

**Environmental Monitoring Form
North-South Commuter Railway (Malolos – Tutuban) Project**

1. General Information

a. Environmental Monitoring Results: 3rd Quarter of 2024
 b. Date of Preparing This form: 15 October 2024
 c. Person Preparing This form: Environmental Consideration Unit
Department/Organizations: North-South Commuter Railway (Malolos – Tutuban) Project

2. Monitoring Results - Construction Phase

(1) Impact on Land

No.	Potential Impact	Parameter	Method	Frequency	Location	Standard	Latest Monitoring Result in 3 rd Quarter of 2024	
							Result	Monitoring Date
1	Soil contamination due to oil and lubricant spill	Oil spill	Ocular inspection	Weekly, immediately after spills	All construction sites (Malolos, Guiguinto, Balagtas, Bocaue, Marilao, Meycauayan and Valenzuela City)	N.A.	Minor spills were commonly observed near/adjacent the mechanical equipment. See Annex A ¹	Environmental Walkthrough Dates: 05, 18 July 2024; 9, 16, 23 & 29 August 2024; 10, 11, 12, 19 & 23 September 2024
2.	Worker and community exposure to health and safety hazards due to working in areas with the excavation of such soils	Proper removal and disposal of excavated soil from RAMCAR battery site	Compliance to RA 9003, RA 6969 and DAO 2013-22	N.A.	RAMCAR battery site	Environmental Standard for Soil Pollution (Japan): 150 mg/kg Dutch Standards of References Values for Soil: 85 mg/kg German Federal Soil Protection and Contaminated Site	Excavation of contaminated soil in Meycauayan was completed. Appropriate PPE was provided to workers directly involved in the hauling of the contaminated soil. Contaminated soil was treated and disposed to a DENR-accredited TSD	N.A.

¹ Annex A. Oil Spills.

For the Annexes, kindly follow the link: https://dotrailway-my.sharepoint.com/:b/g/personal/peresano_dotrailways_com/ERESSpqzXWpBkIA16RI59vkBA8nSKJVnQp1mEwFMy1kh8Q?e=CHuixA

No.	Potential Impact	Parameter	Method	Frequency	Location	Standard	Latest Monitoring Result in 3 rd Quarter of 2024	
							Result	Monitoring Date
						Ordinance: 200 mg/kg DAO 2013-22: <1 mg/L	Facility. Certificate of Treatment was provided in previous reports	
3.	Generation of solid waste; land and water contamination; aesthetic impacts; spread of diseases	Proper waste management and disposal	Checking compliance with RA 9003 and RA 6969	Weekly	All construction sites (Malolos, Guiguinto, Balagtas, Bocaue, Marilao, Meycauayan and Valenzuela City)	N.A.	<p>Solid Waste Management</p> <ol style="list-style-type: none"> Appropriate waste bins with cover are provided in active construction sites. Color coded waste bins are properly labeled: recyclables (red), non-recyclables/residuals (blue), biodegradables (green), and special waste, household healthcare waste (yellow). The recyclables were segregated from residuals. The residual wastes are being collected by the LGUs and some private haulers and disposed to the disposal facility. Recoverable waste materials are recycled and reuse on site. Non-recyclable scrap materials will be disposed to junkshops. In response to COVID-19 pandemic, particularly disposal mask/ gloves and tissues are directly stored and disposed in a separate waste bag/bin (yellow). <p>- Solid Waste Generated: 1,135.521 tons/quarter - Recyclable: 320.765 tons/quarter - Biodegradable: 14.979 tons/quarter - Residual: 799.777 tons/quarter</p>	N.A.

No.	Potential Impact	Parameter	Method	Frequency	Location	Standard	Latest Monitoring Result in 3 rd Quarter of 2024	
							Result	Monitoring Date
							<p>Hazardous Waste Management</p> <ol style="list-style-type: none"> 1. The hazardous wastes are stored in separate containers according to its classification and are labeled. 2. Hazardous wastes are stored in bundled area or with secondary containment to avoid direct spillage to the ground. 3. These wastes are temporarily stored at temporary storage facility. An accredited TSD facility is employed for the proper disposal of the hazardous wastes generated on site. <p>Hazardous Waste Generated for the Quarter:</p> <ul style="list-style-type: none"> - Mercury and Mercury Compounds: 0.0 ton - Lead Compounds: 0.8664 ton - Used Industrial Oil including sludge: 0.04 - Oil Contaminated materials: 0.46803 ton - Containers previously cont. toxic chemicals: 0.5117 ton - Waste Electrical and Electronic Equipment: 0.0 ton - Pathological Waste: 0.009626 ton - Solvent Based: 0.0 ton <p>Grey water disposal and treatment</p>	

No.	Potential Impact	Parameter	Method	Frequency	Location	Standard	Latest Monitoring Result in 3 rd Quarter of 2024	
							Result	Monitoring Date
							Provision of septic tanks, sanitation facilities and portable toilets are available within construction areas. Liquid wastes (i.e., grey water from portalets) are siphoned regularly twice a week by a licensed sewage treater service (Soliman, New Ezkleen, and Envirokonsult). Grey water from kitchen sinks, clean water from washing go through a grease trap before discharge to local drainages See Annex B and C	
4.	Ground subsidence	Level of ground subsidence	Measurement of level	Monthly	Valenzuela Depot	N.A.	N.A.	N.A.
5.	Removal of Narra trees along with alignment from Caloocan to Tutuban and at Valenzuela depot, and other trees.	<ol style="list-style-type: none"> 1. Number of trees cut 2. Number of trees replaced 3. The survival rate of species introduced 4. Provision of the corresponding number of tree seedlings 	Ocular inspection	N.A.	Designated tree planting site and/or reforestation area designated by DENR-EMB National Capital Region (NCR)	85-90% survival rate of trees planted as prescribed by the LGU	<ol style="list-style-type: none"> 1. CP01 <ul style="list-style-type: none"> 1.1 Replacement seedlings <ul style="list-style-type: none"> - 71,000 seedlings in Mt. Balagbag (84.5 ha) - 18,500 seedlings in Mt Balagbag (16.65 ha) - 8,000 seedlings in La Mesa Watershed (20 ha) - 300 bamboo seedlings handed over to Meycauyan LGU 1.2 Transplanted Trees in NFA Compound, Malanday, Depot <ul style="list-style-type: none"> - One of the two transplanted trees survived. 2. CP02 <ul style="list-style-type: none"> 2.1 Replacement seedlings <ul style="list-style-type: none"> - 33,650 seedlings in Mt. Balagbag (52.8 ha)* - 4,000 seedlings in Mt. Balagbag (4.0 ha)* - 4,700 seedlings in Mt. Balagbag (4.0 ha) 	N.A.

