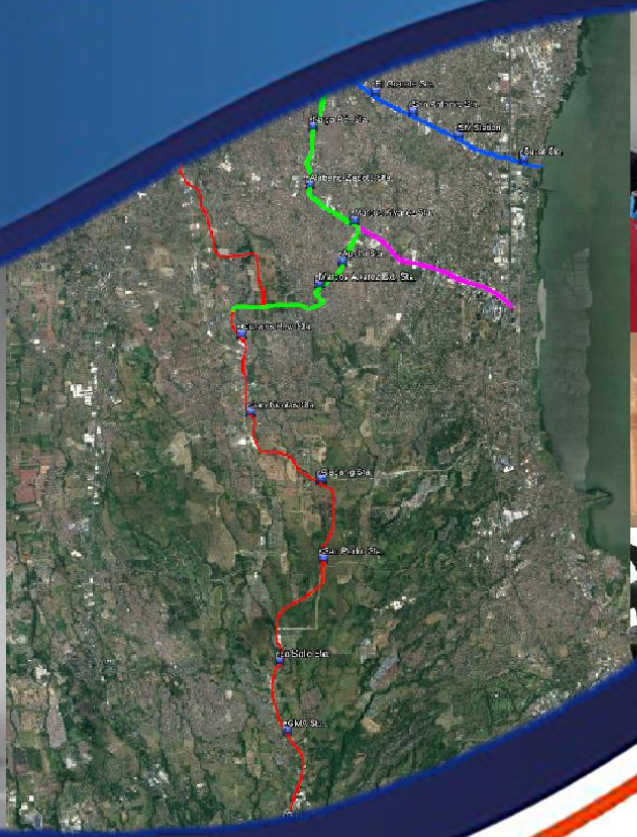
PRIME
ASSET VENTURES, INC.



ENVIRONMENTAL IMPACT STATEMENT

LRT Line 6-A and Line 6B+C Project

Executive Summary (Filipino Version)

SEASTEMS, INC.

15 August 2019

ENVIRONMENTAL IMPACT STATEMENT (Executive Summary)

LRT Line-6A and Line-6B+C Project

1.1 Project Fact Sheet Project Description (PD) Summary

Ang Project Fact Sheet PD Summary ay matatagpuan sa **Table 1-1** sa ibaba.

Table Error! No text of specified style in document.**-1. Project Fact Sheet PD Summary**

<table>
<tr><td>Pangalan ng Proyekto</td><td>LRT Line-6A and Line-6B+C Project (“Project”)</td></tr>
<tr><td>Lokasyon ng Proyekto</td><td>LRT Line-6A: magsisimula sa Niog Station sa Bacoor City hanggang Governors Station sa Dasmariñas City na may walong (8) istasyon at tinatantyang haba na 23.5 km. Ang linya ay dadaan sa bahagi ng Molino Boulevard, pribadong lupain, at bahagi ng Molino-Paliparan Road.
LRT Line-6B: magsisimula sa NAIA Terminal 1/Terminal 2 Station hanggang San Nicolas Station sa Bacoor City na may sampung (10) istasyon at tinatantyang haba na 16 km. Ang linya ay dadaan sa bahagi ng Dr. A. Santos Avenue, A. Canaynay Avenue, CAA Road, Marcos Alvarez Ave., M. Alvarez Extension at Alabang-Zapote Road at ilang pribadong lupain.
LRT Line-6C: magsisimula sa Sucat Station hanggang Lakefront Station at may anim (6) na istasyon at tinatantyang haba na 7.7 km. Ang linya ay dadaan sa Dr. A. Santos Avenue.
Alabang Zapote LRT Line na may apat (4) na istasyon at tinatantyang haba na 5 km mula Marcos Alvarez Station sa Las Piñas City hanggang Star Mall Station sa Muntinlupa City. Ang linya ay dadaan sa Alabang-Zapote Road.</td></tr>
<tr><td>Geographic Coordinates</td><td>Ang geographic coordinates ng mga istasyon ng LRT Line-6 ay nakalista sa ibaba.
<table>
<tr><th>Stations</th><th>Location</th><th colspan="2">Geographic Coordinates</th></tr>
<tr><td>LRT Line-6A</td><td></td><td>°N Latitude</td><td>°E Longitude</td></tr>
<tr><td>Niog</td><td>Bacoor</td><td>14⁰ 27’ 20.72”</td><td>120⁰ 57’ 38.20”</td></tr>
<tr><td>Bacoor City Hall</td><td>Bacoor</td><td>14⁰ 26’ 08.16”</td><td>120⁰ 58’ 07.60”</td></tr>
<tr><td>San Nicolas</td><td>Bacoor</td><td>14⁰ 24’ 33.97”</td><td>120⁰ 58’ 35.74”</td></tr>
<tr><td>Daang Hari</td><td>Bacoor</td><td>14⁰ 23’ 04.10”</td><td>120⁰ 58’ 48.28”</td></tr>
<tr><td>Alabang</td><td>Bacoor</td><td>14⁰ 22’ 25.19”</td><td>120⁰ 59’ 49.73”</td></tr>
<tr><td>San Pedro</td><td>Dasmariñas</td><td>14⁰ 21’ 14.38”</td><td>120⁰ 59’ 51.63”</td></tr>
<tr><td>La Salle</td><td>Dasmariñas</td><td>14⁰ 19’ 43.77”</td><td>120⁰ 59’ 11.88”</td></tr>
<tr><td>GMA</td><td>Dasmariñas</td><td>14⁰ 18’ 42.36”</td><td>120⁰ 59’ 19.18”</td></tr>
<tr><td>Governor’s Drive</td><td>Dasmariñas</td><td>14⁰ 17’ 18.63”</td><td>120⁰ 59’ 18.50”</td></tr>
<tr><td colspan="4">LRT Line-6B</td></tr>
<tr><td>Sucat</td><td>Parañaque</td><td>14⁰ 29’ 05.45”</td><td>120⁰ 59 35.35”</td></tr>
<tr><td>Canaynay</td><td>Parañaque</td><td>14⁰ 28’ 44.33”</td><td>120⁰ 58’ 52.84”</td></tr>
<tr><td>Naga</td><td>Las Piñas</td><td>14⁰ 27’ 39.23”</td><td>120⁰ 59’ 40.98”</td></tr>
<tr><td>Alabang-Zapote</td><td>Las Piñas</td><td>14⁰ 26’ 46.58”</td><td>120⁰ 59’ 38.42”</td></tr>
<tr><td>Marcos- Alvarez</td><td>Las Piñas</td><td>14⁰ 26’ 15.80”</td><td>120⁰ 59’ 18.99”</td></tr>
<tr><td>Apollo</td><td>Las Piñas</td><td>14⁰ 25’ 40.70”</td><td>121⁰ 00’ 09.49”</td></tr>
<tr><td>Queen’s Row</td><td>Las Piñas</td><td>14⁰ 25’ 19.65”</td><td>120⁰ 59’ 48.47”</td></tr>
<tr><td>San Nicolas</td><td>Bacoor</td><td>14⁰ 24’ 33.97”</td><td>120⁰ 58’ 35.74”</td></tr>
<tr><td colspan="4">LRT Line-6C</td></tr>
<tr><td>Sucat</td><td>Parañaque</td><td>14⁰ 29’ 05.45”</td><td>120⁰ 59’ 35.35”</td></tr>
<tr><td>Canaynay</td><td>Parañaque</td><td>14⁰ 28’ 44.33”</td><td>120⁰ 58’ 52.84”</td></tr>
<tr><td>El Grande</td><td>Parañaque</td><td>14⁰ 28’ 08.59”</td><td>121⁰ 00’ 39.46”</td></tr>
<tr><td>San Antonio</td><td>Parañaque</td><td>14⁰ 27’ 52.53”</td><td>121⁰ 01’ 12.88”</td></tr>
<tr><td>St. James</td><td>Parañaque</td><td>14⁰ 27’ 30.82”</td><td>121⁰ 01’ 54.70”</td></tr>
<tr><td>Lake Front</td><td>Muntinlupa</td><td>14⁰ 27’ 10.31”</td><td>121⁰ 02’ 55.03”</td></tr>
<tr><td colspan="4">Alabang-Zapote LRT Line</td></tr>
<tr><td>Marcos Alvarez</td><td>Las Plñas</td><td>14⁰ 26’ 15.80”</td><td>120⁰ 59’ 18.99”</td></tr>
<tr><td>Town Center</td><td>Las Piñas</td><td>14⁰ 25’ 50.92”</td><td>121⁰ 00’ 56.48”</td></tr>
<tr><td>Madrigal</td><td>Muntinlupa</td><td>14⁰ 25’ 33.74”</td><td>121⁰ 01’ 41.74”</td></tr>
<tr><td>Star Mall</td><td>Muntinlupa</td><td>14⁰ 25’ 02.97”</td><td>121⁰ 02’ 42.84”</td></tr>
</table></td></tr>
</table>

