



REPUBLIC OF THE PHILIPPINES  
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS  
MANILA, PHILIPPINES

# DAVAO CITY BYPASS CONSTRUCTION PROJECT (DCBCP)

Package I-1

JICA L/A No. PH-P261 & JICA L/A No. PH-P273

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## ENVIRONMENTAL AND RESETTLEMENT MONITORING REPORT No. 14 (01 APRIL 2024 - 30 JUNE 2024)

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**Joint Venture of:**

 **NIPPON KOEI CO.,LTD.**



**Katahira &  
Engineers  
International**



**Nippon Engineering  
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# Environmental and Resettlement Monitoring Report (01 April 2024 – 30 June 2024)

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### Abbreviations

BOD	biological oxygen demand
CMR	Compliance Monitoring Report
DCBCP	Davao City Bypass Construction Project
DENR	Department of Environment and Natural Resources
DOLE	Department of Labor and Employment
DO	dissolved oxygen
DPWH	Department of Public Works and Highways
ECC	Environmental Compliance Certificate
EIA	Environmental Impact Assessment
EMB	Environmental Management Bureau
EMP	Environmental Management Plan
EMoP	Environmental Monitoring Plan
GRM	Grievance Redress Mechanism
IEC	Information, Education, and Communication
LGU	Local Government Unit
NK	Nippon Koei
PAP	Project Affected Person
RAP	Right of Way Action Plan
RROW	Road Right of Way
SDP	Social Development Plan
SMR	Self-Monitoring Report
SUTJV	Shimizu-Ulticon-Takenaka JV
TSS	total suspended solids
TSP	total suspended particulates

## Executive Summary

This is the fourteenth quarterly Environmental and Resettlement Monitoring Report (ERMR) for the Davao City Bypass Construction Project (DCBCP) Package I-1, covering the monitoring period 01 April 2024 to 30 June 2024. DPWH shall submit this quarterly monitoring report to JICA for concurrence, and subsequent disclosure on JICA's website.

During this monitoring period, construction activities include construction of roads and drainage structures, bridge, tunnel, tunnel facilities and buildings, and the combined field office and laboratory for the Engineer. **The Contractor's Environmental Section for DCBCP Package I-1 are complying to the conditions stipulated in the project's Environmental Compliance Certificate (ECC), and implementing the project's Environmental Management Plan (EMP) and Environmental Monitoring Plan (EMoP).** Regular environmental monitoring activities were conducted for ambient air quality, water quality, and noise levels.

For this monitoring period, TSP exceeded at Waan National High School for 24-hour testing, which is consistent with results during baseline monitoring before the project started. Ambient noise levels during daytime were also exceeded at Waan National High School. For surface water quality, TSS were within limit for all monitoring stations except for Davao River Upstream and Davao River Downstream 2. Slight increase in pH was also recorded for Davao River (Upstream), Davao River Downstream 1 and Davao River Downstream 2. Exceedances were also recorded for DO both at Matina River 2 upstream and downstream. Measured at 2.6 and 4.2 mg/L respectively, the DO level indicates the water at both locations can be considered hypoxic. This is consistent with DENR-EMB findings of pollution Matina River, as evidenced by exceedances for BOD at Davao Matina River 2 upstream and downstream, and at Sta. 18+900.

Regular environmental site inspection and audit were conducted by the implementing office facilitated by the Engineer, Nippon Koei Joint Venture (NK-JV) during this monitoring period to ensure the environmental compliance of the DCBCP Package I-1. **The site inspections and audit include monitoring implementation of the Contractor's activities for the project's social development program (SDP), information, education, and communication (IEC) campaigns, and tree-cutting related requirements.** Non-compliances are monitored and corrective actions identified, as applicable, including implementation of mitigation measures.

Key project compliances for environmental and social safeguards for this quarter include the following:

- Submission of Self-Monitoring Report (SMR) covering 1<sup>st</sup> quarter 2024
- Drafting of SMR for 2<sup>nd</sup> Quarter 2024
- Monitoring implementation of IEC program and Social Development Program (SDP)
- Implementation of mitigation measures in compliance with environmental laws relevant to the project, including Republic Act (RA) 9003 (Solid Waste Management System), RA 6969 (Toxic Substances and Hazardous and Nuclear Wastes Control Act), RA 8749 (Philippine Clean Air Act of 1999), RA 9275 (Philippine Clean Water Act of 2004)
- Coordination with Department of Environment and Natural Resources - Environmental Management Bureau (DENR-EMB) for revision of memorandum of agreement (MOA) for the Creation of Multipartite Monitoring Team (MMT)
- Facilitating acquisition of road right-of-way (RROW)

This report provides the status of each monitoring item in the project's Environmental Monitoring Plan (EMoP) and serves as the quarterly internal monitoring report for Resettlement Action Plan (RAP) implementation. Environmental and social safeguards monitoring activities conducted for this period are summarized in the table below.

No.	Monitoring Item	Monitoring Activity
1	Air quality	Quarterly air quality tests for TSP, NO <sub>2</sub> , SO <sub>2</sub> , CO at 2 locations
2	Water quality (Surface water)	Quarterly surface water quality tests for pH, DO, Oil & Grease, BOD, TSS at 9 locations
3	Water quality (Groundwater)	Measurement of groundwater volume at existing water tank, and water level at tunnel top observation well
4	Waste	Check records of amount and type of waste, and disposal method
5	Noise	Quarterly noise quality test for ambient and road side noise at 2 locations during morning, daytime, evening, and night time
6	Ground subsidence	Daily measurement of volume of groundwater seepage at tunnel section
7	Natural environment - Terrestrial flora and fauna	Daily visual check of condition of vegetation
8	Natural environment - Aquatic flora and fauna	Quarterly surface water quality tests for pH, DO, Oil & Grease, BOD, TSS at 9 locations
9	Social environment - Land use	Check site condition for trees cut
10	Social environment - Water use	Monitoring of complaints from downstream area and groundwater users
11	Social environment - Existing social infrastructure and service	Monitoring of complaints from surrounding communities
12	Health and safety - Infectious disease	Check records of awareness activities on infectious disease
13	Health and safety - Occupational health	Check record of accidents in the construction site
14	Health and safety - Community health and safety	Record of traffic accidents in the surrounding communities
15	Emergency risk - Flood	Condition of flood
16	Emergency risk - Fire	Condition of fire
17	Involuntary Resettlement*	Check relocation and payment records
18	Vulnerable Groups*	
19	Livelihood and Local Economy*	
20	Misdistribution of Benefit and Damage	Monitoring of complaints
21	Local Conflict of Interest	

# 1 General Background

## 1.1 Project Background and Objectives

The Davao City Bypass Construction Project (DCBCP) involves the construction of a 4-lane, 45.5 km highway in the City of Davao, province of Davao del Sur. The DCBCP is composed of the following components:

Unit: km.

Component	Package I -2	Package I -1	Package I -3	Package II	Total
Road Section	11.9	7.9	5.5	13.2	38.5
Bridge Section	0.9	0.5	0.1	2.7	4.2
Tunnel Section	-	2.3	0.5	-	2.8
Total	12.8	10.7	6.1	15.9	45.5

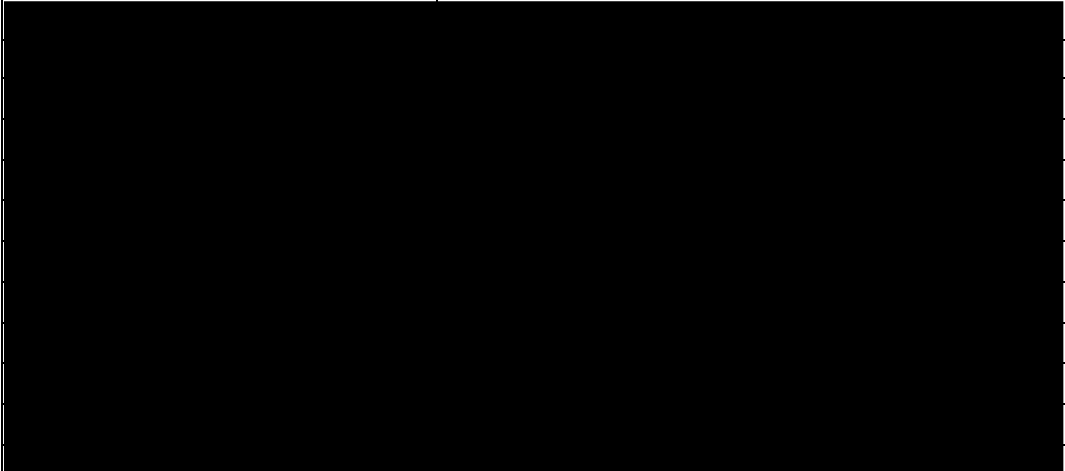
The objectives of the project are:

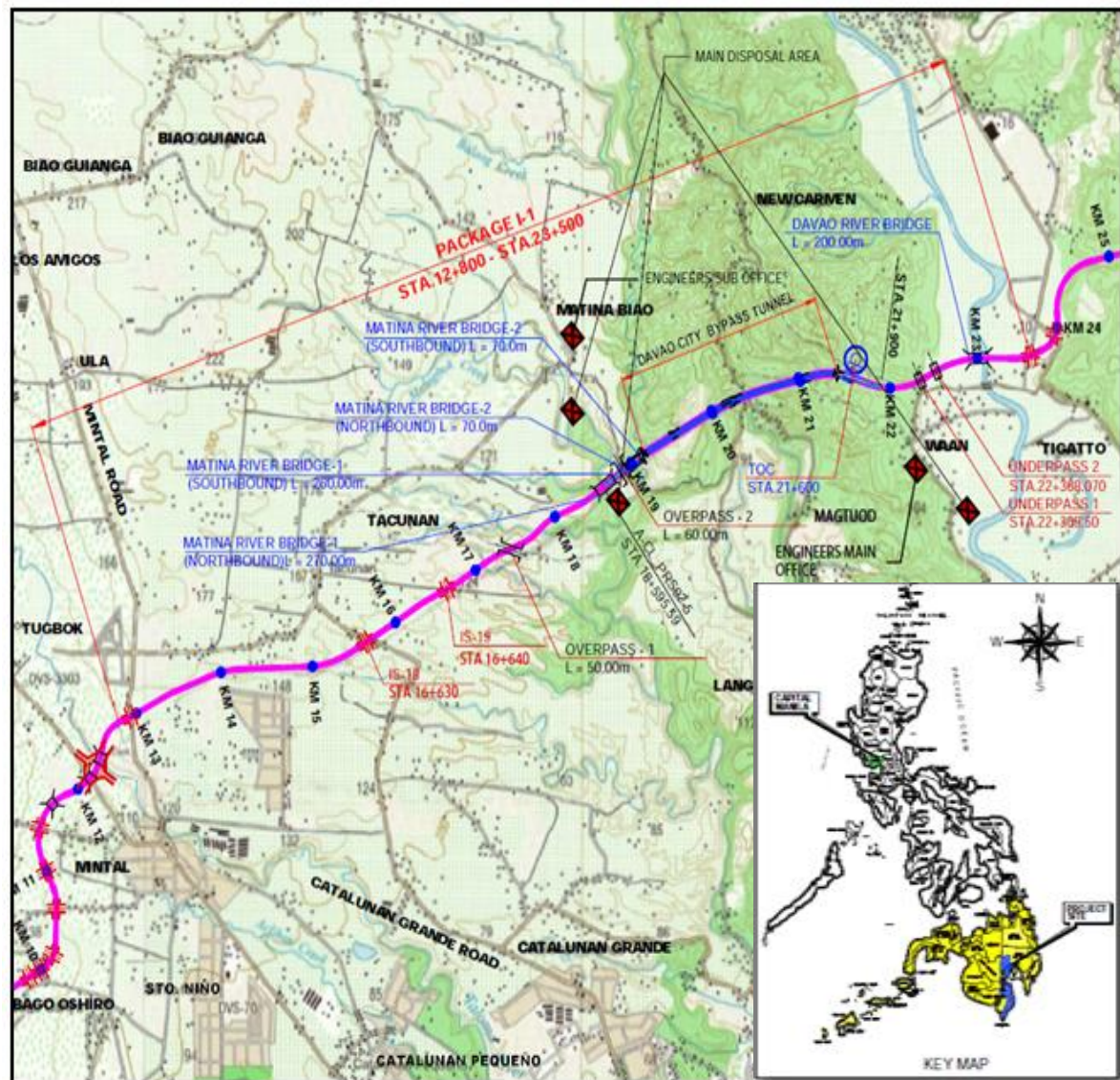
- To divert the traffic to the Bypass, instead of passing through the Urban Center, relieving chronic traffic congestion;
- To expand urban areas towards the inland areas guided by the new road network of the Bypass;
- To support economic activities, particularly for manufacturing and agri-business industries, by providing easier transport access to seaports and airports

## 1.2 Project Profile

DCBCP Package I-1 is a 10.7 km dual carriageway road which begins at Mintal Road Intersection at Sta. 12+800 and ends at Mandug Road Intersection at Sta. 23+500 (See Figure 1 below).

Package I-1 is composed of roads, bridges and tunnel sub-sections. There are three (3) river bridges for a total 0.5 km length, two (2) overpasses, two (2) underpasses and two tunnels (2 lanes x 2) of 2.3 km long. (See summary of project general information/contract data below)

Contract Data	
Project Component	Tunnel, Road, Bridges, Underpasses, Overpasses, Waterways and Road Crossings
Province / Region	Davao Del Sur / Region XI
Funding Source	GOP, JICA Loan No. PH-P261 & PH-P273
	
Revised Expiry Date	20 March 2025



**Figure 1 Project Location Map**

### 1.3 Activities Undertaken for the Monitoring Period

No.	Activity
1	Construction of combined field office and laboratory for the Engineer
2	Acquisition of Road Right-of-Way (RROW)
3	Construction of roads and drainage structures
4	Bridge construction
5	Tunnel civil works
6	Construction of buildings and tunnel facilities
7	Preparation of As-Staked Plans

## 2 Environmental Monitoring

Monitoring for environmental and social considerations is conducted in accordance with the project's **Environmental Management Plan (EMP)** and Environmental Monitoring Plan (EMoP). The primary purpose of this monitoring is to ensure the judicious implementation of sound environmental management within the project and its areas of operation.

Implementation of the EMP and EMoP started during the pre-construction phase and is continued during the construction period and operation phase. For 2nd quarter 2024, the following monitoring items indicated in the prescribed monitoring forms<sup>1</sup> (See Annex 1) were covered for DCBCP Package I-1.

No.	Monitoring Item	Activity
1	Air Quality	Quarterly monitoring of TSP, SO <sub>2</sub> , NO <sub>2</sub> , CO <sub>2</sub> at beginning and end of Package I-1
2	Surface Water Quality	Quarterly monitoring of pH, DO, Oil and Grease, BOD, TSS at Davao River (3 stations), Matina River (4 stations), and Tunnel Section (2 stations)
3	Surface Water Quality	Quarterly monitoring of pH, DO, Oil and Grease, BOD, TSS at downstream areas of construction yards and workers camps (North and South Yard)
4	Groundwater Quality	Monitor groundwater level at existing well (OTBH-4)
5	Groundwater Quality	Monitor groundwater volume discharged at the existing water tank at Sta. 20+350
6	Waste	Monitor records of amount and type of waste and disposal method at cut sections of the alignment, tunnel section, tree cutting areas, and workers camps
7	Ambient and roadside noise	Quarterly monitoring of ambient and roadside noise during morning, daytime, evening and night time at beginning and end of Package I-1
8	Terrestrial flora and fauna	Daily visual check of vegetation condition
9	Aquatic flora and fauna	Quarterly monitoring of pH, DO, Oil and Grease, BOD, TSS at Davao River (3 stations), Matina River (4 stations), and Tunnel Section (2 stations)
10	Land Use	Check site conditions of areas with tree cutting activities
11	Water Use	Check records of complaints from downstream area or from groundwater users
12	Social Infrastructure and Service	Check records of complaints from surrounding communities
13	Infectious Disease	Check records of project activities for raising awareness of infectious diseases
14	Occupational Health	Check records of accidents in the construction site
15	Community Health and Safety	Check records of traffic accidents in the surrounding communities
16	Flood	Check site conditions at left and right bank of Davao River for flood condition
17	Fire	Check site conditions at camps and construction sites

Tables 1 to 10 summarize the results of environmental monitoring activities for this period using prescribed monitoring forms.

<sup>1</sup> Attachment I-20 and I-21 of Loan Agreement No. PH-P273



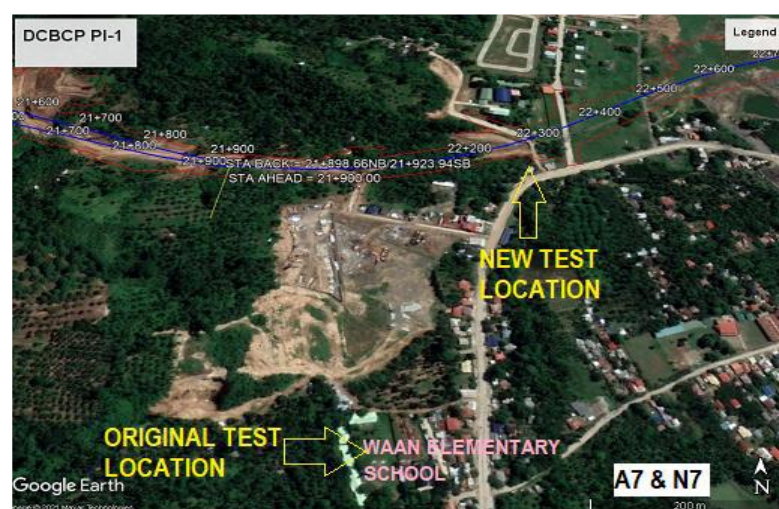
## 2.1 Air Quality

Sampling for 2<sup>nd</sup> quarter 2024 ambient air quality monitoring was conducted on 20-25 May 2024. For this monitoring period, TSP was exceeded at Brgy. Waan monitoring station for 24-hour testing, which is consistent with results during baseline monitoring before the project started. Table 1 below shows the results of the quarterly ambient air quality sampling, with the test results enclosed as Annex 3 of the report.

Since the 3<sup>rd</sup> quarter 2021, sampling locations at the beginning and end of the project were moved closer to the final project alignment. The original test locations are shown in the figure below, together with the locations of the current sampling locations. The new sampling locations are closer to the final road alignment and can thus better monitor the effects of the project on air quality. The table below shows the plotted location of the 2014 sampling stations compared to the adjusted locations.



**Figure 2 Location of sampling station at beginning point of Package I-1 (Elenita Heights)**



**Figure 3 Location of sampling station at ending point of Package I-1 (Brgy. Waan)**






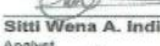


**Table 1. Results of Air Quality Monitoring during Construction Stage, 2<sup>nd</sup> Quarter 2024**

Monitoring Item	Unit	Measured Value (Mean) Along road/ residential area	Baseline Value (Mean) Along road/ residential area	Country's Standard/	Referred International Standards (Japanese Standard)	Remarks (Measurement Point, Frequency, Method, etc.)
TSP	µg/Ncm	S1: 70 / 98 S2: 459 / 146	216.4 / 69.9 S1: 3.2 / 8.18 S2: 349.1 / 78.62	300 (1hr) / 230 (24hr)	SPM (0.1mg/m <sup>3</sup> )	Measurement Point <Package I-1> <ul style="list-style-type: none"> <li>Beginning point of Package I-1 (S1, Elenita Heights)</li> <li>Ending point of Package I-1 (S2, Waan NHS)</li> </ul> Frequency <ul style="list-style-type: none"> <li>Quarterly</li> </ul> Method <ul style="list-style-type: none"> <li>TSP: Gravimetric Method</li> <li>SO2: Pararosaniline Method</li> <li>NO2: Griess-Saltzman Reaction</li> <li>CO: Direct Reading (Gas Analyzer)</li> </ul>
SO2	µg/Ncm	S1: 9 / 1.71 S2: 8 / 0.67	4.0 / 1.3 S1: 19.4 / 4.85 S2: 22.2 / 5.75	340 (1hr) / 180 (24hr)	0.04ppm	
NO2	µg/Ncm	S1: 29 / 5.2 S2: 20 / 1.35	6.6 / 1.0 S1: 11 / 0.85 S2: 9 / 1.03	260 (1hr) / 150 (24hr)	0.04-0.06ppm	
CO	ppm	S1: <1 / <1 S2: <1 / <1	<1.0/1.0 S1: 1 / 1 S2: 2 / 1	30 (Every 8 hours) 9 (24hr)	10ppm	

## 2.2 Water Quality (Surface Water)

The DCBCP Package I-1 monitors surface water quality at 3 stations located at Davao River, at a creek draining unto the same river, and at 5 stations along Matina River. This is apart from other surface water tests conducted for permits issued to the Contractor. Second quarter 2024 ambient surface water quality sampling was conducted on 14 May 2024 and 21 May 2024. The results are presented in Table 2 below, with test reports enclosed as Annex 2 of the report.

In 2014, the project Environmental Impact Statement (EIS) identified increase in total suspended solids (TSS) as the one major project impact on water quality. It was also stated in the EIS that Davao River is actively quarried, with TSS exceedance of 82 mg/L recorded during sampling. (See figure below)

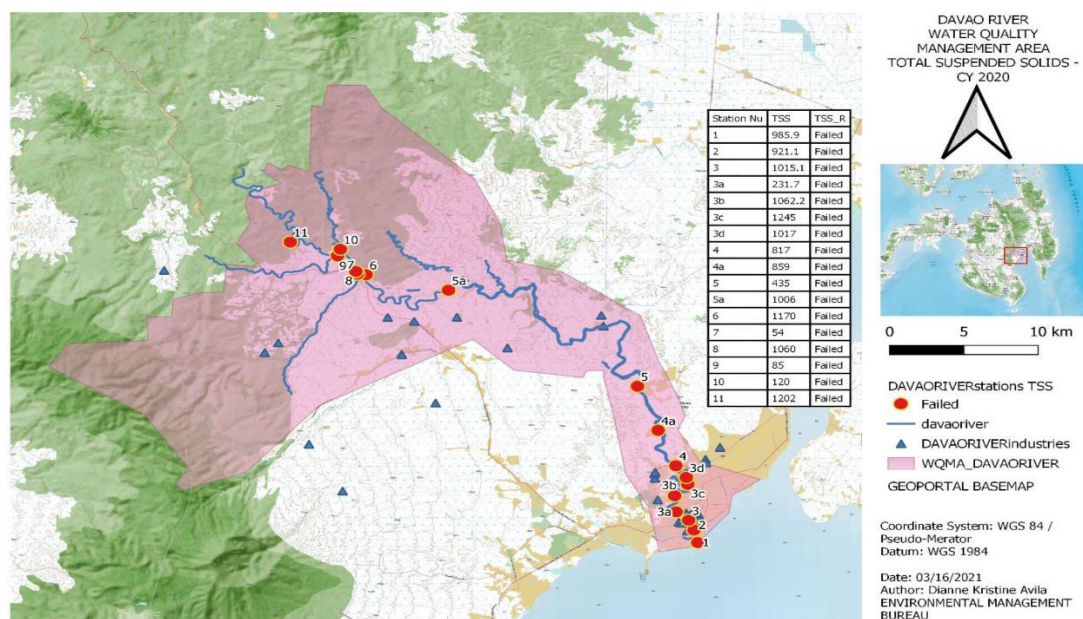
 <b>DAVAO ANALYTICAL LABORATORIES, INC.</b> Mc Arthur Hi-way, Corner Union Avenue, Matina, Davao City Telefax No. (082) 297-3278 E-mail: dalinc_03@yahoo.com							
<b>TEST REPORT</b>							
CLIENT NAME: <b>Eco-system Corporation</b>				CONTROL NO.: 14-7797 DATE RECEIVED: 03 April -14 DATE ANALYZED: 03-15 April -14 DATE REPORTED: 15 April -14			
<b>SAMPLE INFORMATION</b>							
Sample Name: Water (05)				Packaging: contained in 4-L plastic/glass container.			
Description: Riverwater							
Sample Condition: At room temperature							
Lab. Reference No.	Sample ID	DO mg/L	pH @ 26.2 °C	TSS mg/L	BOD mg/L	COD mgO <sub>2</sub> /L	Oil and Grease mg/L
W <sub>3</sub> -14-334	W3 Matina River	7.3	7.73	2.0	2.0	8.7	ND
W <sub>3</sub> -14-335	W4 Talomo River	7.5	7.71	4.0	3.9	14.5	ND
W <sub>3</sub> -14-336	W2 Davao River	7.6	7.75	82.0	0.5	6.7	0.67
W <sub>3</sub> -14-337	W6 Lipadas River	7.1	7.97	1.0	2.7	9.7	ND
W <sub>3</sub> -14-338	W1 Lasang River	7.3	7.87	ND	1.1	9.7	ND
Methods:		Winkler	Electrometric	Gravimetric	Azide Modification	Closed Reflux-Titrimetric	Partition-Gravimetric
***Nothing Follows***							
<b>Remarks:</b> 1. Result(s) is/are based on sample(s) submitted to DALINC unless otherwise indicated. The Laboratory does not guarantee that the sample(s) is/are representative of the whole bulk from where it was/were drawn. 2. Method(s) used is/are in accordance with the Standard Methods for the Examination of Water & Wastewater, 22nd ed. 3. ND = Not Detected. 4. This test report may not be reproduced unless in full.							
Analyzed by:  <b>Angie Rose A. Villafranca</b> Analyst PRC No.: 0011043				 <b>Emie Rose C. Sumambot</b> Analyst			
 <b>Sitti Wena A. Indin</b> Analyst				Certified by:  <b>June Ann Adrienne Teh-Bonilla</b> Laboratory Supervisor PRC No.: 0010782			
 <b>Kesha Jean B. Cao</b> Analyst							
C:\DALINC\DOC\Test Report\2014\Water\rs-#14-7797							
Page 1 of 1							

**Figure 4 2014 Laboratory Results of Water Quality Sampling, EIS**

In 2016, the DENR issued Department Administrative Order No. 2016-08 (Water Quality Guidelines and General Effluent Standards of 2016), which revised the limit for total suspended solids (TSS) at a maximum of 65 mg/L for Class B water bodies.<sup>2</sup>

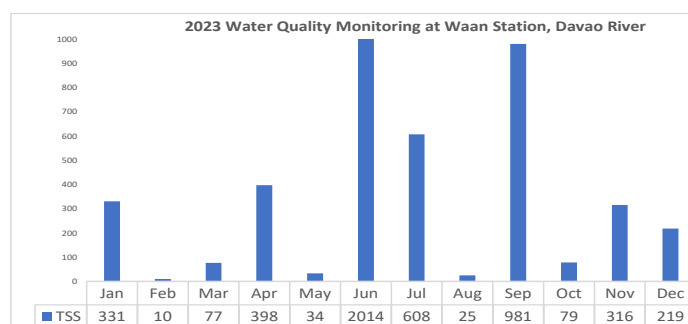
<sup>2</sup> DENR Memorandum Circular No. 97-08 classified the upper reach of Davao River (from Brgy. Malamba, Marilog District to Brgy. Mandug at Buhangin District) as Class A, and lower reach as Class B (from mouth of the river to bridge at Purok 5, Brgy. Waan). Meanwhile, DENR Memorandum Circular No. 2015-01 classified Matina River as Class B from Stn. 3 (Pangi Bridge at Diversion Road) to upstream, and Class C from Stn. 1 at mouth of the river to Stn. 2 at Relief Bridge.

The Environmental Management Bureau – Region XI also reported TSS exceedance for all Davao River stations in their CY 2020 Davao River Water Quality Management Area report.<sup>3</sup>



**Figure 5 CY 2020 TSS Monitoring Results by DENR- EMB at Davao River**

Consistent with this trend, the same agency also reported continued TSS exceedance at the Waan monitoring station of the Davao River in their 2023 Annual Water Quality Assessment Report<sup>4</sup> – further stating that sand and gravel extraction activities are present in the Davao River, which contribute to the turbidity and high TSS. (See figure below)



**Figure 6 2023 TSS Monitoring Results by DENR-EMB at Waan Station, Davao River**

For this monitoring period, TSS were within limit for all monitoring stations. As a mitigation measure, sheet piles were installed at the Davao River Bridge construction area to reduce siltation resulting from construction activities.

<sup>3</sup> Department of Environment and Natural Resources - Environmental Management Bureau. CY 2020 Davao River Water Quality Management Area. Retrieved from <https://emb.gov.ph/wp-content/uploads/2021/03/DAVAO-RIVER.pdf>.

<sup>4</sup> Department of Environment and Natural Resources - Environmental Management Bureau, Region XI. 2023 Ambient Water Quality Assessment Report. Retrieved from <https://r11.emb.gov.ph/wp-content/uploads/2024/02/2023-Ambient-Water-Quality-Assessment-Report.pdf>

**Table 2. Results of Surface Water Quality Monitoring during Construction Stage, 2<sup>nd</sup> Quarter 2024**

Monitoring Item	Unit	Measured Value (Mean)	Baseline Value (Mean)	Country's Standard	Referred International Standards (Japanese Standard, B category river)	Remarks (Measurement Point, Frequency, Method, etc.)
pH	-		7.8	6.5-8.5	6.5-8.5	Measurement Point <Package I-1> [Davao River] <ul style="list-style-type: none"> <li>1 location at 100 m upstream from the proposed bridge location (S1)</li> <li>2 locations at 100 m downstream from the proposed bridge location (S2, S3)</li> </ul> [Matina River-1] <ul style="list-style-type: none"> <li>1 location at 100 m upstream from the proposed bridge location (S4)</li> <li>1 location at 100 m downstream from the proposed bridge location (S5)</li> </ul>
		S1: 8.70	S1: 8.27			
		S2: 8.72	S2: 8.29			
		S3: 8.71	S3: 8.37			
		S4: 8.53	S4: 8.28			
		S5: 8.45	S5: 8.09			
		S6: 8.10	S6: 8.01			
		S7: 8.23	S7: 7.97			
		S8: 8.23	S8: 8.20			
DO	mg/l	S9: 8.54	S9: 8.42	5.0	5	[Matina River-2] <ul style="list-style-type: none"> <li>1 location at 100 m upstream from the proposed bridge location (S6)</li> <li>1 location at 100 m downstream from the proposed bridge location (S7)</li> </ul> [Tunnel Construction Stage] <ul style="list-style-type: none"> <li>1 point at upstream of tunnel section, Sta. 18+900 (S8)</li> <li>1 point at Station 22+200 (S9)</li> </ul> <u>Frequency</u> <ul style="list-style-type: none"> <li>Quarterly</li> </ul> <u>Method</u> <ul style="list-style-type: none"> <li>Site measurement in accordance with the methodologies described in DAO 34-1990 and EMB-DENR, Manual for Ambient Water Quality Monitoring Volume 1</li> </ul>
		S1: 7.4	S1: 7.3			
		S2: 7.5	S2: 7.4			
		S3: 7.0	S3: 7.3			
		S4: 8.1	S4: 7.2			
		S5: 8.8	S5: 6.9			
		S6: 2.6	S6: 5.7			
		S7: 4.2	S7: 6.0			
		S8: 5.9	S8: 5.7			
		S9: 7.9	S9: 7.4			

(cont.) Table 2

Monitoring Item	Unit	Measured Value (Mean)	Baseline Value (Mean)	Country's Standard	Referred International Standards (Japanese Standard, B category river)	Remarks (Measurement Point, Frequency, Method, etc.)
Oil and Grease	mg/l		-	2.0	-	Measurement Point <Package I-1> [Davao River] <ul style="list-style-type: none"> <li>1 location at 100 m upstream from the proposed bridge location (S1)</li> <li>2 locations at 100 m downstream from the proposed bridge location (S2, S3)</li> </ul> [Matina River-1] <ul style="list-style-type: none"> <li>1 location at 100 m upstream from the proposed bridge location (S4)</li> <li>1 location at 100 m downstream from the proposed bridge location (S5)</li> </ul>
		S1: 4.6	S1: <0.5			
		S2: 3.8	S2: 2.6			
		S3: 4.0	S3: 7.2			
		S4: 1.8	S4: 0.86			
		S5: 4.1	S5: 1.1			
		S6: 1.8	S6: 2.5			
		S7: 2.6	S7: 3.4			
		S8: <0.5	S8: <0.5			
BOD	mg/l	S9: 1.0	S9: 0.5	7.0	3	[Matina River-2] <ul style="list-style-type: none"> <li>1 location at 100 m upstream from the proposed bridge location (S6)</li> <li>1 location at 100 m downstream from the proposed bridge location (S7)</li> </ul> [Tunnel Construction Stage] <ul style="list-style-type: none"> <li>1 point at upstream of tunnel section, Sta. 18+900 (S8)</li> <li>1 point at Station 22+200 (S9)</li> </ul> Frequency <ul style="list-style-type: none"> <li>Quarterly</li> </ul> Method <ul style="list-style-type: none"> <li>Site measurement in accordance with the methodologies described in DAO 34-1990 and EMB-DENR, Manual for Ambient Water Quality Monitoring Volume 1</li> </ul>
			2.0			
		S1: <1.0	S1: 5.5			
		S2: <1.0	S2: 2.8			
		S3: 2.2	S3: 5.9			
		S4: 1.3	S4: 1.8			
		S5: 1.9	S5: 2.0			
		S6: 18.5	S6: 12.3			
		S7: 39.9	S7: 7.7			
		S8: 9.4	S8: 10.6			
		S9: <1.0	S9: 3.2			

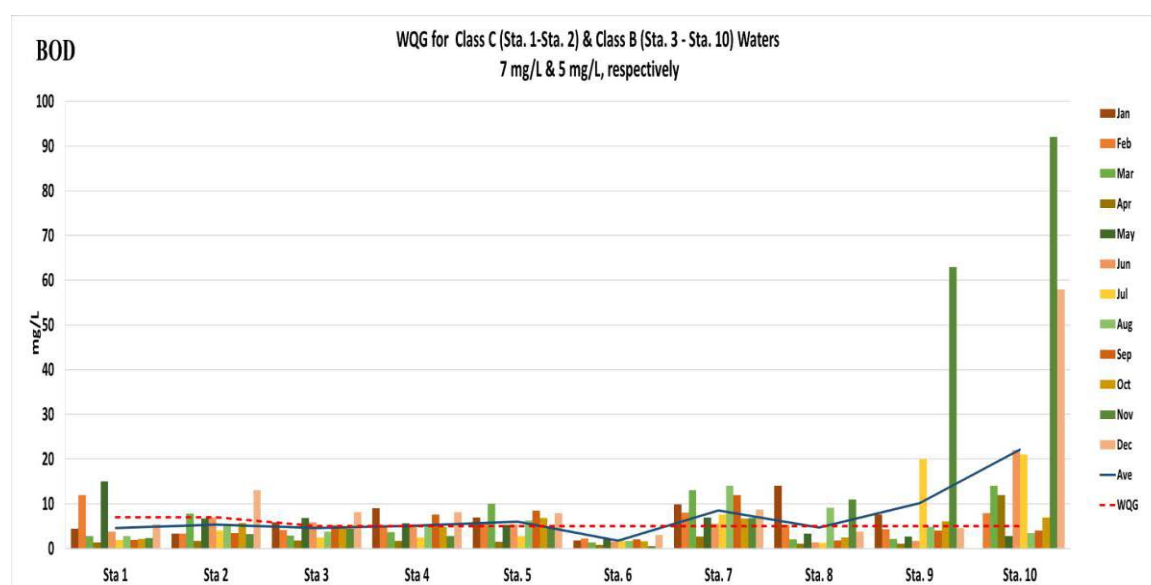
(cont.) Table 2

Monitoring Item	Unit	Measured Value (Mean)	Baseline Value (Mean)	Country's Standard	Referred International Standards (Japanese Standard, B category river)	Remarks (Measurement Point, Frequency, Method, etc.)
TSS	mg/l		22.5	Not more than 30g/l increase	SS 25	Measurement Point <Package I-1> [Davao River] <ul style="list-style-type: none"> <li>1 location at 100 m upstream from the proposed bridge location (S1)</li> <li>2 locations at 100 m downstream from the proposed bridge location (S2, S3)</li> </ul> [Matina River-1] <ul style="list-style-type: none"> <li>1 location at 100 m upstream from the proposed bridge location (S4)</li> <li>1 location at 100 m downstream from the proposed bridge location (S5)</li> </ul> [Matina River-2] <ul style="list-style-type: none"> <li>1 location at 100 m upstream from the proposed bridge location (S6)</li> <li>1 location at 100 m downstream from the proposed bridge location (S7)</li> </ul> [Tunnel Construction Stage] <ul style="list-style-type: none"> <li>1 point at upstream of tunnel section, Sta. 18+900 (S8)</li> <li>1 point at Station 22+200 (S9)</li> </ul> <u>Frequency</u> <ul style="list-style-type: none"> <li>Quarterly</li> </ul> <u>Method</u> <ul style="list-style-type: none"> <li>Site measurement in accordance with the methodologies described in DAO 34-1990 and EMB-DENR, Manual for Ambient Water Quality Monitoring Volume 1</li> </ul>
		S1: 40.4	S1: 61.0			
		S2: 19.2	S2: 168			
		S3: 38.0	S3: 6.0			
		S4: <3.0	S4: 3.0			
		S5: 3.6	S5: <3.0			
		S6: 3.6	S6: <3.0			
		S7: <3.0	S7: <3.0			
		S8: 5.3	S8: 21.0			
		S9: <3.0	S9: 9.0			

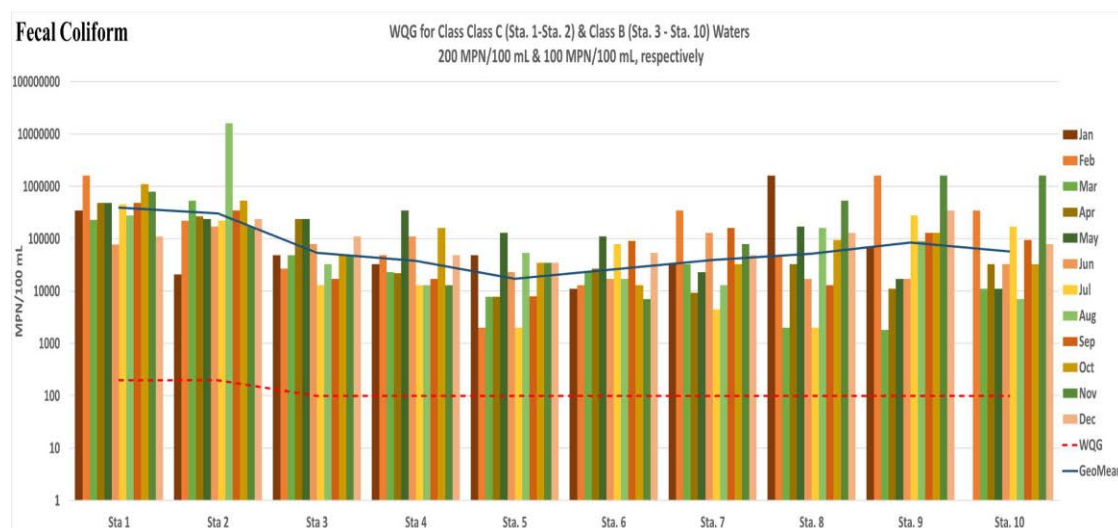


For this monitoring period, exceedances were recorded for DO both at Matina River 2 upstream and downstream – dropping below the minimum national standard of 5 mg/L. Measured at 2.6 and 4.2 mg/L respectively, the DO level indicates the water at both locations can be considered hypoxic and thus detrimental to aquatic flora and fauna. Exceedances were also recorded for BOD at Matina River 2 upstream and downstream, and at Sta. 18+900.

The DO and BOD exceedances points to the polluted condition of Matina River. The DENR-EMB Region XI, in its 2023 Annual Water Quality Assessment Report, reported BOD exceedances in the Matina River monitoring stations. The polluted condition of Matina River is also demonstrated by the consistent fecal coliform exceedance throughout Matina River, from its upper reaches to the mouth of the river. (See figures below)



**Figure 7 2023 BOD Monitoring Results by DENR-EMB for Matina River**



**Figure 8 2023 Fecal Coliform Monitoring Results by DENR-EMB for Matina River**

The DENR-EMB cited in the same report the heavy leachate discharge from the sanitary landfill at New Carmen, Brgy. Magtuod, and stated that high BOD levels in the Matina River may be caused by wastewater discharges from households, agro-industrial enterprises and said sanitary landfill.

Since 1<sup>st</sup> quarter 2021, sampling locations at Davao River and Matina River were moved closer to the final project alignment, while baseline data was taken in April 2021 for the creek at Sta. 22+200. The original test locations are shown in the table and figures below, together with the locations of the current sampling locations.

Original		Updated	
Location	Coordinates	Location	Coordinates
W3 - Matina River Brgy. Langub	7°06'21.7"N 125°33'02.2"E  ~ 1.9km SE of Sta. 18+100	MATINA 1 (US)	7°07'25.26"N 125°32'42.01"E
		MATINA 1 (DS)	7°07'20.94"N 125°32'45.68"E
		MATINA 2 (US)	7°07'25.26"N 125°32'42.01"E
		MATINA 2 (DS)	7.12454° 125.54831°
W2 - Davao River Brgy. Tigatto	7°06'51.9"N 125°35'15.1"E ~ 2.1km SE of Sta. 23+500	DAVAO (US)	7°08'3.57"N 125°34'56.93"E
		DAVAO (DS)	7°07'59.01"N 125°34'58.47"E
		STA. 22+200	7°07'54.85"N 125°34'33.24"E

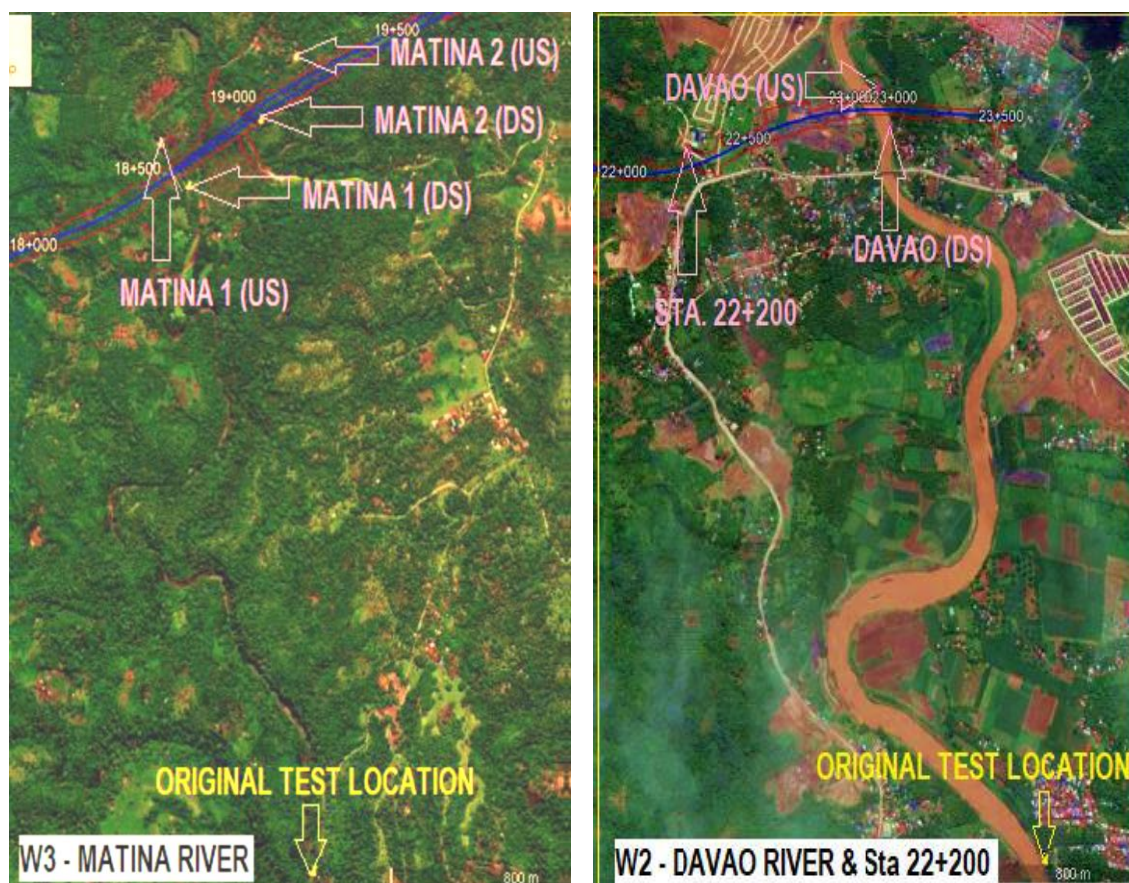


Figure 9 Location of surface water quality sampling stations Package I-1



### 2.3 Water Quality (Groundwater)

**Table 3. Results of Groundwater Quality Monitoring during Construction Stage,  
2<sup>nd</sup> Quarter 2024**

Monitoring Item	Unit	Measured Value (Mean)		Baseline Value (Mean)	Remarks (Measurement Point, Frequency, Method, etc.)
Water quality (Groundwater volume)	m <sup>3</sup>	N/A			<u>Measurement Point</u> <Package I-1> At 2 measurement points <ul style="list-style-type: none"> <li>1 point at the existing well for observation of groundwater level at Station 20+350</li> <li>1 point at the existing water tank at Station 20+350 for local residents</li> </ul> <u>Frequency</u> Quarterly  <u>Method</u> Measurements of groundwater volume and groundwater level
Water quality (Groundwater level)	m	Apr. 18.6 May. 18.8 Jun. 18.2			

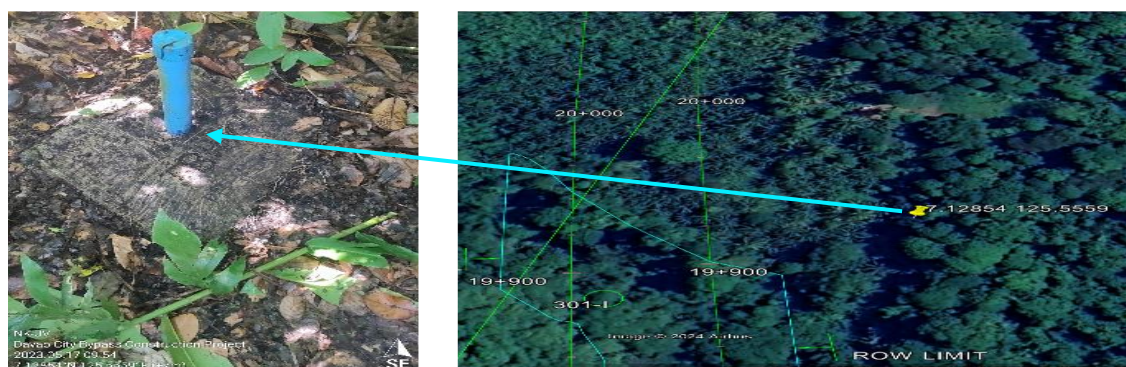
The original locations identified during detailed engineering design (DED) for measuring groundwater level and groundwater volume are shown in the figure below.



**Figure 10 Measurement points for groundwater level and groundwater volume (DED)**

Groundwater volume is monitored through a flow meter installed at the identified measurement point at the elevated water supply tank in Brgy. Magtoud, around 130 m away from Sta. 20+350. The flow meter broke down in March 2024 and was replaced, however operations of the well have been halted due to unpaid electric bills. Monitoring will resume after the well becomes operational again. Inclusion of groundwater quality monitoring for primary parameters pH, DO, BOD and TSS for this monitoring station will also resume after the well is operational again.

As for groundwater level, the measurement point was changed from Tunnel Borehole (TBH) No. 9 to Old Tunnel Borehole (OTBH) No. 4 since the former could no longer be located. The location of the new monitoring station relative to the tunnel alignment between Sta. 19+900 to 20+000 is shown in the figure below.



Baseline data of 17.7 m was measured in May 2023, and tunnel excavation reached this tunnel section after June 2023. No significant changes were monitored for groundwater level from April 2024 to June 2024 and no adverse impacts on water supply were reported by communities along the tunnel sections.

## 2.4 Waste

**Table 4. Results of Waste Monitoring during Construction Stage, 2<sup>nd</sup> Quarter 2024**

Monitoring Item	Monitoring Results during Report Period	Remarks (Measurement Point, Frequency, Method, etc.)
Volume and type of waste, cutting trees, and domestic garbage (ton)	Recyclables: 7.48 Biodegradable: 1.91 Residual: 4.61  Total: 14.00	<u>Measurement Point</u> <ul style="list-style-type: none"> <li>Cutting land section, tunnel section, <b>cutting tree section, and worker's camp</b></li> </ul> <u>Frequency</u> <ul style="list-style-type: none"> <li>As per disposal of waste</li> </ul> <u>Method</u> <ul style="list-style-type: none"> <li>Check records of amount and type of waste, and disposal method</li> </ul>

As part of the Contractor's Solid Waste Management Plan, materials recovery facilities (MRF) are installed at the temporary yards at both North and South Portal. For the monitoring period, a total of 14.00 metric tons of solid waste was generated and collected. The same was disposed at the Davao City landfill, with regular collection of solid waste done on a weekly basis by a 3<sup>rd</sup> party hauler accredited by the Davao City LGU (GENAB Services).

Characterization of solid waste generated and collected for 2<sup>nd</sup> quarter 2024 is summarized in the table below.

Month	Recyclable	Biodegradable	Residual	Total
Apr-24	2.76	0.55	2.43	5.74
May-24	2.36	0.56	0.98	3.90
Jun-24	2.37	0.80	1.20	4.37
Total	7.48	1.91	4.61	14.00

Surplus materials from the tunnel excavations are transported to the 3 main disposal sites. Compaction of materials dumped into the disposal sites is monitored, at 90% compaction for every 200mm layer. Lease agreements were signed between the landowners and the Contractor (Shimizu-Ulticon-Takenaka Joint Venture) for disposal areas 1 and 2, while the location of disposal area 3 was requested by Barangay Waan LGU to be located on public land beside Davao River.

## 2.5 Noise

The same sampling locations are used for monitoring ambient air quality and noise levels. Similar to ambient air, new test locations closer to the project alignment were established to better monitor the effects of the project on ambient noise.

**Apart from the quarterly ambient noise level monitoring, the contractor's Environmental Section also conducts monthly noise level tests for additional monitoring of noise levels.**

The table below shows the results of the ambient air quality sampling for 2nd quarter 2024, with the test results enclosed in Annex 3 of the report. Exceedance in the 24-hr monitoring of noise level was recorded during daytime at the end of the project near Waan National High School. Elevated noise could be linked to mixed activities observed such as continuous movement of light and heavy vehicles, construction works and noise from adjacent residential area.

**Table 5. Results of Ambient and Roadside Noise Monitoring during Construction Stage, 2<sup>nd</sup> Quarter 2024**

Monitoring Item	Unit	Measured Value (Mean) Along road/residential area	Baseline Value (Mean) Along road/residential area	Country's Standard	Referred International Standards (Japanese Standard)	Remarks (Measurement Point, Frequency, Method, etc.)
Ambient and road side noise (dB(A))	dB(A)	<p>S1 Morning: 40 Daytime: 42 Evening: 43 Night Time: 38</p> <p>S2 Morning: 37 Daytime: 53 Evening: 44 Night Time: 38</p>	<p>Along the road 74 (daytime) Residential area 64 (daytime)</p> <p>S1 Morning: 50 Daytime: 51 Evening: 50 Night Time: 48</p> <p>S2 Morning: 60 Daytime: 62 Evening: 57 Night Time: 57</p>	<p>Category AA* Morning 45 Daytime 50 Evening 45 Night Time 40</p> <p>Category A (general areas) Morning 50 Daytime 55 Evening 50 Night Time 45</p> <p>Category A (directly facing / fronting 4-lane road) Morning 50 Daytime 60 Evening 50 Night Time 45</p> <p>Category B (general commercial areas) Morning 60 Daytime 65 Evening 60 Night Time 55</p>	<p>Residential area 55 (daytime) Commercial area 60 (daytime) Along the trunk road 70 (daytime)</p>	<p>Measurement Point &lt;Package I-1&gt;</p> <ul style="list-style-type: none"> <li>Beginning point of Package I-1 (S1, Elenita Heights)</li> <li>Ending point of Package I-1 (S2, Waan NHS)</li> </ul> <p>Frequency</p> <ul style="list-style-type: none"> <li>Quarterly</li> </ul> <p>Method</p> <ul style="list-style-type: none"> <li>LAeq, 10min during morning, daytime, evening and night time</li> </ul>

\*An area that requires quietness, such as an area within 100 m from school sites, nursery schools, hospitals, places of worships, and special homes for the aged

## 2.6 Ground Subsidence

**Table 6. Results of Groundwater Seepage Monitoring during Construction Stage, 2<sup>nd</sup> Quarter 2024**

Monitoring Item	Monitoring Results during Report Period <sup>5</sup>	Remarks (Measurement Point, Frequency, Method, etc.)
Groundwater seepage	186.25 (L/min)	<u>Measurement Point</u> <Package I-1 > <ul style="list-style-type: none"> <li>• Tunnel section</li> </ul> <u>Frequency</u> <ul style="list-style-type: none"> <li>• Daily</li> </ul> <u>Method</u> <ul style="list-style-type: none"> <li>• Record of seepage</li> </ul>

Although ground subsidence resulting from tunnel construction is not anticipated, regular monitoring of groundwater seepage is conducted as a precautionary measure. Results of the daily groundwater discharge monitoring from the tunnels from April 2024 to June 2024 are detailed in the table below.

Daily Average Groundwater Discharge from Tunnels, 1<sup>st</sup> Quarter 2024 (L/min)

Tunnel Name	Apr-24	May-24	Jun-24	Daily Average
NPNB	33.35	38.93	42.66	38.31
NPSB	34.96	32.48	26.30	31.25
Subtotal North Portal	68.31	71.41	68.96	69.56
SPNB	19.33	17.63	16.85	17.94
SPSB	106.32	95.64	94.30	98.75
Subtotal South Portal	125.65	113.27	111.15	116.69
Grand Total	193.96	184.68	180.11	186.25

## 2.7 Natural Environment


**Table 7. Results of Monitoring for Terrestrial and Aquatic Flora and Fauna during Construction Stage, 2<sup>nd</sup> Quarter 2024**

Monitoring Item	Monitoring Results during Report Period	Remarks (Measurement Point, Frequency, Method, etc.)
Terrestrial flora and fauna (condition of vegetation)	- Vegetation clearing confined within project RROW	<u>Measurement Point</u> <Package I-1 > <ul style="list-style-type: none"> <li>• Project sites</li> </ul> <u>Frequency</u> <ul style="list-style-type: none"> <li>• Daily</li> </ul> <u>Method</u> <ul style="list-style-type: none"> <li>• Visual check of vegetation condition</li> </ul>
Aquatic Flora and Fauna (Checking condition of water quality)	See Table 2.	<u>Measurement Point</u> <Package I-1 > Same as surface water quality

<sup>5</sup> SUTJV Geotechnical Team, as reported in monthly monitoring report for Groundwater Discharge from the Tunnels



In compliance with the conditions of the Permit to Cut (PTC) issued by the DENR-CENRO, a total of 662,800 seedlings were procured for replacement of trees to be cleared from the road right-of-way (RROW). The DENR-CENRO issued a certification stating the project complied with the required 1:100 replacement ratio for cut/relocated trees. (See figure below)


 Republic of the Philippines  
 Department of Environment and Natural Resources  
**COMMUNITY ENVIRONMENT AND NATURAL RESOURCES OFFICE**  
 Region XI, CENRO Davao City  
 Email add: cenrocast@yahoo.com / Tel. No. 227-8143 Telefax No. 3059473

DENRXI, Enforcement and Monitoring Section (EMS)  
Supervision

**CERTIFICATION**

AUG 13 2021

**TO WHOM IT MAY CONCERN:**

**THIS IS TO CERTIFY** that **DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS (DPWH)** with office address at **RMC1 Building, 2<sup>nd</sup> St., Port Area, Manila** has an on-going project, **Davao City Bypass Construction Project, Package I-1** within the political jurisdiction of **Barangay Tacunan, Matina Biao, Magtuod, Wa-an and Tigatto**, all of **Davao City** in line with the **Build, Build, Build** program of the Government.

**THIS IS TO CERTIFY FURTHER** that in consistent with DENR Memorandum Order No. 2012-02 dated 05 November 2012 known as **"Uniform Replacement Ratio for Cut or Relocated Trees"** and in support to the National Greening Program (NGP) and Climate Change being initiated by the government, **Davao City Bypass Construction Project (DCBCP) Package I-1** of DPWH has **COMPLIED** and **CLEARED** the requirements for seedling replacement, in cooperation with **BABALI FARMENTS MARKETING COOPERATIVE** represented by its chairman, **MRS. ESMERIDEN C. GAMALI** with business postal address at Brgy. Salaysay, Marilog District, Davao City (VAT Reg. TIN: 719-322-701-000), as per application for **Barangay Tacunan, Matina Biao, Magtuod, Wa-an and Tigatto**, all in **Davao City** and thereby approved and issued Permit to Cut Trees for the said Barangays.

This certification is being issued upon the request of **DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS (DPWH)** for whatever legal purpose it may serve them best.

Issued this **15<sup>th</sup> day of July 2021** at **CENRO Davao City, DENRXI, Bangkal, Davao City.**

Checked and Verified by:

**JANIEL M. LIMPAP**  
For: II/Chief, EMS

Attested by:

**MARVIN D. PARILLA**  
LOIC, CENR Officer

OR No. : **5653858**  
Amount Paid : **50.00**  
Date Issued : **07-26-2021**

The table below details the PTCs issued and number of seedlings donated to the government's National Greening Program, in compliance with the DENR-CENRO requirements.

Barangay	PTC Issued	Total No. of Seedlings Donated
Tacunan	DENRXI-DC-0615-2021-005	388,800
Matina Biao	DENRXI-DC-0226-2021-001	180,700
Magtuod	DENRXI-DC-0312-2021-003	56,300
Waan	DENRXI-DC-0226-2021-002	26,300
Tigatto	DENRXI-DC-0415-2021-004	10,700
<b>Total</b>		<b>662,800</b>

## 2.8 Social Environment

**Table 8. Results of Monitoring for Land Use, Water Use, and Existing Social Infrastructure during Construction Stage, 2<sup>nd</sup> Quarter 2024**

Monitoring Item	Monitoring Results during Report Period	Remarks (Measurement Point, Frequency, Method, etc.)
Land Use (Condition of trees cut)	<ul style="list-style-type: none"> <li>- RROW clearly marked on-site prior to tree cutting activity</li> <li>- Vegetation clearing implemented only for areas within RROW</li> <li>- Observed compliance of to conditions of tree cutting permits</li> </ul>	<u>Measurement Point</u> <Package I-1> <ul style="list-style-type: none"> <li>• Project sites</li> </ul> <u>Frequency</u> <ul style="list-style-type: none"> <li>• As necessary</li> </ul> <u>Method</u> <ul style="list-style-type: none"> <li>• Check site condition</li> </ul>
Water Use (Complaints from downstream area, Complaints from groundwater users)	<ul style="list-style-type: none"> <li>- No complaints received from communities at downstream area, or from groundwater users</li> </ul>	<u>Measurement Point</u> <Package I-1> <ul style="list-style-type: none"> <li>• Project sites</li> </ul> <u>Frequency</u> <ul style="list-style-type: none"> <li>• As necessary</li> </ul> <u>Method</u> <ul style="list-style-type: none"> <li>• Check complaint record</li> </ul>
Existing Social Infrastructure and Service (Complaints from surrounding communities)	<ul style="list-style-type: none"> <li>- No complaints received from surrounding communities</li> </ul>	<u>Measurement Point</u> <Package I-1> <ul style="list-style-type: none"> <li>• Project sites</li> </ul> <u>Frequency</u> <ul style="list-style-type: none"> <li>• As necessary</li> </ul> <u>Method</u> <ul style="list-style-type: none"> <li>• Check complaint record</li> </ul>

## 2.9 Health and Safety

**Table 9. Results of Monitoring for Land Use, Water Use, and Existing Social Infrastructure during Construction Stage, 2<sup>nd</sup> Quarter 2024**

Monitoring Item	Monitoring Results during Report Period	Remarks (Measurement Point, Frequency, Method, etc.)
Infectious Disease (Awareness of infectious disease)	<ul style="list-style-type: none"> <li>- Eight (8) environmental awareness activities conducted for the period, orienting 116 personnel on environmental awareness, including awareness of infectious diseases as part of the <b>project's IEC Program</b></li> <li>- Annual physical exam of personnel shows no reports of HIV/AIDS cases within this period</li> </ul>	<u>Measurement Point</u> <Package I-1> <ul style="list-style-type: none"> <li>• Project sites</li> </ul> <u>Frequency</u> <ul style="list-style-type: none"> <li>• As necessary</li> </ul> <u>Method</u> <ul style="list-style-type: none"> <li>• Check records of awareness activities on infectious diseases</li> </ul>
Occupational Health (Record of accidents in the construction site)	<ul style="list-style-type: none"> <li>- Work Accident and Illness Report (WAIR) monthly reports submitted to the Department of Labor and Employment (DOLE) reflect no accidents for the monitoring period</li> </ul>	<u>Measurement Point</u> <Package I-1> <ul style="list-style-type: none"> <li>• Project sites</li> </ul> <u>Frequency</u> <ul style="list-style-type: none"> <li>• As necessary</li> </ul> <u>Method</u> <ul style="list-style-type: none"> <li>• Check record of accidents in the construction site</li> </ul>



## 2.10 Emergency Risk

**Table 10. Results of Emergency Risk Monitoring during Construction Stage,  
2<sup>nd</sup> Quarter 2024**

Monitoring Item	Monitoring Results during Report Period	Remarks (Measurement Point, Frequency, Method, etc.)
Flood (Condition of flood)	- Daily monitoring at Davao River shows average of 3.6 m as recorded from installed water level gauge at Waan Bridge	<u>Measurement Point</u> <Package I-1 > <ul style="list-style-type: none"> <li>Two (2) points at Davao River (Left and Right Banks)</li> </ul> <u>Frequency</u> <ul style="list-style-type: none"> <li>Quarterly</li> </ul> <u>Method</u> <ul style="list-style-type: none"> <li>Check the site conditions</li> </ul>
Fire (Condition of fire)	- No record of fire incidents recorded for the monitoring period	<u>Measurement Point</u> <Package I-1 > <ul style="list-style-type: none"> <li>Project sites</li> </ul> <u>Frequency</u> <ul style="list-style-type: none"> <li>As necessary</li> </ul> <u>Method</u> <ul style="list-style-type: none"> <li>Check the site conditions</li> </ul>

The average water level at Davao River through the installed water level gauge at Waan Bridge monitored daily from April 2024 to June 2024 is summarized below. No drastic changes in water level are recorded for this monitoring period.

Average Water Level at Waan Bridge for 2<sup>nd</sup> Quarter 2024

Month	2024
April	3.8
May	3.0
June	3.9
Monthly Average	3.6

### 3 Monitoring RAP Implementation

The monitoring items on involuntary resettlement, vulnerable groups, livelihood and local economy, misdistribution of benefit and damage, and local conflict of interests are indicated under Pre-Construction Stage in the JICA monitoring form (See Annex 1). The conduct of Pre-Construction Stage activities were significantly hindered however by the issuance of COVID-19 community quarantine orders.

RAP implementation started during the pre-construction phase and is continued during the construction period. Results of monitoring using the prescribed forms are reported in the table below.

**Table 11. Results of Social Monitoring during Construction Stage, 2<sup>nd</sup> Quarter 2024**

Monitoring Item	Monitoring Results during Report Period	Remarks (Measurement Point, Frequency, Method, Etc.)
Involuntary Resettlement *	<ul style="list-style-type: none"><li>- Self-relocation opted for by owners of residential structures. Initial payment is issued before any structure is cleared from the RROW.</li><li>- Validation is on-going for additional structures affected by the project.</li></ul>	<u>Measurement Point</u> <All Packages> <ul style="list-style-type: none"><li>• Project sites</li></ul> <u>Frequency</u> <ul style="list-style-type: none"><li>• Monthly (Involuntary Resettlement, Vulnerable Groups, Livelihood and Local Economy)</li><li>• As necessary (Misdistribution of Benefit and Damage, Local Conflict of Interest)</li></ul> <u>Method</u> <ul style="list-style-type: none"><li>• Check relocation and payment records</li></ul>
Vulnerable Groups*	<ul style="list-style-type: none"><li>- No payments made yet for vulnerable groups</li></ul>	
Livelihood and Local Economy	<ul style="list-style-type: none"><li>- Community-Based Employment Program (CBEP), which is part of the <b>project's Social Development Plan (SDP)</b> shows 65.35% of <b>Contractor's personnel are from Davao City</b></li></ul>	
Misdistribution of Benefit and Damage	<ul style="list-style-type: none"><li>- No complaint/s received pertaining to misdistribution of benefit and damage or local conflict of interest</li></ul>	
Local Conflict of Interest		

The objective of this quarterly monitoring is to assess the progress of RAP implementation for Package I-1 of the DCBCP. Results of the monitoring from 01 January 2024 to 31 March 2024 for progress of land acquisition and handing over of RROW to Contractor and implementation of the Grievance Redress Mechanism (GRM) are presented in the report.

### 3.1 Status of Handing Over of Land to Contractor

A total of 462,917 sq.m. of the RROW area was handed to the Contractor as of end of March 2024. This is equal to 93.5% of the total project RROW. The table below shows the progress of handing over of land to the Contractor.

**Table 12. Status of Handing Over of RROW Area to Contractor, 2<sup>nd</sup> Quarter 2024**

BARANGAY	TOTAL PROJECT RROW (sq.m)	PRIVATELY-OWNED	GOV'T-OWNED LAND	RROW AREA WITH PTE/WOP and/or ADRI/ARI or GOV'T OWNED	RROW AREA WITHOUT PTE/WOP and/or ADRI/ARI	% RROW AREA HANDED OVER TO CONTRACTOR	% OF REMAINING RROW AREA TO BE HANDED OVER TO CONTRACTOR
TACUNAN	307,425	280,207	27,420	300,521	5,987	97.8	1.9
MATINA BIAO	72,125	71,923	0	66,681	0	92.5	0.0
MAGTUOD	69,047	69,047	0	69,018	0	100.0	0.0
WAAN	33,213	33,213	0	14,539	0	43.8	0.0
TIGATTO	51,923	21,995	29,928	48,185	29,928	92.8	57.6
<b>TOTAL</b>	<b>533,733</b>	<b>476,385</b>	<b>57,348</b>	<b>498,944</b>	<b>35,915</b>	<b>93.5</b>	<b>6.7</b>

For critical sections of the alignment at Matina River Bridge 1, coordination with the Davao Regional Trial Court for issuance of Writ of Possession for Index 299 is on-going. For Underpass 2, negotiations are on-going for acquisition of RROW through negotiated sale of lots owned by Lapanday.

