ENVIRONMENTAL PERFORMANCE REPORT AND MANAGEMENT PLAN

for the

OMCPC SMRA SAN JOSE POWER PLANT EXPANSION PROJECT

OccMin Power Compound, Sitio Pulang Lupa,
Brgy. Central, San Jose, Occidental Mindoro

October 2023

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EXECUTIVE SUMMARY

ES 1. PROJECT FACT SHEET

ES 1.1. Project Details

Project Name:	OMCPC SMRA Diesel Power Plant Expansion
Nature of Project:	Other Thermal Power Plants
Total Power Generating Capacity	24 MW
Total Dependable Capacity	21 MW
Proposed Increase in Power Generation Capacity	8.3 MW (3 x 1.6MW; 2 x 1.2 MW and 1 x 1.1 MW)
Total Project Area:	5 hectares (No increase in Project Area)
Site Location:	OccMin Power Compound Sitio Pulang Lupa, Brgy. Central San Jose, Occidental Mindoro

ES 1.2. Profile of the Proponent

Name of the Proponent:	Occidental Mindoro Consolidated Power Corporation
Office Address:	Unit 1001 10th floor Galleria Corporate Center EDSA corner Ortigas Ave., Brgy. Ugong Norte Quezon City 1110
Contact Person:	Mr. Calvin Luther R. Genotiva Chief Operating Officer
Contact Details:	+632 88151876; +632 89973007; +632 89973012 clrg@firstbpower.com

ES 1.3. Project Size

Plant components	Current Operation	Proposed Plant
Technology	Diesel	Diesel
Rated power capacity (MW)	24	8.3
Net generating capacity (MW)	21	7
Total project area (hectares)	5.0	same
Fuel Type	Diesel/Bunker	Diesel
Fuel consumption:		
HFO (Li/hr)	0.26	N/A
Pure Diesel (Li/hr)	0.26	0.26
Water requirement (m^3/day)	0.8	0.2
Manpower requirement (during operation)	38	45

ES 2. PROJECT BACKGROUND

The **OMCPC San Jose Diesel Power Plant** of Occidental Mindoro Consolidated Power Corporation (OMCPC) was issued with its first Environmental Compliance Certificate (ECC) number ECC-R4B 1510-0095 on October 26, 2015. Previously it was known as "EPI 20 MW Diesel Power Plant Project" of Emerging Power Incorporated (EPI) and managed by its subsidiary OMCPC or OccMin Power during the

construction phase. OMCPC was later acquired by First B Power of the Banson Group thus ECC was amended by because of the transfer of ownership from EPI to OMCPC and First B Power.

By September, 2020, OMCPC requested for an ECC Minor Amendment to add fuel storage and oil & water separator. Subsequently a new ECC number ECC-OL-R4B-2020-0161 was assigned to OMCPC last October 14, 2020. Although it has a rated capacity of 24 MW but its current operating capacity is only peg at 21MW if the three (3) units operate although at present only two (2) units operate and the other unit serve as back-up unit in compliance to the ERC pronouncement.

OMCPC intends to amend its ECC by:

- Amending the Project Name to OMCPC SMRA Diesel Power Plant – in the report submissions to ERC the project is already known as such, thus the request to amend the project name to harmonize project name for both ERC and EMB;
- Request for reduction of total power generation capacity of the existing Caterpillar engines from 24 MW (3 x 8 MW) to 21 MW (3 x 7 MW) based on the Caterpillar – Monark Engine Performance Report (Annex 1.3)
- Increase its power generation capacity by adding 8.3 (3 x 1.6 MW; 2 x 1.2 MW and 1 x 1.1 MW) diesel generator set to increase its total power generation capacity to 29.3 MW. The additional 8.3 MW is part of the commitment of OMCPC to OMECO as indicated in the Power Supply Agreement entered by and between OMCPC and OMECO. As committed, OMCPC will gradually increase its power generation capacity in a span of 6 years and the initial 6MW is the first phase of the gradual increase while the additional 2.3 MW will be attained in two (2) years' time. In the next two or three years, OMCPC is committed to increase the baseload to attain the desired 34 MW as indicated in the PSA with the operation of its OMCPC MMBO Diesel Power Plant in Mamburao and OMCPC SBYN Diesel Power Plant in Sablayan, Occidental Mindoro.

ES 3. THE EIA METHODOLOGY

The EIA study was done to organize the technical components of the project as well as to identify the specific requirements of the proposed additional powerhouse by considering the environmental, economic, social, and institutional factors. All necessary requirements were documented through primary and secondary data gathering. Scientific analyses and recommendation based on actual approaches were used to complement the study. The methodology employed in this assessment is summarized in Table ES 1.

Table ES 1. The Environmental Impact Assessment methodology

Module	Descriptive Methodology
Land use/ Soil	The study and assessment on land-use covered the review of existing literature and maps of the project area. San Jose has an updated CLUP which was used as main reference for the land-use assessment The soil characterization was ascertained by checking available references from the DA.
Geology/Geomorphology	Reports and maps from the Mines and Geo-Sciences Bureau (MGB-DENR), the Philippine Institute of Volcanology and Seismology (PHIVOLCS) and other related literature were reviewed. Secondary data were also used as references.
Terrestrial Biology (flora and fauna)	The fora and fauna rapid assessment was just ocular observation listing all the species observed on-site since an existing power plant is already situated in the area
Hydrology/Hydrogeology	Several secondary data such as NAMRIA topographic map with scale of 1:50,000, rainfall data from PAGASA and climate change projection data were utilized. The

Module	Descriptive Methodology
	detailed discussion of baseline data included the following: hydrological characteristics of the project site including water source/aquifers/watershed characterization; water resources in the area.
Water Quality	Use of existing data from OMCPC such as Self-Monitoring Report (SMR), Compliance Monitoring Report (CMR) and Compliance Monitoring and Validation Report (CMVR) were also used as references.
Air and Noise Quality	Use of OMCPC's semi-annual Monitoring Report (SMR) and Compliance Monitoring and Validation Report (CMVR) were also reviewed. Actual Air Dispersion Modelling was conducted using AERMOD.
Socio-economic and Public Health	Key Informant Interviews (KIIs) and Focus Group Discussions (FGDs) were conducted. Use of secondary data were gathered from the provincial, municipal, barangay offices, Rural Health Unit (RHU), Barangay Health Center, Department of Education and OMCPC.

ES 4. SUMMARY OF BASELINE CHARACTERIZATION

Table ES 2. Summary of the baseline environmental conditions

Module	Summary of Baseline Condition
Land use and Pedology	The existing OMCPC power plant is located within the political jurisdiction of Brgy. Central, Municipality of San Jose, Province of Occidental Mindoro. The municipality of San Jose consists of 38 barangays and has a total area of 67,086.61 hectares based on San Jose's Comprehensive Land Use Plan. The existing project site is previously an agricultural area although the site has been an industrial area for a long time since the NPC Pulang Lupa Power Plant is located within the OMECO compound where the proposed additional powerhouse will also be constructed. In the current CLWUP, the OMECO area is now classified as an industrial area. Based on the Geoportal's soil type mapping, San Jose, Occidental Mindoro consist of 11 soil series: Maranlig Gravelly Sandy Clay Loam, Rough Mountain Soil, Quingua (Clay Loam, Sandy Loam, Clay), River Wash, Magsaysay Clay, San Manuel (Silt Loam, Loamy Sand), San Miguel Silt Loam, Beach Sand, Hydrosol and Bolinao Clay Loam. One (1) type of soil blanket the OMCPC project site in Brgy. Central - the Magsaysay Clay. Magsaysay clay is a fine textured soil with no particular mineral that dominates and is found in areas with sell-distributed rainfall.
Geology/Geomorphology	The land surface at the site is generally flat and slopes slightly towards the southwest with a very gentle dip (2° to 5°). The project site is part of the alluvial plains in the southwest coast of Mindoro. These alluvial plain borders the western coast of the island forming a wide north-south agricultural region almost extending the whole length of the island. The major geologic structure in Mindoro Island is the north-south trending Central Mindoro Fault that stretches about 100 km from Mansalay to Puerto Galera. Previous works by the Mines & Geosciences Bureau (MGB) are vague on the recent activity of the Central Mindoro Fault, although topographic expressions along its trace seem to suggest that it is an active fault. Another major structure is the Lubang Fault that traverses immediately the northern portions of Mindoro Island. The project site is located in the alluvial deposits which is the youngest and still unconsolidated materials on the western coast of Mindoro.

Module	Summary of Baseline Condition
	There is no known active fault at the project site, thus no threat from ground rupture is delineated. There is moderate probability of subsidence at the site considering the nature of the underlying unconsolidated sediments in the project site. The existing power plant and the proposed additional powerhouse is at an elevation of 20 m above sea level, and 3 km away from the active channels of the river, it is spared from the threat of the annual floods
Terrestrial Biology (flora and fauna)	Flora Flora vegetation on-site were composed of 17 vegetation species based on the rapid assessment. There were no threatened species observed on-site. Fauna There were 14 wildlife species observed in the project area all of which are avian species belonging to 14 families that were observed during the assessment. There were no endangered, threatened or vulnerable species observed in the project area. In terms of endemicity all the species are resident species except for two (2) endemic species and one (1) migratory species.
Hydrology/Hydrogeology	The Municipality of San Jose has both marine water and freshwater resources including groundwater and shallow springs. The municipality has mainly four major inland watersheds namely: Busuanga, Cabariwan, Caguray and Labangan. The whole of Ilin and Ambulong Islands is considered as another sub-watershed base on the CLUP of San Jose, Occidental Mindoro. Though the project area is proximal to Busuanga River of the Busuanga watershed but the site is actually within the Labangan watershed. It turned out that Molasses River is the more famous name of Amindan River referred to in the NAMRIA map. The uppermost tributary of Molasses/Amindan River emanates near the project site
Water Quality	Three (3) ambient surface water quality monitoring stations were previously established in the study area for semi-annual monitoring purposes and one (1) wastewater effluent monitoring station The results show that generally the samples did not exceed the standards for Class C freshwater.
Meteorology/Climatology	The Municipality of San Jose in Occidental Mindoro falls under Type I climatic condition based on the Modified Coronas Classification Scheme characterized with two (2) pronounced seasons. Records on climatological normals from 1981 to 2020 showed that the municipality experience, on average, 117 rainy days a year and a total rainfall of 2,388.7 millimeters. Climatological extremes record as of 2021 shows that San Jose experienced its heaviest day of rain on October 21, 1998 at 286.7 mm. Yearly mean temperature record in the San Jose Synoptic station was 28.1°C, which has increase by 0.1°C when compared a decade ago. The annual average wind speed in San Jose is 3 meters per second (m/s), characterized by the prevailing easterly winds. From November to May, the wind speed is generally 3 m/s when the *Amihan* trade wind prevails. From June to September, wind direction is generally west with speeds of 2-3 m/s. Strongest wind recorded in San Jose, Occidental Mindoro occurred last December 25, 2019 at a staggering speed of 42 m/s, when Typhoon Ursula (Phanfone) traversed the Philippines during the Christmas Eve and Christmas Day.

Module	Summary of Baseline Condition
	Occidental Mindoro experiences one (1) cyclone in a year.
Air and Noise Quality	From December 2019 onwards, the stack sampling results for SO_X (as SO_2) were within the emission standards set at 700 mg/Nm^3, except for the recent stack sampling results (July 2023) for SO_X (as SO_2), which exceeded the corresponding emission standard. The results of ambient monitoring were within the ambient quality standards set for TSP, PM_{10}, SO_2, and NO_2 at 300, 200, 340, and 360 µg/Nm^3, respectively. As shown in Tables 2.21 to 2.22 the noise levels in all the monitoring stations except for STN1 exceeded the maximum allowable noise base on their respective category.
Socio-economic	Occidental Mindoro has a total population of 525,354 or 16.27% of MIMAROPA's total population (NSO, 2020). The province's population grows at an annual average rate of 1.59% from 2015-2020. San Jose is the most populated municipality with a population of 153,267 in 2020, which is 29.17% of the province's total population. Brgy. Central has a total population of 9,268. Based on the Status Report on Millenium Development Goals using CBMS Data: Province of Occidental Mindoro, the average literacy rate (15-24 years old) in the province is 93.6% for female and 92.4% for male. Also, 85.3% and 81.0% of women and men, respectively, are functional literate. Majority of the gainful workers in Occidental Mindoro worked in the agriculture, forestry and fishing sector accounting for 42.89% of the total gainful workers 15 years old and over (2010). This indicates that majority of the people in the province depends on agriculture for their livelihood. Labor force participation rate (LFPR) in Occidental Mindoro last 2020 is at 60.4. Employment rate is at 92.0% in 2020. The province had a considerably low unemployment rate in 2018 at 4.9% and then a high of 8.0% in 2020. The health status of an area reflects to a certain extent the healthiness of the people living therein. As reflected in the 2022 MHO LGU Health Score Card, the three (3) major causes of mortality in the municipality were Hypertension (136), Pneumonia (86) and Cancer (82). The top three leading causes of morbidity (2022 MHO LGU Health Score Card) is Acute Respiratory Infection (ARI) for ages 5 and above with 7,293 cases; Hypertension with 4,012 cases and Animal bites with 3,512 cases.

4.2 Impacts, Management, and Monitoring Plan

The identified impacts of the project for land, water, air, and human environment, management and monitoring schemes formulated for the proposed project is depicted on Table ES 3 to ES 4, respectively.

Table ES 3. Impact Management Plan of OMCPC for the existing power plant and the additional powerhouse

Project Phase/ Environmental Aspect	Environmental Component Likely to be Affected	Potential Impacts	Enhancement/Mitigating Measures	Efficiency of Measures	Responsible Entity	Commitment/Guarantee
PRE-CONSTRUCTION PHASE						
Application of permits/licenses/ clearances from LGUs and national government agencies	PEOPLE	• Social Acceptance and Support for the project	• IEC on additional powerhouse project to inform/update Brgy. Central and San Jose LGU, respective institutions, agencies, offices, bodies and organizations for providing their respective endorsements and/or clearances • MOAs with respective bodies	100% compliance to local and national requirements	• OMCPC Admin • OMCPC ComRel	• Non commencement of construction until full compliance and completion of required endorsements and clearances
Site clearing of the proposed ore blend yard area including leveling and surveying	PEOPLE	• Safety of the workers/staff and contractors within the premises of OMCPC	• Fences shall be installed around the perimeter of the project area. • Strict use of PPE • Notice should be placed to inform about the workers/staff on the PPE zone and dangers of falling debris. • Security guards shall be stationed at the entry/exit to prevent unauthorized people from entering the construction site.	100% compliance to PSC's existing Safety Mgmt. Protocol – zero LTA and Fatal Accident	• OMCPC Engineering Group and contractor • OMCPC Safety Manager	• Safety standards management protocol • DOLE compliance and safety report • PPE
CONSTRUCTION PHASE						
Establishment of access road to the project site	LAND	• Vegetation removal due to establishment of new access road or widening of existing access road	• Strategic planning of access road location to minimize vegetation clearing and avoid cutting of mature trees in the vicinity	100% compliance to PD 705 and tree cutting permit conditions if necessary	• OMCPC Engineering Group and contractor • OMCPC Envi Team	• Access road design plan to show potential affected areas • Contingency plan for mitigation measures

Project Phase/ Environmental Aspect	Environmental Component Likely to be Affected	Potential Impacts	Enhancement/Mitigating Measures	Efficiency of Measures	Responsible Entity	Commitment/Guarantee
Establishment of access road to the project site	LAND	• Soil erosion and soil compaction	• Preferential scheduling of clearing and excavations works during the drier months or days of the year • Avoidance of cutting of trees within the required legal easements such as rivers, creeks, riparian zones, and other identified restricted areas to development. • Maximize cut-and-fill method of site preparation and road construction • Hauling of spoils to designated run-off-controlled spoil disposal area • Establishment of appropriate erosion control, such as vegetation cover or retaining walls. • Sediment ponds/traps will be constructed to reduce sedimentation in creeks/rivers and other bodies of water. This will be done downstream of the soil stockpile area. Also, siltation ponds will be constructed on appropriate places within the project site.	100% compliance to the EMP	• OMCPC Engineering Group and contractor • OMCPC Environmental Team	• Slope stabilization plan • Rehabilitation plan to include tree planting and landscaping alongside the access roads
Construction of additional powerhouse and ancillary facilities	LAND	• Vegetation removal due to construction of powerhouse and ancillary facilities • Threat to existence and/ or loss of important local species • Threat to abundance, frequency and	• Balling and transplanting of affected trees of appropriate size shall be emphasized if necessary • Establishment of nursery where seedlings shall be intensively cared for reforestation and greening program of the company for Carbon Sink • Establishment of additional buffer areas and green corridors within the project site	100% compliance to the EMP	• OMCPC Admin • OMCPC Contractor • OMCPC Envi Team	• Tree cutting permit if there is cutting of trees

Project Phase/ Environmental Aspect	Environmental Component Likely to be Affected	Potential Impacts	Enhancement/Mitigating Measures	Efficiency of Measures	Responsible Entity	Commitment/Guarantee
		distribution of important species	• No development and cutting of trees within the required legal easements such as the rivers and creeks, riparian zones, and other identified un-developable areas • Vegetation clearing kept to a minimum and what is essential			
		• Loss of topsoil and occurrence of soil erosion • Soil compaction	• Preferential scheduling of clearing and excavations works during the drier months (Low rainfall in Type I areas is during the months of November to April). • Maximize cut-and-fill method of site preparation and road construction. • Minimal topsoil spoils will be generated since excavation will be limited to structural foundations mainly isolated footings. • Spoils shall be hauled to designated run-off- controlled temporary spoil holding/storage area • Limiting the spoil height to 5m and covering the spoils with tarpaulin especially during rainy months (May to October in Type I areas).	100% compliance to the EMP	• OMCPC Admin • OMCPC Contractor • OMCPC Envi Team	• Include in the TOR of the contractor • Topsoil storage and management plan • SMR
		• Generation of solid and hazardous waste	• Use of existing OMCPC Materials Recovery Facility (MRF) • Classification of waste separating hazardous waste from non-toxic wastes • Collection of scrap and recyclable materials that can be sold • Proper storage of hazardous waste • Tapping DENR-accredited waste transporter to dispose hazardous waste	100% compliance to OMCPCs EMP and manual in compliance to RA 9003 and RA 6969	• OMCPC Admin • OMCPC Contractor • OMCPC Envi Team	• Hazardous Wastes Management, Treatment and Disposal Program • Hazwaste Generator ID • Hazwaste Treater and EMB Certificate of Treatment including Hazwaste Transport Permit

Project Phase/ Environmental Aspect	Environmental Component Likely to be Affected	Potential Impacts	Enhancement/Mitigating Measures	Efficiency of Measures	Responsible Entity	Commitment/Guarantee
	Water Resources	Degradation of ground and surface water quality from surface run-off that will be generated along construction site	• Construction of berms and run-off canals along the edge of construction are that will divert surface run-off to a silt pond and prevent run-off from flowing into the irrigation canal • Establishment of silt fences if necessary	100% compliance to OMCPCs EMP in compliance to RA 9275	• OMCPC Admin • OMCPC Contractor • OMCPC Envi Team	• Include in TOR of contractor • OMCPC Run-off Water and Drainage Mgmt. Plan
	Air Quality	Generation of dust	• Sprinkling of water along exposed areas especially during dry days; • Establishment of wind barriers and perimeter fence within the periphery of the construction area; • Regulation of vehicle speed should be maintained at 30 kph • Tarpaulin covering for haul trucks • Regular washing of all hauling truck along designated areas far from existing drainage canals • Maintain equipment deployment schedule • Regular maintenance of vehicles and construction equipment	100% compliance to OMCPCs EMP in accordance with RA 8749	• OMCPC Contractor • OMCPC Envi Team	• Equipment deployment schedule • Perimeter fence and wind barrier plan • Contract between OMCPC and contractor to show contingency measure for dust abatement
		Increased noise level	• Regulation of vehicle speed should be maintained at 30 kph • Installation of mufflers • Provision of ear plugs to laborers exposed to high noise levels. • Orientation of new employees and contractors regarding noise management program • Strict observance of speed limit – 30 kph	100% compliance to OMCPCs EMP in accordance with NEPC standard	• OMCPC Contractor • OMCPC Envi Team	• Noise Mgmt. Plan • Perimeter fence/wind barrier plan • Contract between OMCPC and contractor to show contingency measure for noise management

Project Phase/ Environmental Aspect	Environmental Component Likely to be Affected	Potential Impacts	Enhancement/Mitigating Measures	Efficiency of Measures	Responsible Entity	Commitment/Guarantee
	PEOPLE	Occupational hazard awareness	• The proponent and its contractor will conduct periodic orientation and safety training seminars to all workers • A safety program shall be implemented putting primary value on safety; placing of safety signage and warning notices on appropriate and strategic places; and proper observance of environmental sanitation practices. • Only qualified and authorized personnel will be allowed to operate any equipment. • More specific practices to be employed would include strict adherence of workers to wearing of PPEs and equipment.	100% compliance to OMCPCs OHS	• OMCPC Admin • OMCPC Contractor • OMCPC Safety Officer	• OSH Program • Emergency Response Program • Safety reports
		Employment opportunities	• Prioritization of locals for hiring • Conduct of IEC regarding policy on local prioritization in hiring manpower, contractors and suppliers • Provision of Capacity Building and Skills Training Program	100% compliance to OMCPCs Hiring Plan	• OMCPC Admin • OMCPC Contractor • OMCPC ComRel • TESDA	• Hiring plan and documentation report • DOLE report • IEC Program
		Possible Adverse Effects on Health and Sanitation	• The workforce shall be given the basic provisions of clean and potable water, sanitary toilet facilities, and hygienic canteen facilities. • Domestic wastes segregation shall be practiced, where recyclable materials shall be collected for re-use or sold to recyclers. • Disposal site for the generated spoils will be identified with due consideration to the safety of the people and protection of the environment.	100% compliance to OMCPCs OHS	• OMCPC Contractor • OMCPC Safety Officer • OMCPC Envi Team	• Health and Sanitation Plan • Waste Management Plan

Project Phase/ Environmental Aspect	Environmental Component Likely to be Affected	Potential Impacts	Enhancement/Mitigating Measures	Efficiency of Measures	Responsible Entity	Commitment/Guarantee
			• The spoils will be hauled on a regular schedule to ensure less impact on traffic and residents.			
		Increased traffic due to hauling trucks, vehicles and equipment going to and from the site	• Installation of safety barriers (e.g. fence) and signages. • Drafting and implementation of Traffic management plan (including ingress/egress of vehicles at construction site), including properly trained personnel to manage traffic flow. • Implement pedestrian walkways near the construction site. • Ensure that contractor's vehicles, trucks and equipment are of good working condition through timely inspections. • Ensure that the contactor employs properly trained crew and operators, especially drivers of large equipment like cranes and earth moving vehicles.	100% compliance to OMCPCs traffic management plan	• OMCPC Safety Officer and Security Team	• Compliance Monitoring Report • Traffic Management Plan
OPERATION PHASE						
Operation of the following: • Existing Power Plant • Additional Powerhouse • Ancillary Facilities • Logistics Operation	LAND	Natural Hazards and Calamities such as: • Seismic Hazards and Earthquake Occurrence • Ground Acceleration and Rupture • Liquefaction, landslide and settlement hazard • Foundation Failure • Tsunami • Volcanic Hazard	• Community awareness thru conduct of IEC activities. • Conduct of detailed engineering geological studies • Regular structural engineering inspection • Provision of safety guidelines/earthquake emergency plans. • Conduct of warning/drill such as earthquake simulation by OMCPC in partnership with LGU and other concerned agencies.	100% compliance to OMCPCs Disaster Risk and Management Program	• LGU • MGB-IVB • NDRRMC • PDRRMO • MDRRMO • OMCPC Admin	• Include in the IEC activities of OMCPC ComRel • MOA between LGU, NDRRMC, NGO's and PO's

Project Phase/ Environmental Aspect	Environmental Component Likely to be Affected	Potential Impacts	Enhancement/Mitigating Measures	Efficiency of Measures	Responsible Entity	Commitment/Guarantee
		Generation of solid waste and hazardous waste	• Periodic re-orientation of workers, laborers and contractors for proper waste segregation and handling of generated waste • Classification of waste and recovery of recyclable materials • Regular collection and proper disposal of solid waste in a dump site/disposal facility • Proper storage and disposal of chemicals used in the power plant • Proper storage and disposal hazardous waste such as busted lamps, used oil, etc. • Tapping DENR-accredited waste treater for hazardous waste • Implementation of Solid Waste Management Pro	100% compliance to PSCs EMP in compliance to RA 9003 and RA 6969	• OMCPC Admin • OMCPC Envi Team	• SMR • Hazwaste Generators ID
	WATER	Change in water quality Potential contamination due to spillage of fuel oil, lubricants and waste oil	• Provision of toilet facilities for workers • Periodic inspection and maintenance including siphoning of sludge of septic tanks • Provisions of a spoil's containment/waste disposal area • Provision of a motor pool with oil traps • Installation of bund walls with 110% retaining capacity • Concreting of tank ground farms • Connection of tank farms to oil and water separator • practices putting bins containing saw dust and sand that can be sprinkled in case of accidental spillage of soil in work areas.	100% compliance to OMCPs EMP in compliance to RA 9275 and RA 6969	• OMCPC Admin • OMCPC Envi Team	• Wastewater Management Plan • Discharge Permit • Oil spill contingency plan

Project Phase/ Environmental Aspect	Environmental Component Likely to be Affected	Potential Impacts	Enhancement/Mitigating Measures	Efficiency of Measures	Responsible Entity	Commitment/Guarantee
			• An existing oil spill management protocol is being implemented by OMCPC and this shall be strictly implemented. • OMCPC also has universal spill kits and sorbents as well as oil containment boom that can be utilized for any untoward oil spillage. • Good housekeeping measures			
	AIR	Increase in the amount of air pollutants	• SOX (as SO2) emissions are proportional or related to the percentage of sulfur content of the fuel, an appropriate mixture of bunker fuel and diesel fuel ensures compliance with the emission standard for SOX (as SO2) • The stack heights of the proposed gensets should be 15 m at a stack inner diameter of 0.45 m to ensure compliance with the ambient guideline values set for NO2, including SO2, NO2, and TSP • Rain caps installed on top of the stacks reduce the air emissions' exit velocities, thus increasing the dispersed ground-level concentrations. Therefore, rain caps should not be used or installed on the stacks • Installation of scrubbers for the existing power plant • Installation and maintenance of continuous emission monitoring system • Scheduled repair and maintenance of plant facilities and equipment • Use of Euro 4 or Euro 5 fuel for service vehicles.	100% compliance to OMCPCs EMP in compliance to RA 8749	• OMCPC Admin • OMCPC Mechanical Team • OMCPC Envi Team	• Maintenance Plan • SMR • Permit to operate

Project Phase/ Environmental Aspect	Environmental Component Likely to be Affected	Potential Impacts	Enhancement/Mitigating Measures	Efficiency of Measures	Responsible Entity	Commitment/Guarantee
			• Semi-annual monitoring for both ambient and stack emissions • Establishment of carbon sink			
		Noise generation	• Enclosure construction for noise generating equipment • Installation of exhaust silencer and safety bulb during emergency shutdown • Periodic re-orientation of workers, laborers and contractors on OMCP's EMP for noise management program including use of ear muffs in noise prone areas • Addition of flexible couplings to minimize torsional vibration • Noise damping or acoustic materials to absorb noise	100% compliance to OMCPCs EMP in accordance with NEPC standard	• OMCPC Mechanical Team • OMCPC Envi Team	• Noise management plan • SMR • OMCPC OHS

Project Phase/ Environmental Aspect	Environmental Component Likely to be Affected	Potential Impacts	Enhancement/Mitigating Measures	Efficiency of Measures	Responsible Entity	Commitment/Guarantee
	PEOPLE	Exposure to Occupational Health and Safety Hazards	• OMCPC and its contractor shall conduct periodic orientation and safety training seminars to all workers. It implements a safety program putting primary value on safety; placing of safety signages and warning notices on appropriate and strategic places; and proper observance of environmental sanitation practices. Likewise, only qualified and authorized personnel will be allowed to operate any equipment. More specific practices to be employed would include strict adherence of workers to wearing of protective devices and equipment. • Assignment of safety engineer and provision of first-aid/safety kits • The workforce has clean and potable water, sanitary toilet facilities, and hygienic canteen facilities. • Domestic wastes segregation shall be practiced, where recyclable materials area collected for re-use or sold to recyclers. • Disposal site for the generated spoils shall be identified with due consideration to the safety of the people and protection of the environment. • The spoils will be hauled on a regular schedule to ensure less impact on traffic, commuters and residents	100% compliance to OMCPCs OHS	• OMCPC Envi Team • OMCPC Safety	• OHS and Emergency response program
	PEOPLE	Employment opportunities and economic benefits	• Prioritize hiring of local workers • As an enhancement measure, the proponent shall pay the taxes, fees,	100% compliance to existing	• OMCPC Admin and Human Resource	• Local hiring report • DOLE Report • Social Development Plan

Project Phase/ Environmental Aspect	Environmental Component Likely to be Affected	Potential Impacts	Enhancement/Mitigating Measures	Efficiency of Measures	Responsible Entity	Commitment/Guarantee
			permits and licenses on time to enable the national government and the concerned LGUs to deliver the basic needs of the residents also on time. • It is recommended that the proponent utilize the bottom to top planning approach to identify the priority needs of the communities entitled to SDP • The company shall conduct consultative meetings to flesh out the details in the formulation of the SDP to ensure that project ideas emanate from the intended beneficiaries. • Implementation of social development programs for host community • The company will assist the beneficiaries of the SDP in project development and presentation to ensure that these proposals are sustainable and environmentally friendly. • The company shall coordinate with training centers and facilities (i.e.TESDA) to upgrade the level of qualifications of residents in the affected barangay to enable them to participate productively in the operational phase of the project • Continuous skills training and development and capacity building program for the impact areas	national and local laws	• OMCPC ComRel	• Corporate Social Responsibility Program • ER 1-94
ABANDONMENT						
Dismantling of existing structures	LAND	Generation of squanders and industrial scraps	• Hiring of an accredited waste collector • Disposal site for the spoils will be identified with due consideration to the	100% compliance to OMCPCs EMP	• OMCPC Admin • OMCPC Envi Team	• Abandonment Plan

Project Phase/ Environmental Aspect	Environmental Component Likely to be Affected	Potential Impacts	Enhancement/Mitigating Measures	Efficiency of Measures	Responsible Entity	Commitment/Guarantee
			safety of the people and protection of the environment.	in compliance to RA 9003 and RA 6969		
	WATER	Oil and grease leakage from the operation of moving/ hauling vehicles	• Regular maintenance of hauling vehicles • Clean-up of affected areas	100% compliance to OMCPCs EMP in compliance to RA 9275 and RA 6969	• OMCPC Admin • OMCPC Envi Team	• Abandonment Plan
	PEOPLE	Employment for the structure removal activities	• Local hiring	100% compliance to existing national and local laws	• OMCPC Admin • OMCPC Envi Team	• Hiring plan

Table ES 4. Revised EQPL of OMCPC

Key Environmental Aspects per Project Phase	Potential Impacts per Envt'l. Sector	Parameter to be Monitored	Sampling & Measurement Plan			Lead Person	Annual Estimated Cost	EQPL Management Scheme					
								EQPL Range			Management Measure		
			Method	Frequency	Location			Alert	Action	Limit	Alert	Action	Limit
I. Construction Phase													
Construction of project facilities and access roads	Occasional increase of fugitive and gaseous emission	Ambient TSP, PM10, SO2, and NO2	• TSP– High Volume-Gravimetric, USEPA 40 CFR, Part 50 • PM10- High volume with 10-micron particle-size inlet-Gravimetric, USEPA 40 CFR, Part 50, Appendix J • SO2 – Gas Bubbler - Pararosanilin e Method NO2- Gas Bubbler-Griess Saltzman Method or Chemilumines cence Method	Semiannua l or as frequent as necessary (or once if project construction is less than 6 months (depends if there are complaints from nearby residents)	Project boundary and nearest residences downwind of the emission sources.	PCO	PhP150,000 per sampling	≥75% of ambient standard. EQPL (Alert Mininum in µg/Nm3) NO2 = 195 TSP = 225 PM10 = 150 SO2 =255	≥ 90% of ambient standard. EQPL (Action minimum in µg/Nm3) NO2 = 234 TSP = 270 PM10 = 180 SO2 =306	NAAQS (in µg/Nm3) NO2 = 260 TSP = 300 PM10 = 200 SO2=340	Monitor levels and determine prevailing wind flows and other meteorological condition Identify possible sources of high ambient concentrations	Check for complaints from residence Implement mitigation measures to reduce fugitive emissions during construction (e.g., water spraying) Inform management in case the proposed project is the possible source of high ambient levels based on meteorological condition	Suspend construction related work that causes exceedance with ambient levels (e.g., TSP) and implement corrective measure (e.g., water spraying)
	Noise	Ambient noise	Direct reading/sound level meter	Semiannua l or as frequent as necessary. or once if project constructio n is less than 6 months (depends if there are complaints from nearby residents)	Residences and other noise sensitive receptors adjacent construction sites.	PCO	Included in the OMCPC's annual EHS Unit monitoring cost	57dB	64dB	70dB	• Check background noise levels • Identification of possible source of noise	• Check sources of noise that contribute to higher noise levels • Maintenance, adjustment, replacement of mufflers • Regulate vehicle speed • Issuance of ear plugs	• Implement noise attenuation measures
	Accidental fuel and oil spills	pH, DO, COD, BOD, Oil and grease	Water sampling	During events of accident spillage	Nearby bodies of water	PCO	Included in the OMCPC's annual EHS Unit monitoring cost	BOD – 6.1mg/L Oil and grease-2.8mg/L	BOD – 6.8 mg/L Oil and grease-2.9mg/L	pH – 6.5-8.5 DO – 5.0 ($_{minimum}$) BOD – 7 mg/L Oil and grease-2mg/L	• Identification of possible source of pollutant • Segregating all waste oils and lubricants from maintenance of	• Segregating all waste oils and lubricants from maintenance of construction equipment • and disposing of them properly.	• Halting operation of the component identified as source of pollutant

Key Environmental Aspects per Project Phase	Potential Impacts per Envt'l. Sector	Parameter to be Monitored	Sampling & Measurement Plan			Lead Person	Annual Estimated Cost	EQPL Management Scheme					
								EQPL Range			Management Measure		
			Method	Frequency	Location			Alert	Action	Limit	Alert	Action	Limit
											construction equipment • and disposing of them properly.	• Constructing secondary containment areas and other sumps and regular monitoring.	
Construction hazards	Safety	No of incidents an accidents	Record accidents and incidents	Daily	Construction site	Proponent and contractor	Part of the construction cost	Lost time due to minor injury	Occurrence of major injury due to accident	Occurrence of fatality due to accident	• Conduct quarterly safety briefing and orientation to laborers and workers • Installation of safety signages along accident prone areas within the construction site	• Conduct daily inspection of construction area • Conduct daily briefing on safety program	• Work stoppage along area where accident occurs and conduct investigation and institute safety measures and formulate specific safety procedures and protocols
Disposal of construction wastes	Solid wastes	Volume of construction wastes and spoils generated	Records estimation and monitoring	Daily	Construction site	Contractor	Minimal cost	• Accumulation of domestic wastes, scraps and junks within the project site	• Accumulated waste became hazard to both vehicle and employees	• Wastes become toxic or serve as breeding ground for pests which can be a vector for infectious diseases	• Proper segregation • Appropriate labeling of waste containers • Establishment of Materials Recovery Facility (MRF)	• Regular audits and maintenance of waste management system	• Immediate hauling and disposal of waste by a DENR accredited waste transporter and treater
Employment conflicts	Complaints manage-ment	Nature and number of complaints	Record keeping	During periods of complaints	Impact communities	ComRel	Minimal cost	• Submission of formal complaint at the ComRel Officers	• Submission of formal complaint the need response/action or intervention from the upper management	• Media intervention causing local/regional /national issues	• Institution of grievance system • Conduct regular IEC to inform and justify the activities being undertaken by OMCPC in its operation	• Notify OMCPCI Admin for complaint and take remedial measures to address complaints • Investigate valid complaints, conduct dialogue with communities and implement mitigating measures	• Conduct in depth investigation and identify root cause • Institute massive efforts to address complaints and compensate affected communities
II. Operation Phase													
Operation of diesel generator sets	Release of gaseous emissions at the stacks	Stack emissions of CO, NOX, PM, SOX,	SOX (as SO2)-U.S.EPA Methods 1 through 4 and 6 or 8 as appropriate	Semiannual for gensets greater than 1250 kW or 1.25 MW and	Exhaust stacks	Project proponent / Accredited third-party stack samplers	PhP 50,000 per stack per year r	≥75% of NESSAP Values. EQPL (Alert Minimum in mg/Nm3) SOX =525 NOX = 1500	≥90% of NESSAP Values. EQPL (Action Minimum in mg/Nm3) SOX =630 NOX = 1800	NESSAP Values (in mg/Nm3) SOX =700 NOX = 2000 PM = 150 CO = 500	• Monitor levels	• Check diesel generator conditions (e.g., gas flow and fuel inputs)	• Implement corrective measures to reduce levels to within NESSAP values

Key Environmental Aspects per Project Phase	Potential Impacts per Envt'l. Sector	Parameter to be Monitored	Sampling & Measurement Plan			Lead Person	Annual Estimated Cost	EQPL Management Scheme					
								EQPL Range			Management Measure		
			Method	Frequency	Location			Alert	Action	Limit	Alert	Action	Limit
			NOX (as NO2) -U.S.EPA Methods 1 through 4 and Method 7 Particulates – U.S.EPA Methods 1 through 5 CO -U.S.EPA Method 3 or 10	not classified as standby gensets; annual for gensets less than 1250 kW				PM = 112.5` CO = 375	PM = 135 CO = 450				
Operation of the diesel generator sets	Release of air emissions	Ambient TSP, PM10, SO2, and NO2	TSP– High Volume-Gravimetric, USEPA 40 CFR, Part 50 PM10- High volume with 10-micron particle-size inlet-Gravimetric, USEPA 40 CFR, Part 50, Appendix J SO2 – Gas Bubbler - Pararosaniline Method NO2- Gas Bubbler-Griess Saltzman Method or Chemiluminescence Method	Semiannual or as frequent as necessary (depends if there are complaints from residents and other receptors)	Project boundary and nearest residences downwind of the emission sources.	Project proponent / contractor	PhP 50,000 per month	≥75% of ambient standard. EQPL (Alert Mininum in µg/Nm3) NO2 = 195 TSP = 225 PM10 = 150 SO2 =255	≥ 90% of ambient standard. EQPL (Action minimum in µg/Nm3) NO2 = 234 TSP = 270 PM10 = 180 SO2 =306	NAAQS (in µg/Nm3) NO2 = 260 TSP = 300 PM10 = 200 SO2=340	• Monitor levels and determine prevailing wind flows and other meteorological condition • Identify possible sources of high ambient concentrations	• Check for complaints from residence • Inform management in case the proposed project is the possible source of high ambient levels based on meteorological condition	• Suspend operation and implement corrective measure
Operation of diesel generator sets	Increase in noise levels	Noise Levels	Direct reading/sound level meter	Semiannual or as frequent as necessary (depends if there are complaints from nearby residents and other receptors)	Same as monitoring stations for air	PCO	Included in the OMCPC's annual EHS Unit monitoring cost	53dB	59dB	NPCC (1980) ambient noise standard: a) Class A-Residential - Daytime= 55 dBA -Evening/ morning = 50 dBA -Nighttime =45 dBA	• Identification of possible source of noise • Issuance of ear plugs	• Maintenance, adjustment, replacement of mufflers and installation of noise reduction apparatus	• Reduction on the use of noisy or temporary reduction of power generation

Key Environmental Aspects per Project Phase	Potential Impacts per Envt'l. Sector	Parameter to be Monitored	Sampling & Measurement Plan			Lead Person	Annual Estimated Cost	EQPL Management Scheme					
								EQPL Range			Management Measure		
			Method	Frequency	Location			Alert	Action	Limit	Alert	Action	Limit
Generation of effluent and sewage	Water quality	Effluent – Effluent rate, BOD, TSS, pH, O/G, Fecal Coliform, Temp. Rise, Phosphate, Surfactants, Ammonia, Nitrate, Cr^{+6}, As, Cd, Cu, Pb, Zn Domestic – BOD, TSS, pH, O/G, Fecal Coliform, Temp. Rise, Phosphate, Surfactants, Ammonia, Nitrate	Effluent sampling and laboratory analysis	Monthly	Plant Effluent – outfall and wastewater treatment facility	PCO	Included in the OMCPC's annual EHS Unit monitoring cost			DAO 2016-08 and DAO 2021-19 Effluent Standards ➢ BOD – 50 mg/L ➢ TSS – 100 mg/L ➢ pH – 6.0-9.5 ➢ O/G – 5 mg/L ➢ Fecal Coliform – 400 mg/L ➢ Temp – 3degC ➢ Phosphate – 1 mg/L ➢ Surfactants – 15 mg/L ➢ Ammonia – 4 mg/L ➢ Nitrate – 14 mg/L ➢ Cr^{+6} – 0.02 mg/L ➢ As – 0.04 mg/L ➢ Cd – 0.01 mg/L ➢ Cu – 0.04 mg/L ➢ Pb – 0.1 mg/L ➢ Zn – 4 mg/L DAO 2016-08 and DAO 2021-19 Ambient Water Standards ➢ BOD – 7 mg/L ➢ TSS – 80 mg/L ➢ pH – 6.5-9.0 ➢ O/G – 2 mg/L ➢ Fecal Coliform – 200 MPN/L ➢ Temp – 25-31degC ➢ Phosphate – 0.5 mg/L ➢ Surfactants – 1.5 mg/L ➢ Ammonia – 0.06 mg/L ➢ Nitrate – 7 mg/L	• Identification of possible source of pollutant • Maintenance or establishment of centralized wastewater treatment facilities • Analysis of materials input	Implementation of additional treatment facility and increase treatment capacity of the wastewater treatment facilities • Use of alternative materials known to have lesser pollutant concentration	• Temporary halting of effluent discharge • Halting operation of the component identified as source of pollutant

Key Environmental Aspects per Project Phase	Potential Impacts per Envt'l. Sector	Parameter to be Monitored	Sampling & Measurement Plan			Lead Person	Annual Estimated Cost	EQPL Management Scheme					
			Method	Frequency	Location			EQPL Range			Management Measure		
								Alert	Action	Limit	Alert	Action	Limit
										➢ Cr^{+6} – 0.01 mg/L ➢ As – 0.02 mg/L ➢ Cd – 0.005 mg/L ➢ Cu – 0.02 mg/L ➢ Pb – 0.05 mg/L ➢ Zn – 2 mg/L			
Waste management	Solid and hazardous wastes	Volume of wastes and spoils generated	Records Estimation and monitoring	Daily	Plant site	PCO	Included in the OMCPC's annual EHS Unit monitoring cost	Accumulation of domestic wastes, scraps and junks within the project site	Accumulated waste became hazard to both vehicle and employees	Wastes become toxic or serve as breeding ground for pests which can be a vector for infectious diseases	• Proper segregation • Appropriate labelling of waste containers • Establishment of Materials Recovery Facility (MRF)	• Regular audits and maintenance of waste management system	• Immediate hauling and disposal of waste by a DENR accredited waste transporter and treater
Laboratory waste	Hazardous Waste	Quantity of laboratory generated waste, pH, Cr, Hg and other waste by-products	Laboratory analysis	Quarterly	Laboratory	PCO	Included in the OMCPC's annual EHS Unit monitoring cost	Accumulation of hazardous wastes	Stored hazardous waste exhibits sign of deterioration or leakage	Spillage of hazardous waste within the storage area	• Collection by DENR-accredited HazWaste treater • Material Safety Data Sheet (MSDS) will be maintained	• Reduction on the use of raw materials known as source of pollutants	• Immediate containment and clean-up of affected area • • Incident plan report
Social conflicts	Complaints manage-ment	Nature and number of complaints Number of affected individuals	Record keeping	During periods of complaints expressed by stake-holders	Impact communities	ComRel	Minimal cost	Submission of formal complaint at the ComRel Officers	Submission of formal complaint the need response/action or intervention from the upper management	Media intervention causing local/regional/ national issues	• Institution of grievance system • Conduct regular IEC to inform and justify the activities being undertaken by OMCPC in its operation	• Notify OMCPC Admin for complaint and take remedial measures to address complaints • Investigate valid complaints, conduct dialogue with communities and implement mitigating measures	• Conduct in depth investigation and identify root cause • Institute massive efforts to address complaints and compensate affected communities
II. Abandonment Phase													

Key Environmental Aspects per Project Phase	Potential Impacts per Envt'l. Sector	Parameter to be Monitored	Sampling & Measurement Plan			Lead Person	Annual Estimated Cost	EQPL Management Scheme					
								EQPL Range			Management Measure		
			Method	Frequency	Location			Alert	Action	Limit	Alert	Action	Limit
Operation of heavy equipment, vehicles, and other equipment	Occasional increase of fugitive and gaseous emission	Ambient TSP, PM10, SO2, and NO2	TSP– High Volume-Gravimetric, USEPA 40 CFR, Part 50 PM10- High volume with 10-micron particle-size inlet-Gravimetric, USEPA 40 CFR, Part 50, Appendix J SO2 – Gas Bubbler - Pararosaniline Method NO2- Gas Bubbler-Griess Saltzman Method or Chemiluminescence Method	Semi-annual or once if abandonment phase is less than 6 months or as frequent as necessary (depends if there are complaints from nearby residents and other receptors;	Project boundary and nearest residences	Project proponent / contractor	PhP 150,000 per quarter	≥75% of ambient standard. EQPL (Alert Mininum in µg/Nm3) NO2 = 195 TSP = 225 PM10 = 150 SO2 =255	≥ 90% of ambient standard. EQPL (Action minimum in µg/Nm3) NO2 = 234 TSP = 270 PM10 = 180 SO2 =306	NAAQS (in µg/Nm3) NO2 = 260 TSP = 300 PM10 = 200 SO2=340	Monitor levels and determine prevailing wind flows and other meteorological condition Identify possible sources of high ambient concentrations	Check for complaints from residence Implement mitigation measures to reduce fugitive emissions during construction (e.g., water spraying)	Suspend abandonment works until ambient levels are within standards

1 PROJECT DESCRIPTION

1.1. Project Information

1.1.1. Project Details

Project Name:	OMCPC San Jose Diesel Power Plant Expansion
Nature of Project:	Other Thermal Power Plants
Total Power Generating Capacity	24 MW
Total Dependable Capacity	21 MW
Proposed Increase in Power Generation Capacity	8.3 MW (3 x 1.6MW; 2 x 1.2 MW and 1 x 1.1 MW)
Total Project Area:	5 hectares (No increase in Project Area)
Site Location:	OccMin Power Compound Sitio Pulang Lupa, Brgy. Central San Jose, Occidental Mindoro

1.1.2. Profile of the Proponent

Name of the Proponent:	Occidental Mindoro Consolidated Power Corporation
Office Address:	Unit 1001 10th floor Galleria Corporate Center EDSA corner Ortigas Ave., Brgy. Ugong Norte Quezon City 1110
Contact Person:	Mr. Calvin Luther R. Genotiva Chief Operating Officer
Contact Details:	+632 88151876; +632 89973007; +632 89973012 clrg@firstbpower.com

1.2. Background of the Project

The **OMCPC San Jose Diesel Power Plant** of Occidental Mindoro Consolidated Power Corporation (OMCPC) was issued with its first Environmental Compliance Certificate (ECC) number ECC-R4B 1510-0095 on October 26, 2015. Previously it was known as "EPI 20 MW Diesel Power Plant Project" of Emerging Power Incorporated (EPI) and managed by its subsidiary OMCPC or OccMin Power during the construction phase. OMCPC was later acquired by First B Power of the Banson Group thus ECC was amended by because of the transfer of ownership from EPI to OMCPC and First B Power.

By September, 2020, OMCPC requested for an ECC Minor Amendment to add fuel storage and oil & water separator. Subsequently a new ECC number ECC-OL-R4B-2020-0161 was assigned to OMCPC last October 14, 2020. Although it has a rated capacity of 24 MW but its current operating capacity is only peg at 21MW if the three (3) units operate although at present only two (2) units operate and the other unit serve as back-up unit in compliance to the ERC pronouncement.

1.3. Project Location and Area

1.3.1. Location

The existing OMCPC San Jose Diesel Power Plant of Occidental Mindoro Consolidated Power Corporation (OMCPC), is a bunker-fired power plant established in Sitio Pulang Lupa, Brgy. Central, San Jose, Occidental Mindoro. The power plant was constructed in 2016 to replace the old NPC Power Plant

which is located inside the Occidental Mindoro Electric Cooperative (OMECO) Compound. The establishment of the power plant boosted the power supply of the whole Occidental Mindoro Province.

The power plant is situated in a 30,000.00 m^2 (approximately 3 hectares) aggregate lot area within the OMECO compound adjacent to the National Road. Figures 1.1 and 1.2 show the location map and vicinity map of the proposed power plant. The project site is bounded on the north and south by rice paddies, on the east by residential community and on the west by the National Road. Opposite of the national road (fronting the project site) is also a residential area. The power plant will be located approximately 10 km northeast of San Jose Municipal Hall, 2.0 km south of Siete Central Elementary School, 1.7 km south of Holy Family Academy and 1.8 km southwest of Central National High School. Presented in Table 1.1.1 are the geographic coordinates of the corner boundaries. Attached as **Annex 1.1** is the lot title of the project site property while **Annex 1.2** is the lease agreement executed by and between OMCPC and OMECO as the property owner. The expansion project will also be located inside the existing project site, located south east of the main power plant near the fuel storage tanks.

Table 1.1. Geographic coordinates of boundaries of OMCPC's project area

Corner	Latitude	Longitude
1	E121° 2'48.48"	N12°26'22.01"
2	E121° 2'47.87"	N12°26'21.91"
3	E121° 2'47.37"	N12°26'22.32"
4	E121° 2'46.55"	N12°26'22.99"
5	E121° 2'45.33"	N12°26'27.20"
6	E121° 2'45.50"	N12°26'27.91"
7	E121° 2'45.80"	N12°26'28.26"
8	E121° 2'46.60"	N12°26'29.17"
9	E121° 2'47.55"	N12°26'30.27"
10	E121° 2'51.94"	N12°26'26.01"

Plate 1.1. Aerial photo of the expansion area

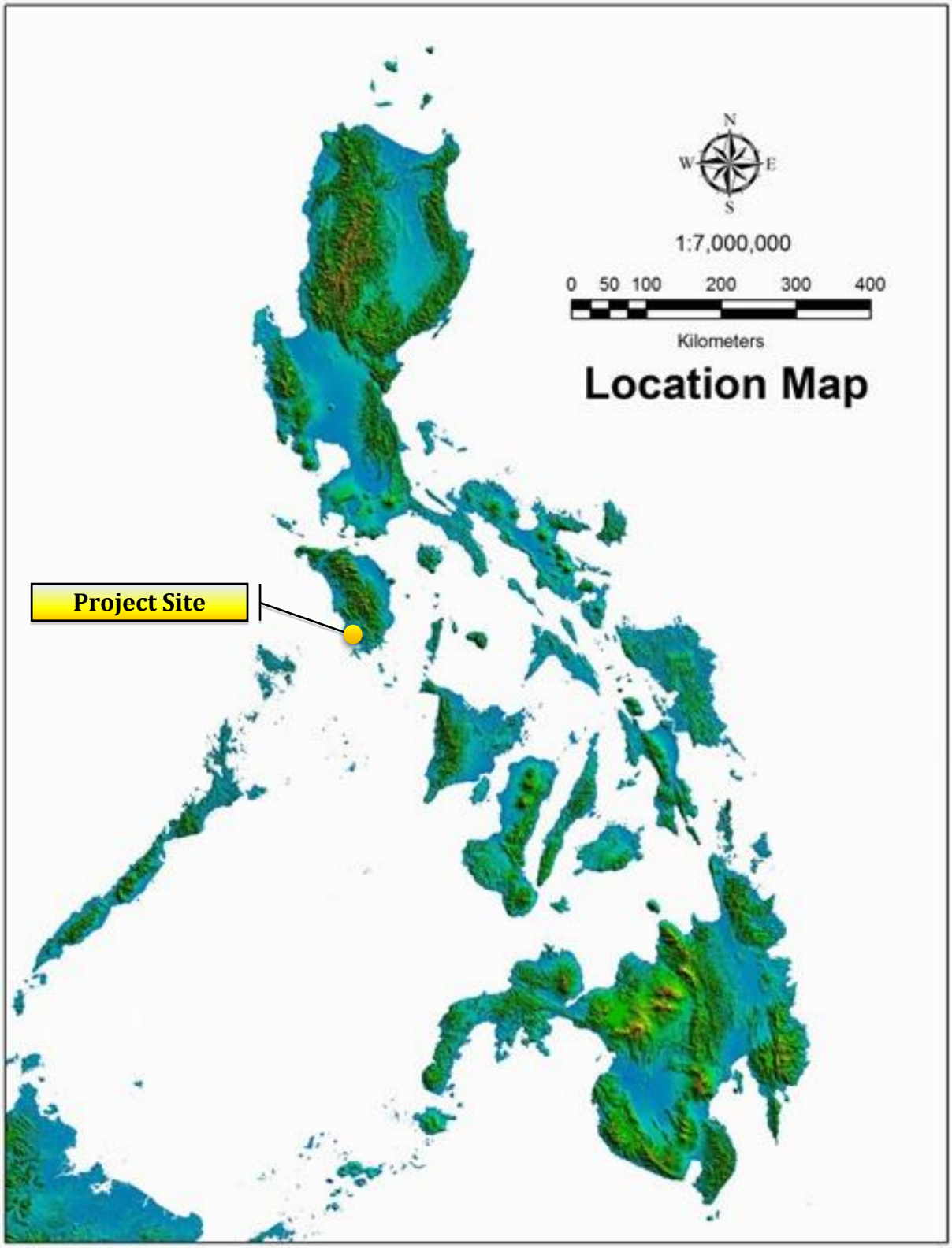


Figure 1.1. Location map of the existing OMCPC San Jose Diesel Power Plant

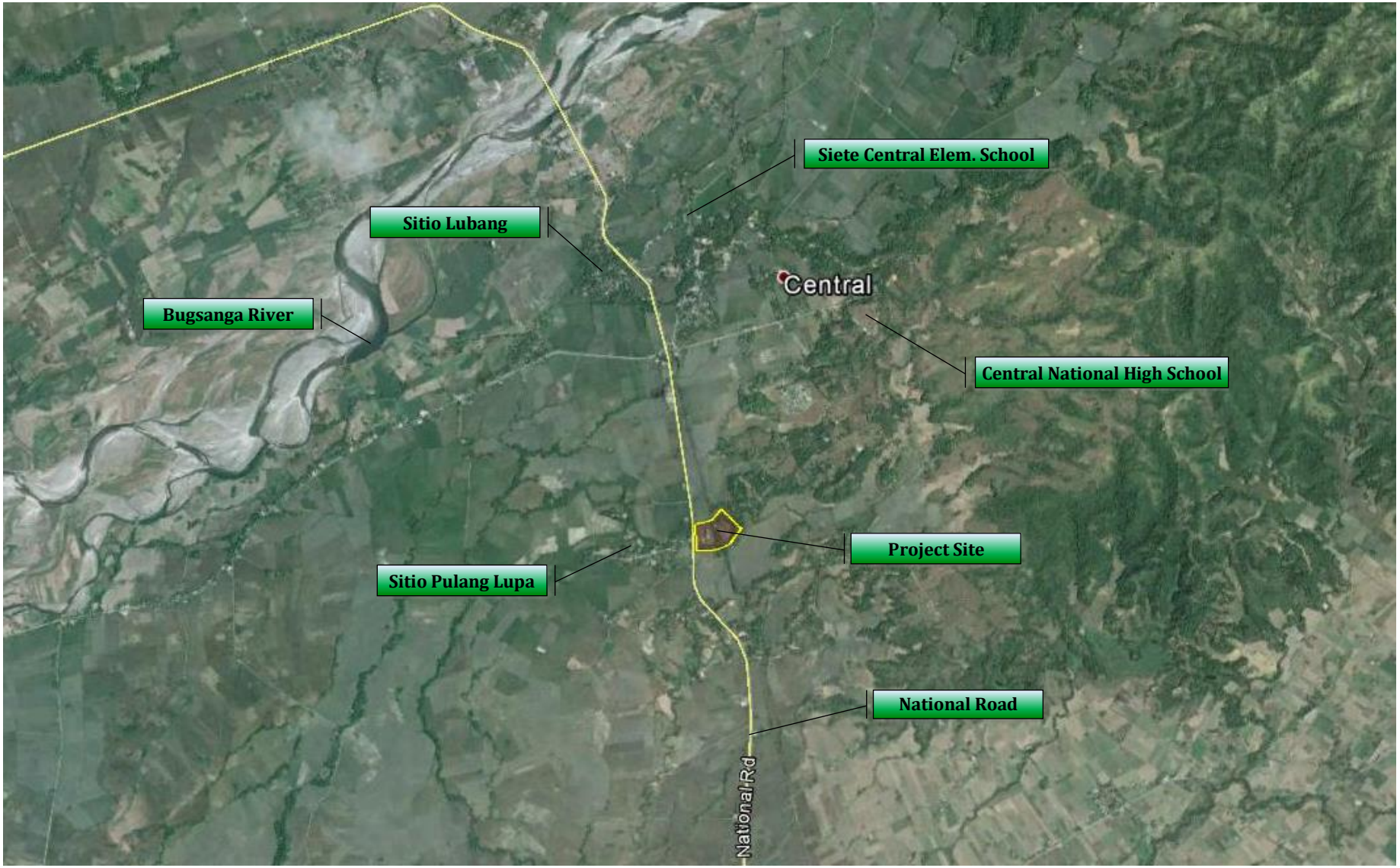


Figure 1.2. Vicinity map of the existing OMCPC San Jose Diesel Power Plant

In compliance with DENR Administrative Order 2023-01 – Establishment of the National Environment and Natural Resources Geospatial Database under the Office of the Secretary, shown below is the relative distance of the project site to the Protected Areas and RAMSAR areas in Occidental Mindoro:

Name	Legal Basis	Legal Status	Proximate Distance from the Project Area
Mts. Iglit-Baco National Park	Proclamation No. 557, s. 1969	Legislated	19.81 kilometers from the southernmost boundary of the protected area (Due North of the Project Site)
Apo Reef Natural Park	Proclamation No. 868, s. 1996	Legislated	63.49 kilometers from the southernmost boundary of the protected area (Due Northwest of the Project Site)
Mt. Calavite Wildlife Sanctuary	Proclamation No. 292, s. 2000	Legislated	130.01 kilometers from the southernmost boundary of the protected area (Due Northwest of the Project Site)
Calavite & F.B. Harrison Game Refuge and Bird Sanctuary	E.O. 9, s. 1920	Initial Component	41.2 kilometers from the southernmost boundary of the protected area (Due Northwest of the Project Site)

Figure 1.3 shows the comparative location map of the project site to the aforementioned protected areas.

1.3.2. Accessibility

San Jose, Occidental Mindoro is accessible by plane via San Jose Airport in Bubog Road, San Jose Mindoro or by RoRo vessels from Batangas Port to Abra de Ilog Port or Calapan Port. Travel time from Batangas to Abra de Ilog via RoRo is 4 hours while from Batangas to Calapan is 2 hours by RoRo and about 45 minutes to 1 hour via fastcraft. From Abra de Ilog the site is accessible by any type of vehicle passing thru Abra de Ilog – Mamburao Highway then turning left to the National Highway all the way to San Jose passing through the towns of Santa Cruz, Sablayan, Calintaan and Rizal. Travel time from Abra de Ilog to San Jose is approximately 4 hours. From Calapan City, the project site is also reachable by taking the Strong Republic Nautical Highway, West Philippine Highway, Mindoro East Coastal Highway and San-Jose – Magsaysay Road. From San Jose proper, the site is approximately 10 km away located on the right side of the highway.

1.3.3. Impact Area

Based on the existing plant site and the proposed expansion development plan, the initial assessment on the existing baseline conditions, identifying areas where people and the environment may be affected, the identified initial impact area map is shown in Figure 1.4.

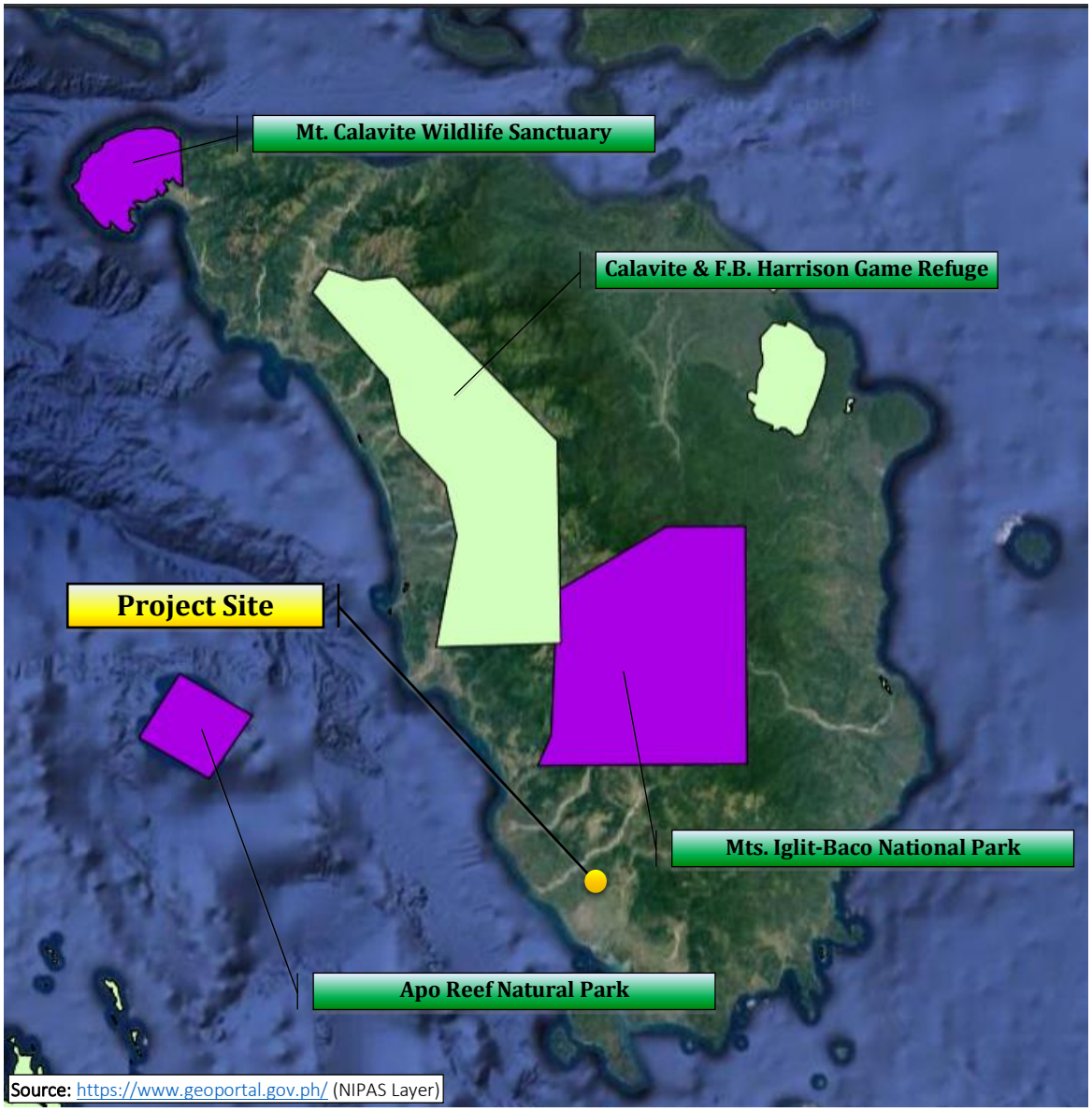


Figure 1.3. Relative proximity of the proposed Project Site to the existing Protected Areas and RAMSAR sites in Occidental Mindoro

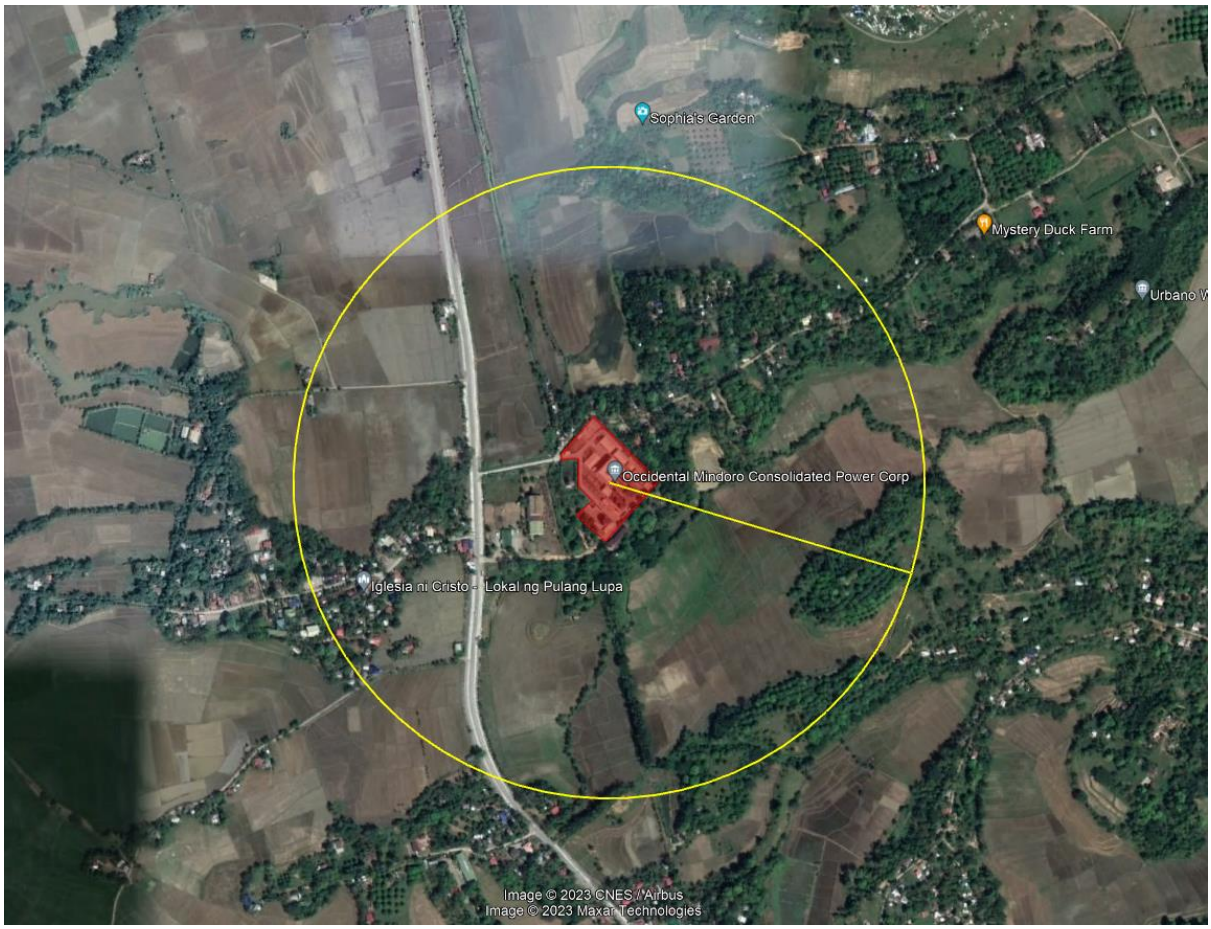


Figure 1.4. Preliminary OMCPC Impact Area

The primary impact area of the proposed project is confined only to the project area of OMCPC within the 30,000.00 m^2 (approximately 3 has) aggregate lot area within the OMECO compound in Sitio Pulang Lupa, under the political jurisdiction of Brgy. Central, San Jose, Occidental Mindoro.

The projected impact area from the gaseous emission and noise generation of the powerplant is initially focused on the 500-meter radius area all within Brgy Central. The detailed extent of emission will be fully determined upon the conduct of an air dispersion modelling for both the existing and the proposed expansion.

In terms of socio-economic impact, the host barangay - Central will receive most of the benefits because of employment and development opportunities once the power generation expansion commences operation. The host municipality – San Jose as well as the Province of Occidental Mindoro will also enjoy the financial benefits coming from the project such as taxes and social development projects as well as Corporate Social Responsibility (CSR) projects.

The MIMAROPA Region is the Regional Impact Zone (RIZ) considering the financial and economic benefits that may be brought by OMCPC once it increased its power generation capacity.

1.4. Project Rationale

Occidental Mindoro for a long time has been suffering from daily power outages that stem from the increasing demand for electricity because of the growing economy in the province. The projected power demand of OMECO for the next 5 years is 39 MW with an annual increase in demand of 1-3 MW.

The existing contracting level of OMECO for 2022 is 31MW and by 2023 it will be 34 MW. Since OMCPC has a Power Supply Agreement with OMECO, OMCPC needs to increase its power supply by augmenting the dependable base load capacity thus the need to increase its power generation capacity.

With the dependable capacity properly increased, power outages will be a thing of the past with OMECO projecting a 0% MW surplus/deficit this year - 2022. The power project would be a big factor in assuring potential investors of Occidental Mindoro that a reliable and secure source of power is feasible thus encouraging them to invest in the province. More investors mean more jobs, increased revenue and better local economy.

1.5. Project Alternatives

1.5.1. Technology Selection

Several options were considered however, with the burgeoning power outage in the province and the immediate need for power supply, the bunker power plant presented the most optimum solution at present. The main deciding factor in adopting this kind of technology is the diminished negative impacts, especially air pollutant emissions, compared to the conventional thermal-fired power plant.

The existing Caterpillar 16CM32 C Engines have higher output with low fuel consumption as compared to similar ranged engines. Furthermore, to immediately provide power augmentation due to constant increase in power demand Caterpillar 3512B engines are reliable and easy to install to compensate the short-term power need of OMECO. OMCPC envisions that once a big and reliable power plant is established for the long -term power demand projection of OMECO, the proposed project will serve as back-up during preventive maintenance or will augment power supply during peak-hours.

1.5.2. Siting/Location

The existing project site in the OMECO compound has been the host site for power plants of NPC and providing electricity in the southern part of Occidental Mindoro. The proposed expansion will also be located within OMCPC complex.

The strategic location of the project site is based on the proximity to the existing transmission line thereby increasing efficiency of the power transmission as the existing 69 kV transmission line (TL) was already established. The location of the proposed power plant is also strategic as it will be established within the Municipality of San Jose which is one of the municipalities in Occidental Mindoro with high power demand. The location is also sufficient enough to provide optimum length of TL to adjoining municipalities. As stated by the law, transmission costs are pass-on to the consumers. A shorter transmission line will involve less cost as compared to the longer ones. Thus, an optimum length will also translate to an optimum transmission cost that will be included in the consumer's electric bill.

1.6. Project Components

1.6.1. Existing Operation

1.6.1.1. *Technology and Generating Capacity*

The existing OMCPC San Jose Diesel Power Plant consist of three (3) units of 8 MW CATERPILLAR Model 16CM32 C Engines with a total installed capacity of 24 MW and a guaranteed dependable capability of 21 MW. The power generating units uses Heavy Fuel Oil (HFO) and Light Fuel Oil (LFO) or Diesel as main fuel. The power plant is also equipped with radiator cooling system, air intake system, fuel system and exhaust system.

The existing power plant utilizes the CATERPILLAR 16CM32 C Engines. These engines have simple and smart design with high reliability and performance. The existing engine have the following features:

- Designed for reliable operation
  - ✓Intensive cooling of key components including exhaust valves
  - ✓Capable of operation up to 700 cSt/50°C fuel quality
- Minimized mechanical wear
  - ✓Modular design
  - ✓State-of-the-art material ensure long life of components
- Overall economy
  - ✓High availability and long life
  - ✓Low fuel and oil consumption
  - ✓Low maintenance requirements
- Highest quality engine parts
  - ✓Semi dry wear resistant liners with calibration inserts
  - ✓Piston with forged steel crown and aluminum skirt
  - ✓Inlet/outlet valves with armored seats
  - ✓High-efficiency turbocharger
- One-piece dry engine block
  - ✓High strength nodular cast iron with under slang crankshaft and free from cooling water
- Ease of maintenance and reliability
  - ✓Easily removable cylinder heads, quick removable fluid connections
  - ✓Split connecting rods to allow piston removal without disturbing the big end bearing
  - ✓High reliability, modular design and integral construction reduce the number of components by 40% over conventional designs

1.6.1.2. *Existing Major Infra and Support Facilities*

The power plant also has its auxiliary support facilities such as control room, fuel depot, power transformer, auxiliary transformer, switchyard system and noise reducers, maintenance area, warehouse. The power plant's other components are wastewater management facility, solid waste management facility, drainage system and access roads.

Table 1.2 presents the tabulated components of the proposed project.

Table 1.2. OMCPC San Jose DPP project component tabulation

Facilities	No. of Units	Total Capacity	Area (sq.m)	Specification/ Description/ Remarks
1. Power House			977.04	
• Caterpillar 16CM32C Engines	3 x 8MW	24 MW		16CM32 C 16 Cylinders, Vee 320 mm Cylinder Bore 460 mm Stroke 7556 kW
• Switchgear Room	1		55.0	
• Control Room	1		55.0	The operator's main interface shall be through an operating station consisting of LCD's mouse and keyboard with color monitor

Facilities	No. of Units	Total Capacity	Area (sq.m)	Specification/ Description/ Remarks
• Battery Room	1		12.00	
• Toilet	1		16.00	
2. Ancillary Facilities			661.80	
• Cooling System (Radiator)	4		194.00	
• Air Intake System	4		160.00	
• Exhaust (Smokestack)	1		80.00	
• Power Transformer	2	25MVA	22.00	
• Auxiliary System	1		25.00	
• Switchyard System	1		44.80	
• Noise Reducers	4		136.00	
3. Tank Farm Area			204.00	
• HFO Storage Tank			113.00	
• Diesel Storage Tank			91.00	
4. Admin Building			243.30	
• Admin Office			48.00	
• Lobby			48.30	
• Waiting Area			14.00	
5. Accommodation Area				
• Quarter Room			22.00	
• Canteen			12.50	
• Dining Area			11.00	
• DRESS KIT Room			4.50	
• Comfort Room			17.00	
• Ramp			40.00	
6. Warehouse			26.00	
7. Ramp			40.00	
8. Water Tank			92.00	
9. Wastewater Mgmt. Facility			432.00	
10. Solid Waste Mgmt. Facility			664.00	
11. Guard House			12.00	
12. Parking Area			173.00	
13. Access Road			1,836.00	
14. Drainage System			396.00	
15. Perimeter Fence			45.00	
16. Open Space (within plant lay-out)			1,402.00	

Powerhouse

Diesel Engine and Generator

Three (3) units of 8 MW CATERPILLAR 16CM32 C Engines is already installed. Each unit has technical specification of 4 stroke, Vee cylinder configuration, direct injection, modular design, turbocharged and after-cooled aspiration. Each engine has 16-cylinders that will drive the generator to deliver a 7,556 kW continuous rated output, 13.8 kV, 60 Hz at 720 rpm rated speed.

Cooling Water System

The cooling water system consists of a low temperature and high temperature system. HT cooling water pump is engine driven. Both HT cooling water pump and HT thermostatic valve are mounted on engine.

Air Intake and Compressed Air System

A supply of compressed air of maximum 30 bar is required from the starting air reservoir. The compressed air is reduced through a pressure regulating valve for starting the engine by air motor starter. Additional accessories for the air intake and compressed air system are the following:

- Intake mat filter in turbocharge as standard specification
- Air motor starter for engine starting
- Main starting/emergency starting valve
- On-off valve for engine stop

Fuel Oil System

The fuel oil system consists of the following:

- Fuel injection equipment on each cylinder;
- Fuel oil change-over valve
- Fuel oil flow meter for engine inlet and outlet
- Fuel leakage tank with level switch;
- Fuel oil safety filter, duplex manual (50) micron; and
- Pressure control valves on external fuel piping.