Nature ng Proyekto	**Bagong nakataas na railway system (New elevated railway system)** Ang iminumungkahing proyekto ay isang "Unsolicited Proposal" para sa "Public-Private Partnership" (PPP) na isinumite sa Gobyerno ng Pilipinas sa pamamagitan ng Kagawaran ng Transportasyon (Department of Transportation) (DOTr) noong 13 Enero 2017. Sa sulat noong 23 Hulyo 2018, hiningi ng DOTr sa Prime Asset Ventures, Inc. (PAVI) na magsumite ng "Environmental Compliance Certificate (ECC)" kasama ng iba pang kailangang upang mapabilis ang pagsusuri at pag-apruba ng National Economic Development Authority (NEDA) sa proyekto. Ibinigay ng DOTr ang "Original Proponent Status" sa PAVI noong Pebrero 2019.
Katwiran ng Proyekto (Project Rationale)	Ang polisiya at layunin ng proyekto ay upang makamit ang "sustainable development" ng bahagi ng lalawigan ng Cavite at katimugan ng Metro Manila sa pamamagitan ng pagkakaroon ng maginhawa, mura, at ligtas na paglalakbay gamit ang isang bagong "mass transit system". Ang bagong linya ng tren ay inaasahang magiging dahilan ng pag-unlad ng ekonomiya sa pamamagitan ng pagtatayo ng bagong negosyo at pagkakaroon ng bagong trabaho sa mga lugar na dadaanan ng railway system. Ang bagong "mass transit system" ay inaasahan din na magiging solusyon sa problema sa trapiko sa mga lugar na dadaanan nito.
Mga Bahagi ng Proyekto	Ang proyekto ay may apat na magkakadugtong na railway lines, kabuuan na 23 na istasyon ng LRT at tatlong "common stations", isang maintenance depot, signaling at communication system, fare collection system, at traction electrification system.
Kakailanganing Tauhan (Manpower)	Hindi bababa sa 5,000 trabahador ang kakailanganin sa construction phase ng proyekto. Samantalang 700 hanggang 1,200 na empleyado ang kakailanganin upang patakbuhin at panatilihing nasa maayos na kondisyon ang lahat ng sangay o segment ng LRT Line 6.
Halaga (Cost)	Ang proyekto ay tinatantyang magkakahalaga ng Php72.2 billion.
Haba ng Proyekto	Ang construction activities sa bawat railway line ay tinatantya na tatagal ng 3.5 taon. Ang operasyon ng isang LRT 6 line ay mag-uumpisa pagkakuha ng PAVI ng mga permits at iba pang approvals sa mga government agencies at Local Government Units.
Detalye ukol sa Project Proponent	
Proponent	Prime Asset Ventures, Inc.
Kinatawan	Tony Tan
Telepono Email	02.226.3552 local 1041 gecsmatt@yahoo.com
Address	UG/F Worldwide Corporate Center, Highway Hills, Shaw Boulevard, Mandaluyong City
Detalye ukol sa Project Proponent	Ang PAVI ay isang kumpanya na pagmamay-ari ng mga Pilipino at itinatag noong 18 Agosto 2011 bilang isang investment at holdings company na naka-focus sa pagtatayo at pagbubuo ng imprastraktura para sa isang komunidad. Ang PAVI at mga subsidiary nito ay namumuhunan sa iba't-ibang industriya katulad ng utilities para sa kuryente at tubig, information technology, at telecommunications. Through the development and management of different types of infrastructure, Nilalayon ng PAVI na masiguro na magiging maayos at kumportable ang pamumuhay ng mga tao sa kanilang partner na komunidad. Ang Prime Water Infrastructure Corp. ay may higit na 30 taon na karanasan sa paghahatid ng "water at sewage management solutions" sa mahigit 124 na syudad at munisipyo sa loob ng 16 rehiyon ng Pilipinas. Ang Solorex Water Technologies, Inc. ay may higit na 25 taon na karanasan sa paghahatid at pagbebenta ng water filtration, sterilization at purification equipment. May interes din ang PAVI sa power systems infrastructure sa pamamagitan ng Kratos Res, Inc., S Power Corporation at Powersource Group, at sa information at communication sa pamamagitan ng ePrime at Streamtech.
Detalye ukol sa EIA Preparer	
EIA Preparer	Seastems, Inc.
Kinatawan	Alvin F. Nacu
Address	Room 314 Philippine Social Science Center Commonwealth Avenue, Diliman, Quezon City
Telepono Email	+63.917.840.7192 info@seastems.com; alvin.nacu@seastems.com