### 3.2 Status of Resettlement

Of the 35 residential structures identified within RROW during construction supervision, 20 have already been issued the initial 70% payment of the affected structure, at replacement cost, while 8 have been issued full payment. All 7 remaining unpaid residential structures are still residing within RROW, with 6 awaiting landowners' issuance of waiver to process payment, and one structure to be included in the filing of expropriation complaint.

Of the 28 claimants paid for their affected residential structure, 26 households have opted for self-relocation, while 2 structures are yet to be cleared from the RROW.

**Table 13. Number of Affected Residential Structures, Status of Payment and Relocation, 2<sup>nd</sup> Quarter 2024**

BARANGAY	TOTAL AFFECTED HOUSEHOLDS			RELOCATION STATUS			Payment
	Total Affected Households	Male-Headed	Female-Headed	Self-Relocation	Male-Headed	Female-Headed	No. of Paid Structures
TACUNAN	29	16	13	22	14	8	22
MATINA BIAO	1	1	0	1	1	0	1
MAGTUOD	2	0	2	2	0	2	2
WAAN	1	1	0	0	0	0	1
TIGATTO	2	2	0	1	1	0	2
<b>TOTAL</b>	<b>35</b>	<b>20</b>	<b>15</b>	<b>26</b>	<b>16</b>	<b>10</b>	<b>28</b>

The number of female-headed households whose residential structures are affected account for 42.9% of the total number of affected households.

### 3.3 Status of Recorded Grievances

The local help desk is set up at the RROW Office situated at the project field office to ensure grievances raised by stakeholders are attended to efficiently. The RROW Office is headed by RROW In-charge (Engineer IV), and manned by DPWH personnel identified in the organizational chart as specifically assigned for RROW acquisition. In addition, the Barangay LGUs of Brgy. Tacunan, Matina Biao, Magtuod, Waan and Tigatto, as well as staff of the Contractor, relay details of grievances relayed on-site. The table below shows the status of recorded grievances for the period.

**Table 14. List of Grievance and Status of Concerns, 2<sup>nd</sup> Quarter 2024**

Brgy	Index	Grievance / Concern	Action Taken	Status
Tacunan	227	Request to expedite final payment for land	Informed claimants of remaining steps required of landowners for processing of remaining 50% payment.	Closed
Matina Biao	Outside RROW	Structure owner near Matina Bridge 1 area complained of two incidents where crane operator accidentally dropped steel bars unto property, narrowly missing structure below.	Recorded grievance and informed the Engineer to monitor crane operations closely, and discuss mitigation measures with Contractor's Safety Officer.	Closed
Magtuod	302-C	Complaint on delayed second payment for lot	Requested additional funds for payment of BIR penalties.	Open
Waan	306	Structure owner complained of overflow from creek at Sta. 22+200 causing damage to house within RROW.	Expedited processing of remaining second payment (30%) for structure to clear the RROW.	Closed

The City Resettlement Implementation Committee (CRIC), created through a Memorandum of Understanding (MOU) signed by DPWH and the Davao City LGU during the DED stage, is yet to be convened. The CRIC is tasked with receiving/acting on complaints. For construction stage, grievances are recorded through official correspondence and verbal complaints received at the local help desk, the Barangay LGUs, and by the Contractor. Thus far, no complaints related to the project have been reported through the city government's central hotline for inquiries and concerns.

## 4 Planned Activities for the Next Monitoring Period

Implementation of the conditions of the ECC, the EMP and EMoP, and adherence to site instructions issued to the contractor will be checked continuously.

Planned activities for the next monitoring period are as follows:

- 1 Supervise the implementation of EMP and EMoP;
- 2 Supervise RAP implementation;
- 3 Draft Self-Monitoring Report No. 15 for submission to DENR-EMB;
- 4 Prepare Environmental and Resettlement Monitoring Report No. 15;
- 5 Monitor the progress of RROW acquisition and compensation and provide assistance to PAPs

Annex 3  
Results of Ambient Air Quality  
and Noise Monitoring

---

## S1. Beginning point of Package I-1, Elenita Heights (1 Hour Ambient Air Monitoring)

Sample Descriptions	Parameters	Results	Units	DAO 2000-81 Standards	Methods
05-216G	Total Suspended Particulates (TSP) <sup>a</sup>	70	µg/Ncm	300	Gravimetric
Elenita Heights	Sulfur Dioxide (SO <sub>2</sub> ) <sup>b</sup>	9	µg/Ncm	340	Pararosaniline
Date Sampled: May 24, 2024	Nitrogen Dioxide (NO <sub>2</sub> ) <sup>c</sup>	29	µg/Ncm	260	Griess-Saltzman
04:51 pm - 05:51 pm	Carbon Monoxide (CO)	<1	ppm	30	Direct Reading -Electrochemical Sensor
	Vehicle Count	19	--	--	--

---

**Total No. of Samples:** 3      **Total Analysis:** 15

**Sample Submission :** Sampled by OMLI-GenSan Staff

**Reference :** USEPA 40 CFR, Part 50, Appendices <sup>a</sup> B, and <sup>b</sup> A ; <sup>c</sup> Methods of Air Sampling and Analysis 3rd ed. by J. P. Lodge;

**Remarks :** Results relate only to the items tested and received by the laboratory.  
The customer is given 7 days upon receipt to raise questions or clarification on any part or content of the certificate, otherwise the result(s) is/are deemed accepted.

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## S2. Ending point of Package I-1, Waan National HS (1 Hour Ambient Air Monitoring)



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DENR Recognized  
Laboratory with  
C.R No. 041/2023

☒ Original Issue  
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☐ Revision Copy

## CERTIFICATE OF ANALYSIS

<b>Customer :</b> SHIMIZU-ULTICON-TAKENAKA JV	<b>CAN :</b> C24-06-014G-1
<b>Address :</b> 2nd Floor Yuta at Dabaw Building, Purok 38, C.P. Garcia Hwy, Ma-a, Davao City	<b>Date of Issue :</b> 06/11/2024
<b>Location :</b> Brgy. Wa-an, Buhangin District, Davao City	<b>RAN :</b> R24-05-069G
<b>Attention :</b> Ms. Mary Ann S. De Casa	<b>Invoice No. :</b> --
<b>Contact Information :</b> 0967-419-9395/decasa.maryann@shimz.biz	<b>Date Received :</b> 05/27/2024
	<b>Date Sampled :</b> --
	<b>Date Analyzed :</b> 05/27-30/2024

## RESULTS OF ANALYSIS

Sample Descriptions	Parameters	Results	Units	DAO 2000-81 Standards	Methods
<b>1 Hour Ambient Air Monitoring</b>					
05-212G	Total Suspended Particulates (TSP)*	459	µg/Ncm	300	Gravimetric
Waan National High School	Sulfur Dioxide (SO <sub>2</sub> )*	8	µg/Ncm	340	Pararosaniline
Date Sampled: May 20, 2024	Nitrogen Dioxide (NO <sub>2</sub> )*	20	µg/Ncm	260	Griess-Saltzman
11:31 am - 12:31 pm	Carbon Monoxide (CO)	<1	ppm	30	Direct Reading - Electrochemical Sensor
	Vehicle Count	3	--	--	--
05-213G	Total Suspended Particulates (TSP)*	35	µg/Ncm	300	Gravimetric
Waan Elementary School	Sulfur Dioxide (SO <sub>2</sub> )*	7	µg/Ncm	340	Pararosaniline
Date Sampled: May 21, 2024	Nitrogen Dioxide (NO <sub>2</sub> )*	<13	µg/Ncm	260	Griess-Saltzman
12:41 pm - 01:41 pm	Carbon Monoxide (CO)	<1	ppm	30	Direct Reading - Electrochemical Sensor
	Vehicle Count	5	--	--	--

**Total No. of Samples:** 2      **Total Analysis:** 10

**Sample Submission :** Sampled by OMLU-GenSan Staff


**Reference :** USEPA 40 CFR, Part 50, Appendices \* B, and \* A ; \* Methods of Air Sampling and Analysis 3rd ed. by J. P. Lodge;

**Remarks :** Results relate only to the items tested and received by the laboratory.  
The customer is given 7 days upon receipt to raise questions or clarification on any part or content of the certificate, otherwise the result(s) is/are deemed accepted.

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## S1. Beginning point of Package I-1, Elenita Heights (24 Hours Ambient Air Monitoring)



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DENR Recognized  
 Laboratory with  
 C.R No. 041/2023

☒ Original Issue  
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☐ Revision Copy

## CERTIFICATE OF ANALYSIS

**Customer :** SHIMIZU-ULTICON-TAKENAKA JV

**Address :** 2nd Floor Yuta at Dabaw Building, Purok 38, C.P. Garcia Hwy, Ma-a, Davao City

**Location :** Brgy. Wa-an, Buhangin District, Davao City

**Attention :** Ms. Mary Ann S. De Casa

**Contact Information :** 0967-419-9395/decasa.maryann@shimz.biz

**CAN :** C24-06-014G-3

**Date of Issue :** 06/11/2024

**RAN :** R24-05-069G

**Invoice No. :** --

**Date Received :** 05/20/2024

**Date Sampled :** --

**Date Analyzed :** 05/20-30/2024

### RESULTS OF ANALYSIS

Sample Descriptions	Parameters	Results	Units	DAO 2000-81 Standards	Methods
<b>24 Hours Ambient Air Monitoring</b>					
05-217G	Total Suspended Particulates (TSP)*	146	µg/Ncm	230	Gravimetric
Waan National High School	Sulfur Dioxide (SO <sub>2</sub> )*	0.67	µg/Ncm	180	Pararosaniline
Date Sampled: May 20-21, 2024	Nitrogen Dioxide (NO <sub>2</sub> )*	1.35	µg/Ncm	150	Griess-Saltzman
12:33 pm - 12:33 pm	Carbon Monoxide (CO)	<1	ppm	9*	Direct Reading -Electrochemical Sensor
	Vehicle Count	3	--	--	--
<b>05-218G</b>					
	Total Suspended Particulates (TSP)*	51	µg/Ncm	230	Gravimetric
Waan Elementary School	Sulfur Dioxide (SO <sub>2</sub> )*	0.69	µg/Ncm	180	Pararosaniline
Date Sampled: May 21-22, 2024	Nitrogen Dioxide (NO <sub>2</sub> )*	1.68	µg/Ncm	150	Griess-Saltzman
01:43 pm - 01:43 pm	Carbon Monoxide (CO)	<1	ppm	9*	Direct Reading -Electrochemical Sensor
	Vehicle Count	32	--	--	--

**Note:** \*8 -hours sampling

**Total No. of Samples:** 2      **Total Analysis:** 10

**Sample Submission :** Sampled by OMLU-GenSan Staff

**Reference :** USEPA 40 CFR, Part 50, Appendices \* B, and \* A ; \* Methods of Air Sampling and Analysis 3rd ed. by J. P. Lodge;

**Remarks :** Results relate only to the items tested and received by the laboratory.  
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## S2. Ending point of Package I-1, Waan National HS (24 Hours Ambient Air Monitoring)

Sample Descriptions	Parameters	Results	Units	DAO 2000-81 Standards	Methods
05-221G	Total Suspended Particulates (TSP) <sup>a</sup>	98	µg/Ncm	230	Gravimetric
Elenita Heights	Sulfur Dioxide (SO <sub>2</sub> ) <sup>a</sup>	1.71	µg/Ncm	180	Pararosaniline
Date Sampled: May 24-25, 2024	Nitrogen Dioxide (NO <sub>2</sub> ) <sup>a</sup>	5.20	µg/Ncm	150	Griess-Saltzman
05:53 pm - 05:53 pm	Carbon Monoxide (CO)	<1	ppm	9*	Direct Reading -Electrochemical Sensor
	Vehicle Count	47	--	--	--

---

**Note:** \*8 -hours sampling  
**Total No. of Samples:** 3      **Total Analysis:** 15  
**Sample Submission:** :Sampled by OMLI-GenSan Staff  
**Reference:** : USEPA 40 CFR, Part 50, Appendices \* B, and \* A ; \* Methods of Air Sampling and Analysis 3rd ed. by J. P. Lodge;  
**Remarks:** : Results relate only to the items tested and received by the laboratory.  
The customer is given 7 days upon receipt to raise questions or clarification on any part or content of the certificate, otherwise the result(s) is/are deemed accepted.


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## S1. Beginning point of Package I-1, Elenita Heights (24 Hours Ambient Noise Monitoring)



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 Email : customerservice.ostreelabs@gmail.com

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## CERTIFICATE OF ANALYSIS

**Customer :** SHIMIZU-ULTICON-TAKENAKA JV

**Address :** 2nd Floor Yuta at Dabaw Building, Purok 38, C.P. Garcia Hwy, Ma-a, Davao City

**Attention :** Ms. Mary Ann S. De Casa

**Contact Information :** 0967-419-9395/decasa.maryann@shimz.biz

**CAN :** C24-06-0146-12

**Date of Issue :** 06/11/2024

**RAN :** R24-05-069G

**Invoice No. :-**

**Date Received :** 05/24/2024

**Date Sampled :** 05/24-25/2024

**Date Analyzed :** 05/24-25/2024

---

### RESULTS OF ANALYSIS

Location	Morning 5:00am- 9:00am dBA	Daytime 9:00am- 6:00pm dBA	Evening 6:00pm- 10:00pm dBA	Night Time 10:00pm- 5:00am dBA
<b>24 Hours Noise Monitoring</b>				
05-221G	40	42	43	38
Elenita Heights				
08:36 pm - 09:49 am				
NPCC Memorandum Circular No. 002 Series of 1980, Class A	50	55	50	45

---

**Note :** Please refer to the contributing factors of noise in Results and Evaluation.  
 Class AA: A section or contiguous area which requires quietness, such as an area within 100 meters from school sites, nursery schools, hospitals and special homes for the aged.

**Total No. of Sample:** 1      **Total Analysis:** 4

**Sample Submission :** Sampled by OMLI-GenSan Staff

**Remarks :** Results relate only to the item tested and received by the laboratory.  
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## S2. Ending point of Package I-1, Waan National HS (24 Hours Ambient Noise Monitoring)

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**CERTIFICATE OF ANALYSIS****Customer :** SHIMIZU-ULTICON-TAKENAKA JV**Address :** 2nd Floor Yuta at Dabaw Building, Purok 38, C.P. Garcia Hwy, Ma-a, Davao City**Attention :** Ms. Mary Ann S. De Casa**Contact Information :** 0967-419-9395/decasa.maryann@shimz.biz**CAN :** C24-06-014G-8**Date of Issue :** 06/11/2024**RAN :** R24-05-069G**Invoice No. :-****Date Received :** 05/20/2024**Date Sampled :** 05/20-21/2024**Date Analyzed :** 05/20-21/2024**RESULTS OF ANALYSIS**

Location	Morning 5:00am- 9:00am dBA	Daytime 9:00am- 6:00pm dBA	Evening 6:00pm- 10:00pm dBA	Night Time 10:00pm- 5:00am dBA
<b>24 Hours Noise Monitoring</b>				
05-217G	37	53	44	38
Waan National High School				
04:33 pm - 06:18 am				
NPCC Memorandum Circular No. 002 Series of 1980, Class AA	45	50	45	40

**Note :** Please refer to the contributing factors of noise in Results and Evaluation.

Class AA: A Section of contiguous area which requires quietness, such as areas within 100 meters away from school site, nursery schools, hospitals and special house of the aged.

**Total No. of Sample:** 1**Total Analysis:** 4**Sample Submission :** Sampled by OML-GenSan Staff**Remarks :** Results relate only to the item tested and received by the laboratory.

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Republic of the Philippines  
Department of Public Works  
and Highways



Japan International  
Cooperation Agency

Construction Supervision of the Davao City Bypass  
Construction Project, Package I-3  
(JICA Loan Agreement No. PH-P273)

**ENVIRONMENTAL and RESETTLEMENT  
MONITORING REPORT NO. 2  
(April 2024 to June 2024)**



Oriental Consultants Global

IN ASSOCIATION



Oriental  
Consultants  
Philippines,  
Inc.



Pacific Rim Innovation  
and Management  
Exponents, Inc.



KGC Partners  
Co.



DCCD  
Engineering  
Corporation



Urban  
Integrated  
Consultants





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#### List of Abbreviations

CENRO	City Environment and Natural Resources Office
CMR	Compliance Monitoring Report
DCBCP	Davao City Bypass Construction Project
DENR	Department of Environment and Natural Resources
DED	Detailed Engineering Design
DPWH	Department of Public Works and Highways
ECC	Environmental Compliance Certificate
EIA	Environmental Impact Assessment
EIS	Environmental Impact Statement
EMB	Environmental Management Bureau
EMP	Environmental Management Plan
EMS	Environmental Management System
ERP	Emergency Response Plan
EWMS	Environmental Work Management Statement
GRM	Grievance Redress Mechanism
GRC	Grievance Redress Committee
HS	Hazardous Substance
LGU	Local Government Unit
MMT	Multi-Partite Monitoring Team
MSDS	Material Safety Data Sheet
PAP	Project Affected Person
PPE	Personnel Protective Equipment
ROW	Road Right-of-Way
SCP	Spill Contingency Plan
SMR	Self-Monitoring Report
SUTJV	Shimizu-Ulticon-Takenaka Joint Venture



[illegible]

## 1. INTRODUCTION

This Environmental and Resettlement Monitoring Report (ERMR)<sup>1</sup> is the second submission for the Davao City Bypass Construction Project (DCBCP) Contract Package I-3, covering the period of April 2024 to June 2024. This is prepared based on information from the Construction Supervision Consultant's Monthly Progress Reports, quarterly environmental monitoring findings documented in the Contractor's Environmental Monitoring Reports, and information gathered during the project site visits and stakeholder consultation meetings.

This report also provides information on the status of the project's compliance with the conditions and requirements of the Environmental Compliance Certificate (ECC) and the implementation of the performance requirements in the Environmental Management and Monitoring Plans. Quarterly environment surveys for air quality, noise, water quality, terrestrial and aquatic flora, and fauna were conducted to monitor the major civil works activities during the period. Tree-cutting permits had already been secured. During this reporting period, the construction activities include clearing and grubbing, geotechnical investigation works, and as-staked surveys. The ongoing work components of Contract Package I-3 are enumerated in Table 1.1 below.

**Table 1.1 Ongoing Work Components of Contract Package I-3**

Work Area	Station Location	Contractor's Camp and Yard
Clearing and Grubbing Works at the end of Contract Package I-3 in the Malagamot Area	Sta 28+900 – Sta 29+700	N/A
Geotechnical Investigation Works in the Cut and Cover Segment	CCT-1, L=315 m Sta 25+346.91 – Sta 25+615.00	N/A
Others		

Source: Supervision Consultant

The critical project compliances during the reporting period are summarized as follows:

1. Supervision and monitoring of the environmental management and monitoring works performed by the Contractor;
2. Preparation of the Self-Monitoring Report No. 2 for submission to the EMB-CO by the designated DPWH Pollution Control Officer (PCO) and providing inputs for the Monthly Progress Reports of the Construction Supervision Consultant;
3. Issued site instructions in connection with the environmental requirements in the Technical Specifications;
4. Monitored the progress of the Contractor's tree-cutting applications;
5. Continuous coordination with the Barangay Captains traversed by the Contract Package I-3;
6. Drafted the Memorandum of Agreement (MOA) on the establishment of the EGF and creation of the Multipartite Monitoring Team (MMT);
7. Drafted the Manual of Operations (MOO) for the issuance of the MMT once the MOA for Contract Package I-3 is approved;
8. Prepared the list of MMT members and drafted a letter for approval by DPWH before its distribution to the local government unit of Davao City and other identified MMT members.
9. Reviewed the Quarterly Environmental Survey (BES) Report submitted by the Contractor;
10. Endorsed for approval by the DPWH the Site-Specific Environmental Management Plan (SSEMP) submitted by the Contractor;

<sup>1</sup> Environmental and Resettlement Monitoring Reports (ERMRs) are submitted quarterly as required under the Terms of Reference (ToR) for Construction Supervision of Packages I-2 and I-3.



11. The Supervision Consultant monitored the progress of land acquisition and compensation to PAPs while the affected landowners assisted in submitting and processing the required documents.

## 2. GENERAL BACKGROUND

### 2.1 Project Background and Objectives

The Government of the Republic of the Philippines (GOP) has received a loan (PH-P261 and PH-P273) from the Japan International Cooperation Agency (JICA) to finance the Davao City Bypass Construction Project (DCBCP), Contract Package I (South and Central Sections, including Contract Packages I-1, I-2, and I-3), while Contract Package II (North Section, including Contract Packages II-1, II-2, and II-3), is under the national government financing.

Davao City, the center of Metropolitan Davao (it includes the cities of Davao, Digos, Mati, Panabo, Samal, and Tagum), is the Philippines' second-most populous metropolitan area. The city plays an integral role in trading commerce and serves as an industry hub of Mindanao. It also serves as a regional center of the Davao Region, where logistical operations support economic development, directly impacting Regional and National Economies. Due to the high concentration of population and the lack of diversion routes, the chronic traffic congestion throughout the day in the urban center has been hampering the city's development for years. The DCBCP involves the construction of a four-lane, 45.6 km highway (two lanes for each direction) comprised of six contract packages. It is expected to partially open in 2026 and fully operational in 2027. The DCBCP Contract Package I-3 is indicated in Figure 1 below.

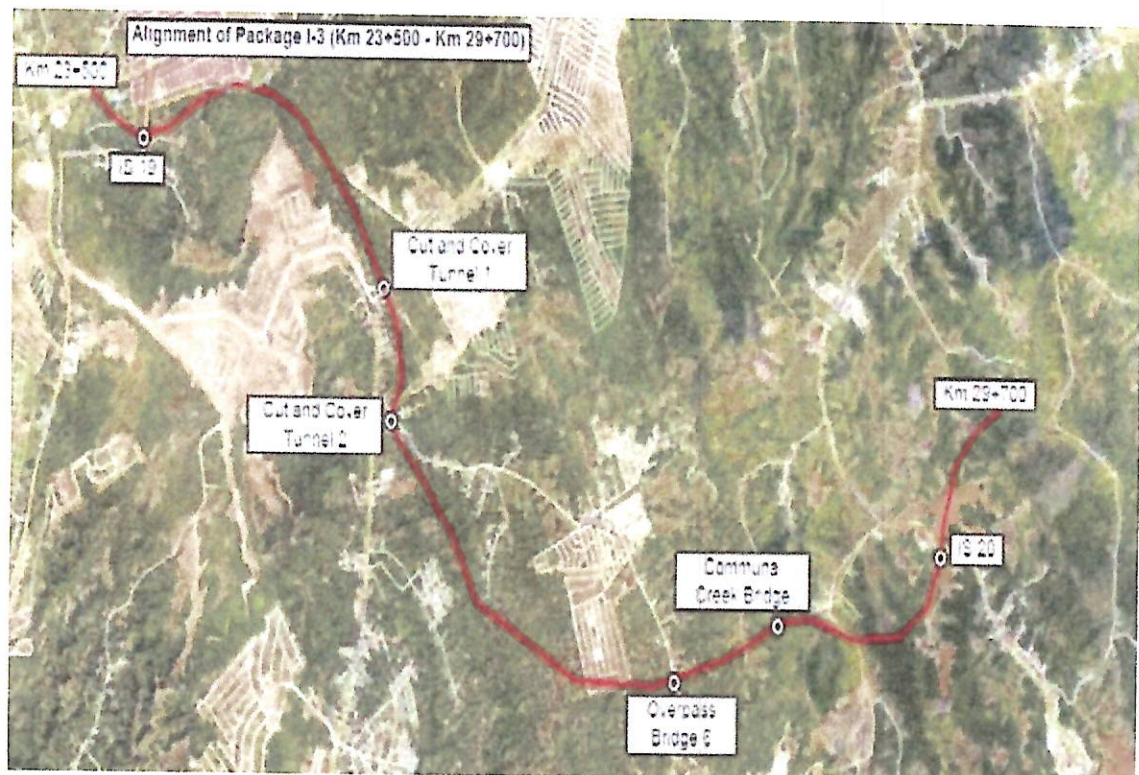


Figure 2.1 Alignment of DCBCP Contract Package I-3 Alignment

The project alignment details are described in Table 2.1 below.

**Table 2.1 DCBCP Alignment Details**

Alignment	Contract Package	Length
Mintal Road to Mandug Road	Contract Package I-1	10.7 km with 2.3 km tunnel
Davao-General Santos Road (Maharlika Highway)	Contract Package I-2	12.8 km
Malagamot Road	Contract Package I-3	6.2 km with 0.45 km cut and cover tunnel (CCT)
Davao-Panabo Road	Contract Package II	15.8 km

Source: Supervision Consultant

The objectives of the project are:

- (i) To divert the traffic to the Bypass Road instead of passing through the urban center, relieving its present chronic traffic congestion;
- (ii) To expand urban areas towards the inland areas, which will be appropriately guided by a new road network, which is the Bypass Road; and
- (iii) To support economic activities, particularly manufacturing, agriculture, and business industries, by providing easier transport access to seaports and airports.

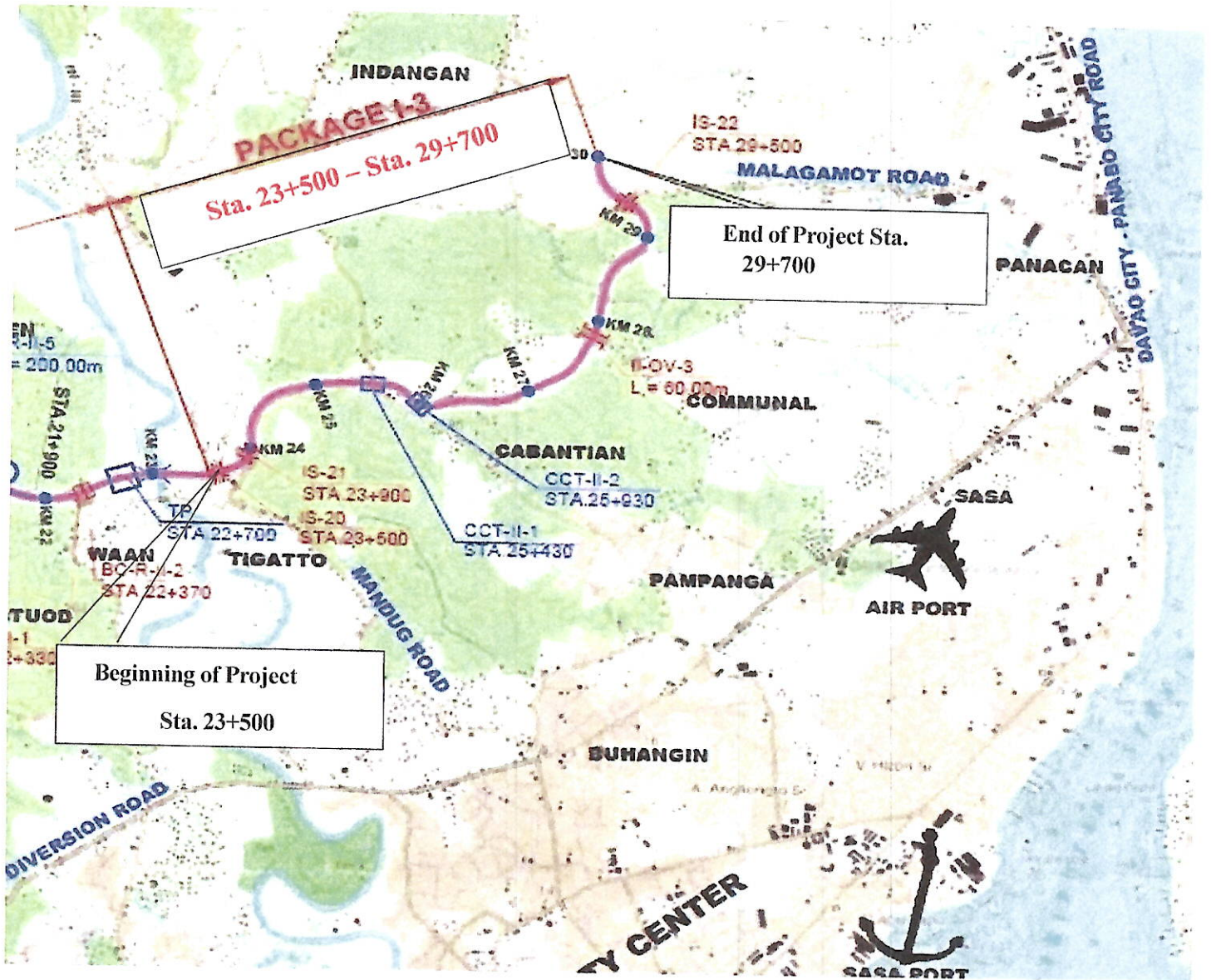
## **2.2 Project Profile**

### **2.2.1 Location of Contract Package I-3**

The total length of Contract Package I-3 is 6.2 km, which starts at the Mandug Road intersection (Sta 23+500) and ends at Sta 29+700, near the crossing of Malagamot Road. The alignment is characterized by flat to rolling terrain with several hilly portions and steep slopes, particularly along the bank of the creeks/rivers. Indicated in Figure 2.2 is the Location Map of Contract Package I-3



**P Contract Package I-3**



## 2.2.2 Key Components of Contract Package I-3

The critical components of Contract Package I-3 include two (2) locations of Cut and Cover Tunnel with 445 meters, two piers of the bridge; two (2) overpasses (including an additional overpass at Sta 28+810); six (6) box culverts; six (6) pipe culverts; three (3) at grade intersections; while the total length of the PCCP construction is 6.2 km. The details of the key components are described in Table 2.2

**Table 2.2. Details of the Key Components of Contract Package I-3**

Item	Description	Standard	Remarks
1	Class of Road	National Road	Primary
2	Design Speed	60 km/hour	-
3	Maximum Gradient	6%, 8%	Rolling/Mountainous (Maximum 5%)
4	Number of Lanes	4	Divided by a median
5	Width of Carriageway Shoulder Median Total Width	6.7 m (3.35 x 2) 2.5 m x 2 2.0 m 25.4 m 21.4 m	Carriageway Shoulder Median Embankment Section Excavation Section
6	Type of Pavement Carriageway Non-Tunnel Section Tunnel Section Shoulder	PCCP - PCCP t = 30 cm PCCP t = 33 cm PCCP t = 23 cm	- - With dowel bars at 4.5 m contract joints With dowel bars at 4.5 m contract joints With dowel bars at 4.5 m contract joints
7	Bridge Construction		
	Communal Creek Bridge Overpass Bridge	Left: 120 m Right: 100 m At 2 locations L=48 m, L=48 m	PC Girder, Bored Piles Foundation PC Girder, Bored Piles Foundation PC Hollow Slab, Bored Piles Foundation An overpass bridge is required to keep an additional crossing of the existing road.
8	Cut and Cover Tunnel	-	-
	Sta 25+346.91 Sta 25+615.00 Sta 25+820.00 Sta 25+950.00	Tunnel 1 L=315 m Tunnel 2 L=130 m	- - -

\*1: The additional Overpass Bridge is located in Sta 28+810.

Note: The PCCP thickness to be adopted is based on the result of pavement design analysis using the AASHTO 1993 pavement design guide as a reference, considering the 20-year and 30-year period for non-tunnel and tunnel sections, respectively. Source

Source: Supervision Consultant

## 2.2.3 Construction Schedule

The construction schedule is estimated at 36 months or 1,080 calendar days (CD) from 18 December 2023 to 17 December 2026. The construction of the Cut-and-Cover Tunnel is a critical path towards completing the Project. The project implementation schedule is presented in Figure 2.3, while the project contract information details are described in Table 2.3 below.







## 2.3 Status of Project Activities

### 2.3.1 Access Road

The status of access road construction is described in Table 2.4 below.

**Table 2.4 Status of Access Road Construction**

Road ID	Description	Location	Status
No. 1	Access Road	Sta 25+500	Awaiting permit to enter the site from the landowner
No. 2	Disposal Area <sup>2</sup>	Sta. 29+500 Malagamot Road	Continues unloading, spreading, and compaction of excavated materials from road excavation

Source: Supervision Consultant, as of June 2024

### 2.3.2 Contractor's Camps and Yards

The Contractor's identification of the construction camps and yards is still on-going.

### 2.3.3 Earthworks along the Main Alignment

The status of the earthworks along the primary alignment is described in Table 2.5 below.

**Table 2.5 Status of Earthworks along the Main Alignment**

Location	Status
Sta 29+000 – Sta 29+600	600 m, clearing and grubbing
Road excavation	Under construction
Excavation	Under construction

Source: Supervision Consultant, as of June 2024.

## 3. ENVIRONMENTAL MONITORING

<sup>2</sup> For Contractor identification and submission of proof of documentation.

The primary purpose of monitoring is to ensure that the project is implemented following sound environmental management compliance with the GOP and JICA environmental and social requirements. Specifically, it aims to ensure the following:

- (i) Project compliance with the conditions set in the Environmental Compliance Certificate (ECC);
- (ii) Project compliance with the Environmental Management Plan (EMP);
- (iii) Effectiveness of the environmental measures on the prevention and mitigation of actual project impacts vis-à-vis the predicted impacts used as the basis for the EMP design; and
- (iv) Continual updating of the EMP for sustained responsiveness to project operations and project impacts (DENR AO 2003-30)

The Environmental Monitoring Plan (EMP) is part of the DCBCP Environmental Management Plan (EMP), which is detailed in the 2014 Environmental Impact Statement (EIS). Implementation of the EMP started during the pre-construction phase and continues throughout this construction period and the operation phase.

### 3.1 Environmental Baseline and Quarterly Monitoring

The baseline environmental monitoring activities were conducted before the construction activities of the Contract Package I-3 components. The sampling activities were planned and started during the first quarter of 2024 (March 2024), while the Quarterly Monitoring was conducted in May 2024 for air, noise and water quality, and towards the end of June 2024 for the terrestrial flora and fauna using the exact sampling locations and parameters in the EIS Baseline Survey performed in 2014.

Before conducting the Baseline Environmental Survey, the Contractor submitted a Method Statement that was reviewed and approved by the Supervision Consultant. The sampling locations were jointly verified with the DPWH Pollution Control Officer, Supervision Consultant, and Contractor. The Quarterly Environmental Monitoring followed the same method statement as approved for the baseline environmental survey.

**Table 3.1 Items and Sampling Locations**

Item	As per EIS (Quarterly Tests)	
	Locations	No. of Tests
<b>1. Pollution</b>		
Air Quality	A1-Sto. Nino Chapel, along the Mandug Road, Brgy. Tigatto, Davao City @ Coordinated 7° 8'9.56"N; 125°35'23.75"E)	1
	A2-Leonora Heights, Brgy. Cabantian, Davao City (7° 8'48.80"N; 125°36'46.11"E)	1
Water Quality (Surface Water)	Lasang River (100 meters Upstream @ Coordinates 7° 8'59.96"N; 125°37'2.19"E)	1
	Lasang River (100 meters Downstream @ Coordinates 7° 8'58.89"N; 125°37'8.92"E)	1
Water Quality (Ground Water), Volume, and Level	Not applicable	None
Waste	Not yet applicable	None
Noise	A1 – Sto. Nino Chapel, along the Mandug Road, Brgy. Tigatto, Davao City (@ Coordinated 7° 8'9.56"N; 125°35'23.75"E)	1
	A2 – Leonora Heights, Brgy. Cabantian, Davao City (7° 8'48.80"N; 125°36'46.11"E)	1
<b>2. Natural Environment</b>		
Terrestrial Flora and Fauna	Visual check of vegetation	2
	Quarterly at specific locations	2



Aquatic flora and fauna	It is the same as surface water sets	2
<b>3. Social Environment</b>		
Land Use	Site conditions	Where necessary
Water Use	Records	Grievance response
Existing Social Infrastructure and Service	Records	Grievance response
<b>4. Health and Safety</b>		
Infectious Diseases	Records	Work sites and field offices
Occupational Health	Records	Work sites and field offices
Community Health and Safety	Record	Adjoining areas of the work sites and field offices
<b>5. Emergency Risk</b>		
Flood	Davao Riverbanks	Lasang River only since works had not yet commenced in the starting point in Barangay Tigatto.
Fire	Site conditions	Worksite and field offices

Source: SUT-JV verified by Consultant Team

Sampling activities and analysis for this reporting period were completed in May 2024. Only clearing and grubbing activities in Sta 29+600 and in the cut and cover segments of Contract Package I-3 (Sta. 00+000 and Sta 00+000) were undertaken during these activities. Other environmental components that may change due to the project were also characterized and covered in the Baseline Survey Report prepared by the Contractor.

### 3.2 Environmental Compliance Monitoring

As required in the Contract, environmental compliance monitoring and measurements shall be carried out by the Contractor under the supervision of the Road Management Cluster 1 (RMC1), Unit B, Construction Supervision Consultant, and JICA. Following the Contract's Technical Specifications, the Contractor shall submit monthly environmental monitoring reports to the DPWH through the Supervision Consultant. Based on these monthly reports, the Construction Supervision Consultant shall prepare Self-Monitoring Reports for the DPWH, which will be submitted online every quarter. A separate Compliance Monitoring Report (CMR) shall be prepared with the assistance of the Construction Supervision Consultant for the DPWH for the duplicate online submission to the Department of Environment and Natural Resources-Environmental Management Bureau (DENR-EMB) on a semi-annual basis. The first CMR covering the period December to June 2024 for this contract package had been submitted and complied accordingly.

#### 3.2.1 Monitoring Activities

As earlier discussed, baseline environmental monitoring of the ecological parameters for Contract Package I-3 was carried out during first quarter. DPWH staff, together with the Construction Supervision Consultant, conducted field visits and, at the same time, supervised the monitoring works performed by the Contractor during that period. The first quarterly environmental monitoring was likewise conducted during the second quarter of 2024 and the combined findings have been integrated with the second SMR for integration in the first Compliance Monitoring Report (CMR) submission in July 2024. Observed non-compliances were few but documented, and site instructions were issued to the Contractor appropriately. The Environmental and Social Services Division (ESSD) of the DPWH mandated under D.O. 58 of the DPWH shall also supervise and monitor the implementation of the RAP in-house.

#### 3.2.2 Contractor's Environmental Monitoring Activities

The Contractor established its own Environmental Management System (EMS), including the SSEMP (Version 2 received on April 2, 2024, after the first quarter reporting cut-off period in March 2024). The



final and approved version is annexed to the Second Quarterly Monitoring Report. The environmental objectives, actions, and targets outlined in the SSEMP are regularly monitored to protect the environment during the construction activities of the Contract Package I-3 components.

## 4. RESULT OF ENVIRONMENTAL MONITORING

### 4.1 Baseline Monitoring

The Environmental Baseline Monitoring (BES) Report prepared by the Contractor and reviewed by the Construction Supervision Consultant had already been attached during the first quarterly reporting. The environmental monitoring report for this quarter is attached as Annex 2. Except from the monthly Environmental Monitoring Report from the Contractor.

#### 4.1.1 Ambient Air Quality

A 24-hour ambient air sampling at two (2) sampling areas set in the EIS and JICA monitoring plan was conducted last May 27-28, 2024 at Stations A1 and A2 shown in the photos as shown below.



Source: SUT JV Progress Report, 2024

## 1) Sampling Location for Air Quality

Sampling was done to determine the concentrations of Nitrogen Dioxide, Sulfur Dioxide, TSP, and Carbon Monoxide (CO). The results are presented in Table 4.1 and graphically presented in Figure 4.1 below.

The sampling activity was conducted during sunny weather conditions. The results for NO<sub>2</sub>, SO<sub>2</sub>, TSP, and CO for twenty-four (24) hours were compared to National Ambient Air Quality Guideline Values (NAAQGV) of the Implementing Rules and Regulations (IRR) of the Philippine Clean Air Act (RA 8749) and Environmental Impact Statement (EIS 2014) results. All values for the pollutants identified except TSP in Station A1<sup>3</sup> were below their maximum permissible limits. Compared to the 2014 EIS data<sup>4</sup>, most parameters except also for TSP in Station A1 were lower than recorded in the EIS. This may be because the temperature for this sampling location was relatively higher than during the 2014 sampling, which allows for higher levels of dispersion.

The sampling lasted for 1140 minutes, which is the requirement for TSP. The filter from TSP sampling is where the metal concentration was obtained—the values from a direct Carbon Monoxide (CO) reading using a calibrated gas analyzer. At the time of measurement, the Carbon Monoxide concentration measured in sampling stations did not exceed the standard limit based on the NAAQGV standard. It must be emphasized, however, that the results represent only individual measurements during sampling.

Table 4.1. Results of 24-Hour Ambient Air Quality Monitoring (Environmental Monitoring Results as of end June 2024)

DCBCP-Package I-3			Department of Environment and Natural Resources (DENR) Administrative Order No. 2000-81 (Implementing Rules and Regulations of the Philippine Clean Air Act of 1999)																															
Location Station	Coordinates		TSP (µg/Nm³)				24 Hr TSP (µg/Nm³)				Nitrogen Dioxide: 24 Hr (µg/Nm³)				NO2 (µg/Nm³)				1 Hr Sulfur Dioxide				24 Hr Sulfur Dioxide				1 Hr CO				Carbon Monoxide 24 hour			
	North	East	EIS 2014	Standard Limit	Baseline 06-08 March	Q2	EIS 2014	Standard Limit	Q2	Baseline 2024	EIS 2014	Standard Limit	Q2	Baseline 2024	EIS 2014	Standard Limit	Q2	Baseline 2024	EIS 2014	Standard Limit	Q2	Baseline 2024	EIS 2014	Standard Limit	Q2	Baseline 2024	EIS 2014	Standard Limit	Q2	Baseline 2024	EIS 2014	Standard Limit	Q2	
			2014	2014	2014	2014	2014	2014	2014	2014	2014	2014	2014	2014	2014	2014	2014	2014	2014	2014	2014	2014	2014	2014	2014	2014	2014	2014	2014	2014	2014	2014	2014	2014
A1- Sto Nino Chapel, Along Mandug Road, Bigy Tigatto, Davao City	7° 09'50"N	125°35'23" 75"E	n/a	300	105	544	120	230	115	124	46	150	2.75	<0.55	n/a	200	16	<13	n/a	100	<2	9	3.7	340	2.75	240	n/a	30	<1	<1	<1	9	1	
A2- Leonora Heights, Bigy Cabantian, Davao City	7° 54'00"N	125°36'46" 11"E	n/a	300	130	<5	n/a	230	33	144	n/a	150	2.55	<0.55	n/a	200	16	<13	n/a	100	<2	6	n/a	340	2.55	<0.55	n/a	30	1	<1	n/a	9	1	

Notes: Pre-construction Baseline Sampling Date - 06-08 March 2024; Q2 Sampling Date: 27-28 May 2024.

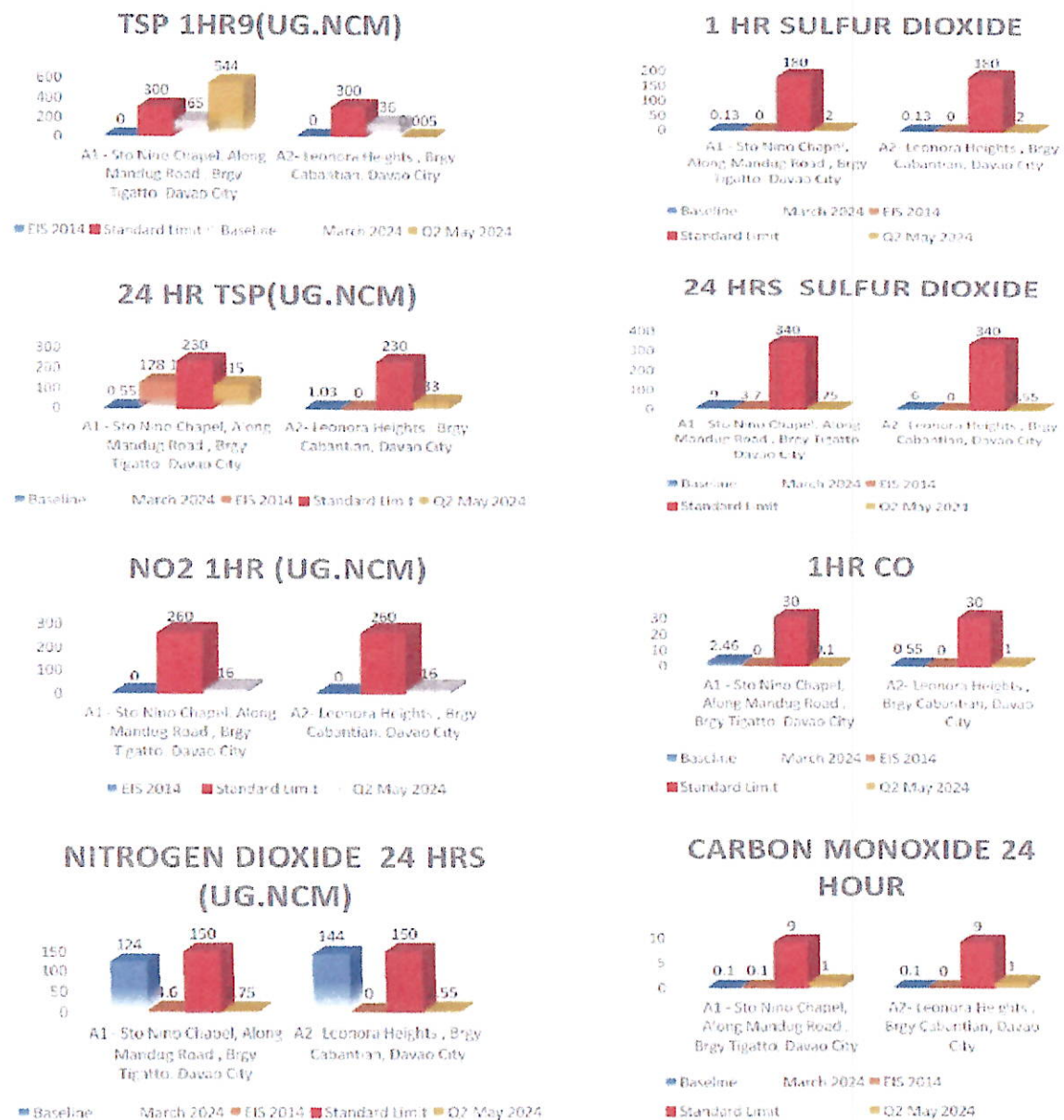
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EIS 2014	Standard Limit	Baseline 06-08 March 2024	Q2
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Source: Environmental Monitoring Report, SUT JUV 2024.

<sup>3</sup> Exceedance on TSP recorded for the 1-Hr sampling may have been attributable to wind direction, road condition and number of passing vehicles. No civil works for Package I-3 has yet taken place in the vicinity of this sampling station.

<sup>4</sup> There were **NO** 2014 EIS baseline information for the following parameters: 1-hr TSP for both Stations 1 and 2; 24-Hr TSP for Station A2; 24-Hr Nitrogen Dioxide (NO<sub>2</sub>) for Station A2; 1 Hr Nitrogen Dioxide (NO<sub>2</sub>) for Stations A1 and A2; 1-Hr Sulfur Dioxide (SO<sub>2</sub>) for both Stations A1 and A2; 24-Hr Sulfur Dioxide (SO<sub>2</sub>) for Station A2; 1-Hr Carbon Monoxide (CO) for both Stations A1 and A2; and 24-Hr Carbon Monoxide (CO) for both Station A2.



Source: Contractor' Quarterly Monitoring Report, June 2024.

Figure 4.1. Ambient Air Quality (Environmental Monitoring Results as of end June 2024)



#### 4.1.2 Ambient Noise Monitoring

The NPCC Guidelines provide the basis for determining whether the result of ambient noise measurement complies with the standard. The IFC Noise Management Guideline values and the NPCC 1980 guidelines were used as continuous ambient noise level monitoring standards. The categories of the sampling stations based on both guidelines are presented below. The results of the 2024 second quarter noise monitoring showed that nearly all stations exceeded the NPCC 1980 guide values for all periods. This is consistent with measurements undertaken during the 2014 EIS baseline measurement results. On the other hand comparing with the IFC-EHS 2007, there were only a few exceedances for the two time periods in this guideline (see Table 4 below).

Table 4.2 Noise Quality Guidelines

Station	Sampling Locations	Coordinates	Area Classification as per NPCC Guideline	Area Classification as per NPCC Guideline	NPCC Standards	IFC EHS Guidelines
N1	Sto Nino chapel along, Mandug road, Tigatto, Davao City	7° 8'12.08"N 125°35'18.50"E	Category AA	RIE	Standard (0900am-18:00pm) ( NPCC 1980 Class A&AA): 45 and 50 dBA	Daytime: 55 dBA (0700-2200)
N2	Leonora Heights Daisy Street corner Daitic Compound, Brgy Cabantian, Davao City, Davao del Sur	7° 8'48.80"N 125°36'46.11"E	Category A	RIE	Standard (0500hr-09:00hr) ( NPCC 1980 Class A&AA): 55 and 50 dBA	Nighttime: 45 dBA (2200-0700)

Source: IFC-EHS 2007, NPCC 1980

Note: Category A is a contiguous section primarily used for residential areas. Category AA - a section of contiguous area that requires quietness, such as areas within 100 meters from school sites, nursery schools, hospitals, and unique houses for the aged. 1 RIE – Residential; Institutional; Educational

#### 1) Results of Noise Level Monitoring

The results of quarterly noise level monitoring conducted for the second (2<sup>nd</sup>) Quarter of 2024 are shown below and compared with both the EIS ambient measurements 2014 and first (1<sup>st</sup>) Quarter of 2024 for the sampling stations under Package I-3.



The sampling activity for Noise Level Measurement at Station N1 was done on May 28-29, 2024 for the 24-hour monitoring. The noise meter was set up on the concrete ground in front of Sto Nino church, approximately 10 meters from the 4-lane main road along the Brgy Tigatto Highway. It is approximately 47 meters from the construction site and around 100 meters from the Deca Homes subdivision. Solid wastes such as concrete rubbles, weeds, dried twigs in the vicinity, and light and heavy vehicles pass along the road are observable.



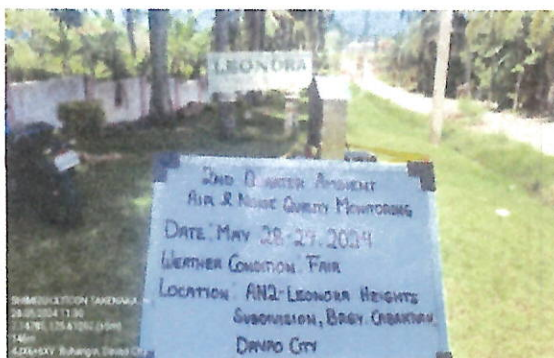
Figure 4.2. Sampling Station A1 for Noise Level Measurements

[illegible]

Figure 4.3 Sampling Locations for Stations A1 and A2

N2 Leonora Heights Daisy Street corner Daitic Compound,  
Brgy Cabantian, Davao City, Davao del Sur  
Residential Area around station 27+900 (End)  
7° 8'48.80"N 125°36'46.11"E

Noise Level Measurement sampling was conducted at Station N2 on March 07-08, 2024, and sampling time started at 10:20H up to 24 hrs. monitoring. A noise meter was set up on the concrete ground beside a grassy (vacant lot) residential area. It is situated on Daisy Street, along the road. The immediate area comprises several households, apartments, and small stores. From the results, only the morning period in two time zones they exceeded the NPCC standards, while 24 Leq values complied with IFC standards. Noise generally comes from passing various light vehicles alongside the main road, people chatting/walking, and animal sounds such as dogs barking, birds chirping during daytime, crickets, and other insects present at nighttime. The weather conditions during sampling are sunny. The traffic situation is light since it is far from the access road.



Source: Contractor' Quarterly Monitoring Report, June 2024

Figure 4.4 Actual sampling of Ambient Noise at Station 2



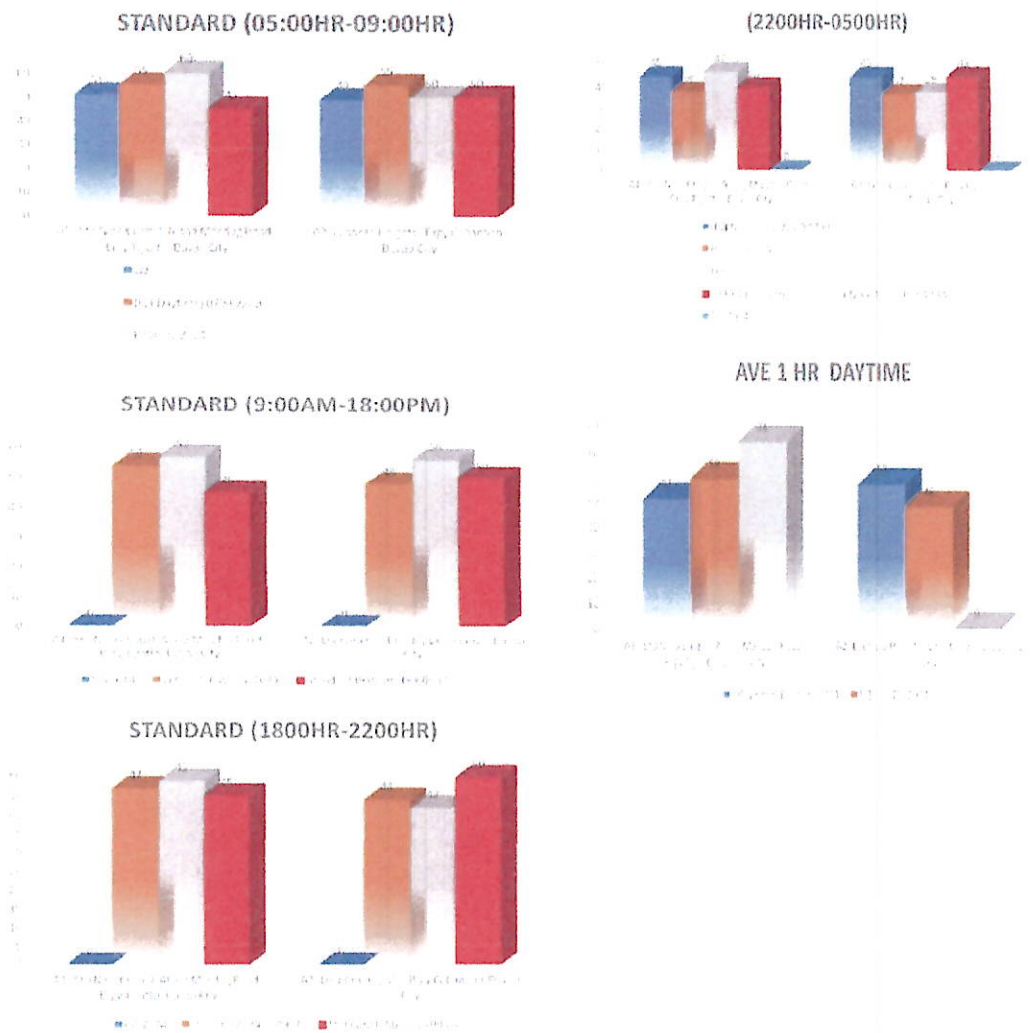
Table 4.3. Results for 24-Hour and Average 1-Hour Ambient Noise Monitoring

DCBCP-Package I-3			24 Hours Ambient Noise Monitoring Results																Ave 1 hr				
Location/Station	Coordinates																						
	North	East	Q2	IPC (Daytime 1700- 2200)	Baseline 2024	Standard (15:00hr- 07:00hr) (NPCC 1988 Class ASAA)	EIS 2014	Baseline 2024	Standard (15:00hr- 18:00hr) (NPCC 1988 Class ASAA)	Q2	EIS 2014	Baseline 2024	Q2	Standard (18:00hr- 22:00hr) (NPCC 1988 Class ASAA)	EIS 2014	IPC (Night time: 22:00- 0700)	Baseline 2024	Q2	Standard (22:00hr- 06:00hr) (NPCC 1988 Class ASAA)	EIS 2014	(day time) Baseline 2024	Q2	EIS 2014
A1 - Sto Nino Chapel, Along Mandug Road , Brgy Tigatto. Davao City	7° 8'59.58"N	125°35'23.7 5"E	51	55	60	45	n/a	57	55	54	n/a	47	49	45	n/a	45	38	47	40	n/a	51	59	74
A2- Leonora Heights , Brgy Cabantian, Davao City	7° 8'48.60"N	125°36'46.1 1"E	49	55	50	50	n/a	56	50	48	n/a	44	42	50	n/a	45	37	38	45	n/a	57	48	n/a

Notes: Pre-construction Baseline Sampling Date - 06-08 March 2024; Q2 Sampling Date: 27-28 May 2024.

Legend:

Q2	IPC (Daytime: 1700-2200)	Baseline 2024	Standard (15:00hr- 07:00hr) (NPCC 1988 Class ASAA)	EIS 2014
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Source: Contractor' Quarterly Monitoring Report, June 2024

Figure 4.5 Graphical Representation of Ambient Noise Test Results





Source: Baseline Environmental Survey Report, April 2024, SUT Joint Venture

**Figure 4.6 Noise Monitoring Stations**

#### 4.1.3 Surface Water Quality

Water quality testing for the upstream and downstream of the Lasang River were conducted on 05 March 2024 (pre-construction baseline environment survey); and 07 May 2024 (first quarterly monitoring during the second quarter) for the same water body. The Lasang River is classified as Class C water body in the EIS (based on 2014 tests). Class C water bodies are primarily used for the culture and growth of fish and other aquatic resources. Below is the location map and summary of the Surface Water Quality Tests:

Source: Environmental Impact Statement (EIS, 2014) and JICA Environmental Monitoring Plan



**Figure4.7. Water Sampling Locations**

The monitoring results for the two stations (Upstream and Downstream of Lasang River) are provided below. Exceedances in DO and Fecal Coliform are indicated. These may due to the presence of residential areas along the sampled river that increases the biological pollutants (DO

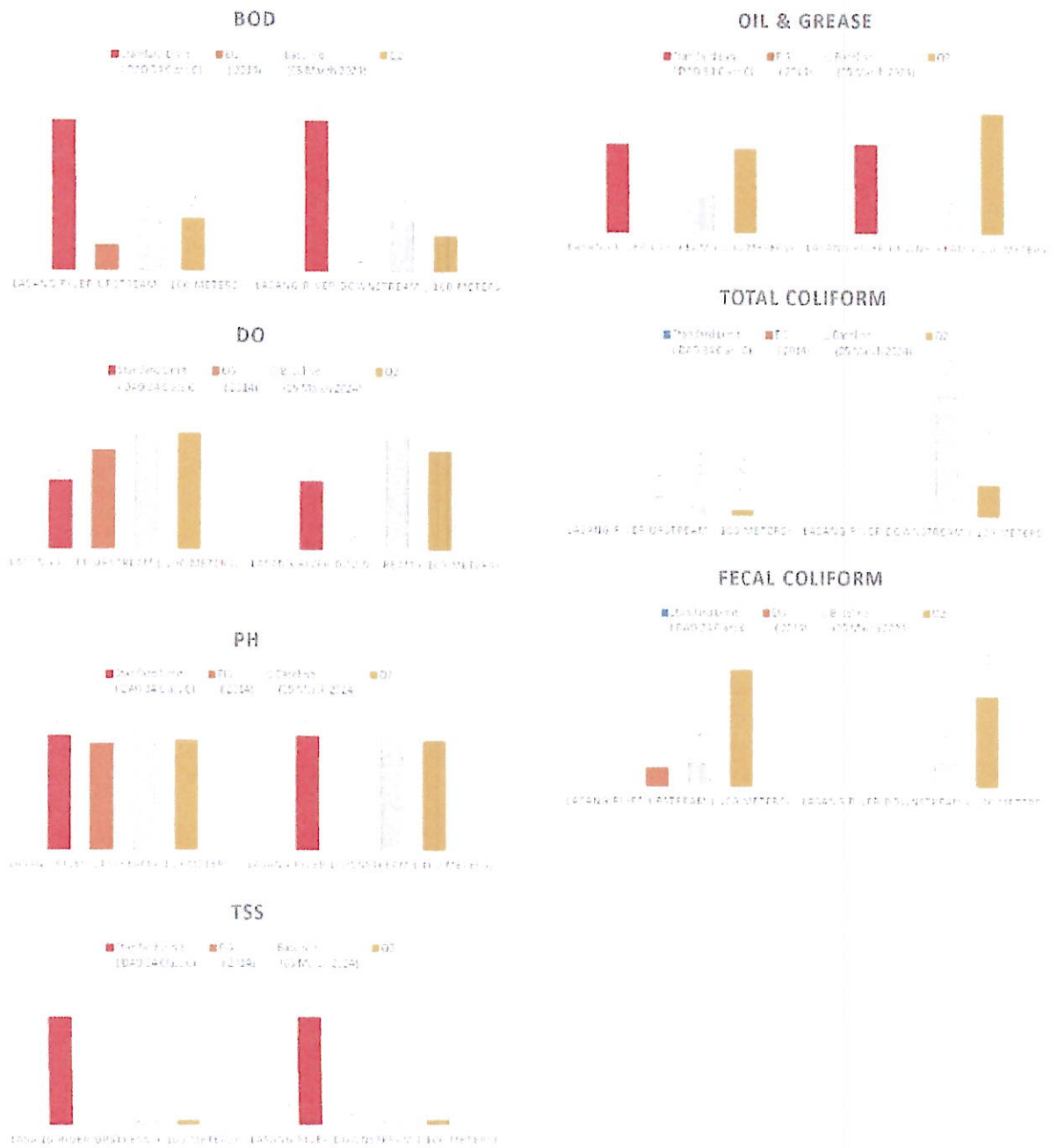
and Feces and total Coliform) resulting from untreated effluent disposal associated with human activities along the river. However, there were no available baseline information for the downstream from the 2014 EIS that these current results can be compared as shown in the following table and figures below.

Table 4.4 Comparative Surface Water Quality Monitoring Results for the 1st and Second Quarters of 2024 (Lasang River)

Particulars	Parameters						
	Dissolved Oxygen (DO), mg/L	pH @ 26.3 °C	Total Suspended Solids (TSS), mg/L	Biochemical Oxygen Demand (BOD), mg/L	Oil & Grease, MPN/100ml	Total Coliform, MPN/100ml	Fecal Coliform, MPN/100 ml
DAO 34 (1990), Class C	5 (min)	6.5 - 8.5	(g)	7(10)	2	5,000	-
DAO 2016-08, Class C	5	6.5 - 9.0	80	7	2	-	200
<b>Lasang River</b>							
<u>Upstream</u>							
Baseline: Q1 (05 March 2024)	8.5	8.4	<3.0	2.3	0.87	2,400,000	45,000
2024: Q2 (07 May 2024)	8.6	8.2	<3.0	2.4	1.9	1,700,000	220,000
<u>Downstream</u>							
Baseline: Q1 (05 March 2024)	8.3	8.42	<3.0	2.3	<0.50	35,000,000	45,000
2024: Q2 (07 May 2024)	7.3	8.2	<3.0	1.6	2.7	9,200,000	170,000
EIS 2014	No Baseline						

Source: Environmental Monitoring Report, SUT JV, June 2024.





Source: Source: Environmental Monitoring Report, SUT JV, June 2024.

Figure 4.8 Comparative Results for Water Quality Sampling



### 1) SW1 - Lasang River (Brgy Communal) Sta 28+200

100 meters upstream at the bridge construction

7° 8'59.96"N 125°37'2.19"E

May 07, 2024, 1000 hrs.



Source: Source: Environmental Monitoring Report, SUT JV, June 2024.

Figure 4.9 Actual water sampling at Lasang River (Upstream)

The sampling site is 100 meters upstream of the proposed bridge construction. The weather conditions during the sampling were sunny. Residential houses were observed nearby, and people were washing their clothes. Thick vegetation also covers the riverbanks. The river was gently flowing at a depth of 4.5 cm and width of 367 cm. Four (4) parameters conformed with DENR Class B and Class C guidelines. For this quarter, one (1) parameter, Total Coliform, does not have a specified class standard applicable to this water body and the result showed a very high count of 1,700,000 MPN/100ml which was actually less than the previous quarter's count. The two (2) non-conforming parameters were DO (8.6 mg/L), and Thermotolerant (Fecal) Coliform (220,000 MPN/100 mL) which is about 5 times higher compared to the first quarter's result.

### 2) SW2- Lasang River (Brgy Communal) Sta 28+200

100 meters downstream of the bridge construction

7° 8'58.89"N 125°37'8.92"E

May 07, 2024, 1000 hrs.



Source: Source: Environmental Monitoring Report, SUT JV, June 2024.

Figure 4.10 Actual water sampling at Lasang River (Downstream)



The sampling site is 100 meters downstream within the proposed bridge construction. The weather conditions during the sampling was sunny. Residential houses were observed in the vicinity. Thick vegetation also covers the riverbanks. The river was gently flowing at a depth of 7 cm and width of 270 cm. Three (3) parameters conformed with DENR Class B and Class C guidelines. One (1) parameter, Total Coliform, does not have a specified class standard applicable to this water body and the result showed a very high count of 9,200,000 MPN/100ml which was actually less than the previous quarter' count. Two (2) non-conforming parameters were DO (8.2 mg/L), and Thermotolerant (Fecal) Coliform (170,000 MPN/100 mL) which is about 4 times higher compared to the first quarter' result.

### **3) WATER QUALITY ASSESSMENT**

The room temperature should be 20-25 degrees Celsius for the water temperature: freezing point 0 Celsius, Boiling point 100 Celsius. On average, the temperature of tap water is roughly 13 degrees Celsius. Compared with the reading taken on-site, it can be concluded that most results are higher than the average attributed to the weather and time during the sample taking.

The pH of pure water is 7. Generally, water with a pH lower than seven is considered acidic, and a pH greater than seven is essential. The normal range in pH in surface water systems is 6.5-8.5 and the pH range. Again, all the pH of the water samples that had been taken are within range and generally basic.