Lube Oil System

The lube oil system consists of the following:

- Lube oil pump
- Lube oil cooler
- Temperature control valve
- Lube oil pressure regulating valve
- Lube oil indication filter
- Lube oil filter

Engine Control and Monitoring System

The technical specification for control and monitoring system are the following:

- Hydraulic speed governor
- Local instrument fitted with direct reading thermometer on each piping, direct reading pressure gauges collected together on gauge board and start/stop button with tachometer for turbocharger rpm in staring box

Tank Farm Area

Four (4) bulk storage tanks (HFO settling tank, HFO service tank and 2 HFO storage tanks) was established for the existing power plant for the heavy fuel oil (HFO) storage. The storage tanks are integrated at the tank farm area and piped to support the fuel requirements for the continuous operation of the existing engines. The HFO settling tank has a capacity of 100,000 liters, HFO service tank has a capacity of 81,500 liters while the HFO storage tanks has a capacity of 1,000,000 liters.

One (1) 150,000 liters capacity tank intended for light fuel oil (LFO) storage was also installed at the tank farm for start-up fuel requirements of the engines and continuous operation.

Each storage tank is connected to a respective supply pump that will facilitate fuel transfer from the tank to the engine.

1.6.1.3. *Pollution Control Measures/Devices*

As part of the commitment of DMPC in safeguarding the environment, the following pollution control measures and devices are being implemented in their existing operation:

- The pollution control measures implemented in the power plant covers the strict implementation of OEM maintenance procedures and constant monitoring of equipment operation. During maintenance, OEM parts and accepted supplies are used for optimum engine performance. Regular stack emission testing is implemented to ensure that the equipment is compliant with the Clean Air Act;
- Used oil properly stored in used oil storage tanks and is disposed through DENR-accredited disposal companies;
- Sludge from the fuel oil purification process is stored in a sludge storage tank and is disposed through DENR-accredited disposal companies;
- Oily water is processed through the oil-water separator. Oil that is skimmed is stored together with the sludge; and
- Domestic wastewater is treated using a septic tank.

1.6.2. Proposed Expansion

OMCPC intends to amend its ECC by:

- Amending the Project Name to OMCPC SMRA Diesel Power Plant – in the report submissions to ERC the project is already known as such, thus the request to amend the project name to harmonize project name for both ERC and EMB;
- Request for reduction of total power generation capacity of the existing Caterpillar engines from 24 MW (3 x 8 MW) to 21 MW (3 x 7 MW) based on the Caterpillar – Monark Engine Performance Report (Annex 1.3)
- Increase its power generation capacity by adding 8.3 (3 x 1.6 MW; 2 x 1.2 MW and 1 x 1.1 MW) diesel generator set to increase its total power generation capacity to 29.3 MW. The additional 8.3 MW is part of the commitment of OMCPC to OMECO as indicated in the Power Supply Agreement entered by and between OMCPC and OMECO. As committed, OMCPC will gradually increase its power generation capacity in a span of 6 years and the initial 6MW is the first phase of the gradual increase while the additional 2.3 MW will be attained in two (2) years' time. In the next two or three years, OMCPC is committed to increase the baseload to attain the desired 34 MW as indicated in the PSA with the operation of it's OMCPC MMBO Diesel Power Plant in Mamburao and OMCPC SBYN Diesel Power Plant in Sablayan, Occidental Mindoro.

Powerhouse

Diesel Engine and Generator

Six (6) units of Caterpillar engines (3 x 1.6 MW; 2 x 1.2 MW and 1 x 1.1 MW) will be installed inside a separate powerhouse to be located adjacent to the recently established HFO storage tank. It will be established due south of the main powerhouse.

Each unit has technical specification of V-16 4 stroke cycle diesel, direct injection, modular design, turbocharged and after-cooled aspiration.

In summary, the following are the components of the propose additional diesel power plant:

- Diesel engines;
- Generator assembly;
- Pressure vessels, pumps;
- Fuel oil handling system and storage;
- Lube oil system;
- Compressed air system;
- Cooling system;
- Electrical system;
- Fire protection system; and
- Fuel pipeline.

Figure 1.5 depict the site development plan of the existing OMCPC 24 MW Bunker Fuel Fired Power Plant including the proposed additional genset powerhouse (Figure 1.6).

1.7. Process Technology

1.7.1. Power Generation Technology

OMCPC will utilize Caterpillar diesel engines which were designed and optimized for low emission and low fuel consumption. The gensets were already proven in thousands of applications worldwide with reliable performance. The over-all process flow diagram of the power plant operation is presented in Figure 1.7.

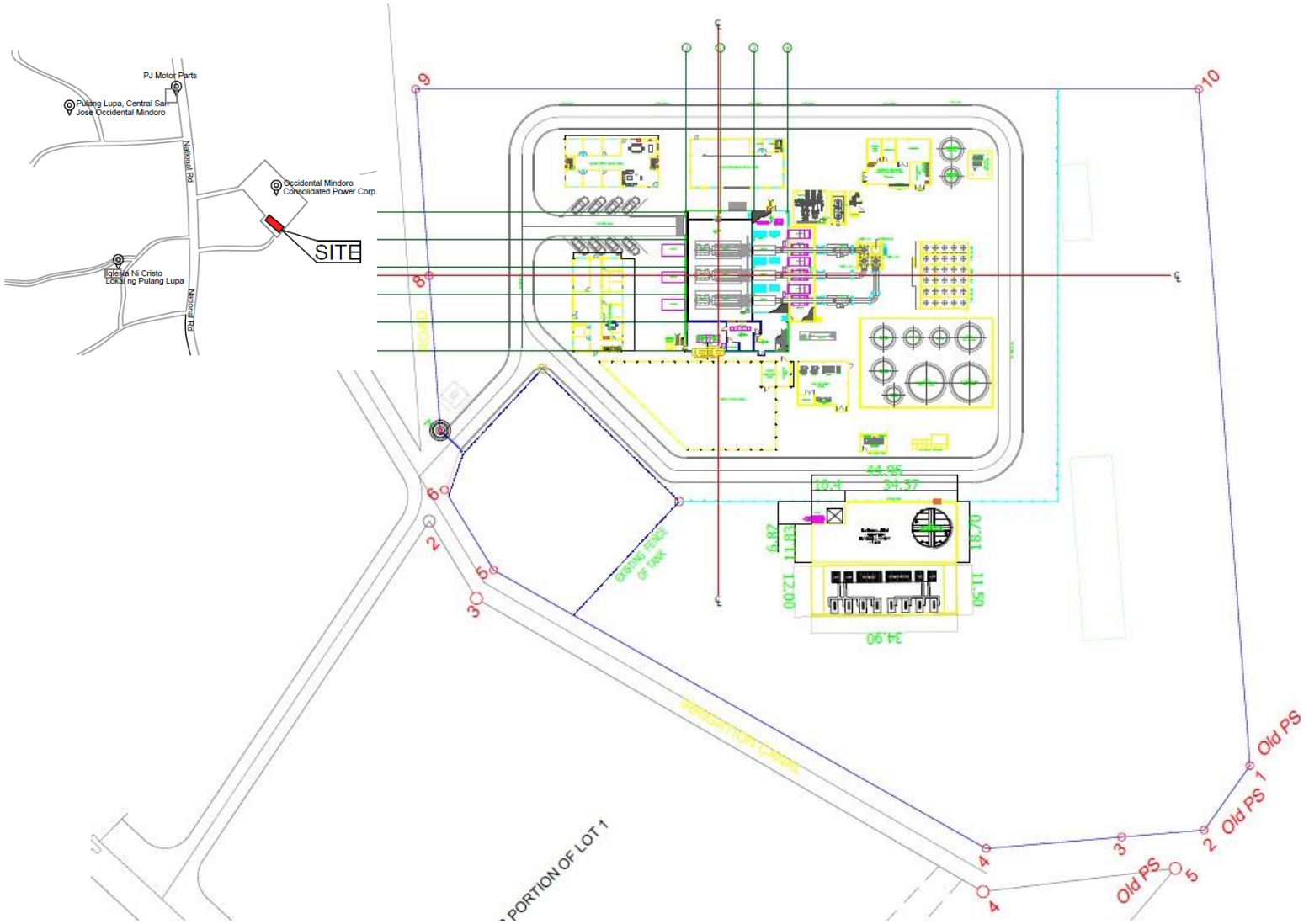


Figure 1.5. Site Development Plan of the existing power plant and the proposed expansion powerhouse

Figure 1.6. Perspective View of the proposed additional powerhouse for high-speed engine

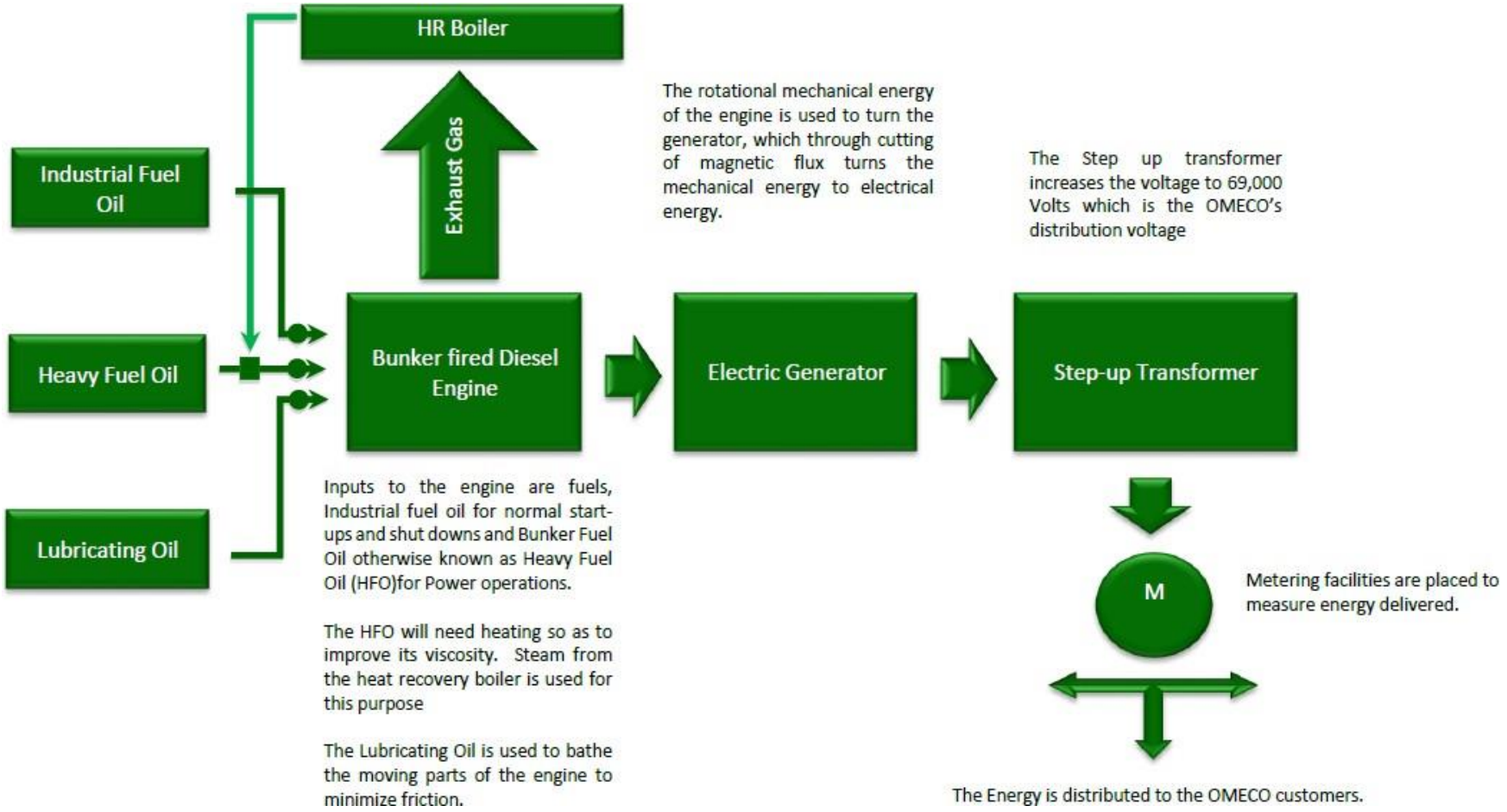


Figure 1.7. Process flow diagram of OMCPC San Jose Diesel Power Plant

1.7.2. Fuel Requirements

The current fuel requirement of the existing power plant is 117,000 liters per month of diesel and 2,300,000 liters per month of bunker fuel (HFO). A fuel contractor delivers on-site the fuel requirements by using fuel tank lorry from Batangas City via Abra de Ilog Port. Fuel lorries deliver diesel and bunker fuel to the site every other day to supply 2 days of operation. Seven (7) fuel tankers are needed to suffice the diesel requirement and bunker fuel requirement. The fuel tanks have approximate capacity ranging from 20,000 liters to 40,000 liters.

1.7.3. Water Supply and Demand

The current water requirement for the operation of the existing diesel power plant is 0.8 m3/day. Water requirement is divided into three (3) categories: plant water for cooling system; industrial water and domestic water. Water is source is from the existing deepwell established by OMCPC solely for the operation of the powerplant.

During the construction of the additional 5MW, it is estimated water requirement is 2.0 m3/day. Water needed by the construction will be provided by the existing deepwell already established on site.

The combined operation of the 24 MW main power plant plus the additional 5MW powerhouse will require 1.0 m3/day. The estimated domestic water supply is 0.5 m3/day for the estimated 38 employees of the plant working in two (2) shifts. The summary of daily water requirements and the water balance matrix is presented in Table 1.2.

1.7.4. Pollution Control and Waste Management

The power plant is designed to meet the emission standards in accordance with RA 8749 – Philippine Clean Air Act by adopting the most stringent standard established and by installation of technological advancement to minimize emissions among power plants. The air emissions control measure is primarily based on the use of low-sulphur content fuel.

Appropriate noise control measures will be implemented so as to ensure that sound level at a distance of one meter from the powerhouse or enclosure outline and height of 1.5 meter from the powerhouse base.

The sludge that will be produced from the operation of the powerplant will come from the oil sump pit, the septic tank and the oily wastewater. Wastes from the settling pit will be transferred/shipped to the allocated containment area or storage facility. Sludge from the septic tank will be regularly siphoned and hauled by a septic tank contractor accredited by DENR. Separated oily wastewater will also be hauled by an accredited contractor with facilities for their disposal or reuse. The existing fuel tanks already bonded to contain oil if untoward incidents such as spillage will occur. Domestic wastewater is coursed through a compartmentalized septic tank while hazardous wastes will be stored in drums for disposal by a DENR-accredited wastewater-treatment company.

The operation of the power plant produces both solid and industrial waste as well as hazardous wastes. The domestic solid wastes will include biodegradables such food wastes from admin office, canteen, vegetation wastes and human wastes, recyclable materials such as paper, cartoon, worn-out wheels, plastic wastes, metal scraps etc. Power plant operation will also produce hazardous wastes such as used oil and sludge, oil contaminated materials, busted bulbs, chemical containers, inks cartridges and used batteries.

Biodegradable wastes produced during the operation will be disposed in a waste dump/compost area already established by the company while scraps and recyclable materials will be segregated in the existing material recovery facility (MRF). Hazardous wastes on the other hand will be kept in a storage area prior to disposal by DENR-accredited wastewater transporter and treater.

1.8. Project Size

The proposed project entails changes in the different aspects of the DMPC plant which is summarized in Table 1.3.

Table 1.3. Summary of the comparative details of the existing and proposed plant

Plant components	Current Operation	Proposed Plant
Technology	Diesel	Diesel
Rated power capacity (MW)	24	8.3
Net generating capacity (MW)	21	7
Total project area (hectares)	3.0	same
Fuel Type	Diesel/Bunker	Diesel
Fuel consumption:		
HFO (Li/hr)	0.26	N/A
Pure Diesel (Li/hr)	0.26	0.26
Water requirement (m^3/day)	0.8	0.2
Manpower requirement (during operation)	38	45

1.9. Development Plan, Description of Project Phases and Corresponding Time Frames

Project implementation is divided into four (4) major phases: pre-construction, construction, operational, and abandonment phases. The pre-construction and construction phases are estimated to last within approximately 12 months. The construction phase will commence after the issuance of all necessary permits including the ECC for the project. The operational phase shall start as soon as the power plant and its supporting facilities have been completed, established and commissioned.

1.9.1. Pre-construction phase

During the pre-construction phase, important activities such as surveying and site assessment of the proposed expansion shall be done by OMCPC. Discussion with OMECO and ERC is also regularly being done regarding the needed permits and agreements. The preparation of the Environmental Performance Report and Management Plan (EPRMP) for the ECC application will also be done as prescribed by the Department of Environment and Natural Resources (DENR).

The project site will be at the existing area of OMCPC. All the required permits, endorsements and certificates will be secured by OMCPC and in accordance with applicable laws and regulations. Other existing standards and regulations pertaining to quality and safety will also be followed to ensure the structural integrity of the proposed project.

1.9.2. Construction phase

1.9.2.1. *Construction Works*

The projected general mobilization at the site will take about 2 to 3 months and is expected to start by June 2022. Construction works will involve the following activities:

- Site clearing and development preparation for the additional coal-fired power plant;

- Construction of staging areas and temporary facilities to house the labor force;
- Tapping from the existing site utilities for water, electricity, illumination, and waste disposal;
- Additional drainage construction and connection to existing system;
- Mobilization of major construction equipment and tools (*e.g.* bulldozers, cranes, trucks; vehicles, diesel generator/s);
- Establish additional site logistics and transport requirements; and
- Delivery of construction supplies.

The main civil construction works will be facilitated by OMCPC Contractor. Civil construction covers a period of approximately 4 to 5 months that include the following activities:

- Excavation of the main foundation areas for the additional powerhouse;
- Forming and pouring of the foundations for equipment and construction of the additional powerhouse; and
- Civil construction and finishing works.

1.9.2.2. *Genset Installation*

The major components will be delivered to the site 3 months after the start of the construction phase. Generator sets will be shipped by barge or trucks to the project site. Small to medium-size equipment will be containerized or bundled and transported by truck to the project site. Materials will be stored on-site in temporary covered storage facilities or open-air storage.

The major genset installation activities are expected to begin about five (5) months after the start of construction and will be completed in 10 months. The Permit to Operate (PO) for the emission source installation (ESI) will be filed subsequently. The PO is expected to be issued before the pre-commissioning activities.

1.9.2.3. *Commissioning and Pre-operation Checks*

The pre-start up and test operation (commissioning) are expected to begin in December 2023. These activities will primarily involve the inspection and pre-operational check-up of all major parts of the additional powerplant including control logic. Many of these pre-operational checks are conducted in parallel with other construction activities. Generally, pre-operational are expected to be completed when installation of all equipment is also completed. Furthermore, these activities must be accompanied by completion of other plant related activities, such as:

- Electrical high voltage power connection to the step-up transformer;
- Owner's operating staff on site for training; and
- All major plant consumables such as fuel oil and other process materials are transported to and stored at site

1.9.2.4. *Hot Commissioning and Performance Testing*

The hot commissioning will start by February 2024 simultaneous with the commissioning and pre-orientation checks, which will be conducted as soon as they are completed for individual systems. Generally, all major equipment establishment activities and pre-operation will be completed on-site and temporary equipment such as containers and mobile equipment will be removed gradually from the site.

A 72-hour performance test period will start on the 12th month of construction period. During this period, operation of the plant in accordance with performance guarantees will be demonstrated. All major equipment commissioning and pre-operation checks will be completed. All temporary equipment such as containers as well as mobile equipment shall be removed from the site after completion of the additional powerplant.

1.9.3. Operational phase

The commissioning phase of the additional 5MW shall be synchronized with the existing diesel power plant. The component of the additional systems shall be tested individually will require about one (1) month. The plant is expected to commence its commercial operation in July, 2023 and will be in commercial operation for 20 years.

The power plant shall use HFO and diesel as the primary fuel during normal operations. The HFO and diesel shall be delivered by fuel lorry either from Caminawit Port or by land from Abra de Ilog port directly to the power plant's fuel storage area. At a rated capacity and at anticipated average utilization rate, HFO and diesel requirements are estimated at 0.26 l/hour and 0.52 l/hour respectively. Delivery of fuel is done every other day utilizing 7 fuel lorries enough for the power plant to continuously operate for 2 days.

Output from the power plant shall be fed to one (1) step-up transformer rated at 25 MVA, 13.8 kV-delta / 69 kV-wye grounded and one (1) step-down transformer/ 13.8kVdelta/13.2 kV-wye grounded connection. The 13.2 kV wye grounded connection shall be connected to a single bus that shall supply the 13.2 kV loads of OMECO. The 13.8 kV delta and 69 kV transformer wye-windings shall connect the 69kV Mindoro Grid, respectively. The connection of the proposed power plant to the NPC's 69 kV Mindoro Grid shall be accomplished by cutting-in the existing Mamburao – San Jose 69 kV transmission line section that passes through the vicinity of the (NPC) Pulang-Lupa office and the OMECO warehouse stockyard. Each end of the transmission line shall be connected to a two (2) bay one-and-a half breaker switchyard as well as the output from the transformers. In order to maintain a reliable and efficient operation of the power plant, the equipment will have a regular preventive maintenance program based on their Service Meter Reading (SMR) [i.e. 1500SMR, 3750SMR, 5000SMR, 75000SMR, 12000SMR, 15000SMR, 24000SMR, 30000SMR, 36000SMR, 45000SMR, 48000SMR, & 60000SMR] to prevent any catastrophic damages. Relatively, the power plant will have shutdown duration of about 31 days annually for its preventive maintenance servicing (PMS) to ensure efficient and reliable operation of the equipment.

1.9.4. Abandonment phase

The existing project including the proposed expansion is estimated to have an economic life of 20 years. After 20 years of operation (assuming that PSA is renewed), it will be assessed if it is still capable to continue commercial operation or not. In case of abandonment, most of the facilities of the power plant will either be dismantled or demolished. Most of the mechanical equipment installed will be dismantled and sold for scraps.

During the abandonment, the proponent will ensure that all environmental mitigating measures will be adopted and followed to minimize negative impact to the environment.

In the event of project abandonment, the proponent shall prepare an abandonment and rehabilitation plan one (1) year before such scheduled termination for the approval of appropriate government agency.

1.10. Manpower

The current operation of OMCPC employs a maximum manpower of 38 personnel. Table 1.4 shows that tabulated manpower requirement of the company for the operation of the existing OMCPC San Jose Diesel Power Plant.

Table 1.4. Manpower involved in the current operation of OMCPC for the San Jose Diesel Power Plant

Department	Number of Employees
Operations	20
Admin	18
Total	38

The construction and installation of the additional 8.3 MW power generation capacity requires an estimated manpower of 22 workers. Majority of these will be laborers and construction workers needed during the initial phase of construction involving site preparation, earth works, and civil construction. The estimated manpower requirement during construction and installation of the additional genset is shown in Table 1.5.

Table 1.5. Estimated manpower requirement during the construction of the additional diesel generator set powerhouse

Workforce	Average Estimates
Manager/Technical	4
Skilled Labor	5
Unskilled Labor	11
Security Guards	2
Total	22

Once the expanded power plant reached its total power generation capacity of 29.3 MW and become operational, it is estimated that a total of 43 employees will be employed to run and maintain the diesel power plant.

1.11. Project Cost

The addition of 5 x 1MW Caterpillar genset for back-up power generation will require supplementary capital expenses for the construction of the additional generator set. The estimated total capital investment cost for the increase in power generation capacity is PhP 76,900,000.00 million.

2 ASSESSMENT OF ENVIRONMENTAL IMPACTS

2.1. The Land

2.1.1. Land Use and Classification

2.1.1.1. Methodology

The study and assessment on land-use covered the review of existing literature and maps of the project area. San Jose has an updated CLUP which was used as main reference for the land-use assessment.

2.1.1.2. Baseline Condition

San Jose Municipality Land-use Classification

The existing OMCPC power plant is located within the political jurisdiction of Brgy. Central, Municipality of San Jose, Province of Occidental Mindoro. The municipality of San Jose consists of 38 barangays and has a total area of 67,086.61 hectares based on San Jose's Comprehensive Land Use Plan. San Jose is bounded on the north by Rizal, Occidental Mindoro; Mansalay, Oriental Mindoro on the northeast; on the east and southeast by Magsaysay, Occidental Mindoro and to the south by Mindoro Strait.

Based on the proposed land use in the CLWUP of San Jose (subsequently approved), about 66.81% or approximately 44,811.37 hectares of the municipal land area is reserved as forest lands which increased by 4.86% from the existing land use. Other major land uses in the municipality are: agriculture lands (25.40%), agro-industrial (0.72%), mining/quarrying (0.27%), built-up areas (5.53%), special use (0.01%) and others land uses (0.91%). Former land uses such as Agriculture in Forestland and Grassland/Pastureland were already reclassified into general land uses while tourism areas was added in the classification. More than half of the land use is forest use because of vast forestlands situated at high elevations in the north and eastern portion of the municipality in the mountainous area. The existing project site is previously an agricultural area although the site has been an industrial area for a long time since the NPC Pulang Lupa Power Plant is located within the OMECO compound where the proposed additional powerhouse will also be constructed. In the current CLWUP, the OMECO area is now classified as an industrial area. **Table 2.1** shows the general land uses of San Jose Municipality. **Figure 2.1** is the general land use map of San Jose, Occidental Mindoro.

Table 2.1. Existing and proposed general land use of the Municipality of San Jose, 2017-2030

Land Uses	CLWUP		Existing Land Use		Proposed Land Use	
	Area (in hectares)	% Distribution	Area (in hectares)	% Distribution	Area (in hectares)	% Distribution
Built-up	2,423.00	4.39	3,180.46	5.76	3,711.87	5.53
Forest	21,543.50	39.03	34,192.94	61.95	44,811.37	66.81
Agriculture	16,868.00	30.56	15,797.14	28.62	17,034.35	25.40
Agriculture in Forestlands	1,175.00	2.13		0.00		
Mining/Quarrying	24.00	0.04	24.00	0.04	178.05	0.27
Grassland/ Pasture lands	12,520.00	22.58	1,045.56	1.89		
Agro-Industrial	20.07	22.68	333.47	0.60	485.00	0.72
Special use		0.04	8.00	0.01	8	0.01
Tourism					228.59	0.34
Others			611.37	1.11	611.37	0.91
TOTAL	55,192.94	100.00	55,192.94	100.00	67,068.60	100.00

Source: CLUP of San Jose, Occidental Mindoro (2017-2030)

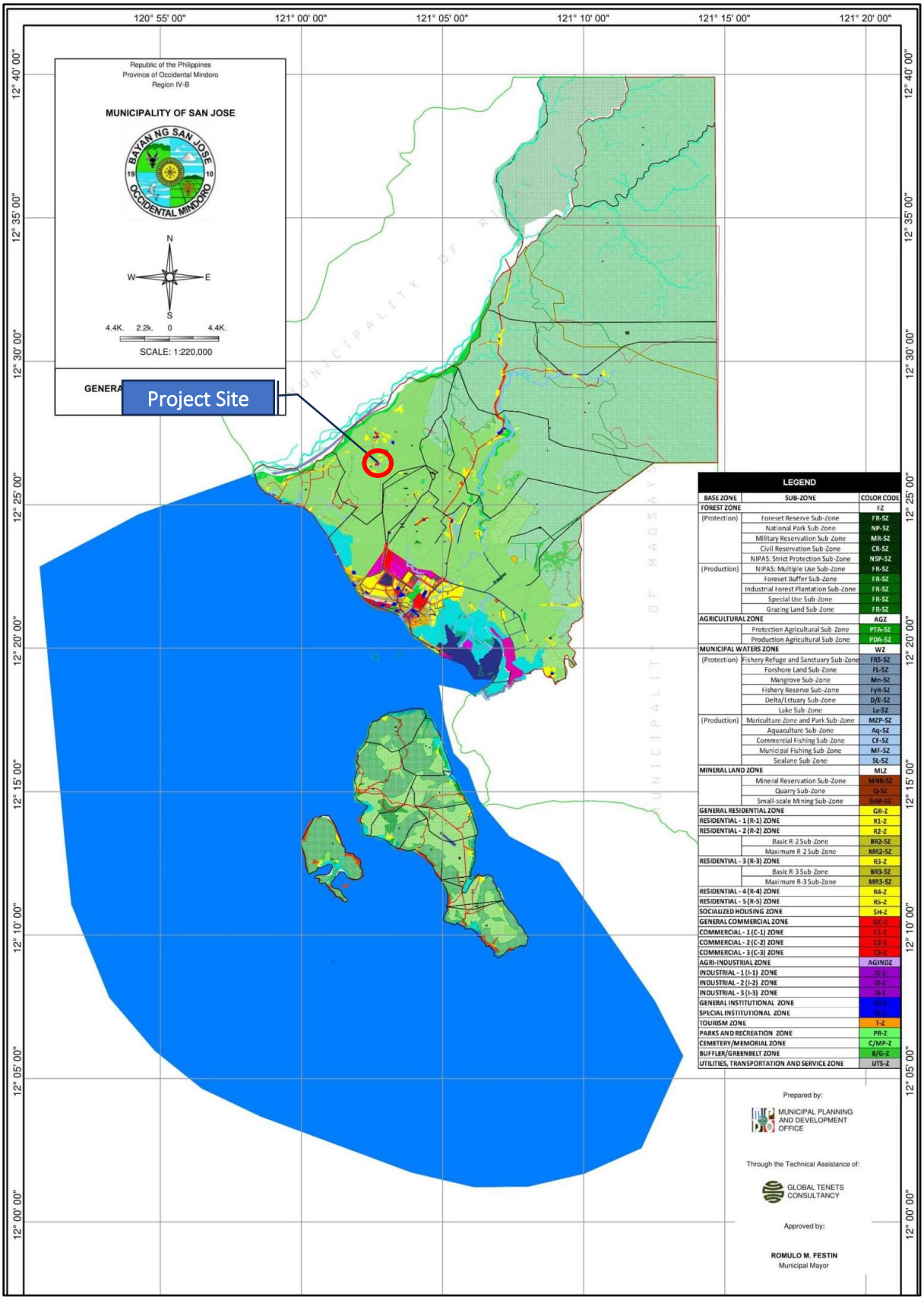


Figure 2.1. San Jose General Land Use Plan

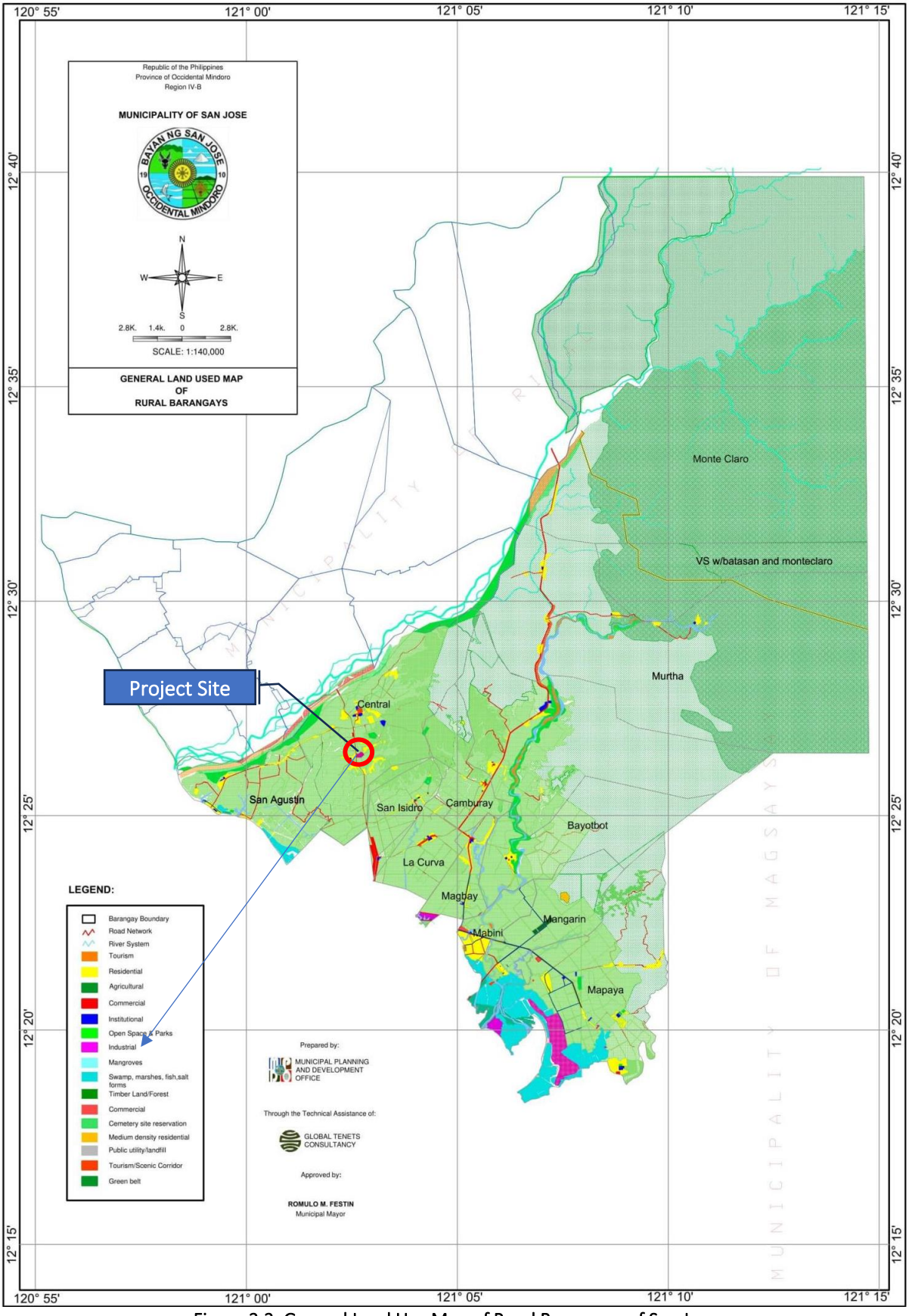


Figure 2.2. General Land Use Map of Rural Barangays of San Jose

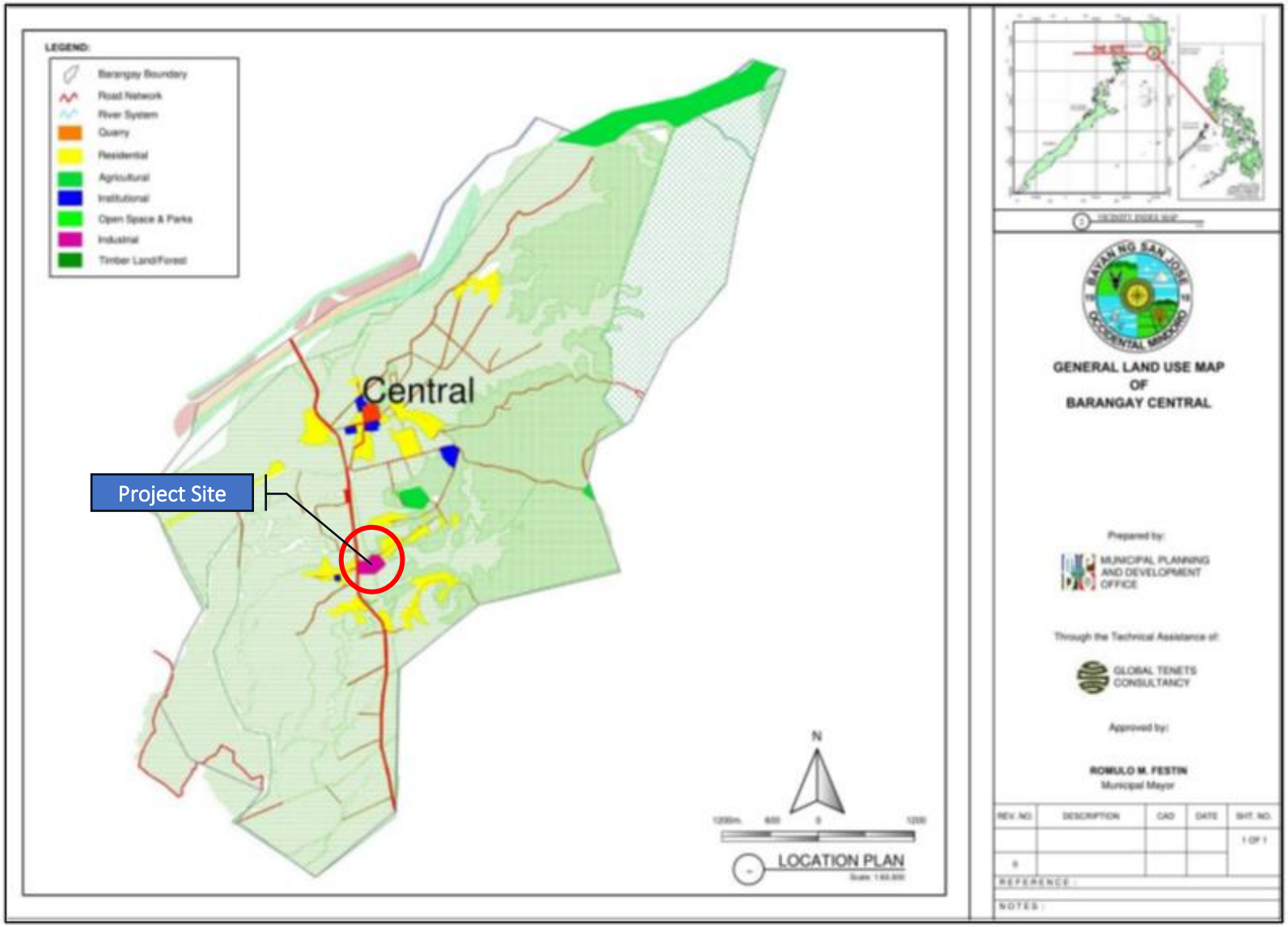


Figure 2.3. General Land Use Map of Brgy. Central, San Jose, Occidental Mindoro

2.1.1.3. Impact Assessment

Table 2.2. Predicted impacts of/on land use and classification to/by the proposed amendment of OMCPC SMRA Diesel Power Plant Expansion

List of Key Impacts	Phase Occurrence				Discussion
	Pre-Construction	Construction	Operation	Abandonment	
Change/ Inconsistency in land use					The existing power plant and the proposed additional powerhouse is situated in an area adjacent to the non-functional NPC Pulang-lupa power plant. The NPC power plant has been existent in the area for a long time as well as the OMECO warehouse, thus the development of the additional powerhouse beside the existing OMCPC power plant will not have significant impact on the land-use in the area. San Jose Municipal Ordinance No. 861 series of 2017, otherwise known as the Revised and Integrated Zoning Ordinance formally set aside the current area of OMCPC as an Industrial Zone.
Encroachment in Environmentally Critical Areas (ECA's)		☑	☑		Among the categorically defined Environmentally Critical Areas (ECA) in Memorandum Circular 2014-005, there are two technical definitions of ECA that fits the project area: areas frequently visited and or hard hit by natural calamities and water bodies as an ECA. San Jose and the rest of Occidental Mindoro are frequently visited by typhoon. A NIA irrigation canal which is a man-made waterbody passes through the area. The irrigation canal is utilized by farmers for the irrigation of rice paddies adjacent to it. The project will not discharge any of its effluent to the irrigation canal thus no significant impact will affect the artificial waterbody.
Possible Tenurial/Land Issue					The property in the project site was issued with Transfer of Certificate of Title (TCT) by virtue of free patent law. No tenurial or land issue arise when OMCPC leased the lot property from OMECO.

2.1.2. Geology/Geomorphology

2.1.2.1. Methodology

The impact of the proposed power generation project on the geology and geomorphology at the project site is assessed based on its conceivable effects on the geological materials, processes and values. The site's existing condition is derived from field surveys, available reports from the Mines and Geosciences Bureau (MGB), Philippine Institute of Volcanology and Seismology (PHIVOLCS), geologic literature and information shared to the consultants by the proponent. Geological and seismological data are mainly lifted from the consultant's own database, and from publicly available international and local sources.

The geological risk assessment employed the semi-quantitative approach, using observations made on similar projects in the country, and in other parts of the world. Statistical information on relevant geological hazards is used whenever available, and modeled to the site and the project as necessary.

2.1.2.2. Baseline Condition

Topography

The land surface at the site is generally flat and slopes slightly towards the southwest with a very gentle dip (2° to 5°). Some irregularities in the gentle topography is caused by small drainage channels that drain into the main Busuanga River, and by the hillier terrain to the east as the foothills are approached. The topographic map of the Project site is shown in Figure 2.4.

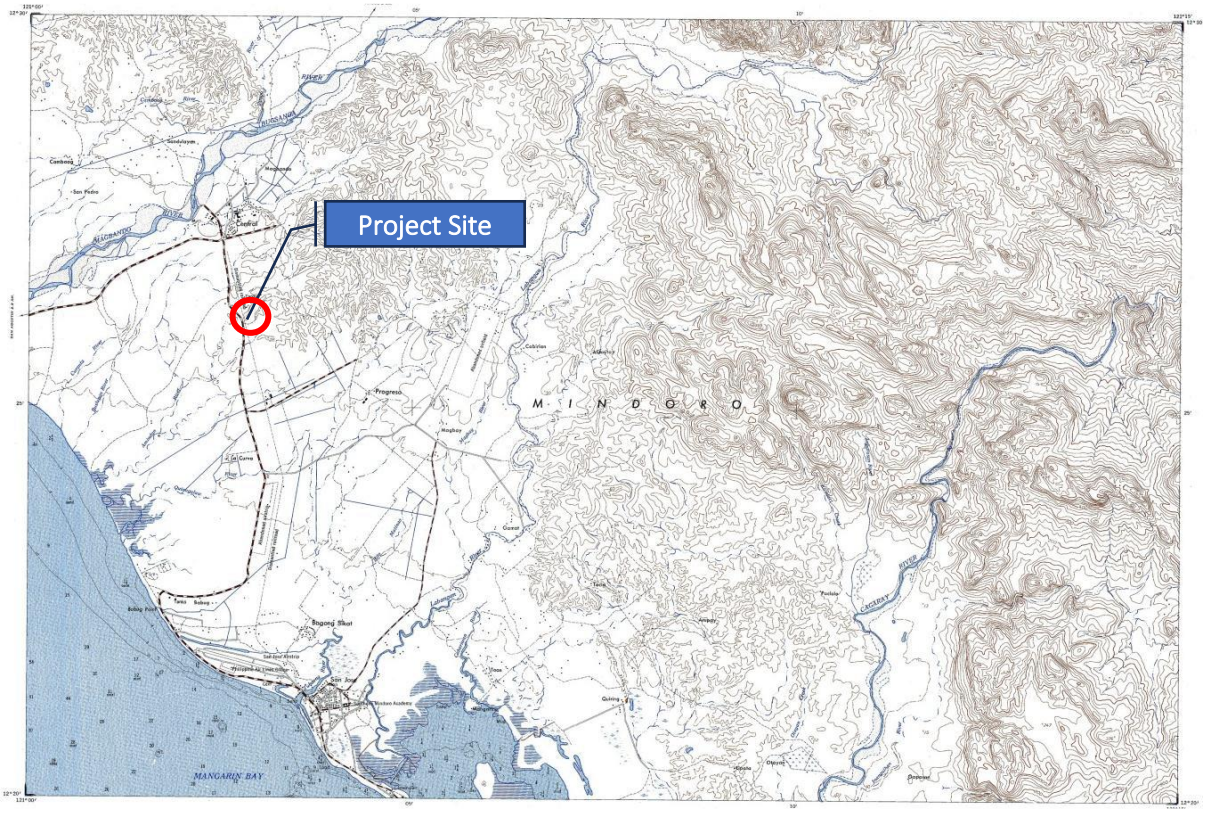


Figure 2.4. Topographic map of San Jose, Occidental Mindoro and adjoining municipalities including the project site

Regional Geology

The project site is part of the alluvial plains in the southwest coast of Mindoro (Figure 2.5). These alluvial plain borders the western coast of the island forming a wide north-south agricultural region almost extending the whole length of the island. On the east, the plain is bordered by the high central ridge of Mindoro including Mount Iglit-Baco. On the west is the Cuyo Passage that serves as the channel connecting South China Sea with the Sulu Sea. The major geologic structure in Mindoro Island is the north-south trending Central Mindoro Fault that stretches about 100 km from Mansalay to Puerto Galera. Previous works by the Mines & Geosciences Bureau (MGB) are vague on the recent activity of the Central Mindoro Fault, although topographic expressions along its trace seem to suggest that it is an active fault. The Aglubang River Fault appears to branch out of the Central Mindoro Fault south of Alcate, Victoria.

Another major structure is the Lubang Fault that traverses immediately the northern portions of Mindoro Island. This fault trends east west and is located between Mindoro and the Luzon mainland. The alignment of the Lubang Fault is often cited as the Verde Island transform which is traced for 380 km through the Bicol peninsula where it appears to be cut-off by the left lateral movement on the

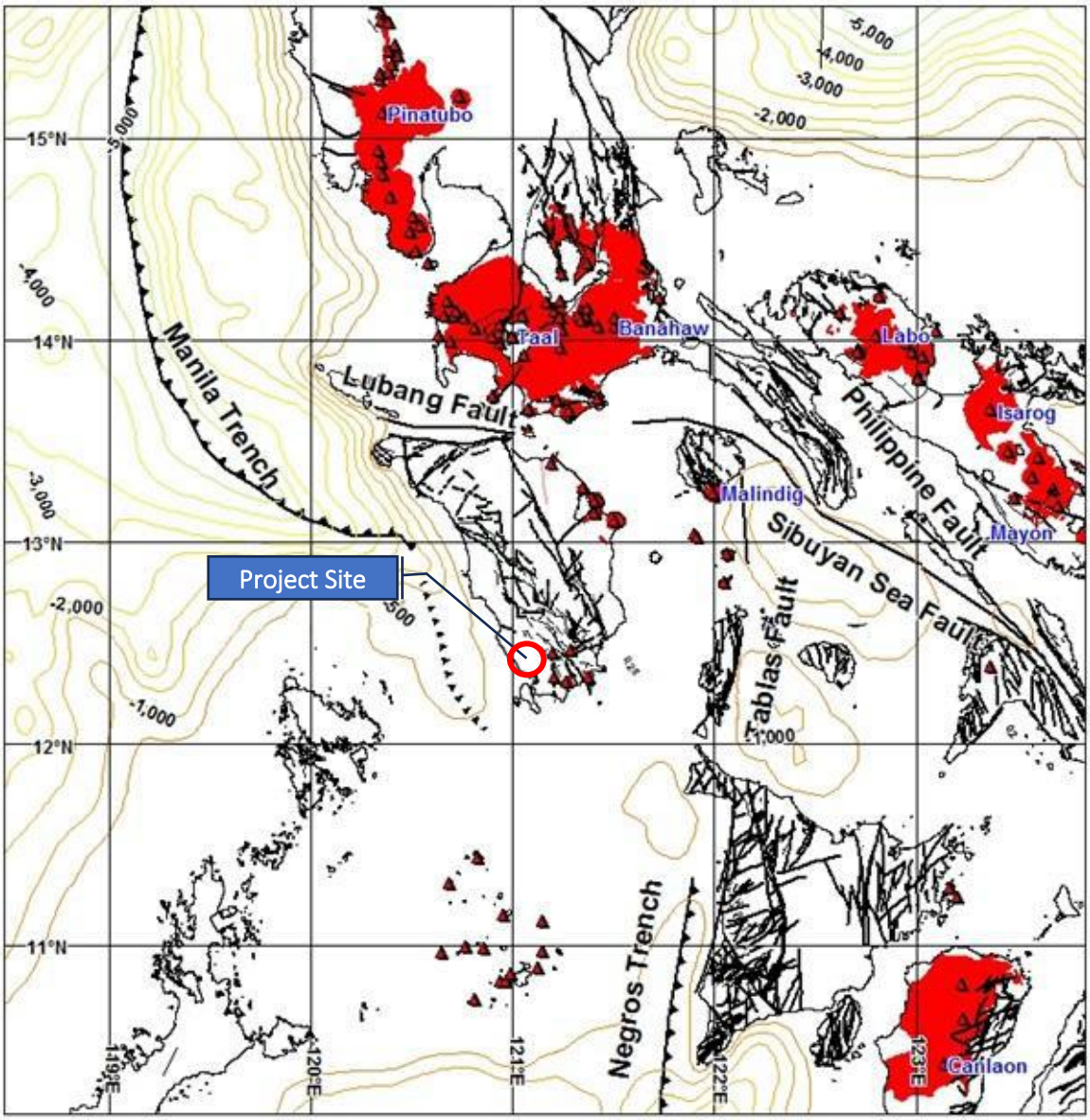


Figure 2.5. Most of the volcanic terranes (red) and faults (black lines) around the project site are associated with the tectonic activity along the Manila Trench. The active and potentially active volcanoes are labeled, along with the known active faults and subduction trenches.

Philippine fault. Verde Island hosts a small volcano that lies in the channel between Luzon and Mindoro. The pronounced feature provides a structural termination for the Manila Trench. Lubang, Ambil, and Golo islands appear to have recently rifted away from Mindoro along this Verde Island "transform." The work of de Boer et al. (1980) cites the rotation of Bataan and Cavite to be associated with this rifting. Intense seismicity occurs at the western end of the Verde Island transform leading de Boer et al. (1980, p. 26) to allude that the seismic swarm which reaches depths of 50 km below Lubang Island may be associated with rising magmas.

Volcanic activity in south-western Luzon which includes the extensive volcanic region around Banahaw Volcano, is difficult to relate to the subduction along the Manila Trench. Divis (1980) attributes the magmatic activity in this area to a leaky transform, although this model does not account for the source of the magma. The South Luzon Mountains are an older volcanic chain north of and parallel to the Verde Island transform extending from the west arm of Batangas Bay eastward for 50 km. Volcanism in this region may have commenced in middle Miocene up to the Pleistocene.

The western coast of Mindoro serves as the termination of both the Manila Trench to the north, and the Negros Trench to the south. In this coastal region it is opined that the edge of the Palawan micro-continent impinges on the island arc crushing the trenches and causing the orogeny in the central portions of Mindoro. Thus, thrust faulting and intense seismicity mark this convergent zone making it one of the more tectonically dynamic areas in the country.

Site Geology

The Geological Map of Mindoro Island (JICA-MMAJ, 1984) is shown in Figure 2.6. The regional stratigraphy of the area (MGB, 2010) comprises the following rock formations from, oldest to youngest: Halcon Metamorphics - As the oldest rock formation in the island, this unit is composed of metaconglomerates, schists and phyllites which form the backbone of the northwest ranges, extending around the northwestern coast from Puerto Galera to Mt. Halcon. This unit is dated as Pre-Jurassic to Jurassic.

- Baco Group which is further subdivided into the Mansalay Formation and the Lumintao Formation-Composed of slightly metamorphosed volcanic and clastic rocks and divided into two formations: the lower Mansalay Formation which is predominantly shale, sandstone, and slate to phyllite; and the upper Lumintao Formation composed mainly of basalt with basaltic tuff, sandstone, shale and slate to phyllite. The Mansalay Formation forms long belt from Mamburao to Mansalay in a northwest-southeast direction, while Lumintao Formation extends from Lumintao River to Mamburao on the western side of the island. This unit is dated as Jurassic.
- Mamburao Group - This is composed of basic volcanic rock, mainly basalt. Exposures of this rock are confined mainly along the lowland of Mamburao and Abra de Ilog. This unit is dated as Paleocene.
- Sablayan Group - Predominantly beds of limestone, calcareous sandstone, calcareous mudstone with andesite and andesitic tuff, this unit is distributed from Sablayan to Bulalacao, being found also along Mamburao River and in the headwaters of Magasawang Tubig River, the Banus River, the Sumagui River and the Tangon River in Oriental Mindoro. This unit is dated as Late Eocene to Late Miocene.
- Bongabong Group - Mostly conglomerate, tuffaceous sandstone and mudstone-siltstone, this unit is distributed in Rizal and Calintaan, Occidental Mindoro with exposures also extending from Victoria up to Bongabong. This unit is dated as Pliocene.
- Socorro Group - Mainly composed of terrace gravel and sand deposits, along with tuffaceous silt, andesitic tuff and limestone, major outcrops are found in the lowland of Oriental Mindoro from Puerto Galera to Roxas, covering also portions San Jose, Magsaysay, Sablayan and Mamburao in Occidental Mindoro. This unit is dated as Quaternary.
- Alluvial deposits - Detrital deposits formed by river systems, this unit is made up of silt, sand, and gravel extensively distributed along the shores, river channels, broad floodplains and delta found in both Occidental and Oriental Mindoro. This unit is also dated as Quaternary.

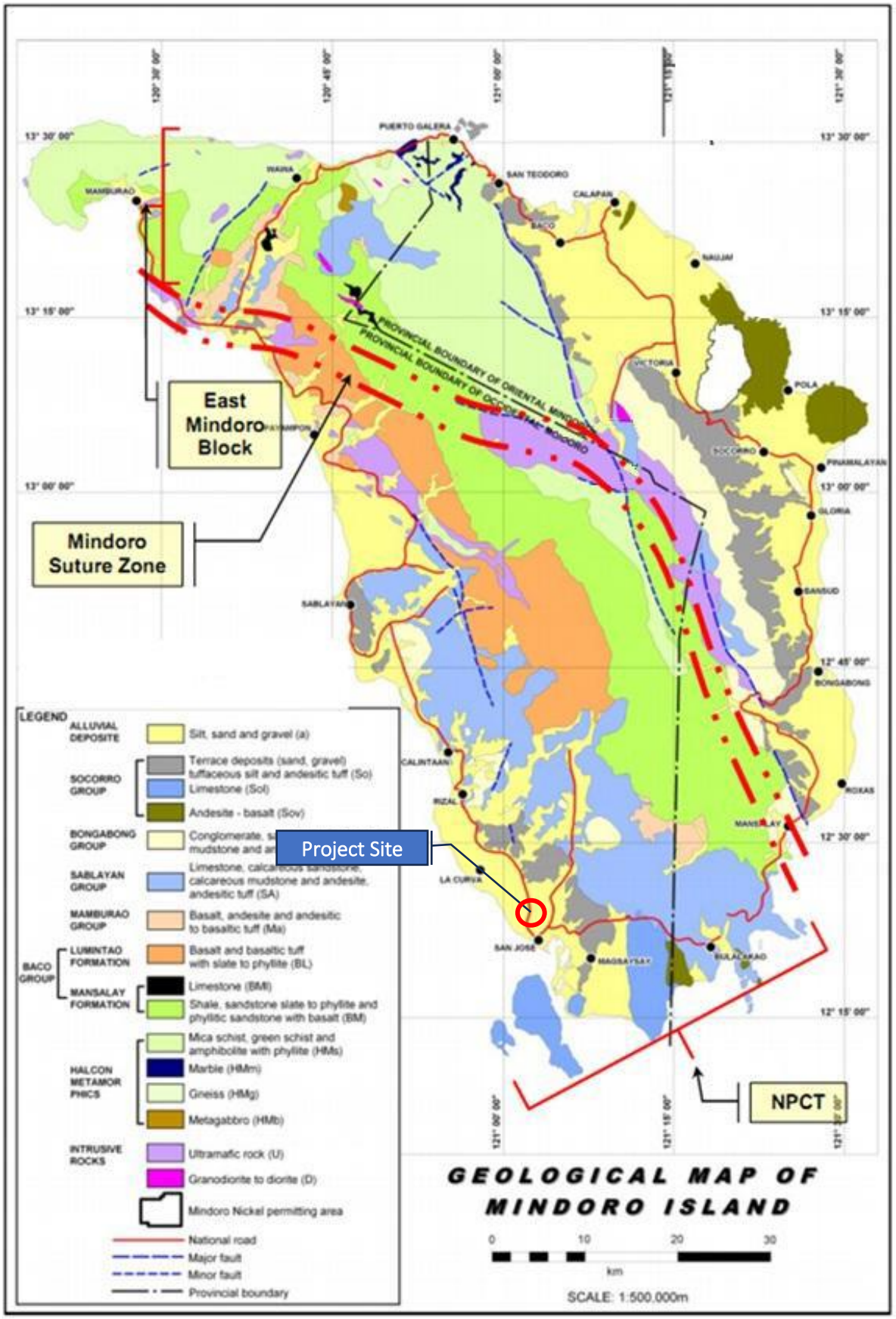


Figure 2.6. Geological map of Mindoro (originally after JICA, modified from Intex Resources, 2010).

The project site is located in the alluvial deposits which is the youngest and still unconsolidated materials on the western coast of Mindoro. The location of the project site is shown in Figure 2.7.

The digital elevation model of the site is also shown in the figure, highlighting the flat plains and the high ridges that border the area to the east. Geologic mapping and terrain analysis indicate that the dominant geologic process in the area is fluvial sediment deposition, where the active erosion in the high mountains in the east results to the deposition of large volumes of sediment on the alluvial plains.

This process is facilitated by the numerous rivers that traverse westerly from the ridge and forming a series of alluvial fans and flood plains that line the coast from San Jose to Sablayan.

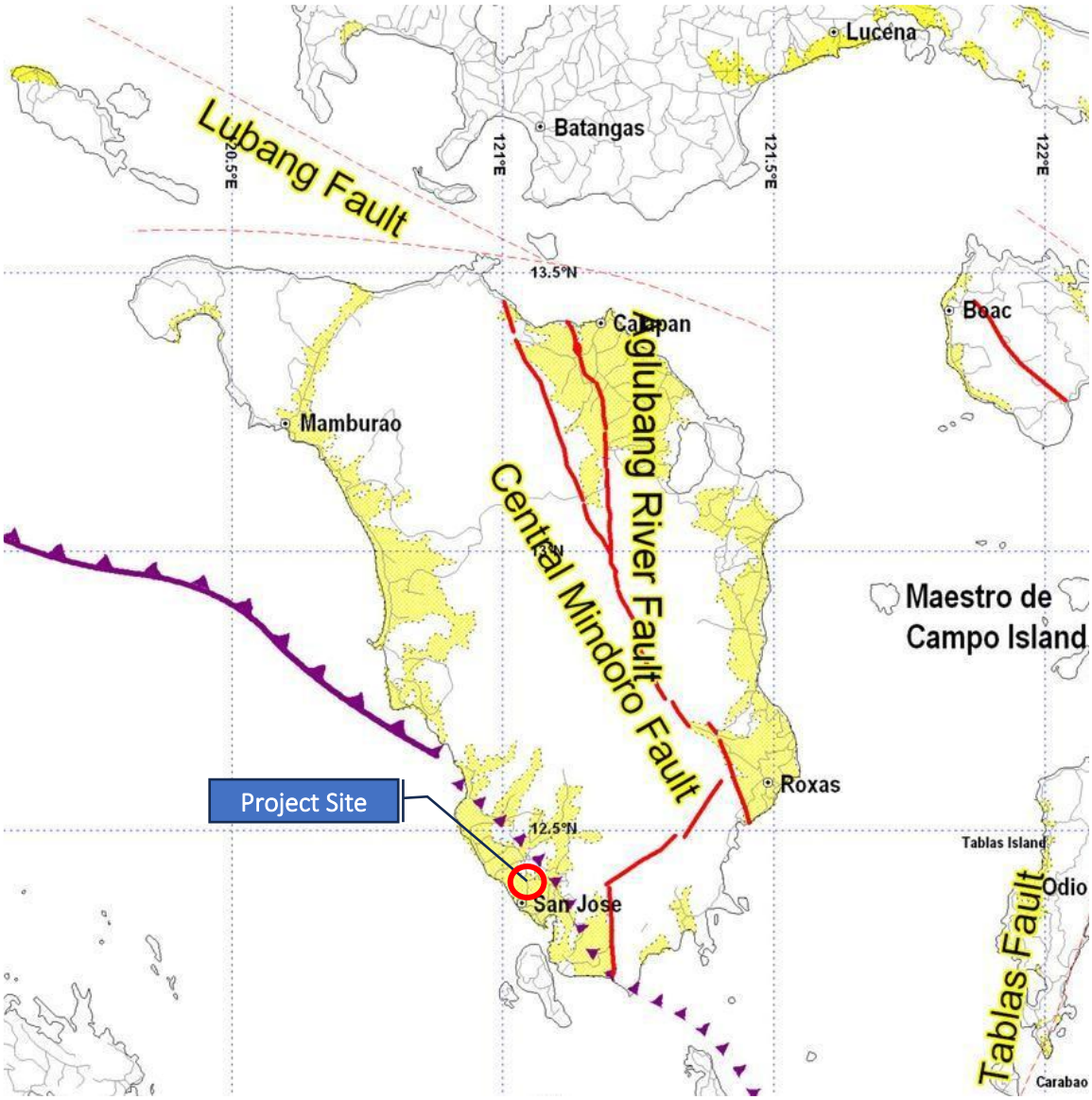


Figure 2.7. The project site is underlain by Quaternary Alluvium lying on a generally flat slope extending from the hilly to mountainous terrain to the shore on the west. This renders the site susceptible to liquefaction and flooding.

2.1.2.3. Impact Assessment

Table 2.3. Predicted impacts of/on geology to/by the proposed amendment of OMCPC SMRA Diesel Power Plant Expansion

List of Key Impacts	Phase Occurrence				Discussion
	Pre-Construction	Construction	Operation	Abandonment	
Change in surface landform		☑	☑	☑	Along the project site, the terrain is already flat, thus change in surface landform impact is insignificant.
Change in sub-surface/ underground morphology		☑	☑	☑	The additional powerhouse will only utilize isolated footing thus change in sub-surface/underground morphology is insignificant.
Inducement of subsidence, liquefaction, landslides, mud/debris flow, etc.		☑	☑	☑	The most significant geologic hazards associated to the site are related to volcanic, seismic and tsunami activities. Also, as a consequence of its geographic location and terrain, some threat from landslides, floods and typhoons exists. The map of seismicity around the project site is shown in **Figure 2.8**, which indicates that some significant earthquakes have occurred within the region. It is evident on this map that many of these earthquakes were caused by tectonic activity along the Philippine Fault zone, Manila Trench, East Zambales Fault, East Laguna Fault and the Casiguran Fault-East Luzon Trench region. For the region around the southern portion of the Manila Trench, the clustering of earthquakes around the Lubang Fault/Verde Island transform is evident. The most recent damaging earthquake near the site is the 1994 Mindoro earthquake, which occurred along the Aglubang Fault which caused destruction as a direct result of the ground shaking, and from the tsunami that immediately followed the earthquake. Another event occurred in 1995, although to a much less damaging effect. The damage caused by shaking during these earthquakes was attributed to poor construction practices and unfavorable geologic conditions (i.e., soft soil and presence of thick sediments near riverbanks and reclaimed areas). **Seismic Hazards** There are no active faults in the vicinity of the project. However, the active seismicity in the region brings threats related to ground shaking during earthquakes. Considering the active seismicity of the Philippines, ground shaking is a well-recognized geologic hazard in the country. Several studies on ground shaking have been conducted, one of which is a study conducted by PHIVOLCS and USGS on the expected seismic acceleration in the country. Thenhaus, et al. (1994) used the analysis of time, space and size distribution of earthquakes to evaluate the distance-dependent distribution of seismic energy and presented the results in three soil conditions (i.e., soft soil, medium soil and rock). The results of the calculations are shown in **Figures 2.9** to **2.11**. As shown on the maps, ground shaking is influenced by the position of the faults and other geologic structures because the expected seismic acceleration values vary parallel to the tectonic features. The peak ground acceleration value for soft soil in the San Jose plains was

List of Key Impacts	Phase Occurrence				Discussion
	Pre-Construction	Construction	Operation	Abandonment	
					estimated at 0.65g while that for medium soil is at 0.38 and that for rock condition is estimated at 0.22g. These values have the probability of not being exceeded in 50 years. **Ground Rupture** There is no known active fault at the project site, thus no threat from ground rupture is delineated. **Ground Acceleration** Liquefaction is possible to occur since the site is underlain by alluvial materials. The alluvium is a thick deposit of sediments coming mainly from Busuanga River and composed of sand and gravel that were left behind as the river meandered and flooded out of its channel. Such liquefaction has been observed in some areas around San Jose and the alluvial plains on the western coast of Mindoro. **Subsidence** Subsidence may occur as a result of compaction and settlement of the unconsolidated sediments. This may be triggered by external events such as by ground shaking during earthquakes or vibration caused by moving heavy equipment. Subsidence has also been observed in areas where large volumes of groundwater have been withdrawn from the alluvial deposits causing the sediments to shift in response to the lost volume. There is moderate probability of subsidence at the site considering the nature of the underlying unconsolidated sediments in the project site. **Mass Movements/Landslide** The terrain of the project site is relatively flat, thus there is no probability of occurrence of landslides. Such movement of sediments and debris constantly occur in the nearby hills and along Busuanga River and therefore there is the likelihood of sediment being deposited in the vicinity of the project site, particularly during intense rains and extreme floods. Being nearly 3 km from the active channels of Busuanga River, the main threat at the project site is minor silt and muddy waters depositing during floods. **Figure 2.12** shows the liquefaction hazards map from PHIVOLCS for the region around the project site. **Volcanic Hazards** The project site is far from active volcanoes, in Luzon such as Taal and Pinatubo and Canlaon in Visayas, to be directly affected by volcanic activities. Light ashfall may reach the project site especially during large volcanic eruptions. Slight ash deposition is expected with the particle size not to exceed a few millimeters in diameter and may be similar to that experienced during the 1991 Pinatubo eruption. The most extreme threat is merely light dusting, in which the ash deposits are in the order of a few mm to few cm thick.

List of Key Impacts	Phase Occurrence				Discussion
	Pre-Construction	Construction	Operation	Abandonment	
					Flooding Hazards Flooding is a known to have occurred along channels of Busuanga River reaching to nearby areas with low elevations. At the main channels of Busuanga River, floods have been documented to reach up to 3m above its normal river level. Two types of flooding may be expected in the vicinity of the project, namely: flashflood that occurs from the rapid accumulation of runoff, and fluvial flood that occurs when the Busuanga River overtops its riverbanks. The existing power plant and the proposed additional powerhouse is at an elevation of 20 m above sea level, and 3 km away from the active channels of the river, it is spared from the threat of the annual floods (**Figure 2.13**). However, with the extreme rainfall that may occur as part of climate change, heavy downpour within the watershed could lead to extreme flooding at the floodplains, and may cause the river to flow out of its channel. This threat is particularly present when debris flow occurs during which the rush of sediment-laden front of the floodwaters can easily overcome the channels and lead to meandering across the floodplain. A detailed analysis of micro-topography may be able to help identify the immediate threats from such meandering floods of the Busuanga River. However, in the long term, the role of small topographic irregularities may be of little relevance for the erosive front of debris flows.

2.1.3. Pedology

2.1.3.1. Methodology

Characterization of the soil in the project site was performed through available maps including the soil type mapping in the Geoportal.gov.ph. The Simplified Key to Soil Series of Occidental Mindoro published by the Department of Agriculture (DA) and PhilRice was also used as reference.

2.1.3.2. Baseline Condition

Based on the Geoportal's soil type mapping, San Jose, Occidental Mindoro consist of 11 soil series: Maranlig Gravelly Sandy Clay Loam, Rough Mountain Soil, Quingua (Clay Loam, Sandy Loam, Clay), River Wash, Magsaysay Clay, San Manuel (Silt Loam, Loamy Sand), San Miguel Silt Loam, Beach Sand, Hydrosol and Bolinao Clay Loam. One (1) type of soil blanket the OMCPC project site in Brgy. Central - the Magsaysay Clay (**Figure 2.14**). Magsaysay clay is a fine textured soil with no particular mineral that dominates and is found in areas with sell-distributed rainfall. It is a young soil in its incipient development stage toward a mature soil but has not yet fully developed its diagnostic horizon. **Figure 2.15** shows the soil fertility indicators and soil physical qualities of Magsaysay clay.

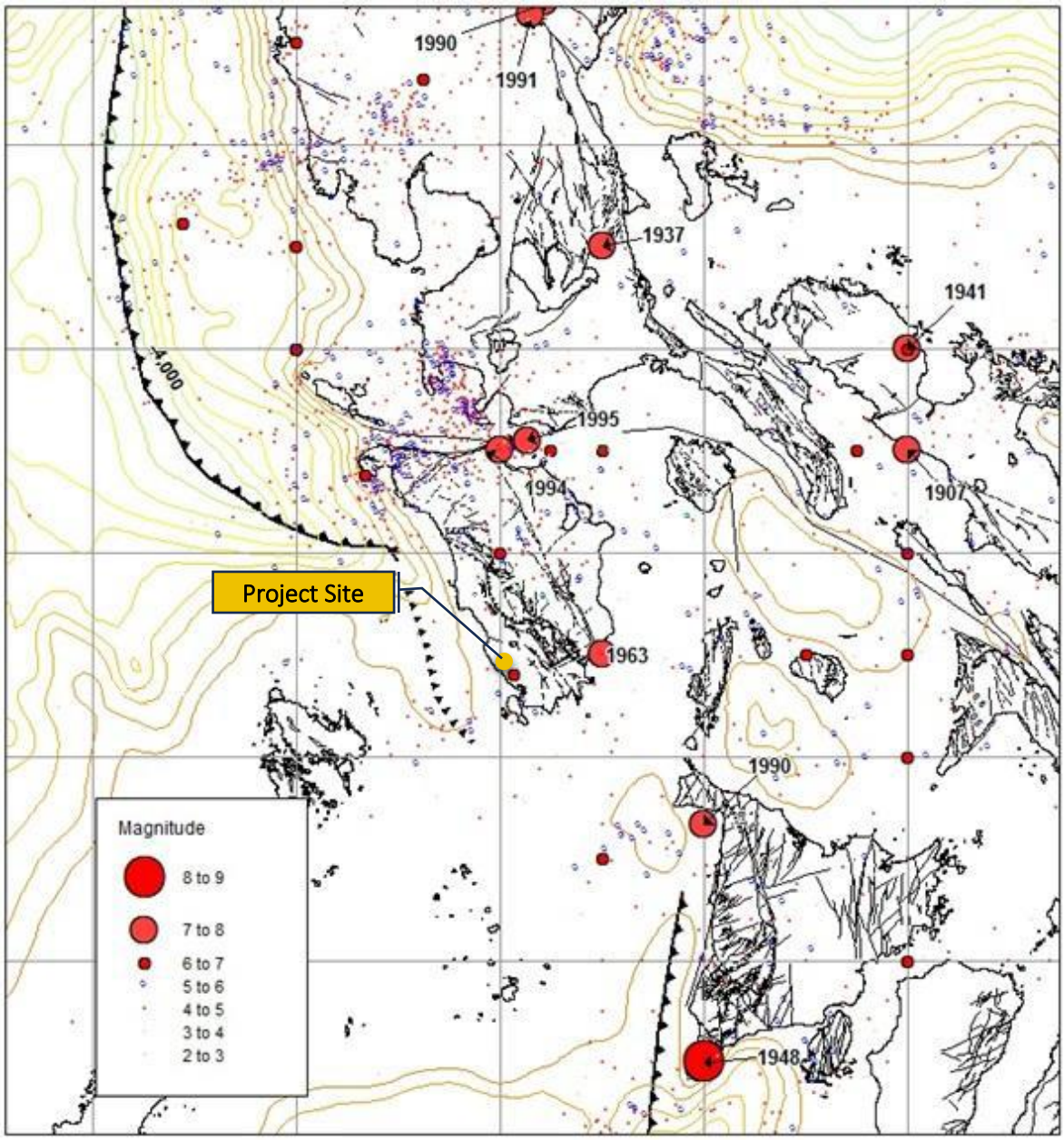


Figure 2.8. Seismicity map of the region around the project site

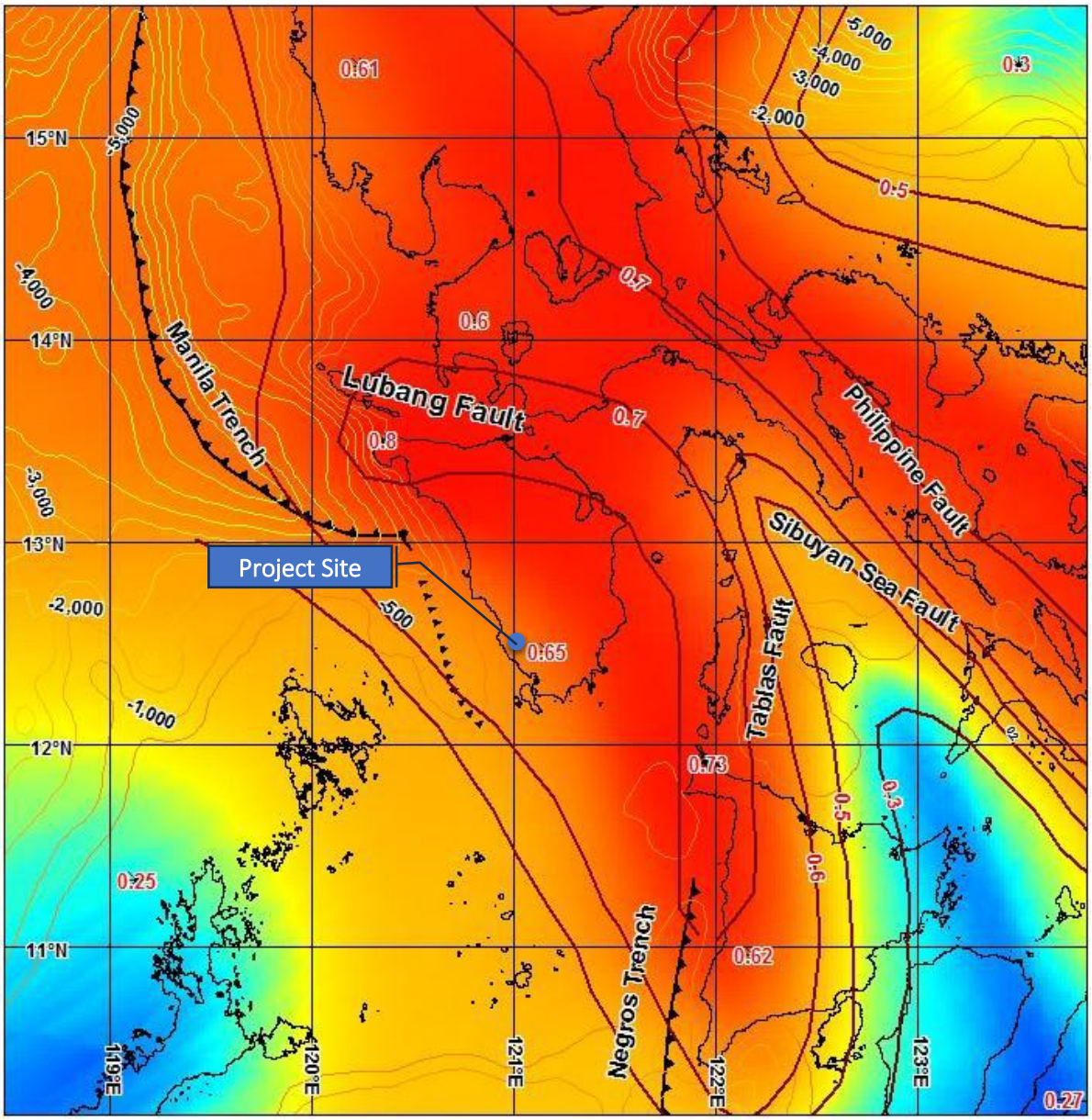


Figure 2.9. Seismic acceleration values for soft soil conditions estimated by probabilistic analysis (after Thenhaus et al, 1994).

