,657	-
Twantay	1:32,564	1:12,664	1:37,992
Kyee Myin Daing	1:16,881	1:7,791	1:101,287
Hlaing Tharyar	1:37,655	1:18,827	1:414,209
Ahlonge	1:27,422	1:9,141	1:27,422
Dala	1:25,760	1:8,586	1:77,281

Source: GAD Township Profile, 2017



Source: ERM (2019)

**Figure 5.18 Township Hospital in Seikgyi Kanaungto Township**

## 5.6 Cultural Characteristics

Yangon Region has a number of culturally significant areas, particularly Buddhist sites. There are also pagodas (Figure 5.19) and monasteries located in the Study Area that are considered as important cultural centres for the local communities. Table 5.9 shows the numbers of different religious monuments from townships in the Study Area.

**Table 5.9 Religious monuments from Townships in the Study Area**

Townships	Pagodas	Monasteries	Nunneries	Church	Mosque	Hindu Temple
Seikgyi Kanaungto	16	15	-	-	1	6
Twantay	104	263	32	61	5	11
Kyee Myin Daing	9	21	-	7	1	5
Hlaing Tharyar	3	157	6	-	-	-
Ahlone	6	9	-	4	2	4
Dala	38	87	7	-	-	-

Source: 2017 Townships General Administration Department Reports



Source: ERM (2019)

**Figure 5.19 Pagoda in Seikgyi Kanaungto Township**

## 5.7 Visual Characteristics

The New Yangon City Development would be potentially visible to communities living in the townships of Hlaing Tharyar, Kye Myin Daing, Seikgyi Kanaungto, Twantay, Dala, and Ahlone. A visual assessment of the Project and the New Yangon City will be conducted in the EIA Report.

## 6. KEY POTENTIAL IMPACT AND MITIGATION MEASURES

### 6.1 Introduction and Approach

This section of the Scoping Report presents the methodology used to conduct the impact assessment. This methodology has been developed by ERM and is based on good international industry practice.

#### 6.1.1 Project Impacts

This section aims to identify the key environmental and social impacts of the Project through a scoping process. Potential impacts have been identified through a systematic process whereby the activities (both planned and unplanned) associated with the Project have been considered with respect to their potential to interact with environmental and social resources / receptors. A Scoping Matrix has been developed to support this assessment and to enable the identification of interactions in a consistent way. Scoping also aims to identify key data gaps and ways to fill those gaps.

The following key activities were undertaken for this Scoping Study:

- Gathered information on Project activities in the Project Area from Township level consultation meetings;
- Listed the potentially relevant environmental and socio-economic receptors in the Projects' Area of Influence;
- Mapped potential interactions between Project activities and environmental and socio-economic receptors; and
- Taking into consideration the information gathered on the extent and nature of Project activities and the existing condition/ sensitivities of the receptors, the potential interactions have been prioritised in terms of their potential to cause significant impacts.

#### 6.1.2 Cumulative Impacts

Cumulative impact assessment is an important component of this Project. The assessment considers the residual direct and indirect impacts reported for the Project and evaluates these alongside potential impacts from other projects/activities/natural events that may affect common resources and receptors. The summary of cumulative impact assessment process is summarised in Table 6.1.

**Table 6.1 Cumulative Impact Assessment Process**

---

<b>Scoping</b>
<ul style="list-style-type: none"><li>■ Identify key issues associated with the project and resources / receptors that may be affected utilising information from impact assessment</li><li>■ Set temporal and geographical boundaries</li><li>■ Conduct stakeholder engagement</li><li>■ Define level of detail of assessment</li><li>■ Identify and screen 'other projects, activities or natural events' for potential interactions with proposed Project</li><li>■ Confirm or establish significance criteria utilising information from impact assessment</li></ul>
<b>Baseline</b>
<ul style="list-style-type: none"><li>■ Confirm the baseline (existing condition) of the Project receptors and resources utilising information from impact assessment</li></ul>
<b>Cumulative Impact Assessment</b>
<ul style="list-style-type: none"><li>■ Determine the magnitude and significance of potential cumulative impacts considering the vulnerability of the resources and receptors and their limits of acceptable change</li></ul>
<b>Management and Monitoring Definition</b>
<ul style="list-style-type: none"><li>■ Develop measures to avoid, minimise or mitigate significant 'Project-related' cumulative impacts</li><li>■ Some measures already committed to in the impact assessment may suffice to control potential cumulative impacts – so it is important to refer back to these and distinguish between those measures and any additional required.</li></ul>

---

An assessment of cumulative impacts will be provided in the EIA Report. The Project is part of the wider New Yangon City Development which includes the six groups of facilities:

- Bridges:
  - Bridge 1: connecting Kyee Myin Daing Township (near Bagaya Road and Kyee Myin Daing Kanner Junction) to the Project; and
  - Bridge 2: connecting Hlaing Tharyar Township to the Project
- Major Roads
  - Providing access to and within the Project Area
- Water:
  - Water Intake Point;
  - Raw water pipeline;
  - Treated water distribution lines; and
  - Water Treatment Plant
- Waste Water:
  - Waste Water Treatment
  - Wastewater and storm water collection system
- Power:
  - Transformer substation (one 230 kV, two 66 kV, and one 33 kV);
  - Transmission lines; and
  - Distribution lines, including 230, 66, 33 and 11 kV lines.
- Industrial Zone:
  - Area for industrial facilities covering approximately 13 sq.km.

The cumulative impacts from the New Yangon City Development as a whole are likely to include; air emissions, noise generation, impacts to water and soil, and livelihood impacts; these will be assessed in the EIA Report.

### **6.1.3 Impact Identification**

Risks were identified for both planned (routine and non-routine) and unplanned (accidents/incidents) activities. Potential impacts were then determined based on the physical activity or hazard type e.g. air emissions, noise, etc.

Table 6.2 provides a summary matrix of the screening exercise. The potential impact sources are listed down the first vertical column of the 'matrix' and the receptors listed across the horizontal axis. The matrix identifies the key aspects of the Project that have the potential to interact with the surrounding environmental and social receptors and cause potential impacts, with no mitigation in place.



**Table 6.2 Potential Interactions and Significance of Impacts to Receptors / Receivers**

Project Activities (below) / Project Receptors (right)	Physical Environment						Biological Environment			Human Environment				
	Ambient Air Quality	Ambient Noise and Vibration	Surface Water and Groundwater Quality	Hydrology and Hydrogeology	Soil Quality and Topography	Landscape and Visual Character	Terrestrial Flora	Terrestrial Fauna	Aquatic Flora and Fauna	Community Health and Safety	Demographic Pattern, Economy and livelihood	Occupational Health and Safety	Infrastructure Services	Cultural Heritage
<b>Construction Phase</b>														
Site preparation, excavation, and filling works	■	■	■				■	■	■	■	■	■	■	■
Bridge construction (i.e., creation of the bored piles, pile cap construction, pier construction, capping beam, construction of bridge superstructure, construction of waterproof layer of bridge deck concrete expansion joint installation, dredging.)	■	■	■	■	■	■			■	■	■	■	■	■
Transportation of equipment, supplies and workforce	■	■	■	■	■				■			■	■	■
Waste, fuel, chemical, oils, gas storage, handling and disposal			■		■							■	■	■
Labour, equipment and services supply									■	■				
Temporary auxiliary support infrastructure	■	■	■		■	■			■			■	■	■

Project Activities (below) / Project Receptors (right)	Physical Environment						Biological Environment			Human Environment				
	Ambient Air Quality	Ambient Noise and Vibration	Surface Water and Groundwater Quality	Hydrology and Hydrogeology	Soil Quality and Topography	Landscape and Visual Character	Terrestrial Flora	Terrestrial Fauna	Aquatic Flora and Fauna	Community Health and Safety	Demographic Pattern, Economy and Livelihood	Occupational Health and Safety	Infrastructure Services	Cultural Heritage
<b>Operational Phase</b>														
Maintenance works		■								■		■		
Traffic	■	■								■	■			■
Bridges' structure						■				■	■		■	
<b>Accidental Events</b>														
Traffic collision										■		■		
Spills and Leaks			■		■			■				■		
Fire and Explosion	■				■			■	■			■		

Scoping Report

Key

	An interaction is not reasonably expected
	An interaction is reasonably possible but none of the resulting impacts are likely to lead to significant effects
	The interaction is reasonably possible and at least one of the resulting impacts is likely to lead to an effect that is significantly negative
	The interaction is reasonably possible and at least one of the resulting impacts is likely to lead to an effect that is significantly positive

Potential interactions that were deemed not to result in a potentially significant impact (grey in the matrix) have been scoped out with justification and will not be considered in more detail in the EIA Study. The rationale for scoping out these impacts is provided in Table 6.3.

**Table 6.3 Aspects Not Carried into the Impact Assessment**

Impact	Rationale for scoping out of assessment
<b>Construction Phase</b>	
Impacts on surface water and groundwater quality due to transportation of equipment, supplies and workforce	Potential short-term, localised impacts to surface water and groundwater quality might arise from site preparation. However, the transport of equipment / workers is not likely to impact on local water resources. It is anticipated that the impacts on surface water and ground water quality can be managed and reduced by implementing good industry practices.
Impacts to soil quality and topography due to transportation of equipment, supplies and workforce	Impact on soil quality and topography from transportation of equipment, supplies and workforce may occur and is not considered significant given the appropriate controls are in place; such as material handling speed limits, maintenance, emergency response plan, etc.
Impacts on community health and safety due to site preparation, excavation and filling works; and bridge construction	With proper management of construction activities, impacts on community health and safety from site preparation would be expected to be limited.
<b>Operation Phase</b>	
Impacts on ambient noise due to maintenance works	The maintenance works are brief events and are unlikely to create a significant noise impact.
Impacts on community health and safety due to maintenance works	With good industry practices in place, there is unlikely to be any impact to community health and safety from maintenance works.
<b>Accidental Events</b>	
Impacts on soil quality and topography due to fire and explosion	Fire and explosion may cause impacts towards soil quality and topography. Given that good industry practices and emergency response measures will be implemented, significant impacts are not considered likely.

## 6.2 Scoping Results

As presented in Section 6.2, there have been interactions between the resources/receptors and project activities that have been identified as likely to lead to significant impacts which should be further investigated during the EIA. Those interactions which have been identified as unlikely to result in significant impacts have been scoped out and do not require further assessment in the EIA.

The following impacts which are anticipated to have potential to generate significant impacts from the proposed Project as presented in Table 6.2 are defined as requiring further detailed assessment and are carried out to the next stage of the EIA process.

### 6.2.1 Construction Phase

The scoped-in impacts during the construction phase include the following:

- Impacts to ambient air quality from:
  - Site preparation, excavation, and filling works;
  - Bridge construction;

- Transportation of equipment, supplies and workforce; and
- Temporary auxiliary support infrastructure.
- Impacts to ambient noise from:
  - Site preparation, excavation, and filling works;
  - Bridge construction;
  - Transportation of equipment, supplies and workforce; and
  - Temporary auxiliary support infrastructure.
- Impacts to surface water and groundwater quality from:
  - Site preparation, excavation, and filling works;
  - Bridge construction;
  - Waste, fuel, chemical, oils, gas storage, handling and disposal; and
  - Temporary auxiliary support infrastructure.
- Impact on hydrology and hydrogeology from bridge construction.
- Impacts to soil quality and topography from:
  - Bridge construction;
  - Waste, fuel, chemical, oils, gas storage, handling and disposal; and
  - Temporary auxiliary support infrastructure.
- Impacts to landscape and visual character from:
  - Bridge construction; and
  - Temporary auxiliary support infrastructure.
- Impacts to terrestrial flora from site preparation, excavation, and filling works.
- Impacts to terrestrial fauna from site preparation, excavation, and filling works.
- Impacts to aquatic flora and fauna from:
  - Site preparation, excavation, and filling works;
  - Bridge construction; and
  - Temporary auxiliary support infrastructure.
- Impacts to community health and safety from:
  - Transportation of equipment, supplies and workforce;
  - Labour, equipment and services supply; and
  - Temporary auxiliary support infrastructure.
- Impacts to demographic pattern, economy and livelihood from site preparation, excavation, and filling works
- Impacts to occupational health and safety from:
  - Site preparation, excavation and filling works;
  - Bridge construction;
  - Transportation of equipment supplies and workforce;
  - Waste, fuel, chemical, oils, gas storage, handling and disposal; and

- Temporary auxiliary support infrastructure.
- Impacts to infrastructure services from:
  - Bridge construction
  - Transportation of equipment, supplies and workforce;
  - Waste, fuel, chemical, oils, gas storage, handling and disposal; and
  - Temporary auxiliary support infrastructure.
- Impacts to cultural heritage from:
  - Site preparation, excavation and filling works;
  - Bridge construction; and
  - Transportation of equipment supplies and workforce.

### 6.2.2 Operational Phase

The scoped-in impacts during the operational phase include the following:

- Impacts to ambient air quality from traffic
- Impacts to ambient noise and vibration from traffic
- Impacts to landscape and visual character from the bridges' structure
- Impacts to community health and safety from traffic
- Impacts to demographic pattern, economy and livelihood from traffic
- Impacts to occupational health and safety from maintenance works.
- Impacts to cultural heritage from traffic.

### 6.2.3 Accidental Events

The unplanned or accidental events can be from incidents during construction and operation caused by the work force, equipment, or supplies. This also includes consequences of natural disasters (floods, cyclones, and/or earthquakes) that can lead to environmental or social impacts.

- Impacts on ambient air quality from fire and explosion.
- Impact to surface water and groundwater quality from spills and leaks.
- Impacts to soil quality from spills and leaks.
- Impacts to aquatic flora and fauna from:
  - Spills and leaks; and
  - Fire and explosion.
- Impacts to community health and safety from:
  - Traffic collision; and
  - Fire and explosion.
- Impacts to occupational health and safety from:
  - Traffic collision;
  - Spills and leaks; and
  - Fire and explosion.

### 6.3 Impacts Mitigation

Table 6.4 provides an overview of the proposed mitigation measures for the Projects' potential impacts. While not exhaustive, this table demonstrates the range of established mitigation measures available to address potential interactions from the installation / construction and operation of the substations and transmission lines. The complete list of proposed mitigation measures will be included in the EIA Report.

**Table 6.4 Preventative and Mitigation Measures Likely to be used in the Construction and Operation Phase for the Bridge Facilities of the New Yangon City**

Potential Impact	Potential Mitigation Measures
Air quality deterioration	<p><b>Air Emissions</b></p> <ul style="list-style-type: none"> <li>■ Ensure there is the maximum possible distance between the stockpiles and receptors;</li> <li>■ Cover and/or water stockpiles of dusty materials such as excavated spoils, dredged materials, filling materials to avoid fugitive dust where required;</li> <li>■ Provide site hoarding along the Project Area boundary higher than the Project activities which may generate dust and fugitive emissions;</li> <li>■ Cover, pack, water or hydro seed the surcharge if it is left for a long time, e.g. overnight;</li> <li>■ Totally enclose any skip hoist for material transport with impervious sheeting;</li> <li>■ Provide material handling sources such as conveyors and bins with similar measures that also have control equipment such as covers or water sprays;</li> <li>■ Implement a watering and sprinkling regime in particular during the dry season, when and where necessary, for example, in the morning and in the afternoon, watering in area which have a lot of dust; the number of watering car will be assigned due to practical demand;</li> <li>■ If scaffolding is erected around the perimeter of a building under construction, provide effective dust screens, sheeting or netting to enclose the scaffolding from the ground floor level of the building, or if a canopy is provided at the first floor level, from the first floor level up to the highest level of the scaffolding;</li> <li>■ Provide a wheel washing facility at the exit of the Project Area to reduce the likelihood of dusty materials being deposited beyond the Project Area boundary or implement a policy to ensure checking and cleaning of roads immediately beyond the Project Area boundary;</li> <li>■ Emission control measures (including height of emission stack) to be determined following quantitative dispersion air modelling; and</li> <li>■ Alarms for fuel gas leaks</li> </ul> <p><b>Vehicle emissions/pollutants</b></p> <ul style="list-style-type: none"> <li>■ Maintain all diesel-powered equipment to reduce emissions of NO<sub>x</sub> and SO<sub>2</sub>;</li> <li>■ Switch off machinery and equipment when it is not in operation;</li> <li>■ Apply dust suppression methods where required;</li> <li>■ Use low sulphur fuels in HGVs and diesel-powered equipment in collaboration with best management practices for construction phase; and</li> <li>■ Use alternative fuels and fuel mixes where possible.</li> </ul>
Increase of noise levels	<ul style="list-style-type: none"> <li>■ Only well-maintained equipment should be operated on-site;</li> <li>■ Regular maintenance of equipment such as lubricating moving parts, tightening loose parts and replacing worn out components should be conducted;</li> <li>■ Machines and construction plant items (e.g. trucks) that may be in intermittent use should be shut down or throttled down between work periods;</li> <li>■ The number of equipment operating simultaneously should be reduced as far as practicable;</li> <li>■ Equipment known to emit noise strongly in one direction should be orientated so that the noise is directed away from nearby noise sensitive receptors as far as practicable;</li> <li>■ Noise impacts from activities (such as piling and blasting activities) should be properly reduced by shielded by implementing control measures (e.g. erecting temporary noise barriers and deflectors) whenever applicable;</li> </ul>



Potential Impact	Potential Mitigation Measures
	<ul style="list-style-type: none"> <li>■ Noisy plant (such as bulldozers, backhoes, rollers and drop hammer) should be located as far away from noise sensitive receptors as practicable;</li> <li>■ Transportation of materials on and off site through existing community areas should be avoided if necessary;</li> <li>■ Material stockpiles and other structures should be utilised, where practicable, to screen noise from on-site construction activities;</li> <li>■ Noise barriers such as berms and vegetation shall be installed to limit noise at plant boundary, if deemed necessary following noise modelling;</li> <li>■ Monitoring for noise and vibration at sensitive receptors during construction and operation; and</li> <li>■ Silencers, mufflers or acoustic enclosures shall be installed to reduce sound power level of noisy equipment if deemed necessary.</li> </ul>
<p>Surface water and groundwater deterioration</p>	<p><b>Construction Site Run-off and Drainage</b></p> <ul style="list-style-type: none"> <li>■ Exposed soil surfaces should be protected by paving or fill material as soon as possible to reduce the potential of soil erosion;</li> <li>■ Open stockpiles of construction materials or construction wastes on-site should be covered with tarpaulin or similar fabric during rainstorms;</li> <li>■ Use methods for minimising sediment runoff, as appropriate to the conditions on-site, such as wheel cleaning facilities;</li> <li>■ Design drainage pipes and culverts for the controlled release of storm flows;</li> <li>■ Protect temporary trafficked areas on-site with coarse stone ballast or equivalent;</li> <li>■ Regularly, and particularly following rainstorms, inspect and maintain drainage systems and erosion control and silt removal facilities to ensure proper and efficient operation at all times;</li> <li>■ Mulch to stabilise exposed areas, where practicable and appropriate;</li> <li>■ Re-vegetate areas promptly, where practicable and appropriate;</li> <li>■ Provide measures to prevent the washing away of construction materials, soil, silt or debris into any drainage system of open stockpiles of construction materials;</li> <li>■ Construct wells/ sediment basins for the separation of oil in the wash water and storm water drains; and</li> <li>■ Install onsite wastewater treatment facilities or processes such as filtration, flocculation or biochemical treatment before discharge to river.</li> </ul> <p><b>General Construction Activities</b></p> <ul style="list-style-type: none"> <li>■ Debris and refuse generated on-site should be collected, handled and disposed of properly to avoid entering the receiving waters. Stockpiles of cement and other construction materials should be kept covered when not being used;</li> <li>■ Oils, fuels and chemicals should only be used and stored in designated areas which have pollution prevention facilities. The bund should be drained of rainwater after a rain event;</li> <li>■ The oil contaminated water will be collected and handled by local licensed waste water sub-contractors (if available, to be determined at the later stage);</li> <li>■ On site oil-water separators and holding facilities should be installed to accommodate and unanticipated releases of oily water;</li> <li>■ Proper guidelines and procedures should be developed for immediate clean-up actions following any spillages of oil, fuel or chemicals; and</li> <li>■ Surface run-off from bunded areas should pass through oil/water separators prior to discharge to the storm water system</li> </ul> <p><b>Sewage Generated from On-site Workforce</b></p> <ul style="list-style-type: none"> <li>■ Where no public sewage treatment system is available, sanitary waste water will be treated by domestic waste water unit. The contractor will provide the domestic waste water unit which is designed and installed to treat all domestic wash and wastewater and sewage during construction. All effluents shall comply with legal guidelines for emissions into the environment, as appropriate;</li> </ul>

Potential Impact	Potential Mitigation Measures
	<ul style="list-style-type: none"> <li>■ All other chemical waste or oil contaminated water will be collected by local licensed waste water treatment sub-contractor (to be determined at a later stage); and</li> <li>■ Wastewater collected from canteen kitchens, including that from basins, sinks and floor drains, should be discharged into foul sewers via grease traps. The foul sewer should then lead to the temporary sewage treatment plant prior to discharge or reuse as greywater.</li> </ul> <p><b>Storage and Handling of Lube Oils and Chemicals</b></p> <ul style="list-style-type: none"> <li>■ Chemical storage areas should be provided with locks and be sited on sealed areas;</li> <li>■ The storage areas of lube oil and chemicals should be surrounded by bunds or other containment devices to prevent spilled oil, fuel and chemicals from reaching receiving waters;</li> <li>■ Guidelines and procedures should be established for immediate clean up actions following any spillages of oil, fuel or chemicals; and</li> <li>■ Surface run off from bunded areas should pass through oil traps prior to discharge to the storm water system.</li> </ul> <p><b>Waste water/ Site Run off</b></p> <ul style="list-style-type: none"> <li>■ All wastewater from Project Area (include wastewater from production area, discharge from bottom of boiler, domestic wastewater, storm water, floor washing water etc.) will be fully collected and treated to comply with applicable standards at a wastewater treatment plant; and</li> <li>■ Implement monitoring system to periodically monitor waste water discharge quality.</li> </ul>
<p>Soil quality &amp; topography deterioration</p>	<p><b>Top soil impacts</b></p> <ul style="list-style-type: none"> <li>■ Reuse of topsoil as backfill where ever possible;</li> <li>■ Scheduling activities (as far as possible) to avoid extreme weather event such as heavy rainfall and high winds;</li> <li>■ Re-vegetating areas with temporary land use, conducting ‘progressive rehabilitation’;</li> <li>■ Minimizing the amount of soil handling;</li> <li>■ Stabilising exposed areas;</li> <li>■ Covering or spraying water on stockpiles of excavated material or backfill; and</li> <li>■ Reducing or preventing sediment runoff through use of settlement ponds, silt fences.</li> </ul> <p><b>Soil compaction</b></p> <ul style="list-style-type: none"> <li>■ Demarcating routes for movement of heavy vehicles;</li> <li>■ Stripping and placing soils when dry, and not when wet;</li> <li>■ Restricting the height of topsoil stockpiles to minimise compaction, restricted to 2m.</li> </ul> <p><b>Soil and groundwater contamination</b></p> <ul style="list-style-type: none"> <li>■ Use of spill or drip trays to contain spills and leaks;</li> <li>■ Use of spill control kits to contain and clean small spills and leaks;</li> <li>■ Storage of chemicals, fuel, and oil in adequately bunded impervious areas, as per international bunding and storage requirements;</li> <li>■ Appropriate management of domestic wastewater;</li> <li>■ Appropriate management, storage and disposal of waste;</li> <li>■ Implement a training program to familiarise staff with emergency procedures and practices; and</li> </ul>

Potential Impact	Potential Mitigation Measures
Waste Management	<ul style="list-style-type: none"> <li>■ Implementation of a periodic soil and groundwater management programme.</li> </ul> <p><b>General</b></p> <ul style="list-style-type: none"> <li>■ To establish waste management priorities and hierarchy at the outset of activities based on an understanding of potential environmental, health and safety risks and impacts;</li> <li>■ Use appropriate waste containers and build secondary containment around chemical or waste storage on-site to avoid spillage of waste and leakage of leachate;</li> <li>■ Periodically review applicable regulations to ensure that the necessary waste disposal permits and licenses are obtained;</li> <li>■ To minimise windblown litter and dust during the transportation of waste by either covering the load on the trucks or by transporting the waste in enclosed trucks; and</li> <li>■ Siting of chemical and waste storage should consider nearby receptors, i.e. site away from watercourses or portable water sources.</li> </ul> <p><b>Waste Reduction Measures</b></p> <ul style="list-style-type: none"> <li>■ Processes should be designed and operated to prevent or minimise the quantities of wastes generated and hazards associated with the waste generated;</li> <li>■ To explore opportunities for reuse of inert construction waste (excavated soil and rock) within the Project Area or other construction projects. The removed soil during site preparation will be utilised as far as possible for surface cover at places on the Site where backfilling takes place, with the rest (together with vegetation wastes) being contracted for disposal;</li> <li>■ To segregate and store different types of waste in different containers, skips or stockpiles to enhance reuse or recycling of material and their proper disposal;</li> <li>■ To segregate, prior to disposal, construction waste, steel and other metals, to the extent practicable, for re-use and/or recycling to minimise the quantity of waste to be disposed of to the dump site;</li> <li>■ To properly store the construction materials to minimise the potential damage or contamination of the materials; and</li> <li>■ To implement a construction materials inventory management system to minimise over-supply of the construction materials, which lead to disposal of the surplus materials at the end of the construction period.</li> </ul> <p><b>Construction Waste from New Building/Structure Construction</b></p> <ul style="list-style-type: none"> <li>■ To minimise over ordering and waste of materials such as ready mixed concrete and cement grouts;</li> <li>■ To designate suitable areas of the worksites for segregation and storage of the various materials; and</li> <li>■ All waste must be sent to appropriate waste treatment facility, by the appropriate transport means and audited to ensure facility is licensed and capable of handling the receiving materials.</li> </ul> <p><b>Hazardous Waste</b></p> <ul style="list-style-type: none"> <li>■ Hazardous waste from the Project shall be disposed at licensed facilities. However, the availability of the hazardous waste treatment facilities shall be determined at the full EIA stage. The contractor should store and dispose of the hazardous waste in accordance with the applicable guidelines. The contractor should report the hazardous waste treatment arrangements to the local authorities (if required);</li> <li>■ Segregate hazardous waste from non-hazardous waste;</li> <li>■ Where practicable, adopt processes which generate reduced quantities or even no hazardous waste, or less dangerous types of hazardous waste;</li> </ul>

Potential Impact	Potential Mitigation Measures
	<ul style="list-style-type: none"> <li>■ Hazardous waste should be stored so as to prevent or control accidental releases to air, soil and water resources. Where practicable:</li> <li>■ the storage area should be clearly labelled and demarcated;</li> <li>■ readily available information on chemical compatibility should be provided to employees, including labelling each container to identify its contents;</li> <li>■ hazardous waste should be store in a manner that prevents the commingling or contact between incompatible wastes and allows for inspection between containers to monitor leaks or spills;</li> <li>■ hazardous waste should be store in closed containers away from direct sunlight, wind and rain;</li> <li>■ hazardous waste storage area should have an impermeable floor and containment, of capacity to accommodate 110% of the volume of the largest waste container; and</li> <li>■ hazardous waste storage areas have adequate ventilation, fire prevention system (if needed).</li> <li>■ On-site and off-site transportation of waste should be conducted so as to prevent or minimise spills, release and exposures to employees and public;</li> <li>■ Maintenance facilities should be located on hard standings within a bunded area. Sumps and oil interceptors should be provided. Maintenance of vehicles and equipment involving activities with potential for leakage and spillage should only be undertaken within areas appropriately equipped to control these discharges; and</li> <li>■ Where onsite treatment of waste is conducted, the waste shall be stored and contained so as to ensure no material is released to the environment and/or river, and waste streams are segregated.</li> </ul> <p><b>General Refuse</b></p> <ul style="list-style-type: none"> <li>■ To provide separate labelled bins for recyclable materials deposit to encourage waste recycling. Consider participation in a local collection scheme if one is available;</li> <li>■ To store general refuse in enclosed bins or covered skips to minimise the occurrence of wind-blown litter or odour nuisance;</li> <li>■ To provide a contained refuse collection area and collect contaminated surface run-off within this area for treatment. If practicable this area must be enclosed to minimise the potential for odour nuisance and the occurrence of wind-blown litter;</li> <li>■ To collect refuse frequently (at least on a weekly basis) to minimise odour, pest and litter impacts; and</li> <li>■ To ensure general refuse is disposed of at the disposal site approved by the local authorities.</li> </ul> <p><b>Operational Waste Management</b></p> <ul style="list-style-type: none"> <li>■ To provide the necessary facilities, receptacles and transport for the temporary storage, removal and disposal of different types of wastes (do not mix hazardous waste with general refuse);</li> <li>■ To store general refuse generated from the power plant in enclosed bins in designated storage areas;</li> <li>■ To separate recyclables from the waste streams so as to facilitate the recycling of these materials;</li> <li>■ To develop recycling programmes for paper, aluminium cans and plastics bottles; and</li> <li>■ To store, handle and dispose of hazardous waste in accordance with good practices and comply with all the relevant statutory requirements for management of hazardous waste.</li> </ul>
<p>Landscape &amp; visual character deterioration</p>	<ul style="list-style-type: none"> <li>■ The following measures and good site practices are recommended:</li> <li>■ The extent of the construction areas should be limited;</li> <li>■ The earthworks and cut and fill areas should be blended into the landscape;</li> </ul>

Potential Impact	Potential Mitigation Measures
	<ul style="list-style-type: none"> <li>■ Cut and fill slopes as well as areas disturbed by construction activity are suitably top soiled and vegetated as soon as is possible after final shaping;</li> <li>■ All existing large trees (if any) that fall outside the earthworks area will be retained where possible;</li> <li>■ Felled trees should be replaced where possible and surround perimeter of site with replanted native trees;</li> <li>■ Natural colours should be used for buildings and other structures within the construction site;</li> <li>■ Site hoarding will be constructed where required. The colour of the hoarding should blend in with the surrounding environment;</li> <li>■ The laydown area, which will no longer be required for the operational stage, should be landscaped with suitable vegetation after the construction work is completed;</li> <li>■ Reduce the height from which floodlights are fixed and identify zones of high and low lighting requirements with the focus of the lights being inward, rather than outward;</li> <li>■ Avoid up lighting of structures but rather direct the light downwards and focused on the object to be illuminated;</li> <li>■ All external light fittings shall not allow light to shine upwards;</li> <li>■ All security and street/road lighting shall have “blinkers” or be specifically designed to ensure light is directed downwards while preventing side spill; and</li> <li>■ Area lighting on tall masts should be confined to the lower landform elevations.</li> </ul>
Ecology	<p>General mitigation measures are typically applied in the following order of priority, are:</p> <ul style="list-style-type: none"> <li>■ Avoidance: Potential impacts should be avoided to the maximum extent practicable by adopting suitable alternatives;</li> <li>■ Minimisation: Unavoidable impacts should be minimised by taking appropriate and practicable measures such as constraints on the intensity of works operations or timing of works operations; and</li> <li>■ Compensation: The loss of important species and habitats may be provided for elsewhere as compensation. Enhancement and other conservation measures should always be considered whenever possible.</li> </ul>
Community health and safety affectation	<ul style="list-style-type: none"> <li>■ Community Grievance System Implementation;</li> <li>■ Environmental Quality Monitoring; and</li> <li>■ Workers Code of Conduct implementation.</li> </ul> <p>A Stakeholder Engagement Management Plan will also be prepared. It will include different measures to maintain a pro-active communication process with the stakeholders of the Project.</p>
Demographic pattern, economy and livelihood affectation	<ul style="list-style-type: none"> <li>■ The agriculture land and other facilities that are within the Project’s area will be compensated through a Compensation Plan;</li> <li>■ A Community Grievance System and a Workers Code of Conduct will be implemented; and</li> <li>■ The hiring of local workers will be prioritized.</li> </ul>
Occupational Health and Safety	<ul style="list-style-type: none"> <li>■ Corporate Occupational Health and Safety (OHS) policy applicable to all operations;</li> <li>■ OHS Manual of Procedures, including ambient air quality monitoring procedure;</li> <li>■ Development of a multi-year OHS training plan for its staff;</li> <li>■ Definition of OHS Key Performance Indicators (KPIs) for monitoring and reporting; and</li> <li>■ Consolidated annual OHS performance reports.</li> </ul>

Potential Impact	Potential Mitigation Measures
Infrastructure services deterioration	<ul style="list-style-type: none"> <li>■ Camps for construction and operational workforces should be properly sited and designed to reduce demand on local infrastructure services;</li> <li>■ Map out traffic routes with speed limit and restriction of traffic hours to reduce pressure on road infrastructure; and</li> <li>■ A Community Grievance Mechanism will be implemented</li> </ul>
Accidental events	<ul style="list-style-type: none"> <li>■ All buildings fitted with fire alarms systems;</li> <li>■ Fuel tanks and chemical storage areas should be provided with locks and be sited on sealed areas. Establishment of secondary containment for fuel storage and hazardous materials;</li> <li>■ The storage areas of oil, fuel oil and chemicals should be surrounded by bunds or other containment devices to prevent spilled oil, fuel and chemicals from reaching receiving waters;</li> <li>■ Guidelines and procedures should be established for immediate clean up actions following any spillages of oil, fuel or chemicals;</li> <li>■ Surface run off from bunded areas should pass through oil/gas traps prior to discharge to the storm water system;</li> <li>■ Debris and refuse generated on-site should be collected, handled and disposed of properly to avoid entering the receiving waters;</li> <li>■ Oils, fuels and chemicals should only be used and stored in designated areas which have pollution prevention facilities. The bund should be drained of rainwater after a rain event;</li> <li>■ The oil contaminated water will be collected and handled by local licensed waste water sub-contractors (if available, to be determined at the later stage); and</li> <li>■ On site oil-water separators and holding facilities should be installed to accommodate unanticipated releases of oily water.</li> </ul>

## 7. PUBLIC CONSULTATION AND DISCLOSURE

This section summarises the scoping methodology and approach for stakeholder identification and analysis undertaken as part of the Project. An overview of the scoping consultations undertaken to date and recommendations for consultation and disclosure required as part of the EIA Study is also provided.