1.2 Dokumentasyon ng Proseso ng Pagsasagawa ng EIA

1.2.1 EIA Team

Ang Environmental Impact Assessment (EIA) Team ay binubuo ng mga sumusunod na espesyalista:

Table Error! No text of specified style in document.**-2. Listahan ng mga miyembro ng EIA Team**

Pangalan ng Espesyalista	EIA Module	EIA Preparer Number
Alvin Nacu	EIA Team Leader	IPCO – 068
Armie Jean Perez	Physical Environment / EIA Integration	IPCO – 071
Arriane C. Tabanao	Geology	0001658[1]
Jose Alan Castillo, PhD	Terrestrial Ecology	-
Daniel Torres	Terrestrial Wildlife	-
Jethro Alden C. Hipe	Meteorology/ Air and Noise Quality	IPCO – 005
Ma. Theresa T. Agravante	Socio-economy / Public Participation	IPCO – 151
Randolph Carreon	Traffic	-
Pedro Peralta, Jr.	GIS/Mapping	IPCO – 254

1.2.2 Iskedyul at Saklaw (Coverage) ng EIA Study

Ang pag-aaral para sa EIA ay nag-umpisa sa pre-scoping activities na ginawa mula 24 Oktubre hanggang 04 Disyembre 2018 sa limang siyudad (Parañaque, Las Piñas, Muntinlupa, Bacoor and Dasmariñas) at 35 na barangay na dadaanan ng proyekto. Ang pre-scoping activities ay binubuo ng courtesy visits at information, education and communication (IEC) campaign sa mga opisyales ng limang siyudad at 35 na baranggay, key informant interviews sa LGU department heads at staff (e.g. City Planning and Development Office (CPDO), City Traffic Management Office (TMO), City Engineering Office, etc.), at focus group discussions kasama ang ilang opisyal ng baranggay at syudad.

Ang kahilingan para sa Public Scoping ay isinumite sa Department of Environment and Natural Resources Environmental Management Bureau (DENR-EMB) pagkatapos ng pre-scoping activities. Ang kahilingan para sa Public Scoping ay isinumite kasama ang mga sumusunod na dokumento:

- Sulat na humihiling ng public scoping nan aka-address sa DENR-EMB
- Patunay ng pagsasagawa ng IEC (dokumentasyon ng IEC, FGD at KIIs)
- Paunang resulta ng perception survey
- Iminumungkahing listahan ng iimbatahan sa public scoping
- Draft ng invitation letter
- Draft presentation material

Ang paghahanda para sa public scoping ay inumpisahan matapos maaprubahan ng DENR ang iskedyul ng public scoping. Inayos ng Seastems at PAVI ang mga lugar na pagdadausan ng public scoping sa bawat syudad na dadaanan ng proyekto. Ang mga invitation letters galling sa DENR ay inihatid at tinanggap ng iba't ibang stakeholder ng proyekto.

Ang mga city-level public scoping ay ginanap mula 18 hanggang 20 Pebrero 2019 sa limang syudad na dadaanan ng proyekto. Ang public scoping report ay inihanda at isinumite sa DENR EMB kasama ng kahilingan para Technical Scoping. Ang technical scoping sa pagitan ng mga miyembro ng EIA review committee, EIARC resource persons, EIA Case Handlers, PAVI at Seastems, Inc. ay ginanap noong 08 March 2019 sa Environmental Impact Assessment and Management Division (EIAMD) Conference Room. Ang EIA technical scoping checklist ay isinakatuparan sa pagpupulong na ito.

Ang mga pag-aaral para sa EIA ay ginawa mula 11 Marso hanggang 29 Abril 2019 samantalang ang pagsusulat ng report ay ginawa Abril hanggang Mayo 2019. Ang pagsusuri ng PAVI sa draft Environmental Impact

[1] Professional Registration Commission (PRC) ID No. as Registered Geologist

Statement (EIS) ay ginawa noong June 2019, at pagkatapos nito ay nagsumite ng kopya sa DENR EMB para sa procedural screening.

1.2.3 Pamamaraan ng EIA (EIA Methodology)

Ang mga pamamaraan na ginamit sa EIA study ay nakatala sa **Table 1-3**.

Table Error! No text of specified style in document.**-3. Mga pamamaraan na ginamit sa pag-aaral para sa EIA**

