NEW MANILA RECLAMATION PROJECT

EIS SUMMARY FOR THE PUBLIC

CITY GOVERNMENT OF MANILA

November 2018

TABLE OF CONTENTS

1 PROJECT INFORMATION

PROJECT INFORMATION	
Project Name	New Manila Reclamation Project
Project Type	Reclamation Project
Project Location	Along Coast of Manila Bay in the territorial jurisdiction of the City of Manila
Project Size	407.42 hectares
Project Cost	PhP43.7 billion
PROPONENT PROFILE	
Project Proponent	City Government of Manila
Authorized Representative	Hon. Joseph Estrada
Designation	Mayor
Proponent Address	Padre Burgos Ave, Ermita, Manila
Proponent Contact Details	T (02) 527 0907
EIA Preparer	RHR Consult Services, Inc.
EIA Preparer Contact Person	Ryan Filiberto P. Botengan Managing Director
EIA Preparer Address	9999-A Mt. Pulog St., Umali Subd., Los Banos, Laguna
EIA Preparer Contact Details	T (02) 411 5763

The City Government of Manila (the proponent) proposes to develop a reclamation project located along the coast of Manila Bay within the political jurisdiction of the City. The project will have a land area of approximately 407.42 hectares that is envisioned to be the new central business district of the city.

The Project will be undertaken under a joint venture development arrangement between the local government of City of Manila and UAA Kinming Group Development Corporation.

2 PROJECT LOCATION

The Project is situated in Metro Manila, the National Capital of the Philippines. The site is adjacent to Manila South Harbor Port with a total site area of approximately 407.42 ha.

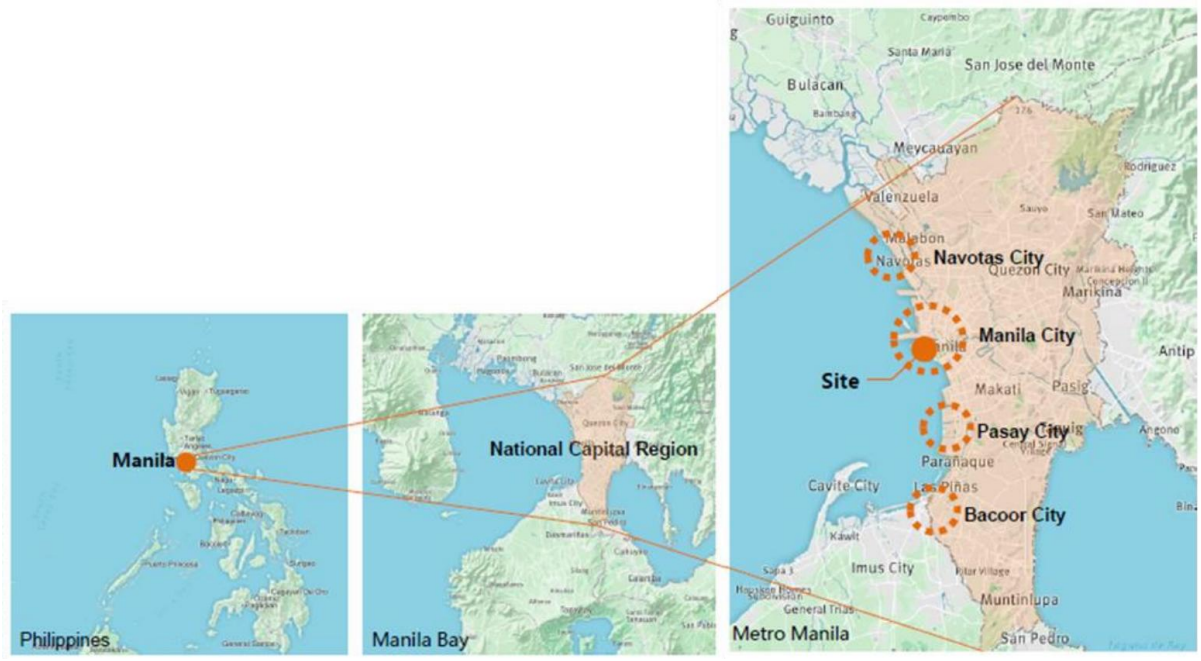

Figure . Location Map of the Project.

The Project site is currently accessible using the 2nd Street which is a partially paved 1-lane road. The 2nd Street is connected to Bonifacio Drive which in turn leads to Roxas Boulevard, which is a dual-3 major arterial road in Metro Manila. Both roads form part of the R1 radial road which convey traffic in and out of the city center to Cavite in the south and other provinces.

3 PROJECT DESCRIPTION

3.1 PROJECT RATIONALE

Over these years, rapid urbanization has resulted in an upsurge of slums and conflicting land uses in the area. It is of the city's priority to rejuvenate this valuable site that is situated in the heart of Metro
Manila.

The focus of this Project will be shifted towards the proposed reclamation area which can be carried out immediately to provide high end mix-used developments and facilities, with the developments at the Baseco Compound to ensue in the next 5-10 years' time, before finally fully developing the port area into a prime harbor residential community hub, achieving the overall development target.

3.2 GOAL OF THE PROJECT

By taking advantage of urbanization trend and carrying out reclamation, Manila City can provide functional land space suitable for mixed use development.

3.3 PROJECT SIZE

The proposed 407.42 ha reclamation area is to be filled up to a platform level of +4.4 m above MLLW. An estimated volume of 48,000,000 m3 of sand is required to meet the target platform level.

3.4 PROJECT COST

The estimated project investment cost for the Reclamation Works is PhP 43.7 billion and about 13.6 billion for Infrastructure and Transport Planning Works.

3.5 PROJECT MANPOWER REQUIREMENT

The total manpower for the raw land reclamation (construction and operation) is estimated to be about 1,095 employees and workers (direct and indirect). The personnel will be mostly composed of operators of reclamation equipment and construction workers for support facilities and administrative personnel. The manpower requirements for construction will mostly entail male workers because of the physical nature of the work.

The proponent shall give priority hiring to locals whose skills and experience match the project's specific needs.

3.6 PROJECT ALTERNATIVES

3.6.1 Project Siting

No other siting alternatives were considered for the proposed project. It is deemed strategically and economically advantageous for the proponent to develop and construct the project within the site based on different considerations such as its history, regional structure, population growth, economic growth, and tourism development.

3.6.2 Technology Selection

Planning and design of the proposed reclamation will depend on the following factors:

- The proposed land use plan and development of the reclaimed land. This will affect the basic shape and size of the proposed reclamation.
- The type of marine facilities or structures to be provided along the proposed reclaimed profile. This will affect the type of revetment and/or shoreline protection to be adopted.
- The seabed conditions, depth of fill and the type of fill material available. This will determine the proposed reclamation method and type of ground improvement works.
- The current flow, tidal flow and the hydrodynamic regime in the vicinity of the proposed reclamation. The structure must be designed such as to avoid siltation of the surrounding waters and/or erosion to the existing shores or, in short, to minimize disturbance to the existing flow conditions and surroundings.
- The existing and future water quality and its potential effects on marine receptors. The design must maintain or minimize the impacts within acceptable limits to the current water qualities of the surrounding waters and/or waterways.

The design of dredging, reclamation and soil improvement works shall be safe, robust, economical, durable, with operation and maintenance costs reduced to a practicable minimum. It must balance reasonable cost, flexibility, functional effectiveness, ease of construction throughout many permutations of design. The design of all works shall comply with the appropriate local Standards and/or the internationally accepted standards.

A shore protection structure is defined as a shoreline structure whose primary purpose is to protect the reclamation area against erosion or alleviates flooding as a result of potential storm surge or monsoon events. Depending on the formation level, land use adjacent to the coastline and types of proposed marine facilities, the most appropriate shore protection structures can be designed to accommodate these developments. The Project will involve several types of shore protection structures to protect the various types of developments and facilities.