### 7.1 Scoping Approach

The methodology for stakeholder engagement includes the primary identification of stakeholders and sorting them according to their impact on the Project and the impact the Project will have on them. The stakeholders may include individuals, groups, and organisations.

#### 7.1.1 Scoping Stakeholder Engagement Objectives

The preliminary stakeholder identification and analysis will need to be further consolidated and based around a detailed stakeholder consultation programme during the EIA Study. The importance of such an analysis lies in the role played by such an understanding in the assessment of the socio-political environment surrounding the Project. It allows for:

- Identification of key stakeholders, their primary groupings and sub groupings;
- Identification of the interests, concerns and potential risks surrounding the stakeholders, as well as conflicts of interests (if any);
- Identification of key groups/ individuals who need to be informed about the Project;
- Identification of the impact and influence of the Project on the stakeholders and of the stakeholders on the Project;
- Generation of information essential to the planning, implementation and monitoring of the Project; and
- Development of a framework for participatory planning and implementation of various Project activities.

The process of stakeholder identification and analysis should allow for the formulation of a robust engagement strategy, which will then provide opportunity for the concerned stakeholders to be involved in the process of identification of areas of concerns as well as formulation of mitigation strategies for the same. This in turn should allow for the stakeholders to develop an understanding of the Project as well as the maintenance of positive relations between stakeholders and the Project Proponent.

#### 7.1.2 Stakeholder Characterisation

This section provides a brief characterisation of the broad stakeholder groups identified for the Project.

##### 7.1.2.1 National Authorities

This group of stakeholders include relevant ministries and governmental departments regulating the Project. The authorities which are likely to have the maximum influence on the Project include the following:

- Ministry of Electricity and Energy (MoEE);
- Ministry of Industry;
- Ministry of Transport and Communication;
- Ministry of Construction;

- Ministry of Agriculture, Livestock and Irrigation (MOALI)
- Ministry of Planning and Finance;
- Ministry of Natural Resources and Environmental Conservation (MONREC);
- Directorate of Water Resources and Improvement of River Systems (DWIR);
- Environmental Conservation Department (ECD);
- Myanmar Port Authority (MPA); and,
- Myanmar Investment Commission (MIC).

Engagement with the national authorities is expected to fulfil the following objectives:

- Seek clarity on the expectations on stakeholder engagement and disclosure;
- Get necessary permission to engage with government departments at different levels as well as to hold consultations in the Project Area of Interest; and
- Get access to useful data from national as well as regional offices.

### *7.1.2.2 Regional and Local Authorities*

These stakeholder groups are defined as those agencies of the government, at the regional and district levels who have the power to regulate or otherwise influence the Project in terms of establishing policy, granting permits and approvals for the Project, monitoring and enforcing compliance with the applicable rules and regulations and making available the necessary infrastructure and resources for the Project. These departments are also store houses of relevant information both for the impact assessment as well as to help implement management plans.

Engagement with the regional authorities is expected to fulfil the following needs:

- Seek expectations on stakeholder engagement and disclosure;
- Get necessary permission to engage with regional government departments as well as hold consultations in the Project Area of Interest;
- Provide introductory letters to meet various regional/local government departments and agencies;
- Obtain regional level data and information; and
- Get specific contacts of people to meet in the region, as well as necessary instructions

Engagement with the local level administration is aimed at the following: Obtain necessary local permissions for meetings:

- Seek an understanding of the specific issues and stakeholder concerns at the local level. For example, information on any important development or conflict could be important intelligence to obtain;
- Obtain district and township level social and environmental data;
- Provide introductions to key people at the township and village tract level;
- Provide introductions to representatives of the administration to join; and observe the consultation process; and
- Provide guidance on local security do's and don'ts.

Some of the key authorities at the regional and local level include the following:

- Yangon Regional Government (YRG);
- Yangon City Development Committee (YCDC);



- District and Township General Administration Department (GAD);
- Regional Environmental Conservation Department (ECD);
- Regional Members of Parliament;
- Directorate of Industrial Supervision & Inspection; and,
- Department of Rural Development
- Department of Public Health

### 7.1.2.3 Projected Affected Communities and Individuals

This group includes people who may be directly or indirectly affected by the Project's presence and activities and their representatives (leaders and other influential people).

This group will include (but not be limited to) the following:

- Village Tract Leaders;
- Village Leaders;
- Civil Society Organizations (CSOs);
- Vulnerable groups, including but not limited to subsistence farmers, fishermen, migrant workers, minority communities, and women.

The various stakeholder groups will be engaged directly as well as through their representatives, including traditional leaders, elected representatives, opinion leaders, and other influential entities. In addition, the Project will consult specifically with people representing potentially vulnerable or marginalised groups such as women, young people, landless people, the sick and disabled, and, potentially, ethnic minorities.

ERM had undertaken previous stakeholder consultations as part of EIA studies for various power projects in Yangon Region. Based on that, the six townships located in the vicinity of the Project are identified in the Project Area of Interest: Twantay, Kyee Myin Daing, Hlaing Tharyar, Seikgyi Kanaungto, Dala and Ahlone Townships. The corresponding village tract / villages of these five townships were then selected for engagement based on potential interaction with the Project's activities.

A list of the relevant townships and villages for the stakeholder consultation is presented in Table 7.1. It should be noted that the list of relevant townships and villages to be engaged has not yet taken into account the ongoing engagement/communication between NYDC and the communities as part of the general consultation in the area. As such, the list of townships and villages to be engaged may be revised. Additional villages may be added to the list.

**Table 7.1 List of Townships and Villages proposed to be engaged for the Project**

Township / Village	Included in Engagement and Rationale
Kyee Myin Daing (East) Township	Yes, this is required to inform the township and villages as the Bridge 1 and roads will be located in Kyee Myin Daing (East)
Kyee Myin Daing (West) Township	Yes, this is required to inform township and wards as the Bride 1 will be located in Kyee Myin Daing (West).
Seikgyi Kanaungto Township	Yes, this is required to inform the township and villages as the roads will be located in Seikgyi Kanaungto.
Hlaing Tharyar Township	Yes, this is required to inform township and wards as the Bridge 2 will be located in Hlaing Tharyar.

Township / Village	Included in Engagement and Rationale
Ahlong Township	Yes, this is required to inform township and wards as the Bride 1 will be located near Ahlong. (Outside the project area)
Twantay Township	Yes, this is required to inform the township and villages as the Bridge 2, Roads, Industrial Zones, Waste Water and Water Treatment Plants and Transformer substation and Transmission Lines and distribution lines will be located in Twantay.
Dala Township	Yes, this is required to inform the Village Tracts and Villages as the Project Area (the parts in Seikgyi Kanaungto Township) is close to Dala Township.
Kha Lauk Chaik, Yae Kyaw, Ta Mar Ta Kaw, Ma Ngay Village Tracts	Yes, this is required to inform the Village Tracts and Villages as the Bridge 2, Roads, Industrial Zones, Waste Water Treatment Plant and Transformer substation and Transmission Lines and distribution lines will be located in those Village Tracts.
Ku Lar Tan, Byauk Yoe and Kan Village Tracts	Yes, this is required to inform the Village Tracts and Villages as the Roads, Industrial Zones, Waste Water and Water Treatment Plants and Transformer substation and Transmission Lines and distribution lines will be located in those Village Tracts.
Let Pan Gwa, Kyun Ka lay, Gyaung Waing and Ah Lat Chaung Village Tracts	Yes, this is required to inform the Village Tracts and Villages as the Roads and Industrial Zone located near those villages.

#### 7.1.2.4 NGOs and Civil Society Organizations (CSOs)

This group includes those who may have an interest in the Project and its social and environmental aspects and non-governmental organisations representing their interests. It includes members of the wider general public in the state and region, civil society organisations such as cooperatives, professional associations, cultural groups, and citizens' associations, environmental and social groups and universities and other academic and research institutions undertaking work relevant to the Project, who may have views on the Project or information that will be useful for the assessment of Project impacts.

Some national/international NGOs/CSOs that have local presence in Yangon Region include:

- Myanmar Centre for Responsible Business (MCRB);
- World Wildlife Fund (WWF);
- Wildlife Conservation Society (WCS);
- Flora and Fauna International (FFI);
- Myanmar Green Network (MGN);
- Myanmar Alliance for Transparency and Accountability (MATA);
- Earth Rights International (ERI);
- EcoDev;
- International Commission of Jurists;
- Myanmar Environmental Rehabilitation-conservation Network (MERN);
- Myanmar Women Affairs Federation;
- Myanmar Maternal and Child Welfare Association;
- Youth Empowerment Association;

- Water, Research and Training Centre (WRTC);
- Water Mothers;
- Ayate Sit CSO (Twantay);
- Twantay Network; and
- Myat Thandar (Twantay);
- Oxfam;
- Earth Right International;
- International Commission of Jurists;
- Paung Ku;
- PLAN;
- Land Core Group
- GRET;
- Hlaing Tharyar Red Cross;
- Hlaing Tharyar Youth Network;
- Person with Disability Network;
- Hlaing Tharyar Institutional Network;
- Social Protection;
- Hlaing Tharyar Development Association

The engagement process will identify other relevant CSOs and NGOs that work with the communities.

#### **7.1.2.5 Media**

Usage of media and engagement may be required during the EIA stage or for the purpose of disclosure and information dissemination.

#### **7.1.2.6 Project Partners and Contractors**

Other development investors may be active on the western part of Yangon River. This may lead to cumulative impacts from these project activities. It is therefore essential to liaise with other investors to reduce and mitigate potential cumulative impacts associated with other activities in the area.

#### **7.1.3 Stakeholder Mapping**

Stakeholder mapping is a process of examining the relative influence that different individuals and groups have over a Project as well as the influence of the Project over them. The purpose of a stakeholder mapping is to:

- Identify each stakeholder group;
- Study their profile and the nature of the stakes;
- Understand each group's specific issues and concerns as well as expectations from the Project; and
- Gauge their influence on the Project.

On the basis of such an understanding, the stakeholders are categorised into high influence/priority, medium influence/ priority and low influence/priority. The stakeholders who are categorised as high influence are those who have a high influence on the Project or are likely to be heavily impacted by

the Project activities, and are thus a priority for engagement and consultation. Similarly, the stakeholders categorised as medium influence are those who have a moderate influence on the Project or that they are to be impacted by the Project but it is unlikely to be substantial. Stakeholders with low influences are those who have a minimal influence on the decision making process or are to be minimally impacted by the Project and are thus low on the Projects engagement list.

Table 7.2 provides a brief profile of the various stakeholders identified with their key concerns in terms of the Project activities and their degree of influence.

**Table 7.2 Stakeholder Mapping**

Stakeholders	Stakeholder Profile	Level of Influence/priority
<b>Primary Stakeholders</b>		
Farmers and local communities	This stakeholder group is comprised of those individuals and households who undertake farming within and near the Project.	High
Vulnerable Groups, including women, elderly, handicapped etc.	This stakeholder group is comprised of those members of the community who due to their socio-economic status are perceived to be more susceptible to the impacts from the project and will required special considerations including the disabled, widows and elderly.	Medium
<b>Secondary Stakeholders</b>		
Government Ministries	This stakeholder group is comprised of the central and region level government departments. These authorities may influence the project in terms of establishing policies, and implementation of the project. This stakeholder group comprises of ministries such as: <ul style="list-style-type: none"> <li>■ Ministry of Electricity and Energy (MoEE).</li> <li>■ Ministry of Industry.</li> <li>■ Ministry of Transport and Communication.</li> <li>■ Ministry of Construction.</li> <li>■ Ministry of Agriculture, Livestock and Irrigation</li> <li>■ Ministry of Planning and Finance.</li> <li>■ Ministry of Natural Resources and Environmental Conservation (MONRC).</li> <li>■ Directorate of Water Resources and Improvement of River Systems (DWIR).</li> <li>■ Environmental Conservation Department (ECD).</li> <li>■ Myanmar Port Authority (MPA).</li> <li>■ Myanmar Investment Commission (MIC).</li> </ul>	High
Local Authorities	This stakeholder group is comprised of the local government bodies, who have the power to regulate or otherwise influence the Project in terms of establishing policy, granting permits and approvals for the Project, monitoring and enforcing compliance with the applicable rules and regulations and making available the necessary infrastructure and resources for the Project. These departments are also a store house of relevant information. The authorities which are likely to	High

Stakeholders	Stakeholder Profile	Level of Influence/priority
	have the maximum influence on the Project include the authorities such as: <ul style="list-style-type: none"> <li>■ Yangon Regional Government (YRG).</li> <li>■ Yangon City Development Committee (YCDC).</li> <li>■ District and Township General Administration Department (GAD).</li> <li>■ Regional Environmental Conservation Department;</li> <li>■ Regional Members of Parliament...</li> <li>■ Directorate of Industrial Supervision &amp; Inspection.</li> <li>■ Department of Rural Development.</li> <li>■ Department of Public Health.</li> </ul>	
NGOs and Civil Society Organisations	This group includes all other people in society who may have an interest in the Project and its social and environmental aspects and non-governmental organisations representing their interests. It includes members of the wider general public in the state and district, civil society organisations, such as religious groups, cooperatives, professional associations, cultural groups and citizens' associations, environmental and social groups and universities and other academic and research institutions undertaking work relevant to the Project, who may have views on the Project or information that will be useful for the assessment of impacts.	High
Local Media	Local media is important for disclosure of information to communities.	High

## 7.2 Scoping Consultations / Site Visits

### 7.2.1 Methodology and Purpose

The Project developed a preliminary Stakeholder Engagement Plan (SEP) which contained an overview of the relevant stakeholder groups to be consulted and the estimate schedule for engagement activities. During the scoping, information was disclosed to various stakeholders, which included:

- Brief details about the Project;
- EIAs and SEA process, study and measures;
- Purpose of the consultations;
- Expectations from the local stakeholders in regards to the consultation etc.; and
- The likely adverse impacts to the public and/or environment.

#### 7.2.1.1 Meeting Structure

The meetings are conducted at the regional level with a representative for the Chief Minister of Yangon, Regional level ECD and GAD, Members of Yangon Region Hluttaw, Member of Pyithu Hluttaw, Director from Department of Social Welfare and Township GADs from the Project Area. At

the Township level, meetings were held with Township GADs, Ward and village administrators, Ward Patrons, CSOs/NGOs, related government departments and local communities.

The meetings were structured as follows:

- Presentation of Project and Project Proponent (in Myanmar language);
- Presentation of the proposed EIAs and SEA study and measures
- Question and Answer Session; and
- Focus Group Discussions (FGDs) and interviews; break out groups with key stakeholder such as Village Tract Leaders etc.

### 7.2.1.2 Usage of Tools

Tools to support and document the engagement process are shown in Table 7.3.

**Table 7.3 Tools used for Stakeholder Consultations**

Checklists/Tools	Purpose
Presentation	Approximately 25 slides which include information on the Project Proponent, information on the Project activities and timeline, potential impacts and mitigation, and contacts details.
Focus Group Discussion	A list of questions was utilised for the following groups: <ul style="list-style-type: none"> <li>■ Village Profile</li> <li>■ Farmers</li> <li>■ Households</li> <li>■ Women’s Group</li> </ul>
Maps and other visual tools	A large map that shows the Study Area used during meetings to discuss potential impacts and locations of key fauna species.

The following data were collected from the questionnaires mentioned in Table 7.3:

- **Village and Household Questionnaires:** Demographic profile, land holding; number of land owners and landless; types of school facilities; credit access; market access; health facility access; access to water source; cooking fuel type uses; fuelwood collection; type of diseases; electricity access; number of households with income; infrastructure; number of people by type of livelihood; number of people by type of livestock; number of members and meetings of support groups; and, type of support from and contribution to support group.
- **Community Leader Questionnaire:** Demographic profile, land holding; types of school facilities; market access; health facility access; access to water source; cooking fuel type uses; type of diseases; electricity access; infrastructure; number of people by type of livelihood; number of people by type of livestock; number of members and meetings of support groups; and knowledge on the proposed project.
- **Farmers Questionnaire:** land holding size and shape; level of subsistence; role of men and women in agriculture; government agricultural scheme, credit source, reason amount, interest rate and payment method; use of hired labour; wage amount paid by gender; cost of labour, irrigation, fertilizers and transportation and land renting; market of cash crop; number of households by type of livestock raised, number of heads, percentage of home consumption and percentage for the market; source and issues of fodder acquisition; crop cycle by crop.
- **Women’s Questionnaire:** number of women in the village, number of women headed households; role of women in community; opinion on equality of gender opportunities; influence on HH decision; problems of women; quality of life rating; women’s health problems; disease outbreaks; causes of death and affected gender group; women’s problem in employment; and percentage of women in farming.

Table 7.4 lists of the community leader interviews that were carried out in each village/ward and the number of participants.

**Table 7.4 Community Leader Interviews in each Village/Ward**

Township	Village/Ward
Ahlonge	Saw Yan Paing (West) Ward
Ahlonge	Lut Latt Yay Ward
Ahlonge	Saw Yan Paing (North)
Ahlonge	Kayin Chan Ward
Kyee Myin Daing	Sat San Ought Yone Alat Chaung Ward
Kyee Myin Daing	Sat San Ward
Kyee Myin Daing	Alat Chaung Ward
Kyee Myin Daing	Ought Yone Ward
Hlaing Tharyar	Ward (20)
Hlaing Tharyar	Ward (14)
Hlaing Tharyar	Ward (8)
Twantay	Tamar Ta Kaw Village
Twantay	Ma Ngay Village
Twantay	Gaung Wine Gyee Village
Seikgyi Kanaungto	Gaung Wine Layy Village
Seikgyi Kanaungto	Pan Pin Chaung Ward
Seikgyi Kanaungto	Pan Pin Chaung Ward

### 7.2.1.3 Stakeholder Engagement Plan

Potential relevant stakeholders and potentially affected communities were identified through a preliminary site visit, discussions with the Consortium and a review of google earth imagery. A top-down approach was followed, firstly the national level stakeholder were consulted and contacted such as Chief Ministers and Regional GADs. These discussions allowed the survey team to gain permission to enter the villages and also helped to map out which villages were closest to the Project Area and could be potentially affected. The stakeholder engagement plan is provided in Table 7.5.

**Table 7.5 Stakeholder Engagement Plan**

Level	Stakeholder Group	Purpose of Engagement	Method of Engagement
National	<ul style="list-style-type: none"> <li>■ Ministry of Electricity and Energy (MoEE);</li> <li>■ Environmental Conservation Department (ECD);</li> <li>■ Ministry of Natural Resource and Environmental Conservation (MONREC (Naypyidaw);</li> <li>■ Ministry of Industry;</li> <li>■ Ministry of Transport and Communication;</li> <li>■ Ministry of Construction;</li> </ul>	<ul style="list-style-type: none"> <li>■ Seek clarity on the expectations on stakeholder engagement and disclosure;</li> <li>■ Get necessary permission and contacts to engage with government departments at different levels as well as to hold consultations in the Study Area; and</li> <li>■ Get access to useful data from national as well as regional offices.</li> </ul>	<ul style="list-style-type: none"> <li>■ Meetings and Semi Structured Interviews.</li> </ul>

Level	Stakeholder Group	Purpose of Engagement	Method of Engagement
	<ul style="list-style-type: none"> <li>■ Ministry of Agriculture, Livestock and Irrigation.</li> </ul>		
Regional	<ul style="list-style-type: none"> <li>■ Yangon Regional Government (YRG);</li> <li>■ Yangon City Development Committee (YCDC);</li> <li>■ General Administration Department (GAD);</li> <li>■ Township Development Committee;</li> <li>■ Environmental Conservation Department;</li> <li>■ Department of Rural Development;</li> <li>■ Regional Members of Parliament;</li> <li>■ Department of Highways;</li> <li>■ Department of Bridges;</li> <li>■ Directorate of Industrial Supervision &amp; Inspection;</li> <li>■ Department of Urban and Housing Development (DUHD);</li> <li>■ Department of Electric power Transmission and system Control (DPTSC);</li> <li>■ NYDC Committee;</li> <li>■ Yangon Region Electrical Committee;</li> <li>■ Yangon Region Water Committee;</li> <li>■ Representatives from Twantay Canal Improvement Works project and Pan Hlaing Sluice Project.</li> </ul>	<ul style="list-style-type: none"> <li>■ Seek expectations on stakeholder engagement and disclosure;</li> <li>■ Seek introductory letters to meet various government departments and agencies;</li> <li>■ Seek clarity on the range of permission and approvals required at different levels of regional government;</li> <li>■ Obtain regional level data and information; and</li> <li>■ Seek an understanding of the requirements and plan for government presence/participation in the consultation process.</li> </ul>	<ul style="list-style-type: none"> <li>■ Meetings and Semi Structured Interviews.</li> </ul>
Township / District	<ul style="list-style-type: none"> <li>■ Township / District GAD;</li> <li>■ Township Development Committees; and</li> <li>■ Local CSOs and NGOs.</li> </ul>	<ul style="list-style-type: none"> <li>■ Obtain necessary local permissions for meetings;</li> <li>■ Provide an understanding of the specific issues and stakeholder concerns at the local level;</li> <li>■ Obtain district and township level social and environmental data; and</li> <li>■ Provide introductions to key people at the township and village tract level.</li> </ul>	<ul style="list-style-type: none"> <li>■ Meetings, Individual interviews.</li> </ul>
Village Tract / Village	<ul style="list-style-type: none"> <li>■ Village Leaders, Community Opinion Leaders;</li> <li>■ Women;</li> <li>■ Farmers;</li> <li>■ Local community; and</li> <li>■ Village representatives of schools, hospitals etc.</li> </ul>	<ul style="list-style-type: none"> <li>■ Obtain information on local potential impacts from the Project; and</li> <li>■ Obtain village tract and village level social and environmental data.</li> </ul>	<ul style="list-style-type: none"> <li>■ Village Meetings, Focus Group Discussions, Project affected people, and Interviews.</li> </ul>



### **7.2.2 Summary of Meetings and Key Findings**

For the Scoping Phase, consultation meetings were held with various relevant stakeholders at the Kyee Myin Daing, Ahlone, Twantay, Seikgyi Kanaungto, and Hlaing Tharyar Townships. The consultation helped the Project to gather information on potentially affected people, and on potential data gaps and how these can be closed out in the EIA Report. Scoping consultation involved face-to-face meetings with a range of stakeholders in Yangon including a representative for the Chief Minister attended by other relevant Ministers, Regional level ECD and GAD, Members of Yangon Region Hluttaw, Member of Pyithu Hluttaw, Director from Department of Social Welfare, Township GADs, Ward and village administrators, Ward Patrons, CSOs/NGOs, related government departments and local communities and community representatives.

The date, time, location, stakeholder and purpose of each meeting is provided in Table 7.6.

**Table 7.6 Consultation Activities Undertaken during Scoping**

<b>Date, time</b>	<b>Location</b>	<b>Purpose of Engagement</b>
Wednesday 23 <sup>rd</sup> January, 2019	Chief Minister Office Meeting	<ul style="list-style-type: none"> <li>■ Present information on the Project</li> <li>■ Get approval for township/ward and village level meetings</li> <li>■ Gather concerns and suggestions from stakeholders</li> </ul>
Wednesday 30 <sup>th</sup> January, 2019	Twantay Township GAD Office , Seikgyi Kanaungto Township GAD office and Kyee Myin Daing Township GAD Office	<ul style="list-style-type: none"> <li>■ Meeting arrangements and approvals</li> </ul>
Thursday 31 <sup>st</sup> January, 2019	Ahlone Township GAD office and Hlaing Tharyar Township GAD Office	<ul style="list-style-type: none"> <li>■ Meeting arrangements and approvals</li> </ul>
Friday 1 <sup>st</sup> February, 2019	Ahlone Township	<ul style="list-style-type: none"> <li>■ Present Project information to local government, ward administrators, local communities and other interested parties</li> <li>■ Gather concerns and suggestions from stakeholders</li> <li>■ Undertake socio-baseline data collection</li> <li>■ Interview with Ward Administrators</li> </ul>
Saturday 2 <sup>nd</sup> February, 2019	Twantay Township	<ul style="list-style-type: none"> <li>■ Present Project information to local government, ward administrators, local communities and other interested parties</li> <li>■ Gather concerns and suggestions from stakeholders</li> <li>■ Undertake socio-baseline data collection</li> <li>■ Interview with Ward Administrators</li> </ul>
Saturday 2 <sup>nd</sup> February, 2019	Kyee Myin Daing Township	<ul style="list-style-type: none"> <li>■ Present Project information to local government, ward administrators, local communities and other interested parties</li> <li>■ Gather concerns and suggestions from stakeholders</li> <li>■ Undertake socio-baseline data collection</li> <li>■ Interview with Ward Administrators</li> </ul>
Sunday 3 <sup>rd</sup> February, 2019	Seikgyi Kanaungto Township	<ul style="list-style-type: none"> <li>■ Present Project information to local government, ward administrators, local communities and other interested parties</li> <li>■ Gather concerns and suggestions from stakeholders</li> <li>■ Undertake socio-baseline data collection</li> <li>■ Interview with Ward Administrators</li> </ul>
Sunday 3 <sup>rd</sup> February, 2019	Hlaing Tharyar Township	<ul style="list-style-type: none"> <li>■ Present Project information to local government, ward administrators, local communities and other interested parties</li> <li>■ Gather concerns and suggestions from stakeholders</li> <li>■ Undertake socio-baseline data collection</li> <li>■ Interview with Ward Administrators</li> </ul>

The minutes of the meetings and photos from the consultation are provided in Appendix A; some photos of the meeting are also provided in Figure 7.1.



**Figure 7.1 Photos from the Scoping Consultation Meetings**

### 7.2.3 Key Queries Raised During Consultation Meetings

Table 7.7 summarises the key questions raised during consultation and how these will be considered in the EIA study.