Baseline Parameter	Data Requirements (Annex 2-7A)	Approach/Methodology	
		Baseline Characterization	Impact Assessment
Land Use and Classification	• Description of existing land use/ zoning/classification • Land use map including location of Environmentally Critical Areas (ECAs) and special land features • Devaluation of land values due to improper waste disposal	• Obtain land use maps and comprehensive land use plans (CLUPs) from host LGUs • Field observations during ride through and site visit of project alignment • Satellite imageries available from Google Earth	• Assess project impacts on land use and land values during the construction and operation phases • Estimate the waste generation during the construction and operation phases and determine possible locations of waste disposal areas
Geology/ Geomorphology	• Regional geology, geomorphology, stratigraphy and tectonic setting • Local geology • Geologic hazards	• Obtain secondary data from Mines and Geosciences Bureau and PHIVOLCS • Collect secondary information from published and unpublished sources • Field observations during ride through and site visits to project alignment	• Determine the possibility of occurrence of ground subsidence, landslides or other natural hazards as a result of project construction • Determine the possibility of occurrence of soil erosion and runoff from borrow sites/quarries
Terrestrial Ecology	• Flora and fauna species inventory • Summary of endemicity/ conservation status • Summary of abundance/frequency of distribution • Site observation/transect walk map	• Conduct field observations along project alignment • Key informant interviews • Collect secondary information from published and unpublished sources • Determine conservation and protection status of identified species based on DENR and IUCN guidelines	• Predict the project impacts on protected areas, if any • Estimate the extent of land clearing activities during site preparation and project construction and determine how this will affect biodiversity and habitats
Hydrology/ Hydrogeology	• Drainage systems • Regional hydrogeology • Streamflow measurements/mean monthly flow data • Flood peaks, volumes and rating curves with storm water flow estimates • Groundwater conditions	• Collect data from DPWH, LWUA and other concerned offices/agencies • Conduct flow measurements, if necessary	• Determine project impacts on hydrologic conditions of natural drainage channels and assess the possibility of occurrence of flooding and inundation resulting from project activities • Assess project impacts on sediment quality due to wastewater generated during the construction and operation phases of the project • Determine project impacts on groundwater flow due to construction of tunnel and other underground facilities
Water Quality	• Physico-chemical and bacteriological characteristics of groundwater and inland surface waters • Sampling site map	• Collect grab surface water samples from pre-identified sampling stations • Store water samples in sterilized sampling bottles provided by the environmental laboratory • Submit water samples for laboratory analysis of identified parameters	• Predict impacts of construction activities on surface water quality with particular emphasis on siltation and sedimentation resulting from construction activities and wastewater disposal from the construction

Baseline Parameter	Data Requirements (Annex 2-7A)	Approach/Methodology	
		Baseline Characterization	**Impact Assessment**
		• Collect secondary data on river/lake water quality from concerned agencies (DENR EMB, LLDA, etc.) • Compare results to DENR water quality standard values	camp • Predict impacts of project operation on surface water quality particularly on wastewater discharges from the stations, substations and depot facilities
Meteorology/ Climatology	• Monthly average rainfall of the area • Climatological normal and extremes • Wind rose diagrams • Frequency of tropical cyclones • Climate change projections	• Obtain climate data (normal and extremes), wind rose diagrams, frequency of occurrence of tropical cyclones, and climate change projections from PAGASA and other data sources	• Estimate the CO_2 emissions from construction equipment and machinery and assess how this will contribute to greenhouse gas emissions • Estimate possible increase or decrease in CO_2 emissions for both with and without the project scenario
Air Quality	• Ambient concentrations of TSP, SO_x, NO_x, PM_{10}, etc.	• Collect ambient air samples from pre-identified sampling stations • Submit samples to third-party environmental laboratory for analysis of parameters • Compare results to National Ambient Air Quality Guideline Values	• Obtain data on typical dust and gaseous emissions from construction equipment and machinery from published and unpublished sources • Predict contribution of gaseous and dust emissions to ambient air quality • Assess project impacts to air quality during project operation
Noise	• Noise levels	• Measure noise levels using handheld noise level meter in identified sampling stations	• Obtain data on typical noise emissions from construction equipment and machinery and predict how these will affect the neighboring communities during the construction phase • Obtain data on typical noise emissions from train operations and predict how this will affect the surrounding communities during the operation phase
People	• Demography • Settlement and population distribution • Population growth rate • Number of households and household size by barangay • Summary of demographic data per barangay to be directly affected focusing on land area, population, population density, main sources of income, gender and age composition, literacy, highest educational attainment, and employment status • Household profile based on results of socio-economic/perception survey	• Conduct literature survey of relevant documents from the regional, provincial, city/municipal and barangay LGUs including previous feasibility studies • Conduct a quick demographic analysis of the project areas • Identify the dominant economic activities and land ownership/land access modes especially of communities in the proposed project sites and how they will be affected by the project • Gather relevant cultural and historical information on current inhabitants, informal settlers, and indigenous peoples, if any • Locate the project within the regional (NCR and CALABARZON), city/ municipality and barangay development plans	• Predict project impacts on the host communities particularly to the vulnerable sectors (poor residents, children, women, senior citizens, indigenous peoples, if any) • Predict the economic impacts of the project during the construction and operation phases • Predict the project impacts on utilities (water, power, communication) and determine the possibility of competition for these resources • Predict the project impact on traffic conditions during the construction and operation phases • Assess the project impacts on community dynamics, particularly

Baseline Parameter	Data Requirements (Annex 2-7A)	Approach/Methodology	
		Baseline Characterization	Impact Assessment
		• Identify project stakeholders especially private property and business owners, informal settlers, poor communities, vulnerable sectors (children, women, senior citizens, PWDs, etc.) for possible relevant inputs and insights towards the project • Rapid scanning of land resource utilization and resettlement management policies, projects and programs related to the project • Conduct barangay consultations and city/municipal level scoping meetings	the possibility of the disruption of communities, due to the construction of infrastructure • Predict the project impacts on historical and cultural resources during the construction and operation phases • Predict the possible project impacts on public health and occupational health and safety • Assess the possibility of occurrence of traffic accidents during the construction phase
Traffic	• Transportation/traffic situation	• Existing traffic condition on major roads along the project alignment	• Traffic impact during project construction

1.2.4 Pakikilahok ng Publiko (Public Participation)

Ang mga sumusunod na aktibidad para sa EIA study ay nilahukan ng iba't ibang stakeholders ng LRT 6.