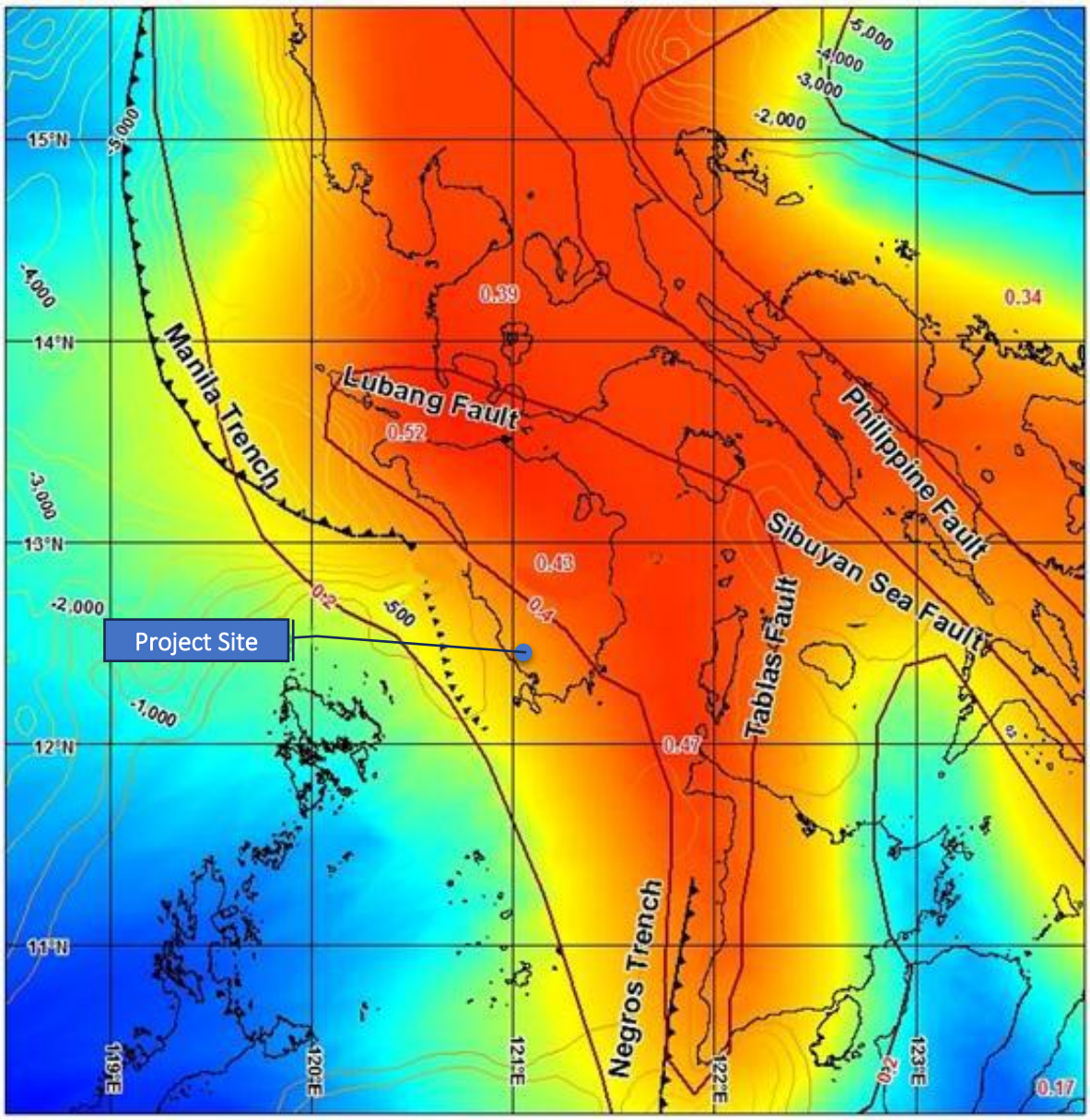


Figure 2.10. Seismic acceleration values for medium soil conditions estimated by probabilistic analysis (after Thenhaus et al, 1994).

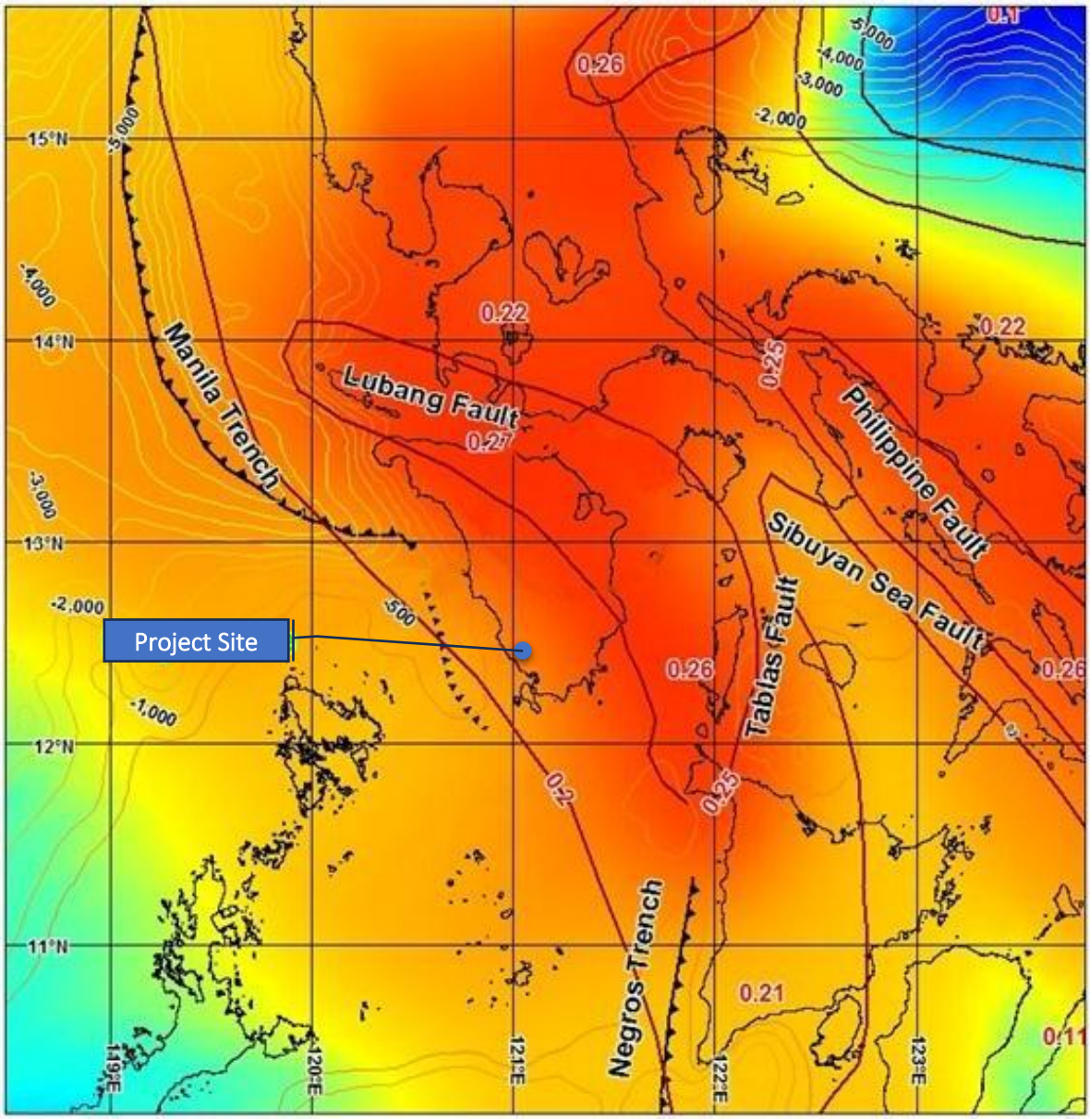


Figure 2.11. Seismic acceleration values for rock conditions estimated by probabilistic analysis (after Thenhaus et al, 1994).

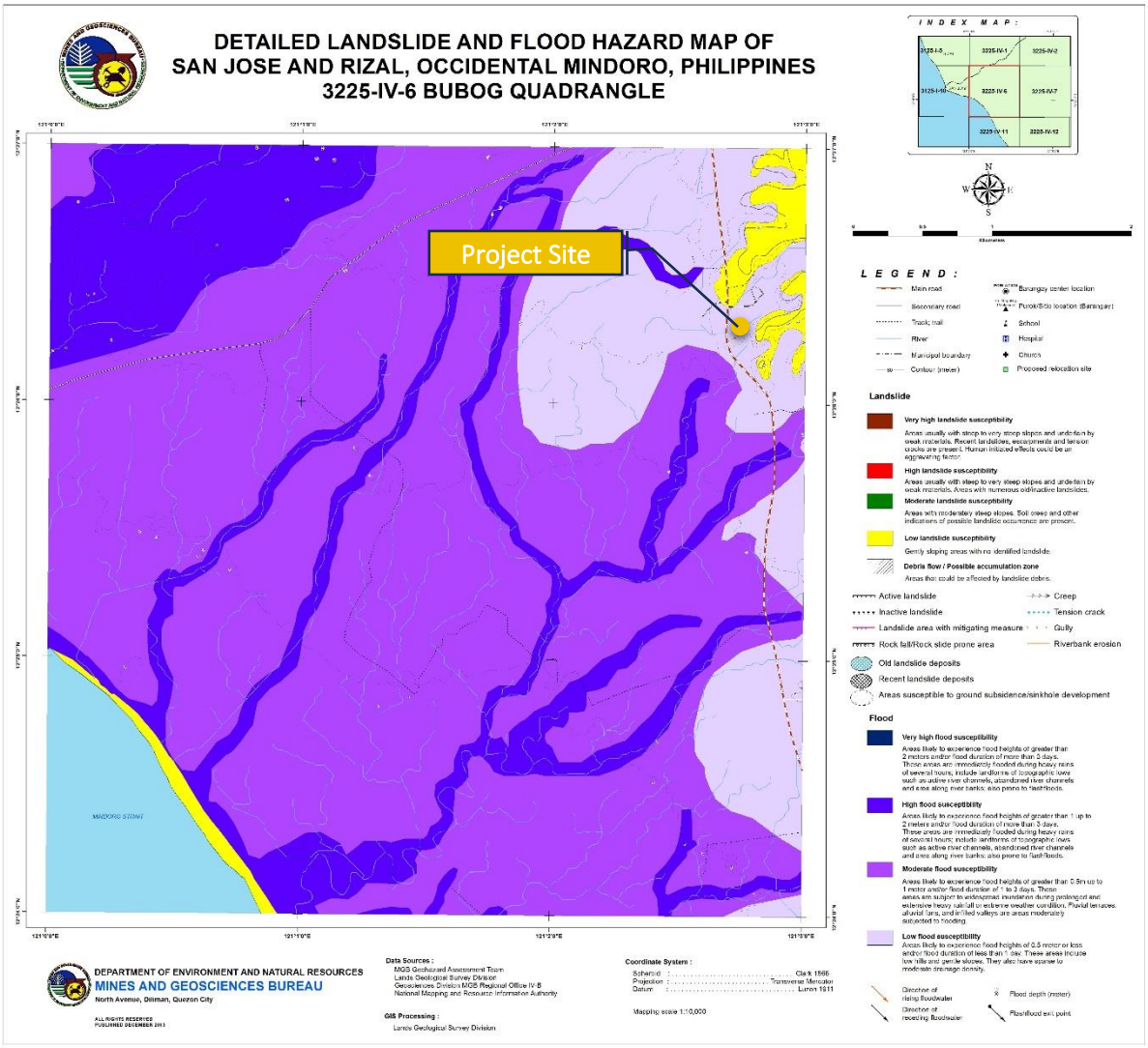


Figure 2.12. Detailed landslide and flood hazard map of San Jose and Rizal, Occidental Mindoro (Bubog quadrangle)

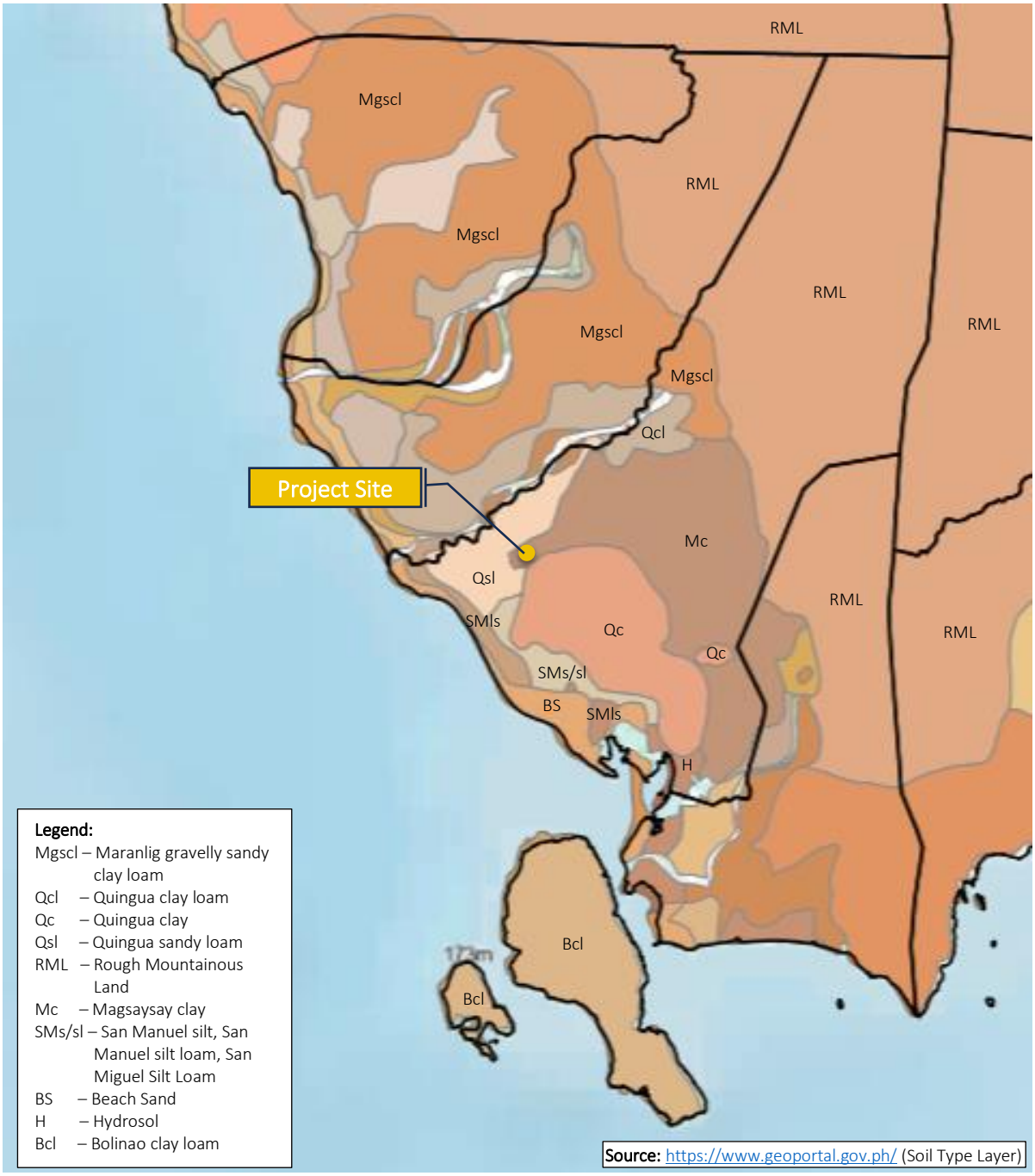
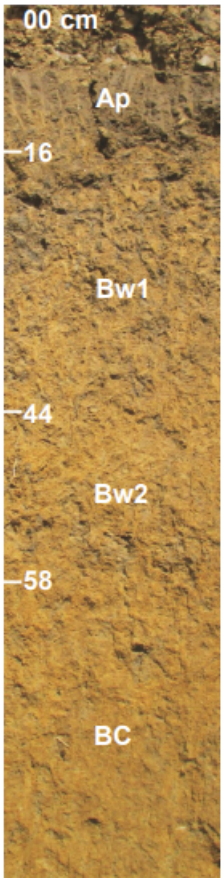


Figure 2.13. Soil map of San Jose, Occidental Mindoro and adjoining municipalities.



Soil Fertility Indicators	
Inherent fertility	High
Soil pH	Slightly acid to near neutral (6.6-7.1)
Organic matter	Low to moderate
Phosphorus (P)	High
Potassium (K)	Low
Nutrient retention (CEC)	High
Base saturation	High
Salinity hazard	None

Physical Soil Qualities	
Relief	Slightly sloping to rolling
Water retention	Moderate
Drainage	Good
Permeability	Good
Workability/tilth	Moderate
Stoniness	Gravels and highly weathered sandstones
Root depth	Moderate (>0.8m)
Erosion	Slight

Figure 2.14. Soil fertility indicator and physical soil qualities of Quingua Soil Series.

2.1.3.3. Impact Assessment

Table 2.4. Predicted impacts of/on pedology to/by the proposed amendment of OMCPC SMRA Diesel Power Plant Expansion

List of Key Impacts	Phase Occurrence				Discussion
	Pre-Construction	Construction	Operation	Abandonment	
Soil erosion/ loss of topsoil/ overburden		☑			Soil erosion is not projected as a significant impact since the area is flat and the proposed additional powerhouse will only use isolated footings for its foundation. Excavation is very minimal.
Change in soil quality/ fertility					Change in soil quality and fertility is minimal since the project area has been utilized for a longtime as project location for power plant back in the NAPOCOR days.

2.1.4. Terrestrial Flora and Fauna

2.1.4.1. Methodology

The fora and fauna rapid assessment was just ocular observation listing all the species observed on-site since an existing power plant is already situated in the area and the additional powerhouse will just be sited adjacent to it.

All the wildlife species observed, heard and encountered at the project site were recorded quantitatively. Direct and indirect method of identification was used in wildlife survey and assessment. The direct method is the actual sighting of faunal species either by the naked eye or with the use of camera. Indirect method employs the use of bioacoustics, the identification of species through its calls. This method has been more useful in avifaunal species identification.

2.1.4.2. Baseline Condition

Terrestrial Flora

The proposed project location of the additional powerhouse is just adjacent to the additional fuel tanks of the existing powerhouse. Adjoining buildings in the property is currently utilized by OMECO as warehouse and stockpile area. Since the site was already utilized as power plant location that has been operating since 2016, tree vegetation is minimal and open areas were dominated by grasses. The most dominant grasses are amorseko (*Chrysopogon aciculatus)* and talahib *(Saccharum spontaneum).* Other species observed are niog (*Cocos nucifera*), Auri (*Acacia auriculiformes*), Rain Tree (*Samanea saman*) and Mangga (*Manggifera Indica*). Adjacent to the new powerhouse are big trees mainly Auri, Mangga and Santol. OMCPC also planted Indian Lanutan or Indian Tree (*Polyalthia longifolia*) next to the perimeter fence to act as greenbelt and noise buffer. Plate 2.1 shows the vegetation growing at the proposed additional powerhouse

Table 2.5.List of plant species observed at the project site

Family Name	Scientific Name	Common Name	DAO 2017-11	IUCN
ANACARDIACEAE	*Buchanania arborescens*	Balinghasai	-	-
	Mangifera indica	Mango	-	-
ANNONACEAE	*Polyalthia longifolia*	Indian Lanutan/Tree	-	-
ARECACEAE	*Cocos nucifera*	Niog	-	-
ASTERACEAE	*Chromalaena odorata*	Hagonoy	-	-
EUPHORBIACEAE	*Macaranga tanarius*	Binunga	-	-
FABACEAE	*Acacia auriculiformes*	Auri	-	-
	Acacia mangium	Mangium	-	-
	Pithecellobium dulce	Kamachile	-	-
	Samanea saman	Rain Tree	-	-
MELIACEAE	*Sandoricum koetjape*	Santol	-	-
MORACEAE	*Ficus nota*	Tibig	-	-
	Ficus septica	Hauili	-	-
POACEAE	*Chrysopogon aciculatus*	Amorseko	-	-
	Cyperus rotundus	Mutha	-	-
	Eleusine indica	Paragis	-	-
	Saccharum spontaneum	Talahib	-	-

Terrestrial Fauna

Wildlife assessment was done by traversing the vicinity of the proposed project site doing ocular observation and recording of occurring wildlife. There were 14 wildlife species observed in the project area all of which are avian species belonging to 14 families that were observed during the assessment.

Most of the avian species commonly observed were the graminivorous Eurasian Tree Sparrow (*Passer montanus*), the frugivorous Asian Glossy Starling (*Aplonis panayensis*) and the insectivorous birds like the Philippine Pied Fantail and Blue-tailed Bee-eater (*Merops philippinus*). Other species observed are the frugivourous Yellow-vented Bulbul (*Pycnonotus goiavier*) and the White-collared Kingfisher (*Todiramphus chloris*). Table 2.1.6 shows the list of wildlife species observed in the proposed project site.

There were no endangered, threatened or vulnerable species observed in the project area. In terms of endemicity all the species are resident species except for two (2) endemic species and one (1) migratory species.

Table 2.6. List of wildlife species observed within the OMCPC power plant complex

Species	Common Name	Residency Status	Conservation Status	Feeding Role
Family Acanthizidae – Australasian Warblers				
Gerygone sulphurea	Golden-bellied Gerygone	Resident	LC	Insectivore
Family Alcedinidae – Kingfishers				
Todiramphus chloris	White-collared Kingfisher	Resident	LC	Piscivore
Family Apodidae – Swifts, Needletails				
Collocalia esculenta	Glossy Swiftlet	Endemic	LC	Insectivore
Family Columbidae – Doves, Pigeons				
Geopelia strata	Zebra Dove	Resident	LC	Graminivore
Family Estrildidae – Avadavats, Parrotfinches, Munias				
Lonchurra atricapilla	Chestnut Munia	Resident	LC	Graminivore
Family Hirundinidae – Martins, Swallows				
Hirundo rustica	Barn Swallow	Resident	LC	Insectivore
Family Laniidae – Shrikes				
Lanius cristatus	Brown Shrike	Migratory	LC	Carnivore
Family Meropidae – Bee-eaters				
Merops philippinus	Blue-tailed Bee-eater	Resident	LC	Insectivore
Family Nectariniidae – Sunbirds, Spiderhunters				
Nectarinia jugularis	Olive-backed Sunbird	Resident	LC	Frugivore
Family Oriolidae – Orioles				
Oriolus chinesis	Black-naped Oriole	Resident	LC	Frugivore
Family Ploceidae – Old World Sparrows, Weavers				
Passer montanus	Eurasian Tree Sparrow	Resident	LC	Graminivore
Family Pycnonotidae – Bulbuls				
Pycnonotus goiavier	Yellow-vented Bulbul	Resident	LC	Frugivore
Family Rhipiduridae – Fantails				
Rhipidura nigritorquis	Philippine Pied Fantail	Endemic	LC	Insectivore
Family Sturnidae –Starlings				
Aplonis panayensis	Asian Glossy Starling	Resident	LC	Frugivore/ Omnivore

2.1.4.3. Impact Assessment

Table 2.7. Predicted impacts of/on the terrestrial flora to/by the proposed amendment of OMCPC SMRA Diesel Power Plant Expansion

List of Key Impacts	Phase Occurrence				Discussion
	Pre-Construction	Construction	Operation	Abandonment	
Vegetation removal and loss of habitat		☑	☑	☑	The proposed additional powerhouse will only occupy 420 sq.m of the existing property within the OMCPC complex. The proposed project area for the powerhouse is already devoid of vegetation as the development area is already grassland even before the existing power plant of OMCPC was constructed. The existing trees will not be cut down as it is far from the proposed construction site of the new powerhouse.
Threat to existence and/ or loss of important local species		☑	☑	☑	Most of the wildlife species observed were generalists, capable of adapting to disturbance or relocating to adjacent habitats. The existing vegetation is of atypical grassland with intermittent trees in the perimeter. OMCPC also planted Indian Lanutan trees in their perimeter fence to serve as buffer and greenbelt. It is also suggested that OMCPC shall actively pursue enrichment planting along its adopted areas to improve diversity while at the same time establishing a carbon sink to compensate a portion of its emission and accommodate more wildlife. OMCPC is encouraged to also adopt a mangrove habitat and conduct mangrove planting along the coastal.
Threat to abundance, frequency and distribution of important species					Since the project area is already existing there are no longer important species found in the area. All the species of flora and fauna observed in the project area have a conservation status of least concern thus there is no threat to abundance, frequency and distribution of important species in the area.
Hindrance to wildlife access					The proposed additional powerhouse is only small and is only one floor thus it will not have significant impact in terms of hindrance to wildlife access. OMCPC planted trees within the vicinity and along the perimeter fence thus wildlife specifically the avian fauna can use the greenbelt as perching or roosting area. Furthermore, OMCPC did not fell all the big trees when construction for the existing power plant was started in 2015 thus the area is not devoid of vegetation and this provides habitat for birds typically occurring in the area.

2.2. The Water

2.2.1. Hydrology/Hydrogeology

2.2.1.1. Methodology

The hydrological features of the Project site were determined from reference materials such as the CLUP of San Jose.

2.2.1.2. Baseline Condition

Surface Water Resources

The Municipality of San Jose has both marine water and freshwater resources including groundwater and shallow springs. The municipality has mainly four major inland watersheds namely: Busuanga, Cabariwan, Caguray and Labangan. The whole of Ilin and Ambulong Islands is considered as another sub-watershed base on the CLUP of San Jose, Occidental Mindoro. Though the project area is proximal to Busuanga River of the Busuanga watershed but the site is actually within the Labangan watershed (Figure 2.15).

There are 11 major rivers and creeks that drains the four (4) abovementioned mainland watersheds and the Ilin-Ambulong Island. Headwaters and tributaries of the river systems in the area exhibit dendritic drainage pattern. Tributaries usually have narrow channels, rocky stream beds and steep gradients and flatten out upon reaching the base of the mountain range. Most of the rivers, creeks and tributaries emanate from the mountain ridge in the northeast and draining to sea in the west to Mindoro Strait.

In the old NAMRIA map, the names of the rivers in San Jose are the following (from North to South): Magbando-Bugsanga River, Curanta River, Buslugan River, Amindan River, Quinagalaw River, Rio Malinao – Tubaong River, Magbay River that eventually drains to Labangan River and Cabariwan River. In the CLUP (2017-2030) however, the river names discussed are the following: Paco River, Bubog River, Molasses River, Palanghiran River, Himarara River, Labangan River, Tubaon River, Manus Creek, Pandurucan River and Busuanga River.

It turned out that Molasses River is the more famous name of Amindan River referred to in the NAMRIA map. The uppermost tributary of Molasses/Amindan River emanates near the project site (Figure 2.16). An irrigation canal emanating from the footslopes of the mountain from the Busuanga River is also travering within the project site. The water is used by local farmers for irrigation of rice paddies.

Groundwater Resources

The Municipality of San Jose's groundwater potential is divided into three (3) categories: Shallow and Deep Well Areas, Deep Well Areas and Difficult Areas. The project site in Brgy. Central falls under the Shallow and Deep Well Areas. Figure 2.17 shows the groundwater potential map of San Jose, Occidental Mindoro base on San Jose's CLUP. In the groundwater availability map provided by the National Economic Development Authority (NEDA) in its Philippine Water Supply and Sanitation Master Plan – MIMAROPA Water Supply and Sanitation Databook and Regional Roadmap, the Municipality of San Jose's groundwater availability classification is area with local and less productive aquifer (Figure 2.18).

Majority of the barangays in San Jose especially the urban areas rely on groundwater for its domestic water requirement. San Jose Water District (SJWD) maintains 17 operating pumping stations which are all shallow wells. SJWD only taps shallow wells due to sulfur and salinity issues in deep wells. In the project site there are shallow

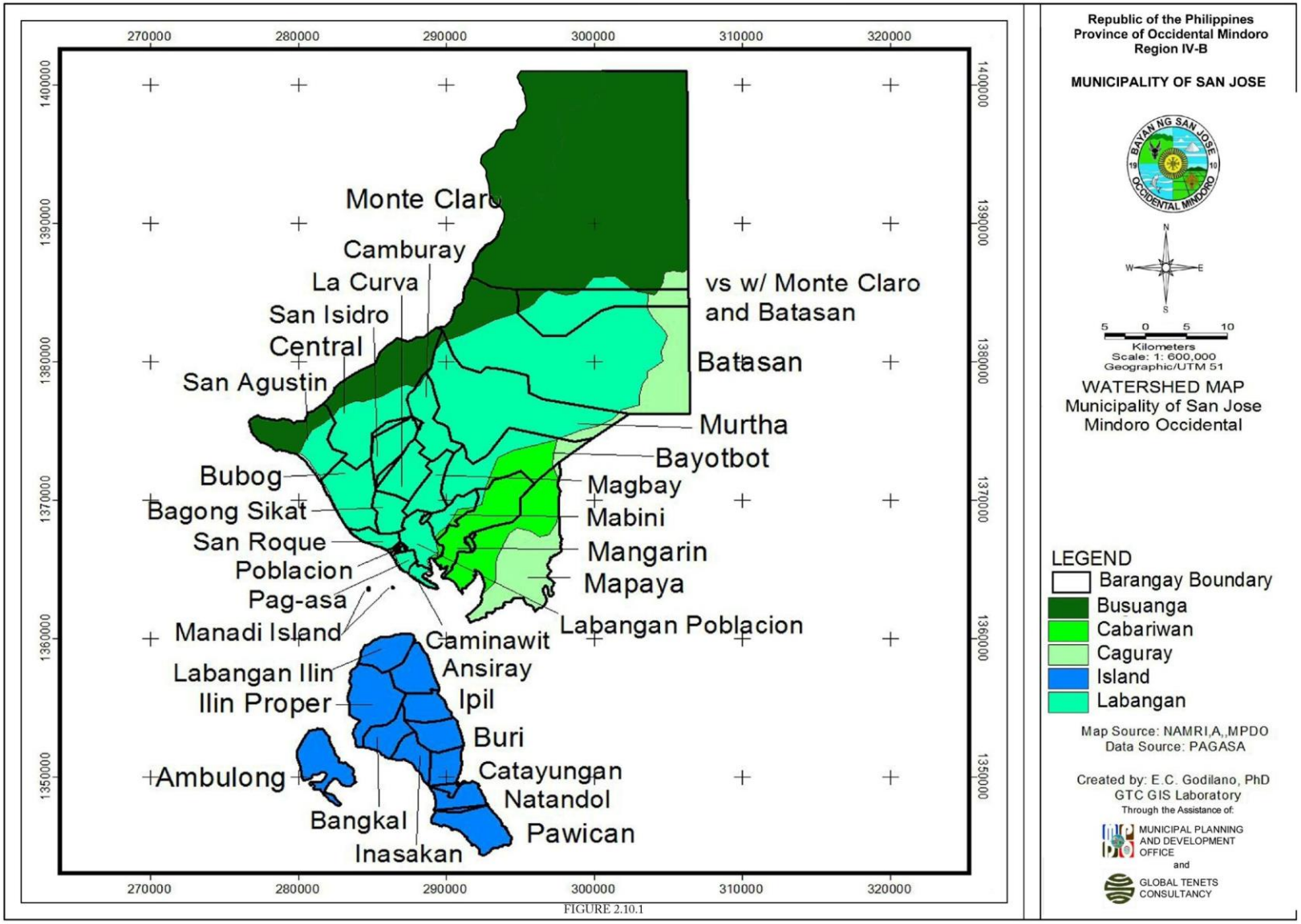


Figure 2.15. Watershed Map of San Jose, Occidental Mindoro

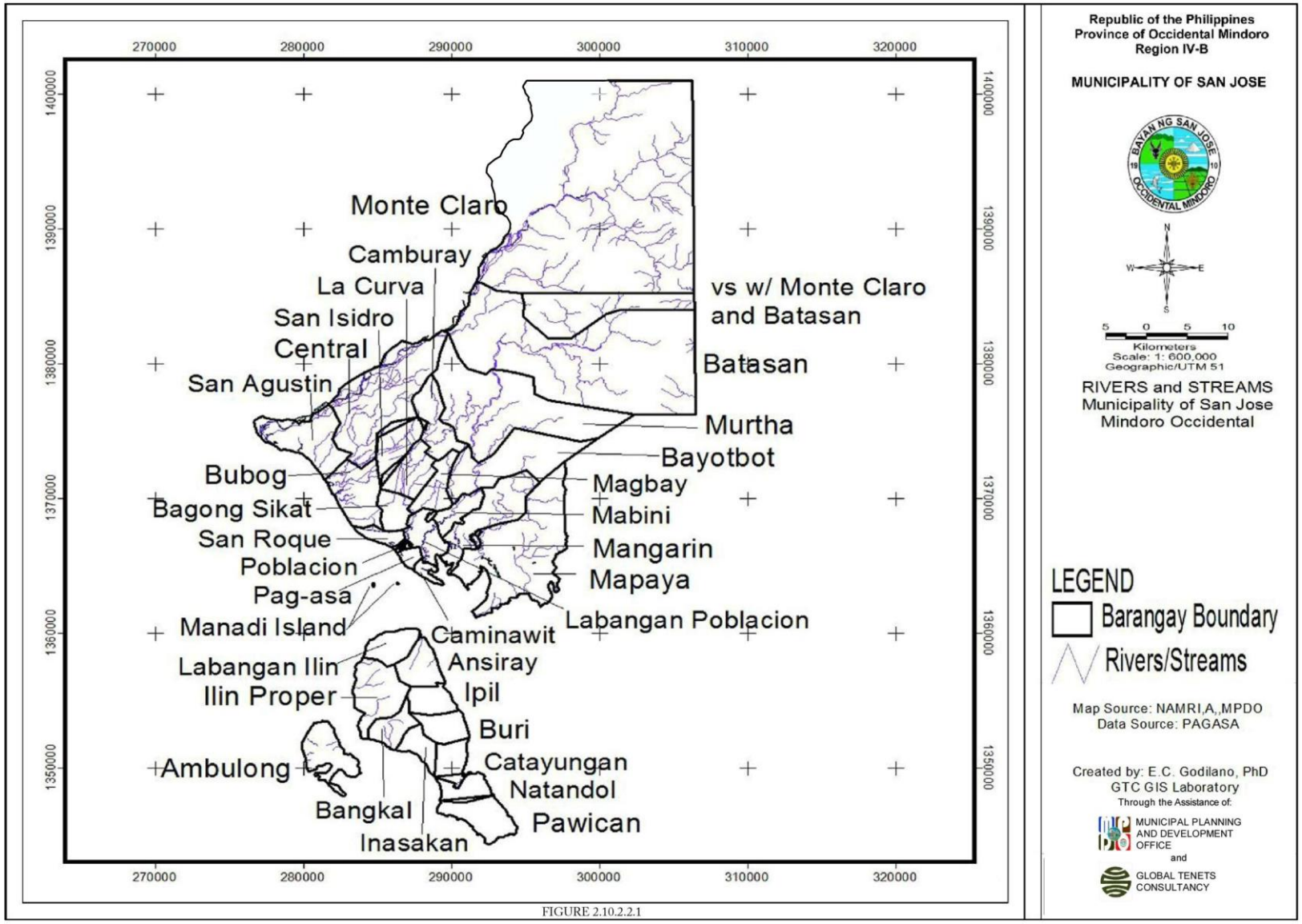


Figure 2.16. River and streams in San Jose, Occidental Mindoro

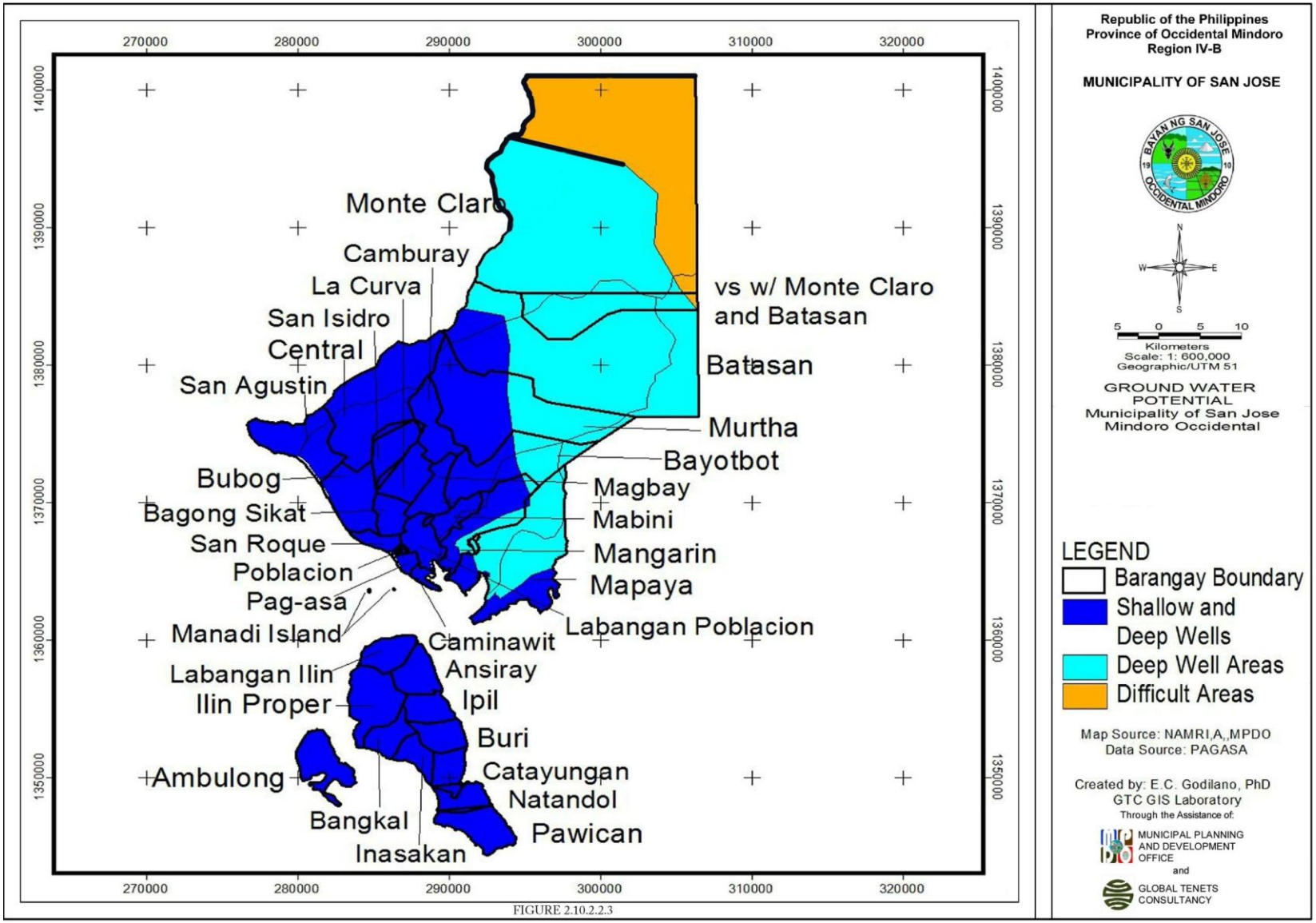


Figure 2.17. Groundwater potential of San Jose, Occidental Mindoro

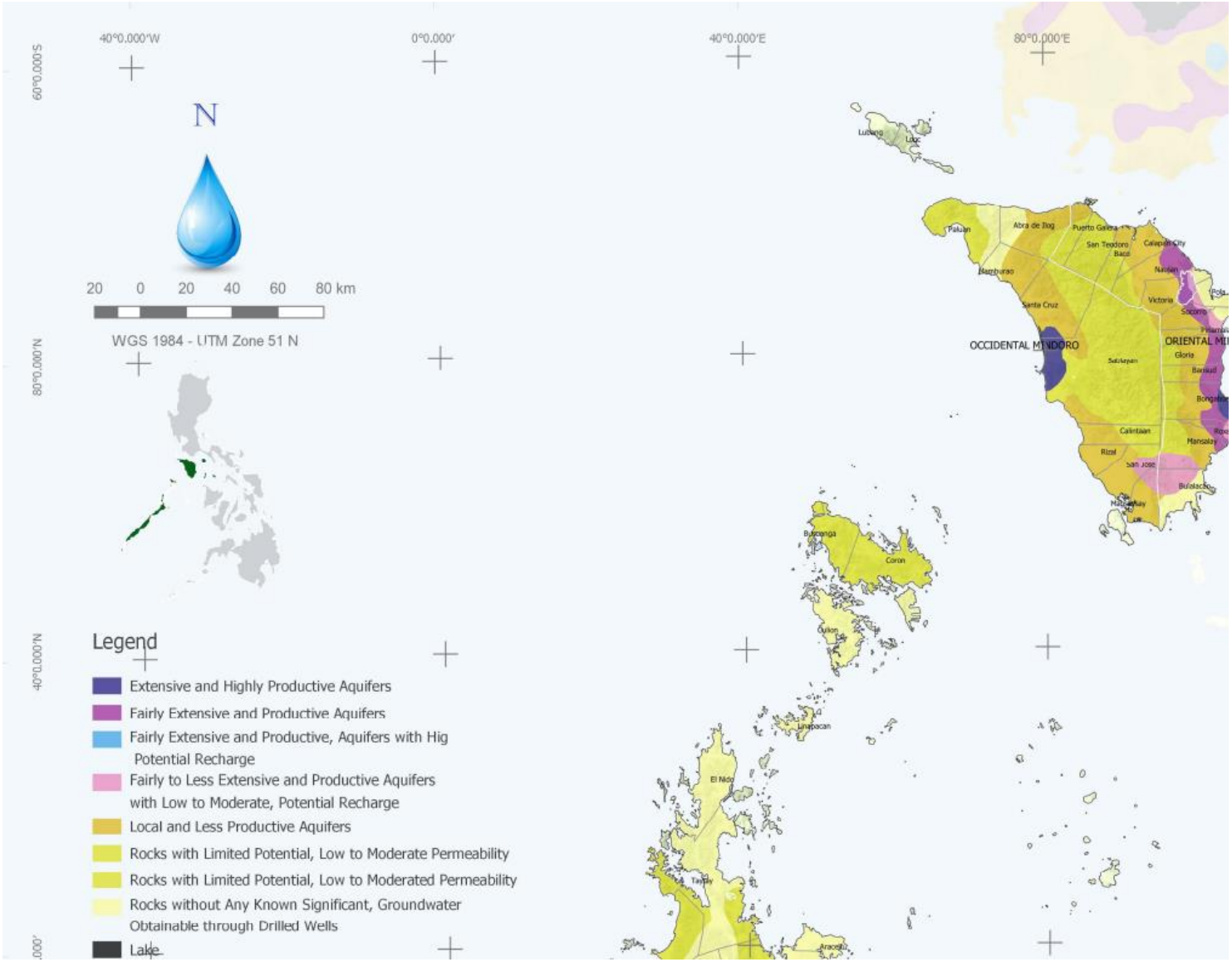


Figure 2.18. Groundwater availability of Mindoro (NEDA)

2.2.1.3. Impact Assessment

Table 2.8. Predicted impacts of/on hydrology/hydrogeology to/by the proposed amendment of OMCPC SMRA Diesel Power Plant Expansion

List of Key Impacts	Phase Occurrence				Discussion
	Pre-Construction	Construction	Operation	Abandonment	
Change in drainage morphology/ inducement of flooding/ reduction in stream volumetric flow					The nearest waterbody in the project site where the additional powerhouse will be constructed is the NIA irrigation canal. There is no perceived impact on the surface waterbody since the powerhouse will be constructed with prefabricated materials and footings excavation is minimal.
Change in stream depth					
Depletion of water resources/ competition in water use			☑	☑	OMCPC taps from the existing groundwater well of NPC in the OMECO compound. The water requirement of the company is minimal since the generator sets were equipped with each own cooling system. Water consumption of the company are mainly for domestic purposes and for make-up water for the cooling system thus water abstraction from groundwater well is not significant. Competition in water resource will be unlikely since OMCPC will not tap from the existing irrigation canal for both water requirements of the existing and proposed additional powerhouse.

2.2.2. Water Quality

2.2.2.1. Methodology

<u>Ambient Water Quality Monitoring Sampling Methodology</u>

The Water Quality Monitoring Manual (Volume 1), Manual on Ambient Water Quality of the Environmental Management Bureau was used in this study for the assessment of the water quality as well as its sampling and handling procedures. The methods for the analysis of the ambient water and effluent samples were based form the Standard Methods for the Examination of Water and Wastewater published by the American Public Health Association, American Water Works Association and the Water Environment Federation.

Grab sampling were conducted for the collection of the water samples in the study area. The samples were obtained by submerging the sampling containers against the flow/drift at a depth of 20cm. Sterilized sample containers such as the wide-mouthed glass for oil and grease, bac-T bottles for bacteriological parameters and two (2) 1-litre plastic containers for physico-chemical parameters were used for the gathering of the grab samples.

For the effluent water, sample is ideally collected at the discharge point of the wastewater treatment facility prior to its mixing the nearest receiving body of water (RBW). In the event that there is no discharge, photo-documentation is necessary to provide proof that there was no discharge at the time of sampling.

All the samples were cool-stored at about 4ºC, as necessary, and were sent to OSTREA Mineral Laboratory for analysis.

A portable digital Lutron YK-2001DO Dissolve Oxygen (DO) meter was used for determining the in-situ parameters such as the dissolve oxygen (DO) and Temperature.

Sampling Location

Three (3) ambient surface water quality monitoring stations were previously established in the study area for semi-annual monitoring purposes and one (1) wastewater effluent monitoring station (**Figure 2.19**) and these were re-visited and sampled for ambient water quality and effluent monitoring. **Table 2.9** presents the coordinates and details of the ambient surface water and effluent monitoring stations.

Table 2.9. OMCPC ambient water quality and effluent monitoring stations

Station ID	Coordinates	Description
OMCPC FWQ1	N12°26'28.42" E121°2'45.78"	The sampling site is located near the northwestern boundary of OMCPC near the front of the entrance gate. The monitoring station is situated in an irrigation canal which traverses in front of OMCPC power facility. It is the nearest surface waterbody to the facility. The station is prior to the confluence with the run-off water emanating from the facility.
OMCPC FWQ2	N12°26'27.69" E121°2'45.49"	The sampling site is also located near the northwestern boundary of OMCPC near the front of the entrance gate. The station is situated in the irrigation canal after the confluence with the run-off water emanating from the facility.
OMCPC FWQ3	N12°26'23.10" E121°2'47.64"	The sampling site is also located near the southwestern boundary of OMCPC near a small bridge connecting OMCPC to the OMECO compound. The station is situated in the irrigation canal 55 meter southwest of the south gate of OMCPC.
OMCPC EWQ1	N12°26'25.86" E121°2'47.56"	The discharge point of OMCPC for its oil and water separator located southwest, outside of the complex

Figure 2.19. OMCPC ambient surface water and effluent quality monitoring stations

Water Quality Monitoring Parameters

The water quality parameters for ambient surface water to be analyzed were listed in Table 2.10 to comply in the requirements stated in the discharge permit and the Environmental Monitoring Plan for the water quality monitoring.

Table 2.10. OMCPC Water Quality parameters for surface water and effluent water

Constituent	Parameter
Primary parameters	Color, pH, Total Suspended Solid (TSS), Dissolved Oxygen (DO), Biological Oxygen Demand (BOD), Chemical Oxygen Demand (COD), Thermotolerant fecal coliform, Nitrates (NO_3-N), Phosphates (PO_4-P) and Chloride (Cl)
Secondary parameters - inorganics	Ammonia (NH3-N)
Secondary parameters - metals	Hexavalent Chromium (Cr_{+6}), Arsenic (As), Cadmium (Cd), Lead (Pb), Copper (Cu) and Zinc (Zn)
Secondary parameters - organics	Oil & Grease, Surfactants (MBAS)

The DENR standards were used to compare the results obtained of the water quality sampling. The DENR Administrative Order 2016-08 (*Water Quality Guidelines and General Effluent Standards of 2016)* was used to characterize the ambient surface water physico-chemical and bacteriological characteristics.

2.2.2.2. Baseline Condition

The concentration of parameters for this monitoring event was compared to Class C since the receiving body of water is an irrigation canal for agricultural water supply.

Class C water classification's intended beneficial use is either of the following:

1. Fishery water for the propagation and growth of fish and other aquatic resources
2. Recreational Water Class II – for boating, fishing or similar activities; and
3. For agriculture, irrigation and livestock watering.

The succeeding table below shows the results of the samples analyzed collected for the OMCPC ambient water quality and effluent monitoring. The results of the analysis were compared to the Class C Standards of the DENR DAO 2016-08.

Ambient Freshwater Quality Monitoring

Primary Parameters

In the current monitoring, FWQ1 to FWQ3 have pH value ranging from 7.7 to 7.8, which indicates that the waters in the sampling stations were all neutral and all are still within the DAO 2016-08 standard for pH for Class C water.

Temperature varies during sampling due to the difference in sampling time and any variation could not be attributed to the current operation of OMCPC which has no discharge during the time of sampling.

The observed values for TSS in this monitoring event range from 61 mg/L to 67 mg/L which is lower than DAO 2016-08 standard for pH for Class C water which is 80 mg/L.

BOD concentration of all the ambient fresh water samples taken at OMCPC monitoring stations range from less than 1.0 to 1.0 mg/L. The new DAO 2016-08 BOD standard for Class C waters is 7. COD

concentration on the other hand ranges from 25 mg/L to 54 mg/L, although there is no standard for COD in the Class C waters.

Observed values for DO were within prescribed values (minimum of 5 mg/L) ranging from a low of 8.2 mg/L to a high of 8.6 mg/L, an indication that the water is relatively aerated.

Values obtained for total coliforms in the current monitoring event ranges from 35 x 10^2 MPN/100mL to 13 x 10^4 MPN/100mL. Considering that the sampling station is an irrigation canal proximal to residential areas with some portions used by farmers for wallowing of their carabaos for cooling, high concentration indicates that some of the residents may have been directing their run-off near the irrigation canal while carabaos may have been defecating while wallowing.

The nitrate concentration for this monitoring event ranges from 0.16 mg/L to 0.21 mg/L, when compared with the DAO 2016-08 standard for nitrate, the concentration is still way below the standard of 7 mg/L. Meanwhile, phosphate concentration ranges from 0.01 mg/L to 0.02 mg/L, compared with the DENR standard, the concentrations were below the standard of 0.5 mg/L. The concentration of Chloride which ranges from 3.0 mg/L to 4.5 mg/L is very low when compared to the DENR standard of 350 mg/L.

Table 2. 11. Result of the OMCPC ambient water quality monitoring, January 2021

Parameter	Analysis Method/Instrument	DENR Standard (Class C)	OMCPC FWQ1	OMCPC FWQ2	OMCPC FWQ3
Temperature, °C	*In-situ Sampling*	25-31	28.7	28.7	28.6
pH	Electrometric Method	7.0 – 9.0	7.8	7.7	7.8
BOD, mg/L	5 day BOD Test	7	<1	1	1
COD, mg/L	Open Reflux Method	--	54	25	46
DOa, mg/L	*In-situ Sampling*	5 (Minimum)	8.6	8.2	8.5
TSS, mg/L	Gravimetric	80	61	61	67
Oil & Grease, mg/L	Liquid-liquid, Partition - Gravimetric	2	<1.0	<1.0	<1.0
Surfactants (MBAS)	Anionic Surfactants as MBAS	1.5	<0.10	<0.10	<0.10
Cr_{+6}, mg/L	Colorimetric	0.01	<0.01	<0.002	<0.002
Phosphate	Stannous Chloride Method	0.5	0.02	0.01	0.01
Ammonia	Ammonia – Selective Electrode	0.5	0.11	0.09	0.06
Nitrate – NO3-N	Colorimetry – Brucine	7	0.16	0.17	0.21
Chloride	Argentometric	350	3.0	4.5	3.4
As, mg/L	Manual Hydride Generation - AAS	0.02	<0.0007	<0.0007	<0.0007
Cd, mg/L	Direct Acetylene Flame	0.005	<0.003	<0.003	<0.003
Cu, mg/L	Direct Acetylene Flame	0.02	<0.005	<0.005	<0.005
Pb, mg/L	Direct Acetylene Flame	0.05	<0.01	<0.01	<0.01

Parameter	Analysis Method/Instrument	DENR Standard (Class C)	OMCPC FWQ1	OMCPC FWQ2	OMCPC FWQ3
Zn, mg/L	Direct Acetylene Flame		28.7	28.7	28.6
Thermotolerant Fecal Coliform	Multiple Tube Fermentation		7.8	7.7	7.8

Secondary Parameters - Inorganics

Ammonia concentration ranges from 0.06 mg/L to 0.11 mg/L. Compared with the DAO 2016- 08 for Class C water standard for ammonia which is 0.5 mg/L, the current concentration is still within the standard.

Secondary Parameters - Metals

Arsenic, cadmium, copper, zinc lead and hexavalent chromium were still less than their respective detection limits in all the surface water samples as prescribed in DAO 2016-08 for Class C waters.

Secondary Parameters - Organics

The current concentration level of oil and grease in all surface water stations were way below the detection limit of the laboratory, the concentrations for all the monitoring stations are less than the 1.0 mg/L detection limit. Surfactant concentration was also below the detection limits set by laboratory.

Effluent Quality Monitoring

During the time of sampling, the wastewater containment facility from the oil and water separator has no discharge. Plate 2.1 shows the photographs of the compartments having low water level with the final discharge compartment empty of water.

2.2.2.3. Impact Assessment

Table 2.12. Predicted impacts of/on water quality to/by the proposed amendment of OMCPC SMRA Diesel Power Plant Expansion

List of Key Impacts	Phase Occurrence				Discussion
	Pre-Construction	Construction	Operation	Abandonment	
Degradation of groundwater quality Degradation of surface water quality		☑	☑	☑	Oil spills during construction and operation may potentially contaminate the groundwater table. Proper handling and storage of diesel, fuel oil and lubricants in covered areas with impermeable flooring and installation of proper bund walls will reduce risk from this environmental aspect. highly probable impact from project activities is siltation/sedimentation of the irrigation canal within and near the project site during the construction phase due to earth-moving activities. Sediment accumulation or deposition may

					potentially drain to the canal. This would be likely especially during events of continuous heavy rains. Sedimentation ponds and silt traps, with proper maintenance and regular monitoring, may be deemed as reasonably adequate mitigation and control measure to manage the siltation and sedimentation impact. Establishment of additional silt traps or sedimentation ponds may be necessary if TSS and turbidity values will continue to be observed at elevated levels. Oil-contaminated wastewater may be generated by the power plant during its operation and could be carried by runoff or discharged to the irrigation system, hence degrading the quality of the irrigation water. Installation of a drainage system that will capture the oil-contaminated water and direct it to a wastewater treatment system with an efficient oil/water separator will render the water discharge compliant to the prescribed water quality parameters prior to discharge. Avoidance of spills, cleaning of spills with absorbents, proper housekeeping and use of dry method of cleaning (less water) will lessen the oil-contaminated wastewater. Oil spills during construction and operation may potentially contaminate the irrigation canal. Proper storage of fuel oil and lubricants in covered areas with impermeable flooring and observance of bunding standards will reduce risk from this environmental aspect.

2.3. The Air

2.3.1. Meteorology/Climatology

2.3.1.1. Methodology

Climatological data were obtained from PAGASA data. The closest PAGASA Station relative to the OMCPC project site is the San Jose Synoptic Station in San Jose, Occidental Mindoro. This station is located approximately 9 km south of the existing power plant and has available record since 1981. Climatologic indicators for the area include mean temperature, rainfall, relative humidity, wind speed and direction.

Other relevant information gathered from PAGASA is the climate and typhoon frequency maps and the 2020 and 2050 climate projection (Climate Change in the Philippines, 2011).

2.3.1.2. Baseline Condition

Climate

The Municipality of San Jose in Occidental Mindoro falls under Type I climatic condition based on the Modified Coronas Classification Scheme (**Figure 2.20**) characterized as two (2) pronounced seasons.

San Jose and most of Occidental Mindoro has two distinct weather types: rainy season and dry season. Rains begin to fall in the province in late May, intensifying through June, July, August, September and October, and gradually subside in November. The months of August and September are the wettest periods, with storms directly passing through the area.

Figure 2.20. Climate map of the Philippines

On the other hand, dry season starts in November, with rainfall subsiding in intensity, and altogether ceasing in January, February, March, and April. March and April are the driest period, with cloudless skies and parched earth characterizing the general area.

Rainfall

Records on climatological normals from 1981 to 2020 showed that the municipality experience, on average, 117 rainy days a year and a total rainfall of 2,388.7 millimeters. July and August both have the greatest number of rainy days at 20, while February and March had the least with two (2) days for each month. Rainfall was unevenly distributed throughout those years, ranging from 11.8 mm during the months of January and February to 507.3 mm in July. Compared with the previous record in the area from 1981 to 2010 to the current, rainy days decreased from 130 to 117 while total annual rainfall increased from 2,350 mm to 2,388.7. Climatological extremes record as of 2021 still shows that San Jose experienced its heaviest day of rain on October 21, 1998 at 286.7 mm.

Temperature

Yearly mean temperature record in the San Jose Synoptic station was 28.1°C, which has increase by 0.1°C when compared a decade ago. The coldest temperature was in January at 21.9°C while the hottest was during the month of April at 34.9°C. San Jose experienced its hottest day on June 03, 2019 with a temperature of 39.2°C, a new record that eclipsed the former hottest day at 38.5°C last April 28, 1992 (1981-2010), while its coldest day was still the record obtained last February 15, 1982 at 15.4°C.

Wind Pattern

The annual average wind speed in San Jose is 3 meters per second (m/s), characterized by the prevailing easterly winds. From November to May, the wind speed is generally 3 m/s when the *Amihan* trade wind prevails. From June to September, wind direction is generally west with speeds of 2-3 m/s. Transition occurs during October with the wind direction transitioning northeast with speeds of 2 m/s.

Strongest wind recorded in San Jose, Occidental Mindoro occurred last December 25, 2019 at a staggering speed of 42 m/s, when Typhoon Ursula (Phanfone) traversed the Philippines during the Christmas Eve and Christmas Day.

Relative Humidity, %

Annual average relative humidity at San Jose is at 80%, 2% higher when compared to a decade ago. Most humid months were August and September with humidity reaching up to 89% while least humid was the month of March at 71% (3% higher when compared to 1981-2010 record). These values are typical for a tropical country like the Philippines.

Cloud, octa

The mean annual cloud amount at San Jose is 5 okta. The cloudiest month was June to September at 6 okta while the least was during March to April at 3 okta.

Mean Sea Level Pressure, mbs

Mean sea level pressure (MSLP) is also an important input to the assessment of the climate in the area. The passage of the tropical cyclones causes the sea level pressure to drop owing to its cyclonic and divergence of wind. A low-pressure area generally indicates the presence of a cyclonic weather disturbance in the northern hemisphere while a high-pressure value indicates a divergence of wind or a fair-weather condition.

Annual mean sea level pressure is 1,009.3 millibars, ranging from the lowest monthly average of 1008.1 mbar in July and August and highest in February at 1011.3 mbar. MSLP has increased when compared to the 1981-2010 record in San Jose.

Lightning and Thunderstorms

Annual average number of days with thunderstorm was recorded at 97 (8 days higher compared to the previous record a decade ago) while number of days with lightning was at 132 days (5 days higher compared to the previous record a decade ago). The town experienced the greatest number of days with thunderstorm and lightning in June with 15 days and 20 days, respectively.

Tropical Cyclones

The Philippines experienced an average of 20 cyclones annually. Occidental Mindoro experiences one (1) cyclone in a year. The occurrence of tropical cyclones in the Philippines is shown in **Figure 2.21**.

2.3.1.3. Impact Assessment

Table 2.13. Predicted impacts of/on meteorology to/by the proposed amendment of OMCPC SMRA Diesel Power Plant Expansion

List of Key Impacts	Phase Occurrence				Discussion
	Pre-Construction	Construction	Operation	Abandonment	
Change in the local micro-climate		☑	☑		To assess the change in local micro-climate within TMC project area, the PAGASA published climate projections report[1] derived from models from updated future climate scenarios were used. Two scenarios were included in the projections: moderate emission scenario and high emission scenario. The data on climate change projections study for 2020 and 2050 (PAGASA, 2011) are presented in **Table 2.14** to **Table 2.15**. The study shows that mean temperature rises by 2020 would be 1.1°C and for 2050 it would be 2.1°C, both compared to baseline of 28.3°C. The existing power plant and the proposed additional powerhouse will have no significant impact on the local climate as the amount of emission from the existing power plant even at full operation would be insignificant compared to the current national greenhouse gas inventory.

1 PAGASA, 2018. "Observed Climate Trends and Projected Climate Change in the Philippines".

List of Key Impacts	Phase Occurrence				Discussion
	Pre-Construction	Construction	Operation	Abandonment	
Contribution in term of greenhouse gas emissions		☑	☑		Greenhouse gases will be generated from the operation of gensets and service vehicles that will eventually emit CO_2 and methane. The GHG emission estimate for the project's operation utilized the CO_2 emission calculation tool formulated by Greenhouse Gas Protocol. The GHG estimation of the power plant is limited to Scope 1 category (All direct emissions) of Greenhouse Gas Protocol. Fuel consumption of the existing power plant and the proposed additional powerhouse was computed using the fuel consumption data for the existing power plant and the project fuel consumption provided by OMCPC. Using the emission calculation, it is estimated that the potential CO_2-e of the project per month is 7,187.5 metric tonnes or 86,250.00 metric tonnes per year.

Table 2.14. Seasonal temperature change for 2020 and 2050 in Occidental Mindoro

Months	(1971-2000)	2020 (2006-2035)		2050 (2036-2065)	
		Change	Projected Value	Change	Projected Value
December-January-February (DJF)	26.5	0.9	27.4	1.9	28.4
March-April-May (MAM)	28.3	1.1	29.4	2.1	30.4
June-July-August (JJA)	27.3	0.9	28.2	1.8	29.1
September-October-November (SON)	27.1	1.0	28.1	1.9	29.0

Table 2.15. Seasonal rainfall change for 2020 and 2050 in Occidental Mindoro

Months	(1971-2000)	2020 (2006-2035)		2050 (2036-2065)	
		Change	Projected Value	Change	Projected Value
December-January-February (DJF)	159.5	-14.3	136.7	15.8	184.7
March-April-May (MAM)	265.9	-15.6	224.4	-23.8	202.6
June-July-August (JJA)	1091.2	13.6	1239.6	26.7	1382.6
September-October-November (SON)	762.6	3.2	787.0	-2.4	744.3

Table 2.16. Seasonal extreme events for 2020 and 2050 in San Jose, Occidental Mindoro

Parameters	OBS	2020	2050
No. of days with Temp. max >35°C	1075	1773	3410
No. of Dry Days	5437	7010	7128
No. of days with Rainfall >300 mm	8	5	14

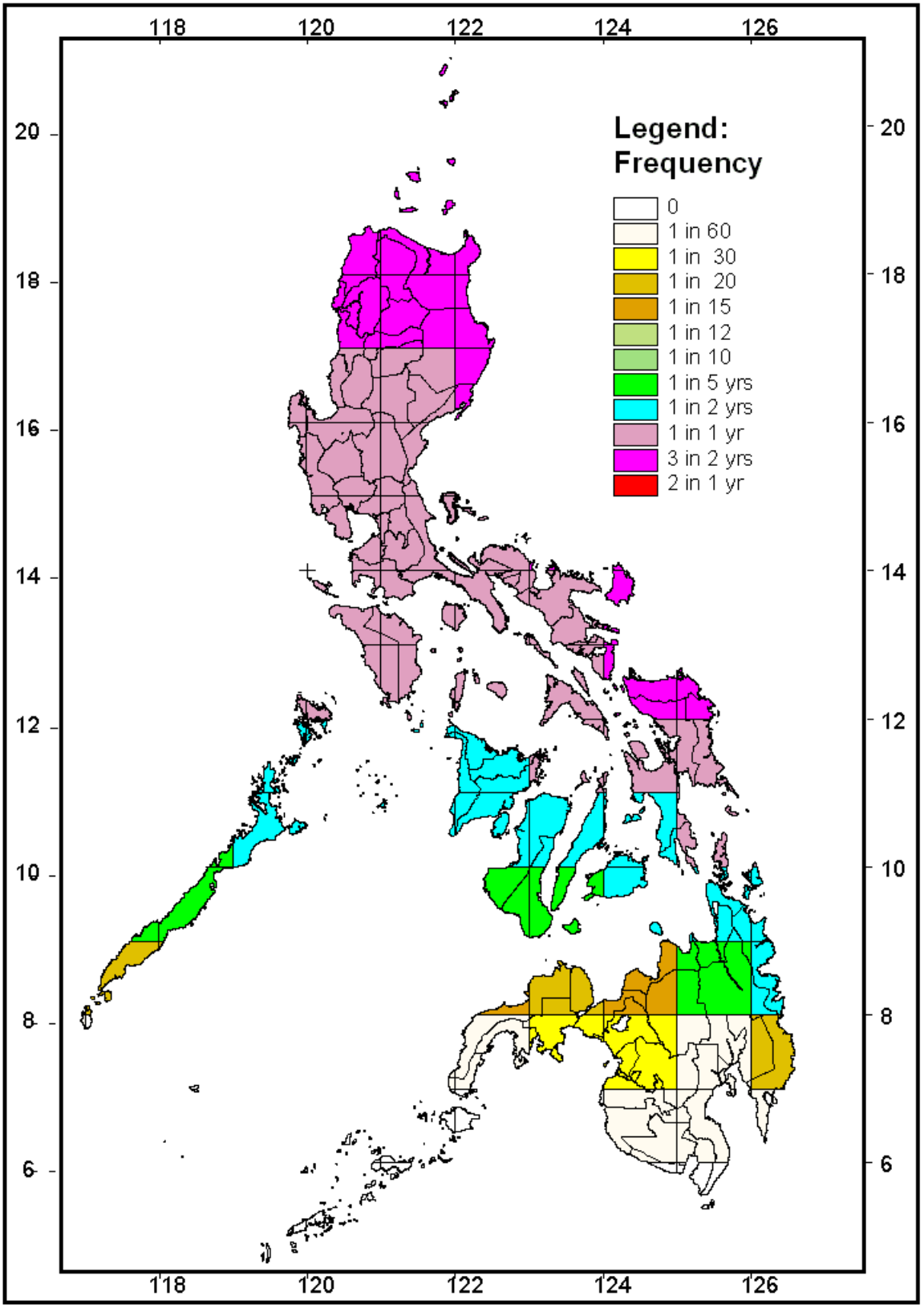


Figure 2.21. Cyclone map of the Philippines

2.3.2. Air Quality and Noise

2.3.2.1. Methodology

Ambient Air Quality Monitoring

OMCPC has been conducting ambient monitoring at four (4) locations through a third-party environmental service provider or third-party sampling team (Table 2.17 and Figure 2.22). The third-party monitoring team has been sampling particulates and gaseous air pollutants.

Table 2.17. Locations and coordinates of the ambient air quality monitoring stations

Sta ID	Location	Latitude (DMS)	Longitude (DMS)
STN 01	La Tierra Resort, Sitio Pulang Lupa	12°15'50.151"	121°2'50.946"
STN 02	Rice mill	12°26'20.711"	121°2'31.887"
STN 03	Brgy. Central basketball court	12°27'19.557"	121°2'44.290"
STN 04	Sitio Casuy (back of OMCPC)	12°26'32.707"	121°2'55.326"

Notes: (1) DMS – Degrees-Minutes-Seconds, (2) Coordinates are based from the report of MJL Environmental Services, Inc. (2022), (3) Station ID are based from the Self-Monitoring Reports (SMR)

Particulate pollutants are total suspended particulates (TSP), particulate matter equal to or less than 10 µm (PM_{10}), while gaseous air pollutants are sulfur dioxide (SO_2) and nitrogen dioxide (NO_2).

Based on the records provided by the OMCPC, the third-party monitoring team has conducted ambient air sampling once or twice a year at the said four (4) sampling stations and air pollutants since December 2019. Since August 2021, OMCPC and its contractor have been monitoring ambient PM_{10} instead of TSP.

Air Dispersion Modelling

Scope

The scope of air quality focused on determining the performance of the existing project in terms of compliance with emission and ambient air quality standards and on determining compliance of the existing and proposed project with the National Ambient Air Quality Guideline (NAAQG) through air dispersion modelling.

Regulatory Setting

The applicable air quality guidelines and standards for the project are as follows:

- National Emission Standards for Source Specific Air Pollutants (NESSAP) (Table 2 of DENR AO 2000-81);
- National Ambient Air Quality Standards (NAAQS) (; and
- National Ambient Air Quality Guidelines (NAAQG).

The NESSAP applies to the air pollutants in the stack prior to release to the atmosphere
The NAAQS set the limits of dispersed air pollutants downwind from an emission source. The NAAQS are enforceable and must be complied by the owner or person in-charge of an industrial operation, process or trade (DAO 2000-81)

Section 3 (Increment Consumption), Rule X (New/Modified Sources in Attainment Areas) of DAO 2000-81 (Plate 2.1) requires that dispersed emissions of proposed projects shall not exceed the NAAQG values or an increase in the increment consumption based on computer dispersion modeling.

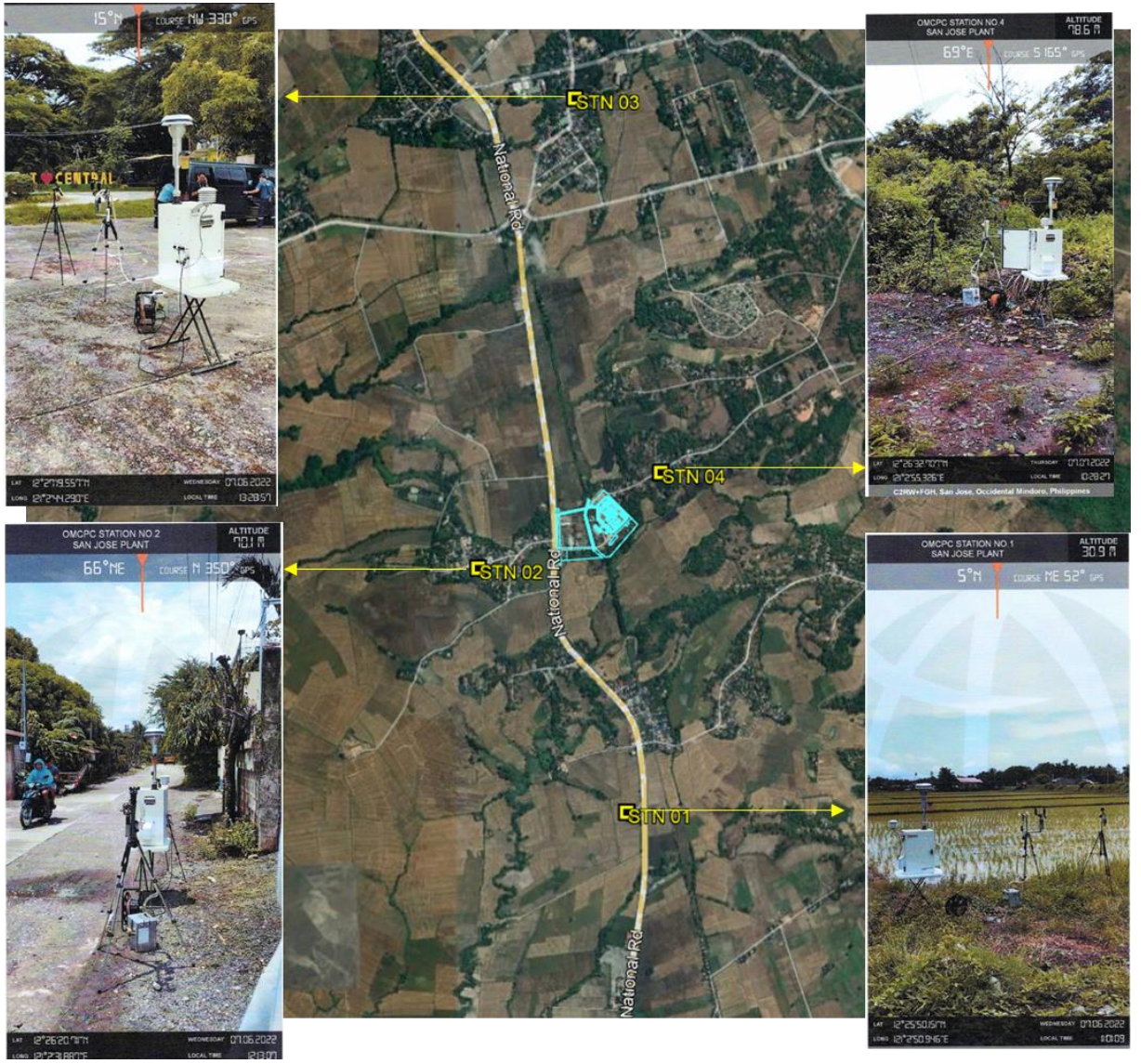


Figure 2.22. Locations of the air sampling stations and photographs of the air samplers (Source: MJL, 2022)

Section 3. Increment Consumption

No new source may be constructed or existing source modified if emissions from the proposed source or modification will, based on computer dispersion modeling, result in:

Exceedance of the National Ambient Air Quality Guideline Values; or
An increase in existing ambient air levels above the levels shown below

PM-10, annual arithmetic mean	17 micrograms per cubic meter
PM-10, 24-hr maximum	30 micrograms per cubic meter
Sulfur Dioxide, annual arithmetic mean	20 micrograms per cubic meter
Sulfur Dioxide, 24-hr maximum	91 micrograms per cubic meter
Nitrogen Dioxide, annual arithmetic mean	25 micrograms per cubic meter

In the case of multiple point sources at a single facility, the net emissions from all affected sources shall be included in a single increment analysis.

Plate 2.1. Section 3, Rule X of DAO 2000-81

This study focused on determining compliance of the project with the National Ambient Air Quality Guidelines (NAAQG) values by modelling the 24-hour and annual average concentrations of the primary air pollutants (SO_2, NO_2, TSP, and CO).

Furthermore, dispersion modelling included the hourly average concentrations of the above-mentioned air pollutants, which will be used as bases on determining the air quality monitoring stations for the project.

Guidelines on Air Dispersion Modelling

Proponents or project owners shall use the prescribed regulatory models of the DENR EMB to check compliance with their proposed projects (new or existing projects with modifications). The specified regulatory models are SCREEN3, AUSPLUME, AERMOD, and CALPUFF. SCREEN3 and AUSPLUME air dispersion models are for Tier 1 and Tier 2 or Tier 3 impact assessments, while AERMOD and CALPUFF are for Tier 4 impact assessments.

Proponents may use the more refined modelling techniques (Tier 3 or Tier 4) directly and skip the Tier 1 and Tier 2 screening methods.

This study utilized the latest version of AERMOD View (Version 11.2.0) in determining the predicted dispersed concentrations of air pollutants emanating from the existing and proposed generator sets. The American Meteorological Society (AMS) and the United States Environmental Protection Agency (U.S.EPA) developed the AERMOD model. Consequently, Lakes Environmental Software, Inc. (Lakes) in Ontario, Canada, developed the Graphical User Interface (GUI) of AERMOD, which Lakes named AERMOD View. (Plate 2.2).

According to the DENR-EMB's Guidelines on Air Dispersion Modelling, proponents should use AERMOD and CALPUFF in Tier 4 air quality impact assessment (DENR MC 2008).

Source Input Parameters

OMCPC has three (3) existing generator sets (gensets) with a rated capacity of 8 MW each (Table 2.18). The gensets used a mix of heavy fuel oil and diesel oil as fuel. Each genset has a stack with a height of 40.207 m from the ground.

OMCPC provided the site plan in .pdf format, which the preparer processed using AutoCAD and GIS software to generate the required file, e.g., shapefile in WGS84 UTM Zone 51, needed in AERMOD View. The source release parameters, such as the emission rates of sulfur oxide (SO_X as SO_2), nitrogen oxide (NO_X as NO_2), particulates, carbon monoxide (CO), exit gas temperature, and exit gas velocities, were from the emission test reports of DENR-accredited third-party stack samplers from December 2017 to July 2022. **Appendix A** presents the summary of the source input parameters, as extracted from the stack sampling monitoring reports.

For the proposed six (6) units of generator sets, the source release parameters were from existing gensets with the same rated capacities (1.6 MW and 1.1 MW) from the Mamburao Diesel Power Plant, except the proposed 1.2 MW, which was from technical specifications of Caterpillar CAT 3512 (**Table 2.19**). **Figure 2.23** and **Figure 2.24** show the locations of the existing and proposed stacks.

Building Profile Inputs

When wind flows over and around buildings, it creates wake zones - a potential cause of building downwash, as shown in **Figure 2.25**. Dispersed air pollutants from relatively lower stacks will be pulled or drawn by the wake zones, resulting in very high ground-level concentrations in the vicinities of the buildings.

Figure 2.26 and **Figure 2.27** show the elevation drawings of the existing and the proposed powerhouses, which were included in the building input profile program to generate the building input data in AERMOD. **Appendix C** shows the output data of the Building Profile Input Program (BPIP).

Modelling Domain or Calculation Area and Receptors

Receptors are locations or points in the modelling domain or calculation area. The model computes the concentrations of dispersed air pollutants from emission sources or stacks at each receptor. In this study, there are three (3) sets of receptors, as follows:

1. Multi-tier grid (**Figure 2.28**),
2. Cartesian plant boundary (**Figure 2.29**), and
3. Cartesian plant boundary intermediate (**Figure 2.29**).