**Table 7.7 Key Questions**

Questions	Responses	EIA Consideration
<b>Land Compensation</b>		
How will the company deal with land compensation?	A 20/80 compensation scheme was agreed with the Security, Peace, Stability and Rule of Law Working Committee. The previous government set 15/85 land compensation scheme however a 20/80 scheme is fairer.	The EIA will provide a high level review of the resettlement / compensation process.
What is the development plan for farmland compensation?	The compensated lands will be upgraded to residential lands from farming land.	
<b>Electricity</b>		
Where the power source for this project?	The Project may potentially get electricity from the Mee Lin Chaint (1350 MW) power plant (in Ayeyarwady Region). The Yangon Regional Government discussed with Union Minister of Ministry of Electricity and Energy regarding the electricity requirements for the project and Union Minister agreed to provide the power to NYDC. NYDC is also looking for private power investor producing as a secondary option of power source. Transformer substations will be constructed within the new city and will provide 24 hour electricity for all industries.	The EIA Report will consider the potential impact on existing infrastructure and services to ensure there is no significant impact on current power supply.
<b>Roads and Transportation</b>		
Will there be an underground transportation system?	All the transportation facilities will be above ground.	The impacts from road construction, increased traffic, and impacts on existing local infrastructure (roads) / local communities will be considered in the EIA Report.
What will be the width of roads in the New City?	The roads will be at least two lanes and included drainage on both sides. Some major roads will be up to four lanes.	The impacts from road construction, increased traffic, and impacts on existing local infrastructure (roads) / local communities will be considered in the EIA Report.
During Cyclone Nargis, Twantay-Hlaing Tharyar Road was not flooded but the Kha Lauk Chaik-	NYDC has commissioned a dedicated Flood Risk Assessment which will be conducted by Royal Haskoning for the	The design of the Project incorporates flooding risk.

Questions	Responses	EIA Consideration
Seikgyi Kanaungto road was flooded. The road level should be as high as possible and as high as the Twantay-Hlaing Tharyar Road to ensure it is protected from flooding.	Project. In accordance with good international practice, Royal Haskoning conducted flood analysis for 100-year events, considering tidal flooding, climate change, and precipitation. Flood protection for the Industrial Zones and Resettlement Areas will be prioritised. After that, the Project will upgrade the flood protection of the other infrastructure facilities as per the progress of the Project.	The EIA Report will contain an Emergency Response Plan, which will include natural disasters, to ensure that there are no accidental impacts to the environment or people from construction or operation of the Project.
<b>Bridge</b>		
Is there any bridge construction in the Seikgyi Kanaungto Township?	For the whole Project, it is proposed to construct twelve bridges; two bridges will be built in Stage 1 of Phase 1. The design and location for all bridges for Phase 1 will be confirmed at the end of February 2019.	There will be a separate EIA for bridge construction and operation for the whole Project.
<b>Construction</b>		
Where will the Project use sand and soil? We suggest the Project does not excavate the soil from the Twantay, Kawhmu, and Kungyankone area. We recommend to take the soil from the river bank.	We are planning to excavate from other areas (i.e., not the Project Area) as well as potentially excavating soil from the lake in the Project Area and Twantay channel.	The excavation of sand/soil from the Project Area will be considered in the EIA report in terms of the impact on the environment and people.
<b>Water and Waste Water</b>		
Will there be a storm water collection system?	A water treatment plant and storm water collection system is included as part of the project.	The impacts of wastewater and storm water drainage will be considered in the EIA Report and the impact to local communities and environment.
Is it correct that the project will take the water from Toe River?	Water intake will be from Toe River; this has been studied by JICA, who prepared the 2040 Master Plan for Yangon Region. The water quality has been tested which suggested that the quality is good to use as a water source. Ground water from the Project Area will not be used due to its quality and concerns about land subsidence.	The impacts of water intake from the Toe River will be considered in the EIA Report. The EIA Report will specify that no groundwater from the Project Area will be utilised given the poor quality and potential impact on existing water resources.
<b>Land Utilization</b>		
Is all the land within the Project Area farm land?	About 85% of the land is farmland in the Project Area.	Impacts for the changes of land utilisation will be considered in the EIA Report.
<b>Environment</b>		

Questions	Responses	EIA Consideration
What about villages outside of Project Area's clean environment? Based on experiences with existing industrial zones, it is observed that after a few decades the environment will become affected. Will villages in Hlaing Tharyar Township have environmental impacts?	Our EIA will not just focus on the Project Area. We also assess the surrounding area and include this in our mitigation recommendations. We will conduct primary baseline surveys and if the current baseline is degraded, it means that we will adopt stricter environmental management and mitigation measures for the Project. Furthermore, monitoring plans will also be prepared and reported to the ECD every 6 months in order to confirm whether mitigation measures are effective.	Environmental impacts and mitigation measures will be considered in the EIA Report for the Project Area and all surrounding areas in the Area of Influence (i.e., area where impacts may occur).
<b>Urban Management</b>		
Will there be any physical displacement for the people living in the Project Area?	The villages in the Project area will remain untouched and there will also be green spaces between the new developed areas and the existing villages.	Impacts on the villages in the Project Area from construction and operation of the Project will be considered in the EIA Report.
How will the city manage the population increase in the future and what is the process for the Bill of Materials (BoM) and Quality Control (QC)?	There is a Master Plan prepared by AECOM and includes a consultant to countercheck the process of BoM and QC.	Population increases will be assessed in the EIA Report in terms of resource use and associated impacts.
When will the community settle in the New City?	The industries will be constructed in 2022 and there will be job opportunities for locals after this time.	Social impacts will be considered in the EIA Report.
Does NYDC have any plans regarding the squatter areas for the New City?	NYDC understands the current squatter issues and ensure adequate workers' accommodation is included in the Project Area. The construction workers will be required leave the Project Area once construction is complete.	The influx of workers for construction and operation phases and the impacts from this influx on local communities and environment (including squatters) will be considered in the EIA Report.
Is there any plan to include an area for the administrative departments?	NYDC will include administrative department areas that cover approximately 5% of the resettlement areas.	-
Are there any hotel zones in the Project Area?	There will be an approximately 20 square kilometre commercial and residential development areas, which include areas for hotels and condominiums.	-
There are 2.3 million of disabled persons according to census data. How is the project designed so services and	NYDC considered the design for disabled persons as per American with Disabilities Act (ADA) compliance, and Myanmar National Building Codes for buildings and infrastructure.	-

Questions	Responses	EIA Consideration
infrastructure are assessable for disabled persons?		
People from different economic statuses want to purchase houses in this Project Area. How many options are there for them?	There will be different types of housing starting from one storied to up to mid to high rise buildings. We designed for the estimated 1.2 million people. Everyone can buy houses depending upon the amount of money they have. Houses will vary from private compounds and condominiums to affordable housing.	-
Will the cemeteries from Seikgyi Kanaungto and Ah Lat Chaung be combined into one?	The existing cemeteries will remain as they are.	Cultural impacts will be considered in the EIA report.
<b>Waste Management</b>		
What is the Waste Management system?	There will be industrial and residential waste. For industrial waste, we are discussing with interested investors including DOWA company, which is currently waste management facility in Thilawa. All the waste from the Project and the city will be managed in line with National Standards and Guidelines.	In terms of waste management, generation, and disposal, all environmental and social impacts will be considered in the EIA Report.
Where will waste be discharged and how many acres will be set up for a dumpsite?	There is a plan for industrial waste and municipal waste will be disposed of like Thilawa industrial Zone.	In terms of waste management, generation, and disposal, all environmental and social impacts will be considered in the EIA Report.
<b>Employment Opportunity</b>		
Will there be employment opportunities for local people?	There will be employment opportunities for people who live in and around the new city during the construction and operation of the Project.	Positive impacts from jobs will be considered in the EIA Report.
I would like to request the company to create employment opportunities for disable persons.	NYDC will record your suggestion and try to implement.	Positive impacts from jobs will be considered in the EIA Report.

## 7.3 Future Engagement and Disclosure

### 7.3.1 Engagement

During the EIA Phase, there will be Village and Township level public consultation meetings in Ahlone, Kyee Myin Daing, Seikgyi Kanaungto, Twantay, Hlaing Tharyar, and Dala Townships in Yangon Region. The purpose and structure of these meetings will be the same as the Scoping Phase consultations. FGDs and socio-economic surveys will be conducted among key stakeholders, as shown in the Appendix D. Social and environmental baseline data collection and results, stakeholder

concerns during scoping consultations and preliminary identification of potential impacts and proposed mitigation measures will be presented during the EIA consultation meetings.

### **7.3.2 Disclosure**

As per the requirements of the EIA Procedure, NYDC disclosed information on the Project in two newspapers (one in English and one in Myanmar). Project information will be available on NYDC's website and signboards will be posted at the site office.

In compliance with potential lenders requirements to undertake meaningful consultations, information on the findings of the EIA, mitigation and beneficial measures in the EMP will be disclosed to the public and project affected people. Community meetings will be held in directly affected wards and villages to explain how the impacts and risks will be managed by the Project.

The advertisements for the scoping stage that were announced in The Global New Light of Myanmar (English) and The Mirror (Burmese) are provided in Figure 7.2 and Figure 7.3.

The Scoping Report will be shared on NYDC website (<https://www.nydc.com.mm/>).





**ENVIRONMENTAL IMPACT ASSESSMENTS & STRATEGIC ENVIRONMENTAL ASSESSMENT OF THE DEVELOPMENT OF NEW YANGON CITY PHASE 1 MASTERPLAN**

New Yangon Development Company Ltd. ("NYDC") proposes to develop the New Yangon City in Seikgyi Kanaungto, Twantay, Hlaing Tharyar, and Kyee Myin Daing Township, Yangon Region, Myanmar. For Stage 1 of Phase 1 of the Project, the New Yangon City is split into the following six groups based on the types of facilities: Bridges, Roads, Power, Industrial Zone, Water, and Wastewater.

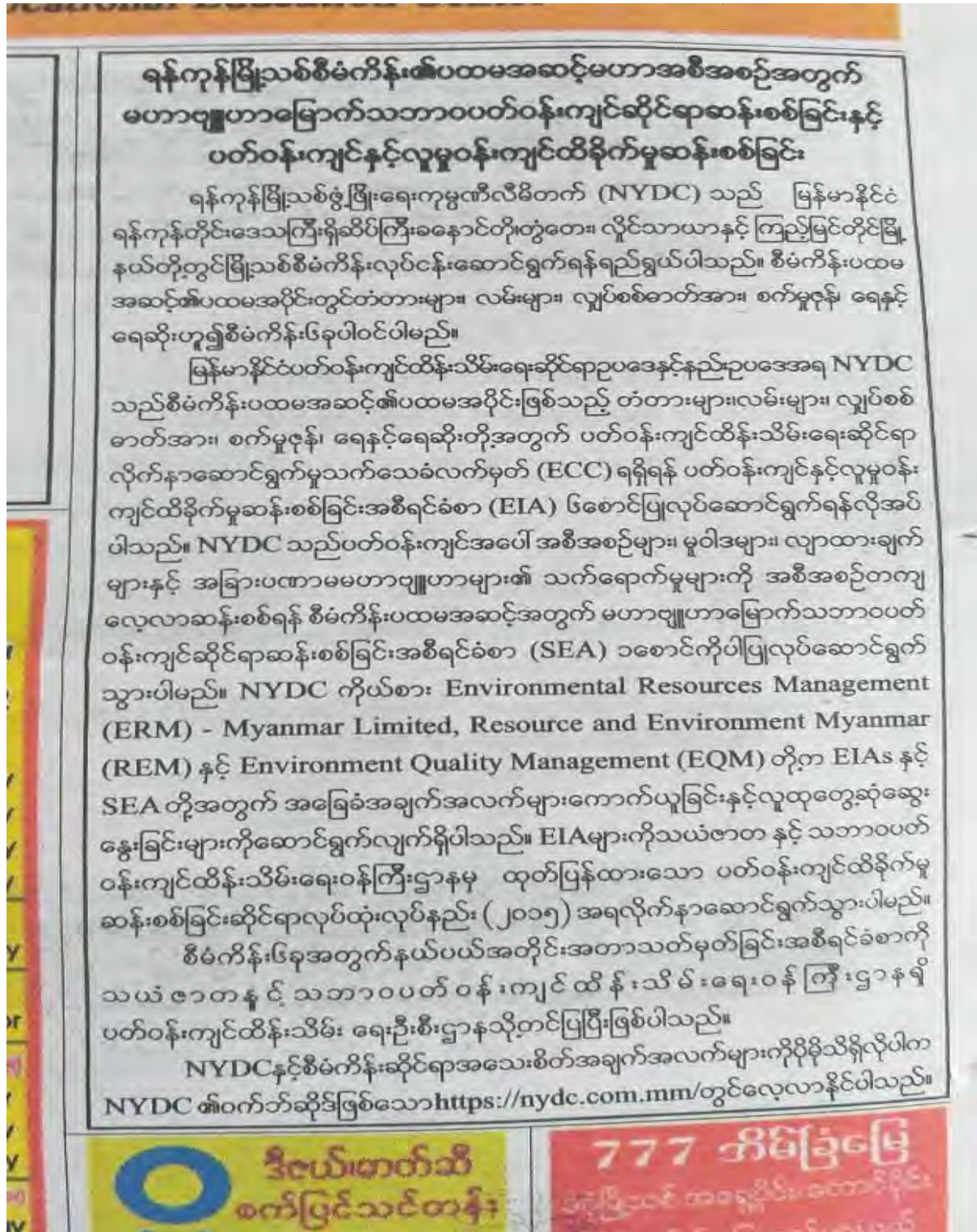
Under the Environmental Conservation Law and Rules of the Republic of the Union of Myanmar, NYDC is required to undertake six Environmental Impact Assessments (EIAs) for Bridges, Roads, Power, Industrial Zone, Water, and Wastewater in order to obtain an Environmental Compliance Certificate (ECC) for Stage 1 of Phase 1. NYDC will also undertake one Strategic Environmental Assessment (SEA) for Phase 1, to systematically analyse the impacts of plans, policies, programmes and other strategic initiatives on the environment. Environmental Resources Management (ERM) - Myanmar Limited, Resource and Environment Myanmar (REM) and Environment Quality Management (EQM), on behalf of NYDC, are currently undertaking the EIAs & SEA, which include baseline surveys and stakeholder engagement. The EIAs will be conducted in accordance with the Ministry of Natural Resources and Environmental Conservation (MONREC)'s EIA Procedure(2015).

The scoping reports for the six project components have been submitted to the Environmental Conservation Department (ECD) of the MONREC.

More information about NYDC and the Projects can be found at NYDC website <https://nydc.com.mm/>.

English version of the Public Consultation advertisement published on 29th April, 2019

**Figure 7.2 Newspaper Advertisement (Global New Light of Myanmar)**



Myanmar version of the Public Consultation advertisement published on 29th April, 2019

Figure 7.3 Newspaper Advertisement (The Mirror)

## 8. CONCLUSIONS AND RECOMMENDATIONS

The Scoping Study focused on the potential impacts associated with the construction and operation of the Project. Potential environmental impacts during construction are likely to be temporary and localised to the Project Area. Impacts during construction include air (dust) and noise emissions, vegetation clearance, land use change, local infrastructure, and livelihoods and economy. Potential impacts during operation, include those related to noise, local infrastructure, livelihoods and economy, and landscape/visual amenity. Impacts from accidental events have been considered in this scoping and all the impacts will be assessed in detail in the EIA Study.

From a social perspective, the Project is located in Kyee Myin Daing, Twantay and Hlaing Tharyar Township. The scoping visit in February 2019 confirmed that this was the main concern from the communities in terms of environmental and social impacts were traffic, squatters and access to the new city.

### 8.1 Recommendations for EIA Study

The Scoping Study makes the following recommendations for the EIA Study which are explained in more detail in Section 9;

- Environmental baseline surveys for noise, ground water quality, and soil quality, marine water quality, marine sediment quality, marine benthos, and terrestrial biodiversity will be undertaken for the EIA study to inform the impact assessment.
- NYDC will manage the environmental and social risks identified through the Environmental and Social Management System (ESMS) and prepare an Environmental Management Plan (EMP) for the Project.
- Social baseline data collection (e.g. focus group discussions with farmers, women), and public consultation will be undertaken in Seikgyi Kanaungto, Twantay, Kyee Myin Daing, Hlaing Tharyar, Dala and Ahlone Township to assess whether the Project is likely to have any adverse impact.
- Information will be disclosed as per the EIA Procedure, on the NYDC's website, in newspapers and at sign boards around the Project Area.
- NYDC will conduct traffic surveys, flood risk assessments, and finalise the master plan for the EIA Study.

## 9. TERMS OF REFERENCE FOR THE EIA STUDY

### 9.1 Introduction

A key outcome of scoping includes the creation of the Terms of Reference (ToR) for the EIA Study. The EIA Study will then be carried out according to the ToR. This section sets out the following:

- EIA objectives;
- Overview of activities to complete the EIA process;
- Desktop studies;
- Baseline survey methodology and locations;
- Stakeholder engagement;
- Impact assessment methodology; and
- Outline structure for the EIA Report.

### 9.2 EIA Objectives

The purpose of the EIA is to assess the potential impacts of the Project activities on the environment (including biological, physical, and socio-economic resources), and where applicable to design mitigation or enhancement measures to remove, reduce, or avoid negative impacts to the environment or people.

### 9.3 EIA Steps

Following on from the Scoping Phase of the Project, ERM will:

- Update and finalise the technical Project description as further details become available;
- Collect additional baseline data through desktop research and baseline surveys to complete a comprehensive description of the environmental and social conditions;
- Conduct additional stakeholder consultation;
- Develop mitigation and enhancement measures and outline an EMP including an approach for monitoring; and
- Report findings in a comprehensive EIA Report and present the mitigation and enhancement measures.

### 9.4 Desktop Review

In order to assess potential Project impacts, baseline environmental and social conditions relevant to Project impacts and risks shall be described for the Study Area. It will cover the range of physical, biological, socio-economic, and cultural features that are likely to be affected. Information will be presented for different spatial levels (e.g. Project Area, and Study Area) where applicable.

Secondary data to be used will include; statistical records, census records, government reports, NGO publications, academic studies and texts, topographic maps, aerial photos, and satellite imagery. Project engineering studies will also be reviewed for quantitative information on environmental elements.

### 9.5 Baseline Environmental Surveys

Primary data will be collected by international and Myanmar specialists applying industry-recognised survey and analysis methods. The sampling data collected in the Study Area will be used in all EIAs and the SEA. Results will be used respectively in each EIA and to help address cumulative impacts. Details are provided in the following sections.

### 9.5.1 Sampling Locations

Table 9.1 shows the sampling plan, and Figure 9.1 shows the sampling points location.

**Table 9.1 Sampling Plan**

Topic	Parameters	Number of Sites	Sample per Site	Total	Monitoring Frequency
Air Quality	NO <sub>2</sub> , SO <sub>2</sub> ,	27	1	27	One season, four weeks continuous monitoring with diffusion tubes
Air Quality	PM <sub>10</sub> , PM <sub>2.5</sub>	18	1	18	One season, 24 hrs continuous monitoring with machine
Noise	Sound Level (LAeq in dB(A))	27	1	27	One season, day time (07:00-22:00) and night time (22:00-07:00) monitoring for 24 hours for two days (1 weekday and 1 weekend)
Ground Water Quality	pH value, Temperature, Biochemical Oxygen Demand (BOD), Chemical Oxygen Demand (COD), Oil and Grease, Total Nitrogen, Total Phosphorus (TP), Total Suspended Solids (TSS), Total Phenols, Mercury (Hg), Arsenic (As), Zinc (Zn), Copper (Cu), Total Chromium (Cr), Ammonia, Chlorine, Sulphide, Nitrate, Fluoride, Total Coliform.	24	3	72	One season, in situ and lab analysis using existing well locations in villages
Surface Water Quality	pH value, Temperature, Biochemical Oxygen Demand (BOD), Chemical Oxygen Demand (COD), Oil and Grease, Total Nitrogen, Total Phosphorus (TP), Total Suspended Solids (TSS), Total Phenols, Mercury (Hg), Arsenic (As), Zinc (Zn), Copper (Cu), Total Chromium (Cr), Ammonia, Chlorine, Sulphide, Nitrate, Fluoride, Total Coliform.	24	3	72	One season, in situ and lab analysis in Yangon River, Twantay Canal, local creeks and ponds, and Toe River
Soil Quality	pH, Iron (Fe), Cadmium (Cd), Lead (Pb), Zinc (Zn), Copper (Cu), moisture content	24	3	72	One season

Scoping Report

Topic	Parameters	Number of Sites	Sample per Site	Total	Monitoring Frequency
Biodiversity	Conduct habitat mapping and establish biodiversity indices, species inventory and identification of threatened species	9	Within 500m of the Project Area and water pipeline route	9	One season
	For Aquatic fauna, this will include interview of fishermen and local markets.				



**Figure 9.1 Sampling Points Location**

## 9.5.2 Sampling Methodology

### 9.5.2.1 Ambient Air Monitoring

Baseline ambient air monitoring to be conducted within the Study Area (2km buffer around the whole New Yangon City Phase 1 Development; encompassing the Townships neighbouring the **Project Area**). Sample locations are selected by the nearest sensitive receptors locations off-site. Air quality monitoring locations were selected by identifying potentially affected communities, with consideration given to the prevailing wind conditions and Project activities. There is limited local monitoring of meteorology and therefore the Weather Research and Forecasting Model data was used to generate meteorological data for the purpose of reviewing climatic conditions, review regional air quality and identify representative sensitive receptors.

A total of 27 air quality monitoring sites have been established at locations in the Study Area. At each monitoring location, measurements of NO<sub>x</sub>, NO<sub>2</sub> and SO<sub>2</sub> will be taken using Palmes type diffusion tubes and measurements of PM<sub>10</sub> and PM<sub>2.5</sub> will be undertaken by using the direct reading of HAZ-SCANNER Environmental Perimeter Air Station (EPA).

Diffusion tubes are passive samplers that consist of small plastic tubes which contain a chemical reagent to absorb the pollutant to be measured directly from the air. The preparation and analysis of the diffusion tubes is undertaken to BS EN 13528. The technique is widely recognised internationally, including by the IFC, US EPA and UK Environment Agency. There is best practice guidance, adopted by this assessment, available from the US EPA and from the UK Department for the Environment, Food and Rural Affairs (DEFRA) on the siting and deployment of tubes. The analysis of the exposed tubes is completed through Ion Chromatography (United Kingdom Accreditation Service (UKAS) Accredited Method ISO/IEC 17025:2005).

### 9.5.2.2 Ambient Noise Monitoring

Baseline ambient noise monitoring to be conducted within the Study Area. Noise monitoring (db (A)) will be conducted at selected locations that can reflect the exposure of the nearest local community's and sensitive locations (e.g., houses, schools, monasteries, etc.) and duration and frequency will be recorded for 24hrs continuously for (two) consecutive days at each site, covering a weekday and a weekend day, using the Sound level Meter (Model: SL-4023SD) along with SD card real time data recorder (USB/RS232). The monitoring procedures, data analysis and interpretation are carried out in accordance with the guidelines of USEPA and the operational manufacture.

### 9.5.2.3 Ground Water and Surface Water Quality

In general, water samples will be collected by using clean sampling dipper in order to avoid sample contamination from other sources according to the standard operation procedures. Before sample collection, the appropriate measures including wearing of disposable and powder less gloves and rinsing of sampling dipper with native water will be carried out so as to condition, or equilibrate to the sample environment and make sure that all cleaning-solution residues are removed. The water-sampling dipper is immersed approximately 1m depth into the flowing stream and then filled into the sample bottles. Total dissolved solid (TDS), conductivity, chlorine, PH value, temperature will be measured on-site at the sampling locations according to the standard operation procedures.

The sample bottles will be partially filled and rinsed with the water to be sampled (rinse water). In order to avoid suspended sand particles, the water for rinsing will collect at the edge of the stream in an area of low-flow turbidity and then drained the rinse water.

After sample collection, sample bottles will be kept in a cooling box with ice/ice packs until the laboratory. All water sample will be sent to ALS Hong Kong Laboratory and measured the following parameters.



United States Environmental Protection Agency (USEPA) (2002) standard method for chemical analysis of water and wastewater and American Public Health Association (APHA) (2005) Standard method for examination of water and wastewater will be used to analyse the surface and ground water quality.

#### 9.5.2.4 Soil Quality

Soil samples will be collected from drill -holes dug approximately 1 m depth by soil auger (hand auger drill). During sample collection, gloves will be worn, and glove and soil auger will be rinsed with clean water. Samples will be transferred into wide-mouth glass bottles and sent to an internationally accredited laboratory (ALS Hong Kong Laboratory) in Hong Kong. The soil samples will be collected according to the standard procedure and kept in cooling box at 4°C till the respective laboratory. Dutch Standards for Soil Quality will be used to analyse the data.

#### 9.5.2.5 Biodiversity

##### *Terrestrial Flora (Wet Season)*

Surveys will be conducted to:

- Determine the presence of species of conservation significance<sup>1</sup> (Critically Endangered, Endangered and Vulnerable on the IUCN Red List of Threatened Species; endemic species; and Myanmar Protected species).
- Determine the presence of any invasive species within the Project Area and at the cooling water outflow (according to the Global Invasive Species Database and Myanmar national listings).

Transect surveys will be used to identify the aforementioned species. GPS reference locations are to be made for all individual species identified.

Representative samples are to be taken of different vegetation communities within the Study Area Mapping of mangrove health and extent within this area is to occur. Particular focus should be on identifying individuals of the Critically Endangered Mangrove species, *Sonneratia griffithii*, if present.

Undertake vegetation class/land use mapping to show the type, condition and distribution of vegetation classes of the surveyed area. This mapping may occur through satellite image/aerial photograph interpretation and a series of inspections to confirm vegetation class distribution. Qualitative descriptions and a photographic record of the vegetation classes and conditions are to be provided based on field observations.

##### *Birds and Mammals*

Surveys will be conducted for mammals and birds within the Study Area, covering the range of habitats including paddy, woodland, mangroves etc. Representative areas along transmission line route using relevant techniques (villager interviews, transect surveys). The surveys should focus on the presence of species of conservation significance. Surveys will determine the presence of any invasive species within the Project Area (according to the Global Invasive Species Database and Myanmar national listings).

##### *Aquatic/Marine/Mangrove*

Aquatic/Marine/Mangrove survey at the bridge locations and water intake locations will be conducted outflow using relevant techniques (transect surveys, nocturnal and diurnal inspection of habitats). Surveys are to be conducted at representative locations to sample to all habitats present, including

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<sup>1</sup> CR, EN and VU on the IUCN Red List of Threatened Species; migratory and endemic species; congregatory and Myanmar Protected species

paddy, woodland, mangroves etc. The surveys will focus on the presence of species of conservation significance. Data on fish species will be collected from local community interviews.

## 9.6 Stakeholder Engagement and Socio-economic Data Collection

The stakeholder engagement to be undertaken is presented in the following sections. This is required to inform stakeholders about the Project as well as to fill any data gaps identified which will be necessary to conduct a robust impact assessment.

### 9.6.1 Public Consultations for the EIA

During the EIA, public consultation and disclosure will be undertaken across the various stakeholder groups identified. For the potentially affected communities, consultation and disclosure will be undertaken in Seikgyi Kanaungto, Twantay, Kyee Myin Daing, Hlaing Tharyar, Dala and Ahlone Township. The public consultation meetings locations during the EIA stage are shown in Figure 9.2. The public consultations will be advertised in the national papers.

The consultation process was guided by the following key principles:

- **Inclusive:** The consultations were organised to ensure representation of potentially affected and interested stakeholders. Separate focus group discussions (FGDs) were undertaken with fishermen and boat owners.
- **Sharing of information:** At the township and village level consultations, special emphasis was given to build community level understanding of the Project and all the information was provided in Myanmar language.
- **Participatory:** Stakeholders were encouraged to actively participate in the consultations and were always given the opportunity to ask questions.

