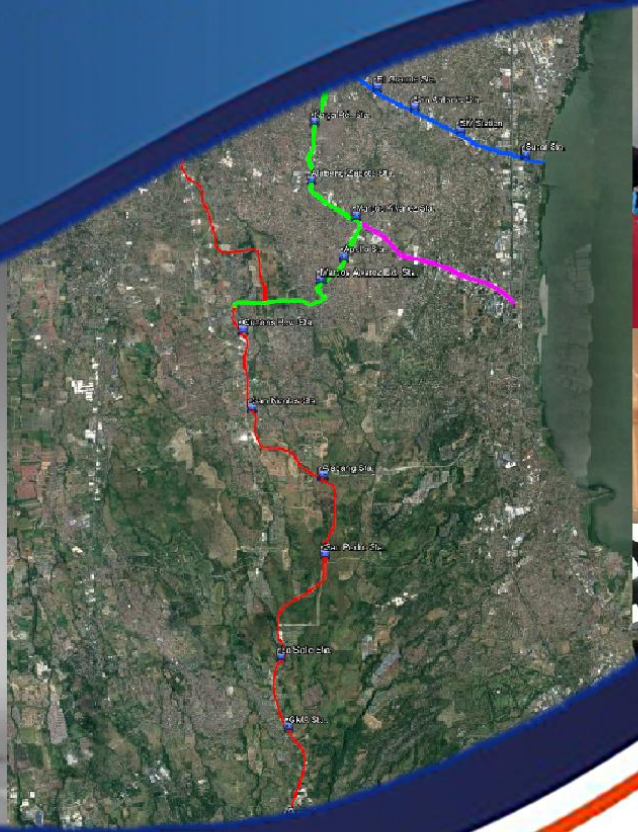
PRIME
ASSET VENTURES, INC.



ENVIRONMENTAL IMPACT STATEMENT

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

Executive Summary

SEASTEMS, INC.

15 August 2019

ENVIRONMENTAL IMPACT STATEMENT (Executive Summary)

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

1.1 Project Fact Sheet PD Summary

The project fact sheet Project Description (PD) Summary is presented in **Table 1-1** below.