3.6.3 Resources

A sand source located within a 30 km radius from the site such as the San Nicholas Shoal (SNS) has been planned for this Project as the borrow area for fill materials.

Figure . Project site and source of materials

Aside from the San Nicholas Shoal, other alternative sources of borrow material may be considered from the foreshore area in Mariveles, Bataan and lahar deposits from Pampanga and Zambales area. The source to be tapped for borrow material will undergo detailed geotechnical study and pre-screening process to ensure that the material is appropriate to be used as fill materials in the reclamation site and that these are not contaminated.

4 PROJECT COMPONENTS

A 407.42 ha land reclamation is proposed to be carried out at the area adjacent to Manila South Harbor Port, City of Manila, Philippines. The area is proposed to be filled up to a platform level of +4.4 m above MLLW. Based on the proposed platform level, an estimated volume of 48,000,000 m^3 of sand is required to meet the target platform level.

Table . Project Components

Component	Materials	Size/Capacity	Safety Features
1. Reclamation area	Borrow filling materials	48,000,000 m^3	Platform level at 4.4m above MLLW estimated based on effect of climate change for several return periods (50 years) determined by a combination of the Highest Astronomical Tide (HAT), seasonal variation, storm surges and Sea Level Rise (SLR) Use of proper navigational equipment and safety gears
2. Shore protection structures			
• Sloping revetment	Concrete blocks or concrete mattress	9,000m (to be finalized after detailed design)	Use of proper equipment and Personal protective Equipment (PPE)
• Steel Sheet Pile (SSP)	Sheet piles	400m (to be finalized after detailed design)	Use of proper equipment and Personal protective Equipment (PPE)
• Gravity wall	Concrete block	400m (to be finalized after detailed design)	Use of proper equipment and Personal protective Equipment (PPE)
3. Access Roads	Sub-base materials, concrete and asphalt pavement materials	Final specifications to be determined after detailed design	Use of proper equipment and PPE
4. Utilities Drainage, water, sewer, power lines	Reinforced concrete pipes UPVC or PE pipes	Final quantity and size to be determined after detailed design	Use of PPE

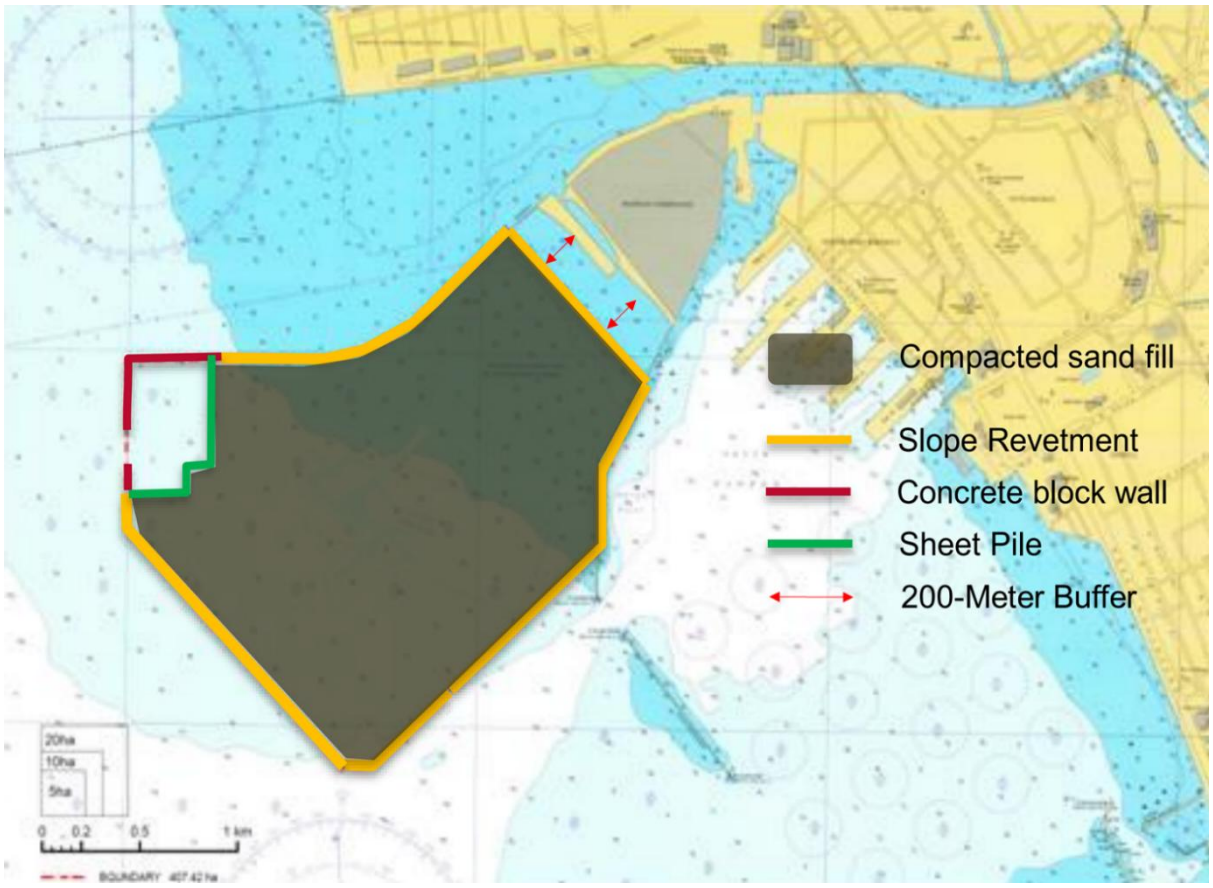

Figure . Proposed Reclamation Extent of the Project

5 IDENTIFIED STAKEHOLDERS

As per DENR Administrative Order No. 30 Series of 2003 (DAO 03 -30), the direct impact areas (in terms of the physical environment) are those areas where all project components are proposed to be constructed/situated which is the 407.42-hectare reclamation area. On the other hand, the whole city of Manila City is considered as the direct social impact area for the Project.

The stakeholders identified during the Public Scoping and will be invited to the public hearing are:

Stakeholder Group	Barangay Address
Department of Tourism	The New DOT Building, 351 Senator Gil Puyat Avenue, Makati City.
Manila GoldCoast Development Corporation	Solar Century Tower, Tordesillas cor. Dela Costa Sts., Makati City
National Academy of Science and Technology	3rd level Science Heritage Building, DOST Complex Bicutan, Taguig City
Philippine Reclamation Authority	7/F Legaspi Towers 200 Bldg 107 Paseo de Roxas St., Legaspi Village 1226 Makati City
National Economic and Development Authority	No. 12 St. Jose Maria Escriva Drive, Ortigas Center, Pasig City
Metropolitan Manila Development Authority	MMDA Building, EDSA corner Orense St., Guadalupe Nuevo, Makati City