The modelling domain has a dimension of 12 km by 12 km, which is also the extent of the multi-tier grid. Fine grids are assigned near the emission sources or the stacks, while coarse grids at 1 km to 6 km from the centroid of the stacks. The muti-tier grid has the following grid spacings.

a) 20-m grid spacing from the centroid of the stack to 1000 m (or 1 km) along the N-S and E-W directions
b) 100-m grid spacing from 1000 m (1 km) to 3000 m (3 km) of the stack to 1000 m (or 1 km) along the N-S and E-W directions; and
c) 200-m grid spacing from 3000 m to 6000 m of the centration of the stacks along the N-S and E-W directions

Receptor inputs in AERMOD dispersion modelling require the following information.

a) UTM (or x and y) coordinates (in m);
b) Elevation of each receptor (in m);
c) Hill height (Hz) (in m); and
d) Flagpole height or receptor height from ground level (optional).

Table 2.18. Source input parameters of the existing generator sets (gensets)

Source ID	Genset 1	Genset 2	Genset 3	Data Source
Brand Rated Capacity	Caterpillar 16CM32 8 MW	Caterpillar 16CM32 8 MW	Caterpillar 16CM32 8 MW	
Fuel	Heavy Fuel Oil/ Diesel Fuel	Heavy Fuel Oil/ Diesel Fuel	Heavy Fuel Oil/ Diesel Fuel	
Orientation of stack	Vertical	Vertical	Vertical	
X-coordinate (m) (WGS84 UTM Zone 51)	287,719.70	287,717.84	287,719.79	Extracted in AERMOD View using the imported site plan (**Figure 2.23** and **Figure 2.24)**
Y-coordinate (m) (WGS84 UTM Zone 51)	1,376,080.58	1,376,078.75	1,376,076.75	Extracted in AERMOD View using the imported site plan (**Figure 2.23** and **Figure 2.24)**
Base elevation (m)	24.98	24.98	24.98	Averaged elevations using SRTM data, as extracted by AERMAP View
Release height (m)	40.207	40.207	40.207	Elevation drawing (**Figure 2.25**)
Source Release Parameters				
Emission rate of SO_X (as SO_2) (g/s)	21.262	25.160	25.563	Emission test reports by DENR-accredited stack samplers
Emission rate of NO_X (as NO_2) (g/s)	11.254	17.661	15.500	Emission test reports by DENR-accredited stack samplers
Emission rate of PM (g/s)	2.214	1.625	1.671	Emission test reports by DENR-accredited stack samplers
Emission rate of CO(g/s)	5.098	5.379	5.017	Emission test reports by DENR-accredited stack samplers
Exit gas temperature (^oC)	289.1	303.5	307.5	Emission test reports by DENR-accredited stack samplers
Stack inside diameter (m)	1.09	1.09	1.09	Emission test reports by DENR-accredited stack samplers
Exit gas velocity (m/s)	28.11	28.74	28.13	Emission test reports by DENR-accredited stack samplers
Rain caps	None	None	None	

Notes: a) Emission test reports by DENR-accredited stack samplers from December 2017 to July 2022, b) Emission rates are 98th percentile values, c) Exit gas temperature, and exit gas velocity are averaged values

Table 2.19. Source input parameters of the proposed generator sets (gensets)

Source ID	Genset 1	Genset 2	Genset 3	Genset 4	Genset 5	Genset 6	Data Source
Brand Rated Capacity	Caterpillar 3516B 1.6 MW	Caterpillar 3516B 1.6 MW	Caterpillar 3516B 1.6 MW	Caterpillar 3512B 1.2 MW	Caterpillar 3512B 1.2 MW	Caterpillar 3516B 1.1 MW	
Fuel	Diesel fuel	Diesel fuel	Diesel fuel	Diesel fuel	Diesel fuel	Diesel fuel	
Orientation of stack	Vertical	Vertical	Vertical	Vertical	Vertical	Vertical	
X-coordinate (m) (WGS84 UTM Zone 51)	287,651.22	287,648.89	287,646.42	287,639.35	287,637.01	287,634.62	Extracted in AERMOD View using the imported site plan
Y-coordinate (m) (WGS84 UTM Zone 51)	1,376,021.67	1,376,023.97	1,376,026.50	1,376,033.72	1,376,036.11	1,376,038.53	Extracted in AERMOD View using the imported site plan
Base elevation (m)	23.5	23.5	23.5	23.5	23.5	23.5	Averaged elevations using SRTM data, as extracted by AERMAP View
Release height (m)	5.319 (initial height)	5.319 (initial height)	5.319 (initial height)	5.319 (initial height)	5.319 (initial height)	5.319 (initial height)	Elevation drawing (**Figure 8**)
Source Release Parameters							
Emission rate of SO_X (as SO_2) (g/s)	0.0127	0.0127	0.0127	0.1068	0.1068	0.0979	Based on emission test reports of existing gensets of Mamburao Diesel Power Plant, except the proposed 1.2 MW which was based from technical specifications CAT 3512
Emission rate of NO_X (as NO_2) (g/s)	4.0344	4.0344	4.0344	3.7803	3.7803	3.4653	-do-
Emission rate of PM (g/s)	0.0714	0.0714	0.0714	0.0946	0.0946	0.0714	-do-
Emission rate of CO(g/s)	0.2977	0.2977	0.2977	0.4431	0.4431	0.4061	-do-
Exit gas temperature (^oC)	444.00	444.00	444.00	457.80	457.80	418.17	-do
Stack inside diameter (m)	0.45	0.45	0.45	0.45	0.45	0.45	Provided by OMCPC
Exit gas velocity (m/s)	43.28	43.28	43.28	33.10	33.10	30.19	Same source as emission rate data

Notes: a) Emission rates are 98th percentile values, b) exit gas temperature, and exit gas velocity are averaged values

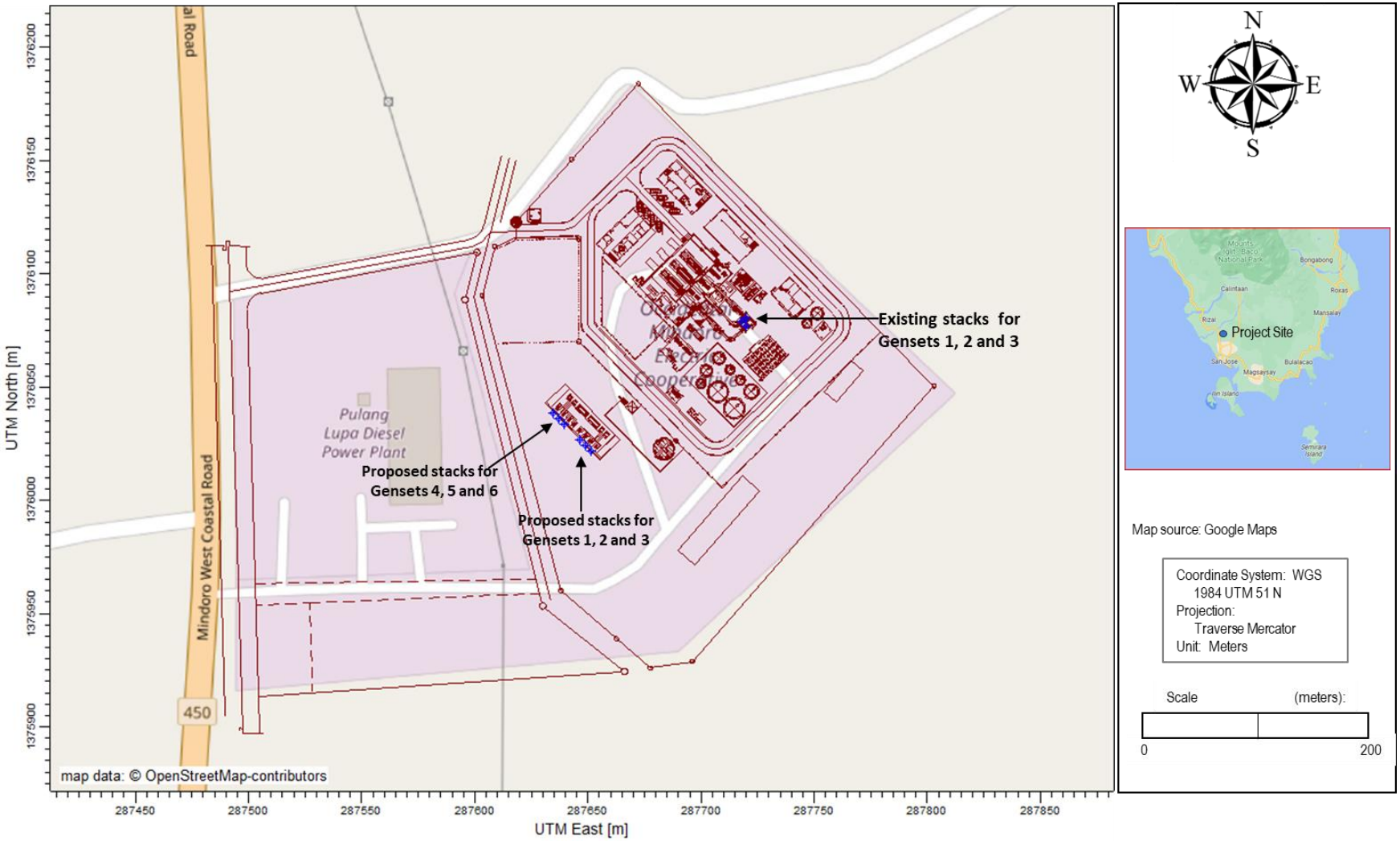


Figure 2.23. Locations of existing and proposed stacks of the diesel generator sets

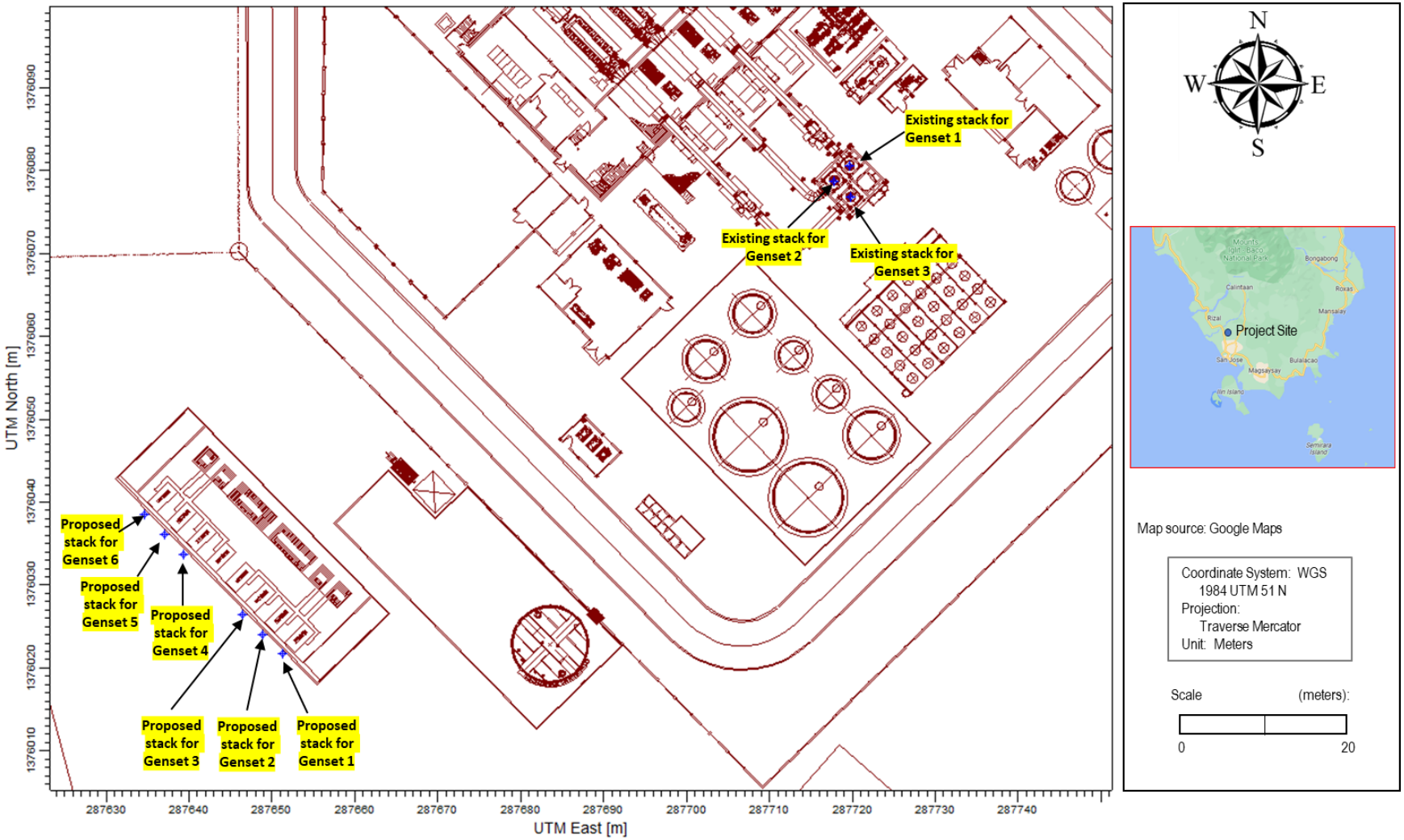


Figure 2.24. Closer view of the locations of the stacks for the existing and proposed gensets

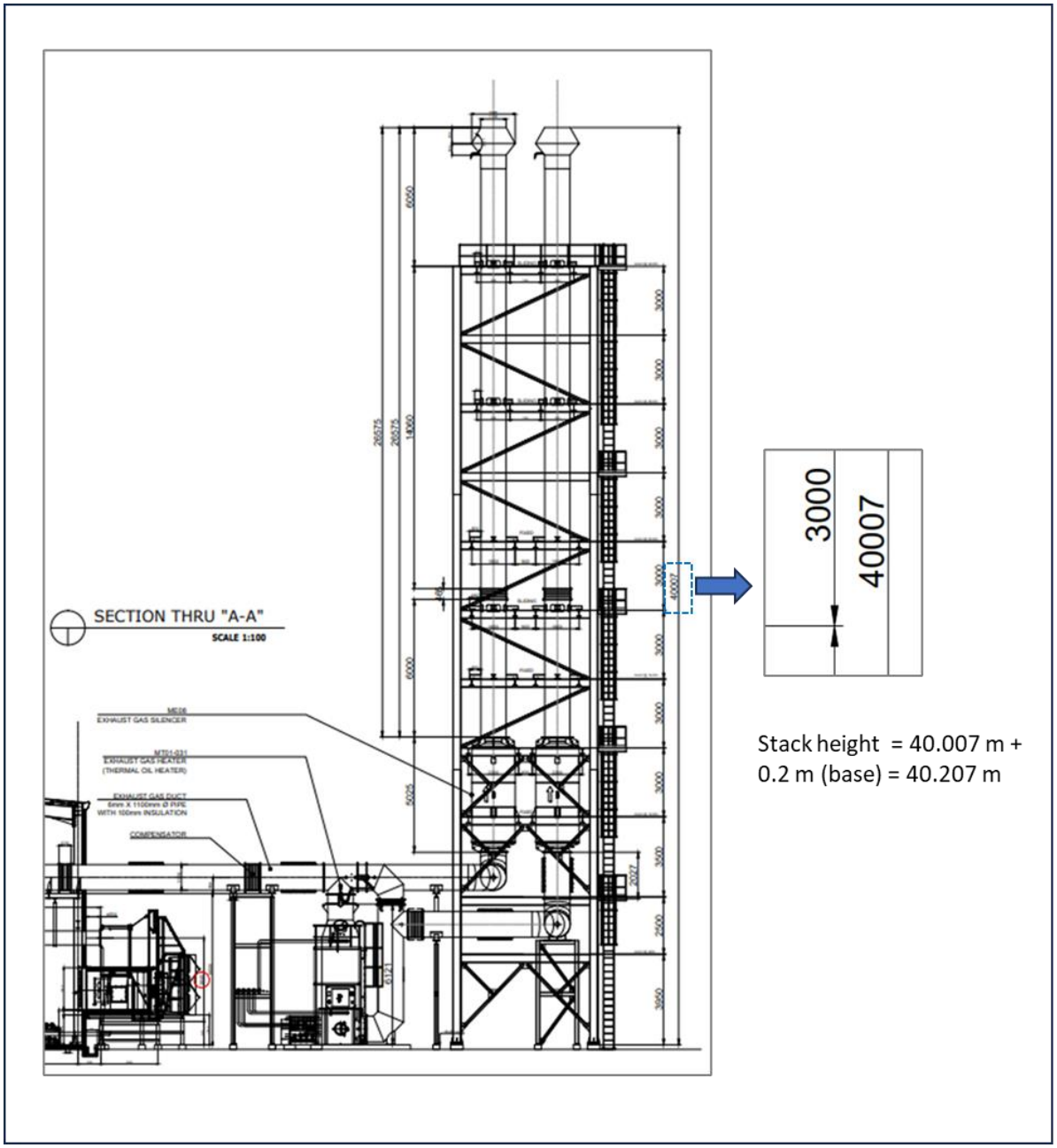


Figure 2.25. Elevation drawing of the stack of the existing powerplant

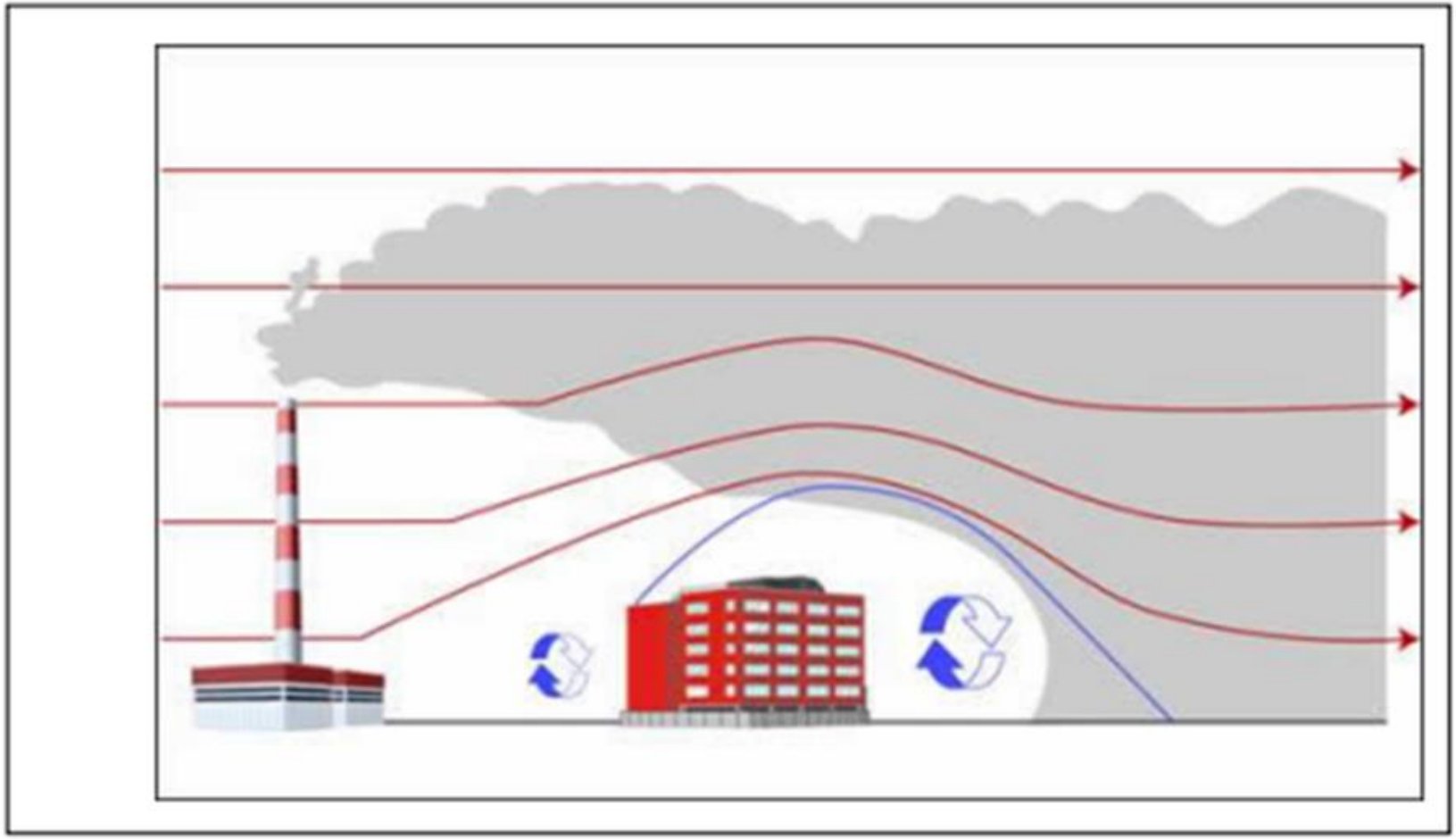


Figure 2.26. The building downwash concept where the presence of buildings forms localized turbulent zones that can readily force pollutants down to ground level (Source: DENR EMB 2008).

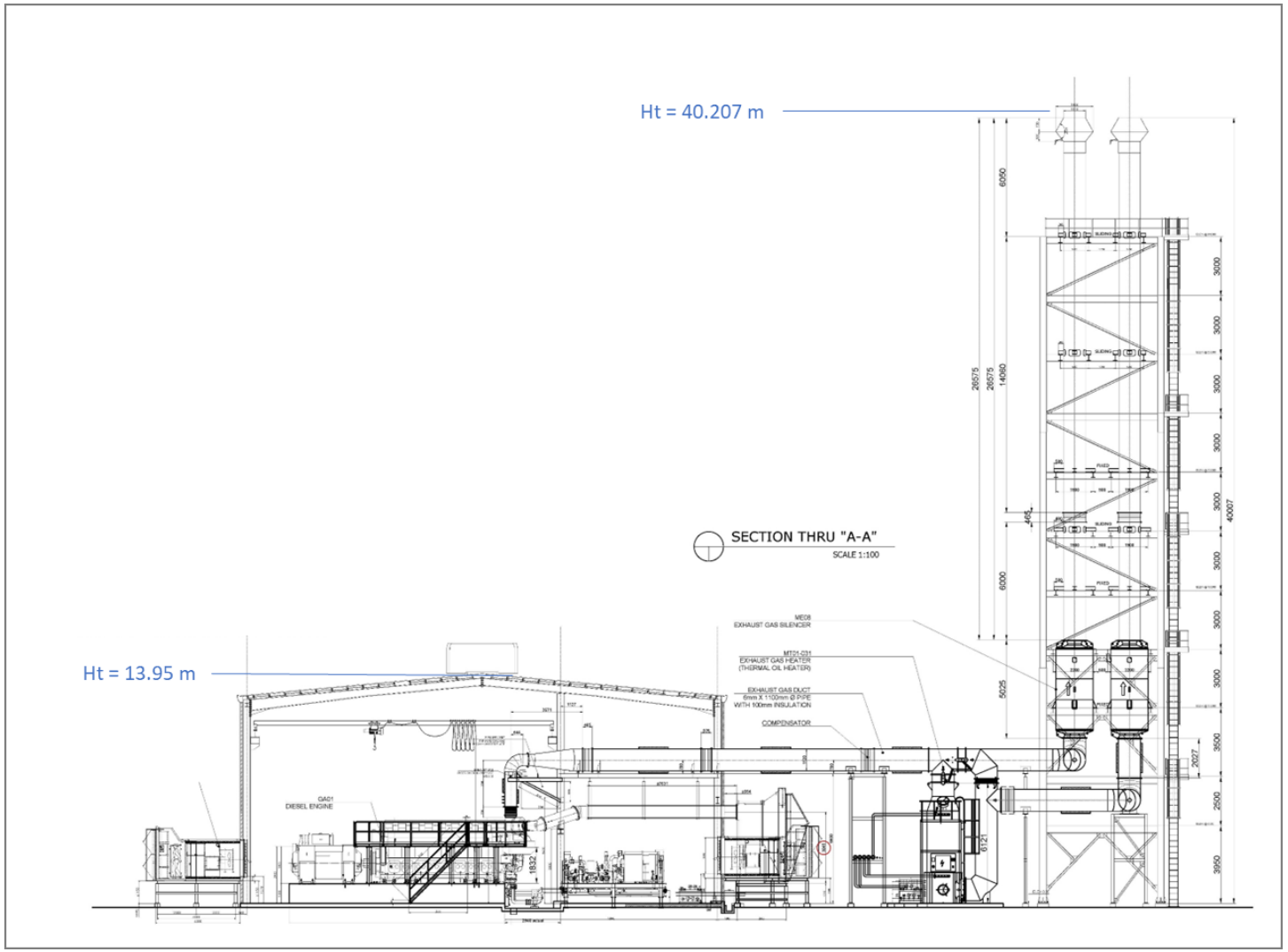


Figure 2.27. Elevation drawing of the power house and the existing stacks

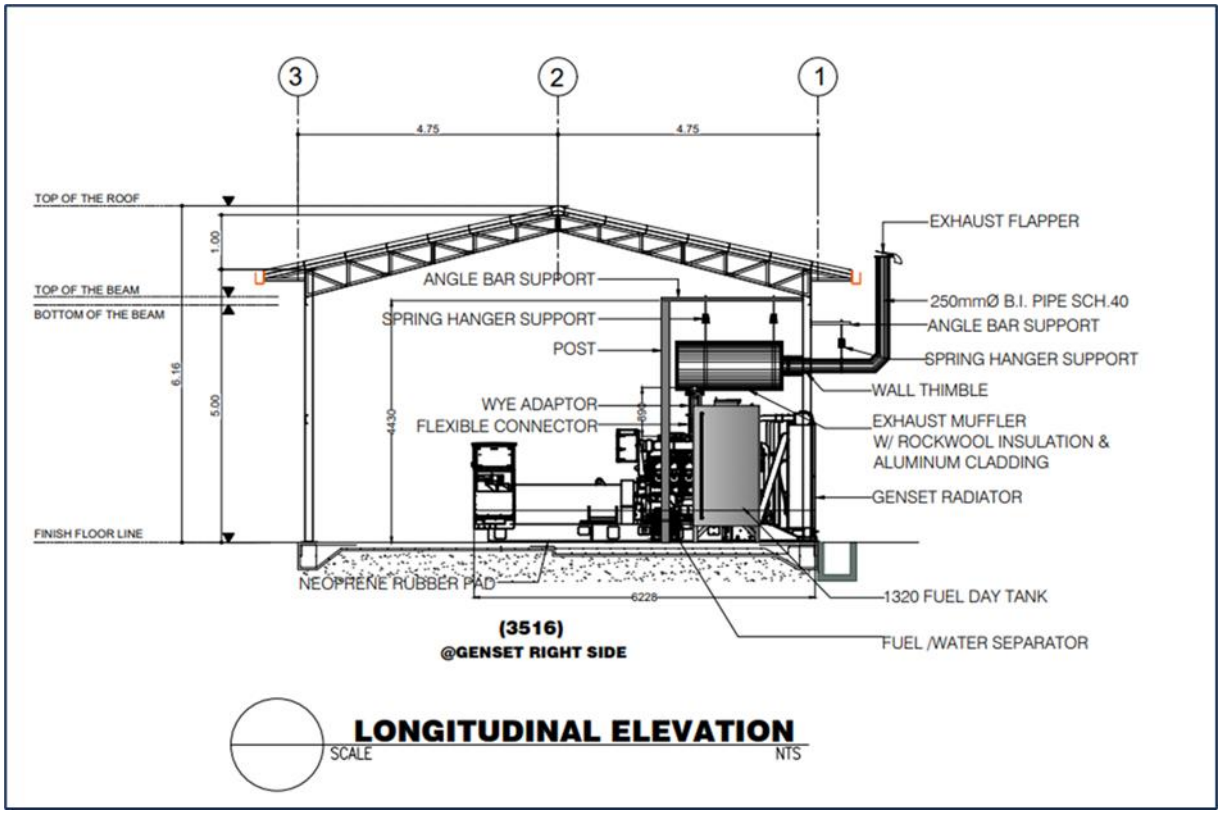


Figure 2.28. Elevation drawing of the powerhouse and stack of the proposed gensets.

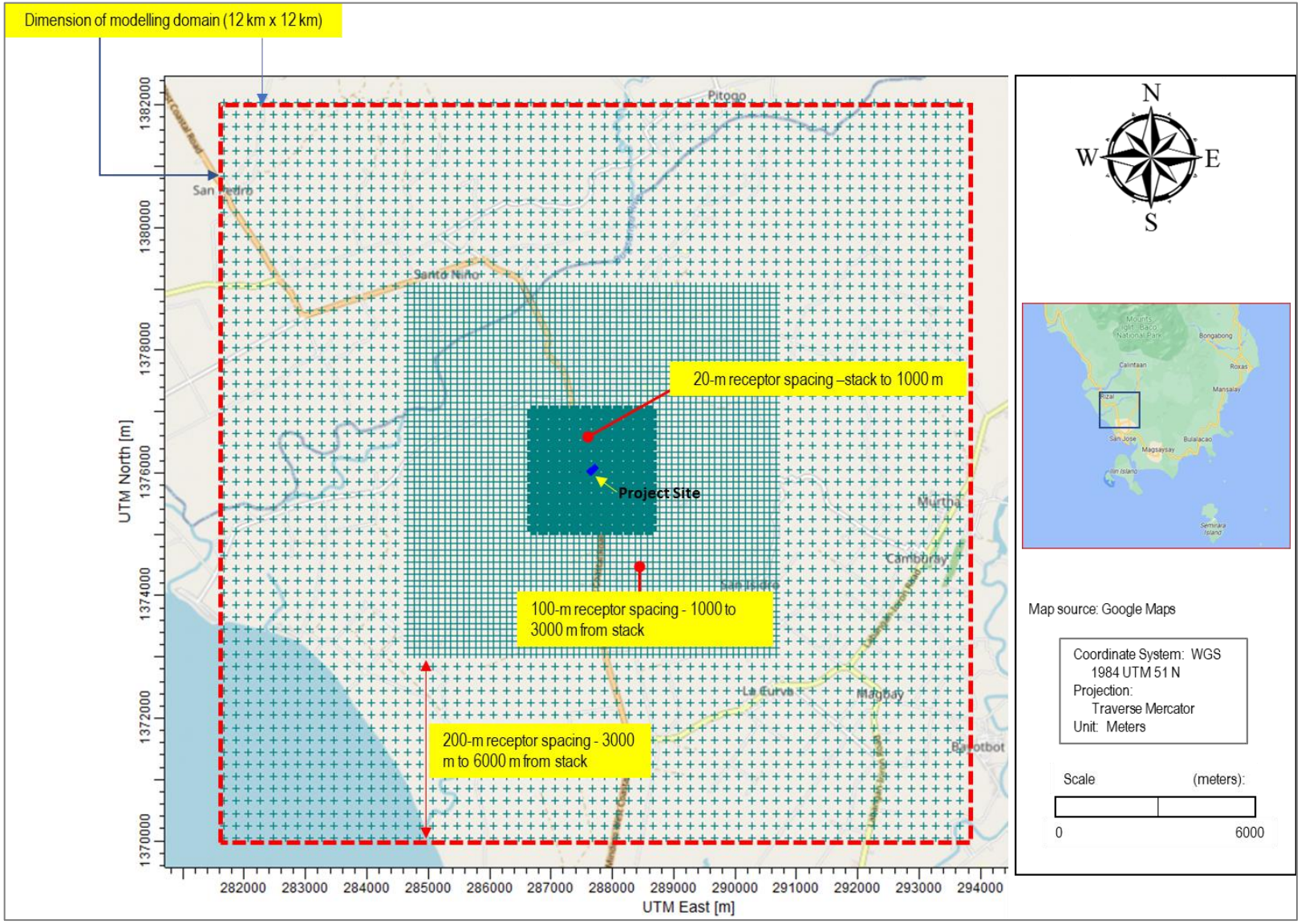


Figure 2.29. Multi-tier risk receptors

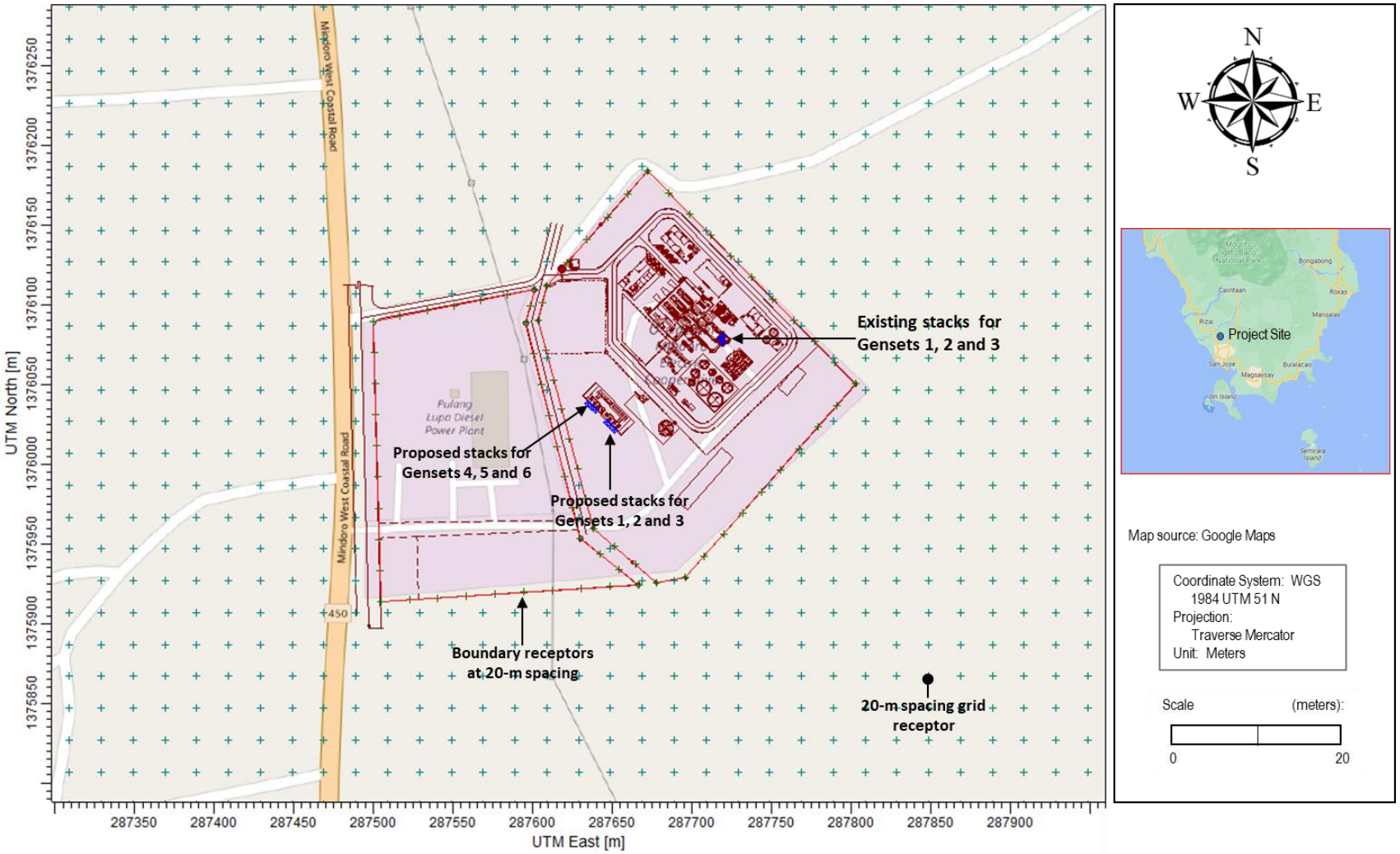


Figure 2.30. Closer view of receptors in the vicinity of the project site

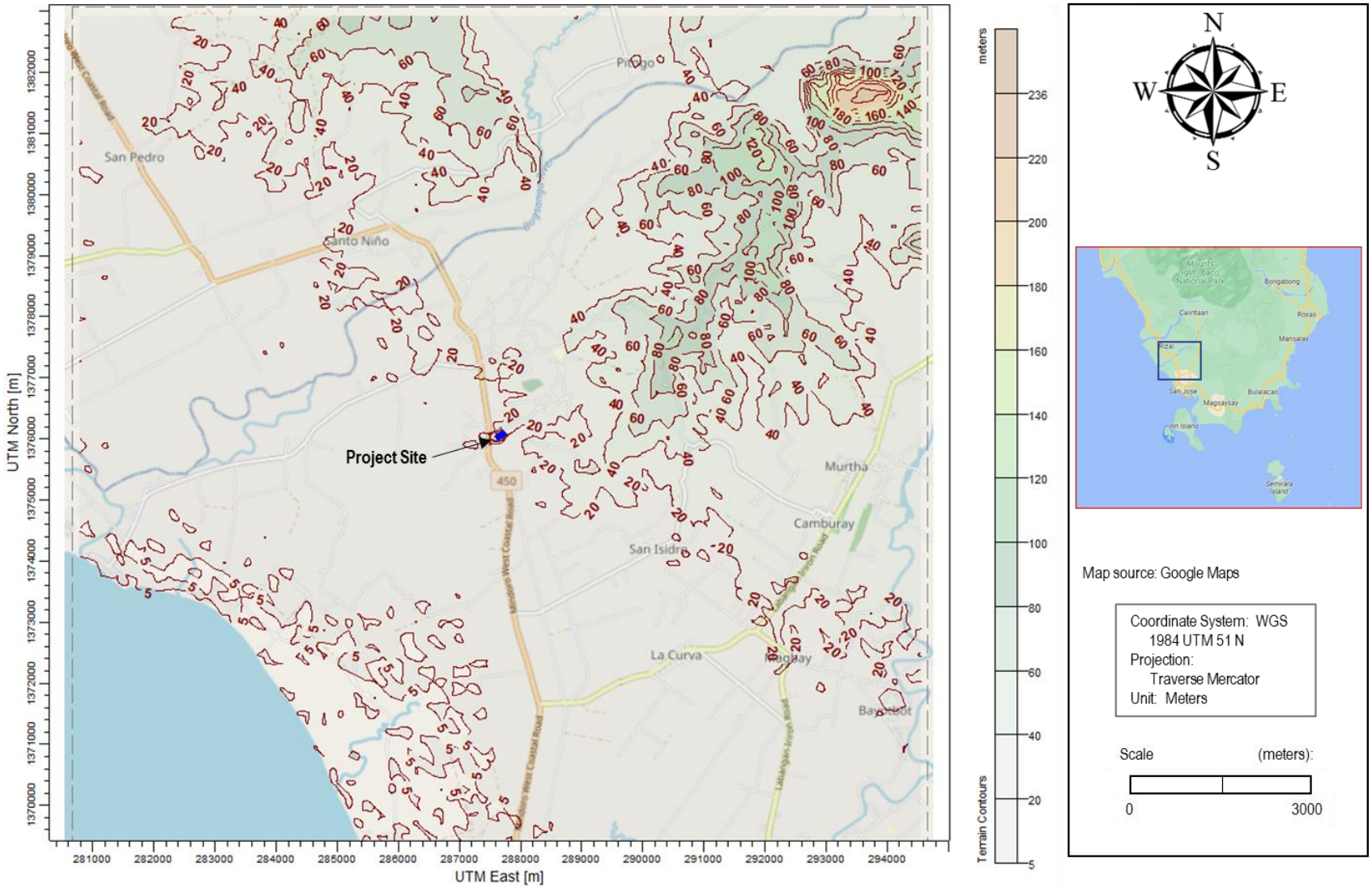


Figure 2.31. Terrain contours within the modelling domain

AERMAP View, a terrain preprocessor of AERMOD View, extracted the elevation at each receptor from the Shuttle Radar Topography Mission (SRTM) data. Figure 11 shows the generated elevation contours using AERMAP View. Complex terrain or terrain higher than the top of the projects' stacks is within the site's N-E and N-W quadrants.

The hill height (Hz) is the height of the terrain surrounding the receptor that will most influence the flow in stable conditions (www.weblakes.com). AERMAP View automatically generates the hill heights using the receptor coordinates.

The height of the receptor is 2 m from ground level. This height was based on sampling heights of at least two (2) meters, as provided in Section 1 (NAAQS), Rule XXVI of DAO-200081 (Implementing Rules and Regulations of RA 8749).

Meteorological Input Data

Meteorological data used in this study consisted of the surface and profile or upper air data files. The surface input data included, among others, the mechanical and convective turbulence scales, i.e., velocity and length scales, wind speed, wind direction, ambient air temperature, and other surface characteristics (**Plate 3**). The upper air input data are the wind speed, wind direction, air temperature, and standard deviations of wind speed and wind direction (**Plate 4**).

AERMET View, a meteorological preprocessor of AERMOD View, generated the input data files (surface and upper air data) using the preprocessed meteorological data, which are in SAMSON (*.sam) and TD 6201 (*.ua) formatted files), from Lakes Environmental Software, Inc. The data processing involved the following:

a) Generation of land cover within a 6-km radius from the centroid of the stacks using Geographic Information System (GIS) software (**Figure 12**);
b) Calculation of the area per land cover type (water, forest, cultivated area, grassland, urban or built-up, and bare or no vegetation) every 30-degree sector;
c) Designation of the albedo, Bowen Ratio, and surface roughness per land cover type; and
d) Calculate the average albedo, Bowen Ratio, and surface roughness per sector (every 30 degrees) by multiplying the area per land cover and the corresponding factor (Item c above) and adding the values obtained per land cover. **Table 4** shows the average values per sector.

Table 2.20. Average albedo, Bowen Ratio, and surface roughness per sector

Sector	Albedo	Bowen Ratio	Surface Roughness
1	0.257	1.042	0.218
2	0.187	1.039	0.560
3	0.230	0.875	0.338
4	0.261	0.861	0.186
5	0.270	0.822	0.159
6	0.279	0.758	0.080
7	0.240	0.735	0.108
8	0.130	0.354	0.040
9	0.252	0.932	0.108
10	0.252	0.908	0.094
11	0.258	0.886	0.198
12	0.218	1.015	0.410

The wind rose shows how frequently the wind blows from a specific direction at various speeds. The annual wind rose diagram shows the prevailing light winds (1 to 5 m/s) in the N-E and S-W quadrants, indicating the prevailing northeast and southwest monsoon winds in the Philippines, respectively (Figure 13). The southwest monsoon winds are apparent from May to August and became less frequent in September. In October, northeast winds start to dominate until February. The transition periods appear in May, April, and September or October (Figure 14 and Figure 15).

Modelling Options and Modelling Scenarios

The following are the options and settings used in the dispersion modelling.

a) Use of "Default" as the regulatory option,
b) Elevated terrain and flagpole height of 2 m,
c) Building downwash using the Building Profile Input Program (BPIP)
d) Tier 2 (Ambient Ratio Method or ARM) for NOX to NO2 conversion option,
e) No exponential decay,
f) Three (3) years of sequential hourly meteorological data,
g) 98th percentile values for the a) 24-hour average concentrations of SO_2, NO_2, and TSP and b) 1-hour and 8-hour average concentrations of CO, and
h) Hourly emission rate file for scenarios assuming intermittent operation (7 hours per day and 9 days per month)

The modelling scenarios are as follows:

a) Existing three (3) units of gensets - dispersed ambient air concentrations of SO_2 and NO_2 (or background levels) emanating from the three (3) existing gensets using three (3) years, and
b) Existing (3) units and proposed gensets (6 units) or a total of nine (9) gensets - cumulative impact or dispersed ambient air concentrations from the existing and proposed emission sources. The following were the additional simulations in case of exceedances with ambient guideline values.
c) Nine (9) days of operation per month in 3 years,
d) Seven (7) hours of operation per day in 3 years, and
e) Increasing the stack heights from an initial height of 5.32 m to a stack height in which the dispersed air concentrations are within the ambient guideline values.

Note that hourly emission rate files were used in simulating air pollutants for scenarios assuming 9 days of operation per month and 7 hours of operation per day.

Noise Level Monitoring

A Digital EXTECH 407764 sound meter that meets the American National Standard Institute (ANSI) standard was used in measuring noise level in the air quality sampling points was used in measuring noise in the areas coincident with the air quality sampling points. The arithmetic median of the readings was taken and compared with the National Pollution Control Commission (NPCC-1981) noise standards.

2.3.2.2. Baseline Conditions and Environmental Performance

Stack Emissions

Appendix A summarizes the stack sampling results conducted by DENR-accredited stack samplers for the existing three (3) units of gensets of the OMCPC from December 2017 to July 2023. Results of stack sampling showed that stack gas concentrations of NO_X (as NO_2), particulate matter, and CO were within the National Emission Standards for Specific Air Pollutants (NESSAP) (or emission standards) set at 2000, 150, and 50 mg/Nm^3, respectively.

Surface File Name: Mindoro-met.SFC
Station Latitude: 13.367N | Upper Air Station ID: 00066666 | Onsite Station ID: N/A
Station Longitude: 121.167E | Surface Station ID: 66666 | Version: 21112 CCVR_SUB TEMP_SUB

Filter
Year: All | Month: All | Day: All | Julian Day: All | Show

Data Quality
Calms: 423 [hours] 1.61 [%] | Missing: 10 [hours] 0.04 [%]

Table | Graph

	Year	Month	Day	Julian Day	Hour	Sensible Heat Flux [W/m^2])	Surface Friction Velocity [m/s]	Convective Velocity Scale [m/s]	Vertical Potential Temperature Gradient above PBL	Height of Convectively-Generated Boundary Layer - PBL [m]	Height of Mechanically-Generated Boundary Layer - SBL [m]	Monin-Obukhov Length [m]	Surface Roughness Length [m]	Bowen Ratio	Albedo	Wind Speed - Ws [m/s]	Wind Direction - Wd [degrees]	Reference Height for Ws and Wd [m]	Temperature - temp [K]
Min.	2016	Jan	1	1	1	-999.0	-9.000	-9.000	-9.000	-999.0	-999.0	-99999.0	0.040	0.35	0.13	0.00	0.0	15.0	295.0
Max.	2018	Dec	31	366	24	292.7	1.315	2.641	0.018	2744.0	3602.0	8888.0	0.560	1.04	1.00	11.80	360.0	15.0	305.4
Graph						☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑
1	2016	Jan	1	1	1	-4.0	0.085	-9.000	-9.000	-999.0	60.0	13.7	0.108	0.74	1.00	2.10	181.0	15.0	299.0
2	2016	Jan	1	1	2	-1.9	0.057	-9.000	-9.000	-999.0	33.0	8.9	0.080	0.76	1.00	1.50	178.0	15.0	298.9
3	2016	Jan	1	1	3	-2.1	0.061	-9.000	-9.000	-999.0	36.0	9.8	0.108	0.74	1.00	1.50	184.0	15.0	298.8
4	2016	Jan	1	1	4	-4.0	0.085	-9.000	-9.000	-999.0	60.0	13.7	0.108	0.74	1.00	2.10	193.0	15.0	298.8
5	2016	Jan	1	1	5	-4.0	0.085	-9.000	-9.000	-999.0	60.0	13.7	0.108	0.74	1.00	2.10	203.0	15.0	298.8
6	2016	Jan	1	1	6	-5.4	0.103	-9.000	-9.000	-999.0	79.0	17.8	0.040	0.35	1.00	2.60	212.0	15.0	298.6
7	2016	Jan	1	1	7	-12.5	0.248	-9.000	-9.000	-999.0	297.0	109.7	0.040	0.35	0.63	4.10	225.0	15.0	298.2
8	2016	Jan	1	1	8	22.2	0.264	-9.000	-9.000	-999.0	325.0	-74.0	0.040	0.35	0.27	3.60	223.0	15.0	297.5
9	2016	Jan	1	1	9	81.0	0.261	-9.000	-9.000	-999.0	321.0	-19.8	0.108	0.74	0.28	2.60	197.0	15.0	298.2
10	2016	Jan	1	1	10	122.6	0.233	-9.000	-9.000	-999.0	271.0	-9.3	0.108	0.74	0.25	2.10	191.0	15.0	298.5
11	2016	Jan	1	1	11	142.1	0.188	-9.000	-9.000	-999.0	197.0	-4.2	0.108	0.74	0.25	1.50	184.0	15.0	298.8
12	2016	Jan	1	1	12	134.2	0.177	-9.000	-9.000	-999.0	179.0	-3.7	0.080	0.76	0.28	1.50	176.0	15.0	298.8
13	2016	Jan	1	1	13	116.6	0.142	-9.000	-9.000	-999.0	128.0	-2.2	0.108	0.74	0.24	1.00	183.0	15.0	298.8
14	2016	Jan	1	1	14	127.1	0.186	-9.000	-9.000	-999.0	193.0	-4.5	0.108	0.74	0.25	1.50	189.0	15.0	298.8
15	2016	Jan	1	1	15	103.0	0.182	-9.000	-9.000	-999.0	186.0	-5.2	0.108	0.74	0.25	1.50	202.0	15.0	298.8
16	2016	Jan	1	1	16	75.0	0.222	-9.000	-9.000	-999.0	252.0	-13.1	0.108	0.74	0.28	2.10	204.0	15.0	298.8
17	2016	Jan	1	1	17	18.5	0.199	-9.000	-9.000	-999.0	213.0	-38.0	0.040	0.35	0.27	2.60	221.0	15.0	298.5
18	2016	Jan	1	1	18	-13.3	0.192	-9.000	-9.000	-999.0	202.0	47.4	0.040	0.35	0.66	3.60	217.0	15.0	298.2
19	2016	Jan	1	1	19	-21.5	0.268	-9.000	-9.000	-999.0	333.0	80.5	0.040	0.35	1.00	4.60	224.0	15.0	298.0
20	2016	Jan	1	1	20	-21.5	0.268	-9.000	-9.000	-999.0	333.0	80.4	0.040	0.35	1.00	4.60	217.0	15.0	297.9
21	2016	Jan	1	1	21	-21.5	0.268	-9.000	-9.000	-999.0	333.0	80.4	0.040	0.35	1.00	4.60	220.0	15.0	297.8
22	2016	Jan	1	1	22	-18.2	0.227	-9.000	-9.000	-999.0	260.0	57.4	0.040	0.35	1.00	4.10	232.0	15.0	297.6
23	2016	Jan	1	1	23	-13.7	0.257	-9.000	-9.000	-999.0	312.0	111.2	0.108	0.93	1.00	3.60	240.0	15.0	297.8

Plate 2.2. Foreshortened screenshot of the meteorological surface input data

Profile File Name: Mindoro-met.PFL

Filter

Year: All Month: All Day: All

Table Graph

	Year	Month	Day	Hour	Measurement Height [m]	1, if this is the last (highest) level for this hour, or 0 otherwise	Direction the wind is blowing from for the current level [degrees]	Wind Speed for the current level [m/s]	Temperature at the current level [C]	Standard deviation of the wind direction fluctuations [degrees]	Standard deviation of the vertical wind speed fluctuations [m/s]
Min.	2016	Jan	1	1	15.0	1	0.0	0.00	21.9	99.0	99.00
Max.	2018	Dec	31	24	15.0	1	360.0	11.80	32.2	99.0	99.00
Graph					☐	☐	☐	☐	☑	☐	☐
1	2016	Jan	1	1	15.0	1	181.0	2.10	25.9	99.0	99.00
2	2016	Jan	1	2	15.0	1	178.0	1.50	25.8	99.0	99.00
3	2016	Jan	1	3	15.0	1	184.0	1.50	25.6	99.0	99.00
4	2016	Jan	1	4	15.0	1	193.0	2.10	25.6	99.0	99.00
5	2016	Jan	1	5	15.0	1	203.0	2.10	25.6	99.0	99.00
6	2016	Jan	1	6	15.0	1	212.0	2.60	25.5	99.0	99.00
7	2016	Jan	1	7	15.0	1	225.0	4.10	25.1	99.0	99.00
8	2016	Jan	1	8	15.0	1	223.0	3.60	24.4	99.0	99.00
9	2016	Jan	1	9	15.0	1	197.0	2.60	25.1	99.0	99.00
10	2016	Jan	1	10	15.0	1	191.0	2.10	25.4	99.0	99.00
11	2016	Jan	1	11	15.0	1	184.0	1.50	25.6	99.0	99.00
12	2016	Jan	1	12	15.0	1	176.0	1.50	25.6	99.0	99.00
13	2016	Jan	1	13	15.0	1	183.0	1.00	25.6	99.0	99.00
14	2016	Jan	1	14	15.0	1	189.0	1.50	25.6	99.0	99.00
15	2016	Jan	1	15	15.0	1	202.0	1.50	25.6	99.0	99.00
16	2016	Jan	1	16	15.0	1	204.0	2.10	25.6	99.0	99.00
17	2016	Jan	1	17	15.0	1	221.0	2.60	25.4	99.0	99.00
18	2016	Jan	1	18	15.0	1	217.0	3.60	25.1	99.0	99.00
19	2016	Jan	1	19	15.0	1	224.0	4.60	24.9	99.0	99.00
20	2016	Jan	1	20	15.0	1	217.0	4.60	24.8	99.0	99.00
21	2016	Jan	1	21	15.0	1	220.0	4.60	24.6	99.0	99.00
22	2016	Jan	1	22	15.0	1	232.0	4.10	24.5	99.0	99.00
23	2016	Jan	1	23	15.0	1	240.0	3.60	24.6	99.0	99.00
24	2016	Jan	1	24	15.0	1	210.0	1.50	25.0	99.0	99.00
25	2016	Jan	2	1	15.0	1	116.0	2.10	25.2	99.0	99.00
26	2016	Jan	2	2	15.0	1	112.0	3.60	25.4	99.0	99.00

Plate 2.3. Foreshortened screenshot of the meteorological profile input data

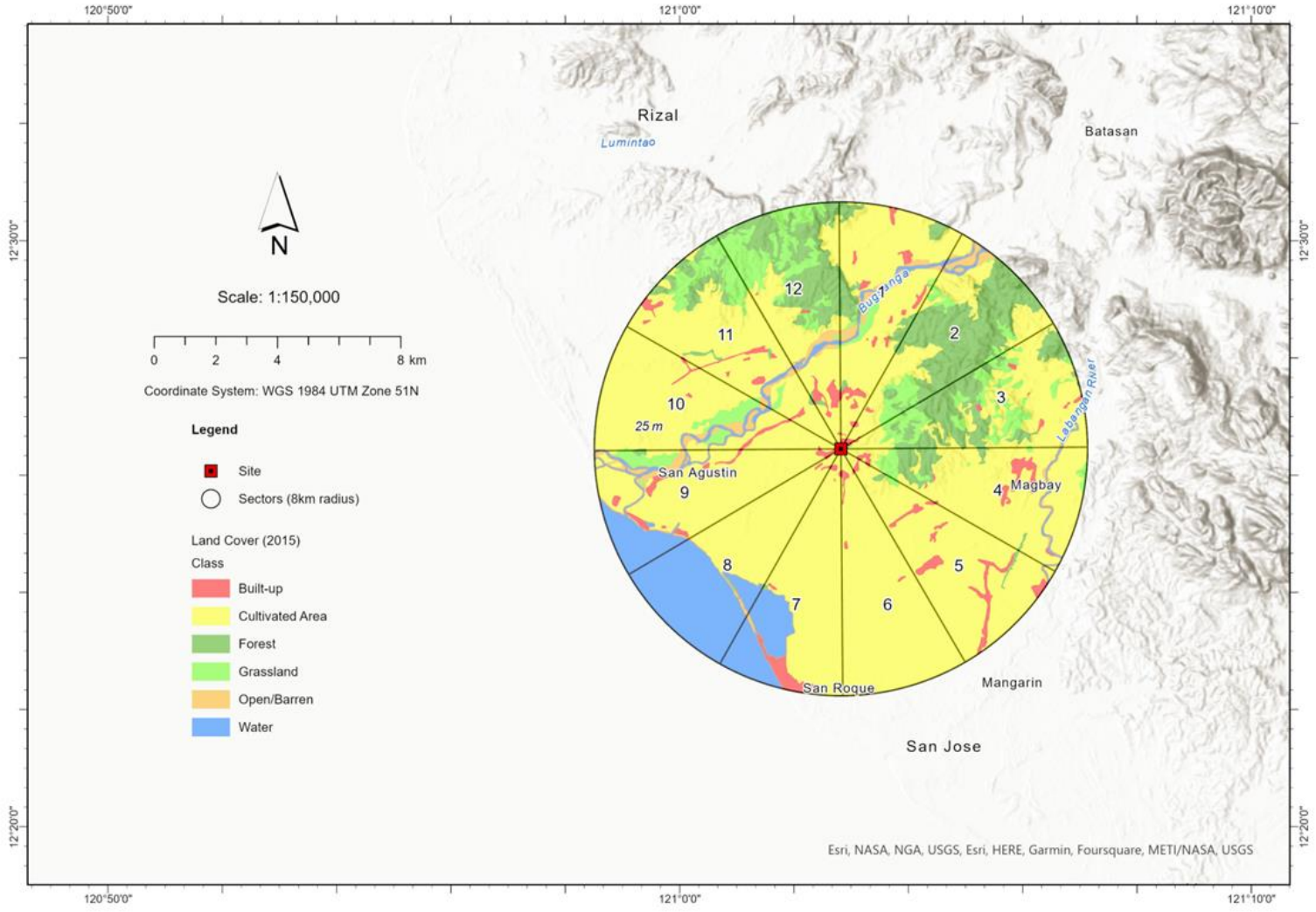
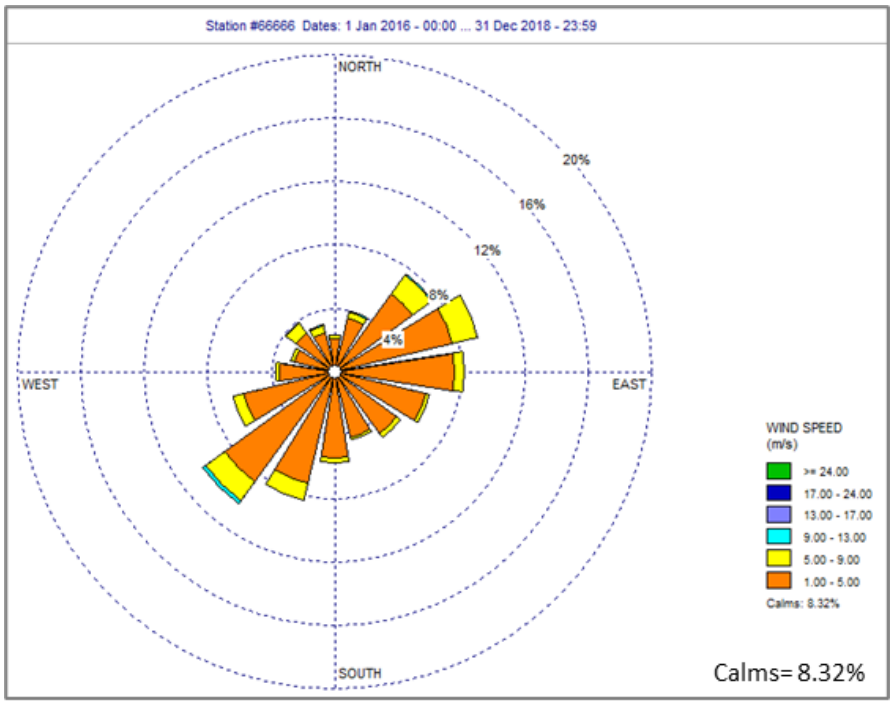
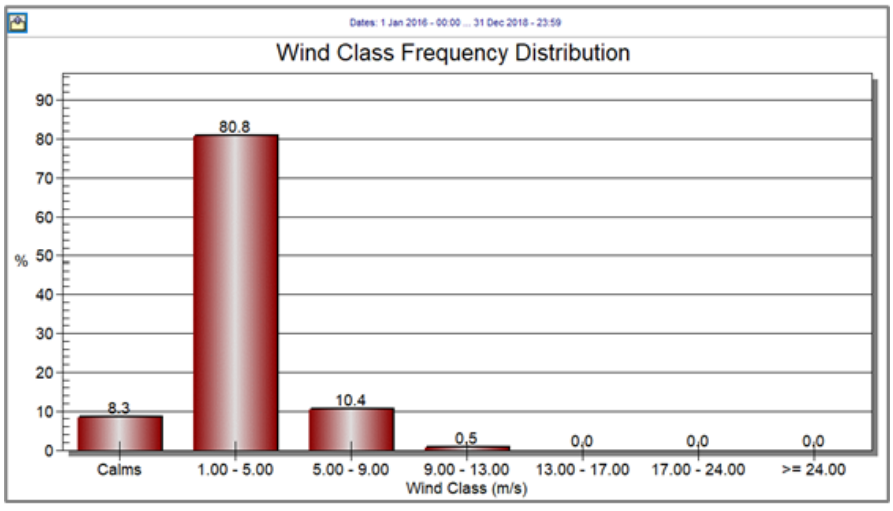


Figure 2.32. Land cover within 6-km radius from the centroid of the existing and proposed stacks



(a) Wind rose (Jan 1, 2016 to Dec 31, 2018)



(b) Wind class frequency distribution

Figure 2.33. Annual wind rose diagram (top) and wind class frequency distribution (bottom)

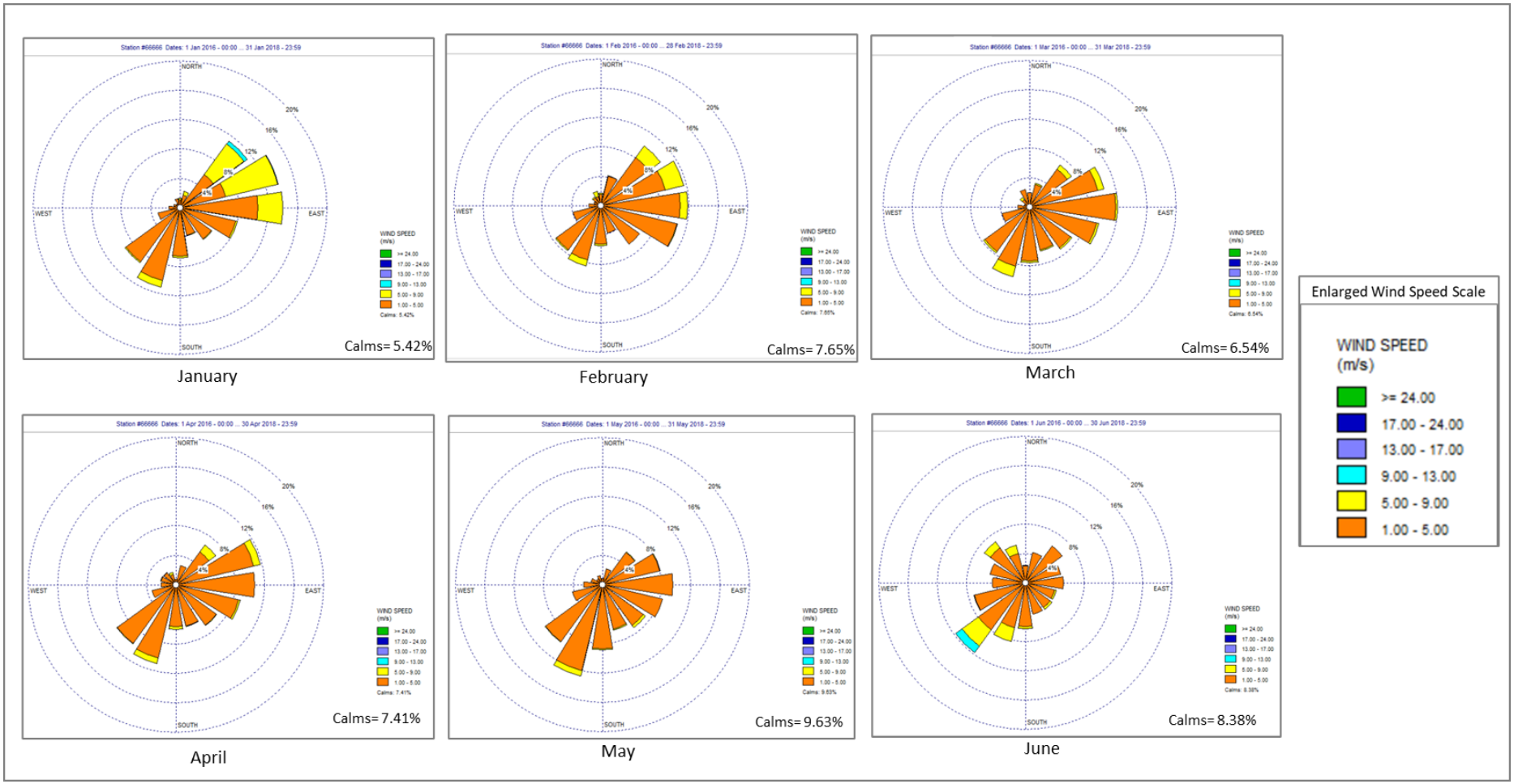


Figure 2.34. Wind rose diagrams for January to June (2016 to 2018)

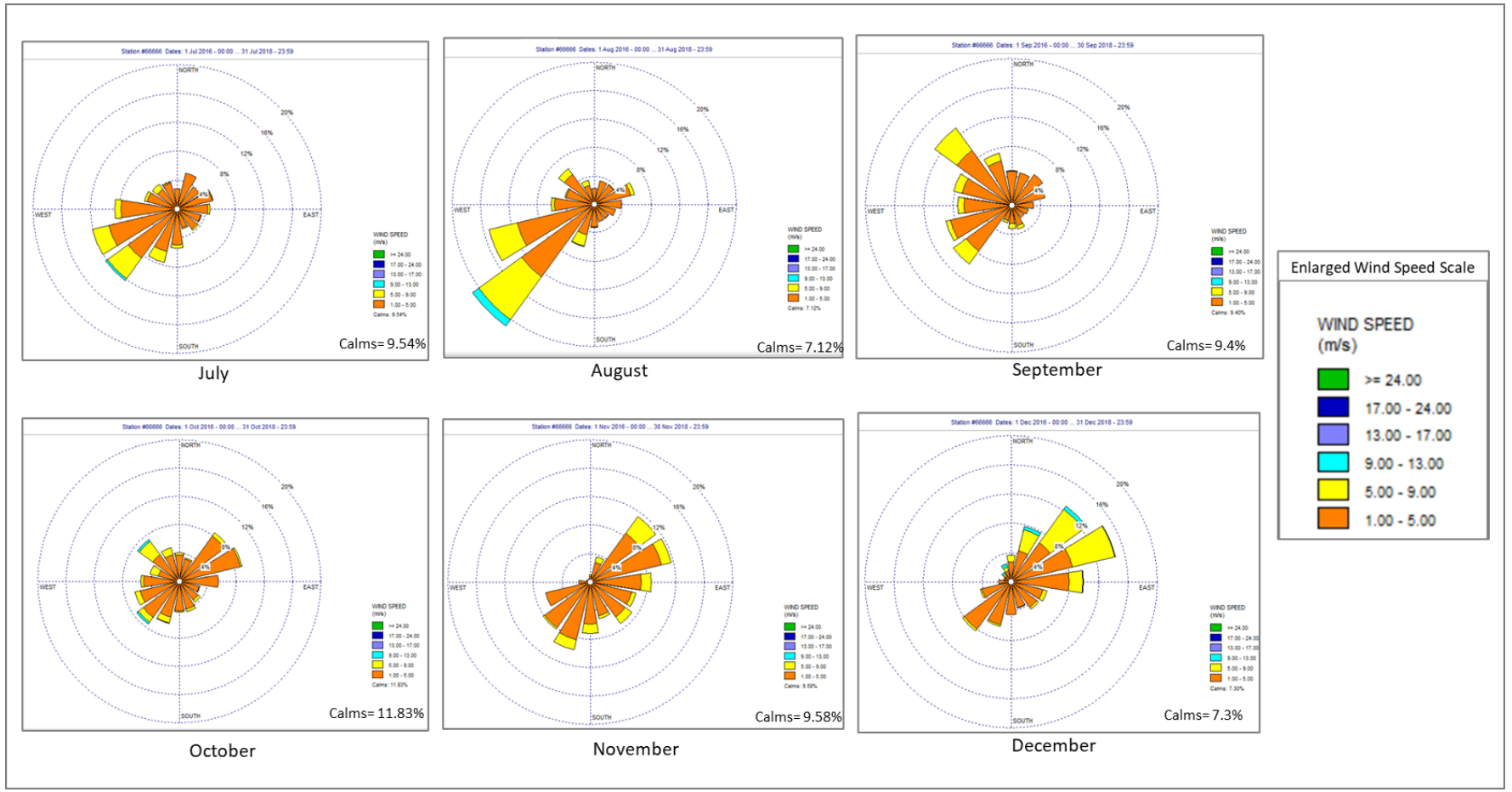


Figure 2.35. Wind rose diagrams for July to December (2016 to 2018)

However, the stack sampling results for SO_X (as SO_2) from December 2017 to July 2019 were greater than the NESSAP set for SO_X (as SO_2) at 700 mg/Nm^3. This period, though, was within the grace period in which facilities using bunker fuel were allowed to operate without penalties, according to the Memorandum of the DENR Secretary dated July 30, 2007. On September 27, 2019, however, the said memorandum was revoked by then DENR Secretary Cimatu and requires submission of the results of the source emission and ambient air quality monitoring.

From December 2019 onwards, the stack sampling results for SO_X (as SO_2) were within the emission standards set at 700 mg/Nm^3, except for the recent stack sampling results (July 2023) for SO_X (as SO_2), which exceeded the corresponding emission standard.

As SO_X (as SO_2) emissions are proportional or related to the percentage of sulfur content of the fuel, an appropriate mixture of bunker fuel and diesel fuel ensures compliance with the emission standard for SO_X (as SO_2).

Ambient Air Quality

Figure 16 to **Figure 18** show the plots of the measured ambient air concentrations of TSP, PM_{10}, SO_2, and NO_2 at four (4) established stations from December 2019 to June 2022. Ambient monitoring for the project has been conducted twice yearly except in 2020 due to travel restrictions on COVID-19.
The results of ambient monitoring were within the ambient quality standards set for TSP, PM_{10}, SO_2, and NO_2 at 300, 200, 340, and 360 µg/Nm^3, respectively. The monitoring data, however, is limited because there are only five (5) data points for each pollutant, making it difficult or inappropriate to statistically determine trends in air quality.

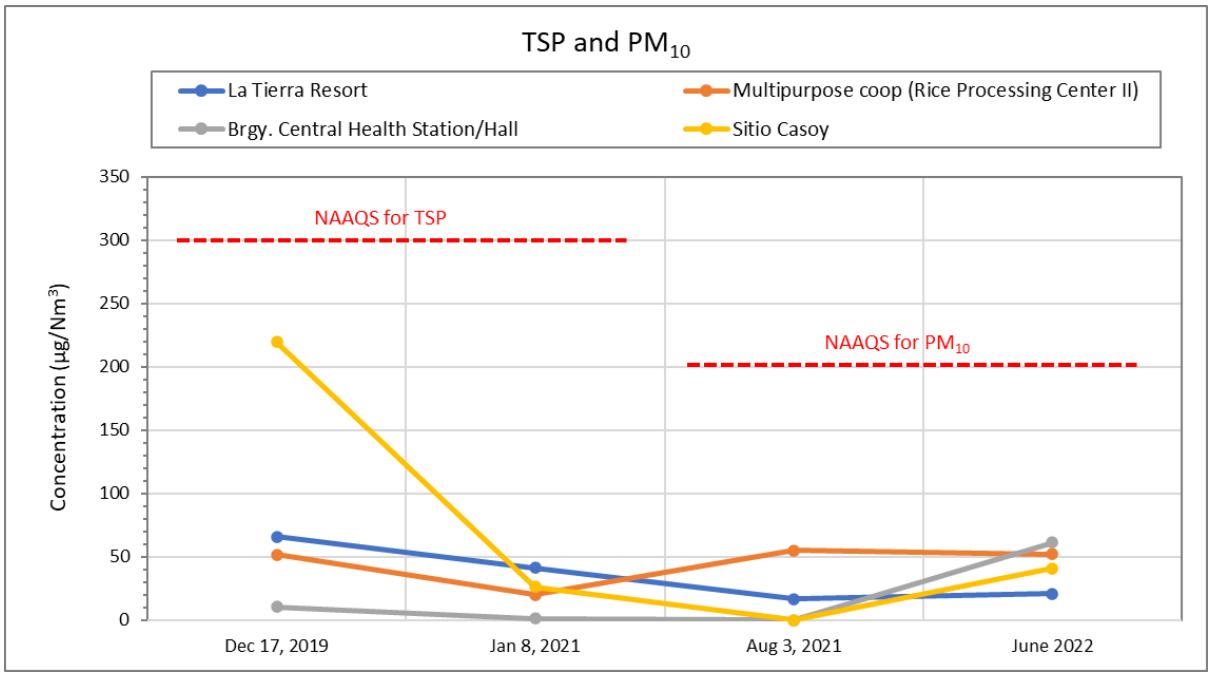


Figure 2.36. Measured ambient TSP in 2019 to 2022

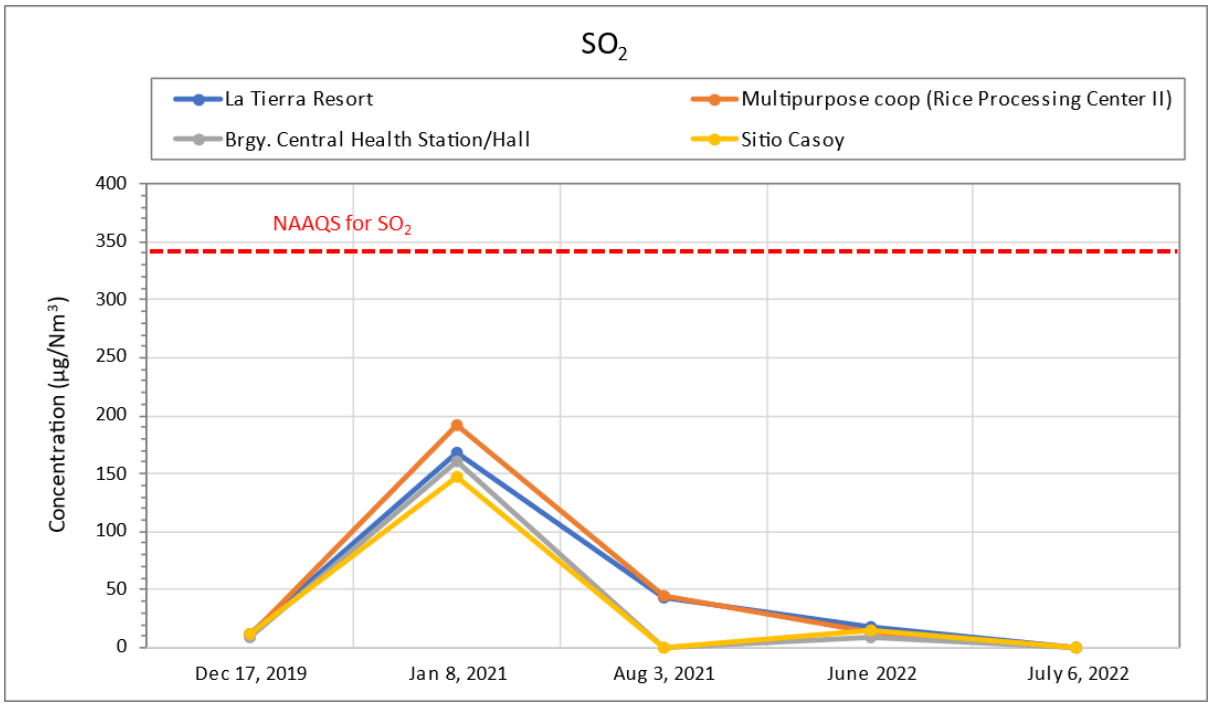


Figure 2.37. Measured ambient SO_2 in 2019 to 2022

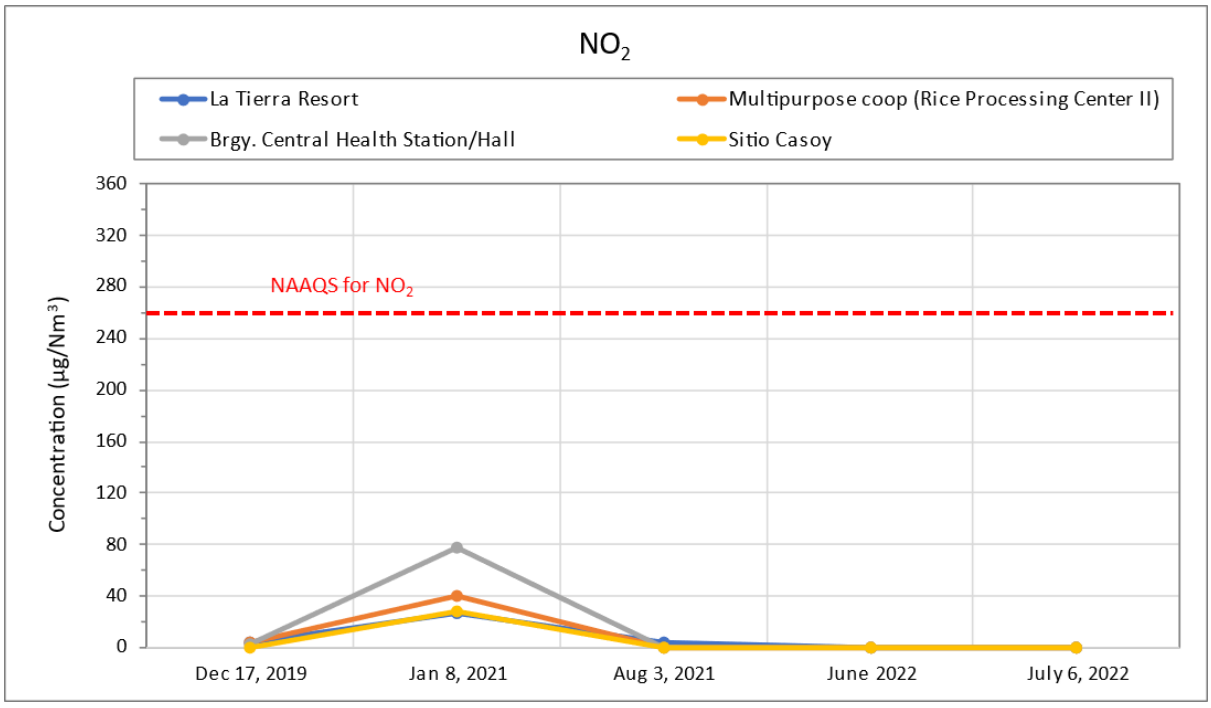


Figure 2.38. Measured ambient SO_2 in 2019 to 2022

Furthermore, as can be seen in **Figure 2**, only two (2) stations (STN 02 and STN 04) are likely downwind of the source during ambient monitoring, and the other stations (STN 01 and STN 03) are crosswind of the prevailing wind flows, which are the northeast and southwest winds. According to Section 1, Rule XXVI (Source Specific Ambient Air Quality Standards) of DAO 2000-81, it is advisable to conduct ambient monitoring downwind of the emissions source or the power plant.

