SECTION ES. EXECUTIVE SUMMARY

ES. 1.1. Project Fact Sheet

	Table ES-1	. Project Fact Sheet	
Name of Project	PROPOSED PASAY CITY HARBOR CENTER RECLAMATION PROJECT		
Project Location	In the Waters of Manila Bay in the Territorial Jurisdiction of the City of Pasay, Metro		
	Manila		
Project Area	265 Hectare Mor	e or Less	
Project Category per EMB	Category A: Envi	ronmentally Critical Project (ECP)	
Memorandum Circular 2014-	Major Reclamation	on Project ≥ 50 hectares	
Project Classification per FMB			
Memorandum Circular 2014-	3.3 Reclamation	and other land restoration project	
005		· · · · · · · · · · · · · · · · · · ·	
	Component	Size	
	Island 1	210 Hectares	
	Island 2	55 Hectares	
	Bridge Bet.	4 lanes 20 m W x 156 m L	
	Islands1 and	- Barthannan	
	2		
	Internal Road	30 m wide Variable Lengths	
	Network		
		in the second se	
		Constant of WAY	
	Drainage		
	System		
		ISLAND A ISLAND B 2005 540 Road 2005 540 Road 2005 540 Road 2005 540 Road 2005 540 Road	
Summary of Major			
, ,			
Components			
		are and and and STP/Below/Ground)	
		STP(Below Ground)	
		Urban Forest /Cistern	
		(Rainwater-bilection for Brown Water Distribution)	
	Storm Surge	By design	
	Protection	By dooligh	
	Access Way	Viaduct System Under Design	
	(S) Tourism	Linder Design	
	wharfs		
	Theme Parks	Under Desian	

Table ES-1. Project Fact Sheet			
	Entertainment Under Design Complex		
	Commercials	Under Design	
	Others	Under Design	
	Waste Water	Construction Phase: OWS/Bilge System in Vessels	
	Treatment Systems	Operations Phase: Modular System	
Project Cost	Php 72 Billion		
Project Timeline	Within approxima	tely five (5) years	
Proponent Authorized	The Honourable Mayor Antonino G. Calixto		
Proponent Address and	Address: F.B. Harrison St., Pasay City		
Contact Details	Office of the City Mayor: (02) 833-3729		
EIA Preparer	TECHNOTRIX CONSULTANCY SERVICES, INC.		
Preparer Contact Person	Edgardo G. Alabastro, Ph.D.		
Preparer Address and Contact	Unit 305 FMSG Building, Balete Dr. QC 1101		
Details	Telephone No.: (02) 416-4625		
Details	Cellular No.: 091	78255203	
	E-mail address: <u>technotrixinc@gmail.com</u>		

ES 1.2. Brief Project Background

The City of Pasay has been granted an Environmental Compliance Certificate (ECC) **No. ECC-CO-1601-003** dated 2017-October-24 for its Proposed 360 Hectare Reclamation Project. The city is proposing to embark on an additional reclamation project with an area of 265 hectares.

The proposed reclamation project covers 265 hectares involving two (2) islands with areas of 210 hectares and 55 hectares, respectively. Consistent with the protocol of the Revised Procedural Manual (RPM), the Environmental Compliance Certificate (ECC) application being applied for involves only the horizontal development phase. The operations phase will be subject to the applicable requirements of the Philippine EIS System (PEISS).

The private sector project developers for the original (360 hectares) and the new (265 hectares) projects will be different and separate corporate entities; hence separate ECCs are required.

ES 1.2.1. Location and Political Boundaries

The project, broken down into 2-islands, is located west of Metro Manila, within the municipal waters of Pasay City and adjacent to the City of Manila. It is adjacent to the Proposed 360 Hectare Pasay City Reclamation Project, which has recently been granted an ECC.

The impact barangay for the Proposed Project is Barangay 76 Zone 10, as indicated in Figure ES-1.



Figure ES-1. Barangay Boundaries Map Indicating the Proposed Project vis-à-vis the Impact Barangay

ES 1.3. Process Documentation of the Conduct of EIA

The EIA Report for this Proposed Reclamation Project has been prepared in compliance with the basic principle of the Philippine EIS System (PEISS), i.e. that **an EIA/ECC is a planning tool and not a permit**, substantiated hereunder.

a. The Revised Procedural Manual (DAO 03-30) stipulates this basic paradigm (of a planning tool), shown in **Figure ES-2.**



(Reference: Revised Procedural Manual for DENR Administrative Order No. 30 Series of 2003 (DAO 03-30)



b. The Public Announcement in a major daily newspaper of Former DENR Secretary J.L Atienza asserting the Planning Tool concept of an ECC, shown below. (Reference is also made to https://litoatienza.wordpress.com/2009/11/26/due-process-is-a-requirement-ofgood-governance-secretary-lito-atienza/)



Figure ES-3. Verbatim excerpts from an ECC granted by EMB Region IV-A.

c. In an ECC granted by EMB Region IV-A, it was specifically stated that an ECC is a Planning Tool, shown verbatim below:

This is to certify, further, that in issuing this **CERTIFICATE**, it should be understood that the same is a **PLANNING TOOL** and **NOT A PERMIT**. Hence, the proponent shall secure pertinent **PERMITS/CLEARANCES** from all concerned government agencies (i.e. HLURB, NWRB, LGUs, DOH, DOLE, DTI, DPWH, MGB, DOT, PMRB, DENR, DOE, ERC, DOTC, DOST, etc.) prior to the implementation of the project to be submitted to this Office within sixty (60) working days upon receipt thereof; otherwise this Office shall be constrained to take appropriate legal action.