No.	Potential Impact	Parameter	Method	Frequency	Location	Standard	Latest Monitoring Result in 3 rd Quarter of 2024	
							Result	Monitoring Date
							<p>Note: *Protection and maintenance already done in 2021.</p> <p>Note: Protection and maintenance activities for the planted seedlings were completed in 2022. DENR-NCR and DENR-Region 3, through CENRO Guiguinto, issued a Certificate of Completion for the Planting and Maintenance Activities. Copy of Certificate of Completion annexed in the 4th quarter 2024 report.</p>	
5	Loss of small swampy area used for migratory and resident birds due to development of depot	Seasonal bird count	Ocular Survey	Annually	Adjacent offset wetland of Valenzuela depot	N.A.	<p>Bird count at the offset wetland (Tanza Marine Tree Park) are not yet conducted. The Memorandum of Agreement between DOTr and DENR-National Capital Region (NCR), and Work and Financial Plan (WFP) for the conservation of TMTP, as part of the NSCR offset wetland management project, is already signed and Notarized. The documentary requirements for the Disbursement of Fund were requested to DENR-NCR on 15 September 2023. On 30 November 2023, a response letter was received from DENR-NCR.</p> <p>On 12 January 2024, DOTr and DENR-NCR conducted an online meeting to discuss the issues and concerns on the proposed site.</p> <p>Assessment for possible alternative</p>	N.A.

No.	Potential Impact	Parameter	Method	Frequency	Location	Standard	Latest Monitoring Result in 3 rd Quarter of 2024	
							Result	Monitoring Date
							sites for the offset wetland is ongoing.	

(2) Impact on Water

No.	Potential Impact	Parameter	Method	Frequency	Location	Standard	Baseline		Latest Monitoring Result in 3 rd Quarter of 2024	
							Feasibility Study Phase (2013)	Pre-construction Phase (2019)	Result (Annex D) ²	Monitoring Date
1	Increase in suspended solid of receiving water/ pollution of receiving water bodies	1. pH 2. DO 3. Oil & Grease 4. BOD 5. Fecal 6. TSS	Water sampling (DAO 34-1990), DENR-EMB Manual for Ambient Water Quality Monitoring Volume I (2008), and Water Quality Guidelines and General Effluent Standards of (DAO 2016-08)	Quarterly	1. Guiguinto River 14.830339 N; 120.878609 E	For Class "C" freshwater ³ : 1. pH: 6.5 to 9.0 2. DO: 5.0 mg/L 3. Oil & Grease: 2.0 mg/L 4. BOD: 7.0 mg/L 5. Fecal Coliform: 200 MPN/100mL 6. TSS: 80 mg/L	Guiguinto River 1. pH: 8.8 2. DO: 2.3 mg/L 3. Oil & Grease: 0.8 mg/L 4. BOD: 12 mg/L 5. Fecal Coliform: 44 MPN/100mL 6. TSS: N.A.	Guiguinto River 1. pH: 7.43 2. DO: ND 3. Oil & Grease: ND 4. BOD: 3.26 mg/L 5. Fecal Coliform: 4.9x10 ³ MPN/100mL 6. TSS: 8.6 mg/L	Guiguinto River 1. pH: 7.21 2. DO: 1.28 mg/L 3. Oil & Grease: 1.85 mg/L 4. BOD: 18.7 mg/L 5. Fecal Coliform: 24,000 MPN/100mL 6. TSS: 11.8 mg/L	Guiguinto River: 22 August 2024
					2. Santol (Balagtas) River 14.818506 N; 120.913071 E		Santol (Balagtas) River 1. pH: 7.6 2. DO: 4.5 mg/L 3. Oil & Grease: 0.6 mg/L 4. BOD: 2 mg/L 5. Fecal Coliform: 1.3x10 ⁴ MPN/100mL 6. TSS: 8.8 mg/L	Santol (Balagtas) River 1. pH: 7.63 2. DO: 2.39 mg/L 3. Oil & Grease: ND 4. BOD: 8.01 mg/L 5. Fecal Coliform: 3.5x10 ³ MPN/100mL 6. TSS: 26.3 mg/L	Santol (Balagtas) River: 1. pH: 7.15 2. DO: 2.27 mg/L 3. Oil & Grease: 1.72 mg/L 4. BOD: 18.7 mg/L 5. Fecal Coliform: 35,000 MPN/100 mL 6. TSS: 30.6 mg/L	Santol(Balagtas) River: 22 August 2024
					3. Bocaue River 14.80575 N; 120.9268 E		Bocaue River: 1. pH: 7.9 2. DO: 8.2 mg/L 3. Oil & Grease: 0.7 mg/L 4. BOD: 4 mg/L 5. Fecal Coliform: 3.5x10 ⁴ MPN/100mL 6. TSS: 44 mg/L	Bocaue River: 1. pH: 7.4 2. DO: 7.2 mg/L 3. Oil & Grease: 3 mg/L 4. BOD: 12 mg/L 5. Fecal Coliform: 3.3x10 ⁴ MPN/100mL 6. TSS: 46 mg/L	Bocaue River: 1. pH: 7.14 2. DO: 7.4 mg/L 3. Oil & Grease: 2 mg/L 4. BOD: 8 mg/L 5. Fecal Coliform: 330,000 MPN/100mL 6. TSS: 38 mg/L	Bocaue River: 08 August 2024

² Annex B and C presents some measures implemented on-site to mitigate possible impact on water quality.