Table Error! No text of specified style in document.**-4. Public Participation Activities for the EIA of the LRT 6 Project.**

Public Participation Activity	Date	Participant/s	No. of Participants
Courtesy visits, key informant interviews, focus group discussions and IEC campaign	24 October 2018	• Parañaque City Hall – Office of the Mayor • Barangay San Antonio, Parañaque City • Barangay San Isidro, Parañaque City • Barangay San Dionisio, Parañaque City • Barangay Sto. Nino, Parañaque City • Barangay La Huerta, Parañaque City • Barangay BF Homes, Parañaque City	16
	25 October 2018	• Parañaque City Mayor Edwin Olivarez • Office of the City Administrator, Muntinlupa City	2
	26 October 2018	• Dasmariñas City Mayor Elpidio Barzaga and City Administrator Aisa Sango	2
	06 November 2018	• Office of the City Administrator, Las Piñas City	1
	12 November 2018	• Muntinlupa City Mayor Jaime Fresnedi • Muntinlupa CPDO Noel Cardona • Barangay Sucat, Mujntinlupa City • Barangay Alabang, Muntinlupa City • Barangay Ayala Alabang, Muntinlupa City • Barangay Cupang, Muntinlupa City	20
	14 November 2018	• Bacoor CPDO Engr. Jesus Francisco • Office of the Bacoor City Administrator • Bacoor Barangay Affairs Office • Barangay Talaba IV, Bacoor City • Barangay Molino III, Bacoor City	10
	15 November 2019	• Barangay Molino VI, Bacoor City • Bacoor City Traffic Management Department • Barangay Molino IV, Bacoor City • Barangay Niod III, Bacoor City • Barangay Molino I, Bacoor City	17
	16 November 2019	• Barangay San Nicolas III, Bacoor City • Barangay Bayanan, Bacoor City	18

Public Participation Activity	Date	Participant/s	No. of Participants
		• Barangay Molino II, Bacoor City • Barangay Ligas III, Bacoor City • Barangay San Nicolas II, Bacoor City • Barangay San Nicolas I, Bacoor City • Barangay Ligas II, Bacoor City	
	19 November 2018	• Barangay Cupang, Muntinlupa City • Barangay Alabang, Muntinlupa City	11
	27 November 2018	• Office of the City Administrator and City Planning and Development Office, Las Piñas City	3
	28 November 2018	• Dasmariñas City Mayor Elpidio Barzaga, City Administrator Aisa Sango and City Assessor Engr. Mildred Laudato • Barangay Salawag, Dasmariñas City • Barangay Paliparan III, Dasmariñas City • Barangay Paliparan II, Dasmariñas City • Barangay Paliparan I, Dasmariñas City	12
	04 December 2018	• IEC presentation for Las Pinas City LGU and barangay officials • Barangay Paliparan II, Dasmariñas City • Barangay Paliparan, Dasmariñas City	30
Public scoping	18 February 2019 Parañaque City	• City Planning and Development Officer • Representatives from the City Engineering Office and City Traffic Management Office • Representatives from six host barangays • Representatives from homeowners associations along project alignment • Representatives from medical and educational institutions • Representatives from business sector • EMB NCR representative	47
	19 February 2019 (9:00 – 11:00AM) Bacoor City	• LGU representatives from the Mayor's Office, Sangguniang Panlungsod members, City Planning Office, City Engineering Office, Barangay Affairs Office and Traffic Management Department • Representatives from 9 out of 13 impact barangays • Representatives from medical and educational institutions • Representatives from homeowners associations, • Representatives from the business sector • Representatives from transport groups	66
	19 February 2019 (1:30 – 3:30 PM) Dasmariñas City	• LGU representatives (City Vice Mayor, Sangguniang Bayan members, City Traffic Management Bureau) • Representatives from three out of four impact barangays • Representatives from educational institutions • Representatives from the business sector	31
	20 February 2019 (9:00 – 11:30AM) Las Piñas City	• LGU representatives from the City Administrator, City Planning Office, some members of the city council, City Engineering Office and Traffic Management Bureau • Representatives from seven out of eight host barangays • Representatives from medical and educational institutions • Representatives from the business sector • Representatives from transport groups	55
	20 February 2019 (1:30 – 3:30 PM) Muntinlupa City	• LGU representatives from the city council, City Planning Office, City Engineering Office, Traffic Management Department and Public Information Office • Representatives from one out of four impact barangays • Representatives from medical and educational institutions • Representatives from the business sector • Representatives from the Parañaque and Muntinlupa City	32

Public Participation Activity	Date	Participant/s	No. of Participants
		Police Departments	
Perception Survey and key informant interviews	25-27 April 2019	• Project affected stakeholders along the project alignment	87

Ipinapakita sa **Table 1-5** ang buod ng mga isyu presents the summary of isyu at concern na inilatag sa iba't ibang IEC activities samantalang ipinapakita naman sa **Table 1-6** ang pagsusuri ng stakeholder perception sa iba't ibang IEC activities. Ipinapakita sa **Table 1-7** ang buod ng mga isyu at concerns na inilatag sa public scoping sessions.

Table Error! No text of specified style in document.**-5. Buod ng Issues at Concerns na inilatag sa IEC Activities.**

Issues and Concerns	Parañaque	Muntinlupa	Las Piñas	Bacoor	Dasmariñas
Project Description					
Project stage and completion date		✓	✓		
Project alignment has sharp curves				✓	✓
No problem with project alignment since structure is elevated and will be built on center island				✓	
Why is project alignment off the road?				✓	✓
Why does alignment not pass through Aguinaldo Highway?					✓
Exact location of project alignment				✓	✓
Constructing piers on road will decrease road width				✓	✓
Consider electricity posts on both sides of the road				✓	
Structure might collapse on houses				✓	
Consider other infrastructure and development projects in the city			✓	✓	✓
Air					
Noise impact especially at night	✓			✓	
People					
Officials were already aware about the project	✓			✓	
LGU welcomes the project	✓	✓	✓	✓	✓
Jeepney operators and drivers associations, business establishments, subdivisions and affected schools should be invited to the public scoping	✓	✓	✓	✓	✓
Expansion of business opportunities is foreseen		✓			
Increased daytime foot traffic and business activity is expected		✓			
Traffic impact during construction is expected	✓	✓	✓	✓	✓
Project will ease traffic problem		✓	✓	✓	✓
Subsequent road widening will affect houses along the road				✓	✓
Avoid ROW acquisition on private properties				✓	
Will project contribute to barangay IRA?				✓	
Project will shorten travel time to Metro Manila					✓
Rerouting will be necessary during construction				✓	
Access of residents will be hampered during construction				✓	
Others					
Project will improve transport system	✓	✓	✓		
Proper spoils management during construction	✓				
Project will augment needed road infrastructure		✓	✓		
No major negative impact is foreseen			✓	✓	

Ang mga EIA consultant at kinatawan ng proponent ay nagawang maki-pagusap sa 127 na kinatawan ng stakeholder mula sa limang syudad at 35 na baranggay. Sa limang syudad, lahat maliban sa Muntinlupa ay alam na ang tungkol sa proyekto sa pamamagitan ng impormasyon na ipinamahagi ng project proponent. Alam na ng lahat ng barangay ng Parañaque City ang tungkol sa proyekto subalit ang ibang baranggay ay wala pang alam tungkol sa proyekto. Malugod na tinatanggap ng lahat ng kinatawan ng mga syudad at baranggay ang proyekto at inaantay na nila ang pag-uumpisa ng proyekto upang mabawasan ang trapiko sa kanilang lugar (**Table 1-6**).