For Dissolved Oxygen, if the dissolved oxygen level in water drops below 5.0mg/l, aquatic life is stressed. The lower the concentration, the greater the stress. All the results show that the oxygen level readings are higher than 5.0mg/l indicating that the water is suitable for aquatic life.

BOD is a measure of oxygen consumed by microorganisms under specific conditions. Most pristine rivers will have Biochemical Oxygen Demand below 1 mg/L. Moderately polluted rivers may have a BOD value of 2 to 8 mg/L. Rivers may be considered severely polluted when BOD values exceed 8 mg. All the water sampled for the project has a BOD reading below 7mg/L.

TSS are the most visible indicators of water quality. These suspended particles can come from soil erosion, runoff, discharges, stirred bottom sediments, or algal blooms. While some streams can naturally have high levels of suspended solids, clear water is usually considered to be healthy water. All water sampled had low suspended solid levels <3mg/L.

The concentration of oils and grease (OG) is an essential limitation for water quality and safety. OG in water can cause surface films and shoreline deposits, lead to environmental degradation, and induce human health risks when discharged in surface or ground waters. Also, OG might interfere with aerobic and anaerobic biological processes and lead to declined wastewater treatment efficiency.

All water sampled have low concentrations of OG 1.9 mg/L (for the upstream sampling point which was about 2 time elevated), and 2.7 mg/L (for the downstream sampling point that was very significantly elevated) compared to the first quarter' monitoring results. Fecal Coliform bacteria are present in the environment and the feces of all warm-blooded animals and humans but are not likely to cause illness. However, it indicates that disease-causing organisms (pathogens) could be in the water system. Fecal coliform bacteria are a sub-group of total coliform bacteria. The presence of fecal coliform in a water system indicates recent contamination and a

greater risk of pathogens. The laboratory results confirm that all water bodies sampled are contaminated with Fecal Coliforms and E. coli bacteria.

#### 4.1.4 Terrestrial Flora and Fauna

##### • Terrestrial Flora and Fauna

In the conduct of flora and fauna inventory for the Davao City Bypass Construction Project Package I-3, one-shot sampling was used on 12-16 March 2024 for the baseline and on 24-28 June 2024 for the second quarter. For terrestrial ecology, the species inventory was studied in one location using a consistent transect quadrat approach.

A total of four (4) sites for plant and bird surveys were monitored along the Davao City Bypass Construction Project Package I-3 alignment. Sampling sites are typically along rural-urban locations, ranging from relatively disturbed riparian habitats in rural areas to highly human settlements along urban areas. The Flora and Fauna sampling sites are described in the table below.

Table 4.5 Sampling Locations of Flora and Fauna

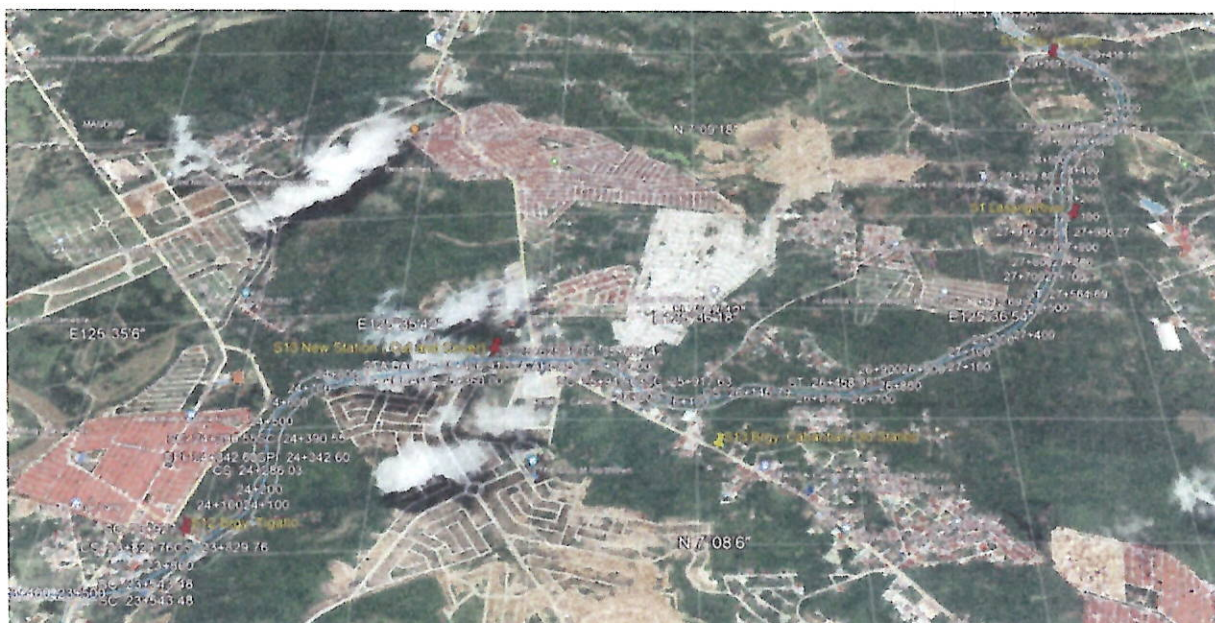
Description of Flora and Fauna Sampling Sites				
Sta. No.	Location	Coordinates	Description	Sampling ID
S1	Lasang River, Brgy. Communal	N 07° 08'59.3" E 125° 37'07.3"	Riparian Habitat near residential area	Transect 1 & Transect 2
				Site 1
				Site 1
				Transect 1
S12	Brgy. Tigatto	N 07° 08'09.07" E 125° 35'22.02"	Along national road/highly residential area (subdivision)	Transect 15
				Transect 11
New Proposed S13 Location	Brgy Cabantian	7° 8'33.81"N	Construction of Cut and Cover Tunnel	Transect 16
		125°35'53.87"E		Transect 12
Old S13	Brgy. Cabantian	N 7° 8'33.81"N E 125° 36'20.16"	Along national road exemplified by privately owned lot on other side	Transect 16
				Transect 12
S14	Brgy. Indangan	N 07° 09'35.32" E 125° 37'06.78"	Along national road	Transect 17
				Transect 13



During this monitoring period, the common species recorded in the observation sites are weeds where in the increase of the density might possibly be due to the rainy season where this weed species grown fast on that season. Importance value of flora and fauna species present in the observation sites with comparison to the baseline data are shown below.

Table 4.6 Importance Values of Top 5 Flora Species Recorded in Transect 1 (S12 Brgy Tigatto)

Scientific Name	Common Name	Abundance Baseline March 2024	Abundance Q2 June 2024	Frequency % March 2024	Frequency % Q2 June 2024	Relative Abundance % Baseline March 2024	Relative Abundance % Q2 June 2024	Relative Frequency % Baseline March 2024	Relative Frequency % Q2 June 2024	Importance Value Baseline March 2024	Importance Value Q2 June 2024
<i>Centrosema virginum</i>	Sourdestroffii type	34	34	44.11	44.11	25.13	25.13	19.65	19.65	29.43	29.43
<i>Calopogon muricatus</i>	Calopo	30	40	26.66	37.5	22.22	31.13	16.45	32	22.22	30.66
<i>Bahama Pectia L.</i>	Bahama beautyhead	25	25	23.07	22.01	19.25	17.93	14.25	14.25	19.25	19.65
<i>Mimosa pudica</i>	Mexthya	25	25	15	20	18.51	17.24	13.71	13.71	17.07	17.45
<i>Comocora umbellata</i>	Hogvine	20	20	17	12	14.51	13.79	10.97	10.97	13	13



Source: SUT JV Progress Report, June 2024

Table 4.7 Importance Values of Top 5 Flora Species Recorded in Transect 2 (S13 Brgy Cabantian Cut and Cover Tunnel Section)

Common Name	Abundance Baseline March 2024	Abundance Q2 June 2024	Frequency % March 2024	Frequency % Q2 June 2024	Relative Abundance % Baseline March 2024	Relative Abundance % Q2 June 2024	Relative Frequency % Baseline March 2024	Relative Frequency % Q2 June 2024	Importance Value Baseline March 2024	Importance Value Q2 June 2024
Hot Grass	113	115	15	17	24.19	25.42	14.2	14.24	14.19	14.67
Chinese Violet	90	90	13	13	19.9	19.9	12.56	12.56	13.54	13.54
Kudu	76	76	9	9	14.13	14.68	8.44	8.44	11.54	11.54
Cassia sinensis	13	13	6	6	17.22	17.02	3	3	6.42	6.42
Cassia	13	13	4	4	18.18	18.18	2.5	2.5	3.21	3.21
Cordia	9	9	3	3	2.23	2.23	1.9	1.9	2.9	2.9



Table 4.8 Importance Values of Top 5 Flora Species Recorded in Transect 3 (S1 Brgy Communal, Bridge Section)

Source: SUT JV Progress Report, June 2024

Scientific Name	Common Name	Abundance Baseline March 2024	Abundance Q2 June 2024	Frequency % March 2024	Frequency % Q2 June 2024	Relative Abundance % Baseline March 2024	Relative Abundance % Q2 June 2024	Relative Frequency % Baseline March 2024	Relative Frequency % Q2 June 2024	Importance Value Baseline March 2024	Importance Value Q2 June 2024
<i>Neustanthus Phaseoloides</i>	Tipocal Kudzu	257	267	17.13	22.47	45.03	45.94	3	3.2	44.62	44.96
<i>Scleria secans</i>	Razor grass	114	120	7.07	10	20	20.2	1.24	1.25	19.79	20.12
<i>Chromolaena odorata</i> L.	Hagony	90	92	6.66	6.69	15.73	15.68	1.16	1.18	15.6	15.92
<i>Opismenus compositus</i>	Running mountain grass	64	70	6.25	6.57	11.22	11.78	1.09	11.02	11.48	11.65
<i>Itelylepis dentata</i>	Downy maiden fern	45	45	4.44	4.44	7.69	7.69	0.77	0.77	8.03	8.03

Table 4.9 Importance Values of Top 5 Flora Species Recorded in Transect 4 (S14 Brgy Indangan, End of Project)

Source: SUT JV Progress Report, June 2024

Scientific Name	Common Name	Abundance Baseline March 2024	Abundance Q2 June 2024	Frequency % March 2024	Frequency % Q2 June 2024	Relative Abundance % Baseline March 2024	Relative Abundance % Q2 June 2024	Relative Frequency % Baseline March 2024	Relative Frequency % Q2 June 2024	Importance Value Baseline March 2024	Importance Value Q2 June 2024
<i>Neustanthus Phaseoloides</i>	Tipocal Kudzu	257	267	17.13	22.47	45.03	45.94	3	3.2	44.62	44.96
<i>Scleria secans</i>	Razor grass	114	120	7.07	10	20	20.2	1.24	1.25	19.79	20.12
<i>Chromolaena odorata</i> L.	Hagony	90	92	6.66	6.69	15.73	15.68	1.16	1.18	15.6	15.92
<i>Opismenus compositus</i>	Running mountain grass	64	70	6.25	6.57	11.22	11.78	1.09	11.02	11.48	11.65
<i>Itelylepis dentata</i>	Downy maiden fern	45	45	4.44	4.44	7.69	7.69	0.77	0.77	8.03	8.03

## 1) Documentation During Actual Survey/Monitoring



SUT JV Progress Report, June 2024

Source:

Figure 4.11 Actual Sampling Locations for Flora and Fauna



Source: SUT JV Progress Report, June 2024

Figure 4.12 Representative Plants with Highest Abundance Recorded

## 2) AQUATIC FLORA AND FAUNA

Only Two (2) species were seen in one sampling location along the station. The *Rhinella marina* (cane toad) dominated the entire survey with a relative abundance of 84.61 % and *Arothron*



manilensis (Buriring) with 15.38 %. Representatives of Herpetofauna from the survey site are shown in Figure 4.13. There are no changes on the species composition recorded compared to the baseline.

Table 4.10 Comparative Species Composition and Abundance of Fauna (end of June 2024)

Scientific Name	Common Name	Abundance Baseline March 2024	Abundance Q2 June 2024	Relative Abundance % Baseline March 2024	Relative Abundance % Q2 June 2024
<i>Rhinella marina</i>	Cane toad	45	55	75	84.61
<i>Arothron manilensis</i>	Buriring	15	10	25	15.38

Source:

SUT JV Progress Report, June 2024



Figure 4.13 Representative Frogs from the Lasang River Survey Site

## 4.2 Compliance Monitoring

The progress of compliance with the ECC and EMP are summarized in Table 7. below.

### 4.2.1 ECC Conditions

Table 4.11 Summary of ECC Conditions

Conditions	Status of Compliance/Comments/Activities Taken/Recommendation
<b>Environmental Management</b>	
1. Conduct an adequate Information, Education, and Communication (IEC) Program to inform and educate all stakeholders about the mitigating measures embodied in its EIS, the conditions stipulated in this Certificate, and the environmental and human safety features of the project for greater awareness, understanding and sustained acceptance of the project. The program shall be submitted to EMB Central Office and EMB Regional Office No. XI on an annual basis;	IEC activities during this period have been limited to courtesy visits to the Barangay Captains to inform them of the commencement of works for Package I-3. Interactions with the affected persons are also done to inform them of the Right-of-Way Acquisition (ROWA) status, request permits to enter, and gather documents to meet the ROWA requirements for completing the compensation as per applicable entitlements. A Stakeholder Engagement Plan shall be submitted for the next reporting period.
2. Implement a Comprehensive Social Development Program (SDP) and submit a semi-annually separate report with the	The DPWH Department Order 130, series of 2016, and provisions of Republic Act 6685, an Act Requiring Private Contractors (to whom national,

<p>Compliance Monitoring Report (CMR) to the EMB Regional Office, a copy furnished to EMB Regional Office No. XI.</p>	<p>provincial, city, and municipal public works projects have been awarded under contract) to Hire at least Fifty Percent of the Unskilled and at least Thirty Percent of Skilled Labor Requirements are being strictly adhered to. As mandated, a minimum of 50 percent of the unskilled labor and 30 percent of the skilled labor requirement shall be recruited and equally distributed to both men and women.</p> <p>To date, there are 85 workers under the project, including support personnel. Of this number, 23 are skilled workers and 14 are unskilled workers comprising the workforce. Workers are projected to be mobilized when construction operation work is at full swing. Hiring of workers is continuing with those from the affected barangays as a priority, including the project-affected people (PAPs) and persons with disability (PWDs).</p> <p>The combined skilled workforce from the directly affected Barangays and Davao City is 12 or 14.11 percent of 23 skilled workers. Eight (9.41%) of unskilled workers are from the directly affected barangays. The details are presented in Annex 4-List of Unskilled and Skilled Labor. Continuous monitoring activities will be conducted by implementing the Community-Based Employment Program (CBEP).</p> <p>In addition, a Social Development Program (SDP) shall be established with local hiring as one of the components. Progress for this shall be reported during the next ERMR.</p>
<p style="text-align: center;"><b>General Conditions</b></p>	
<p>3. The operations shall conform to any relevant provisions of RA 6969 (Toxic Substances and Hazardous and Nuclear Wastes Control Act of 1990, RA 8749 (Philippine Clean Air Act of 1999, RA 9003 (Ecological Solid Waste Management Act), and RA 9275 (Philippine Clean Water Act of 2004) and applicable provisions of P.D. 705, R.A. 9147 (Wildlife Resources Conservation and Protection Act); and R.A. 9072 (National Caves &amp; Cave Resources Management &amp; Protection Act, 2001);</p>	<p>Act of 1999), and RA 9275 (Philippine Clear Water Act of 2004). As such, garbage bins are provided while the wastes generated from the project offices are collected by designated city garbage collectors daily. In addition, the construction waste generated for the period is insignificant, while no hazardous waste was generated during this period. Moreover, dust pollution and greenhouse gas emissions from the access road improvement and camp construction were negligible.</p> <p>There were no construction activities along the primary project road alignment. Regarding baseline survey activities, (i) ambient air sampling survey was conducted on March 6-8, 2024 (refer to Annex X); (ii) ambient noise sampling survey was conducted on March 7-8, 2024 (refer to Annex X); (iii) surface water sampling survey was conducted on March 7-8, 2024 (refer to Annex X); and (iv) terrestrial flora and fauna survey was conducted on March 12-16, 2024 (refer to Annex X). Moreover, no on-site accidents have been reported, and the peace and order situation are</p>



	normal. In addition, security personnel are continuously deployed in the Contractor's work areas.
4. The DPWH shall ensure that: a. Contractor's All Risk Insurance (CARI) is provided to cover expenses for the following: i. Indemnification/compensation of damage to life and property that the project may cause; ii. Abandonment/decommissioning of the project facilities related to preventing possible negative impact.	Complied, on file, and available upon request.
b. A Quick Response Fund (QRF) to supplement the CARI shall also be set up. QRF will be used for emergency repairs/restoration of the critically damaged infrastructure facilities after calamity to restore mobility and ensure safety in the affected areas;	This is for compliance with Package I-3, albeit this has been complied with for Package I-1.
c. Multipartite Monitoring Team (MMT) shall be established, composed of representatives (s) from the DPWH, EMB, a local environmental Non- Government Organization (NGO), primary impact area/barangays, the concerned LGUs, other Governmental agencies and stakeholders to include the University of the Philippines, HOLCIM- Davao Plant, Davao Light and Power Corporation (DLPC), Davao City Water District (DCWD) and National Grid Corporation of the Philippines (NGCP). The MMT shall primarily oversee the proponent's compliance with the conditions of the ECC, Environmental Management Plan, Monitoring Plan, and other commitments in the EIS documents.	A draft MOA for Package I-3 was prepared and patterned after the MOA for Package I-1. This MOA will be executed between the DPWH and DENR- EMB.  The Supervision Consultant prepared a draft manual on operations (MOO). When the MOA for Package I-3 is signed, the MMT will have access to it.
d. A replenishable Environmental Monitoring Fund (EMF) as per DENR-DPWH MOA dated May 27, 1999, and DPWH Order 245 Series of 2003, attendant to the operation and monitoring activities of the MMT including, but not limited to, capacity building, training, actual sampling and laboratory analysis. Said provisions must be considered with the DAO 2003-30;	This is already included in the MOA, and a proposed amount has been identified. When the MOA is approved, it will be made available to the MMT.
e. The Environmental Unit (EU) to competently handle the environment-related aspects of the project. In addition to the monitoring requirements specified in the Environmental Management Plan (EMP), the Environmental Monitoring Plan (EMoP).  It shall: i) Monitor actual impacts vis-a-vis the predicted impacts and management measures in the EIS; ii) Submit quarterly (SMR) and semi-annually (CMR and CMVR) all environmental reports to EMP Region XI and the EMB Central Office, respectively,	The DPWH is still filling up positions for this EU. In the meantime, the Supervision Consultant provides environmental management and monitoring support according to its Terms of Reference. Full compliance shall be reported during the next ERMR.  An SMR has already been submitted online to the EMB-CO. The DPWH's Pollution Control Officer (PCO) uploaded the SMR No. 1 with assistance from the Supervision Consultant. This will be a continuing compliance.

and ensure that monitoring and reporting areas are carried out as required.	
f. A replenishable Environmental Monitoring Fund (EMF) as per DENR-DPWH MOA dated May 27, 1999, and DPWH Order 245 Series of 2003, attendant to the operation and monitoring activities of the MMT including, but not limited to, capacity building, training, actual sampling and laboratory analysis. Said provisions must be considered with the DAO 2003-30;	This is already included in the MOA, and a proposed amount has been identified. When the MOA is approved, it will be made available to the MMT.
5. The proponent shall submit to the EMB Central Office a Resettlement and Compensation Action Plan before project implementation. Moreover, the said plan should be implemented, and the status thereof reported to EMB semi-annually;	Continuously being complied. As of this reporting period, the status of the ROWA is provided is pending upon receipt of the ROWA Implementation Progress Report.
6. The proponent shall consider the results of the feasibility stage Road Safety Audit (RSA) and Road Design (including those components considering geological condition/features) in the preparation of the DED and during implementation/construction	Continuously being complied. Safety signs and barricades are installed where work has started and is continuing.
7. The proponent shall ensure that its contractors and sub-contractors strictly comply with the relevant conditions of this Certificate:	Contractors' and subcontractors' compliance with ECC conditions is being monitored. Site instructions are issued where applicable and necessary.
8. No cutting and clearing of trees and other woody vegetation within the project's affected areas shall be undertaken without the special tree cutting and tree earth balling permit. The affected areas shall be rehabilitated using the project's approved rehabilitation/restoration plan.	DENR Region XI CENRO Davao City has yet to issue a Permit to Cut Trees to DPWH and the Contractor. The DENR has already completed tree validation, and the contractor has yet to pay for the tree-cutting permit application requirements. The contractor has already made an application in compliance with their contractual obligation.
9. If the results of the Detailed Engineering Design showed a need for the adjustment of the Project's alignment, the corresponding centerline of the adjustment shall not exceed the 20-meter distance on both sides from the centerline of the previous alignment.	Complied per two (2) ECC amendments already issued upon DPWH application with updated EIS based on detailed design.
10. Activities shall be undertaken only what was stipulated in the final EIS. Should there be any expansion of the project beyond the project description or any change in the activity or transfer of location or realignment, it shall be subject to a new Environmental Impact Assessment and	ECC was amended twice in 2018 and 2019 upon DPWH application with updated EIS based on detailed design.
11. In case of a transfer of ownership of this project, these same conditions and restrictions shall apply, and the transferee shall be required to notify the EMB Central Office within fifteen (15) days of the transfer to allow the necessary changes brought about by such transfer.	Not applicable

Source: Environmental Compliance Certificate (ECC) (ECC-CO-1503-0007), Southern Mindanao Economic Corridor (Davao City Bypass Construction) Project.



#### 4.2.2 Recommendations to Government Agencies Concerned

**Table 4.12 List of Recommendations to Government Agencies Concerned**

Recommendations to Government Agencies Concerned	Responsible Agency	Remarks
1. Compliance with the occupational health and safety and Sanitation Code of the Philippines;	DOH, DOLE, Barangay/ Municipal Health Offices	The Occupational Health and Safety Plan is being implemented.
2. Compliance with the Labor Code of the Philippines;	DOLE, BWC  DPWH	The contractor complies with this; progress will be monitored and reported in the next reporting period. OSH Training waDEs provided to the contractor's staff, including DPWH and the Supervision Consultant. DWPH D.O. 130 Series of 2016 is being complied.
3. Ensure conformance with the Ecological Solid Waste Management Act	LGU	This is for compliance with the Package I-3 work location.
4. Secure appropriate zoning clearance	LGU	The city government has approved the use of areas within the project alignment. Related documents are being compiled.
5. Before cutting and clearing of trees & other woody vegetation within the project area, the proponent shall secure a Tree Cutting and Tree Earth Balling Permit supported with a tree inventory report that should originate from DENR/ CENRO/PENRO/Region, which has jurisdiction over the project area.	DENR Central Office	For continuing compliance. Tree-cutting permits have yet to be issued for this Package I-3.
6. The proponent shall consider including a walkable—bikeable lane in the project's Detailed Engineering Design.	DPWH	For Package I-3, the detailed design is being reviewed for compliance.
7. Priority of employment shall be given to qualified residents. Adequate public information for jobs available to residents in the affected areas must be provided.		Coordination with Barangay Officials is undertaken for additional job referrals per DPWH D.O. 130 Series of 2016.
8. Conduct regular dialogue, consultations, and FGDs with the project's stakeholders to settle any conflicts and address identified valid concerns for a substantive and satisfactory public acceptance of the project. Likewise, submit process documentation of the said activities to EMB.		Continuing compliance. Discussions of concerns with stakeholders are being conducted as part of the regular activities of DPWH, Supervision Consultant, and Contractor. Necessary permits and clearances will be secured where applicable for the following associated facilities before establishment: <ul style="list-style-type: none"> <li>• Batching Plant(s)</li> <li>• Disposal Site(s)</li> <li>• Quarry/Borrow areas</li> <li>• Temporary Road Closure</li> </ul>
9. Design and undertake a practical continuing Information, Education, and Communication (IEC) Program		IEC is being done continuously. DPWH, the Supervision Consultant,



throughout the project's pre-construction, construction, and operational phases, especially on the Traffic Management Plan to be implemented.		and the Contractor continue coordinating with barangay officials and lot owners.
10. First aid facilities and services for staff and employees shall be made available onsite during the construction and operation of the project.		Company nurses will be hired, and clinic facilities will be set up in compliance with the DOLE-approved Construction Safety Management Plan.

Source: Environmental Compliance Certificate (ECC) (ECC-CO-1503-0007), Southern Mindanao Economic Corridor (Davao City Bypass Construction) Project.

#### 4.2.3 Environmental Management Plan/Program

**Table 4.13 Review of the Status of Environmental Management Plan/Program Implementation**

Enhancement/Mitigation Measures	Status of Implementation		Actions Taken
	Yes	No	
<b>Air Quality</b>			
<ul style="list-style-type: none"> <li>- Use construction machinery and vehicles in good condition,</li> <li>- Limit speed for construction machinery at construction sites adjacent to residential areas</li> <li>- Regular water sprinkling</li> </ul>	<input type="checkbox"/>		For continuing compliance
<b>Water Quality</b>			
<ul style="list-style-type: none"> <li>- Proper treatment of water pollutants generated from construction works under Philippine Regulations</li> <li>- Arrange silt traps or sedimentation ponds, as necessary, not to discharge wastewater from construction sites to public water channels directly,</li> <li>- Shelter scattered river mud from dredging works by using silt fence, as necessary</li> <li>- Install adequate portable toilets for workers</li> </ul>		<input type="checkbox"/>	For continuing compliance
<b>Waste</b>			
<ul style="list-style-type: none"> <li>- Dispose of wastes at the designated places after considering the possibility of re-use</li> <li>- Rolling compaction of soil waste at the disposal site</li> <li>- Provide education on Waste Management to construction workers</li> <li>- The concerned agencies should approve all disposal sites</li> </ul>	<input type="checkbox"/>		For continuing compliance
<b>Noise</b>			
<ul style="list-style-type: none"> <li>- Avoiding works of heavy equipment at night time around sensitive areas such as residential area</li> <li>- Install soundproof walls/acoustic enclosures as necessary</li> <li>- Disseminate the construction schedule to surrounding communities to obtain their consensus</li> </ul>	<input type="checkbox"/>		For continuing compliance
<b>Natural Environment</b>			

<ul style="list-style-type: none"> <li>- Terrestrial Flora and Fauna</li> <li>- Cutting of trees only in designated areas according to issued Permits from concerned authorities</li> <li>- Plant trees at sites designated by DENR</li> </ul>	<input type="checkbox"/>	<input type="checkbox"/>	Cutting trees in designated areas with Permits is allowed. Where this is being done, site instructions are issued and closely monitored. Planting sites shall be coordinated with the DENR PENRO/CENRO.
<ul style="list-style-type: none"> <li>- Aquatic flora and Fauna</li> <li>- Same as mitigation measures explained in Water Quality</li> </ul>		<input type="checkbox"/>	For continuing compliance
<b>Social Environment</b>			
<ul style="list-style-type: none"> <li>-Land use</li> <li>- Cutting trees only in designated areas according to issued Permits from concerned authorities</li> </ul>	<input type="checkbox"/>	<input type="checkbox"/>	For continuing compliance
<ul style="list-style-type: none"> <li>- Water use</li> <li>- Inform the construction schedule and contents of the downstream communities in advance</li> <li>- Provide alternative water sources in case groundwater is affected by construction works</li> </ul>		<input type="checkbox"/>	For continuing compliance  For continuing compliance
<ul style="list-style-type: none"> <li>- Existing social infrastructures and services</li> <li>- Preparation of appropriate Resettlement Plan</li> <li>- Informing resettlement works in the communities on time.</li> </ul>		<input type="checkbox"/>	RAP is being implemented
<ul style="list-style-type: none"> <li>- Control traffic volume.</li> </ul>		<input type="checkbox"/>	For continuing compliance
<b>Health and Safety</b>			
<ul style="list-style-type: none"> <li>- Infectious Diseases such as HIV/AIDS</li> <li>- Prepare and implement the HIV/AIDS - Prevention Plan</li> </ul>	<input type="checkbox"/>	<input type="checkbox"/>	For continuing compliance
<ul style="list-style-type: none"> <li>- Occupational health and safety</li> <li>- Prepare and implement a Safety Plan</li> <li>- Provide education to construction workers on Health and Safety at the construction site</li> </ul>			For continuing compliance
<ul style="list-style-type: none"> <li>- Community health and safety</li> <li>- Prepare and implement Health and Safety</li> </ul>			For continuing compliance
<b>Emergency Risk</b>			
<ul style="list-style-type: none"> <li>- Flood</li> <li>- Prepare and implement a Safety Plan and Risk - Reduction Management Plan.</li> </ul>			For continuing compliance
<ul style="list-style-type: none"> <li>- Fire</li> <li>- Prepare and implement a Fire Prevention/Safety Plan and Risk Reduction Management Plan.</li> </ul>			For continuing compliance

Source: Supervision Consultant

### **4.3 Monitoring RAP Implementation**

The Resettlement Action Plan (RAP) implementation is implemented by the Department of Public Works and Highways (DPWH) through its Roads Management Cluster 1 (Bilateral) under the Unified Project Management Office. The Supervision Consultant's scope of work is to facilitate its subsequent implementation and record accordingly based on the information requirements as presented below:



#### 4.3.1 Progress of Updating the RAP during the Detailed Engineering Design (DED)

The summary of the progress of the updating the RAP during the detailed engineering design is as shown below:

Table 4.14 Summary Progress of Updating the RAP during the DED

Monitoring Items	Status of Implementation
Validate number of lots affected	
Validate number of structures affected	
Validate crops/trees affected	
Engage GFI for updating price offer for land	
Update replacement cost of structures/improvements	
Update price offer of crops/trees to current market value	
Recompute cost estimate for land	
Recompute cost estimate for structures/improvements and crops/trees	
Finalize cost for Livelihood Restoration and Improvement Program (LRIP)	
Finalize number of project-affected households	
Modify RAP, reflecting all changes	
Disclose Final Relocation Plan	
Finalize total relocation cost	
Reflect all changes in letter offers, budget adjustment and all sections of Updated RAP	

Source: Internal and External Monitoring Reporting of the DPWH RMC (1) – UPMO as of March 2024.

#### 4.3.2 Monitoring Items and Results during the Reporting Period

The items for reporting during the period are as shown below. This will be updated with the progress during the project' continuing implementation.

Table 4.15 Monitoring Items and Results (as of June 2024)

Monitoring Item	Monitoring Results during Report Period	Remarks (Measurement Point, Frequency, Method, Etc.)
-----------------	---	--

Involuntary Resettlement*	No information available from both internal and external monitoring as of the reporting period. To be reported in subsequent ERMIs when made available.	<u>Measurement Point</u> • Project sites <u>Frequency</u> • Monthly (Involuntary Resettlement, Vulnerable Groups, Livelihood and Local Economy) • As necessary (Misdistribution of Benefit and Damage, Local Conflict of Interest) <u>Method</u> • Check relocation and payment records
Vulnerable Groups*		
Livelihood and Local Economy*		
Misdistribution of Benefit and Damage		
Local Conflict of Interest		

\*Monitoring for Involuntary Resettlement, Vulnerable Groups, Livelihood and Local Economy is to be done by internal and external monitoring defined in the RAP.

#### 4.3.3 Status of Land Acquisition for Package I-3

As of the end of June 2024, a total of 39 out of 154 lots have been issued Permit to Enter (PTE) or Writ of Possession (WOP) which is 25.4 % of the total number of lots. This cover a RROW area of 119,910 sq.m. equivalent to 32.2 % of the total RROW of 372,687 (refer to Table 4.16).

**Table 4.16 Status of Land Acquisition for Package I-3**

PTE Status	No. of Lots	% Lots	Land Area	% Total Land Area
With signed PTE/WOP	39	25.4	119,910	32.2
No signed PTE	114	74.0	252,777	67.8
Public Domain	1	0.6	34,602	9.3

Source: DPWH ROWA Team, as of end March 2024

.The details of the handing over of the land to the Contractor is shown in Table 4.17 below.

**Table 4.17 Status of Handing Over of Land to Contractor for Package I-3**



BARANGAY	TOTAL PROJECT ROW (sq.m)	PRIVATELY-OWNED	GOVERNMENT LAND	ROW AREA WITH PTE/WOP and/or ADRI/ARI	ROW AREA WITHOUT PTE/WOP and/or ADRI/ARI	% ROW AREA HANDED OVER TO CONTRACTOR	% OF REMAINING ROW AREA TO BE HANDED OVER TO CONTRACTOR
TIGATTO	90,166	90,166	0	11,103	79,063	12.3	87.7
CABANTIAN	156,071	121,469	34,602	11,079	144,992	7.1	92.9
COMMUNAL	26,143	26,143	0	20,844	5,299	79.7	20.3
INDANGAN	100,307	100,307	0	44,771	55,536	44.6	55.4
<b>TOTAL</b>	<b>372,687</b>	<b>338,085</b>	<b>34,602</b>	<b>87,797</b>	<b>284,890</b>	<b>23.6</b>	<b>76.4</b>

Source: DPWH ROWA Teamt as of end March 2024.

#### 4.3.4 Status of Compensation

Information on the status of compensation when made available from the DPWH ROWA implementation team shall be provided in the table provided below.

Table 4.18 Status of Compensation to date (as of June 2024)

TYPE OF IMPACT	STATUS OF COMPENSATION	TIGATTO	CABANTIAN	COMMUNAL	INDANGAN	TIGATTO	TOTAL
LAND	TOTAL ELIGIBLE PAPs						
	FULLY PAID						
	PARTIALLY PAID						
	PROGRESS %						
STRUCTURE	TOTAL ELIGIBLE PAPs						
	FULLY PAID						
	PARTIALLY PAID						
	PROGRESS %						
CROPS AND TREES	TOTAL ELIGIBLE PAPs						
	FULLY PAID						
	PARTIALLY PAID						
	PROGRESS						
	TOTAL ELIGIBLE PAPs						
	FULLY PAID						



LOSS OF INCOME (BUSINESS OWNERS)	PARTIALLY PAID PROGRESS %					
LOSS OF INCOME (DISPLACED EMPLOYEES)	TOTAL ELIGIBLE PAPs FULLY PAID PARTIALLY PAID PROGRESS %					
LOSS OF INCOME FOR AGRI (INCLUDING TENANTS, CARETAKERS, RENT-FREE-FARMERS)	TOTAL ELIGIBLE PAPs FULLY PAID PARTIALLY PAID PROGRESS %					

Source: Table provided by DPWH ROWA Team, and information collaborated with Supervision Consultant as of end June 2024.

#### 4.3.5 Progress of Actual Relocation

Information on the status of actual relocation when made available from the DPWH ROWA implementation team shall be provided in the table provided below.

Table 4.19 Progress of Actual Relocation (as of June 2024)

NUMBER OF AFFECTED HOUSEHOLDS	TOTAL AFFECTED HOUSEHOLDS			SELF-RELOCATION			PERMANENT HOUSING (SOCIALIZED)			PERMANENT HOUSING (ECONOMIC)			PUBLIC RENTAL FACILITY		
	Total No. of Affected Households	Male-Headed	Female Headed	Total	Male-Headed	Female Headed	Total	Male-Headed	Female Headed	Total	Male-Headed	Female Headed	Total	Male-Headed	Female Headed
BARANGAY															
TIGATTO															
CABANTIAN															
COMMUNAL															
INDANGAN															
TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Source: Table provided by DPWH ROWA Team, and information collaborated with Supervision Consultant as of end June 2024.

#### 4.3.6 Status of Project-affected Livelihoods

Information on the status of project-affected livelihoods when made available from the DPWH ROWA implementation team shall be provided in the table provided below.

Table 4.20 Status of Project-affected Livelihoods (as of June 2024)

PAP Category	Number of PAPs	Assistance Provided
PAPs with affected business/livelihood source		
Other employees/workers of affected businesses		
Vulnerable (Households headed by poor, elderly, solo-parent w/dependents, PWDs		

Source: Table provided by DPWH ROWA Team, and information collaborated with Supervision Consultant as of end June 2024.

#### 4.3.7 Summary of Trainings Conducted

Information on the trainings conducted when made available from the DPWH ROWA implementation team shall be provided in the table provided below.

Table 4.21 Summary of Trainings Conducted (as of June 2024)

Trainings Conducted	TIGATTO	CABANTIAN	COMMUNAL	INDANGAN	TOTAL
No. of Planned Sessions					
No. of Sessions Conducted					
No. of Eligible Project Affected Household					
No. of Eligible Project Affected Household Attended					
No. of Eligible Project Affected Person (Total)					
No. of Eligible Project Affected Person (Female)					
No. of Eligible Project Affected Person (Male)					
No. of Eligible Project Affected Person Attended (Total)					
No. of Eligible Project Affected Person Attended (Female)					



[illegible]

Source: Table provided by DPWH ROWA Team, and information collaborated with Supervision Consultant as of end June 2024.

#### 4.3.8 Summary of Progress Provision of Special Assistance to Vulnerable Groups

Information on the progress of provisioning of special assistance to vulnerable groups when made available from the DPWH ROWA implementation team shall be provided in the table provided below.

### Table 4.22 Summary Progress of Provision of Special Assistance to Vulnerable Groups

Provision of Special Assistance to Vulnerable Groups	TIGATTO	CABANTIAN	COMMUNAL	INDANGAN	TOTAL
# OF ELIGIBLE VULNERABLE HOUSEHOLDS (HH)					
# OF VULNERABLE HH THAT RECEIVED INCONVENIENCE ALLOWANCE					
# PAPs WHO REGISTERING/SEEKING SKILLS TRAINING (TOTAL)					
# PAPs WHO REGISTERING/SEEKING SKILLS TRAINING (Female)					
# PAPs WHO REGISTERING/SEEKING SKILLS TRAINING (Male)					
# PAPs FROM VULNERABLE HH COMPLETED SKILLS TRAINING (TOTAL)					
# PAPs FROM VULNERABLE HH COMPLETED SKILLS TRAINING (Female)					
# PAPs FROM VULNERABLE HH COMPLETED SKILLS TRAINING (Male)					

Source: Table provided by DPWH ROWA Team, and information collaborated with Supervision Consultant as of end June 2024.

#### 4.3.9 Summary of Livelihood Restoration Program

Information on the implementation of the livelihood restoration program when made available from the DPWH ROWA implementation team shall be provided in the table provided below.



Table 4.23 Summary of Livelihood Restoration Program Provided

Type of Assistance	No. of Programs Implemented
Financial Management Training	
Assistance to Secure Government Soft Loans	
Vocational/ Enterprise Training	
Priority placement in project work	
Job Referral	

Source: Table provided by DPWH ROWA Team, and information collaborated with Supervision Consultant as of end June 2024.

#### 4.3.10 Progress of Activities for Information Disclosure

Information on the progress of activities for information disclosure when made available from the DPWH ROWA implementation team shall be provided in the table provided below.

Table 4.24 Progress of Activities for Information Disclosure (during project implementation stage)

Activity	Details	No. of Activities Conducted
Community Validation	Posting of list of affected ISFs in each barangay, as part of final validation of masterlist	
Visit to Resettlement Sites	Households who are qualified for relocation or their elected representative will be invited to participate in a visit to relocation sites proposed	

Consultation/s through the local help desk (DPWH, CRIC, SHFC, LIAC)	Final orientation for PAPs prior to relocation to discuss: i. Timeline and schedule of relocation; ii. Documents to be prepared and secured (e.g., IDs, school records, and health records); iii. Policies in relocation sites; iv. Payment of monthly amortizations for socialized housing or monthly rents for public rental facilities; and v. Procedures for compensation and other eligibilities.	
Consultation/s for livelihood restoration	DPWH will conduct livelihood restoration consultations per relocation site to monitor the status of implementation and determine if there are PAPs who need assistance in finding jobs or starting/restarting a business. Also a venue for raising issues/concerns	

Source: Table provided by DPWH ROWA Team, and information collaborated with Supervision Consultant as of end June 2024.

## 5. CORRECTIVE ACTION PLAN

### 5.1 Implementation of the Environmental Management Plan (EMP)

The Contractor has implemented mitigation measures based on the EIS Environmental Management Plan. DPWH is carrying out continuous validation with the assistance of the Supervision Consultant. Site instructions are issued to the Contractor for issues that require immediate action. As of this reporting period, the key issues identified during the previous quarterly reporting are presented in Table 5.1 below.

**Table 5.1 Key Issues and Required Actions**

Issues	Required Actions	Responsibility and Timing	Status
Environmental Management Plan (EMP)	The Contractor submitted EMP in June 2024. The Supervision Consultant approved in July 2024..	The Supervision Consultant submitted EMP to the Employer for approval in July 2024.	The Employer approved EMP in July 2024.

Source: Supervision Consultant Team.

## 5.2 Implementation of the Resettlement Action Plan (RAP)

The implementation of the RAP is generally hampered by the slow pace of land acquisition due to the problems encountered during the period for which recommendations have been provided as shown in Table 4.14 below:

Table 5.2 Problem/Issues encountered and recommendations/Actions Taken (Package I- 3)

Problems/Issues Encountered	Recommendation/Actions Taken	Status
• Road Right-of-Way (RROW) Acquisition	• RROW Acquisition	Continuing
- According to Davao City Planning Development Office (DCPDO), relocation site is not available for the eight-five (85) Informal Settlers Families (ISFs) in Binuling Creek (Barangays Tigatto and Cabantian). However, nine (9) ISFs agreed for compensation based on replacement cost of their structures.	- The CPDO said that majority of ISFs are not qualified for having lots. RMC1(B)-UPMO advised the ISFs to be compensated based on the replacement cost of their structures as an alternative to relocation.	Continuing
- Slow progress of acquisition due to claimants' failure/refusal in providing required documents and difficulty locating some lot owners.	- RMC1(B)-UPMO constantly reminded the claimants to submit all documentary requirements for processing of payment and visited the lots as well as posted notice at property of one owner that cannot be located.	Continuing
- Awaiting issuance of Certificates of No Objection (CNOs) from Barangay Tigatto (1 left out of 4 Barangays) for the Tree Cutting Permit Application.	- RMC1(B)-UPMO followed up the concerned Barangays for the issuance of CNO. A joint inspection was held in Brgy. Tigatto last February 22, 2024 with RMC1(B)-UPMO, Supervision Consultant, Contractors, Barangay Captain, and Barangay Councilors, to inspect properties/trees affected prior to the issuance of CNO.	Continuing

Source: DPWH ROWA Team as of end June 2024.

## 6. COMPLAINTS

### 6.1 Details of Complaints

The local population and other stakeholders raised no complaints during the reporting period. The complaints received will be appropriately documented in the Grievance Redress Intake Form following the table format below:

Table 6.1 Status of Recorded Grievances

BARANGAY	RECEIVED GRIEVANCES				RESOLVED GRIEVANCES				UNRESOLVED GRIEVANCES			
	RAP-related	Env't--related	Others	Total	RAP-related	Env't--related	Others	Total	RAP-related	Env't--related	Others	Total
TIGATTO	0	0	0	0	0	0	0	0	0	0	0	0
CABANTIAN	0	0	0	0	0	0	0	0	0	0	0	0
COMMUNAL	0	0	0	0	0	0	0	0	0	0	0	0
INDANGAN	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	0	0	0	0	0	0	0	0	0	0	0	0



Source: Table provided by DPWH ROWA Team, and information collaborated with Supervision Consultant as of end June 2024.

## **6.2 Action Taken**

Corresponding actions for the complaints will be recorded when grievances are received. These will be classified as short-term or long-term. A GRM Logbook will be maintained at the project office of the Supervision Consultant and DPWH RMC(1)-UPMO.

## **7. Planned Activities for the Next Reporting Period**

The Supervision Consultant shall sustain the compliance monitoring of the implementation of the conditions of the ECC, the EMP, EMoP, RAP and site instructions that will be issued to the contractor from time to time during the next reporting period.

Planned activities for the next monitoring period shall include but shall not be necessarily limited to the following:

- 1 . Supervise the implementation of EMP and EMoP;
- 2 . Continue to facilitate the implementation of the RAP and closely coordinate with the DPWH ROWA team for updated information;
- 3 . Prepare and submit Self-Monitoring Report No. 3 for online submission to DENR-EMB;
- 4 . Prepare and submit Compliance Monitoring Report (CMR) also for online submission to the DENR-EMB;
- 5 . Assist the DPWH in the finalization and implementation of the Memorandum of Agreement (MOA) for the formation of the Multipartite Monitoring Team (MMT) and the finalization of the Multipartite Monitoring budget;
- 6 . Attend Multipartite Monitoring Team activities whenever scheduled and assist DPWH in the documentation requirements;
- 7 . Prepare Environmental and Resettlement Monitoring Report No. 3;
- 8 . Monitor the progress of RROW acquisition and compensation and provide assistance to the DPWH in engagement with the LGUs and the PAPs.

## **8. CONCLUSION**

This Environmental and Resettlement Monitoring Report No. 2 is the second report of findings during the second quarter of 2024. Environmental compliance during this period is progressing according to the project's preparatory works. Implementing the conditions of the ECC, the commitments in the Environmental Management Plan, and adherence to the site instructions issued to the Contractor will be continuously monitored. The accomplishments during the reporting period are as follows:

- (i) Supervision and monitoring of the environmental management and monitoring works performed by the Contractor;
- (ii) Preparation of the Self-Monitoring Report No. 2 for submission to the EMB-CO by the DPWH-assigned Pollution Control Office (PCO) and providing inputs for the Monthly Progress Reports of the Supervision Consultant.
- (iii) Issued site instructions in connection with the environmental requirements in the Technical Specifications;
- (iv) Monitored the progress of the Contractor's tree-cutting applications;
- (v) Continuous coordination with the Brgy. Captains traversed by the Package I-3;

- (vi) Drafted the MOA on the establishment of EGF and the creation of the MMT;
- (vii) Drafted the Manual of Operations (MOO) for issuance to the MMT once the MOA for Package I-3 is approved;
- (viii) Prepared the list of MMT members and drafted a letter for approval by DPWH before its distribution to the Local Government Unit of Davao City and the other identified MMT members;
- (ix) Reviewed the Site-Specific Environmental Management Plan (EMP) submitted by the Contractor; and
- (x) The Supervision Consultant monitored the land acquisition and compensation progress to PAPs and assisted affected landowners in submitting and processing required documents.

Planned activities for the next monitoring period shall include but shall not be necessarily limited to the following:

- 1 . Continue to supervise the implementation of EMP and EMoP;
- 2 . Continue to facilitate the implementation of the RAP and closely coordinate with the DPWH ROWA team for updated information;
- 3 . Prepare and submit Self-Monitoring Report No. 3 for online submission to DENR-EMB;
- 4 . Prepare and submit Compliance Monitoring Report (CMR) also for online submission to the DENR-EMB;
- 5 . Assist the DPWH in the finalization and implementation of the Memorandum of Agreement (MOA) for the formation of the Multipartite Monitoring Team (MMT) and the finalization of the Multipartite Monitoring budget;
- 6 . Attend Multipartite Monitoring Team activities whenever scheduled and assist DPWH in the documentation requirements;
- 7 . Prepare Environmental and Resettlement Monitoring Report No. 3;
- 8 Monitor the progress of RROW acquisition and compensation and provide assistance to the DPWH in engagement with the LGUs and the PAPs.

### **List of Annexes**

- Annex 1: Environmental Management Plan
- Annex 2: Skilled and Unskilled Labor
- Annex 3: Record of Site Incidents
- Annex 4: Ambient Air and Noise
- Annex 5: Surface Water Quality

# **Annex 1 Environmental Management**

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## **Plan**



**Funded under JICA Loan Agreement No. PH-P273  
(CONTRACT ID NO. 21Z00008)**

**Davao City By-Pass Construction Project,  
Package I-3, Sta. 23+500 to Sta 29+700**

# **Environmental Management Plan**

**SUTJV-DCBCP-I3-EMP Rev. 2**



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## 1. ABBREVIATION AND ACRONYM

The following list shows the abbreviations and acronym used in this plan.

Abbreviation /Acronym	Description
DPWH	Department of Public Works and Highways
CENRO	Community Environment and Natural Resources Office
CMR	Compliance Monitoring Report
DCBCP (II), PI-3	Davao City Bypass Construction Project (II) Package I-3, Sta. 23+500 to Sta. 29+700
DENR	Department of Environment and Natural Resources
ECC	Environmental Compliance Certificate
EIA	Environmental Impact Assessment
EIS	Environmental Impact Statement
EMB	Environmental Management Bureau
EMP	Environment Management Plan
EMS	Environmental Management System
ERP	Emergency Response Plan
EWMS	Environmental Work Method Statement
GRM	Grievance Redress Mechanism
LGU	Local Government Unit
MMT	Multi-Partite Monitoring Team
PAP	Project Affected Person Project Affected Person
RROW	Road Right of Way
SMR	Self-Monitoring Report
HS	Hazardous Substance
MSDS	Material Safety Data Sheet
SCP	Spill Contingency Plan
SUTJV	Shimizu-Ultron-Takenaka JV

**Table 1. ABBREVIATION AND ACRONYM**



## 2. INTRODUCTION

This Environment Management Plan (EMP) has been prepared for Davao City Bypass Construction Project, Package I-3 (hereinafter called as "Project") for the construction of 6.20km 4-lane road including one (1) river bridge, one (1) overpass bridge, and two (2) cut and cover tunnels for managing the potential environmental and social impacts of the proposed construction and operation activities.



Figure 1: Contract Package I-3 and Location of Major Structures

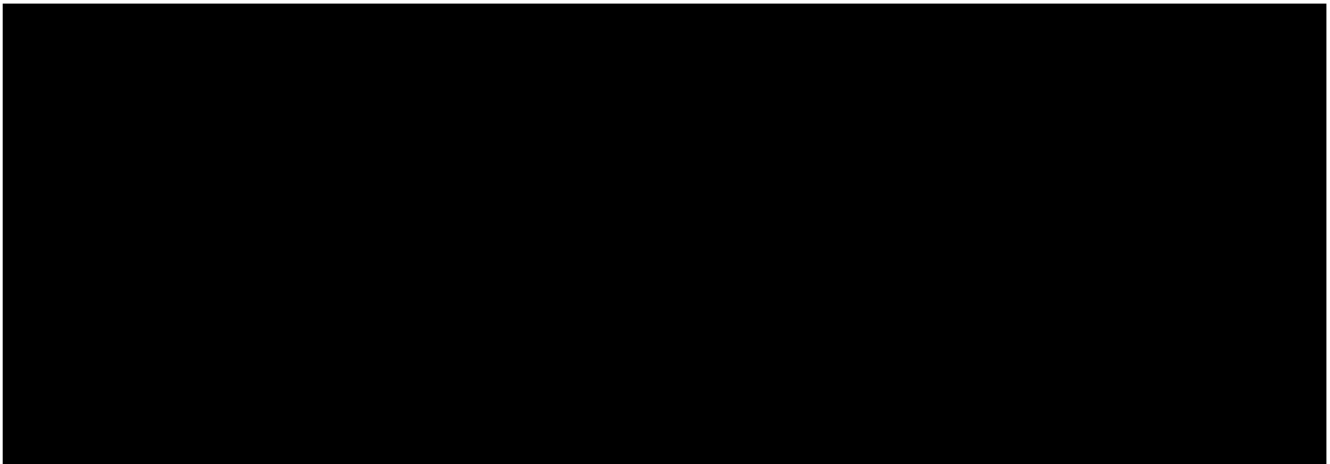
The overall purpose of the SSEMP is to ensure that the environment in the Project area is protected and adverse impacts from construction works are minimized and corrective actions proposed. The SSEMP has been prepared by the contractor to:

- I. Avoid or prevent, whenever practical, any unacceptable or adverse environmental, social, and/or economic impacts of construction for Package I-3.
- II. Describes the approach and procedures in ensuring the environmental and social impacts are avoided or mitigated while the construction activities of Package I-3 Project are being undertaken.
- III. Assists SUTJV in ensuring that intended outcomes or mitigation are reasonably achieved, thereby, reducing the environmental and social impacts to the levels as predicted in the EIA; and

IV. Provides guidance of I-3 and mechanism for legal and policy compliance and obligations with the Regulatory agencies, e.g. DENR, DPWH, LGUs such as;

IV.1 Ensure applicable national environmental laws including but limited to the EIA law, the Clean Water Act, the Clean Air Act, the Ecological Solid Waste Management Act, the Environmental Impact Assessment Law and regulations, and the Toxic Substances and Hazardous and Nuclear Wastes Control Act are fully understood by the project organization.

IV.2 Ensure that local ordinances and legislations of the province of Davao del sur, and the city of Davao are observed and complied with.



**Table 2. Package I-3 General Information**

## 2.2 LEGAL FRAMEWORK

### 2.2.1 Philippine Constitution

Right to Health and Right to a Healthful and Balanced Ecology SUTJV understands the precepts of the Philippine Constitution under Article II, section 15 which provides that “the State shall protect and promote the right to health of the people and instill health conscious among them” and in Article II, Section 16, where it is stated that “the State shall protect and advance the right of the people to a balanced and healthful ecology in accord with the rhythm and harmony of nature”.

The Right to a “Balanced and Healthful Ecology” of all individuals along the railway shall be respected and SUTJV shall strive to ensure that any impacts that defeat this right is mitigated.

### 2.2.2 International Agreements

SUTJV shall comply with the following international agreements that apply to its operations:

- Montreal Protocol on Substances that Deplete the Ozone Layer (1989) – SUTJV shall comply with the requirements of the phasing out and use of HCFCs and other ozone-depleting substances.
- United Nations Framework Convention on Climate Change (1994) – SUTJV will comply with any requirements to disclose carbon footprints.



- Stockholm Convention on Persistent Organic Pollutants (2004) – SUTJV will not be using POPs in any of its operations,
- Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal (1992) – SUTJV shall not transfer wastes outside of the country and will not produce wastes that would require prior informed consent.
- Convention on International Trade in Endangered Species of Wild Flora and Fauna (1975) – SUTJV shall insure that its employees, suppliers, and contractors do not trade in endangered flora and fauna.

### **2.2.3 Environmental Laws**

- P.D. 1586 – Philippine Environmental Impact Assessment System – an ECC has already been procured for the construction of the entire span of the Davao City Bypass Construction Project (DCBCP). SUTJV shall, however, still apply for an ECC for portions of its operations not covered under the ECC, including the campsite, batching plant, and yard. It shall likewise ensure that upon abandonment, the area is restored to as nearly as possible to its original condition and that trees are replanted for every tree removed. SUTJV will also monitor its compliance to the ECC.
- RA 6969 – Toxic Substances and Hazardous and Nuclear Waste Control Act of 1990 – SUTJV shall safely store and label its hazardous wastes and properly transport and dispose of the same through an accredited transporter and treater. It shall secure a hazardous waste generator's ID from the DENR-EMB-RXI Office.
- P.D. 856 – Sanitation Code – SUTJV shall insure that adequate sanitation in the form of toilets is provided to all workers and that the wastewater treatment systems for such are properly and professionally designed. It shall also ensure the proper management of the canteen for the workers.
- RA 9003 – Ecological Solid Waste Management Act of 2001 – SUTJV shall properly segregate its domestic waste and allow these to be collected by the proper municipal authorities. It shall likewise take care of its construction wastes and reuse it or find a suitable place for ultimate disposal of the same.
- RA 8749 – Philippine Clean Air Act – SUTJV shall insure that its fugitive dust is kept at a minimum during its construction operations and that its vehicles and machineries are well maintained so as to diminish the release of criteria pollutants. It will also secure permit to operate for all air pollution source installations (i.e., gensets and batching plant). It will likewise control vehicle movement maintaining the speed limit within the construction site and provide cover to loaded truck
- P.D. 1067 – Water Code of the Philippines – SUTJV shall use only enough water so as to insure its operations. It shall help to conserve water and use water that is conveyed by an authorized entity.
- RA 9275 – Clean Water Act – SUTJV shall ensure that the wastewater from its toilets and its canteens will meet the standards. It will also guarantee that no used oil shall be spilled specifically in Lasang river.



- RA 7942 – Philippine Mining Act of 1995 – SUTJV will only accept quarry resources from holders of quarry permits which have ECCs.
- PD 984 – Pollution Control Decree of 1976 – SUTJV will provide separate bins for its segregated wastes and will endeavor not to pollute the land, the air, or any waterway.

## **2.2.4 Other important laws and regulations**

- PD 442: Labor Code of the Philippines, as amended (including Occupational Safety and Health Standards)
  - Gender equality will be promoted in hiring of workers.
  - SUTJV shall comply with the relevant rules under the standards, especially rule 1410 on construction safety and 1080 on Personal Protective Equipment.
  - It shall include the provision of a medical certificate in the requirements for hiring of workers to ensure that they are fit to work.
  - SUTJV will also ensure that they are provided with proper training on construction, occupational health and safety, and emergency response procedures.
  - It will establish Health and Safety Desk or Medical Station at the active construction sites to monitor and safeguard the health of the workers and local residents and to provide immediate response during unexpected incidents/emergencies and maintain close coordination with the nearest hospitals in the active construction site for immediate transfer and/or further evaluation and medical management of the patient.
- RA 6541: Building Code
  - SUTJV will ensure the implementation of Emergency Response Plan and Health and Safety Management Plan to include but not limited to:
  - Distribution of manual/guideline for workers/employees on health and safety, environmental management.
  - Orientation and continuous training of qualified workers/ employee/ operator on Environmental Management, Basic and Construction Occupational Safety and Health, Scaffolding Safety, Fire Safety and Safe Use of Chemicals at Work.
  - Provision of earthquakes, fire drills for workers.
  - Provision of appropriate PPE for workers.
  - Provision of security personnel
- RA 10066 or the National Cultural Heritage Act of 2009 – protects artifacts found during excavations that may be of historical or cultural importance.

## 3. BRIEF DESCRIPTION SCOPE OF WORK

Package I-3 is the construction of a 6.2km carriage road divided by a median from Mandug Road intersection at sta 23+500 to 187 past Malagamot road intersection at sta. 29+700 and two large scale cut and cover tunnels of 445 meters combined length.

### 3.1 Associated Facilities

The tabulate following depicts the contractor yards although the location is not yet finalized. SUTJV will submit the details of the yard for approval of the engineers.

#### Information

#### Address

ECC no.

#### Information

#### Address

ECC No.

#### UBI site office

Brgy Tigatto, Davao City

#### Proposed Site office and Yard

TBC







Figure 2. Proposed Contractors Site Office

## 4. ORGANIZATION AND REPORTING PROCEDURE

### 4.1 Organizational chart for environmental management

The SUTJV sets out the clear environment governance structure, which will be continuously maintained. The SUTJV JV team structure is contained within Figure 3. it is the responsibility of SUT JV to inform all contractors and subcontractors of the JV's Organization.



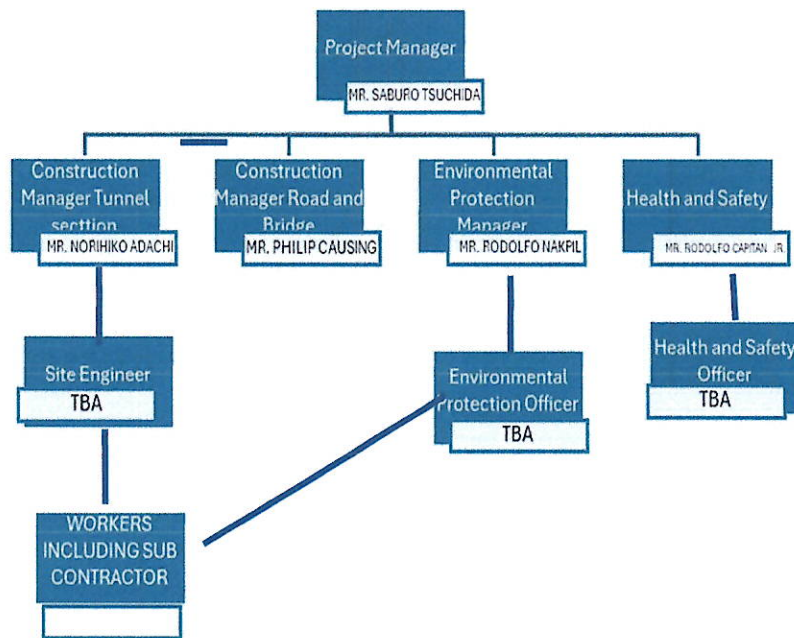


Figure 3: Project Organization for Environment Management

## 4.2 RESPONSIBILITY

Description of the responsibilities on the Environment/Safety Staff appearing on the Organization Chart including:

### ➤ Project Manager

The Project Manager will be responsible for:

- Providing leadership in the implementation of the SSEMP.
- Ensuring that the project complies with the legal and contractual environmental requirements.

- Establish environmental objectives.
- Coordination of the different discipline leaders in order to comply with the Environmental requirements.
- Ensuring that contracts with SUT JV subcontractors include environmental projects requirements.
- Implementing the SSEMP, making sure that there is proper coordination between the teams involved.
- Stops work immediately if an unacceptable impact on the environment is likely to occur.
- Approve the SSEMP; and
- Approve the Environmental reports.

➤ **Environmental Protection Manager (EPM)**

The Environmental Protection Manager will be responsible for:

- Leading the Environment Management and Monitoring Unit.
- Developing and updating the SSEMP.
- Supervise and monitor the project's compliance with the Environmental Compliance Certificate (ECC) and its amendments during construction, include the following.
- Coordinate with LGU in resolving project related environmental grievances through the GRM.
- Coordinate with members of the Third-Party Auditor/Environmental Monitoring Agent (in lieu of the Multipartite Monitoring Team) on environmental issues in their respective communities.
- Support in SDP implementation.
- Lead in the implementation of continuing environmental IEC.
- Support in the implementation of the Resettlement Action Plan (RAP), as needed.
- Identify environmental requirements.
- Identify and assess environmental aspects.
- Define the project's environmental targets, which should match the current SSEMP.
- Define applicable environmental measures.
- Establishing and maintaining open lines of communications with the and the Project Manager, Construction Managers and HS Manager.

- Define environmental inspections and monitoring.
- Monitor and examine environmental management.
- Ensures that environmental controls, materials and equipment are maintained.
- Report the environmental information required by the company.
- Approve method statements making sure that environmental protection measures are included when needed.
- Ensure environmental permits are in place prior to the start of construction of ancillary facilities and related plants.
- Ensure environmental training to SUT JV team and subcontractors ‘

➤ **Environment Protection Officer**

The environmental officers will be responsible to

- Perform daily site visits for the implementation of the environmental management and monitoring program in their respective areas.
- Conduct internal and coordinates regulatory required environmental monitoring such as water quality monitoring, air quality, environmental noise monitoring in sensitive receptor impact zones and historical structures if there is;
- Report to the Environment Protection Manager on the findings on site.
- Assist the Environment Protection Manager in fulfilling environmental reports, providing the necessary information.
- Identify significant environmental aspects and impacts of the construction activities and recommend mitigation measures.
- Monitor compliance to the requirements specified in the Environmental Compliance Certificate (ECC) and the commitments stipulated in the SSEMP and the Employer's Requirement

➤ **Construction Manager (Tunnel, Road, and Bridge)**

The construction manager will be responsible to

- Assist in the definition of strategies for protection of project's opportunities and for mitigation of risks.
- Consistency of presentation of documentation.
- Coordinated contractual justification.
- Consistent support documentation.
- Systematic logging of delay onto the overall delay and disruption schedule.



- Common approach to costs.
- Successful contract closeout.
- Applying on Site with the Environment support the SSEMP.
- Site engineers and supervisors will follow up the Construction Manager's instructions regarding the environmental monitoring required on Site: dust monitoring, dewatering monitoring, housekeeping, etc

➤ **Health and Safety Manager**

The HS manager will be responsible to

- Creation of Health, Safety and Environment Committee
- Assist the Environment Officer in conducting environment survey and inspection at site.
- Assist the Environment Officer in implementing the SSEMP.
- Conducts risk assessment and enforces preventive measures in relation to environment programs.
- Prepare OHS programs in line with environment management procedures.
- Assist the Environment Officer in overseeing installations, maintenance, and disposal of hazardous substances.
- Assist the Environment Officer in recording and investigating incidents to determine the cause.

➤ **Site Engineer / Supervisor**

The Site Engineer will be responsible to

- Supervising site activities, ensuring all activities under their supervision are carried out safely.
- Incorporating ES instructions in routine orders ensures work is carried out safely.
- Supervising workers to observe ES rules and regulations.
- Restraining workers from taking risks and discouraging horseplay.
- To ensure all workers have received appropriate ES training before they are allowed to work.
- To ensure plant, machinery and equipment complied with legal and other requirements.
- Co-operating with the ES Officer / ES Supervisor, taking corrective actions to improve site safety.
- To ensure workers are using personal protective equipment's properly.
- Assist the Environment and HS Officer to deal with emergency situations promptly; and

- Reporting incidents, accidents, emergency situations, defects, unsafe acts and unsafe conditions to the ESH officer

➤ **Workers (Including subcontractors)**

- Taking reasonable care for himself/herself and of others who may be affected by his/her acts or omissions at work.
- Co-operating with his/her proprietor and safety personnel and supervisor, to enable them to comply with or to perform duties and responsibilities for securing ES at work.
- Observe ES rules and regulations.
- Correctly use and conserve tools and equipment.
- Properly use personal protective equipment.
- Follow control measures mentioned in SSEMP.

Reporting defects of plant, tools and equipment, unsafe conditions or accident to Supervisor or HS Officer/Environment Officer.

### 4.3 Communication and Reporting Schedule

Following Technical Specifications B14, all environmental inspections; audits; incident reports, and correspondences shall be transmitted to the Engineer through Document Transmittal

Environment reports will consist of the following:

- Daily Environment Inspection and Observation Report and Environmental Compliance Checklist will be conducted and properly documented including community complaints, if any, and it shall be submitted to Environmental Management Unit Head, the EPM at the end of each week. Any incidents that require immediate attention will be discussed with the Unit Head at the soonest practicable time in order to address the issue expeditiously.
- Quarterly (Air, Noise, Terrestrial Flora and Fauna & Surface water) results of laboratory analysis will also be incorporated into the Monthly Monitoring Report in the corresponding month it becomes available (typically the month after sampling is undertaken).
- Quarterly SMR will be prepared by the JV EMU for the contractor's yard, incorporating various environmental modules, and submitted to DENR EMB as well as the Semi-annual Compliance Monitoring Reports.