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

<table>
<tr><td>Project Name</td><td>LRT Line-6A and Line-6B+C Project (“Project”)</td></tr>
<tr><td>Project Location</td><td>LRT Line-6A: commencing from Niog Station in Bacoor City to Governors Station in Dasmariñas City with 8 stations and approximate route length of 23.5 km. Alignment will traverse segments of Molino Boulevard, privately-controlled properties and segments of Molino-Paliparan Road
LRT Line-6B: commencing from NAIA Terminal 1/Terminal 2 Station until San Nicolas Station in Bacoor City with 10 stations and approximate route length of 16 km. Alignment will traverse segments of Dr. A. Santos Avenue, A. Canaynay Avenue, CAA Road, Marcos Alvarez Ave., M. Alvarez Extension and Alabang-Zapote Road and will pass through some privately-controlled properties.
LRT Line-6C: commencing from Sucat Station until Lakefront Station with 6 stations and approximate length of 7.7 km. Alignment will traverse Dr. A. Santos Avenue.
Alabang Zapote LRT Line with four stations and approximate length of 5 km from Marcos Alvarez Station in Las Piñas City to Star Mall Station in Muntinlupa City. Alignment will traverse Alabang-Zapote Road.</td></tr>
<tr><td>Geographic Coordinates</td><td>The geographic coordinates of the LRT Line-6 stations are provided below.
<table>
<tr><th>Stations</th><th>Location</th><th>Geographic Coordinates</th><th></th></tr>
<tr><td colspan="2">LRT Line-6A</td><td>°N Latitude</td><td>°E Longitude</td></tr>
<tr><td>Niog</td><td>Bacoor</td><td>14° 27’ 20.72”</td><td>120° 57’ 38.20”</td></tr>
<tr><td>Bacoor City Hall</td><td>Bacoor</td><td>14° 26’ 08.16”</td><td>120° 58’ 07.60”</td></tr>
<tr><td>San Nicolas</td><td>Bacoor</td><td>14° 24’ 33.97”</td><td>120° 58’ 35.74”</td></tr>
<tr><td>Daang Hari</td><td>Bacoor</td><td>14° 23’ 04.10”</td><td>120° 58’ 48.28”</td></tr>
<tr><td>Alabang</td><td>Bacoor</td><td>14° 22’ 25.19”</td><td>120° 59’ 49.73”</td></tr>
<tr><td>San Pedro</td><td>Dasmariñas</td><td>14° 21’ 14.38”</td><td>120° 59’ 51.63”</td></tr>
<tr><td>La Salle</td><td>Dasmariñas</td><td>14° 19’ 43.77”</td><td>120° 59’ 11.88”</td></tr>
<tr><td>GMA</td><td>Dasmariñas</td><td>14° 18’ 42.36”</td><td>120° 59’ 19.18”</td></tr>
<tr><td>Governor’s Drive</td><td>Dasmariñas</td><td>14° 17’ 18.63”</td><td>120° 59’ 18.50”</td></tr>
<tr><td colspan="4">LRT Line-6B</td></tr>
<tr><td>Sucat</td><td>Parañaque</td><td>14° 29’ 05.45”</td><td>120° 59 35.35”</td></tr>
<tr><td>Canaynay</td><td>Parañaque</td><td>14° 28’ 44.33”</td><td>120° 58’ 52.84”</td></tr>
<tr><td>Naga</td><td>Las Piñas</td><td>14° 27’ 39.23”</td><td>120° 59’ 40.98”</td></tr>
<tr><td>Alabang-Zapote</td><td>Las Piñas</td><td>14° 26’ 46.58”</td><td>120° 59’ 38.42”</td></tr>
<tr><td>Marcos- Alvarez</td><td>Las Piñas</td><td>14° 26’ 15.80”</td><td>120° 59’ 18.99”</td></tr>
<tr><td>Apollo</td><td>Las Piñas</td><td>14° 25’ 40.70”</td><td>121° 00’ 09.49”</td></tr>
<tr><td>Queen’s Row</td><td>Las Piñas</td><td>14° 25’ 19.65”</td><td>120° 59’ 48.47”</td></tr>
<tr><td>San Nicolas</td><td>Bacoor</td><td>14° 24’ 33.97”</td><td>120° 58’ 35.74”</td></tr>
<tr><td colspan="4">LRT Line-6C</td></tr>
<tr><td>Sucat</td><td>Parañaque</td><td>14° 29’ 05.45”</td><td>120° 59’ 35.35”</td></tr>
<tr><td>Canaynay</td><td>Parañaque</td><td>14° 28’ 44.33”</td><td>120° 58’ 52.84”</td></tr>
<tr><td>El Grande</td><td>Parañaque</td><td>14° 28’ 08.59”</td><td>121° 00’ 39.46”</td></tr>
<tr><td>San Antonio</td><td>Parañaque</td><td>14° 27’ 52.53”</td><td>121° 01’ 12.88”</td></tr>
<tr><td>St. James</td><td>Parañaque</td><td>14° 27’ 30.82”</td><td>121° 01’ 54.70”</td></tr>
<tr><td>Lake Front</td><td>Muntinlupa</td><td>14° 27’ 10.31”</td><td>121° 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>14° 26’ 15.80”</td><td>120° 59’ 18.99”</td></tr>
<tr><td>Town Center</td><td>Las Piñas</td><td>14° 25’ 50.92”</td><td>121° 00’ 56.48”</td></tr>
<tr><td>Madrigal</td><td>Muntinlupa</td><td>14° 25’ 33.74”</td><td>121° 01’ 41.74”</td></tr>
<tr><td>Star Mall</td><td>Muntinlupa</td><td>14° 25’ 02.97”</td><td>121° 02’ 42.84”</td></tr>
</table></td></tr>
</table>