The approach to consultation, informed by these principles, is described below. The stakeholder consultation meetings will be structured as followed:

- **Introductions and information disclosure:** Introduce NYDC, the Project, the EIA, the proposed stakeholder engagement process, the potential environmental and social impacts and mitigation to help the stakeholders understand the Project and NYDC's intentions for engagement.
- **Question and answer session for all stakeholders in the town hall meeting to raise concerns, comments or ask questions to which NYDC can directly respond.**

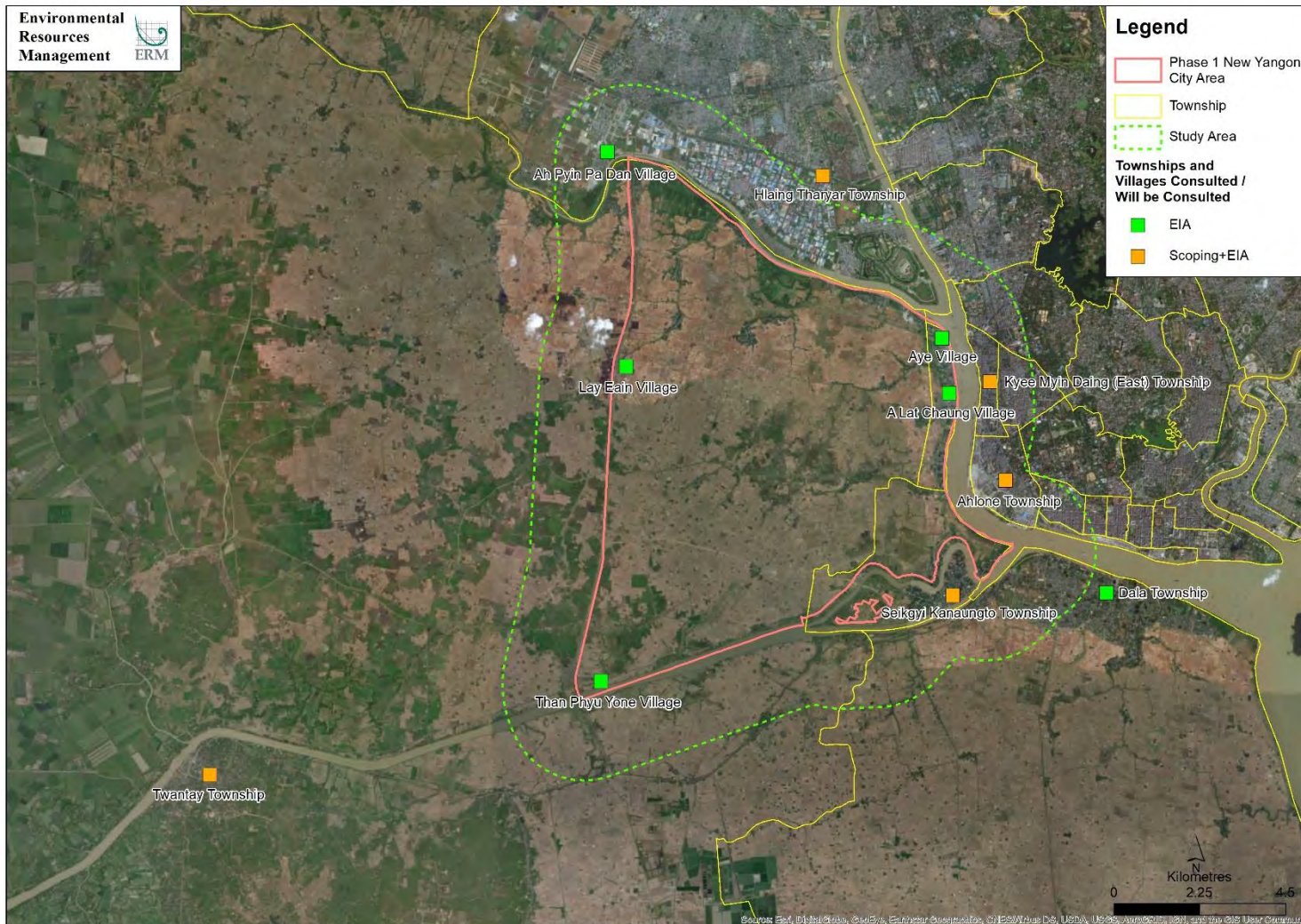


Figure 9.2 Public Consultation Meetings Locations

## 9.6.2 Socio-economic Data Collection

As part of the EIA process, a detailed baseline data collection will be undertaken to update the baseline established in the Scoping Report and adequately assess the potential impacts from the Project on the local communities. The baseline study will cover the socio-economic conditions of the Project Affected People (PAP). Figure 9.3 shows the social baseline survey locations. This baseline will be established on the basis of Focus Group Discussions and interviews with local communities and other interested stakeholders in all Townships. Stakeholders will be asked questions using both checklists and informal interviews to find out the village and household level information on demographics, income, infrastructure, farming and livelihoods as per the following:

- **Village and Household Questionnaires:** Demographic profile, land holding; number of land owners and landless; types of school facilities; credit access; income sources; living standards; market access; health facility access; access to water source; cooking fuel type uses; fuelwood collection; type of diseases; electricity access; number of households with income; infrastructure; number of people by type of livelihood; number of people by type of livestock; number of members and meetings of support groups; and, type of support from and contribution to support group.
- **Farmers Questionnaire:** land holding size and shape; level of subsistence; role of men and women in agriculture; government agricultural scheme, credit source, reason amount, interest rate and payment method; use of hired labour; wage amount paid by gender; cost of labour, irrigation, fertilizers and transportation and land renting; market of cash crop; number of households by type of livestock raised, number of heads, percentage of home consumption and percentage for the market; source and issues of fodder acquisition; crop cycle by crop.
- **Women's Questionnaire:** number of women in the village, number of women headed households; role of women in community; opinion on equality of gender opportunities; influence on household decision; problems of women; quality of life rating; women's health problems; disease outbreaks; causes of death and affected gender group; women's problem in employment; and percentage of women in farming.

A sample survey of up to 300 households within the townships mentioned above will be administered to allow for a detailed understanding of the baseline and the potential impacts of the Project to be established. In order to minimise disruption to local residents, this would be combined stakeholder consultation.

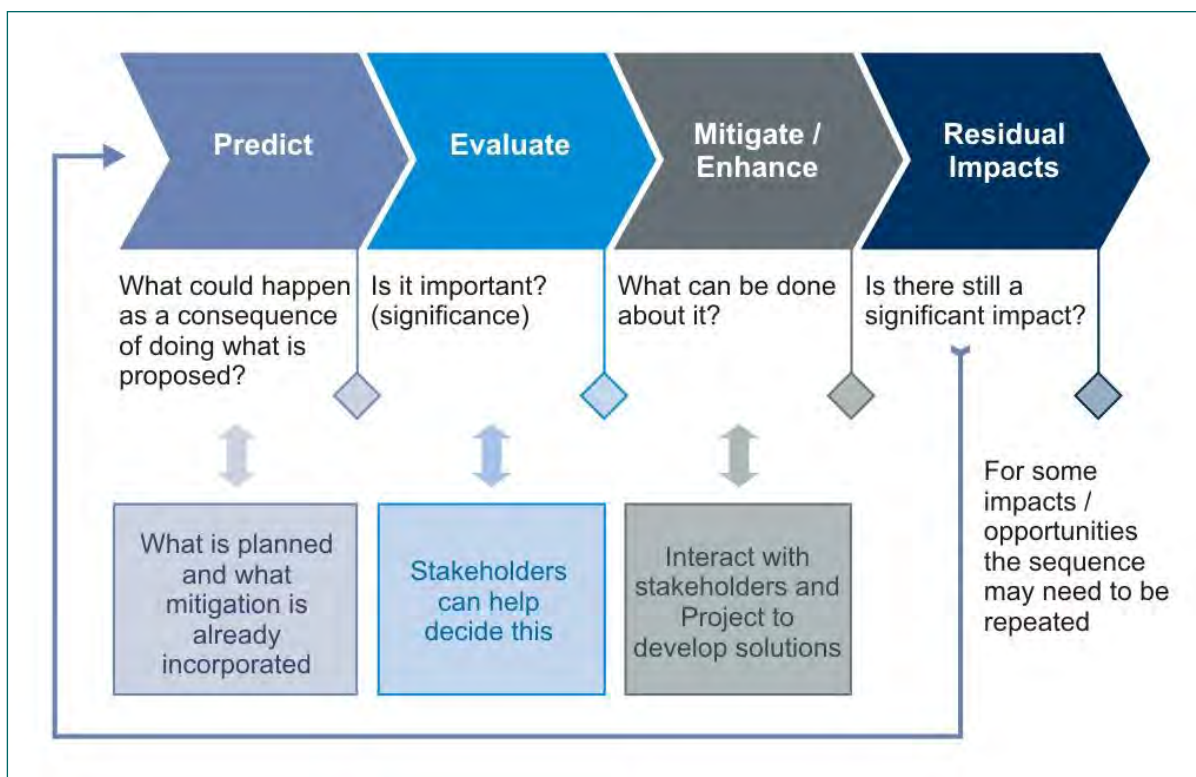


Figure 9.3 Social Baseline Survey Locations

## 9.7 Impact Assessment Methodology

The principal impact assessment steps are summarised in Figure 9.4 and comprise:

- Impact prediction: to determine what could potentially happen to resources/receptors as a consequence of the proposed Project and its associated activities.
- Impact evaluation: to evaluate the significance of the predicted impacts by considering their magnitude or likelihood of occurrence (for unplanned events), and the sensitivity, value and/or importance of the affected resource/receptor.
- Mitigation and enhancement: to identify appropriate and justified measures to mitigate negative impacts and enhance positive impacts.
- Residual impact evaluation: to evaluate the significance of impacts assuming effective implementation of mitigation and enhancement measures. Major impacts are considered “significant” in Figure 9.4.



**Figure 9.4 Impact Assessment Process**

The above methodology will be used to predict, evaluate and assess potential impacts in the Report.

## 9.8 Structure of the EIA Report

An outline of the proposed contents of the EIA Report is provided in Table 9.2 which follows the EIA Procedure (2015). It is important to note that the table of contents may be revised based on the requirements of the Myanmar authorities.

**Table 9.2 Structure of the EIA Report**

Chapter No.	Contents Heading	Explanatory Note (Sub-headings)
	Cover Pages	Title page, acknowledgements, authors and contributors, table of contents (including lists of figures, tables, and maps)
	Commitment Letter	Letter from proponent to commit to robustness of EIA and adopting all mitigation measures.
1	Executive Summary	Summary of the entire EIA Report.
2	Introduction	<ul style="list-style-type: none"> <li>■ Presentation of the Project Proponent</li> <li>■ Presentation of the Environmental and Social Experts</li> </ul>
3	Policy, Legal and Institutional Framework	<ul style="list-style-type: none"> <li>■ Corporate Environmental and Social Policies Policy and Legal Framework, including existing laws and rules, other related environmental law and rules, International Conventions, Treaties and Agreements, and international standards, guidelines</li> <li>■ Institutional Framework</li> <li>■ Project's Environmental and Social Standards</li> </ul>
4	Project Description and Alternative Selection	<ul style="list-style-type: none"> <li>■ Project Background</li> <li>■ Project Location, overview map and site layout maps</li> <li>■ Comparison and Selection of Alternatives</li> <li>■ Description of the Selected Alternative (per phase)</li> </ul>
5	Description of the Surrounding Environment	<ul style="list-style-type: none"> <li>■ Setting the Study Limits</li> <li>■ Methodology and Objectives</li> <li>■ Physical Components including air, noise, soil, water, environmental quality data, and climate data</li> <li>■ Biological Components including biodiversity maps, and vegetation cover maps</li> <li>■ Socio-Economic Components including land use maps, population distribution, and maps of other socio-economic indicators</li> <li>■ Cultural Components including maps with location of cultural, historical, and religious importance</li> <li>■ Visual Components including landscape</li> </ul>
6	Impact and Risk Assessment and Mitigation Measures	<ul style="list-style-type: none"> <li>■ Impact Assessment Methodology</li> <li>■ Identify potential physical, biological, social, socioeconomic, cultural, and visual impacts; this shall include identification of potential impacts; develop mitigation measures, assess Residual Impacts and prepare a comprehensive monitoring plan</li> <li>■ Relevant maps in proper scale clearly indicating the location of sources of Adverse Impacts, images, aerial photos, satellite images, the areas, people, assets or features impacted, sensitive habitats, vulnerable areas or settlements and the nature of the impacts</li> </ul>
7	Cumulative Impact Assessment	<ul style="list-style-type: none"> <li>■ Methodology and Approach</li> <li>■ Cumulative Impact Assessment</li> </ul>
8	Environmental Management Plan	<ul style="list-style-type: none"> <li>■ Monitoring Plan</li> <li>■ Reporting Requirements</li> <li>■ List of EIA Commitments</li> <li>■ Management sub-plans</li> </ul>
9	Public Consultation and Disclosure	<ul style="list-style-type: none"> <li>■ Purpose of consultation undertaken for Project</li> <li>■ Methodology and approach</li> <li>■ Summary of consultation</li> <li>■ Summary of main comments received and how comments taken into account during EIA process</li> <li>■ Further consultation and disclosure</li> </ul>
10	Conclusions and Recommendations	Main conclusions of the EIA Report and recommendations for future actions.

Chapter No.	Contents Heading	Explanatory Note (Sub-headings)
Appendices		These will include technical annexes with details of specific surveys, and other required information.



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**APPENDIX A            SCOPING STAKEHOLDER ENGAGEMENT MATERIALS  
AND MEETING MINUTES**

## Meeting of Minutes: Stakeholder Engagement Meeting for the Development of New Yangon City

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### Detail:

<b>Project</b>	The Development of New Yangon City	<b>Region / State</b>	Yangon
<b>Venue</b>	Meeting Room - 3, Yangon Region Government's Office		
<b>Objective</b>	Chief Minister Meeting		
<b>Date</b>	23 <sup>rd</sup> January 2019		
<b>Time</b>	14:00 – 16:00 PM		

- The Chief Minister was not able to attend the meeting and requested H.E. Daw Nilar Kyaw to attend in his place.
- Daw Aye Aye Khine (Head of City Planning and Development, NYDC) introduced the meeting and gave a brief explanation of the Project.
- Daw Khin Su Su Naing (Senior Consultant, ERM) gave an overview of the Strategic Environmental Assessment (SEA) and Environmental Impact Assessment (EIA) process as per the Myanmar EIA Procedure and a brief explanation of the scoping study.

### Question and Answer Section

#### ***Suggestion from Daw Nilar Kyaw, Minister of Electricity, Industry, Roads and Transport***

- An official letter including the proposed stakeholder engagement schedule should be submitted to the Yangon Regional Government in order to get approval for the future stakeholder consultation meetings.

#### ***Comment from U Khin Win, Regional Hluttaw Representative, Kyee Myin Daing Township***

- If the eleven villages from Kyee Myin Daing are not included in the Project Area, it is recommended that NYDC should explain this to the villagers. Are the eleven villages in the western part of Kyee Myin Daing Township included in the project area?

#### ***Response from Daw Nilar Kyaw, Minister of Electricity, Industry, Roads and Transport***

- The Project Area was confirmed by the former government and is continuing as planned. The brown highlighted areas are the villages (from slide 8 of the presentation) and these will not be included in the Project Area.

#### ***Response from Daw Aye Aye Khine, NYDC***

- Those villages are located in the Project Area will remain untouched and there will be green spaces between the new developed areas and the existing villages.

#### ***Response from Daw Khin Su Su Naing, ERM***

- We will consider these villages in the impact assessment.

#### ***Comment from U Kyaw Nanda Aung, Regional Hluttaw Representative, Kyee Myin Daing Township***

- These eleven villages might be included in the future phases of the project although they are not included in the initial stage of development. Therefore, the impact assessment should consider them as well.

#### ***Comment from U Thet Htun Win, Hluttaw Representative (Chairman of Transportation, Communication, Construction and Industry of Yangon Region Hluttaw)***

- The Master Plan should be presented to the Public.
- Where is the power source for the new city?
- How many gallons of water will be required and where will it be from?
- Where will the population be settled in the new city?
- The old city has a problem with water shortage. Where is the water reservoir area for the project?
- Where will the administration area be in the new city?
- What is the capital investment to implement the project?
- How many acres of land will be acquired for the project and how many people will be impacted by the Project?

### ***Response from Daw Nilar Kyaw, Minister of Electricity, Industry, Roads and Transport***

- Any queries of land acquisition should be raised in the upcoming Master Plan Final Presentation, which will be held on 15 February as today meeting is focusing on SEA/EIA study of the project.
- A 20/80 compensation scheme was agreed with the Security, Peace, Stability and Rule of Law Working Committee. The previous government set 15/85 land compensation scheme, however, a 20/80 scheme is more fair.
- Water and Electricity issues are under discussion with the Union Ministry.
- The Project has a plan to get electricity from the Mee Lin Chaint (1350 MW) power plant (in Ayeyarwady Region).
- Fresh water is planned to intake from the Toe River and is working together with Water Management Committee regarding the matter.
- The capital investment will practice Public Private Partnership (PPP) system.
- The Union level will manage the project but have not assigned to any focal ministry yet. Yangon Regional Government is currently taking responsibility for the project.

### ***Comment from U KyawHtwe, AmyothaHluttaw Representative***

- Will the Project seek approval from Parliament when the Master Plan is completed in March 2019?
- The 20/80 compensation scheme can be practiced for land acquisition only if landowners agree.

### ***Response from Daw Nilar Kyaw, Minister of Electricity, Industry, Roads and Transport***

- Land acquisition process was already completed till the eighth-stage by the previous government. The next step is to confirm how to compensate. Land owners said they prefer to receive land than cash, as land is more important in Yangon Region.
- In addition, the four existing “New Dagon Townships” will be upgraded with particular plans (especially for electricity, road and drinking water).

### ***Comment from Dr. Kyaw Zin Oo, Regional Hluttaw Representative, Twantay Township***

- Is there any plan to fix the roads in Twantay Township prior to the project construction?

### ***Response from Daw Nilar Kyaw, Minister of Electricity, Industry, Roads and Transport***

- The townships included in the New Yangon Development Plan are not included in any of other budgets so it will be submitted to Chief Minister.

### ***Comment from U Zaw Win, Pyithu Hluttaw Representative, Kyee Myin Daing Township***

- Kyee Myin Daing Township is densely populated with 18 wards and four villages. The livelihood of the communities from the Kyee Myin Daing (West) Township is different from the Kyee Myin Daing (East) Township and Kyee Myin Daing (West) Township want to improve their income and livelihood options.

Within the Township, 75% of the people agree and support the project. However, the dissemination of project information to local people is limited.

- Parliament members have meetings in Nay Pyi Taw and Regional Parliament meetings will start on 21<sup>st</sup> January, the schedule of the stakeholder engagement should consider this. The weekday meetings are not feasible for Parliament members. The meeting should be scheduled on parliament representative availability.

### ***Response from Daw Nilar Kyaw, Minister of Electricity, Industry, Roads and Transport***

- NYDC should take this into account and change the schedule.

### ***Comment from Dr. Aung Myint Maw, Deputy Head of the Environmental Conservation and Cleaning Department***

- Will the cemeteries from Seikgyi Kanaungto and Ah Lat Chaung be combined into one?
- If the population is 1.2 million, waste discharge per day will be 600 tons. Where will waste be discharged and how many acres will be set up for a dumpsite and it should be included in the Master Plan and Urban Plan?

### ***Response from Daw Aye Aye Khine, NYDC***

- The existing cemeteries will remain as they are.

There is a plan for industrial waste and municipal waste management and industrial waste will be disposed of like Thilawa Industrial Zone.

### ***Comment from U Kyaw Zaeya, Secretary of Regional Hluttaw Representative (Planning and Commerce Committee)***

- Conflicts between the local workers and foreigners should be minimised and salary gaps between local and international employees should be managed and justified.
- How will the city manage the population increase in the future?
- What is the process of Bill of Quantities (BOQ) and Quality Control (QC)?

### ***Response from Daw Khin Su Su Naing, ERM***

- Employment opportunities for local communities will be included in the EIA study.

### ***Comment from U Thet Htun Win, Hluttaw Representative (Chairman of transportation, Communication, Construction and Industry Committee)***

- The location of the cemeteries and the waste disposal should not be changed often.
- The areas of the administration buildings should be defined.
- In the future, the resident population will increase. Meetings with the related government departments should be held.
- The structural design of the project should be counter checked and costing should be independently audited.
- The investment is based on profit; therefore an independent consultant should be appointed to assess and audit.

### ***Response from Daw Aye Aye Khine, NYDC***

- The area for the administration infrastructure will be defined for the project and it is under discussion with the relevant departments
- A Quantity Surveyor consultant has been assigned to counter check the Bill of Quantities (BoQ) submitted by CCCC. The information provided by China Communications Construction Company (CCCC) to date has been checked.

- The estimated population in 2050 is 1.2 million.
- The master plan prepared by AECOM includes a consultant to countercheck the work, including BoQ and Quality Control.

***Comment from Dr. Kay Thi Kyaw, Director, Department of Social Welfare***

- The Project should protect women and elderly people and should prepare management plans and mechanisms considering potential crime and rape cases for migrant women and children.

***Response from Daw Khin Su Su Naing, ERM***

- The SEA/EIA studies will be prepared in accordance with the UN Sustainable Development Goals and Myanmar Sustainable Development Plan, which consider gender equality and health.
- Regarding the stakeholders, we practice an inclusive and transparent process regarding the dissemination of information.
- ***Response from Daw Nilar Kyaw, Minister of Electricity, Industry, Roads and Transport*** In the Township Level public consultation meeting, representatives from Hluttaw would like to participate so the meetings should be held during weekends.

***Suggestion from U Khin Win, Regional Hluttaw Representative, Kyee Myin Daing Township***

- An observation trip to Kyee Myin Daing (other side of the river) is advised prior to the Township stakeholder engagement to get a clear understanding of the challenges for the upcoming engagement.

***Comment from U Thant Zin, Chief Executive Officer, Yangon Electricity Supply Corporation***

- A 230kV transmission line crosses the New Yangon City area which is managed by the Union Government and cannot be used for the Project. There will be 500 kV lines in the Project as well as smaller 11kV, 33kV and 66kV distribution lines. The connection to the national grid is still to be confirmed, this will either be from Hlaing Tharyar or Western University. The distribution lines should be underground cable system and overhead lines should not be used for all power and distribution lines.

***Response from Daw Nilar Kyaw, Minister of Electricity, Industry, Roads and Transport***

- We already instructed the Project to design for an underground cable system. The 230kV lines can be an underground system however, the distribution should be an underground system as well.

## Attendance List

No	Name	Position	Department
1.	H.E. Daw Nilar Kyaw	Minister	Ministry of Electricity, Industry, Roads and Transportation, Yangon Region
2.	Dr. Kay Thi Kyaw	Director	Department of Social Welfare
3.	U Ye Swe	Deputy Director	Environmental Conservation, Yangon Region
4.	U Nay Win Aung	District Administrator	Southern District, Yangon Region
5.	U Aung San Win	Head of Department	Water and Sanitation Department, Yangon City Development Council (YCDC)
6.	Dr. Aung Myint Maw	Deputy Head of Department	Environmental Conservation and Sanitation Department, YCDC
7.	U Zaw Thein	Township Officer	Seikgyi Kanaungto, General Administration Department (GAD)
8.	U Zarni Win	Township Officer	Kyee Myin Daing, GAD
9.	Daw Khin Thida Tin	Director	Environmental Conservation Department
10.	U Tint Lwin	Chairman	Region Hluttaw (Parliament)
11.	Daw Thet Htar New Win	People Accounting Committee's Secretary	Yangon Region Hluttaw (Parliament)
12.	U Zaw Win	Pyithu Hluttaw Representative	Kyee Myin Daing Township
13.	U Kyaw Nanda Aung	Regional Hluttaw (Parliament) Representative	Yangon Regional Hluttaw
14.	U Thet Htun Win	Chairman	Transportation, Communication, Construction and Industry Committee
15.	U Than Naing Oo	Member	Transportation, Communication, Construction and Industry Committee
16.	Dr. Kyaw Zin Oo	Regional Hluttaw (Parliament) Representative	Twantay Township
17.	U Kyaw Zaeya	Secretary of Regional Hluttaw (Parliament)	Finance, Planning and Commence Committee
18.	U Khin Win	Regional Hluttaw (Parliament) Representative	Kyee Myin Daing Township
19.	U Kyaw Htway	Amyothar Hluttaw (Parliament) Representative	Yangon Region
20.	U Myo Aung Htay	Secretary	Yangon Regional Government
21.	U Thant Zin	Chief Executive Officer	Yangon Electricity Supply Corporation
22.	U Zaw Moe Aung	Regional Head	Department of Agricultural Land Management and Statistics
23.	U Moe Khaing Tun	Township Officer	Twantay Township, General Administration Department



## NYDC / ERM Attendees

No	Name	Position	Department
1.	Dr. Ye Moe Myint	Director	NYDC
2.	Daw Aye Aye Khine	Head of City Planning and Development Dept.	NYDC
3.	Daw Wint Wint Htet Hlaing	Head of Corporate Development Dept.	NYDC
4.	U Hlaing Win	Communication and Authority Manager	NYDC
5.	Daw Hnin Ei Ei Phyo	Assistant Officer II	NYDC
6.	Tessa Morton	City Planner I	NYDC
7.	Shiki Osawa	City Planner I	NYDC
8.	Aye Mya Thinzar	Assistant Constant	ERM
9.	Becky Summons	Senior Consultant	ERM
10.	Khin Su Su Naing	Senior Consultant	ERM

Photos



## Meeting of Minutes: Stakeholder Engagement Meeting for the Development of New Yangon City

### **Detail:**

<b>Project</b>	The Development of New Yangon City	<b>Region / State</b>	Yangon
<b>Venue</b>	GAD Office Meeting Room, Ahlone Township GAD Office.		
<b>Objective</b>	Ahlone Township Meeting – Scoping Phase		
<b>Date</b>	1 <sup>st</sup> February 2019		
<b>Time</b>	1:00 – 3:00 PM		

- Daw Aye Aye Khine (Head of City Planning and Development, NYDC) introduced the meeting and gave a brief explanation of the Project.
- Daw Khin Su Su Naing (Senior Consultant, ERM) gave an overview of the Strategic Environmental Assessment (SEA) and Environmental Impact Assessment (EIA) process as per the Myanmar EIA Procedure and a brief explanation of the scoping study.

### Question and Answer Section

#### ***Comment from U San Lwin, Head of the Saw Yan Paing North Ward***

- Is NYDC a private or non-profit company? How will NYDC return the 10 billion MMK which will be used for establishment of the company?
- Is there any underground transportation system planned for this New Yangon Development Project?

#### ***Response from Daw Aye Aye Khine, NYDC***

- The NYDC is an entity incorporated under the Special Companies Act and was established to undertake the development of the New Yangon City. NYDC is 100% owned by the Yangon Regional Government who provided 10 billion MMK to NYDC for the City Development which is used to prepare the Master Plan, consultancy fees and construction and operational costs.
- NYDC's task also includes looking for investors and facilitate for the project. The percentage of the profit from investors will be returned to the country.
- All the transportation facilities will be above ground.

#### ***Comment from U Thein Myint, Htar Nay Ward Patron***

- The project will take the water from Toe River, is it correct? Is there any plan for a storm water collection system?
- Please explain why the project is called "New Yangon City"?
- Can electricity be provided in the 12 years duration; 2018 – 2030?

#### ***Response from Daw Aye Aye Khine, NYDC***

- Water intake will be from Toe River and this has been studied by JICA, who prepared the 2040 Master Plan for Yangon Region. The water quality has been tested which suggested that the quality is good to use as a

water source. Ground water from the project area will not be used due to its quality and concern for land subsidence.

- A water treatment plant and storm water collection system is included as part of the project.
- The Yangon Regional Government discussed with Union Minister of Ministry of Electricity and Energy regarding the electricity requirements for the project and Union Minister agreed to provide the power to NYDC. NYDC is also looking for private power investor producing as a secondary option of power source. Transformer substations will be constructed within the new city and will provide 24 hour electricity for all industries.

#### ***Comment from U Myo Thint Zaw, Ahlone Township GAD Officer***

- Has this New Yangon Development Project been approved by the Union Government?
- You mentioned that 20% of the land will be returned to the landowner, please clarify that?

#### ***Response from Daw Aye Aye Khine, NYDC***

- Yangon Regional Government is handling the necessary approval requirements from Union. Most of the farming land cannot be used for agriculture purpose since Nargis 2008 due to its quality. The land owners agreed to the proposed land compensation scheme as they prefer to get land rather than just cash compensation.
- The land acquisition strategy was approved since last administration. It was reapproved by current government.

#### ***Comment from Dr. May Thiri, Deputy Officer from Ahlone Township Health Department***

- Is all the land within the project area farm land?
- When will the community settle in this new city and work?
- Which sectors will the investors come from for this new city?
- Will this project offer employment opportunities for the local communities?

#### ***Response from Daw Aye Aye Khine, NYDC***

- About 85% of the land is farmland in the Project area.
- Two Bridges (Bagaya Bridge and Pan Hlaing Bridge) and roads will be constructed with the aim to finish in 2021. The industries will be constructed in 2022 and there will be job opportunities for locals after this time.
- Many industries such as garment, food, furniture, electronic, chemical, and service industries, will be located in the industrial zone.
- There will be employment opportunities for people who live in and around the new city.

#### ***Comment from U Myo Ko Ko Win, Officer from Fire Services Department***

- Is there any plan to include an area for the fire services department?

#### ***Response from Daw Aye Aye Khine, NYDC***

- NYDC will include administrative departments' areas approximately 5% of the resettlement areas which will include fire stations.

***Comment from U Win Shwe, Administrator of the Sin Min Ward***

- There are many squatter areas in Hlaing Tharyar Township. Does NYDC have any plans considering this for the new city?

***Response from Daw Aye Aye Khine, NYDC***

- NYDC understands the current squatter issues current issues and ensure adequate workers' accommodation is included in the Project area. The construction workers will leave the Project Area once construction is complete.

***Response from Daw Khin Su Su Naing, Senior Consultant from ERM***

- The ESIA will consider and study those impacts and proposed mitigation measures to the Project.