Stakeholder Group	Barangay Address
Aloha Hotel	2150 Roxas Blvd. Malate Manila
Admiral Hotel/ Admiral Baysuites	2138 Roxas Blvd., Malate, Manila
Manila City Government	Padre Burgos Ave., Ermita, Manila
Department of Engineering and Public Works	Manila City Hall Building
Manila Traffic and Parking Bureau	3rd Floor, Manila City Hall Building
City Planning and Development Office	Manila City Hall Building
Manila City Government	Padre Burgos Ave, Ermita, Manila
Manila Hotel	One Rizal Park, Manila
Hotel H20/ Manila Ocean Park	666 Behind Quirino Grandstand, Ermita, Manila
Barangay LGU	Barangay 653, Manila City Barangay 649, Manila City Barangay 20, Manila City Barangay 275, Manila City Barangay 286, Manila City
Intramuros Administration Office	General Luna St., Intramuros, Manila
Lighterage Association of the Philippines (LAP)	V. Reyes Building, Beaterio Street Intramuros, Manila
H. Atienza Elementary School	Port Area, Manila
Pres. C. Aquino High School	Port Area, Manila
Department of Public Works and Highways	2nd Street, Port Area, Manila
Asian Terminals Incorporated	ATI Bldg. A. Bonifacio Drive, Port Area, Manila
Manila Harbor Pilot Association of the Philippines (MHPAP)	Pier 13, South Harbor Landing Port Area, Manila
Philippine Ports Authority	A.Bonifacio Drive, South Harbor, Port Area, Manila
Philippine Coast Guard	139 25th Street Port Area, Manila
Philippine Coast Guard – NCR	Muelle dela Industria Farola Compound, Binondo, Manila
Samahang Magkakapitbahay ng Valderama (SMU)	Barangay 286, Manila City
DENR Region IV-A CALABARZON	1515 L&S Building DENR by the Bay, Roxas Boulevard. Ermita, Manila
Harbison Plaza	FB Harrison St & M Adriatico S, City of Manila
Century Park Hotel	599 P. Ocampo St., 1004 Malate, Manila
Metropolitan Musuem of Manila	BSP Complex, Roxas Blvd. Malate, Manila
Ospital ng Maynila	Barangay 719, President Quirino Avenue, Roxas Blvd, Malate, Manila
Senate of the Philippines	4th Floor Senate of the Philippines, Roxas Blvd, Pasay
Philippine International Convention Center (PICC)	PICC Complex, Roxas Boulevard
The Manila Film Center	Pasay, Manila, Philippines
Government Services Insurance System (GSIS)	Financial Center, Pasay City
Manila Yatch Club	2351 Roxas Boulevard, Malate, Manila
Waterfront Manila Premiere Development Inc.	Ramon Magsaysay Center, Quintos St., Malate, Manila
US Embassy in Manila	1201 Roxas Boulevard Manila, Philippines
Diamond Hotel Manila	Roxas Blvd. Malate, Manila
Kaisahan ng Magulang at Anak na may Kapansanan (KAISAKA INC)	Our Lady of Remedios Parish Center M Ignacia Cor San Andres ST., Bgy 701, Zoe 077 Malate

Stakeholder Group	Barangay Address
National Parks Development Committee	T.M. Kalaw St., Manila
National Historical Commission of the Philippines (NHCP)	NHCP Building, T.M. Kalaw St., Manila
Coconut Palace	Cultural Center of the Philippine Complex, Roxas Blvd. Manila
Hotel Jen	3001 Roxas Blvd., Pasay City
Manila City Planning and Development Office	Padre Burgos Ave, Ermita, Manila
Manila City Government	Padre Burgos Ave, Ermita, Manila
Biodiversity Management Bureau	Ninoy Aquino Parks and Wildlife Center, Diliman, 2200 Quezon City
EMB NCR	National Ecology Center, East Ave., Diliman, Quezon City
DENR NCR	National Ecology Center, East Ave., Diliman, Quezon City
R-II Builders, Inc	136 Malakas St, Diliman, Quezon City
Philippine Institute of Volcanology and Seismology (PHIVOLCS)	PHIVOLCS Building, C.P. Garcia Ave., U.P. Campus, Diliman, Quezon City
The Marine Science Institute	Velasquez St., U.P. Diliman Quezon City
World Wildlife Fund	WW-Philippines Headquarters 4th flr JBD Plaza #65 Mindanao Ave. Barangay Bagong Pag-asa, Quezon City
Pasig River Rehabilitation Commission	1608 Quezo Ave., Quezon City
The United Architects of the Philippines	UAP Building, 53 Scout Rallos St., Barangay Laging Handa Diliman 1103 Quezon City
Bureau of Fisheries and Aquatic Resources	PCA Bldg, Diliman Quezon City
Center for Environmental Concerns	175-B Kamias Rod, Quezon City, Metro Manila

6 ANALYSIS OF KEY ENVIRONMENTAL IMPACTS

6.1.1 Land

6.1.1.1 Land Use

No CARP or CADC/CADT areas were identified within or near the area of the project. The proposed project site is also situated at Manila Bay and may be vulnerable or susceptible to natural hazards.

6.1.1.2 Geology

The subsoil in the project site is generally weak (very soft to soft) with thick sequence of Quaternary alluvium made up principally of unconsolidated strata of plastic silty clay and clay. Very stiff to hard clay layers are generally deeper.

The project area may experience ground shaking of Intensity VI as felt during the July 1990 Luzon Earthquake.

The seismic hazards to which the project will be exposed to are ground shaking, liquefaction and surface rupturing.

In terms of ground shaking, five major earthquake generators, namely, the West Valley Fault, the Philippine Fault Zone, the Lubang Fault, the Casiguran Fault and Manila Trench have been identified as the most likely sources of future earthquakes that could affect the project. Of these sources, the WVF and the PFZ are most likely to generate the strongest levels of ground shaking. The worst-case scenario is a large magnitude event on the West Valley Fault.

Three zones of average, below and above average levels of ground shaking have been identified in Metro Manila. Areas within the above average are those underlain by thick piles of water-saturated sediments. These include the reclaimed areas in Manila, Navotas, Malabon, eastern Pateros, the valley side of Marikina and eastern section of Pasig.

Identified liquefaction-prone areas in Metro Manila are essentially within the zone of average to above average zone of ground shaking. Several areas in Manila (particularly those close to the Pasig River), Navotas and Malabon have high potential to liquefaction.

In addition to ground-shaking related hazards, surface rupturing may also occur from West Valley Fault. The surface rupture is expected to essentially follow the pre-existing fault trace and restricted to a narrow zone. For a magnitude 7.5 earthquake, the empirical data suggest an associated 70 km long surface rupture and maximum displacement of 2 to 3 meters along the fault trace. Damages as a result of this hazard is expected to be substantial for structures directly straddling and located within few meters from the rupture zone.

Tsunamis may occur but are not expected to significantly impact the project area.

The project area is 70 km away from Taal Volcano and 85 km from Mount Pinatubo and therefore not susceptible to major volcanic hazard even if violent eruption will happen. Based on the recorded hazards associated with the eruption of Taal Volcano, the project area being 70 km away from the said volcano could only experience ashfall.

Only a minor quantity of ash has affected Metro Manila based on the review of the extent of impacted areas from the largest eruptions of Mount Pinatubo. It is thus conceivable that should Mt. Pinatubo erupt with the same magnitude in the future, the same level of ashfall impact is expected to likely affect the project area.

Manila being situated in low grounds is very much prone to flooding.

As seen during Typhoon Pedring and other previously reported storm surges that affected Manila Bay, Manila Bay coastline is considered highly vulnerable to storm surges and coastal floods.

6.1.1.3 Terrestrial Ecology

Terrestrial ecology is deemed not significant or relevant to the project as there is no terrestrial flora or fauna on the site.

6.1.2 Water

6.1.2.1 Hydrology

The proposed project site, the whole Pasig River-Laguna de Bay basin and surrounding areas belong to Type 1 climate under the Corona's modified climate type classification. This type of climate has

two (2) pronounced seasons; generally dry from November to April and wet during the rest of the year.

The most recent catastrophic flood occurred in Metro Manila when Typhoon "Ondoy" hit the country on September 26, 2009.

The various flood peaks and return period at the Sto. Nino gaging station was transposed at the mouth of Pasig River using the basin factor approach to have an idea on the response of the catchment on the intense rainfall for a period of 8 hours caused by typhoon "Ondoy".