Issued at EMB CALABARZON Region this May 27, 2016.

- d. Moreover, the details of a project are established post-ECC, as stipulated in **page 10 of the Revised Procedural Manual**, quoted verbatim below:
- iii) During the project's **Detailed Engineering Design (DED)** stage, which is post-ECC, the generic measures identified during the EIA study at the FS stage will now be detailed based on the project facility design and operational specifications. Additional baseline monitoring may also be required prior to construction or implementation of the project to provide a more substantive basis for defining the environmental management and monitoring plans.

The application of the paradigm that an ECC is a planning tool is further discussed in **Section 3** wherein prior to project implementation which can only commence upon securing of a Notice to Proceed from the Philippine Reclamation Authority, several clearances have to be secured which require an ECC as input for decision making by various agencies in granting these clearances.

The Public Participation Process as stipulated in **DAO 2017-15** was observed and reported in **Section ES.7.**

ES 1.3.1. Document Type for ECC Application and Generic Contents

An Environmental Impact Statement (EIS) Report is the most appropriate document for the Construction/Reclamation Phase of the project. Other reclamation projects granted Environmental Compliance Certificates (ECCs) also used the format of an EIS Document.

For the Operations Phase a Programmatic EIS (PEISS) is an option.

ES 1.4. EIA Team (Proponent & Preparer Team members, module of involvement, expertise)

The table showing the list of EIA Preparers is shown below.

Team Member	Module	Company	Registration No.
Edgardo G. Alabastro, Ph.D.	Team Leader	Technotrix Consultancy Services, Inc.	IPCO-257
Nadia P. Conde	Project Coordinator	Technotrix Consultancy Services, Inc.	IPCO-102
Dr. Felixberto Roquia	Sociology	Technotrix Consultancy Services, Inc.	IPCO-028
Benjamin Francisco	Marine and Fresh Water Ecology (Team Leader)	Technotrix Consultancy Services, Inc.	IPCO-038
Engr. Emerson B. Darroles	Oceanography	Technotrix Consultancy Services, Inc.	
Jose Rene Villegas	Marine Team	Technotrix Consultancy Services, Inc.	
Michael Chester Francisco	Fisheries	Technotrix Consultancy Services, Inc.	IPCO-040
Nazario Sabello	Air Quality	Technotrix Consultancy Services, Inc.	IPCO-240
Jean Ravelo	Geology	Technotrix Consultancy Services, Inc.	-
Maria. Catherine Rontos	Technical Assistant	Technotrix Consultancy Services, Inc.	IPCO-037
Angelie Faye Nicolas	Research	Technotrix Consultancy Services, Inc.	IPCO-259
Kathlene Andrea Efe	Research	Technotrix Consultancy Services, Inc.	IPCO-258

Table ES-2. List of EIA Preparers

Environmental Impact Statement

Team Member	Module	Company	Registration No.
Proponent's External Expertis	e/EIS Resource Persons		
Carlo D. Dayanghirang	ECCAR	DCCD Engineering Corporation	-
MSc Quaternary Geology	LOGAN		
Dr. Proscoro Ervin Mundo	Initial Master Plan	Independent Consultant	-
Carlo D. Dayanghirang	Controphylical Studios	DCCD Engineering Corporation with	-
MSc Quaternary Geology	Geolecinical Studies	Geotechnics Philippines, Inc.	
Eric Huang	Reclamation Methodology	China Harbour Engineering Corporation	-
Bruce Hao	Reclamation Methodology	China Harbour Engineering Corporation	
Atty. Miguel Barreto	Legal	Libra Law Office	-
Atty. Alexis Medina	Legal	Libra Law Office	

ES. 1.5. EIA Study Schedule

The following are the activities that were conducted for the EIA study:

ACTIVITY	DATE	AREAS COVERED	
Master Planning	October 2016-July 2017	Landform	
Feasibility Study	October 2016-July 2017	Project Site and Impact Areas	
Hydrography and Bathymetry	10-13 February 2017	Project Site and Immediate Vicinity	
Secondary Data Researches	January to March 2018	City of Pasay	
Primary Baseline Data for Air	2012	Barangay 76 Zone 10 and other immediate	
Air Dispersion Modeling for Metro	2013	vicinities	
Manila	2014-2018		
Primary Baseline Data for Noise	2013	Barangay 76 Zone 10 and other immediate vicinities	
Marine Study	December 2017	Proposed Project site and immediate vicinity	
Water Sampling and Laboratory Tests	December 2017	Proposed Project site	
Engineering Geological and		Proposed Project site and immediate vicinity	
Geohazard Assessment Report	January 2018 to April 2018		
(EGGAR)			
Geotechnical Survey (Drilling)	January 2018 to April 2018	Project Site	
Geotechnical Studies	January 2018 to April 2018	Project Site	
PUBLIC PARTICIPATION ACTIVITIES			
Initial Perception Survey	January 31 to March 6, 2018	Barangay 76 Zone 10	
Information. Education and		Attendees:	
Communication (IEC)	30 January 2018	Barangay 76 Zone 10 officials and a number	
		of residents	
		Attendees:	
		Philippine Navy	
		Metropolitan Manila Development	
		Authority	
		Philippine Ports Authority	
		DENR-MBCO	
		National Commission for Culture and	
		the Arts	
Focus Group Discussion	10 April 2018	Philippine Reclamation Authority	
		 National Economic Development 	
		Authority	
		Senate of the Philippines	
		PHIVOLCS	
		DPWH-NCR	
		Philippine Coast Guard	
		Cultural Center of the Philippines	
		National Museum	