## Attendance List

<b>Sr</b>	<b>Name</b>	<b>Occupation/Organization</b>	<b>Address</b>
1	U Than Htwe	Patron	Sin Min Ward
2	U Saw Maung Chaw	Patron	Kayin Chan Ward
3	U Maung Aye	Patron	Saw Yan Paing (north) Ward
4	U Htun Htun	Patron	Saw Yan Paing (north) Ward
5	U Than Zaw Sein	Patron	Kayin Chan Ward
6	U Kyaw Thein	Township Deputy Police Head	Ahlong Township Police Office
7	U Nyunt Phone	Patron	Thit Taw ward
8	U Kyaw Than Soe	Custom department	
9	U Myat Kyaw	Patron	Htar Nar Ward
10	U Ba Myint	Deputy Education Officer	
11	U San Lwin	Ward Administrator	Saw Yan Paing (north) Ward
12	U Hein Myint	Patron	Htar Nay Ward
13	U Wai Soe Htet	Lawyer	
14	Dr.May Thiri	Deputy officer, Public Health Department	Alone Township
15	Daw Tin Tin	Staff Officer Corporative Department	
16	U Lin Aung Khaing	Clerk (Ayeyarwady)	
17	Daw Khin Myo	Librarian	
18	U Myo Ko Ko Win	Officer, Fire Services Department	Alone Township
19	U Naing Lin Oo	100 Administrator	Lut Lat Yay Ward
20	U Win Shwe	Ward Administrator	Sin Min Ward
21	U Than Hteik	Ward Administrator	Saw Yan Paing (south) Ward
22	U Win tin	Committee Chairman	Saw Yan Paing (west) Ward
23	U Htein Lin	Ward Administrator	Htar Nar Ward
24	U Myin San	Myanmar Green Network	
25	Daw Myint Myint Ohn	Township Deputy Staff Officer	Alone Township
26	U Bo Bo Thwin	Ward Administrator	Lut Lat Yay Ward
27	U Kyaw Aye	Patron	Hlaw Kar street
28	U Soe Myint	Administrator for 100 households	
29	U Hla Thein Hlaing	Patron	Forest Ward
30	U Htay win	Ward Administrator	Saw Yan Paing (east) Ward
31	Daw Aye Khine		Aung Zeya Yeik Mon Ward
32	U Maung Maung Aung	Patron	Galun Ward
33	U Myint Aung	Ward Administrator	Galun Ward
34	U Maung Maung Htun	Township Municipal Administrator	
35	U Sit Maung		Saw Yan Paing (North)
36	U Myo Thein Zaw	Alone Township GAD Officer	Alone Township

Photos







## Meeting of Minutes: Stakeholder Engagement Meeting for the Development of New Yangon City

### Detail:

<b>Project</b>	The Development of New Yangon City	<b>Region / State</b>	Yangon
<b>Venue</b>	GAD Office Meeting Room, Twantay Township		
<b>Objective</b>	Twantay Township Meeting – Scoping Phase		
<b>Date</b>	2 <sup>nd</sup> February 2019		
<b>Time</b>	10:00 AM – 12:00 PM		

- U Moe Khaing Htun, Twantay Township Administration Officer explained that the Project commenced in 2017 and has been gathering the opinions of the local farmers with regards to land acquisition. The agreement is 20% of the farmland will be compensated to the farmers and 80% of the farmland will be used for the Project. The land category will be upgraded from farmland to urban land. A list of farmland owners who have agreed to the proposed scheme has been collected. 92% of land owners in the Project Area have agreed and the other 8% are in the category of disagree, cannot contact or no comment.
- Daw Aye Aye Khine (Head of City Planning and Development, NYDC) introduced the meeting and gave a brief explanation of the Project.
- Daw Khin Su Su Naing (Senior Consultant, ERM) gave an overview of the Strategic Environmental Assessment (SEA) and Environmental Impact Assessment (EIA) process as per the Myanmar EIA Procedure and a brief explanation of the scoping study.

### Question and Answer Section

#### ***Comment from U Nay Win Shein, Kalar Tan Thone Ein Village Administrative Officer***

- We are aware that this Project is a Union level Project and understand that the land will be acquired for the Project. I would like to know when the farmers' land will be compensated, at the beginning of the Project or later.
- Village roads will be upgraded after the project. What will be the width of the village roads?

#### ***Response from Daw Aye Aye Khine, NYDC***

- The main infrastructure construction is scheduled to commence this year and major components of the resettlement areas such as roads, drainage, electricity, and storm water systems will be completed in around three years; expected to be in 2021.
- There will be four different types of roads and the width of the roads will be designed based on the numbers of users. Roads and railway systems are all designed in conjunction with our traffic consultant, "Oriental Consultant Global" and have been included in the master plan.
- Local roads will be at least two lanes and include drainage on both sides. Some major village roads will be up to four lanes wide.

#### ***Comment for U Thaung Tin, Farmer, Sat San Village***

- How will the 20% of compensated land be returned and where will it be located?

#### ***Response from U Moe Khaing Htun, Township Administration Officer, Twantay Township***

- The relevant village tract level land management department will be responsible for the location of the land and will consider the distance to roads and other important locations. The Township level land management department will supervise and check the results. There will be transparency and fairness at all stages.

#### ***Comment for U Khin Maung Yin, Yangon South-West Development Group***

- During Cyclone Nargis, Twantay-Hlaing Tharyar Road was not flooded but the Kha Lauk Chaik-Seikgyi Kanaungto road was flooded. The road level should be raised as much as the Twantay-Hlaing Tharyar to protect from flooding.
- A dam was constructed at Kokowa River and there has been no flood from Ayeyarwaddy River for three years.

#### ***Response from Daw Aye Aye Khine, NYDC***

- The Twantay – Hlaing Tharyar road was upgraded after cyclone Nargis. Therefore, its level is considered as 100-year flood proof level. NYDC has instructed a Flood Risk Assessment by Royal Haskoning for the Project. In accordance with good international practice, Royal Haskoning conducted flood analysis for 100-year event, considering tidal flooding, climate change, and precipitation.
- Flood protection for Stage 1 of Industrial Zones and Resettlement Areas will be prioritised. After that, the Project will upgrade the flood protection of the other infrastructure facilities as per the progress of the Project; Royal Haskoning will assist with this.

#### ***Comment for U Hla Myo, Twantay CSO, Myanmar Archaeology Association***

- We noted that 20% of farmlands will be compensated. We would like to know the plans for farmland compensation.
- Where will the Project take sand and soil? We suggest the Project does not excavate the soil from the Twantay, Kawhmu, and Kungyankone area. We recommend totake the soil from the side of the river.
- If the ground level of new city is increased, could the areas on the other side of river (Seik Kan and Downtown) be flooded? If dams and embankments at Nyaungdone are not strong, flood can occur in this area.
- It would be great if the lakes and stream in this area could be excavated again.
- There is a port near the new bridge location in Kyee Myin Daing and we hope the dockyard near the Department of Marine Administration will not be required to be removed.

#### ***Response from Daw Aye Aye Khine, NYDC***

- We are considering to obtain soil from other areas (i.e., not the Project Area) as well as excavation of soil from the lake in the Project Area and Twantay channel.
- The land category will be changed and 20% of the compensated lands will be upgraded to urban land from farmland. The Project plans to create job opportunities for local residents. Job opportunities for industry will start in 2022 and NYDC is discussing with investors to provide vocational trainings to workers.
- NYDC doesn't have authority to directly manage the land compensation.
- We will give garment, food, and furniture industries the first priority. Electronics and Chemicals will be the second priority and service industries will be the third priority in industrial zones.
- We commissioned Royal Haskoning to conduct the land level assessment and they will conduct the assessment in conjunction with relevant departments, such as YCDC.

#### ***Comment for U Tint Lwin, Assistant Director, Planning Department***

- Is the name of the project confirmed as 'New Yangon'?
- There are a lot of industrial zones in Yangon but access to adequate electricity is an issue. How will power for the Project be supplied; national grid or own source?

#### ***Response from Daw Aye Aye Khine, NYDC***

- Approximately 25% of the Project Area will be industrial zone as the Project aims to create more job opportunities.
- Electricity is important for the industrial zone and there are currently two potential sources for electricity. YRG discussed with Ministry of Electricity and Energy (MOEE) for the electricity supply from national grid and also with private power producers.
- The name 'New Yangon' has been confirmed by the Yangon Regional Government; but we will pass the stakeholders' comments to higher level management.

#### ***Comment for U Khin Maung Win, Engineer, YCDC***

- I would like to know the area of storm water storage compared to the whole city area, public areas, population ratio, and waste management system.

***Response from Daw Aye Aye Khine, NYDC***

- Green and water space will be approximately 12%; nearly 12.3 square kilometers. This will include public parks, corridor plantation, and green buffer areas between the new city and existing villages.
- There will be industrial and residential waste. For industrial waste, we are now talking with interested investors including DOWA company, which is currently managing waste in Thilawa. All the waste from the project and the city will be managed in line with National standards and guidelines.

***Comment for U Hla Myo, Twantay CSO, Myanmar Archaeology Association***

- The current industrial zone area had been called 'Mat Hlaing Si Yin Su' for 147 years and was named by British during colonial period. If you are considering alternate names, I recommend this name – "Mat Hlaing Si Yin Su Industrial Zone'.

***Response from Daw Aye Aye Khine, NYDC***

- Thank you and noted.

***Response from Daw Khin Su Su Naing, ERM***

- Thank you very much to everyone for the comments today; they will be recorded and considered in our report.

## Attendance List

No	Name	Occupation/Organization	Address
1	Daw Thin Thin Htwe	Librarian	Twantay
2	Daw Mar Mar Moe	Economic Bank Staff	Twantay
3	U Khin Zaw		Kone Village
4	U Myo Haling	Information And Public Relations	Twantay
5	U Mg Mg Thant	Police Force	Twantay
6	U Moe Kyaw Thu	Village Administrative Officer	Gyaung Wine Gyi Village
7	U Htun Kywal	Village Administrative Officer	-
8	U Htun Lwin	Village Administrative Officer	A Latt Chaung Village
9	Daw Win Win Khaing	Village Administrative Officer	Oae Bo Village
10	U Nyunt Shwe	Port Authority	Twantay
11	U Aung Than	Village Patron	Set San Village
12	U Myint Aung	Village Patron	Bawga Village
13	U Thaug Lwin	Village Administrative Officer	Set San Village
14	U Moe Myint	Village Patron	War Yone Sate Village
15	U Aung Kyaw Moe	Village Patron	Out Yone
16	U Khin Htun	Village Patron	Twantay
18	U Win Zaw		Twantay
19	U Hla Naing	Village Administrative Officer	Kyun Ka Lay Village
20	Daw Myint Myint Zaw	Clerk	Lat Pan Gwa Village
21	U Khin Maung Myint	Village Administrative Officer	Ta Man Gyi Village
22	Daw Aye Aye Aung	Township Education Officer	Twantay
23	U Chit Khin		Twantay
24	U Win Naing		Twantay
25	U Zaw Latt	100 Household Head	Kone Village
26	U Zaw Win Kyaw	Assistant Supervisor from Livestock Breeding & Veterinary Department	Twantay
27	U Wan Kyin	Village Committee	Ta Mar Ta Kaw Village
28	U Myint Swe	Village Patron	Pa Dan Yay Kyaw Village
29	U Soe Kyi	Village Committee	Kha Lout Chaikhe Village
30	U Myint Oo	Farmer	Twantay
31	U Win Sein	Village Administrative Officer	Pa Dan Yay Kyaw Village
32	U San Nyein	Village Patron	Pa Dan Yay Kyaw Village
33	U Myo Aung	Village Administrative Officer	Twantay
34	U Myint Zaw	Village Patron	Kan Village
35	Usaw Maung Than	Ward Officer	Fire Service
36	U Aung Nyein	Clerk	Pa Dan Yay Kyaw Village
37	U Maung Maung Khin	Village Committee	Twantay
38	U Khin Maung Yin	Village Committee	Taung Da Yan Village
39	U Thein Soe	Village Patron	Pa Da Yay Kyaw Village
40	U Kyaw Ngwe	Village Patron	Pa Dan Yay Kyaw Village

No	Name	Occupation/Organization	Address
41	U Sein Thaug	Village Committee	Kyun Ka Lay Village
42	U Khin Aung		War Yone Sate Village
43	U Khin Zaw Lwin	Village Administrative Officer	Htin Kone Village
44	U Tin Htay	Incharge	Ma Ngay Village
45	U Aung Win	Village Administrative Officer	Ta Mar Ta Gaw Village
46	U San Win	Incharge	Ywar Lay Village
47	U Zaw Win Bo	New Yangon City Committee	Htein Kone
48	U Tun Aye	New City Region Committee	Kalatan Thone Eain Village
49	U Kyaw Shwe	New Yangon City Committee	Byauk Yoe
50	U Min Aung	New Yangon City Committee	Lat Pan Village
51	U Mya Lwin	New City Region Committee	A Latt Chaung
52	U Tin Nyo		Kalar Tan
53	U Khin Zaw Aung		A Lal Ywar Village
54	U Kyaw Thaug		Tamatakaw
55	U Myint Aye		Twantay
56	U Myint Sein		Latt Pan Ywar Village
57	U Aung Ko Ko Soe	Clerk	Ta Man Gy Village
58	U Thaug Tin		Latt Pan Vilage
59	U Khin Maung Win	Executive Officer (Township Development Committee)	Twantay
60	U Hla Myo	CSO (Myanmar Archaeology Association)	Twantay
61	U Hla Soe	Township Health Officer (1)	Twantay
62	U Aung Than	Forest Department	Twantay
63	U Sat Mo Aung	Clerk	Kyun Kalay
64	U Ye Htet Naing		A Latt Chaung Village
65	U Zin Thu		Gyaung Win Gye Village
66	U Kaung Sat Aung	Legal Department	Twantay
67	U Myo Htut Thu	In Charge	Latt Pan Village
68	U Myo Myint Oo	Legal Department	Twantay
69	U Ni Win Shein	Village Administrative Officer	Kalatan Thone Eain Village
70	U Win Naing Htun	Assistant Staff Officer/ Department Of Agriculture Land Management And Statistics	Twantay
71	U Hla Than	Village Administrative Officer	Kha Lout Chaing Village
72	U Zaw Lin Htwe	Clerk	Ma Ngyay Ah Lal Village
73	U Myo Aung	Village Administrative Officer	Kan Ywar Village
74	U Myint Zaw	Village Leader	Kan Ywar Village
75	U Moe Khaing Htun	Township Administrative Officer	Twantay
76	U Tint Lwin	Assistant Director, Planning Department	Twantay

**Photos**



## Meeting of Minutes: Stakeholder Engagement Meeting for the Development of New Yangon City

### **Detail:**

<b>Project</b>	The Development of New Yangon City	<b>Region / State</b>	Yangon
<b>Venue</b>	GAD office Meeting Room, Kyee Myin Daing Township GAD Office		
<b>Objective</b>	Kyee Myin Daing Township Meeting – Scoping Phase		
<b>Date</b>	2 <sup>nd</sup> February 2019		
<b>Time</b>	2:00 – 4:00 PM		

- Daw Aye Aye Khine (Head of City Planning and Development, NYDC) introduced the meeting and gave a brief explanation of the Project.
- Daw Khin Su Su Naing (Senior Consultant, ERM) gave an overview of the Strategic Environmental Assessment (SEA) and Environmental Impact Assessment (EIA) process as per the Myanmar EIA Procedure and a brief explanation of the scoping study.

### Question and Answer Section

#### **Statement from U Zaw Win, Htuttaw Representative (Pyithu Hluttaw)**

- The livelihood on the other side of Kyee Myin Daing Township (*in the Project Area*) is different from the city side. Hlaing River separates the wards. Therefore, Pyithu Hluttaw representatives welcome this NYDC project to improve the livelihood of the local communities.
- The Htuttaw representatives request to the Regional Government to be well informed of the Project during the Project progress and to be invited for meetings related to the Project.
- 75% of the local communities and most of the Hluttaw representatives agree with the Project. Local communities would like the bridge to be built first.

#### **Statement from U Khin Win, Htuttaw Representative (Regional Government)**

- All participants are welcome to ask any Project related questions.

#### **Statement from U Kyaw Nanda Aung, Htuttaw Representative (Regional Government)**

- All participants in this meeting are welcome to ask any questions related to SEA and EIA study of the Project. But note that this meeting is not focused on the land acquisition.

#### **Comment from U Tin Sein, War Yone Seik Aye Ywar Ward Patron**

- Local communities from the Aye Ywar Ward would like to get the employment from this Project. Please consider them.

#### **Response from Daw Aye Aye Khine, NYDC**

- There will be employment opportunities during the construction and operation phase of the industrial zone.

#### ***Response from Daw Khin Su Su Naing, ERM***

- ERM will collect socio-economic data of the local communities in the Project Area. The potential impacts will be considered on livelihoods including potential positive impacts of job creation.

#### ***Comment from U Mya Than, Baw Ga Ward Patron***

- When will the NYDC project be completed? We will support all the requirements when ERM conduct the social, environmental, and biological surveys.

#### ***Response from Daw Aye Aye Khine, NYDC***

- The project is planned to be completed within 30 years, but the construction of the bridge 1 (connecting the Kyee Myin Daing Township to New City) will be complete within 3 years.

#### ***Comment from U Zaw Win, Htuttaw Representative (Pyithu Hluttaw)***

- It is noted that the bridge 1 will be connected from Myay Ni Gone to New City at first. But later come to know that the bridge will be built at 220m north of Bagaya Junction, upstream of Yangon River. Are there any compensation plans considered for the houses which will need to be removed due to construction? Access roads should be completed before the establishment of New City.

#### ***Response from Daw Aye Aye Khine, NYDC***

- The potential impact for the construction of Bridge 1 has been considered through surveys and the location was presented to Yangon Regional Government, Ministry of Construction and Myanmar Port Authority. It has been approved conceptually.

#### ***Comment from U Philip Tun Hla Aung, Land Core Group member***

- I would like to know the time frame for the environmental and socio-economic studies.
- Which methods will be used during the impact assessment study?
- Will there be any vocational training programs for the local communities?

#### ***Response from Daw Aye Aye Khine, NYDC***

- The Project aims to support the employment opportunities for the local communities and is planning to include vocational schools for local communities to become skill labours, so they are able to work in various industries for the project.

#### ***Response from Daw Khin Su Su Naing, ERM***

- The baseline data collection for the physical, environmental, and socio-economic characteristics will take about two months.
- Face to face interview with ward leaders will also be undertaken after this meeting.

#### ***Comment from U Philip Tun Hla Aung, member of the Land Core Group***



- Can socio-economic data collection be completed within two months?
- What is the sample sizes to be collected within the three townships?
- How many villages will be selected for the socio-economic survey?
- Is there any publication of socio-economic survey questionnaires in the ERM website?

***Response from Daw Khin Su Su Naing and Ms Rebecca Summons, ERM***

- At this stage, ERM is collecting the township demographic baseline data and holding discussions with local communities to understand the required household surveys and data collection required for the population of the Project area.
- The socio-economic survey questionnaires have been prepared in line with the nature of the project and the related impacts. ERM can send you examples of our survey questionnaire if you require; these are not available on our website as they are project specific.
- ERM will conduct face to face interviews, Focus Group Discussions with women and vulnerable groups and Household survey data collection.

## Attendance List

<b>Sr</b>	<b>Name</b>	<b>Occupation/Organization</b>	<b>Address</b>
1	U Zaw Win	Hluttaw Representative (Pyithu Hluttaw)	Kyee Myin Daing Township
2	U Kyaw Nanda Aung	Hluttaw Representative (Regional)	Kyee Myin Daing Township
3	U Khin Win	Hluttaw Representative (Regional)	Kyee Myin Daing Township
4	U Soe Myint Han	Ward Administrator	Zaykalay Ward
5	U Tin Tun	Municipal Committee	Zaykalay Ward
6	U Soe Myint	Patron	
7	U Taung Aye	Patron	Zaykalay Ward
8	U Thein Htut	Patron	
9	U Mya Than	Patron	Baw Ga Ward
10	U Chan Myae oo	Patron	Baw Ga Ward
11	U Aung Kyaw Htay	In Charge	Aye Ywar Ward (west)
12	Daw Win Win Khaing	Clerk	Ohe Bo Ward
13	U Hla Htay	In Charge	Sat San Ward
14	U Khin Tun	-	-
15	U Thein Tun	Patron	Zaykalay Ward
16	U Mya Than	Patron	Baw Ga Ward
17	U Soe Myint	Patron	Zaykalay Ward
18	U Zaw Lin	Ward Administrator	War Yone Seik Aye Ywar Ward
19	U Than Tun	Administrator for 100 Households	War Yone Seik Aye Ywar Ward
20	U Khin Zaw	Patron	War Yone Seik Aye Ywar Ward
21	U Min Zaw	Community member	
22	U Ohn Myint	Patron	Sat San Ward
23	U Tin Sein	Patron	War Yone Seik Aye Ywar Ward
24	U Tun Lin	Patron	Thar Du (West) Ward
25	U Ye Tun Naing	Ward Administrator	Oh Bo Ward
26	U Philip Tun Hla Aung	Member of the Land Core Group	Thadu Ward
27	U Aung Than	Patron	A Latt Chaung Ward
28	U Zaw Htet Aung	Clerk	Zaykalay Ward
29	U Min Thiha	Patron	A Latt Chaung Ward
30	U Myint Aung	In Charge	Out Gon Ward
31	U Tun Win	Ward Administrator	Baw Ga Ward
32	U Mya Aung	Patron,	Baw Ga Ward
33	U Tin Win	Patron	Baw Ga Ward
34	U Soe Gye	-	-
35	U Thaug Lwin	Ward Administrator	A Latt Chaung Ward
36	U Aung Kyaw Soe	Patron	Out Gon Ward

Photos





## Meeting of Minutes: Stakeholder Engagement Meeting for the Development of New Yangon City

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### Detail:

<b>Project</b>	The Development of New Yangon City	<b>Region / State</b>	Yangon
<b>Venue</b>	GAD office Meeting Room, Seikgyi Kanaungto Township GAD Office.		
<b>Objective</b>	Seikgyi Kanaungto Township meeting – Scoping Phase		
<b>Date</b>	3 <sup>rd</sup> February 2019		
<b>Time</b>	10:00 – 12:00 PM		

- U Zaw Thein (Seikgyi Kanaungto Township GAD Officer) explained that most of the local communities from Seikgyi Kanaungto Township go to Yangon every day to work as there are not much employment opportunities. If there is industrial zone in the New City, local communities could get more employment opportunities and will not need to go outside of their township for work. All attendees are welcome to ask questions related to the Project.
- Daw Aye Aye Khine (Head of City Planning and Development, NYDC) introduced the meeting and gave a brief explanation of the Project.
- Daw Khin Su Su Naing (Senior Consultant, ERM) gave an overview of the Strategic Environmental Assessment (SEA) and Environmental Impact Assessment (EIA) process as per the Myanmar EIA Procedure and a brief explanation of the scoping study

### Question and Answer Section

#### ***Comment from U Linn Naing, Kanaungto East Ward Patron***

- In 2017, Kamaryut media interviewed us to find out if we supported the NYDC project or not. We answered that we all support the Project.
- We are aware that there will be more employment opportunities for local communities from the Project.
- We heard that the bridges will be constructed by a Singaporean company. Can you give us an information about that company?

#### ***Response from Daw Aye Aye Khine, NYDC***

- The project targets to support 600,000 employment opportunities in 2025 and 900,000 in 2050.
- The NYDC has signed a Framework Agreement with China Communications Construction Company Ltd (CCCC) and submitted a detailed project proposal which includes infrastructure works related to Stage 1 Phase 1 of the Project on 30 April 2018.
- NYDC adopted the “Swiss Challenge model” that lays the foundation for fair competition, efficiency, and transparency. This model gives the opportunity to the company who is qualified and competent to undertake the first phase of the development and allows them to submit a set of Pre-Project Documents (PPDs) which include technical specifications, financial proposal, and business model. It does not mean that CCCC has been awarded the contract for all the infrastructure works in Phase 1.

- If there is a company who can offer a lower bid, CCCC is entitled to either match the offer or withdraw the bid. If the CCCC choose to withdraw the bid, the winning company will be awarded the offer and be obliged to reimburse all costs incurred for the PPD to CCCC.
- Industrial zones will be operational from 2022 and there will be more employment opportunities for the local communities.

***Comment from U Kyaw Than, Dockyard service***

- Are there any bus stations and hotel zones in the Project area?
- Is there any bridge construction in the Seikgyi Kanaungto Township?
- Why will the New City take 30 years to complete?
- Will there be any physical displacement for the people living in the Project area?

***Response from Daw Aye Aye Khine, NYDC***

- The Project will allocate 5% of resettlement areas as administrative areas and the project includes a public transportation system.
- There will be approximately 20 square kilometre commercial and residential development areas, which include area for hotels and condominiums.
- There won't be any physical displacement. The current residential areas (villages) will be buffered from the Project Area.
- The Project is designed with a 30 year plan as the idea is for long term development.
- In total, there is a plan to build twelve bridges; two bridges will be built in Stage 1 of Phase 1. The design and location for all bridges for Phase 1 will be confirmed at the end of February 2019.

***Response from Daw Sandar Min, Hluttaw Representative (Regional Government)***

- There won't be any physical displacement. Green spaces will separate the local community and the Project Area.
- The industrial zone will be initially completed in Phase 1 and can create job opportunities for the community. After that, the resettlement area will be implemented.
- Transportation systems are considered for the Project.

***Comment from U Yin Htwe Thet, Farm land owner and Trader***

- Part of Seikgyi Kanaungto Township is included in the Project Area. It includes approximately 17 acre of compensated land; the compensation has been agreed and is processing.
- Will the public infrastructure area take count of the 20 % of compensated farming land?
- Why did NYDC decide to work with CCCC for this project?
- Farmers do not need 20% to be returned as they do not need much. The project can compensate the land which farmers really require and the remaining land can be invested in the Project on behalf of the farmers for long term benefit.
- Why does the Project give the first right of refusal to CCCC?

#### ***Response from Daw Aye Aye Khine, NYDC***

- The public infrastructure locations are considered as part of the Project Area and there is approximately 17 acre of compensated land.
- It is important for NYDC to work with companies which have expertise, experience, and financial capabilities according to the Project scope and size. NYDC welcomes CCCC's project proposal to lay the groundwork for the tender process as NYDC believes the company has the required capability and sufficient experience of planning, designing, financing, and constructing, as well as experience of regional development projects similar to this Project.
- CCCC is the world's largest highway and bridge design and construction company and is Asia's largest international contractor. CCCC is a publicly traded company listed in Hong Kong, and is one of the China's largest state-owned enterprises.

#### ***Comment from U Hla Moe, Kanaungto (West) Ward***

- The location of Industrial Zone is quite far from the Seikgyi Kanaungto Township. Is there any plan to upgrade the road access and construct a road from Seikgyi to the Industrial Zone area?

#### ***Response from Daw Aye Aye Khine, NYDC***

- Location for the roads construction will be discussed with the experts and will be constructed as required.

#### ***Comment from U Hla Maung, Myanmar Red Cross Society***

- We all welcome this Project as Seikgyi Kanaungto Township will become developed and there will be employment opportunities for locals when this project is successful.

#### ***Comment from U Zaw Thein, Seikgyi Kanaungto Township GAD Officer***

- The Project was approved by the last government.