The extent of inundation of the flood equivalent to about 5,320 cms (200 year flood) at the Sto. Nino gaging station as a result of typhoon "Ondoy".

In the case of the areas near the project site, inundation occurred due to rise of the sea level and bankful capacity of Pasig River has already been reached by flood waters where drainage cannot anymore drain its waters to the river or to the sea. As a result, flooding on level areas occurred.

In the case of the areas near the project where access roads are within the flood prone areas, flooding is not mainly caused by the overbanking of flood waters from Pasig River due to the drainage system that are not totally function properly since it cannot discharge its waters to the sea or to Pasig River

6.1.2.2 Oceanography

Hydrodynamic Modelling. Three (3) sets of modelling domains or calculation areas were developed to compare the currents, tides and wave patterns in the area, as follows:

- Scenario 1 – without the proposed project (New Manila) and other proposed reclamation islands
- Scenario 2 – with the proposed project (New Manila); and
- Scenario 3 – with all reclamation sites of the City of Manila

Simulated Tidal Patterns. It appears that the simulated water levels at the three (3) locations or cells without and with the reclamation islands were about the same elevations or heights throughout the simulation periods.

Simulated Currents. Without the reclamation projects (Scenario 1), currents flows were generally tidal driven as seen on two (2) prevailing opposite current directions. At two cells located near the mouth of the Pasig River, dominant current flows are to the west and the southeast directions, respectively, due to influence or effect of river discharges. Further, simulated current velocities during the southwest monsoon were higher than those simulated during the northeast monsoon. Increase in wind intensity contributed to increase of current velocities at the project area and vicinities.

With the proposed project (Scenario 2), there are changes on the directions of current flows because currents generally flow parallel to the coast. Changes in current flows are apparent at areas adjacent the proposed project site.

Furthermore, with the other reclamation islands (Scenario 3), current roses are along the directions of the channels between reclamation islands. Relatively higher current speeds were noted along narrower channels between the other reclamation projects of the proponent.

In general, the generated current roses suggest that with the reclamation projects, the prevailing current directions are generally parallel with the project boundaries, and that there is substantial reduction of other current flows perpendicular (or intersects) with the project boundaries for scenarios without the project.

Current roses were generated at one (1) location southwest of the project site with moderate to strong southwest winds for Scenarios 1, 2, and 3. Results show higher current velocities with the moderate to strong winds than those generated with lower wind speeds. This suggests further that current velocities are also influenced by wind flows, particularly at shallow areas.

Simulated Wave Heights. In all simulations or scenarios, wave directions are along the directions of wind flows. Simulated wave heights were also higher at the northeaster part of Manila Bay. Cavite City, which extends northward from the coast of Cavite, partially blocks generation of higher waves at the three (3) reclamation islands located S-E of the proposed project.

Simulated Sedimentation or Dispersion of Sediments. Results show that without the project scenario, sedimentations occur at areas near the mouth of Pasig River and at the project site. With the project scenario, sedimentations are still apparent at areas fronting the Pasig River and between the project site and the coast of Manila Bay (or east side of the project site).

6.1.2.3 Water Quality

The guidelines stipulated in DENR Administrative Order No. 2016-08 – Water Quality Guidelines and General Effluent Standards of 2016 were used in the assessment of the current status of surface water quality in the study area. Philippine fresh, coastal and marine waters are classified based on their beneficial use. Based on DENR Memorandum Circular No. 2010-08, Manila Bay is classified as Class SB.

6.1.2.4 Freshwater Ecology

River Characteristics. In all stations, substrate was comprised intense silt mixed with garbage, mostly plastic.

Phytoplankton. The overall impression from the results obtained in the sampling along the survey area is poor, with a low number of genera and cell densities; but should be taken into account - as reflected by the relatively low diversity values, as well as the inclusion of potentially harmful genera as recorded during the sampling period.

Zooplankton. The zooplankton community in the survey area is relatively poor as indicated by a low number of taxa and abundance for some groups during the time of survey. There are however no rare or endangered genera or groups in the sampled zooplankton community, and all are cosmopolitan in distribution worldwide.

Macrobenthos and macro-invertebrates collected for food and trade. A total 727 individuals belonging to six (6) families/classes was identified across all survey stations. However, there were no edible nor economically important macrobenthos fauna sampled in the three stations during the river survey.

Commercially important macro-invertebrates in the Pasig River. Opportunistic survey for macro-invertebrates of commercial importance for food or trade was undertaken to supplement data on macrobenthos survey but no edible macro-invertebrates were encountered.

Fish Biota. Three test fishing operations in the Pasig River yielded six species of brackish water species dominated by the Tilapia.

6.1.2.5 Marine Ecology

Benthic resources and substrate characterization. Corals and seagrass communities, including macro-algae and similar habitats were completely absent in the 6.5 kilometers of benthic observation pathways, spot dives, sediment collection and systematic snorkeling across the proposed reclamation area.

Fish Communities and Species Richness. In the absence of coral reefs, fish visual census was no longer undertaken as no significant stocks of demersal fish species were encountered in the manta tows and spot dives. However, observations of actual fishing catch landings indicate the presence of resilient target species of at least twelve species of fish. Anecdotal accounts of fishers interviewed during the survey claiming declining catch rates are supported by fish production statistics reported by the Bureau of Agricultural Statistics on municipal fisheries production of top species caught in Manila Bay.

Phytoplankton Diversity. The overall impression from the results obtained in the phytoplankton sampling along the survey area is poor, with a low number of genera and cell densities; but should be taken into account - as reflected by the relatively low diversity values, as well as the inclusion of potentially harmful genera as recorded during the sampling period.

Zooplankton Diversity. The zooplankton community in the survey area is relatively poor as indicated by a low number of taxa and abundance during the time of survey.

Macrobenthos Diversity. The macrobenthos recorded in this survey was represented by five major phyla i.e Annelida, Mollusca, Nematoda, Nemertea and Sipunculida.

Macro-invertebrates significant to livelihoods. In the proposed reclamation area itself, no macroinvertebrates collected for food were encountered. Collection of oysters and mussels is being undertaken in the "North Breakwater" about 100 meters north of the project site and in the rocky rip-rap in the Gasangan breakwater where barges are docked. Gleaning for edible bivalves of the Asian green mussel (Mytillus),and various species of the zigzag venus (Manila Clam or *Halaan; Venerupis philippinarum*) is being undertaken regularly and is about 500 meters away from the boundary of the proposed reclamation site.

Seagrass and Associated Macrobenthic Algae. Manta tows and spot dives revealed absence of seagrass meadows in the muddy shelf in coastal waters inside the proposed reclamation site.

***Mangroves*.** Two (2) mangrove reforestation areas are located in the coastline of Barangay 649, or what is more popularly known as "Gasangan". The mangrove areas, littered with trash from nearby communities, were too small to require detailed assessment. Both sites are nearly 1 km away from the boundary of the proposed reclamation site.

6.1.3 Air

6.1.3.1 Meteorology

The proposed Project site falls under Type 1 climate classification characterized by two (2) pronounced seasons, which are dry from November to April and wet during the rest of the year. August has the highest monthly average rainfall at 432.4 mm.

High temperatures are expected in dry season in April and May. The highest monthly mean temperature recorded at PAGASA Port Area is 30.1 °C during the month of April.

The prevailing wind at the Project site is from southwest and east directions, each comprise 15% of the events. The average annual wind speed is 2.9 meters per second.

The proposed project site is located in a zone wherein about five (5) tropical cyclones pass over the area in 3 years.