Ang buod ng mga isyu at concern na nabanggit sa IEC ay makikita sa **Table 1-7**. Walang nakikita ang mga project stakeholders na malaking problema sa implementasyon ng proyekto.

Table Error! No text of specified style in document.**-6. Pagsusuri ng pananaw ng mga stakeholder sa LRT 6 Project**

Stakeholder Representative	No. of Respondents	Awareness about the Project		Source of Information	Do you want project to proceed?	
		Yes	No		Yes	No
Parañaque City LGU	3	✓		Proponent	✓	
Barangay San Antonio	3	✓		Mayor's Office	✓	
Barangay San Isidro	3	✓		Mayor's Office	✓	
Barangay San Dionisio	3	✓		Mayor's Office	✓	
Barangay Sto. Nino	2	✓		Mayor's Office	✓	
Barangay La Huerta	1	✓		Mayor's Office	✓	
Barangay BF Homes	1	✓		Mayor's Office	✓	
Muntinlupa City LGU	4		✓		✓	
Barangay Sucat	2		✓		✓	
Barangay Alabang	2		✓		✓	
Barangay Ayala Alabang	3		✓		✓	
Barangay Cupang	9		✓		✓	
Bacoor City LGU	5	✓		Proponent	✓	
Barangay Talaba IV	2		✓		✓	
Barangay Molino III	5		✓		✓	
Barangay Molino VI	9		✓		✓	
Barangay Molino IV	3		✓		✓	
Barangay Niog III	2		✓		✓	
Barangay Molino I	2		✓		✓	
Barangay San Nicolas III	4		✓		✓	
Barangay Bayanan	2		✓		✓	
Barangay Molino II	2		✓		✓	
Barangay Ligas III	2		✓		✓	
Barangay San Nicolas II	2		✓		✓	
Barangay San Nicolas I	3		✓		✓	
Barangay Ligas II	3		✓		✓	
Las Piñas City LGU	3	✓		Proponent	✓	
Host Barangays	30		✓		✓	
Dasmariñas City LGU	3	✓		Proponent	✓	
Barangay Salawag	2		✓		✓	
Barangay Paliparan III	1		✓		✓	
Barangay Paliparan II	3		✓		✓	
Barangay Paliparan I	3		✓		✓	
	127					

Table Error! No text of specified style in document.**-7. Buod ng mga isyu at concern na ibinahagi sa City Level Public Scoping Meetings**

Issues and Concerns	Parañaque	Bacoor	Dasmariñas	Las Piñas	Muntinlupa
Project Description					
Provision of technical documents/exact project alignment so stakeholders can determine project impacts to their areas	✓	✓		✓	✓
Consideration of climate change in project design	✓				
Expected start of project construction and length of construction period; simultaneous construction?	✓	✓	✓	✓	✓
Proper waste management during construction	✓			✓	
Interconnection of LRT-6 with other railway projects	✓		✓		
Acquisition of right of way in private properties	✓				
Timing of project implementation should consider other infrastructure projects in the area	✓			✓	✓
Aesthetic aspects of project	✓				
Conflict with other planned infrastructure projects and		✓		✓	✓

Issues and Concerns	Parañaque	Bacoor	Dasmariñas	Las Piñas	Muntinlupa
coordination with concerned agencies					
Roads along project alignment are narrow; road widening should be done to accommodate this project as well as other infrastructure projects		✓	✓	✓	✓
Compatibility of project with Comprehensive Land Use Plan		✓			✓
Presence of station near Bacoor City Hall and accessibility of stations to LRT users		✓			
Provision of public transportation terminal in selected or all LRT stations		✓		✓	
Project alignment on major roads and private properties		✓	✓		
Construction of project on the shoreline rather than busy roads			✓		
Observation of proper road setback in anticipation of the project and other road infrastructure projects			✓		
Underground railway instead of overhead railway	✓				✓
Land					
Seismic analysis to determine location of active faults					✓
Water					
Liquid waste management during construction	✓				
Disallow squatting on waterways traversed by the project to avoid flooding and drainage concerns	✓				
Air					
Project impacts on noise, vibration, air quality	✓	✓		✓	✓
People					
Hampered access of residents and business establishments during project construction and operation	✓			✓	
Compensation of damage to public and private roads and public infrastructures	✓				
Livelihood displacement	✓			✓	
Mass transportation as solution to traffic problems but affected stakeholders will have to bear with the inconvenience during construction	✓				
Conduct survey to identify major traffic issues that should be addressed during project construction	✓				
Submission of Traffic Impact Study and Traffic Management Plan to LGU	✓			✓	✓
Roads along project alignment are very busy and used by several residents as well as schools and business establishments	✓	✓	✓	✓	✓
Regular information dissemination and consultation regarding project timelines and schedules				✓	✓
Others					
Relocation of informal settlers in existing roads that can be used as alternate access of residents during construction phase	✓				
Construction of bridge over Laguna Lake to connect southern and northern parts of Metro Manila bypassing EDSA, C-5 and other busy roads	✓				
Technical impact of project such as on drainage, sewer lines, vibration, noise, sound, magnetic intervention, etc.					
Conduct IEC for each impact barangay to let everyone know about the project		✓			
Creation and operation of MMT			✓	✓	
Non-compensation of private property owners whose properties were affected by road construction in Paliparan 1, 2 and 3			✓		
Discussion of issues raised during Public Scoping in Technical Scoping			✓		
Project impact on private business development plans					✓
Information sharing on LGU social media platform					✓

1.3 EIA Summary

1.3.1 Summary of Alternatives

Siting

Ang orihinal na plano para sa LRT Line 6 ay maging extension o Phase 2 ng LRT-1 South Extension mula Niog Station sa Bacoor City hanggang Governor's Drive Station sa Dasmariñas City na dadaan sa Aguinaldo Highway. Ang iminumungkahing proyekto na may apat na magkakahiwalay na alignment ay nilalayong magtayo na alternatibong koneksyon sa timog na bahagi ng Metro Manila sa hilagang bahagi ng probinsya ng Cavite maging sa silangan at kanlurang bahagi ng Parañaque City at Muntinlupa City. Ang alignment ng LRT Line-6A na dadaan sa Bacoor Boulevard, Molino-Paliparan Road at privately-controlled properties ay napili bilang alignment ng LRT-1 south extension sapagkat mas malawak ang lugar na ito kumpara sa mas makipot na kalsada ng Aguinaldo Highway, kung saan ang presensya ng 69kV transmission lines ay magiging problema sa pagtatayo ng i-girders gamit ang cranes at iba pang malalaking kagamitan.