ACTIVITY	DATE	AREAS COVERED	
		Manila Goldcoast Development	
		Corporation	
		 Maricaban Market Vendors 	
		Emma Homeowners	
		Serra's Center	
		Family Touch	
		Prime Movers	
		 Institute of Environmental Planners 	
		Attendees:	
		Barangays	
		 Barangay 135 	
		 Barangay 7-2 	
		 Barangay 76-10 	
		 Barangay 10 Z-4 	
		 Barangay 01-01 	
		 Barangay 05-02 	
		 Barangay 135-13 	
		Government Offices	
		Councilor Advincula	
		Philippine Ports Authority	
		Office of Senator Villar	
		Department of Tourism	
		Pasay City Engineering Office	
		Pasay City Planning and	
		Development Office	
		City Council of Pasay	
		City Environmental and Natural	
		Resources Office of Paranague	
		Office of Councilor Pee Wee	
		Aquilar of Las Piñas	
Public Scoping	30 April 2018	EMB Central Office	
		Manila-LGU	
		Philippine Navy	
		DPWH-NCR	
		 MMDA 	
		 Senate of the Philippines 	
		Cultural Center of the Philippines	
		DENR-MBCO	
		• EMB-MBO	
		Philippine Reclamation Authority	
		EMB-NCR	
		GSIS	
		Brgy. Captain Rosemarie San	
		Miguel (Host brgy.)	
		Private Office	
		Ulticon Builders Inc.	
		Manila Goldcoast Development	
		Corporation	
		Technotrix Consultancy Services	
		Inc.	
		Libra Law	
		PECABAR	

ACTIVITY	DATE	AREAS COVERED
		Harbour SquareAnchor Land Holdings, Inc.,
		NGOs/POs Save Freedom Island Movement
		(SFIM) • Serras Center
		Maricaban Market Vendors Association Inc.
		Emma Homeowners Eamily In Touch Malibay
		Earth Island Institute
		Philippines Wetlands, Inc.,
Technical Scoping	15 May 2018 (See Annex 1)	Not Applicable
Perception Survey	31 Jan to 06 March 2018	Barangay 76 Zone 10

ES 1.6. EIA Methodologies

Table ES – 4. EIA Methodology

Module / Section	Baseline	Methodology			
LAND					
Land Use Classification	Secondary data: The Comprehensive Land Use Plan (CLUP) of Pasay City.	Assessment of compatibility of the proposed project in the land use classification, Manila Bay Coastal Strategy, Consistency with the PRA Implementing Rules and Regulations, Relation to the PRA Master Plan for Manila Bay			
Geology	Secondary data: Geologic, seismic, liquefaction, slope hazard maps and evaluation based on government data and maps. Primary data: Borehole drilling/geotechnical	Identify and assess project impact in terms of the changed in topography including existing hazard as maybe aggravated Project EGGAR used as primary			
	studies. Soil Investigation	reference			
Pedology	Primary data: Geotechnical Studies	Describe the physical properties and erodibility potential of the soil, ongoing erosion processes and assess the erosional impacts of the project.			
WATER					
Hydrology / Hydrogeology	Secondary data: Existing drainage system. Historical flooding occurrences	Identify and assess project impact on the change in drainage morphology, local drainage and resulting effects of flooding			
	Primary data: Standard Methods for Water Quality Sampling and Monitoring.	Assess impacts on siltation of surface and coastal marine waters			
Marine Water Quality	Water Body Classification: DENR Class SB				
	Parameters Considered: pH, BOD5, COD, DO, Oil and Grease, TSS, Heavy Metals, Fecal / Total Coliform Nitrates / Phosphates				