6.1.3.2 Contribution in Terms of Greenhouse Gas Emissions

The construction of the Project is expected to contribute an approximately 0.14 % of the total CO_2 emission based on the 2000 GHG emission data of the Philippines, which is a small contribution to the total anthropogenic CO_2 load. Moreover, this will only be temporary since the construction project will only be 3.5 years.

6.1.3.3 Ambient Air and Noise

The results of sampling for ambient air quality showed that ambient concentration levels of TSP, PM10, SO_2, and NO_2, except for the ambient concentration level of TSP measured at 1,274.6 µg/Nm^3 in Station AQ3 (Brgy. Hall, Brgy. 20, Tondo, Manila), were within the ambient standards of 300, 200, 340, and 260 µg/Nm3, respectively.

The result of ambient noise level monitoring showed that noise level in Station N1 was lower than the NPCC maximum allowable noise level of 75 dBA set for heavy industrial areas during daytime period. Similarly, the noise level at Station N2 was lower than the NPCC maximum allowable noise level of 70 dBA set for light industrial areas during daytime period. However, noise level at Station N3, an area classified as light industrial, exceeded the NPCC maximum allowable noise level by 12 dBA. The noted sources of noise in this station were the continuous passing of light and heavy vehicles at the nearby access road and the pedestrians passing nearby.

The noise levels at Station N4 and Station N5 exceeded the NPCC maximum allowable noise level of 55 dBA and 50 dBA, respectively, during daytime period. Station was located in a residential area (Class A) while Station N5 was located in an area which requires quietness (Class AA). The noted sources of noise in these stations were the vehicles passing nearby.

The predicted noise level from equipment was added to the background noise levels to determine the cumulative noise level at the two (2) closest receptors or noise stations (MICT Access Road, Brgy. 20, Tondo, Manila and Brgy. Hall, Brgy. 20, Tondo, Manila). The results showed a <5 dBA increase in the baseline noise levels. According to the impact categories by Wilson (1986), an increase of <5 dBA in the noise level data have none to minor effects.

6.1.4 People

6.1.4.1 Socio-Demographic/ Economic Conditions

Based on the 2015 Census of Population and Housing (CPH), the City of Manila, a highly urbanized city in the National Capital Region, posted a total population of 1,780,148 persons. On the other hand, the total number of families in Barangay 649 as of 2013 is 13,276.

The City of Manila number of households in 2015 was 435,237 with an average household size of 4.1 persons. Tondo has the biggest household population and total number of 148,152 household with 4.3 average household size, Intramuros has the smallest household population with only 1,509 and average household size of 3.7.

6.1.4.2 Public Scoping

The Public Scoping of the proposed New Manila Reclamation Project was held on the 2nd of July 2018 (Monday) Tamayo Restaurant, General Luna cor. Anda St., Intramuros, Manila. The program proper started at 9:00 am and finished at 10:50 am. In attendance were at least 80 representatives of 27 stakeholder organizations and/or sectors. Issues and concerns raised during Public Scoping are:

1. Timeline of ECC application
2. Impact on power supply
3. Systemic problems from the proposed project and other reclamation projects in Manila Bay
4. Impact of access road to the residents
5. Manila Mandamus to be part of EIA study
6. Source of filling materials
7. Involvement of necessary stakeholders during public participation
8. Impact on traffic
9. Impact on flooding
10. Impact on Earthquake hazard
11. Future land classification of the project
12. Impact of waste disposal on Manila Bay (aquatic life) and the community
13. Impact on drainage thereby causing flooding in Las Piñas
14. Impact on upstream of affected rivers
15. Impact on navigable waters
16. Existing breakwater to be part of the project
17. Consideration on international ports
18. Impact of hazardous equipment on water quality
19. Impact of hazardous equipment on historic and aesthetic value of the area
20. Impact of project size on water displacement near Pasig River
21. Flow analysis of bay / study on impact of drainage to the community to be included in the EIA
22. Generation of jobs
23. Displacement of barangay residents
24. Threat of hazards in the community
25. Improvement of the Baseco Community
26. Cleared and open Manila bay to preserve historical value of the area
27. Social preparation for the community;
28. Include in the development of the community
29. Fishing grounds affected by the equipment, ex. Compactor

30. Aid for the fisherfolk
31. Plan for aplaya residents

6.1.4.3 Perception Survey

An assigned number of 119 Total Number of Persons was designated to serve as the 100% of the Respondents.

The venues of the Survey are in the barangay hall and residences, stores and work areas in the impact Barangays in the Project. Barangay 649 in Baseco, Manila the impact barangay of the Project, was selected for the sampling of the Perception Survey.

The Survey Methodology used was Purposive Sampling, wherein the selection of the respondents was based on their representation of the different Sectors in their community. The other respondents randomly selected are residents, albeit ensuring that only one per household is selected, of different genders, and that ages, although limited to adults (18 years old and up) are not of a narrow range. Results are as follows:

Demographic and Socio Economic Characteristics of Respondents:

- Most of the respondents (41%) belong to 20-40 age bracket
- Eighty two percent (82%) of the respondents are females
- Forty seven percent (47%) of the respondents finished Elementary, another 47% finished highschool, while only 6% have finished college.
- Majority (76%) of the respondents are Roman Catholics.
- Selling, Salary, and contractual jobs (i.e laundry, garlic peeling) are some of the sources of livelihood of the respondents
- Majority of the respondents did not indicate their monthly income. Six percent of the respondents have monthly income of 1,000-4999 while another 6% have monthly income of more than 20,000 pesos.

Biggest Problem the Barangay is currently facing:

1. Cleanliness / Sanitation
2. Peace and Order
3. Livelihood
4. Health
5. Education
6. Water supply
7. Corruption
8. Vices of youth

Respondents fear in the establishment/running of the project:

1. Displacement of residents
2. Loss of livelihood
3. Accidents/disasters
4. Increase in crime

Respondents' perception on what should be done about the project

1. Public Consultation
2. Information Dissemination on Activities regarding the Project
3. Do not continue the project
4. Develop/improve the surroundings

7 PROJECTED TIMELINE

The reclamation will take about three (3) years to complete.

Phase	Activities
Pre-construction	• Survey and Soil Investigation Works • Detailed engineering designs • Philippine Reclamation Authority Memorandum of Agreement • Application of Notice of Proceed • Calling for Construction Tender

Construction and Operation Phase	• Establishment of a camp site for construction personnel and equipment, including temporary lodging (with sanitation facilities), material and equipment storage, and field office;
	• Upgrading, improvement and construction of necessary access roads and drainage systems;
	• Site preparation for warehouse;
	• Construction of the administration office, laboratory, and control room;
	• Procurement and commissioning of reclamation equipment; and
	• Reclamation Works
	  ○ Construction of Sand Bund
	  ○ Continuing Construction, Dredging and Reclamation
	  ○ Continuing Sand bund and sand key construction
	  ○ Start of Filling the Reclamation
	  ○ Continuing Construction
	  ○ Start of Construction of Concrete Blocks
	  ○ Continuing Construction until completion of reclamation

Abandonment	• Removal of site infrastructure and waste • All civil structures and associated infrastructure will be removed • All remaining materials and hazardous waste will be removed • All waste will be disposed of in an appropriate manner • Reusable materials will be resold or recycled

Overall, the entire reclamation project is proposed to be completed within a 36-month period inclusive of soil improvement works.