Nature of Project	**New elevated railway system** The proposed Project is an Unsolicited Proposal for Public-Private Partnership (PPP) submitted to the Philippine Government through the Department of Transportation (DOTr) on 13 January 2017 (**Appendix 1**). In a letter dated 23 July 2018, DOTr required Prime Asset Ventures, Inc. (PAVI) to submit an ECC among other requirements to expedite the National Economic Development Authority (NEDA) evaluation and approval of the project (**Appendix 2**). DOTr subsequently issued the Original Proponent Status to PAVI on February 2019 (**Appendix 3**).
Project Rationale	The policy objective for the proposed project is to pursue and achieve sustainable development of the Cavite area and southern Metro Manila by providing convenient, affordable and safe movement through a newly constructed mass transit system. The new railway line is expected to catalyze economic growth and development through the generation of various business and job opportunities along the railway corridor or railway alignment. The mass transit system is also expected to help solve the traffic problems in the area.
Project Components	The Project will consist of four interconnected railway lines, a total of 23 stations with three common stations, a maintenance depot, signaling and communication system, fare collection system, and traction electrification system.
Manpower	At least 5,000 workers will be needed during the construction phase of the Project. During project operation, about 700 to 1,200 personnel will be necessary to maintain and operate the various railway segments of LRT 6.
Capital Cost	The estimated project cost is Php72.2 billion.
Project Duration	Construction activities are estimated to be completed within 3.5 years for each railway line and will commence once government approvals and permits are secured by the project proponent.
Proponent Contact Details and Profile	
Proponent's Name	Prime Asset Ventures, Inc. (see **Appendix 4** for Proponent Accountability Statement)
Authorized Representative	Tony Tan
Contact Details	02.226.3552 local 1041 gecsmatt@yahoo.com
Proponent's Address	UG/F Worldwide Corporate Center Highway Hills, Shaw Boulevard, Mandaluyong City
Proponent Profile	PAVI is a 100% Filipino owned company that was incorporated on 18 August 2011 as an investment and holdings company with focus on building and development community infrastructure. PAVI and its subsidiaries have invested in various industries including power and water utilities, information technology, and telecommunications. Through the development and management of different types of infrastructure, PAVI aims to ensure that lives in its partner communities are made better and kept constantly connected. PAVI's Prime Water Infrastructure Corp. has over 30 years industry experience by providing water and sewage management solutions in over 124 cities and municipalities within the 16 regions of the Philippines. Solorex Water Technologies, Inc. has over 25 years industry experience and is engaged in supplying water filtration, sterilization and purification equipment. PAVI also has interests in power systems infrastructure through Kratos Res, Inc., S Power Corporation and Powersource Group, and information and communication through ePrime and Streamtech.
EIA Preparer Contact Details	
EIA Preparer	Seastems, Inc. (see **Appendix 5** for EIA Preparer's Accountability Statement)
Authorized Representative	Alvin F. Nacu President
Address	Room 314 Philippine Social Science Center Commonwealth Avenue, Diliman, Quezon City
Contact Details	+63.917.840.7192 info@seastems.com; alvin.nacu@seastems.com

1.2 Process Documentation of the conduct of the EIA

1.2.1 EIA Team

The Environmental Impact Assessment (EIA) Team consists of the following key specialists:

Table Error! No text of specified style in document.**-2. List of EIA Team Members**

Name of Specialist	Assigned 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 EIA Study Schedule and Area

The EIA study commenced with the pre-scoping activities conducted from 24 October to 04 December 2018 in the five host cities (Parañaque, Las Piñas, Muntinlupa, Bacoor and Dasmariñas) and 35 host barangays. The pre-scoping activities included courtesy visits and information, education and communication (IEC) campaign with city and barangay local government unit (LGU) officials, key informant interviews with LGU department heads and staff (e.g. City Planning and Development Office (CPDO), City Traffic Management Office (TMO), City Engineering Office, etc.), and focus group discussions with selected barangay and city officials.

The request for public scoping was submitted to the Department of Environment and Natural Resources Environmental Management Bureau (DENR-EMB) after completion of the pre-scoping activities. The request for scoping was submitted together with the following documents:

- Letter request for public scoping addressed to DENR-EMB
- Proof of conduct of IEC (documentation of IEC, FGD and KIIs) (**Appendix 6**)
- Initial perception survey results (**Appendix 7**)
- Proposed list of invitees for public scoping (**Appendix 8**)
- Draft invitation letter
- Draft presentation material

Preparation for the public scoping was commenced after DENR approved the scoping schedule. Arrangements for the scoping venue were finalized and the invitation letters from DENR were distributed to the identified project stakeholders.