Module / Section	Baseline	Methodology			
	Topographic map covering the Manila Bay from NAMRIA.	To determine the topographic configurations of the sea bed (referred to as "bathymetry"), available			
	Depth surveys available in the project area.	topographic map covering the Manila Bay from NAMRIA were digitized and			
	Post-processing of the interpolated bathymetry of the areas covering Manila Bay	merged with the depth surveys available in the project area.			
Oceanography	Coordinates of the following reclamation projects: • The City Waterfront Project • The North Harbour Reclamation Project	Post-processing of the interpolated bathymetry of the areas covering Manila Bay were conducted using GIS.			
	 The Kinming (Qinming) Reclamation Project, And The Navotas Reclamation Project 	Delft3D			
Marine	Primary data: Abundance / density / distribution of ecologically and economically important species, mangroves, benthism plantons, coral reefs, algae, seaweeds, sea grasses	Transect, manta tow and spot dives surveys, marine resource characterization (e.g. city/municipal and commercial fisheries data), Key informant interview.			
	Presence of pollution indicator				
AIR					
	Primary data: Ambient air quality sampling and testing.	Methodology: Standard Methods for Ambient Air Quality Sampling and Monitoring			
Ambient Air Quality	DENR Classification Ambient Air and Noise Classification: Class B – Commercial Area				
	Parameters Considered: TSP, PM10, Sox, NOx				
Ambient Noise Quality	Primary data: Noise Meter				
Contribution in terms of GHG	Data in Greenhouse gasses	Estimate of projected greenhouse gasses (GHG)			
PEOPLE					
Demographic Profile /	otile / Primary data: Conduct of Public Perception Survey, Public Scoping				
Baseline	Secondary data: Comprehensive Land Use Plan of Pasay City				

ES 1.7. Public Participation Activities

DAO 2017-15 on Public Participation was strictly complied with.

ES 1.7.1 Summary Matrix of Issues and Concerns Raised During Public Participation Activities

1. First IEC with Stakeholders

Table ES-5. List of Issues and Concerns Raised during the IEC Activity (30 January 2018)					
EIA Module	NAME/AFFILIATION	ISSUES/CONCERNS	RESPONSE		
Project Description	Kagawad Danilo San Miguel	When will the project start? We hope we are still here when it materializes.	We are still on the planning stage. No definite year or date has been set for the start of the construction.		

FIA Module	NAME/AFEILIATION	ISSUES/CONCERNS	RESPONSE
	Kagawad Danilo San Miguel	What are the planned developments after the reclamation? Malls, condos, etc?	The proposed reclamation is for mixed-used development. To date, no definite plan yet.
	Kagawad Danilo San Miguel	Where is the exact location? Near Sofitel?	Nearest site onshore is Sofitel
Water	Kagawad Danilo San Miguel	Isn't the proposed area too shallow?	Initial study shows that the proposed area is suitable for reclamation. The propose site is adjacent to the existing 360 hectare reclamation project.
Impacts Management Plan	Kagawad Jean Roxas	What are the possible negative impacts of the project? You only discussed the positive ones.	As an EIA Consultant, we are trying to avoid any negative impacts on all of our projects, that is why, we are conducting a thorough study in all aspects to avoid the negative impacts. In cases where impacts cannot be avoided, we make sure that the proponent will apply proper mitigating measures.

2. Focus Group Discussion

Table ES-6. List of Issues and Concerns Raised During the FGD Activity (10 April 2018)

EIA Module	Issues/Suggestions Raised by Stakeholder	Issues and Concerns	Response	
LAND	Ronald Ray. Taperla of National Economic Development Authority (NEDA)	Are issues on climate change included in the EIS?	Yes, climate change issues will be included in the study.	
	Daniel Jose Buhay of PHILVOCS	Did you consider tsunami effects?	We have Section 2.1 Land and it includes seismicity, tsunami sea level rise, etc., We also have an Engineering, Geological And Geohazard Assessment Report (EGGAR)	
	Mark Angelo V. Cagampan of Manila Bay Coordinating Office (MBCO)	When you will apply for the Area Clearance? Is the proposed project included in the existing Comprehensive	Atty. Madrona, City Legal of Pasay: Yes, we are happy to say that the proposed project is included in our CLUP. The HLURB approved our CLUP last year.	
		Land Use Plan (CLUP) of the City of Pasay?	With regards to Area Clearance, everything should be clear. We will apply for both Area Clearance and ECC. The process is chicken and egg. In our past experience, after we were done with our ECC, we embarked on the process of acquiring the Area Clearance. Thus, rest assured that we will apply for both.	
PEOPLE	Giovanni G. Bautista of National Museum of the Philippines	Virtual Underwater Heritage concerns RA 1066, which requires archaeological	EIA Preparer: As a preparer, we commit to conduct this survey.	
		assessment.	Mayor Calixto: Sunken vessels nationwide are owned by the government. National Steel Corp (NASCO) has the record. I did not see any sunken vessel within this area but if there is, PPA will ask to remove it. For the past 70	

EIA Module	Issues/Suggestions Raised by Stakeholder	Issues and Concerns	Response
	Giovanni G. Bautista of National Museum of the Philippines	We would like to search for historical artifacts, etc., as this was a trading area in the past.	years in Pasay, no ship wreck has been found because Pasay waters is shallow. I was personally involved in NASCO's search for sunken vessels, cargoes etc. We can ask assistance from NASCO for data. EIA Preparer: We will do it but will be limited to impact areas
	Fr. Soc Montaelto of Our Lady of Sorrows Church	Pasay is the Philippines' Las Vegas. They are creating a sin city of so many casinos around. With the proposed project, we should not create more casinos. Dutuerte actually said no casino in Boracay. I hope you will not create another casino in Pasay. Developments are good but there are problems with casino addiction.	Mayor Calixto: The new developed casinos are in Paranaque. No casinos were built here in Pasay since after the time of Mayor Cuneta. I myself have not approved any casino project in the past. I will remember your concern that no new additional casinos in Pasay should be developed.
Project Description	Ronald Ray Taperla of National Economic Development Authority (NEDA)	Target Date for NEDA endorsement?	Atty. Madrona, City Legal of Pasay: It may take 1 to 2 years depending on what we accomplish. We can't say the exact timeframe for the clearances from agencies pursuant to NEDA requirements.
	Alnie Hayudino of National Commission of Culture and Arts (NCAA)	Access route from existing reclaimed areas	We are still starting and we will have our studies. There will also be inter-island bridge and we will include both in the report.