#### **4.3.1 Internal Communications**

SUTJV planned interaction and communication procedures between construction people and personnel in implementing environmental protection, safety and traffic control includes: Communication through facilities such as:

- ✓ cellphones
- ✓ computers and internet
- ✓ two-way radio
- Routine reporting systems
- Daily Pre-start meetings
- Weekly/fortnightly toolbox meetings
- Weekly Project progress meetings
- Notice boards and emails.

The Environment Officer will prepare environmental reports including incident reports, if any, based on the Daily Site Diaries.

#### **4.4 Employee Environmental Training and Induction Outline**

##### **4.4.1 Training Requirements**

Training and competence are essential to the effective implementation of the SSEMP. Training and competencies are split to reflect competency requirements for designers, managers, engineers and workers.

The Environment Protection Manager with support from the Environment Officers establishes the environmental training program schedule, and is responsible for:

The development of training materials or the oversight of the preparation of such material by a competent person in order to effectively conduct environmental training.

- ✓ Development of an environmental training program.
- ✓ The preparation and updating of the schedule for environmental training.
- ✓ Carrying out environmental training for site personnel in accordance with this procedure.
- ✓ Training the subcontractor's nominated trainers

The collation and retention of training records.

All site personnel shall be responsible for attending and participating in the scheduled training sessions, as applicable. Arrangements should be made which would allow the SUTJV to identify each individual who has successfully completed environmental training. Those who cannot be identified shall not be allowed to work on site.



Arrangements are made to ensure that, at the start of each week's work, all workers participate in a toolbox talk with their supervisor.

Records are kept for auditing purposes. Guidance on how to present the talks is prepared by the SUTJV EPM and issued to those giving the talk.

Training material follows best international practice. Training material is developed using the following sources among others:

- Construction Industry Research and Information Association: [www.ciria.org/](http://www.ciria.org/)
- International Finance Institution: <http://www1.ifc.org>
- Waste & Resources Action Program : [www.wrap.org.uk](http://www.wrap.org.uk)

## 4.4.2 Scope

This procedure is applicable to the SUT-JV and includes all project personnel (including supply partner personnel, subcontractors, subconsultants etc.)

## 4.4.3 Responsibilities

### ➤ Project Manager / Contractor's Representative

The Project Manager is ultimately responsible for the effective implementation and approvals as defined within this procedure and has delegated the responsibility for planning and arrangement of training needs and training provision as required by this procedure (and/or any project specific requirements) to the Environment Protection Manager.

### ➤ Environment Protection Manager

Has responsibility for the effective management of this procedure and for ensuring effective implementation on project sites as described herein. He is responsible to identify training needs, prepare necessary training programs, evaluate training results and suggest future improvements to the Project Manager.

### ➤ Head of Human Resources

Will provide necessary infrastructure and support conducive to the SUTJV training requirements stated within this procedure. Include appointment of staff (employments contracts).

### ➤ Construction Managers (Tunnel, Road and Bridge Sections)

Shall ensure staff under their control receive the appropriate level of environmental training to allow them to undertake their work in an environmentally sound, safe and sustainable manner.

### ➤ Supply Partners, Subcontractors, Sub Consultants

Will ensure that all personnel under their control are appropriately trained and competent in accordance with the contract requirements, SUTJV's training requirements within this procedure and/or Best International Industry Practice (BIIP). Will maintain records of training and competence for all personnel under their control and make them available to the SUTJV upon request.

## 4.4.4 References:

ISO 14001: Competencies, Training and Awareness

## 4.4.5 Terms and Definitions:

- Competence: Demonstrated ability to apply knowledge and skills
- Awareness: Conscious of or having knowledge of (e.g. policies, procedures, work instructions, objectives, targets etc.)
- Training: A learning process involving the acquisition of knowledge and skills

## 4.5 Competence and Awareness

Competence requirements for the SUTJV are led by the companies' stated objectives and the scope of current and future operational requirements.

Existing staff represent the fundamentals for the project implementation and their training and development into highly competent resources is a key goal of SUTJV.

For that reason, the training will be planned and coordinated through the HR department in conjunction with external trainers. Personnel evaluations will be arranged at regular intervals. The evaluations will include an assessment from both employee and relevant manager.

The HR team will review each evaluation and assess the need for training in consultation with the employee and/or relevant manager to arrange training if required. The SUTJV ensures that key staff and operatives engaged by subcontractors, subconsultants and supply partners to work on the JV's operations are competent.

### 4.5.1 Define training needs.

The Environment Protection Manager is responsible for reviewing the training needs of the personnel within their respective department at least annually.

Current competence levels and the future training needs of existing staff are determined through several means, the principle being:

- Introduction of new technology (e.g. monitoring systems or new equipment)
- Introduction of new legislation
- Introduction of new procedures
- General staff training requests.
- Project, customer specific requirements
- Lessons learn.
- The minimum Environment training requirements are.

Target Audience	Training Course/Content	Frequency	Remarks
All Employees	Staff Induction – Including environmental issues and controls and HIV/AIDS/STI's prevention	Once a year	Within 1 week of joining

All Management Personnel	Environmental Policy, Significant Environmental Impacts, Legislation, Objectives and Targets, Operation Controls SEMP Monitoring, Auditing, Training, HIV/AIDS/STI's prevention	Once a year	Within 1st year and refresher as required
<b>Target Audience</b>	<b>Training Course/Content</b>	<b>Frequency</b>	<b>Remarks</b>
Environment related personnel	Environmental Auditing	Once a Month	30 mins
	Waste Management Plan		
	Complaints (Grievance Redress Mechanism)		
	Social development plan		
	IEC Plan and program		
	Air, Noise and Surface water monitoring plan		
	Terrestrial Flora and Fauna management plan		
	SSEMP implementation		
<b>Target Audience</b>	<b>Training Course/Content</b>	<b>Frequency</b>	<b>Remarks</b>
Workers on Site (Job Specific) linked to Individual environmental plans within the CEMMP	Toolbox Talk: Segregation of Waste	Once a Month	30 mins
	Toolbox Talk: Spill Prevention and Response		
	Toolbox Talk: Dust and Air Quality management		
	Toolbox Talk: Noise Nuisance		
	Toolbox Talk: Storage of Waste		
	Toolbox Talk: Cement and Concrete waste		
	Toolbox Talk: Hazardous or special waste (aerosols, COSHH)		
	Toolbox Talk: Odor Management		
	Toolbox Talk: hazardous waste management/Material handling		
	Toolbox talk: Sensitive Areas Protection (Flora and Fauna)		
	Toolbox Talk: Pollution Prevention: Working near or on watercourses		
	HIV/AIDS/STI's prevention	Quarterly	Service Provider

**Table 4. Minimum Project Induction Training Requirements**



The project environmental training requirements are determined by the SUTJV Environment Protection Manager based on project requirements. However, minimum environmental training requirements as stated in Table 4. Minimum Project Induction Training Requirements shall be complied with.

They will include all legal, statutory, project specific and the SUT JV requirements.

The minimum project induction training requirements are.

Induction Type	Target Audience
Staff Induction	Management, General Staff including those of partner companies (Consultant, Clients, Agent)
Visitor Induction	Visitors
Site Induction	General workers and supervision including all partner companies and associated subcontractors
IEC	Target Audience
Environmental Awareness	Project Affected People/Communities

Table 5. Project IEC program

## 4.5.2 Development and Plan of Training

Where competence gaps are apparent and/or training needs are identified (may be in respect to forthcoming changes/improvements) then relevant training plans and programs will be developed and realized under the direction of the EPM with the support of the HR department or other training providers

The Project Manager or the EPM may at any time schedule training which is not defined on the annual training plan, this may be discretionary or in respect to requests/needs.

## 4.5.3 Provide Training

The Project Manager shall approve training plans in line with previously identified current and future operational requirements within the limits of any agreed training budget.

The EPM will be responsible for updating and maintaining environmental training records. Visitors shall be made aware of site hazards, their area of access, restricted area and Personal Protective Equipment's (PPE) used during their stay at site.

## 4.5.4 Evaluate Training Outcomes

The SUTJV will place employees in jobs consistent with their abilities and level of environmental training achieved (competency). The EPM reviews the effectiveness of training provided.

The negative reviews on training courses / training providers shall be informed to HR who shall review the overall feedback on specific training providers (both internal and external). Where necessary, alternative training providers may be sourced, or course content altered. The training attendees shall be requested to provide feedback.

A recommended form will be formulated and will be included in this procedure. Training evaluation assessments shall be forwarded to the EPM. The attendees will be evaluated at the end of each training session with practice cases and a specific questionnaire about the environmental task exposed previously.

#### **4.5.5 Records**

The Training Plan and Training attendance shall be recorded using a standard form and is included in this procedure. All records pertaining to this procedure including all related correspondence, records and reports shall be retained in accordance with the document and records control procedure.

#### **4.5.6 Specialist Training Requirements**

In addition, the SSEMP is regularly updated in order to include specialist training for individuals with specific roles and responsibilities, including but not limited to, chemical and fuel handling, handling of organic solvents, handling of toxic materials and hazardous wastes etc.

Specialized training is provided in close cooperation and coordination with the HS team. Specialized training designed to address specific environmental requirements shall be required to be provided as necessary. Specialized trainings include but are not limited to:

- COSHH Risk assessment
- Accident and Incident investigation
- Emergency preparedness and response plan
- Firefighting.
- Spill control and response.
- First aid and CPR training

In general, specialized training is always undertaken by a competent SUTJV in-house organization or a qualified third-party organization.

### **5. Hazardous Material Management and Emergency Response Procedures (HMMERP)**

#### **5.1 Objectives**

The purpose of this plan is to ensure that hazardous materials and any emergency response are managed correctly across all project sites and do not cause harm to people or the environment. The plan covers all construction activities, materials and equipment.

The HMMERP is applicable to all SUTJV staff and Subcontractors on the Project. The details of the Emergency Response Procedures are provided in the next section.

## **5.2 Regulatory Framework**

The following environmental laws and regulations applicable to this Plan.

- Republic Act (RA) 6969: Toxic Substances and Hazardous and Nuclear Wastes Control Act of 1990
- DENR Administrative Order (DAO) 1992-29 Title II: Implementing Rules and Regulations of RA 6969
- DAO 2013-22: Revised Procedures and Standards for the Management of Hazardous Wastes
- DOLE OSHS Control on Substances Hazardous to Health
- DAO 2021-09: Chemical Control Order (CCO) for Chromium VI Compounds
- DAO 2021-08: CCO for Cadmium and Cadmium Compounds
- DAO 2019-20: Revised CCO for Mercury and Mercury Compounds
- DAO 2019-17: CCO for Arsenic and Arsenic Compounds
- DAO 2013-24: CCO for Lead and Lead Compounds
- DAO 2004-01: CCO for Polychlorinated Biphenyls (PCBs)
- DAO 2004-08: Revised CCO for Ozone Depleting Substances (ODS)
- DAO 2000-02: CCO for Asbestos
- DAO 1997-39: CCO for Cyanide and Cyanide Compounds
- DAO 2014-02: Revised guidelines for Pollution Control Officer Accreditation
- DAO 1997-38: Chemical Control Order for Mercury and Mercury Compounds
- Republic Act 9275: Clean Water Act of 2003
- DAO 2021-19: Updated Water Quality Guidelines (WQG) and General Effluent Standards (GES) for selected Parameters
- DAO 2016-08: Water Quality Guidelines and General Effluent Standards
- DAO 2005-10: Implementing Rules and Regulations of RA 9275 Clean Water Act

## **5.3. Permitting Requirements**

- Permit for Chemicals regulated by CCOs
- Permit for Chemicals use from DOLE OSHS
- DAO 2014-02: Revised Guidelines for Pollution Control Officer Accreditation

## **5.4 Environmental Impacts**

Potentially harmful or hazardous materials likely to be used during the construction works include:

- Paints, thinners and solvents.



- Cleaning agents.
- Insulating materials such as fiberglass and ceramics.
- Silica sand, cleaning agents and other sandblasting agents.
- Compressed gases such as oxygen, nitrogen, argon, helium.
- Greases, oils and other lubricants.
- Fuel gases such as gasoline, diesel, kerosene.
- Epoxy resins.
- Sealant.
- Antipest chemicals
- Waterproofing chemicals.

### **5.5 Management Measures**

**Hazardous Materials (Chemicals)** All materials used during construction will be stored and handled as per its specific Material Safety Data Sheets (MSDS).

MSDS for chemicals stored and use will be clearly displayed at all storage areas.

The register of hazardous materials is retained by the Environment Department.

- Hazardous materials will only be handled by personnel trained in spill response and who are provided with the appropriate personnel protective equipment.
- A visual assessment of the chemical and hazardous material usage areas, delivery areas and store areas should take place as part of the daily inspection routine.
- The potential for environmental and human health risks arising from spills and leakages will be minimized by, where possible, substituting hazardous materials with nonhazardous materials.
- Spill kits will be available at all hazardous material storage and fuel storage areas.
- An inventory of all potentially hazardous materials and chemicals will be maintained.
- The appropriate and limited use of these chemicals to reduce the potential route of soil and groundwater contamination is essential.

The measures to be taken to appropriately store, handle and transport these hazardous materials are detailed below.

- Prior authorization from the Environment Protection Manager will be required before hazardous materials, chemicals, oils, paints or any other potentially hazardous substance are used or stored on the Project sites.
- All fuel, oil and chemical drums and containers will be sited in storage areas which are impervious to the materials stored therein. In addition, the hazardous material storage areas will be bunded/drip trays designed to hold 110% of the maximum capacity of the largest tank or drum or 25% of the total volume of substance which could be stored within the bunded area, whichever is greater.

- All fuel to be used on site (e.g. for generators) will be stored in a container (tank or drum) which is of sufficient strength and structural integrity and has been installed so as to ensure that it is unlikely to burst or leak in its ordinary use.
- Fuel quantities more than 100 liters will not be stored in plastic barrels. They will be stored in double- skinned horizontal steel tanks and bundled appropriately.

## 5.6 Responsibilities

### ➤ Management

#### - **Construction Managers (Tunnel, Road, and Bridge Sections):**

- ✓ Overall responsibility for the execution of the plan, resolving disputes relating to the Plan execution and coordination and liaising with the JV EPM on resolving HMMERP issues.

#### - **Environment Protection Manager:**

- ✓ Managing and updating the HMMERP, liaising with the Construction Managers to ensure implementation of the HMMERP, completing weekly and monthly site environmental inspections, identifying acceptable or unacceptable conditions in weekly or monthly inspections, completing the Environmental Incident Report.
- ✓ Establishing and implementing control measures to prevent, correct and avoid pollution reoccurrence and collecting the documentation to close the Environmental Incident.
- ✓ He is also responsible in the approval of the quarterly submission of Self- Monitoring Report (SMR) and bi-annual Compliance Monitoring Report (CMR) to DENR EMB prepared by Environmental Officer for contractors temporary facilities.

### ➤ Site

- ✓ Construction Managers: Implementing the HMMERP on site, implementing onsite mitigation measures in collaboration with the EPM and reporting of incidents on site.
- ✓ Environment Officer: Working with the Construction Manager to implement the HMMERP on site. Assist the Environment and Construction Manager in the implementation of all aspects of HMMERP. Conduct site visits and regular site inspections.
- ✓ Construction Workers: Supporting the EPM and Construction Manager to ensure the HMMERP is followed, prevent and control pollution incidents.
- ✓ Environment Officer: daily inspections, trending the process in coordination with EPM, collating and filing inspection records, reporting of findings to the EPM.
- ✓ Health & Safety Manager: Responsible for maintaining all site induction training records covering HS.

## 3.7 Monitoring and Reporting

- Visual Inspection of hazardous materials storage/s
- Visual inspection of hazardous materials carried out onsite.
- Review of chemical lists

- Daily Inspection Observation and Weekly Audit
- Environmental Monitoring Report
- Chemicals lists (SUTJV Chemical List)
- Copies of MSDS
- Copies of COSHH Risk Assessment
- Quarterly submission of Self-Monitoring Report (SMR) to DENR EMB pursuant to DAO 2003-27: Amending DAO 26, DAO 29 and DAO 2000-81 Among Others on the Preparation and Submission of Self-Monitoring Report for Contactors Yard.

### **5.8 Record Management**

All reports listed below will be submitted through Document control transmittal. Further, the environmental unit will keep the hard copies and compile them into folders. Electronic copies of reports and lists will be stored in electronic folders.

### **5.9 Emergency Response Procedures (ERP)**

This section describes the way SUT- JV will manage environmental emergency situations, to guarantee the protection of workers and an effective response to the effects that, on the environment, could be caused by possible emergency situations. Detailed ERP are attached to annexes.

- ✓ To define responsive and preventive measures to potential events, the contractor will implement these procedures in order to:
- ✓ Assist in coordinating with internal workers and external agencies during an emergency.
- ✓ Providing information on training and drill exercises.
- ✓ Ensuring all workers are aware and understand their responsibilities in an emergency.

An environmental emergency is considered when unexpected events occur, with potential environmental consequences, not legally allowed, which needs the implementation of urgent measures in order to prevent further damage.

#### **5.9.1 Potential emergency scenarios**

Environmental emergency situations include, but are not limited to:

- Oil/chemical spills to water or land.
- Fire and explosion.
- Floods
- Serious injury or death



## 5.10 Management control

The EPM will continually develop and improve Emergency Management capability in consultation with the management, other functional roles and workgroups.

### Notification Procedure

Below is a step-by-step procedure for notifying environmental emergency situations in this Project:

- ✓ Assess the situation and if safe to do so, immediately rectify the pollution source and control the migration of any pollution. Ensure access routes for spills to any surrounding drains or waterways are blocked.
- ✓ Immediately notify the SUTJV Environment Officers assigned to sites or the EPM of the environment incident, giving details such as location, volumes of pollutants and circumstances of the incident. If the incident is not able to be contained by means of the Project, notify the emergency services to aid in control of the incident.
- ✓ If deemed to be required, the EPM will immediately notify OCG and /or DPWH.
- ✓ Any follow up reports required as per the Project licenses and conditions will be submitted to OCG by EPM within the given timeframes. This report (Environmental Incident Report) will detail results of investigation, corrective and preventative actions.

### 5.10.1 Environmental Emergency Equipment

Equipment will be inspected, tested, and maintained on a monthly basis.

These includes:

- Spill kits (chemicals / oil)
- Fire emergency equipment.
- First Aid equipment
- Flood rescue equipment,

If available environmental incident simulation and scenario drills will be conducted at least once a year to be developed and delivered jointly by the EPM & Teams and Health & Safety Manager & Teams.

## 5.11 Corrective Actions

The following table includes the corrective actions that will be followed in case of different environmental emergency scenarios:

Emergency	Corrected Action
Oil spill on land	Isolated and cordoned off the spill area. Use oil booms or put earth dike to contain

	the spill. Extract, collect and contain contaminated soil. Disposed of thru a DENR-EMB accredited Transporter and TSD facility. The used spill kits and equipment will be replenished
Oil spill on water	Oil booms to contain and minimize spread of oil in the water body. Water contaminated with oil will be collected, contained, and disposed of by DENR-EMB accredited Transporter and TSD Facility. The used spill kits and equipment will be replenished.
Chemical spill on land	Isolated and cordoned off the spill area. In case of potential explosion, Implement the fire evacuation guideline. Clean up the spill using chemical absorbent mats or pads. Extract, collect and contain contaminated soil. Contaminated mats and booms will be collected, contained and disposed of by DENR-EMB accredited Transporter and TSD Facility.
Chemical spill on water	Control and contain the spill using chemical spill containment boom. Collect and contain drums contaminated water. Dispose chemicals and chemical soaked materials appropriately.
Fire/explosion	Isolate any power, machinery, or equipment. If it is safe, try to extinguish the fire, if not, improve site access for emergency services.
Floods	Decide if it is safer to stay indoors or evacuate/proceed to safer area. Listen to local radio station for official advice and warnings. Do not use electrical appliances which have been affected by flood waters or firefighting chemicals/equipment until checked for safety. Worst case scenario,

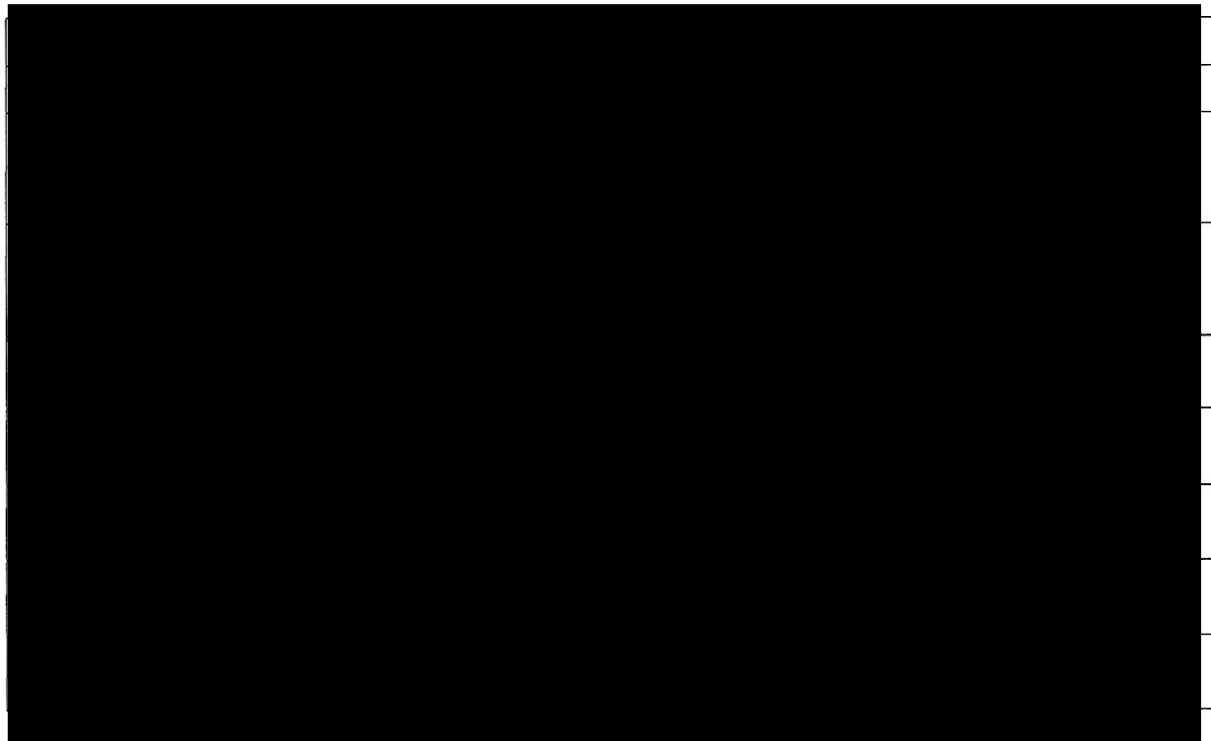
	when someone stranded due to floods, rescue will be undertaken.
Serious injury or death	Medical care will be immediately notified. Do not move the injured unless their location continues to put them in danger. Provision of first aid (such as for cuts and abrasions, fractures, concussion and contusion, heat stroke etc.)

Table 6. Environmental emergency scenarios

## 5.12 Communication

During any emergency, Site managers will progressively relinquish control of the specific response as the relevant professional responders arrive (Police, Fire Brigade, and Ambulance etc).

The Environment and Health & Safety Managers' roles will generally progress to coordinating support for professional responders and providing communication updates to Senior Managers / Project and Construction Managers.



## 5.13 Incident investigation

If there are environmental incidents or emergencies, the EPM shall prepare an Environment Incident Report prescribed by EMB in accordance with DAO 2014-02. Refer to Appendixes. Environment Incident Report. This report shall include:

- Date of Incident
- Type of Incident
- Description of Incident



- Estimated Amount of Chemicals, Hazardous Waste, Emissions and/or Effluent Released to the Receiving Environment
- Probable Cause of Incident
- Interim/ Contingency Measures to Mitigate any Potential Negative Impact

#### **5.14 SUB-CONTRACTOR ENVIRONMENTAL MANAGEMENT AND ENFORCEMENT PROCEDURES**

All sub-contractors are required to work in accordance with the approved SSEMP.

As part of the selection process, consideration will also be given to their past environmental performance. The EPM will participate in the tender assessment where it is deemed necessary due to associated environmental risks and sub-contractors' activities involved.

Environmental requirements and responsibilities will be specified to sub-contractors in the contract documentation, aiming to:

- comply with all legal and contractual requirements.
- comply with the SSEMP.
- comply with site environmental requirements.
- comply with management / supervisory directions.
- participate in induction and training scheduled.
- all incidents are reported.
- stop activities where there is an actual or immediate risk of harm to the environment and advise the Project Manager and the EPM.

All activities shall be developed and operated with the lowest possible environmental impacts, related to air emissions, waste generation, water discharge, biodiversity alteration.

SUT JV will evaluate sub-contractors and suppliers through the corresponding purchasing processes considering the environmental criteria fulfillment. Furthermore, through the monitoring program and where apply, sub-contractors will be assessed in order to verify:

- General work practices.
- The effectiveness of their environmental protection measures.
- Compliance with the requirements of this SSEMP.
- The maintenance of environmental measures.

Other requirements and specifications are included in the specific environmental plans.

## **6. ENVIRONMENTAL IMPACTS MANAGEMENT**

### **6.1 Introduction**

The Technical Specification (TS) B14 Environmental Management stipulates the “Environmental Management Plans” (EMPs) that shall be established as part of the project site specific Contractor Environmental Management Plan (SSEMP).

The SUTJV SSEMP followed TS B14 Requirements, the details specified on the Environmental Impact Statement (EIS 2014), JICA monitoring plan and condition stated on the Environmental Compliance Certificate (ECC).

The SSEMP must be implemented and respected by anybody who is linked to the construction project of Davao City Bypass Construction Project I-3. The SSEMPs adopt a precautionary approach and a philosophy of best international practice. Therefore, the purpose of the SSEMPs is to draft and maintain detailed management plans that will effectively prevent/ minimize environmental degradation.

The SSEMPs identify feasible and cost-effective measures that may reduce potentially significant adverse environmental impacts to acceptable levels. Specifically, the SSEMP Identifies and summarizes anticipated significant adverse environmental impacts. Describes each mitigation measure, including the type of impact to which it relates and the conditions under which it is required (e.g., continuously or in the event of contingencies), together with designs, equipment descriptions, and operating procedures, as appropriate. Provides linkage with any other mitigation plans required for the project.

Environmental monitoring during project implementation provides information about key environmental aspects of the project, particularly the environmental impact of the construction works and the effectiveness of mitigation measures. Therefore, the SSEMPs identify monitoring objectives and specify the type of monitoring, with linkages to the impacts assessed in the EIS and the mitigation measures described in the SSEMPs. Specifically, the monitoring section of the SSEMPs provide.

- A specific description and technical details, of monitoring measures, including the parameters to be measured, methods to be used, sampling locations, frequency of measurements, detection limits (where appropriate), and definition of thresholds that will signal the need for corrective actions.
- Monitoring and reporting procedures to ensure early detection of conditions that necessitate mitigation measures. furnish information on the progress and results of mitigation.
- To support timely and effective implementation of environmental project components and mitigation measures, if necessary, the SSEMPs recommend the training of staff to allow the appropriate implementation of SSEMP procedures. For all three aspects (mitigation, monitoring, and capacity development), the SSEMPs provide an implementation schedule for measures that must be carried out as part of the project, showing phasing and coordination with overall project implementation plans.

The SSEMPs cover each separately one environmental topic related to preparation, execution, monitoring and reporting of environmentally relevant work activities. These SSEMP therefore be referred to as ‘live’ plan subject to continuous improvement throughout the life of the project.

The SSEMPs describe in detail the plans and procedures that the SUTJV implement in order to control individual environmental issues associated with its activities, to comply with legislation and standards, to protect the environment and preserve natural resources. The environmental team will develop the SSEMPs sites specifically and closely linked to the planned activities on each of the construction sites.



## **7. SOIL MANAGEMENT PLAN (SMP)**

### **7.1 Objectives**

The purpose of the Plan is to reduce not only soil erosion, but also protecting air quality from dust generation, and water quality from discharging turbid and elevated levels of suspended solids. Further, the plan is to ensure that the effects from construction on soil do not cause any soil contamination.

The surveys that have been performed haven't identified contaminated soils, therefore the plan does not include any measure to deal with that type of soils. However, in case contaminated land is encountered in the project site, specific procedures will be included in the Waste management plan in order to prevent damage to water, land or population.

The Soil Management Plan is applicable to all SUTJV staff and Subcontractors on the Project.

### **7.2 Regulatory Framework**

There is no local legislation that defines soil erosion, spoils and stockpile Management specifications. Nevertheless, relevant Philippine specific legislation that apply to the management of soil erosion, spoils, and material stockpiles includes:

- Presidential Decree (PD) 1586: Philippine EIS System
- Presidential Decree 984: Pollution Control Law
- Republic Act 8749: Clean Air Act of 1999
- Republic Act 9275: Clean Water Act of 2003
- Republic Act 6969: Toxic Substances and Hazardous and Nuclear Waste Control Act of 1992
- Presidential Decree 856: Sanitation Code of the Philippines
- Dept. Administrative Order (DAO) 2003-30: Implementing Rules and Regulations (IRR) of the Philippine EIS System
- DAO 1992-29 Title III: Implementing Rules and Regulations of RA 6969
- DAO 2013-22: Revised Procedures and Standards for Hazardous Waste Management of RA6969'

### **7.3 Permitting Requirements**

The following permits may be required, depending on the activity, and to be applied for at the appropriate local authorities:

- Excavation Permit, if applicable
- Ground preparation permit for any road widening/creation.
- Permit to Disposed and Transport if applicable.



## **7.4 Environmental Impacts**

Permanent and major modification of the terrain and alteration of landform due to the construction of embankments.

- Topsoil removal.
- Generation of spoils from excavation and earthmoving works.
- Earthworks which include excavation, backfilling, stockpiling, tunneling for the underground, and natural hazards may deliver to Ground Subsidence Liquefaction Landslide, Mud/ Debris Flow.
- Degradation of soil quality (soil contamination) due to accidental spills of fuels /lubricants from construction vehicles & machineries / hazardous chemicals.
- Generation and improper handling/disposal of construction soil spoils & hazardous wastes.
- Soil erosion of existing slopes in active construction sites and in construction camps
- Migration of soil/spoils into water bodies and subsequent increase in turbidity and total suspended solid levels in the water column; and
- Air quality impacts dust resuspension from exposed stockpiles.

## **7.5 Management Measures**

### **7.5.1 Mitigation**

Formulate appropriate design measures for the protection on slopes and banks, soil improvement / ground reinforcement to minimize ground failure during construction based on the results of the geological survey and geotechnical investigations.

- Reduce to a minimum clearance and removal of vegetation.
- Topsoil from within construction and logistics sites will not be removed from the site. This soil will be stored on designated spoils stockpile area for temporary stockpiling and eventually be used within the site as part of the development or restoration.
- Implementation of appropriate construction method, schedule, and activities based on combination of geotechnical and geological investigations, and seismicity studies in coordination with the Philippines Institute of Volcanology and Seismology (PHIVOLCS);
- Implement construction methods through support of the existing structures to control vertical and horizontal settlement of road, bridges and other existing buildings.
- The project will perform progressive conduct of ground preparation and clearing to minimize disturbance in the soil cover.

- The project will identify the areas that are going to be used for stockpiles and other construction materials considering the distance from the residents and nearest sensitive receptor.
- Proper inspection and maintenance of machines and equipment.
- Vehicles, plant and machinery will be regularly serviced, and routine checks made to determine leaks.
- Mobile equipment and vehicles will be removed from site for servicing. Major maintenance will take place offsite.

### **7.5.2 Control**

#### **➤ Erosion Protection in Bridge Construction Areas:**

- Construct diversion banks above excavated areas to intercept and divert runoff away from the exposed areas. Diversion banks normally remain in use after construction is completed and should be constructed with a channeling capacity sufficient for coping with the 1 in 10-year storm discharges. Bare earth channels should be sloped at 0.05% to avoid channel erosion.
- The erosion protection on site should be 10 meters to 20 meters upstream.
- Diversion channels should have stable outlets that will not erode.
- Construction of temporary cut-off drains across the excavated area. These should be constructed at 2.0 m vertical intervals with channel slopes <0.05% check if stable outlets are available.
- Erection of temporary silk fences using a porous geotextile fabric that will allow the runoff to pass through the structure but retain sediment. Silk Silt fences should be erected at the base of the construction area or alongside a buffer area to prevent sediment from entering.
- Use of mulches which are spread at sufficient depth, normally 25 to 50 millimeters (mm) over the exposed slope to intercept erosive rainfall.

#### **7.5.2.1 Sediment Control**

- Contractor's machinery and vehicle parking areas and material stores, which may include large bare earth areas, will increase storm water runoff volumes. Runoff from these areas will be high in sediment, and may also be polluted with fuel, oil residues and construction related pollutants. It shall be directed into a holding pond in case of contamination. Runoff from upstream areas shall be diverted around these designated storage areas.
- Use sediment collecting basins at the base of large excavation areas. The designs of sediment basins require careful design to match capacity with runoff volumes and setting times. Sediment basins should be installed at the start of the excavation and need regular maintenance to clean out the sediment.
- Site vehicle-washing facilities or rumble strips at construction-site exits to remove earth and mud from vehicles and machinery before they leave the



site. Wash-down bays must discharge to a sediment collection basin and only after that to a watercourse.

- Set up check dams in the form of rock dams, silt fences and sandbags placed along catch drains in order to slow flow, reduce scour and capture sediment.
- Regular inspections and maintenance of silt fences, sedimentation basins, and other erosion control measures are required.

#### **7.5.2.2 Erosion Protection in Cut and Cover Tunnel and Bridge Section:**

- To avoid potential differential settlements, a geomembrane is proposed to be installed.
- Stockpiles will be protected from: wind and rain in order to prevent erosion and dust generation.
- Stockpiles won't exceed 2 meters in height and shall be graded to prevent erosion.
- Store stockpiles within bunded area. Provide a "buffer" zone between areas of activities and existing edges/slopes.
- Incorporate storm water drainage system within the construction camp to intercept silty runoff in silt ponds.
- The volume of excavated soil that is disposed off-site will be recorded and data included in the Monthly Progress Report. An appointed person in the Logistics department will be the keeper and recorder of excavated soil to be disposed off-site.
- Temporary work. The construction method for cut and cover excavation will be open cut when the stability of the slopes is safe. In those cases that the stability could be a concern (higher slopes, lack of space, low bearing capacity...), sheet piling will continue. When the sheet piles installation requires extra support, ground anchor bolts will be implemented while the excavation is going deeper. The determination of each method will be defined in the temporary works design will be applied the solution of sheet piles with at least three levels of anchors. Method statement for each of these activities (earthworks, anchoring and sheet piling works) will be submitted separately for engineer's approval.
- The implementation of contingency measures for the rainy periods will be applied in each step of the earthworks. When the original ground slope transferred the water towards the excavations, a longitudinal trench will be excavated and kept clean in order to collect the water to the nearest discharge point, out of the work area. The excavations will maintain a smooth slope to the sides in each section and in the toe of the slope, drainage channels and sump pits will be excavated to collect the water and submersible pumps will be installed to pump water and drain into the superficial drainage channels. In the event that water is not clean, a standby sedimentation tank will be placed.

#### **7.5.2.2.1 Enhancement**

In order to implement waste minimization, soil collected which are not contaminated, will be reused as backfill.



### 7.5.2.3 Management

#### ➤ **Construction Managers:**

Overall responsibility for the execution of the plan, resolving disputes relating to the Plan execution and coordination and liaising with the EPM on resolving SMP issues.

#### ➤ **Environmental Protection Manager**

Managing and updating the SMP, liaising with the Construction Managers to ensure implementation of the SMP, completing weekly and monthly site environmental inspections, identifying acceptable or unacceptable conditions in weekly or monthly inspections, completing the Environmental Incident Report, establishing and implementing control measures to prevent, correct and avoid pollution reoccurrence and collecting the documentation to close the Environmental Incident

#### ➤ **Site**

- Implementing the SMP on site, implementing onsite mitigation measures in collaboration with the EPM and reporting of incidents on site.
- Environment Officers: Assist the EPM and Construction Manager in the implementation of all aspects of SMP. Conduct site visits and regular site inspections.
- Construction Workers: Supporting the EPM and Construction Manager to ensure the SMP is followed, prevent and control pollution incidents.

#### ➤ **Health & Safety Manager**

Responsible for maintaining all site induction training records covering HS.

### 7.5.2.4 Monitoring and Reporting

- If required, soil testing will be executed according to general best practice and shall comply with the Dutch Intervention Values.
- Where there is no existing evidence of soil contamination identified within the EIS Study, or during analysis, then additional sampling shall only be undertaken when there are visible material changes and where contamination is suspected. If there are no changes in strata and if no contamination is suspected during the site investigation, then additional sampling shall not be undertaken.
- Daily Inspection/Observation and Weekly Audit.
- Monthly environmental monitoring report.

### 7.5.2.5 Performance Indicator

- No visible signs of contamination.
- No observe soil erosion on stockpiles and on excavated areas.

- No observe sedimentation /siltation on nearest water body.
- No visible signs of fugitive dust emission from stockpile and during transport

### **7.5.2.6 Records Management**

All reports listed below will all be submitted to the engineer for information and reference. Further, the environmental unit will keep the hard copies and compile them into folders. Electronic copies of reports and lists will be stored in electronic folders.

### **7.5.2.7 Corrective Actions**

- Investigate soil erosion from stockpile.
- Investigate cause of chemical / oil spill.
- Investigate mud/dirt on road.
- Investigate elevated fugitive dust emissions.
- Review the SSEMP.
- Provide corrective and preventive actions aligned with the SSEMP and related environmental requirements and standards.

### **7.5.2.8 Summary of Environmental Monitoring Plan for Soil with EQPL**

Key Environmental Aspects	Potential Impacts	Parameter to be monitored	Sampling & Measurement Plan			Lead Person	EQPL MANAGEMENT SCHEME				
					Location		EQPL RANGE		MANAGEMENT MEASURE		
							ALERT	ACTION	LIMIT	ACTION	LIMIT
Potential contamination	Contamination due to significant amount of spill from: a.) Chemicals b.) Oil	Visual check to determine extent & weight of contamination a.) Chemicals – dependent on the composition based on MSDS b.) Oil – dependent on the composition based on MSDS	Visual check if visible contamination in Grab sampling	When spill incidents	Package I-3 including yards ( Road, Bridge and Cut and cover section)	EPM/EPO	TCLP - Toxicity Characteristic leachate Procedure	TCLP - Toxicity Characteristic leachate Procedure			
Topsoil removal;	Siltation on water courses	Sediments and color	Visual observation	Daily	Package I-3 including yards ( Road, Bridge and Cut and cover section)	EPM/EPO	n/a	n/a			
Permanent and major modification of the terrain and alteration of landform due to the construction of embankments	Terrain and land alteration	Land alteration	Visual observation	Daily	Package I-3 including yards ( Road, Bridge and Cut and cover section)	EPM/EPO	n/a	n/a			
Earthmoving works during spoils removal and excavation	Excessive dust levels	Dust emission	Visual observation	Daily	Package I-3 including yards ( Road, Bridge, Disposal area and Cut and cover section)	EPM/EPO	TSP = 230	TSP = 230			
	When community complaints arise	TSP = 230	3rd Party ambient testing	As required							
Earthworks during backfilling	Excessive dust levels	Dust emission	Visual observation	Daily	Package I-3 including yards ( Road, Bridge, Disposal area and Cut and cover section)	EPM/EPO	TSP = 230	TSP = 230			
During stockpiling	Excessive dust levels	Dust emission	Visual observation	Daily	Package I-3 including yards ( Road, Bridge, Disposal area and Cut and cover section)	EPM/EPO	TSP = 230	TSP = 230			

**Table 8. Summary of Environmental Monitoring Plan for Soil with EQPL**



## **8. WASTE MANAGEMENT PLAN (WMP)**

### **8.1 Objectives**

The purpose of this Plan is to ensure that waste generated in the pre-construction and construction phases of the project is managed and disposed of in accordance with RA6969, RA9003 and RA9275 and in a way that protects both public health and the environment.

The objectives of this WMP are to:

- Determine the types of waste that will be generated by the project.
- Estimate the volume of waste generated.
- A designated Solid waste hauler and sanitary landfill facility. All solid (nonhazardous waste) will be disposed of at this landfill site.
- Environmental management controls will be implemented to ensure waste is disposed according to this WMP and evidence submitted with the Compliance Monitoring Report (CMR) and the Self-Monitoring Report (SMR)

### **8.2 Regulatory Framework**

Management of waste is governed by the following Environmental Laws and related regulations:

- Presidential Decree 1586: Philippine EIS System
- Republic Act 6969: Toxic Substances and Hazardous and Nuclear Waste Control Act
- Republic Act 9003: Ecological Solid Waste Manage Act
- Republic Act 9275: Clean Water Act
- Republic Act 8749: Clean Air Act
- Presidential Decree 856: Sanitation Code of the Philippines
- DAO-1992-29 Title III: Implementing Rules and Regulations of RA 6969
- DAO 2013-22: Revised Procedures and Standards for Hazardous Waste Management
- DAO 2001-34 Implementing Rules and Regulations of RA 9003
- DAO 2003-30 Implementing Rules and Regulations of the Philippine EIS System
- DAO 2003-27 Implementing Rules and Regulations of the Preparation of Self-Monitoring Report
- DAO 2014-02: Revised guidelines for Pollution Control Officer Accreditation
- DAO 2021-09: Chemical Control Order (CCO) for Chromium VI Compounds

- DAO 2021-08: CCO for Cadmium and Cadmium Compounds
- DAO 2019-20: Revised CCO for Mercury and Mercury Compounds
- DAO 2019-17: Chemical Control Order for Arsenic and Arsenic Compounds
- DAO 2013-24: Chemical Control Order for Lead and Lead Compounds
- DAO 2004-01: Chemical Control Order (CCO) for Polychlorinated Biphenyls (PCBs)
- DAO 2000-02: Chemical Control Order (CCO) on Asbestos
- DAO 1997-39: Chemical Control Order for Cyanide and Cyanide Compounds
- DAO 1997-38: Chemical Control Order for Mercury and Mercury Compounds

### **8.3 Permitting Requirements**

The SUTJV is committed to comply with all the environmental requirements and related regulations and secure relevant permits / clearance.

#### **➤ Solid Waste (Nonhazardous)**

- Solid Waste Hauler Accreditation (Accredited by LGU-CENRO Davao City)
- Scrap Materials (Coordination with LGU-CENRO Davao City)

#### **➤ Liquid Waste**

- Septage hauling and transport (LGU-CENRO Davao City)

#### **➤ Hazardous Waste**

- Registration as a Hazardous Waste Generator (SUTJV)
- Transport Permit (Third Party DENR-EMB-RXI Accredited)
- TSD Facility Permit (Third Party Third Party DENR-EMB-RXI Accredited)
- Waste Manifest (Third Party Third Party DENR-EMB-RXI Accredited)
- Certificate of Treatment (COT Third Party DENR-EMB-RXI Accredited)

### **8.4 Waste Characterization**

Waste generated from Pre-construction stage of the project will be minimal and composed of solid (nonhazardous) waste and tree cuttings. The bulk of wastes generation will be from the construction phase.

The WMP has identified waste that will be generated during construction, these are:

- The estimated volume of spoil in the Cut and cover tunnel section is 3153.446 m<sup>3</sup> of volume spoil.
- The management of spoil will be discussed in the Spoil Management Plan (SpMP)

➤ **Solid waste (Nonhazardous):**

- Domestic solid waste
- Waste concrete from concrete pours.
- Timber: occasional formworks

➤ **Liquid waste:**

- Sanitary waste (sewage & greywater)
- Pile slurry liquid, referred to as polymers or special clays.
- Concrete washout liquid

➤ **Hazardous waste**

- Discarded / busted fluorescent bulbs.
- Discarded batteries.
- Medical or Infectious wastes
- Spent paint and chemical containers.
- Oil and chemical contaminated spill kits.
- Electrical & Electronic (EE) Waste

For solid waste (nonhazardous), collection and disposal service will be an accredited waste hauler from Davao City. Solid waste collected will be disposed of at Davao City Sanitary Landfill Facility in Brgy Carmen, Davao City.

### **8.5 Environmental Impacts**

The Impacts Identified during the construction activities are:

- Generation of domestic solid waste (nonhazardous) from construction camps and by construction workers.
- Devaluation of land value as a result of improper solid waste management.
- Potential contamination of surrounding area, including water and soil, near the work sites due to generation and spill of hazardous waste at construction sites.
- Sanitary wastewater discharge from temporary facilities i.e. offices, canteen and workers camp.



- Generation of wastewater from construction activities i.e. slurry and concrete washout liquid
- Threat to public health from exposure to inappropriate disposal of sanitary and/or hazardous wastes.

## 8.6 Management Measures

### 8.6.1 Mitigation and Control Solid Waste (Nonhazardous)

The following management measures to be undertaken.

- For construction waste, a designated temporary solid waste storage area will be established in the project sites. One location for the temporary storage area is at the temporary Facilities.
- Dedicated waste collection or Material Recovery Facility (MRF) for papers, metals, glass, carton, food will be provided by the solid waste hauler. It will have the proper labels / placards showing the type of waste.
- Labels / placards will always be available to avoid mixing waste inside the bins.



Figure 4. Proposed Material Recovery Facility

- Sorters will be arranged to manage sorting of waste through appropriate waste bins.
- Solid waste is not allowed to accumulate onsite or overfull, they are both environmental, health or safety hazard. Therefore, the strategy to be implemented is weekly collection or once the waste bins are almost full will be removed from site. Visual observation / inspection will be included in the Monitoring plan.
- Environmental Officers (EO) on. The site will contact the Solid waste hauler to collect the waste bins. Further, solid waste hauler is required to provide the waste trip ticket /delivery notes for reporting and for audit purpose.

- For concrete debris, a dedicated collection bin will be provided. Collected concrete will- be reprocessed at the batching plant. Some will be used for fixing at temporary facility or be used for concrete hard standing.
- For timber or commercial lumber, it will be reused for construction. Excess timber or commercial lumber may be sold to scrap buyers/recyclers accredited by LGU Davao City CENRO. Arrangement will be undertaken for the collection of Scrap buyers. A designated collection point for used timbers will be established. The location will be separated and away from any flammable materials for safety and fire.

### **8.6.2 Hazardous Waste**

The following management measures will be undertaken:

- Hazardous Waste (HW) storage areas or Facilities must be designed for the specific materials that will be stored taking into consideration the requirements of the appropriate Material safety data (MSDS) sheets and the requirements of the DENR-EMB. It will be constructed with impermeable material to eliminate seepage and contamination.
- Inspect HW containers to ensure they are all in good condition with no leaks or signs of corrosion; Take immediate action if any spills are seen.
- Make sure all containers are adequately and clearly labeled with all information required in accordance with DAO 2013-22 Section 6.
- Monitor activities on site (such as vehicle and machinery refueling) which have the potential to result in spills and environmental health impacts.
- All hazardous waste will be brought to the hazardous waste facility at the end of the working day.
- Maximum storage of HW will be six (6) months however the quantity and cost will be considered; Check that spill prevention is actively being enforced on site.
- Check that site personnel wear adequate PPE when working with hazardous waste.
- Accurate record keeping of hazardous waste types and amounts must be undertaken. This will take place on a monthly basis or as a new hazardous waste stream is produced.
- All relevant staff must be trained in the safe handling of hazardous waste and provided with the necessary personal protective equipment.
- Flammable waste such as that contaminated with paint / oils / solvents will be locked in approved fireproofed containers provided with proper signage and located an appropriate distance from ignition sources. This will be labelled as hazardous waste. A management strategy for this type of waste is to make special arrangements with respective product suppliers for the retrieval of hazardous wastes such as empty chemical containers i.e. paints/solvents/lubricants.
- Discarded batteries and busted fluorescent lamps/ bulbs will be collected, stored and disposed of thru EMB-DENR accredited Transporters and TSD facilities.



- Medical or Infectious waste from onsite clinics, onsite management is through collection in a specialized (yellow) receptacle and will be collected and transported by DENR-EMB accredited Transporters & TSD facility prior to disposal.
- Oil and chemical contaminated spill kits will be stored and disposed of by DENR-EMB accredited TSD facility. Contaminated soil from excavation or from accidental spill will be disposed of thru accredited TSD Facility.
- Electrical and Electronic (EE) waste will be stored and collected by DENR-EMB accredited TSD Facility. An EMB accredited facility within Davao region collects EE Waste. They will be contacted once EE waste is already generated onsite.
- All hazardous waste treated and /or disposed of by DENR-EMB accredited TSD facility shall issue Certificate of Treatment/s (COT) as proof of treatment/disposal. Records will be kept and filed for submission to the Monthly Monitoring Report, for auditing and monitoring purposes. It will also be included in the quarterly Self-Monitoring Report (SMR).
- SUT JV will nominate a Pollution Control Officer (PCO) to manage hazardous waste on site. This individual will be responsible for ensuring the correct placing, construction, maintenance, and housekeeping of the hazardous waste storage areas.

#### **8.6.3 Liquid Waste**

- Sanitary waste is composed of sewage and greywater runoff from toilets, kitchen/wash basins, showers generated in site offices and workers camps.
- Sanitary waste shall be collected in septic tanks located within the construction site.
- All septic tanks shall be designed with three (3) chamber (Building Code Standards) type to ensure that there is no risk to groundwater from overflow between emptying schedules. No discharge will be permitted for the septic tanks.
- If sanitary waste is treated onsite, a Sewage Treatment Plant (STP) will be installed. A discharge permit will be secured from EMB-DENR. Monitoring of the discharge will be part of the monitoring plan.
- Portable toilets will be provided for the employees across the site. Daily Collection from the Portable Toilets or dependent on the capacity to contain the waste. The service provider will be consulted as regards this.
- Septic tanks and portable toilets will have storage capacities capable of coping with all staff utilizing the facilities.
- Sanitary waste shall be collected, tankered and disposed of through approved service providers by DENR- EMB and LGU Davao CENRO.
- Inspection for leaks will be undertaken on a regular basis, if any leaks are found, the reporting procedures will be followed immediately.
- Apart from sanitary waste, concrete washout and pile slurry liquid will be generated from the construction activities. Piling is carried out with a liquid slurry system. The slurry is either mixed with bentonite clay or special polymers to stabilize the sides of the borehole. Before the slurry is dispose of, the material must be de-watered. The arrangement for the treatment onsite of the slurry is thru series of settlement to reduce



turbidity and neutralize pH to conform to EMB limits. Treated water will be tested prior to discharge.

- Concrete washout liquid (Alkaline in nature) from concrete lorries, batching plants and other equipment, will be generated. Refer to Appendix G Concrete washout point design/plan. They will be contained in a dedicated steel containment for drying.

### **8.7 Enhancement Measures**

The Ecological Solid Waste Management encourages waste minimization. The SUTV is committed to optimizing its resources to lessen waste generation. Moreover, it is encouraged that waste i.e. scrap rebars, timber and other materials will be reused.

### **8.8 Responsibilities**

#### **Management**

##### **➤ Construction Managers:**

Overall responsibility for the execution of the plan, resolving disputes relating to the Plan execution and coordination and liaising with the EPM on resolving WMP issues.

##### **➤ Environment Manager:**

Managing and updating the WMP, liaising with the Construction Managers to ensure implementation of the WMP, completing weekly and monthly site environmental inspections, identifying acceptable or unacceptable conditions in weekly or monthly inspections, completing the Environmental Incident Report.

Establishing and implementing control measures to prevent, correct and avoid pollution reoccurrence and collecting the documentation to close the Environmental Incident

##### **➤ Site**

- Construction Manager: Implementing the WMP on site, implementing onsite mitigation measures in collaboration with the EPM and reporting of incidents on site.
- Environmental Officers: Working with the Construction Manager to implement the WMP on site. Assist the EPM and Construction Manager in the implementation of all aspects of WMP. Conduct site visits and regular site inspections, daily inspections, trending the process in coordination with the EPM, collating and filing inspection records, reporting of findings to the EPM.
- Construction Workers: Supporting the EPM and Construction Manager to ensure the WMP is followed, prevent and control pollution incidents.

##### **➤ Health & Safety Manager**

- Responsible for maintaining all site induction training records covering HS.

### **8.9 Monitoring and Reporting**

- The Environment Officer in charge of the site will inspect and monitor all hazardous wastes storages. Both will be responsible for ensuring the correct placing, construction,

maintenance and housekeeping of the hazardous waste storage areas and the Solid waste (nonhazardous) storage area. Daily Inspection/Observation and Weekly Audit

- Monthly Environmental Monitoring Report
- Self-Monitoring Reports and Compliance Monitoring Reports for DENR-EMB

#### **8.10 Performance Indicator**

- No observe unsegregated waste on waste bins.
- No observe overfull waste bins.
- No visible signs of contamination at the HW storage areas.
- No visible signs of leak from HW containers / spillage on the floors.
- No observe septage from portable toilets / STP.
- No visible signs of color / turbidity / suspended solids from water discharges to nearest water body.
- No observe concrete washout spillages.
- No observe slurry spillages

#### **8.11 Records Management**

All reports listed below will all be submitted to the Engineers for information and reference. Further, the environmental unit will keep the hard copies and compile them into folders. Electronic copies of reports and lists will be stored in electronic folders.

Further, records of the Hazardous wastes i.e. Certificate of Treatment etc. will be available in the Hazardous Waste Storage areas or Facility.

- Daily Inspection / Observation and Weekly Audit.
- Monthly Environmental Monitoring Report.
- Records of induction training and toolbox talks.
- Contract with DENR-EMB Accredited TSD Facility
- Certificates of Treatment issued by the DENR Accredited TSD Facility
- All transactions with DENR-EMB Hazardous Waste Management are thru the Online Hazardous Waste Manifest System in transporting HW for offsite treatment, storage, and disposal.
- Waste Tickets (nonhazardous)
- Hauler Tickets (Scraps /Recyclables)
- Water Tests (STP / Slurry ponds / Concrete washout liquids)

## 8.12 Corrective Actions

- Investigating HW spillage.
- Investigate septage from portable toilets / above limit discharge from STP.
- Investigate concrete washout liquids disposal.
- For HW spillage, spill management procedure will be implemented.
- The Environment officer assigned to the construction site will prepare an Incident report. Further, the Corrective action Plan (CAP) will be prepared for approval by Project Manager. Implement CAP and monitor execution and effectiveness and eventual closing of the CAP.
- Review the SSEMP. Provide corrective and preventive actions aligned with the SSEMP and related environmental requirements and standards.

## 8.13 Summary of Environmental Monitoring Plan with EQPL



Key Environmental Aspects	Potential Impacts	Parameter to be monitored	Sampling & Measurement Plan			Lead Person	EQPL MANAGEMENT SCHEME			
			Method	Frequency	Location		EQPL RANGE		MANAGEMENT MEASURE	
Solid Waste (Non Hazardous) – CONSTRUCTION PHASE										
		At the MRF Papers; Plastic; Glasses; Scrap metals / steel bars. Bin Identification: Concrete waste; Concrete washout;								
	Unsegregated wastes	Concrete waste; Concrete washout;	Visual check	Daily	Construction yard, Labor camp, Batching Plant,	Env Officer	Proper segregation	Proper segregation		
	Overfull skips	Concrete waste	Visual check	Daily	Construction yard, Labor camp, Batching Plant,	Env Officer	No overfull bins	No overfull bins		
Liquid Waste										
	Domestic, Sewage	Sewage spill	Visual check	Daily	Construction yard, Labor camp, Batching Plant,	Env Officer				
	Concrete washout	Washout spill	Visual chec	Daily	Construction site (Bridge and Cut and Cover tunnel)	Env Officer	No spills from concrete washout are	No spills from concrete washout area		
Hazardous Waste										
	Used oil including oil contaminated soil	Used oil spill; including oil contaminated soil	Visual check	Daily	Batching Plant, Construction site (Bridge and Cut and Cover tunnel)	Env Officer	No spills from used oil; including oil contaminated soil	No spills from used oil; including oil contaminated soil		
	Discarded fluorescent Lamps	Mishandled Discarded fluorescent Lamps	Visual check	Daily	Construction yard, Labor camp, Batching Plant,	Env Officer	No mishandled discarded fluorescent lamps	No mishandled discarded fluorescent lamps		
	Discarded batteries	Mishandled Discarded batteries	Visual check	Daily	Construction yard, Labor camp, Batching Plant,	Env Officer	No mishandled discarded batterie	No mishandled discarded batteries		
	Medical or Infectious wastes	Mishandled Medical or Infectious wastes	Visual check	Daily	Clinic	Env Officer	No mishandled Medical infectious wastes	No mishandled discarded batteries		
	Spent paints and chemical containers including contaminated soil	Mishandled Spent paints and chemical containers including contaminated soil	Visual check	Daily	Construction yard, Labor camp, Batching Plant,	Env Officer	No mishandled spent paints and chemical containers including contaminated soil	No mishandled Spent paints and chemical containers including contaminated soil		
	Oil and chemical contaminated spill kits	Mishandled oil and chemical contaminated spill kits	Visual check	Daily	Batching Plant, Construction site (Bridge and Cut and Cover tunnel)	Env Officer	No mishandled Oil and chemical contaminated spill kit	No mishandled Oil and chemical contaminated spill kits		

**Table 9. Summary of Environmental Monitoring Plan for Solid Waste with EQPL**

## **9. SPOIL MANAGEMENT PLAN (SpMP)**

### **9.1 Introduction**

The Excavation material (spoil) comes from excavation of tunnels, piles, drainage, roads and additional excavation required from the project. The estimated total quantity for CP I-3 is about 3153.446 m<sup>3</sup> and it will be reused for backfilling the tunnel section.

### **9.2 Spoil Transport**

The Traffic Management Plan (TMP) will be implemented during transport of the spoiled materials from excavation and grubbing operations onto the proposed stockpile area.

### **9.3 Classification of the Spoil**

- Grubbing operation spoil (Unsuitable material) these includes grasses and remaining roots. The topsoil will likely to be mixed with various bits of rubble, tree roots and plants.
- Excavation Waste (Suitable material) these includes suitable material for backfilling / restoration at site and excess suitable material which will be transported to the Clients designated Stockpile area.
- Excess Slurry waste from bore piling activity.

### **9.4 Spoil Reduction, Reuse and Disposal**

- A stretch target of 100% reused excavation waste will be set.
- Soil and fill excavated from excavation of tunnels and from the roads will have to be transferred on a stockpile area approved by engineer.
- No excavated materials will be sent to other locations unless agreed by the Project Manager and EPM.
- A proportion of the excavated material will be reused for backfill on existing projects.
- Where feasible excavated material will be graded according to quality/size for future use unless otherwise specified by the Project Manager.
- The remainder of the excavated material that is unable to be reused will be taken to the designated stockpile area.
- Excess Slurry waste from bore piling activity will be stockpiled to dry prior transport to designated disposal / dumping area.

The following management measure to be implemented in the Spoil stockpile area:

- Minimize surface areas of stockpiles (subject to health and safety and visual constraints regarding slope gradients and visual intrusion) to reduce area of surfaces exposed to wind pickup.
- Where practicable, stockpiles of soils and materials should be located as far as possible from sensitive properties, taking account of prevailing wind directions and seasonal variations in the prevailing wind.
- All stockpiles will be covered, enclosed on three sides or kept moist particularly during dry or windy periods.
- Stockpiles will be located away from sensitive receptors where possible.
- Access roads adjacent to stockpiles will be watered.

### **9.5 Disposal and Reuse locations**

The unsuitable excavated material will be removed onsite to an authorized- and approved disposal site. Although not yet finalized. Disposal Area for Spoil / unsuitable excavated material.

For the suitable excavated material will be prioritized the reuse inside the project directly from the excavation areas to the final disposal or filling zones. When is not possible to place directly from the excavations ongoing, the material shall be temporarily stockpiled beside excavated area in such a way that shall not hamper any ongoing activities for a later re-use. The surplus of suitable material will be handed over into a designated stock yard /pile.

The suitability of the material will be determined as per embankment specifications.

### **9.6 Spoil Transport Routes**

Currently, the stockpile area for spoil is not finalized, yet. This information will be provided once the location and the route are available.

### **9.8 Records Management**

Spoil transport tickets should be collected and provided to the EMU for auditing and monitoring purposes. The logistics department / construction department will arrange and assign a person to monitor the transport and dumping of the surplus suitable excavated material. Transport and Dispose permits should also be secured and be available when audited.

### **9.9 Summary of Environmental Monitoring Plan with EQPL**



Key Environmental Aspects	Potential Impacts	Parameter to be monitored	Sampling & Measurement Plan			Lead Person	EQPL MANAGEMENT SCHEME						
			Method		Frequency		EQPL RANGE			MANAGEMENT MEASURE			
							ALERT	ACTION	LIMIT	ALERT	ACTION	LIMIT	
Earthworks including excavation of tunnel activities					Daily visual inspection Monthly reporting and meeting, immediately in case of spil								
	Generation of excavated soil	Volume of excavated soil	Volume of excavated soil		Area of construction	EPM / Environment Officer			As per requirement by Client Representative				As per requirement by Client
	Disposal of grubbing (unsuitable material)	Volume of unsuitable material from grubbing operation	Ocular inspection	Weekly visual inspection	Area of construction	EPM / Environment Officer			Proper disposal to government authorized disposal site.				Proper disposal to government authorized disposal site.

Table 10. Summary of Environmental Monitoring Plan for Spoil with EQPL

## **10. SURFACE QUALITY MANAGEMENT PLAN (SWMP)**

### **10.1 Objectives**

The purpose of this Plan is to ensure that surface water is correctly controlled and managed and that any effects from surface water do not cause harm to people or the environment. It includes an assessment of the impacts of the pollution of surface water where the potential interface with people or the environment has been identified.

Construction activities may result in changes that could affect both water quality and disrupt natural drainage. The project will include excavation of cut and cover tunnel and the bridge construction at the specific section of the project. For cut and cover tunnel dewatering is needed in this area as part of the construction activities.

The SWMP includes site investigation to determine existing surface water conditions and data collection, through monitoring, and subsequent data analysis for the effective management of the surface water. The nearest surface water to Package I-3 is Lasang River which runs parallel to the proposed bridge construction site.

The SWMP is applicable to all SUTJV employees and Subcontractors.

### **10.2 Regulatory Framework Management of surface water is governed by the following.**

Environmental Laws and related regulations:

- Presidential Decree 1586: Philippine EIS System
- Presidential Decree 856: Sanitation Code of the Philippines
- Republic Act 9275: Clean Water Act
- Republic Act 6969: Toxic Substances and Hazardous and Nuclear Waste Management Act
- Republic Act 10121: An Act Strengthening the Philippine Disaster Management
- Republic Act 9729: Philippine Climate Change Act of 2009
- DAO 2021-19: Updated Water Quality Guidelines (WQG) and General Effluent Standards (GES) for Selected Parameters
- DAO 2016-08: Water Quality Guidelines and General Effluent Standards
- DAO 2005-10: Implementing Rules and Regulations of the Philippine Clean Water Act of 2004
- DAO 2003-30: Implementing Rules and Regulations (IRR) of the Philippine EIS System
- DAO 2003-27: IRR of the Preparation of Self-Monitoring Report

**10.3 Permitting Requirements Relevant permits to be secured is the Discharge Permit****10.4 Environmental Impacts**

- Flooding and inundation by sediment run off, siltation, drainage overflow, clogging due to construction activities.
- Disturbance on bottom sediment and degradation of surface water.
- Siltation and turbidity of the nearest surface water body.
- Threat to abundance, frequency and distribution of aquatic species.
- Discharge of wastewater from construction sites, accidental spills, and improper handling and disposal of construction waste

**10.5 Management Measures Mitigation and Control**

- Sufficient drainage system including temporary drainage during construction will be installed to accommodate the surface water runoff from the project and avoid any flooding in the project site, in consideration to the existing drainage system and flood storage capacity.
- If possible, minimize the removal of vegetation and alteration of topography.
- Install soil erosion control such as protection of slope and bank, silt traps, to minimize siltation of waterways as required.
- Strictly implement construction plan, operating instructions, and solid waste / soil management plan, which include minimization of waste/soil generation, segregation, and proper disposal by contractor in accordance with RA 9003.
- Regular inspection and prompt maintenance of the drainage system, all installed structures and facilities and improve/enhance capacity when possible.
- The design of the temporary facilities will take into consideration the risks of flooding.
- Any intervention that affects the natural drainage system will consider an alternative way for water flow, in order to prevent damage in case of heavy rains.
- All excavations will be backfilled, and ground restored to its original conditions.
- Erosion and sediment control measures will be implemented on stockpile area and on stockpiles.
- Specific protection measures in the Lasang River for the bridge construction will be included on the method statement.





Figure 5 Lasang river Brgy Communal, Davao city

- Temporary drainage and siltation ponds will be constructed to mitigate siltation of adjacent water bodies.
- Plan and implement construction activities in consideration to the water course, embankment, and dry season.
- Install protection measures for soil erosion and bottom sediment around the bridge piers.
- Place excavated material in temporary staging area with provision for silt traps/ siltation pond to avoid silt draining to waterways, degradation of surface water quality and clogging of waterways.
- A quarterly surface water quality monitoring will be conducted at the upstream and downstream of the river. Details are discussed in the Surface water quality monitoring.
- In case a STP is installed, its discharge will be monitored and tested to comply with DENR-EMB Standards. Portable toilets will have storage capacities capable of coping with all staff utilizing the facilities. All septic tanks shall be designed with three (3) chamber type to ensure that there is no risk to groundwater from overflow between emptying schedules. And will be encase with concrete or installation of HDPE.
- Toilets and lavatories to be provided at the construction camps will be at a ratio per toilet of provided by the H&S Team.
- Conduct proper inspection and regular maintenance of construction machineries, equipment, vehicles and wastewater treatment equipment and facilities with appropriate measure to collect any leakage.
- Control oil refueling activities and provide oil bunds in oil storage areas.

- Where small oil containers / chemicals to be used on construction site, drip trays / pans will be provided.
- Prohibit workers from dumping garbage into drains and canals.
- Implement material handling program or a site protection program.
- Prior to operation of the batching plant, construct settling/retention ponds with sufficient capacity for treatment of wastewater from washing of equipment such as mixer drums, trucks and chutes.
- Properly maintain settling/retention ponds to ensure compliance with the effluent quality.
- Comply with environmental permitting requirements for the storage, transport, handling, and treatment of hazardous material/ wastes and contaminated soil in accordance with RA 6969 and solid waste / soil management plan, which include minimization of waste/soil generation, segregation, and proper disposal including the temporary storage by contractor in accordance with RA 9003.