³ DAO 2016-08: Water Quality Guidelines and Effluent Standards of 2016

No.	Potential Impact	Parameter	Method	Frequency	Location	Standard	Baseline		Latest Monitoring Result in 3 rd Quarter of 2024	
							Feasibility Study Phase (2013)	Pre-construction Phase (2019)	Result (Annex D) ²	Monitoring Date
					4. Marilao River 14.76135 N; 120.9507 E		Marilao River: 1. pH: 7.8 2. DO: 7.1 mg/L 3. Oil & Grease: 0.8 mg/L 4. BOD: 8 mg/L 5. Fecal Coliform: 3.5x10 ⁴ MPN/100mL 6. TSS: 36 mg/L	Marilao River: 1. pH: 7.6 2. DO: 7 mg/L 3. Oil & Grease: <1 mg/L 4. BOD: 18 mg/L 5. Fecal Coliform: 3.1x10 ⁵ MPN/100mL 6. TSS: 17 mg/L	Marilao River: 1. pH: 7.17 2. DO: 0.6 mg/L 3. Oil & Grease: 2 mg/L 4. BOD: 13 mg/L 5. FecalColiform: 5,400,000MPN/100mL 6. TSS: 52 mg/L	Marilao River: 07 August 2024
					5. Meycauayan River 14.73063 N; 120.9644 E		Meycauayan River: 1. pH: 7.4 2. DO: <2.0 mg/L 3. Oil & Grease: 0.6 mg/L 4. BOD: 9 mg/L 5. Fecal Coliform: N.A. 6. TSS: 17 mg/L	Meycauayan River: 1. pH: 7.5 2. DO: 6.8 mg/L 3. Oil & Grease: <1 mg/L 4. BOD: 25 mg/L 5. Fecal Coliform: 1.3x10 ⁶ MPN/100mL 6. TSS: 33 mg/L	Meycauayan River: 1. pH: 7.10 2. DO: 0.5 mg/L 3. Oil & Grease: 4 mg/L 4. BOD: 116 mg/L 5. Fecal Coliform: 54,000,000 MPN/100mL 6. TSS: 47 mg/L	Meycauayan River: 07 August 2024
					6. Valenzuela Depot 14.713699 N; 120.961019 E		Valenzuela Depot: 1. pH: 6.6 2. DO: <2.0 mg/L 3. Oil & Grease: 0.7 mg/L 4. BOD: 55 mg/L 5. Fecal Coliform: N.A. 6. TSS: 9 mg/L	Valenzuela Depot: 1. pH: 7.6 2. DO: 4.2 mg/L 3. Oil & Grease: 2 mg/L 4. BOD: 65 mg/L 5. Fecal Coliform: 4.9x10 ⁵ MPN/100mL 6. TSS: 9 mg/L	Valenzuela Depot: 1. pH: 7.21 2. DO: 8.1 mg/L 3. Oil & Grease: 2 mg/L 4. BOD: 59 mg/L 5. Fecal Coliform: 240,000,000 MPN/ mg/L 6. TSS: 10 mg/L	Valenzuela Depot: 08 August 2024
					7. Tullahan River 14°40,672'N 120°58.315'E		Tullahan River ⁴ - N.A.	Tullahan River - N.A.	Tullahan River - N.A.	Tullahan River: N.A.

⁴ Water quality monitoring was not conducted at Tullahan River, and Estero de Maypajo since Section 1 of Contract Package 01 is not yet handed over to the contractor.

No.	Potential Impact	Parameter	Method	Frequency	Location	Standard	Baseline		Latest Monitoring Result in 3 rd Quarter of 2024	
							Feasibility Study Phase (2013)	Pre-construction Phase (2019)	Result (Annex D) ²	Monitoring Date
					8. Estero de Maypajo 14°38,113'N 120°58.6'E		Estero de Maypajo - N.A	Estero de Maypajo - N.A.	Estero de Maypajo - N.A.	Estero de Maypajo: N.A.

(3) Impact on Air

No.	Potential Impact	Parameter	Method	Frequency	Location ⁵	Standard	Baseline		Latest Monitoring Result in 3 rd Quarter of 2024		
							Feasibility Study Phase ⁶	Pre-construction Phase (2019)	Result ^{7,8} (Annex E)	Monitoring Date	
1	Generation of dust and particulate matter, and gas emissions.	1. TSP 2. PM _{2.5} 3. PM ₁₀ 4. NO ₂ 5. SO ₂	Clean Air Act of 1999 (RA 8749) 1. TSP: High Volume Gravimetric Method 2. PM _{2.5} : High Volume w/2.5-micron particle size inlet, Gravimetric 3. PM ₁₀ : High Volume w/10-micron particle-size inlet, Gravimetric 4. SO ₂ : Pararosaniline Method 5. NO ₂ : Griess Saltzman Reaction	Quarterly, immediately based on complaints	1. Malolos 14°51'14.53"N 120°48'50.96"E	National Ambient Air Quality Guideline Values (NAAQGV) 24-Hr Monitoring: 1. TSP:230 µg/Ncm 2. PM _{2.5} :50 µg/Ncm ⁹ 3. PM ₁₀ : 150 µg/Ncm 4. SO ₂ : 180 µg/Ncm 5. NO ₂ : 150 µg/Ncm	24-Hr Monitoring: Malolos (2012): 1. TSP: 95 µg/Ncm 2. PM ₁₀ : 61.8 µg/Ncm 3. PM _{2.5} : N.A. 4. SO ₂ : <0.05 µg/Ncm 5. NO ₂ : 3.093 µg/Ncm	1-Hr Monitoring Malolos: 1. TSP: 297 µg/Ncm 2. PM ₁₀ : 198 µg/Ncm 3. PM _{2.5} : 94.1 µg/Ncm 4. SO ₂ : <25.5 µg/Ncm 5. NO ₂ : 18.9 µg/Ncm	24-Hr Monitoring: Malolos: 1. TSP: 181 µg/Ncm 2. PM ₁₀ : 102 µg/Ncm 3. PM _{2.5} : 24.8 µg/Ncm 4. SO ₂ : 0.556 µg/Ncm 5. NO ₂ : 21.1 µg/Ncm	24-Hr Monitoring: Malolos: 24 September 27 September 2024	
					2. Guiguinto 14°49'31.06"N 120°54'21.05"E		National Ambient Air Quality for Source-Specific Air Pollutants from Industrial Sources / Operations	Guiguinto (2013): 1. TSP: 20.20 µg/Ncm 2. PM ₁₀ : 26.83 µg/Ncm 3. PM _{2.5} : N.A. 4. SO ₂ : 3.68 µg/Ncm 5. NO ₂ : 8.67 µg/Ncm	1-Hr Monitoring Guiguinto: 1. TSP: 188 µg/Ncm 2. PM ₁₀ : 187 µg/Ncm 3. PM _{2.5} : <47.2 µg/Ncm 4. SO ₂ : <25.5 µg/Ncm 5. NO ₂ : 11.3 µg/Ncm	Guiguinto and Malolos Boundary: 1. TSP: 78.8 µg/Ncm 2. PM ₁₀ : 46.8 µg/Ncm 3. PM _{2.5} : 26.3 µg/Ncm 4. SO ₂ : 0.668 µg/Ncm 5. NO ₂ : 17.9 µg/Ncm	Guiguinto and Malolos Boundary: 25 September 27 September 2024
					3. Balagtas 14°50'21.90"N 120°51'31.28"E		1-Hr Monitoring: 1. TSP:300 µg/Ncm 2. PM _{2.5} : N.A 3. PM ₁₀ :200 µg/Ncm 4. SO ₂ : 340 µ/Ncm 5. NO ₂ : 260 µ/Ncm	Balagtas: N.A.	1-Hr Monitoring Balagtas: 1. TSP: 271 µg/Ncm 2. PM ₁₀ : 189 µg/Ncm 3. PM _{2.5} : 67.9 µg/Ncm 4. SO ₂ : 25.7 µg/Ncm 5. NO ₂ : 19.7 µg/Ncm	Balagtas: 1. TSP: 72.1 µg/Ncm 2. PM ₁₀ : 42.3 µg/Ncm 3. PM _{2.5} : 30.3 µg/Ncm 4. SO ₂ : 0.556 µg/Ncm 5. NO ₂ : 6.67 µg/Ncm	Balagtas: 26 September 2024
					4. Bocaue 14°48'2"N 120°55'53"E			Bocaue (2012): 1. TSP: 133 µg/Ncm 2. PM ₁₀ : 67.9 µg/Ncm 3. PM _{2.5} : N.A.	24-Hr Monitoring Bocaue: 1. TSP: 98.8 µg/Ncm	Bocaue: 1. TSP: 29.64 µg/Ncm 2. PM ₁₀ : 8.74 µg/Ncm 3. PM _{2.5} : 2.67 µg/Ncm	Bocaue: 05 August 2024