Thus, future compliance monitoring shall consider the prevailing wind flows during monitoring and the locations of the highest predicted concentrations based on air dispersion modelling.

Noise Level

OMCPC also conducts noise monitoring along the ambient air quality monitoring areas. These areas are outside the community. As shown in Tables 2.21 to 2.22 the noise levels in all the monitoring stations except for STN1 exceeded the maximum allowable noise base on their respective category. Noise sources however were identified mostly emanating from the passing of different vehicles mainly tricycles and motorcycles and from barking dogs. In STN 2 noise emanating from the power plant was recorded to contribute to the maximum allowable noise as it is undergoing pre-commissioning checks. In STN 3, the noise levels exceeded the dBA standards for a contiguous area primarily used as residential area, mainly due to residential activities and from incessant barking of dogs as well as vehicles passing near the basketball court.

Table 2.21. Ambient noise levels in OMCPC STN1 (Class A)

	Sound Reading (dB)				
1	46.9	47.8	48.5	46.0	47.5
2	46.4	46.2	47.7	48.8	46.3
3	46.1	45.8	45.2	46.0	45.2
4	46.3	52.6	47.9	47.7	50.1
5	50.2	51.3	51.7	49.6	50.8
6	52.1	48.8	52.3	49.5	51.1
				Minimum	45.2
				Median	47.9
				Maximum	52.6
				Average	48.4
				NPCC Standard for Class A during Daytime	55

Note: Noise reading was taken during daytime 1222H to 1227H

Table 2.22. Ambient noise levels in OMCPC STN2 (Class C)

	Sound Reading (dB)				
1	68.4	69.0	69.6	69.5	69.9
2	69.8	69.2	69.7	69.8	69.4
3	68.5	69.6	68.5	70.2	69.7
4	68.6	69.3	69.0	69.4	69.
5	68.0	69.4	69.1	69.9	69.0
6	69.5	70.1	69.7	70.1	70.3
				Minimum	68.0
				Median	69.5
				Maximum	70.3
				Average	69.4
				NPCC Standard for Class A during Daytime	65

Note: Noise reading was taken during daytime 1423H to 1428H

Table 2.23. Ambient noise levels in OMCPC STN3 (Class A)

	Sound Reading (dB)				
1	69.4	67.8	66.0	66.9	66.6
2	66.7	66.2	65.4	65.4	66.9
3	66.2	66.2	68.2	65.3	67.4
4	65.3	67.2	67.3	62.4	66.9
5	68.7	69.4	67.8	69.6	68.4
6	66.6	69.2	69.6	67.7	67.6
				Minimum	62.4
				Median	67.1
				Maximum	69.6
				Average	67.1

	Sound Reading (dB)
NPCC Standard for Class A during Daytime	55

Note: Noise reading was taken during daytime 1531H to 1536H

Table 2.24. Philippine Ambient Noise Standards

Category[1]	Maximum Allowable Noise (dBA) by Time Periods[2]		
	Daytime	Morning/Evening	Nighttime
AA	50	45	40
A	55	50	45
B	65	60	55
C	70	65	60
D	75	70	65

Note: [1]**Class AA** - a section of contiguous area, which requires quietness, such as areas within 100 meters from school sites, nursery schools, hospitals and special houses for the aged; **Class A**- a section of contiguous area, which is primarily used for residential areas; **Class B** – a section or contiguous area, which is primarily a commercial area; **Class C** – a section primarily zoned or used as a light industrial area and **Class D** – a section, which is primarily reserved, zoned or used as a heavy industrial area. [2]**Morning** - 5:00 A.M. to 9:00 AM; **Daytime** - 9:00 A.M. to 6:00 P.M; **Evening** - 6:00 P.M. to 10:00 P.M.; **Nighttime** - 10:00 P.M. to 5:00 A.M.

2.3.2.3. Impact Assessment

Table 2.25. Predicted impacts of/on ambient air quality and noise to/by the proposed amendment of OMCPC SMRA Diesel Power Plant Expansion

List of Key Impacts	Phase Occurrence				Discussion
	Pre-Construction	Construction	Operation	Abandonment	
Degradation of air quality		☑	☑		The dispersion modelling results are in two (2) categories: a) existing sources and b) existing and proposed sources. Predicted dispersed air pollutants from the existing sources (or the existing three gensets) provided the background air quality in the area, while the combined or predicted cumulative dispersed air pollutants emanating from the existing and proposed sources (or a total of 9 gensets) aimed to check compliance with the ambient guideline values. **Table 5** summarizes the results of the predicted air pollutant concentrations based on dispersion modelling results in **Figure 19** to **Figure 28**. Predicted concentrations of SO_2 and NO_2 emanating from the three (3) existing gensets were within the corresponding ambient guideline values (**Table 5**). As the emission rates for particulates (PM) are relatively lower than those of SO_2 and NO_2, then it follows that the predicted dispersed concentrations for TSP (particulates) and CO were less than those of SO_2 and NO_2, thus results for TSP and CO for the existing sources are not presented in **Table 5**. Furthermore, the ambient guidelines for CO are very high at 10,000 and 35,000 µg/Nm^3 at 8- and 1-hour averaging periods, respectively; thus, dispersed concentrations of CO may be acceptable in compliance with ambient guideline values. For the existing and proposed emission sources (or a total of 9 gensets), the predicted dispersed concentrations of SO_2, TSP, and CO

List of Key Impacts	Phase Occurrence				Discussion
	Pre-Construction	Construction	Operation	Abandonment	
					were within the ambient guideline values set for these air pollutants, as shown in **Table 5**. The predicted dispersed NO_2 was 1,832.6 µg/m^3, which exceeded the ambient guideline value set for NO_2 at 150 µg/Nm^3. As discussed in the previous section (**Section 1.3.2.6 -Modelling Options and Modelling Scenarios**), the simulations included hourly emission rate files for scenarios with intermittent operations (9 days per month and 7 hours per day) and increasing the stack heights to determine the stack height that yielded dispersed pollutant concentrations to within ambient guideline values, as shown in **Table 6**. **Table 6** shows that at stack heights of 5.32 to 14 m, the dispersed concentrations of NO_2 are greater than the corresponding ambient guideline value. The highest dispersed concentration is within the project boundary, northeast of the proposed stacks. However, the predicted dispersed concentrations outside the project boundary are greater than the ambient guideline values for NO_2. Simulated NO_2 concentrations were very high in the N-E and S-W quadrants of the project site, as shown in **Figure 28** onwards. At a stack height of 15 m, the highest predicted 24-hour average concentration of NO_2 (at the 98th percentile) of 151.3 µg/m^3 was slightly higher than the corresponding ambient guideline value. However, the dispersed ambient air concentrations outside the project boundaries were within ambient guideline value. Note that the Department of Labor and Employment (DOLE) air quality standards apply to areas within the project boundaries; thus, assessment of compliance with the ambient guideline values of the DENR focused on areas outside the project site. Based on the results of the simulations, this study recommends a stack height of 15 m for each of the proposed genset.
Increase in ambient noise level		☑	☑		Noise is a significant impact in the borrow quarry operation during blasting operation. This impact however is short term since the contractor utilizes controlled blasting. Prior to the conduct of blasting, the contractor notifies the public and announces the date and time of blasting. Blasting activity is done during daytime only. Furthermore, the location of the borrow quarry is already far from the communities thus blasting noise is less significant. TMC mine site is approximately 4 to 5 kms from the populated area of the barangay. Hence, there will be no significant noise to affect the community. However, drivers are advised not to blow their horns especially during the night when passing thru the main highway going to the causeway/wharf during loading operation. There are traffic spotters in various locations along the access routes. Special operation procedures are also included already in the work instructions and strictly implemented across all road users.

Table 2.26. Highest predicted dispersed concentrations of air pollutants in comparison with the ambient guideline values assuming continuous operation in 3 years

Pollutant	Averaging Period	Predicted Concentration (µg/m³)	DENR Ambient Guideline Value (µg/Nm³)	Remarks	Reference Figure
Existing Diesel Generator Sets (Gensets 1, 2, and 3)					
SO_2	24 hours	85.7	180	Within guideline value	Figure 19
SO_2	1 year	22.0	80	Within guideline value	Figure 20
NO_2	24 hours	47.3	150	Within guideline value	Figure 21
NO_2	1 year	12.1	Not specified	Within IFC guideline value of 40 µg/Nm³	Figure 22
2) Existing (3 units) and Proposed Diesel Generator Sets (6 units)					
SO_2	24 hours	88.8	180	Within guideline value	Figure 23
TSP	24 hours	75.8	230	Within guideline value	Figure 24
CO	1 hour	567.8	35,000	Within guideline value	Figure 25
CO	8 hours	485.8	10,000	Within guideline value	Figure 26
NO_2	24 hours	1832.6	150	Exceeded ambient guideline value	Figure 27 and Figure 28
Note: As there is no local ambient guideline value for NO_2 at 1 year averaging period, the ambient guideline value of the International Finance Corporation (IFC) is used to compare model result					

Table 2.27. Highest predicted dispersed concentrations of air pollutants using hourly emission rate files or at various stack heights

Pollu-tant	Scenario	Averaging Period	Highest Predicted Concentration (µg/m³)	DENR Ambient Guideline Value (µg/Nm³)	Remarks	Reference Figure
NO_2	Nine (9) days of continuous operation per month in 3 years. Stack heights of proposed stacks = 5.32 m	24 hours	1270.8	150	Exceeded ambient guideline value*	Figure 29 and Figure 30
NO_2	Seven (7) hours of operation per day in 3 years. Stack heights of proposed stacks = 5.32 m	24 hours	847.2	150	Exceeded ambient guideline value*	Figure 31 and Figure 32
NO_2	Increased stack height of proposed stacks to 8 m; continuous operation in 3 years	24 hours	334.6	150	Exceeded ambient guideline value*	Figure 33 and Figure 34
NO_2	Increased stack height of proposed stacks to 12 m ; continuous operation in 3 years	24 hours	181.4	150	Exceeded ambient guideline value*	Figure 35 and Figure 36
NO_2	Increased stack height of proposed stacks to 13 m ; continuous operation in 3 years	24 hours	164.1	150	Exceeded ambient guideline value*	Figure 37
NO_2	Increased stack height of proposed stacks to 14 m; continuous operation in years	24 hours	156.1	150	Exceeded ambient guideline value*	Figure 38
NO_2	Increased stack height of proposed stacks to 15 m; continuous operation in years	24 hours	151.3	150	Dispersed ambient air concentrations outside the project boundaries are within ambient guideline value	Figure 39 and Figure 40

*Note: The highest dispersed concentration is within the project boundary, specifically northeast of the proposed stacks. The predicted dispersed concentrations outside the project boundary, however, are greater than the ambient guideline values for NO_2.

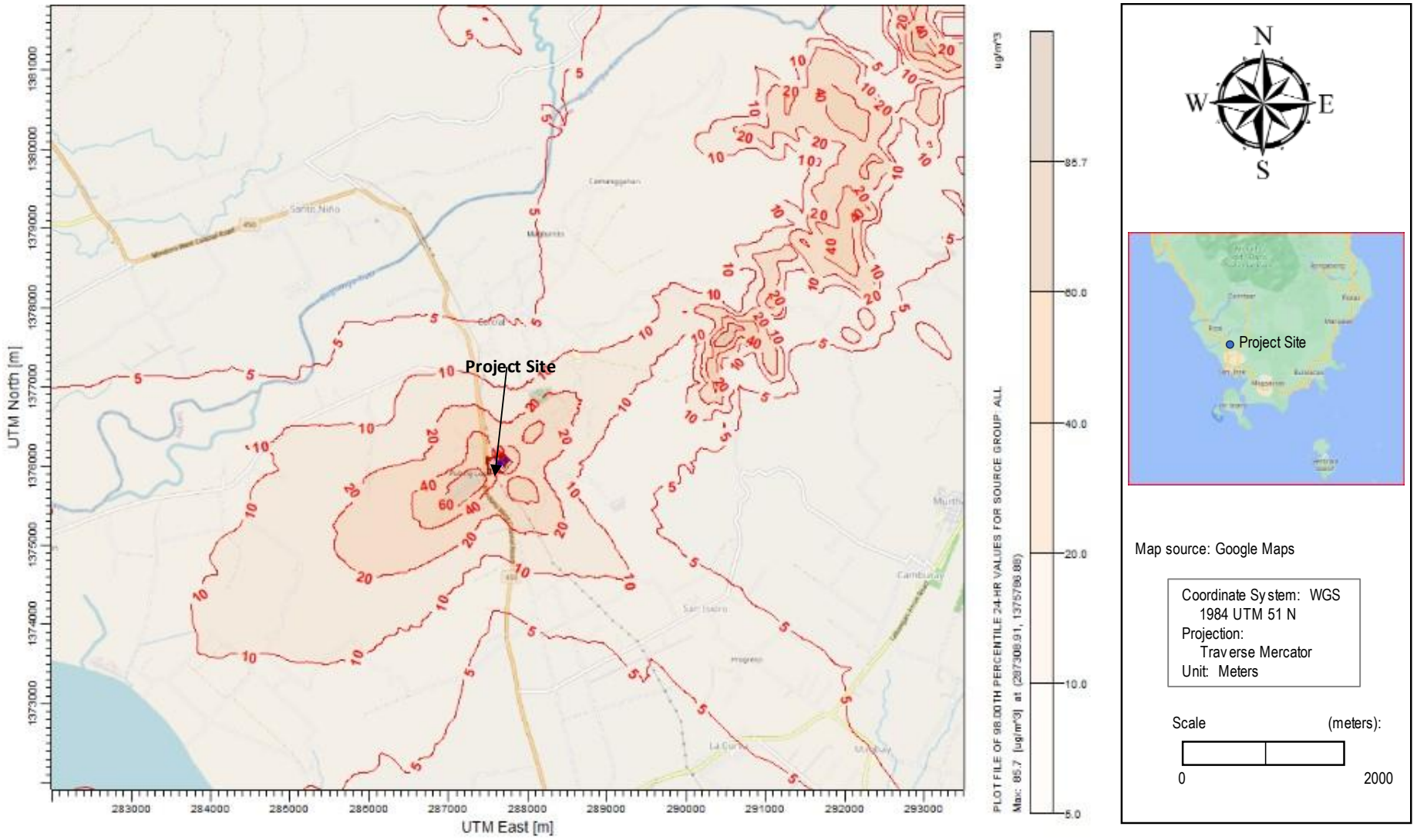


Figure 2.39. Plot of 98th percentile 24-hour values of dispersed SO_2 emanating from emissions of existing gensets (Gensets 1, 2, and 3)

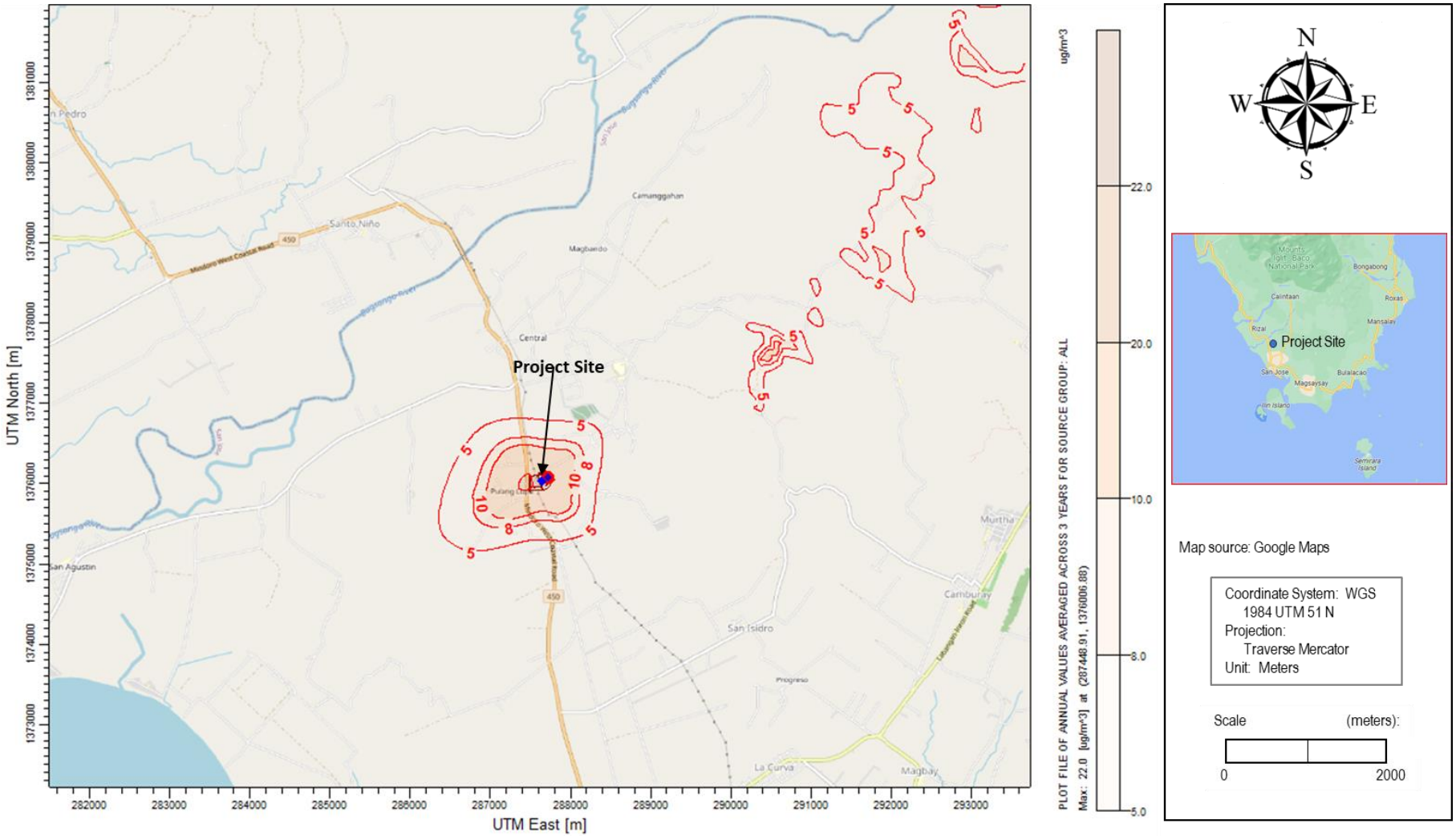


Figure 2.40. Plot of annual average dispersed SO_2 emanating from emissions of existing gensets (Gensets 1, 2, and 3)

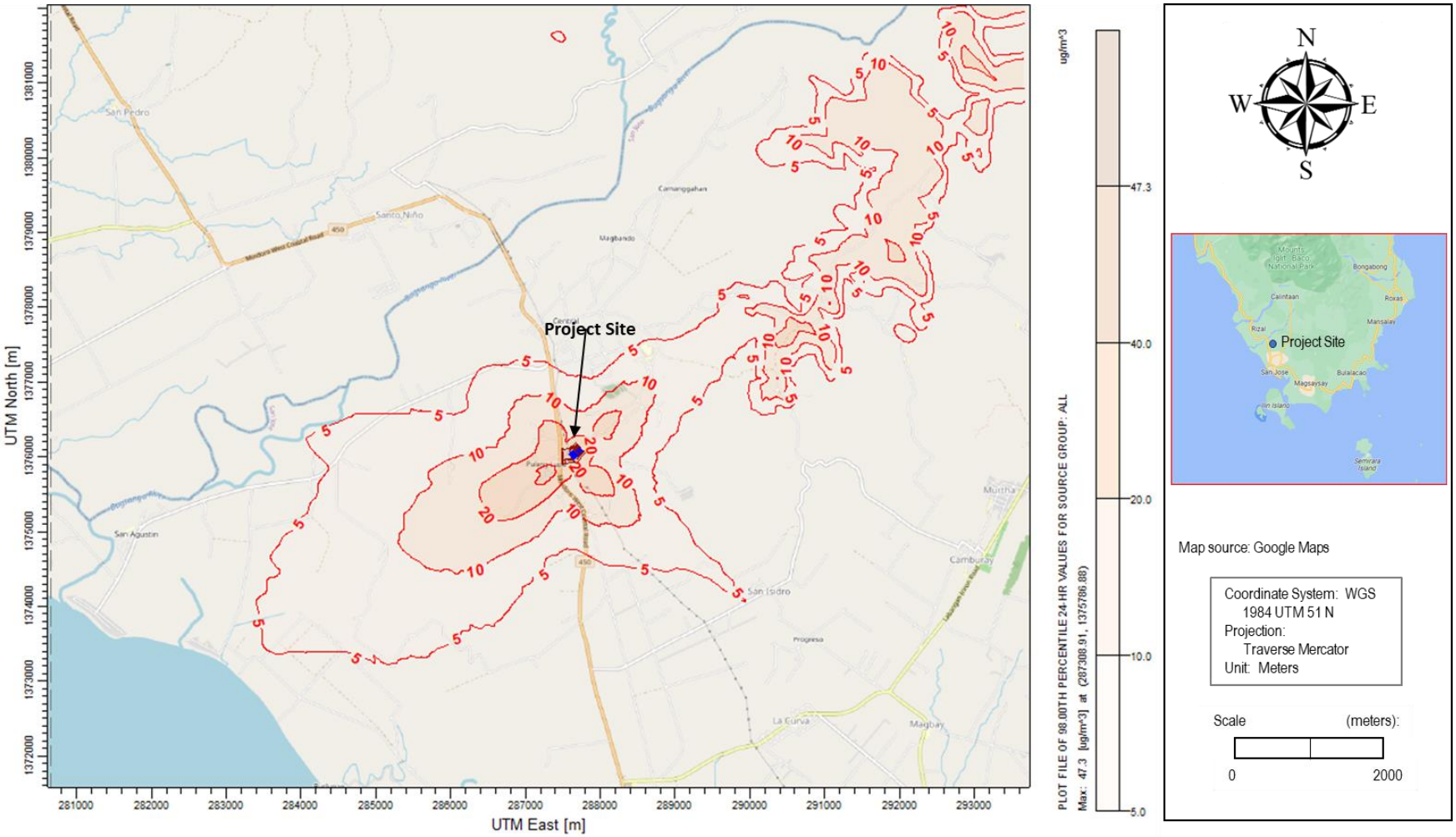


Figure 2.41. Plot of 98th percentile 24-hour values of dispersed NO_2 emanating from emissions of existing gensets (Gensets 1, 2, and 3)

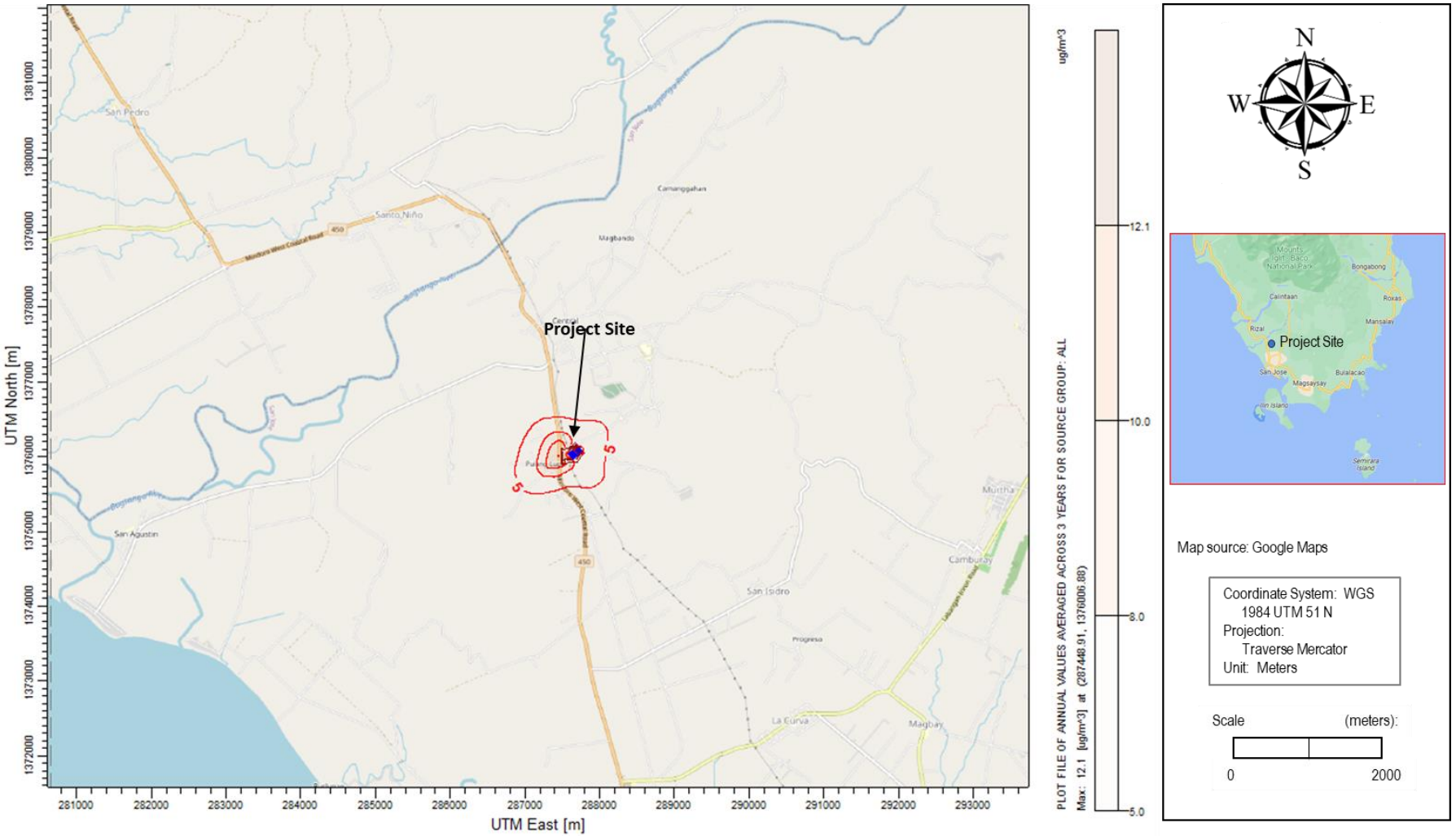


Figure 2.42. Plot of annual average dispersed NO_2 emanating from emissions of existing gensets (Gensets 1, 2, and 3)

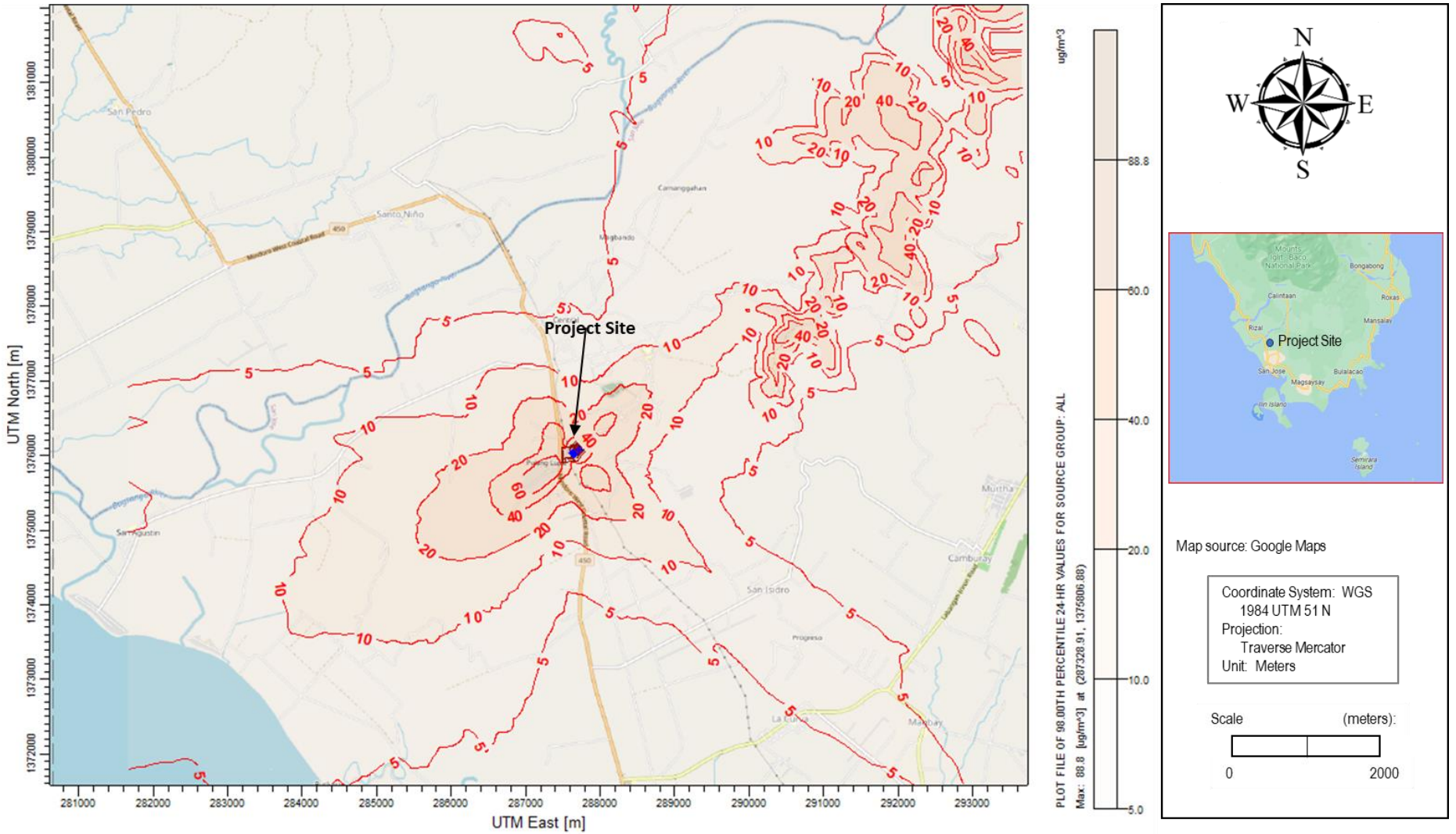


Figure 2.43. Plot of 98th percentile 24-hour values of dispersed SO_2 emanating from emissions of existing gensets (Gensets 1, 2, and 3) and proposed six (6) units of gensets (Stack heights = 5.32 m)

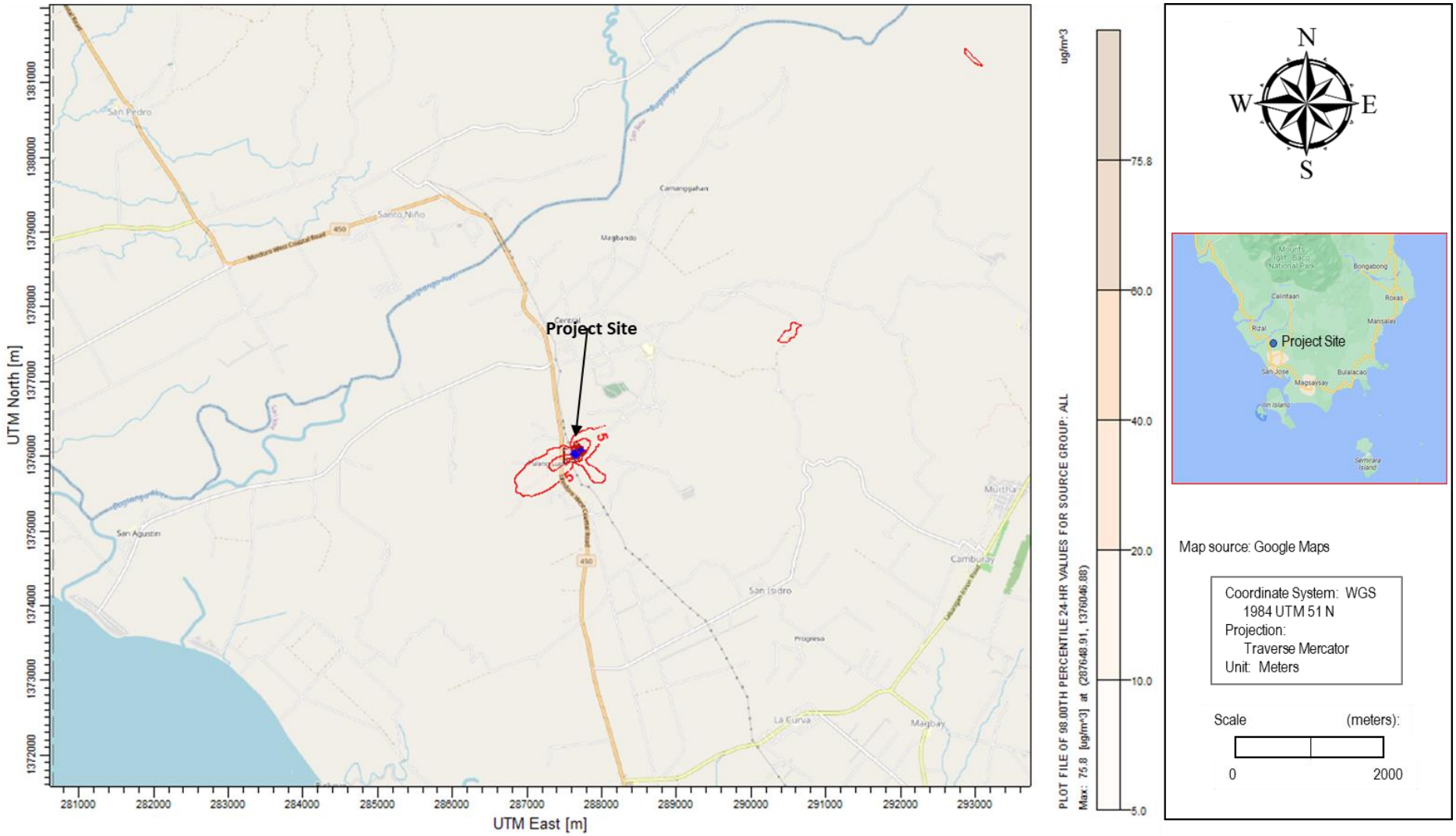


Figure 2.44. Plot of 98th percentile 24-hour values of dispersed TSP emanating from emissions of existing gensets (Gensets 1, 2, and 3) and proposed six (6) units of gensets (Stack heights = 5.32 m)

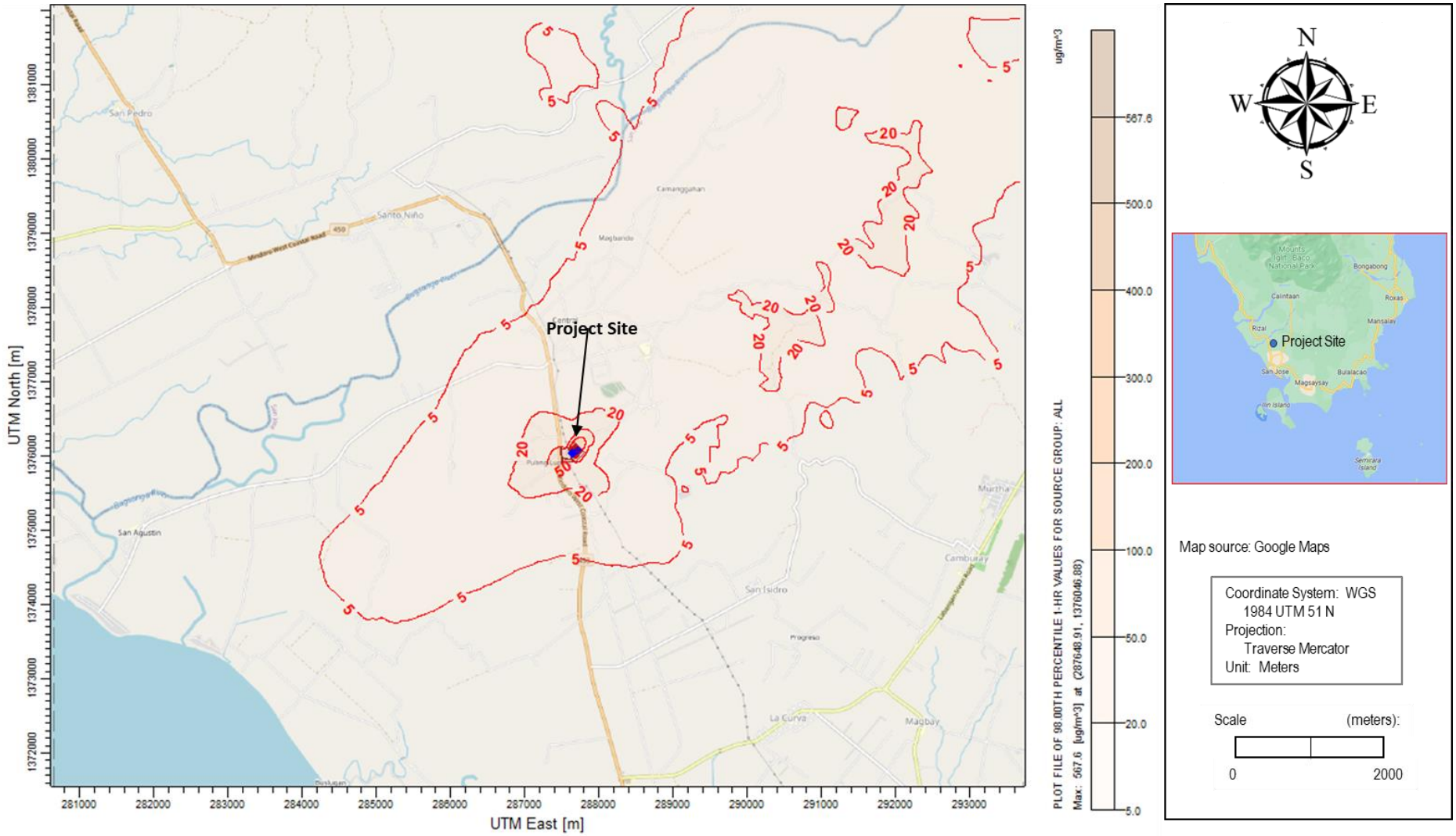


Figure 2.45. Plot of 98th percentile 1-hour values of dispersed CO emanating from emissions of existing gensets (Gensets 1, 2, and 3) and proposed six (6) units of gensets (Stack heights = 5.32 m)

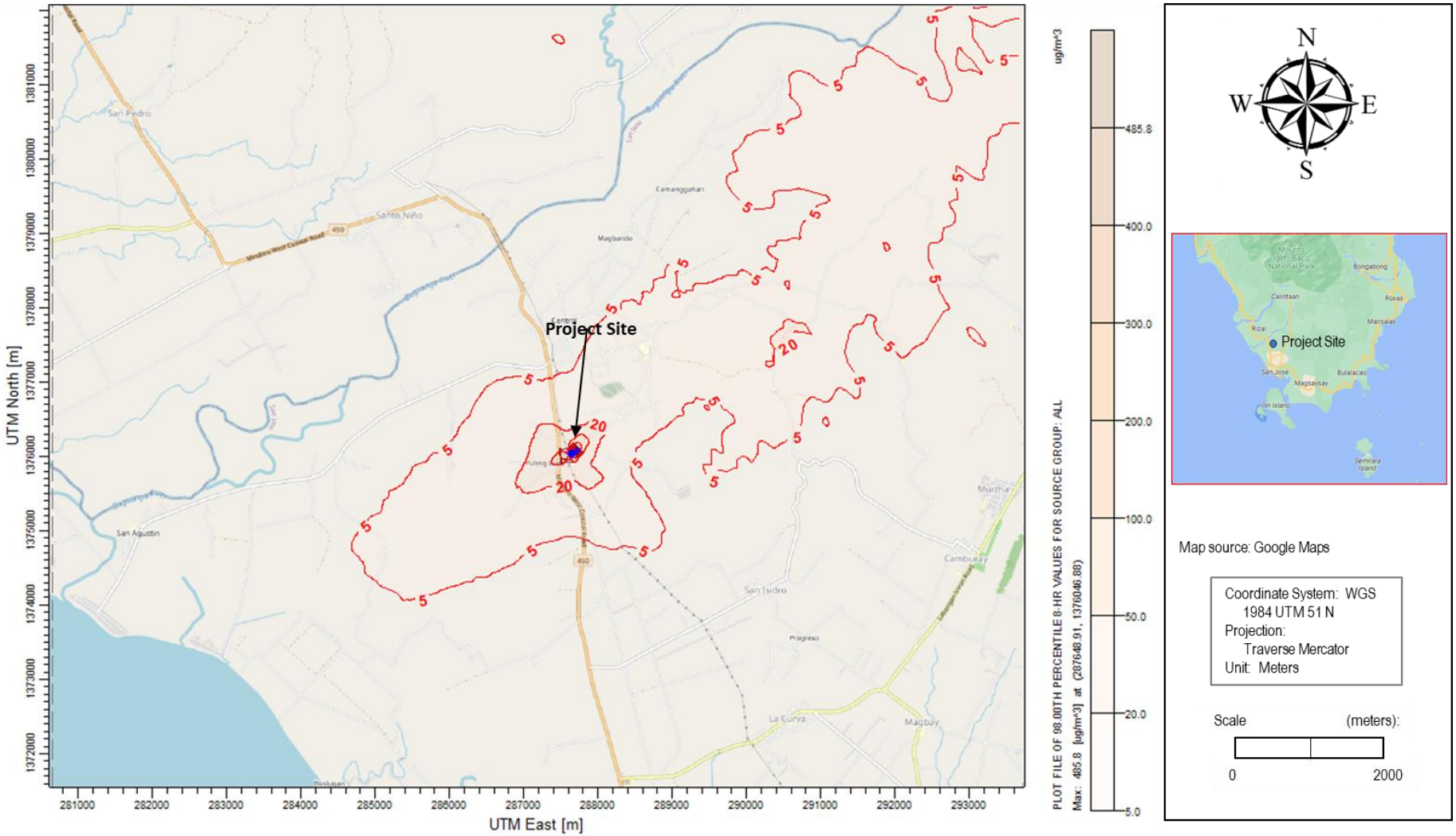


Figure 2.46. Plot of 98th percentile 8-hour values of dispersed CO emanating from emissions of existing gensets (Gensets 1, 2, and 3) and proposed six (6) units of gensets (Stack heights = 5.32 m)

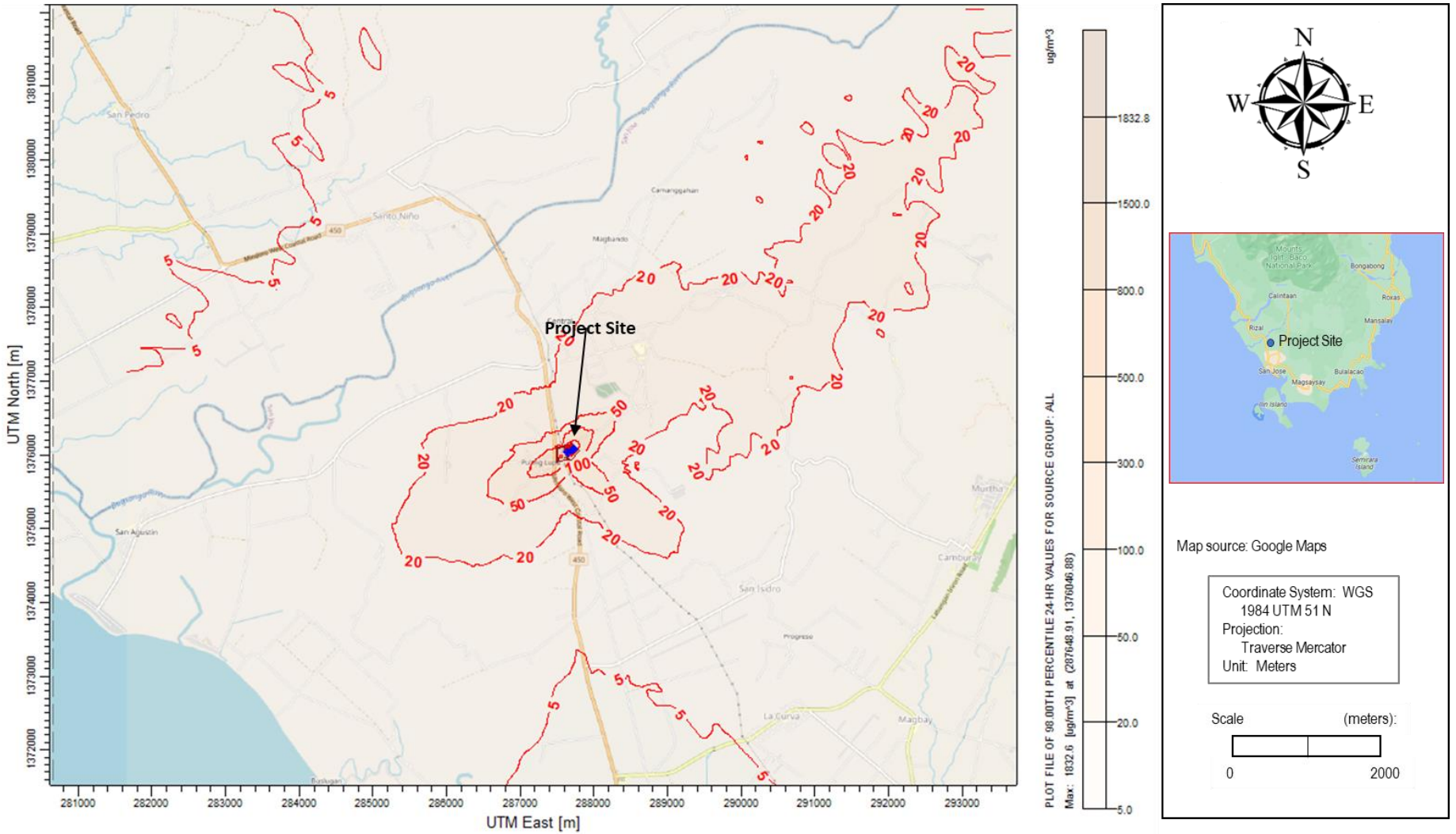


Figure 2.47. Plot of 98th percentile 24-hour values of dispersed NO_2 emanating from emissions of existing gensets (Gensets 1, 2, and 3) and proposed six (6) units of gensets (Stack heights = 5.32 m)

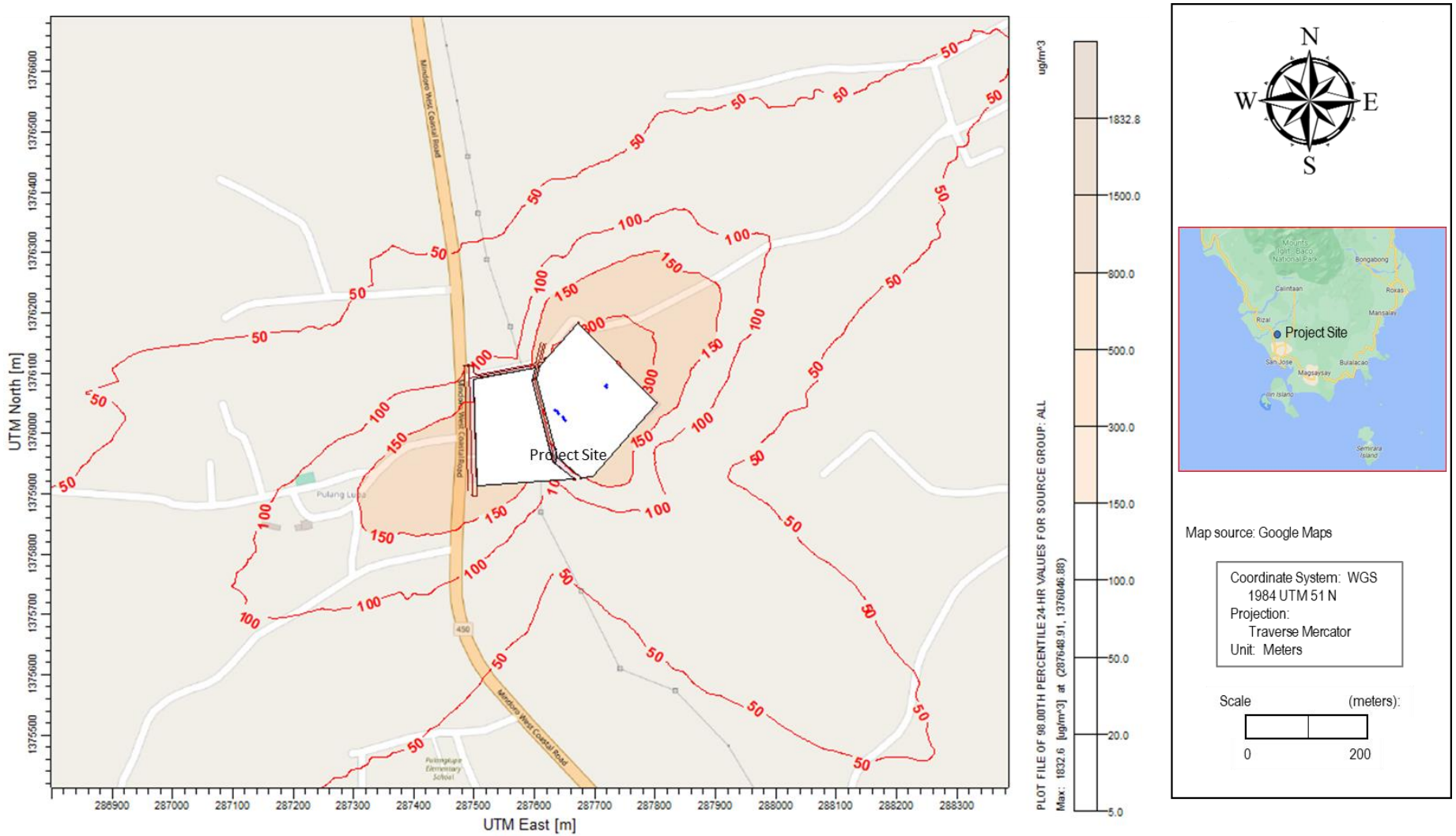


Figure 2.48. Closer view of the plot of 98th percentile 24-hour values of dispersed NO_2 emanating from emissions of existing gensets (Gensets 1, 2, and 3) and proposed six (6) units of gensets (Stack heights = 5.32 m)

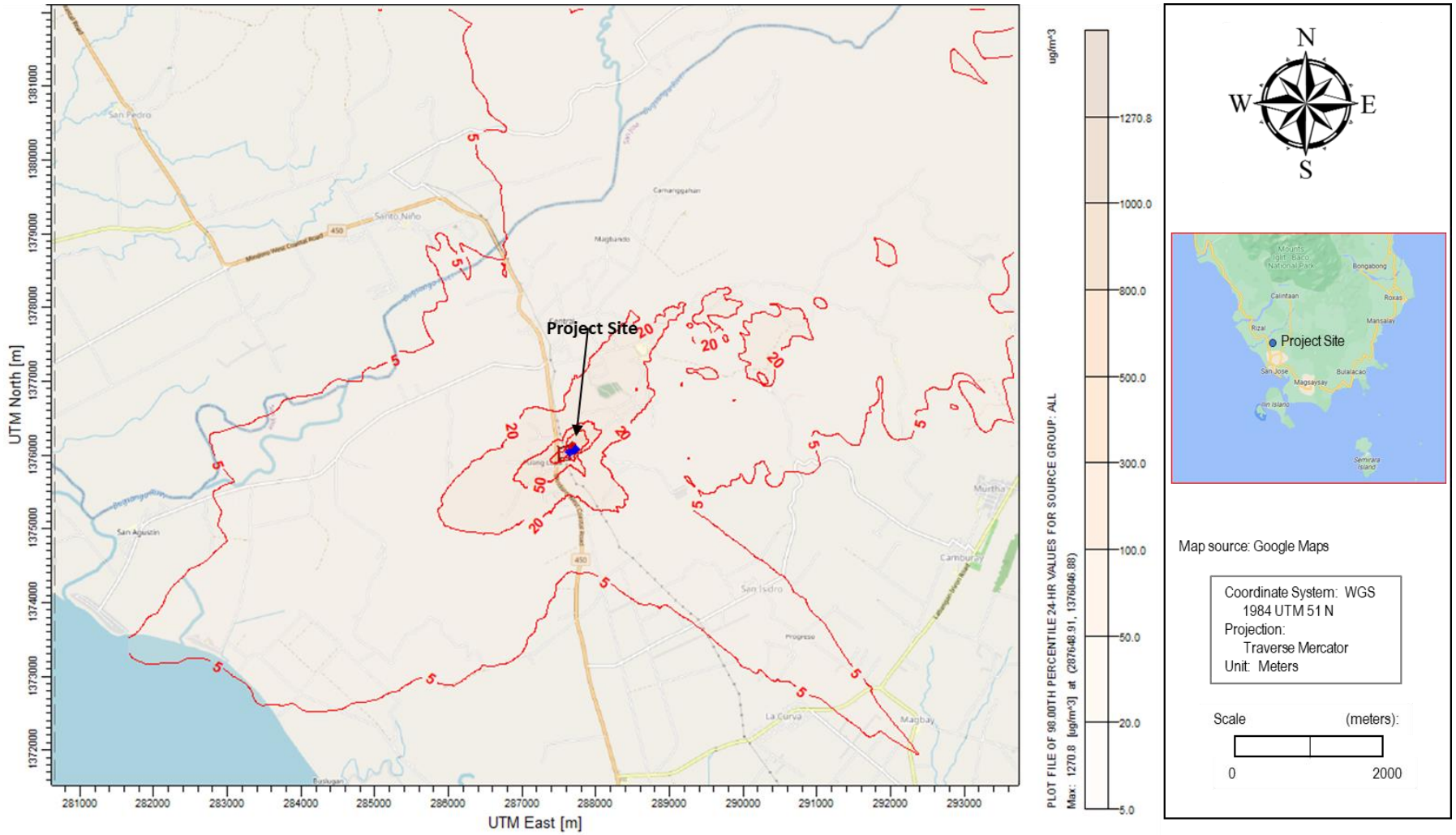


Figure 2.49. Plot of 98th percentile 24-hour values of dispersed NO_2 emanating from emissions of existing gensets (Gensets 1, 2, and 3) and proposed six (6) units of gensets (Stack heights = 5.32 m) assuming nine (9) days of continuous operation per month

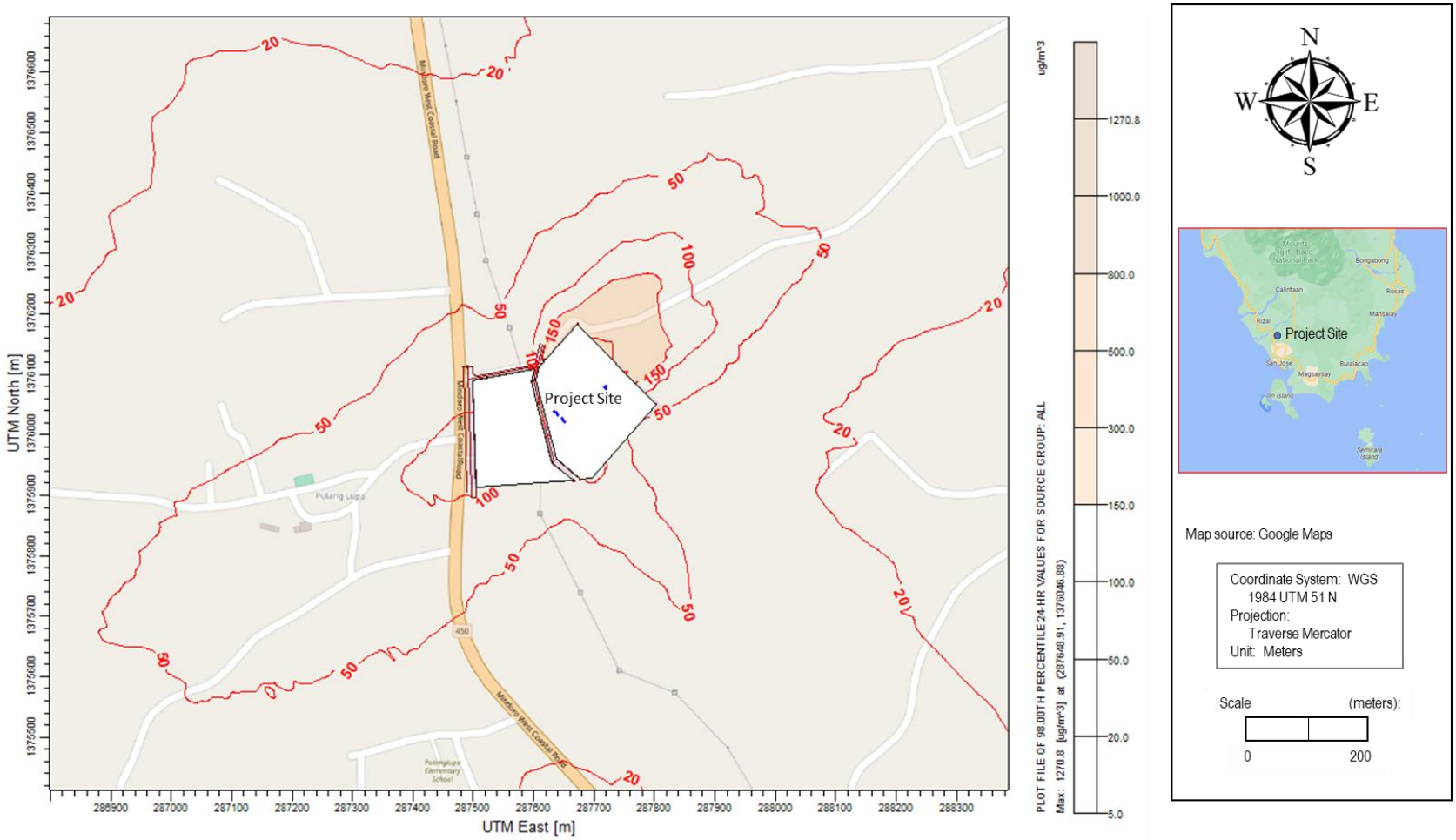


Figure 2.50. Closer view of the plot of 98th percentile 24-hour values of dispersed NO_2 emanating from emissions of existing gensets (Gensets 1, 2, and 3) and proposed six (6) units of gensets (Stack heights = 5.32 m) assuming nine (9) days of continuous operation per month

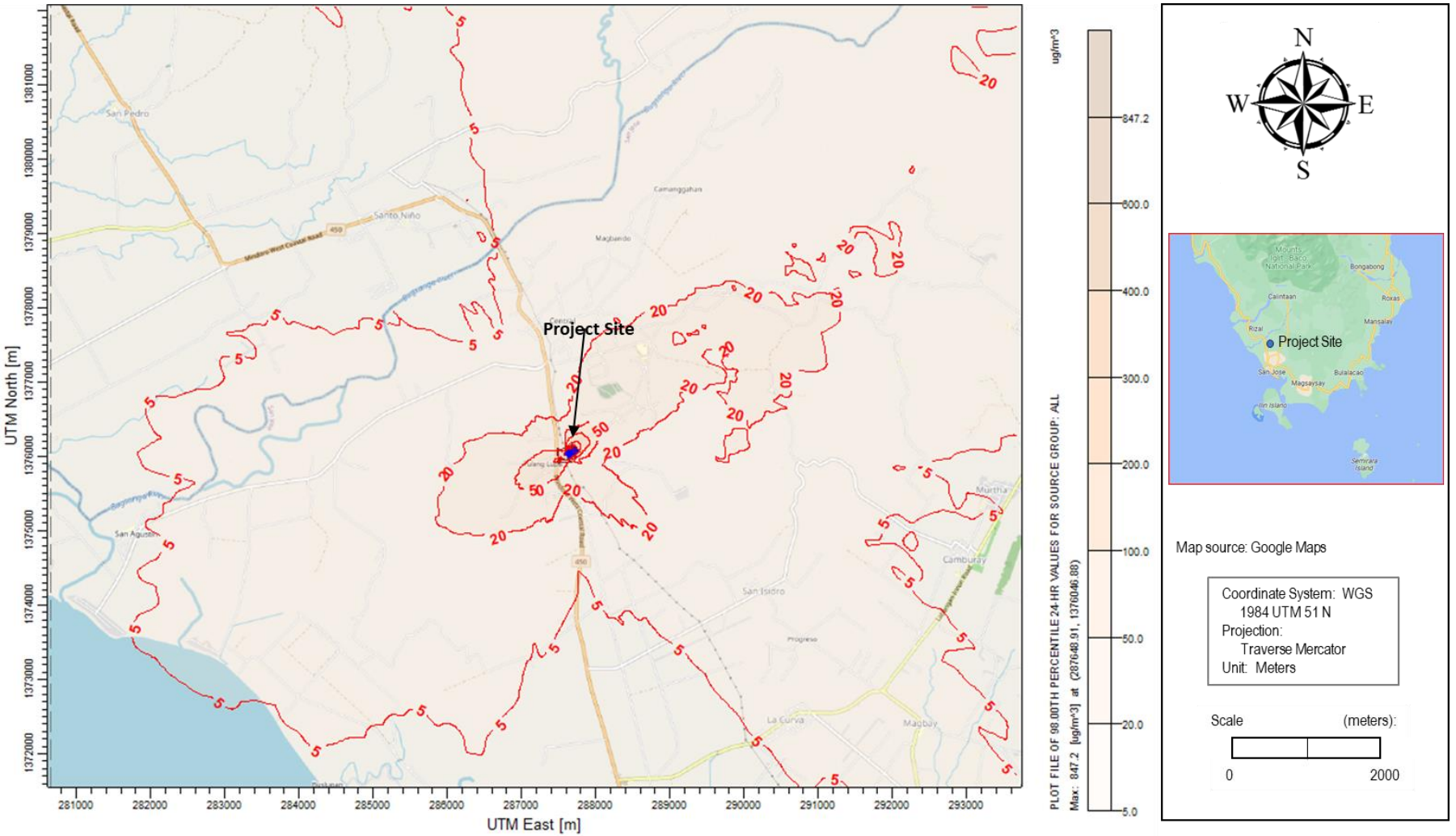


Figure 2.51. Plot of 98th percentile 24-hour values of dispersed NO_2 emanating from emissions of existing gensets (Gensets 1, 2, and 3) and proposed six (6) units of gensets (Stack heights = 5.32 m) assuming seven (7) hours of operation per day per month

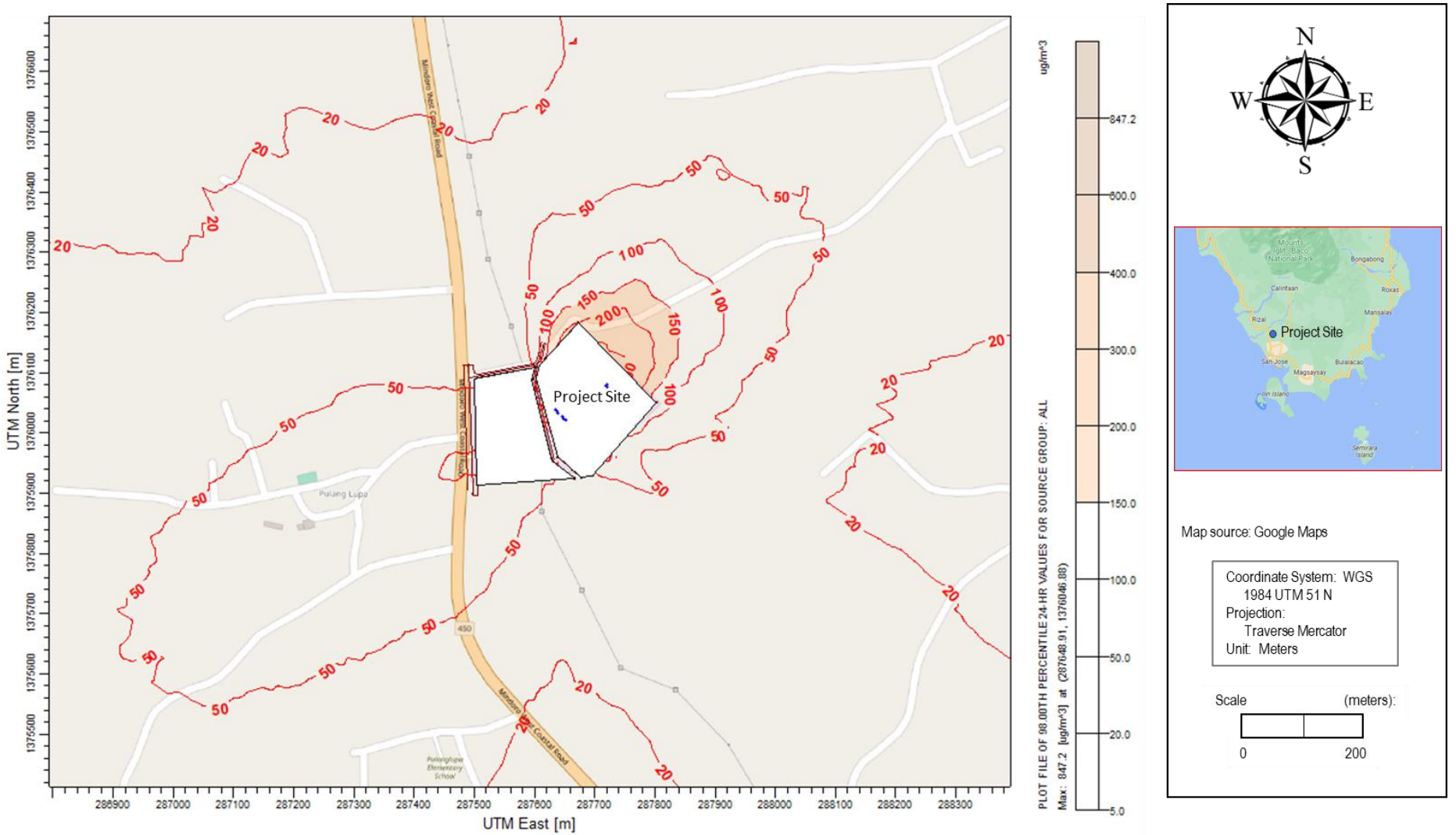


Figure 2.52. Closer view of the plot of 98th percentile 24-hour values of dispersed NO_2 emanating from emissions of existing gensets (Gensets 1, 2, and 3) and proposed six (6) units of gensets (Stack heights = 5.32 m) assuming seven (7) hours of operation per day per month

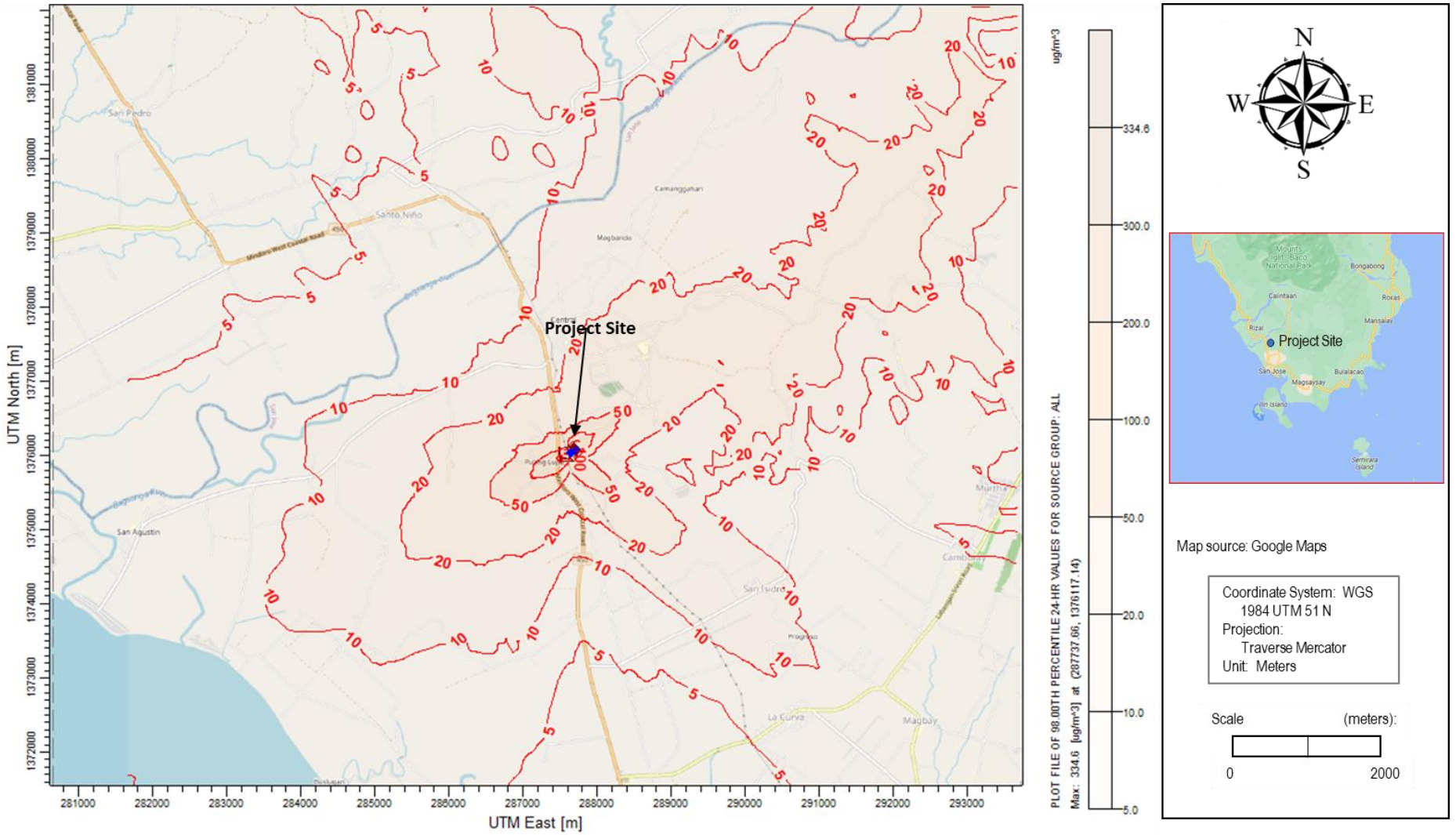


Figure 2.53. Plot of 98th percentile 24-hour values of dispersed NO_2 emanating from emissions of existing gensets (Gensets 1, 2, and 3) and proposed six (6) units of gensets (Stack heights = 8 m)

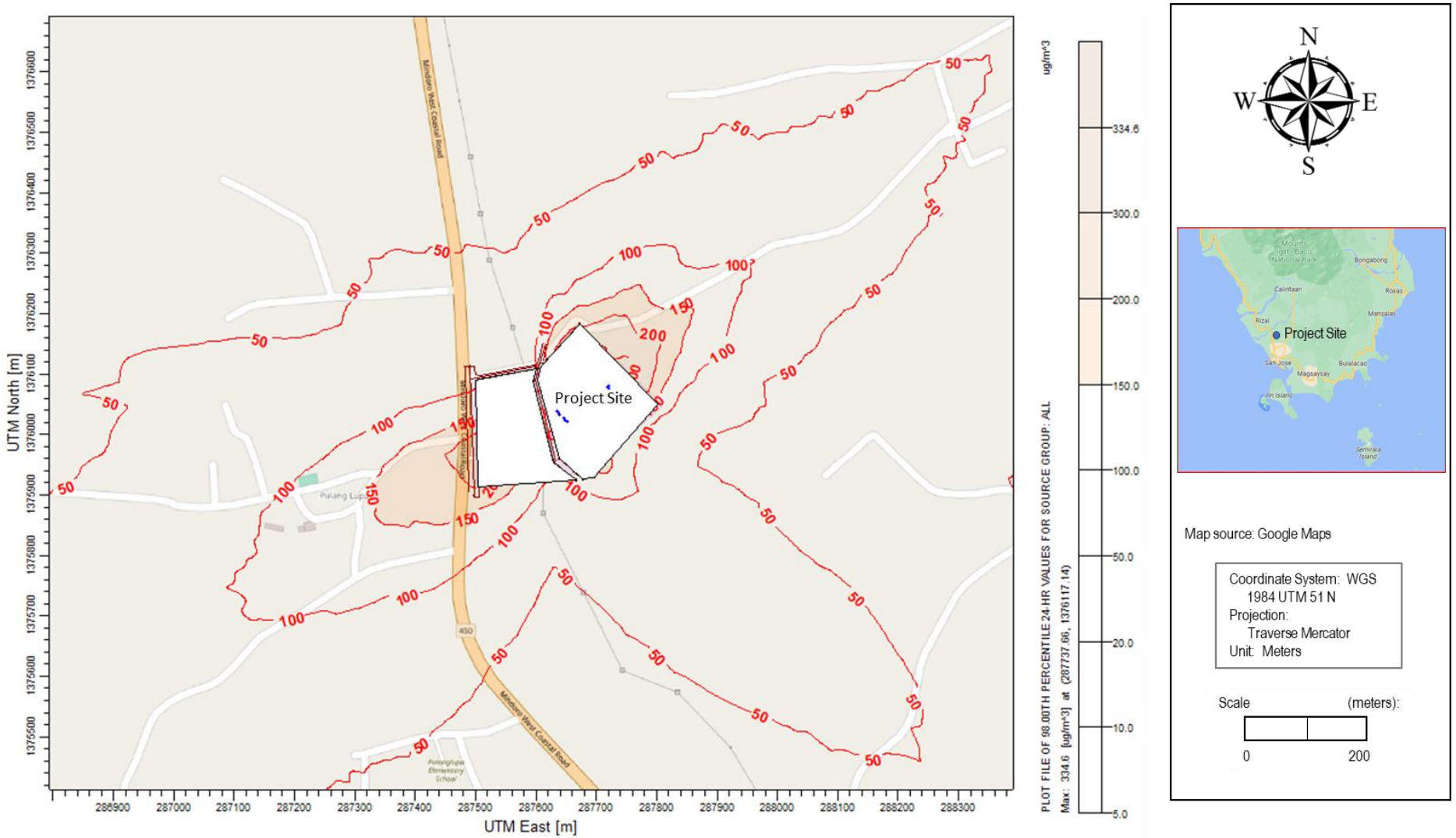


Figure 2.54. Closer view of the plot of 98th percentile 24-hour values of dispersed NO_2 emanating from emissions of existing gensets (Gensets 1, 2, and 3) and proposed six (6) units of gensets (Stack heights = 8 m)