### **10.6 Enhancement Measure**

It is proposed that part of the water resource plan, is a water conservation program e.g. rain harvesting to be used for dust suppression; watering of plants, treated water reuse from the STP for toilet cleaning etc.

### **10.7 Responsibilities**

#### **Management**

##### **➤ Construction Managers:**

- Overall responsibility for the execution of the plan, resolving disputes relating to the Plan execution and coordination and liaising with the JV EPM on resolving SMP issues.

##### **➤ Environmental Protection Manager:**

- Managing and updating the SGWMP, liaising with the Construction Manager to ensure implementation of the SGWMP, completing weekly and monthly site environmental inspections, identifying acceptable or unacceptable conditions in weekly or monthly inspections, completing the Environmental Incident Report, establishing, and implementing control measures to prevent, correct and avoid pollution reoccurrence and collecting the documentation to close the Environmental Incident

##### **➤ Site**

- Construction Manager: Implementing the SGWMP on site, implementing onsite mitigation measures in collaboration with the EPM and reporting of incidents on site.
- Environment Officer: Working with the Construction Manager to implement the WMP on site. Assist the EPM and Construction Manager in the implementation of all aspects of SGWMP. Conduct site visits and regular site inspections, daily inspections,



trending the process in coordination with the EPM, collating and filing inspection records, reporting of findings to the EPM.

- Construction Workers: Supporting the EPM and Construction Manager to ensure the SGWMP is followed, prevent and control pollution incidents.

➤ Health & Safety Manager:

- Responsible for maintaining all site induction training records covering HS

### **10.8 Monitoring and Reporting**

- The EPM and its Officer will be monitoring the wastewater discharges onto the nearest water body.
- Weekly in situ measurement for Three parameters namely pH, Temperature and TSS on Lasang river will also be undertaken.
- Quarterly Surface water testing will be undertaken.
- Daily Inspection/Observation and Weekly Audit.
- Monthly Environmental monitoring report.
- Self-Monitoring and Compliance Monitoring Reports will be prepared for submission to EMB-DENR.

### **10.9 Performance Indicator**

- Compliance to RA 9275 and DAO 2016-08 for effluent discharges
- No observe septage from portable toilets / STP
- No visible signs of contamination at the nearest surface water body (Lasang River).
- No visible signs of leak from HW containers / spillage on the floors.
- No visible signs of color / turbidity / suspended solids from water discharges.
- No observe concrete washout liquid onto nearest surface waterbody
- No observe slurry spillages onto nearest surface waterbody

### **10.10 Record Keeping**

- Daily Inspection/Observation and Weekly Audit
- Monthly environmental monitoring report
- Records of induction training and toolbox talks
- Water Tests (STP / Slurry ponds / Concrete washout liquids)
- Wastewater trip tickets



## 10.11 Corrective Actions

- Investigate the dewatering quality.
- Investigate concrete washout liquids disposal.
- Investigate slurry liquid disposal.
- Investigate the surface waterbody.
- Review the SSEMP. Prepare compliance action plan thru the Corrective and Preventive Actions (CAPA) Report, secure approval, implement, monitor the effectiveness, and close the CAPA aligned with the SSEMP and related environmental requirements and standards.

## 10.12 Summary of Environment Monitoring Plan with EQPL

Key Environmental Aspects	Potential Impacts	Parameter to be monitored	Sampling & Measurement Plan		Lead Person	EQPL MANAGEMENT SCHEME					
			Method	Frequency		Location	EQPL RANGE		MANAGEMENT MEASURE		
						ALERT	ACTION	LIMIT	ALERT	ACTION	LIMIT
Surface Water ( Lasang River)	Water quality	1. Temperature 2. pH (Range) 3. Dissolved Oxygen (DO) 4. Biochemical Oxygen Demand (BOD) 5. Total Suspended Solids (TSS) 6.)Oil & Grease 7.)TotalColiforms 8.) Fecal coliform	Grab sampling	Quarterly	SW1 Lasang river, Bigy Communal, Davao City 7° 8'58.76"N 125°37'5.62"E ( 100 meters upstream and 100 meter	Env Mgr / Environment Officer ( 3rd party DENR-EMB accredited laboratory)	DAO 2016-08 Water Quality Guidelines &General Effluent Standards (Class C) 1. Temperature 25 -31c 2. pH (Range) 6.5 – 9 3. Dissolved Oxygen (DO)5 mg/L 4. Biochemical Oxygen Demand (BOD) : 7 mg/L 5. Total Suspended Solids (TSS) 80 6.)Oil & Grease 2 7.)Total Coliforms N/A 8.) Fecal coliform 200MPn		DAO 2016-08 Water Quality Guidelines & General Effluent Standards (Class C)		
		1. Temperature 2. pH (Range) 3. Dissolved Oxygen (DO) 4. Biochemical Oxygen Demand (BOD) 5. Total Suspended Solids (TSS) 6.)Oil & Grease 7.)Total Coliforms 8.) Fecal coliform	AdHoc	Weekly	SW1 Lasang river, Bigy Communal, Davao City 7° 8'58.76"N 125°37'5.62"E ( 100 meters upstream and 100 meter	Environment Officer	1. Temperature 25 -31c 2. pH (Range) 6.5 – 9 3.)Suspended Solids (TSS) 80		DAO 2016-08 Water Quality Guidelines & General Effluent Standards (Class C)		
Cut and Cover Tunnel dewatering water discharged	Water quality	1. Temperature 2. pH (Range) 3. Dissolved Oxygen (DO) 4. Biochemical Oxygen Demand (BOD) 5. Total Suspended Solids (TSS) 6.)Oil & Grease 7.)Total Coliforms 8.) Fecal coliform	Grab sampling	Quarterly	Cut and Cover Section	Env Mgr / Environment Officer ( 3rd party DENR-EMB accredited laboratory)	DAO 2016-08 Water Quality Guidelines &General Effluent Standards (Class C) 1. Temperature 25 -31c 2. pH (Range) 6.5 – 9 3. Dissolved Oxygen (DO)5 mg/L 4. Biochemical Oxygen Demand (BOD) : 7 mg/L 5. Total Suspended Solids (TSS) 80		DAO 2016-08 Water Quality Guidelines & General Effluent Standards (Class C)		
		1. Temperature 2. pH (Range) 3. Dissolved Oxygen (DO) 4. Biochemical Oxygen Demand (BOD) 5. Total Suspended Solids (TSS) 6.)Oil & Grease 7.)Total Coliforms 8.) Fecal coliform	Grab sampling	Quarterly	TBA	Env Mgr / Environment Officer ( 3rd party DENR-EMB accredited laboratory)	DAO 2016-08 Water Quality Guidelines &General Effluent Standards (Class C) 1. Temperature 25 -31c 2. pH (Range) 6.5 – 9 3. Dissolved Oxygen (DO)5 mg/L 4. Biochemical Oxygen Demand (BOD) : 7 mg/L 5. Total Suspended Solids (TSS) 80		DAO 2016-08 Water Quality Guidelines & General Effluent Standards (Class C)		
Contractors Yard and Camps	Water quality	1. Temperature 2. pH (Range) 3. Dissolved Oxygen (DO) 4. Biochemical Oxygen Demand (BOD) 5. Total Suspended Solids (TSS) 6.)Oil & Grease 7.)Total Coliforms 8.) Fecal coliform	Grab sampling	Quarterly		Env Mgr / Environment Officer ( 3rd party DENR-EMB accredited laboratory)	DAO 2016-08 Water Quality Guidelines &General Effluent Standards (Class C) 1. Temperature 25 -31c 2. pH (Range) 6.5 – 9 3. Dissolved Oxygen (DO)5 mg/L 4. Biochemical Oxygen Demand (BOD) : 7 mg/L 5. Total Suspended Solids (TSS) 80		DAO 2016-08 Water Quality Guidelines & General Effluent Standards (Class C)		

Table 11. Summary of Environment Monitoring Plan for Surface water with EQPL

## **11. SPILL RESPONSE PLAN (SRP)**

### **11.1 Objective**

This Plan covers all likely pollution hazards, preventative measures, clean up equipment and procedures, how and when relevant local emergency services will be contacted and a commitment to undertake full remediation in the case of any pollution event, as required by regulatory authorities.

### **11.2 Regulatory Framework**

The following environmental laws and regulations cover the Plan.

- Republic Act 6969: Toxic Substances and Hazardous and Nuclear Wastes Control Act 1990
- Republic Act 9275: Clean Water Act of 1999
- Republic Act 9003: Ecological Solid Waste Management Act of 2000
- DAO 2016-08: Water Quality Guidelines and Effluent Standards
- DAO 1992-29: IRR of Toxic Substances and Hazardous and Nuclear Wastes Control Act
- DAO 2005-10: IRR of Clean Water Act
- DAO 2001-34: IRR of Ecological Solid Waste Management Act

### **11.3 Permitting Requirements**

- Disposal (Permit) of Hazardous wastes and substances pursuant to RA 6969 and its IRR
- Disposal (Permit) of Solid Waste (Nonhazardous) pursuant to RA9003 and its IRR

### **11.4 Environmental Impacts**

Pollution of surface via discharges and disposal of liquid and hazardous substances / wastes. Potential pollution incidents include:

- Hazardous wastes e.g. used oil, paints, solvents etc. spill / accidental / illegal discharge.
- Hazardous substances e.g. oil, paints, solvents, etc. spill / accidental / illegal discharge.
- Exceeding disposal permits parameters and/or unauthorized disposal to surface water.
- Spent bentonite spill disposal outside construction areas.
- Disposal of liquid wastes at unauthorized disposal sites; and
- Illegal / accidental discharge of sewage to surface water and construction site.



### **11.5 Management Measures Notification**

- A duty to immediately report an incident applies where a pollution incident occurs during the Project so that material harm to the environment is caused or threatened. It does not matter that harm to the environment is caused only on the premises where the pollution incident occurs.
- Leaks, spills, water discharges and other pollution incidents can harm the environment. The relevant regulatory authorities need to be informed of pollution incidents immediately, so that action can be coordinated to prevent or limit harm to the environment. Regulatory authorities and notification responsibilities of key personnel are given in the table below.
- Key Personnel will be available on call 24 hours a day.

### **11.6 Notification Responsibilities**

Under the procedure for the Spill Response Plan, the following people have a duty to notify a pollution incident occurring in the course of an activity that causes or threatens material harm to the environment:

- The person carrying on the activity.
- An employee or agent carrying on the activity.
- An employer carrying on the activity.
- Project Manager and EPM must be notified immediately after the person becomes aware of the incident.
- The Project Manager or EPM will then be the point of contact for notifying all relevant regulatory authorities.
- Responsibility and notification processes for environmental incidents are recorded in the SSEMP.

### **11.7 Notification Procedure**

Below is a step-by-step procedure for notifying pollution incidents in this Project:

- ✓ Assess the situation and if safe to do so, immediately rectify the pollution source and control the migration of any pollution. Ensure access routes for spills to any surrounding drains or waterways are blocked.
- ✓ Immediately notify the Environment Officer or the EPM of the pollution incident, giving details such as location, volumes of pollutants and circumstances of the incident. If the incident is not able to be contained by means of the Project, notify the emergency services to aid in control of the incident.
- ✓ If deemed to be required, the EPM will immediately notify the OCG/DPWH.
- ✓ Within 24 hours of pollution incident notify the DENR-EMB-RXI Regional Office.

- ✓ Any follow up reports required as per the Project licenses and conditions will be submitted to Engineer by the EPM within the given timeframes.
- ✓ This report (Environmental Incident Report) will detail results of investigation, corrective and preventative actions.

Table 12. Types of Emergency Response

Type of emergency	Preparation of an Emergency	Response to an Emergency
Minor spill of hazardous waste or substances	<ul style="list-style-type: none"> <li>- Awareness training of appropriate response and procedures to be incorporated into Environmental and Safety Induction.</li> <li>- Kept up to date all materials.</li> <li>- Adequate supply of absorbent materials available in the site compound and on vehicles at work location</li> <li>- Post MSDS for certain chemical types.</li> <li>- Train and familiarize workers for the chemicals they will be exposed to, especially on first aid in the event of spill and contamination;</li> </ul>	<p>Report spills immediately to the EPM.</p> <ul style="list-style-type: none"> <li>- Attempts to be made to limit or contain the spill using sandbags to construct a bund wall, use of absorbent material, temporary sealing of cracks or leaks in containers, use of geotextile or silt fencing to contain the spill.</li> <li>- Construction Manager and JV Supervisors to coordinate the response, clean up and disposal of the material.</li> <li>- Material to be disposed of in accordance with the manufacturers' recommendations and applicable legislation</li> </ul>
Major spill of hazardous waste or substances	<ul style="list-style-type: none"> <li>- Awareness training of appropriate response and procedures to be incorporated into Environmental and Safety Induction.</li> <li>- Adequate supply of absorbent materials available in the site compound and on vehicles in work location.</li> <li>- Emergency telephone numbers prominently</li> </ul>	<p>Report spill immediately to Project Manager and/or EPM who will notify the client.</p> <ul style="list-style-type: none"> <li>- Attempts to be made to limit or contain the spill using sandbags to construct a bund wall, use of absorbent material, temporary sealing of cracks or leaks in containers, use of geotextile or silt fencing to contain the spill, righting overturned containers, transferring remaining material.</li> <li>- Construction Manager to coordinate the response, clean up and disposal of the material.</li> </ul>



	displayed around office and issued to supervisors	<ul style="list-style-type: none"> <li>- If spill is regarded to be outside the onsite resources, then the fire brigade should be called.</li> <li>- A full environmental Incident Report of the event is to be completed by the EPMas soon as practicable after the area has been secured</li> </ul>
Floods	<ul style="list-style-type: none"> <li>- Awareness training of appropriate response and procedures to be incorporated into Environmental and Safety Induction.</li> <li>- Monitor flood warnings.</li> <li>- Maintain high standard for erosion and sedimentation controls</li> </ul>	<ul style="list-style-type: none"> <li>- All chemicals, fuels and other hazardous substances to be in secured containers and stored within a sealable shipping container.</li> <li>- Ensure that construction materials and rubbish does not leave the site.</li> <li>- Check effectiveness of erosion and sedimentation devices and other flood controls</li> </ul>
Severe Storm / High Wind / Dust generation	<ul style="list-style-type: none"> <li>- Daily on-site weather monitoring.</li> <li>- Awareness training of appropriate response and procedures to be incorporated into Environmental and Safety Induction.</li> <li>- Ensure First Aid supplies are well stocked and adequate.</li> <li>- Awareness training of appropriate response and procedures to be incorporated into Environmental and Safety Induction.</li> <li>- Fire extinguishers maintained, clearly labelled and distributed around site compound and vehicles.</li> <li>- Training in the use of fire extinguishers and which</li> </ul>	<ul style="list-style-type: none"> <li>- Dust controls in place including wetting down exposed areas, fencing and barriers around contaminated areas.</li> <li>- Stop work if conditions are generating dust.</li> <li>- Secure all plants, equipment, and materials.</li> <li>- All chemicals will be in secured containers and stored within a sealable shipping container.</li> <li>- For small fires, attempts to be made to extinguish the fire or limit its spread with available fire extinguishers or water hoses if appropriate.</li> <li>- Supervisor is to be informed immediately. Supervisor to contact client and external services where necessary (fire, ambulance) as a precautionary measure.</li> <li>- All personnel on site to be assembled in the Evacuation</li> </ul>



	<p>one to use for each type of fire.</p> <ul style="list-style-type: none"> <li>- First Aid supplies are stocked and adequate</li> </ul>	<p>Assembly Area and a head count performed.</p> <ul style="list-style-type: none"> <li>- Any resulting fuel or chemical spill to be handled as detailed above.</li> <li>- Supervisor to coordinate with emergency services and provide assistance as required</li> </ul>
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## 11.8 Hazardous Materials:

All hazardous materials produced because of pollution incidents will be managed in accordance with Section 5 Hazardous Material Management and Emergency Procedures.

This includes, but not limited to, type of materials, management, storage, handling, reporting, documentation, Material Safety Data Sheets (MSDS), identification, labelling, emergency response, and contact numbers.

All pollution incidents are recorded within an Environmental Incident Report. Each Pollution Incident Report provides details on the specific incident, including:

- Details of witness responsible for reporting and corrective actions:
- Place of work/office
- Responsible for reporting
- In coordination with person responsible for corrective action
- Date for corrective action.
- Date the corrective action is to be completed.
- Laboratory tests, if required, will be conducted to check successful cleanup of the potential contaminated site.
- Laboratory tests, if required, will be conducted to check successful cleanup of the potential contaminated site.

### ➤ Details of the event:

- Type of events
- Classification of events
- Date and time, day of week.
- Location o Cause/nature of the environmental incident
- Proposed resolution

- Measures established prevention.
- Initial measures action
- Was the event reported to the Environment Department?
- Control measures.
- Brief description of the events
- Is a follow-up investigation required.
- Photos

### **11.9 Records Management**

All the information required for corrective actions will be completed: tickets, quality specifications, pictures, activities compliance schedules, monthly data, reports, procedure to prevent the same incident. Records of Environmental and Safety Induction Training to be retained by the EPM.

## **12. FLOOD MITIGATION / STORMWATER MANAGEMENT PLAN (FMP)**

### **12.1 Objective**

The purpose of this Plan is to ensure that flood or storm water is correctly controlled and managed and any effects from storm water does not cause harm to people or the environment.

The Plan covers the collection and removal of harmful materials including solids, sludge, sediment, floating debris, oil, pesticides, herbicides, and scum from storm or wastewater discharges to prevent contaminants from reaching public utilities.

The plan details how storm water will be diverted offsite or captured, stored, treated and reused. The FMP also covers the maintenance of existing drainage to ensure that no flooding occurs offsite. The FMP is applicable to all SUTJV staff and Subcontractors on the Project.

### **12.2 Regulatory Framework**

Management of Flood Mitigation/ Stormwater Management Plan is governed by the following.

Environmental Laws and related regulations:

- Presidential Decree 1586 Philippine EIS System
- DAO 30-2003 IRR of the Philippine EIS System

### **12.3 Environmental Impacts**

- Poor drainage and treatment of storm water increase loss of local water quality, loss of amenity.
- Reduction in water quality and local amenity through erosion and sedimentation and contamination.

- Poor drainage and treatment of storm water increase loss of local water quality, loss of amenity.
- Contaminated materials not handled in accordance with EMB-DENR requirements. Possible inappropriate disposal or further contamination of soils/waterways or receiving environment.
- Water run off poor quality. Loss of localized water quality (due to sediment loss), loss of local amenity, risk of prosecution.
- Immediate danger to people's safety, environment, damage to equipment.
- Localized harm to soil and local water quality.

## 12.4 Management Measures

Prior to the commencement of any site grading works at construction sites or logistics areas, a hydrological assessment of the site which is part of the EIS Study will be consulted to determine the location of existing drainage channels and these will be maintained or diverted to ensure no flooding occurs offsite because of the project.

## 12.5 Mitigation

- During heavy downpours the SUTJV will protect the environment from flooding. This will be managed through the deployment of a localized runoff management system and where feasible this will be integrated with the local storm water management infrastructure. It is the responsibility of the Construction Manager on site to develop such a system.
- This will include temporary surface water runoff facilities, which in addition to containing contaminants will provide onsite attenuation for surface water flows, thereby reducing the flood risk.
- An area where erosion may occur has to be identified in order to ensure that they are appropriately protected by installing the necessary temporary and/or permanent drainage works as soon as possible.
- Any erosion channels which develop during the construction period shall be suitably backfilled, compacted and restored to a proper condition.
- Where excavation takes place, the affected area has to be properly stabilized to minimize erosion risk.
- Appropriate storm water management measures have to be established in order to ensure that contaminants are not mobilized into the wider environment.
- Where feasible source control systems and oil separators shall be utilized to prevent sewer and waterway contamination.
- Runoff drains located in areas that have a low risk of surface water pollution shall specify natural surface water management measures such as permeable surfaces, filter drains, sand filters, swales, filter strips, and infiltration devices to prevent waterway contamination.



- Runoff drains located in areas of high risk of surface water pollution such as oil/petrol shall specify oil/petrol separators, equivalent systems, or methods to prevent further contamination. Apparently, Paved areas will be cleaned regularly to reduce pollution from substances such as oil, gasoline, and other automotive fluids.
- Protection of bridge abutments, slope protection for the soil surfaces near the drainage line using geonets, or bio-engineered vegetation covers, and grouted ripraps.
- Exterior areas in the Project that contain waste or recycling facilities will be managed and cleaned properly to avoid contaminating waterways with harmful substances.
- Where practical any runoff stormwater and groundwater should be collected, stored and reuse wherever possible to conserve water on site and reduce the burden on public treatment facilities. For example, dewatered groundwater can be reused for onsite dust suppression rather than pumping to local sewer drains.
- During rainy season, in areas where there are excavations in the cut and cover tunnels, submersible pumps will be on standby. Trenches will be constructed around the excavated area at the end is a collection pit for which the rainwater is collected.
- Pumped water will be transferred to a collection/sedimentation pond prior discharge to the existing drainage system.

## 12.6 Emergency Plan Measures

- Water quality outside the target parameters may need to be treated or managed prior to release to ensure compliance with any regulatory requirements. Incident reports shall be completed when test results fall outside the required parameters and appropriate actions taken in accordance with the Spill Response Plan (SRP).
- If oil or grease is detected the source shall be identified and equipment fixed. Where feasible, the oil or grease shall be captured and placed in drums for removal from site in accordance with Waste Management Plan (WMP) and Hazardous Materials Management and Emergency Response Procedure (HMMERP)
- Provide additional training to personnel where required.

## 12.7 Responsibilities

### Management

#### ➤ EPM:

- Managing and updating the FMP, liaising with the Construction Manager to ensure implementation of the FMP, completing weekly and monthly site environmental inspections, reviewing water testing certificates and results, identifying acceptable or unacceptable conditions in weekly or monthly inspections, completing the Environmental Incident Report, establishing and

implementing control measures to prevent, correct and avoid pollution reoccurrence, collecting the documentation to close the Environmental Incident Report.

## ➤ Site

- Construction Managers (Tunnel, Road and Bridge) : Implementing the FMP on site, ensuring physical and chemical water discharge levels are maintained in line with EMB-DENR requirements, implementing onsite mitigation measures in collaboration with the EPM and reporting of incidents on site.
- Construction Workers: Support to EPM and Construction Manager to ensure the FMP is followed, prevent and control pollution incidents.
- Environment Officer: daily inspections, trend the process in coordination with the EPM, collating and filing of water monitoring data and certificates, reporting of summary figures to the EPM.

## ➤ Health & Safety Manager:

- Responsible for maintaining all site induction training records covering HS.

## 12.8 Monitoring and Reporting

- Daily Inspection/ Observation Report and Weekly Audit
- Monthly Environmental Report
- Dewatering Effluent Sampling (Tunnel section): Start of each separate discharge.
- Dewatering Effluent Visual Inspection: Daily (Tunnel section)
- Dewatering effluent sampling and testing: Quarterly (Tunnel section)

## 12.9 Records Management

All reports listed below will all be submitted to the engineers for their record. Further, the environmental unit will keep the hard copies and compile them into folders. Electronic copies of reports and lists will be stored in electronic folders.

## 13. BIODIVERSITY MONITORING AND MANAGEMENT PLAN (BMMP)

Bridge, road, and Tunnel section alignment are occupied by agricultural landscapes and settled areas.

### 13.1 Objectives

To set out the environmental monitoring requirements for flora and fauna, to ensure that environmental monitoring will be undertaken in accordance with the SSEMP.

### 13.2 Regulatory Framework

- DENR Administrative Order No. 2017-11 "Updated National List of Threatened Philippine Plants and their Categories". The National List of Threatened Philippine Plants and their Categories, and the List of other Wildlife Species".



- License agreement, license, and lease or permit (Section 20) of Presidential Decree No 705 otherwise known as the Revised Forestry Code of the Philippines states, “No person may utilize, exploit, occupy, possess or conduct any activity within any forest land, or establish and operate any wood-processing plant, unless he has been authorized to do so under a license agreement, lease, license, or permit.” In the event that endangered or threatened tree species need to be removed, conditions shall be stated in the permit (i.e. the use of earth balling).
- Section 5 of Republic Act No. 8048 or the Coconut Preservation Act of 1995 states that ““No coconut trees shall be cut unless a permit therefore, upon due application being made, has been issued by the Philippine Coconut Authority (PCA),” and its Implementing Rules and Regulations (Philippine Coconut Authority (PCA) Administrative Order 02 Series of 2005)
- Memorandum Circular (MC) No. 02 Series of 2008 or the “Moratorium on the issuance of Permit to Cut Coconut Trees.”
- RA 7161 Revised Forestry Code

## 13.3 Permitting Requirements

The following permits are anticipated to be required for the project, and will need to be obtained prior to any removal of species:

- Tree-cutting permits from the DENR Community ENRO for any affected terrestrial trees.
- Coconut cutting permits from the Philippine Coconut Authority
- Consistency with Memorandum Order No. 2012-02 dated 05 November 2012 known as the “Uniform Replacement Ration for cut or relocated trees’ to support the National greening program and Climate Change Initiatives.

## 13.4 Register of impacts and Mitigation

The table below shows a register of potential impacts on terrestrial wildlife in the vicinity of the project, as well as potential impacts on biodiversity.

Table 13. Package I-3 Potential Impacts on Biodiversity

Biodiversity Impact	Mitigation Measures
<p>Loss of Habitat</p> <ul style="list-style-type: none"> <li>- Threat to Existence and/or Loss of Important Local Species</li> <li>- Threat to Abundance, Frequency and Distribution of Important Species</li> </ul>	<ul style="list-style-type: none"> <li>- Prior to any clearing activity, clearly mark the ROW to avoid the unnecessary clearance of tree cutting.</li> <li>- Conduct tree planting activities to compensate for site clearing activities. Conduct regular monitoring of the survival of replanted trees and replant if necessary.</li> <li>- Secure tree cutting permit in compliance with DENR Memorandum Order No. 2012-02</li> </ul>



Impacts on composition and density of river ecology and increased turbidity due to reclamation, cut and cover works and piling activities	Use of silt and sediment traps during the construction phase can help address impacts on river ecology
Regulate / control stream volumetric flow, nor constriction of waterways	Ensure that water flow through intersected rivers is not impeded during construction works
Noise impacts on bio cycles of terrestrial fauna proximate to the construction sites	Use of mufflers; scheduling activities during daytime to minimize noise disturbance to wildlife species, particularly during the night-time rest period.
Clearing and removal of vegetation	Minimize the removal of vegetation cover as much as possible Plant additional trees along the project alignment and its vicinity and other suitable areas

## 13.5 Description of Controls

Prior to any clearing activity, clearly mark the ROW to avoid the unnecessary clearance of tree cutting.

Implement an Ecological management plan as part of the construction plan considering the significance to fauna (local bird species) such as installing buffer zone, minimizing the use of herbicide and machinery as much as possible.

A 100% inventory of the affected trees along the alignment will be conducted to determine the total counts, category, and characteristics of affected trees and minimize removal particularly in areas adjacent to vegetation of higher conservation significance as much as possible. Native/endemic/indigenous species of trees, shrubs and grasses will be specified.

Incorporating appropriate training for workers in the avoidance of wildlife, as well as in the proper rescue and care of wildlife, where they might be inadvertently caught within construction areas.

Scheduling most activities, especially noisy ones, during the daytime, in order to cause disturbance.

Secure tree cutting permit in compliance with DENR Memorandum Order No. 2012-02.

Wildlings of the endangered and threatened species will be collected before construction, placed in the nursery, and given priority during nursery operation to be used for rehabilitation of areas that will be affected by construction activities.

Coordinate with EMB-DENR for the conservation of migratory birds if there is.

## 13.6 Biodiversity Monitoring Plan

Monitoring of the identified parameters shall be conducted regularly through visual and hearing inspection, as well as regular in situ monitoring. The proposed Biodiversity monitoring plan and location is presented below.

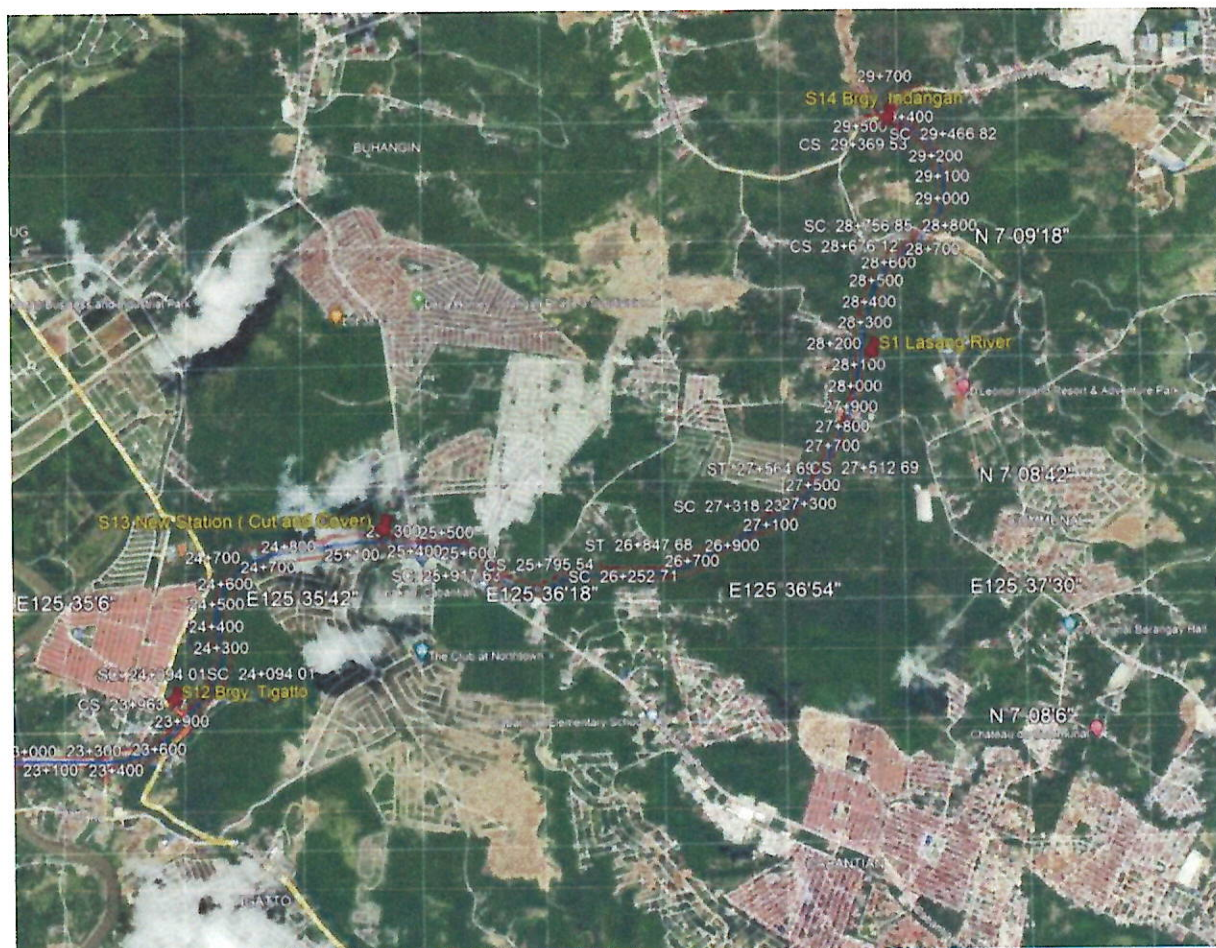


Figure 6. Project Location of Package I-3 Monitoring Station for Flora and Fauna



Key Environmental Aspects	Location	Parameter to be monitored	Sampling & Measurement Plan		Lead Person	EQPL MANAGEMENT SCHEME			
			Method	Frequency		ALERT	ACTION	ALERT	LIMIT
Construction	S1 Lasang River, Brgy. Communal	Vegetation and Bird survey	Ocular survey Inventory which will be recorded on the record sheet	Monthly	Env. Manager/ Env Officer	Obtain Tree and Coconut Cutting permit	EMU in coordination with OCG and DPWH		
	S12 Brgy. Tigatto								
	S12 Brgy. Cabantian (Cut and Cover Tunnel Section)								
	S13 Brgy. Indangan								

Table 14 Summary of Environment Monitoring Plan for Biodiversity with EQPL



### **13.7 Environmental Rehabilitation and Restoration Plan**

Prior to the start of all operation the SUTJV shall adequately record the condition of access routes, agricultural land, structures at risks or likely to be affected by operations (such as vibration, dust emissions, accidents, collisions, spills, road damage etc.) along the alignment.

During and after construction, SUTJV will rehabilitate or restore some work areas, relevant to the operation of the project, to its almost original state if possible. JV will observe or undertake the following activities.

- Complete restoration of affected service utilities (i.e. power and water supply, and telecommunication lines) to their normal functions.
- Complete closure and dismantling of the workers' camps, field offices, and temporary construction facilities.
- Complete dismantling of the temporary sanitation facilities i.e septic tanks and portable toilets
- Clean-up of the workers camps and field offices to ensure that no wastes are abandoned in the sites.
- Remaining debris are hauled and disposed to duly approved sites
- Complete restoration/reconstruction of affected roads, public structures, agricultural land that might be accidentally damaged.

## **14. POLLUTION PREVENTION AND CONTROL**

### **14.1 Air quality, dust, smoke, and airborne pollution management (AQMP)**

#### **14.1.1 Objectives**

This section includes the SUTJV's proposal regarding air pollution mitigation and control during construction, including the design of an air quality monitoring program and the regulatory framework to consider.

The main purpose of this air quality monitoring plan/program is to ensure that the intended air pollution mitigation measures are being effectively practiced and the impacts on air environmental conditions are reduced or eliminated. Therefore, the Program brings on the opportunity to evaluate the efficiency of the implemented measures and, if needed, proceed to implement additional mitigation measures

#### **14.1.2 Regulatory framework**

The Environmental Management Bureau of the Department of Environment and Natural Resources implements the Republic Act No. 8749 (Clean Air Act) and Presidential Decree 984 (Pollution Control Law). One of the mechanisms of the Clean Air Act (CAA) is to regulate and manage the country's emissions and ambient air in the Implementing Rules and Regulations (IRR) of the CAA (DENR Administrative Order No. 2000-81)

#### **14.1.3 Targets and Standards**

The table below presents the maximum allowable concentration levels based on the DENR Administrative Order 2000-81 Implementing Rules and Regulations of RA 8749 Title National Ambient Air Quality Guideline Values of Republic Act 8749

Parameters	Averaging Time	DENR Standard
TSP	24 Hours	230
SO <sub>2</sub>	24 Hours	180
NO <sub>2</sub>	24 Hours	150
CO	1 Hour	35

Sources: DAO 2000-81 IRR for RA 8749 Clean Air Act; National Ambient Air Quality Guideline Values

**Table 15. RA 8749 Clean Air Act: National Ambient Air Quality Guideline Values**

## 14.1.4 Permitting requirements.

The following air quality-related permits will be required and/or should be maintained during the duration of the works:

- Pursuant to RA 8749, The Clean Air Act of 1999 and DAO 2000-81 IRR for 8749, all sources of air pollution shall secure Permits to Operate Air Pollution Sources and Control Installations (APSCI) from EMB-DENR. Further, pursuant DAO 2004-26 Amending Rule XIX of DENR 2000-81 the removal of securing ‘Authority Construct’ for APSCI. And EMB Memorandum Circular 2007-003 Policy on Compliance and Permitting for Industrial Facilities relating to Air Quality. Air pollution sources will be from power generators or standby gensets, as well as any stationary equipment and facilities that will produce air emissions (e.g., batching plants, boilers, smokestacks).
- Land Transportation Office (LTO) Registration of Vehicles and Equipment, including appropriate emissions testing certificates — All vehicles and mobile equipment will be registered with the Land Transportation Office, in accordance with requirements. Copies of registrations and accompanying documentation will be kept on file and maintained.

## 14.1.5 Sources of Dust and Air Pollutant Emissions

Construction activities that are likely to affect air quality include the following:

- Earthworks:
- Pile cap excavation in land.
- Transport of quarry material from source to site for backfilling activities.
- Transfer of fill material from stockpile area to construction site
- Stockpiling of fill material in laydown areas

### 14.1.5.1 Batching plants.

- Transport of raw materials to plant locations
- Handling of raw materials
- Power Generators (Standby Gensets).

**14.1.5.2 Excavation Works**

- Movement of vehicles for transport of workers and materials.
- Operation of heavy equipment, including:
  - Pile drivers.
  - Excavators

**14.1.6 Environmental Impacts**

The main air quality impacts that may arise during construction activities are:

- Dust deposition, resulting in the soiling of surfaces.
- Visible dust plumes, which are evidence of dust emissions.
- Elevated TSP concentrations, as a result of dust generating activities on site.
- An increase in concentrations of airborne particles and nitrogen dioxide due to exhaust emissions from diesel powered vehicles and equipment used on site (nonroad mobile machinery) and vehicles accessing the site.

The following points summarize the key activities identified in the risk assessment that represent a risk to local air quality during construction works:

- Movement of plant and equipment on the sites (including survey vehicles, drilling rigs, excavators).
- Clearing and of facilities and access tracks.
- Establishment of site sheds and facilities.
- Installation of boundary.
- Earthworks, bulk excavations.
- Slope stabilization.
- Road construction.
- Installation of buildings, equipment, support structures and services.

The risk of dust emissions from the Project causing loss of amenity and/or health or ecological impacts is related to:

- The activities being undertaken (demolition, number of vehicles and plant etc.).
- The duration of the activity.
- The size of the site.



- The meteorological conditions (wind speed, direction and rainfall).
- The proximity of receptors to the activities.
- The adequacy of the mitigation measures applied to reduce or eliminate dust. O
- The sensitivity of the receptors to dust.

## 14.1.7 Management Measures Mitigation and Control

- Any vehicle with an open load carrying area used for moving potentially dust producing material will have properly fitting side and tail boards. Materials having the potential to create dust will not be loaded to a level higher than the side and tail boards and will be covered by a clean tarpaulin in good condition. The tarpaulin will be properly secured.
- Where dusty materials are being discharged to vehicles from a conveying system at a fixed transfer point, a three-sided roofed enclosure with a flexible curtain across the entry will be provided. Exhaust fans will be provided for this enclosure and vented to a suitable fabric filter system.
- Where practicable, stockpiles of soils and materials should be located as far as possible from sensitive properties, taking account of prevailing wind directions and seasonal variations in the prevailing wind.
- Minimize surface areas of stockpiles (subject to health and safety and visual constraints regarding slope gradients and visual intrusion) to reduce area of surfaces exposed to wind pickup.
- All stockpiles will be covered, enclosed on three sides or kept moist using rotary sprinklers, particularly during dry or windy periods. Stockpiles will be located away from sensitive receptors where possible. Access roads adjacent to stockpiles will be watered.
- Activities that potentially generate high dust levels will be curtailed, suspended or postponed in situations where the wind direction and speed is causing adverse impacts on nearby sensitive receptors.
- Handling of dusty materials will be minimized and drop heights to lorries or skips will be kept to a minimum.
- Onsite movements will be restricted to well within site and not near the perimeter, if possible.
- All areas within the site where there is regular movement of vehicles will be hard surfaced and be kept clean of loose surface material.
- Where practicable, Mesh/screens will be installed surrounding areas of earthworks to prevent the lateral movement of dust due to wind where required.
- A mobile bowser/dust suppression system will be used to dampen vehicle route ways and unpaved areas.

- Water will be sprayed at sufficient frequency and quantity during excavation works, loading and unloading.
- For the excavation activity using trench cutting machinery: every machine will have its own water tank spraying the front cutter heads during its operation. Additional watering will be done from above to reduce the plume of dust in the air.
- Use of site speed limits to prevent any unnecessary generation of dust emissions will be imposed and site movements will be kept to a minimum.
- Rumble grids will be installed at the main construction site and precast yard exits to remove any dirt or dust from vehicles.
- Designated areas will be established for vehicle and wheel washing. The wheel wash facility will have an impermeable surface.
- Regular inspection and, if necessary, cleaning of local highways and site boundaries to check for dust deposits (and removal if necessary).
- Transport the material to the landfill at night to reduce disturb produced by dust.
- A traffic plan will be implemented on site to reduce the movements of the vehicles.
- Use of dust suppressed tools for all operations.
- Ensuring that all construction plant and equipment is maintained in good working order and not left running when not in use.
- No unauthorized burning of any material anywhere on site.
- All odorous or potentially odorous sources will be removed offsite.
- Adapt the machinery for dust suppression. Haul the excavated materials from the construction areas as soon as possible.
- Designate at least 3-4 workers per construction area to clean the site after the completion of daily activities and arrange material piling in order to prevent dust diffusion.
- Check and maintain or monitor engine conditions and machines used in the construction at least once a week.
- For the elevated structures, provide nets and scaffoldings for falling debris from construction of elevated structures to avoid dust emission and hazards from falling debris.
- Monitor air quality at identified nearby sensitive receptors regularly and evaluate effectiveness of the air pollution reduction measures provided.
- SUTJV will require its subcontractors to apply water suppression measures through regular water sprinkling of unpaved haul roads and stockpiles whenever visible dust is observed.



- Regular dust monitoring will be conducted by SUTJV EMU within the project site and near sensitive receptors.
- Physical barriers and/or bund around spoil and building material stockpiles will be installed where possible.
- Personal protective equipment will be issued to workers in pursuant to the BWC DOLE Occupational Safety and Health Standards (As Amended), 1989
- SUTJV and its subcontractors will be required to undergo and pass the government vehicle emission tests prior to awarding of contract.
- Standard occupational health and safety practices will be implemented.
- Traffic management guidelines will be incorporated in workers and subcontractor's induction seminar. Guidelines will include control in vehicle speed and spraying of road routes and work sites as well as transport routes near the host communities.
- Control measures for emission of fuel combustion will include the following:
  - Unnecessary travel will be minimized.
  - Staff travel arrangements will be coordinated to minimize trips and maximize passenger loads on each trip.
  - SUTJV will ensure engines that are not used will be switched off.
  - It is prohibited to smoke on public areas (Pursuant to RA 8749) therefore; a designated smoking area will be established on site.

#### **14.1.8 Responsibilities**

##### **Management**

###### **➤ The Project Manager:**

- Has the overall responsibility for environmental protection during the Project execution.
- He has ultimate responsibility for ensuring compliance with the relevant regulations and the relevant regulations in the SUTJV. Ensuring that financial, technical, and human resources are provided to implement the AQMP.

###### **➤ The Construction Managers:**

- Implementing the AQMP on site, implementing onsite mitigation measures in collaboration with the EPM and reporting of incidents on site.

###### **➤ The EPM**

- will implement, maintain and monitor compliance with the SSEMP and the environmental compliance procedures, the EPM will be supported by a team of Environment Officers
- The EPM will be responsible for identifying incidents in the weekly or monthly inspections, completing the Environmental Audit and Incident Report, establishing



and implementing control measures to prevent, correct and avoid dust reoccurrence, collecting the documentation to close the Environmental Audit and Incident Report; conducting site inductions. The Environment is authorized to cease operation and act to prevent environmentally unsound and/or unsustainable working practices, infringement of the SSEMP or breach of any applicable laws.

➤ **The JV Site Staff:**

- Support the EPM and Construction Manager to ensure the AQMP is followed, prevent and control pollution incidents.

#### **14.1.9 Monitoring and Reporting**

As discussed in the Environment Monitoring Plan, Air Quality within the construction sites will be regularly monitored by:

- Daily Visual inspection / observation.
- Daily Inspection/ Observation Report and Monthly Compliance Audit
- Monthly environmental monitoring report
- Records of induction training and toolbox talks.
- Air quality measurement - Quarterly (AAQ 1 @ Sto nino Church, Brgy Tigatto & AA 2 @ Leonora Heights Brgy. Cabantian)
- . Records of induction training and toolbox talks.
- Quarterly Self-Monitoring R and Semi- Annually Compliance Monitoring Report submitted to EMB-DENR.

#### **14.1.10 Records Management**

All reports listed above will be submitted to the Engineers (OCG) for information and reference. Further, the environmental unit will keep the hard copies and compile them into folders. Electronic copies of reports and lists will be stored in electronic folders.

#### **14.1.11 Performance Indicator**

- Compliance to RA 8749 and DAO 18-2000 IRR for 8749
- No observe dust emission from demolition works.
- No observe dust emission from truck movements.
- No observe dust emission from Stockpile area.
- No observe dust emission from Batch plant operation.
- No observe black smoke (Ringelmann Shade No.3) from machine/equipment/generator stacks.
- No complaints are received from sensitive receptors and from local authorities.

- All Permit to Operate Air Pollution Source and Control Installations (APSCI) will be posted on Air Pollution Source location as compliance to the provisions set in the Permit to Operate (APSCI).

**14.1.12 Corrective Actions**

- Investigate dust emission from demolition activities.
- Investigate dust emission from truck movements.
- Investigate dust emission from Stockpile area.
- Investigation of dust emission from Batch plant operation.
- Investigate black smoke emission from machines/equipment/generators.
- Investigate complaints from sensitive receptors.
- Review the SSEMP. Provide corrective and preventative actions aligned with the SSEMP and related environmental requirements and standards.

**14.1.13 Summary of Environment Monitoring Plan with EQPL**

Key Environmental Aspects	Potential Impacts	Parameter to be monitored	Sampling & Measurement Plan			Lead Person	EQPL MANAGEMENT SCHEME			
			Method	Frequency	Location		EQPL RANGE		MANAGEMENT MEASURE	
							ALERT	ACTION	LIMIT	LIMIT
Air (Ambient)	Elevated levels of dust emission from truck/vehicle movement	TSP SO2 NO2 CO	Gravimetric; US Environmental Protection Agency. (2011). Reference method for the determination of suspended particulate matter in the atmosphere (High-volume method) <b>Gas Bubble/Pararosaniline; US Environmental Protection Agency. (2010). Reference method for the determination of sulfur dioxide in the atmosphere (Pararosaniline method)</b> <b>Gas Bubble/Griess - Saltzman</b> <b>Direct Reading/Electrochemical Sensor</b>	Quarterly	A1: Sto Nino chapel along, Mandug road, Tigatto, Davao City (start) A2: Leonora Heights Daisy Street corner Daitic Compound, Brgy Cabantian, Davao City (end)	Env Manager/Env officer 3rd party DENR EMB Accredited Testing Center	TSP = 230 µ/Ncm3 SO2= 180 µ/Ncm3 NO2=150 µ/Ncm3 CO=10mg/Ncm3			TSP = 230 µ/Ncm3 SO2= 180 µ/Ncm3 NO2=150 µ/Ncm3 CO=10mg/Ncm3
	Excavated and spoil material loading	Dust emission	Visual Inspection	Daily	Cut and Cover Tunnel, Road and Bridge Construction and disposal Areas	Env officer		Excessive dust emission		Excessive dust emission
	Vehicles / Trucks Emission	LTO Emission parameters (CO, HC, NOx, PM	LTO Emission Testing	Before renewal registration / Emission to be submitted to SUTJV Testing result	Emission Testing Centers	Env Manager/Env officer	CO=4.5 HC=1.1 NOx=8.0 PM=0.36			CO=4.5 HC=1.1 NOx=8.0 PM=0.36
Stack Sampling (Source Specific) Power Generators ( 500 Kva only)	Elevated levels of Emissions from power generators (standby)	Particulate SO2 NO2 CO, as per advice by DENR EMB	Stack Testing, as per DAO 2000-81	As required by EMB DENR	TBA	Env Manager/Env officer 3rd party DENR EMB Accredited Testing Center	Particulate= 150mg/Ncm 200 mg/Ncm NO2= 500 mg/Ncm CO = 500 mg/Ncm Particulate= 150mg/Ncm 200 mg/Ncm NO2= 500 mg/Ncm			Particulate= 150mg/Ncm 200 mg/Ncm NO2= 500 mg/Ncm CO = 500 mg/Ncm Particulate= 150mg/Ncm 200 mg/Ncm NO2= 500 mg/Ncm

**Table 16. Summary of Environment Monitoring Plan for Ambient Air Quality with EQPL**





**Figure 7. Location of Monitoring for Ambient Air Quality Stations**

## 15. NOISE AND VIBRATION MANAGEMENT PLAN (NVMP)

### 15.1 General considerations

The construction of the package I-3 may create changes to the existing noise environment. There may be a significant number of noise-generating machinery operating in relatively proximity to noise sensitive receptors. Throughout the construction phase, noise effects must be carefully managed to avoid/reduce to a minimum noise disturbance to local population.

A significant amount of noise generating equipment will also be operating in relatively proximity to sensitive receptors, including buildings adjacent to the alignment. Noise impacts from establishment of piles (e.g., through pile driving) and cut and cover works will need to be managed appropriately.

Construction often generates community noise complaints despite the limited timeframe over which such activities take place, underscoring the need for early identification and assessment of potential problem areas.

The objective of this noise and vibration management plan is to prevent excessive noise and vibration impacts generated by truck and vehicle movements, pile-driving, cut and cover works, material receiving, and fill placement, among others.



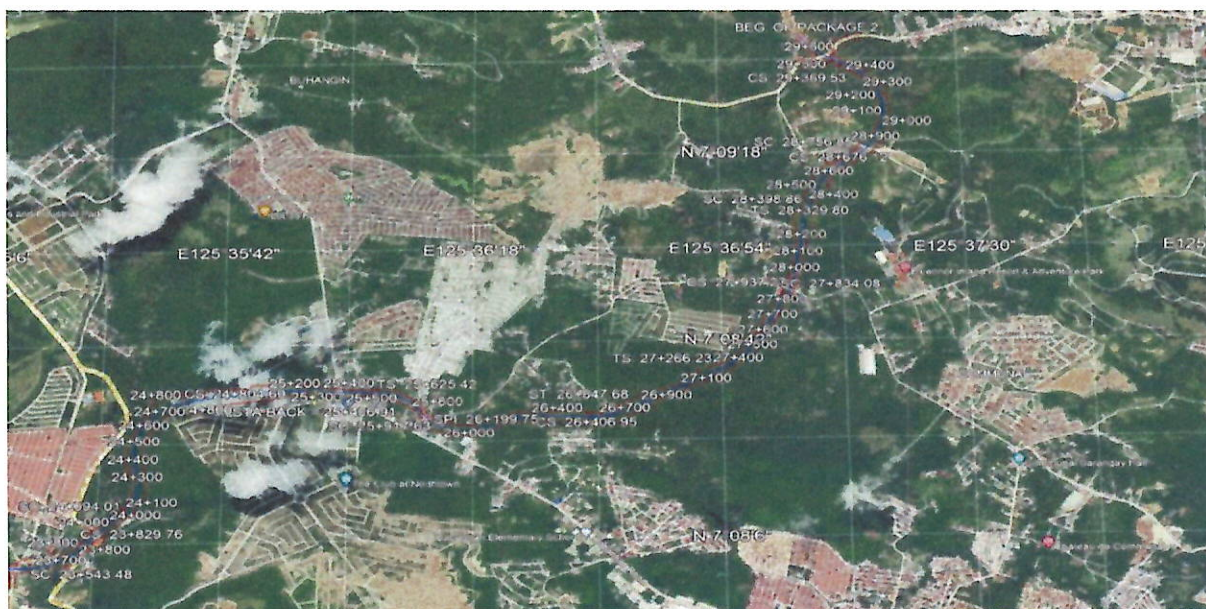


Figure 8. Package I-3 Project alignment.

## 15.2 Regulatory Framework

The potential project impacts on noise will be assessed with reference to Section 8 of PD 984 amended by the National Pollution Control Commission (NPCC) Memorandum Circular No. 002 (May 12, 1980), per table below.

Category	Maximum Allowable Noise (dBA) by time periods		
	Daytime (9:00 A.M. to 6:00 P.M.)	Morning/Evening (5:00 A.M. to 9:00 AM/ 6:00 P.M. to 10:00 P.M.)	Nighttime (10:00 P.M. to 5:00 A.M.)
AA	50	45	40
A	55	50	45
B	65	60	55
C	70	65	60
D	75	70	65

- Class AA- a section of contiguous area which requires quietness, such as areas within 100 meters from school site, nursery schools, hospitals and special house for the aged
- Class A - a section of contiguous area which is primarily used for residential area
- Class B - a section of contiguous area which is primarily a commercial area
- Class C - a section of contiguous area reserved as light industrial area
- Class D-a section which is primarily reserved as heavy industrial area

Source: National Pollution Control Commission (NPCC) Memorandum Circular No. 002 (May 12, 1980)

Table 17: NPCC Standards for Noise in General Areas

Moreover, as stipulated in the NPCC MC 1980-002 for areas directly facing a public transportation route or an urban traffic artery, the foregoing standards plus a correction factor equivalent to the following will apply:

- I – Areas directly fronting or facing a four-lane road ..... + 5 dBA
- II – Areas directly fronting or facing a four-lane or wider road ..... + 10 dBA

For areas directly fronting or facing less than four-lane road, Environmental Quality Standards for Noise in General Areas will apply.

In addition, the general International Finance Corporation (IFC) EHS and WHO Community Noise Guidelines are presented in the table below. Impacts of noise should not exceed the levels shown in Table below or result in a maximum increase in background levels of 3dB at the nearest offsite receptor.

Receptor	1hr LAeq (dBA) <sup>1</sup>	
	Daytime (0700 – 2200)	Night time (2200-0700)
Residential, institutional, educational <sup>2</sup>	55	45
Industrial, commercial	70	70

Source: International Finance Corporation (IFC) EHS Guidelines

**Table 18: IFC EHS & WHO Community Guidelines for Noise**

The threshold limit values for noise refers to the sound pressure in which workers may be repeatedly exposed without adverse effect to their ability to hear and understand normal speech. These threshold values based on OSHA is shown in the table below.

Duration per day, hr	Sound Level dB (A)
8	90
6	92
4	95
3	97
2	100
1 1/2	102
1	105
1/2	110
1/4	115*

Source: OSHA Ceiling value: No exposure more than 115 dB (A) is allowed

**Table 19: Permissible Noise Exposure (Based on OSHA)**

## 15.3 Permitting Requirements

During construction, SUTJV will obtain permits relevant to noise and vibration management from the local government if there are any.

## 15.4 Sources of Noise and Vibration

Construction noise typically originates from either engine operations, especially without sufficient muffling, or from the activity process, such as pile driving. Construction activities that are expected to be the highest contributors of noise include:

- Excavation
- Trench digging
- Cut and cover.
- Pile-driving, and
- Operation of excavation and heavy earthmoving machinery:
  - o bulldozers
  - o backhoes
  - o compactors



- front end loaders, and
- jackhammers.

Depending on the equipment used and the methods employed, construction activities can result in varying levels of ground vibration which spread through the ground and diminish in strength with distance. Pile driving and cut and cover are potentially the greatest sources of vibration impact associated with equipment used during construction of the package I-3. The main sources of vibration include:

- Sheet Pile installation and extraction
- Bulldozer
- Vibratory Roller
- Loaded trucks.

### **12.5 Environmental Impacts**

- Increase in ambient noise level due to operation of construction machinery, earthworks, and facilities.
- Threat to existence and/or loss of important local species and habitat
- Threat to abundance, frequency, and distribution of species
- Disruption and disturbance to sensitive receivers / nearby residences
- Increase in ambient noise level and threat to the health and safety of sensitive receptors due to geotechnical investigations, operation of construction machinery. pile driving, tunnel construction, etc.
- Threat to existence and/or loss of important local species and habitat
- Threat to abundance, frequency, and distribution of species

## **15.6 Management Measures Mitigation and Control**

### **15.6.1 General Noise and Vibration Control Measures**

All necessary measures will be taken in accordance with EMB-DENR requirements to ensure that the operation of all mechanical equipment and construction processes on or off the site will not cause excessive noise and/or vibration which may disturb any occupant of any nearby dwellings, schools, hospitals, or premises with similar sensitivity to noise.

- Nighttime working may only be carried out after approval has been granted by the Engineer. Request should be submitted 14 days in advance and must include details of the noise mitigation measures to be adopted, and evidence of public/LGU consultation.
- Avoid activities like Phase demolition, earth-moving; and ground impacting operations to take place at the same time.

- Careful selection of working methods and programming of construction activities to reduce noise impacts.
- Site hoarding must be provided around all surface construction and logistics areas.
- Noise monitoring will be undertaken within close proximity of noise sensitive locations, especially if future works include activities which are known to cause significant levels of noise.
- Stationary machinery such as generators must be kept in enclosed structures for noise control during nighttime works.
- Items of plant on site operating intermittently will be shut down in the intervening periods between uses.
- Electrically powered plant will be preferred, where practicable, to mechanically powered alternatives.
- All mechanically powered plant will be fitted with suitable silencers.
- Noisy equipment and machinery will be replaced with less noisy alternatives or provide equipment that is specifically designed with noise inhibitors, such as generators and compressors with silencers and muffled jackhammers.
- Material stockpiles and other structures will be effectively utilized to screen noise from onsite construction activities.
- Tires and tire pressure of vehicles entering the site will be maintained to reduce friction between the wheel and surface. This will additionally facilitate the vehicle to operate at optimum efficiency.
- Movement of traffic outside the site will be minimized using the good working practices detailed in the Traffic Management Plan.
- All equipment will be regularly maintained and/or replaced as necessary. Defective plant will not be used until repaired.
- The loading of materials into the trucks by excavators will be carried out from a minimum height to prevent high noise.
- Speed restrictions of 15kph at all Project sites will be enforced.
- If safe to do so, all audible warning systems will be switched to the minimum setting and banksmen will be used as an alternative to audible alarms wherever practicable.
- Excavations will be restricted to daytime hours wherever possible.
- Use of vibratory hammer rather than impact hammer to reduce noise levels.
- Avoid impact pile driving where possible in noise-sensitive areas. Drilled piles or the use of a sonic or vibratory pile driver are quieter alternatives where the geological conditions permit their use.
- Avoid vibratory rollers and packers near sensitive areas.
- Where possible, piling works will be limited to between 7am and 7pm..

- Coordinate with sensitive receptors prior to pile driving and Cut and Cover activities.
- Strictly control construction activities close to historical/archaeological sites.
- If construction activities will cause continuous vibration, especially foundation excavation, it is necessary to reduce energy at each excavation.

#### **15.6.2 Personnel Protection**

- Proper Personal Protective Equipment (PPE) will be provided to all personnel working in high noise areas.
- All workers will undergo a hearing test as part of the Project induction process.
- Appropriate breaks will be provided to personnel working in high noise areas.
- A quiet area will be provided for personnel to take breaks, such as a lunchroom.
- A hearing conservation program will be implemented where the sound levels exceed specified limits.
- High noise sign boards to be placed in high noise areas such as piling, excavation, cutting, grinding, etc.

### **15.7 Responsibilities**

#### **Management**

##### **➤ The Project Manager:**

- Has the overall responsibility for environmental protection during the Project execution.
- He has ultimate responsibility for ensuring compliance with the relevant regulations and the relevant regulations in the SUTJV. Ensuring that financial, technical and human resources are provided to implement the NVMP.

##### **➤ The Construction Managers:**

- Implementing the NVMP on site, implementing onsite mitigation measures in collaboration with the EPM and reporting of incidents on site.

##### **➤ The EPM**

- will implement, maintain, and monitor compliance with the SSEMP and the environmental compliance procedures, the EPM will be supported by a team of Environment Officer
- The EPM will be responsible for identifying incidents in the weekly or monthly inspections, completing the Environmental Audit and Incident Report, establishing and implementing control measures to prevent, correct and avoid dust reoccurrence, collecting the documentation to close the Environmental Audit and Incident Report, conducting site inductions. The EPM is authorized to cease operation and act to



prevent environmentally unsound and/or unsustainable working practices, infringement of the SSEMP or breach of any applicable laws.

➤ **The JV Site Staff:**

- Support the EPM and Construction Manager to ensure the NVMP is followed, prevent and control pollution incidents.

### **15.8 Monitoring and Reporting**

As discussed in the Environment Monitoring Plan, Noise within the construction sites will be regularly monitored thru:

- Daily Visual inspection / observation.
- Quarterly 3<sup>rd</sup> party measurement via approved testing laboratories by DENR-EMB
- In situ measurement of Noise at the designated Stations (N-1 and N-2) on monthly basis using calibrated noise meter
- Results will be included in the Monthly Environment Monitoring Report.
- It will also be incorporated in the Quarterly Self-Monitoring Report submitted to EMB-DENR
- Daily Inspection/ Observation, Weekly Audit

### **15.9 Performance Indicator**

- Compliance with NPCC Regulations for Noise.
- No observe excessive noise from piling works.
- No observe excessive noise from demolition works.
- No observe excessive vibration from piling, cut and cover and tunneling works
- No observe excessive noise from machines and equipment e.g, generators, trucks, Jack hammers.
- No observe excessive noise from Batching plant operation
- No observe excessive noise from truck movements
- Noise measurements are within the standards.
- No complaints receive from sensitive receptors and from local authorities.

### **15.10 Record Management**

All reports listed in Section 15.8 Monitoring and Reporting will all be submitted to the Engineers for information and reference. Further, the environmental unit will keep the hard copies and compile them into folders. Electronic copies of reports and lists will be stored in electronic folders.

## 15.11 Corrective Actions

- Investigate excessive noise from piling works.
- Investigate excessive vibration from piling, cut and cover and tunneling works.
- Investigate excessive noise from machines and equipment e.g, generators, trucks, Jack hammers.
- Investigate excessive noise from Batching plant operation.
- Investigate excessive noise from truck movements.
- Investigate complaints received from sensitive receptors and from local authorities.
- Review the SSEMP. Provide corrective and preventative actions aligned with the SSEMP and related environmental requirements and standards.

## 15.12 Summary of Environmental Monitoring Plan with EQPLs

Key Environmental Aspects	Potential Impacts	Parameter to be monitored	Sampling & Measurement Plan			Lead Person	EQPL MANAGEMENT SCHEME					
							EQPL RANGE			MANAGEMENT MEASURE		
							ALERT	ACTION	LIMIT	ALERT	ACTION	LIMIT
Noise	Excessive Noise from construction heavy equipment such as bore piling, cut and cover, etc	dBA	Sound level Meter	Quarterly	N1-- Sto Nino chapel along, Mandug road, Tigatto, Davao City N2-Leonora Heights Daisy Street corner Daitic Compound, Brgy Cabantian, Davao City, Davao del Sur	Env Manager/Env officer 3rd party DENR EMB Accredited Testing Center	NPCC Standard 1980 Morning (05:00 – 09:00) = 50 Daytime (09:00 – 18:00) = 55 Evening (18:00 – 22:00) = 50 Nighttime (22:00 – 05:00) = 50	NPCC Standard 1980 Morning (05:00 – 09:00) = 50 Daytime (09:00 – 18:00) = 55 Evening (18:00 – 22:00) = 50 Nighttime (22:00 – 05:00) = 50				

**Table 20. Summary of Environmental Monitoring Plan for Noise with EQPLs**



## **16. SOCIAL ENVIRONMENT MANAGEMENT AND MITIGATION**

### **16.1 Traffic Management Plan (TMP)**

#### **16.1.1 Objectives**

The purpose of this plan is to ensure that there are no adverse effects to the existing highway network because of the Project. The plan covers the transportation of all construction activities, materials and equipment. Detailed TMP were attached on the Annexes.

The TMP is applicable to all SUTJV staff and Subcontractors on the Project.

#### **16.1.2 Environmental Impacts**

The following are the key activities with the potential for impacting traffic in the Package I-3 and its adjacent road network:

- Supply of diesel, water, and equipment.
- Sewage removal.
- Removal of excavated materials.
- Concrete and steel delivery.
- Spoil (grubbing and excavated materials) to transported to designated Stockpile Area

The excavation, segregation, transportation, dumping and returning of processed excavated materials will be carried out by SUTJV approved Subcontractor. Due to the volumes of material to be removed it is estimated that an increase in the number of trucks will be generated during transport. Therefore, the following are the key traffic management aspects and impacts identified for the construction phases of the Project.

- Congestion on highway network and driver delay, conflicts with local traffic, emergency services vehicles and public transport routes.
- Vehicle deposits and debris at construction site entrances
- Disruption to adjacent land users

#### **16.1.3 Management Measures Planning & Approvals**

- Any required road closures will be carefully planned to minimize impacts to traffic on the local road network associated with diversions and subsequent congestion.
- Road closures will be avoided wherever possible and where not possible roads will be reinstated or alternatives provided to restore traffic access as soon as possible.
- If road closures are required, the appropriate approvals must be sought from LGU Davao City or relevant Local Authorities.

**16.1.4 On Site Traffic Network**

- Minimization of movement of plants, vehicles and the removal of materials and waste by road will be adopted wherever possible.
- Wheel wash areas will be used.
- Only hard surfacing/ stabilized entrance/exits will be used onto public paved surfaces.
- Streets/entrances to the sites will be cleaned as required to ensure mud from the construction areas does not leave the site.
- Traffic will be kept to designated construction routes.
- Routes will be planned to be as direct as possible.
- All drivers to the site will be provided with a site map and clear directions which indicate the correct access and exit routes.
- Where practical, stationary vehicles will stop their engines instead of idling.

**16.1.5 Offsite Traffic Network**

- Any required road closures will be carefully planned to minimize impacts to traffic on the local road network associated with diversions and subsequent congestion.
- If road closures are required, the appropriate approvals will be sought from LGU Davao City Traffic Police or relevant Local Authorities.
- Any road closures will abide by any conditions required by these approvals.
- Disruption of access for residents and businesses will be minimized and alternative access points provided wherever possible.
- Traffic routes for construction traffic will avoid residential areas where possible.
- Where possible, construction traffic will be scheduled in off peak traffic times and on well-maintained routes. The timing of site deliveries will be coordinated and managed to ensure that disruption to local residents and other highway users is reasonably minimized.
- Waste collection will be scheduled to minimize journeys at peak times.
- Appropriate traffic safety signage will be provided to warn the public of construction traffic where traffic merges with normal road traffic.
- Where appropriate, locally sourced materials will be utilized within the construction phase to minimize driving distances, and workers must be transported to site by bus to minimize external traffic.
- The loading capacities and clearances of existing bridges and connecting roads will require full consideration when undertaking transportation of materials to the site and vice versa.
- Minibuses/buses to be provided to transfer construction staff to site.