⁵ Indicates the location of the 2021 1st quarter air quality monitoring station.

⁶ Source: NSCR EPRMP, March 2015

⁷ Ambient air quality monitoring was not conducted in Calocan, Manila, Solis and Tutuban stations since Section 1 of Contract Package 01 is not yet handed over to the contractor.

⁸ Dust mitigation measures are presented in **Annex F**.

⁹ DAO 2013-13 – Establishing the Provisional National Ambient Air Quality Guideline Values for Particulate Matter 2.5 (PM_{2.5})

No.	Potential Impact	Parameter	Method	Frequency	Location ⁵	Standard	Baseline		Latest Monitoring Result in 3 rd Quarter of 2024	
							Feasibility Study Phase ⁶	Pre-construction Phase (2019)	Result ^{7,8} (Annex E)	Monitoring Date
							4. SO ₂ : <0.05 µg/Ncm 5. NO ₂ : 2.7 µg/Ncm 1. TSP: 145 µg/Ncm 2. PM ₁₀ : 104.4 µg/Ncm 3. PM _{2.5} : N.A. 4. SO ₂ : <0.05 µg/Ncm 5. NO ₂ : 2.7 µg/Ncm	2. PM ₁₀ : 43.8 µg/Ncm 3. PM _{2.5} : 17.3 µg/Ncm 4. SO ₂ : 1.0 µg/Ncm 5. NO ₂ : 3.6 µg/Ncm	4. SO ₂ : 1.05 µg/Ncm 5. NO ₂ : 10.02 µg/Ncm	
					5. Marilao 14°45'44"N 120°57'2"E	Marilao: N.A.	24-Hr Monitoring: Marilao: 1. TSP: 55.2 µg/Ncm 2. PM ₁₀ : 47.5 µg/Ncm 3. PM _{2.5} : 6.1 µg/Ncm 4. SO ₂ : 0.6 µg/Ncm 5. NO ₂ : 4.1 µg/Ncm	Marilao: 1. TSP: 48.54 µg/Ncm 2. PM ₁₀ : 8.03 µg/Ncm 3. PM _{2.5} : 4.0 µg/Ncm 4. SO ₂ : 1.03 µg/Ncm 5. NO ₂ : 7.87 µg/Ncm	Marilao: 06 August 2024	
					6. Meycauayan 14°44'20"N 120°57'39.32"E	Meycauayan: N.A.	24-Hr Monitoring: Meycauayan: 1. TSP: 61.6 µg/Ncm 2. PM ₁₀ : 15 µg/Ncm 3. PM _{2.5} : 14.6 µg/Ncm 4. SO ₂ : 0.8 µg/Ncm 5. NO ₂ : 5.1 µg/Ncm	Meycauayan: 1. TSP: 48.15 µg/Ncm 2. PM ₁₀ : 6.96 µg/Ncm 3. PM _{2.5} : 1.33 µg/Ncm 4. SO ₂ : 0.88 µg/Ncm 5. NO ₂ : 10.65 µg/Ncm	Meycauayan: 07 August 2024	
					7. Valenzuela 14°42'51" N 120°57'39"E	Valenzuela (2013): 1. TSP: 37.52 µg/Ncm 2. PM ₁₀ : 49.68 µg/Ncm 3. PM _{2.5} : N.A. 4. SO ₂ : 3.96 µg/Ncm 5. NO ₂ : 10.43 µg/Ncm	24-Hr Monitoring: Valenzuela: 1. TSP: 27.3 µg/Ncm 2. PM ₁₀ : 12.5 µg/Ncm 3. PM _{2.5} : 5.3 µg/Ncm 4. SO ₂ : 1.2 µg/Ncm 5. NO ₂ : 4.9 µg/Ncm	Valenzuela: 1. TSP: 104.08 µg/Ncm 2. PM ₁₀ : 10.30 µg/Ncm 3. PM _{2.5} : 3.11 µg/Ncm 4. SO ₂ : 1.29 µg/Ncm 5. NO ₂ : 8.60 µg/Ncm	Valenzuela: 08 August 2024	
					8. Caloocan 14°39'28.3" N 120°58'26.2"E	Caloocan (2014): 1. TSP: 97.28 µg/Ncm 2. PM ₁₀ : 97.60 µg/Ncm 3. PM _{2.5} : N.A. 4. SO ₂ : 15.53 µg/Ncm 5. NO ₂ : 30.81 µg/Ncm	Caloocan – N.A.	Caloocan – N.A.	Caloocan: N.A.	
						1. TSP: 86.3 µg/Ncm				