The city-level public scoping was held from 18 to 20 February 2019 in the five host cities of the LRT 6 project. A public scoping report (**Appendix 9**) was prepared after the scoping activities and this was submitted to DENR EMB together with the request for technical scoping. The technical scoping with EIA review committee members and EIARC resource persons was held on 08 March 2019 at the Environmental Impact Assessment and Management Division (EIAMD) Conference Room. The scoping checklist accomplished during the technical scoping is presented in **Appendix 10**.

Data collection for the EIA study was conducted from 11 March to 29 April 2019 while report writing was done from April to May 2019. Client review of the draft Environmental Impact Statement (EIS) was done on June 2019, after which a copy was submitted to DENR EMB for procedural screening.

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

1.2.3 EIA Methodology

The methods used in the EIA study are summarized in **Table 1-3**.

Table Error! No text of specified style in document.**-3. Methodology used in the EIA Study**

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 • Collect secondary data on river/lake water quality from concerned agencies (DENR EMB, LLDA, etc.)	• 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 camp • Predict impacts of project operation on surface water

Baseline Parameter	Data Requirements (Annex 2-7A)	Approach/Methodology	
		Baseline Characterization	**Impact Assessment**
		• Compare results to DENR water quality standard values	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 • Identify project stakeholders especially private property and business owners, informal settlers,	• 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 the possibility of the disruption of communities, due to the construction of infrastructure

Baseline Parameter	Data Requirements (Annex 2-7A)	Approach/Methodology	
		Baseline Characterization	**Impact Assessment**
		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	• 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 Public Participation

The following public participation activities were conducted for this EIA study.

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 • Barangay Molino II, Bacoor City • Barangay Ligas III, Bacoor City • Barangay San Nicolas II, Bacoor City	18

Public Participation Activity	Date	Participant/s	No. of Participants
		• 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 Police Departments	32
Perception Survey and key informant	25-27 April 2019	• Project affected stakeholders along the project alignment	87

Public Participation Activity	Date	Participant/s	No. of Participants
interviews			

Table 1-5 presents the summary of issues and concerns raised during the IEC activities while **Table 1-6** presents the analysis of stakeholder perception during the IEC activities. **Table 1-7** presents the summary of issues and concerns raised during the public scoping sessions.

Table Error! No text of specified style in document.**-5. Summary of Issues and Concerns raised during the 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			✓	✓	

The consultant and proponent representatives were able to talk to a total of 127 stakeholder representatives mostly from LGU offices of the five host cities and 35 host barangays during the IEC. Among the five host cities, all except Muntinlupa were already aware about the project through information disseminated by the project proponent. All host barangays in Parañaque City were already aware about the project but the host barangays of other host cities were not yet aware about the project alignment. All the representatives of the host cities and

barangays welcome the project and are eagerly awaiting project implementation to ease traffic congestion in their areas (**Table 1-6**). Issues and concerns raised during the IEC are summarized in **Table 1-7**. Stakeholders foresee no major negative impacts from the project.

Table Error! No text of specified style in document.**-6. Analysis of Stakeholder Perception during the IEC**

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. Summary of Issues and Concerns Raised during the 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	✓			✓	✓

Issues and Concerns	Parañaque	Bacoor	Dasmariñas	Las Piñas	Muntinlupa
infrastructure projects in the area					
Aesthetic aspects of project	✓				
Conflict with other planned infrastructure projects and 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			✓		

Issues and Concerns	Parañaque	Bacoor	Dasmariñas	Las Piñas	Muntinlupa
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

LRT Line 6 was originally intended as the Phase 2 of the LRT-1 South Extension from Niog Station in Bacoor City to Governor's Drive Station in Dasmariñas City passing through Aguinaldo Highway. The proposed project which consists of four separate alignments that will connect southern Metro Manila with Cavite Province as well as the eastern and western sections of Parañaque City and Muntinlupa City will provide an alternative connection between the southern cities of Metro Manila and the northern cities of Cavite Province. LRT Line-6A which will pass through Bacoor Boulevard, Molino-Paliparan Road and on privately controlled properties was chosen as the alignment of the LRT-1 south extension since it will provide wider space for construction compared to the limited space along Aguinaldo Highway which is further constrained by the presence of 69kV transmission lines that will create an obstacle when using cranes during the erection of pre-fabricated I-girders.