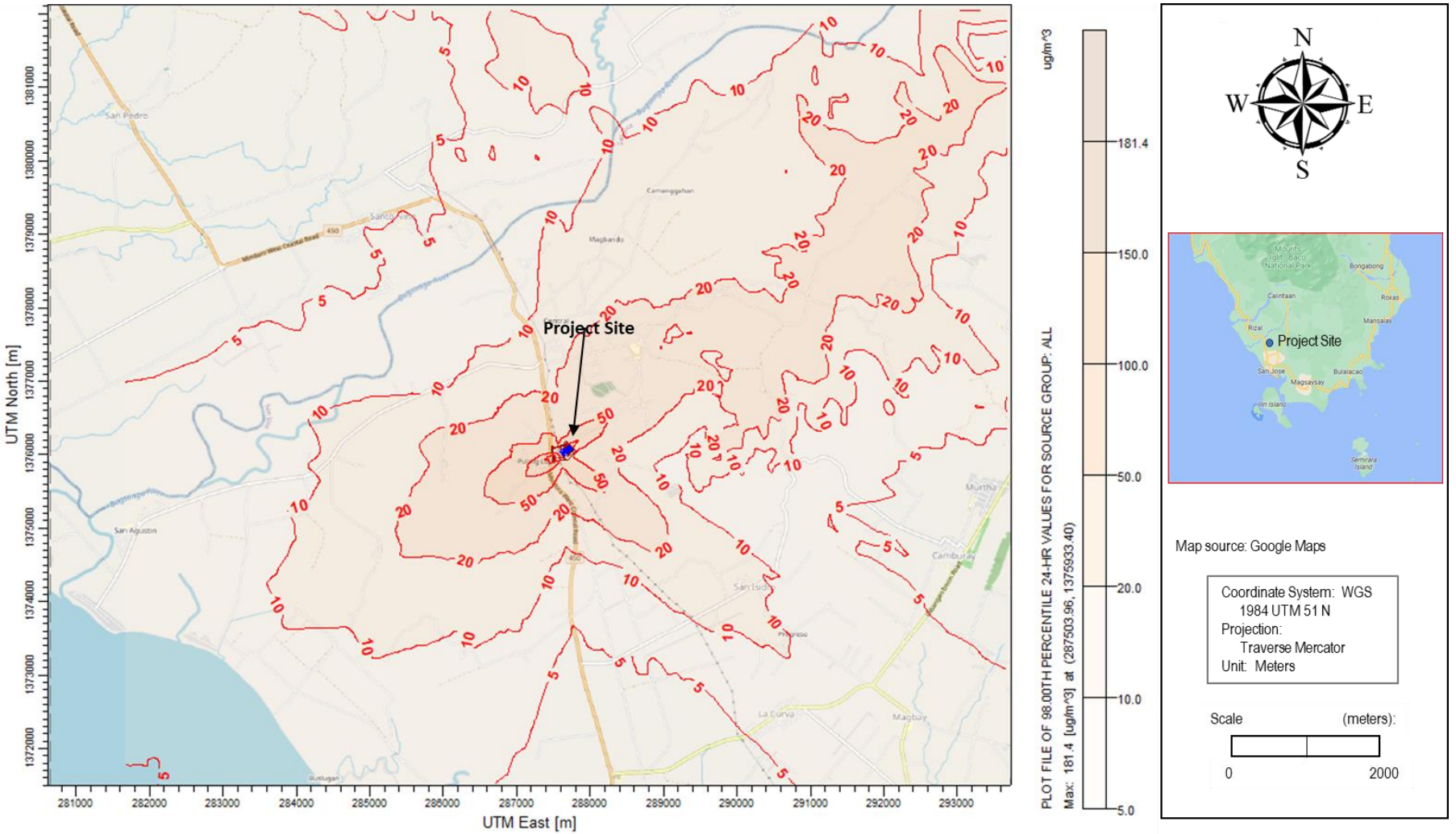


Figure 2.55. Plot of 98th percentile 24-hour values of dispersed NO_2 emanating from emissions of existing gensets (Gensets 1, 2, and 3) and proposed six (6) units of gensets (Stack heights = 12 m)

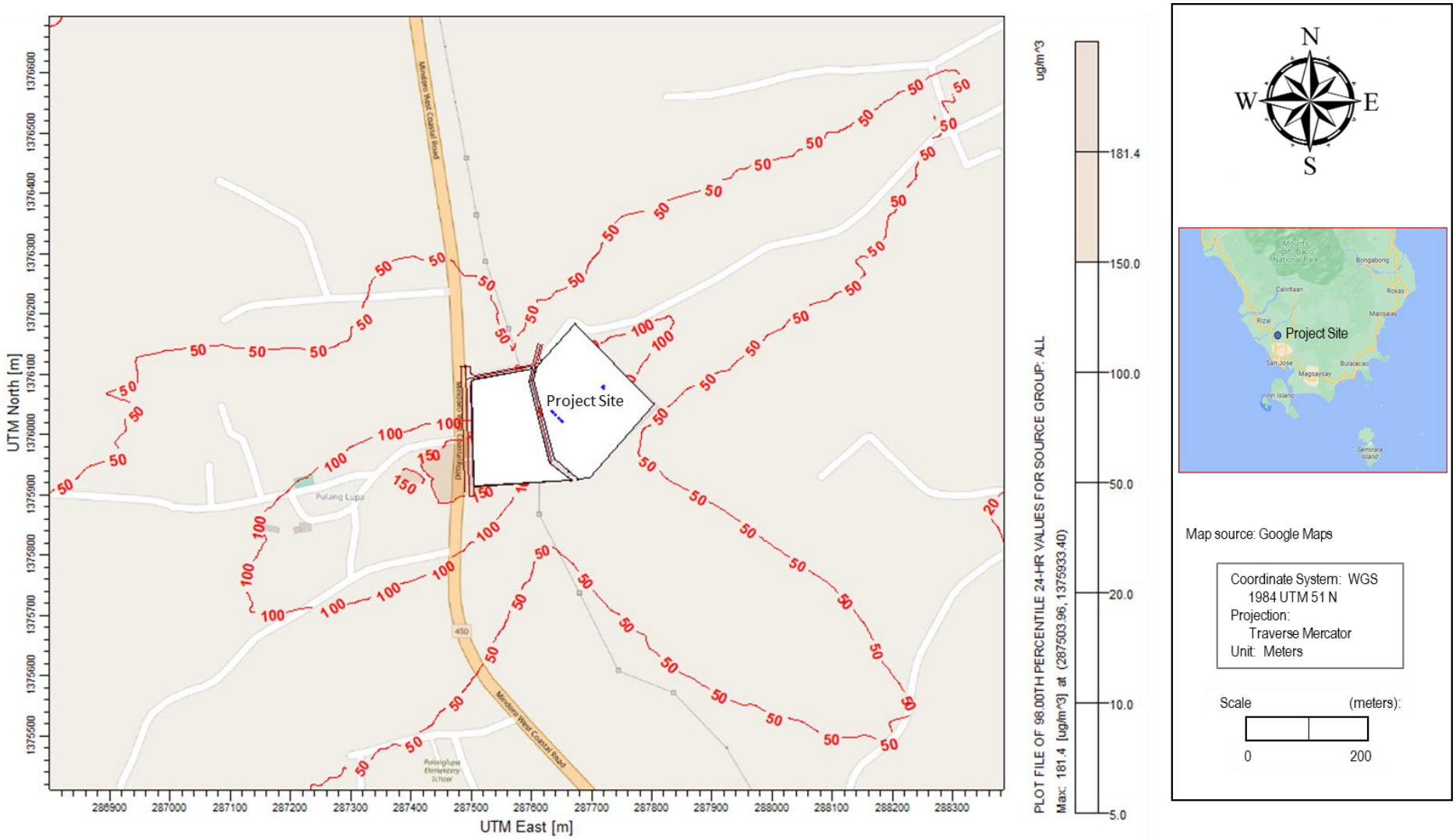


Figure 2.56. Closer view of the plot of 98th percentile 24-hour values of dispersed NO_2 emanating from emissions of existing gensets (Gensets 1, 2, and 3) and proposed six (6) units of gensets (Stack heights = 12 m)

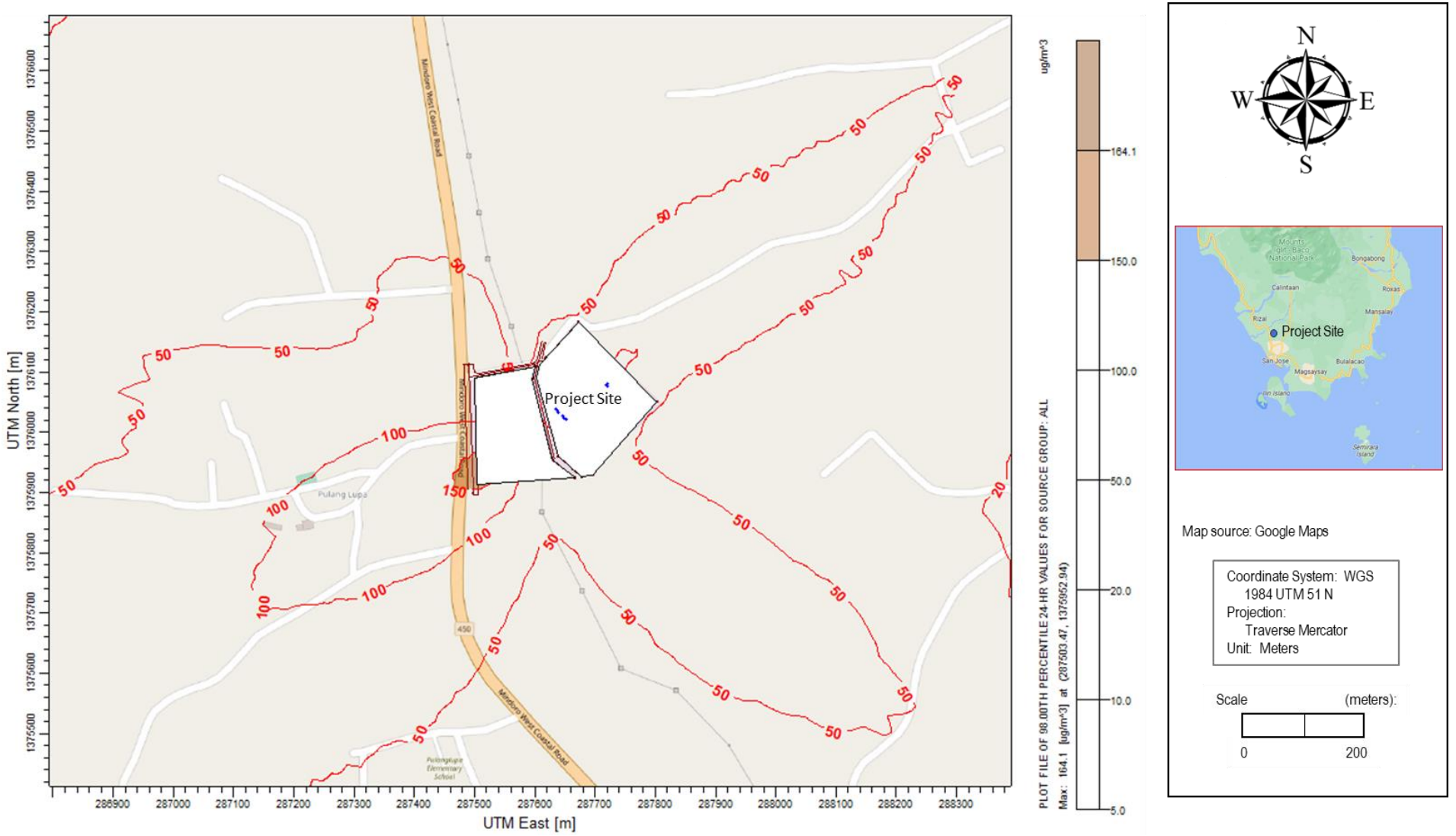


Figure 2.57. Closer view of the plot of 98th percentile 24-hour values of dispersed NO_2 emanating from emissions of existing gensets (Gensets 1, 2, and 3) and proposed six (6) units of gensets (Stack heights = 13 m)

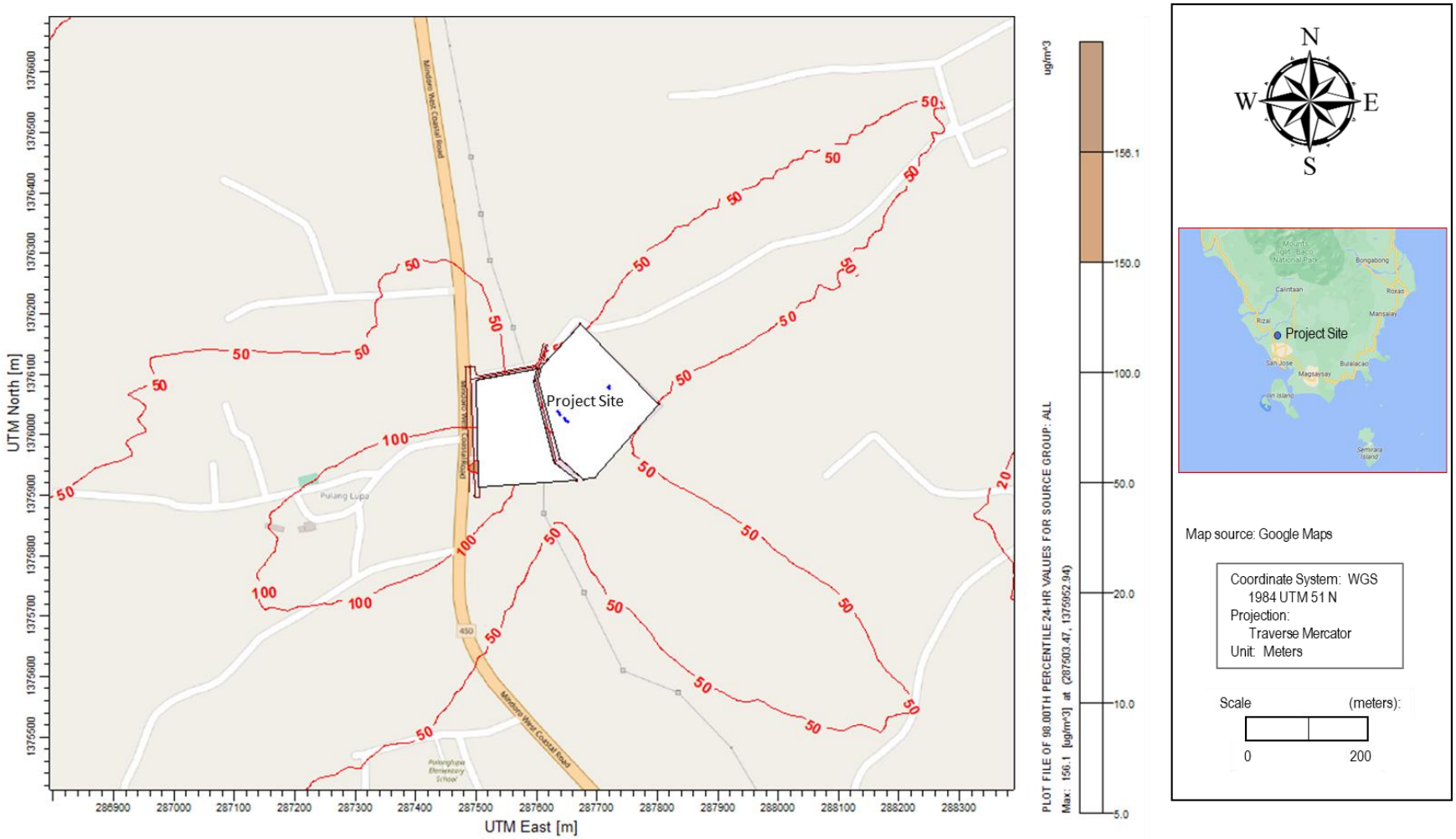


Figure 2.58. Closer view of the plot of 98th percentile 24-hour values of dispersed NO_2 emanating from emissions of existing gensets (Gensets 1, 2, and 3) and proposed six (6) units of gensets (Stack heights = 14 m)

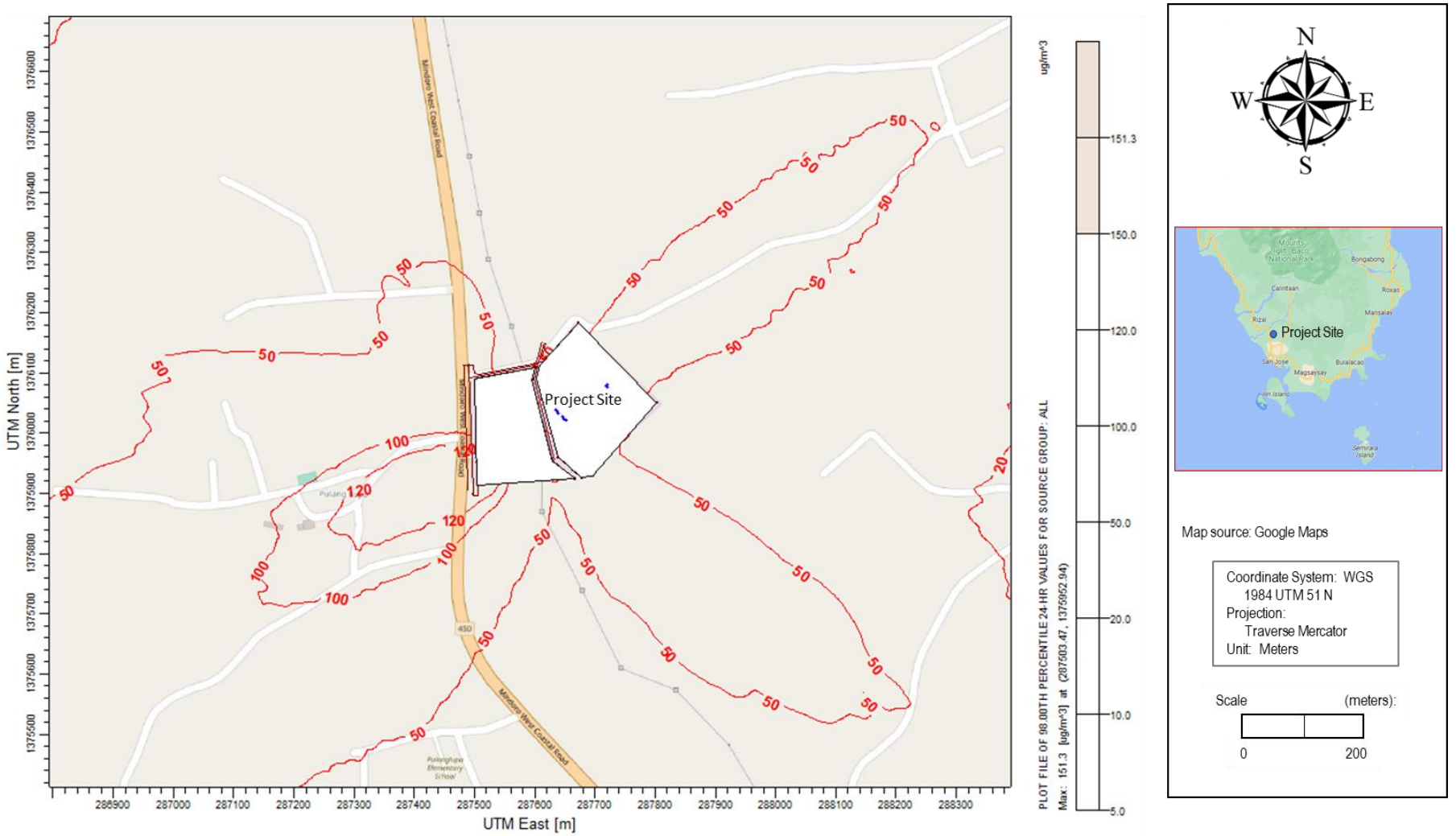


Figure 2.59. Closer view of the plot of 98th percentile 24-hour values of dispersed NO_2 emanating from emissions of existing gensets (Gensets 1, 2, and 3) and proposed six (6) units of gensets (Stack heights = 15 m)

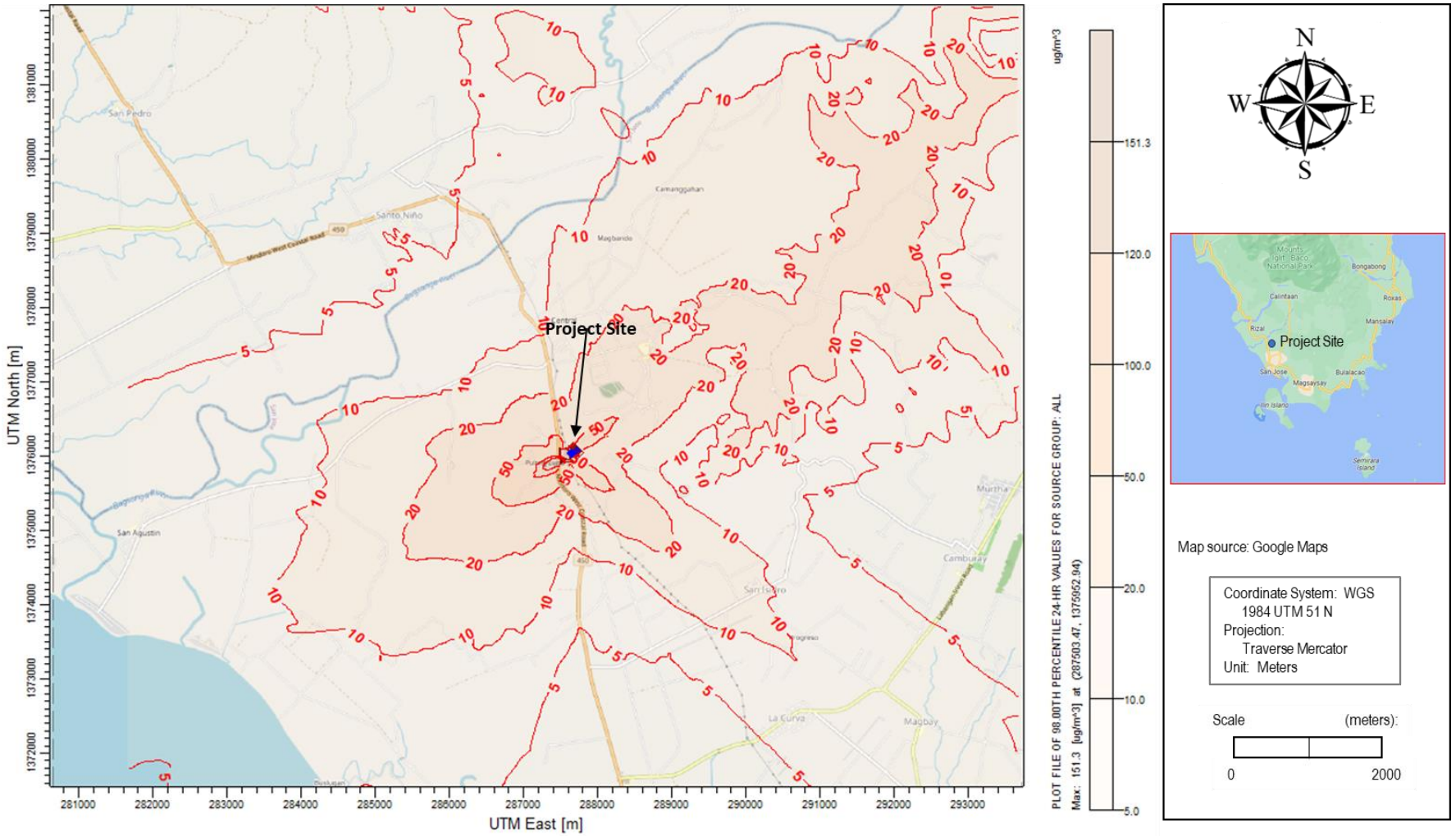


Figure 2.60. Plot of 98th percentile 24-hour values of dispersed NO_2 emanating from emissions of existing gensets (Gensets 1, 2, and 3) and proposed six (6) units of gensets (Stack heights = 15 m)

2.4. The People

2.4.1. Demographics

2.4.1.1. Methodology

Socio-economic profiles of the host local government units were used as bases to describe the historical and current socio-economic condition of the impact barangays and local government units. Profiles of the municipalities were obtained from their respective Municipal Planning and Development Office (MPDO) while barangay profiles were requested from barangay authorities. Additional secondary information were either obtained from publication, books and other reference materials as well as from the internet websites.

2.4.1.2. Baseline Condition and Environmental Performance

<u>Socio-Economic Profile of Occidental Mindoro</u>

Occidental Mindoro has a total population of 525,354 or 16.27% of MIMAROPA's total population (NSO, 2020). The province's population grows at an annual average rate of 1.59% from 2015-2020. The population density is 90 per square kilometer. The population of the province increased by 37,940 people when compared to 487,414 population in 2015.

San Jose is the most populated municipality with a population of 153,267 in 2020, which is 29.17% of the province's total population. Sablayan, which has the largest land area, ranks second in terms of population count with its populace reaching 92,598. Looc is the least populated municipality with a population of 7,802 in 2020. Occidental Mindoro's population is expected to reach 536,768 by the year 2025 as projected by the NSO based on the 2015 Census of Population.

Total enrolment in the province for both private and public elementary schools reached 74,292 students (SY 2019-2020) posting a slight increase of 0.95% from the previous school year's enrolment in 2018-2019. Out of the total elementary school enrollees, 96.50% attended public schools while only 3.42% attended private schools. Elementary participation rate is at 85.65% while completion rate is at 92.65%.

On the other hand, enrolment in the secondary level for the SY 2019-2020 for public and private schools totaled 58,590, 4.6% higher than the previous school year. Public high schools were attended by 88.85% of the total secondary students, while 11.15% of high school students went to private schools. Secondary participation rate is at 76.8% while completion rate is at 83.36%.

Correspondingly, there was an increase in the number of schools in both elementary and secondary levels only for government-operated schools. Four (4) new government elementary schools were opened during the SY 2019-2020 for a total of 303 while no new government secondary school was opened in the said school year. There is still no government stand-alone senior high school in the province while three (3) private stand-alone senior high school offer SHS curriculum. This is one (1) school higher when compared with the SY 2018-2019. Integrated schools in the province are at 15 schools, 2 schools higher when compared with the SY 2018-2019. Most of the integrated schools are private with only three (3) government integrated schools. In total, there are 407 schools in the province consisting of 9 kinder schools (all private), 324 elementary, 56 secondary, three (3) stand-alone SHS and 15 integrated schools the school year 2019-2020.

Based on the Status Report on Millenium Development Goals using CBMS Data: Province of Occidental Mindoro, the average literacy rate (15-24 years old) in the province is 93.6% for female and 92.4% for

male. Also, 85.3% and 81.0% of women and men, respectively, are functional literate. Simple literacy refers to a person's ability to read and write with understanding a simple message in any language or dialect. Functional literacy on the other hand, includes not only reading and writing skills but also numeric skills.

Majority of the gainful workers in Occidental Mindoro worked in the agriculture, forestry and fishing sector accounting for 42.89% of the total gainful workers 15 years old and over (2010). This indicates that majority of the people in the province depends on agriculture for their livelihood. On the contrary, only 4.67% of the total employed persons in the province worked in the service sector, 6.67% in the government, 5.10% in trade and 6.01 in the industry while 23.72% were laborers and skilled workers.

Labor force participation rate (LFPR) in Occidental Mindoro last 2020 is at 60.4. Employment rate is at 92.0% in 2020. The province had a considerably low unemployment rate in 2018 at 4.9% and then a high of 8.0% in 2020. Visible underemployment in the province, on the other hand, increased from 24.9% in 2018, 28.0% in 2019 and 38.7% in 2020. This means that there has been increase in the number of people in the province who wanted more hours of work but are only given 40 hours of work in a week.

Socio-Economic Profile of San Jose, Occidental Mindoro

San Jose is a first-class municipality located at the southern part of the province of Occidetal Mindoro with a total land area of 67,068.61 hectares. The municipality is shares common boundary with Rizal on the north, Oriental Mindoro's Municipality of Mansalay on the east and Magsaysay to the southeast. Mindoro Strait serves as boundary towards the west and southeast of the municipality.

Population size and number of households by barangay

The total population of the three (3) classified barangays - urban, rural and island - as of 2012 was 125,861 with a total household of 29,173. Of the total number of population 43.08% or a population of 54,222 resides in the rural barangays while 45.89% or a population of 57,758 resides in the urban barangays. The urban/rural population manifests the preference of people to reside in the rural areas.

Table 2.28 shows that among the 38 barangays, Barangay San Roque marked the largest population at 12,517 or 9.95% of the overall population of the Municipality of San Jose, followed by Caminawit with a population of 10,242 or 8.14% of the total municipal population. The third barangay in the Urban Classified Barangays is Pag-asa with a population of 9,990 or 7.94% of the total municipal population. Likewise, of the 38 barangays of San Jose, Barangay Poblacion 1 of the Urban Classified Barangays had the least population size at 140 or 0.11% of the total San Jose population.

Table 2.28. Population size and number of households by barangay, Municipality of San Jose, Occidental Mindoro

Number	Barangay	Population	Percentage	Number of households
Urban Barangays				
1	Bagong Sikat	5,685	4.52	1,225
2	Barangay Poblacion 1	140	0.11	60
3	Barangay Poblacion 2	247	0.20	77
4	Barangay Poblacion 3	1,019	0.81	245
5	Barangay Poblacion 4	503	0.40	126
6	Barangay Poblacion 5	1,251	0.99	326
7	Barangay Poblacion 6	335	0.27	98
8	Barangay Poblacion 7	354	0.28	115
9	Barangay Poblacion 8	256	0.20	76

Number	Barangay	Population	Percentage	Number of households
10	Bubog	8,343	6.63	1,963
11	Caminawit	10,242	8.14	2,237
12	Labangan Poblacion	6,876	5.46	1,669
13	Pag-asa	9,990	7.94	2,428
14	San Roque	12,517	9.95	3,191
	Sub-Total	**57,758**	**45.89**	**13,836**
Rural Barangays				
1	Batasan	4,946	3.93	1,099
2	Bayotbot	2,212	1.76	512
3	Camburay	1,835	1.46	421
4	Central	9,268	7.36	2,064
5	La Curva	3,416	2.71	849
6	Mabini	2,445	1.94	586
7	Magbay	3,591	2.85	828
8	Mangarin	3,236	2.57	765
9	Mapaya	6,863	5.45	1,614
10	Monteclaro	3,863	3.07	874
11	Murtha	5,297	4.21	1,215
12	San Agustin	5,231	4.16	1,191
13	San Isidro	2,019	1.60	472
	Sub-Total	**54,222**	**43.08**	**12,490**
Island Barangays (Rural)				
1	Ambulong	2,105	1.67	409
2	Ansiray	941	0.75	195
3	Bangkal	932	0.74	183
4	Buri	551	0.44	115
5	Catayungan	1,039	0.83	234
6	Ilin Proper	1,854	1.47	389
7	Inasakan	637	0.51	147
8	Ipil	708	0.56	135
9	Labangan Ilin	961	0.76	199
10	Natandol	1,594	1.27	340
11	Pawican	2,559	2.03	501
	Sub-Total	**13,881**	**11.03**	**2,847**
	Grand Total	**125,861**	**100.00**	**29,173**

Source: CLWUP 2017-2030 Comprehensive Land and Water Use Plan – Socio Economic and Physical Profile (SEPP) Volume 1

Historical population growth

Table 2.29 shows that the average growth rates posted in the municipality over the years 1903 to 2020 were all positive. The highest growth rate incurred during the years 1948-1960 at 9.85%. There were fluctuations over the years but still remained positive. The least growth rate observed was at 0.56% in the year 1948. Over the course of 117 years, there was an increase of 151,503 people in the Municipality of San Jose although there might be a variance since in 1969, several barangays formerly under San Jose became a separate municipality of what is now Magsaysay thus the significant decrease in growth rate by 1970.

Table 2.29. **Historical population growth,** Municipality of San Jose, Occidental Mindoro

Year	Total population	Increase/decrease	Percentage increase/decrease	Growth rate
1903	1,764			
1918	7,703	5,939	336.68	9.76%

Year	Total population	Increase/decrease	Percentage increase/decrease	Growth rate
1939	11,788	4,085	53.03	2.15%
1948	12,443	655	5.56	0.56%
1960	36,211	23,768	199.02	9.85%
1970	44,761	8,550	23.61	2.10%
1975	53,100	8,339	18.63	3.49%
1980	66,262	13,162	24.79	4.53%
1990	87,520	21,258	32.08	2.82%
1995	101,411	13,891	15.87	2.80%
2000	111,009	9,598	9.46	1.96%
2007	118,807	7,798	7.02	0.94%
2010	131,188	12,381	10.42	3.67%
2015	143,430	12,242	9.33	1.71%
2020	153,267	9,837	6.86	1.41%

Average household size per barangay

Table 2.30 shows that the average household size of the 38 barangays of the municipality was at 4. At the urban barangay level, the highest average household size is at Barangay Bagong Sikat and Caminawit at 5. The lowest was with Barangay Poblacion 2 at 2. On the other hand, at the Rural Barangay level, the highest average was 5 at Barangay Batasan, Barangay Central where the OMCPC power complex is located has an average household size of 4. At the Island Barangay level, almost all the barangays has an average household size of 5 except for Barangays Catayungan and Inasakan at 4.

Table 2.30. Average number of households by barangay, Municipality of San Jose, Occidental Mindoro

Number	Barangay	Total Population		Number of Households		Average Household*
		No.	%	No.	%	
Urban Barangays						
1	Bagong Sikat	5,685	4.52	1,225	4.20	5
2	Barangay Poblacion 1	140	0.11	60	0.21	2
3	Barangay Poblacion 2	247	0.20	77	0.26	3
4	Barangay Poblacion 3	1,019	0.81	245	0.84	4
5	Barangay Poblacion 4	503	0.40	126	0.43	4
6	Barangay Poblacion 5	1,251	0.99	326	1.12	4
7	Barangay Poblacion 6	335	0.27	98	0.34	3
8	Barangay Poblacion 7	354	0.28	115	0.39	3
9	Barangay Poblacion 8	256	0.20	76	0.26	3
10	Bubog	8,343	6.63	1,963	6.73	4
11	Caminawit	10,242	8.14	2,237	7.67	5
12	Labangan Poblacion	6,876	5.46	1,669	5.72	4
13	Pag-asa	9,990	7.94	2,428	8.32	4
14	San Roque	12,517	9.95	3,191	10.94	4
	Sub-Total	**57,758**	**45.89**	**13,836**	**47.43**	**4**
Rural Barangays						
1	Batasan	4,946	3.93	1,099	3.77	5
2	Bayotbot	2,212	1.76	512	1.76	4
3	Camburay	1,835	1.46	421	1.44	4
4	Central	9,268	7.36	2,064	7.08	4
5	La Curva	3,416	2.71	849	2.91	4
6	Mabini	2,445	1.94	586	2.01	4
7	Magbay	3,591	2.85	828	2.84	4
8	Mangarin	3,236	2.57	765	2.62	4
9	Mapaya	6,863	5.45	1,614	5.53	4

Number	Barangay	Total Population		Number of Households		Average Household*
		No.	%	No.	%	
10	Monteclaro	3,863	3.07	874	3.00	4
11	Murtha	5,297	4.21	1,215	4.16	4
12	San Agustin	5,231	4.16	1,191	4.08	4
13	San Isidro	2,019	1.60	472	1.62	4
	Sub-Total	**54,222**	**43.08**	**12,490**	**42.81**	**4**
Island Barangays (Rural)						
1	Ambulong	2,105	1.67	409	1.40	5
2	Ansiray	941	0.75	195	0.67	5
3	Bangkal	932	0.74	183	0.63	5
4	Buri	551	0.44	115	0.39	5
5	Catayungan	1,039	0.83	234	0.80	4
6	Ilin Proper	1,854	1.47	389	1.33	5
7	Inasakan	637	0.51	147	0.50	4
8	Ipil	708	0.56	135	0.46	5
9	Labangan Ilin	961	0.76	199	0.68	5
10	Natandol	1,594	1.27	340	1.17	5
11	Pawican	2,559	2.03	501	1.72	5
	Sub-Total	**13,881**	**11.03**	**2,847**	**9.76**	**5**
	Grand Total	**125,861**	**100.00**	**29,173**	**100.00**	**4**

Source: CLWUP 2017-2030 Comprehensive Land and Water Use Plan – Socio Economic and Physical Profile (SEPP) Volume 1
Note: * - rounded off to a whole number

Population Density by Barangay classification

Built-up density provides a picture of the concentration of population in a given area. Urban classified barangays are denser at 24.93 persons per hectare compared to the two (2) other classified barangay. Rural classified barangays have an average density of 1.14 persons/ha and the Island classified barangays at a density of 1.63 persons/ha.

Population density by barangays

Table 2.31 manifests that the average population density of 2.48 persons/hectare of the whole municipality reflects a sparse density of San Jose. It further implies that it could still admit additional legal settlers into the community. However, the entry of migrants/settlers into the area must be regulated to avoid the negative effects of migration. Among the 38 barangays, Barangays Batasan of the rural barangays has the lowest density at 0.53 persons per hectare, followed by Barangay Bayotbot at 0.91 persons/hectare and 0.87 persons/hectare at Barangay Buri of the Island Barangays.

Table 2.31. Population size and number of households by barangay, Municipality of San Jose, Occidental Mindoro

Number	Barangay	Total Population		Land Area (in hectares	Population Density
		No.	%		
Urban Barangays					
1	Bagong Sikat	6,564	4.58	559.08	11.74
2	Barangay Poblacion 1	283	0.20	5.70	49.63
3	Barangay Poblacion 2	415	0.29	8.87	46.79
4	Barangay Poblacion 3	1,323	0.92	11.20	118.09
5	Barangay Poblacion 4	500	0.35	8.66	57.71
6	Barangay Poblacion 5	1,569	1.09	8.67	181.04
7	Barangay Poblacion 6	398	0.28	6.71	59.30
8	Barangay Poblacion 7	436	0.30	10.94	39.84
9	Barangay Poblacion 8	348	0.24	6.31	55.18
10	Bubog	9,356	6.52	1,351.27	6.92
11	Caminawit	12,223	8.52	170.58	71.65

Number	Barangay	Total Population		Land Area (in hectares	Population Density
		No.	%		
12	Labangan Poblacion	9,683	6.75	718.33	13.48
13	Pag-asa	11,232	7.83	171.60	65.46
14	San Roque	14,706	10.25	298.75	49.23
	Sub-Total	**69,036**		**3,337**	
Rural Barangays					
1	Batasan	6,260	4.36	10,123.48	0.62
2	Bayotbot	2,492	1.74	2,396.02	1.04
3	Camburay	1,849	1.29	1,055.85	1.75
4	Central	10,901	7.60	3,624.87	3.01
5	La Curva	2,938	2.05	879.36	3.34
6	Mabini	3,410	2.38	513.40	6.64
7	Magbay	3,034	2.12	703.75	4.31
8	Mangarin	4,299	3.00	1,655.70	2.60
9	Mapaya	7,982	5.57	4,288.68	1.86
10	Monteclaro	5,985	4.17	15,952.84	0.38
11	Murtha	3,855	2.69	4,942.82	0.78
12	San Agustin	5,363	3.74	1,644.05	3.26
13	San Isidro	1,785	1.24	735.22	2.43
	Sub-Total	**60,153**		**48,516**	
Island Barangays (Rural)					
1	Ambulong	2,224	1.55	1,033.41	2.15
2	Ansiray	1,032	0.72	775.21	1.33
3	Bangkal	933	0.65	603.19	1.55
4	Buri	607	0.42	641.83	0.95
5	Catayungan	1,021	0.71	502.32	2.03
6	Ilin Proper	2,124	1.48	1,398.05	1.52
7	Inasakan*	625	0.44	483.02	1.29
8	Ipil	789	0.55	606.64	1.30
9	Labangan Ilin	1,070	0.75	689.10	1.55
10	Natandol	1,521	1.06	477.53	3.19
11	Pawican	2,295	1.60	1,002.03	2.29
	Sub-Total	**14,241**		**8,212**	
	Cajui Island			1.06	
	Buri Island			5.23	
	Manadi Island			2.27	
	Sub-Total			**8.56**	
Barangay in conflict with					
1	VS W/ BATASAN AND MONTECLARO			2,299.44	-
2	VS W/ CAMBURAY AND SAN ISIDRO			23.52	-
3	VS W/ CATAYUNGAN AND NATANDOL			97.81	-
4	VS W/ CENTRAL AND SAN ISIDRO			101.20	-
5	VS W/ LAPANGAN AND MABINI			27.87	-
6	VS W/ MANGGARIN AND MAPAYA			51.83	-
7	VS W/ PAWICAN AND NATANDOL			68.35	-
8	VS W/ SAN ISIDO AND LACURVA			69.58	-
	Sub-Total			**2,739.61**	
	Grand Total	**143,430**		**62,813.00**	

Source: CLWUP 2017-2030 Comprehensive Land and Water Use Plan – Socio Economic and Physical Profile (SEPP) Volume 1

Gender Ratio

In 2014, comparing gender among babies at age 1 year old, more female babies (10.99%) were born than the male babies of same age (3.30%). Nevertheless, in the succeeding age groups, there are more male than females. Figure 2.61 shows the age and gender structure of the municipality as of 2014.

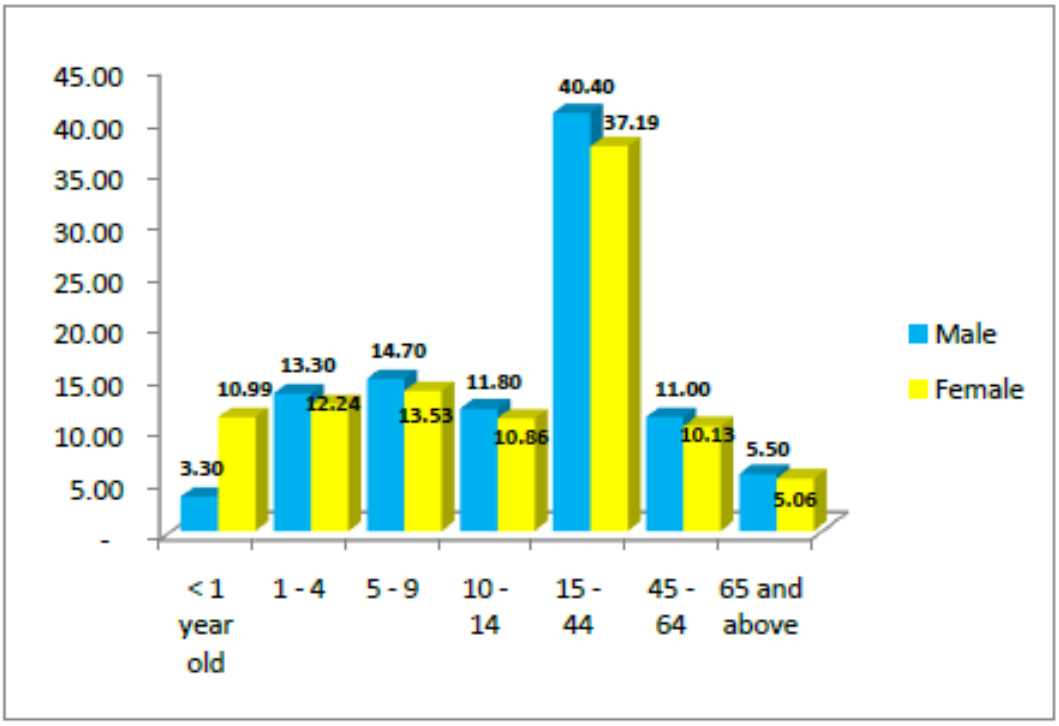


Figure 2. 61. Percentage of age and gender structure, San Jose, Occidental Mindoro

Ethnic Groupings

The Municipality of San Jose is composed of different ethnic groups. Indigenous Mangyan peoples comprises 3.42 of the population of the Municipality. Mangyans in the municipality are divided into different tribes anthropogenically labelled as HAGURA (Hanunuo, Gubatnon and Ratagnon, and Buhid). Other people in the locality are Visayans, Batangueños and Ilocanos.

In the host barangay of Central there is no recorded tribal community or ancestral domain although there are few individuals (approximately six (6)) who belongs to the Mangyan tribe. Barangays Batasan and Monteclaro located in the hinterlands hosts most of the Mangyan IP's in the Municipality of San Jose.

Dialects/Language Spoken and Understood

The population of San Jose is multi-lingual. A mixture of different dialects and languages are understood and spoken by the population. However, Tagalog is the most outspoken dialect used daily by the people in the community. There is also a significant number of the San Jose population who speak Hiligaynon-Ilonggo and Ilocano. Native settlers like Mangyan speak with their own Mangyan dialect. Children could quite easily shift from Tagalog to their native tongue. Aside from Tagalog-based Filipino language, English is also once in a while spoken and/or understood by the people of the communities while others can speak Chinese and other foreign languages.

Educational Services

The Local Government units of San Jose recognized the importance of education in molding responsible citizenry. To achieve this goal, the San Jose District at present is composed of 75 public and private elementary schools with complete elementary education. Aside from the formal education, other programs were undertaken in the District not only for the enhancement of the pupil's development but also of the teaching staff. The student development programs included those concerned with testing programs, nutrition development programs and competitions in sports and academics. For staff development, seminars and trainings were conducted for a more effective and efficient teaching skills. There is also a constant improvement and/or updating of the curriculum to meet the demands of better education. As far as the secondary level is concerned, there are five (5) private and seven (7) public high schools. The 12 secondary schools of San Jose have enough teaching staff to meet the needs of their secondary students. To further enhance the education of their community people, San Jose has five (5) tertiary schools. Three (3) of these tertiary schools are offering vocational courses only while two (2) offers both degree and vocational courses. The schools in San Jose are all dispersed in the local communities to make them more accessible to the students.

In Brgy. Central, owing to its large area, there are four (4) government elementary schools and two (2) secondary schools (1 private and 1 government). There are also eight (8) daycare centers in the host barangay.

Housing

Based on the 2014 CBMS data, about 63.93% of the 29,173 households stated that they are the owners of their residences or they own their residence but without the consent of lot owner while the remaining 36.07% stated that their residences were either rented or they are squatting. Dwelling units were either single detached or duplex and some are apartment types. Housing materials are either concrete hollow block with galvanized roofing or are made of light materials and some households were made up of salvaged//makeshift materials.

Only 24,103 households out of 29,173 have access to sanitary toilets while the remaining 17.38% have no access to sanitary toilets. Most of the households with no access to sanitary toilets are from the island barangays.

In terms of access to safe water, 11.16% or 3,255 households have no access to safe water. Majority of households with access to safe water were due to its proximity to the San Jose Water District which caters to the water demands of the urbanized barangays and some rural barangays. Brgy. Central relies mostly on deepwell and some level 2 water system.

Sports and Recreation

There are numerous sports and recreation facilities that exist in San Jose. Basketball, volleyball and tennis courts, gymnasium, movie houses, billiard halls, karaoke/videoke bars, disco houses, cockpit arena, public plaza, public beach (with cottages), private swimming pools and many more are available for recreation and leisure activities in the municipality. Numerous basketball courts are found in each barangay. Some barangays are provided with more than one (1) basketball court that serves as major venue of various outdoor sports activities. In other barangays, these facilities are utilized as places to solar dry rice during harvest season. The sports and recreation activities are usuallyengaged by the youth, as well as, adults in the municipality for their physical fitness. Other recreational structure like the Children's Park was established to cater to children.

Social Welfare

The Municipal Social Welfare and Development Office (MSWDO) is in-charge of all matters related to social welfare and development services. Two social workers facilitate the undertakings of the said office. The Senior Citizens Office was established through the initiative of civic groups. Moreover, there are 77 social welfare office/stations dispersed in each barangays to cater to the needs of the residents in their specific areas.

Indigent community members are prioritized in DSWD Assistance Program, specifically the economically depressed conditions clientele that consist of families, women, children, youth, senior citizen, disabled persons, and victims of natural or man-made calamities. Among the 38 barangays, Barangay Caminawit has the largest number of families (384 or 20.01% of its total households) that are economically depressed followed by Barangays Pag-asa, Central and Batasan. As of 1999, there are around 4,648 clientele served by the MSWDO.

As of 2014, 85 service centers provides the needs day care services neighborhood play of the municipality and approximately 67 of these service centers attend to the needs of pre-school education.

Protective Services

The SJOM police force station, located within the periphery of the Municipal Building of San Jose in the town proper is manned by 90 police officers represented by three (3) Police Chief Officer, one (1) NUP and 86 PNCOs all equipped with organic firearms and long and short firearms to handle the peace and order of the 156,791 total population of the municipality. Police force population ratio is recorded at 1:1,650 which is still below the standard ratio of 1:1,000. The PNP Police Station is provided with a patrol car and motorcycle to undertake security service and immediate response if necessary. Generally, San Jose is the second most peaceful municipality in the country (next to Marinduque) having low crime incidence. Although there are certain petty crime incidences, the existing number of police force is still considered efficient to maintain peace and order situation in the locality. The support and cooperation provided by the "Barangay Tanods", numerous civilian volunteers, traffic enforcers and private security entities rendering protective services contribute to the maintenance of peace and order in the municipality. In addition, the presence of an Army Detachment in the area also strengthens the maintenance of peace and order and in the drive against insurgency, illegal drugs and illegal fishing.

Economic Characteristics

Income/ Poverty Threshold

There were 6 (56.6%) poor income households for every 10 households. About four (4) in every 10 households have income below the food threshold (41.1%).

Labor Force and Employment

In 2012, out of 61,456 working individuals 33, 887 or 55.14% were employed while 2,606 or 4.24% were unemployed. The rest are unknown whether employed or unemployed. Agriculture absorbs 76% or 25,754 of those engaged in non-agricultural activities such as industrial, commercial service, private practitioners, public service, and others.

Economic Activities

Various economic activities were engaged in by the members of the labor force in the barangays of the municipality. The economic activities vary in nature - from odd jobs in private or in public institutions to professional endeavors. The 2009 CBMS Data of LGU-San Jose mentions that, majority of the

livelihood activities engaged by each of the barangays focused more on hunting, forest products gathering, farming, forestry/tree plantation, and livestock/poultry raising.

Agriculture

About 17,543.86 hectares of the total land area of San Jose is agricultural land most of which are devoted to production of rice and other cash crops. Grasslands on the hand are set aside for livestock production. San Jose's principal crops are categorized into food crops (i.e. rice or "palay", corn, garlic, monggo, legumes and vegetables), commercial crops (i.e. coconut, cashew, tobacco etc.) and the fruit-bearing trees (i.e. banana, mango, etc.). Rice (palay) gives an average yield of 90 cavans per hectare whether it is irrigated or unirrigated. Furthermore, it was observed that corn, garlic and onion have significant produce, however, statistical data is unavailable.

Farming Practices

The use of various farm inputs such as fertilizers, pesticides, herbicides and high yielding varieties of palay are considered a common practice among local farmers to increase production and to maintain the quality of farm products. Though the use of hand tractors and other machineries for tilling of farmlands are already known in the locality, most still rely on animal labor (carabao) for plowing and prefer manual labor for other farming activities. During dry season, the farmers utilize the rainfed farms for the production of cash crops such as garlic and other crops which require minimum water. Furthermore, multiple cropping schemes like planting of mixed agricultural crops (vegetables, rice, root crops and fruits) is the common practice by both upland and lowland dwellers. Both farmers adopt the early maturing varieties of rice and high value vegetable crops.

Irrigation

Most of San Jose rice farms are irrigated. Out of the 10,724 has, only 38.64% or 4,144 hectares are un-irrigated. A recorded average yield per hectare shows that un-irrigated areas are equally productive with the irrigated farms. Communal Irrigation System (CIS) irrigate a total of 3,246 has covering 285 has in Barangay Batasan and 2,961 has in Barangay Central. About 229 has also enjoy the same privilege in Monte Claro. The irrigation system provided by the National Irrigation Authority (NIA) benefited 1,752 farmers. Some local farmers, with sufficient financial capacity, manage to irrigate their farmland using water pumps.

Existing agricultural/post-harvest facilities

The Municipality of San Jose has the largest number of agricultural support facilities such as rice mills, warehouses, solar dryers. It also has a pool of experts from the Department of Agriculture, the Department of Agrarian Reform (DAR) and the existing agricultural school. These experts can be tapped in cases when technical and technology assistance are needed. Furthermore, a breeding station is also available to provide improved livestock quality. The National Food Authority (NFA) provides warehouse and rice mills aside from the facilities operated by NFA. Privately operated rice mills, feed mill, and warehouses also accommodate local farmers. Moreover, barangays basketball courts and concrete roads are being utilized in some areas where solar dryer is either unavailable or inadequate.

Livestock and Poultry Production

The raising of the above-named animals play an important role in augmenting family income and/or some of the food needs of the families. Various types of livestock and poultry raised in the 38 barangays of the municipality such as swine, cattle, carabaos, goats, horses, dogs, chicken, fighting cocks, roosters, ducks, and turkeys. Furthermore, commercial livestock and poultry farms producing layers, broilers and meat products also exist. To enhance livestock in the area, the local and/or national government

undertook animal dispersal and livestock extension services. Thus, farmers availed of the swine, cattle and carabao dispersal programs.

Cattle Industry

The Municipality of San Jose was once number one producer of cattle in Region IV in 1970's-1980's but because of the peace and order problems, the cattle industry weakened. In addition, the grazing areas were affected by the declaration of large portions as Protected Areas and the issuance of CADTs where the renewal of the same is under the approval of the Biodiversity Management Bureau (BMB) or IPs. To date, despite that there are only two (2) existing permittees left in Barangay Batasan that comprise a total area of 1,061 has, San Jose still remains as the number one producer of beef products supplying the Metro Manila area.

Marine Resources

Fishing is another significant economic activity in the locality especially dwellers living along the coastal area. Most of these communities depended on fishing as their source of income. Out of the 38 barangays in San Jose, there are 21 barangays engaged in fishing particularly in coastal barangays and other barangays in San Jose like Caminawit, Mangarin, Mapaya, Bubog, San Agustin, Ilin and Ambulong Island, fishing is considered one of the major sources of income of 1,854 fishermen. A significant economic activity in the locality considering that the Municipal fishing ground zone is 95,275.72 has. With its fertile fishing grounds, the fishing sector is undoubtedly seen as an economic booster if given developmental priority.

Among the important marine resources of San Jose are species of finfish, species of coral, a thousand species of other invertebrates, species of algae, a diverse collection of sea grass and species of mangroves.

Records also showed that aside from fishing, other activities related to fishing involve seaweeds farming and other sources of fish catch from fish pens/cages.

Mining Industry

Some areas of San Jose are found to have abundant reserves of minerals. Considered in abundance are copper, iron, gold, nickel, chromite, limestone, sand and gravel. Mining activities are located in the eastern part of San Jose wherein two BGMS prospected sites of copper deposits can be found. At the northern part adjacent to Magsaysay has also been identified a limestone deposit.

Trade, Commerce and Industry

Commercial establishments in the municipality according to DTI totaled to 1,030. Most are wholesale and retail (95.05 percent). Others include Banking and Finance and Insurance establishments. Known commercial banks are: Allied Bank, Metrobank, PNB, DBP, Land Bank, CARD Bank, Veterans Bank and other Rural Banks. While there were a number of possible sources of capital which may be tapped for their crops and livestock/poultry production and in fishing activities, the main sources though came from income obtained from previous cropping season or from earnings from livestock and poultry raised.

However, those who lacked earnings or capita, borrowed/obtained their monetary needs from private crop and fish traders/buyers, the landowners, their parents or the 5-6 system of borrowing. Furthermore, local farmers which are financially incapacitated in cultivating their lands availed or sought assistance from banking and lending institutions with legal interest rates or through a

middleman with high interest rates. If local farmers chose to do business with middlemen, mode of payment is in cash or in kind depending upon the conditions and terms of payment that both parties agreed upon. On the other hand, banking institutions prefer to provide loan assistance to an organized farmer's cooperative rather than individual farmers.

San Jose Wet and Dry Public Market covers a total land area of 4,202 sq.m which serves as the center of commercial and trading activities. It is the largest public market in the province offering the most diverse goods and services. About 760 stalls are operating regularly from 5:00 a.m. to 7:00 p.m. everyday. Local traders and middlemen from neighboring towns, Panay, Island and Coron, Palawan, facilitate commodity flow and exchange.

About 20 registered manufacturing and processing industries are operating at different scales. These could be classified into: manufacturing of hollow blocks/bricks/concrete pipes, food processing, processing of bath/detergent soap, and furniture-making. A total of 117 workers are employed by industries occupying a total land area of 1.6556 has or an average space of 0.08278 ha per industry. There are around eight (8) cottage industries in the locality. One is engaged in the production of peanut brittle while the rest are engaged in the production of bread. The volume of production is considered to be sufficient for local consumption only.

Transportation System

Most roads in the Poblacion area and nearby barangays are concreted and asphalted. The major thoroughfares are Rizal Street, Liboro Street, Bonifacio Street, Mabini Street, and the streets in and around the public market. Tricycles are the common means of transportation around town. Jeepneys provide the main mode of public transportation between San Jose and other towns of the province. Vans and sports utility vehicles (SUVs) are likewise numerous. The number of land vehicles in San Jose has grown because of the population boom starting in the early 2000s. Pumpboats also provide access to nearby Island Barangays. One can charter pump boats to ferry them to island resorts and diving spots.

The town is served by the San Jose Airport, with regular scheduled flights (MWFSS) to and from Manila by Cebu Pacific. Flights approximately take 45 minutes. Dimple Star, RORO Transport, JAM Liners take direct bus routes from Cubao (in Quezon City), Sampaloc (in Manila) and Alabang (in Muntinlupa City) to San Jose that includes a roll-on/roll-off ferry that operates between Abra de Ilog and Batangas City (a three-hour trip across the Verde Island Passage). It is also accessible via the Calapan Mindoro Pier-San Jose from the Oriental Mindoro. Furthermore, San Jose is linked to all towns of Occidental Mindoro via a mostly-dusty provincial highway that runs from north to south. Roads in and around San Jose are well-paved generally on flat terrain. Local bus and jeepney operators ply the route from the northernmost town of Abra de Ilog all the way to south of San Jose. From San Jose Bus Terminal, travelers can ride a jeepney to Magsaysay, the last town of the province of Occidental Mindoro, and further across the mountains to Bulalacao, Oriental Mindoro via the newly constructed Roxas-Bulalacao-San Jose Road.

Infrastructure and Utilities

Roads and Bridges

There are 16 bridges, mostly made of concrete and steel, existing in generally good condition. On the other hand, a total of 498.219 km of a road network system surrounds the Municipality of San Jose providing internal and external accessibility. Majority of the said roads are classified as barangay roads comprising about 75% or 376.25 km. Only 38% of the total barangay roads are paved while the rest are unpaved and found mostly concentrated in the rural barangays. About 60% of the total road network remains unpaved isolating areas during a heavy rainfall.

The urban roads of SJOM within a 1 km radius during peak periods (7:00 am to 8:30 am, 11:00 a.m. - 1:30 p.m. and 4:30 p.m. - 6:00 p.m.) are able to take up about 2000 motorized vehicles, 75% of which are tricycles and cars, 6% by motor bikes and trucks and the rest by other passenger vehicles like buses and vans. During non-peak hours, a one km road radius absorbs 1400 vehicle units (personal communication, PNP Inspector Roi Robin Urbina, 2015).

Airport and Port/Wharves

An airport is located at Barangay San Roque in the Municipality of San Jose. It enhances air transport from the Municipality to Manila and vice-versa. Cebu Pacific has available daily round trip flights. Motorized boats ply daily from Caminawit pier to Antique and Palawan.

Public Utilities

Power Supply

OMCPC and Pag-asa Grain Center Inc. (PGCI) is the only source of electric power in the municipality with bulk of the power supply provided by OMCPC. The Occidental Mindoro Electric Cooperative (OMECO) is the major distributor of power supply in 29 barangays of San Jose Majority of the total households of San Jose have connections to the source of electricity while the other households resort to kerosene, LPG and other fuel for lighting.

Water Supply/Sources

Around 20 barangays are being served by either Levels II or III water supply. However, out of 13,111 households only 4,200 or 32.03% have access to a piped water distribution system. This reveals that majority of households depend on Level I water system such as shallow well pitcher pumps, hand pumps and springs.

Level I water system is the primary source of water supply of 26 barangays where Levels II and III water system is inaccessible. There are around 17,771 households that depend on Level I water system. To date, there are 8,087 Level I water source. Of which, 99.31% or 8,031 are shallow wells. Only 0.69% or 75 rely on springs. However, there are a few households specifically within the urban areas, which have access to all levels of water supply for their domestic consumption.

Solid waste management

According to the FHSIS Annual report for year 2014, there were 25949 households or 92.16% that performed satisfactory disposal of solid waste. Solid waste is collected and dumped in an 8 has disposal site in Barangay San Isidro. The average waste collection in urban areas is at 106 m^3 per day.

Host/Direct Impact – Barangay Central

Demographic Characteristics

Barangay Central is composed of 22 sitios and is located 14 kms from the main town area of San Jose, Occidental Mindoro. It has a population size of 12,178 corresponding to 7.95% of the total population of the municipality. The total number of households is 2,494 with an average household size of 4.37 (2015 census). The barangay's population density is 3.36 persons/ha which corresponds to the same average population density for the whole municipality.

Water Supply /sources

Water in the barangay is sourced from deep wells and through a water distribution system with corresponding water fees and charges. Other households especially those located outside the

Poblacion area and marginal lands usually rely on existing springs and shallow wells located in several parts of the barangay. In Sitio Kasuy, there is a free-flowing source of water that provides a reliable water supply even during summer season. This water source also irrigates the rice and vegetable areas. As part of the development programs of the barangay, continuous search in several parts of the barangay for possible sources of water has been practiced. As stated by some participants during the Focus Group Discussion (FGD), the search led them to discover allegedly the presence of a natural gas source in Sitio San Carlos, Barangay Central. However, upon discovery, numerous residents, backed up by the church opposed for the further exploration and excavation activities due to the possible dangers it may cause to the people and environment. This "discovery" naturally disappeared.

Status of Agricultural Land and agricultural practices in the Barangay

Most of the people in the barangay engage in farming activities. Some of these farmers are tenants while others have their own farm lands. There are also few agricultural lands owned by private entities that utilized their land as a ranch while others preferred to cultivate their lands for agricultural production by hiring tenant farmers. At present, the Communal Irrigation System in the area which source its water from Busuanga River can irrigate 2,961 hectares of rice lands in the barangay out of the 3,624.87 has total land area of Brgy. Central.

There is a common practice in the area known as "tampa". A worker is regularly paid a daily wage rate of PhP350 with accompanying snacks provided by the contractor. However, at times, because of the financial needs of the worker, he is forced to secure an advance of PhP130/day from the contractor. He is then given the amount equivalent to the number of days he should be working for. However, when the time comes for the worker to work, he will not be able to get anything from the work he rendered. His day's work which should have been PhP350/day has become PhP130/day. And since this has already been advanced earlier, the worker gets nothing nor any additional pay.

Health Condition in the Barangay

According to the participants, common causes of illnesses in the barangay come from cough, colds and flu. There is also one reported case of dengue in the barangay. Other common illnesses in the barangay are lifestyle related diseases such as diabetes, hypertension and other related ailments as a result of alcohol consumption.

Traffic Management

With the presence of OMCPC, the participants mentioned that several investment projects are expected to be established in the locality. Thus, heavy loads and large vehicles will be expected to enter and leave the locality due to the increasing industrial and commercial activities.

Based on the current operation of the company, there was no significant traffic build-up in the area since road widening programs and improvement on transportation services was already implemented by the DPWH, effectively converting the national road in the vicinity to a four-lane highway.

2.4.1.3. Impact Assessment

Table 2.32. Predicted impacts on the socio-economics of the proposed amendment of OMCPC SMRA Diesel Power Plant Expansion

List of Key Impacts	Phase Occurrence				Discussion
	Pre-Construction	Construction	Operation	Abandonment	
Displacement of settler/s • Displacement / disturbance of properties • Change/ conflict in land ownership • Change/ conflict right of way • Impact on Public Access		☑	☑		No resident will be displaced in the process. The area where the new powerhouse will be established is just situated adjacent to the existing power plant of OMCPC. The OMCPC complex is inside the OMECO compound which fenced ad gated and there are no residents within the compound since NPC started operating in the area. For a long-time the subject property of land is private and titled. Furthermore, there is no right of way conflict nor conflicts in land ownership. Common access road is being shared by OMCPC and resident of Sitio Casuy which is situated at the back of OMCPC. The public road is opened at all time and during fuel delivery, the company doesn't obstruct the traffic flow since OMCPC has wide parking area in the complex.
In-migration		☑	☑	☑	At OMCPC's current operation, there is no problem about in-migration. The current power plant is being operated only by about 38 personnel most of which are locals or resides within Occidental Mindoro. The project ensures that the members of the community with the skills to carry out the necessary tasks are hired for the job. The more advanced and sophisticated skill requirements were sourced from outside the municipality or province but OMCPC provides an accommodation area within the complex. The construction of the additional powerhouse will only require 22 manpower since the powerhouse that will be constructed is small and gensets that will be installed is modular. In terms of operation of the additional powerhouse, the existing manpower is expected to carry-out the tasks and only five (5) additional manpower will be added since the additional gensets will only serve as back-up in case of emergency breakdown or preventive maintenance of the existing power plant. The aforementioned figures are small compared to the number of investors, truckers, wholesalers and mall workers that already migrated in the municipality due to stable power supply. In fact Gaisano Capital San Jose is already established due to stable power supply. In the same regard, more hotels, restaurants and resorts were constructed as the tourism industry was uplifted due to the steady power supply. Seasons Hotel and Convention, SJ Mansion Hotel and other new establishments have operated because of the power supply provided by OMCPC. With available power supply, increased business activity is expected and influx of migrants will not necessarily be informal since these people will be employed in the various economic sectors.

List of Key Impacts	Phase Occurrence				Discussion
	Pre-Construction	Construction	Operation	Abandonment	
Cultural/ Lifestyle change					More of the *Mangyans* like those few that have already settled in Brgy. Central may potentially leave their culture and adopt ways of people in the lowland as more employment opportunities will be made available. OMCPC provides assistance as part of its corporate social responsibility and extends its livelihood and educational programs to IPs such as donation of classroom to Taganop Elementary School.
Threat to delivery of basic services/ resource competition					There are no additional threats to the delivery of basic services arising from the additional construction of powerhouse within the OMCPC complex. The municipality and barangay will continue their mandates to provide basic services to their constituents. The MLGU and BLGUs will continue to receive benefits and CSR funded projects. In fact, the LGU will benefit from the operation of additional powerhouse, as taxes such as Real Property Tax and additional permits that are legally required will be paid locally by OMCPC. This will mean additional revenues of both the municipality and barangays that can possibly provide additional basic services. In fact, OMCPC has been the consistent top tax payer for the last three consecutive years (2020-2022) for the operation of the existing power plant. Additional power facility constitutes additional real property taxes.
Generation of Local Benefits from the project Enhancement of employment and livelihood opportunities Increased revenue of LGUs					Local business tax means the fees charged and the method by which a local governing authority grants the privilege of engaging in or managing any business, profession, or occupation within its jurisdiction. OMCPC is the top tax payer in San Jose for the last three (3) years and the revenue of the LGU from these taxes helps in increasing the municipal budget which in turn means additional budget for basic services that will benefit the whole municipality. Furthermore, stable power supply means more investors for the municipality that will uplift further the trade and commerce. Subsequently, economy will be boosted and more jobs is generated. This is evident now in San Jose as malls such as Gaisano Capital, hotels like the Seasons Hotel and Convention Center as well as major fast-food chains were now established and flourishing. By adding the back-up powerhouse, power outage is lessened and more investors will be attracted. More investors mean additional employment and livelihood opportunities.
Traffic congestion					Traffic congestion within the vicinity of the project area of OMCPC did not occur as previously predicted since the company ensures that its fuel delivery trucks were immediately allowed inside the facility to discharge fuel. The power complex has ample parking inside the facility thus traffic congestion did not occur along the main highway. Furthermore, DPWH had already widened the main highway into four-lanes thus traffic congestion is highly unlikely to occur.

2.4.2. Public Health

2.4.2.1. Methodology

A focal group discussion was conducted in Barangay Hall of Barangay Central, San Jose, Occidental Mindoro. Interviewed Health Personnel included barangay health workers and the Municipal Health Officer. Residents in impact communities were also interviewed on household health status, availed health services and programs, sources of food and water and household waste management.

2.4.2.2. Baseline Condition and Environmental Performance

San Jose Health Profile

Health

There are eighty-six health facilities available in the municipality (2010 Busuanga Watershed Characterization and Vulnerability Assessment Report). The private health facilities include three (3) private hospitals, five (5) medical clinics, and six (6) dental clinics. Seven drugstores/pharmacies also exist in the area. Usually, private health facilities are situated in urban barangays. The public health facilities include San Jose District Hospital, one (1) Rural Health Center, 38 Barangay Health Center, and 29 Barangay Health Stations.

The San Jose RHU has for its staff a doctor (Municipal Health Officer), a Medical Officer IV, two (2) dentists, two (2) public health nurses, one (1) Medical Technologist, 18 Rural Midwives, three (3) Municipal Sanitary Inspectors, two (2) supervisors, three (3) nursing attendants, two (2) Dental Aide, one (1) TB Microscopist, one (1) Malaria Microscopist, one (1) Nutrition Officer II, one (1) pharmacist, one (1) pharmacy aide, four (4) casual nurses, three (3) casual midwives, 11 RN Heals, one (1) detailed administrative aide, three (3) administrative aides, one (1) data encoder, and one (1) utility worker. Providing support to the RHU personnel especially at the Barangay levels are the 1,046 accredited Barangay Health Workers (BHWs), 38 Barangay Nutrition Scholars (BNS). Health services rendered by rural health midwives are specifically in marginal areas of the municipality.

Live Births and Deaths

According to the 2014 Annual MHO Accomplishment Report the crude birth rate was 20.24%; while the rate of deaths per 1000 population was 4.67%. On the other hand, the rates of maternal and infant deaths were 1.76 % and 5.99%, respectively.

Mortality

The health status of an area reflects to a certain extent the healthiness of the people living therein. As reflected in the 2022 MHO LGU Health Score Card, the three (3) major causes of mortality in the municipality were Hypertension (136), Pneumonia (86) and Cancer (82). The other leading causes of mortality were Myocardial Infarction (51), Diabetes Mellitus (48), Cerebro Vascular Accident(47), Pulmonary Tuberculosis (43), Hypertensive Cardio Vascular Disease (42), Senility (32) and Asthma (25).

Morbidity

The top three leading causes of morbidity (2022 MHO LGU Health Score Card) is Acute Respiratory Infection (ARI) for ages 5 and above with 7,293 cases; Hypertension with 4,012 cases and Animal bites with 3,512 cases. The other leading causes of morbidity were Influenza like illness (3,397), ARI in below 5 (3,123), influenza (1,148), Acute Watery Diarrhea (949), PTB (746), Skin Diseases (734) and Diabetes Mellitus (722).

2.4.2.3. Impact Assessment

Table 2.33. Predicted impacts on public health of the proposed amendment of OMCPC SMRA Diesel Power Plant Expansion

List of Key Impacts	Phase Occurrence				Discussion
	Pre-Construction	Construction	Operation	Abandonment	
Threat to public health and safety					Based on the recent perception survey, Key Informant Interview (KII) and Focal Group Discussion (FGD) pertaining to the perceived impacts of the existing power facility, majority of the residents did not complain of any ill-effects of the power plant to public health and safety in its seven (7) years of operation. In fact, Brgy. Central is gracious of the budget assistance extended to the community in terms of additional legal drugs and medicine as well as equipment and assistance to BHWs and BNS. OMCPC also conducts free medical outreach program for the community. It even extends its assistance to some of the adjoining barangays as well as IP communities in the uplands.

2.4.3. FGD, KII and Perception Survey

2.4.3.1. Methodology

<u>Public Consultation</u>

Data and information in this section came from primary and secondary data. Primary data were generated from focus group discussions (FGDs), key informants' interviews (KIIs) and surveys conducted from 28-30 July 2023. Among the participants were municipal officials from San Jose, Occidental Mindoro, barangay officials from Central, and representatives of sectoral groups such as barangay health workers, barangay nutrition scholar, farmers and irrigator's association member, women, and senior citizens. The study team also conducted discussions with the ComRel, Environment and Safety officers of OMCPC.

<u>Perception Survey</u>

There were 96 respondents for the socio-economic survey all from Brgy. Central. The computation of the number of respondents per barangay is based on 2020 population census of the Philippine Statistics Authority (PSA) and was extrapolated to 2023 population based on the population growth rate of Brgy. Central. The percentage of the population of a barangay to the total number of respondents was then computed. The sample size is based on the extrapolated 2023 population of the Brgy. Central using Slovin's formula with a 95% confidence level with a margin of error of +/- 5%.

$$n = \frac{N}{1+Ne^2}$$

Where: n = sample size
N = population size
e = margin of error

The enumerators are the BHWs of Brgy. Central. They were chosen because they are all from the barangays and are very familiar with the residents. In addition, they have been interviewing the residents from previous municipal and barangay surveys as well as the OMCPC pre-scoping survey and have the necessary experiences. The enumerators underwent half day training to administer the survey questionnaires. The consolidated results of the socio-economic and perception survey are also presented and discussed in this chapter.

Table 2.34. OMCPC perception survey sample size distribution

Barangay	AGR	2020 Population	2021	2022	Sample Size
Central	2.36%	12,178	12,465	12,760	96
					Total: 96

2.4.3.2. Baseline Condition and Environmental Performance

<u>Public Consultation</u>

The stakeholders' consultations were conducted in compliance with the requirements set by the EMB during the technical scoping meeting. These series of stakeholders' consultations are summarized below.

Table 2.35. Result of FGD and KII surveys

Aspect	Discussion
Discussion of prior and present situation of OMCPC operation	• Former operation of power providers in the area emits black smoke and fumes smells oily, oil spill is a common occurrence and plant operation is noisy. No assistance is provided to the community • In the current OMCPC operation, there were no more fume smell, oil spill no longer occurs and noise from the power plant is significantly reduced. Revenue from tax increased and IRA was also increased. Livelihood assistance to womens association such as dressmaking. There are feeding programs, vitamins and medicine assistance, extra dam as plume for irrigation and provides assistance to different sectors in the community. • The additional powerhouse will mean job creation and employment. Reliable electricity means irrigators will no longer rely on portable generators for water pump operation thus more economical. Brown-out or power outage will be reduced and taxes that will be paid by the company will also increase.
Discussion on SDP and CSR	• OMCPC were able to provide computers and photocopying machines in the in the schools in Brgy. Central; • Tree planting activities over the years and the first activity was already forest like; • Toilet bowls for sanitation were provided; • Computers for Brgy. Health Center Use; • Launching of Haplos Musmos Program (i.e., provision of milk and vitamins to all schools within the barangay), feeding programs; • Infrastructure assistance such as cementing of road, establishment of waiting shed and street lights; and • Dressmaking assistance livelihood (i.e., provision of sewing machine and capital)
Potential SDP projects that shall be implemented by OMCPC	• Priority on health projects such as ambulance, vitamins for mothers and senior citizens as well as maintenance medicine • Increased the scholars for college education

Aspect	Discussion
	• Additional tree planting activities • Business related trainings and financial capital assistance to start micro-enterprise • Assistance for farm to market roads
IEC activities	• Strengthening of IEC activities so that all sectors know about the activities of OMCPC • Strengthen coordination with LGU by providing notices for forthcoming activities • OMCPC's current operation is OK and has no significant negative to the environment and community
Approval on the additional powerhouse	• All the participants endorse the project as it will ensure stable power supply and ensures less occurrence of brown-out, increased tax revenue and continuous assistance to the community

Perception Survey

Respondent's Demographic Information

Position of the Respondents in the Family

As observed in Table 2.36, majority (70 or 73.68%) of the interviewed individuals were either the mother or father of the household, who may or may not be the head of the family. Meanwhile, there were nine (9 or 9.47%) and three (3 or 3.16%) respondents who identified themselves as the head of the household and spouses of the heads, respectively.