No.	Potential Impact	Parameter	Method	Frequency	Location ⁵	Standard	Baseline		Latest Monitoring Result in 3 rd Quarter of 2024	
							Feasibility Study Phase ⁶	Pre-construction Phase (2019)	Result ^{7,8} (Annex E)	Monitoring Date
							2. PM ₁₀ : 30.5 µg/Ncm 3. PM _{2.5} : N.A. 4. SO ₂ : 0.4 µg/Ncm 5. NO ₂ : 10.6 µg/Ncm			
					9. Manila 14°37'26.75" N 120°58'25.52"E		Manila – N.A.	Manila – N.A.	Manila – N.A.	Manila – N.A.
					10. Solis 14°37'56" N 120°58'34.6"E		Solis (2014). 1. TSP: 84.6 µg/Ncm 2. PM ₁₀ : 30.5 µg/Ncm 3. PM _{2.5} : N.A. 4. SO ₂ : 0.9 µg/Ncm 5. NO ₂ : 10.9 µg/Ncm	Solis – N.A.	Solis – N.A.	Solis – N.A.
					11. Tutuban 14°36'22" N 120°58'17"E		Tutuban (2014): 1. TSP: 81.3 µg/Ncm 2. PM ₁₀ : 46.7 µg/Ncm 3. PM _{2.5} : N.A. 4. SO ₂ : 2.3 µg/Ncm 5. NO ₂ : 12.7 µg/Ncm	Tutuban – N.A.	Tutuban – N.A.	Tutuban – N.A.

No.	Potential Impact	Parameter	Method	Frequency	Location	Standard ¹⁰	Baseline		Latest Monitoring Result in 3 rd Quarter of 2024	
							Feasibility Study Phase ¹¹	Pre-construction Phase (2019)	Result (Annex G) ¹²	Monitoring Date
2	Noise pollution	Noise level	Noise level meter	Monthly, immediately based on complaints	Abangan Norte Elementary School, Marilao	Class AA - Morning: 50 dB - Daytime: 55 dB - Evening: 50 dB - Nighttime: 45 dB	N.A.	- Morning: 70.1 dB - Daytime: 71.84 dB - Evening: 70.83 dB - Nighttime: 63.5 dB	- Morning: 57.1 dB - Daytime: 58.0 dB - Evening: 50.5 dB - Nighttime: 45.7 dB	11-12 July 2024
					Tabing Ilog Elementary School, Marilao	Class AA ¹³ - Morning: 50 dB - Daytime: 55 dB - Evening: 50 dB - Nighttime: 45 dB	N.A.	- Morning: 77.8 dB - Daytime: 78.93 dB - Evening: 76.8 dB - Nighttime: 68.42 dB	- Morning: 68.3 dB - Daytime: 70.2 dB - Evening: 68.8 dB - Nighttime: 63.2 dB	14-15 August 2024 14-15 September 2024

¹⁰ Environmental Quality Standards for Noise in General Areas (NPCC, Memorandum Circular No. 002 Series of 1980). Note: For stations which indicates "Class 3-4; Class A", Standard for 'Class 3-4 Construction activities' was adopted for Morning and Daytime, and Standard for 'Class A General Areas' was adopted during Evening and Nighttime. Also, a corrective factor was applied for stations directly facing 2-lane and 4 or more-lane road as indicated in the NPCC MC No. 1980-002.

¹¹ Source: NSCR EPRMP, March 2015

¹³ With Correction factor of +5 dBA applicable for areas directly facing 2-lane road

No.	Potential Impact	Parameter	Method	Frequency	Location	Standard ¹⁰	Baseline		Latest Monitoring Result in 3 rd Quarter of 2024	
							Feasibility Study Phase ¹¹	Pre-construction Phase (2019)	Result (Annex G) ¹²	Monitoring Date
					Near St. Mary Meycauayan College	Class AA ¹⁴ - Morning: 55 dB - Daytime: 60 dB - Evening: 55 dB - Nighttime: 50 dB	N.A.	- Morning: 86.45 dB - Daytime: 86.0 dB - Evening: 87.760 dB - Nighttime: 86.90 dB	- Morning: 78.0 dB - Daytime: 78.1 dB - Evening: 78.5 dB - Nighttime: 77.1 dB - Morning: 78.1 dB - Daytime: 77.8 dB - Evening: 79.1 dB - Nighttime: 78.0 dB - Morning: 78.9 dB - Daytime: 79.3 dB - Evening: 79.8 dB - Nighttime: 79.4 dB	10-11 July 2024 13-14 August 2024 11-12 September 2024
					Front of Meycauayan College	Class AA ¹⁵ - Morning: 55 dB - Daytime: 60 dB - Evening: 55 dB - Nighttime: 50 dB	N.A.	- Morning: 86.28 dB - Daytime: 86.58 dB - Evening: 86.73 dB - Nighttime: 86.41 dB	- Morning: 79.5 dB - Daytime: 79.3 dB - Evening: 80.3 dB - Nighttime: 78.5 dB - Morning: 79.6 dB - Daytime: 78.9 dB - Evening: 80.1 dB - Nighttime: 79.0 dB - Morning: 80.0 dB - Daytime: 79.7 dB - Evening: 80.6 dB - Nighttime: 78.6 dB	09-10 July 2024 12-13 August 2024 10-11 September 2024
					Malinta Elementary School	Class AA - Morning: 45 dB - Daytime: 50 dB	N.A.	Inside Malinta Elementary School (Class AA): - Morning: 65.25 dB	- Morning: 60.6 dB - Daytime: 61.7 dB - Evening: 58.3 dB - Nighttime: 54.9 dB	09-10 July 2024

¹⁴ With Correction factor of +10 dBA applicable for areas directly facing 4-lane or wider

¹⁵ With Correction factor of +10 dBA applicable for areas directly facing 4-lane or wider