The other project alignments which are located in the cities of Parañaque, Las Piñas and Muntinlupa are experiencing rapid development through the establishment of commercial centers and housing projects whose residents commute to Metro Manila daily for work and other business. The rapid development in these areas have resulted in traffic congestion along major road networks and this project is seen as one of the best transport alternatives that can alleviate the traffic condition in these areas.

In terms of natural hazards, the project sites are susceptible to ground shaking along with the rest of the country that is located within the Philippine mobile belt. The nearest seismic generator to the project site is the West Valley Fault and PHIVOLCS has assessed the proposed LRT 6 stations to be safe from ground rupture. The eastern and western sections of LRT Line-6C and the northern segment of LRT Line-6A were assessed to have moderate to high susceptibility to liquefaction hazards while the western segment of LRT Line-6B+C and the northern segment of LRT Line-6A are within the tsunami inundation zone.

In terms of right of way (ROW) issues, land acquisition is foreseen in certain sections of LRT Line-6B located within Parañaque and Las Piñas cities. The project proponent is expected to acquire affected properties according to local and international guidelines on ROW acquisition for infrastructure projects.

Technology Selection

The horizontal and vertical alignments as well as the routes of the proposed project minimized land acquisition issues and impacts along the routes. The project also aimed to reduce initial investment costs as well as operation and maintenance costs; provide a fast, convenient, safe and comfortable service to users; and connectivity of the project to other transport modes and railway lines.

To reduce initial investment costs, the LRT Line 6 alignments will be elevated except for sections within privately controlled properties which will be on embankment. The use of ballasted track type will also help reduce initial investment costs although the final selection will be done during the detailed engineering design stage.

The elevated structures will be designed to comply with the minimum vertical clearance requirement of DPWH and will be consistent with the latest version of Philippine and international standards on infrastructure and transportation development.

1.3.2 Summary of main impacts and residual effects after applying mitigation

The main impacts of the proposed project as well as the proposed mitigation/enhancement measures are summarized in the matrix below. During the pre-construction and construction phases, the main project impacts

include ROW acquisition along the alignment of LRT Line-6B, noise and dust generation, and traffic congestion in project segments where construction activities are taking place. During project operation, the project will help alleviate the worsening traffic conditions in the host cities since it will provide an alternative transport option for residents to and from Metro Manila.

Table Error! No text of specified style in document.**-8. Summary of Key Environmental Impacts and Environmental Management Plan**

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 to penalties provided by the law	None
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	Oil sumps should be installed in active construction	None

Environmental Component	Potential Impact	Mitigation/Enhancement Measures	Residual Impacts
	occur due to spills and leaks from construction equipment and machinery	areas to minimize discharge of oil spills and leaks from construction equipment, machinery and vehicles.	
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 incidence	None
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	• Increase distance between noise source and receiver • Install noise barriers between noise source and	None

Environmental Component	Potential Impact	Mitigation/Enhancement Measures	Residual Impacts
	hospitals	receiver to interrupt the path of the noise • Incorporate noise criteria in specifications and selection of equipment	
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 and uncertainties relating to the findings and implications for decision making

The proposed project has very few residual impacts that are expected to persist even with the implementation of recommended mitigating measures. These include the impacts to residents and business owners along the project alignment whose properties will need to be acquired for the project's ROW as well as the potential overcrowding and loss of airshed space in roads with narrow ROWs. The proponent will aim to minimize and limit ROW acquisition and if ROW acquisition is inevitable, affected properties will be acquired following local and international guidelines on ROW acquisition. The proponent is expected to acquire affected properties using fair market values.

Seismic and other natural hazards are expected to persist with or without the project implementation. The existence of these hazards, particularly liquefaction, ground shaking and tsunami should be considered in the project design.