- All construction vehicles and site personnel will be instructed to use only the approved access routes to the site.
- Construction plant, equipment and vehicles will be parked onsite to avoid 'overspill' parking on public roads, prolonged queuing on approach roads and uncontrolled on street HGV parking in normal operating conditions.
- Wheel washing facilities will be provided onsite in order to keep site entrances and routes used by construction vehicles free from vehicle deposits and debris.
- Manual sweeping will be provided, as required, in order to keep site entrances and routes used by construction vehicles free from vehicle deposits and debris. Road sweeping will also be undertaken at frequent intervals.
- Ensure the proper transport of materials, e.g. vehicle loads will be enclosed/ covered to restrict any spill of excavated material, spoil, and concrete debris.
- Proper servicing and maintenance of vehicles will be undertaken to avoid any leaks or spills of oil, petrol, or concrete.
- Drip trays will be placed under standing machinery to avoid localized oil and petrol pollution.
- A truck ticket system will be in operation to monitor all vehicles arriving at and leaving the Project site.

#### **16.1.6 Monitoring and Reporting**

- Daily, Weekly and Monthly inspections reports.
- Monthly environmental monitoring report.

#### **16.1.7 Record Keeping**

- Daily, weekly, and monthly environmental checklists.
- Monthly environmental monitoring report.
- Records of induction training and toolbox talks.
- Truck ticket records.
- Vehicle inspection records.
- Copies of truck drivers' licenses.

### **16.2 Addressing Disabled and Gender Requirements**

Overview The promotion of gender fairness for all genders as partners and beneficiaries of development is a key priority of the Davao City Bypass Construction Project Package I-3. All persons, without discrimination, are encouraged to perform important roles in community activities.

- to provide support and to participate in community planning, project development, project implementation, and monitoring and evaluation.



- DCBCP I-3 aims to provide secure and self-sustaining measures in gender mainstreaming initiatives, including the addressing of gender-based violence (GBV). The provision of gender-friendly environments in DCBCP I-3 is paramount in promoting gender fairness.
- It aims to cultivate safe spaces during the construction and operations of DCBCP I-3 , through mitigating risk and increasing awareness regarding GBV.
- It aims to provide the project, the public, and its surrounding communities, with security and safety within the duration of the project.

The following guidelines shall equip the DCBCP CP I-3 personnel, its contractors, operators, subcontractors, community members, and other stakeholders with self-sustaining measures in understanding and responding to the imbalances in gender relations.

This is to promote gender responsive for the whole project while ensuring gender-fair treatment, streamlining processes involved in addressing GBV in DCBCP CP I-3, and enhancing the monitoring and evaluation of the effectiveness of the guidelines itself.

### **16.2.1 Guiding Principles in Handling Gender-Based Violence**

The GBV Guideline for DCBCP CP I-3 will be using the “**DO NO HARM**” approach guiding principles made by US Agency for International Development (USAID).

#### **✓ The “Do No Harm” Approach**

##### **1. SAFETY**

- It is essential to always ensure the safety of the survivor and their family, including their children and people who have assisted them.

##### **2. CONFIDENTIALITY**

- Always respect the confidentiality of survivors (and their families) by not disclosing any information, at any party without the informed consent of the person concerned. Ensure the survivor’s trust and empowerment.

##### **3. RESPECT**

- All actions or decisions should be guided by respect for the survivor’s choices, wishes, rights, and dignity.

##### **4. NON-DISCRIMINATION**

- Survivors should receive equal and fair treatment, regardless of their age, sex, race, marital status, sexual orientation, or any other characteristic. Survivors should receive honest and complete information about possible referrals for service, be made aware of any risks or implications of sharing information about the situation and have the right to limit the types of information shared and whom it is shared with.

### **16.2.2 Prohibited Acts and Cases Covered by the Guidelines**

The DCBCP CP I-3 wants to ensure that mechanisms are in place prior, during and after construction of DCBCP CP I-3 in the affected communities that we consider as a-risk factor. An instance of this is in the workplace where there is undeniably power imbalance as for powerful groups have privileges or advantages and people in the less powerful groups (vulnerable sector) do not have.

The different types of privileges that come higher economic, education, social status. The root causes of violence against women and girls globally are the various factors determine the type and extend of violence experienced in each setting, such as age, disability, sexual orientation, gender identity or expression, race, ethnicity, poverty etc. While for men and boys, certain forms of violence against them might be the result of masculinities that are imposed, acceded to, or even acclaimed by victims/survivors as well as by perpetrators.

Included in the vulnerable sectors, the LGBTIAQ+ groups' experience of violence is related to social norms that regulate their sexuality and sexual identity. The following table shows the different forms of prohibited GBV acts in all phases of DCBCP CP I-3 implementation and operations.

Physical	Sexual	Verbal	Psychological	Economic
<ul style="list-style-type: none"> <li>➤ Invading personal space.</li> <li>➤ Bodily harm such as punching, kicking, pushing, strangling, physical restraint.</li> <li>➤ Violence such as using weapons or objects against you</li> </ul>	<ul style="list-style-type: none"> <li>➤ Unwelcome sexual flirtation, advances, propositions.</li> <li>➤ Leering or ogling.</li> <li>➤ Unwanted invitations</li> <li>➤ Public masturbation/flashing.</li> <li>➤ Acts of lasciviousness</li> <li>➤ Malicious or unnecessary touching and groping.</li> <li>➤ Sexual harassment and assault</li> <li>➤ Voyeurism.</li> <li>➤ Prostitution.</li> <li>➤ Sexual abuse</li> <li>➤ Rape</li> <li>➤ Human trafficking</li> </ul>	<ul style="list-style-type: none"> <li>➤ Catcalling.</li> <li>➤ Wolf whistling.</li> <li>➤ Threats</li> <li>➤ Sexist jokes</li> <li>➤ harassing electronic messages</li> </ul>	<ul style="list-style-type: none"> <li>➤ Peer pressure stalking.</li> <li>➤ Blackmail.</li> <li>➤ Threat of physical harm</li> </ul>	<ul style="list-style-type: none"> <li>➤ Withdrawal of financial support because of provision of insufficient financial support.</li> <li>➤ Deprivation of threat of deprivation of financial resources.</li> <li>➤ Controlling the victim's own money or solely controlling conjugal money or properties;</li> <li>➤ Favor as a condition to employment and compensation;</li> </ul>

Table 21 Guiding Principles in Handling Gender-Based Violence and Prohibited Acts and Cases

## 16.2.3 Implementation of GBV guidelines

Implementation of the Gender Based Violence guidelines shall be based and derived from the national and local legal bases of Philippine Constitution and laws. Coordination with the Local Government Units (LGUs) and Non-Government Units (NGOs) shall be strictly observed and monitored throughout the entire Project duration with its promotion to reduce Gender based violence.



**Prevention** – constant promotion, conduct awareness program, trainings related to gender-based violence on affected communities and Project employees to increase awareness and continuous monitoring.

**Protection** – identifying and providing services to GBV survivors through continuous follow up and monitoring.

**Accountability** – ensuring that perpetrators/ violators are sanctioned and persecuted by the law through close coordination with the Local Government Units and formulation of Company Code of Conduct. The DCBCP CP I-3 shall impose a zero-tolerance policy on Gender-based and Sexual Harassment.

The DCBCP CP I-3 shall impose a zero-tolerance policy on Gender-based and Sexual Harassment.

### **16.3 Occupational Health and Safety (OHS) Management**

There will be a H&S Management Plan which will discuss in detail on OHS management.

### **16.4 Addressing temporary Employment Generation Requirements for Affected Communities**

The SUTJV in coordination with the host Local Government Units (LGU), specifically at the Barangay level up to City - Public Employment Service Office (PESO) will closely coordinate the hiring of locals, legitimate residents in the area in consideration also with the gender equality.

Job placement shall be established with the required skills and qualifications of the Project. The SUTJV will ensure compliance with the requirement to hire 50% of unskilled labor and 30% skilled labor from the province, city or municipality in which the project is undertaken contained in RA 6685.

In addition, SUTJV will implement the Community Based Employment Program (CBEP).

### **16.5 Supporting the Information, Education, and Communication (IEC) Program**

The SUTJV in coordination with OCG and DPWH will commit to regularly communicate with the stakeholders of the project, especially in affected barangays, to promote and foster transparency between the project and its stakeholders as well as document social risks.

SUTJV will assign a Communications Officer who will ensure that relevant information about the project is disseminated in a timely and effective manner. The Communications Officer will also ensure that issues and concerns of the host communities are appropriately addressed and documented.

#### **16.5.1 Topics to be covered in IEC.**

- Project description and status of the project.
- Potential and actual impacts of the project and corresponding mitigating measures.
- Application requirements; and
- Other relevant concerns, as they arise.

#### **16.5.2 Information Education Campaign (IEC) Strategy**

The IEC scheme/strategy methods will include the following:

- Group methods such as meetings, group discussions, and study tours.



- Mass media methods such as local newspaper publication, radio broadcast and posting on the project's website.
- Information Materials will include the following:
  - Symposia /public forum
  - Multi-media exposure/ releases
  - Flyers & handouts

Flyers & handouts	Major Topics of Concern	Information Material	Indicative Timelines and Frequency
Relevant local government units, host communities of the project	<ul style="list-style-type: none"> <li>- Project description and status of the project</li> <li>- Findings of the EIA study</li> <li>- Potential and actual impacts of the project and corresponding mitigating measures</li> </ul>	<ul style="list-style-type: none"> <li>- Symposium/ public forum</li> <li>- Multi-media exposure/ releases</li> <li>- Flyers and handouts</li> </ul>	<ul style="list-style-type: none"> <li>- Pre-construction – prior to commencement of construction activities</li> <li>- Construction phase – at least semi-annually</li> </ul>

Table 22. Information Education Campaign (IEC) Strategies

## 17. ENVIRONMENTAL MONITORING

### 17.1 Objectives

The primary purpose of the environmental monitoring, inspection, and audit procedure (EIMAP) is to ensure that the SUTJV's construction activities and its subcontractors comply with the following:

- All Philippine Environmental Laws and Regulations and Other related laws
- ECC and permit compliances
- Contractual Obligations / Requirements of TS B14
- SSEMP, EIS and JICA monitoring Plan.

The Environmental Monitoring, Inspection and Audit Plan provides means for the SUT-JV to assess the level of compliance against the above requirements. As the objective, the results of audits allow for evaluation of the standard of environmental performance against the key performance indicators (KPIs) agreed between SUTJV and DPWH or OCG.

It also defines the internal system for verification of the implementation of the EMS by:

- Providing assurance that the controls, arrangements, or procedures necessary to achieve the objectives of the EMS have been established throughout the project.

- Confirming by measuring the degree of compliance with these controls and procedures, and stimulating discussion on their continued effectiveness and improvement

The SSEMP sets out how the compliance of construction activities is periodically inspected through:

- Internal audits and Inspections by the SUTJV
- Internal audits and Inspections by DPWH and OCG
- External audits and Inspections by independent third parties or MMT

## **17.2 Recording and Reporting of Environmental Impacts Monitoring**

As part of the Monthly Environmental Monitoring Report, environment reporting will include the results of all the monitoring activities that will be performed during construction. Data for the monthly and/ or quarterly monitoring is to be plotted on a date timeline for each location and each measurement type.

Moreover, all laboratory analysis results signed off by the environmental laboratory will be part of the environmental monitoring report. The environment monitoring report may include trend analysis of results versus the baseline and the EMB-DENR limits.

Moreover, records of all daily site inspection monitoring and corrective actions carried out in the month shall be collated and filed as part of the environmental management system.

### **17.2.1 Weekly Environment Site Inspection and Observation Report**

The Environmental Officer for each site will conduct and prepare site observation report weekly. The report will consist of the implementation of SSEMP. It will also cover compliances to environmental Laws and Regulations and relevant Statutory Requirements e.g., DENR FMB, DOH. An Environmental Site Inspection and Observation Form is in Appendixes.

### **17.2.2 Monthly Environment Monitoring Report**

The Environment Officers will collate and compile all its weekly Environment Site Inspection and Observation Reports which forms part of the Monthly Environment monitoring Report. The report will have its trend analysis for each environmental monitoring and performance indicators, site observations and incident closeouts will also be included in the report.

### **17.2.3 Monthly HSE patrol or Walkthrough and Committee meeting**

A Monthly walkthrough inspection every last Wednesday of the month will be conducted by the HSE committee members together with the representatives from DPWH and OCG. A meeting will be conducted after the walkthrough.

### **17.2.4 Regulatory Reporting**

The EPM together with its Officers will have to prepare the following environmental reports for submission to EMB-DENR for contractors' temporary facilities.

The Self-Monitoring Reports (SMR) to be submitted quarterly with a specified format pursuant to DAO 2003-27 and the Compliance Monitoring Reports (CMR) to be submitted semi-annually with a specified



format pursuant to Environmental Compliance Monitoring Report (CMR) to reflect the compliance with the conditions in the Environmental Compliance Certificate (ECC).

The Environmental Monitoring Plan for this project, considering the different management plans, is summarized in the table below.

Part of the SMR is the reporting of the Water Supply which includes the origin of and predicted/ actual volumes of supplies of freshwater to be used in the works.

## 17.2.5 Environment Permit Register

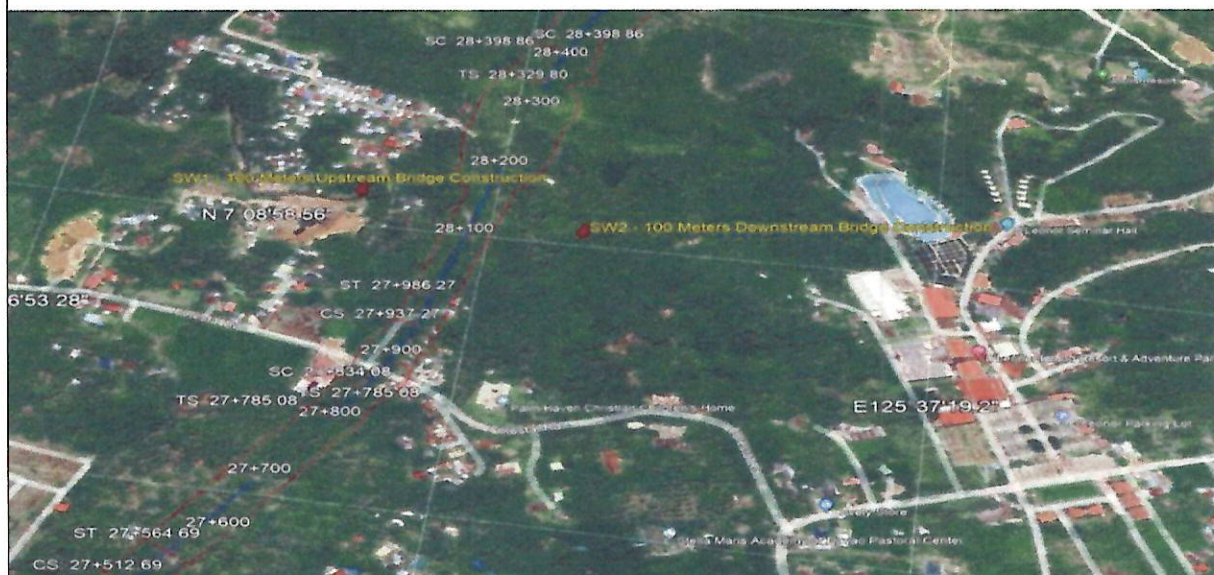
An Environment Permit Register will be maintained for the purpose of tracking the validity of all environmental permits related to the project. The Environmental Permit Register is attached as an Appendix.

## 18. WATER QUALITY MONITORING

A Baseline Surface Water Quality measurement will be conducted prior to commencement of any construction activities.

Refer to Figure 5 Surface Water Sampling Station (SW-1) for Package I-3 at Lasang river 100 meters upstream and 100 meters downstream on the bridge construction.

Station No.	Location	Coordinates
SW-1 Lasang River (Brgy Communal) Sta 28+200	One point at 100 meters upstream at the bridge construction	7° 8'59.96"N 125°37'2.19"E
	One point at 100 meters downstream of the bridge construction	7° 8'58.89"N 125°37'8.92"E



Source: Environmental Impact Statement (EIS 2014) and JICA Environmental Monitoring Plan  
Figure 9 Surface Water Quality Sampling Location

Monitoring for Surface water quality will be fixed quarterly intervals thereafter in February, May, August, and November. Adhoc measurement with the Three parameters (ph, temperature and TSS) at the same location will be conducted to prevent any complaints due to pollution incidents.



Table 23. Environmental Monitoring for Surface Water Quality for Package I-3., the Tables will be populated up and will form part of the Monthly Environment Monitoring Report. Method of laboratory tests are in accordance with EMB-DENR Laboratory requirement.

Surface Water Quality baseline testing and monitoring will be undertaken by an EMB DENR Accredited Laboratory. The selected and approved laboratory is Davao Analytical, and Laboratories Incorporated located in Davao City.

Parameters	Unit	WQ Guideline for Primary Parameter (Standards)	2024				
			Baselin SW1	February	May	August	November
Temperature	C	26-30					
pH (Range)		06/-09					
Dissolved Oxygen	mg/L	5					
BOD	mg/L	5					
TSS	mg/L	65					
Oil & Grease	mg/L	2					
Total Coliforms	MPN/100mL	No Limit					
Fecal Coliforms	MPN/100mL	400					

Parameters	Unit	WQ Guideline for Primary Parameter (Standards)	2024				
			Baselin SW2	February	May	August	November
Temperature	C	26-30					
pH (Range)		06/-09					
Dissolved Oxygen	mg/L	5					
BOD	mg/L	5					
TSS	mg/L	65					
Oil & Grease	mg/L	2					
Total Coliforms	MPN/100mL	No Limit					
Fecal Coliforms	MPN/100mL	400					

Table 23 Surface Water Quality Monitoring



## 19. AMBIENT AIR QUALITY MONITORING

A Baseline Air Quality measurement will be conducted prior to commencement of construction activities. Refer to Figure 7 Ambient Air Quality Monitoring Station (AAQ1 & AAQ2) for Package I-3.

Station No.	Location	Coordinates
AAQ1 Residential Area around station 23+900 (Beginning)	Sto Nino chapel along, Mandug road, Tigatto, Davao City	7° 8'12.08"N 125°35'18.50"E
AAQ 2 Residential Area around station 27+900 (End)	Leonora Heights Daisy Street corner Daitic Compound, Brgy Cabantian, Davao City, Davao del Sur	7° 8'48.80"N 125°36'46.11"E



Figure 10 Ambient Air Quality Monitoring Stations



Air Quality will be measured at the locations located in construction identified in the EIS and confirmed by the OCG and DPWH prior to commencement of construction activities and will then be monitored at fixed quarterly intervals thereafter in February, May, August and November. It shall also be monitored immediately when instructed by the OCG because of public complaints.

Ambient Air Quality baseline testing and monitoring will be undertaken by an EMB DENR Accredited Laboratory.

Table 24. Air Quality Monitoring presents the Environment Monitoring for the Air Quality of Package I-3. Moreover, this will be populated up until the final phase of the construction.

And Table 24. Air Quality Monitoring Methodology presents the Method of Sampling and Testing pursuant to RA 8749 and its IRRs.

Parameters	Unit	AAQG Values	Time	2024					
				Baseline AAQ 1 Sto Nino Chapel along mandug road near Deca homes, Brgy Tigatto,	Baseline AAQ 2 Leonora Heights Subdivision, Daisy Street corner Daitie Compound, Davao City	February	May	August	November
Total Suspended Particulates (TSP)	ug/Ncm	230	24 hrs						
		300	1hr						
		180	24 hrs						
Sulfur Oxides as SO2	ug/Ncm	340	1hr						
		150	24 hrs						
Nitrogen Oxides as NO	ug/Ncm	260	1hr						
		9	24 hrs						
CO	ppm	30	1hr						

Table 24 Ambient Air Quality Monitoring

Parameters	Sampling and Analysis Procedures	Reference method of Analysis
Total Suspended Particulates (TSP)	Gravimetric; US Environmental Protection Agency. (2011). Reference method for the determination of suspended particulate matter in the atmosphere (High-volume method) [PDF File]. Retrieved from <a href="https://www.govinfo.gov/content/pkg/CFR-2011-title40-vol2/pdf/CFR-2011-title40-vol2-part50-appB.pdf">https://www.govinfo.gov/content/pkg/CFR-2011-title40-vol2/pdf/CFR-2011-title40-vol2-part50-appB.pdf</a>	USEPA CFR 40, part 50, Appx. B
Sulfur Dioxide (SO <sub>2</sub> )	Gas Bubbler/Pararosaniline; US Environmental Protection Agency. (2010). Reference method for the determination of sulfur dioxide in the atmosphere (Pararosaniline method) [PDF File]. Retrieved from <a href="https://www.ecfr.gov/cgi-bin/textidx?SID=65790c339b8744881588a04b9c22c7d2&amp;mc=true&amp;node=ap40.2.50_119.a_62&amp;rgn=div9">https://www.ecfr.gov/cgi-bin/textidx?SID=65790c339b8744881588a04b9c22c7d2&amp;mc=true&amp;node=ap40.2.50_119.a_62&amp;rgn=div9</a>	USEPA CFR 40, part 50, Appx. A
Nitrogen Dioxide (NO <sub>2</sub> )	Gas Bubbler/Griess – Saltzman; Lodge, J.P. (Ed.). (1988). Methods of Air Sampling and Analysis (3rd ed., pp. 389-393). New York: CRC Pres	Lodge Method 406
Carbon Monoxide (CO)	Direct Reading/Electrochemical Sensor; Methods of Air Sampling and Analysis, 3rd ed. by J.P. Lodge	Using Electrochemical Sensor

Source USEPA, JICA monitoring plan, EIS 2014 & DPWH SEMS manual.

Table 25 Ambient Air Quality Metroaologies

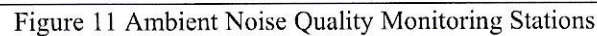
## 20. Noise Quality Monitoring

A Baseline Noise measurement will be conducted prior to commencement of construction activities. at Package I-3. Refer to Figure 8 Noise Monitoring Station (N1 & N2) for Package I-3.

Station No.	Location	Coordinates
N1 Residential Area around station 23+900 (Beginning)	Sto Nino chapel along, Mandug road, Tigatto, Davao City	7° 8'12.08"N 125°35'18.50"E
N2 Residential Area around station 27+900 (End)	Leonora Heights Daisy Street corner Daitic Compound, Brgy Cabantian, Davao City, Davao del Sur	7° 8'48.80"N 125°36'46.11"E







The prevailing wind direction shall also be recorded. The contractor shall use handheld noise meters for boundary noise monitoring to control and assess nuisance noise due to construction works. Levels and location should be formally recorded together with the ongoing construction works and mitigation actions, and data tabulated. The data will be included in the Monthly Environmental Monitoring Report.

Parameters	Unit	Noise level (dBA)	Time	2024				
				Baseline N1 Sto Nino Chapel along mandug road near Deca homes, Brgy Tigatto,	Baseline N2 Leonora Heights Subdivision, Daisy Street corner Daitie Compound, Brgy Cabantian, Davao City	February	May	August
								November
Noise Measurement	A	50	Morning (05:00 – 09:00)					
	A	55	Daytime (09:00 – 18:00)					
	A	50	Evening (18:00 – 22:00)					
	A	45	Nighttime (22:00 – 05:00)					

Table 26 Ambient Noise Quality Monitoring



A flora and fauna inventory will be conducted as baseline data for the terrestrial ecology. The data that will be gathered will serve as guide and reference for monitoring during the construction phase for Package I-3 of the Davao City Bypass Construction Package. The following stations has been identified with reference to the prepared Environmental Impact Statement (EIS 2014) except the S13 which will be transferred at the new location located at construction of cut and cover tunnel at Sta 25+400.

Description of Flora and Fauna Sampling Sites				
Sta. No.	Location	Coordinates	Description	Sampling ID
S1	Lasang River, Brgy. Communal	N 07° 08'59.3" E 125° 37'07.3"	Riparian Habitat near residential area	Transect 1 & Transect 2
				Site 1
				Site 1
				Transect 1
S12	Brgy. Tigatto	N 07° 08'09.07" E 125° 35'22.02"	Along national road/highly residential area (subdivision)	Transect 15
				Transect 11
New Proposed S13 Location	Brgy Cabantian	7° 8'33.81"N	Construction of Cut and Cover Tunnel	Transect 16
		125°35'53.87"E		Transect 12
Old S13	Brgy. Cabantian	N 7° 8'33.81"N E 125° 36'20.16"	Along national road exemplified by privately owned lot on other side	Transect 16
				Transect 12
S14	Brgy. Indangan	N 07° 09'35.32" E 125° 37'06.78"	Along national road	Transect 17
				Transect 13



Source: Environmental Impact Statement (EIS 2014), JICA Environmental Monitoring Plan and Joint inspection on the confirmation of monitoring stations with Employer, Engineers, and Contractor

Figure 12 Flora and Fauna Monitoring Stations



Importance Values for Flora and Fauna

Species Name	Common Name	Abundance	Frequency	Relative Abundance (%)	Relative Frequency (%)	Importance Value

Species Inventory of Terrestrial Flora

Species Name	Common Name	Relative Abundance (%)	No. of Individuals	IUCN	DAO 2016-12

Table 27 Flora and Fauna Monitoring

## **22. ARCHAEOLOGICAL CHANCE FIND PROCEDURE**

### **22.1 Archaeological Monitoring**

The location of Package I-3 will not affect any historic or archaeological areas or structures based on the Environmental Impact Statement (EIS). However, in case of chance find of any archaeological artifacts, the workers who encountered such resources shall immediately report or coordinate to DPWH or OCG who will subsequently inform the LGU and other appropriate government agencies.

In case of significant chance find of these resources, the works must be terminated immediately, and guidance must be sought from the LGU, National Archaeological Commission and other government authorities prior to resumption. The EPM is the focal point in cases of any or possible archaeological chance find.

### **22.2 Chance Find Procedures**

The chance find procedure is a project-specific procedure that outlines actions required if previously unknown heritage resources, particularly archaeological resources, are encountered during project construction or operation. A Chance Find Procedure, as described in IFC Performance Standard 8, is a process that prevents chance finds from being disturbed until an assessment by a competent specialist is made and actions consistent with the requirements are implemented.

If any person discovers a physical cultural resource, such as (but not limited to) archaeological sites, historical sites, remains and objects, or a cemetery and/or individual graves during excavation or construction, the following steps shall be taken:

- Stop all works in the vicinity of the find, until a solution is found for the Preservation of these artefacts or advice from the relevant authorities is obtained.
- Immediately notify a foreman. The foreman will then notify the Construction Manager and the Environment Officer (EO)/Environmental Protection Manager (EPM).
- Record details in Incident Report and take photos of the find.
- Delineate the discovered site or area; secure the site to prevent any damage or loss of removable objects. In cases of removable antiquities or sensitive remains, a night guard shall be arranged until the responsible local authorities take over.
- Preliminary evaluation of the findings by archaeologists. The archaeologist must make a rapid assessment of the site or find to determine its importance. Based on this assessment the appropriate strategy can be implemented. The significance and importance of the findings should be assessed according to the various criteria relevant to cultural heritage such as aesthetic, historic, scientific or research, social and economic values of the find.
- Sites of minor significance (such as isolated or unclear features, and isolated finds) should be recorded immediately by the archaeologist, thus causing a minimum disruption to the work schedule of the Contractor. The results of all archaeological work must be reported to the authorities, once completed.
- In case of significant find the National Archaeological Commission and other government authorities should be informed immediately
- The onsite archaeologist provides the Heritage team with photos, other.
- Information as relevant for identification and assessment of the significance of heritage items.



- Decisions on how to handle the finding shall be taken by the responsible authorities. This could include changes in the layout (such as when finding an irremovable remain of cultural or archaeological importance) conservation, preservation, restoration and salvage.
- Construction works could resume only after permission is granted from the responsible authorities.

## 22.3 Complaints Handling

All incoming grievances shall be acknowledged as soon as possible in accordance with the following considerations.

SUTJV will coordinate with the Grievance Redress Mechanism (GRM) set up by the employer/DPWH.

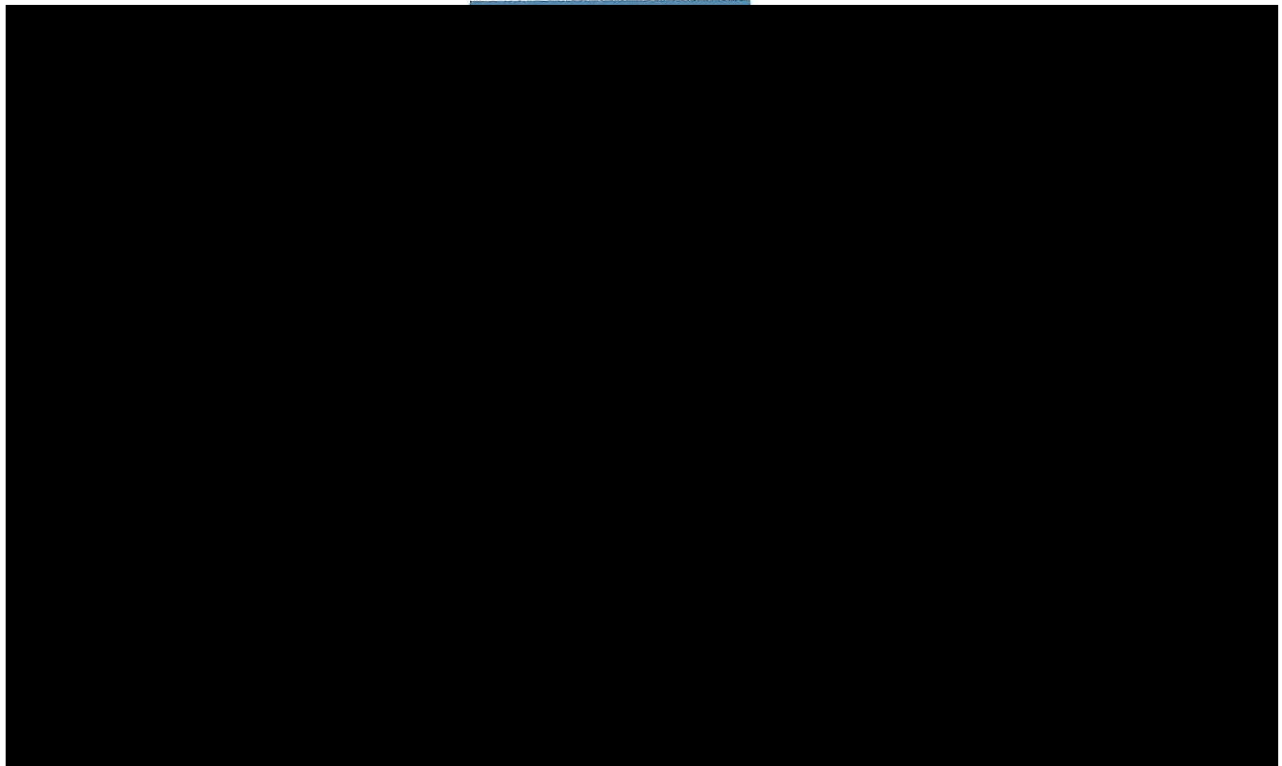
- **A formal confirmation**—with a complaint number, or other identifier, and a timeline for response assures the complainant that the organization is responding properly, and it gives the project a record of the allegation. If a complaint is received in person, a good practice is to acknowledge it on the spot.
  - If a more complex investigation is required, the complainant shall receive a detailed response explaining the actions required to resolve the complaint, and the likely timeline.
  - The company shall explain up front what claims are clearly outside the scope of the mechanism and what alternative avenues communities can use to address these potential issues.
  - Coordinate with the local government unit through the DPWH & OCG, if there is a need to escalate the grievance to agencies or units outside the company.

All grievances will be reviewed and investigated, depending on the type of grievance and clarity of circumstances. Grievance Investigation Procedure Investigation of grievances will proceed in accordance with the following.

- **Involve senior management**—senior management will be fully informed of any and all instances of grievances and will be assigned responsibilities and timeframes for handling investigations.
- **Appoint the right investigation team**—People investigating grievances will have no material, personal, or professional interest in the outcome and no personal or professional connection with complainants or witnesses. As a rule, investigators will have the authority to gather information and commit to the time frame for investigation, but not make promises regarding the outcomes of a complaint.
- **Develop clear tasks and responsibilities**—Develop a clear list of tasks and outcomes that an investigation is expected to achieve. Investigators will be expected to develop an investigation plan, assess the needs for safety and confidentiality, collect evidence, and produce an investigation report.
- **Conduct meetings with complainants and site visit**—Site visits and inspections are useful for a grievance resulting from a physical incident. Site visits are most useful at the beginning of an investigation—to avoid any change in physical evidence that may happen over time—and should be documented. A prompt corrective action may be necessary if an incident is of a serious nature and has potential for harm.
- **Developed a response or solution**—Resolution options will be developed, taking into consideration the community preferences, project policy, past experience, current issues, and potential outcomes.



- Communicate the response (whether rejected or accepted)—A response will be provided to all complainants. Responses will always be written. At the time of first interaction between the company representative and complainant(s), there are two possible scenarios:
- The claim is rejected, and no further action will be taken.
  - The claim is accepted. The response procedure will include two general steps:
  - A preliminary response will be provided within a stipulated period of time and the next steps and actions to be taken for resolution shall be proposed.
  - A final response will be given to document the final proposed resolution. Communicate the proposal, stipulate mutual commitments, and ask for the complainants' agreement.



### **23. TEMPORARY FACILITIES**

Currently, the temporary facilities location still not approved or finalized, yet. This information will be discussed when the location is finalized.

### **24. ENVIRONMENTAL AUDITS**

#### **24.1 Environmental Audit by the SUTJV**

The Environment Manager, or an authorized delegate, shall conduct regular internal environmental audit on both the environmental management system and the physical site conditions. The audits include the systems, procedures and works of the SUTJV itself and of its subcontractors.

The EPM together with its Environment Officer will carry out the said audit. Results of environmental audits will be recorded and file for future requirements and in compliance to the environment management system of the SUTJV.

The SUTJV concerned and its subcontractors shall address the environmental concerns and issues and provide corrective actions resulting from inspections and audits in a holistic manner, which are tracked until they are closed. Results from audits can be included as part of the of the Monthly Environmental Report.

#### **24.1.1 Environmental Audits and Inspections**

The SUT JV environmental team will provide comprehensive support to DPWH or OCG audits and will make all information, data and documents available as required.

#### **24.1.2 External Environmental Audits and Inspections**

The EPM will support and participate in external audits as appropriate and requested. The SUTJVs environmental team will be ready for discussion, the provision of information, data and documents and for the participation in site inspections.

### **25. NON-CONFORMANCE, CORRECTIVE AND PREVENTIVE ACTION**

The SUTJV environmental team records the nonconformances investigated on a nonconformance report form, which includes the following information:

- Location, date, and time that the incident occurred, or when the incident was first reported to the Environmental Manager
- Who observed the incident?
- Description of the incident and description of the activities that were taking place when the incident occurred.
- Name and company details of those involved in the incident.
- Likely receivers
- Immediate actions taken in response to the incident.
- Corrective action and preventative actions proposed, and the due date and responsibility for these actions.
- Incident closeout date and sign off by the Environment Manager

#### **25.1 Introduction**

Environmental performance reporting is a key tool that provides management with the information to make meaningful and positive changes and would also ensure that DPWH and the EMB-DENR are appropriately informed of how the SUTJV manages its environmental performance. Periodic

performance reports (Self-Monitoring Reports and Compliance to the ECC Condition) will be prepared and submitted to EMB DENR on a quarterly and semi-annual basis.

The EPM must be responsible for undertaking and facilitating the required environmental monitoring. All laboratories or environmental specialists engaged by the SUTJV, and subcontractors is registered and accredited by the competent authorities (EMB-DENR).

## **25.2 Scope**

The SUTJV nonconformance Procedure for environment shall adopt the the Non-Conformity, Corrective Action and Preventive Action - Procedure of the Quality Department with applicable to SUTJV's activities with relevance to environmental management and natural resources management at all project sites.

Nonconformity issues can be identified during routine/ non routine inspections and/or general observations.

The Procedures are in similar to those in quality management and in health & safety management.

## **25.3 Responsibilities**

All personnel who are designated with the responsibility for implementation of NCR actions will ensure that the actions are effectively implemented and verified within the defined time scale.

### **➤ Project Manager**

The Project manager is ultimately responsible for the effective implementation and approvals as defined within this procedure. The project manager has delegated the responsibility for the effective day to day management of the procedure to the Environment Manager.

### **➤ Construction Manager**

In relation to this procedure, the construction managers may deputize for any duties allocated by the Project manager.

### **➤ EPM**

Has responsibility for the effective management of this procedure and for ensuring effective implementation on project sites as described herein. Note that the term "Environment Manager" includes her/his nominated deputies.

## **25.4 Nonconformity**

### **25.4.1 Nonconformity Identification and Assessment**

Nonconformity may be identified at any stage of any environmentally relevant process and also includes materials and products provided by supply partners. In all cases the EPM shall be notified.

The EPM will in the first instance ensure that measures have been taken to isolate/quarantine the product/practice/condition to positively stop any further work (or continuing works) and agree with the relevant SUTJV section head that the product/practice/condition is nonconforming; this will be in consultation with the supply partner as necessary.

Nonconformity reports or notifications such as verbal, meetings, letters etc. issued by DPWH/OCG or their authorized representative will always be covered by a SUTJV nonconformity report.



#### **25.4.2 Nonconformity Reports and Registration**

When nonconformity is confirmed, then Nonconformity Report (NCR) will be generated by the EPM using QA's NCR Form. The NCR will be allocated a unique reference number based on the Corrective Action Register which is controlled by SUTJV's QA Department. The EPM will liaise with the relevant SUTJV section head to establish the means by which the nonconformity will be addressed (corrective action). The priority being to ensure that the product/practice/condition is finally in compliance with the requirements.

In respect to environment related NCR's and compliance; if it is not practical to comply with the specified requirements (maybe risk/impact assessments/contract requirements) then the process risk/impact assessment(s) may be reviewed and reassessed.

In the event that contract requirements cannot be achieved then the issues will be discussed with DPWH and/or their authorized representatives to agree the most practical means. However, under no circumstances will it be acceptable to breach any form of legislation or associated codes of practice etc. The NCR, which is authorized to disposition, will be issued to the document controller (DC) for circulation to relevant personnel and/or supply partners as defined by the EPM.

#### **25.4.3 Nonconformity Report Close Out**

It is the responsibility of the person responsible for NCR closure (section head) or the designated appointees thereof to ensure that each NCR is effectively closed out in accordance with the timescale defined and to inform the EPM by submitting the Corrective Action Request Form (CAR), with the relevant sections duly completed and signed. It should be noted that the responsible person (section head) should complete the CAR clearly to define the action taken and to verify that it is in accordance with the action defined.

Upon receipt of each completed CAR then the EPM will review and assess the action taken to verify compliance to the defined requirements and annotate the NCR Form and CA register accordingly. Sign off can only occur once verification of CA and/or PA has been undertaken as per the Non-Conformance Procedure. The NCR is then officially closed. The EPM will monitor the CA register at least once per week to ensure that NCR's are being closed in accordance with the defined timescales. He will notify the relevant manager/engineer in charge in writing should any defined timescales be exceeded by more than one week.

#### **25.4.4 Record Control**

All records pertaining to this procedure including all related correspondence will be retained. An individual folder will be generated for each (Environment) NCR within the project file. The folder will include all data relating to the NCR such as correspondence, images and any request for inspection/other inspection and approval documents. NCR results/analysis will form part of the input data for management review.

#### **25.4.5 Terms & Definitions**

- Nonconformity: Non fulfilment of a requirement
- Concession: Permission to use or release a product that does not conform to the specified requirements
- Repair: Action on a nonconforming product to make acceptable for the intended use
- Inspection: Conformity evaluation by observation and judgment accompanied as appropriate by measurement, gauging, test or other means

## **26. Environmental Management Monitoring Report**

The Environmental Monitoring Plan (EMoP) provides general guidance on monitoring requirements and compliance of the civil works under Contract package I-3. Monitoring will be implemented during these pre-construction and construction phases with focus on actual sampling and results of the mitigation measures contained in the EMP including the status of compliance with DENR, DPWH, LGUs, and JICA requirements.

The baseline environmental and the perpetual quarterly monitoring on water quality, air quality, Terrestrial flora and fauna and noise will be collected prior to the commencement of civil works and until the issuance of the Certificate of Completion for package I-3 or the package is turned over to the DPWH. (Refer to the annexes MS Baseline Environmental Survey)

Additional environmental monitoring may be taken only if required by the Engineer or when construction fronts take place near sensitive receptors as deemed necessary.

The monitoring will include gathering of actual environmental samples and data from the direct impact areas pre-identified in the EIS and JICA monitoring plan. The monitoring results will be taken by an Independent Testing Laboratory, accredited by DENR. The periodic monitoring will be taken quarterly. Checklists will be developed to draw attention to the requirements of pre-construction and during the implementation of construction stage.

General Monitoring and Reporting requirements is provided in Table 30-1 Per the requirement of DENR and the conditions of the ECC, the results of environmental monitoring will be reported through the submission of the Self-Monitoring Report (SMR), Compliance Monitoring Report (CMR), and the Compliance Monitoring and Verification Report (CMVR).

These are submitted quarterly to the office of DENR except on CMVR, which is semi-annual. The quarterly data is plotted on a date timeline for each sampling location and measurement. Copies of laboratory analysis from the accredited laboratory are included as part of the reports. Records of daily, weekly, and monthly inspections including monitoring and corrective actions are logged in records and kept at the campsite office.

Two Independent Testing laboratories have been identified to be used for the analysis of the environmental quality parameters:

- OSTREA MINERALS for Ambient Air and Noise
- Davao Analytical Laboratories for Surface Water)

### **26.1 Summary of Environmental Monitoring plan**

Please refer to the below monitoring plan



Item	Monitoring Item	Monitoring		Frequency	Environmental Requirements
		Method	Site		
1	Pollution				
	Water quality (Surface Water)	<p>pH, DO, Oil and Grease, BOD, Fecal/Total Coliform, TSS</p> <p>Site measurement in accordance with methodologies described in DAO 34-1990 and DENR-EMB Manual for Ambient Water Quality Monitoring (Volume I)</p>	<p>2 Measurement point at existing river</p> <p>1 point at 100m upstream proposed bridge</p> <p>1 point 100m downstream downstream proposed bridge</p>	Quarterly	<p>pH: 6.5 to 8.5</p> <p>DO: 5.0 mg/L</p> <p>Oil &amp; Grease: 2.0 mg/L</p> <p>BOD: 7.0 mg/L</p> <p>TSS: 80 mg/L</p>
	Noise	<p>Ambient and Road side Noise (dBA Leq)</p> <p>Leq 10min during morning, daytime evening and night</p>	<p>same location with ambient air quality</p>	Quarterly	<p>Class A section of contiguous area which is primary a residential area</p> <p>daytime 9AM-6PM: 55 dB</p> <p>Morning/Evening 5AM-9AM 6PM: 10PM 50dB</p> <p>Nighttime 10PM-5AM: 45dB</p>
	Ambient Air Quality	<p>Level of TSP, NO<sub>2</sub>, SO<sub>2</sub>, CO<sub>2</sub> and CO</p> <p>Site measurement using the following methods</p> <p>TSP: Gravimetric Method</p> <p>SO<sub>2</sub>: Parosoline Method</p> <p>NO<sub>2</sub>: Griess Saltzman Reaction</p> <p>CO: Direct Reading (Gas Analyzer)</p>	<p>2 measurement point</p> <p>Residential area around station 23+900</p> <p>Residential area around station 27+900</p>	Quarterly	<p>TSP: 1hr - 300 µg/Ncm</p> <p>24hrs - 230 µg/Ncm</p> <p>SO<sub>2</sub>: 1 hr - 340 µg/Ncm</p> <p>24hrs - 180 µg/Ncm</p> <p>NO<sub>2</sub>: 1 hr - 260 µg/Ncm</p> <p>24hrs - 250 µg/Ncm</p> <p>CO: 1 hr - 30ppm</p> <p>24hrs - (every 8 Hrs) 9ppm</p>
	Waste	<p>Volume and type of waste cutting trees and domestic garbage</p> <p>Check records of amount and type of waste and disposal method</p>	<p>Cutting land section, cutting tree section and workers camp</p>	as per disposal of waste	
2	Natural Environment				
	Terrestrial Flora and Fauna	<p>Condition of vegetation</p> <p>Visual check of vegetation condition</p>	<p>Project sites</p>	Daily	
	Aquatic Flora and Fauna	<p>Checking the condition of water quality</p> <p>Visual Observation</p>	<p>Same as water quality</p>	Same as water quality	
3	Social Environment	<p>Condition of trees cut</p> <p>Check site condition</p>	<p>Project site</p>	As necessary	

Table 29. Summary of Environmental Monitoring Plan



4	Water Use	Complaint from the downstream area - Complaint from the groundwater user	check complaint record	Project site	As necessary
	Existing Social Infrastructure and Service	Complaint from the surrounding communities	check complaint record	Project site	As necessary
	<b>Health and Safety</b>				
	Infectious Disease	Awareness of infectious disease	Check records of awareness activities on infectious diseases	Project site	As necessary
5	Occupational Health	Record of Accidents in the construction Sites	Check record of accident in the construction site	Project Sites	As necessary
	Community Health and Safety	Records of traffic accident in the surrounding area	Check the records of traffic accidents in the surrounding communities	Project sites	As necessary
	<b>Emergency Risk</b>				
	Fire	Condition of Fire	Check site conditions	Construction sites and workers camp	As necessary

Source: Environmental Impact Statement (EIS 2014), JICA Environmental Monitoring Plan and TS B14



# Environmental Management Plan

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4	Water Use	Complaint from the downstream area - Complaint from the groundwater user	check complaint record	Project site	As necessary
	Existing Social Infrastructure and Service	Complaint from the surrounding communities	check complaint record	Project site	As necessary
	Health and Safety	Awareness of infectious disease	Check records of awareness activities on infectious diseases	Project site	As necessary
	Infectious Disease	Record of Accidents in the construction Sites	Check record of accident in the construction site	Project Sites	As necessary
5	Occupational Health	Records of traffic accident in the surrounding area	Check the records of traffic accidents in the surrounding communities	Project sites	As necessary
	Community Health and Safety	Condition of Fire	Check site conditions	Construction sites and workers camp	As necessary
	Emergency Risk				
	Fire				

Source: Environmental Impact Statement (EIS 2014), JICA Environmental Monitoring Plan and TS B14

# ANNEX 1

## Method Statement for Baseline Environmental Monitoring





## Environmental Management Plan

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### Baseline Environmental Survey Report

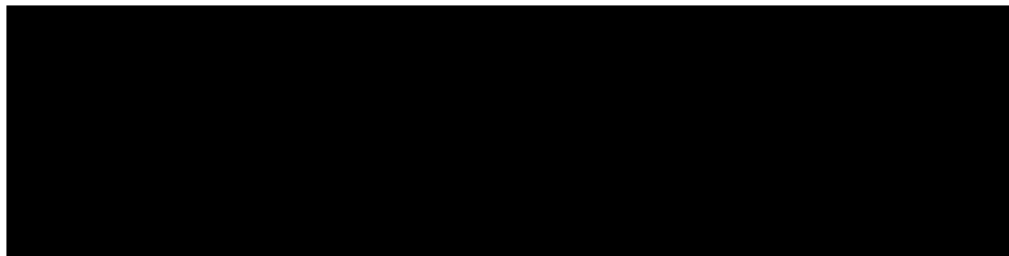
SUTJV-DCBCP-I3-BESR-001  
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Funded under JICA Loan Agreement No. PH-P273  
(CONTRACT ID NO. 21Z99008)

**Davao City Bypass Construction Project**  
**Package I-3, Sta. 23+500 to Sta. 29+700**

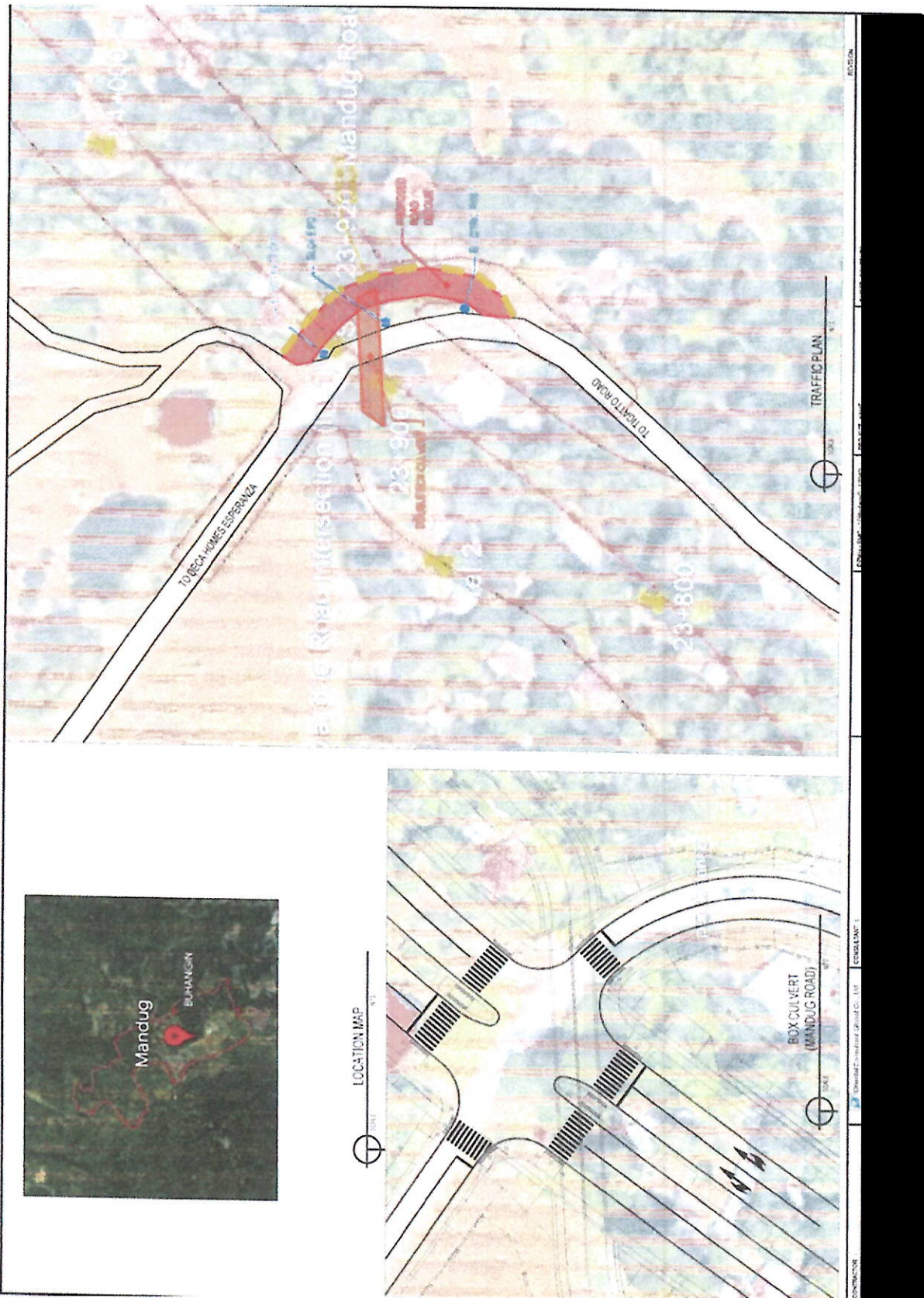
### Baseline Environmental Survey Report

SUTJV-DCBCP-I3-BESR-001 Rev. 0

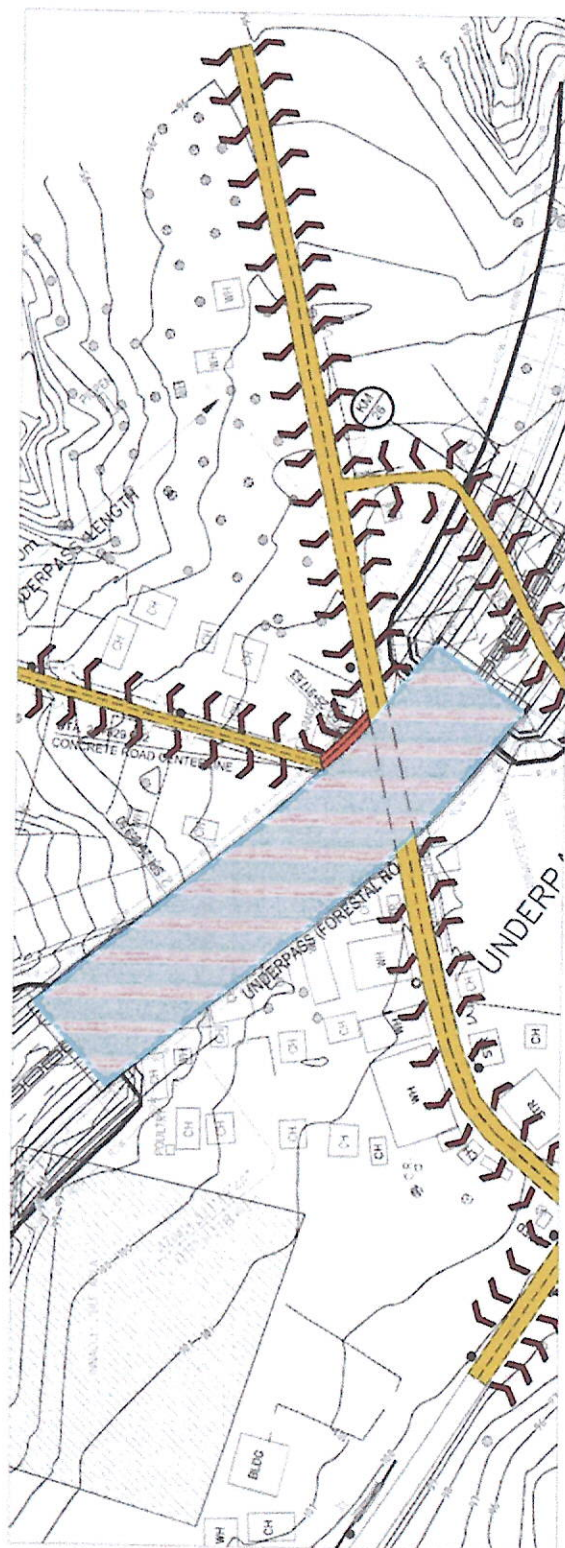


# ANNEX 1-A

## Traffic Management Plan

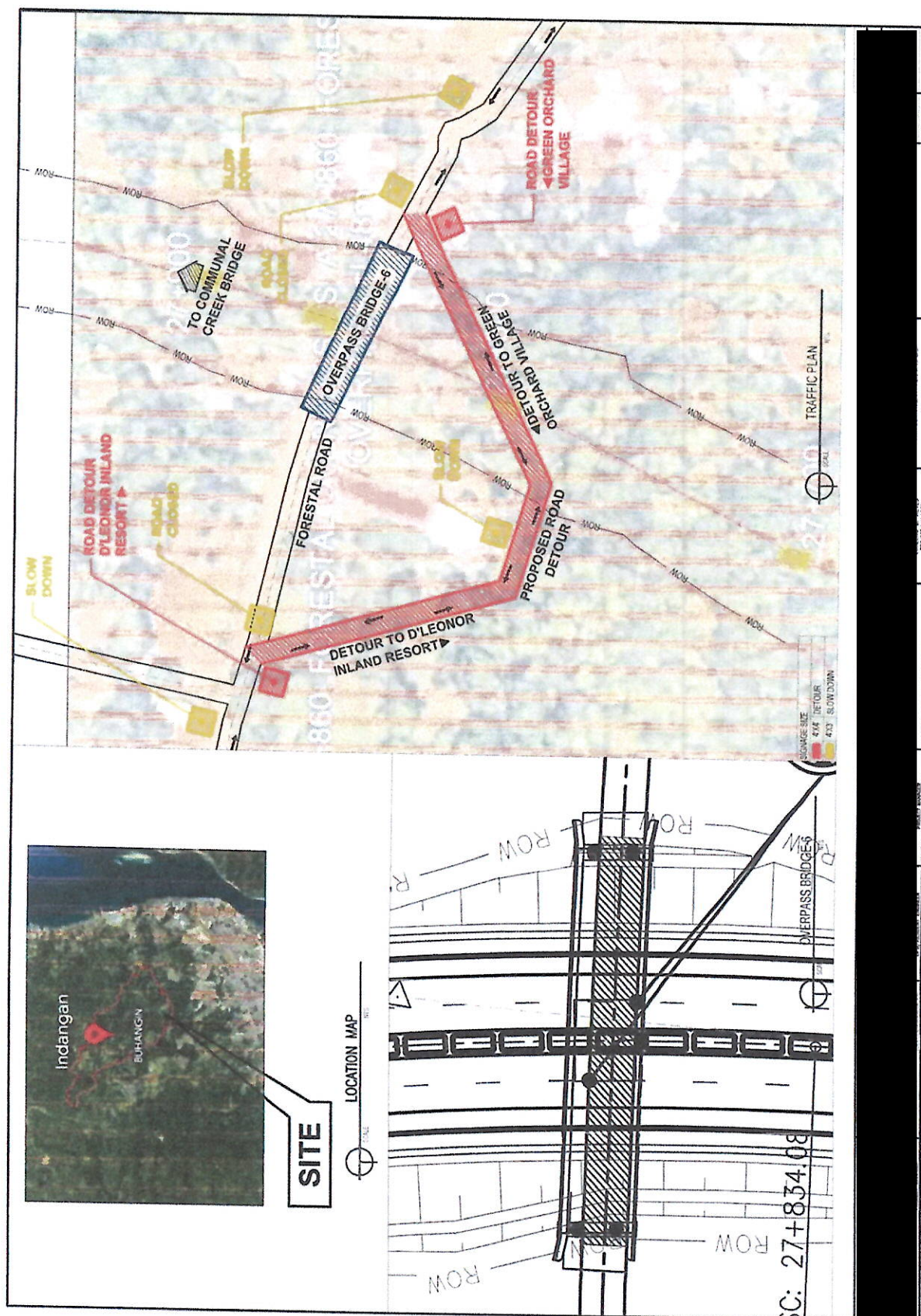




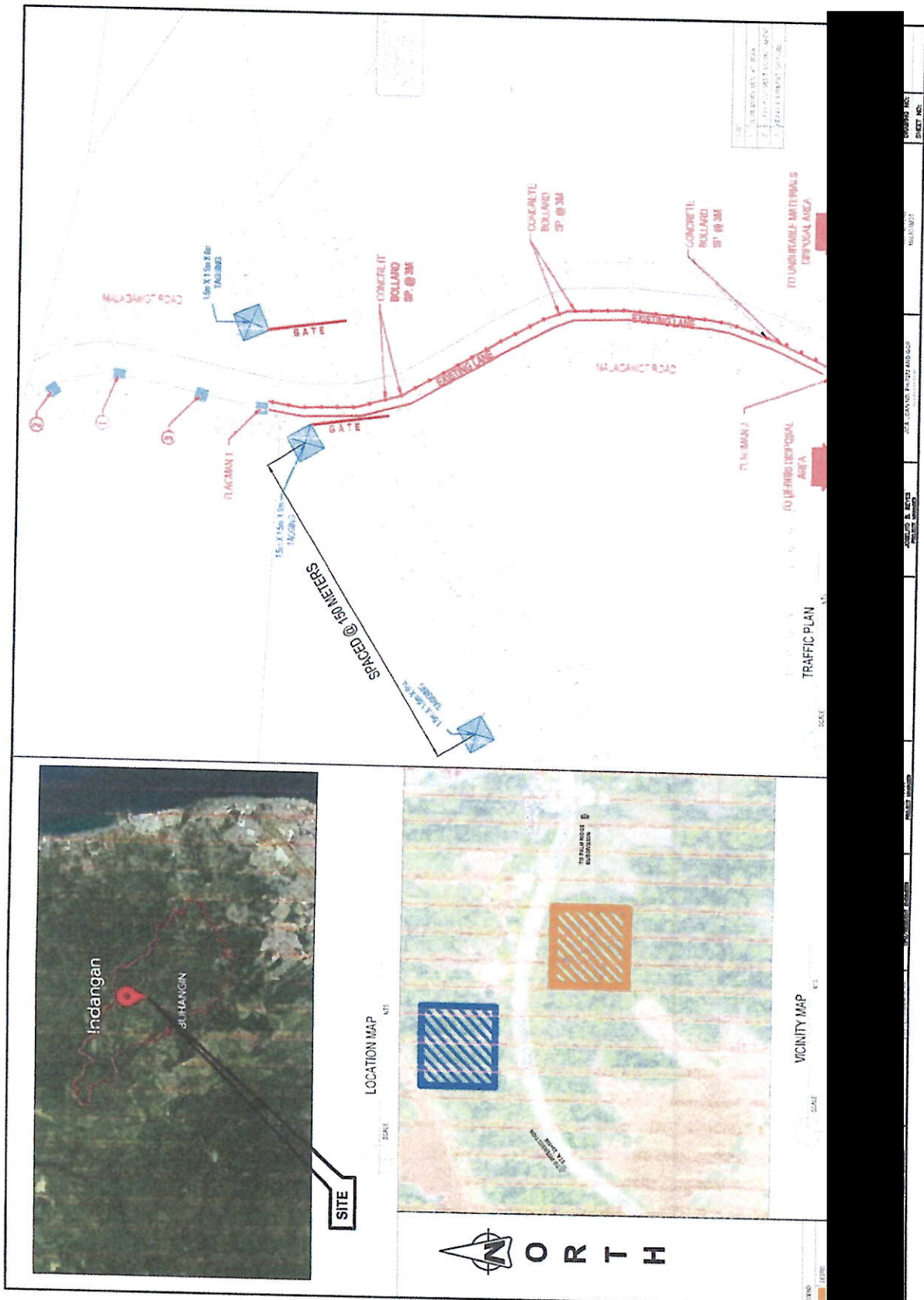


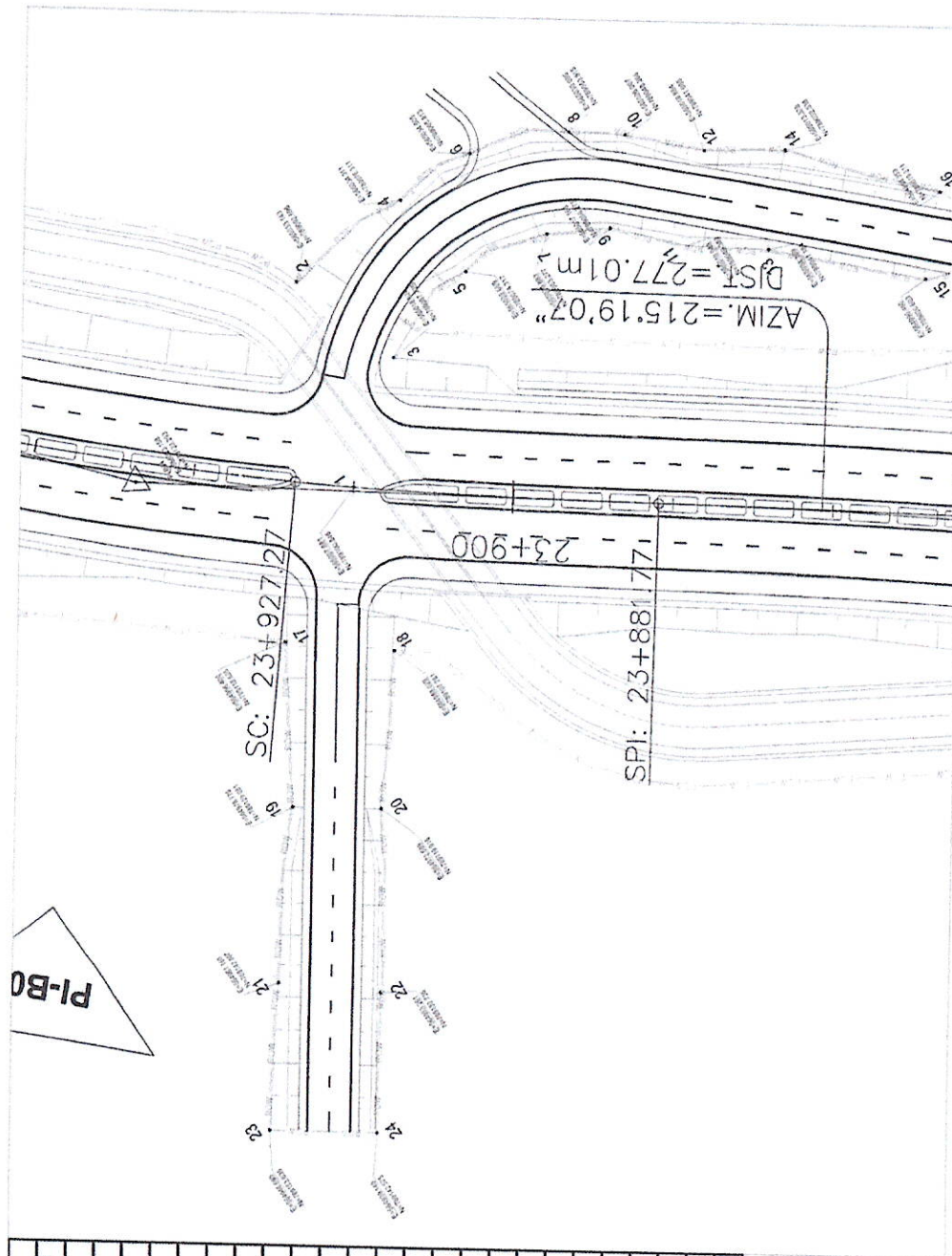








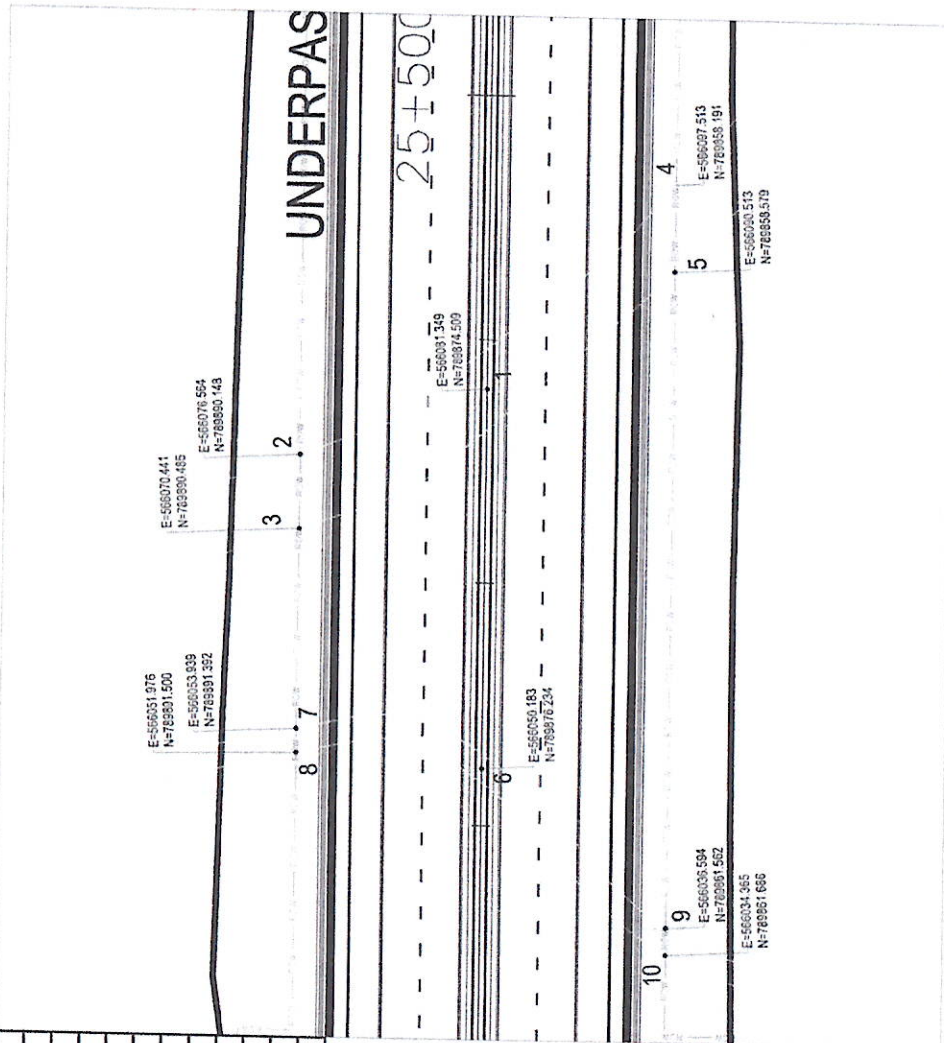




TIGATTO INTERSECTION			
POINT	EASTING	NORTHING	
1	565007.881	789100.846	
2	565033.143	789092.696	
3	565018.624	789087.725	
4	565034.311	789076.311	
5	565022.669	789074.317	
6	565034.605	789065.813	
7	565020.883	789063.277	
8	565030.095	789053.915	
9	565017.163	789056.273	
10	565026.007	789048.266	
11	565010.048	789049.382	
12	565018.884	789041.085	
13	565004.169	789041.184	
14	565013.378	789032.538	
15	564990.480	789026.603	
16	564998.353	789019.211	
17	564996.400	789118.625	
18	564988.029	789107.781	
19	564978.775	789129.081	
20	564972.589	789119.916	
21	564961.160	789142.807	
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23	564946.690	789153.636	
24	564939.140	789142.575	