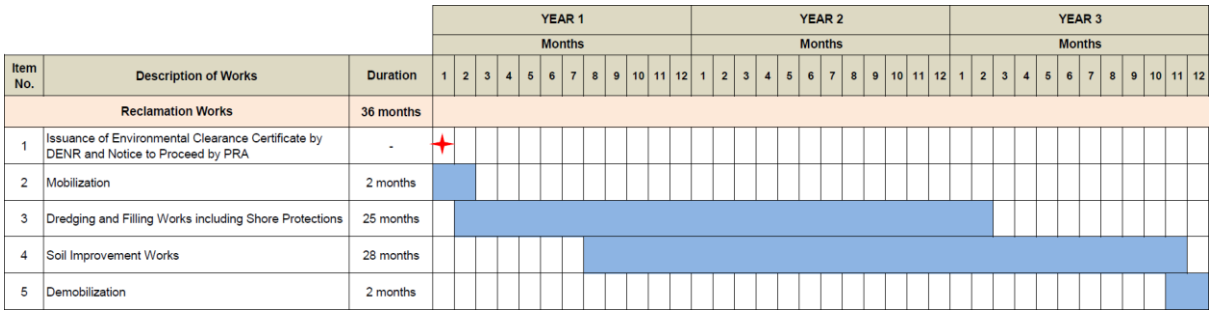

Figure . Reclamation Schedule

8 SUMMARY OF MAJOR IMPACTS OF THE PROJECT

Project Phase/ Environmental Aspect	Environmental Component Likely to be Affected	Potential impact (+/-)	Prevention, Mitigation or Enhancement Measures	Guarantee/ Financial Arrangement
I. Pre-construction Phase				
Geotechnical investigation	Land Water	*Contamination of soil, groundwater, and surface water.* (-) Drilling fluid may potentially leak into receiving environment if not managed properly	▫ Use appropriate drilling fluid ▫ Implement proper bunding to avoid spillage into receiving environment. ▫ Prepare emergency spill kits in case of potential leaks.	Part of the project cost
Increased movement of heavy equipment on site and delivery of materials	Air	*Generation of dust* (-) Increased particulate matter due to movement of vehicles (-) Health effects due to inhalation of dust by residents living in areas adjacent to project site	▫ Implement dust suppression techniques. ▫ Cover trucks with tarpaulin loaded with spoils/filling materials when in transit. ▫ Pre-wetting of road surface to minimise dust.	Part of the project cost
	People	*Threat to public safety* (-) Possible injury or fatality as a result of heavy equipment and delivery trucks movement in the project site	▫ Implement speed limits and safety devices /signs. ▫ Ensure competency of drivers to drive safely. ▫ Engage local communities and inform them of site activities through IECs, posting construction “off limits” and safety signage	Part of the project cost
		Traffic congestion (-) Rapid deterioration of existing national/ municipal/ barangay road condition as a result of heavy equipment movement	▫ Coordinate with DPWH and Municipal Engineering Department in road maintenance and necessary improvements to accommodate increased vehicle movement.	Part of the regular coordination of the Proponent with the LGU
Geotechnical investigation	People	Occupational Health and Safety	▫ Posting of safety warning and danger	OSH and Emergency

Project Phase/ Environmental Aspect	Environmental Component Likely to be Affected	Potential impact (+/-)	Prevention, Mitigation or Enhancement Measures	Guarantee/ Financial Arrangement
			signs ▫ Provision and wearing of personal protective equipment at all times ▫ SDP (see Chapter 5 in Section 5.1) ▫ IEC (see Chapter 5 in Section 5.2)	response program
Geotechnical investigation	Socio-Economics	Employment opportunities and economic benefits	▫ Prioritize hiring of local workers ▫ Prompt payment of taxes ▫ Implementation of social development programs for host community ▫ Continuous skills training and development and capacity building program for the impact areas ▫ SDP (see Chapter 5 in Section 5.1) ▫ IEC (see Chapter 5 in Section 5.2)	Local hiring report DOLE Report Social Dev't and Mgmt Plan Corporate Social Responsibility Program
Completion of requisite MOAs, endorsements, and clearances	People	Social Acceptance and Support for the project	▫ IEC on Project to inform, respective institutions, agencies, offices, bodies and organizations for providing their respective endorsements and/or clearances ▫ MOAs with respective bodies	No commencement of construction until full compliance and completion of required endorsements and clearances
II. Construction Phase (Reclamation Works)				
Site preparation, ground levelling, and drainage improvements	Land	*Change in geomorphology* (-) The Project site's elevation will be altered. The elevation change will result in subsequent change in the hydrology surrounding the Project site	▫ Implement flood control measures which such as construction of proper and adequate drainage systems.	Part of project cost
Site preparation, excavation, and	Land	*Inducement of subsidence or collapse*	▫ Implement best engineering practices	Part of project cost

Project Phase/ Environmental Aspect	Environmental Component Likely to be Affected	Potential impact (+/-)	Prevention, Mitigation or Enhancement Measures	Guarantee/ Financial Arrangement
filling		(-) Minor subsidence may occur within the project site when the subsurface is disturbed during excavation activities for preparation of foundation (-) Minor settling may also occur as a result of additional loads from heavy machinery and structures	such as suitable backfilling material, proper slope, grading and contouring to minimise possibility of subsidence or differential settling.	
Site preparation, ground levelling and drainage improvements	Land People	*Inducement of higher flood levels* (-) Occurrence, frequency and magnitude of flooding may be affected due to the change in drainage morphology and changes in ground elevation in the project site (-) Flooding may cause damage to property, assets, and may pose threat to public safety	▫ Implement best engineering practices such as suitable backfilling material, proper slope, grading and contouring to minimise possibility of subsidence or differential settling. ▫ Probable modification of drainage systems shall maintain natural outlets or consider similar transport regimes/streamflow as the pre-existing natural drainage ▫ Maximize the capacity of two exit river channels on both sides of the reclamation area through regular desilting and clearing operations	Part of project cost
Site preparation, excavation, and filling	Land	*Soil erosion from onsite activities* (-) Improper storage of construction materials and indiscriminate disposal of fill materials and excavated soils may affect erosion patterns.	▫ Implement best engineering practices such as suitable backfilling material, proper slope, grading and contouring to minimise possibility of subsidence or differential settling. ▫ Progressive ground preparation and clearing to minimize total area of land that will be disturbed at any one time,	Part of project cost

Project Phase/ Environmental Aspect	Environmental Component Likely to be Affected	Potential impact (+/-)	Prevention, Mitigation or Enhancement Measures	Guarantee/ Financial Arrangement
			where practical.	
		Contamination of soil / disposal site (-) Excavated soil materials may contain contaminants that may potentially affect soil and ground and surface water quality	▫ Implement best engineering practices such as proper stockpiling and handling of excavated materials. ▫ Implement proper filling and disposal to avoid contamination of soil, groundwater, and surface water	Part of project cost
Reclamation works	River water quality Marine water quality	(-) Degradation of water quality due to siltation brought about by reclamation activities	▫ Maintain water quality levels prescribed in DAO 2016-08, particularly TSS at 80 g/l. ▫ Sand bunds or other types of bund walls or silt curtains or other appropriate mitigation measures should be provided to prevent dispersion of silt or sediments away from the project site during reclamation works. ▫ Implement best environmental management practices such as, but shall not be limited to, removal of debris along the waterways, proper disposal of construction wastes, installation of silt traps at strategic locations, and spoils to be properly contoured to prevent erosion ▫ Regular dredging works should be conducted adjacent the proposed project site, specifically in vicinities of the mouth of Pasig River where sediment deposition from these highly-silted river inflows would constrict waterways and current flows.	Part of project cost.