## Attendance List

<b>Sr</b>	<b>Name</b>	<b>Occupation/Organization</b>	<b>Address</b>
1	U Zaw Thein	Township Administrator	Seikgyi Kanaungto Township
2	Daw Sandar Min	Hluttaw Representative (Regional)	Seikgyi Kanaungto Township
3	U Thet Naing Moe	Deputy Staff Officer, Department of Agriculture Land Management and Statistics	
4	U Kyaw Naing Oo		Dala Township
5	U Htay Aung		Pan Pin Chaung Ward
6	U Maung Maung Oo	Farmer	Samar Ward
7	Daw Wutt Yee Htun	Clerk, General Administrative Department	Pan Pin Chaung Ward
8	Daw Naw Ester Than Htay	Cleaner, General Administrative Department	Kanaungto (West) Ward
9	U Yazar Htun	Patron	Kanaungto (East) Ward
10	U Than Naing	Trader	Samar Ward
11	U Wai Yang Htun	Information and Public Relations Department	Kanaungto (East) Ward
12	U Tin Win	Trader	Samar Ward
13	U Hla Tin	Headmaster, Basic Education Primary School	BEPS (15)
14	Daw Khin Win Shwe	Farmer	Seikgyi Kanaungto Township
15	Daw San San Hlaing	Clerk	Seikgyi Kanaungto Township
16	U Yin Htwe Thet	Farmer and Trader	Seikgyi Kanaungto Township
17	U Ther Naing Soe	Department of Agriculture Land Management and Statistics	Seikgyi Kanaungto Township
18	U Htay Myint	Administrator for 10 Households	Samar Ward
19	Daw Khin Aye Lwin	Local person	Seikgyi Kanaungto Township
20	U Myint San	Patron	Shwe Let Pan Village
21	U Aung Kyaw Khant	Administrator for 10 Households	Kanaungto (West) Ward
22	U Thet Myint Win		Kanaungto (East) Ward
23	U Aung Myo Naing		Kanaungto (East) Ward
24	U Hla Maung	Myanmar Redcross Society	Seikgyi (West) Ward
25	U Thant Zin Htun		Seikgyi Kanaungto Township
26	U Kyi Thein	Trader	Seikgyi (East) Ward
27	U Kan Aye		Seikgyi (East) Ward
28	U Ye Myint		Seikgyi (West) Ward
29	Daw Zar Chi Seint	Staff Officer, Information and Public Relations Department	Thin Baw Seik Street
30	U Soe Yin	Dockyard service	Seikgyi (East) Ward
31	U Kyaw Zin Htike	Dockyard service	Seikgyi (East) Ward
32	U Kyaw Thu		Seikgyi (West) Ward
33	Daw Thida Htwe	Clerk	Seikgyi (West) Ward
34	U Htun Khaing		Seikgyi Kanaungto Township
35	U Myint Soe	Patron	Seikgyi (West) Ward
36	U Hla Nyein	Patron	Seikgyi (East) Ward
37	U San Nyut	Administrator for 10 households	Kanaungto (East) Ward
38	U Kyaw Win	Administrator for 10 households	Samar Ward
39	U Khin Hlaing	Administrator for 100 households	Samar Ward



<b>Sr</b>	<b>Name</b>	<b>Occupation/Organization</b>	<b>Address</b>
40	U Kyaw Aye	Commission Chairman	Gaung Wine Lay Ward
41	U Phone Thant	Farmer	Tha Khin Ba Thaug Ward
42	U Aye Thein		Kanaungto (East) Ward
43	U Kyaw Hlaing	Community Group	Pan Pin Chaung Ward
44	Daw Shu Tin	Maternal and Child Welfare Association	Kanaungto (West) Ward
45	U Tun Naing		Seikgyi (West) Ward
46	U Aung Myo		U Tun O Ward
47	U Soe Moe Khant		U Tun O Ward
48	U Aung Nyein		U Tun O Ward
49	Daw Than Than Sint		Kanaungto (East) Ward
50	U Lay Naing Oo	Construction	Yauk Street
51	U Maung Sein		Seikgyi (East) Ward
52	U San Thein		Samar Ward
53	U Tin Yee		Seikgyi Kanaungto Township
54	U Hla Wai		Seikgyi Kanaungto Township
55	U Sein Hla Tun	10 Households Head	Seikgyi Kanaungto Township
56	U Khaing Zaw Linn		Seikgyi (East) Ward
57	U Aung Myat Thu		Bo Tayza Street
58	U Sit Aung		U Tun O Ward
59	U Nyan Win		Samar Ward
60	U Sithu Aung	Deputy Range officer, Forest Department	Seikgyi Kanaungto Township
61	U Kyaw Aung Min	Agricultural Department	Seikgyi Kanaungto Township
62	Daw Win Win Shwe	Mantel and Child Welfare Association	Seikgyi Kanaungto Township
63	U San Myaing		Seikgyi Kanaungto Township
64	U Phyto Chit Htun		U Tun O Ward
65	U Win Myint		Seikgyi (West) Ward
66	U Win Htay		Seikgyi (West) Ward
67	U Lwin Ko Latt		Bo Min Yaung Ward
68	U Naing Lin Htun		Kanaungto (East) Ward
69	U Ko Ko Lay		Seikgyi (East) Ward
70	Daw Mar Mar	Myanmar Women Affair Federation	Kanaungto (West) Ward
71	U Soe Hlaing	Ward Administrator	Seikgyi (West) Ward
72	U Hla Wai	Ward Administrator	U Tun O Ward
73	U Zaw Zaw		Seikgyi (West) Ward
74	U Sein Hla Maung		Kanaungto (West) Ward
75	U Aung Myo Swe		U Tun O Ward
76	U Tin Htun Hlaing		Padauk Street
77	U Aung Kyaw Soe		Bo Ba Htoo Street
78	U Than Shwe		Kanaungto (East) Street
79	U Hla Htwe		Seikgyi (East) Ward
80	U Htay Myint	Ward Patron	Kanaungto (East) Ward

<b>Sr</b>	<b>Name</b>	<b>Occupation/Organization</b>	<b>Address</b>
81	U Naing Lin Aung	Ward Administrator	Gaung Wine lay Ward
82	U Min Min Htun		Gaung Wine lay Ward
83	U Mya Nwe		Kanaungto (West) Ward
84	U Kyin Htun		Kanaungto (East) Ward
85	U Aung Kyaw Myint		Seikgyi (West) Ward
86	U Htay Lwin	Assistant Director, Directorate of Water Resources and Improvement of River Systems	Seikgyi Kanaungto Township
87	U Myo Win Ko	Manager	Seikgyi Kanaungto Township
88	Daw Khin Yee	Farmer	Tha Khin Ba Thaug Ward
89	U Aung Naing Myo	Ward Administrator	Pan Pin Chaung Ward
90	U Myint Zaw	Patron	Kanaungto (West) Ward
91	U Mya Thaug	Patron	Kanaungto (East) Ward
92	U Khin Maung	Patron	Seikgyi Kanaungto Township
93	Daw Ohnmar Win	Farmer	Seikgyi Kanaungto Township
94	Daw Myint Khin	Farmer	Seikgyi Kanaungto Township
95	U Than Naing	Ward Administrator	Kanaungto (West) Ward
96	U Aung Than		Seikgyi Kanaungto Township
97	U Kyaw Than	Dock Service	Seikgyi Kanaungto Township
98	U Myin Maung Yee		Seikgyi Kanaungto Township
99	U Tin Maung Yee	Patron	Seikgyi (East) Ward
100	U Sai	Patron	Samar Ward
101	U Aung Win	Patron	Samar Ward
102	U Than Nwet	Patron	Seikgyi (East) Ward
103	U Maung Maung Lat	Staff, Post and Telecommunication Department	Seikgyi Kanaungto Township
104	U Hla Moe	Trader	Kanaungto (West) Ward
105	U Thar Htun	Farmer	Pan Pin Chaung Ward
106	U Lwin	Farmer	Pan Pin Chaung Ward
107	U Kyaw Aung	Farmer	Pan Pin Chaung Ward
108	U Htun Min Htike	Water and Sanitation Department	Seikgyi Kanaungto Township
109	U Myint Zaw Hein	General Administrative Department	Seikgyi Kanaungto Township
110	U Soe Aung	Private Company	Tha Khin Ba Thaug Ward
111	U Zaw Zaw Aung		Kanaungto (East) Ward
112	U Ye Yint Htun		Seikgyi (East) Ward
113	Daw Nu Nu Yin	Clerk	Seikgyi (West) Ward
114	Daw Khay Mar Thein	Senior Clerk	Seikgyi Kanaungto Township
115	Daw Thandar Aung	Accountant	Seikgyi (West) Ward
116	Daw Mya Thet Lwin	Accountant	Seikgyi (East) Ward
117	Daw Hnin Soe Oo	Junior clerk	Seikgyi Kanaungto Township
118	Daw Moe Thuzar	Junior clerk	Seikgyi Kanaungto Township
119	Daw Su Mon Htet	Office helper	Seikgyi Kanaungto Township

Photos





## Meeting of Minutes: Stakeholder Engagement Meeting for the Development of New Yangon City

### Detail:

<b>Project</b>	The Development of New Yangon City	<b>Region / State</b>	Yangon
<b>Venue</b>	Ka Naung Meeting Room, Hlaing Tharyar Township		
<b>Objective</b>	Hlaing Tharyar Township Meeting – Scoping Phase		
<b>Date</b>	3 <sup>rd</sup> February 2019		
<b>Time</b>	2:00 PM – 4:00 PM		

- Daw Aye Aye Khine (Head of City Planning and Development, NYDC) introduced the meeting and gave a brief explanation of the Project.
- Daw Khin Su Su Naing (Senior Consultant, ERM) gave an overview of the Strategic Environmental Assessment (SEA) and Environmental Assessment (EIA) process as per the Myanmar EIA Procedure and a brief explanation of the scoping study.

### Question and Answer Section

#### **Comment from U Myint Naing Kyaw, Myanmar Center for Responsible Business Officer**

- How will the project prevent settlement of squatters?
- There are 2.3 million of disabled persons according to census data. How is the project designed so services and infrastructure are assessable?

#### **Response from Daw Aye Aye Khine, NYDC**

- Squatter problems need to be solved with combined actions. NYDC take responsibility for the management of construction workers via their contractors. Our rules are that when construction is complete, all the workers must leave the area. We will try to provide job opportunities for them to improve the livelihood and economy. The government is also helping them by planning to implement affordable housing projects.
- We considered design for disabled persons, American with Disabilities Act (ADA) compliance, and Myanmar National Building Codes for buildings and infrastructure.

#### **Response from Daw Khin Su Su Naing, ERM**

- We will include an assessment of worker influx impacts in our assessment report including settlement, health, and safety sectors.

#### **Comment from U Win Tin, Ward 9 Administrative Officer**

- Will there be resettlement plans for the existing squatters?

#### **Response from Daw Aye Aye Khine, NYDC**

- The Yangon Regional Government may have a project for squatters. New Yangon City does not have project for existing squatters. Our project does have an affordable housing planning.

#### **Comment from U Khin Win, Ward Patron, Ward 15**

- In terms of both poor families and squatters; how many years will the project take to set up this affordable housing planning? 30 years? 20 years?

#### **Response from Daw Aye Aye Khine, NYDC**

- The two bridges will finish construction at 2021 and industrial zones at 2022. We estimated the number of workers who will be required to work in industrial zones. We have an affordable housing planning so that

workers can purchase housing with their earnings. We are now working with the policy for as soon as industries start operating.

***Comment from U Khin Aung Htun, Ward 19 Administrative Officer***

- From rich to poor, different types of people who want to buy houses. How many options are there for them?

***Response from Daw Aye Aye Khine, NYDC***

- We have different types of housing starting from one storied to up to mid to high rise buildings. We designed carefully for the estimated 1.2 million people. Everyone can buy houses depending upon the amount of money they have. Houses will vary from private compounds and condominiums to affordable housing.

***Comment from U Zayar Min Oo, Yay Okkan Village Administrative Officer***

- There are environmental impacts due to industrial zones. The Project focuses on positive results as job opportunities, economic developments. Villages in the Project Area will be converted to towns but what are the plans for villages at the Hlaing Tharyar Township?

***Response from Daw Aye Aye Khine, NYDC***

- The Project will not remove or claim any houses in the villages. Furthermore, boundary areas between new town areas and village areas will be connected with green spaces. So that villagers won't get the feeling of being separated.

***Comment from U Zayar Min Oo, Yay Okkan Village Administrative Officer***

- What about villages outside of project area's clean environment? Due to industrial zones, after a few decades, the environment will be affected. Will villages in Hlaing Tharyar Township have environmental impacts?

***Response from Daw Khin Su Su Naing and Ms. Rebecca Summons, ERM***

- Our environmental impact assessment will not only focus on the Project Area itself. We also assess the surrounding area and cover this in our mitigation plans. We will conduct baseline surveys and if the current baseline is degraded, we will adopt strict environmental management and mitigation measures for the Project. Furthermore, monitoring plans will also be prepared and reported to the ECD every 6 months in order to confirm whether mitigation measures are effective.

***Comment from U Myo Nay Aung, Ward 1 Administrative Officer***

- I think the main challenge for new cities is the waste water drainage system, so we want the project to focus on that.
- There will be a lot of transportation needs when the city is implemented. It would be great if the bridges are constructed quickly. Bridge 2 is only two lanes and we think it is too narrow for the current amount of traffic.

***Response from Daw Aye Aye Khine, NYDC***

- For waste from municipal, industrial and commercial sectors, service companies will manage. Industrial waste will be initially treated in the compound and then sent to a waste water treatment plant. Waste water discharges from our city will be in accordance with national standards. We collaborated with Royal Haskoning for the design of the drainage channel, storm water, and flood drainage.
- The new Pan Hlaing bridge will be two lanes and it will be constructed next to the existing two lane bridge so totally there will be four lanes.

***Comment from Daw Ngai Ngai Win, Vice secretary, Hlaing Tharyar Disabilities Group***

- I would like to request the company to create job opportunities for disabled persons.

***Response from Daw Aye Aye Khine, NYDC***

- Thank you, we will record your suggestion and try to implement.

***Comment from U Khin Maung Win, Member, Hlaing Tharyar Disabilities Group***

- I would like to say thank you for considering for disabled persons. There are no platforms for wheel chairs for public transportation and bridges. We would like to request the company to arrange these in this project.

***Response from Daw Aye Aye Khine, NYDC***

- Thank you, we will record your suggestion. We are currently considering for disabilities in the design.

***Response from Daw Khin Su Su Naing, ERM***

- Thank you everyone, we will include all the discussion in the scoping report.

## Attendance List

Sr	Name	Occupation/Organization	Address
1	U Maung Maung Lwin		Ward 14
2	U Kyaw Naing Oo		Yay Oakkan Ward
3	U Aung Htun		Kalar Gyi Su Ward
4	Ko Myo San		Hlaing Tharyar
5	Hein Zar Lin		Hlaing Tharyar
6	Dr.Lay Lay Thin	Public Health Officer	Hlaing Tharyar
7	U Kan Shein		Ward 9
8	U Htun Lay		Ward 8
9	U Thein Soe Naing		Ward 9
10	U Nyunt Win		Ward 10
11	U Kyaw Min Oo	Ward Administrative Officer	Ward 8
12	U Tin Htun	Ward Administrative Officer	Ward 1
13	U Win Tin	Ward Administrative Officer	Ward 9
14	U Than Zaw	Ward Administrative Officer	Nyaung Ward
15	U Mya Ko	Ward Administrative Officer	Ward 11
16	Daw Ngai Ngai Win	Lin Yaung Chi Disability Organization Officer	Hlaing Tharyar
17	Daw San San Win	Palt Kaing Shin Organization Officer	Hlaing Tharyar
18	Myint Naing Kyaw	Myanmar Center for Responsible Business Officer	Hlaing Tharyar
19	U Khin Maung Win	Hlaing Tharyar Disabilities Group Member	Hlaing Tharyar
20	U Khin Win	Ward Patron	Ward 15
21	U Kyi Hlaing		Ward 14
22	U Myo Aung		Ka Lar Gyi Su Ward
23	U Thaug Hlaing Soe	100 Household Head	Ka Sin village
24	U Myo Nay Aung	Ward Administrative Officer	Ward 1
25	U Than Oo	Ward Administrative Member	Ward 1
26	U Aung Kyaw soe	Ward Administrative Officer	Ward 4
27	U Myo Thein	Nway Thaw Lat Myar Group Member	Hlaing Tharyar
28	U Aung Aung		Ward 13
29	Daw Hla Hla Sint	Maternal and Child Welfare Association Member	Hlaing Tharyar
30	U Than Htun		Ward 14
31	U Myo Kyaw Kyaw		Ward 18
32	Daw Mya Sandar Min	Myanmar Women's Affair Federation Township Secretary	Hlaing Tharyar
33	U Aye San		Yay Oakkan Ward
34	U Thein Sint	Ward Administrative Officer	Kalar Gyi Su Ward
35	U Khin Aung Htun	Ward Administrative Officer	Ward 19



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36	U Myint Swe	100 Household Head	Ward 19
37	U Aye Than		Ward 14
38	U Nanda Htun		Ward 13
39	U Than Shwe	Ward Administrative Officer	Ward 1
40	U Zayar Min Oo	Ward Administrative Officer	Yay Oakkan Ward
41	Daw Nwe Nwe Win	Hlaing Tharyar Disabilities Group Vice secretary	Hlaing Tharyar

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Photo

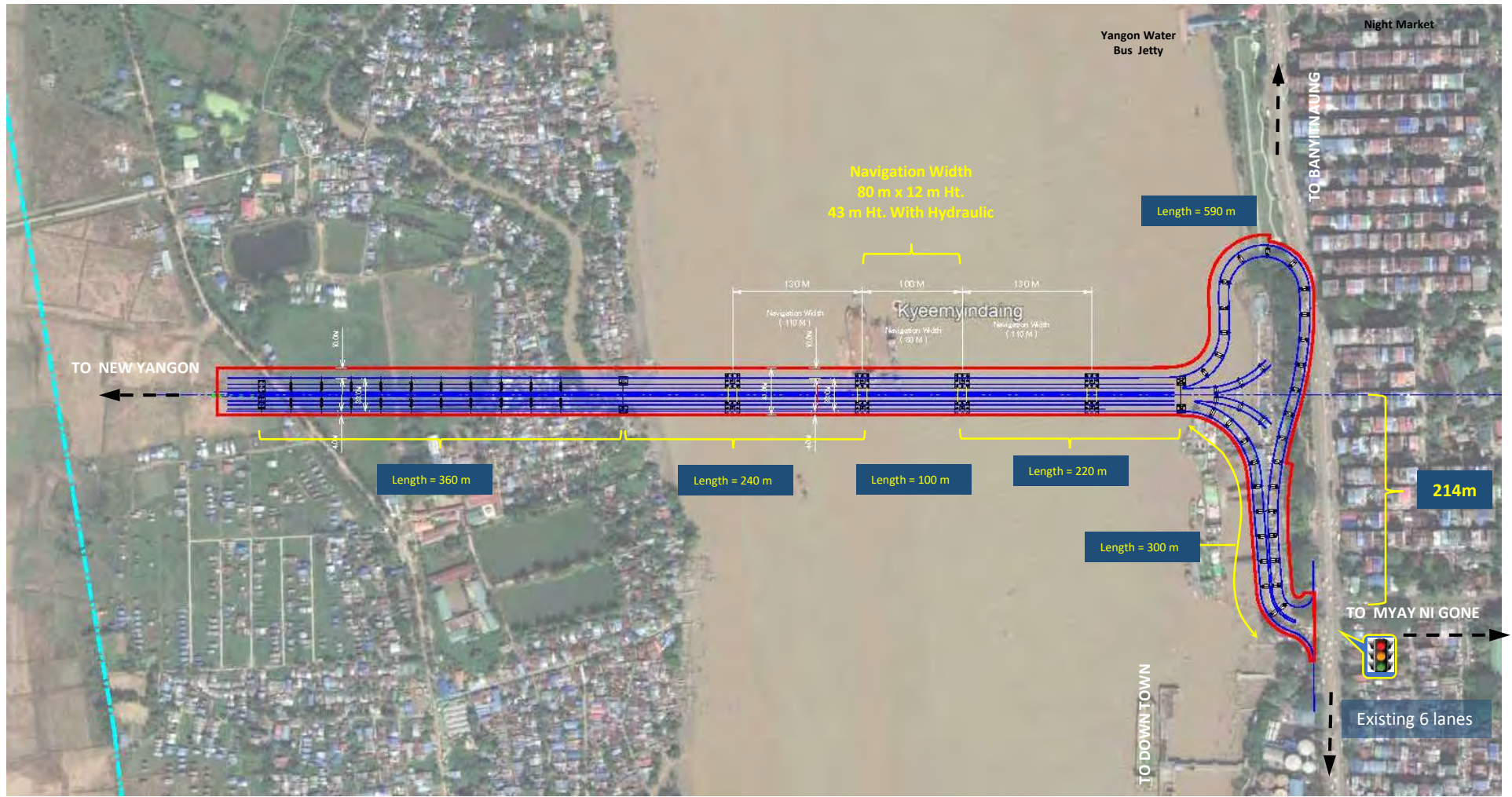


## **APPENDIX B      BRIDGE 1'S LAYOUT PLAN**

1

# BRIDGE 1 – THE YANGON RIVER

80m Width Navigation Clearance & 12m Height Extradosed Bridge

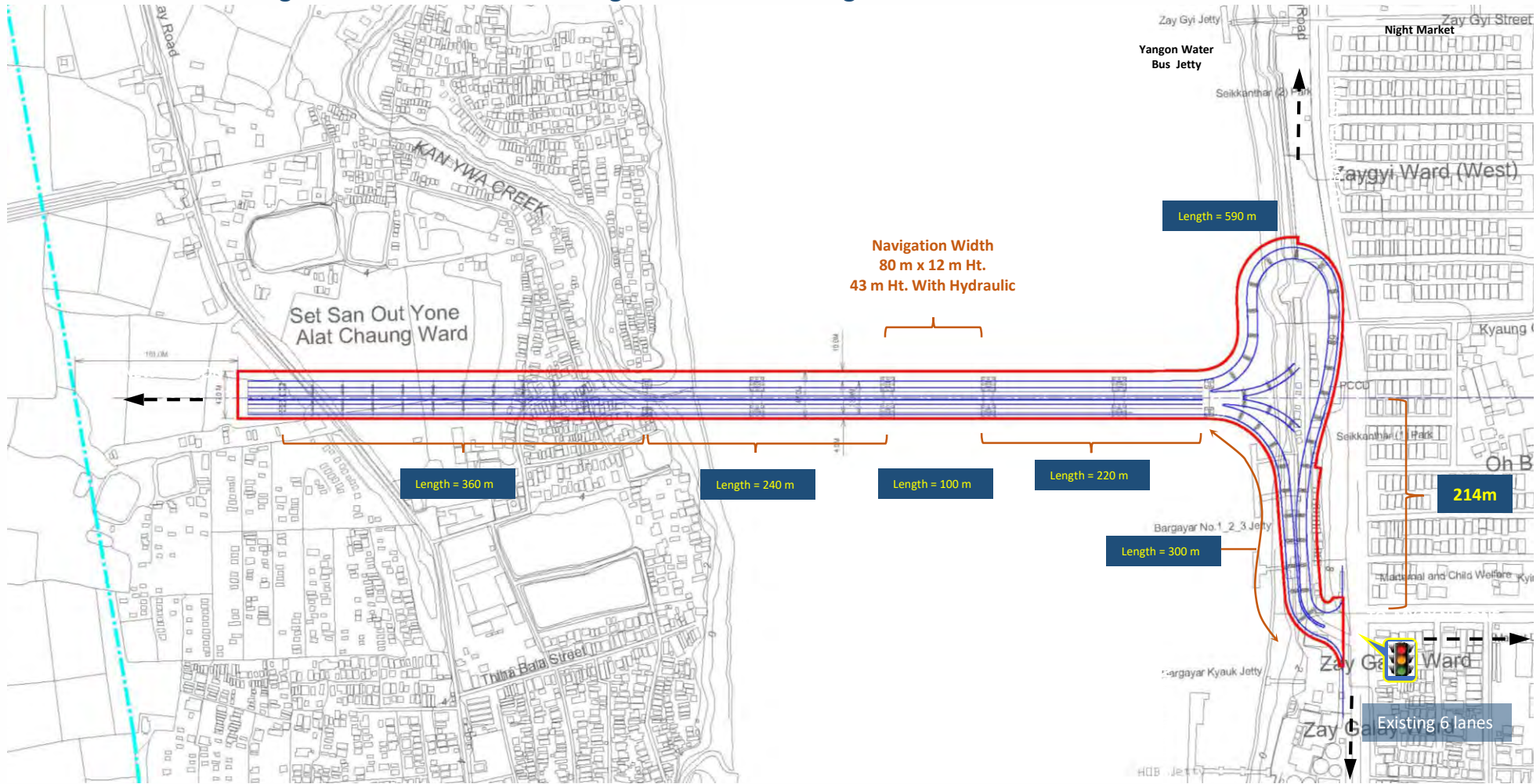


TOTAL LENGTH : 360+560+300+590= 1810m

2

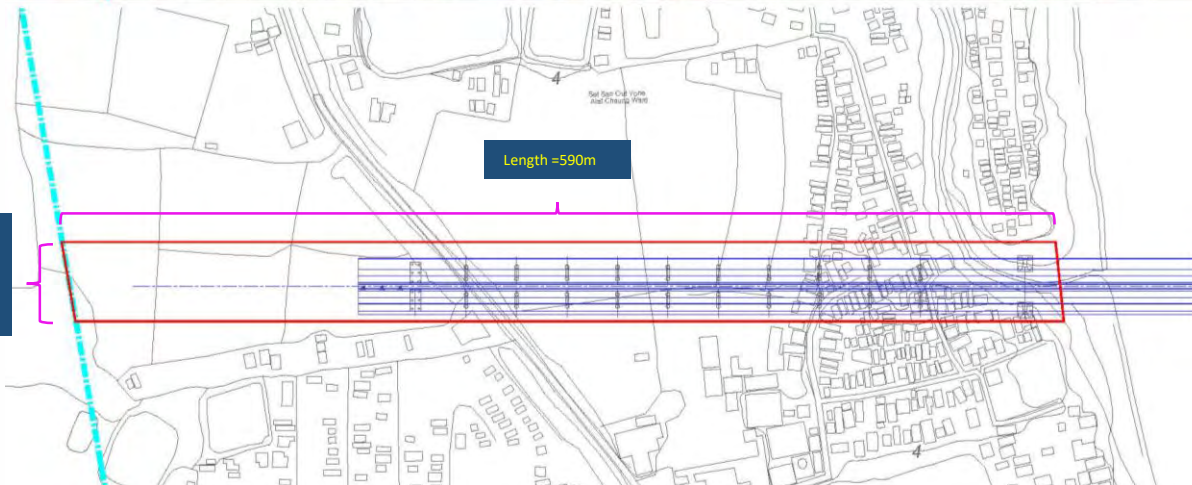
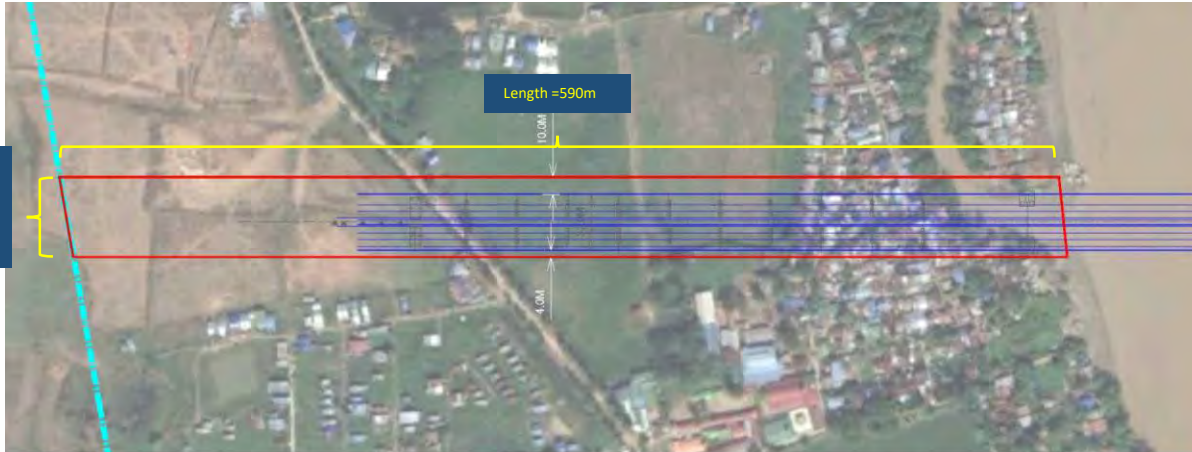
# BRIDGE 1 – THE YANGON RIVER

80m Width Navigation Clearance & 12m Height Extradosed Bridge



TOTAL LENGTH : 360+560+300+590= 1810m

### 3 BRIDGE 1 – Impacted Area ( Alat Chaung / West of Hlaing River)



- ❑ **Total Construction Impacted Area**  
( Alat Chaung Ward,  
Kyee myin Daing Townships )

- **27,776 sqm / 6.86 Acre**

- ❑ **Existing Impacted Structure**  
( Estimated )

- Housing ( 90 nos. )

# 4 BRIDGE 1 – THE YANGON RIVER ( Existing Impacted Structure )



## Housing



## 5 BRIDGE 1 – Impacted Area ( Kyee Myin Daing / West of Hlaing River)



### ➤ Existing Impacted Structure ( Kyee Myin Daing Township )

- Banana / Coconut Shop ( 126 nos. )
- Guavea / Mango Shop ( 1no.)
- Shop (7 nos.)
- Restaurant ( 2 nos. )
- MPA Port Office + Police Station ( 1 no. )
- Loading/Unloading Committee Office ( 1 no.)
- Bridge Supervisoin Office ( 1 no.)
- 2 Storey Building ( 1 no.)
- Jetty ( 3 nos. )
- Quay ( 2 nos. )
- Public Toilet ( 2nos. )
- Seik Kanthar Park ( 1 no. )
- Seik Kanthar Park Offie ( 1no. )
- YCDC Office ( 1no.)

### ❑ Total Construction Impacted Area

( Alat ChaungWard, Kyee myin Daing Townships )

- 16,563 sqm / 4.1 Acre



# 6 BRIDGE 1 – THE YANGON RIVER ( Existing Impacted Structure )

MPA Port Office + Police Station



Banana / Coconut Shop



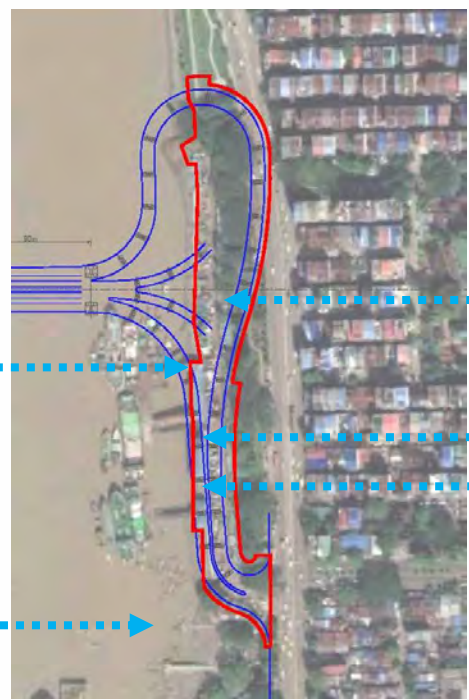
Loading / Unloading Committee Office



Jetty & Quay



Bridge Supervisoion Office



**7 BRIDGE 1 – THE YANGON RIVER ( Existing Impacted Structure )**

Seik Kanthar Park Office & YCDC office



Restaurant



Seik Kanthar Park



Public Toilet

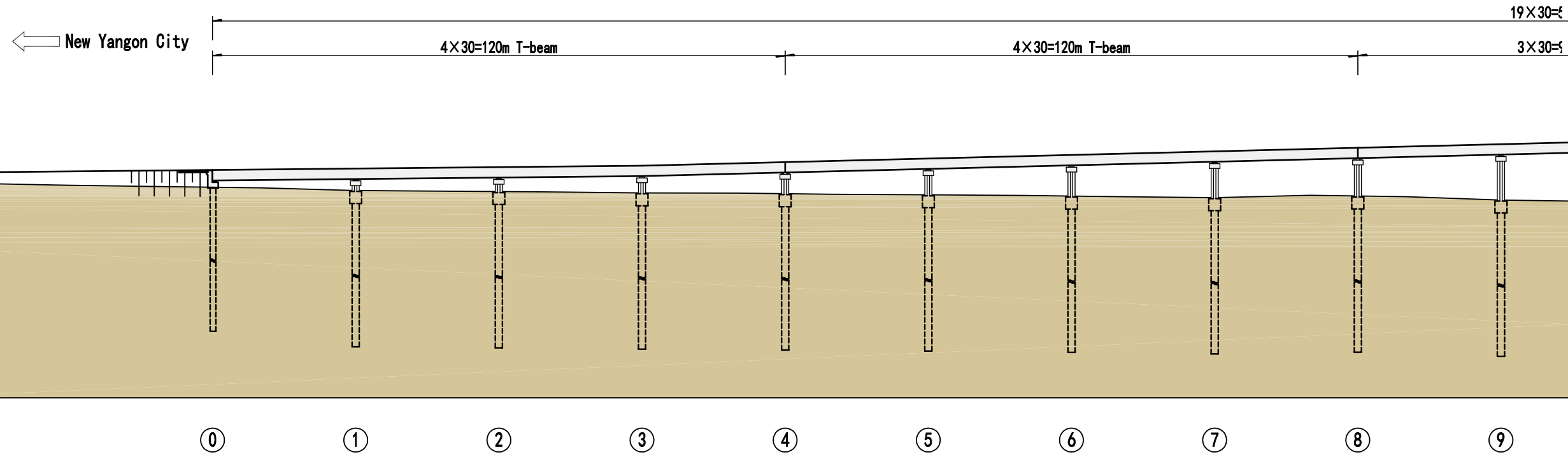


Guavea/Mango Shop



## **APPENDIX C      BRIDGE 2'S LAYOUT PLAN**

# ELEVATION



NOTES:

相关图纸 REFERENCE DRAWINGS

图号 DRG No.	图纸名称 DRG TITLE.
------------	-----------------



A	02.07.2018	FOR DISCUSSION								
版号 REV.	日期 DATE	出版状态 DESCRIPTION	设计 BY	校对 CHECKED	专业负责 CHIEF DESIGNER	审核 REVIEWED	审定 APPROVED			

审定 APPROVED BY	日期 DATE
审核 REVIEWED BY	日期 DATE
专业负责 CHIEF DESIGNER	日期 DATE
校对 CHECKED BY	日期 DATE
设计 DESIGNED BY	日期 DATE

业主 CLIENT

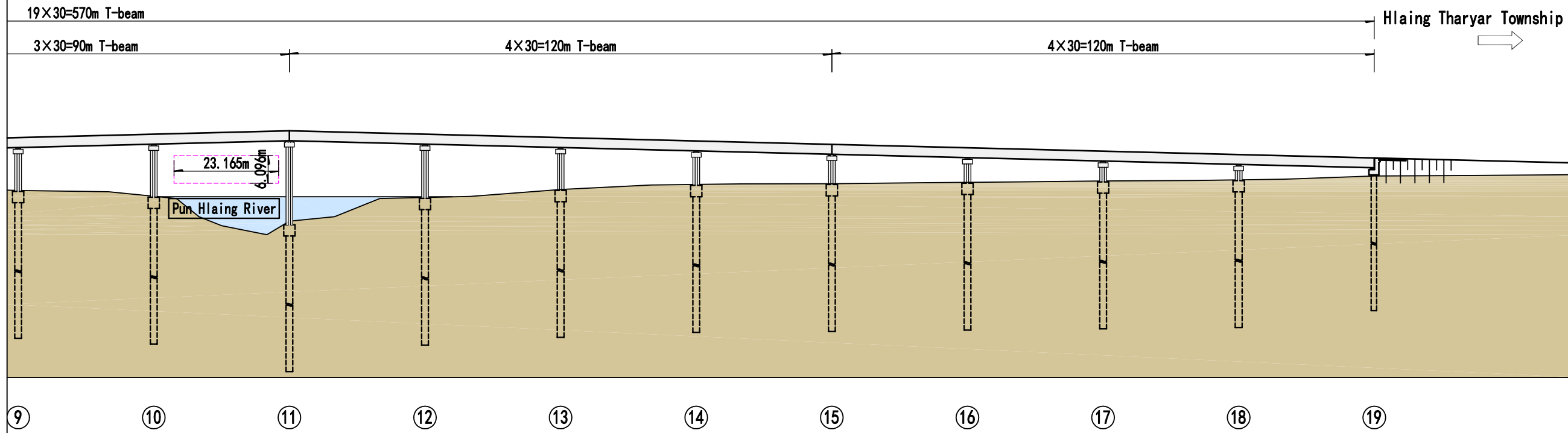


NEW YANGON CITY PHASE 1 DEVELOPMENT

PUN HLAING RIVER NEW BRIDGE  
GENERAL LAYOUT OF THE BRIDGE (1 OF 3)

图号 DRG No.	版号 REV.
BR-PHRND-DR-0001	A
图框比例 PLOT SCALE A1 (1:1)	
版权所有 COPYRIGHT RESERVED	

# ELEVATION



NOTES:

相关图纸 REFERENCE DRAWINGS

图号 DRG No. 图纸名称 DRG TITLE.