Table 2.36. Position of the survey respondents in the family.

Position of the Respondent	Total	%
Daughter/Son	8	8.42
Head	9	9.47
Mother/Father	70	73.68
Other Relatives	1	1.05
Spouse	3	3.16
No Response	4	4.21
TOTAL	95	

Gender and Age

Table 2.37 depicts the age distribution of the respondents relative to their gender. Accordingly, it can be inferred that the surveyed population was mostly comprised of females (58 or 61.05%) belonging to the 30 to 59 years (41 or 70.69%) age bracket. The male population, on the other hand, accounted for 37 or 38.95% of the respondents with the majority belonging to ages 35 to 59 years old. However, it should be noted that there was one (1) male respondent who did not identify his age group.

Table 2.37. Age distribution of the respondents by gender.

Age Bracket Of The Respondent	Female		Male		Total	
	Subtotal	%	Subtotal	%	Subtotal	%
15-19	0	0.00	1	2.70	1	1.05
20-24	4	6.90	1	2.70	5	5.26
25-29	5	8.62	4	10.81	9	9.47
30-34	7	12.07	2	5.41	9	9.47
35-39	7	12.07	7	18.92	14	14.74
40-44	9	15.52	2	5.41	11	11.58
45-49	5	8.62	5	13.51	10	10.53
50-54	5	8.62	7	18.92	12	12.63

Age Bracket Of The Respondent	Female		Male		Total	
	Subtotal	%	Subtotal	%	Subtotal	%
55-59	8	13.79	5	13.51	13	13.68
60-64	5	8.62	2	5.41	7	7.37
65 pataas	3	5.17	0	0.00	3	3.16
No Response	0	0.00	1	2.70	1	1.05
SUBTOTAL	58	61.05	37	38.95	95	100

Marital Status

Majority (71 or 74.74%) of the interviewed respondents were married. Conversely, there were seven (7) or 7.37% who were still single while nine (9) or 9.47% were widowed. Meanwhile, the proportion of respondents who were separated from their spouses, and were in a live-in arrangement were 2.11% and 5.26%, respectively (Table 2.38).

Table 2.38. Marital status of the survey respondents

Marital Status	Total	%
Single	7	7.37
Married	71	74.74
Widowed	9	9.47
Separated	2	2.11
Live-In	5	5.26
No Response	1	1.05
TOTAL	95	100

Religion

Catholic faith was discovered to be the most prevalent religion (72 or 75.79%) among the surveyed residents of Barangay Central. Other religious affiliations of the respondents are Born Again (5.26%), Christian (1.05%), Iglesia ni Cristo (13.68%), Jehova's Witness (1.05%), and Protestants (1.05%). However, there were two (2) respondents who did not disclose their religious affiliations (Table 2.39).

Table 2.39. Religious affiliation of the respondents

Religion	Total	%
Catholic	72	75.79
Born Again	5	5.26
Iglesia ni Cristo	13	13.68
Protestants	1	1.05
Jehovah's Witness	1	1.05
Christian	1	1.05
No Data	2	2.11
TOTAL	95	100

Education

Out of the 95 respondents, at least one-fifth had reached and/or completed secondary education. This constituted for 19 or 20% and 28 or 29.47% of the respondents, respectively. In terms of tertiary education, approximately 15.79% were able to finish their college education while seven (7) or 7.37% completed vocational courses. Again, two (2) of the interviewed individuals did not divulge their educational attainment (Table 2.40).

Table 2.40. Highest education attainment of the survey respondents

Highest Educational Attainment	Total	%
Elementary Level	4	4.21

Highest Educational Attainment	Total	%
Elementary Graduate	7	7.37
High School Level	19	20.00
High School Graduate	28	29.47
College Level	13	13.68
College Graduate	15	15.79
Vocational	7	7.37
No Data	2	2.11
TOTAL	95	100

Income/Employment

As shown from **Table 2.41**, majority of the surveyed male (33 or 89.19%) and female (38 or 65.52%) population have a source of income. In totality, this corresponded to approximately 74.74% of the population.

Table 2.41. Proportion of the population with and without a source of income based on gender.

Livelihood Status	Female		Male		Total	
	Subtotal	%	Subtotal	%	Subtotal	%
With Source of Income	38	65.52	33	89.19	71	74.74
Without a Source of Income	20	34.48	4	10.81	24	25.26
TOTAL	58	100	37	100	95	100

Occupation

Out of the 71 individuals with a source of income (**Table 2.42**), more than one-fifth of the respondents stated that their principal livelihoods were farming and employment (Table 7). Accordingly, these occupations constituted for 43.84% of the working respondents. Meanwhile, self-employment or business was found to account for approximately 15.02%. It is noteworthy that two (2) of the interviewed individuals have multiple occupations.

Table 2.42. Present occupation of the respondents

Occupation	Total	%
Barangay Employee	12	16.43
Driver	3	4.10
Employed (Teacher, Sales, Security Guard, Helper, Baker, Bookkeeper)	16	21.92
Farmer	16	21.92
Hired Laborer	6	8.22
Self-employed/Business	11	15.02
Skilled Worker (Assistant Operator, Draftsman, Electrician, Mason, Construction worker)	8	10.96
No Response	1	1.37
TOTAL	73*	100

Multiple response*

Location of Livelihood

Table 2.43 illustrates the distance of the respondents' livelihood from the barangay. Accordingly, about 50.83% of respondents were found to be working within the barangay. Meanwhile, there were 16.84% and 4.21% of the respondents working outside the barangay and outside of town, respectively. The "Not Applicable", on the other hand, stands for the interviewed individuals without a source of income.

Table 2.43. Location of the respondents' occupation

Workplace	Total	%
Within the Barangay	50	52.63
Outside the Barangay	16	16.84
Outside of Town	4	4.21
Not Applicable	24	25.26
No Data	1	1.05
TOTAL	95	100

House Information

House Ownership

In accordance with **Table 2.44**, majority (85 or 89.47%) were discovered to be owners of the establishment they currently reside in. Meanwhile, the non-owners were either caretakers (2 or 22.22%) or residing with the owners for free (6 or 66.67%). For the latter, the respondents remarked that the house is owned by their relatives. However, there was one (1) respondent who did not disclose their living arrangements and home ownership.

Table 2.44. House ownership

House Ownership	Total	%
Owned	85	89.47
Not Owned	9	9.47
No Response	1	1.05
TOTAL	95	100

Land Ownership

Table _ showcases the proportion of the respondents who owned the land where they are presently dwelling, which was equivalent to 79 or 83.16% of the surveyed population. In contrast, those who do not own the land–which was approximately 13.68% of the respondents–established their houses on the lands of their relatives (69.23%) or private individuals (30.77%).

Table 2.45. Land ownership

Land Ownership	Total	%
Owned	79	83.16
Not Owned	13	13.68
Relatives	*9*	*69.23*
Private Individual	*4*	*30.77*
No Data	3	3.16
TOTAL	95	100

Electricity

As depicted in **Table 2.46**, 85 out of 95 respondents (89.47%) attested to have their own power line for electricity, which was predominantly sourced from the Occidental Mindoro Electric Cooperative, Inc. (OMECO). Those who do not own power lines were found to be sourcing from their relatives.

Table 2.46. Source of electricity connection of the respondents

Source of Electricity	Total	%
Owned	85	89.47
Not Owned	9	9.47
No Response	1	1.05
TOTAL	95	100

Lighting Fuel

Out of 95 respondents, only 18 or 18.95% identified other sources of lighting fuel. Delving further, it was discovered that solar (38.89%) was the primary alternative, followed by candles (27.78%), and kerosene lamps (16.67%). There was one (1) respondent who claimed to illegally tap on other power lines for lighting fuel.

Table 2.47. Alternative sources of lighting fuel

Lighting Fuel	Total	%
Generator	2	11.11
Candles	5	27.78
Kerosene lamp	3	16.67
Solar	7	38.89
Illegal tapping	1	5.56
TOTAL	18	100

Fuel for Cooking

Charcoal (33.33%), LPG/Gasul (30.36%), and wood (27.38%) were found to be the principal fuels used for cooking, consecutively (Table 2.48). However, it was worth noting that the interviewed individuals typically use a combination of these fuels.

Table 2.48. Different types of fuels used by the respondents for cooking.

Fuel for Cooking	Total	%
LPG/Gasul	51	30.36
Charcoal	56	33.33
Gas/ Kerosene	3	1.79
Wood	46	27.38
Electricity	12	7.14
TOTAL	168*	100

Multiple response*

Household Appliances

As showcased in Table 2.49, the leading household appliances owned by the respondents are electric fan (75 or 22.66%), television (74 or 22.36%), and washing machine (68 or 2.54%), sequentially. Other household appliances in their possession were found to be electric irons, refrigerators, stereos, gas/electric stoves, microwaves, and laptops/personal computers.

Table 2.49. Household appliance

Ownership of House Appliances	Total	%
Microwave	6	1.81
Stereo	15	4.53
Television	74	22.36
Refrigerator	30	9.06
Electric Fan	75	22.66
Personal Computer	4	1.21
Laptop	12	3.63
Washing Machine	68	20.54
Gas/ Electric Stove	13	3.93
Electric Iron	34	10.27
TOTAL	331*	100

Multiple response*

Roof Materials

Yero or galvanized iron (GI) sheets (60.58%) were found to be the predominant material used for roofing. This was succeeded by cement (16.06%) and wood (16.06%), consecutively. Other materials used were bamboo, nipa, or cogon (Table 2.50).

Table 2.50. Different materials used by the respondents for roofing

Roof Materials	Total	%
Cement	23	16.06
Yero/ GI sheets	83	60.58
Wood	22	16.06
Bamboo	7	5.11
Nipa/Cogon	1	0.73
No Response	1	0.73
TOTAL	137*	100

Multiple response*

Wall Materials

As observed from Table 2.51, the primary choice of the respondents for wall material was cement (74 or 64.91%). Meanwhile, other respondents also used wood (19.30%), bamboo (7.89%), and nipa/cogon (1.75%) for walling. Nonetheless, it should be pointed out that the enumerated wall materials were also utilized conjointly.

Table 2.51. Various materials used for the walls of the respondent's houses.

Wall Materials	Total	%
Cement	74	64.91
Wood	22	19.30
Bamboo	9	7.89
Nipa/Cogon	2	1.75
No Response	7	6.14
TOTAL	114*	100

Multiple response*

Community Information

Leading Sources of Income

Farming was the primary occupation in the barangay, which was echoed by 88 or 92.63% of the interviewed individuals. Consecutively, the respondents also identified businesses (58 or 25.22%) and employment in carpentry, construction, and sewing (50 or 21.74%) as the other major sources of income of the residents (refer to Table 2.52).

Table 2.52. Top three (3) leading sources of income within the barangay

Leading Sources of Income	Total	%
Business	58	25.22
Employment	1	0.43
Farming (i.e., includes livestock and poultry)	88	38..26
Fishing	11	4.78
Hired Laborer	11	4.78
Others (i.e., Driver, Helper, OFW)	9	3.91

Leading Sources of Income	Total	%
Skilled Worker (i.e., Carpentry, Construction, Seamster)	50	21.74
No Response	2	0.87
TOTAL	230	100

Multiple response*

Other Potential Sources of Income

Apart from discerning the leading sources of income, other potential livelihood the residents may venture into was also consulted. In accordance with **Table 2.53**, majority (77 or 55.40%) of the respondents perceived businesses (e.g., barbershops, online selling, mini-groceries, etc.) as the most feasible income-generating activity the residents may venture into. Other occupations the respondents proposed to consider were farming, carpentry, and construction among others.

Table 2.53. Other potential sources of income

Potential Sources of Income	Total	%
Business (Barbershop, Food Business, Online Selling, Mini-Grocery Store, Sari-sari Store)	77	55.40
Driver	4	2.88
Farming (includes livestock and poultry)	20	14.39
Fishing	1	0.72
Hired Laborer	11	7.91
Skilled Worker (Carpentry, Construction, Seamstress)	14	10.07
No Response	12	8.63
TOTAL	139	100

Multiple response*

Membership to Local Organizations

As inferred from **Table 2.54**, approximately 86.32% of the respondents (82 out of 95) were not part of any local organization. Meanwhile, those with organizations, which corresponded to roughly 10.53% of the respondents–were affiliated with an economic, women, or religious organization. Out of the 10 individuals with organizations, only six (6) of them disclosed their roles in the organization. In particular, the respondents were either heads of the organization (2 or 33.33%), treasurers (2 or 33.33%), or members (2 or 33.33%).

Table 2.54. Membership to local organizations

Are you a member of local organizations?	Total	%
No	82	86.32
Yes	10	10.53
Economic	*2*	*20.00*
Women's	*1*	*10.00*
Religious	*3*	*30.00*
Unspecified	*4*	*40.00*
No Response	3	3.16
Total	95	100

Educational Institutions

Generally, the respondents have at least one (1) elementary student (54 or 38.57%) in their family with the majority (37 or 68.52%) enrolled in Siete Central Elementary School. In terms of secondary

educations, the proportion of respondents with a child belonging to either high school, junior high school, and/or senior high are 38 or 27.14%, 13 or 9.29%, and 14 or 10%, respectively. Meanwhile, Central National High School was the predominant school for secondary education. For the respondents with household members taking tertiary education (21 or 15%), Occidental Mindoro State College was found to the principal educational institution (18 or 85.71%).

Table 2.55. List of the educational institutions attended by the household members

Schools attended by the household members	Total	%
Elementary	54	38.57
Camanggahan Elementary School, San Jose, Occidental Mindoro	*4*	*7.41*
Hilltop Elementary School, San Jose, Occidental Mindoro	*8*	*14.82*
Holy Family Academy, San Jose, Occidental Mindoro	*1*	*1.85*
Pulanglupa Elementary School, San Jose, Occidental Mindoro	*4*	*7.41*
Siete Central Elementary School, San Jose, Occidental Mindoro	*37*	*68.52*
High School	38	27.14
Central National High School, San Jose, Occidental Mindoro	*29*	*76.32*
Holy Family Academy, San Jose, Occidental Mindoro	*8*	*21.05*
Unspecified	*1*	*2.63*
Junior High School	13	9.29
Central National High School, San Jose, Occidental Mindoro	*9*	*69.23*
Holy Family Academy, San Jose, Occidental Mindoro	*2*	*15.38*
Unspecified	*2*	*15.38*
Senior High School	14	10
Central National High School, San Jose, Occidental Mindoro	*10*	*71.43*
Holy Family Academy, San Jose, Occidental Mindoro	*1*	*7.14*
Pedro T. Mendiola Sr. Memorial National High School, San Jose, Occidental Mindoro	*1*	*7.14*
Philippine Central Islands College, San Jose, Occidental Mindoro	*2*	*14.29*
College/Vocational	21	15
Divine Word College of San Jose, Occidental Mindoro	*1*	*4.76*
Mindoro School of Electronics, San Jose, Occidental Mindoro	*1*	*4.76*
Occidental Mindoro State College, San Jose, Occidental Mindoro	*18*	*85.71*
Southern Luzon College of Business, Maritime, Science and Technology, Inc., Dasmariñas, Cavite	*1*	*4.76*
TOTAL	140*	100

Multiple response*

Community Problems

Table 2.56 depicts the recurring problems observed by the respondents in the community. Accordingly, the most prominent concern in the community was found to be the lack of job opportunities (69 or 32.70%). This was followed by health concerns and persistence out-of-school youth (OSY), which was raised by 16.11% and 13.27% of the respondents, respectively. It was also noteworthy that two (2) of the interviewed individuals did not perceive any problems in the community.

Table 2.56. Persisting problems observed in the community

Community Problems	Total	%
Child Labor	14	6.64
Drug pushing/ addiction	6	2.84
Health Concerns	34	16.11
Out-of-School Youth (OSY)	28	13.27
Lack of Job Opportunities	69	32.70
Peace and Order	14	6.64
Political Issues	17	8.06

Community Problems	Total	%
Polluted Environment	27	12.80
None	2	0.95
TOTAL	211*	100

Multiple response*

Positive Attributes of the Barangay

Despite the above-listed problems, the respondents identified some positive aspects of their community. To name a few, these were the presence of trustworthy and reliable government officials (29.56%), many school-aged children are in school (23.90%) and clean environment (17.61%). Nevertheless, one (1) respondent claimed that there are no positive attributes in the barangay (**Table 2.57**).

Table 2.57. Perceived positive attributes of the community

Positive Attributes of the Barangay	Total	%
Clean Environment	28	17.61
Good governance	21	13.21
High Employment Rate	24	15.09
Many school-aged children are in school	38	23.90
Trustworthy and reliable government officials	47	29.56
None	1	0.63
TOTAL	159*	100

Multiple response*

Women's Involvement

To have a vivid understanding of the gender equality in the community, the respondents were also inquired about the women's involvement in household-level decision-making. As deduced from **Table 2.58**, women play a significant role in the decision-making of every household, particularly on the aspects regarding financial concerns (19.08%), nurturing and raising children (18.87%), education of children (18.03%), and daily chores (18.03%).

Table 2.58. Women's involvement in household decision-making

Category	Total	%
Financial Concerns	91	19.08
Education of Children	86	18.03
Approach in Nurturing and Raising Children	90	18.87
Purchase of Family Assets	62	13
Daily Chores	86	18.03
Social and Wedding Concerns	62	13
TOTAL	477*	100

Multiple response*

Potential Livelihood for Women

The primary occupation identified by the respondents to empower women financially was business endeavors (85 or 59.03%). Other income-generating activities emerging from the surveys (**Table 2.59**) were dressmaking (36 or 25%) and farming (12 or 8.33%). Conversely, there were four (4) individuals who opted to provide no response.

Table 2.59. Various income-generating activities the women may venture into

Potential Sources of Income for Women	Total	%
Business	85	59.03
Farming	12	8.33

Potential Sources of Income for Women	Total	%
Hired Laborer	5	3.47
Seamstress	36	25
Others (Laundrywomen, Teacher, Doctor)	2	1.39
No Response	4	2.78
TOTAL	144*	100

Multiple response*

Problems Encountered by Women

Despite the majority (55 or 57.89%) perceiving no gender issues in the community, the 33 or 34.74% of the respondents who have claimed otherwise had identified the loss of livelihood (60.61% of the individuals who responded 'Yes') as the primary concern faced by women. While one (1) respondent pointed out abuse and discrimination, the rest have not specified the problems encountered by women (refer to Table 2.60).

Table 2.60. Recurring problems faced by women in the community

Are there problems encountered by women?	Total	%
Yes	33	34.74
Loss of Livelihood	*20*	*60.61*
Victims of Abuse and Discrimination	*1*	*3.03*
Unspecified	*12*	*36.36*
None	55	57.89
No Response	7	7.37
TOTAL	95	100

Perspective About the Proposed Project

Perception of Change

More than four-fifths of respondents (82 or 86.32%) claimed to have notice some changes in the environment for the last five (5) years. However, it should be noted that three (3) of the interviewed individuals did not offer an opinion for this query.

Table 2.61. Respondents' perception whether there are changes in the environment for the last half decade

Perception of change in the environment for last five (5) years	Total	%
With Change	82	86.32
Without Change	10	10.53
No Response	3	3.16
TOTAL	95	100

Observed Changes in the Environment

Table 2.62 presents the respondents' perceived changes for the last half decade, as well as the entity or institutions assisting them in resolving the adverse changes. Accordingly, it can be deduced that the five (5) leading changes were the intensifying number of factories and other industrial plants (43 or 17.27%), increased farm harvest (41 or 16.47%), population growth (35 or 14.06%), increased flooding (28 or 11.24%), as well as reduced flooding (27 or 14.75%) and air pollution (27 or 14.75%). Nonetheless, it was crucial to note that more than half of the respondents did not have a definite opinion on the potential changes in the environment.

For the observed adverse changes, the institutions identified who have contributed in assisting the respondents in addressing the problem were government officials from the barangay, municipal,

provincial, and national levels, as well as non-governmental organizations (NGO) or private institutions (Table 2.62).

Table 2.62. List of the observed changes in the last five (5) years and institutions that contribute to addressing the observed adverse effects

Observed changes in the environment for the last five (5) years	Increased		Decreased		No Opinion		Institutions assisting to resolve the observed detrimental changes
	Total	%	Total	%	Total	%	
Establishment of factories, and other industrial plants	43	17.27	2	1.09	50	8.16	1, 2, 3, 4, 5, 6
Conversion to Subdivisions	23	9.24	2	1.09	70	11.42	1, 2, 3, 4, 5
Quantity of Farm Harvest	41	16.47	14	7.65	40	6.53	1, 2, 3, 4, 5, 6
Flooding	28	11.24	27	14.75	40	6.53	1, 2, 3, 4, 5, 6
Forest	14	5.62	23	12.57	58	9.46	1, 2, 3, 4, 5, 6
Population	35	14.06	12	6.55	48	7.83	1, 2, 3, 4, 5, 6
Migration	19	7.63	14	7.65	62	10.11	1, 2, 3, 4, 5, 6, 7 (unspecified)
Water Pollution	6	2.41	23	12.57	66	10.77	1, 2, 3, 4, 5, 6, 7 (unspecified)
Air and Noise Pollution	12	4.82	27	14.75	56	9.14	1, 2, 3, 4, 5, 6
Traffic	13	5.22	18	9.84	64	10.44	1, 2, 3, 4, 5, 6
Peace and Order	15	6.02	21	11.48	59	9.62	1, 2, 3, 4, 5, 6
TOTAL	249*	100	183*	100	613*	100	-

Multiple response*
Legend: 1 - Barangay, 2 - Municipal Government, 3 - Provincial Government, 4 - National Government, 5 - NGO o Private Organizations, 6 - Religious Affiliations, 7 - Others

Changes that Greatly Affected the Respondents

In accordance to the aforementioned changes observed in the last half decade, the respondents perceived flooding (32 or 19.88%), quantity of farm harvest (21 or 13.04%), as well as the establishment of factories and other industrial plants (19 or 11.80%) as the top three changes that had greatly impacted the respondents. Nonetheless, it is important to note that roughly 16.77% of the interviewed individuals did not provide an answer (Table 2.63).

Table 2.63. List of changes which greatly impacted the respondents

Changes Affecting the Respondents	Total	%
Establishment of factories, and other industrial plants	19	11.80
Conversion to Subdivisions	4	2.48
Quantity of Farm Harvest	21	13.04
Flooding	32	19.88
Forest	6	3.73
Population	14	8.70
Migration	6	3.73
Water Pollution	5	3.11
Air and Noise Pollution	5	3.11
Traffic	8	4.97
Peace and Order	11	6.83
Concreting of Roads	3	1.86
No Response	27	16.77
TOTAL	161*	100

Multiple response*

Calamities

Ninety-seven percent of the respondents were found to be devastated by typhoons in the last half decade, which coincided with the fact that the Philippines is a typhoon-prone country. On the other hand, 1.33% of the interviewed individuals indicated that they suffered from landslide while 24.44% experienced earthquakes for the same time period.

Table 2.64. Different calamities experienced by the respondents in the last five (5) years

Types of Calamities	Total	%
Typhoon	92	40.89
Earthquakes	55	24.44
Flooding	75	33.33
Landslide	3	1.33
TOTAL	225*	100

Multiple response*

Understanding of the Proposed Project

Awareness of OMCPC

As shown in Table 2.65, almost all of the respondents (97.89%) were familiar, or at least, have heard OMCPC prior to the conduct of the study. One of the claimed to be unfamiliar with the company while the other opted not to answer.

Table 2.65. Awareness of the respondents about OMCPC

Level of Awareness about Occidental Mindoro Consolidated Power Corporation (OMCPC)	Total	%
Familiar or Knowledgeable	93	97.89
Unfamiliar	1	1.05
No Response	1	1.05
TOTAL	95	100

Awareness on the Proposed Project

Focusing on the proposed amendment of the OMCPC's ECC, 76 out of the 95 respondents (80%) ascertained that they were aware of the proposal prior to the implementation of the household survey. In contrast, 16 or 16.84% interviewed individuals were unaware of the proposed project as of the time of the study.

Table 2.66. Proportion of the respondents who were aware and unaware of the proposed project of OMCPC.

Awareness of the Proposed Project Prior the Survey	Total	%
Aware	76	80
Unaware	16	16.84
No Response	3	3.16
TOTAL	95	100

Sources of Information

Out of the 76 respondents who were aware of the proposed projects, the leading sources of information were found to be barangay officials (37 or 48.68%), followed by radio, television, and newspaper (36 or 47.37%), as well as social media posts (36 or 47.37%). Apart from the aforementioned sources, some of the respondents also listed relatives, friends, neighbors, as well as barangay meetings/consultations as their sources of information.

Table 2.67. Various sources of information of the respondents prior to the survey.

Sources of Information	Total	%
Barangay Officials	37	21.14
OMCPC Employees	1	0.57
Relatives/Friends/Neighbors	29	16.57
Radio/ TV/ Newspaper	36	20.57
Social Media Posts	36	20.57
Barangay Meetings and Consultations	26	14.86
Surveys and other research endeavors	10	5.71
TOTAL	175*	100

Multiple response*

3 IMPACT MANAGEMENT PLAN

The Impacts Management Plan (IMP) presents the mitigation and enhancement principles, practices, and technologies aimed at minimizing and/or eliminating the potential impacts of the existing OMCPC power plant and the proposed additional powerhouse.

The proposed project will inevitably create various impacts, both positive and negative throughout the pre-construction, construction, operations, and abandonment phases.

An analysis of the identified impacts is shown in Table 3.1.

Table 3.1. Impact Management Plan of OMCPC for the existing power plant and the additional powerhouse

Project Phase/ Environmental Aspect	Environmental Component Likely to be Affected	Potential Impacts	Enhancement/Mitigating Measures	Efficiency of Measures	Responsible Entity	Commitment/Guarantee
PRE-CONSTRUCTION PHASE						
Application of permits/licenses/ clearances from LGUs and national government agencies	PEOPLE	• Social Acceptance and Support for the project	• IEC on additional powerhouse project to inform/update Brgy. Central and San Jose LGU, respective institutions, agencies, offices, bodies and organizations for providing their respective endorsements and/or clearances • MOAs with respective bodies	100% compliance to local and national requirements	• OMCPC Admin • OMCPC ComRel	• Non commencement of construction until full compliance and completion of required endorsements and clearances
Site clearing of the proposed ore blend yard area including leveling and surveying	PEOPLE	• Safety of the workers/staff and contractors within the premises of OMCPC	• Fences shall be installed around the perimeter of the project area. • Strict use of PPE • Notice should be placed to inform about the workers/staff on the PPE zone and dangers of falling debris. • Security guards shall be stationed at the entry/exit to prevent unauthorized people from entering the construction site.	100% compliance to PSC's existing Safety Mgmt. Protocol – zero LTA and Fatal Accident	• OMCPC Engineering Group and contractor • OMCPC Safety Manager	• Safety standards management protocol • DOLE compliance and safety report • PPE
CONSTRUCTION PHASE						
Establishment of access road to the project site	LAND	• Vegetation removal due to establishment of new	• Strategic planning of access road location to minimize vegetation clearing and avoid cutting of mature trees in the vicinity	100% compliance to PD 705 and	• OMCPC Engineering	• Access road design plan to show potential affected areas

Project Phase/ Environmental Aspect	Environmental Component Likely to be Affected	Potential Impacts	Enhancement/Mitigating Measures	Efficiency of Measures	Responsible Entity	Commitment/Guarantee
		access road or widening of existing access road		tree cutting permit conditions if necessary	Group and contractor • OMCPC Envi Team	• Contingency plan for mitigation measures
Establishment of access road to the project site	LAND	• Soil erosion and soil compaction	• Preferential scheduling of clearing and excavations works during the drier months or days of the year • Avoidance of cutting of trees within the required legal easements such as rivers, creeks, riparian zones, and other identified restricted areas to development. • Maximize cut-and-fill method of site preparation and road construction • Hauling of spoils to designated run-off-controlled spoil disposal area • Establishment of appropriate erosion control, such as vegetation cover or retaining walls. • Sediment ponds/traps will be constructed to reduce sedimentation in creeks/rivers and other bodies of water. This will be done downstream of the soil stockpile area. Also, siltation ponds will be constructed on appropriate places within the project site.	100% compliance to the EMP	• OMCPC Engineering Group and contractor • OMCPC Environmental Team	• Slope stabilization plan • Rehabilitation plan to include tree planting and landscaping alongside the access roads
Construction of additional powerhouse and ancillary facilities	LAND	• Vegetation removal due to construction of powerhouse and ancillary facilities • Threat to existence and/ or loss of important local species	• Balling and transplanting of affected trees of appropriate size shall be emphasized if necessary • Establishment of nursery where seedlings shall be intensively cared for reforestation and greening program of the company for Carbon Sink	100% compliance to the EMP	• OMCPC Admin • OMCPC Contractor • OMCPC Envi Team	• Tree cutting permit if there is cutting of trees

Project Phase/ Environmental Aspect	Environmental Component Likely to be Affected	Potential Impacts	Enhancement/Mitigating Measures	Efficiency of Measures	Responsible Entity	Commitment/Guarantee
		• Threat to abundance, frequency and distribution of important species	• Establishment of additional buffer areas and green corridors within the project site • No development and cutting of trees within the required legal easements such as the rivers and creeks, riparian zones, and other identified un-developable areas • Vegetation clearing kept to a minimum and what is essential			
		• Loss of topsoil and occurrence of soil erosion • Soil compaction	• Preferential scheduling of clearing and excavations works during the drier months (Low rainfall in Type I areas is during the months of November to April). • Maximize cut-and-fill method of site preparation and road construction. • Minimal topsoil spoils will be generated since excavation will be limited to structural foundations mainly isolated footings. • Spoils shall be hauled to designated run-off- controlled temporary spoil holding/storage area • Limiting the spoil height to 5m and covering the spoils with tarpaulin especially during rainy months (May to October in Type I areas).	100% compliance to the EMP	• OMCPC Admin • OMCPC Contractor • OMCPC Envi Team	• Include in the TOR of the contractor • Topsoil storage and management plan • SMR
		• Generation of solid and hazardous waste	• Use of existing OMCPC Materials Recovery Facility (MRF) • Classification of waste separating hazardous waste from non-toxic wastes • Collection of scrap and recyclable materials that can be sold • Proper storage of hazardous waste	100% compliance to OMCPCs EMP and manual in compliance to RA 9003 and RA 6969	• OMCPC Admin • OMCPC Contractor • OMCPC Envi Team	• Hazardous Wastes Management, Treatment and Disposal Program • Hazwaste Generator ID • Hazwaste Treater and EMB Certificate of Treatment

Project Phase/ Environmental Aspect	Environmental Component Likely to be Affected	Potential Impacts	Enhancement/Mitigating Measures	Efficiency of Measures	Responsible Entity	Commitment/Guarantee
			• Tapping DENR-accredited waste transporter to dispose hazardous waste			including Hazwaste Transport Permit
	Water Resources	Degradation of ground and surface water quality from surface run-off that will be generated along construction site	• Construction of berms and run-off canals along the edge of construction are that will divert surface run-off to a silt pond and prevent run-off from flowing into the irrigation canal • Establishment of silt fences if necessary	100% compliance to OMCPCs EMP in compliance to RA 9275	• OMCPC Admin • OMCPC Contractor • OMCPC Envi Team	• Include in TOR of contractor • OMCPC Run-off Water and Drainage Mgmt. Plan
	Air Quality	Generation of dust	• Sprinkling of water along exposed areas especially during dry days; • Establishment of wind barriers and perimeter fence within the periphery of the construction area; • Regulation of vehicle speed should be maintained at 30 kph • Tarpaulin covering for haul trucks • Regular washing of all hauling truck along designated areas far from existing drainage canals • Maintain equipment deployment schedule • Regular maintenance of vehicles and construction equipment	100% compliance to OMCPCs EMP in accordance with RA 8749	• OMCPC Contractor • OMCPC Envi Team	• Equipment deployment schedule • Perimeter fence and wind barrier plan • Contract between OMCPC and contractor to show contingency measure for dust abatement
		Increased noise level	• Regulation of vehicle speed should be maintained at 30 kph • Installation of mufflers • Provision of ear plugs to laborers exposed to high noise levels. • Orientation of new employees and contractors regarding noise management program • Strict observance of speed limit – 30 kph	100% compliance to OMCPCs EMP in accordance with NEPC standard	• OMCPC Contractor • OMCPC Envi Team	• Noise Mgmt. Plan • Perimeter fence/wind barrier plan • Contract between OMCPC and contractor to show contingency measure for noise management

Project Phase/ Environmental Aspect	Environmental Component Likely to be Affected	Potential Impacts	Enhancement/Mitigating Measures	Efficiency of Measures	Responsible Entity	Commitment/Guarantee
	PEOPLE	Occupational hazard awareness	• The proponent and its contractor will conduct periodic orientation and safety training seminars to all workers • A safety program shall be implemented putting primary value on safety; placing of safety signage and warning notices on appropriate and strategic places; and proper observance of environmental sanitation practices. • Only qualified and authorized personnel will be allowed to operate any equipment. • More specific practices to be employed would include strict adherence of workers to wearing of PPEs and equipment.	100% compliance to OMCPCs OHS	• OMCPC Admin • OMCPC Contractor • OMCPC Safety Officer	• OSH Program • Emergency Response Program • Safety reports
		Employment opportunities	• Prioritization of locals for hiring • Conduct of IEC regarding policy on local prioritization in hiring manpower, contractors and suppliers • Provision of Capacity Building and Skills Training Program	100% compliance to OMCPCs Hiring Plan	• OMCPC Admin • OMCPC Contractor • OMCPC ComRel • TESDA	• Hiring plan and documentation report • DOLE report • IEC Program
		Possible Adverse Effects on Health and Sanitation	• The workforce shall be given the basic provisions of clean and potable water, sanitary toilet facilities, and hygienic canteen facilities. • Domestic wastes segregation shall be practiced, where recyclable materials shall be collected for re-use or sold to recyclers. • Disposal site for the generated spoils will be identified with due consideration to the safety of the people and protection of the environment.	100% compliance to OMCPCs OHS	• OMCPC Contractor • OMCPC Safety Officer • OMCPC Envi Team	• Health and Sanitation Plan • Waste Management Plan

Project Phase/ Environmental Aspect	Environmental Component Likely to be Affected	Potential Impacts	Enhancement/Mitigating Measures	Efficiency of Measures	Responsible Entity	Commitment/Guarantee
			• The spoils will be hauled on a regular schedule to ensure less impact on traffic and residents.			
		Increased traffic due to hauling trucks, vehicles and equipment going to and from the site	• Installation of safety barriers (e.g. fence) and signages. • Drafting and implementation of Traffic management plan (including ingress/egress of vehicles at construction site), including properly trained personnel to manage traffic flow. • Implement pedestrian walkways near the construction site. • Ensure that contractor's vehicles, trucks and equipment are of good working condition through timely inspections. • Ensure that the contactor employs properly trained crew and operators, especially drivers of large equipment like cranes and earth moving vehicles.	100% compliance to OMCPCs traffic management plan	• OMCPC Safety Officer and Security Team	• Compliance Monitoring Report • Traffic Management Plan
OPERATION PHASE						
Operation of the following: • Existing Power Plant • Additional Powerhouse • Ancillary Facilities • Logistics Operation	LAND	Natural Hazards and Calamities such as: • Seismic Hazards and Earthquake Occurrence • Ground Acceleration and Rupture • Liquefaction, landslide and settlement hazard • Foundation Failure • Tsunami • Volcanic Hazard	• Community awareness thru conduct of IEC activities. • Conduct of detailed engineering geological studies • Regular structural engineering inspection • Provision of safety guidelines/earthquake emergency plans. • Conduct of warning/drill such as earthquake simulation by OMCPC in partnership with LGU and other concerned agencies.	100% compliance to OMCPCs Disaster Risk and Management Program	• LGU • MGB-IVB • NDRRMC • PDRRMO • MDRRMO • OMCPC Admin	• Include in the IEC activities of OMCPC ComRel • MOA between LGU, NDRRMC, NGO's and PO's

Project Phase/ Environmental Aspect	Environmental Component Likely to be Affected	Potential Impacts	Enhancement/Mitigating Measures	Efficiency of Measures	Responsible Entity	Commitment/Guarantee
		Generation of solid waste and hazardous waste	• Periodic re-orientation of workers, laborers and contractors for proper waste segregation and handling of generated waste • Classification of waste and recovery of recyclable materials • Regular collection and proper disposal of solid waste in a dump site/disposal facility • Proper storage and disposal of chemicals used in the power plant • Proper storage and disposal hazardous waste such as busted lamps, used oil, etc. • Tapping DENR-accredited waste treater for hazardous waste • Implementation of Solid Waste Management Pro	100% compliance to PSCs EMP in compliance to RA 9003 and RA 6969	• OMCPC Admin • OMCPC Envi Team	• SMR • Hazwaste Generators ID
	WATER	Change in water quality Potential contamination due to spillage of fuel oil, lubricants and waste oil	• Provision of toilet facilities for workers • Periodic inspection and maintenance including siphoning of sludge of septic tanks • Provisions of a spoil's containment/waste disposal area • Provision of a motor pool with oil traps • Installation of bund walls with 110% retaining capacity • Concreting of tank ground farms • Connection of tank farms to oil and water separator • practices putting bins containing saw dust and sand that can be sprinkled in case of accidental spillage of soil in work areas.	100% compliance to OMCPs EMP in compliance to RA 9275 and RA 6969	• OMCPC Admin • OMCPC Envi Team	• Wastewater Management Plan • Discharge Permit • Oil spill contingency plan

Project Phase/ Environmental Aspect	Environmental Component Likely to be Affected	Potential Impacts	Enhancement/Mitigating Measures	Efficiency of Measures	Responsible Entity	Commitment/Guarantee
			• An existing oil spill management protocol is being implemented by OMCPC and this shall be strictly implemented. • OMCPC also has universal spill kits and sorbents as well as oil containment boom that can be utilized for any untoward oil spillage. • Good housekeeping measures			
	AIR	Increase in the amount of air pollutants	• SOX (as SO2) emissions are proportional or related to the percentage of sulfur content of the fuel, an appropriate mixture of bunker fuel and diesel fuel ensures compliance with the emission standard for SOX (as SO2) • The stack heights of the proposed gensets should be 15 m at a stack inner diameter of 0.45 m to ensure compliance with the ambient guideline values set for NO2, including SO2, NO2, and TSP • Rain caps installed on top of the stacks reduce the air emissions' exit velocities, thus increasing the dispersed ground-level concentrations. Therefore, rain caps should not be used or installed on the stacks • Installation of scrubbers for the existing power plant • Installation and maintenance of continuous emission monitoring system • Scheduled repair and maintenance of plant facilities and equipment • Use of Euro 4 or Euro 5 fuel for service vehicles.	100% compliance to OMCPCs EMP in compliance to RA 8749	• OMCPC Admin • OMCPC Mechanical Team • OMCPC Envi Team	• Maintenance Plan • SMR • Permit to operate

Project Phase/ Environmental Aspect	Environmental Component Likely to be Affected	Potential Impacts	Enhancement/Mitigating Measures	Efficiency of Measures	Responsible Entity	Commitment/Guarantee
			• Semi-annual monitoring for both ambient and stack emissions • Establishment of carbon sink			
		Noise generation	• Enclosure construction for noise generating equipment • Installation of exhaust silencer and safety bulb during emergency shutdown • Periodic re-orientation of workers, laborers and contractors on OMCP's EMP for noise management program including use of ear muffs in noise prone areas • Addition of flexible couplings to minimize torsional vibration • Noise damping or acoustic materials to absorb noise	100% compliance to OMCPCs EMP in accordance with NEPC standard	• OMCPC Mechanical Team • OMCPC Envi Team	• Noise management plan • SMR • OMCPC OHS

Project Phase/ Environmental Aspect	Environmental Component Likely to be Affected	Potential Impacts	Enhancement/Mitigating Measures	Efficiency of Measures	Responsible Entity	Commitment/Guarantee
	PEOPLE	Exposure to Occupational Health and Safety Hazards	• OMCPC and its contractor shall conduct periodic orientation and safety training seminars to all workers. It implements a safety program putting primary value on safety; placing of safety signages and warning notices on appropriate and strategic places; and proper observance of environmental sanitation practices. Likewise, only qualified and authorized personnel will be allowed to operate any equipment. More specific practices to be employed would include strict adherence of workers to wearing of protective devices and equipment. • Assignment of safety engineer and provision of first-aid/safety kits • The workforce has clean and potable water, sanitary toilet facilities, and hygienic canteen facilities. • Domestic wastes segregation shall be practiced, where recyclable materials area collected for re-use or sold to recyclers. • Disposal site for the generated spoils shall be identified with due consideration to the safety of the people and protection of the environment. • The spoils will be hauled on a regular schedule to ensure less impact on traffic, commuters and residents	100% compliance to OMCPCs OHS	• OMCPC Envi Team • OMCPC Safety	• OHS and Emergency response program
	PEOPLE	Employment opportunities and economic benefits	• Prioritize hiring of local workers • As an enhancement measure, the proponent shall pay the taxes, fees,	100% compliance to existing	• OMCPC Admin and Human Resource	• Local hiring report • DOLE Report • Social Development Plan

Project Phase/ Environmental Aspect	Environmental Component Likely to be Affected	Potential Impacts	Enhancement/Mitigating Measures	Efficiency of Measures	Responsible Entity	Commitment/Guarantee
			permits and licenses on time to enable the national government and the concerned LGUs to deliver the basic needs of the residents also on time. • It is recommended that the proponent utilize the bottom to top planning approach to identify the priority needs of the communities entitled to SDP • The company shall conduct consultative meetings to flesh out the details in the formulation of the SDP to ensure that project ideas emanate from the intended beneficiaries. • Implementation of social development programs for host community • The company will assist the beneficiaries of the SDP in project development and presentation to ensure that these proposals are sustainable and environmentally friendly. • The company shall coordinate with training centers and facilities (i.e.TESDA) to upgrade the level of qualifications of residents in the affected barangay to enable them to participate productively in the operational phase of the project • Continuous skills training and development and capacity building program for the impact areas	national and local laws	• OMCPC ComRel	• Corporate Social Responsibility Program • ER 1-94
ABANDONMENT						
Dismantling of existing structures	LAND	Generation of squanders and industrial scraps	• Hiring of an accredited waste collector • Disposal site for the spoils will be identified with due consideration to the	100% compliance to OMCPCs EMP	• OMCPC Admin • OMCPC Envi Team	• Abandonment Plan

Project Phase/ Environmental Aspect	Environmental Component Likely to be Affected	Potential Impacts	Enhancement/Mitigating Measures	Efficiency of Measures	Responsible Entity	Commitment/Guarantee
			safety of the people and protection of the environment.	in compliance to RA 9003 and RA 6969		
	WATER	Oil and grease leakage from the operation of moving/ hauling vehicles	• Regular maintenance of hauling vehicles • Clean-up of affected areas	100% compliance to OMCPCs EMP in compliance to RA 9275 and RA 6969	• OMCPC Admin • OMCPC Envi Team	• Abandonment Plan
	PEOPLE	Employment for the structure removal activities	• Local hiring	100% compliance to existing national and local laws	• OMCPC Admin • OMCPC Envi Team	• Hiring plan

4 ENVIRONMENTAL RISK ASSESSMENT (ERA) & EMERGENCY RESPONSE POLICY GUIDELINES

4.1. Environmental Risk Assessment

4.1.1. Introduction

This Environmental Risk Assessment (ERA) was prepared for the proposed OMCPC San Jose Diesel Power Plant Expansion, located inside the OMCPC power complex, in Brgy. Central, Municipality of San Jose, Province of Occidental Mindoro. The said power plant expansion will be constructed to augment the power supply and provide reliable source of power in Occidental Mindoro. The conduct of the ERA was based on the scoping agreement between the EMB and the proponent, Occidental Mindoro Consolidated Power Corporation (OMCPC). It was agreed during the scoping that a descriptive/qualitative risk assessment be conducted for the proposed project.

The proposed power plant expansion will utilize diesel for its expansion project while for its existing power plant it is using diesel and Heavy Fuel Oil (HFO) or bunker fuel as principal fuel. It will utilize five (5) units of Caterpillar diesel power generator units (3 x 1.6MW; 2 x 1.2 MW and 1 x 1.1 MW) for its proposed expansion with a total installed capacity of 8.3 MW while the existing 3 x 8MW only has a total dependable capacity 21 MW based on its current performance. The total annual estimated fuel consumption of the existing power plant is 24,658.795 liters and 3,486,409 liters for the high-speed diesel engines of the additional powerhouse.

This ERA aims to come up with a qualitative environmental risk assessment of the proposed power plant project. It aims to identify and describe the associated environmental hazards and to qualitatively characterize the associated risks. In compliance with the scoping agreement, this ERA likewise aims to come up with an Emergency Plan based on the results of the risk assessment.

This ERA focused on the analysis of the various safety (fire, explosion, chemical toxicity) and physical environmental hazards associated with the proposed project. In compliance with the Procedural Guidelines for Scoping of Environmental Risk Assessment (Annex 2-7e of the Revised Procedural Manual of DAO 03-30), this ERA focused on safety risks, which are characterized by low probability, high consequence, accidental nature and acute effects" (EMB-EIAMD, 2007). It took into consideration the PAGASA-predicted climate changes that are expected in the years 2020 and 2050. It also undertook the simulation of a Worst-Case Accident Scenario for fire/explosion involving the storage of liquid fuels.

Based on the scoping agreement, this ERA covered the following aspects:

1. Identification and description of hazards, both acute and chronic, for man and the environment, that are posed by the release of flammable, explosive and/or toxic substances and/or by failure of structures, as applicable;
2. Identification of conditions, events and circumstances which could be significant in bringing about the identified safety and/or physical risks;
3. Description and assessment of possible accident scenarios; and
4. Assessment of whether the project location is projected to have extreme climate events for 2020 and/or 2050 that could contribute to triggering identified scenarios.

4.1.2. ERA Conceptual Framework and Methodology

4.1.2.1. The Environmental Risk Assessment Process

The Procedural Manual for DAO 2003-30 defines environmental risk assessment as "the use of universally accepted and scientific methods to assess the risks associated with a project. It focuses on determining the probability of occurrence of accidents and their magnitude (e.g., failure of containment or exposure to hazardous materials or situations.)". Risk is defined as a measure of potential human injury/ death, economic loss, or environmental damage in terms of the probability of the loss, injury/death or damage occurring and the magnitude of the loss, injury/death or damage if it occurs. Risk involves two measurable parameters: consequence and probability. In the context of this study, risk refers to the qualitative or quantitative measures of hazards associated with the proposed OMCPC additional powerhouse. It is the integrated result or product of the calculated consequence of a postulated accident scenario and the calculated probability or frequency of occurrence of such event.

4.1.2.2. The ERA Framework

The general framework of this ERA is illustrated in Figure 4.1.

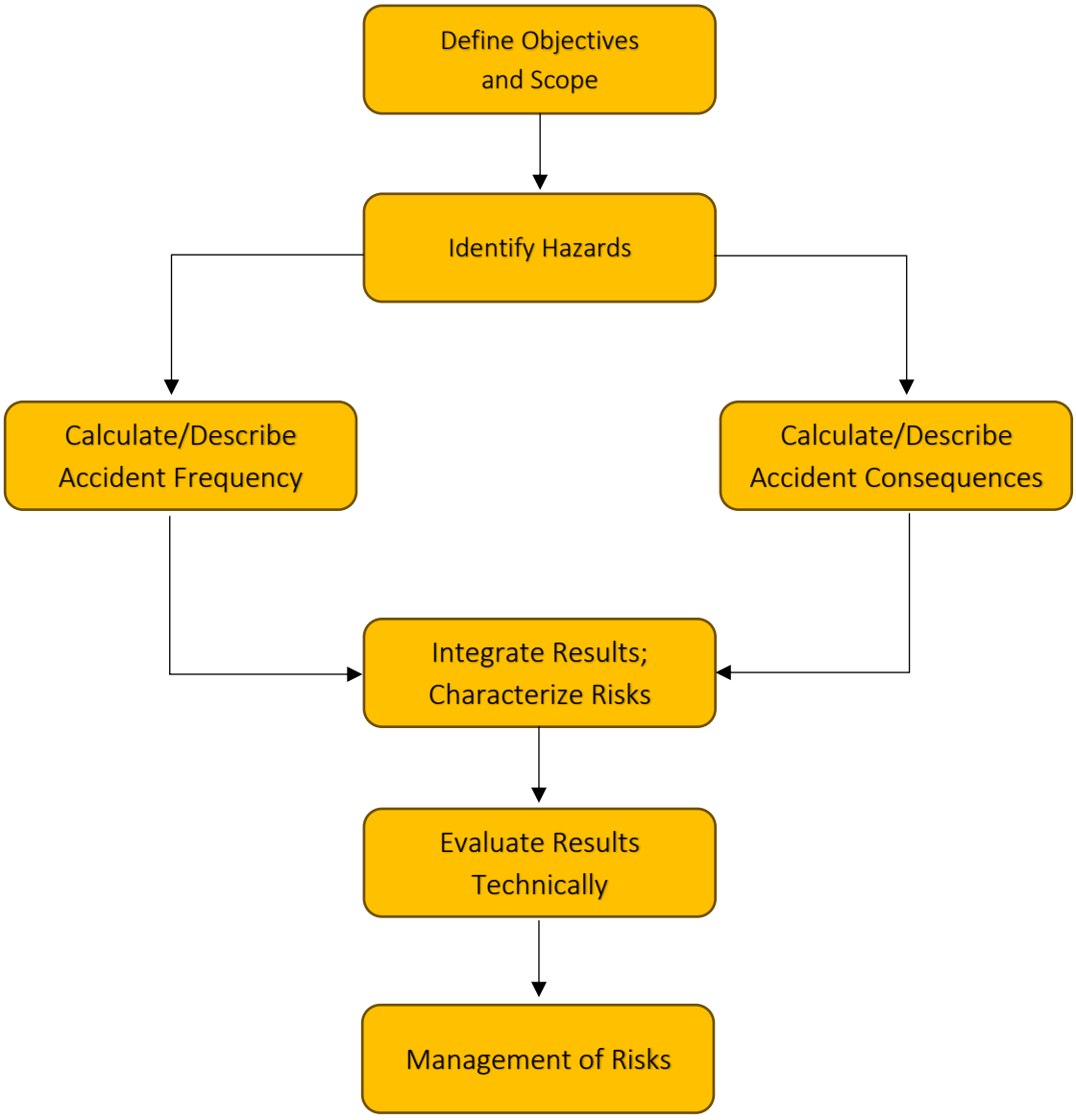


Figure 4.1. The Risk Assessment Procedure

4.1.2.3. Hazard Identification

The various hazardous processes, activities and substances associated with the proposed project were identified and reviewed at this stage. The substances' flammability, explosive potential and potential for toxicity were the focus of hazard identification. As a first step in hazard identification, risk screening activity was conducted. It included all substances that will be used, handled and stored in association with the project. The potential of each substance to pose hazards to the environment, the public and the facility was analyzed based on a thorough review of the substance's intrinsic physical, chemical and hazard characteristics. Risk screening was done according to the process and criteria described in the Revised Procedural Manual of DAO 2003-30: Guidelines for the Conduct of Environmental Risk Assessment, particularly Annex 2-7e.

4.1.2.4. Consequence Analysis

Estimation of unwanted consequences, effects, impacts or outcomes of projected major hazard incidents in the facility were undertaken. Major hazard incidents involve hazardous activities or substances that have impacts in terms of death, injury or evacuation of people, damage to property or lasting harm to the environment. The consequence analysis focused on worst case accident scenarios that involve the release of flammable, explosive and/or toxic substances, the quantities of which are beyond threshold limits. These substances were identified as diesel and bunker fuel in storage. Consequences calculation was done based on the procedure as described in the IAEA TECDOC 727 Manual (1996).

4.1.2.5. Frequency Analysis

Frequency analysis was undertaken using the methodology described in IAEA-TECDOC-727 (IAEA, 1996). The equation on frequency estimation method for fixed installation was used (Equation 2 of the Manual) for the postulated accident scenario.

4.1.2.6. Risk Characterization

As the ERA is qualitative in nature, risk calculation was not undertaken. Rather risks were described in a qualitative manner based on the description and analysis of hazards and the indicative values obtained from consequence and frequency estimates.

4.1.3. Hazard Identification

In the context of this ERA, environmental hazards associated with the proposed OMCPC San Jose Diesel Power Plant Expansion are storage and use of combustible and flammable fuels (diesel, bunker fuel); storage and use of slightly caustic and toxic cooling water treatment substance, nitrite-borate solution; and the inherent presence of high voltage electricity sources that could result to electrical burns and electrical shock in exposed workers within the site. Loss of containment of diesel or bunker fuel could predispose to fire in the presence of ignition sources. Such loss of containment is not expected to result to explosion incidents, however, due to the low vapor pressure of the said fuels. The toxic components of diesel and Bunker fuel (VOCs, PAH, H2S) may produce acute toxicities on exposed persons, especially in the event of massive liquid fuel spills. Under normal operating procedures, however, such toxicities are usually minimal.

Toxicity from nitrite-borate solution in storage is expected to be of minor concern due to the low inventory of the said substance, the low concentration of its active toxic components, and the low

volatility of the toxic components. The expected impact of PAGASA's predictions on climate change was also integrated in the risk analysis. Based on data provided by the project proponent, they will be using diesel as start-up fuel, bunker fuel as principal fuel, and nitrite-borate (TRAC102) to treat raw water for cooling.

4.1.3.1. Hazard Screening

All identified hazardous substances to be stored and used in the project are below DENR'S Level 1 Threshold Inventory. The substances' maximum inventory as compared to DENR's Level 1 and Level 2 Threshold Inventory are shown in **Table 4.1** below. This supports the technical scoping decision that the ERA to be conducted is qualitative in nature.

Table 4.1. Screening of hazardous substances according to DENR's Threshold Inventory Levels

Substance	Category	Max. Inventory of Substance		Level 1 Threshold	Comments
		m3	tons	tons	
Diesel	Flammable	70.4	59.2	5,000	Way below Level 1
Heavy Fuel Oil	Flammable	1,337	1,471	5,000	Way below Level 1
TRAC 102	Toxic Substance (low)	4.4	5.1	50	Way below Level 1

4.1.3.2. Hazard Analysis Matrix

Table 3.3.2 below presents the hazards associated with the various processes, substances and climate factors in the OMCPC power plant facility.

Table 4.2. OMCPC Power Plant Hazard analysis matrix

Unit Operation/ Activity	Hazards/ Outcome	Initiating/ Contributing Factors
1. Liquid Fuel Storage (Diesel, HFO)	Fire following loss of containment or spills	• Presence of ignition sources in the vicinity of storage tanks; • Exposure of storage tanks to extreme heat as in fire incidents; • Lightning hits on storage tanks; • Mechanical impacts; • Corrosion of tanks and accessories; • Metal fatigue; • Defective or substandard materials; • Pipeline and/or pump failure; • Lack of or insufficient equipment maintenance; • Poor housekeeping practices; • Adverse weather conditions (very strong winds); • Earthquakes resulting to toppling of storage tanks; • Vandalism
	Toxicities from toxic chemical components (VOCs, H2S, PAHs, heavy metals) through inhalation, skin and mucosal contact	• Liquid spills and leaks; • Lack of/insufficient PPE while handling (gloves, goggles); • Poor housekeeping procedures and practices; • Lack of/poor spill emergency procedures; • Lack of secondary containment facilities
2. Storage and Use of Nitrite -Borate solution (corrosion inhibiting agent)	Toxicity from direct contact with liquid solution	• Leaks and spills from storage containers; • Lack/insufficient PPE while handling (gloves, goggles); • Poor housekeeping procedures and practices; • Lack of/poor spill emergency procedures; • Lack of secondary containment facilities

Unit Operation/ Activity	Hazards/ Outcome	Initiating/ Contributing Factors
3. Electricals	Electrical burns from flash arcs and direct contact with electricity	• Inherent presence of electrical safety hazards at the Plant site; • Failure of electrical equipment and accessories; • Human error (non-compliance with operation protocols, etc.);
	Electrical shocks from direct contact with electricity	• Loitering in off limits areas; • Lack of/ inadequate PPEs; • Poor or inadequate housekeeping; • Inadequate safety trainings and drills
4. Climate Changes and Extremes (as predicted by PAGASA)	Intensification of many aspects of risks	• Greater frequency of temperature extremes (≥ 35oC)
a. Increased frequency and intensity of tropical cyclones	Increased risks from fire/ explosions due to equipment/facility damages (eg. toppling of storage tanks; electrical posts, etc.) Increased risks from direct contact with electricity	• Poor engineering design and zoning; • Poor maintenance of structures; • Defective warning systems; • Inadequate program/plan on Emergency Prevention and Response; • Failure to adequately integrate Disaster Risk Management considerations in the Plant's design and safety mgt plan; • Inadequate trainings and drills on emergency recognition, prevention and control.
b. Increased intensity and frequency of rains during rainy season	Increased risks from fires due to more frequent shut downs and restarts; lightning hits; Increased risks from contact with high voltage electricity due to flash floods and wet conditions	
c. Drier dry seasons; increased ambient temperatures; greater frequency of extreme temperatures	Increased risks from fire/explosions incidents; Increased toxic risks from chemicals; Increased risks from spontaneous combustion of coal	• Presence of ignition sources, especially near storage of liquid fuels; indiscriminate disposal of live cigarette butts; • Increased vapor pressures of stored fuel contributing to greater volatilization of hazardous components; • Decreased water supply for fire suppression and control.

4.1.3.3. Characteristics of Identified Hazardous Substances

Diesel

The maximum amount of diesel fuel to be stored at the plant site at any one time is 59.2 tons, to be contained in a vertical atmospheric storage tank that is provided with appropriate secondary containment or bund walls.

Fire Hazards of Diesel

Diesel is a moderately flammable liquid fuel. The National Fire Protection Agency (NFPA) of the U.S.A. assigns to diesel a Flammability Rating 2 (ignites when moderately heated). Distillation temperature of

diesel at 90% point is between 282-338oC. Its minimum flash point temperature is 52°C. Its other physico-chemical and toxicological properties are listed in Table 4.3.

Table 4.3. Physico-chemical and Toxicological Properties of Diesel and HFO.

Property	Value/ Description		References
	Diesel	Heavy Fuel Oil	
CAS RN No(s).	68334-30-5; 68476-30-2; 68476-31-3	68553-00-4 68476-33-5	Cameo, 2003; Global, 2014
Maximum Inventory at the Site	140.54 tons	1,962.40 tons	OMCPC
Flammability Designation/Code	Moderately Flammable (NFPA F:2)	Moderately flammable (NFPA F:2)	Cameo, 2003
Flash Point, oC	52	≥ 61	Cameo, 2003; Kildair , 2013
Lower flammability limits in air (%)	1.3	1	Cameo, 2003
Upper flammability limits in Air (%)	6	5	Cameo, 2003
Autoignition Temperature, oC	254-285	>300	Cameo, 2003; Kildair, 2013
Boiling point range (oC) at 1 atm	282-338 at 90% point	250-550	Cameo, 2003; Kildair, 2013
Specific gravity (liquid)	0.841 at 16oC	0.940 – 1.100 at 15.5 °C	Cameo, 2003; Kildair, 2013
Vapor pressure (bar)	0.0028 at 21oC	0.001 at 20 oC	NREL, 2007; North Atlantic, 2013
Viscosity (mm2/s @ 50°C)	Not listed	> 380	Texaco, 2004
Acute Health Hazard Rating	Slightly hazardous (NFPA H:1)	Slightly hazardous (NFPA H:1)	Cameo, 2003; Global, 2014
Chronic Health Hazard Rating	Not listed	Moderately hazardous (HMIS H: 2)	Global, 2014
TLV-TWA	100 mg/m3 as total hydrocarbon	ACGIH TLV-TWA: 5 mg/m3 as mineral oil	Cameo, 2003; Global, 2014

Health Hazards of Diesel

The NFPA Health Hazard Rating of Diesel is 1 (slightly hazardous). This slight health hazard is mainly attributable to its volatile organic compound components (VOCs) which comprise about 1.5% of its total weight. These VOCs may include benzene, toluene, ethylbenzene, xylene and other alkylbenzenes. The acute effects of exposure to high level concentration of various solvents are generally very similar. High level exposure usually results to disorientation, euphoria, giddiness and confusion, progressing to unconsciousness, paralysis, convulsion, and death from respiratory or cardiovascular arrest. Chronic exposure to levels above the threshold level values may result to specific organ toxicity.

Table 4.4 provides the short-term exposure limits (STEL) and threshold level values in time weighted average (TLV-TWA) of the various VOC components of diesel. STEL is the maximum concentration of a substance to which workers can be continuously exposed for 15 minutes without suffering adverse health effects. The TLV-TWA is defined by the American Conference of Governmental Hygienists (ACGIH) as the average airborne concentration of a substance at which nearly all workers may be exposed for an 8-hour working day during a 40-hour week without suffering adverse health effects. It should be noted that these exposure limits are applied in a 40-hour working situation where subjects

are mostly adults and not to household situations where children or the ill and elderly are included and are exposed for more than 8-hours per day (Hume and Ho, 1994).

Table 4.4. Threshold limits of air concentration of hazardous VOCs that may be present in diesel.

Substance	STEL (ppm)	TLV-TWA (ppm)
1. Benzene	5	1
2. Toluene	200	300 (C)1
3. Ethylbenzene	125	100
4. Xylene	150	100

Sources: NIOSH Pocket Guide to Chemical Hazards; International Chemical Safety Cards.

Heavy Fuel Oil (HFO)

Heavy fuel oil (HFO) is also known as bunker fuel, bunker crude, bunker C, furnace fuel oil (FFO) or Fuel Oil No. 6 and Fuel Oil No. 5B. Literally at the bottom of the barrel among petroleum oils, HFO is less volatile and more viscous than diesel. It belongs to the family of aromatic aliphatic hydrocarbons C15 and greater. It contains sulphur in varying concentration depending on product specifications. It may also contain hydrogen sulphide (H2S) in trace and varying amounts. The physico-chemical and toxicological properties of HFO are listed in Table 4.3. The maximum total amount of HFO that will be stored at any one time at the plant site is 1,962.4 tons. Three vertical atmospheric storage tanks will be used for HFO storage. The first tank is the HFO settling tank (1000 kiloliter HFO Tank), the second is the HFO service tank 1 (500 kiloliter), the third tank is the HFO storage tank 2 (500 kiloliter) and the fourth tank is 150 kiloliter diesel.

Fire Hazards of HFO

Assigned a flammability hazard rating of "2" by NFPA, HFO is a combustible liquid that ignites when moderately heated. The vapor pressure of HFO is 0.001 at 20°C, a much lower value than that of diesel, making it less volatile and less flammable. Due to the low vapor pressure, explosion is an unlikely accident that may arise from the usage and storage HFO. Its boiling point range or distillation temperature is from 250oC to 550oC. Distillation temperature of diesel at 90% point is between 282-338oC. Its minimum flash point temperature is ≥ 61oC. Other physico-chemical and toxicological properties of HFO are shown in Table 4.3.

Health Hazards of HFO

Heavy fuel oil is assigned an HMIS Health Hazard Rating of No. 1, meaning that it may cause slight health hazards that may present as irritation or minor reversible injury in acute form. The Occupational Safety and Health Administration (OSHA) of the US has classified HFO as hazardous by virtue of its being a combustible liquid, an acute health hazard and as a chronic health hazard. Health concerns from HFO arise from the following hazardous substances that it contains or may contain: hydrogen sulphide (H2S); volatile organic compounds (VOCs), and the possibly carcinogenic polyaromatic hydrocarbons (PAH) that it may contain.

Studies have shown that despite the trace quantities of H2S in HFO, said substance can pose as a health hazard as it can accumulate in the headspace of storage tanks. It has been shown, for example that 1 ppm by weight of H2S in the fuel may produce 100 ppm or more H2S in the storage tank headspace. This is clearly a concern as the OSHA ceiling Permissible Exposure Limit (PEL) of hydrogen sulphide is only 20 ppm. The American Conference of governmental and Industrial Hygienists (ACGIH) prescribes

[1] C = ceiling concentration.

a threshold limit value in time weighted average (TLV-TWA) of 10 ppm and a short-term exposure limit (STEL) of 15 ppm for H2S (Global, 2014).

Short term exposure to vapors of HFO through inhalation may cause irritation to the nose, throat and upper respiratory tract. High level exposure to HFO vapors and mists, as may happen during massive spill accidents, may affect the central nervous system (CNS) and manifest as pain, headache, nausea, vomiting, dizziness, drowsiness and other CNS effects. Severe respiratory irritation is possible. High level exposure to vapors and mists of HFO may also cause convulsions, coma, respiratory arrest and even death. Noxious gases, such as hydrogen sulphide, may be released during thermal decomposition. The substance may also cause mild to moderate skin irritation and moderate eye irritation. Chronic skin exposure may cause dermatitis, characterized by red, dry, itching skin. Chronic exposure may also produce liver and kidney effects (Kildair , 2013).

As the product contains polycyclic aromatic hydrocarbons (PAHs), it has been classified as possibly carcinogenic to humans (Group 2B) by IARC. Prolonged exposure to certain PAHs by inhalation or skin contact has been demonstrated to cause skin and lung cancer (Kildair, 2013).

Nitrite-Borate solution (TRASAR®TRAC 102)

TRAC 102 is an anti-corrosion agent used in closed loop cooling water treatment system. Its active ingredients are nitrite and borate. The project intends to store a maximum inventory of 4,400 Li of this substance in drums at any one time at the project facility. The substance is an odorless and dark red liquid. Its physic-chemical characteristics are listed in Table 4.5 below. The hazardous components of the substance are listed in Table 4.6.

Table 4.5. Physico-chemical characteristics of TRAC 102 (NALCO, 2011).

Properties	Description/ Value
Product Name	TRASAR®TRAC102
Physical state	Liquid
Odor	None
Color	Dark red
Specific gravity	1.12 – 1.16 at 25oC
Solubility in water	complete
pH (100%)	11.1 – 11.8
Freezing point	-29oC
Acute Health Hazard Rating (NFPA)	2 (moderately hazardous; Temporary or minor injury may occur)
Chronic Health Hazard Rating (HMIS)	2 (moderately hazardous)
Flammability Hazard Rating (NFPA/HMIS)	1 (Slight Hazard; Material must be preheated before ignition will occur

Table 4.6. Hazardous chemical components of TRAC 102 (NALCO, 2011).

Chemical component	CAS No.	% (w/w)
Sodium Nitrite	7632	1.0
Sodium Tetraborate	1330	1.0
Sodium Metasilicate	6834	1.0
Sodium Nitrate	7631	1.0
Sodium Mercaptobenzothiazole	2492	0.1

The NFPA has assigned an acute Health Hazard Rating of "2" to TRAC 102, meaning that it is moderately hazardous and may cause temporary or minor injury on exposed persons. Exposure to the substance

is mainly through ingestion and direct skin or mucosal contact. Ingestion of the product, can lead to methemoglobin formation. This particular harmful effect is attributed to the nitrite component of the substance. Methemoglobin is a form of hemoglobin wherein the iron in the heme group is in the ferric state (Fe3+) and not the ferrous state (Fe2+) as expected in normal hemoglobin. Methemoglobin cannot bind with oxygen, which can lead to hypoxia in affected individuals. Unborn fetuses are particularly sensitive to methemoglobinemia. Exposure to the substance may cause skin and eye irritation. Sensitization of the skin may also occur. The primary route of exposure is through skin and eye contact. Unintentional ingestion is unlikely unless if the person is handling the substance while eating or smoking. Inhalation is also unlikely, though exposure to product aerosols or mists may irritate the upper respiratory tract (NALCO, 2011).

4.1.3.4. Hazards from Fire

Hazards from fires are associated with their direct heating effect, by convection within the fire itself, and thermal radiation from the fire. In case of fire engulfment, the effects of fire on humans are usually on the skin and on the lungs. Smoke rather than the fire itself, is the most common cause of death indoors.

Fires emit radiation, which can produce considerable heat loads on nearby equipment and may cause harm to people. Thermal radiation levels and their damaging effects on equipment and people are described in Table 4.7 (CCPS-AIChE, 1994).

Table 4.7. Effects of Thermal Radiation from Fire.

Incident Flux (KW/m2)	Type of Damage Caused	
	Equipment	People
37.5	Damage to process equipment (steel structure, piping, vessels, etc,) after several minutes of exposure.	100% fatality in 1 min.; 1% fatality in 10 sec.
25.0	Minimum energy level to ignite wood at indefinitely long exposure without flame.	100% fatality in 1 min.; Significant injury in 10 sec.
12.5	Minimum energy to ignite wood with a flame; melts or degrades plastic materials.	30% fatality in 1 min.; 1st degree burns in 10 sec.
10.0	-	People will feel pain after 5 seconds and receive second-degree burns after 14 seconds. Usually used to define the fatality zone, as this level is expected to quickly cause third degree burns leading to potential fatalities
5.0	-	People will feel pain after 13 seconds and receive second-degree burns after 40 seconds. Usually used to define the injury zone.
4.0	-	Causes pain if duration is longer than 20 sec.; blistering is unlikely

Incident Flux (KW/m2)	Type of Damage Caused	
	Equipment	People
1.6	-	Causes no discomfort even for long exposures

Sources: Taylor, 1994; USEPA, et al., 1990; World Bank Technical Paper No. 55.

4.1.4. RISK CHARACTERIZATION

Consequence, frequency and risk estimation were undertaken for purposes of coming up with indicative values of risks associated with the project. Since the ERA is qualitative in nature, the methodology for consequence and frequency estimation as prescribed in IAEA TECDOC 727 (1996) was deemed sufficient for the purpose and was used as methodologies for consequence and frequency estimation for this ERA.

4.1.4.1. Consequence Estimation

Accident Scenario. One worst case accident scenario analysis involving the occurrence of a fire accident, which involves all liquid fuels (diesel and HFO) at the site stored at maximum capacities, was assumed. The total amount of all the liquid fuels is 2,102.94 tons (refer to Table 4.1). Due to the very low volume of TRAC 102, no worst-case accident scenario analysis was done for this substance. The consequence analysis focused on occurrence of fire, as the primary hazard associated with diesel and HFO are their flammability potential. The accident scenario was selected based on the principle that such will give the highest accident consequences. The bases and results of the consequence analysis are shown in Table 4.8.

Table 4.8. Bases and results of consequence modelling for liquid fuel storage at the project site.

Particulars	Value	Reference/ Explanation (IAEA, 1996)
Total maximum inventory of liquid fuels	2,102.94 tons	Computed
Reference Number	1	Table IVa (Flammable liquid with vapor pressure < 0.3 bar at 20oC, in storage with tank pit)
Effect Category	BI	Table IVa; Ref. No. 1
Maximum fatality radius	25-50 m	Table V
Maximum Effect Area (Fatality Zone)	8000 m2	Table V

Summary of Results Consequence Analysis. The expected fatality radius from the worst-case accident scenario, which assumed the involvement in a fire/explosion accident of all liquid fuels stored at maximum capacity at the project site, is 25 to 30 m from the storage site.

4.1.4.2. Frequency Analysis

Results of frequency estimates based on IAEA-TECDOC-727 Manual (IAEA, 1996) are presented in Table 4.9. The reference numbers assigned by the IAEA-TECDOC-727 Manual to a specific substance and activity, as well as the effect category classification after determination of the maximum inventory of a specific substance of concern in an activity type are also listed.

Table 4.9. Frequency of accident occurrence and bases of calculations using IAEA-TECDOC 727 (1996) methodologies.

Parameters	Value	Reference/Explanation (IAEA, 1996)
Reference Number	1	Table IVa

Parameters	Value	Reference/Explanation (IAEA, 1996)
Total Mass of liquid fuels (tons)	1,530	Computed from OMCPC Data
Effect Category	BI	Table IVa; Ref. No. 1
N* i,s	8	Table IX; average probability number
nl	0	Table X (a); correction parameter for frequency of loading/unloading operations
no	0	Table XII ; correction parameter for org. safety
np	0	Table XIII; correction parameter for wind direction towards populated areas
Probability Number (Ni,s)	8	Sum of N* i,s + nl + no + np
Frequency (events per year)	1 X 10-8	Table XIV; conversion of probability numbers into frequencies

Summary of Results Frequency Analysis. Estimation of the frequency of the postulated fire/explosion accident occurrence using the methodology described in IAEA TECDOC 727 showed that the event may occur once every 100 million years.

4.1.4.3. Risk Characterization

Due to the qualitative nature of this ERA, quantitative risk values were not computed nor assessed as to their acceptability. Indicative values from the consequence and frequency calculation, however, show that risks arising from the identified hazards are low. Even in the worst-case accident scenario wherein all inventories of liquid fuel that are stored at maximum capacity were involved in a fire/explosion accident, the fatality radius, which was estimated at 20 to 50 m, is not expected to involve any external receptors.

4.1.5. RISK MANAGEMENT

4.1.5.1. Recommended Risk Management Measures

The ERA demonstrated that risks associated with the project are minimal. Despite this, it would be to the best interests of the public, the environment and the project proponent that the identified environmental hazards be appropriately managed so as to prevent their realization and to further reduce impacts of hazard outcomes, should associated accidents happen. Risks should be further managed and reduced to as low as can be reasonably attained. The values of increased safety, environmental protection or lives saved and the costs involved in the process of risk reduction should be reasonably balanced at all times.

Major considerations in risk management are appropriate plant design; compliance with standards in the design, construction and maintenance of the diesel/bunker-fired power plant, equipment and facilities; well-maintained safety systems; well-trained and motivated workforce; and the establishment of an appropriate Emergency Preparedness and Response Plan (EPRP). Table 4.10 below lists the recommended risk management measures for particular identified hazards.

Table 4.10. Recommended risk management measures for particular hazards.

Unit Operation	Hazards	Preventive and Control Measures
1. Liquid Fuel Storage (Diesel)	• Fire/ explosion following major releases/ spills	1. Provide each tank with concrete bund containment equivalent to at least 110% of maximum inventory; 2. Install lightning arrestors in strategic areas to prevent lightning strikes; 3. Equip storage tanks with appropriate lever sensors to prevent overfilling that could lead to spills;

Unit Operation	Hazards	Preventive and Control Measures
		4. Design, construction and materials of storage tank are compliant with industry standards; 5. Install fire detection devices (smoke detectors, heat detectors, or flame detectors) and fire control systems (e.g. CO2 deluge system, foam deluge system, cooling water spray, etc.) in the area; 6. Install sump pumps, spill drainage and treatment system; 7. Control all ignition sources in the area; 8. Ensure regular inspection and maintenance of tanks, piping, valves, gauges and other accessories; 9. Maintain a safety radius or buffer zone around the facility. 10. Set up and implement an effective spill and fire prevention and control program; 11. Ensure that chemical tank/container labels are readable and in standard format; 12. Good housekeeping practices; 13. Implement necessary security measures to prevent any unauthorized persons from loitering in storage areas; 14. Education/ training on fire/explosion safety, prevention and control and on safety SOPs; 15. Written safety procedures that are specific, readily accessible to all operating personnel; contain necessary information for system checkout, warm up, shut down and emergency conditions; and regularly reviewed; 16. Regular conduct of fire-fighting and response drills
	• Toxicities from toxic chemical components (VOCs, H2S, PAHs, heavy metals) through inhalation, skin and mucosal contact	1. Spills prevention and control program for liquid fuels; 2. Address this hazard in the Emergency Preparedness and Response Program for the Plant; 3. Provide appropriate PPEs to workers (e.g., respirators, gloves, goggles); 4. Education/training on chemical hazards and safe handling and procedures; 5. Post the MSDS of the liquid fuels in a conspicuous area.
2. Storage and Use of Nitrite + Borate solution (anti-corrosion agent)	• Toxicities from toxic chemical components (sodium nitrite, sodium tetraborate, Sodium Metasilicate, Sodium Nitrate, Sodium Mercaptobenzo-thiazole)	1. Provide storage drums with secondary containment or bund system, the volume of which should be enough to contain 110% of the maximum substance inventory; 2. Post the MSDS of the substance in conspicuous area near the storage facility; 3. Orient and train all workers on hazards of all substances and on emergency preparedness and response; 4. Provide appropriate PPE (goggles, gloves, long sleeved lab gowns, respirators) free of charge to workers who are involved in the preparation, usage and waste disposal of the substance; 5. Train workers on the importance of PPEs and their proper use; 6. Spills or waste product of the substance should be properly treated before disposal to the environment.
3. Electricals	• Electrical burns from flash arcs and direct contact with electricity • Electrical shocks from direct contact with electricity	1. Ensure provision and wearing of appropriate PPEs by personnel and workers (e.g., fire retardant clothing, gloves, safety shoes, etc.); 2. Put up signages to indicate electrical hazard areas; 3. Limit access to identified electrical hazard areas to authorized persons only

Unit Operation	Hazards	Preventive and Control Measures
4. Climate Change (as predicted by PAGASA)	• Intensification of many aspects of environmental risks	1. Integrate the factor of climate change in the design, operational plans, safety program, and Emergency Preparedness and Response Program (EPRP) of the power plant; 2. Orient, educate and train all personnel and workers on EPRP of the Plant, and SOPs in case of emergency.
a. Increased frequency and intensity of tropical cyclones; b. Increased intensity and frequency of rains during rainy season	Increased risks from fire/ explosions due to equipment/facility damages; more frequent shut downs and start-ups; greater probability of lightning strikes Increased risks from direct contact with electricity due to flash floods and wet conditions.	
c. Drier dry seasons; increased ambient temperatures; greater frequency of extreme temperatures	Increased risks from fire/explosions incidents; Increased toxic risks from chemicals	

4.1.5.2. Emergency Plan

DENR requires the preparation of an emergency/ contingency plan for substances with inventory equal to or more than the Level 1 Threshold Inventory as defined in Annex 2-e of the Revised Procedural Manual of DAO 2003-30 (Guidelines for the Conduct of Environmental Risk Assessment). All identified hazardous substances in the proposed project are all way below the Level 1 Threshold Inventory. Nevertheless, a recommended Emergency Plan is prepared for liquid fuels (diesel and HFO) contingencies, such as major spills and fire accidents. The recommended Emergency Response Plan should be situated in the context of the proponent's (Emerging Power, Inc.) Emergency Preparedness and Response Program (EPRP), which should have well-defined objectives, organization, standard operating procedures (SOPs) and courses of action for each identified threat. Said EPRP should include the following components:

- Policy statement;
- Environment, Safety and Health Guidelines;
- Procedures;
- Evacuation Plan and Procedure; and
- Priority Settings for the Evacuation.