Ang ibang project alignments na matatagpuan sa mga syudad ng Parañaque, Las Piñas at Muntinlupa ay nakakaranas ng mabilis na pag-unlad sa pamamagitan ng pagtatayo commercial centers at proyektong pabahay na kung saan ang mga residente ay naglalakbay araw-araw papunta sa Metro Manila para sa trabaho at iba negosyo or gawain. Ang mabilis na pag-unlad ng mga lugar na ito ay nagdulot ng matinding trapiko sa mga major road networks at ang LRT 6 project ay nakikita bilang isang solusyon at pinakamagandang alternatibo upang maibsan ang trapiko sa mga lugar na ito.

Kung titingnan ang natural hazards, ang mga lugar na dadaanan ng proyekto ay susceptible sa ground shaking kasama ng ibang lugar sa bansa na matatagpuan sa Philippine mobile belt. Ang pinakamalapit na seismic generator ay ang West Valley Fault at nakita ng PHIVOLCS na ang mga istasyon ng LRT 6 ay ligtas sa pagbitak ng lupa (ground rupture). Ang silangan at kanlurang bahagi ng LRT Line-6C at ang hilagang bahagi ng LRT Line-6A ay may moderate hanggang high susceptibility sa liquefaction hazard samantalang ang kanlurang bahagi ng LRT Line-6B+C at ang hilagang bahagi ng LRT Line-6A ay nasa tsunami inundation zone.

Sa usaping ng right of way (ROW), nakikitang magkakaroon ng land acquisition sa ibang seksyon ng LRT Line-6B sa Parañaque at Las Piñas. Inaasahan na ang project proponent ay bibilhin ang mga apektadong private properties ayon sa mga lokat at pandaigdigang gabay sa ROW acquisition para infrastructure projects.

Pagpili ng Teknolohiya (Technology Selection)

Ang horizontal at vertical alignments maging ang mga ruta ng iminumungkahing proyekto ay naglalayon na malimitahan ang mga isyu ukol sa land acquisition at epekto sa mga mga dadaanang lugar. Nilalayon din ng proyekto na mabawasan ang halaga na kakailanganin upang itayo, patakbuhin at i-maintain ang LRT 6; maghatid ng mabilis, ligtas, kumbinyente at komportableng transportasyon para sa mga gagamit nito; at panatilihin ang connectivity ng proyekto sa iba pang uri ng transportasyon at linya ng LRT.

Upang mabawasan ang paunang gastos, ang mga alignment ng LRT Line 6 ay itataas maliban sa ibang seksyon na dadaan sa pribadong lupain kung saan nasa embankment ang alignments. Ang paggamit ng ballasted track ay makakabawas din sa paunang gastos subalit ang pinal na disenyo ay gagawan sa detailed engineering design stage.

Ang mga nakataas na istruktura ay idedesenyo upang sumunod sa "minimum vertical clearance requirement" ng DPWH at susunod sa pinakabagong bersyon ng standards sa pagpapatayo ng imprastraktura at transportasyon ng Pilipinas at sa ibang bansa.

1.3.2 Buod ng mga epekto ng proyekto

Ang mga epekto ng proyekto at mga inererekomendang "mitigation/enhancement measures" ay makikita sa **Table 1-8** sa ibaba. Sa pre-construction at construction phases, ang mga inaasahang epekto ng proyekto ay ang pagkura ng right of way para sa alignment ng LRT Line-6B, paglikha ng ingay, pagkakaroon ng madaming alikabok, at paglikha ng trapiko sa mga seksyon ng proyekto kung saan may construction activities. Sa operasyon ng proyekto, makakatulong ang LRT 6 upang maibsan ang paglala ng trapiko sa mga lugar na dadaanan nito sapagkat maghahatid ito ng alternatibong opsyon sa pagbyahe para sa mga residente papunta at pauwi galling Metro Manila.

Table Error! No text of specified style in document.**-8. Buod ng mga epekto ng proyekto at mga rekomendasyon upang maiwasan ito.**

Environmental Component	Potential Impact	Mitigation/Enhancement Measures	Residual Impacts
Pre-Construction/Construction			
Land use and classification	Change in existing land use along project alignments	Final project alignment should be communicated to host LGUs to ensure that the project will be considered in the land use and zoning plans of host cities.	None
	Potential conflicts with other government and private infrastructure projects	PAVI should coordinate with concerned agencies such as DPWH and the host LGUs	None
	ROW acquisition will be necessary in some sections of the project alignment	Project design should aim to minimize ROW acquisition and if is inevitable, ROW acquisition should be done according to existing local and international guidelines on ROW acquisition. A resettlement action plan should be prepared in consultation with project affected persons and host LGUs and concerned government agencies	This is a residual project impact. Proper compensation should be provided to affected residents and business owners to minimize this impact.
	Project can affect visual aesthetics and devaluation of land value can occur if construction sites are not managed properly	Installation of fence or screens to cover the construction site will minimize negative visual impacts. Unnecessary equipment and other materials should be removed from the site.	None
Geology	Project will be prone to seismic hazards such as groundshaking, liquefaction and tsunami	Proper engineering design in accordance with the results of the geotechnical study and the requirements of the National Building and Structural Code of the Philippines; footings and foundations must consider the peak acceleration for worst case earthquake scenarios	The risk of seismic hazards will remain with or without the project. This should be addressed by proper engineering design.
	Change in subsurface/ underground geomorphology	Monitoring of changes in geological subsurface including rock formations or soil/sand characteristics and cracks that may have significant implications on design and integrity of the structure	None
Soils	Unprotected excavated soils can be washed off during heavy rains	Soils and construction wastes should be covered appropriately; topsoil should be secured and stored properly for later reuse during revegetation	None
Terrestrial Ecology	Loss of habitat and habitat fragmentation due to vegetation removal along project alignment	Green spaces should be maintained during the construction phase. Vegetation clearing should be kept to a minimum and done only when necessary	None
	Removal of vegetation cover can threaten the endemic plants in the project sites	Plants that will be lost to clearing should be salvaged by collecting seedlings and tending them in a nursery for use in revegetating the area	None
	Road kills of terrestrial fauna can occur during transport of construction materials, personnel and machinery	Implement road safety standards when using the access roads. Drivers and construction personnel should be informed about policies and actions to apply when dealing with injured terrestrial fauna	This is a residual project impact.
	Collection of terrestrial fauna by construction related personnel	Personnel and workers should be informed that collection of wildlife is prohibited and will be subject	None