3. Public Scoping

The EIAMD-driven Public Scoping was conducted on 30 April 2018 at the Cuneta Astrodome, Pasay City; the complete report thereof submitted to the EIAMD on 02 May 2018. Among those invited were LGU Officials, Government Offices, Non-Government Organizations (NGO) / People's Organization (PO), Private Offices and Barangays. Out of the 94 stakeholders invited, 41 of the invitees were able to attend the said event while 53 invitees did not attend. Out of 41 attendees, 17% are from various barangays of Pasay, 53% are from various government offices, 14.63% are from various private offices and 17% are from NGOs / POs sector (See **Table ES-3**). Issues and Concerns raised are provided in **Table ES-7** while **Annex 2.0** provides the complete report on Public Scoping.

EIA Module	Sector or Representative Who Raised the Issue/ Suggestion	Issues/Suggestions Raised by Stakeholder	Proponent's Response
	Representative from Philippine Reclamation Authority (PRA)	Issue on boundary of Manila and Pasay, the City Ordinance affected the boundary of the City of Manila	Atty. Madrona (City Legal of Pasay): We assure ourselves that we have legal basis to assure our municipal waters. We also inform the PRA about it and our municipal waters is included it in our Comprehensive Land Use Plan (CLUP).
	Mr. Paul of Save Island Movement	Will the reclamation project help the rehabilitation of Manila Bay?	Mayor Calixto (Pasay City Mayor): 25% will be set to the rehabilitation of Manila Bay. Our aim before there was no reclamation is to increase our earnings from more than 1 billion pesos but when there was reclamation our aim is 5 billion. Thus, this increase can help and can do a lot for Manila Bay.
	Representative from Manila Bay Coordination Office (MBCO)	We stand on the issuance of ECC and Area Clearance. There are Executive Orders (EOs) and DAOs that needs to secure Area Clearance before ECC.	Atty. Madrona: Actually we applied for Area Clearance and I that believe we are complying.
	Representative from Earth Island Institute	It was mentioned that there are environmental impacts identified, is the data be accessible particularly impacts on your filling materials?	Mr. Santiago (DENR-EIA): We will still have our Public Hearing, there will be posting in the newspaper under DAO 2017-15. The draft EIS wherein the identified impacts is included is accessible in the website during that time. After Public Hearing the full documentation is also posted in the DENR website and your issues and concerns raised should be included in the report which you can access in the website.
		Separate marine study of San Nicholas Shoal, there are livelihood for fishers in Cavite and other adjacent city such as Las Piñas.	Dr. Alabastro (ElA Preparer): San Nicholas Shoal is applying for an ECC. Whatever project, the filling materials for a proposed reclamation will undergo to process.
	Representative from Philippine	Distance of island to the shoreline?	Dr. Alabastro: Approximately 1.1 km.
	navy	The Navy, CCP and PICC areas before are property of the Philippine Navy. Now only the Manila Yacht Club. Our issue is on the notice for the navigational safety of our ships and vessels. Sooner or later we will have our submarines and	Mayor Calixto: We will have our MOA and this MOA will be a great help to our project. With regards to the passage and duct of vessels, I believe this is not part of Pasay, The waters of Pasay is shallow. I will coordinate with our City Administrator to get the necessary information from you.
		you will need to extract and transport your filling maters, maybe we can have our MOA?	

Table ES-7. Issues and Concerns Raised during the Public Scoping Activity (30 April 2018)