REV.	DATE	DESCRIPTION	DESIGNED BY	CHECKED	DESIGNER	REVIEWED	APPROVED
A	02.07.2018	FOR DISCUSSION					

审定 APPROVED BY	日期 DATE
审核 REVIEWED BY	日期 DATE
专业负责 CHIEF DESIGNER	日期 DATE
校对 CHECKED BY	日期 DATE
设计 DESIGNED BY	日期 DATE

业主 CLIENT

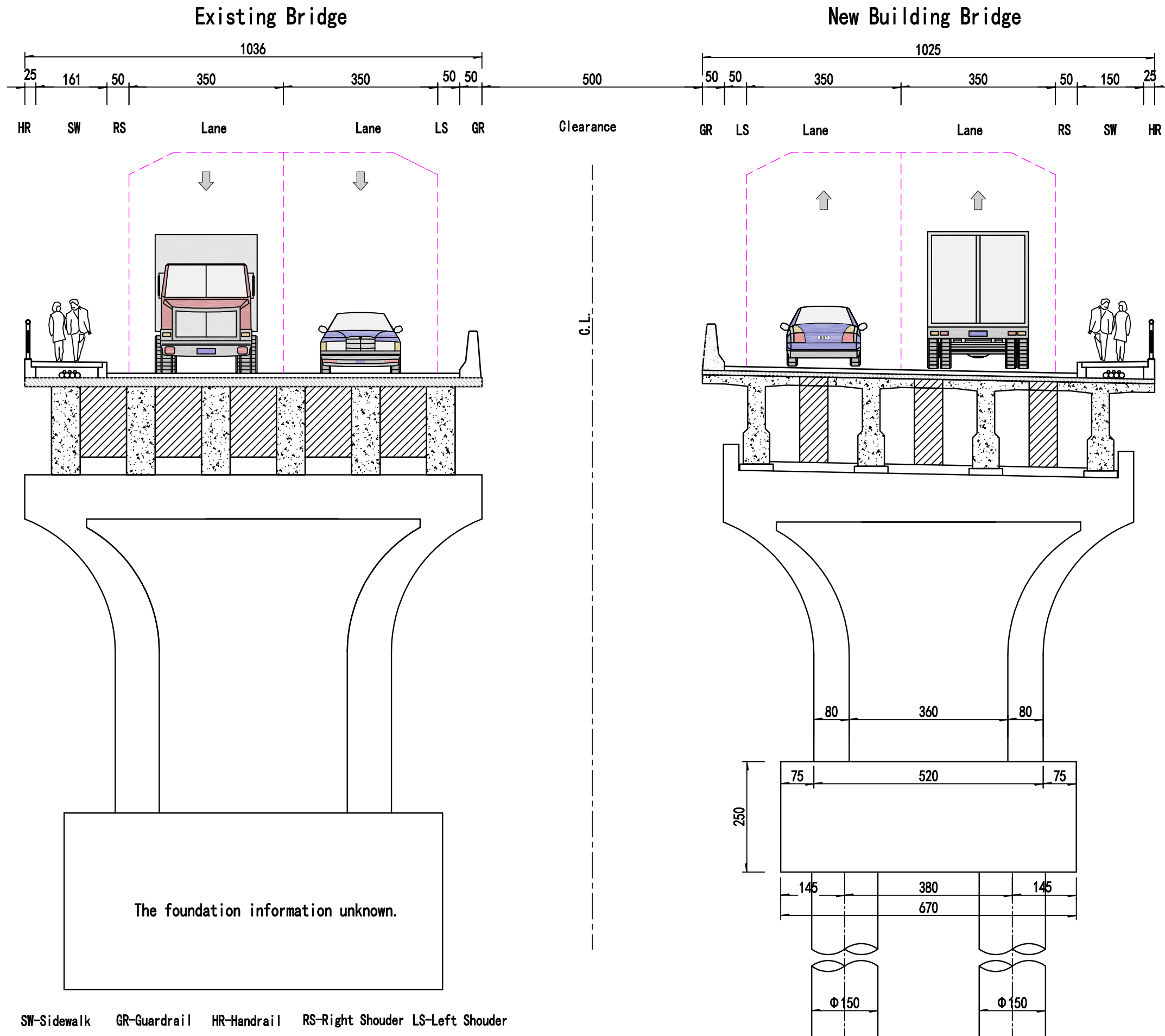


NEW YANGON CITY PHASE 1 DEVELOPMENT

PUN HLAING RIVER NEW BRIDGE  
 GENERAL LAYOUT OF THE BRIDGE (2 OF 3)

图号 DRG No.	BR-PHRND-DR-0002	版号 REV.	A
图框比例 PLOT SCALE	A1 (1:1)		
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Typical Section of Bridge-2 (Unit: cm)



NOTES:

相关图纸 REFERENCE DRAWINGS  
图号 DRG No. 图纸名称 DRG TITLE.

版号 REV.	日期 DATE	出版状态 DESCRIPTION	设计 BY	校对 CHECKED	专业负责 CHIEF DESIGNER	审核 REVIEWED	审定 APPROVED
A	02.07.2018	FOR DISCUSSION					

审定 APPROVED BY	日期 DATE
审核 REVIEWED BY	日期 DATE
专业负责 CHIEF DESIGNER	日期 DATE
校对 CHECKED BY	日期 DATE
设计 DESIGNED BY	日期 DATE
业主 CLIENT	



NEW YANGON CITY PHASE 1 DEVELOPMENT

PUN HLAING RIVER NEW BRIDGE  
GENERAL LAYOUT OF THE BRIDGE (3 OF 3)

图号 DRG No.	BR-PHRND-DR-0003	版号 REV.	A
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比例 DRG SCALE 图框比例 PLOT SCALE A1 (1:1)  
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## **APPENDIX D      SOCIO-ECONOMIC SURVEY QUESTIONNAIRE**

**Community Questionnaire: Village Socio-economic Survey (Village leader)**

<b>Location Details</b>			
Village: ကျေးရွာအမည်		Township: မြို့နယ်	
Village Tract: ကျေးရွာအုပ်စုအမည်		District: ခရိုင်	
State/Regionပြည်နယ်/တိုင်း		Coordinates: ကိုအော်ဒီနိတ်	
VTL Name		VTL Signature	

**Village Level Primary Information**

1.	Population လူဦးရေ	a. Total စုစုပေါင်း	b. Male ကျား	c. Female မ	
2.	Number of households အိမ်ထောင်စုဦးရေ				
3.	Ethnicity လူမျိုး	Ethnicity လူမျိုး	No. of HHS အိမ်ထောင်စုဦးရေ	Ethnicity လူမျိုး	No. of HHS အိမ်ထောင်စုဦးရေ
		a. Bamar ဗမာ		b. Rakhine ရခိုင်	
		c. Kachin ကချင်		d. Shan ရှမ်း	
		e. Kayah ကယား		f. Indian အိန္ဒိယ	
		g. Kayin ကရင်		h. Chinese တရုတ်	
		i. Chin ချင်း		j. Other (.....)	
		k. Mon မွန်		l. Other (.....)	
		4.	When was the village founded? ရွာကိုမည်သည့်အချိန်တွင်တည်ထောင်သနည်း။		
5.	Are there any rivers cross the village? ရွာကို ဖြတ်စီးသွားသည့်မြစ်ရှိပါက ဖော်ပြရန်				
6.	How far is the river from your village habitation? (Name of river) ရွာနှင့်မြစ်အကွာအဝေး (မြစ်အမည်ဖော်ပြရန်)				
7.	Are there any instances of disaster in the village, please mention year? Can you remember how it affected the community? သင့်ရွာတွေ့ကြုံဖူးသော သဘာဝဘေးအန္တရာယ် ဖြစ်ပွားသောခုနှစ်။ ရွာကိုမည်သို့ထိခိုက်သနည်း။				

**Livelihood စားဝတ်နေရေး**  
*What do people do to support themselves?*

8.	Number of people engaged in these sources of livelihood အလုပ်လုပ်ကိုင်မှု အခြေအနေ	Source of livelihood အဓိက စားဝတ်နေရေး အလုပ်	Number of HHS engaged အိမ်ထောင်စုပေါင်း	Primary Role of Man <sup>1</sup> and Woman <sup>2</sup> အမျိုးသား နှင့် အမျိုးသမီး ၂ တို့၏ အရေးပါမှု
	a. Cultivator စိုက်ပျိုးရေး	<input type="checkbox"/>		
	b. Agricultural laborers လယ်စာရင်းငှား	<input type="checkbox"/>		
	c. Fishing ငါးဖမ်းခြင်း	<input type="checkbox"/>		



	d. Business (SME, shop, trading etc.) <input type="checkbox"/> စီးပွားရေး (ဥပမာ-ဈေးဆိုင်၊ ကုန်သွယ်ရေး၊ စသဖြင့်)		
	e. Hunting တောလိုက်ခြင်း <input type="checkbox"/>		
	f. Making coal မီးသွေးဖုတ်ခြင်း <input type="checkbox"/>		
	g. Livestock rearing မွေးမြူရေး <input type="checkbox"/>		
	h. Casual Labour/ temporary work ကျဘန်း <input type="checkbox"/>		
	i. Other အခြား <input type="checkbox"/>		
	j. Government service အစိုးရဝန်ထမ်း <input type="checkbox"/>		
	k. Private companies ကိုယ်ပိုင်ကုမ္ပဏီ <input type="checkbox"/>		
	l. Money from relatives (remittance) ဆွေးမျိုးများမှ ထောက်ပံ့ခြင်း <input type="checkbox"/> င်း		

**Fishing ငါးဖမ်းခြင်း**

8	How do you classify the boats?						
	Type of Boats လှေအမျိုးအစား	Size (feet) အရွယ်အစား	Carrying Capacity သယ်ဆောင်နိုင်သောဦးရေ	Motor capacity မော်တာ (မြင်းကောင်ရေအား)	Distance covered (in kms) သွားနိုင်သောအကွာအဝေး	Usually moves in Depth of (in mts.) သွားနိုင်သောရေ၏အနက်	Number of HHS အိမ်ထောင်စုပေါင်း
	1)						
	2)						
	3)						
9	How many households in the village are full time fishermen and have no land ရွာတွင်မြေမရှိဘဲ အချိန်ပြည့်ငါးဖမ်းလုပ်ငန်းလုပ်သည့် အိမ်ထောင်စုပေါင်း						
10	How many families are fishermen and also have agricultural land ရွာတွင်မြေရှိပြီး ငါးဖမ်းလုပ်ငန်းလုပ်သည့် အိမ်ထောင်စုပေါင်း						
11	What are the main types of fish catch ဖမ်းမိရရှိနိုင်သည့် ငါးအမျိုးအစားများ						
	Type of Fish ငါးအမျိုးအစား	Specific season/ round the year ရာသီ	Big boat/ Medium Boat/ Small Boat (အသေး/အလတ်/အကြီး)	Distance from the river at which they are usually found မည်မျှဝေးဝေးသွားဖမ်းရပါသနည်း			
	1.						
	2.						
	3.						
	4.						
	5.						
	6.						
	7.						
	8.						

12	What is the main market for selling fish? မည်သည့်ဈေးတွင်ဖြန့်လည်ရောင်းချပါသနည်း	1. Local (village) ဒေသတွင်း <input type="checkbox"/> 2. National နိုင်ငံတွင်း <input type="checkbox"/> 3. Export နိုင်ငံခြားသို့တင်ပို့ခြင်း <input type="checkbox"/>																										
13	What is the usual kind of fishing method? အသုံးပြုသည့် ငါးဖမ်းနည်းများ	1. Net Fishing ငါးဖမ်းပိုက် <input type="checkbox"/> 2. Line Fishing တန်းချ <input type="checkbox"/> 3. Other Fishing ..... .....																										
<b>Land</b>																												
14	Do people engage in cultivation in this village? ရွာသားများအနေဖြင့် စိုက်ပျိုးရေးကို အခြေခံကြပါသလား	a. Yes, <input type="checkbox"/> b. No <input type="checkbox"/>																										
15	Do families own the land that they cultivate / farm? And if so, do they also live on the land? လယ်လုပ်သူမိသားစုများမှာ ထိုမြေကိုပိုင်ဆိုင်ပါသလား။ ပိုင်ဆိုင်ပါကထိုမြေပေါ်တွင်နေထိုင်ကြပါသလား။  If they don't own the land, who do they lease from and how is the system managed? အကယ်၍မပိုင်ဆိုင်ပါကမည်သူကဝယ်ယူထားပြီးလုပ်ခလစာမည်မျှရသနည်း။																											
16	If the answer to the previous question is yes, how many families are engaged in agriculture? စိုက်ပျိုးရေးလုပ်ငန်းအားအခြေခံ လုပ်ကိုင်ပါက လုပ်ကိုင်သည့် အိမ်ထောင်စုပေါင်း																											
17	What is the average land holding size per family in the village? ( <i>mention in acres or any other unit but specify</i> ) ပျမ်းမျှ မြေယာပိုင်ဆိုင်မှု (ဧက)																											
	<table border="1"> <thead> <tr> <th data-bbox="544 1346 954 1518">i. Type of land အမျိုးအစား</th> <th data-bbox="954 1346 1257 1518">ii. Proportion မြေယာပိုင်ဆိုင်မှု အချိုး</th> <th data-bbox="1257 1346 1519 1518">iii. Utilization အသုံးချမှု (သီးနှံအမည်/ ရောင်စွန်းရန်/ စားရန်)</th> </tr> </thead> <tbody> <tr> <td data-bbox="544 1518 954 1563">a. LE (wet) လယ်</td> <td data-bbox="954 1518 1257 1563"></td> <td data-bbox="1257 1518 1519 1563"></td> </tr> <tr> <td data-bbox="544 1563 954 1608">b. Ya (dry) ယာ</td> <td data-bbox="954 1563 1257 1608"></td> <td data-bbox="1257 1563 1519 1608"></td> </tr> <tr> <td data-bbox="544 1608 954 1697">c. Kaing (cultivable waste land, island etc.) ကိုင်း</td> <td data-bbox="954 1608 1257 1697"></td> <td data-bbox="1257 1608 1519 1697"></td> </tr> <tr> <td data-bbox="544 1697 954 1787">d. Taungya (shifting cultivation) ရွှေ့ပြောင်း တောင်ယာ</td> <td data-bbox="954 1697 1257 1787"></td> <td data-bbox="1257 1697 1519 1787"></td> </tr> <tr> <td data-bbox="544 1787 954 1832">e. Garden ဥယျာဉ်ခြံမြေ</td> <td data-bbox="954 1787 1257 1832"></td> <td data-bbox="1257 1787 1519 1832"></td> </tr> <tr> <td data-bbox="544 1832 954 1877">f. Reserved forest ကြီးပိုင်းတော</td> <td data-bbox="954 1832 1257 1877"></td> <td data-bbox="1257 1832 1519 1877"></td> </tr> <tr> <td data-bbox="544 1877 954 1921">g. Current fallow ပလပ်မြေ</td> <td data-bbox="954 1877 1257 1921"></td> <td data-bbox="1257 1877 1519 1921"></td> </tr> <tr> <td data-bbox="544 1921 954 1966">h. Other (specify) အခြား</td> <td data-bbox="954 1921 1257 1966"></td> <td data-bbox="1257 1921 1519 1966"></td> </tr> </tbody> </table>	i. Type of land အမျိုးအစား	ii. Proportion မြေယာပိုင်ဆိုင်မှု အချိုး	iii. Utilization အသုံးချမှု (သီးနှံအမည်/ ရောင်စွန်းရန်/ စားရန်)	a. LE (wet) လယ်			b. Ya (dry) ယာ			c. Kaing (cultivable waste land, island etc.) ကိုင်း			d. Taungya (shifting cultivation) ရွှေ့ပြောင်း တောင်ယာ			e. Garden ဥယျာဉ်ခြံမြေ			f. Reserved forest ကြီးပိုင်းတော			g. Current fallow ပလပ်မြေ			h. Other (specify) အခြား		
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g. Current fallow ပလပ်မြေ																												
h. Other (specify) အခြား																												
18	Do people use any irrigation methods for their field? ရေသွင်းစိုက်ပျိုးမှုရှိပါက ရေသွင်းသည့်နည်းလမ်း																											

19	How many families use irrigation sources for their field? ရေသွင်းစိုက်ပျိုးသည့် အိမ်ထောင်စုအရေအတွက်	
20	What percentage of the total agricultural land will be irrigated? ရာခိုင်နှုန်းမည်မျှ ရေသွင်းစိုက်ပျိုးပါသနည်း	

**Crops သီးနှံ**

21	<p><b>Sample crops:</b> Monsoon Paddy (မိုးစပါး) , Summer Paddy (နွေစပါး) , Oil Seeds (ဆီထွက်သီးနှံ) , Peas (ပဲပင်) , Pulses (ပဲတောင့်) , Maize (ပြောင်း) , Wheat (ဂျုံ) , Potatoes (အာလူး) , Sweet Potato (ကန်စွန်းဥ) , Onion (ကြက်သွန်နီ) , Garlic (ကြက်သွန်ဖြူ) , Ginger (ဂျင်း) , Turmeric (နန္ဒင်း) , Chili (ငြိပ်) , Fruits (သစ်သီးဝလံ) , Vegetables (ဟင်းသီးဟင်းရွက်) , Sugar cane (ကြံ) , Nippa Palm (အုန်းထန်းပင်) , Coconut (အုန်းပင်) , Betel nut/ leaf (ကွမ်း) , Toddy (ထန်းပင်).</p> <p>We should just stress on getting the important crops which are either important for the survival of the HHs or are important for the income it brings to the household. Please pick from the options mentioned above, if the community needs help.</p>	
	What are the major crops grown in the village. အဓိကစိုက်ပျိုးသည့် သီးနှံ	<p>1.....</p> <p>2.....</p> <p>3.....</p> <p>4.....</p> <p>5.....</p>

**Livestock မွေးမြူရေး**

22	Number of households rearing these livestock (tick the appropriate option) မွေးမြူရေးဆောင်ရွက်သည့် အိမ်ထောင်စုအရေအတွက်	<b>Type အမျိုးအစား</b>	<b>Number of Households having the livestock holdings အိမ်ထောင်စုအရေအတွက်</b>	<b>Main Use မွေးမြူခြင်းရည်ရွယ်ချက် Eat 1/ Trade<sup>2</sup> (စားရန်<sup>၁</sup>/ရောင်းရန်<sup>၂</sup>)</b>
		Buffalo ကျွဲ	<input type="checkbox"/> _____	
		Goats/Sheep ဆိတ်/ သိုး	<input type="checkbox"/> _____	
		Horse မြင်း	<input type="checkbox"/> _____	
		Cattle နွား	<input type="checkbox"/> _____	
		Ducks ဘဲ	<input type="checkbox"/> _____	
		Chickens ကြက်	<input type="checkbox"/> _____	
		Pigs ဝက်	<input type="checkbox"/> _____	
	Others အခြား	<input type="checkbox"/> _____		

**Income/ Expenditure ဝင်ငွေနှင့်အသုံးစရိတ်**

23	How many households fall into these Annual Income Levels? တစ်နှစ်ဝင်ငွေ	<b>Level of monthly income ဝင်ငွေ အဆင့်</b>	<b>Number of HH falling under the categories အိမ်ထောင်စုအရေအတွက်</b>
		a. Less than 25,000 Kyats < ၂၅,၀၀၀ ကျပ်	
		b. 25-50,000 Kyats ၂၅,၀၀၀- ၅၀,၀၀၀ ကျပ်	
		c. 50-100,000 Kyats ၅၀,၀၀၀- ၁၀၀,၀၀၀ ကျပ်	
		d. 100,000-200,000 Kyats ၁၀၀,၀၀၀- ၂၀၀,၀၀၀ ကျပ်	
		e. 200,000-300,000 Kyats ၂၀၀,၀၀၀- ၃၀၀,၀၀၀ ကျပ်	
	f. More than 300,000 Kyats > ၃၀၀,၀၀၀ ကျပ်		

**Village Infrastructure ကျေးရွာအခြေခံအဆောက်အအုံ**

24	Distance to the following facilities (in time mile) အကွာအဝေးဖော်ပြရန်
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	Infrastructure အခြေခံအဆောက်အအုံ	i. Facilities available ii. ( Yes/ No) ရှိ/မရှိ ဖော်ပြရန်	iii. Distance from Village (in Minutes) အကွာအဝေး (မိနစ်ဖြင့်ဖော်ပြရန်)	iv. Preferred mode of Transport သယ်ယူပို့ဆောင်ရေး	Mode of Transport အသုံးပြုသည့်အမျိုးအစား
	Health Center ကျန်းမာရေးစင်တာ				1) Walking လမ်းလျှောက် 2) Bicycle, စက်ဘီး 3) Motor-cycle မော်တော်ဆိုက်ကယ် 4) Car ကား 5) Boat ဂေ
	Seed/grain bank မျိုးစေ့ဘဏ်				
	Cyclone shelter ဆိုင်ကလုန်း အဆောက်အအုံ				
	Hand pumps လက်နှိပ်ပန်း				
	Grocery shops ကုန်စုံဆိုင်				
	Chemist /Pharmacy ဆေးဆိုင်				
	Post office စာတိုက်				
	Bank ဘဏ်				
	Other (specify) အခြား.....				
25	Access to Road Facilities in the village (tick the appropriate) ရွာလမ်း	a. No Road (reaching all the way to the village); လမ်းမမရှိပါ b. Rough Track (Bullock Cart or Walking only); လမ်းလျှောက်ရန်/ ခွားလှည်းနှင့်သွားရန် c. Accessible by trawlargee but not cars/trucks; ထော်လာဂျီနှင့်သာသွားရန် d. Accessible by car/ truck in dry weather only; နွေရာသီတွင်သာ ကား/ထရပ်ကားဖြင့်သွားရန် e. Accessible by car/truck in all-weather ရာသီတိုင်း ကား/ထရပ်ကားဖြင့်သွားရန်			<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
Availability, access and proximity to the education services ပညာရေး		i. Facility ပုံစံ	ii. Distance (km or mile) အကွာအဝေး (ကီလိုမီတာ/ မိုင်)	iii. Quality (Good <sup>1</sup> /bad <sup>2</sup> /no comments <sup>3</sup> ) အရည်အသွေး (ကောင်း/ညံ့/ မသိပါ)	
26	Operational Education System ပညာရေးစနစ်	a. Nursery နေ့ကလေးထိန်း			
		b. Primary မူလတန်း			
		c. Middle အလယ်တန်း			
		d. Secondary အထက်တန်း			
		e. University တက္ကသိုလ်			
		f. Vocational training institute သက်မွေးပညာသင်ကျောင်း			
		g. Religious School ဘုန်းတော်ကြီးပညာသင်			
27	Market (when and	a. Every day market နေ့စဉ်ဈေး			

	where) ဈေး (ဖွင့်ချိန် / နေရာ)	b. Weekly market (for basic provisions) တစ်ပတ်တစ်ခါဈေး		
		c. Monthly market (for trade) တစ်လတစ်ခါဈေး		
		d. Occasional market အခါအားလျော်စွာဖွင့်သည့်ဈေး		
28	Operational Health System ကျန်းမာရေးစနစ်	a. Town council မြို့နယ်ဆေးရုံ		
		b. Station hospital တိုင်းအဆင့်ဆေးရုံ		
		c. Rural health center ဆေးခန်း		
		d. Rural health Sub-center Rural health Sub-center (eg local mid-wife)ကျေးလက်ဆေးပေးခန်း (သားဖွားဆရာမ)		
		e. Village health committee ကျေးရွာကျန်းမာရေးဧကော်မတီ		
29	<b>Credit Facility ချေးငွေဆိုင်ရာပုံစံများ</b>			
A	How do people borrow money? ငွေချေးနိုင်မှုအခြေအနေ	1. Family မိသားစု 2. Friends/ Neighbours သူငယ်ချင်း/ အိမ်နီးချင်း 3. Licensed creditor အမိန့်ရအပေါင်ဆိုင် 4. Bank ဘဏ် 5. Savings group ငွေစုအုပ်စု 6. Other (specify): အခြား _____		
B	What is the interest rate? အတိုးနှုန်း	<input type="checkbox"/> <input type="checkbox"/> .....% per ..... (period <sup>1</sup> ကာလ <sup>၁</sup> : year <sup>2</sup> နှစ် ၂, month <sup>3</sup> လ ၃) <input type="checkbox"/> <input type="checkbox"/> No interest အတိုးမဲ့		
C	Why do people borrow money? ငွေချေးယူရသည့် အကြောင်းရင်း	1. Repairing/buying boats (လှေပြင်ရန်/ဝယ်ရန်) 2. Repairing or buying fishing equipment (ငါးဖမ်းပစ္စည်းဝယ်ရန်/ ပြင်ရန်) 3. Food (အစားအစာ) 4. Medical facilities (ဆေးဝါး) 5. For Marriage (လက်ထပ်ထိမ်းမြားရန်) 6. For house construction (အိမ်ဆောက်ရန်) 7. For Business (စီးပွားရေးလုပ်ရန်) 8. Others (education, land etc). အခြား (ပညာရေး /မြေဝယ်ရန်)		
30	Identify the five main health challenges in the village according to the following အဓိကရင်ဆိုင်ရသော ကျန်းမာရေးပြဿနာ ငါးမျိုးကိုဖော်ပြပေးပါ။	a. General b. အထွေထွေ	c. Especially among women အမျိုးသမီး	d. Especially among children ခလေး
		A. Diarrhoea ဝမ်းလျှောခြင်း		
		B. Malaria ငှက်ဖျား		
		C. Respiratory tract infection (cold, cough etc) အအေးမိဖျားနာ		
		D. Cholera ကာလဝမ်းရောဂါ		
		E. Tuberculosis တီဘီအဆုပ်နာ		
		F. HIV/AIDS		

		G. Guinea worm သံကောင်		
		H. Sexually transmitted infection ကာလသားရောဂါ		
		I. High blood pressure သွေးတိုး		
		J. Skin rash/itches အရေပြားရောဂါ		
		K. Other အခြား		
31	Access to Electricity လျှပ်စစ်ရရှိမှု	a. Type of electricity supply ရရှိသည့်အခြေခံ	b. No. of HHs utilizing အိမ်ထောင်စုအရေအတွက်	c. Power Consumption/day နေ့စဉ်သုံးစွဲသည့်ပမာဏ
		a. Government Electricity/ National Grid နိုင်ငံတော်		
		b. Electricity Organized by the Village ရပ်ရွာ အခြေခံ		
		c. Electricity by private/ commercial generator ဂျင်နရေတာ		
		d. Solar နေရောင်ခြည်စွမ်းအင်သုံး		
		e. No electricity လျှပ်စစ်မသုံးစွဲပါ		
32	Cooking fuel ချက်ပြုတ်သည့် လောင်စာ	What type of cooking fuel is used in the community? 1) Firewood 2) Charcoal 3) Electricity 4) Other ချက်ပြုတ်သည့်အခါတွင် မည့်ကဲ့သို့ သော လောင်စာအမျိုးအစားကို အသုံးပြုသနည်း။ ၁) ထင်း ၂) မီးသွေး ၃) လျှပ်စစ် ၄) အခြား		
<b>Water Services ရေအရင်းအမြစ်</b>				
33	Water sources ရေအရင်းအမြစ် Where do people get drinking water? သောက်ရေမည်ကရရှိပါသနည်း	a. River (မြစ်) b. Creek (ချောင်း) c. Pond (ရေကန်) d. Brick Well (အုတ်စီရေတွင်း) e. Hand -Dug Well (လက်ရက်တွင်း) f. Tube Well (Motor Pump) (ရေစုပ်စက်-မော်တာပန့်) g. Tube Well (Hand Pump) (တုံကင်) h. Spring Water (natural) (ပိုက်သွယ်တန်း-သဘာဝ) i. Spring Water (stored) (ပိုက်သွယ်တန်း- သိုလှောင်) j. Public Water Supply (အစိုးရရေပိုက်)		

	k. Rain Water Storage Tank (မိုးရေသိုလှောင်ကန်)		
	l. Other အခြားဖော်ပြရန် (Specify).....		
	Option 1..... ပထမအခြေအနေ	Option 2..... ဒုတိယအခြေအနေ	Option 3..... တတိယအခြေအနေ
a.	Distance from the village ရွာမှ အကွာအဝေး		
b.	Availability of water (In months)လစဉ်ရေ ရရှိမှုအခြေအနေ		
c.	Quality (Good/ Average/ Bad) အရည်အသွေး (ကောင်း/သင့်/ညံ့)		

**34. Priority wise Key expectations for the village စီမံကိန်းနှင့် ပတ်သက်၍ ကျေးရွာအတွက် အဓိကကျပြီး ဦးစားပေးရမည့် မျှော်မှန်းချက်များ**

	i. Men အမျိုးသား	ii. Women အမျိုးသမီး	iii. Youth လူငယ်
A	A	A	A
B	B	B	B
C	C	C	C

**Social Group Support**

Try to understand the social networks in the village. Try to understand through a discussion on the existence of these groups, role they perform and then try to fill in the information in the table below.