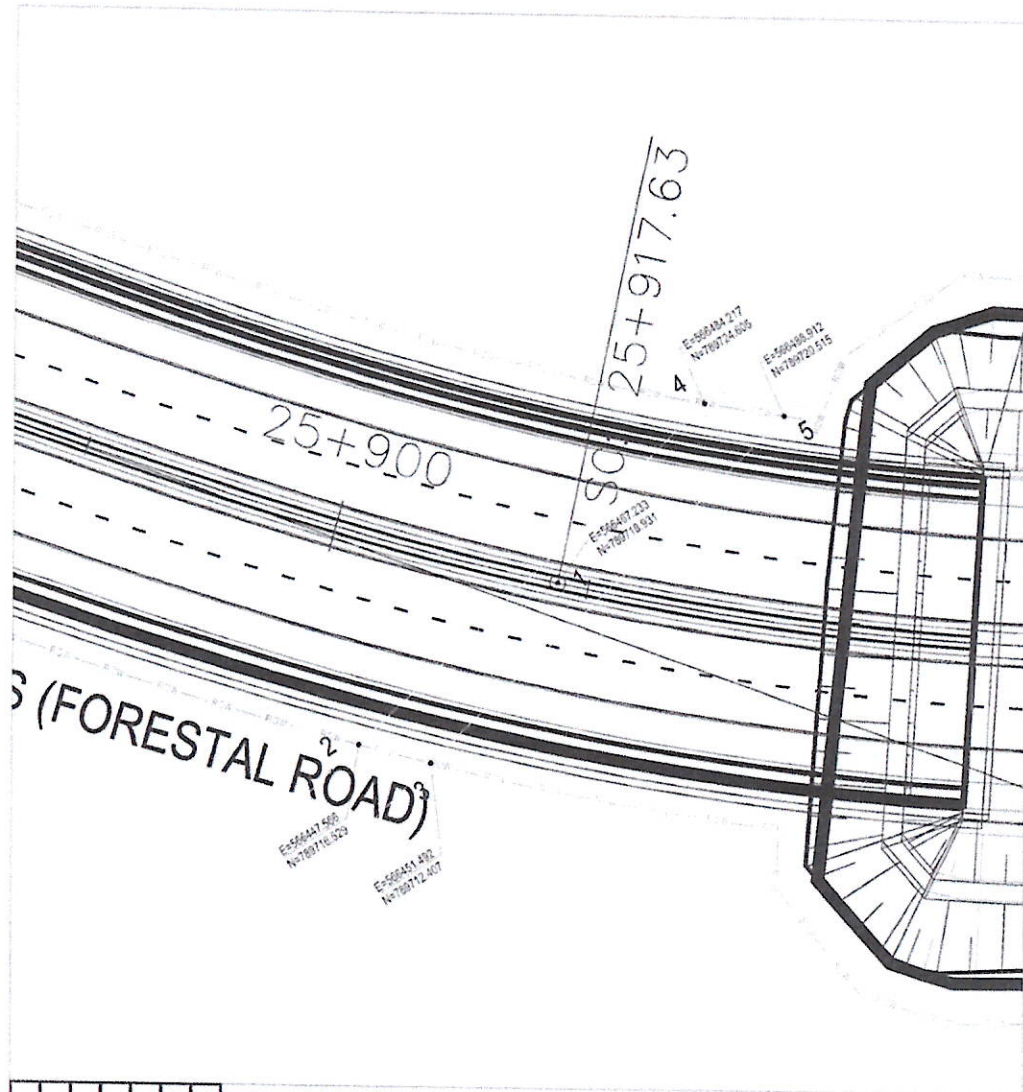
T I G A T T O I N T E R S E C T I O N

CABANTIAN UNDERPASS		
POINT	EASTING	NORTHING
1	566081.349	789874.509
2	566076.564	789890.148
3	566070.441	789890.486
4	566097.513	789858.191
5	566090.513	789858.579
6	566050.183	789876.234
7	566053.939	789891.392
8	566051.976	789891.500
9	566036.594	789861.562
10	566034.365	789861.686



C A B A N T I A N U N D E R P A S S





F O R E S T A L U N D E R P A S S

FORESTAL UNDERPASS		
POINT	EASTING	NORTHING
1	566467.233	789718.931
2	566447.566	789716.529
3	566451.492	789712.407
4	566484.217	789724.605
5	566488.912	789720.515

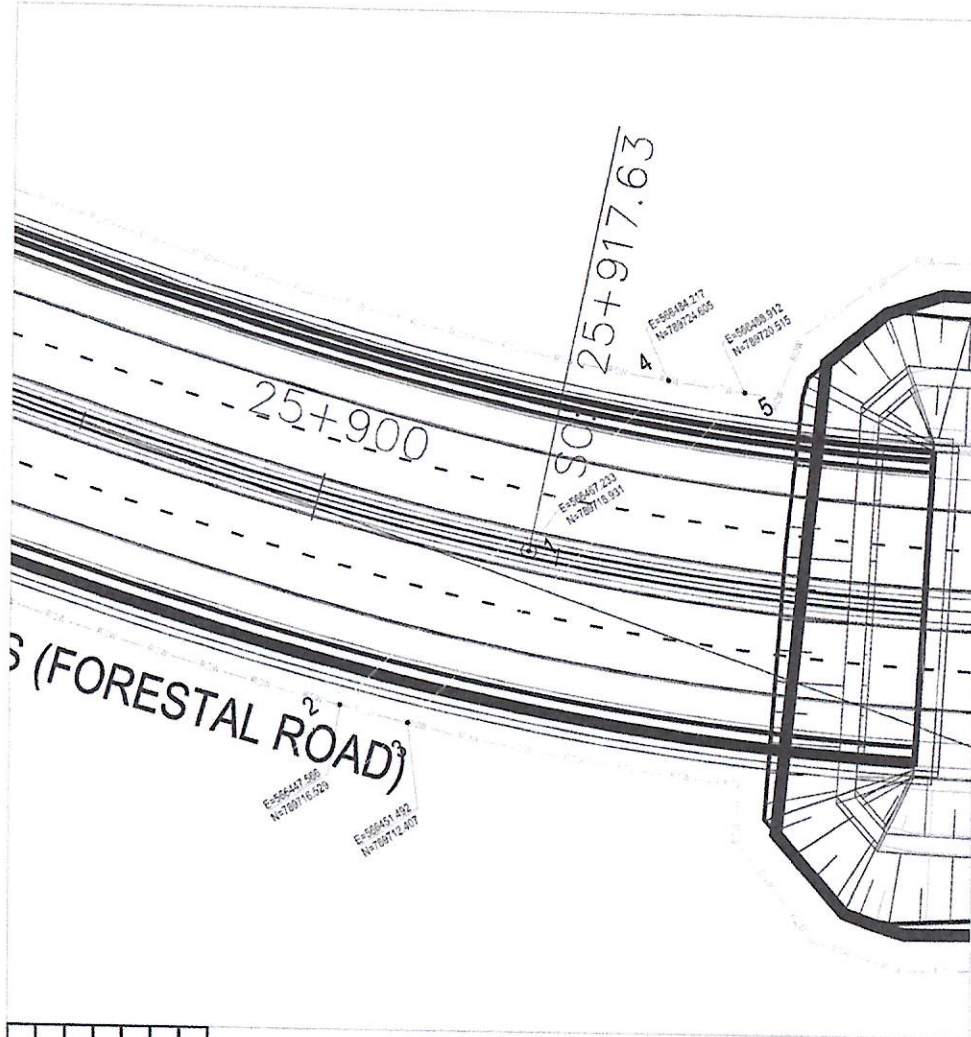


# Environmental Management Plan

SUTJV-DCBCP-I3-EMP

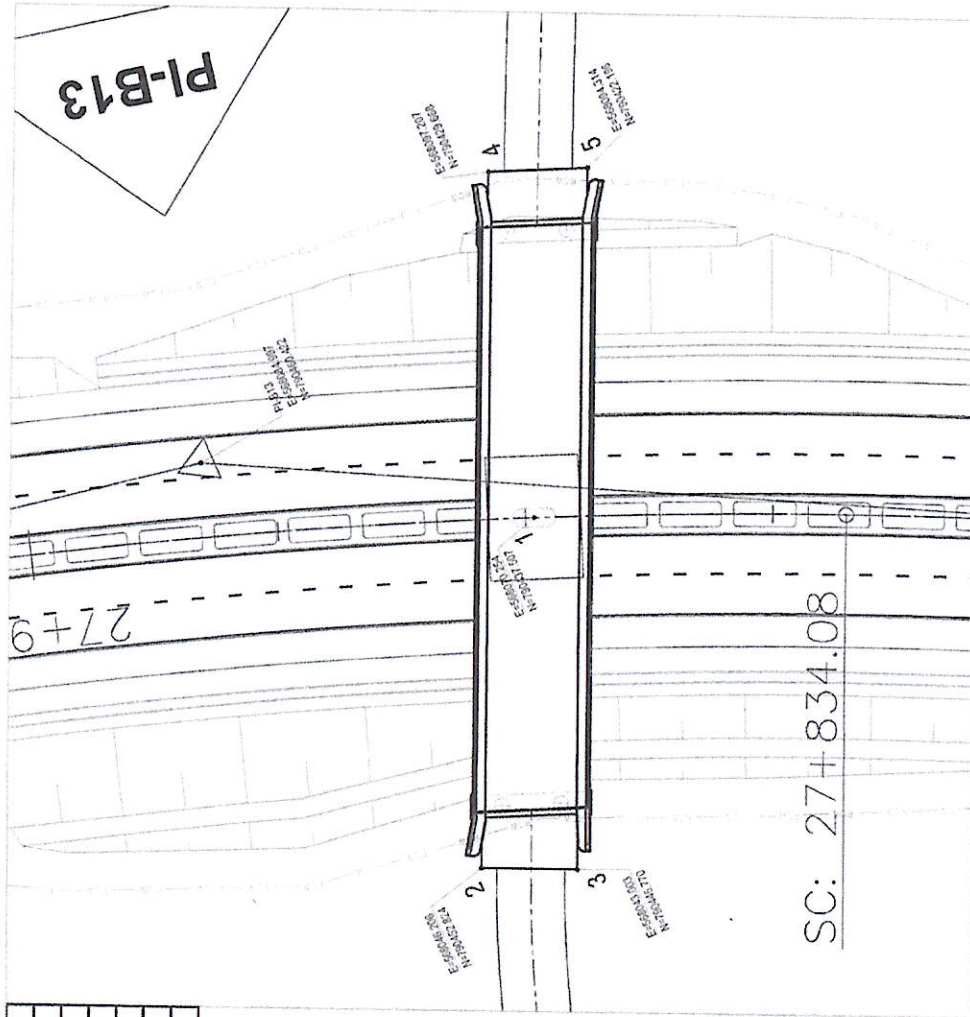
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F O R E S T A L U N D E R P A S S

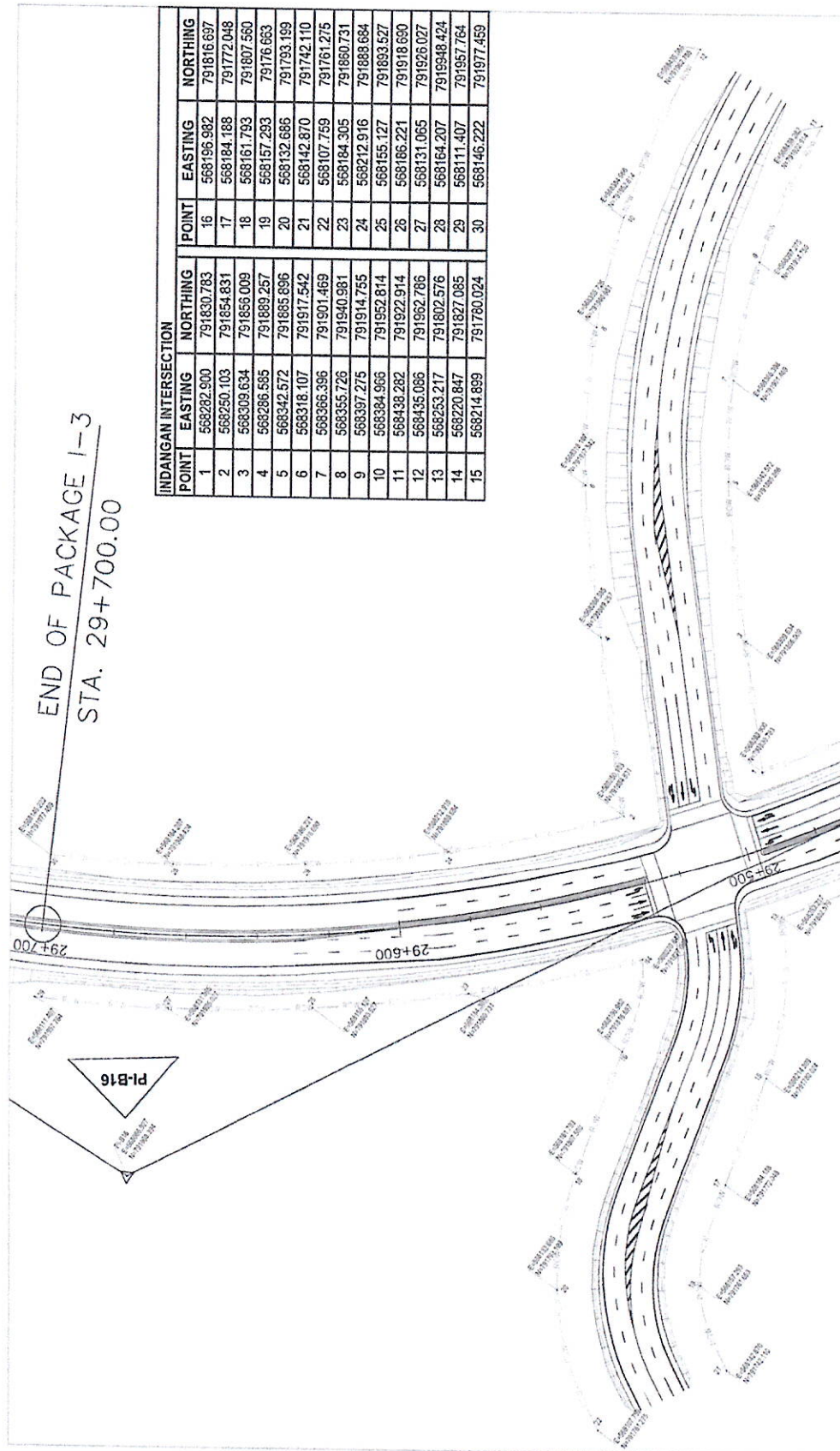
FORESTAL UNDERPASS			
POINT	EASTING	NORTHING	
1	566447.233	789718.931	
2	566447.566	789716.529	
3	566451.492	789712.407	
4	566484.217	789724.605	
5	566488.912	789720.515	



COMMUNAL CREEK BRIDGE			
POINT	EASTING	NORTHING	
1	568070.254	790437.507	
2	568046.206	790452.824	
3	568043.003	790445.770	
4	568097.207	790429.668	
5	568094.314	790422.196	

C O M M U N A L C R E E K B R I D G E





I N D A N G A N I N T E R S E C T I O N

# ANNEX 1-B

## Workforce & Site Management Plan

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## **1. Introduction**

The Davao City Bypass Construction Project (II), Package I-3 for the construction of 6.20km 4-lane road including one (1) river bridge, one (1) overpass bridge, and two (2) cut and cover tunnels. The contract was awarded to the Shimizu -Ulticon- Takenaka Joint Venture to carry out the Construction Work.

## **2. Purpose**

Workforce and Site Management Plans define the importances of Workforce and Sites on DCBP Package I-3 . SUTJV take into account the welfare of all its employees both international and local employees and also the camp site. SUTJV with all means will do their best to improve its Site conditions in a more environmentally friendly and safe manner for its entire workforce.

The principal objectives of this plan are:

- Workforce Management
- Site Management

## **3. Workforce Management Plan**

During the execution of the work, SUTJV employs skilled labour, semi-skilled labour, casuals and new graduates both male and female.

Under SUTJV, there are:

- Civil Works teams - Operators, Drivers, Supervisors, and its work force.
- Specialist such as Environment Specialist and Safety Specialist
- Engineers (bridge),
- Engineers (Tunnel)
- Surveyors
- Technicians
- SUTJV administration Staffs.
- Workshop - mechanics, welders, and electricians.
- Site workers.
- Public Relationship Officers.
- Chef and Cleaners.
- SUTJV Security Personals

### **3.1 SUTJV Workers Management**

SUTJV aims to produce a good, qualified workforce who do work efficiently without much supervision. SUTJV employs very skilled managers and supervisors in its departments such as workshop, tunnel section site and Bridge works and is prepared to train its workforce in all aspects of work. Finally, SUTJV wants its workforce to be well qualified and skilled in the profession they are in.

### **3.2 Workers Management Support**

SUTJV are preparing support its workers management with Logistic, Equipment's, Machineries, Managerial skills, and other professions. SUTJV will always allow its workforce to attend any workshop or seminars to gain advanced knowledge.

### **3.3 Skilled Work Force**

SUTJV employs both skilled and semi-skilled workforce. There are some international workforces who are very skilled in their profession and are very much willing to train local workers. Some skilled workforces are encouraged to work closely with international supervisors to gain more experience.

### **3.4 Casual Workers**

SUTJV will employ casuals from communities around the road, bridge, and tunnels where maintenance, repair and construction will take place. The SUTJV engineers, supervisors and P.R. Os are engaged to train, supervise and make sure communities participate in this project (package I-3).

The community engaged in casual work must be educated why they are doing this task and for what purpose, and what benefit they will gain from this project. A better understanding and good working relationship must be established between SUTJV and the communities. Especially for labour engagement, SUTJV will engage labours in different locations where the bridge and tunnel works are to provide more opportunity to locals and make them become skilled with its work program moving forward.

### **3.5 Engagement and Records**

SUTJV will engage unskilled labour in different communities based on actual needs of project and skilled labour from the whole Package I-3. SUTJV will keep complete and accurate records of the employment of labour at site. The records shall include the names, ages, genders, hours worked, and wages paid to all workers. All employees are encouraged to open their bank account and can be paid through bank transfer. Some other casual labour will be paid by cash if they really cannot open their bank account.

The salary is agreed between the employee and employer through negotiation based on the qualification of employee. Employees will be promoted or demoted or remain still based on their performance and assessment from management in accordance with regulations of company.

### **3.6 Documentation of Employees**

Contract agreements shall be signed between employer and employee in time and filed properly. Pay slips shall be issued to employees within one week after their pay and filed properly.

## **4. Site Plan**

SUTJV Camp Sites is not yet finalized as of today.

### **4.1 Camp First Aid**

The construction camp will be equipped with a first aid and health-post which will include first aid and basic medical supplies. To reduce the risk of incidents at the camp, access to construction camps by other than authorized workers and people will be prohibited.

#### **4.2 Camp Toolbox Meetings**

SUTJV will instruct and induct all workers in health and safety matters (induction course) including construction camp rules and site agents will follow up with toolbox talks on a weekly basis. Workforce training for all workers starting on site will include safety and environmental hygiene.

Also, other awareness like HIV & Aids, STI awareness will be conducted regularly at the camp site

#### **5. Conclusion**

SUTJV Workforce and Site Management Plan will be seriously looking at educating and training its workforce in the following fields and also a camp site conducive for employees to live in and work.

- Equipment and machinery maintenance
- Roads and bridges structural program
- Management and operation of batching plant
- Supervision, budgeting, works, planning and programing
- And SUTJV work force must be fully aware of workplace safety environmental issues and social problems related to SSEMP. These issues will be taken up by SUTJV professional staff. SUTJV doesn't want to leave anyone left behind in its enduring to train and educate its work force.



# ANNEX 1-C

## Contractor's Campsite Management Plan

**Funded under JICA Loan Agreement No. PH-P273**

**(CONTRACT ID NO. 21Z00008)**

**Davao City By-Pass Construction Project (II),  
Package I-3, Sta. 23+500 to Sta 29+700**

# **CONTRACTOR'S CAMPSITE MANAGEMENT PLAN**

## Camp Management Plan I

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## **1. Introduction**

Davao City Bypass Construction Project (II), Package I-3 for the construction of 6.20km 4-lane road including one (1) river bridge, one (1) overpass bridge, and two (2) cut and cover tunnels and serve as a baseline data for monitoring during the construction stage of the project.

. The Campsite Management Plan is the plan in which Shimizu-Ulticon-Takenaka Joint Venture will act upon to ensure that the camp area and its facilities are safe and conducive for its workers. The plan will guide and protect the employees, properties and other stakeholders from any harm or loss of any valuable properties and assets in the SUTJV campsites.

## **2. Objective**

This camp site management Plan for Davao City Bypass Construction Project Package I-3 will ensure that the employees of Shimizu-Ulticon- Takenaka Joint Venture, visitors, other stakeholders and the surrounding communities at the campsite are guided by set rules and guidelines that protect the camp area and those that uses it.

## **3. Location**

SUTJV has not yet finalized the location of the campsite and yard.

## **4. Duties and Responsibilities**

### **4.1 Project Manager**

- The Project Manager (PM) has the highest authority to ensure the implementation of the campsite management plan. Specifically, the Project Manager is responsible for:
  - o Allocation of resources, to ensure that the campsite management plan is implemented.

### **4.2 Project Engineer**

- In coordination with the project manager the project engineer develops the actual campsite design plan for construction and maintenance.

### **4.3 Construction Manager**

- In coordination with the project engineer and manager, the construction manager constructs the campsite.

### **4.4 Environmental Protection Manager**

- responsible for the implementation of the campsite management plan

### **4.5 Health and Safety Manager**

- Monitoring and reporting of the overall state of the campsite.
- Report on all safety issues including incidents.

### **4.6 Landlord**

- The landlord is responsible to assist the management and the HSM in protecting and reporting any issues that may arise within the camp.

## 4.7 Staff/Workers

- Workers and staff are to adhere to all campsite rules and regulations.

## 5. Trainings/Induction

Table 1. Training/Induction Responsibilities

No.	Training/Induction	Location	Person Responsible	Target Group	Freq
1	Environmental, Health, and Safety, Air, Noise, water and Waste Management,	Campsite	HSEO	Workers	Monthly
2	HIV/AIDS/STI's	Campsite	Service Provider	Workers	Quarterly
3	Emergency Response	Campsite	HSEO	Workers	Quarterly

## 6. Campsite Management Plan

### 6.1 Campsite

The camp comprises of lodging areas, offices, mess, sewerage facilities, laboratory, workshop, and storage areas.

### 6.2 Air Quality

Air Quality in campsite is important for the well-being of all workers. During pre-construction and construction phase dust and emissions will have an effect on the workers and the surrounding residents in campsite. SUTJV will adhere to all necessary mitigative measures to minimize the effects.

### 6.3 Noise and Vibration

Increase in noise and vibration levels are expected with the operation of the construction equipment, operation of the batching plant if there is movement of trucks and the workshop area. Sustained noise could lead to hearing impairment to construction crews directly operating or working near the equipment and residents in the area. This applies to all machinery and vehicles in the campsite where noise and vibration may affect susceptible receptors. The improvement/rehabilitation works would inadvertently result to increased noise levels in the area.

Among the impacts identified are the following:

- The operation of heavy equipment and various construction machinery are primary noise generators. It is projected that noise levels could reach from 65 to 80 dB (A) at peak times; and
- Poor maintenance of equipment may cause very high noise levels. Faulty or damaged mufflers, loose engine parts, rattling screws, bolts, or metal plates all contribute to increasing the noise level of a machine as well as careless or improper handling and operation of equipment.



## **6.4 Wastes**

### **6.4.1 Wastewater**

SUTJV will ensure that no untreated wastewater will be discharged into the nearby the nearest water bodies. Waste water from sewerage and shower rooms will go through the main three chambered septic tank. Measures to prevent proliferation of mosquitoes shall be implemented (e.g., provision of insecticide treated mosquito nets to workers, installation of proper drainage to avoid formation of stagnant water).

Standing water will not be allowed to accumulate in the temporary drainage facilities or along the roadside. SUTJV will secure a discharged permit from DENR-EMB R11 in case there will be a wastewater discharged.

### **6.4.2 Sewerage**

Sewerage wastes cause serious environmental damage if not properly managed. Sewerage is expected be to produce since workers will be stationed there permanently depending on the lifespan of the project. Sewerage waste can cause human health problems if allowed to mix with drinking water source, produce bad odor that will attract household flies that would lead to other ecological problems.

In addition, sewerage waste effluence contains loads of Ammonia (NH<sub>4</sub>) and Nitrate (NO<sub>3</sub>) which are essential for plant nutrients like legumes. If allowed to reach a water body without been treated well, it will encourage growth of invasive plants that would colonize the area rapidly affecting other aquatic flora and fauna (especially native species) through the process known as Eutrophication.

### **6.4.3 Solid Wastes**

Solid Wastes include Off-cut timber and concrete, Kitchen, Scrape Metals & General Rubbish which have the potential to cause environmental harm. During the construction of the camp site, such waste is guaranteed to be produced. SUTJV will ensure the solid wastes are disposed of responsibly.

### **6.4.4 Laboratory Wastes**

Waste water from the laboratory area will be collected in buckets and disposed of at the camp site settling pond.

### **6.4.5 Workshop wastes**

The workshop will create several specific wastes (Such wastes include waste oil, fuel and oil filters, batteries, tires, etc) that can cause environmental damage if not properly managed. SUTJV will secure Hazardous waste Identification from DENR-Emb Region 11, and disposal will be DENR-EMB Treatment, Storage and Disposal accredited facility only.

#### **6.4.5.1 Wastes oil**

Waste Oil results during the servicing of machinery. Waste oil is a pollutant and causes contamination of water courses. Severe oil pollution will cause considerable biological damage.

#### **6.4.5.2 Fuel and Oil Filters**

These wastes are created by regular service of plant and vehicles in a road construction workshop. Environmental issues that may arise as a result of mismanaging fuel and oil filters include but not limited

to surface and ground water pollution, human health issues if ingested and contamination of soil.

#### **6.4.5.3 Used Tires**

Generally, in Davao there are problems with disposal of used tires. They have limited values as recycled products and when disposed of they do not readily decompose. SUTJV will make sure that all used tires are retained in the company workshop and disposed of properly.

Environmental issues that may arise because of mismanaging used tires includes.

- Tires create environmental risk when they are burnt. The toxic black smoke produced can affect lungs when inhaled in by workers or observers.
- They also collect water, which can be used by mosquitoes as a breeding habitat, thereby increasing the risk of malaria and dengue.

#### **6.4.5.4 Other Wastes (Batteries, Used Parts etc.)**

SUTJV is aware that regular supplies of damaged machinery parts accumulated at workshops and can cause a range of environmental problems and need careful disposal or good maintenance.

In addition, used vehicle and machinery batteries will accumulate at the workshop. Used parts have sharp edges and present a risk to safety. Sometimes they collect water and provide breeding ground for mosquitoes. They are also unattractive and as a result cause visual pollution. Lead batteries can be very harmful if digested by animal or human being hence they require specific management approach.

### **6.5 Storage**

Solid waste will be segregated according to the type of wastes produced and disposed accordingly. Biodegradable materials from the kitchen will be re-used to make garden/flowerbed compost inside the camp site. Residual solid wastes from the camp site will be transported to Davao City Landfill Facility on a weekly basis.

### **6.6 Removal**

No waste shall be disposed prior to the receipt of written approval and permission from the Engineer. Removal and transportation will depend on the waste produced. SUTJV will transport waste from the camp site every week to Davao City Landfill Facility. Solid and workshop area will be segregated into separate bins and taken to the dump site when filled.

Construction waste from the road will be transported to Davao City Landfill Facility. The truck transporting the waste will not be filled to the capacity to avoid waste from falling off the vehicle.

### **6.7 Management and Treatment**

- Dispose of at properly established disposal bins on site.
- all non- biodegradable solid waste that are not harmful to the environment must be separated from those that are or can cause negative impact to the environment such as tires, used oil/fuel filters will be stored and disposed of at appropriate designated location approved by DENR-EMB.
- All recyclable items to be brought back to camp site for recycling. Anything that can be reused



will be reused on site.

- Encourage minimization of waste generation on site.
- Always dispose in proper waste bins. Color code bins to encourage waste segregation at source.

## **6.8 Hazardous Wastes**

Hazardous wastes include Junk/Spoilt Chemical and Fuel Transfer that are associated with machinery workshops. These materials are hazardous and are able to cause severe environmental damage if carelessly handled.

SUTJV will ensure that all dangerous goods are properly managed to avoid any spills that may cause harm to the existing environment, including flora and fauna life, aquatic life and water quality with application of the following mitigation measures.

## **6.9 Use of Hazardous Materials**

Use of hazardous substances such as oils and lubricants can cause significant impacts if uncontrolled or if waste is not disposed correctly. Oils and lubricants discharged to vegetation can kill plant roots. SUTJV will implement mitigation measures to control access to and the use of hazardous substances such as oils and lubricants and control waste disposal.

Improper storage and handling of hazardous materials may result in the pollution of the surrounding areas. The poor handling and storage of large quantities of construction materials will lead to the loss of aesthetic values of the environment. The hazardous materials and waste management section of the SSEMP will include consideration of all matters related to hazardous waste disposal including the following.

- Expected types and volumes of hazardous materials and waste.
- Methods for treatment and disposal of all hazardous waste.
- Approvals and environmental licenses required from DENR EMB.
- Methods of transportation to minimize interference with normal traffic.

## **6.10 Erosion and sedimentation**

During the construction period, there will be various temporary uses of land such as for contractor's facilities, office, worker camps, storage of equipment and materials and service area.

The natural landscape may be damaged from unnecessary destruction, clearing and defacing of the natural surroundings. These are, however, minimal and temporal in nature and will be mitigated through measures established in the SSEMP.

Soil erosion is expected when site clearing commences. Vegetation cover shall be removed exposing soil to the elements. During heavy rains, these loose soil materials will be carried away by run-off to the creeks and eventually to the river.

The impacts during this phase will be of short duration and will be moderate. The magnitude of the impact can be considered low although the impact is still negative because the landscape will be significantly changed. The duration of the impact is permanent.



## 6.11 Mitigation Measures

Table 2: Campsite Environmental Impacts and Mitigation Measures

No	Specific Location	Impacts	Mitigation Measures
1	Camp Sites	Dusts/Air Quality	<ul style="list-style-type: none"> <li>- Dust suppression by water spraying.</li> <li>- A vehicle exhaust emission will undergo immediate servicing.</li> <li>- No burning of any wastes</li> </ul>
		Noise & Vibration	<ul style="list-style-type: none"> <li>- Install a temporary construction site sound barrier near a noise source.</li> <li>- Avoid night-time construction in residential neighborhoods.</li> <li>- Monitor and maintain equipment to meet noise limits.</li> </ul>
		Wastewater	<ul style="list-style-type: none"> <li>- Waste water from sink and kitchen will have separate settling pond.</li> </ul>
		Sewerage	<ul style="list-style-type: none"> <li>- Double compartment septic tanks will be used for on-site wastewater treatment.</li> <li>- Before allowing sewerage effluence to leach out, effluent will be treated with chlorine tablets.</li> <li>- Treat wastes with necessary chemicals to avoid bad odor, foul smell and attraction of houseflies.</li> <li>- Prevent spread of diseases by implementing strict toilet use and hygiene practice.</li> <li>- Sanitary waste shall be collected, tankered and disposed of thru approved service providers by DENR- EMB</li> </ul>
		Wastes	<ul style="list-style-type: none"> <li>- wastes to be collected in bins.</li> <li>- Wastes categorization/separation (Organic/In-organic) and placed into separate bins</li> </ul>
2	Site Office	Dusts	<ul style="list-style-type: none"> <li>- Office area to be kept clean at all times.</li> <li>- One assigned cleaner responsible for cleaning the office every morning</li> </ul>

		Noise & Vibration	<ul style="list-style-type: none"> <li>- Monitor and maintain equipment to meet noise limits</li> </ul>
		Wastewater	<ul style="list-style-type: none"> <li>- Sanitary waste shall be collected, tankered and disposed of thru approved service providers by DENR- EMB</li> </ul>
		Office Wastes	<ul style="list-style-type: none"> <li>- Office wastes to be collected in bins.</li> <li>- Wastes categorization/separation (Organic/In-organic) and placed into separate bins</li> </ul>
3.	Yard/Workshop Area	Dust	<ul style="list-style-type: none"> <li>- Dust suppression by spraying water</li> </ul>
		Noise & Vibration	<ul style="list-style-type: none"> <li>- Monitor and maintain equipment to meet noise limits</li> </ul>
		Wastewater	<ul style="list-style-type: none"> <li>- Sanitary waste shall be collected, tankered and disposed of thru approved service providers by DENR- EMB</li> </ul>
		Wastes Oil	<ul style="list-style-type: none"> <li>- All Waste Oil will be collected in drums (44-gallon drums) and stored securely and separately on the Hazardous waste storage facility.</li> <li>- All hazardous waste treated and /or disposed by DENR-EMB accredited TSD facility shall issue Certificate of Treatment/s (COT) as proof of treatment/disposal</li> </ul>
		Fuel & Fuel Filters	<ul style="list-style-type: none"> <li>- All used fuel and oil filters will be gathered up into one container at the workshop</li> <li>- All hazardous waste treated and /or disposed by DENR-EMB accredited TSD facility shall issue Certificate of Treatment/s (COT) as proof of treatment/disposal</li> </ul>
		Used Tires	<ul style="list-style-type: none"> <li>- Where possible used tires are used for erosion control or brgy level decoration</li> <li>- Used tires will not be burn</li> </ul>
		Other Wastes	<ul style="list-style-type: none"> <li>- Workshop Manager to make regular inspections of the storage and disposal</li> </ul>

			<p>of used parts and provide monthly reports to SUTJV Management.</p> <ul style="list-style-type: none"> <li>- All hazardous waste treated and /or disposed by DENR-EMB accredited TSD facility shall issue Certificate of Treatment/s (COT) as proof of treatment/disposal</li> </ul>
		Hazardous Wastes	<ul style="list-style-type: none"> <li>- Reuse and discourage junk and obsolete chemical generation.</li> <li>- Staff and workers involved in the management and utilization of oils, fuel and lubricants are shall be properly trained in the handling, storage and dispensing of such materials;</li> <li>- Petroleum, oil and lubricants and any other hazardous substances shall be clearly marked/labelled and shall be stored in securely locked, fenced and properly designated areas away from water courses/bodies;</li> <li>- All hazardous waste treated and /or disposed by DENR-EMB accredited TSD facility shall issue Certificate of Treatment/s (COT) as proof of treatment/disposal</li> </ul>
4.	Laboratory	Dusts	<ul style="list-style-type: none"> <li>- To be cleaned each day after use so that dust is minimized.</li> <li>- The Lab team will be informed of the</li> </ul>

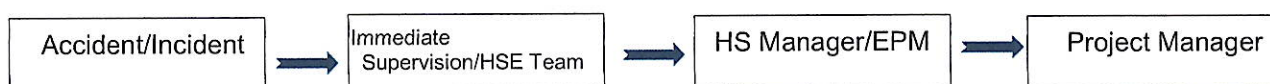


			<p>company's stance on promoting a safe a healthy working area.</p> <ul style="list-style-type: none"> <li>- Dust will settle one way or the other inside the lab, the lab team will ensure a complete clean-up each month to maintain a dust free working zone</li> </ul>
		Wastewater	<ul style="list-style-type: none"> <li>- Sanitary waste shall be collected, tankered and disposed of thru approved service providers by DENR- EMB</li> </ul>
5.	Storage Area	Dust	<ul style="list-style-type: none"> <li>- Dust Suppression by spraying water</li> </ul>
		Noise & Vibration	<ul style="list-style-type: none"> <li>- Monitor and maintain equipment to meet noise limits</li> </ul>
6	Campsite	HIV/AIDS/STI's	<ul style="list-style-type: none"> <li>- Awareness and testing to be done by Local Service Provider</li> </ul>

## 7. Incident Reporting

The following reporting procedure shows how the information of incidents is to be sorted out for responses accordingly. This procedure is a blue print of all cases including extreme emergency cases that need immediate contingency plans. The communication channel is vice versa.

Figure 3: Reporting procedure for SUTJV Campsite during an Accident/Incident



## 8. Monitoring Performance

Monitoring includes monitoring parameters, location, method and frequency of the monitoring. The plan is to monitor the mitigation measures mentioned at table 1.

Table 3: Campsite Monitoring Parameters

No.	Monitoring Parameters	Method	Responsible	Freq
1	Emission and Dust	(High-volume method	EPM via 2nd party DENR-EMB testing laboratories	Quarterly
2	water	Standard Methods for the Examination of Water and Wastewater, 23 <sup>rd</sup> edition	EPM via 2nd party DENR-EMB testing laboratories	Quarterly
3	Waste disposal	Visual assessment/Waste Manifest/Trip Ticket	EPM	Weekly
4	Noise	Sound level Meter	EPM	Weekly

## 9. Commitment and Conclusion

This campsite management plan is to comply with the Site-Specific Environmental Management Plan and other environmental regulatory bodies as specified in the regulatory framework in the SSEMP.

SUTJV is committed to implement the CMP to protect its workers and the surrounding environment and to comply with all environmental local legislation, and all its subsequent regulations; international commitments, technical guidelines, and all other issuances; as well as good international management practices.



# ANNEX 1-D

## Site Security Management Plan



**Funded under JICA Loan Agreement No. PH-P273  
(CONTRACT ID NO. 21Z00008)**

**Davao City By-Pass Construction Project (II),  
Package I-3, Sta. 23+500 to Sta 29+700**

# **SITE SECURITY MANAGEMENT PLAN**

## Site Security Management Plan

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## Abbreviations

DCBCP – Davao City ByPass Construction project  
SSMP - Site Security Management Plan  
DPWH - Department of Public Works and Highway  
PM -Project Manager  
PRO -Public Relation Officer  
SUTJV – Shimizu -Ulticon- Takenaka Joint Venture  
SM - Safety Manager



## **1 Executive Summary**

This Site Security Management Plan (SSMP) for Package I-3 will ensure that the employees of SUTJV, visitors, other stakeholders and the surrounding communities along the project sites are to be protected from any harm related issues.

## **2 Introduction**

The Site Security Management Plan (SSMP) is the plan in which SUTJV will act upon it to ensure the Safety and Security of its employees, properties, and business partners. The plan will guide and protect the employees, properties and other stakeholders from any harm or loss of any valuable properties and assets along the Package I-3 construction sites.

Safety and Security is important due to the nature of the work/project. Construction sites on bridge and tunnel locations require manageable security and safety measures to implement a safer working environment.

In addition, Law and Order Issues is becoming an issue within communities and along the highways thus most security assurances and comfort will come from the Philippine National Police through effective communications system and up to date contacts.

## **3 Objective and Scope**

The objective of the site security plan is to ensure that workers, staff, visitors and the community where works are being conducted are safe and protected from thieves and other persons with intention to create trouble or harm to others.

The scope of the site security plan includes the following:

- Develop and implement security measures and protocols for site works and review its security measures and protocols in particular after the occurrence of incidents or emergency situations.
- Provide security/police escort on bridge and tunnel locations known to be a threat to the workers and personal visiting the sites

## **4 Duties and Responsibilities**

### **4.1 Project Manager**

The Project Manager (PM) has the highest authority to ensure the implementation of the site security plan.

Specifically, the Project Manager is responsible for:

- Allocation of resources, to ensure that the security personal is available on work site deem dangerous for workers and work equipment.

### **4.2 Safety Manager**

In coordination with the Project Manager and Police Escort in-charge conducts weekly briefings to site personnel and workers with regards to security issues, threats, and mitigation measures. Also assist and give inputs to police officers/Commanders on possible threat location and reports coming from the workers.

## 4.3 Police Escorts

Shall in coordination with Police escort in-charge ensure the security of workers and staff working at sites. Also, with the help of company PRO conducts peaceful settlement of dispute with company and community if any. Ensure that the security threat in the work area is reduced to acceptable levels or acted upon.

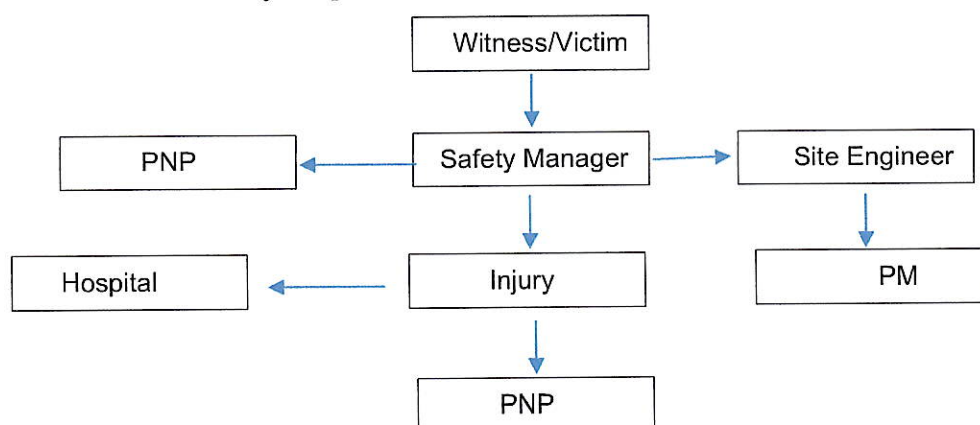
## 4.4 Workers

Reporting any threat or acting of violence to the police escorts or site supervisor. Don't engage themselves if threats arise in the work area.

## 5. Security Scenario and Response

Emergency Scenarios	Response	Preventive Measures
Theft/ personal items stolen Stealing of personal items with the use of knives or	Check your surroundings as much as possible. Don't act violently and give them what they want. Report the incident to the police escort for possible recovery of stolen items	As much as possible don't carry expensive items when doing site visits or working at site. Work or travel in group and when travelling in well know dangerous areas make sure to bring police escort
Hijacking of vehicles or work equipment and machineries	When inside a private vehicle check the surrounding and if possible don't stop Report the incident to the Police Escort immediate so it can be responded.	Work or travel in group and when travelling in well know dangerous areas make sure to bring police escort When moving machineries long distance make sure it is accompanied by Police Escort
Community violence or clan violence happening near the work location	Stay away as much as possible from the location and immediately inform the police escorts. Site supervisor to control their workers not to join or cheer on the going violence	Stay away and report to the assigned police escort. Move to different work area if possible.

## 6. Follow Chart and Security Response



## 7. Communication and Training

SUTJV is committed to ensuring that safety and security of personnel in the work site are attended. Thus, it is encouraging all workforces to report any forms of threat, violence, and possible dangerous areas. Regular communication is necessary to get this type of information from the workforce.

## 8. Security Trainings

Workers and staff will be trained in the basic security protocols, contact persons, how to assess threats and how to peacefully disburse any conflict within their communities.

## 9. Reporting and Investigation

Workers are encouraged to report any security related incident to their area supervisor. So, a proper investigation can be taken place and lessons learnt can be disseminated to the workforce.

## 10. Weekly Security Meeting

Weekly meetings conducted by the site safety manager and Police Escort in-charge to discuss security matters and measures to the workforce. Workers can voice their concerns and recommendations on how to improve the security protocols at specific work scope/Sites.

## 11 Security Resources and Allocation

Work Location	Security Details	Shifting and Timing	Remarks
Civil Worksites (Road, bridge and Tunnel)	2 police escorts with armaments and vehicle	Dayshift	Each civil site should have a standby 2 police escort. Threat to be assessed by police escort in-charge and safety manager
Work equipment on standby or not in the work area	1 community look out but patrolled by police escort near the location	Dayshift & Night Shift	
Work equipment left on the work area	landowners look out	Nightshift	For equipment that can't
Camp site	3 third party security from local security agencies e.g. guard dog security	Day & Nightshift	To ensure that camp is always with security day and night





# ANNEX 1-E

## Emergency Response Plan

**Funded under JICA Loan Agreement No. PH-P273  
(CONTRACT ID NO. 21Z00008)**

**Davao City By-Pass Construction Project (II),  
Package I-3, Sta. 23+500 to Sta 29+700**

## **Emergency Response Plan**

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## 1. GENERAL

### 1.1 PURPOSE

To establish and maintain procedures for Emergency Preparedness and Response. This plan will help ensure the safety of the road workers, supervision, public and the protection of property and the environment.

### 1.2 SCOPE

To identify, prepare and implement an emergency preparedness plan and procedures to manage emergency situations effectively.

The organization shall establish and maintain plans and procedures to identify the potential for, and responses to incidents and emergency situations, and for preventing and mitigating the likely illness and injury that may be associated with them. The organization shall review its emergency preparedness and response plans and procedures after the occurrence of incidents or emergency situations. The organization shall also periodically test such procedures where applicable.

## 2. DEFINITIONS

TERM	DEFINITIONS
Emergency Situation	An unplanned event which results in death, injury, or damage to persons or property on a scale which cannot be controlled, or adequately mitigated, using the company emergency response resources immediately available
Dangerous Occurrence	An incident that may cause any significant damage to facility, equipment, material, property or environment is considered as Dangerous Occurrence. It may lead to physical injury during the occurrences.
Environmental Incident	An incident, which causes or having potential to cause damage to the natural environment in the workplace and surroundings are called Environmental incident.
Emergency Alarm	The warning sound produced by the sirens installed at various location of the facility
Emergency Controller	The head of the whole emergency response activity
Incident Controller	A person who is present at the incident site and coordinates with the emergency response teams and the emergency controller.
Incident	A single event/incident which has caused or could have caused fatality, injury, illness and/or damage (loss) to assets, the environment, entity reputation or to third parties

### 3. DUTIES AND RESPONSIBILITIES

#### 3.1 EMERGENCY CONTROLLER (EC) (Project Manager)

**Alternate Member: Site Manager**

- Shall be in co-ordination with Incident controller, Emergency coordinator and assess the emergency.
- The emergency will be declared by the Emergency controller in consultation with Incident controller, Emergency coordinator. In case of potential emergency, the siren is activated to warn the employees. Manual sirens will be activated by suitably briefed employees (emergency wardens) as the importance and functioning of warning systems are explained to all personnel during HSE induction and toolbox talks etc.
- Take full control over the emergency.
- Co-ordinate with local authorities for emergency services and media as applicable.
- Inform transport to standby for emergency transport of the victims if required.

#### 3.2 INCIDENT CONTROLLER (IC): Civil Engineers

**Alternate Member: Area Supervisor**

- Shall be in co-ordination with emergency controller and emergency coordinator.
- Ensure all work is stopped, assess the situation and follow the emergency plan.
- Ensure all employees are evacuated immediately from the scene.

#### 3.3 EMERGENCY COORDINATOR: Health & Safety Officer

**Alternate Member: Public Relations Officer**

- Shall be in co-ordination with Emergency controller & Incident controller.
- Monitor the evacuation process and coordinate with emergency wardens to identify missing personnel.
- Coordinate with local authorities in the firefighting operation.
- Coordinate with the team members to identify casualties and the shifting of the casualties to first aid station / outside clinic.
- Notifies the emergency services in the order of importance depending on the nature of emergency and casualty status.

#### 3.4 LOGISTICS COORDINATOR: SUTJV Administrator

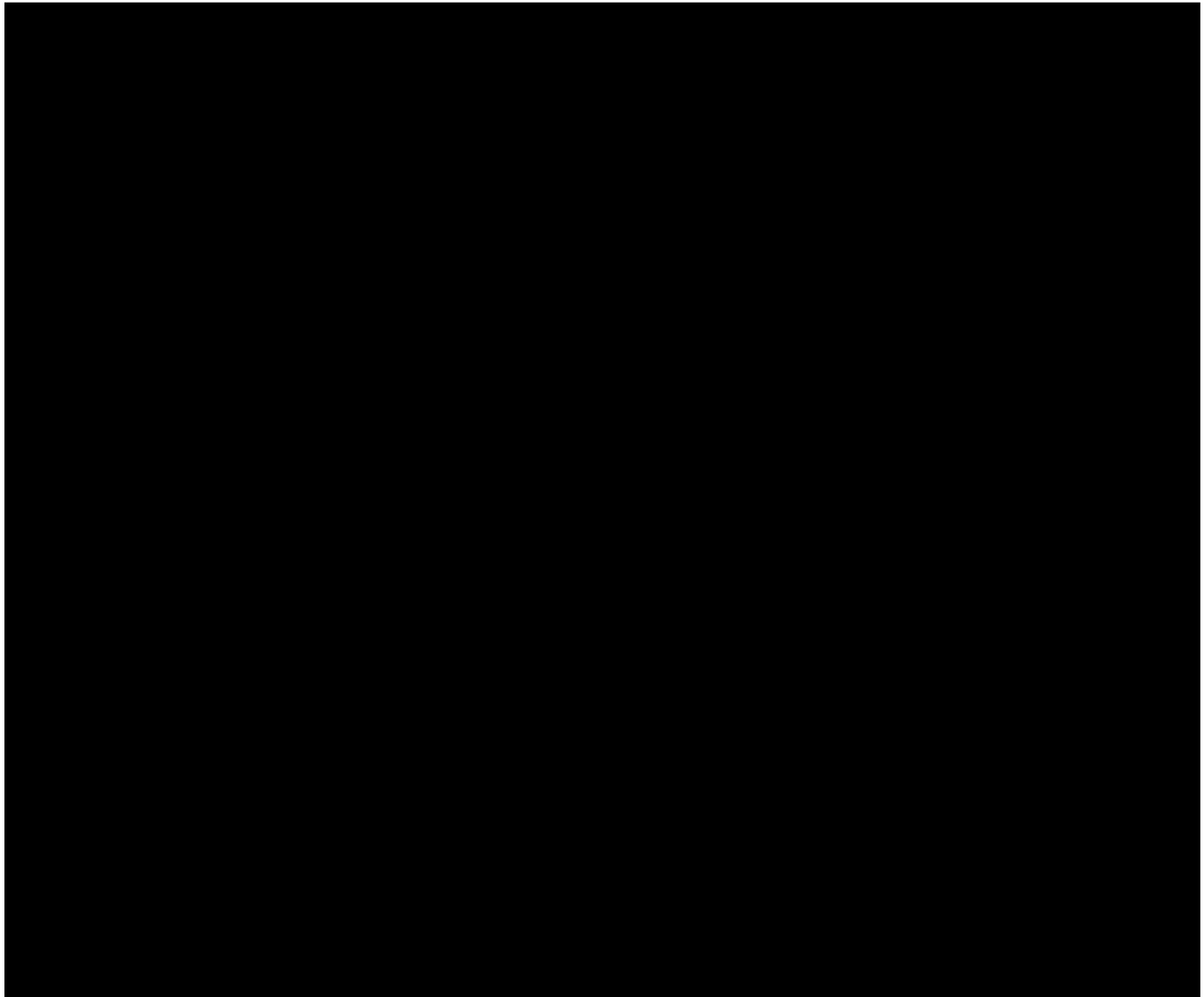
**Alternative Member: SUTJV Asst. Administrator**

- Shall be in coordination with emergency coordinator and extend the service of vehicles for evacuation / transport of victims as and when required.

- Coordinator shall ensure that spare vehicles are readily available to response to emergency events. Also, vehicles shall be adequately maintained and have enough fuel.

### **3.5 EMERGENCY WARDENS**

- Shall be in coordination with Emergency coordinator and activate manual emergency alarms as directed.
- Assist all employees for safe evacuation and direct them to assembly point.
- Ensure all employees are safely evacuated by cross-checking the assigned areas.



### **3.6 SUPERVISORS / FOREMEN**

- Ensure all personnel are alerted and cleared from the scene and gathered at the assembly point.
- Ensure all machineries are stopped and follow the emergency procedure.
- Ensure evacuation to the assembly point in coordination with Incident controller, and Emergency coordinator.



- Ensure soonest possible head count of personnel in his area of responsibility and that all are accounted for. Report to the Fire and rescue coordinator for any missing persons.

### **3.7 RESCUE TEAM LEADER (First Aider)**

Shall be in coordination with Emergency coordinator.

- From the rescue team (listed first aiders) as directed by Emergency coordinator.
- Shall be fully equipped to handle rescue operation with the help of assigned rescue team members.

### **3.8 WORKERS**

On hearing the emergency alarm:

- Don't panic.
- Stop work.
- Turn off the power.
- Turn off / shut down and secure all machinery and equipment.
- Turn off and secure all gas cylinders.
- Move through the escape route to the nearest assembly point.
- All work in this case should be ceased and an emergency plan should be followed until the emergency situation is controlled and declared safe.

### **3.9 SECURITY/ POLICE ESCORT**

- Restrict exit / entry of personnel and regulate vehicle movement during emergency.
- Keep the main gate open for smooth emergency vehicle movement.
- To coordinate with timekeeper on daily basis on the actual headcount of company personnel present on the facility. Head count to be communicated to Incident controller during emergency.

## **4. EMERGENCY EQUIPMENTS**

Organization will maintain safety and emergency related equipment as deemed necessary, including but not limited to:

- First Aid & stretcher
- Fire Extinguishers
- Spill Response kits.

Organization will maintain emergency file at assembly point with following documents:

- Emergency Preparedness Plan
- Emergency Evacuation Procedure

## 5. RESPONDING TO EMERGENCY SITUATION

### 5.1 Sounding of the workshop/ office alarm

The alarm signal for the facility will be raised in the form of siren and fire alarm bells (Only continuous alarm exceeding at least 15 seconds duration will be treated as emergency). Upon hearing of emergency alarms, all personnel are instructed to:

Stop working.

Shutdown machinery and isolate all sources of ignition.

- Follow the directions as per escape route layout.
- Leave site / offices via established evacuation routes and proceed to the designated muster area. The employee shall try to assist and if not possible will call for help.

Security/ Police escort shall take control of workers and outsiders/ watchers and restrict unauthorized traffic entry during emergency.

ALL WORK IN THIS CASE should be ceased and emergency plan should be followed until the emergency situation is controlled and declared safe by those responsible for HSE.

### 5.2 Headcount

Once all personnel have assembled at the Assembly Point, a total head count process is carried out by Emergency Coordinator with the help of Area Supervisor based on the attendance register to ensure all personnel are safe. Any missing personnel shall be immediately reported to the Emergency coordinator.

### 5.3 All Clear

The Emergency controller, in consultation with Incident controller and emergency coordinator, will declare the area is safe for occupancy. The All-clear message will be relayed through verbal announcements at the muster point.

## 6. EMERGENCY SCENARIOS AND RESPONSE

Emergency Scenarios	Response	Possible Area
Fire and Explosion Fire from flammable solvents and gas mixtures. Explosion from compressed air equipment and cylinders Electrical fires. Machineries and Generator Sets	Any person seeing a fire must fire communicate either verbally, by activating the alarm or by telephone to Emergency Controller.	Work Area
	On hearing the alarm, all personnel must vacate their area and proceed to allocated muster stations.	Paint storage/ painting area & shed/ Flammable material storage area

	Tackle fire only unless it is extremely small and safe to do so.	Electrical equipment from generator set
Spills Oil spill from storage area and equipment. Fuel, paint and chemical spillage	Communicate spill location to spill response team, in which depending on the severity and substance involved and in coordination with EC will advise if mustering is required.	Paint storage area / other solvent handling area
		Working machineries
Natural Calamities Flooding Earthquake Strong Winds	Earthquake: Raise the siren so others may know. Stay indoors, take cover underneath heavy furniture	Work Area
	Flooding: Raise alarm/ shout for awareness, evacuate to higher location.	Work Area

## 7. RESPONSE TO SPECIFIC EMERGENCY SCENARIOS

### 7.1 Gas Fires (General)

- Isolate the source.
- Cool surrounding equipment with water sprays, If available.
- Do not extinguish the fire until the pressure in the system has been reduced sufficiently to prevent the formation of explosive gas clouds.
- Extinguish the fire with water or dry chemical.
- Assess the environmental impact.

### 7.2 Spills (General)

- Establish nature of spill (obtain material safety datasheet if required)
- Wear appropriate protective clothing.
- Barrier off area if required.
- Contains the spill. (Assess drains in vicinity; beware of contamination).
- Assess environmental impact.

### 7.3 Diesel Spills & Diesel Fires

- Contain the spill; ensure diesel does not enter clean drains (diesel pollutes water and soil).



- Diesel is an eye and skin irritant.
- Eliminate ignition sources near hot diesel (flash point 56°C).
- If diesel enters the waterways, place absorbent mats/booms.
- Extinguish with dry powder or foam (do not use water).
- Beware of contaminating drains.
- Follow-up as diesel spill.

#### **7.4 Incident Involving Chemical**

- Restrict access to area of the leak or spill.
- Consult MSDS for the chemical.
- Isolate the source of the leak, If possible.
- Contain the spill ensuring workers wear correct PPE for the particular chemical.
- Collect the spilled chemical in suitable containers.

#### **7.5 Fires/ Explosion**

- Switch off electrical supplies.
- Cool gas cylinder storage areas with water.
- Extinguish it with CO<sub>2</sub>, dry powder, or foam.

#### **7.6 Fatality**

- In the event of a fatality:
- Immediately inform EC.
- Inform the police.
- Do not disturb the scenes until authorized by the police.
- Do not report a person as dead until a doctor has confirmed death.
- Do not move the body until death has been confirmed or the police have visited the scene. If the body is in an exposed place judgment can be exercised but photographs should be taken, a witness should be present and the witness should make a statement.
- With police approval the body should be taken to the nearest hospital or doctor for certification of death.
- If death may have been a result foul play or criminal activity the Police must be involved, as they are required to investigate.
- HR informs next of kin if the deceased is company employee.

- If the diseased is not a company employee HR informs the employer.
- IC or his delegate briefs the workforce.
- Consider the provision of specialist counseling for direct witnesses.

### **7.7 Earthquake**

- If Inside, stay indoors and take cover under a desk or in a doorway. Persons working in office are exposed to hazard of false ceiling falling. They can take shelter under heavy furniture e.g. tables to protect them from falling false ceiling.
- Personnel are not to stand or walk near walls and glass windows. Objects mounted on walls and lights are weak points and may fall during earthquake. Do not stand or walk near them. Choose evacuation route in such a way that these can be avoided.
- Raise the siren so people can be aware of the situation.
- Evacuate safely to assembly points as a precaution for aftershocks.
- If outdoors, get into an open area away from buildings or overhead structures.
- If driving, pull over and stop in an area clear of buildings or overhead structures. Stay in the vehicle.

### **7.8 Flooding**

- Evacuation towards higher / safe grounds to be done, Alarm to be raised for awareness and safe evacuation.
- All machineries/ equipment as much as practicable shall be kept in elevated positions.
- Safe exit from facility shall be maintained and informed.
- EC to direct for alternate location in case the primary one is affected by flood.

### **7.9 Medical Evacuation of Injured Personnel**

- Three level of medical response to emergencies apply to the premises and associated facilities:
- Routine medical treatment and minor injuries.
- Major incidents requiring local hospital services.

#### **7.9.1 Routine Medical Treatment and Minor Injuries**

- Adequate number of trained First Aiders will be available at site who will attend the immediate medical needs for minor injuries (cuts, lacerations, burns etc.).

- First aid kits will be made available and keep by site managers or inside site office/ containers if available.

#### **7.9.2 Incidents Requiring Local Hospital Services**

Where necessary, personnel may be treated at local hospitals. Transportation for this will be facilitated by administration department. Victims can also be travelled using company vehicles at site or if possible ambulance services may be requested where personnel are unable to travel in normal road vehicles.

### **8. TESTING OF THE EMERGENCY RESPONSE PLAN**

Mock drills shall be carried out once every 6 months. Action plans shall be formulated on simulated scenarios and effectiveness to be evacuated in post mock drill meeting.

### **9. TRAINING**

All relevant personnel on the facility will be informed of emergency arrangements as part of their site orientation.

Personnel with specific roles in emergency response have to receive specific in-house and third-party training in the requirements of this procedure.

The site evacuation procedure described here forms part of the safety induction program given to all personnel employed on the facility. Further enforcement is obtained by regular toolbox presentations. Emergency response notices will be placed prominently on office and site noticeboards detailing actions to be taken and emergency contact details.

Awareness training will be conducted to all project personnel relating to emergency scenarios specified in this document. Records will be kept.

### **10. DOCUMENTATION**

Incidents reports will be prepared in accordance with MCC procedures and will be issued at the earliest opportunity.

Reports of the mock drill exercises are prepared in order to assess/ gauge the preparedness as per this plan to be reported to relevant parties by using "Mock Drill Report Form".



# ANNEX 1-F

## HIV/AIDS Awareness

### Program

**Funded under JICA Loan Agreement No. PH-P273  
(CONTRACT ID NO. 21Z00008)**

**Davao City By-Pass Construction Project (II),  
Package I-3, Sta. 23+500 to Sta 29+700**

# **HIV/AIDS AWARENESS PROGRAM**

## HIV/AIDS AWARENESS PROGRAM

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<b>2. GENERAL.....</b>	<b>2</b>
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<b>2.2 Objectives.....</b>	<b>4</b>
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## **1. INTRODUCTION**

The Philippines is a low-HIV-prevalence country, with 0.1 percent of the adult population estimated to be HIV-positive. However, the rate of increase in infections is one of the highest in the Asia and Pacific region. As of August 2019, the Department of Health (DOH) AIDS Registry in the Philippines reported 69,629 cumulative cases since 1984. The spread of HIV/AIDS in the Philippines is attributed to lack of HIV/AIDS knowledge and education, and unsafe injection equipment.

Risky sexual activities, such as multiple partner relationships, high rates of transactional sex, and sexual violence against women, are common. Knowledge about HIV transmission and prevention is low. High levels of urban migration have broken down traditional methods of social control.

Davao City Bypass Construction Project (II), Package I-3 for the construction of 6.20km 4-lane road including one (1) river bridge, one (1) overpass bridge, and two (2) cut and cover tunnels e. SUTJV works activities will increase socio-economic activities along the roads and bridge works areas, therefore increasing the risk of spread of HIV/AIDs. Therefore, this plan is to provide awareness and keep track of changes and more importantly disseminate information and knowledge about the risk and spread of the disease to the workers and the communities along the road corridor, especially on high-risk areas along the bridge construction sites.

## **2. GENERAL**

### **2.1 Purpose**

To empower and increase the awareness and knowledge of participants on HIV/AIDS, its impact, management, and availability of support systems. This program intends to educate workers & personnel and local community on the risk of HIV/AIDS.

### **2.2 Objectives**

The objective of this program is to reduce the risk of transfer of HIV virus between and among the workers and the local community, to promote early diagnosis and to assist affected individual.

## **3. PREVENTION & EDUCATION**

- To raise awareness with regards to risk of HIV/AIDS on the workers and local community through awareness and training sessions.
- Continuous information drive by distributing flyers, posters and installing information billboards on public space easily accessible by local communities.
- To include in the awareness session the importance of abstinence on preventing the spread of the virus.
- To educate all Contractor personnel including subcontractors and other personnel involved in the site.

## **4. TESTING & COUNSELLING**

- To encourage voluntary testing for HIV/AIDS
- To provide information on the available treatment health facilities
- To assist affected personnel if any.

## 5. EVALUATION

- To have program be evaluated and/or audited by PNG National AIDS Council to ensure its compliance and effectiveness.