Environmental Impact Statement

EIA Module	Sector or Representative Who Raised the Issue/ Suggestion	Issues/Suggestions Raised by Stakeholder	Proponent's Response
	Representative from Senate of the Philippines	What will be the effect of the Proposed Project to Las Piñas-Paranaque wetlands which is included in the RAMSAR.	Dr. Alabastro: Part of our EIS Report is to include the Environmental Critical Areas (ECA). The LPPCHEA is distant to the proposed project but this will be included and an important entry on our EIS report.
	Representative from Philippine Ports Authority (PPA)	The proposed project will not extend to the City of Manila but will this obstruct vessels? Port Zone delineation and Route of ships and permits to be acquired.	Mayor Calixto: Rest assured that we will get the necessary permits from PPA. We will look into all aspects in order not to affect our adjacent city.
WATER	Representative from Society for the Conservation of Philippines Wetlands	There is a Mandamus to clean-up the Manila Bay. I would to suggest to have a comprehensive baseline data because if the rehabilitation will be successful, the Manila Bay will be productive.	 Mayor Calixto: The City of Pasay is also preparing for programs such a livelihood programs to further utilize the Manila Bay as a source of income and not to destroy, that is why we want to comply. Dr. Alabastro (EIA Preparer): As EIA Preparer we will have in-depth
	Representative from the Senate of the Philippines	In the previous years we experienced flooding in our area considering that our vicinity is not surrounded by informal settlers. What will happen more if the 360 Pasay reclamation and Proposed 265 project will be erected, flooding is a social problem.	study for Marine Ecology. Mayor Calixto: Sometimes drainage system is the cause of flooding due to siltation. Maybe our City Engineer needs to inspect the drainage in your area to ensure the continuous flow of water so as not to cause flood.
PEOPLE	Representative from Department of Tourism	The City Mayor has a very active congruence. The City is one of the destination for tourism and # 1 in MICE because the city has their own convention facilities, CCP etc., We will abide to the development market, inclusive growth and sustainability and we would like to develop a larger and stable income and with that thank you Pasay City!	Mayor Calixto: There is a big improvement in Pasay City Government. The city is considered as "Best Improved City" in the country and so this year we are planning to put a tourism police because of number of tourist destinations such as the Mall of Asa (MOA), hotels, MOA Arena, bus terminals and airport. After this reclamation project, Pasay City will be #1. When I started my term in 2010 the budget of Pasay City grew over the years hence we give monthly financial assistance to number of beneficiaries and we can give more assistance because of the reclamation project. This will be a great help and Pasay City becoming as World Class area.

EIA Module	Sector or Representative Who Raised the Issue/ Suggestion	Issues/Suggestions Raised by Stakeholder	Proponent's Response
OTHERS	Representative from Society for the Conservation of Philippines Wetlands	For PRA or MBCO, what is the threshold of reclamation in Manila Bay	Mr. Santiago (DENR-EIA): For the threshold in Manila Bay, there are certain laws who can apply for the project and the Programmatic Environmental Impact Statement (PEISS) was raised and this differs because of the memorandum of PRA.
		Who will be the developer for the Proposed Project? Is it the City of Pasay or Private Developer?	Atty. Madrona: The reclamation project will be develop by the City of Pasay together with our joint venture partner.
			Dr. Alabastro: The second phase which is the operations phase is not covered by this ECC application.
	Representative form DENR- EMB NCR	How will you set-up your monitoring? For instance wastewater pollution, will it be directly go to a STP? Will each locator have separate STP?	Atty. Madrona: It will be the jurisdiction of Pasay City because the proponent of the project is the LGU hence the LGU will hire third party service provider and this third party will hire other service providers and we will assess this third party contractor.
		Who will manage the island? Is it the City Government?	Engr. Lagmay (CPDO head of Pasay): The monitoring is part of our framework in our 2014 CLUP, the timeframe is until 2022. We have a proposed framework and we will have a detailed master plan for effluent and STP.
			Dr. Alabastro: What we do is to include this and implement through the CLUP. We think that this is a sectionalized treatment and the project will have own wastewater treatment.
			Mayor Calixto: Actually this is included in the national laws hence we will have no problem.

ES 1.8. EIA SUMMARY: Summary of Alternatives and Environmental Impacts ES 1.8.1. Alternatives for Siting and Reclamation Methodology Options

Figure ES.4 illustrates the framework for decision-making relative to site and reclamation methodology options.



Figure ES-4. Illustration of the Framework for Siting and Reclamation Methodology Options

As may be gleaned from the above, after a site option has passed the criteria (within territorial jurisdiction of the LGU-Proponent, absence of conflict with ECAs, absence of or manageable significant marine resources, etc), the various reclamation methodologies are thence evaluated. The methodology options must pass the financial viability criteria and must be compatible with the Contractor's capability and further, should be compliant with environmental standards.

Ultimately, the site and methodology must pass the requirements of the PRA for the granting of a Notice to Proceed (NTP).

Tables ES-8 and ES-9 summarize the various siting and configuration (number of islands) alternatives.

Table ES-8. Alternatives for Siting				
	Advantages	Disadvantages	Environmental Impacts	
Alternative Siting 1				
Land	Consistent w ECA criteria	Not relevant	Same for all Alternatives	
	Flooding consideration- Not relevant		Same for all alternatives	
	Territorial Jurisdiction	Not relevant	Same for all alternatives	
Water	 Insignificant Marine Resources incl. mangroves Water depths within 10 m. 	Not relevant	Same for all alternatives	

able EC 9. Alternatives for Siting

	Advantages	Disadvantages	Environmental Impacts
Air	Not a major factor for the ac		elopment
People	Absence of Settlers	Not relevant	None (social impacts)
Other alternatives sites			
Land	Same as above	Same as above	Same for all alternatives
Water	Same as above except for water depths consideration	Same as above except water depths unacceptable	Greater impacts on silt dispersal and seabed disturbance
People Same as for alternative 1			

Inasmuch as the selected site option passes the criteria, the next step, which is the evaluation of the number of islands, is thereby undertaken.