No.	Potential Impact	Parameter	Method	Frequency	Location	Standard ¹⁰	Baseline		Latest Monitoring Result in 3 rd Quarter of 2024	
							Feasibility Study Phase ¹¹	Pre-construction Phase (2019)	Result (Annex G) ¹²	Monitoring Date
						- Evening: 45 dB - Nighttime: 40 dB		- Daytime: 60.88 dB - Evening: 66.85 dB - Nighttime: 61.61 dB	- Morning: 58.8 dB - Daytime: 62.6 dB - Evening: 60.5 dB - Nighttime: 52.0 dB	12-13 August 2024
								Outside campus Malinta Elementary School - Morning: 85.68 dB - Daytime: 85.53 dB - Evening: 85.3 dB - Nighttime: 85.86 dB	- Morning: 62.1 dB - Daytime: 62.2 dB - Evening: 60.3 dB - Nighttime: 52.8 dB	09-10 September 2024
					Holy Infant Elementary School, Malolos	Class AA ¹⁶ - Morning: 50 dB - Daytime: 55 dB - Evening: 50 dB - Nighttime: 45 dB	N.A.	- Morning: 66.62 dB - Daytime: 65.71 dB - Evening: 67.05 dB - Nighttime: 64.7 dB	- Morning: 59.3 dB - Daytime: 59.0 dB - Evening: 59.3 dB - Nighttime: 56.1 dB	16-17 July 2024
									- Morning: 60.8 dB - Daytime: 60.6 dB - Evening: 58.2 dB - Nighttime: 56.8 dB	08-09 August 2024
									- Morning: 65.1 dB - Daytime: 58.8 dB - Evening: 62.6 dB - Nighttime: 60.8 dB	03-04 September 2024

¹⁶ Additional +5 dBA since the sampling point is located beside/facing the access road which is also connected to the T-intersection highway (4 lanes)

No.	Potential Impact	Parameter	Method	Frequency	Location	Standard	Baseline		Latest Monitoring Result in 3 rd Quarter of 2024	
							Feasibility Study Phase ¹⁷	Pre-construction Phase (2019)	Result (Annex H)	Monitoring Date
3	Increase in ground vibration level due to the operation of heavy equipment and machinery	Vibration level	Vibration level meter	Quarterly, immediately based on complaints	Holy Infant School, Malolos City	¹⁸ 55 dB or 0.0056 m/s ²	N.A.	- Daytime: 0.69 mm/s or 0.00069 m/s ²	Morning (0500H-0900H) - x: 33.6 VdB y: 35.8 VdB z: 32.1 VdB Daytime (0900H-1800H) - x: 35.6 VdB y: 32.3 VdB z: 33.6 VdB Evening (1800H-2200H) - x: ND y: 32.3 VdB z: ND Nighttime (2200H- 0500H) - x: ND y: 31.6 VdB z: ND	16-17 July 2024

¹⁷ Source: NSCR EPRMP, March 2015

¹⁸ "Technology and Laws Regulation for Pollution Control, 2000", Japan Environmental Management Association for Industry

No.	Potential Impact	Parameter	Method	Frequency	Location	Standard	Baseline		Latest Monitoring Result in 3 rd Quarter of 2024	
							Feasibility Study Phase ¹⁷	Pre-construction Phase (2019)	Result (Annex H)	Monitoring Date
					Abangan Norte Elementary School, Marilao	¹⁹ 55dB or 0.0056 m/s ²	N.A.	<ul style="list-style-type: none"> - Morning: 53 VdB - Daytime: 63 VdB - Evening: 57 VdB - Nighttime: 56 VdB 	Morning (0500H-0900H) - x: 42.7 VdB y: 40.0 VdB z: 41.6 VdB Daytime (0900H-1800H) - x: 44.1 VdB y: 41.8 VdB z: 42.6 VdB Evening (1800H-2200H) - x: 43.1 VdB y: 40.8 VdB z: 41.5 VdB Nighttime (2200H- 0500H) - x: 39.9 VdB y: 38.0 VdB z: 37.1 VdB	14-15 August 2024

¹⁹ "Technology and Laws Regulation for Pollution Control, 2000", Japan Environmental Management Association for Industry

No.	Potential Impact	Parameter	Method	Frequency	Location	Standard	Baseline		Latest Monitoring Result in 3 rd Quarter of 2024	
							Feasibility Study Phase ¹⁷	Pre-construction Phase (2019)	Result (Annex H)	Monitoring Date
					Tabing Ilog Elementary School, Marilao	²⁰ 55dB or 0.0056 m/s ²	N.A.	<ul style="list-style-type: none"> - Morning: 63 VdB - Daytime: 70 VdB - Evening: 68 VdB - Nighttime: 60VdB 	Morning (0500H-0900H) - x: 45.6 VdB y: 48.1 VdB z: 59.0 VdB Daytime (0900H-1800H) - x: 44.3 VdB y: 47.1 VdB z: 56.0 VdB Evening (1800H-2200H) - x: 41.2VdB y: 44.3 VdB z: 59.5 VdB Nighttime (2200H- 0500H) - x: 43.0 VdB y: 45.9 VdB z: 50.9 VdB	13-14 August 2024
					St. Mary College, Meycauayan	²¹ 55dB or 0.0056 m/s ²	N.A.	<ul style="list-style-type: none"> - Morning: 72 VdB - Daytime: 76 VdB - Evening: 77 VdB - Nighttime: 78 VdB 	Morning (0500H-0900H) - x: 58.0 VdB y: 56.7 VdB z: 63.9 VdB Daytime (0900H-1800H) - x: 58.1 VdB y: 55.7 VdB z: 64.0 VdB Evening (1800H-2200H) - x: 60.1 VdB y: 55.7VdB z: 64.0VdB	13-14 August 2024

²⁰ "Technology and Laws Regulation for Pollution Control, 2000", Japan Environmental Management Association for Industry

²¹ "Technology and Laws Regulation for Pollution Control, 2000", Japan Environmental Management Association for Industry