## 6. EVALUATION

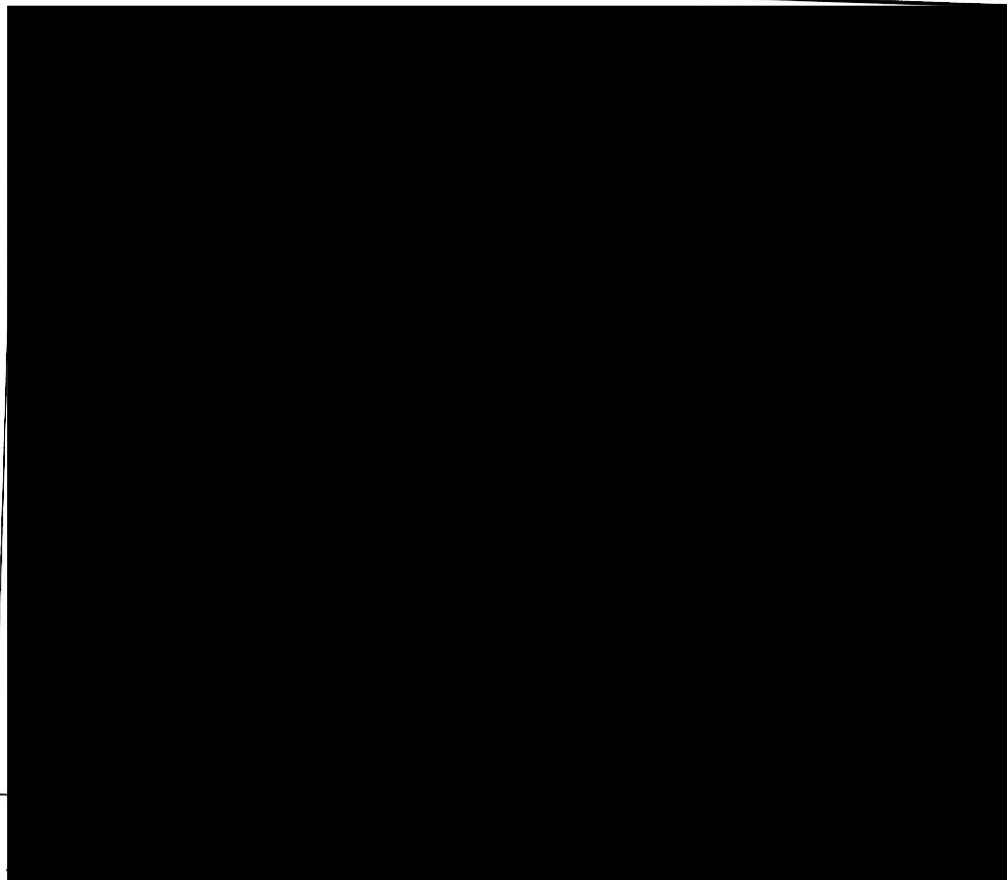
Table 1: Terms and Definitions

TERM	DEFINITIONS
AIDS	Acquired Immune Deficiency Syndrome. Infected person is said to have a very weak immune system to fight off infection and develops certain defining symptoms and illnesses.
Approved Service Provider	Means a person or entity approved by the Department of Health (DOH) to provide HIV/AIDS Awareness Program. For this program the service provider is DCBCP Package I-3 HIV/AIDS Health Program
Contractor Personnel	All personnel who are under the contractor's control and on the Site in connection with the Contract, including its subcontractors.
HIV/AIDS Awareness Program	An awareness program in compliance with the HIV awareness program curriculum and guidelines published by DOH.
Local Community	The communities local to the Site most likely have contact with the contractors' personnel and in particular, vulnerable groups and sex workers in those communities.
HIV	Human Immune Deficiency Virus – HIV/AIDS is also Sexually Transmitted Diseases
STI	Sexually Transmitted Infection- There are more than 20 different types of STI's.
Risk Behavior	Unprotective sexual contact with multiple sex partners
IEC/HCT	Information, Education & Communication /HIV Counseling & Testing
ART	Anti-Retroviral Therapy (Drugs for AIDS)

```
graph TD; A[Department of Health  
Davao City Health Office] --> B[Health and Safety Manager  
Mr. Rodolfo Capitan Jr.]; B --> C[Nurse 1  
( Road & Bridge)  
(TBA)]; B --> D[Nurse 2  
( Cut & Cover Tunnel)  
(TBA)]; B --> E[Nurse 3  
(Office)];
```

[illegible]





## 7. AWARENESS AND TRAINING PROGRAM

- The training program will be conducted by a trainer from the Davao City Health Office HIV/AIDS PROGRAM. Trainers will be headed by 1. Team Leader --DCHO who leads two teams, one from construction sites and the other from communities.
- The program shall be carried out once every three months within respective DOH and company staffs and workers at alternate months at selected locations.
- As per the requirements of the contract the training program will be conducted to personnel arrive at site and to repeat the training/ awareness at intervals not exceeding three months. HIV/AIDS information will also be communicated through TBT and Safety Induction Sessions at the camp sites and through public awareness out with target groups. At the end of every awareness month the service provider will provide a HIV/Aids awareness report.

The awareness schedule will target high risk areas where there are communities close or near the construction area. Such areas include:

- Brgy Tigatto
- Brgy. Cabantian
- Brgy Comunal
- Brgy Indangan

Table 4: The awareness and training program will comprise of two different sessions:

Session Setting	Attendees	Session Duration	Topics:	Training Materials
Classroom	Administration Staff including drivers, security and support services; Managers and Engineers	3 hours	<ul style="list-style-type: none"> <li>➤ Basic HIV/AIDS Information</li> <li>➤ Identify ways to prevent HIV transmission.</li> <li>➤ Global/ Nation Prevalence &amp; Trend</li> <li>➤ Sign &amp; Symptoms</li> <li>➤ Diagnosing &amp; Management</li> <li>➤ Sexually Transmitted Diseases</li> <li>➤ Referral Pathways/ Clinic Sites</li> <li>➤ Distribution of condoms and IEC materials to participants.</li> </ul>	<ul style="list-style-type: none"> <li>➤ Power point presentation</li> <li>➤ Training Manual</li> <li>➤ Information Leaflets</li> </ul>
Group Discussion	Local community near to site and site workers	1.5 hours	<ul style="list-style-type: none"> <li>➤ Introduction on HIV/AIDS</li> <li>➤ Mode of transmission</li> <li>➤ Sign &amp; Symptoms</li> <li>➤ Sexually Transmitted Diseases</li> <li>➤ Referral Pathways/ Clinic Sites</li> <li>➤ Distribution of condoms and IEC materials to participants.</li> </ul>	DOH Speakers formation Leaflets

## 8. AWARENESS SCHEDULE FOR 2024

This is a schedule for the year 2024. All awareness will be done on construction sites (Road, Bridge & Tunnel) where work is ongoing and where there are communities, schools and markets nearby.

Table 5: HIV/AIDS Awareness Schedule for 2024 (April - December)

Activity	Target Stakeholders	Objectives	Expected Outcome	Responsibility
Awareness Counselling Condom Distribution IEC Materials	Community Areas	Awareness and Prevention of HIV/AIDS – to influence behaviour change and encourage openness	Education, Prevention, Non-discrimination and Care	PRO/HSE Specialist/Safety Officer DOH Team

## 9. COUNSELING AND TESTING

Aside from basic information it is required to be part of the awareness session the importance of testing and counseling and that attendees know the available treatment facility in the area.

## 10. PERIPHERALS MATERIALS

### 9.1 Condom Distribution

Condoms for both male and female will be distributed during after every training session. It will also be available in camps sites accessible to all personnel and contractor will ensure that adequate supply is also available. It will also be distributed to local community.

Condoms available which conforms to EN ISO 4074 requirements (Appendix 1). A single use condom made of natural latex rubber and manufactured in Thailand.

### 9.2 IEC Materials (leaflets, billboards)

Information leaflets will be distributed every after-awareness session to reinforce the training information. Information posters will be posted in site bulletin boards place in site offices and in campsites mess hall and other public spaces .Billboards will also be arranged for local community information.

Information in the IEC materials will include contact details of treatment facilities and basic information relating to HIV/AIDS.

## 11. DOCUMENTATION

As proof of attendance attendees will be required to fill up the SUTJV training forms and records will be kept for future reference.

If necessary, the training form will be part of the claim support.

For the purpose of payment claim an HIV/AIDS Compliance Report as described in B14 Specification and Performance Requirements will be submitted by Contractor to Engineers for approval.





# ANNEX 1-G

## Project Environmental Compliance Certificate (ECC)



Republic of the Philippines  
Department of Environment and Natural Resources  
ENVIRONMENTAL MANAGEMENT BUREAU  
DENR Compound, Valenzuela Avenue, Alabang, Muntinlupa City 1510  
Telephone Nos. 597 15 17, 528 20 98  
Email: [emb@denr.gov.ph](mailto:emb@denr.gov.ph)  
[www.denr.gov.ph](http://www.denr.gov.ph)

22 SEP 2015

ECC CO-1503 0007

HON. ROGELIO L. SINGSON

Secretary

DEPARTMENT OF PUBLIC WORKS

AND HIGHWAYS (DPWH)

Bonifacio Drive, Port Area

Manila

SUBJECT: ENVIRONMENTAL COMPLIANCE CERTIFICATE

Dear Hon. Singson:

This refers to your application for the Environmental Compliance Certificate (ECC) of the proposed **Southern Mindanao Economic Corridor (Davao City Bypass Construction) Project** that will traverse Davao City and Panabo City, Davao del Norte.

After satisfying the requirements and upon evaluation and assessment of the Environmental Impact Assessment Review Committee (EIARC), the Department of Environment and Natural Resources (DENR) through the Environmental Management Bureau (EMB), hereby grants the ECC in favor of the above-mentioned project.

With the issuance of the ECC, the proponent is expected to fully implement the measures presented in the Environmental Impact Statement (EIS), particularly in the Environmental Management and Monitoring Plans, which are intended to protect and mitigate the Project's adverse impacts on community health, welfare and the environment. Environmental considerations shall be incorporated in all phases and aspects of the Project. The proponent shall only proceed with the Project implementation after securing all the necessary permits from other pertinent government agencies. This Office shall be strictly monitoring the Project to ensure strict compliance with all stipulations cited in the attached ECC.

Please be guided accordingly.

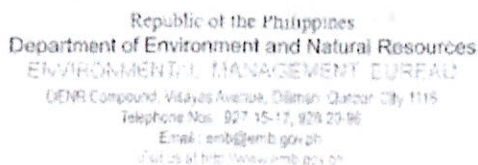
Very truly yours,

By the Authority of the Secretary

ATTY. JUAN MIGUEL T. CUNA

DENR Assistant Secretary  
and concurrent EMB Director

cc: DPWH Region XI  
EMB Regional Office XI  
LGU - Davao City, Davao del Norte  
LGU - Panabo City, Davao del Norte  
DOL  
DOH



ECC-CO-1503-0007

 REPUBLIC OF THE PHILIPPINES  
DEPARTMENT OF ENVIRONMENT  
AND NATURAL RESOURCES



## Annex A

### I. CONDITIONS

#### ENVIRONMENTAL MANAGEMENT

All commitments, mitigating measures and monitoring requirements, contained in the Environmental Impact Statement (EIS) for the proposed **Southern Mindanao Economic Corridor (Davao City Bypass Construction) Project**, particularly in the Environmental Management Plan/ Environmental Monitoring Plan, including any modifications and/or additional information as approved by the EMB, shall be instituted to minimize any adverse impact of the project to the environment throughout its implementation, which shall include among others, to wit:

1. Conduct an effective Information, Education and Communication (IEC) Program to inform and educate all stakeholders about the mitigating measures embodied in its EIS, the conditions stipulated in this Certificate and the environmental and human safety features of the project for greater awareness, understanding and sustained acceptance of the project. The program shall be submitted to EMB Central Office and EMB Regional Office No. XI on an annual basis,
2. Implement a Comprehensive Social Development Program (SDP) and submit on a semi-annual basis a separate report together with the Compliance Monitoring Report (CMR) to the EMB Central Office, copy furnished EMB Regional Office No. XI;

#### GENERAL CONDITIONS

3. The operations shall conform to any relevant provisions of RA 6969 (Toxic Substances and Hazardous and Nuclear Wastes Control Act of 1990), RA 8749 (Philippine Clean Air Act of 1999), RA 9003 (Ecological Solid Waste Management Act of 2000), and RA 9275 (Philippine Clean Water Act of 2004) and applicable provisions of P.D. 705 (*Revised Forestry Code of the Philippines*), R.A. No. 9147 (*Wildlife Resources Conservation and Protection Act*); and, R.A. 9072 (*National Caves & Cave Resources Management & Protection Act, 2001*);
4. The DPWH shall ensure that:
  - a. Contractors All Risk Insurance (CARI) is provided to cover expenses for the following:
    - i. Indemnification/Compensation of damage to life and property that may be caused by the implementation of the project; and
    - ii. Abandonment/decommissioning of the project facilities related to the prevention of possible negative impact.
  - b. A Quick Response Fund (QRF) to supplement the CARI shall be also be set up. QRF will be used for emergency repairs/restorations of the critically damaged infrastructure facilities after calamity in order to restore mobility and ensure safety in the affected areas.
  - c. Multipartite Monitoring Teams (MMT) shall be established, composed of representative(s) from the DPWH, EMB, a local environmental Non-

OFFICE OF THE SECRETARY  
Department of Public Works and Highways (DPWH)  
1201 Alabang, Marikina City, Metro Manila

*[Signature]*



Government Organization (NGO), primary impact area/barangays, the concerned LGUs, other Government agencies and stakeholders to include the University of the Philippines-Mindanao, HOLCIM-Davao Plant, Davao Light and Power Corporation (DLPC), Davao City Water District (DCWD) and National Grid Corporation of the Philippines (NGCP).

The MMT shall primarily oversee the compliance of the proponent with the condition of the ECC, Environmental Management and Monitoring Plan and other commitments contained in the EIS documents;

- d. A replenishable Environmental Monitoring Fund (EMF) as per DENR-DPWH MOA dated May 27, 1999 and DPWH Order 245 Series of 2003, attendant to the operation and monitoring activities of the MMT including, but not limited to, capability building, training, actual sampling and laboratory analysis. Said provisions must be consistent with the DAO 2003-30;
- e. An Environmental Unit (EU) to competently handle the environment related aspects of the project in addition to the monitoring requirements as specified in the Environmental Management Plan (EMP)/Environmental Monitoring Plan (EMoP). It shall:
  - i. Monitor actual project impacts vis-à-vis the predicted impacts and management measures in the EIS;
  - ii. Submit quarterly (SMR) and semiannually (CMR and CMVR) all environmental reports to EMB Region XI and EMB Central Office respectively; and
  - iii. Ensure that monitoring and reporting are carried out as required
5. The proponent shall submit to EMB Central Office a Resettlement and Compensation Action Plan prior to project implementation. Moreover, the said plan should be implemented and status thereof reported to EMB semiannually;
6. The proponent shall consider results of the feasibility stage Road Safety Audit (RSA) and Road Design (including those components considering geological condition/features) in the preparation of the DED and during implementation/construction
7. The proponent shall ensure that its contractors and sub-contractors strictly comply with the relevant conditions of this Certificate;

## II. RESTRICTIONS

8. No cutting and/or clearing of trees and other woody vegetation within the affected areas of the project shall be undertaken without the necessary special tree cutting and/or tree earthballing permit. The affected areas shall be rehabilitated in accordance with the approved rehabilitation/restoration plan of the project.
9. In the event that the results of the Detailed Engineering Design showed a need for the adjustment on the Project's alignment, the corresponding centerline of

ENVIRONMENTAL COMPLIANCE CERTIFICATE  
Southern Mindanao Economic Corridor-Davao City Express Construction Project  
Department of Public Works and Highways (DPWH)  
Region XI - Davao



the adjustment shall not exceed 20 meter distance both sides from the center line of the previous alignment.

10. No activities shall be undertaken other than what were stipulated in the final EIS. Should there be any expansion of the project beyond the project description or any change in the activity or transfer of location, or realignment, shall be subject to a new Environmental Impact Assessment; and
11. In case of transfer of ownership of this project, these same conditions and restrictions shall apply and the transferee shall be required to notify the EMB Central Office within fifteen (15) days from the transfer of ownership to allow the necessary changes brought about by such transfer.

D.R. No. 6693055  
Date 1/6/2015  
Processing Fee TNP 6,000.00



STATE UNIVERSITY COMPLIANCE CERTIFICATE  
Southern Mindanao Economic Corridor (Davao City Bypass Construction Project)  
Department of Public Works and Highways (DPWH)  
Region 11 Office - Davao City





## Annex B

### PROJECT ASSESSMENT PLANNING TOOL

For assistance of the Proponent and government agencies concerned in the management of the project, and for better coordination in mitigation of impacts of the project to its surrounding areas and to the environment.

By way of recommendations, the following have been noted by the Bureau and are forwarding these to the parties and authorities concerned for proper appreciation and action.

RECOMMENDATIONS TO GOVERNMENT AGENCIES CONCERNED	RESPONSIBLE AGENCY
1. Compliance with the occupational health and safety and Sanitation Code of the Philippines	DOH, Department of Labor and Employment (DOLE), Barangay and Municipal Health Offices
2. Compliance with the Labor Code of the Philippines	DOLE, BWC
3. Ensure conformance with the Ecological Solid Waste Management Act	LGU
4. Secure appropriate zoning clearance	LGU
5. Prior to cutting and/or clearing of trees & other woody vegetations within the project area, the proponent shall secure a TREE CUTTING and/or TREE EARTH-BALLING PERMIT supported with tree inventory report that should originate from the DENR CENRO/PENRO/Region who has jurisdiction over the project area.	DENR Central Office
<b>ENVIRONMENTAL PLANNING RECOMMENDATIONS FOR THE PROPONENT</b>	
6. The proponent shall consider the inclusion of walkable-bikeable lane in the projects' Detailed Engineering Design	
7. Priority of employment shall be given to qualified local residents. Adequate public information for jobs available to local residents in the affected areas needs to be provided	
8. Conduct regular dialogue, consultations, and FGDs with the project's stakeholders in order to settle any conflicts and address identified valid concerns for a substantive and satisfactory public acceptance of the project. Likewise, submit process documentation of the said activities to EMB.	
9. Design and undertake an effective continuing Information, Education and Communication (IEC) Program throughout the pre-construction, construction and operational phases of the project especially on the Traffic Management Plan to be implemented	
10. First aid facilities and services for staff and employees shall be made available on-site during construction and operation of the project.	

ATTY. MICHAEL DRAKE P. MATIAS  
OIC, Chief EIAM Division

ATTY. JUAN MIGUEL T. CUNA  
DENR Assistant Secretary  
and concurrent EMB Director

PROJECT TITLE: SUTJV-DCBCP-I3-EMP  
FOR THE: SUTJV-DCBCP-I3-EMP (Davao City Bypass Road, Phase 1, Section 1)  
Project: Part of the SUTJV-DCBCP-I3-EMP and Highways (DENR)  
Date: 10/10/2013



and correcting any deficiency or error that may be found after issuance of this Certificate.

Issued at DENR, Quezon City, Philippines, this SEP 22 2015.

Recommending Approval:

**ATTY. MICHAEL DRAKE P. MATIAS**  
OIC-Chief, EIAM Division

Approved by the Authority of the Secretary:

**ATTY. JUAN MIGUEL T. CUNA**  
DENR Assistant Secretary  
and concurrent EMB Director



## SWORN ACCOUNTABILITY STATEMENT

I, **Hon. Rogelio L. Singson**, of the Department of Public Works and Highways (DPWH), proponent of this Southern Mindanao Economic Corridor (Davao City Bypass Construction) Project, that will traverse Davao City and Panabo City, Davao del Norte, take full responsibility in complying with all conditions set forth in this Environmental Compliance Certificate (ECC).

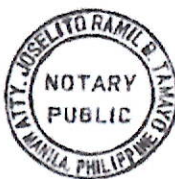
Department of Public Works and Highways  
Office of the Secretary  
WIN5Q37371

**ROGELIO L. SINGSON**  
Signature

TIN \_\_\_\_\_

Subscribed and sworn to before me on this 06 OCT 2015 day, the above-named affiant taking oath and presenting his/her \_\_\_\_\_ issued on \_\_\_\_\_ at \_\_\_\_\_.

Doc. No. 42  
Page No. 42  
Book No. NU  
Series of W



Signature of Administering Office

**ATTY. RAMIL JOSE LITO B. TAMAYO**  
NOTARY PUBLIC TIN NO. 221430744000 ROLL NO. 49637  
P.O. Box 302591 Quezon City 1105 Philippines  
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Office Address: National Press Club Bldg., Quezon City, Philippines

ENVIRONMENTAL MANAGEMENT PLAN  
Southern Mindanao Economic Corridor (Davao City Bypass Construction) Project  
Department of Public Works and Highways (DPWH)  
Office of the Secretary  
Quezon City, Philippines



Republic of the Philippines  
Department of Environment and Natural Resources  
Office of the Director, Office of the Secretary, Office of the Undersecretary

Director Virgilio C. Castillo  
Project Director  
**DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS**  
Bonifacio Drive, Port Area, Manila

**SUBJECT: ECC AMENDMENT FOR SOUTHERN MINDANAO ECONOMIC CORRIDOR (DAVAO CITY BYPASS CONSTRUCTION PROJECT) ECC-CO-1503-0007**

Dear Director Castillo:

This refers to your letter dated 26 June 2019 requesting for the amendment of the Environmental Compliance Certificate (ECC-CO-1503-0007) issued to Department of Public Works and Highways for the Southern Mindanao Economic Corridor (Davao City Bypass Construction Project) that will traverse Davao City and Panabo City, Davao del Norte.

Upon review of documents submitted in consideration with the changes of the scheme from two(2)-stage two(2)-lane to single-stage four(4)-lane implementation in line with the Detailed Engineering Design (DED) and traffic conditions in Davao City, the ECC amendment issued on 20 June 2018 is hereby revised to read as follows:

*"The proposed route/alignment will enclose an easement or road right-of-way (RROW) average of 60 meters across and will have a total length of 45.50 km. The new alignment of the project specified as follows:*

Alignment	Name	Length
Mintal Road to Mandag Road	Package I-1	10.7 kilometer with 2.3 km tunnel
Davao-General Santos Road (Maharlika Highway)	Package I-2	12.8 kilometer
Malagmot Road	Package I-3	6.1 kilometer with 0.34 km cut and cover tunnel
Davao Panabo Road	Package II	15.9 km

All other conditions stipulated in the abovementioned ECC shall remain in full force and effect unless revised/revoked in writing. Any expansion or modification of currently approved project components shall be subject to a new EIA evaluation. Please be reminded however that the approved Environmental Management Plan (EMP) which forms part of your Environmental Impact Statement is likewise subject to compliance monitoring and evaluation by this Office.

Very truly yours,

ENGR. METODIO U. TURBELLIA  
Director

O/R No.  
Date  
Amount

1503-0007  
June 2019  
P

Department of Environment and Natural Resources  
Office of the Director, Office of the Secretary, Office of the Undersecretary

Letter 2019

19 07 2019 11:14:38 +0000





# Environmental Management Plan

SUTJV-DCBCP-I3-EMP

Revision: 2

Page 264 of 268



Republic of the Philippines  
Department of Environment and Natural Resources  
**ENVIRONMENTAL MANAGEMENT BUREAU**  
1000 Shambhag Road, Quezon City, Philippines  
Tel. (02) 8629-6000, Fax (02) 8629-6001  
E-mail: emmbureau@denr.gov.ph

Use: **Emil K. Salfain, CESO I**  
Undersecretary for UPMO Operations  
and Technical Services  
**DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS**  
29<sup>th</sup> Street, Port Area, Manila

Subject: **AMENDMENT OF ENVIRONMENTAL COMPLIANCE CERTIFICATE  
(ECC-CO-1503-0007)**

Dear Sir:

This refers to your letter requesting for the amendment of the above ECC to cover the changes based on the Detailed Engineering Design (DED) findings which show an increase of about 0.8 km from the approved ECC covering the Southern Mindanao Economic Corridor (Davao City Bypass Construction Project). Hence, page 2 of the above ECC, paragraph 2 of the Project Description will read as follows:

"... the proposed route alignment will enclose an easement or road right-of-way (RR(W) limits of 60 meters across and will now have a total length from **44.58 km** to **45.4 km**."

However, considering that the project is not yet implemented/constructed, resettlement and compensation action plan must include those identified affected areas of the new alignment and be submitted to this Office prior to project implementation.

Further, all other conditions stipulated in the above-cited ECC shall remain in force unless otherwise revised in writing. Any expansion and/or modification of approved operations shall be subjected to a new Environmental Impact Assessment (EIA) requirement.

Thank you.

Very truly yours,

**ENGR. METODIO C. TURDOLA**  
Director

C: EMB Regue XI

O.R. No. 2013006  
Date: 06-28-2018  
Processing Fee: Php 2,000

Tracking no. REC 2018-3-908



*Protect the environment. Protect life.*



## ANNEX 1-H

Item B.14 In compliance with  
the Employer's requirements  
for Environment Management  
and Monitoring

## B.14 ENVIRONMENTAL MANAGEMENT PLAN

### B.14.1 Scope of Work

The Contractor shall take full responsibility for performing the work minimizing environmental negative effects and damage that may occur pursuant to his construction operations.

The Contractor shall prepare and implement the site-specific Environment Management Plan (EMP) in complying with all applicable government/ local laws and regulations in the Country as well as referring to the Environmental Impact Statement (EIS) report of the Project describing the requirement of environmental protection during the entire duration of this contract. The Contractor shall also refer to the Environmental Compliance Certificate (ECC) issued by Department of Environmental and natural Resources (DENR) to the EIS report prepared in October 2014 (the Original EIS Report in JICA FS), and its amendment to the Original Report during the detailed design stage. The Contractor shall be primarily responsible and accountable for the actions and activities of his subcontractors and suppliers, and for their compliance with the EMP.

The Contractor shall assume the responsibility of securing all the necessary licenses, permits, clearances and their attendant costs and fees prior to start of any construction activities. The Contractor shall coordinate with the Employer/ the Engineer thereon to fulfill such requirements.

The Engineer will notify the Contractor in writing of any observed noncompliance with relevant laws, regulations, permits and other elements of the Contractor's EMP. The Contractor shall, after receipt of such notice, inform the Engineer of proposed corrective actions and take such actions, at his own cost, immediately as approved by the Engineer. If the Contractor fails to comply promptly, the Engineer may issue an order stopping all or part of the work until satisfactory corrective action has been taken. No time extension therefore shall be granted to the Contractor for any such suspension.

The Contractor shall provide and maintain at his own cost the personnel, equipment and facilities necessary for a fulfillment of the requirements of the Environment Protection.

### B.14.2 Submittals

#### 1. Environment Management Plan (EMP)

The Contractor shall submit the own EMP to the Engineer for his approval not later than fourteen (14) calendar days after the Commencement of Works. Any construction operation shall not begin until the EMP has been approved by the Engineer. The EMP shall include a series of management plans as below:

- Sediment and erosion control plan for each Site;
- Camps management plan for each camp;
- Waste management plan;
- Pollution control (water, air, noise and vibration) plan for each Site;
- Traffic management plan;
- Standard Operating Procedures for pollution spills, and management of fuels and hazardous substances.

These plans above shall be compiled by using information below:



- a) Organization and lines of responsibilities including subcontractors and suppliers
- b) Methods of protection of features to be preserved such as trees/vegetation, soil, landscape features, air and surface/ground water, fish and wildlife, historical, archaeological and cultural resources.
- c) Procedures to be implemented to provide the required environmental management, to comply with the applicable laws and regulations, and to correct pollution due to accident, natural causes, or failure to follow the procedures of the EMP
- d) Drawings showing locations of any proposed temporary excavations or embankments for haul roads, stream crossings, material storage areas, stockpiles of excess or spoil materials and sanitary facilities and solid waste disposal areas
- e) Training for Contractor's personnel during the construction period

The approval by the Engineer shall not relieve the Contractor of any of his responsibility for the Environment Protection pursuant to his construction operations. Furthermore, the Engineer shall have the right to require the Contractor to improve the approved EMP whenever it is deemed necessary in the opinion of the Engineer.

## 2. Environment Monitoring Report

The Contractor shall submit the Environmental Monitoring Report to the Engineer for his review monthly thereafter, each within 7 days after the last day of the period to which it relates.

Reporting shall continue until the Contractor has completed all work which is known to be outstanding at the completion date stated in the Taking-Over Certificate for the Works.

The Report shall include the items of environmental monitoring requested in this Section.

### B.14.3 Relevant Statutes and Baseline Survey

The Contractor shall at all times comply with all existing statutes in the Country concerning environmental protection, pollution control and abatement that are applicable to his construction operations. Such statutes include, but are not limited to, the following:

#### 1. Assignment of Environmental Protection Manager (EPM)

The Contractor shall assign an Environment Protection Manager (EPM) at a fulltime basis. A CV including the name, qualifications, education and work experiences of the EPM shall be submitted for approval of the Engineer prior to the assignment.

#### 2. Baseline Survey

The Contractor shall conduct at the attendance of the Engineer the base line survey and tests for recording the quality and condition of water, air, flora, fauna and other items:

before start of the construction in accordance with the Environmental Monitoring During Construction Stage attached at the end of this Part B. The survey shall cover the area where may directly and indirectly affected by the construction, including the camp and plant yards and material disposal sites. The Contractor shall submit a comprehensive report for approval of the Engineer, the Employer and other concerned departments and agencies.

## B.14.4 Terrestrial Environment

### 1. Vegetation and Wildlife

The Contractor shall minimize interference with, disturbance to, and damage of vegetation and wildlife. The Contractor shall take appropriate measures as may be necessary to prevent his personnel from hunting, disturbing, capturing, or destroying wildlife specified by the relevant laws and regulations. The tree removal in the Site designated by the Employer is handled by the Employer. However, in the case that additional tree removal will be required for the construction work within the Site designated by the Employer, the Contractor shall follow instructions by the Engineer for necessary process.

### 2. Landscape

The Contractor shall define all activities at the Site defined by the drawings and specifications. Except in areas indicated on the drawings or specified to be cleared, the Contractor shall not destroy topsoil and land forms without the permission of the Engineer.

Any unpermitted destruction, clearing, damage, or defacing of the landscape pursuant to the construction operations shall be corrected to the satisfaction of the Engineer at the Contractor's expense.

Pay attention to keep construction materials, machines, vehicles, workers' camps and many more not to disturb the landscape of the project area, keeping clean storage sites for the construction equipment.

### 3. Soil erosion

The Contractor shall effectively prevent erosion and control sedimentation through approved methods including, but not limited to, the following:

- Retardation and control of runoff
- Erosion and sedimentation control devices
- Sediment basins

## B.14.5 Water Resources

The Contractor shall keep construction activities under surveillance, management, and control to avoid pollution of surface and ground waters. Toxic or hazardous chemicals shall not be applied to soil or vegetation when such application may cause contamination of the fresh water reserve.

Proper treatment of water pollutants generated from construction works for example settling ponds or a simple water treatment system to comply with effluent level in the



standards in the Philippines. Also, adequate preventive following measures shall be taken as necessary;

1. Provide appropriate protection or construction methods minimizing cut and fill soils washed into streams including waste/excess soil disposal sites.
2. Surface runoff from the Site shall be directed to silt traps or sedimentation basin with the help of channels before discharge.
3. Monitoring water quality during construction.

The Contractor shall be responsible for observation of variation of the underground water levels where bored pipe was installed by the DD consultant through its construction period as a part of the Environmental Monitoring Program. The Contractor is also responsible for observation of the discharge of underground water and report to the Engineer in its Environmental Management and Monitoring Report.

## **B.14.6 Air, Noise and Vibration**

The Contractor shall keep construction activities under surveillance and control to minimize environment damage by air contamination, noise, vibration, odors and/or other disturbances.

Dust particles pursuant to production and preparation of vehicles and materials shall be controlled at all times. The Contractor shall maintain excavations, stockpiles, haul roads, permanent and temporary access roads, spoil areas, and other work areas within or outside the Site free from particulate which would cause a hazard or a nuisance to persons and/or damage crops, orchards, cultivated field and dwellings. A discharge of dust into the atmosphere shall be controlled during processing, handling and storing cement and cementitious materials. The Contractor shall daily spray water, except rainy days, to control dust on its gravel or earth access roads.

Night-time operations producing a high level of noise and/or vibration shall be performed only at time and places approved by the Engineer. Temporary noise barriers, or acoustic screens or enclosures shall be used at the Site close to the residential houses to shield residences from the noise as necessary. The Contractor shall indemnify the Employer/the Engineer from any liability for damages due to noise, vibration and/or other disturbances caused by his construction operations and also from all claims relating to such liability.

Equipment and vehicles shall be maintained and operated at all times in such a condition as not discharge excessive exhaust gases due to poor engine adjustments or other inefficient operating conditions. The Contractor shall likewise ensure that all equipment and machinery are in proper working condition so as to minimize the amount of noise and vibration generated. The Engineer may require, at his discretion, the Contractor to replace any equipment, machinery or vehicles emitting excessive exhaust gases, noise and/or vibration.

## **B.14.7 Waste Disposal**

The Contractor shall dispose any kind of wastes pursuant to his construction operations in compliance with the relevant laws and regulations in the Philippines. Any fees or charges required shall be paid by the Contractor.



The Contractor shall treat the vegetative wastes and construction wastes separately at the dumps approved by the relevant local authorities and the Engineer. The Contractor shall be responsible for making necessary arrangements with private parties and with the relevant local authorities for the location of such dumps.

Solid wastes shall be placed in containers which can be emptied on a regular schedule. Handling and disposal shall be conducted to prevent contamination. Segregation measures shall be employed so that no hazardous or toxic waste will become co-mingled with solid waste.

Chemicals shall be dispensed ensuring no spillage to ground or water. Periodic inspections of dispensing areas to identify leakage and initiate corrective action shall be performed and documented by the Contractor. Chemical waste shall be collected in corrosion resistant, compatible containers.

The Contractor shall take sufficient measures to prevent spillage of hazardous and toxic materials during dispensing and shall collect waste in suitable containers observing compatibility. Spills of hazardous or toxic materials shall be immediately reported to the Engineer. Clean-up and the costs arising there from due to spills shall be the Contractor's responsibility.

## **B.14.8 Social Considerations**

The Contractor shall pay attention to the public morality of his staff and labors including his subcontractors both on and off the Site.

In the interest of good community relations, the Contractor and his subcontractors shall be circumspect in dealings with people residing in the neighborhood of the Site and take adequate efforts to avoid any disturbance to them. The Contractor shall, in his responsibility, arbitrate any dispute arising between his personnel and persons in the neighborhood of the Site. Unskilled labor shall preferably be employed from the towns/villages affected by the Works. Also, the Contractor shall distribute prior information of construction works as following but not limited through installation of signboards informing the residents who live in and around the construction area.

- Starting and completion date of construction works
- Location of construction work (dredging and disposal work)
- Notices of the construction work etc.
- Method of grievance (contact person and contact number, etc.)

## **B.14.9 Environmental Mitigation Measures and Monitoring**

The Contractor shall perform environmental monitoring for the duration of this contract and submit results to the Engineer. The minimum requirement for items, frequency and number of locations of sampling or measurement and the detail shall be confirmed in the updated EIS report to be approved by the Engineer, the Employer and DENR.

## **B.14.10 Prevention HIV/AIDS**

The Contractor shall conduct an HIV/AIDS awareness program via an approved service provider, and shall undertake such other measures as are specified in this Contract to reduce the risk of the transfer of the HIV virus between and among the Contractor's Personnel and the local community, to promote early diagnosis and to assist affected individuals.

The Contractor shall through the contract (including the Defect Liability Period):

1. Conduct Information, Education and Consultation Communication (IEC) campaigns, at least every other month, addressed to all the Site staff and labor (including all the Contractor's employees, all Sub-Contractors and Consultants' employees, and all truck drivers and crew making deliveries to Site for construction activities) and to the immediate local communities, concerning the risks, dangers and impact, and appropriate avoidance behavior with respect to Sexually Transmitted Diseases (STD)—or Sexually Transmitted Infections (STI) in general and HIV/AIDS in particular;
2. Provide male or female condoms for all Site staff and labor as appropriate; and
3. Provide for STI and HIV/AIDS screening, diagnosis, counselling and referral to a dedicated national STI and HIV/AIDS program, (unless otherwise agreed) of all Site staff and labor.

The Contractor shall include in the program to be submitted for the execution of the Works under an alleviation program for Site staff and labor and their families in respect of Sexually Transmitted Infections (STI) and Sexually Transmitted Diseases (STD) including HIV/AIDS. The STI, STD and HIV/AIDS alleviation program shall indicate when, how and at what cost the Contractor plans to satisfy the requirements of this Sub-Clause and the related specification. For each component, the program shall detail the resources to be provided or utilized and any related sub-contracting proposed. The program shall also include provision of a detailed cost estimate with supporting documentation. Payment to the Contractor for preparation and implementation this program shall not exceed the Provisional Sum dedicated for this purpose.

## Annex 2

### Skilled and Unskilled Labor

Total Number of Skilled and Unskilled in the Project Labor Force						
Description	Affected Barangays	Davao City	Davao de Sur Province	Other Provinces	Foreign	Total
Total No. of Workers	8	28	31	45	9	85
%	9.41%	32.94%	36.47%	52.94%	10.58%	100%
Unskilled Workers	6	13	13	1	0	85
%	7%	15.29%	15.29%	1.10%	0.00%	16.39%
Skilled Workers	2	10	12	11	0	85
%	2.35%	11.76%	14.11%	12.90%	0.00%	27.01%

Source: SUT-JV (Package I-3 Contractor)



## Annex 3

# Record of Site Accidents

---

Table 6.1 List of Project Site Incidents\*

Report No.	Date	Area/Location	Findings and Observations	Actions Taken	Remarks
N/A	N/A	N/A	N/A	N/A	N/A

\*Note: No accidents have been recorded as of this reporting period.

## **Annex 4**

### **Ambient Air and Noise**

---



# OSTREA MINERAL LABORATORIES, INC.

Assaying and Environmental Testing Specialist

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Telephone : (032) 343-6472; (032) 383-8077  
Email : customerservice.ostrealabs@gmail.com

DENR Recognized  
Laboratory with  
C.R No. 041/2023

Original Issue ☒  
Duplicate Issue by Request ☐  
Revision Copy ☐

## CERTIFICATE OF ANALYSIS

Customer : SHIMIZU-ULTICON-TAKENAKA JV

Address : 2nd Floor Yuta at Dabaw Building, Purok 38, C.P. Garcia Hwy, Ma-a, Davao City

Attention : Ms. Chilen Jere Angeli F. Balid

Contact Information : 0967-419-9395/decasa.maryann@shimz.biz

CAN : C24-06-033G-1

Date of Issue : 06/14/2024

RAN : R24-05-077G

Invoice No. : --

Date Received : 05/27/2024

Date Sampled : --

Date Analyzed : 05/27-06/03/2024

## RESULTS OF ANALYSIS

Sample Descriptions	Parameters	Results	Units	DAO 2000-81 Standards	Methods
<b>1 Hour Ambient Air Monitoring</b>					
05-230G	Total Suspended Particulates (TSP) <sup>a</sup>	544	µg/Ncm	300	Gravimetric
Sto. Niño Church, Brgy Tigatto, Davao City	Sulfur Dioxide (SO <sub>2</sub> ) <sup>b</sup>	<2	µg/Ncm	340	Pararosaniline
Date Sampled: May 27, 2024	Nitrogen Dioxide (NO <sub>2</sub> ) <sup>c</sup>	16	µg/Ncm	260	Griess-Saltzman
09:25 am - 10:25 am	Carbon Monoxide (CO)	<1	ppm	30	Direct Reading -Electrochemical Sensor
	Vehicle Count	10	--	-	--
05-231G	Total Suspended Particulates (TSP) <sup>a</sup>	<5	µg/Ncm	300	Gravimetric
Leonora Heights, Brgy. Cabantian, Davao City	Sulfur Dioxide (SO <sub>2</sub> ) <sup>b</sup>	<2	µg/Ncm	340	Pararosaniline
Date Sampled: May 28, 2024	Nitrogen Dioxide (NO <sub>2</sub> ) <sup>c</sup>	<13	µg/Ncm	260	Griess-Saltzman
11:28 am - 12:28 pm	Carbon Monoxide (CO)	1	ppm	30	Direct Reading -Electrochemical Sensor
	Vehicle Count	3	--	-	--

Total No. of Samples: 2

Total Analysis: 10

Sample Submission : Sampled by OMLI-GenSan Staff

Reference : USEPA 40 CFR, Part 50, Appendices <sup>a</sup> B, and <sup>b</sup> A ; <sup>c</sup> Methods of Air Sampling and Analysis 3rd ed. by J. P. Lodge

Remarks : Results relate only to the items tested and received by the laboratory.  
The customer is given 7 days upon receipt to raise questions or clarification on any part or content of the certificate, otherwise the result(s) is/are deemed accepted.

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Email : customerservice.ostrealabs@gmail.com

DENR Recognized  
Laboratory with  
C.R No. 041/2023

Original Issue ☒  
Duplicate Issue by Request ☐  
Revision Copy ☐

## CERTIFICATE OF ANALYSIS

Customer : SHIMIZU-ULTICON-TAKENAKA JV

Address : 2nd Floor Yuta at Dabaw Building, Purok 38, C.P. Garcia Hwy, Ma-a, Davao City

Attention : Ms. Chilen Jere Angeli F. Balid

Contact Information : 0967-419-9395/decasa.maryann@shimz.biz

CAN : C24-06-033G-2

Date of Issue : 06/14/2024

RAN : R24-05-077G

Invoice No. :--

Date Received : 05/27/2024

Date Sampled :--

Date Analyzed : 05/27-06/03/2024

## RESULTS OF ANALYSIS

Sample Descriptions	Parameters	Results	Units	DAO 2000-81 Standards	Methods
24 Hours Ambient Air Monitoring					
05-232G	Total Suspended Particulates (TSP) <sup>a</sup>	115	µg/Ncm	230	Gravimetric
Sto. Niño Church, Brgy Tigatto, Davao City	Sulfur Dioxide (SO <sub>2</sub> ) <sup>b</sup>	<0.02	µg/Ncm	180	Pararosaniline
Date Sampled: May 27-28, 2024	Nitrogen Dioxide (NO <sub>2</sub> ) <sup>c</sup>	2.75	µg/Ncm	150	Griess-Saltzman
10:30 am - 10:30 am	Carbon Monoxide (CO)	1	ppm	9*	Direct Reading -Electrochemical Sensor
	Vehicle Count	37	-	-	-
05-233G	Total Suspended Particulates (TSP) <sup>a</sup>	33	µg/Ncm	230	Gravimetric
Leonora Heights, Brgy. Cabantian, Davao City	Sulfur Dioxide (SO <sub>2</sub> ) <sup>b</sup>	<0.02	µg/Ncm	180	Pararosaniline
Date Sampled: May 28-29, 2024	Nitrogen Dioxide (NO <sub>2</sub> ) <sup>c</sup>	2.55	µg/Ncm	150	Griess-Saltzman
12:30 pm - 12:30 pm	Carbon Monoxide (CO)	1	ppm	9*	Direct Reading -Electrochemical Sensor
	Vehicle Count	8	-	-	-

Note: \*8 -hours sampling

Total No. of Samples: 2

Total Analysis: 10

Sample Submission : Sampled by OMLI-GenSan Staff

Reference : USEPA 40 CFR, Part 50, Appendices <sup>a</sup> B, and <sup>b</sup> A ; <sup>c</sup> Methods of Air Sampling and Analysis 3rd ed. by J. P. Lodge  
\*USEPA Compendium Method IO-3.1.

Remarks : Results relate only to the items tested and received by the laboratory.  
The customer is given 7 days upon receipt to raise questions or clarification on any part or content of the certificate, otherwise the result(s) is/are deemed accepted.

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Email : customerservice.ostrealabs@gmail.com

## CERTIFICATE OF ANALYSIS

Original Issue ☒  
Duplicate Issue by Request ☐  
Revision Copy ☐

Customer : SHIMIZU-ULTICON-TAKENAKA JV

Address : 2nd Floor Yuta at Dabaw Building, Purok 38, C.P. Garcia Hwy, Ma-a, Davao City

Attention : Ms. Chilen Jere Angeli F. Balid

Contact Information : 0967-419-9395/decasa.maryann@shimz.biz

CAN : C24-06-033G-3

Date of Issue : 06/14/2024

RAN : R24-05-077G

Invoice No. : --

Date Received : 05/27/2024

Date Sampled : 05/27/2024

Date Analyzed : 05/27/2024

## RESULT OF ANALYSIS

Sample Description	Parameter	Result	Unit	NPCC Memorandum Circular No 002 Series of 1980, Class A	Method
1 Hour Noise Monitoring 05-230G Sto. Niño Church, Brgy Tigatto, Davao City 09:44 am - 09:59 am	Noise (Daytime)	59	dBA	55	Direct Reading-Sound Level Meter

Note : Please refer to the contributing factors of noise in Results and Evaluation.  
Daytime: 09:00 am to 06:00 pm  
Class A: A section of contiguous area which is primarily used for residential area.

Total No. of Samples: 1

Total Analysis: 1

Sample Submission : Sampled by OMLI-GenSan Staff

Remarks

: Result relates only to the item tested and received by the laboratory.  
The customer is given 7 days upon receipt to raise questions or clarification on any part or content of the certificate, otherwise the result(s) is/are deemed accepted.

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## CERTIFICATE OF ANALYSIS

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Revision Copy ☐

**Customer :** SHIMIZU-ULTICON-TAKENAKA JV

**Address :** 2nd Floor Yuta at Dabaw Building, Purok 38, C.P. Garcia Hwy, Ma-a, Davao City

**Attention :** Ms. Chilen Jere Angeli F. Balid

**Contact Information :** 0967-419-9395/decasa.maryann@shimz.biz

**CAN :** C24-06-033G-4

**Date of Issue :** 06/14/2024

**RAN :** R24-05-077G

**Invoice No. :-**

**Date Received :** 05/28/2024

**Date Sampled :** 05/28/2024

**Date Analyzed :** 05/28/2024

## RESULTS OF ANALYSIS

Sample Descriptions	Parameters	Results	Units	NPCC Memorandum Circular No 002 Series of 1980, Class A	Methods
1 Hour Noise Monitoring					
05-231G	Noise (Daytime)	48	dBA	55	Direct Reading-Sound Level Meter
Leonora Heights, Brgy. Cabantian, Davao City					
11:57 am - 12:12 pm					

**Note :** Please refer to the contributing factors of noise in Results and Evaluation.  
Daytime: 09:00 am to 06:00 pm  
Class A: A section of contiguous area which is primarily used for residential area.

**Total No. of Samples:** 1

**Total Analysis:** 1

**Sample Submission :** Sampled by OMLI-GenSan Staff

**Remarks**

: Result relates only to the item tested and received by the laboratory.  
The customer is given 7 days upon receipt to raise questions or clarification on any part or content of the certificate, otherwise the results is/are deemed accepted.

Not valid without OMLI dry seal

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Telephone : (032) 343-6472; (032) 383-8077  
Email : customerservice.ostrealabs@gmail.com

## CERTIFICATE OF ANALYSIS

Original Issue	<input checked="" type="checkbox"/>
Duplicate Issue by Request	<input type="checkbox"/>
Revision Copy	<input type="checkbox"/>

Customer : SHIMIZU-ULTICON-TAKENAKA JV

Address : 2nd Floor Yuta at Dabaw Building, Purok 38, C.P. Garcia Hwy, Ma-a, Davao City

Attention : Ms. Chilen Jere Angeli F. Balid

Contact Information : 0967-419-9395/decasa.maryann@shimz.biz

CAN : C24-06-033G-5

Date of Issue : 06/14/2024

RAN : R24-05-077G

Invoice No. :-

Date Received : 05/27/2024

Date Sampled : 05/27-28/2024

Date Analyzed : 05/27-28/2024

### RESULTS OF ANALYSIS

Location	Morning 5:00am- 9:00am dBA	Daytime 9:00am- 6:00pm dBA	Evening 6:00pm- 10:00pm dBA	Night Time 10:00pm- 5:00am dBA
24 Hours Noise Monitoring 05-232G Sto. Niño Church, Brgy Tigatto, Davao City 10:51 am - 06:18 am	51	54	49	47
NPCC Memorandum Circular No. 002 Series of 1980, Class A	50	55	50	45

Note : Please refer to the contributing factors of noise in Results and Evaluation.  
Class A: A Section of contiguous area which is primarily used for residential area.

Total No. of Sample: 1 Total Analysis: 4

Sample Submission : Sampled by OMLI-GenSan Staff

Remarks : Results relate only to the item tested and received by the laboratory.  
The customer is given 7 days upon receipt to raise questions or clarification on any part or content of the certificate, otherwise the result(s) is/are deemed accepted.

Not valid without OMLI dry seal

Page 1 of 1

This Report is the confidential property of the client named. Prior client approval is required to verify and confirm the information contained herein. Persons acting without diligent verification do so at their peril. Unless otherwise authorized, all reprographic, dissemination and publication rights are reserved, including downloads, digital and image files and representations.

Uninterrupted Total Quality Service Since  
1976



# OSTREA MINERAL LABORATORIES, INC.

Assaying and Environmental Testing Specialist

RJ Ouano Building, M.C. Briones Street, Highway, Bakilid Mandaue City, Cebu  
Telephone : (032) 343-6472; (032) 383-8077  
Email : customerservice.ostrealabs@gmail.com

## CERTIFICATE OF ANALYSIS

Original Issue ☒  
Duplicate Issue by Request ☐  
Revision Copy ☐

Customer : SHIMIZU-ULTICON-TAKENAKA JV

Address : 2nd Floor Yuta at Dabaw Building, Purok 38, C.P. Garcia Hwy, Ma-a, Davao City

Attention : Ms. Chilen Jere Angeli F. Balid

Contact Information : 0967-419-9395/decasa.maryann@shimz.biz

CAN : C24-06-033G-6

Date of Issue : 06/14/2024

RAN : R24-05-077G

Invoice No. :-

Date Received : 05/28/2024

Date Sampled : 05/28-29/2024

Date Analyzed : 05/28-29/2024

## RESULTS OF ANALYSIS

### Location

#### 24 Hour Noise Monitoring

05-233G

Leonora Heights, Brgy. Cabantian, Davao City

12:51 pm - 08:39 am

NPCC Memorandum Circular No. 002 Series of 1980, Class A

Morning 5:00am- 9:00am dBA	Daytime 9:00am- 6:00pm dBA	Evening 6:00pm- 10:00pm dBA	Night Time 10:00pm- 5:00am dBA
----------------------------------	----------------------------------	-----------------------------------	--------------------------------------

49

48

42

38

50

55

50

45

Note : Class A: A Section of contiguous area which is primarily used for residential area.

Total No. of Sample: 1

Total Analysis: 4

Sample Submission : Sampled by OMLI-GenSan Staff

Remarks

: Results relate only to the items tested and received by the laboratory.  
The customer is given 7 days upon receipt to raise questions or clarification on any part or content of the certificate, otherwise the result(s) is/are deemed accepted.

Not valid without OMLI dry seal

Page 1 of 1

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1976

## **Annex 5**

### **Surface Water Quality**

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# DAVAO ANALYTICAL LABORATORIES, INC.

Mc Arthur Hi-way, Corner Union Avenue, Matina, Davao City  
Telefax No. (082) 297-3278 E-mail: dalinc\_03@yahoo.com

Rev. No. 0 / Issue No. 1

## TEST REPORT

**CLIENT NAME:** Shimizu - Ulticon - Takenaka JV  
**ADDRESS:** Shoppes at Woodlane, Unit 4A 2nd Floor  
Diversion Road, Brgy. Ma-a Davao City

**CONTROL NO.:** 24-18652  
**DATE RECEIVED:** 07 May-24  
**TIME RECEIVED:** 01:44 PM  
**DATE ANALYZED:** 07-16 May-24  
**DATE REPORTED:** 16 May-24

### SAMPLE INFORMATION

**Sample Type:** Water (01)

**Sample Name:** Riverwater

**Sample Condition:** At room temperature

**Packaging:** Stored in a plastic/ glass container

**Sampling Date:** May 07, 2024

**Sampling Time:** 10:01 AM

Sample Condition: At room temperature

Sampling Date: May 07, 2024

Sampling Time: 10:01 AM

PARAMETERS	Lab. Reference No. / Sample ID		METHODS
	W <sub>3</sub> -24-2375		
	Lasang River Upstream		
BOD <sub>5</sub> , mg/L	2.4		SMEWW 5210 B
DO, mg/L	8.6		SMEWW 4500-O C
pH @ 25.0 °C	8.2		SMEWW 4500-H* B
TSS, mg/L	<3.0		SMEWW 2540 D
Oil and Grease, mg/L	1.9		SMEWW 5520 B
***Nothing Follows***			

Remarks:

1. Result of

### Remarks:

1. Result(s) is/are based on sample(s) submitted to DALINC unless otherwise indicated. The Laboratory does not guarantee that the sample(s) is/are representative of the whole bulk from where it was/were drawn.
2. Method(s) used is/are in accordance with the Standard Methods for the Examination of Water & Wastewater, 23rd ed.
3. The determination of pH and DO were done in the laboratory of DALINC.
4. This test report may not be reproduced without permission.



# DAVAO ANALYTICAL LABORATORIES, INC.

Mc Arthur Hi-way, Corner Union Avenue, Matina, Davao City  
Telefax No. (082) 297-3278 E-mail: dalinc\_03@yahoo.com

Rev. No. 0 / Issue No. 1

## TEST REPORT

**CLIENT NAME:** Shimizu - Ulticon - Takenaka JV  
**ADDRESS:** Shoppes at Woodlane, Unit 4A 2nd Floor  
Diversion Road, Brgy. Ma-a Davao City

**CONTROL NO.:** 24-18652  
**DATE RECEIVED:** 07 May-24  
**TIME RECEIVED:** 01:44 PM  
**DATE ANALYZED:** 07-16 May-24  
**DATE REPORTED:** 16 May-24

### SAMPLE INFORMATION

**Sample Type:** Water (01)

**Sample Name:** Riverwater

**Sample Condition:** At room temperature

**Packaging:** Stored in a plastic/ glass container  
**Sampling Date:** May 07, 2024  
**Sampling Time:** 10:31 AM

Sample Condition: At room temperature

Sampling Date: May 07, 2024

Sampling Time: 10:31 AM

PARAMETERS	Lab. Reference No. / Sample ID		METHODS
	W <sub>3</sub> -24-2376		
	Lasang River Downstream		
BOD <sub>5</sub> , mg/L	1.6		SMEWW 5210 B
DO, mg/L	7.3		SMEWW 4500-O C
pH @ 25.0 °C	8.2		SMEWW 4500-H* B
TSS, mg/L	<3.0		SMEWW 2540 D
Oil and Grease, mg/L	2.7		SMEWW 5520 B
***Nothing Follows***			

Remarks:

1. Results are based on the sample condition at the time of sampling.

### Remarks:

1. Result(s) is/are based on sample(s) submitted to DALINC unless otherwise indicated. The Laboratory does not guarantee that the sample(s) is/are representative of the whole bulk from where it was/were drawn.
2. Method(s) used is/are in accordance with the Standard Methods for the Examination of Water & Wastewater, 23rd ed.
3. The determination of pH and DO were done in the laboratory of DALINC.
4. This test report may not be reproduced unless in full.



# DAVAO ANALYTICAL LABORATORIES, INC.

Mc Arthur Hi-way, Corner Union Avenue, Matina, Davao City  
Telefax No. (082) 297-3278 E-mail: dalinc\_03@yahoo.com

Rev. No. 0 / Issue No. 1

## TEST REPORT

CLIENT: **Shimizu - Ulticon - Takenaka JV**  
ADDRESS: Shoppes at Woodlane, Unit 4A 2nd Floor  
Diversion Road, Brgy. Ma-a Davao City

CONTROL NO.: 24-18652  
DATE RECEIVED: 07 May-24  
TIME RECEIVED: 01:44 PM  
DATE ANALYZED: 07-16 May-24  
DATE REPORTED: 16 May-24

### SAMPLE INFORMATION

Sample Type: Water (01)  
Sample Name: Riverwater  
Sample Condition: At room temperature

Packaging: contained in a sterilized glass container  
Sampling Date: May 07, 2024  
Sampling Time: 10:01 AM

Parameters	Lab Ref No./ Sample ID	Methods
	W <sub>3</sub> -24-2375 Lasang River Upstream	
Total Coliform, MPN/100 ml	1,700,000	SMEWW 9221 B
Fecal Coliform, MPN/100 ml	220,000	SMEWW 9221 E
***Nothing Follows***		

### Remarks:

1. Result(s) is/are based on sample(s) submitted to DALINC unless otherwise indicated. The Laboratory does not guarantee that the sample(s) is/are representative of the whole bulk from where it was/were drawn.
2. Method(s) used is/are in accordance with the Standard Methods for the Examination of Water & Wastewater, 23rd ed.
3. MPN- Most Probable Number.
4. This test report may not be reproduced unless in full.





# DAVAO ANALYTICAL LABORATORIES, INC.

Mc Arthur Hi-way, Corner Union Avenue, Matina, Davao City  
Telefax No. (082) 297-3278 E-mail: dalinc\_03@yahoo.com

Rev. No. 0 / Issue No. 1

## TEST REPORT

**CLIENT:** Shimizu - Ulticon - Takenaka JV  
**ADDRESS:** Shoppes at Woodlane, Unit 4A 2nd Floor  
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**CONTROL NO.:** 24-18652  
**DATE RECEIVED:** 07 May-24  
**TIME RECEIVED:** 01:44 PM  
**DATE ANALYZED:** 07-16 May-24  
**DATE REPORTED:** 16 May-24

### SAMPLE INFORMATION

**Sample Type:** Water (01)

**Sample Name:** Riverwater

**Sample Condition:** At room temperature

**Packaging:** contained in a sterilized glass container

**Sampling Date:** May 07, 2024

**Sampling Time:** 10:21 AM

Sample Condition: At room temperature		Sampling Date: May 07, 2024	
Parameters	Lab Ref No./ Sample ID		Methods
	W <sub>3</sub> -24-2376		
	Lasang River Downstream		
Total Coliform, MPN/100 ml	9,200,000		SMEWW 9221 B
Fecal Coliform, MPN/100 ml	170,000		SMEWW 9221 E
Remarks:		***Nothing Follows***	

### Remarks:

1. Result(s) is/are based on sample(s) submitted to DALINC unless otherwise indicated. The Laboratory does not guarantee that the sample(s) is/are representative of the whole bulk from where it was/were drawn.
2. Method(s) used is/are in accordance with the Standard Methods for the Examination of Water & Wastewater, 23rd ed.
3. MPN- Most Probable Number.
4. This test report may not be reproduced unless in full.

## **Annex 6**

## **Permits**

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The Philippine Coconut Authority  
Province of DAVAO DEL SUR

Accountable Form  
RA 8048 Form No. 01-R2-2019  
Article VII. Sec. 29

## PERMIT TO CUT COCONUT TREES

PTC NO. 3632426

Date Issued: MAY 09, 2024

In reference to Letter Application No. [REDACTED] dated FEBRUARY 19, 2024 permit is hereby  
granted to [REDACTED] of JUNA SUBDIVISION, DAVAO CITY  
(Name of Applicant) (Address)

after submitting all supporting documents required in view of the favourable findings/recommendations of  
[REDACTED] details of which are as follows:  
(Name of Agriculturist)

No of Trees approved for cutting : 100 TREES  
Ground for issuance of PTC : POSING HAZARD/GOV'T PROJECT  
Estimated volume(in bd. ft.) : 15,000 BD. FT.  
Area/Locality : BRGY. INDANGAN, BUHANGIN DISTRICT, DAVAO CITY  
Official receipt no. [REDACTED]  
Amount and Date paid [REDACTED]  
If ground for cutting is for conversion  
DAR Conversion Order No. : N/A Dated : N/A

This PERMIT is issued in accordance with the provisions of RA 8048 as amended and its Implementing Rules and Regulations promulgated by the Philippine Coconut Authority (PCA). Any violation of non-compliance with these established rules and regulations shall be ground for cancellation of this Permit and prosecution of violators by appropriate court.

This PERMIT is valid until MAY 13-27, 2024 ( 15 days) from the date of issue and must  
(Period of Effectivity)  
bear the official dry seal of the Authority. Any alterations will render this Permit invalid.

Approved: [REDACTED]

- cc:(certified true copies)  
☐ Barangay Chairman  
☐ CFO  
☐ LCIDC  
☐ Municipal Treasurer  
☐ MARO  
☐ Tenant (if applicable)

Note: This Permit to Cut Coconut Trees is issued and filed at the PCA Provincial/Regional/Central Offices. Original copy/duplicate of this document shall be presented to PCA/deputized law enforcement personnel during inspection.



The Philippine Coconut Authority  
Province of DAVAO DEL SUR

Accountable Form  
RA 8048 Form No. 01-R2-2019  
Article VII. Sec. 29

## PERMIT TO CUT COCONUT TREES

PTC NO. R11-DAS

Date Issued: MAY 09, 2024

In reference to letter Application No. [REDACTED] dated FEBRUARY 19, 2024 permit is hereby  
granted to [REDACTED] of JUNA SUBDIVISION, DAVAO CITY  
(Name of Applicant) (Address)

after submitting all supporting documents required and in view of the favourable findings/recommendations of  
[REDACTED] details of which are as follows:  
(Name of Agriculturist)

No of Trees approved for cutting : 99 TREES  
Ground for issuance of PTC : POSING HAZARD/GOV'T PROJECT  
Estimated volume(in bd. ft.) : 14,850 BD. FT.  
Area/Locality : BRGY. INDANGAN, BUHANGIN DISTRICT, DAVAO CITY  
Official receipt no. : [REDACTED]  
Amount and Date paid : [REDACTED]  
If ground for cutting is for conversion : [REDACTED]  
DAR Conversion Order No. : N/A Dated : N/A

This PERMIT is issued in accordance with the provisions of RA 8048 as amended and its Implementing Rules and Regulations promulgated by the Philippine Coconut Authority (PCA). Any violation of non-compliance with these established rules and regulations shall be ground for cancellation of this Permit and prosecution of violators by appropriate court.

This PERMIT is valid until JUNE 03-17, 2024, (15 days) from the date of issue and must  
(Period of Effectivity)  
bear the official dry seal of the Authority. Any alterations will render this Permit invalid.

Approved: [REDACTED]

cc:(certified true copies)  
☐ Barangay Chairman  
☐ CFO  
☐ LCIDC  
☐ Municipal Treasurer  
☐ MARO  
☐ Tenant (If applicable)

Note: This Permit to Cut Coconut Trees is issued and filed at the PCA Provincial/Regional/Central Offices. Original copy/duplicate of this document shall be presented to PCA/deputized law enforcement personnel during inspection.

The Philippine Coconut Authority  
Province of DAVAO DEL SUR

Accountable Form  
RA 8048 Form No. 01-R2-2019  
Article VII, Sec. 29

## PERMIT TO CUT COCONUT TREES

PTC [REDACTED]

Date Issued: JUNE 21, 2024

In reference to letter Application No. 464021 dated FEBRUARY 19, 2024 permit is hereby  
granted to [REDACTED] of JUNA SUBDIVISION, DAVAO CITY  
(Name of Applicant) (Address)

after submitting all supporting documents required and in view of the favourable findings/recommendations of  
[REDACTED] details of which are as follows:  
(Name of Agriculturist)

No of Trees approved for cutting : 50 TREES  
Ground for issuance of PTC : POSING HAZARD/GOV'T PROJECT  
Estimated volume(in bd. ft.) : 7,500 BD. FT.  
Area/Locality : BRGY. INDANGAN, BUHANGIN DISTRICT, DAVAO CITY  
Official receipt no. : [REDACTED]  
Amount and Date paid : [REDACTED]  
If ground for cutting is for conversion :  
DAR Conversion Order No. : N/A Dated : N/A

This PERMIT is issued in accordance with the provisions of RA 8048 as amended and its Implementing Rules and Regulations promulgated by the Philippine Coconut Authority (PCA). Any violation of non-compliance with these established rules and regulations shall be ground for cancellation of this Permit and prosecution of violators by appropriate court.

This PERMIT is valid until JUNE 26- JULY 05, 2024 ( 10 days) from the date of issue and must  
(Period of Effectivity)  
bear the official dry seal of the Authority. Any alterations will render this Permit invalid.

- ☐ LCIDC  
☐ Municipal Treasurer  
☐ MARO  
☐ Tenant (If applicable)

Note: This Permit to Cut Coconut Trees is issued and filed at the PCA Provincial/Regional/Central Offices. Original copy/duplicate of this document shall be presented to PCA/deputized law enforcement personnel during inspection.

The Philippine Coconut Authority  
Province of DAVAO DEL SUR

Accountable Form  
RA 8048 Form No. 01-R2-2019  
Article VII, Sec. 29

## PERMIT TO CUT COCONUT TREES

Date Issued: JUNE 21, 2024

granted

dated FEBRUARY 19, 2024

permit is hereby

of JUNA SUBDIVISION, DAVAO CITY

(Name of Applicant)

(Address)

after submitting all supporting documents required and in view of the favourable findings/recommendations of  
[REDACTED] details of which are as follows:

(Name of Agriculturist)

No of Trees approved for cutting : 99 TREES

Ground for issuance of PTC : POSING HAZARD/GOV'T PROJECT

Estimated volume (in bd. ft.) : 14,850 BD. FT.

Area/Locality : BRGY. INDANGAN, BUHANGIN DISTRICT, DAVAO CITY

Official receipt no. : [REDACTED]

Amount and Date paid : [REDACTED]

If ground for cutting is for conversion

DAR Conversion Order No. : N/A Dated : N/A

This PERMIT is issued in accordance with the provisions of RA 8048 as amended and its Implementing Rules and Regulations promulgated by the Philippine Coconut Authority (PCA). Any violation of non-compliance with these established rules and regulations shall be ground for cancellation of this Permit and prosecution of violators by appropriate court.

This PERMIT is valid until JULY 15-29, 2024, (15 days) from the date of issue and must

bear the official dry seal of the Authority. Any alterations will render this Permit invalid.

☐ MARO  
☐ Tenant (If applicable)

Note: This Permit to Cut Coconut Trees is issued and filed at the PCA Provincial/Regional/Central Offices. Original copy/duplicate of this document shall be presented to PCA/deputized law enforcement personnel during inspection.