	Advantages	Disadvantages	Environmental Impacts
Alternative Siting 1			
Land	Consistent with ECA	Not relevant	Same for all Alternatives
	criteria		
	Flooding consideration- Not	relevant	Same for all alternatives
	Territorial Jurisdiction	Not relevant	Same for all alternatives
Water	Insignificant Marine	Not relevant	Same for all alternatives
	Resources incl.		
	mangroves		
	Water depths within		
10 m.			
Air	Not a major factor for the ac	ctivities through horizontal deve	elopment
People	Absence of Settlers	Not relevant	None (social impacts)
Other alternatives sites			
Land	Same as above	Same as above	Same for all alternatives
Water	Same as above except for	Same as above except	Greater impacts on silt
	water depths	water depths unacceptable	dispersal and seabed
	consideration		disturbance
People	Same as for alternative 1		

Table ES-9. Criteria for the Design of Islands

With respect to configuration:

- Configuration and site must be in conformance with the CLUP
- Configuration must not conflict with existing and future reclamation plans of the City
- Consistent with Boulevard 2000 Framework
- Compliant with the restrictions of the Civil Aeronautics regulations on building heights
- Site and configuration must be acceptable to concerned other government entities, e.g. the PPA as would be established during the securing of the Letters of No Objection (LONOs)
- The Master Plan and configuration should be harmonized
- In particular, the design of the viaduct will also be influenced by the site and configuration selected.

Conclusions:

- The above considered, a two (2)-island configuration in the site within the territorial jurisdiction of the City of Pasay are thus considered the most optimum alternative/options.
- The selected alternatives will be further evaluated by the PRA before it grants the NTP for the Project.
- It may be noted that for a previous project with ECC granted for a two (2) island configuration, the number of islands was increased to three (3) based on the detailed engineering design study undertaken post ECC.

ES 1.8.2. Alternatives in Process Technology Selection





Figure ES-5. An Illustration of the Reclamation "Process"

(Note: This is the same as **Figure in Section 1**)

The option for the reclamation methodology, which will be decided during the bidding for the reclamation work, will be undertaken post ECC and will be guided by several factors including:

- > Compliances with environmental laws (e.g. availability of onboard waste treatment systems)
- Minimization of unwanted seabed materials to be disposed for which contractors may have specific methodologies
- Methods for dumping of fill materials at the project site and implications of each method on silt dispersal to the sea. (Examples of dumping methods are: rainbow blowing as illustrated below, and bottom dumping)
- > Methods for soil stabilization of the created land

An image of the "rainbow blowing" methodology



Details on the methodology are presented in Section 1.

On the other hand, key factors in the selection of the reclamation contractor are project cost and timetable.

Key environmental impacts of technology options considered are as below:

Table Lo-10. Rey Environmental impacts of reenhology options considered		
Technology Options	Environmental Considerations	
Cutter Dredger	Silt Dispersal greater than TSHD	
TSHD	Lesser Silt Dispersal	
Proprietary Technology on Reuse of seabed Materials	Lesser silt dispersals	

Table ES-10. Key Environmental Impacts Of Technology Options Considered

ES 1.8.3 Options considered for the source of water, power, fuel, etc.

Power and Water Supply

• **Power**- During the dredging/reclamation works, electrical power that will be required by sea craft and auxiliary equipment (e.g. pumps) will be sourced onboard these sea vessels.

During soil consolidation, which may take approximately 1 to 2 years, the minimal power requirements of the maintenance crew and for lighting on the reclaimed land will be sourced through MERALCO.

• **Water-** Water supply for the vessel/barge crews will also be onboard. No underground water extraction will be done. Internal sourcing by individual contractors for water can be tapped from the MWSS-designated concessionaire. The reclamation works are "dry" in nature.

ES 1.8.4 Summary of Main Impacts and Residual Effects after Applying Mitigation

Table ES-11. Summary of Main Impacts, Mitigation and Residual Effects after Applying
Mitigation

Activity/ Resources Likely to be	Potential Impact	Options for Prevention or Mitigation* or Enhancement	Residual Effects	
I. PRE-CONSTRUCTION mitigation is by avoidan	ION PHASE- Potential disturbance of corals and marine ecology during the geotechnical survey of the seabed; ance through appropriate selection of test sites			
Site Survey	Baseline works on geotechnical, marine se	urvey and water quality essentially finished		
II. CONSTRUCTION PI	HASE			
Dredging and	Impacts on ECA	Not Relevant ECA distant from site	Nil	
Reclamation Phase	Solid Waste Generation	 Domestic garbage from construction crews segregated and collected onboard ship and disposed onshore per RA 9003. No garbage disposal to Manila Bay. Inventory of solid wastes, principally garbage through records of amount of garbage 	Nil	
	Disturbance of Marine Species Silt Dispersal	 Provision of silt curtains where sediment streams are likely to occur and escape. Installation of silt and sediment weirs around reclamation equipment and barges; 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. Collection and trans-location of macro-invertebrates found within the reclamation area. 	Nil	