**Use these codes for the following one question:**

*Nature of support – 1. None II. Monetary III. Farming IV. House Construction V. Other (specify)*

35	Type of Group အုပ်စုအမျိုးအစား	Number of Members အဖွဲ့ဝင်အရေအတွက်	Frequency of Meeting (In months) လစဉ်တွေ့ဆုံသည့် အကြိမ်အရေအတွက်	Nature of Support Received အထောက်အပံ့ရရှိမှု	Any contribution to group အခြားကူညီထောက်ပံ့မှု
	a. Youth Group လူငယ်အုပ်စု				
	b. Fishing Group ငါးဖမ်းအုပ်စု				
	c. Farming Group လယ်သမားအုပ်စု				
	d. Hunter Group အမဲလိုက်အုပ်စု				
	e. Community Group ရပ်ကွက်အုပ်စု				
	f. Religious Group ဘာသာရေးအသင်း				
	g. Low Interest Micro Credit group အသေးစားငွေချေး				
	h. Other (specify) အခြားဖော်ပြရန်				
36	Does the village have some kind of fishing association or cooperative? ငါးလုပ်ငန်းဆိုင်ရာ				

	အသင်း/အဖွဲ့အစည်းရှိပါသလား	
	How does the fishing association work? မည်သို့ဆောင်ရွက်လေ့ရှိသနည်း	

**Non-governmental Organizations Operational in the community အစိုးရမဟုတ်သောအဖွဲ့အစည်းများဆောင်ရွက်ပေးမှု**

**Use these options for the following questions:**

Nature of Work – Health, Sanitation, Education, Livelihood, Water supply, Micro-credit, Environment conservation, Other (specify),  
Benefits Received – Technical training, Medical Supplies, Other Capacity Building, Credit Group Formation, Other (specify)

37	Are their NGOs or CSOs operational in the area? အစိုးရမဟုတ်သောအဖွဲ့အစည်းများနှင့် လူမှုရေးရာအဖွဲ့အစည်းများရှိပါသလား	a. Yes,    b. No  If the answer is <u>yes</u> , move to the next question, otherwise skip
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38	i. NGO name / CSO name အမည်	ii. Nature of Work လုပ်ငန်း	iii. Benefits Received အကျိုးကျေးဇူး

**Sacred sites, graves and heritage sites ထိန်းသိမ်းစောင့်ရှောက်ရမည့် နေရာ - ဂူ၊ ယဉ်ကျေးမှုဆိုင်ရာအမွေအနှစ်**

39	i. Object အမည်	ii. Location's Name နေရာအမည်	iii. Distance from village (in mins or kms or mile) အကွာအဝေး (မိနစ်/ကီလိုမီတာ/မိုင်)	iv. Likely to fall within the Project area or not စီမံကိန်းဧရိယာတွင်းမှာပါဝင်မှုရှိ/မရှိ

**Knowledge about the Project စီမံကိန်းနှင့် ပတ်သက်သည့်ဗဟုသုတ**

40	Do you have any information regarding the proposed Project? စီမံကိန်းနှင့် ပတ်သက်၍သိရှိပါသလား	a. Yes, I know about the Project သိရှိပါသည် b. Yes, somewhat သိသလိုလိုရှိပါသည်	c. No မသိရှိပါ d. No response ဘာမှမပြောလိုပါ
41	If Yes, from where did you hear about the Project? သိပါက မည်သို့သိရှိခဲ့ပါသနည်း If No. how would like being communicated about the project? မသိဘူး ဆိုပါက မည်ကဲ့သို့ သောနည်းလမ်းများဖြင့်စီမံကိန်းအကြောင်းကို မိတ်ဆက်ပေးရန် လိုအပ်ပါသနည်း	a. Government Department (အစိုးရဌာနများ) b. Technical Surveyors (နည်းပညာအရတိုင်းထွာမှုများမှ) c. Newspapers (သတင်းစာများ) d. Neighbours (အိမ်နီးချင်းများ)	e. Community Elders/ Traditional leaders ကျေးရွာခေါင်းဆောင်များ f. Direct Contact with the community member လူမှုရေးအဖွဲ့အစည်းအဖွဲ့ဝင်များမှ g. Radio ရေဒီယို h. Any Other(specify) အခြားရှိကဖော်ပြရန် .....

**GRS Grievance redressal system**

42	Information Disclosure system in the village. ရွာမှ သတင်းအချက်အလက်ဖြန့်ဝေမှုစနစ်။	
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	<p>a. How information made available to the community? To the community? ရွာလူထုမှ သတင်းအချက်အလက်ဘယ်လိုရလဲ။ Is it through community radio, Television, public address system, newspapers, notice, meetings in the community etc. ရေဒီယို၊ TV၊ သတင်းစာ၊----</p>	
43	<p>Grievance redressal system in the village ရွာမှာဆိုးရှုံးနစ်နာမှု အတွက်ဘယ်လိုလုပ်ဆောင်ပေးလဲ။</p> <p>a. What kind of grievance situations arises for the community? ရွာမှာထိခိုက်မှုအမျိုးအစားဘယ်လိုရှိလဲ။</p> <p>b. How are these grievances settled? ဘယ်လိုဆောင်ရွက်ပေးလဲ။</p> <p>c. What is the role of village level institutions in addressing these grievances? နစ်နာချက်တွေကိုကိုင်တွယ်ဆောင်ရွက်တဲ့အခါ ရပ်ရွာတွေအဆင့်အခန်းကဏ္ဍကဘယ်လိုလဲ။</p>	
44	<p>What kinds of grievances are typically raised by the community? လူ့အဖွဲ့အစည်းတွေမှာဘယ်လိုမျိုးနစ်နာချက်တွေ ပေါ်ပေါက်လဲ။</p> <p>a. What is the role of the related department in handling these grievances? နစ်နာချက်တွေကိုဖြေရှင်းတဲ့အခါ နစ်နာချက်တွေကို သက်ဆိုင်ရာဌာနများမှ ဘယ်လိုလုပ်ဆောင်ပေးပါသလဲ။</p> <p>b. What is the role of the Client in handling the grievances? စီမံကိန်းပိုင်ရှင်မှ မည်သို့တာဝန်ယူဆောင်ရွက်ပေးသနည်း</p> <p>c. Are they handled in a similar fashion like the general grievances in the community? ရပ်ရွာတွေမှာအထွေထွေနစ်နာချက်တွေကိုဘယ်လိုလုပ်ဆောင်ပေးလဲ။</p>	
45	<p>General understanding of vulnerability in the village ရွာ၏ အထွေထွေ ထိခိုက်မှုရှိနိုင်မည့်သူများ</p> <p>a. What is the understanding of vulnerability in the village? ရွာမှာထိခိုက်နိုင်မှုရှိတဲ့လူတွေကိုဘယ်လိုခွဲခြားသိနိုင်လဲ။</p> <ul style="list-style-type: none"> <li>• Poor ဆင်းရဲ</li> <li>• Disabled မသန်မစွမ်း</li> <li>• Old age အသက်ကြီးသူ</li> <li>• Widow မုဆိုးဖို/မုဆိုးမ</li> </ul> <p>b. Why are they considered vulnerable by the community? ကျေးရွာအဖွဲ့အစည်းအနေဖြင့်ထိခိုက်မှုတွေကိုမည်သို့ စဉ်းစားပေးပါသနည်း</p> <p>c. What are the support systems (if any) to help these people? ရွာသူ/သားတွေကိုဘယ်လိုထောက်ပံ့မှုမျိုးလုပ်ဆောင်ပေးလဲ</p>	
46	<p>Previous experience of any project in the area. အရင်တုန်းကစီမံကိန်းများရှိခဲ့သလား။</p> <p>a. Are there past experiences of other projects in the area? Or engagement with other operators or large companies?</p> <p>b. ဤနေရာတွင် အခြားမည်သည့်ကုမ္ပဏီ(သို့) စီမံကိန်းများရှိပါသလား။</p> <p>c. Was there any issue with the community? ကျေးရွာအဖွဲ့အစည်းနဲ့ ပတ်သက်ပြီးအတွေ့ကြုံရှိလား။</p>	

**Any Special observations from the village**

47

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**Farmers' Focus Group Discussion**

**Instructions to the Project Company Staff:** Greet the respondent and please introduce yourself briefly to the respondent.

*We are conducting a survey in the villages that may be affected by the Cement Plant project, which is being undertaken as a part of the Environmental Impact assessment (EIA) for the project. In order to understand the nature of impact of this project on assets in the area, we are undertaking a survey of some of the communities (villages/ Towns) that may get affected as a result of this project. Based on the results of this survey, a socio economic baseline would be created and impact assessment done for the project area. There are no rights or wrong answers. We only seek your responses and opinions regarding some of the issues. We assure that these details will be kept confidential. The interview might take 40 to 45 minutes. We seek your cooperation in this regard.*

*May we proceed? ..... Thank you.*

**Enumerator Details:**

<i>Name:</i>	1)	<i>Contact Phone No:</i>	1)	<i>Signature:</i>	1)
	2)		2)		2)
	3)		3)		3)
	4)		4)		4)
	5)		5)		5)

*Date: (DD/MM/YY)*

**Location Details**

<i>Village:</i>		<i>Township:</i>	
<i>Village Tract:</i>		<i>District:</i>	
<i>State/Region</i>		<i>Coordinates:</i>	

Name and Identification Number (by survey team) ...../...../...../...../.....

<b>A. Land Ownership farming and Renting practices</b>				
1.	What is the average land holding size in the village?			
2.	Reason for such holding size in the village.			
3.	Can you please give the break-up of the land ownership in the village, according to the major social groups in the area?			
	<b>Land size based categorisation</b>	<b>Buddist</b>	<b>Christian</b>	<b>Muslim</b>
	Landless			
	Marginal			

	Small				
	Semi Medium				
	Medium				
	Large				
4.	Are women able to claim ownership of the land in the community? Especially once the male member in the family has faced sudden demise/ death?				
5.	How is the land availability in your village and nearby areas? Is the land buying and selling among the villagers common? Please mention the reasons for the same?				
6.	Who takes decision on the land purchase in the community?				
<b>B</b>	<b>DEPENDENCE ON AGRICULTURE</b>				
7.	Is farming the main economic activity in this settlement? As major form of subsistence or primarily for selling purposes or for both?				
8.	What are the main crops grown in the area				
9.	What are the major agriculture equipments that you primarily use for any kind of cultivation or farming activity? Are you easily able to source the equipments from the market or elsewhere? Why?				
<b>C</b>	<b>CHANGING AGRICULTURE PRACTICES</b>				
10.	Are people shifting from Agriculture? If yes what are the reasons?				
11.	Has there been change in the productivity? If yes, what has been the reason for such change?				
12.	Has there been a change in the form of agriculture undertaken in terms of crops produced, or techniques used? If yes, what has been the driver of such change?				
13.	Are the youths getting into agriculture? Please mention the reason for the same?				
<b>D</b>	<b>DIVISION OF LABOUR</b>				
14.	Do women also engage in farming like the men? Why? If yes, should they be promoted for taking up farming activities in the region?				

15.	What are the activities that women do in farming? What are the jobs that men do in farming?	
16.	Do children support the farming process? How? When (e.g. during school holidays)? What activities do they do? Do they help with the use of pesticides/herbicides?	
17.	What is the availability of labour and migrant opportunities?	
<b>E</b>	<b>GOVERNMENT SCHEMES and NGO Presence</b>	
18.	What are the various agricultural schemes of the government in the villages? How many farmers are availing these schemes? What kind of support has government provided you till date related to farming? Is there any present programme of the Agriculture department in which you are involved?	
19.	Does the Government run any kind of farming support programmes in the community? Do they have any field action programme in the community?	
20.	Are there any NGOs/ company CSR working in your area on the improvement of the farming practices? If yes, what are they working upon? Has it been useful for	
	you? Do you think extension of such services will help you improve farming activities?	
<b>F</b>	<b>ACCESS TO CREDIT</b>	
21.	Do the farmers usually take credit for farming or not? If yes, what is the purpose of such credit? Is the credit crop specific?	
22.	What is the typical amount of such loan? What are the sources of loan? What is the interest rate on the loan? What is the payment method for the repayment of such loans?	
<b>G</b>	<b>COOPERATIVE SOCIETIES</b>	
23.	Are there agriculture or Dairy Cooperative societies in the village?	
24.	Please mention and also mention the membership of these cooperative societies? What will be the percentage of women having membership to such societies?	
<b>H</b>	<b>AGRICULTURAL LABOUR PRACTICES</b>	

25.	Is it common to hire labour to help with the farming?  If yes, are hired people local or do people travel seasonally? Which are the villages from which they usually come? Or they are from the same village? Is there a preference for men or women as labourers? If yes, reasons for the same	
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<b>I.</b>	<b>Expenditure on Agriculture</b>	<b>Mention in Numbers</b>
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26.	wage paid per male Labour per day	
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27.	Wage per women labour per day	
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28.	<b>Total cost of per .....(Bigha/ Acre) of land on average for crop cycle</b>	
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	Crop	Total Expenditure on Labour per crop Cycle	Expenditure on irrigation per crop cycle	Expenditure seed/ fertilizer/ Transportation
	A			
	B			
	C			
	D			
	E			
	F			
	G			

<b>J</b>	<b>LAND RENTING PRACTICES</b>	
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29.	Do the land renting practices occur in your community? If yes, what is the reason for the same.	
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30.	If user, what is the relationship of the user to the owner (tick the applicable options)	(1=Relative, 2= Not related/ other villager)
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31.	If agreement, terms of agreement (tick the applicable options)	1= Freely lend; 2= rent ; 3 = tenant farming ; 4= paid with part of the crop ; 5= Other agreement : precision.....
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32.	Duration of User agreement (tick the applicable options)	1. Agriculture Cycle 3. Specify, Other.....	2. One year
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<b>M</b>	<b>MARKETING OF PRODUCE</b>	
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33.	How do you sell your farm produce? (Cash Crops)	1. At the farm 3. Take by vehicle to the major town	2. Local market in the town
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<b>N</b>	<b>LIVESTOCK OWNERSHIP</b>			
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	a. Livestock	b. Number ( or %) of HHs engaged	c. Average number of livestock heads	% of HHs using it for self-consumption	% of HHs using it for business
<b>i.</b>	Cattle (milk)				

<b>ii.</b>	Cattle (meat)				
<b>iii.</b>	Goats				
<b>iv.</b>	Pigs				
<b>v.</b>	Poultry				
<b>vi.</b>	Horses				
<b>vii.</b>	Other (specify)				
1.	Source of Fodder				
2.	Is managing fodder an issue in the community?				





	Crop grown in parallel				
	Selling %				
	Self-Consumption %				
	<b>Third Cycle Crop</b>	<b>Crop 1</b>	<b>Crop 2</b>	<b>Crop 3</b>	<b>Crop 4</b>
	Name of the crop				
	Month (From- to)				
	Sowing Period				
	Harvesting period				
	Grown on (which kind of land)				
	Crop grown in parallel				
	Selling %				
	Self-Consumption %				

**Women’s Focus Group Discussion**

<b>Enumerator Details:</b>					
<i>Name:</i>	1)	<i>Contact Phone No:</i>	1)	<i>Signature:</i>	1)
	2)		2)		2)
	3)		3)		3)
	4)		4)		4)
	5)		5)		5)
<i>Date: (DD/MM/YY)</i>					
<b>Location Details</b>					
<i>Village:</i>		<i>Township:</i>			
<i>Village Tract:</i>		<i>District:</i>			
<i>State/Region</i>		<i>Coordinates:</i>			

**GENERAL**

1.	How many women are there in the village? Women Voters in the village? How many widowed women in the village?	
2.	Are there any women headed households? If yes, how many in the village?	
3.	What role do women play in: - the community? - local leadership/politics?	
4.	What is the average daily schedule? What time does the day start and end? For a day, how much time do women spend in doing their mainwork? Do men help women with domestic chores?	

**LEADERSHIP ROLES**

5.	How many women are in leadership position in the community?	
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**OWNERSHIP**

6.	What are the ownership patterns in the village? What are the typical assets owned by women in the family (land, property, Jewellery etc.)	
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7.	Are the ownership rights for girl child defined? What right do newly-wed women have?	
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### SOCIAL STATUS

8.	Do you think men and women are given equal opportunities?	
9.	What influence do women have in decisions made within the household? (e.g. marriage, children, other family issues)	
10.	If there is a dispute to resolve between a husband and wife, how is this resolved? Who helps resolve this?	
1sa 1.	Do girls access formal education? Until what level? How does it compare with boys? If there is a difference, why does it exist and what do you think about it?	
12.	What are the main problems faced by women/girls in general? What do you think the reason for this is?	
13.	How would you rate your quality of life (good, average, bad)? What do you like/dislike about your quality of life?	
14.	What wishes and hopes do you have for your daughters and their lives?	
15.	Are there any women's associations / groups? What do they do?	

### ACCESS TO SERVICES

16.	What are the main health problems faced by women in the community? Ask the group to priorities the top three.	
17.	Have there been any serious disease outbreaks in your community in the past year?	
18.	What are the main causes of death in your village? Why? What groups (men, women, children)?	
19.	Is smoking or drinking alcohol common within your village? If so, among which groups and what ages? How does it affect the women?	
20.	Where do you access your healthcare? What type of facility is it? (Private, government, religious, traditional etc.) How far is it from the village (miles)? Indicate distance and time taken to walk/travel.	

21.	Are you satisfied with the levels of healthcare available to you and your family? What are the main problems if any? (e.g. distance, long queues, opening hours, condition of hospital or clinic, medical supplies, costs)	
22.	Do you have to pay for healthcare? Which type of care do you pay for? Can you tell us the price that you have to pay for the diseases or treatment which you have to afford commonly?	
23.	Are there any health programmes in the area? If yes, which ones?	
24.	Are Sexually Transmitted Infections (STIs) common? Which ones are more common (e.g. syphilis, Hepatitis, HIV)?	
25.	What sexual health and familyplanning services are provided to women in the village?	
26.	How is knowledge regarding sexual health transferred to the younger generation?	
27.	How do you avoid getting pregnant? What are the modern/traditional ways?	
28.	What is the practice of birth delivery generally practised- Home based through traditional nurses or institutional delivery in the hospitals?	
<b>LIVELIHOOD &amp; INCOME</b>		
29.	What are the income generating sources for women in the community? Which are the main economicactivities undertaken by women?	Please describe the special roles of women.
	On the farm?	
	Fishing?	
	Firewood collection and selling?	
	Gathering of non-timber forest products?	
30.	How many women in the community are working in the formal sector? How many are working in various industries? What types of jobs?	

31.	Roughly, what is women's contribution to family income? Does it increase their status in the family or increase their say in the decisionmaking?	
32.	Are there households where men or other family members who migrate seasonally or annually for work? How does this impact on the family?	
33.	What significant changes have taken place in women's role since previous generations? Why? Will this change again in the future? Why?	
34.	What is the main problem faced by working women, especially in formal employment or informal employment?	
<b>FARMING (AGRICULTURE, Livestock) (if farming community)</b>		
35.	How many women in the village are engaged in farming? <ul style="list-style-type: none"> <li>• % of HHs where women are engaged in farming.</li> <li>• % of HHs where women are engaged as paid farm workers</li> </ul>	
36.	<ul style="list-style-type: none"> <li>• Do women have ownership over land?</li> <li>• What proportions of women in the village have their own lands?</li> <li>• Is the women ownership over land is more common in certain caste/sub groups?</li> </ul>	
37.	What is the role of women in various agricultural activities? <ul style="list-style-type: none"> <li>• Land preparation</li> <li>• Buying of seeds and fertilizers</li> <li>• Sowing</li> <li>• Weeding</li> <li>• Harvesting</li> <li>• Winnowing and Packaging</li> <li>• Taking to the market for sale</li> <li>• Managing finance</li> </ul>	
38.	What are the normal working hours for women working in the field? <ul style="list-style-type: none"> <li>• Own farm/ Benefits</li> <li>• Others farm / Benefits wages\ Are the wages equal for female agricultural worker?</li> </ul> Are they separately paid or paid as a family?	

39.	Do children support the farming process? How? When (e.g. during school holidays)? What activities do they do? Do they help with the use of pesticides/herbicides?	
40.	What are the main crops grown & in what months?	
41.	What are the main livestock reared? What are the roles and responsibility of women in livestock rearing <ul style="list-style-type: none"> <li>• Fodder collection</li> <li>• Buying and selling of cattle</li> <li>• Grazing</li> <li>• Shed management</li> <li>• Dung cakes preparation</li> <li>• Milking</li> <li>• Selling of milk or taking it to cooperatives</li> <li>• Vaccination and veterinary services- health management</li> </ul>	
42.	Is agricultural/farming produce used for self-consumption or selling in the market? What portion? Does this differ from crop to crop? Can you specify in terms of the crops that they grow?	
43.	Where are the fields located? Indicate distance and radius from the village. How far women farm workers have to travel for work? <ul style="list-style-type: none"> <li>• Is the Farm labour work available throughout the year</li> <li>• Do you face competition with the migrant?</li> </ul>	
44.	What are the main challenges faced by women farmers in the village?	
<b>FISHING (if fishing community)</b>		
45.	Do the women engage in fishing in this community? How many women are involved in fishing? Or on an average how many families engage in fishing from a typical village or everybody does it?	
46.	Where do people in the village fish? Do people in other villages fish in the areas you fish? Are these rivers or seasonal streams or small waterbodies with continuous water supply throughout the year?	

47.	What fish species are currently available? What size fish do you typically catch? How many fish do you catch?/ day ?	
48.	If fishing is done, are there specific seasons for the same or its year around practice?	
49.	Is fish sold for earning income? If yes, who is responsible for selling the fishes? Where is the fish sold- in the town, nearby town or in the market?	
50.	What proportion of an average catch is eaten by the fisherman's family and how much of it is sold out?	
51.	Will these fishing areas be affected because of the project Operations? Would there be substantial loss of income or source of livelihood for some of the families?	
<b>SOCIAL STATUS AND EQUALITY</b>		
52.	How do they compare with the aspirations of women – would women like to be more/less involved?	
53.	If there is a dispute to resolve between a husband and wife, how is this resolved? Who helps resolve this? Are women generally satisfied with the outcomes?	
54.	What are the main problems faced by women/girls in general? What do you think the reason for this is?	
<b>QUALITY OF LIFE</b>		
55.	How would you rate your quality of life (good, average, bad)? What do you like/dislike about your quality of life? Please explain ( e.g. Access to Recreation, availability of personal time, and opportunity of engagement with other women in the village, access to Mobile etc., participation in cultural activities)	
<b>PROJECT RELATED IMPACTS- perceptions on Industry, expectations and Concerns</b>		
56.	What do you know about the proposed project	
57.	Do you anticipate any positive impacts from the project? Describe	
58.	Do you anticipate any negative impacts from the project? Describe	

59.	Do you have any ideas for mitigation / enhancement measures for the issues described above (project impacts / benefits), especially in relation towomen?	
60.	Do you think that there will be any impact on your life owing to the following?	
	a) Forest as a source of resources like medicines, firewood, food, and other income generation sources	
	b) Traditional Forest	
	c) Religious sites ( the ones you pray including graves, shrines, etc.)	
	d) Fishing sites	
	e) Agricultural land and related food insecurity	
	f) Availability of land	
	g) Pollution	
	h) Increased crime in the area	
	i) Increased influx of the people in the area	
	j) Market in the area	
	k) Increase in the food prices in the area	
	l) Any other traditional livelihood	
	m) Any other issue of significant concern for the women	



**APPENDIX E      NYDC'S COMPANY REGISTRATION CERTIFICATE**

## Myanmar Companies Online Registry - Company Extract

**Company Name (English)**

NEW YANGON DEVELOPMENT COMPANY LIMITED

**Company Name (Myanmar)**

-

### Company Information

<b>Registration Number</b>	<b>Registration Date</b>	<b>Status</b>
114946508	12/12/2017	Registered
<b>Company Type</b>	<b>Foreign Company</b>	<b>Small Company</b>
Private Company Limited by Shares under the Special Company Act 1950	No	-
<b>Principal Activity</b>	<b>Date of Last Annual Return</b>	<b>Previous Registration Number</b>
-	-	1SC/2017-2018(YGN)

### Addresses

Registered Office In Union	56 Chindwin Road Kamayut Township Yangon Region, Myanmar
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### Officers

Name:	DAW HLAING MAW OO	Type:	Director
Date of Appointment:	20/06/2019	Date of Birth:	07/05/1958
Nationality:	Myanmar	N.R.C./Passport:	12/YAKANA(N)020880
Gender:	Female	Business Occupation:	Secretary, Yangon City Development Committee
Name:	MR. GEORGE YONG-BOON YEO	Type:	Director
Date of Appointment:	N/A	Date of Birth:	13/09/1954
Nationality:	Singapore	N.R.C./Passport:	E5784654J
Gender:	Male	Business Occupation:	Director
Name:	U SOE LWIN	Type:	Director
Date of Appointment:	20/06/2019	Date of Birth:	17/11/1953
Nationality:	Myanmar	N.R.C./Passport:	12/DAGANA(N)024566
Gender:	Male	Business Occupation:	Vice-Mayor, Yagon City Development Committee
Name:	U THEIM WAI (A.K.A MR. SERGE PUN)	Type:	Director
Date of Appointment:	N/A	Date of Birth:	08/05/1953
Nationality:	Myanmar	N.R.C./Passport:	12/MAGATA(N)084053
Gender:	Male	Business Occupation:	Director
Name:	U TUN MYAT	Type:	Director
Date of Appointment:	N/A	Date of Birth:	20/09/1942

## Myanmar Companies Online Registry - Company Extract

**Company Name (English)**

NEW YANGON DEVELOPMENT COMPANY LIMITED

**Company Name (Myanmar)**

-

Nationality:	Myanmar	N.R.C./Passport:	12/KATATA(N)026265
Gender:	Male	Business Occupation:	Retired UN assistant secretary general

**Ultimate Holding Company**

Name of Ultimate Holding Company	Jurisdiction of Incorporation	Registration Number
Yangon Region Government	Myanmar	Established by the Constitution of the Republic of the Union of Myanmar (2008)

**Share Capital Structure**

<b>Total Shares Issued by Company</b>	<b>Currency of Share Capital</b>
1,000,000	MMK

Class	Description	Total Number	Total Amount Paid	Total Amount Unpaid
ORD	Ordinary	1,000,000	10,000,000,000.00	0.00

**Members**

Name of Company:	YANGON CITY DEVELOPMENT COMMITTEE
Registration Number:	Established by the Yangon City Development Law (2013)
Jurisdiction of Incorporation:	Myanmar

Class	Description	Total Number	Total Amount Paid	Total Amount Unpaid
ORD	Ordinary	1	10,000.00	0.00

Name of Company:	YANGON REGION GOVERNMENT
Registration Number:	Established by the Constitution of the Republic of the Union of Myanmar (2008)
Jurisdiction of Incorporation:	Myanmar

Class	Description	Total Number	Total Amount Paid	Total Amount Unpaid
ORD	Ordinary	999,999	9,999,990,000.00	0.00

**Mortgages and Charges**

Form / Filing Type	Effective Date
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No records available

*Details about all mortgages and charges can be accessed from the Company Profile Filing History at no charge.*
**Filing History**



## Myanmar Companies Online Registry - Company Extract

**Company Name (English)**

NEW YANGON DEVELOPMENT COMPANY LIMITED

**Company Name (Myanmar)**

-

**Form / Filing Type**

D-1 | Particulars of directors and secretary

**Effective Date**

08/07/2019

B-4 | Application for re-registration of a private company limited by shares formed under the Special Company Act 1950

17/01/2019

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