Project Phase/ Environmental Aspect	Environmental Component Likely to be Affected	Potential impact (+/-)	Prevention, Mitigation or Enhancement Measures	Guarantee/ Financial Arrangement
			▫ Dredging works shall regularly be conducted adjacent and at immediate vicinities along the eastern part of project boundaries wherein accretion of sediments is likely due to the presence of the reclaimed project site.	
		(-) Enhanced turbidity (temporary)	▫ The use of steel sheet piles reinforced with silt curtains will effectively reduce sediment stream reaching the river estuary	
Generation of wastes		(-) Degradation of water quality due to runoff from sanitary sewage, waste water, solid wastes, and other construction materials that can harm aquatic flora/fauna	▫ Removal of debris along the waterways will be conducted, all construction wastes will be properly disposed, silt traps at strategic locations and spoils will be properly contoured to prevent erosion. ▫ Construction of sediment/ settling ponds and related structures to mitigate siltation or sedimentation of water body ▫ Portalets will be provided for use of the workers and its corresponding wastewater will be properly disposed. ▫ Implementation of Solid waste management program and Hazardous waste management program. ▫ Use of DENR accredited haulers/TSD companies.	Part of project cost
Oil and lubricants	River water quality	(-) River water contamination	▫ Implement oil and grease recovery plan for all marine vessels operating in the reclamation area;	

Project Phase/ Environmental Aspect	Environmental Component Likely to be Affected	Potential impact (+/-)	Prevention, Mitigation or Enhancement Measures	Guarantee/ Financial Arrangement
			▫ Implement prohibition on releasing ship bilge into the bay.	
Reclamation, soil filling and compacting	Coastal water quality; Benthic communities of marine organisms; Fish resources	(-) Increase in siltation/sedimentation loading in coastal waters; increase in turbidity and suspended solids; (-) Reduction in photosynthesis and primary productivity (-) Suffocation of bivalve veliger in soft bottom benthos; (-) Disruption of fish feeding and benthos larval growth; (-) Impairment in fish and shellfish reproductive process.	▫ Use of steel sheet piles and sloping revetment technologies during reclamation; ▫ Provision of silt curtains where sediment streams are likely to occur and escape. ▫ Collection and trans-location of macro-invertebrates found within the reclamation area, if any; ▫ Monitoring of sediment fluxes and application of more stringent control measures when necessary; or temporary cessation of activities. ▫ Sediment canals in reclaimed areas will be installed to divert sludge into filters and weirs that capture sediments and fugitive reclamation filling materials at source.	Part of project cost
Reclamation, soil filling and compacting	Wastewaters emanating due to influx of reclamation workers can add to marine pollution and negatively affect benthic communities of macro-invertebrates; plankton community fish	(-) Inadvertent spill of domestic wastewaters can cause coastal water pollution, loss of macro-invertebrate population, impairment in fish and shellfish reproductive physiology.	▫ Install liquid waste management system ensuring modern waste retrieval and treatment system. Treatment and disposal of liquid waste at point source will involve collecting liquids of point source origin; directing waste into integrated multiple waste streams facilities or collecting vessels, and application of treatments. Any fluid effluent to be discharged at sea will be monitored and tested before	Part of project cost

Project Phase/ Environmental Aspect	Environmental Component Likely to be Affected	Potential impact (+/-)	Prevention, Mitigation or Enhancement Measures	Guarantee/ Financial Arrangement
			discharging. ▫ Installation of modern latrines and waste receptacles; collection facilities; ▫ Adoption of clean practices by all project operating units and personnel; ▫ Efficient waste retrieval system; ▫ Greening of reclamation area	
Reclamation, soil filling and compacting	Coastal waters	Oil and grease contamination	▫ Adoption of an oil and grease recovery and treatment system; ▫ Implementation of rigid policies against indiscriminate disposal of oily waste and marine vessel bilge water.	Part of project cost
Reclamation, soil filling and compacting	Fisheries and mariculture livelihoods	(-) Dislocation of gill net and hook and line fishers	▫ Provision of alternative livelihoods to affected fishers.	Part of project cost
Delivery of construction materials and equipment, construction works	Air People	*Contribution in Terms of Greenhouse Gas Emissions* (-) The sources of carbon dioxide emission in the project are the fuels used in the operation of heavy machinery and equipment such as dredgers, pile drivers and the barges during its construction.	▫ Implement regular inspection and preventive maintenance of heavy equipment, machineries and service vehicles to meet the DENR standards on vehicular emissions; and ▫ Use electric or fuel-efficient equipment, machineries and vehicles and maximize its operation, if possible.	

Project Phase/ Environmental Aspect	Environmental Component Likely to be Affected	Potential impact (+/-)	Prevention, Mitigation or Enhancement Measures	Guarantee/ Financial Arrangement
	Air People	*Generation of air pollutants* (-) Generation of air pollutants such particulate matter, nitrogen dioxide and carbon monoxide due to heavy equipment used for filling of the reclamation site, soil improvement and civil works. (-) Vehicles extensively used at construction site will also generate air pollutants, primarily nitrogen dioxide.	▫ The use of electrically-powered equipment will be maximized to reduce the volume of the air pollutant that will be generated ▫ Regular preventive maintenance of heavy equipment, machineries and service vehicles shall be undertaken to keep these equipment, machineries and service vehicles in good working condition for lower emission rate of air pollutants.	Part of the construction cost
	Air People	*Generation of dust (temporary)* (-) Air pollution from fugitive dust resulting from ground clearing operations, site preparation, structure erection, and vehicle movement. (-) Health effects due to inhalation of dust by residents living in areas adjacent to project site	▫ Frequent water spraying at dry and unpaved reclaimed sites near ASRs, especially during dry periods where fugitive dusts are potentially dispersed by winds; ▫ Reduction of wind speeds by installing temporary wind barriers at the area, if necessary. These wind barriers could be strategically located at areas close to the ASRs; ▫ Provide wheel washing facilities for vehicles leaving the project site. This wheel washing facility is intended to remove muds from the tires of the heavy equipment and other vehicles, which are potential sources of dust if detached from vehicles traveling outside the project site (e.g., paved or unpaved roads); ▫ Impose speed limits within the project site	Part of project cost

Project Phase/ Environmental Aspect	Environmental Component Likely to be Affected	Potential impact (+/-)	Prevention, Mitigation or Enhancement Measures	Guarantee/ Financial Arrangement
			and along access roads. Reduction of vehicular speed will significantly reduce generation of fugitive emissions; ▫ If possible, re-route vehicles at considerable distances from the ASRs. This measure (re-routing) is effective means of decreasing release of fugitive emissions to nearby ASRs, especially during very dry conditions where wetting of dry surfaces would be effective for short duration; and ▫ Conduct regular visual inspection at the project site (including monthly sampling of TSP, PM10, SO2, and NO2) to determine areas with high fugitive emissions, and to implement mitigation measures as necessary.	
Construction works	Air (noise)	(-) Generation of noise from construction activities	▫ All machinery will be maintained in accordance with the original manufacturer's specifications and manuals to avoid excessive noise, vibration and vehicle exhaust pollution. Regular maintenance of equipment and engines as per manufacturers requirements will be carried out ▫ Conduct reclamation works during night time at the project area relatively far from the Barangay Baseco. ▫ Reduce the number of equipment to be operated at night time and inform the	Part of project cost

Project Phase/ Environmental Aspect	Environmental Component Likely to be Affected	Potential impact (+/-)	Prevention, Mitigation or Enhancement Measures	Guarantee/ Financial Arrangement
			residents and barangay officials prior to the conduct of reclamation works, especially if equipment need to be operated near residential areas. ▫ Monitor noise levels especially at night time periods (10:00 P.M. to 5:00 P.M) at residences closest reclamation works	
Site preparation activities	People	*Community protests or complaints* (-) Potential adverse community response resulting from access restrictions in working areas.	▫ Conduct of IECs to host and neighboring communities. ▫ Properly implement programs stipulated in the SDP	Part of project cost
Increased manpower requirements	People	*Opportunities for local employment* (+) Employment opportunities and benefits of employees and its multiplier effect or potential livelihood/business opportunities (-) Bringing in of outside workers may antagonise local communities	▫ Implement priority local hiring policy for qualified local workers. ▫ Provide skills training for local residents ▫ Coordinate with barangay or/and municipal LGU as to relevant ordinance on providing opportunities for local employment.	Employment generated together with the origins of workers will be validated by the MMT.
Increased manpower requirements	People	*In-migration* (+) Workers will be required during construction (-) In-migrants may compete with locals for employment, project benefits, natural resources (i.e. water competition), local health, welfare services and infrastructure In-migration may also lead to proliferation of informal settlers in the project impact barangay	▫ Livelihood opportunities will be provided to local communities especially to host barangay ▫ Provide skills training for local residents ▫ Conduct consultation with barangay LGUs on requirements and process of hiring to maximize employment of local residents. ▫ Coordination meetings shall be undertaken regularly with the LGUs to	Part of project cost