Activity/ Resources Likely to be	Potential Impact	Options for Prevention or Mitigation* or Enhancement	Residual Effects
Land Stabilization	Inducement of natural hazards such as floods, subsidence, liquefaction, tsunami, storm surge, land subsidence	 Reclamation Platform itself with wave deflector gives sheltering effect. Appropriate structure to be selected in DED stage. Current best option is the use of wave deflector for tsunamis/storm waves; soil compaction/stabilization for liquefaction & subsidence; sufficient drainage system & retention/storage areas for floodwaters, among others. Structural defense options are: seawalls at breakwaters, wave deflectors, other similar defenses such as revetment; angled bypass walls. Monitoring of ground level will be done during the period of soil stabilization (before vertical development) to determine quantitative surface movements with respect to both spatial and temporal rates. Design of evacuation routes Public education, awareness and preparedness campaign to include each of the known hazards. This will include evacuation drills, placing of signage, and establishing alert systems. This will be done in coordination with agencies like NDRRMC, PHIVOLCS, PAGASA, Project NOAH, etc. vis-a-vis the Disaster/Risk Reduction and Management Plan of the government. 	Nil to Minimal
Dudsian	Soil Erosion	 To prevent erosion on the seaward portion of the project, the construction of the seawalls shall be implemented in the initial phase of the reclamation. Consideration shall be given to forming a bund after the construction of the sea wall and placement of filter material, using selected granular material where possible, along the line of and immediately behind the sea wall. Such a bund assists in stabilizing the sea wall and its foundation if mud waves occur during filling. 	Nil
Reclamation Phase	Changes in Seabed properties	 Reclamation technology to minimize seabed soil removal e.g. by maximum reuse of existing through surcharges 	Nil
	Hectare Manila Bay Water, Change in Bathymetry	derived from SNS; possible use of sand bag technology, etc.	residual effect
	Change in water circulation	• Final design and alignment of landform to	Minimized
	Disruption in water circulation pattern and coastal erosion and deposition	be based on the mathematical modeling for the landform layout. Will include in	Minimize

Activity/ Resources Likely to be	Potential Impact	Options for Prevention or Mitigation* or Enhancement	Residual Effects
-	Overall impact on whole Manila Bay circulation pattern and dispersion behaviours of existing outfalls and discharges	modeling other approved projects.	Dependent on other reclamation projects in Manila Bay
	Inducement of Flooding	 Project will not block or disturb existing drainage system 	Nil
	Degradation of marine water quality	 Silt curtains and containment structures Pre-screening of filling materials; most possible source is from Manila Bay (San Nicolas Shoal) itself 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 discharging. Installation of latrines and waste receptacles; collection facilities; Collection of shipboard wastes. Adoption of clean practices by all project operating units and personnel; Implementation of an efficient waste retrieval system; Greening of reclamation area. 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. 	Nil
	Threat to existence and/or loss of important local species and habitat	 Support appropriate stock enhancement measures e.g., re-seeding of appropriate species; Support closed seasons to enhance reproduction capacity of sardines and recruitment of stocks. Provision of alternative livelihoods to affected fishers 	Nil
	Potential Conflict with PPA	Relocation of anchorageClose coordination with PPA	Nil to Minimal If any issue, to be resolved with PPA
	Sea Level Rise	Elevated platform is a mitigating measure	Nil

Activity/ Resources Likely to be	Potential Impact	Options for Prevention or Mitigation* or Enhancement	Residual Effects
	Potential accidents and damages to marine ecosystems during transport of dredging vessel	 Sea worthy vessels Navigational Devices Proper training Avoid transport during inclement weather Compliance with PCG and International regulations 	Nil to Minimal
Horizontal Development	Fugitive Dust Generation from construction equipment and vehicles	Construction Methodology	Nil
	Increase of Ambient Air and Noise Quality	 Construction works distant from ESRs Short term only Sea is buffer zone itself to population onshore 	Nil
	Emissions if power generating sets used and fossil fuel using equipment	 Proper preventive maintenance of gensets; replace leaking valves, fittings, etc. 	Nil
Land Stabilization	Essentially none- no settlers to be displaced because the area is uninhabited		
	Livelihood and employment opportunity	 Positive effects of the proposed project 	Long term positive impacts

ES 1.8.5. Risks and uncertainties relating to the findings and implications for decision making

Risks and Uncertainties discussed in Section 4 "Environmental Risks Assessment", and in other Sections (e.g. Section 1 which includes discussions in floods, seismic risks, land subsidence, etc.) relate significantly to safety risks and potentially by Climate Change induced-phenomenon, the latter which could result in storm surges and floods. Sea level rise which is climate change induced is not considered a risk/uncertainty to the Project.

Safety risks are readily addressed and discussed in Section 4 while the met-ocean risks induced by climate change are present with or without the Project.

Decision making which is translated into whether to proceed with the project or not is only slightly influenced by these risks/uncertainties because:

- The project proponent and its consortium members especially the private sector developer and funding source will not risk investments and environmental disasters without due engineering interventions
- Risks to the environment (marine resources, terrestrial resources, land resources and people) are clearly identified and are addressed adequately with mitigating measure thus cushioning effects on decision making.
- Noting that the EIS and the ECC application is only through the horizontal development phase, risks and uncertainties that may be identified during the Operations Phase will be clearly delineated during the EIS Process for the Operations Phase.
- Equally important, as stated by Pasay City Mayor A.G. Calixto during the Public Scoping, the City takes lessons and encouragements from the success of the long-competed reclamation project in Pasay City.
- Not to be minimized is the fact that the funding for this size of project will undergo close due diligence by financial institutions which requirements among other is the analysis of uncertain and risks. The project can only be implemented after passing the due diligence of these institutions.