No.	Potential Impact	Parameter	Method	Frequency	Location	Standard	Baseline		Latest Monitoring Result in 3 rd Quarter of 2024	
							Feasibility Study Phase ¹⁷	Pre-construction Phase (2019)	Result (Annex H)	Monitoring Date
									Nighttime (2200H- 0500H) - x: 57.6 VdB y: 58.0 VdB z: 63.5 VdB	
					Meycauayan College	²² 55dB or 0.0056 m/s ²	N.A.	Meycauayan College (Category 3): - Morning: 66 VdB - Daytime: 68 VdB - Evening: 70 VdB - Nighttime: 67 VdB	Morning (0500H-0900H) - x: 62.3 VdB y: 63.0 VdB z: 55.7 VdB Daytime (0900H-1800H) - x: 60.9 VdB y: 60.2 VdB z: 56.1 VdB Evening (1800H-2200H) - x: 60.3 VdB y: 59.9 VdB z: 55.9 VdB Nighttime (2200H- 0500H) - x: 60.1 VdB y: 61.5 VdB z: 59.3 VdB	12-13 August 2024
					Malinta Elementary School, Valenzuela City (Category 3)	²³ 55dB or 0.0056 m/s ²	Valenzuela: - ND	- Morning: 59 VdB - Daytime: 57 VdB - Evening: 58 VdB - Nighttime: 55 VdB	Morning (0500H-0900H) - x: 46.3 VdB y: 42.9 VdB z: 43.2 VdB Daytime (0900H-1800H)	12-13 August 2024

²² "Technology and Laws Regulation for Pollution Control, 2000", Japan Environmental Management Association for Industry

²³ "Technology and Laws Regulation for Pollution Control, 2000", Japan Environmental Management Association for Industry

No.	Potential Impact	Parameter	Method	Frequency	Location	Standard	Baseline		Latest Monitoring Result in 3 rd Quarter of 2024	
							Feasibility Study Phase ¹⁷	Pre-construction Phase (2019)	Result (Annex H)	Monitoring Date
									- x: 46.2 VdB y: 43.8 VdB z: 44.1 VdB Evening (1800H-2200H) - x: 44.1 VdB y: 42.3 VdB z: 42.7 VdB Nighttime (2200H- 0500H) - x: 46.3 VdB y: 44.4 VdB z: 44.3 VdB	

(4) Impact on People

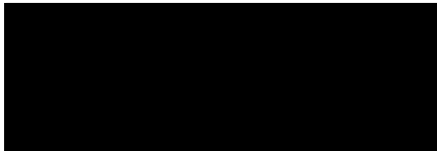
No.	Potential Impact	Parameter	Method	Frequency	Location	Standard	Latest Monitoring Result in 3 rd Quarter of 2024	
							Result	Monitoring Date
1	Traffic conditions	Traffic flow (congestion)	Ocular inspection	Weekly	A major intersection in the vicinity of constriction sites	N.A.	<p>To manage traffic flow, the contractors provided flagmen with proper traffic gears, and cautionary signages.</p> <p>Contract Package 01 Provision of flagmen with proper traffic gears:</p> <ol style="list-style-type: none"> 1. Mc Arthur Hi-way, Malinta, Valenzuela City – 2 (On an 8-hour shift with night duty flagman). 2. ACA Rd, Brgy Malanday, Valenzuela City – 4 (Flagman is on a 4-hour shift, two shifts per day). 3. Bancal, Meycauayan, Bulacan - 2 (Flagman is on a 4-hour shift, two shifts per day) 4. CW3 Entrance- 2 (On an 8-hour shift with night duty flagman) 5. Gov. Halili Ave., Biñang 2nd, Bocaue-4 flagmen (Deployment during the PC Segment Erection with day and night shifts) 6. Ciudad de Victoria (CDV) Bypass Road – 2 flagmen (Deployment during the PC Segment Erection with day and night shifts) 7. Meycauayan Traffic and Parking Bureau has 5 personnel deployed to assist 	N.A.

No.	Potential Impact	Parameter	Method	Frequency	Location	Standard	Latest Monitoring Result in 3 rd Quarter of 2024	
							Result	Monitoring Date
							<p>in the delivery of segments.</p> <p>8. Marilao Traffic Sector has 5 traffic enforcers- assisting the delivery of segments and are on an on-call status, when needed can be deployed to assist and manage traffic at their AOR.</p> <p>9. Bocaue Traffic Management Division has 5</p> <p>10. Traffic Enforcers - deployed to assist traffic management during the deliveries of segments.</p> <p>Contract Package 02 Provisions being implemented on site such as cautionary signages, re-routing schemes, banksmen, traffic assessment and traffic engineering works. Traffic Management Officer is full time designated on site. Conducted monthly traffic impact assessment at Malolos, Guiguinto, and Balagtas area along major routes of third-party vehicles as required by DOTr.</p> <p>Malolos, Guiguinto and Balagtas Project Site have pedestrian access routes. Each Site has 10, 15, and 8, respectively. TMP provisions the placement of traffic and safety signages and deployment of flagmen in all road intersections of the transportation</p>	

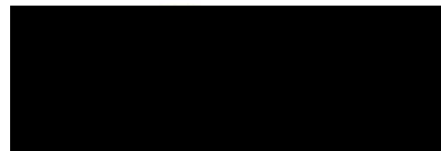
No.	Potential Impact	Parameter	Method	Frequency	Location	Standard	Latest Monitoring Result in 3 rd Quarter of 2024	
							Result	Monitoring Date
							route.	
							See Annex I	
2	Loss of old PNR stations	Status of old PNR stations	Ocular inspection and Monitoring	Monthly until preservation work of station is completed	Malolos Station, Guiguinto Station, Bigaa station., Meycauayan Station, Polo/Valenzuela Station, and Tutuban Station	Status of old PNR stations	See Annex J for the observations and findings during inspections.	Valenzuela Old PNR Station: 23 July 2024 27 August 2024 24 September 2024 Meycauayan Old PNR Station: 23 July 2024 27 August 2024 24 September 2024 Bigaa (Balagtas) Old PNR Station: 29 July 2024 29 August 2024 27 September 2024 Guiguinto Old PNR Station: 29 July 2024 29 August 2024 27 September 2024 Malolos Old PNR Station: 29 July 2024 29 August 2024 27 September 2024

For the Annexes, kindly follow the link: https://dotrailway-my.sharepoint.com/:b/g/personal/peresano_dotrailways_com/ERESSpqzXWpBkIA16RI59vkBA8nSKJVnQp1mEwFMv1kh8Q?e=CHuixA

Data Prepared by:



Noted by:



**Attachment 3:
RAP Implementation
Monitoring Form as of
September 2024**

RAP Implementation Monitoring Form
For North-South Commuter Railway (Malolos - Tutuban) Project

1. General Information

a. RAP Implementation Monitoring Results: 3rd Quarter of 2024

b. Date of Preparing this Form: 30 September 2024

c. Person Preparing this Form: Office of the Project Manager, Right of Way Acquisition, ISFR and Livelihood Units, Environmental Considerations
Department/Organizations: North-South Commuter Railway (Malolos - Tutuban) Project