Project Phase/ Environmental Aspect	Environmental Component Likely to be Affected	Potential impact (+/-)	Prevention, Mitigation or Enhancement Measures	Guarantee/ Financial Arrangement
			identify threats and vulnerabilities in the society as well as to develop programs to prevent foreseen social problems. ▫ SDP (see Chapter 5 in Section 5.1) ▫ IEC (see Chapter 5 in Section 5.2)	
Increased manpower requirements	People	*Cultural and lifestyle change* (+) Increase in ability to cope with household and subsistence expenses for stakeholders directly employed by the project; and stakeholders with new and additional livelihood, catering to the activities and direct and indirect personnel of the project (+) Improved Access to Education for studying children of employed and those with new and additional small livelihood (+) Improved Nutrition and less health-related worries of Household members of employed and those with new and additional small livelihood (+) Improved Access to Recreational Activities for household members of employed and those with new and additional small livelihood (+) Decrease in vulnerability to succumbing to juvenile delinquency and unlawful/illegal activities for subsistence of household members of employed and those with new and additional	▫ Prioritization of Local stakeholders for employment in the Project ▫ Livelihood Programs to augment income for indigent stakeholders ▫ Educational Programs such as Scholarships and contribution to improvements and additions to educational facilities ▫ Contribution to Peace and order programs and facilities	Part of project cost

Project Phase/ Environmental Aspect	Environmental Component Likely to be Affected	Potential impact (+/-)	Prevention, Mitigation or Enhancement Measures	Guarantee/ Financial Arrangement
		small livelihood (+) Decrease in susceptibility to public disorder stemming from economic inactivity of and interpersonal grievances and strained community relationships of household members of employed and those with new and additional small livelihood (-) Threat of uptake of crime in and near the BASECO Community due to increase in economic activity near the area		
		Threat to delivery of basic services and resource competition (-) Unplanned population increase due to in-migration or increase in informal settlers/structures puts pressure on basic services (education, health and social welfare) and utilities (water, electricity and waste management).	▫ Develop and implement SDP, which shall involve improvement of basic services such as health and welfare, livelihood, infrastructure, education, among others	Part of project cost
Increased movement of heavy equipment on site and delivery of materials, Increased manpower requirements,	People	*Traffic congestion* (-) Possible increase in traffic given the number of workers to be employed and delivery of some construction materials.	▫ Implement speed limits, vehicle load limits, vehicle maintenance requirements, and limiting driving hours. ▫ Signs for ongoing construction activities (i.e. speed limit, safety signage) shall be installed at strategic places to notify and warn the general public as necessary.	Part of project cost

Project Phase/ Environmental Aspect	Environmental Component Likely to be Affected	Potential impact (+/-)	Prevention, Mitigation or Enhancement Measures	Guarantee/ Financial Arrangement
Reclamation Works	Water People	*Marine Vessel Traffic* (-) limited path and passage towards Manila South Harbor and other port facilities such as those of the Philippine Coast Guards which may lead to: - longer time in off-shore anchorage prior to accessing the ports and terminals, along with its inherent cost counterparts in fuel, personnel, and other time affected aspects. - increase in the distance of the anchorage area from the harbor facilities	▫ IEC with the parties, especially the pertinent agencies and offices, covering the area and marine vessel traffic and navigation, such as the PPA, the Philippine Coast Guard, Manila Bay Coordinating Office, and others. ▫ Coordination with the parties, especially the pertinent agencies and offices, covering the area and marine vessel traffic and navigation, such as the PPA, the Philippine Coast Guard, Manila Bay Coordinating Office, and others, on coming up with a Sea Lane Navigation and Traffic Plan in consideration of the Project.	Sea Lane Navigation and Traffic Plan, IEC Program, MOAs/MOUs
Dredging and reclamation works	Hazards and disaster risks	*(-) Impacts of storm surges, flooding, and other disaster risks*	▫ Residents and workers to evacuate the area in the event of incoming typhoon. Provision of early warning systems and effective dissemination procedures could effectively avoid casualties in the event of extreme weather events. ▫ Reclamation site should be designed considering the projected sea level rise in Manila Bay, including the heights of the highest astronomical tide and wave effects during southwest monsoon (not storm surges).	OSH and Emergency response program
	People	(-)*Occupational Health and Safety*	▫ Posting of safety warning and danger signs	OSH and Emergency response program

Project Phase/ Environmental Aspect	Environmental Component Likely to be Affected	Potential impact (+/-)	Prevention, Mitigation or Enhancement Measures	Guarantee/ Financial Arrangement
			▫ Provision and wearing of personal protective equipment at all times ▫ SDP (see Chapter 5 in Section 5.1) ▫ IEC (see Chapter 5 in Section 5.2)	
	Socio-Economics	*Loss of livelihood* (-) Loss of livelihood and income source for fisher folks previously mooring in the coastal area within the vicinity	▫ Just Compensation and relocation package ▫ Provision and development of alternative livelihood	▫ Plan for Compensation ▫ Livelihood programs ▫ Fund for compensation
IV. Decommissioning Phase				
Clearing and removal of structures	Land Water People	*Ground and water contamination* (-) Clearing and removal of structures and facilities that may result to improper disposal of contaminated materials or release of toxic and hazardous wastes / compounds	▫ Proper implementation of the approved Abandonment/ Decommissioning Plan that details the decommissioning, rehabilitation, and social activities which shall include the methodology, timing, and techniques. ▫ Use of DENR accredited haulers/TSD companies for wastes classified under RA No. 6969.	Part of project cost
	People	Loss of employment / livelihood	▫ Abandonment for SDP (see Chapter 5 in Section 5.1) ▫ Abandonment for IEC (see Chapter 5 in Section 5.2)	Contractor's contract/ Abandonment Plan

Legend:

+/- Positive or negative impact

9 PROPONENT'S STATEMENT OF COMMITMENT

This is to certify that the proponent, **City Government of Manila**, is capable and committed to implement the necessary mitigating measures to minimize the adverse effects and enhance the beneficial impact caused by the proposed **New Manila Reclamation Project** located at **along Coast of Manila Bay in the territorial jurisdiction of the City of Manila.**

In witness hereof, we hereby set my hand this _____ day of _____ 2018 at _____,
Philippines

HON. JOSEPH ESTRADA
Mayor
City Government of Manila

SUBSCRIBED AND SWORN TO before me this _____ day of _____ 2018, affiant exhibiting their Community Tax Certificate No. _____ issued at _____ on _____.

10 AVAILABILITY OF THE EIS REPORT

The report can be accessed through the following:

a. ENVIRONMENTAL MANAGEMENT BUREAU
DENR Compound, Visayas Avenue, Diliman, Quezon City 1116
Telephone Nos.: 927-1517, 928-3742

b. EMB website
www.emb.gov.ph

c. City Planning and Development Office
Manila City Hall
Padre Burgos Ave, Ermita, Manila