Environmental Component	Potential Impact	Mitigation/Enhancement Measures	Residual Impacts
		to penalties provided by the law	
Water Quality	Silt laden surface runoff from active construction areas can drain into nearby surface water bodies	Silt control and silt protection measures such as silt traps should be in place in active construction areas.	None
	Oil and grease contamination can occur due to spills and leaks from construction equipment and machinery	Oil sumps should be installed in active construction areas to minimize discharge of oil spills and leaks from construction equipment, machinery and vehicles.	None
Air Quality and Noise	Dust generation will be significant in active construction areas	Dust suppression techniques will be applied such as water application and speed restriction. Water application should be done in 3.2 hr intervals and speed restriction at active construction sites can reduce fugitive dust generation. Trucks delivering construction materials and stockpiles of construction materials should be covered to prevent fugitive dust from escaping.	None
	Noise disturbance will be evident in active construction areas	Use of mufflers and regular maintenance of construction equipment, machinery and vehicles can minimize sound levels in active construction sites. Construction activities should be limited during leisure hours, hours of sleep and anytime when loud and continuous noises can affect certain special activities	None
People	Limited displacement of residents and businesses along the project alignment	The proponent has a policy to limit ROW acquisition to the minimum necessary level and to abide by the ROW Acqusition Law (RA 10572) and other pertinent laws	This is a residual project impact.
	Elevated infrastructure may cause overcrowding and airshed space	Design adjustments should be done to ensure that airshed space of neighboring entities is respected and to prevent diminution of values and opportunities of existing buildings specially in narrow roads	This will be a residual project impact in alignments where road right of way is narrow.
	The proposed project will have a huge potential for job creation and will require the services of various types of professionals and workers	Proponent should have prior coordination with the host LGUs to ensure that a certain percentage of the workforce from host areas will be employed during construction and operation	None
	Traffic congestion will occur in active construction areas	Careful planning and implementation of rerouting schemes and traffic management including early installation of traffic signages and multi media announcements of construction schedules, road closures and alternative routes	None
Operation			
Land use and classification	Commercial and residential development will occur in undeveloped areas near the proposed LRT 6 stations	Project alignment should be communicated to host LGUs so that the project can be incorporated in the local land use and development plans.	None
Terrestrial Ecology	Revegetation of cleared out areas along the project alignment will improve aesthetic value and enhance its ecology	Planting materials should be bird-diversity related such as anabiong, balete, sampalok and other native/endemic plants	None
	Introduction of invasive exotic species for landscaping may negatively impact local biodiversity	Revegetation will be done with minimal use of exotic plants; nursery raised seedlings collection from the site will be used instead	None
	Collision of terrestrial wildlife with railway components	Personnel should be informed about policies and actions required to apply on injured terrestrial fauna. All incidents should be reported to DENR. Bird strike data should be assessed to determine points of collision and areas of high collision	None

Environmental Component	Potential Impact	Mitigation/Enhancement Measures	Residual Impacts
		incidence	
Air Quality and Noise	Noise will be generated during the passage of trains and impact will be significant in areas with sensitive receptors such as schools and hospitals	• Increase distance between noise source and receiver • Install noise barriers between noise source and receiver to interrupt the path of the noise • Incorporate noise criteria in specifications and selection of equipment	None
People	Operation of the railway infrastructure will make social services such as housing facilities, health care and educational opportunities more accessible to host and neighboring LGUs	Regular and proper maintenance of railway project to ensure constinuous and uninterrupted service to railway users.	None
	Huge infrastructures and electronically-run systems can pose risks to public safety	Provision of adequate lighting, clear signages, functional security surveillance systems and assignment of adequate number of security personnel in entrance/exit points and in the platforms	None
	Operation of micro-businesses in the LRT stations can create jobs for local residents	Provision of space for micro-businesses should be incorporated in the design of the LRT 6 stations	None
	The project can boost tourism in the host cities	Proper and regular maintenance of the railway project will increase its positive impact to the users.	None

1.3.3 Risks at uncertainties patungkol sa mga pag-aaral at implikasyon nito sa pagbuo ng mga desisyon

Ang iminumungkahing proyekto ay may kakaunting residual impacts na inaasahang magtatagal kahit na magkaroon ng mga mitigating measures. Ilan sa mga ito ay ang epekto ng proyekto sa mga residente at may-ari ng negosyo sa mga dadaanan ng proyekto na kakailanganing kunin ang right of way. Kasama din ditto ang maaaring pagkakaroon ng overcrowding at pagkawala ng airshed space sa mga kalsada na may masikip na right of way. Maglalayon ang proponent na bawasan at limitahan ang pagkuha ng right of way at kung sakaling hindi maiiwasan ang pagkuha ng right of way, ang affected properties ay bibilhin ayon sa local at pandaigdigang gabay sa ROW acquisition. Inaasahan na bibilhin ng proponent ang right of way gamit ang fair market values.

Ang mga natural na panganib katulad ng lindol ay inaasahang manatili itayo man o hindi ang proyekto. Subalit dapat ikonsidera sa disenyo ng proyekto ang mga hazards na ito kagaya ng liquefaction, ground shaking at tsunami.