2. Scale of Land Acquisition and Resettlement

- Update after finalization of RAP during DED stage

2.1. Project Affected Households (PAHs) and Project Affected Persons (PAPs)

Items	Unit	Per RAP	Actual Number	Remarks
Total Project Affected Households (PAHs)	household	Legal: 395 HH	Legal: 461 Property Owners under Negotiated Sale and Expropriation 104 Project-Affected Renters 83 Business Owners 34 Displaced Employees	The total number of property owners in CP01/CP02 decreased due to the exclusion of 9025/MC-41 because of the NR case.
		Informal: 438 (ISFs)	Informal: 1,263 ISFs	per NHA validation, including CP05
PAHs which need relocation (as resident)	household	Legal: 88 HH	Legal: 26 HH with affected structures 45 Project-Affected Renters	
		Informal: 416 (ISFs)	Informal: 1094 ISFs (337 relocated)	per DOTr validation
PAHs which do not need relocation (as resident)	household	Legal: 307 HH	461 Property Owners under Negotiated Sale and Expropriation	The total number of property owners in CP01/CP02 decreased due to the exclusion of 9025/MC-41 because of the NR case.
		Informal: 22 (ISFs)	Informal: 98 ISFs	Through series of validation, some ISFs were disqualified, self-dismantle, self-relocation. (For CP05, The 3 ISFs have been disqualified because they were previously awarded by the NHA and 9 other have been disqualified because they were
Business owners who need relocation	persons	14 persons	18 persons	
Business owners who do not need relocation	persons	24 persons	8 persons	

Total PAPs	persons	Legal: 575 persons	Legal: 213 persons to be displaced 461 Property owners under Negotiated Sale and Expropriation (361 Negotiated Sale; 101 Expro) 2 persons to donate property 3 persons to execute quitclaim 83 persons with excluded properties 7 unidentified persons (TOTAL: 769 persons)	The total number of property owners in CP01/CP02 decreased due to the exclusion of 9025/MC-41 because of the NR case.
		Informal: 1752 persons	Informal: 5052 persons	x4 per ISF(approximate), including CP05
PAPs who need relocation (as resident)	persons	Legal: 268 persons	Legal: 213 persons	
		Informal: 1448 persons	Informal: 1436 persons	x4 per ISF(approximate) * additional 90 ISF's for the 3Q of 2024 * data is updated based on the actual relocated ISFs as of this reporting quarter.
PAPs who do not need relocation (as resident)	persons	Legal: 88 persons	Legal: 461 persons	The total number of property owners in CP01/CP02 decreased due to the exclusion of 9025/MC-41 because of the NR case.
		Informal: 304 persons	Informal: 428 persons	x4 per ISF(approximate) *additional 9 ISF's for the 3Q of 2024 * data is updated based on the actual number of ISFs disqualified for relocation as of this reporting quarter.

2.2. Total Areas to be Acquired

Total	Details
Total areas: 185,968.94 m2 including CP05	Residential: 17,140.94 m2 Commercial: 11,367.0 m2 Industrial: 140,035.0 m2 Agricultural: 10,881.0 m2 Mixed Use: 1,079.0 m2 Road Lot: 67.0 m2 No Data: 481.0 m2 Government: 4918.0 m2

2.3. Structures and Improvements

Legal Structures	CP01 & CP02 - 180 (under Negotiated Sale and Expropriation Only) [146 Structures and 34 Improvements] CP05 - 229 (under Negotiated Sale and Expropriation Only) [206 Structures / 23 - Improvements]
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Illegal Structures	CP01 - 299 (202 Demolished and Cleared) CP02 - 12 (12 Demolished and Cleared) CP05 - 458 (10 Demolished and Cleared)
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2.4. Crops and Trees

Trees	Fruit trees: 409 Forest Trees and Cash Crops: 135 Ornamental Plants and Palms: 2,633 Other Plants and Trees: 19
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3. Monitoring Results

3.1. Progress of Land Acquisition and Resettlement

(1) Summary of Progress: Number

As of (d/m/y)	Number of PAHs Receiving All Compensation / Subsidy for Loss of Land (HH)	Number of PAHs Receiving All Compensation / Subsidy for Loss of Structure (HH)	Number of PAHs Receiving All Compensation / Subsidy for Loss of Improvement (HH)	Number of PAHs Receiving All Compensation / Subsidy for Loss of Crop/Tree/Perennial (HH)	Number of PAHs Receiving All Compensation / Subsidy for Loss of Income (HH)	Number of PAHs Receiving All Full Entitlement (HH)	Number of PAHs Move Out Current Place (HH)	Number of ISFs Moving into Resettlement Site (HH)	Land Area Already Acquired (m2)
30/09/2024	100 out of 321 Lots	76 out of 352 Structures	14 out of 57 Improvements	20 out of 30 crops and trees owners [Php 148,825.90 of Php 278,643.42]	58 out of 117 business owners and displaced employees	244 out of 1094 ISFs	337 out of 1094 ISFs	337 out of 1094	168,679.60 sqm out of 185,968.94 sqm

(2) Summary of Progress: Percentage

As of (d/m/y)	Percentage of PAHs Receiving All Compensation / Subsidy for Loss of Land (%)	Percentage of PAHs Receiving All Compensation / Subsidy for Loss of Structure (%)	Percentage of PAHs Receiving All Compensation / Subsidy for Loss of Improvement (%)	Percentage of PAHs Receiving All Compensation / Subsidy for Loss of Crop/Tree/Perennial (%)	Percentage of PAHs Receiving All Compensation / Subsidy for Loss of Income (%)	Percentage of PAHs Receiving All Full Entitlement (%)	Percentage of PAHs Move Out Current Place (%)	Percentage of ISFs Moving into Resettlement Site (%)	Percentage of Land Area Already Acquired (%)
30/09/2024	31.15%	21.59%	24.56%	66.67%	49.57%	22.30%	30.80%	30.80%	90.70%

(3) Detailed List of Compensation and Assistance

- Legal Owners in a separate document (Annex A)
- ISFs in a separate document (Annex B)

3.2. Livelihood Restoration Programs

- In a separate document (Annex C)

3.3. Grievance Redress Mechanism

- In a separate document (Annex D)