<u>Emergency Response Procedures in Case of Liquid Fuel Spills and Fire</u>

Objectives:

- To contain the liquid fuel, spill the soonest possible time so as to minimize exposure of workers and the surrounding communities to hazardous chemical components;
- To prevent the spill from contaminating the surrounding environment; and
- To prevent the escalation of events into fire/explosion accidents.

Important Considerations:

- Immediate mobilization of the Emergency Response Organization of the Plant;
- Know the product and identify its hazards (flammability, health, reactivity, etc.);
- Know the product's composition and information on each component;
- Study, familiarize and employ first aid procedures as necessary;
- Be educated, familiarize and apply appropriate fire-fighting procedures as needed;
- Be educated, familiarize and apply accidental release measures;
- Know and apply appropriate clean up procedures, handling and storage; and
- Know and apply appropriate control procedures and the necessary personal protection needed.

Specific response procedures. The Material Safety Data Sheet (MSDS) of a hazardous substance of concern (e.g., diesel, bunker fuel) may be consulted for specific recommended actions and procedures in case of contingencies, such as spills, fires and acute toxicities. The MSDS can provide information, for example, on first aid procedures, PPEs needed, clean up procedures, fire-fighting procedures, physico-chemical and toxicological properties, etc.

4.1.6. SUMMARY AND CONCLUSIONS

Hazards associated with the Project are fire from storage and utilization of liquid fuels (diesel and HFO), toxic components of liquid fuels (VOCs, PAH, H2S), toxic components of the nitrite-borate anti-corrosion agent, TRAC 102; electrical hazards; natural hazards; noise; air pollution; water pollution; and occupational hazards. This environmental risk assessment focused only on the following hazards: fire/explosion, chemical toxicity, and electrical hazards. The intensification of hazards by predicted climate changes were taken into consideration.

The risk assessment covered only qualitative aspects, as specified in the technical scoping. Through risk screening it was verified that the identified hazardous substances are way below the prescribed limits of DENR's Threshold Inventory Level 1. Each identified hazardous substance was qualitatively described in terms of its hazard rating, and its inherent physico-chemical and toxicological properties. Specific environmental, health and safety hazards attributed to the substance were described. The liquid fuels, diesel and bunker fuel are moderately flammable fluids (NFPA Flammability Rating 2) that require moderate heating before they can be ignited. Their acute health hazard rating is "1", meaning that the substances are slightly hazardous to health; that irritation or minor reversible injury is possible with exposure to the substance. Bunker fuel is assigned a chronic health hazard rating of 2 (moderately hazardous) because some of its PAH components may be possible human carcinogens.

Chemical toxicity risks from storage and use of Nitrite-borate solution (TRAC 102) is expected to be minimal given the small amount of the substance, its low toxicity rating (moderately hazardous), and its low volatility. Effects from this hazard are expected to be mostly occupational and be well confined within the vicinity of the storage and usage sites. Consequences from electrical hazards are not expected to go beyond the plant site and are mostly occupational in nature.

To obtain indicative values for risk characterization, consequence and frequency estimation were done using methodologies as described in IAEA's TECDOC 727 Manual (1996). A worst-case accident scenario analysis was conducted for the flammable liquid fuels (diesel and HFO), substances which are expected to account for the worst hazard outcome within the facility. The consequence analysis for fire/explosion yielded a fatality radius of 20 to 50 meters from the location of liquid fuel storage tanks, distances that are not expected to go beyond the perimeters of the power plant facility. The frequency

analysis yielded a frequency value of 1.0 X 10-8 events per year or an event frequency of one in every 100 million years, indicating a very low probability of occurrence.

Overall, it may be concluded that risks associated with the proposed project are low. Consequences from even the worst-case accident can very well be managed not to go beyond the plant premises, given the short fatality radius involved. Indicative value of the probability of accident occurrence is likewise very minimal.
Recommended risk management measures are described in Table 4.10, Section 4.5 of this document.

4.2. Environmental Health and Safety Program of OMCPC

4.2.1. Introduction

OMCPC's Environment, Health and Safety Program is designed to comply with the requirements of Occupational Safety and Health Standard.

The main goal of the safety program is to eliminate hazardous work practices and conditions at the project site. Although it may never be possible to completely eliminate disabling injuries and accidents, all effort must be made to do so. The safety procedure and all other safety training tools such as safety bulletins and posters which are integral part of that effort will be enforced and disseminated to ensure success of the Environment, Health and Safety.

Attitude and safe working condition are the key factors in accident prevention. Everybody is encouraged to develop a continuing concern for safety by making safety a matter of personal commitment. The safety of everybody depends on the interest and concern of each individual by observing and adhering to company Environment, Health and Safety Standards.

The safety rules and regulations presented in this safety plan are derived from the diversified experiences of safety practitioners who are dedicated to the prevention of operations losses due to accidents. This does not attempt to spell out every conceivable requirement for the prevention of job hazards; rather it suggests procedures for dealing with work hazard and provides a foundation for the development of safety consciousness. Additional safety precautions that can further assure an accident-free operation maybe incorporated.

As a strict compliance of safety rules regulation is a must, it is urgent importance that the management, the employee and workers must be made aware of and be familiar with this Environment, Health and Safety Plan.

4.2.2. General EHS Policy Statement

"We, at OCCIDENTAL MINDORO CONSOLIDATED POWER CORPORATION is one of the power generation company whose foundations are customer satisfaction and continuous good service. In pursuing our business objectives, we commit to deliver high quality, cost effective, timely and safe working systems, with utmost care for the environment, safety and health of our people.

OMCPC is committed to serve with great satisfaction without sacrificing the environment as well as safety and health of all workers. We believe that all accident and incidents are preventable thru proper management, orientation and training.

Having an Accident–Free Working Environment is every company's goal and we can achieve this by sharing to others our knowledge with regards to environment, safety & health management. We should learn from our past experience and make some counter-measures so past accidents/incidents will not happen again."

4.2.3. OMCPC Safety Organization

This section of the safety program describes the project organizational structure for health and safety and outlines the responsibilities of the personnel who have been assigned specific duties to control, coordinate and monitor health and safety matters and who have significant contribution to make in the successful implementation of the safety program.

4.2.3.1. Plant Manager

- The plant manager has overall responsibility for all health and safety matters on the project.
- He shall ensure that the safety program is regularly reviewed, kept up to date and implemented in full.
- He shall ensure that all line management is conversant with the relevant requirements of current legislation and of the safety program and that all supervisors are assigned appropriate duties and responsibilities to assist in its effective implementation.

4.2.3.2. Safety Officer

- Conduct independent daily safety inspection to check conformance with the established safety program and to draw management attention to any defect or deficiency.
- Check proper usage and maintenance of protective equipment and evaluate its effectiveness in the project.
- Conduct investigation of any injury to personnel, loss or damage to property including near misses.
- Encourage all trades to safety consciousness during safety toolbox meeting to suggest ways of improving safety as well as preventing loss and damage to equipment and materials.
- Ensure that any equipment on site is suitable and provided with necessary valid certificate and to draw management attention to any defect or deficiency.
- Keep abreast with new development in the field of accident prevention, personal protective equipment and first aid procedures and equipment.
- Determine the cause of any accident and recommend measures to prevent recurrence of same.

4.2.3.3. Plant Nurse

- Administer first aid treatments and provide medications for employees needed.
- Monitor and record the patient's condition.
- Assist all injured employees to the nearest hospital.
- Maintain all employees medical and other similar records
- Secure and ensure that the sick employees submit fit to work certificate
- Interpret and evaluate diagnostic test base test based on the verification of medical certificates
- Conduct inventory of medicines and other supplies twice a month.
- Perform other duties and other responsibilities that maybe assign from time to time.
- Blood pressure monitoring once a week to all employees.
- Does other office work related to the job/s listed above.

4.2.3.4. Engineer and Supervisors

- The Supervisors are accountable to the Plant Manager implementing the pertinent requirements of the Safety Plan in regard to the operations for which they are responsible.
- They shall be directly responsible for safety. It is their duty to inspect their workplace, investigate accidents, correct unsafe conditions and unsafe practices, and develop and maintain a good safety attitude among all people under their supervision.
- They shall familiarize themselves with the requirements of the relevant health and safety legislation, the Safety Plan and the specific health and safety programs of subcontractors under their control.
- They shall closely monitor the operations under their control to ensure that they are conducted in accordance with all the foregoing requirements and take urgent and appropriate action to prevent unsafe working practices and any other infringements of the statutory, contractual and Safety Plan requirements.
- They shall indoctrinate new hires and transferred workers concerning the hazards of the work or the task to be performed.
- Have a thorough knowledge of safe procedures, work permits, etc., applicable to the work being performed.
- Conduct safety meetings among his men prior to any work/activities.
- Responsible for obtaining prompt first aid to the injured.

4.2.3.5. All Personnel/Workers

- Every person employed on the plant shall be regularly reminded that they have a duty to take reasonable care of their own health and safety as well as that of others who may be affected by their actions or omissions at work and to wear or use the appropriate safety equipment, clothing and safety devices.
- Every person found intentionally or recklessly interfering with, or misusing, anything provided for the safety, health or welfare of persons employed upon, or visiting the site shall be liable to disciplinary action including instant dismissal or removal from the project site.
- All personnel shall be required to wear or use the appropriate safety equipment, clothing and safety devices.
- All personnel shall be required to familiarize themselves with the relevant requirements of the Plant Safety Program and the specific health and safety programs of the Subcontractors, where applicable.
- All personnel shall be required to report any damage to property or equipment to their immediate supervisor, regardless of whether persons were injured when the damaged was incurred.
- Do nothing to endanger self or workmates, refrain from horseplay and abuse of safety devices, equipment and welfare facilities.
- All personnel shall be encouraged to make suggestions to improve health and safety on the site. Suggestions can be made to their immediate supervisor or engineer.

4.2.4. Safety Management

4.2.4.1. General Provision

This section of the safety program describes the general health and safety management techniques implemented in order to control and to promote greater health and safety awareness among all persons employed upon or associated with the project, and to monitor and measure the overall projects performance in health and safety.

All relevant statutory safety requirements and all health safety requirements shall be observed.

4.2.4.2. Safety Rules and Regulations

In line with the general policy, the company hereby promulgates the safety rules and regulations to govern employee's conduct while on the job, or in the company job site or compound.
It is therefore the general policy of the company to ensure the personal health and safety of its employees to the end that each employee may be unnecessarily exposed to danger or other hazards and that he may encounter with maximum safety and efficiency.

OMCPC strictly enforce all of the Safety Policies and Procedures stated in this safety program including the PPE Zoning. Inside the PPE Zone all personnel are required to wear a Hardhat and a Safety Shoes or Safety Rubber Boots if necessary and a special PPE's are mandatory to every facility and working areas. This procedure is effective every day and night, even after working hours, rest days and holidays. See attached layout of the PPE Zoning.

Any person who failed to comply any safety policy, commits unsafe act or violates common sense on safety does not only expose himself to unnecessary danger but also endangers the personal health and safety of his fellow workers and may, through his action or omission, cause damage to person or property, either of the company or his fellow employees.

An employee who willfully violates any of these rules or who; through gross neglect, commits an unsafe act; shall be subject to disciplinary action including but the disciplinary action depends on the gravity of the offense or the degree to which the employee or his fellow workers has been unnecessarily exposed by reason of such unsafe act or omission.

<u>Safety Personnel</u>

To ensure that the Environment, Health and Safety Plan is duly followed and enforced at the plant premises and including the construction project site which is required to have the minimum required safety personnel, as described herein:

- A full-time officer who shall be assigned as the Safety Officer to oversee full time the overall management of the Safety and Health Program.
- An additional Safety Officer depending on the total number of personnel assigned to the construction project sites, to oversee the effective compliance with the Construction Safety and Health Plan of the Contractors at the site, under the direct supervision of the Plant Manager.
- Two (2) Full time Safety Officer for every two hundred (200) workers or fraction thereof, to oversee the effective compliance with the Construction Safety and Health Plan at the construction project site.
- Each construction subcontractor (if any) must provide for a representative, who shall have the same qualifications as a Safety Officer to oversee the management of the Construction Safety and Health Plan for the subcontractor's workforce and the specific area of work operations.
- Only safety personnel (Safety Officer) who has undergone trainings in accordance with the requirements of Rule 1033 of the Occupational Safety and Health Standard shall be employed.

Emergency Health Personnel and Facilities

The OMCPC in partnership with Salcedo Medical Clinic and San Jose District Hospital provides medical facility and other necessary first aid facilities for the use of the workers employed in the project site.

First aid boxes shall be kept for emergency only, when the work area is more than four (4) minutes from the nearest medical facility. Medical supply shall be replaced with the same quantity immediately after use or consumption.

First aid treatment for injury or sickness shall be reported to OMCPC and brought to Salcedo Medical Clinic and San Jose District Hospital, and shall not be carried out by our employee except in an emergency.

For over nineteen (19) employees one (1) shall be trained in First Aid and one for every one hundred (1/100). Training shall be approved by the management.

Subcontractor

The company shall require from all subcontractors, and other persons associated in any way with the project, the same standards of health and safety as required of the client.

All subcontractors shall be required to fully comply with all aspects of this Safety Plan.

All subcontractors shall nominate and appoint their own Safety Officer or Safety representative.

4.2.5. Safety and Health Committee/Disaster Management Team

To ensure that these rules and the Safety and Health Plan are observed and enforced at the plant site, at the start the operation must have a safety and health committee composed of the following personnel as described under:

a. Plant Manager or his representative as the chairperson ex officio;
b. Safety Officer as the secretary;
c. Supervisors and Engineers;
d. All Personnel/Workers.

The OMCPC created Emergency Response Team to fulfill the needs when emergency situation occurred. It is composed of the following:

- First Aid & Rescue Team (FART),
- Fire Suppression Team (FST),
- Communications Team (CT),
- Crowd Control Team (CCT), and
- Spill & Flood Control Team (SFCT).

4.2.6. Components of the Safety and Health Program of OMCPC

The Environment, Health and Safety (EHS) Program of OMCPC includes the following components:

- Safety Organization
- Safety Management
- Individual Responsibilities
- Safety Education and Training
- Personal Protective Equipment

- Office Safety
- Fire Extinguisher Inspection and Location
- Housekeeping
- Alcohol and Drug-free Workplace
- Accident Investigation and Reporting
- OMCPC Emergency Response Procedures
- OMCPC Disaster Management Team
- First Aid and Medical Services
- Bunk House Safety
- Safe Use of Electrical Power Tools
- Hot Works
- Material Handling
- Elevated Work Fall Protection
- Electrical Works
- Assured Equipment and Grounding Conductor Program
- Confined Space Entry
- Cranes and Lifting/Hoisting Equipment
- Steel Erections
- Sling Inspection and Identification
- Painting Safety
- Disciplinary Policy
- Signs, Barricades and Flagging
- Security Plan
- Protection of the General Public
- Environmental and Waste Management Plan
- Sludge Disposal Management Plan
- Spill Prevention/Contingency Plan
- Heavy Equipment Safety Management
- Permit to Work System

4.3. Safety Statistics for the Period 2022 - June 2023

The annual safety statistics for the existing OMCPC for the period 2022-2023 (June). For the said period, there was no fatal accident that occurred, while there were two (2) non-lost time accidents. Of the 2 workers that were involved in the incident, one (1) of this was a Medical Treatment Case (MTC) and one (1) First Aid Case (FAC). It is worth noting that no fatal lost time accident (F-LTA) occurred in the two-year period, indicating that no major accident happened in the said period. Based on the safety statistics, it could be said that the safety performance of OMCPC for the period was good accumulating 521,972.11 safe work manhour (without LTI).

A lost time accident is an accident occurring at the workplace that results in at least one full day away from work due to sustained injury. A Fatal Lost Time Accident (F-LTA), on the other hand, is an accident occurring at the workplace that results to the death of a worker or workers. A death at the workplace is equivalent to 6,000 days lost.

5 SOCIAL DEVELOPMENT PLAN FRAMEWORK AND IEC FRAMEWORK

5.1. Social Development Plan Framework

The Social Development Plan (SDP) framework primarily addresses the concerns identified during the scoping session, meetings, and consultations with the stakeholders. The SDP integrates the ongoing and planned social intermediations that will benefit both OMCPC and the local community. As part of the Company's social responsibility, it aims to capacitate the stakeholders through developmental projects that will enhance their skills, which will later on encourage self-reliance through financial independence.

With reference to *Section 66* of RA 9136 otherwise known as Electric Power Industry Reform Act (EPIRA) of 2001: *"The proponent shall allot one centavo per kilowatt-hour (PhP 0.01/kWh) of the electricity sales which shall apply to all generation facilities and/or energy resource development projects located in all barangays, municipalities, cities, provinces and regions",* the actual SDP shall be conducted to determine the specific plan of OMCPC and the stakeholders in retaining or improving the existing social development programs. Among the target participants will be the representatives of the project proponent, project affected persons, municipal and barangays officials, and other stakeholders.

OMCPC is committed to continuously implement the following:

- Electrification Fund (EF) at 50% of one centavo per kWh (PhP 0.005/kWh);
- Development and Livelihood Fund (DLF) at 25% of one centavo per kWh (PhP 0.0025/kWh); and
- Reforestation, Watershed Management, Health and/or Environment Enhancement Fund (RWMHEEF) at 25% of one centavo per kWh (PhP 0.0025/kWh).

The Community Relations Office (CRO) of OMCPC will continue to coordinate with other corporate units regarding the implementation of the SDP. The ComRel is the forerunner of the company in its interface with the host communities and local government officials. The ComRel also discusses the concerns firsthand about employment, medical missions, education, trainings, livelihood and other community needs. The CRO will be responsible in highlighting the needs of the community and shall approve and/or endorse such necessities to the proper corporate authorities of OMCPC. The CRO is also assigned in leading the development assistance with the affected stakeholders.

The proceeding section presents the different programs under the SDP of OMCPC which have been captured through FGDs and KIIs. The following programs shall consider potential projects under ER 1-94 including reforestation, watershed management, health and/or environmental enhancement fund and among the inclusive programs under the energy regulation policies.

5.1.1. Employment Assistance Program

Employment offered by OMCPC is limited. On the other hand, for the proposed expansion, not employing the residents will significantly affect the trust of the community to the Company. The ComRel in coordination with the human resource unit and/or project management of OMCPC shall be responsible for ensuring that importance and top priority will be given to the residents of the affected barangays as far as employment is concerned. Pre-selected qualified applicants shall undertake the usual pre-employment procedures.

Table 5.1. Social Development Plan (SDP) framework of the OMCPC San Jose Power Plant Expansion Project

Concern	Responsible Community Member/ Beneficiary	Government Agency / Non- Government Agency	Proponent	Timeline	Source of Fund
1. Employment assistance program • Local employment with precedence over local residents • Conduct of training programs to capacitate local residents	Municipal/ barangay officials Qualified residents of the host barangay	Municipal and barangay local government	Community Relations Officer and Human Resource Office	Construction and operation	Annual budget of CRO
2. Education and skills training programs • Agriculture based training • Scholarship programs • Local school facility/ educational tools enhancement • Innovative training for the youth and teachers	Qualified students/ residents, schools in the host barangay	Department of Education Municipal and barangay officials	Community Relations Officer	Construction and operation	Corporate funds ER-1-94 Section 289 local government code
3. Health and nutrition programs • Medical and dental missions • Enhancement of local health facilities • Haplos Musmos Program • Nutritional and feeding programs	Barangay health center Residents of host barangay and municipality	Municipal Health office Barangay health committee	Community Relations Officer	Construction and operation	Corporate funds ER-1-94 Section 289 local government code
4. Livelihood assistance program • Dress-making for women (training and provision of equipment and materials) • Business-related awareness and training	Residents of direct impact areas and indirect impact areas Women and youth sectors	TESDA Local government units	Community Relations Officer	Construction and operation	Corporate funds ER 1-94 Section 289 local government code
5. Environmental enhancement program • Tree planting activities in the surrounding vicinities	Residents of direct impact areas and indirect impact areas	DENR/CENRO Municipal and barangay	Community Relations Officer	Construction and operation	Corporate funds ER 1-94

Concern	Responsible Community Member/ Beneficiary	Government Agency / Non- Government Agency	Proponent	Timeline	Source of Fund
• Bamboo plantation and enterprise development		environmental communities			
6. Infrastructure improvement • Farm-to-market road • Construction of waiting sheds • Provision of street lights	Residents of impact areas, municipal and barangay officials	DPWH Municipal and barangay local government	Community Relations Officer	Operation	Corporate funds/ local government funds

OMCPC may consider the conduct of free training program for non-qualified residents to assist potential applicants in uplifting his/her skills and have a greater change to be hired in the future. OMPC will also continue to provide support among its workers especially in needed trainings and workshops related to the operation of the power plant.

5.1.2. Education and Skills Training Program

To continuously promote the intellectual and physical well-being of school children, the proponent shall provide adequate educational and accessory facilities.

OMCPC will continue to provide educational assistance to the host barangays through classroom construction and repairs and provision of educational materials and equipment among others. Teachers and youth trainings on innovative educational system can also be considered in the line-up of projects with the aim of improving the quality of education in the community. As an added knowledge, agriculture-based learning scan be introduced to the youth to encourage business-related opportunities at a young age. Continuation of scholarship grants to deserving children in the community is also a good project.

Plate 5.1. OMCPC's participation in Brigada Eskwela at Hilltop National High School

Plate 5.2. OMCPC's participation in Brigada Eskwela at Caminawit National High School

Plate 5.3. OMCPC donation of canon printer, inks and coupon bonds to Thirty (30) Elementary schools including six (6) Mangyan Communities like Taganop Elem School, Naibuan ES, Naitan, Danlog , Insulman and Hinango Elem. School

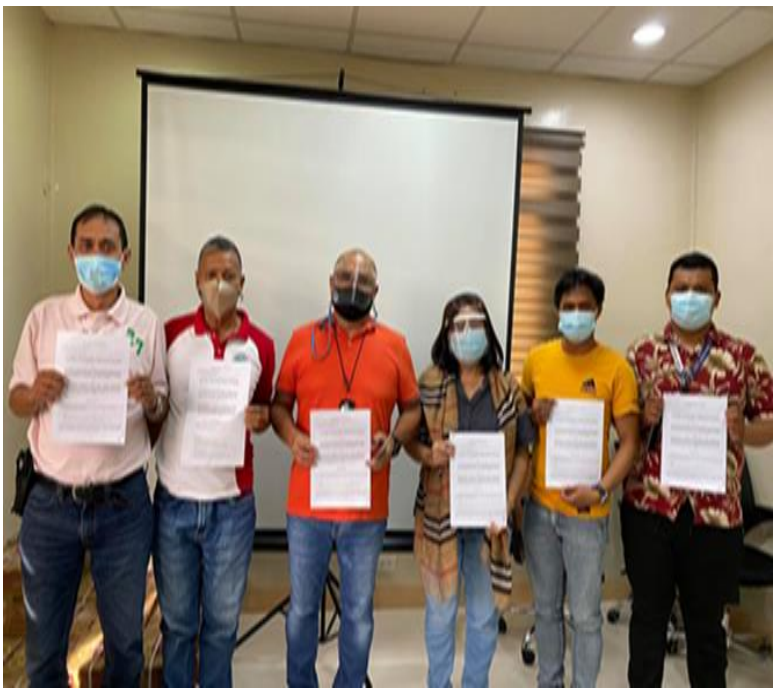


Plate 5.4. Consultation meeting with Taganop Elementary School head for the donation four (4) classrooms located within a Mangyan Community

Plate 5.5. Distribution of school supplies and materials to indigents communities at Caminawit Central School

Plate 5.6. Finalization thru coordination with MSWD Official in the implementation of Scholarship Program for Engineering Students. OMCPC will provide P10,000 allowance for every indigent and deserving 20 students for every semestral period

5.1.3. Health, Sanitation and Nutrition Assistance Program

OMCPC aims to support the community in improving the general health situation and nutrition of residents in the barangay and its municipality by enhancing the provision of basic health and nutritional services and affiliating with the nutritional programs of the RHU. This can be accomplished through the regular medical and dental missions and feeding program including Haplos Musmos Program of OMCPC. Moreover, OMCPC must continue to collaborate with the RHU regarding the enhancement of the local health programs including assistance in providing vitamins for mothers and senior citizens. Based on the FGD, the local community is seeking for the provision of ambulance vehicle and maintenance medicine, which are part of the LGU's basic response for medical assistance. Contribution to the improvement of health services and facilities will be done through its own funds under ER 1-94.

Plate 5.7. Distribution of milk and vitamins to almost 50 children of indigents families

Plate 5.8. Feeding activities were launched by OMCPC to more than 100 day care children beneficiaries at the farmers village of Sitio Pulang Lupa and Sitio Mabuhay, Central

Plate 5.9. Awarding of 40 toilet bowls was held in the Barangay Hall of Central to address poor sanitation

5.1.4. Livelihood Program

It is intended that the existing SDP of OMCPC will continue to enhance the living situation of the impact communities. The livelihood option such as the conduct of business-related trainings was deemed important during the FGD conducted. The current dress-making assistance program to women including the provision of sewing machine and capital amount was appreciated by the stakeholders. Currently, the attendees of the FGD are inclined in learning business-related techniques that will further assist them in enhancing their skills for other potential livelihood opportunities. OMCPC may also explore the potential of bamboo plantation and developmental enterprise which can further assist the stakeholders in generating income simultaneous with environmental conservation.

Plate 5.10. Organizing of OMCPC Neighborhood Association for livelihood dressmaking. Two Juki heavy duty sewing machine and initial financial capital was provided by OMCPC.

5.1.5. Environment Assistance Program

OMCPC is serious is committed in the conservation and protection of the natural resources especially within and around its vicinity. During the FGD, it was mentioned that the areas where the tree planting program of OMCPC was established has already flourished.

Plate 5.11. Tree planting activity at Brgy. Central

Plate 5.12. Tree planting of 200 Narra seedlings with the participation from the academe and Brgy. Officials of Central

Plate 5.13. Mangrove Tree Planting activity at Brgy. Mangarin, San Jose, Occidental Mindoro.

Plate 5.14. Launching of Coastal Clean-up activities in the coastal areas of Barangay Caminawit

Plate 5.15. Mangrove Tree Planting activity at Barangay Mapaya, San Jose, Occidental Mindoro

Plate 5.16. Tree Planting activity at Iriron, Calintaan National High School

Plate 5.17. Tree Planting activity of 300 narra seedling at Aguas National High School, Rizal, Occidental Mindoro

Thus, the company should continue to identify other sites for reforestation and/or enhance the existing program. As priorly discussed, OMCPC may also explore the potential of bamboo plantation and its associated enterprise potential.

Plate 5.18. Mangrove Planting in Barangay Ansiray, Ilin Island

OMCPC also donates empty drums that are recycled for Clean and Green Programs in the municipality. OMCPC has donated several hundreds of drums to be utilized as trash cans to promote waste segregation. Empty drums were also used as barricade for defense capability of Philippine National Police.

Plate 5.19. Clean and Green Programs" of various Brgy. Local Government Units (LGUs) particularly in the Municipality of San Jose where OMCPC had distributed more than 100 empty drums to be used as garbage cans

Plate 5.20. OMCPC had distributed empty drums to be used as barricade defense capability

Plate 5.21. Donation of 20 empty drums to Barangay Bubog, San Jose, Occidental Mindoro clean and green beautification program

Plate 5.22. Farmer beneficiaries of empty drums using it as alternative irrigation water channel during long dry season at Brgy. Central

5.1.6. Infrastructure

Currently, OMCPC has provided immense assistance in cementing the barangays road and has helped in establishing waiting sheds and street lights within the host communities, which provided more comfort among the stakeholders when going outside their homes. During the FGD, it was mentioned that they a farm-to-market road project will further assist them in delivering both their raw materials and produce to potential and existing markets in a shorter period of time.

Plate 5.23. Installation of Solar Powered Street light along Sityo Casoy, Central, San Jose, Occidental Mindoro

Plate 5.24. Electric motor pumps were provided in government schools for water supply such as in Aguas National High School

Plate 5.25. Awarding of Computer Desk Top to Barangay Central

Plate 5.26. Coordination, planning, construction and ocular inspection of OMCPC donation of three (3) school classrooms and one (1) social hall to Sityo Taganop Elementary schools installed a 1000 KW capacity powered by Solar Energy and is now being used by the schools for their lighting needs and operation of lap tops and xerox machines

5.2. IEC Framework

The Information, Education and Communication (IEC) Program directs OMCPC to effectively disseminate information that are important to the stakeholders. The IEC program serves as a guidebook that puts emphasis on the environmental management and monitoring plans, Social Development Plan and project operations including development process and OMCPC's contribution to local development. The implementation of the IEC is headed by the Community Relations Officer – Mr. Rolando Ilustre.

OMCPC had also actively conducted its information dissemination to consumers and the listening public. Regular radio programs in the two radio stations: the *DWDO* and *Radio Natin* had tackled interviews and discussion of topics that provided correct information to controversial power issues. Through these radio programs hosted by the CSR Officer various government agencies resource

persons both from the power industry, LGUs and even from DENR were interviewed. OMCPC had also established harmonious relation with local media to gain their support in the proper delivery of issues concerning the plant activities and concerns. Several occasions of plant site visit were conducted with local media active participation.

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Plate 5.27. IEC activity at Radyo Natin FM Radio

Plate 5.28. IEC activity at 102.5 Heart FM Radio

Plate 5.29. IEC activity at DZYM AM Radio

5.2.1. Target Sector

The primary audiences of the IEC are the project stakeholders, including the following:

- LGU Officials and Community Leaders from the Province of Occidental Mindoro, Municipality of San Jose and DIA and IIA Barangays;
- Local NGOs and other Interest Groups; and
- Schools, Health Centers and other Concerned Government and Private Agencies.

5.2.2. Overall Scheme

This IEC Program Strategy shall use:

- One-way delivery of messages, facts and statements through the use of handouts, AVP and reports; and
- Two-way exchange of opinions, facts, statements, or sentiments about the messages through multi-partite meetings or group discussions

5.2.3. Message

The topics that will continuously be covered in the IEC activities include the project details and the processes involved, results of the self-monitoring activities conducted by OMCPC as well as the MMT and the company's performance in complying with the conditions of the ECC as well as other agreements that may be arrived at during the project life. The Company's program to protect the environment and apply conservation techniques shall be reported continuously through the regular IECs. Other activities such as discussions with concerned individuals or institutions, as beneficiaries or as implementing partner, during the planning, implementation, monitoring or evaluation of the programs identified in the SDP shall also be part of the existing and enhanced IEC program.

5.2.4. Timeline and Frequency

The IEC activities shall continue to be implemented as part of the ECC conditionality. Correct and proper Information shall be disseminated to the concerned target sectors as soon as information is available and cleared by the management for release. Table 5.2 below shows the topics to be considered in the enhanced IEC plan of OMCPC.

Table 5.2. Information Education and Communication Framework Matrix

Target Sector to be provided with IEC	Major Topics	IEC Strategy / Methods	Information Medium	Indicative Timeline / Frequency	Indicative Cost, PhP
Occidental Mindoro province, San Jose municipality, barangay Central, Sitio Pulang Lupa	Project cycle and processes, pollution control and monitoring Environmental parameters	Seminars workshop	Audio visual presentations handouts	Pre-construction, Construction until operation	15,000/ month
San Jose municipality and barangay officials Civil society, leaders of local NGOs	ECC compliance report Monitoring statistics SDP compliance	Seminars/workshops Regular meetings/ Radio broadcast, social media platforms, printed materials	Compliance/ monitoring reports Consultation meetings	Pre-construction, Construction until operation	15,000/ quarter
RHUs, barangay heath service, schools, people organizations, concerned government agencies, private companies	Programs under the SDP and CSR and its implementation	Seminars/ workshops Meetings One on one meetings Focus group discussion; Radio broadcast, social media platforms, printed materials	Official letters, memorandum circulars, consultative meetings, focus group discussions, radio programs	Construction until operation	15,000/ quarter
Barangay officials, senior citizens, women and youth sector, leaders of affected barangay, Leaders of local NGOs	Planned/identified livelihood programs and other benefits from the proposed project Issues and concerns and suggestions to address how to smoothly pursue the implementation phase	Focus group discussions	Reports/consultation meetings	Construction until operation	7,500/ meeting

6 ENVIRONMENTAL COMPLIANCE MONITORING

6.1. Self-Monitoring Plan/Compliance Monitoring and Validation

Environmental monitoring is inherent in best practice environmental management. This environmental monitoring program will be implemented for the periodic assessment of the conditions at the project site and subsequent action on environmental management measures at all stages of the project.

OMCPC incorporate in its organizational structure an Environmental Management Unit (EMU) that shall perform all necessary environmental monitoring as part of its environmental management program.

The EHS Manager, also the Pollution Control Officer (PCO), is responsible in submitting Self-monitoring Reports (SMRs) as part of the Self-monitoring System being implemented by the Department of Environment and Natural Resources (DENR). The report is submitted to the DENR Region IVB Office on a quarterly basis and include the following modules:

- Module 0 (General Information Sheet) – It contains basic information about the facility;
- Module 1 (General Information) – Included in this module are background information about the establishment firm or facility and changes or modifications of Module 0;
- Module 2 (R.A. 6969) – This module is divided into:
- COO Report;
- Hazardous Wastes Generator; and
- Hazardous Wastes Treater or Recycler;
- Module 3 (P.D. 984 - Water Pollution);
- Module 4 (R.A. 8749 - Air Pollution);
- Module 5 (P.D. 1586 - EIS System); and
- Module 6 (Others) – Necessary data not included in previous modules are included in this section.

In addition to the SMR, a Compliance Monitoring and Verification Report (CMVR) is also accomplished by the Pollution Control Officer. The report contain OMCPC's status of compliance to the conditionalities indicated in the ECC and the commitments stated in the Environmental Monitoring Plan.

The key objectives of the monitoring program are to demonstrate the ongoing effectiveness of mitigation measures and detect environmental impacts at an early stage so that they can be addressed immediately and effectively.

Table 6.1. Self-monitoring activities of OMCPC

Aspect	Parameters	Stations
Actual power generation operation	• Average and maximum operating hours per day • Average and maximum operating days per week • Average and maximum number of shift per day • Power Generation Capacity • Average Daily Production Output (KwH) • Total water Consumption per quarter (m^3) • Total Output *power generation capacity* per quarter (MW) • Total electric consumption per quarter (KwH)	Entire power facility
Waste Materials	• Waste chemical generated	Monthly and Quarterly

Aspect	Parameters	Stations
	• Hazardous waste generation • Waste storage, treatment and disposal	
Water	• Water pollution data • Water treatment plant discharge • Cost of treatment (if necessary)	• Semi Annual Outlet 1 – Oily Water Separator
	• Ambient water ➢ Effluent rate ➢ BOD ➢ TSS ➢ Fecal Coliform ➢ pH ➢ Oil&Grease ➢ Temp. Rise ➢ Phosphate ➢ Surfactants ➢ Ammonia ➢ Nitrate ➢ Heavy Metals: Cr^{+6}, As, Cd, Cu. Pb, Zn	• Semi Annual • Station 1 – OMCPC FWQ1 • Station 2 – OMCPC FWQ2 • Station 3 – OMCPC FWQ3
Ambient Air	• Particulate Matter 10 microns (µg/Ncm) • SOx (µg/Ncm) • NOx (µg/Ncm)	• Semi Annual • Station 1 – OMCPC AQ1 • Station 2 – OMCPC AQ2 • Station 3 – OMCPC AQ3 • Station 3 – OMCPC AQ4
ECC Conditions	• Status of Compliance • Proof of Compliance	Quarterly
Environmental Management Plan/Program	• Enhancement/Mitigation Measures • Status of Implementation • Action/s Taken	Quarterly
Solid waste characterization	• Average quantity of solid wastes generated per month, kg • Average quantity of solid wastes collected per month, kg • Total quantity of solid wastes generated per quarter, kg • Total quantity of solid wastes collected per quarter, kg	Quarterly
Accidents and Emergency Records	• Area/Location • Findings and Observations • Action/s Taken	Quarterly
Personnel/ Staff training	• Date conducted • Course/Training Description • Number of Personnel Trained	Quarterly

6.2. Environmental Compliance Performance

The discussion on performance assessment primarily covered the recent monitoring activities performed by the EHS of OMCPC. Moreover, the performances on social development projects and Corporate Social Responsibility (CSR) are documented based on the reports provided by the OMCPC Community Relations Office (ComRel) and OMCPC Admin Office.

6.2.1. Land

6.2.1.1. Republic Act 9003: Ecological Solid Waste Management

OMCPC implements waste segregation at source. It has provided properly labeled bins in the offices, restrooms, warehouses and other facilities to ensure proper segregation of domestic solid waste. For industrial solid wastes, these are left at the work area, collected and stored at their respective temporary areas.

- Biodegradable wastes are composted;
- Recyclable wastes such as scrap wood, scrap metals, rubber, paper/cartons, tins/aluminum, glass and plastics are stored; and
- Residual wastes

OMCPC may consider strengthening its IEC among employees and contractors on the proper disposal of solid domestic wastes.

6.2.1.2. Republic Act 6969: Toxic Substances and Hazardous and Nuclear Waste Control Act of 1990

Hazardous Waste Management

OMCPC is a registered Hazardous Waste Generator – OL-GR-R4B-51-004669 with the EMB Region IVB. OMCPC generates HW as by-products of its operations and support activities and was audited based on the requirements of DAO 2013-22 and DAO 2004-36.

HW mainly generated and transported for treatment and disposal are I101, I104 and D407. OMCPC's transporter demonstrated the proper classification, packaging, labeling, and documentation of hazardous waste shipments and ensuring appropriate containment and handling measures during transportation.

In general, OMCPC complies with the requirements of DAO 2013-22 and 2004-36 except the storage beyond the 6-month period for some hazardous wastes although this were all treated by the end of 2022.

6.2.2. Water

6.2.2.1. Republic Act 9275: Philippine Clean Water Act of 2004

Rule 14 of DAO 2005-10 requires all that discharge regulated pollutants to secure a discharge permit. OMCPC has valid permit oily water separator (OWS).

Compliance with Effluent Standards

Based on the results of the monitoring, recorded concentration values were within the prescribed limits in DAO 2016-08. Monitoring were not continuous due to absence of overflow from the oily water separator.

Water Quality Monitoring

OMCPC implements also water quality monitoring at the receiving body of water (surface and coastal waters). Parameters measured were the following: BOD, TSS, Fecal Coliform, pH, Oil & Grease, Temperature Rise, Phosphate, Surfactants, Ammonia and Nitrate

Recorded concentration values were within the prescribed limits in DAO 2016-08

6.2.2.2. Water Code of the Philippines

Section 1 of the Water Code of the Philippines IRR requires all operators to secure permit from the NWRB for water appropriation for any purpose stated in Article 10 of the Code except for family or domestic use under Article 6.

OMCPC draws water from one (1) deep well to meet its operational requirements.

6.2.2.3. Philippine Coast Guard

OMCPC has Oil Spill Contingency Plan although this was not yet approved by the Philippine Coast Guard. While there is existing procedure and sufficient oil spill materials and supplies. OMCPC needs to have its Oil Spill Contingency Plan approved by the PCG.

6.2.3. Air

6.2.3.1. Republic Act 8749: Philippine Clean Air Act of 1999

In compliance with Section 1, Rule XIX, Part VI of DAO 2000-81, OMCPC operates and maintains three (3) Caterpillar 16CM32 generator sets, one (1) Blackstart 250 kVA, and auxiliary thermal heater. These air pollution source installations are covered valid permit to operate (PTO) issued by EMB Region IVB.

Other requirements of DAO 2000-81 are as follows:

- Compliance with emission standards (Section 1, Rule XXV, Part VII); and
- Compliance with ambient air quality standards (Section 1, Rule XXVI, Part VII)

Compliance with Emission Standards

Table 6.2 shows the fuel and non-fuel burning equipment covered by Permit to Operate.

Table 6.2. Fuel and Non-Fuel Burning Equipment with Emission Testing

		Emission Conc., mg/Ncm			
Date	Source	PM	SO2	CO	NOx
05-Jul-22	8MW Caterpillar Diesel Generator Set No. 1	57.2	12.7	1042	65.8
16-Dec-22	8MW Caterpillar Diesel Generator Set No. 2	144.7	2,257.9	1120	120.4
14-Dec-22	8MW Caterpillar Diesel Generator Set No. 3	156.8	2,294.4	0.4	1525
	DENR Standard	**150**	**700**	**2,000**	**500**

Emission testing for generator sets must be conducted according to the schedule indicated in Table 6.3.

Table 6.3. Classification of Stationary Source

Classification	Boiler Capacity, HP	Diesel Generator Sets, KW	Potential Emissions (tons)	Frequency of Compliance Testing
Environmentally significant	Any source of emissions of hazardous air pollutants included in the Priority Chemicals List			Twice a year
Large	≥251	≥1,250 (continuously operations)	≥100	Twice a year
		≥1,250 (back-up or stand-by)		Once a year

Classification	Boiler Capacity, HP	Diesel Generator Sets, KW	Potential Emissions (tons)	Frequency of Compliance Testing
Medium	100-250	600-1,250 (regardless of operation)	30-100	Once a year
Small	<100	<600 (regardless of operation)	30	Once every 2 years

Source: EMB MC 2007-003: Policy on Compliance and Permitting for Industrial Facilities Relating to Air Quality and MC 2009-004: Amendment of Annex 2 of MC 2007-003

With the implementation of EMB MC No. 2022-003, a generator set may not undergo emission testing provided that the following are met:

- It operates for a maximum of 200 hours per year,
- It operates for not more than 3 days in a week and
- It operates for not more than 3 hours per day.

If the conditions above are not met, an emission testing with a frequency described in **Table 6.3** is required.

Under EMB Memorandum Circular No. 2020-17 Annex C, generator sets with capacity of 15 KW and below are not required to secure a PTO.

Compliance with Ambient Air Quality Standards

OMCPC implements ambient air quality monitoring (PM-10, SOx and NOx). A third-party air quality sampling is conducted semi-annually. Ambient concentrations were compliant with the NAAQGVS.

Compliance with Noise Standards

OMCPC conducts noise sampling in the in the same ambient air quality monitoring station. These areas are outside the community. Noise sampling results are within the NPCC noise standard.

6.2.4. People

ER1-94 is an integral component of the EPIRA Law, OMCPC is required to implement an SDP to promote sustainable development and social progress in the host communities. OMCPC is required to set aside 1 centavo for every kW of power generated for the creation and implementation of SDMPs. These plans serve to meet both social and economic needs in the local community by offering programs and projects which contribute to their wellbeing.

The SDP includes livelihood programs, infrastructure development, healthcare services, education support services, skills training programs and environmental management. Furthermore, this plan stresses community participation in planning and decision-making processes to ensure their voices are heard and their concerns addressed.

6.3. Compliance to ECC Conditions

6.3.1. Presidential Decree 1586: Philippine Environmental Impact Statement (EIS) System - ECC Conditions

In general, OMCPC complies with all the conditions of the ECC. The following describes TMC's compliance with the ECC conditions:

Amended ECC-R4B-1510-0095 issued by the EMB Regional IVB Office in September 21, 2016.

ECC Project Description covers the OCCIDENTAL MINDORO CONSOLIDATED POWER PLANT having a total rated capacity of 24.0 MW located at Sitio Pulang Lupa, Brgy. Central, San Jose, Occidental Mindoro

The project will consists of the following components, to wit:

Existing Components	Existing Components
• 3 x 8MW Diesel Generator Sets • 2 x 500 kl Fuel Storage Tank (FOST) • 1 x 30kl Sludge Tank • 1 x 100 kl Water Tank • 1 x 30kl Water Tank • Powerhouse • Thermal Oil Building • Tank Farm • Smokestack • Switchyard • Admin Building • Employee's Quarters • Workshop/Warehouse and Water Treatment House	• Fuel/Fire Pump House • Fuel Treatment House • Maintenance Building • Materials Recovery Facility • Hazardous Waste Storage Facility • Guard House • Access Road
	Additional Components
	1 x 1000 kl Fuel Storage Tank (FOST) Oil Water Separator

ECC Condition No. 1. That the proponent shall ensure that the project implantation shall *NOT START* unless all required clearances from the concerned government agencies are secured. EMB shall be advised when all the permits/clearances are secured and when will be the actual date of project implementation.

Remarks: Complied. When the project started construction in 2016 all required clearances from the concerned government agencies were secured.

ECC Condition No. 2. That the proponent shall establish a reforestation and carbon sink program using endemic/indigenous species to mitigate greenhouse gas (GHG) emissions of the project in line with the DENR's thrust for GHG emissions reduction programs and National Greening Program. The program shall be submitted to EMB-4B (MIMAROPA Region) six (6) months prior to the project implementation.

Remarks: Complied. OMCPC is conducting tree planting activities in coordination with several barangays in San Jose and gov't. schools. Some of the tree planting projects already formed canopy and serve as carbon sink, this includes narra plantations in the uplands and mangrove areas along coastal areas in San Jose.

ECC Condition No. 3. That the proponent shall conduct an effective Information, Education and Communication (IEC) Program to inform and educate all stakeholders, especially its contractors, workers, and local residents about the mitigating measures embedded 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 programs shall be submitted to EMB-4B (MIMAROPA Region) on an annual basis.

Remarks: The Community Relations Manager is active in the Information, Education and Communication (IEC) Program by having a radio program and also conducts Facebook live that discusses the project, issues and activities that OMCPC conducts to address issues arising from its operation including power supply among others.

ECC Condition No. 4. That the proponent shall implement a Comprehensive Social Development Program (SDP) and submit a separate report together with the Compliance Monitoring Report (CMR) to the EMB 4b (MIMAROPA Region) on a semi-annual basis.

Remarks: Complied. OMCPC regularly submits output for its Social Development Program included in its CMR submission to EMB.

ECC Condition No. 5. That the proponent shall strictly manage all project related traffic problems, excessive surface run-off, dust, soil erosion, accidental spillage and health hazards identified in the EIS and, in case of emergency episodes, appropriate response activities shall be immediately undertaken for the protection of the workers/personnel, hosts and nearby communities and he receiving environment

Remarks: Complied. OMCPC regularly monitors all the predicted impacts and implements mitigation measures.

ECC Condition No. 6. That preservation and easement retention of natural drainage/waterways shall be undertaken and should conform with the provisions of the DENR Administrative Order No. 97-05 (Procedures on then Retention Areas within certain distances along the Banks of Rivers, Streams, and Shores of Seas, Lakes and Oceans for Environmental Protection). If disturbed, a replacement drainage system shall be constructed within two (2) months from the disturbance.

Remarks: Complied.

ECC Condition No. 7. The proponent shall install adequate and properly maintain effective Water Pollution Control Facility to ensure maximum efficiency at all times in order to conform to the prescribed DENR standards.

Remarks: OMCPC have functional septic tanks for its Domestic wastewater as well as Oily Water Separator for its industrial wastewater. Collected sludge and oily wastewater were properly stored, hauled and treated by a DENR accredited hazardous waste treater.

ECC Condition No. 8. That proper Air Pollution Source and Control Installations (APSCI) shall be provided by the proponent to avert pollutant emissions.

Remarks: OMCPC installed Air Pollution Source and Control Installations (APSCI) for its power plant.

ECC Condition No. 9. The proponent shall set-up the following:

9.1. A Memorandum of Agreement (MOA) shall be entered into by the proponent with the EMB MIMAROPA Region and Other Stakeholders to become part of their MMT and in setting up the corresponding Environmental Monitoring Fund (EMF) prior to project implementation

Remarks: OMCPC has no MMT since it is not an Environmentally Critical Project. However, OMCPC allots budget for its Environmental Monitoring.

9.2. A replenishable Environmental Monitoring Fund (EMF) to cover all costs attendant to the operation of the MMT such as conduct meetings, training, sampling and analysis, hiring of technical expert, meals, accommodations, supplies and materials communication and transportation.

Remarks: Not applicable since there is no MMT.

9.3. The amount and mechanics of the EMF and the establishment of MMT shall be determined by the EMB MIMAROPA Region and the proponent in consultation and the proponent in consultation with stakeholder-communities and other concerned agencies. This MOA shall be submitted to EMB-MIMAROPA within sixty (60) days from receipt of this ECC.

Remarks: Not applicable since there is no MMT.

9.4. To establish an Environmental Guarantee Fund (EGF) in coordination with EMB-MIMAROPA Region and shall be submitted for approval within sixty (60) days from receipt of this ECC.

Remarks: OMCPC has an existing EGF for the project.

ECC Condition No. 10. That the solid waste management scheme as provided in the Environmental Management Plan (EMP) shall be continuously implemented from the start of the project operation.

Remarks: Complied. It has a solid waste management program that is continuously implemented. A Materials Recovery Facility as well as Garbage Holding Area is in place.

ECC Condition No. 11. That the proponent shall submit the Air Quality Dispersion Model ninety (90) days upon receipt of the ECC. The results of the dispersion modelling will be the basis for the company to install a Continuous Emission Monitoring System (CEMS) or a Predictive Emission Monitoring System (PEMS).

Remarks: Partial Compliance.

GENERAL CONDITIONS
ECC Condition No. 12. The project operations shall conform to the 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 other relevant policies, rules and regulations.

Remarks: Complied. OMCPC has obtained a Hazardous Waste Generator's ID and regularly treat its hazardous waste with Certificate of Treatment. The company also secured Permit to Operate for its power gensets and Discharge Permit for its Oily Water Separator.

ECC Condition No. 13. That the proponent shall set-up a competent Environmental Unit and shall be accredited by this Office in accordance with DAO No. 25, series of 1992 (Appointment/Designation of Pollution Control Officers). The Environmental Unit shall be integrated in the proponent's organizational chart to handle all environment related aspects in the project implementation in addition to the monitoring requirements as specified in the Environmental Management Plan (EMP)/Environmental Monitoring Plan (EMoP) and other environmental commitments such as but not limited to the following:

13.1. Monitor actual project impacts vis-à-vis the predicted impact and management measures in the EIS;

Remarks: Complied. OMCPC regularly complies to its Impact Management Plan and includes compliance to in its SMR submitted to EMB R4B.

13.2. Recommend revisions to the EMP/EMoP, whenever necessary subject to the approval of EMB-4B (MIMAROPA Region);

Remarks: Complied.

13.3. Ensure that data gathered during monitoring activities are properly documented, assessed, evaluated and reported to EMB-4B (MIMAROPA Region) in accordance with the standard formats;

Remarks: Complied.

13.4. Ensure that monitoring and submissions of reports to EMB-4B (MIMAROPA Region) are carried out as required;

Remarks: Complied. OMCPC regularly submits SMR to EMB R4B.

13.5. Regular submissions of a semi-annual ECC Compliance Monitoring Report (on or before January 15 and July 15 of each year the project is operational) provided with supporting documents and in accordance with the prescribed format stipulated in the Implementing Rules and Regulations of P.D. 1586;

Remarks: Complied. *OMCPC regularly submits CMR to EMB R4B.*

13.6. Submit a quarterly monitoring report using the prescribed format of the Self-Monitoring Report (SMR) pursuant to DAO 2003-27;

Remarks: Complied. OMCPC regularly submits SMR to EMB R4B.

13.7. Submit an Abandonment Plan two (2) months prior to the abandonment activities. It shall include rehabilitation measures/clean up, costs, remediation of areas possibly contaminated with toxic/hazardous substances and presentation of options on proposed alternative projects in the area;

Remarks: OMCPC will submit an abandonment plan to EMB R4B in case abandonment is unavoidable.

ECC Condition No. 14. That the proponent shall allocate ample budget for the implementation of the proposed mitigating/enhancement measures in all phases of the project;

Remarks: Complied. OMCPC regularly allots budget for the implementation of its IMP and EMoP.

ECC Condition No. 15. That health and sanitation practices shall be observed in all phases of the project and safety & personal protection equipment/devices shall always be provided to all employees /workers within the premises of the project site to prevent health and occupational hazards;

Remarks: Complied. OMCPC thru its EHS Unit implements the OMCPC Environmental, Health and Safety program of the company.

ECC Condition No. 16. That a billboard containing this message " Notice to Public, This OMCPC 24MW Diesel Power Plant Project of Occidental Mindoro Consolidated Power Corporation has been issued an Environmental Compliance Certificate (ECC-OL-R4B-2020-0161) by the Department of Environment and Natural Resources Environmental Management Bureau MIMAROPA Region on _____ shall be installed at all entry and exit points and in the perimeter of the project site facing the road to inform the general public within thirty (30) days from receipt of the ECC

Remarks: Complied.

ECC Condition No. 17. That a copy of the ECC shall be posted in a conspicuous location at the field office of the project site clearly visible to the public and shall be adequately framed or otherwise protected against damage and at the barangay bulletin board of the host barangay (s) within thirty (30) days from receipt of the ECC.

Remarks: Complied.

ECC Condition No. 18. That any authorized DENR-EMB personnel, with proper identification card and travel/mission order, shall be allowed unconditional access to conduct an on-the-spot inspection and monitoring to the project without the need for prior notice to the proponent to oversee compliance to the ECC.

Remarks: Continuous compliance. OMCPC regularly allows EMB R4B and Occidental Mindoro PEMO to conduct inspection within its facility.

RESTRICTIONS

1. That no other activities should be undertaken other than what was stipulated in the EIS, should there be an expansion of the project beyond the project description, construction of other structures beyond those that stated in the EIS, or any change in activity or location, shall be made subject to a new Environmental Impact Assessment (EIA) requirements

Remarks: Complied. OMCPC has secured an ECC amendment in 2020 when it added a 1 x 1000kl fuel tank and this ECC amendment for the additional power generator sets.

2. That all appropriate construction, operational and resource-use permits/clearances from other national and local government agencies concerned (i.e. PMRB, PNP, LGUs, DPWH, DOH, NWRB, HLURB, MGB, DA, DAR, DOLE, DTI, etc.) shall be secured pertaining to the implementation of the project. Likewise, the proponent shall notify this Office of the reckoning date of the project operation. The proponent shall also comply with, but not limited to the following: PD 856 of the Sanitation Code of the Philippines; PD 442 or the Labor Code of the Philippines including Occupational Health and Safety, PD 705 & DAO 97-05, and RA 9513 & DC 2009-05-0008.

Remarks: Complied.

3. That the Zoning Clearance from the Municipal Planning and Development Office shall be secured and submitted to this office prior to project implementation.

Remarks: Complied. OMCPC has already secured a zoning clearance and the project area is now zoned as an Industrial Area.

4. 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;

Remarks: Complied. EMB was notified when ownership of the project was transferred from Emerging Power Incorporated (EPI) to OMCPC. OMCPC now implements all the commitments stipulated in the EIS, EPRMP and the ECC.

5. That the proponent shall be accountable for any misrepresentation and failure to state material information in the submitted documents.

Remarks: Noted.

6.3.2. Environmental Quality Performance Level

OMPCP commits in ensuring the compliance of the project with all the Environmental Laws set by DENR at all project phases. This EPRMP shall provide a revised Environmental Monitoring Plan (EMoP) which can be adopted by the OMCPC EHS Unit in their monitoring program.

Table 6.4 presents the proposed revised EMoP for this project. The revised EMoP is formulated based on the identified impacts and its corresponding proposed mitigating measures. It includes an Environmental Quality Performance Level (EQPL) Management Scheme which will allow OMCPC to prevent exceedance of specific parameters with the allowable limit set by DENR. The scheme sets a limit per level (alert, action and limit) and provides corresponding management measures to retain the parameters within acceptable range. This scheme also allows to measures the effectiveness of each mitigating measure being adopted for a specific impact.

6.3.2.1. Contingent Liability and Rehabilitation Fund

EPI shall be committed to allocate Environmental Guarantee Fund (EGF) and Environmental Monitoring Funds (EMF) for its entire operations. For the EGF, OMCPC shall allocate an amount of PhP 500,000.00 in the form of escrow account where the details of which shall be specified in the EGF Agreement that will be made between OMCPC and DENR-EMB. This will be replenished on a regular basis by an established committee who also performs the disbursement, accounting, assessing, and processing of the stated projects. The EPI EGF shall have two (2) components: (1) EGF Trust Fund in the form of an insurance bond which is allocated for the damages to life and properties caused by the operation; and (2) EGF Cash Fund is for the immediate rehabilitation and compensation of affected communities.

OMCPC set a budget of PhP 300,000.00 for the implementation of its EMoP.

Table 6.4. Revised EQPL of OMCPC

Key Environmental Aspects per Project Phase	Potential Impacts per Envt'l. Sector	Parameter to be Monitored	Sampling & Measurement Plan			Lead Person	Annual Estimated Cost	EQPL Management Scheme					
								EQPL Range			Management Measure		
			Method	Frequency	Location			Alert	Action	Limit	Alert	Action	Limit
I. Construction Phase													
Construction of project facilities and access roads	Occasional increase of fugitive and gaseous emission	Ambient TSP, PM10, SO2, and NO2	• TSP– High Volume-Gravimetric, USEPA 40 CFR, Part 50 • PM10- High volume with 10-micron particle-size inlet-Gravimetric, USEPA 40 CFR, Part 50, Appendix J • SO2 – Gas Bubbler - Pararosanilin e Method NO2- Gas Bubbler-Griess Saltzman Method or Chemilumines cence Method	Semiannua l or as frequent as necessary (or once if project constructio n is less than 6 months (depends if there are complaints from nearby residents)	Project boundary and nearest residences downwind of the emission sources.	PCO	PhP150,000 per sampling	≥75% of ambient standard. EQPL (Alert Mininum in µg/Nm3) NO2 = 195 TSP = 225 PM10 = 150 SO2 =255	≥ 90% of ambient standard. EQPL (Action minimum in µg/Nm3) NO2 = 234 TSP = 270 PM10 = 180 SO2 =306	NAAQS (in µg/Nm3) NO2 = 260 TSP = 300 PM10 = 200 SO2=340	Monitor levels and determine prevailing wind flows and other meteorological condition Identify possible sources of high ambient concentrations	Check for complaints from residence Implement mitigation measures to reduce fugitive emissions during construction (e.g., water spraying) Inform management in case the proposed project is the possible source of high ambient levels based on meteorological condition	Suspend construction related work that causes exceedance with ambient levels (e.g., TSP) and implement corrective measure (e.g., water spraying)
	Noise	Ambient noise	Direct reading/sound level meter	Semiannua l or as frequent as necessary. or once if project constructio n is less than 6 months (depends if there are complaints from nearby residents)	Residences and other noise sensitive receptors adjacent construction sites.	PCO	Included in the OMCPC's annual EHS Unit monitoring cost	57dB	64dB	70dB	• Check background noise levels • Identification of possible source of noise	• Check sources of noise that contribute to higher noise levels • Maintenance, adjustment, replacement of mufflers • Regulate vehicle speed • Issuance of ear plugs	• Implement noise attenuation measures
	Accidental fuel and oil spills	pH, DO, COD, BOD, Oil and grease	Water sampling	During events of accident spillage	Nearby bodies of water	PCO	Included in the OMCPC's annual EHS Unit monitoring cost	BOD – 6.1mg/L Oil and grease-2.8mg/L	BOD – 6.8 mg/L Oil and grease-2.9mg/L	pH – 6.5-8.5 DO – 5.0 (minimum) BOD – 7 mg/L Oil and grease-2mg/L	• Identification of possible source of pollutant • Segregating all waste oils and lubricants from maintenance of	• Segregating all waste oils and lubricants from maintenance of construction equipment • and disposing of them properly.	• Halting operation of the component identified as source of pollutant

Key Environmental Aspects per Project Phase	Potential Impacts per Envt'l. Sector	Parameter to be Monitored	Sampling & Measurement Plan			Lead Person	Annual Estimated Cost	EQPL Management Scheme					
								EQPL Range			Management Measure		
			Method	Frequency	Location			Alert	Action	Limit	Alert	Action	Limit
											construction equipment • and disposing of them properly.	• Constructing secondary containment areas and other sumps and regular monitoring.	
Construction hazards	Safety	No of incidents an accidents	Record accidents and incidents	Daily	Construction site	Proponent and contractor	Part of the construction cost	Lost time due to minor injury	Occurrence of major injury due to accident	Occurrence of fatality due to accident	• Conduct quarterly safety briefing and orientation to laborers and workers • Installation of safety signages along accident prone areas within the construction site	• Conduct daily inspection of construction area • Conduct daily briefing on safety program	• Work stoppage along area where accident occurs and conduct investigation and institute safety measures and formulate specific safety procedures and protocols
Disposal of construction wastes	Solid wastes	Volume of construction wastes and spoils generated	Records estimation and monitoring	Daily	Construction site	Contractor	Minimal cost	• Accumulation of domestic wastes, scraps and junks within the project site	• Accumulated waste became hazard to both vehicle and employees	• Wastes become toxic or serve as breeding ground for pests which can be a vector for infectious diseases	• Proper segregation • Appropriate labeling of waste containers • Establishment of Materials Recovery Facility (MRF)	• Regular audits and maintenance of waste management system	• Immediate hauling and disposal of waste by a DENR accredited waste transporter and treater
Employment conflicts	Complaints manage-ment	Nature and number of complaints	Record keeping	During periods of complaints	Impact communities	ComRel	Minimal cost	• Submission of formal complaint at the ComRel Officers	• Submission of formal complaint the need response/action or intervention from the upper management	• Media intervention causing local/regional /national issues	• Institution of grievance system • Conduct regular IEC to inform and justify the activities being undertaken by OMCPC in its operation	• Notify OMCPCI Admin for complaint and take remedial measures to address complaints • Investigate valid complaints, conduct dialogue with communities and implement mitigating measures	• Conduct in depth investigation and identify root cause • Institute massive efforts to address complaints and compensate affected communities
II. Operation Phase													
Operation of diesel generator sets	Release of gaseous emissions at the stacks	Stack emissions of CO, NOX, PM, SOX,	SOX (as SO2)-U.S.EPA Methods 1 through 4 and 6 or 8 as appropriate	Semiannual for gensets greater than 1250 kW or 1.25 MW and	Exhaust stacks	Project proponent / Accredited third-party stack samplers	PhP 50,000 per stack per year r	≥75% of NESSAP Values. EQPL (Alert Minimum in mg/Nm3) SOX =525 NOX = 1500	≥90% of NESSAP Values. EQPL (Action Minimum in mg/Nm3) SOX =630 NOX = 1800	NESSAP Values (in mg/Nm3) SOX =700 NOX = 2000 PM = 150 CO = 500	• Monitor levels	• Check diesel generator conditions (e.g., gas flow and fuel inputs)	• Implement corrective measures to reduce levels to within NESSAP values

Key Environmental Aspects per Project Phase	Potential Impacts per Envt'l. Sector	Parameter to be Monitored	Sampling & Measurement Plan			Lead Person	Annual Estimated Cost	EQPL Management Scheme					
								EQPL Range			Management Measure		
			Method	Frequency	Location			Alert	Action	Limit	Alert	Action	Limit
			NOX (as NO2) -U.S.EPA Methods 1 through 4 and Method 7 Particulates – U.S.EPA Methods 1 through 5 CO -U.S.EPA Method 3 or 10	not classified as standby gensets; annual for gensets less than 1250 kW				PM = 112.5` CO = 375	PM = 135 CO = 450				
Operation of the diesel generator sets	Release of air emissions	Ambient TSP, PM10, SO2, and NO2	TSP– High Volume-Gravimetric, USEPA 40 CFR, Part 50 PM10- High volume with 10-micron particle-size inlet-Gravimetric, USEPA 40 CFR, Part 50, Appendix J SO2 – Gas Bubbler - Pararosaniline Method NO2- Gas Bubbler-Griess Saltzman Method or Chemiluminescence Method	Semiannual or as frequent as necessary (depends if there are complaints from residents and other receptors)	Project boundary and nearest residences downwind of the emission sources.	Project proponent / contractor	PhP 50,000 per month	≥75% of ambient standard. EQPL (Alert Mininum in µg/Nm3) NO2 = 195 TSP = 225 PM10 = 150 SO2 =255	≥ 90% of ambient standard. EQPL (Action minimum in µg/Nm3) NO2 = 234 TSP = 270 PM10 = 180 SO2 =306	NAAQS (in µg/Nm3) NO2 = 260 TSP = 300 PM10 = 200 SO2=340	• Monitor levels and determine prevailing wind flows and other meteorological condition • Identify possible sources of high ambient concentrations	• Check for complaints from residence • Inform management in case the proposed project is the possible source of high ambient levels based on meteorological condition	• Suspend operation and implement corrective measure
Operation of diesel generator sets	Increase in noise levels	Noise Levels	Direct reading/sound level meter	Semiannual or as frequent as necessary (depends if there are complaints from nearby residents and other receptors)	Same as monitoring stations for air	PCO	Included in the OMCPC's annual EHS Unit monitoring cost	53dB	59dB	NPCC (1980) ambient noise standard: a) Class A-Residential - Daytime= 55 dBA -Evening/ morning = 50 dBA -Nighttime =45 dBA	• Identification of possible source of noise • Issuance of ear plugs	• Maintenance, adjustment, replacement of mufflers and installation of noise reduction apparatus	• Reduction on the use of noisy or temporary reduction of power generation

Key Environmental Aspects per Project Phase	Potential Impacts per Envt'l. Sector	Parameter to be Monitored	Sampling & Measurement Plan			Lead Person	Annual Estimated Cost	EQPL Management Scheme					
								EQPL Range			Management Measure		
			Method	Frequency	Location			Alert	Action	Limit	Alert	Action	Limit
Generation of effluent and sewage	Water quality	Effluent – Effluent rate, BOD, TSS, pH, O/G, Fecal Coliform, Temp. Rise, Phosphate, Surfactants, Ammonia, Nitrate, Cr^{+6}, As, Cd, Cu, Pb, Zn Domestic – BOD, TSS, pH, O/G, Fecal Coliform, Temp. Rise, Phosphate, Surfactants, Ammonia, Nitrate	Effluent sampling and laboratory analysis	Monthly	Plant Effluent – outfall and wastewater treatment facility	PCO	Included in the OMCPC's annual EHS Unit monitoring cost			DAO 2016-08 and DAO 2021-19 Effluent Standards ➢ BOD – 50 mg/L ➢ TSS – 100 mg/L ➢ pH – 6.0-9.5 ➢ O/G – 5 mg/L ➢ Fecal Coliform – 400 mg/L ➢ Temp – 3degC ➢ Phosphate – 1 mg/L ➢ Surfactants – 15 mg/L ➢ Ammonia – 4 mg/L ➢ Nitrate – 14 mg/L ➢ Cr^{+6} – 0.02 mg/L ➢ As – 0.04 mg/L ➢ Cd – 0.01 mg/L ➢ Cu – 0.04 mg/L ➢ Pb – 0.1 mg/L ➢ Zn – 4 mg/L DAO 2016-08 and DAO 2021-19 Ambient Water Standards ➢ BOD – 7 mg/L ➢ TSS – 80 mg/L ➢ pH – 6.5-9.0 ➢ O/G – 2 mg/L ➢ Fecal Coliform – 200 MPN/L ➢ Temp – 25-31degC ➢ Phosphate – 0.5 mg/L ➢ Surfactants – 1.5 mg/L ➢ Ammonia – 0.06 mg/L ➢ Nitrate – 7 mg/L	• Identification of possible source of pollutant • Maintenance or establishment of centralized wastewater treatment facilities • Analysis of materials input	Implementation of additional treatment facility and increase treatment capacity of the wastewater treatment facilities • Use of alternative materials known to have lesser pollutant concentration	• Temporary halting of effluent discharge • Halting operation of the component identified as source of pollutant

Key Environmental Aspects per Project Phase	Potential Impacts per Envt'l. Sector	Parameter to be Monitored	Sampling & Measurement Plan			Lead Person	Annual Estimated Cost	EQPL Management Scheme					
			Method	Frequency	Location			EQPL Range			Management Measure		
								Alert	Action	Limit	Alert	Action	Limit
										➢ Cr^{+6} – 0.01 mg/L ➢ As – 0.02 mg/L ➢ Cd – 0.005 mg/L ➢ Cu – 0.02 mg/L ➢ Pb – 0.05 mg/L ➢ Zn – 2 mg/L			
Waste management	Solid and hazardous wastes	Volume of wastes and spoils generated	Records Estimation and monitoring	Daily	Plant site	PCO	Included in the OMCPC's annual EHS Unit monitoring cost	Accumulation of domestic wastes, scraps and junks within the project site	Accumulated waste became hazard to both vehicle and employees	Wastes become toxic or serve as breeding ground for pests which can be a vector for infectious diseases	• Proper segregation • Appropriate labelling of waste containers • Establishment of Materials Recovery Facility (MRF)	• Regular audits and maintenance of waste management system	• Immediate hauling and disposal of waste by a DENR accredited waste transporter and treater
Laboratory waste	Hazardous Waste	Quantity of laboratory generated waste, pH, Cr, Hg and other waste by-products	Laboratory analysis	Quarterly	Laboratory	PCO	Included in the OMCPC's annual EHS Unit monitoring cost	Accumulation of hazardous wastes	Stored hazardous waste exhibits sign of deterioration or leakage	Spillage of hazardous waste within the storage area	• Collection by DENR-accredited HazWaste treater • Material Safety Data Sheet (MSDS) will be maintained	• Reduction on the use of raw materials known as source of pollutants	• Immediate containment and clean-up of affected area • • Incident plan report
Social conflicts	Complaints manage-ment	Nature and number of complaints Number of affected individuals	Record keeping	During periods of complaints expressed by stake-holders	Impact communities	ComRel	Minimal cost	Submission of formal complaint at the ComRel Officers	Submission of formal complaint the need response/action or intervention from the upper management	Media intervention causing local/regional/ national issues	• Institution of grievance system • Conduct regular IEC to inform and justify the activities being undertaken by OMCPC in its operation	• Notify OMCPC Admin for complaint and take remedial measures to address complaints • Investigate valid complaints, conduct dialogue with communities and implement mitigating measures	• Conduct in depth investigation and identify root cause • Institute massive efforts to address complaints and compensate affected communities
Operation of heavy equipment, vehicles, and other equipment	Occasional increase of fugitive and gaseous emission	Ambient TSP, PM10, SO2, and NO2	TSP– High Volume-Gravimetric, USEPA 40 CFR, Part 50 PM10- High volume with	Semi-annual or once if abandonment phase is less than 6 months	Project boundary and nearest residences	Project proponent / contractor	PhP 150,000 per quarter	≥75% of ambient standard. EQPL (Alert Mininum in µg/Nm3) NO2 = 195 TSP = 225	≥ 90% of ambient standard. EQPL (Action minimum in µg/Nm3) NO2 = 234	NAAQS (in µg/Nm3) NO2 = 260 TSP = 300 PM10 = 200 SO2=340	Monitor levels and determine prevailing wind flows and other meteorological condition	Check for complaints from residence Implement mitigation measures to reduce fugitive emissions	Suspend abandonment works until ambient levels are within standards

Key Environmental Aspects per Project Phase	Potential Impacts per Envt'l. Sector	Parameter to be Monitored	Sampling & Measurement Plan			Lead Person	Annual Estimated Cost	EQPL Management Scheme					
								EQPL Range			Management Measure		
			Method	Frequency	Location			Alert	Action	Limit	Alert	Action	Limit
			10-micron particle-size inlet-Gravimetric, USEPA 40 CFR, Part 50, Appendix J SO2 – Gas Bubbler - Pararosaniline Method NO2- Gas Bubbler-Griess Saltzman Method or Chemiluminescence Method	or as frequent as necessary (depends if there are complaints from nearby residents and other receptors;				PM10 = 150 SO2 =255	TSP = 270 PM10 = 180 SO2 =306		Identify possible sources of high ambient concentrations	during construction (e.g., water spraying)	

7 DECOMMISSIONING/ABANDONMENT REHABILITATION POLICY

7.1. Objectives

The proposed diesel power plant is expected to operate in the next 20-30 years. After which, an assessment taking into consideration various aspects such as operations and maintenance costs, cost/benefit analysis and future environmental considerations and power demands, among others, will be conducted to determine whether the plant will continue its commercial operations. Should OMCPC decides to cease its operation, an Abandonment/Decommissioning Plan should be in place to create a safe environment for the host communities. The said plan shall have the following objectives:

- To mitigate possible on-site and off-site contamination of land, air and water due to the plant's closure;
- To rehabilitate disturbed areas occupied by the power plant's infrastructures and facilities; and
- To conduct comprehensive monitoring and evaluation.
- To aid in the preparation of an Abandonment/Decommissioning/Rehabilitation Plan, the following activities shall be conducted:
- A review of the Environmental Impact Assessment (EIA), which will provide information on the state of the environment and community before the project was implemented;
- An assessment of the actual impacts caused by the project and the corresponding environmental management measures that were implemented and still need to be done;
- Manage the aspirations and expectations of the stakeholders at the time the decision was made; and
- An accounting of obligations of the proponents to local parties including its workers.

7.2. Power Plant Decommissioning

Cost will play a big role on the decommissioning strategy that will be implemented. Full decommissioning will require dismantling all equipment, demolishing all infrastructures and clean-up of the entire site according to environmental standards. Partial dismantling of structures can also be done to meet the specific requirements of the planned reuse of the site. In such case, buildings and facilities will be evaluated; buildings that are still in good condition can be donated to San Jose LGU or Barangay Central. During the decommissioning, the proponent will ensure that all environmental mitigating measures will be adopted and followed to minimize the environmental impacts.

In the decommissioning/abandonment plan, the following components should be considered to ensure safety during the implementation of decommissioning activities:

- Final Land Use of Surface Facilities and Rehabilitation;
- Environmental Risk Assessment (ERA);
- Waste Management; and
- Social Development and Livelihood Assistance.

Based on the components indicated above, details of the following should also be included in the decommissioning/abandonment plan:

- A description of the project and its components including the schedule of
- abandonment;
- Dismantling plans of the infrastructures and facilities;
- Company officials who will be responsible for the implementation of the
- abandonment plan;

- Previous and most recent Multi-Partite Monitoring Team (MMT) assessment reports
- on environment, social and public health;
- Suggested options of livelihood alternatives for the host communities including the
- employees to minimize dislocation that will result from the abandonment of the
- project;
- Detailed rehabilitation plans for the coastal areas, water bodies and other important
- environmental resources. These plans should include specific rehabilitation activities,
- persons responsible for implementation and the amount of funds to be committed for
- rehabilitation;
- Environmental, social and economic projections of host communities years after the
- company has abandoned the project;
- Action plan of the company and concerned authorities on severance benefits and
- dislocation compensation; and
- Source of funds to implement the rehabilitation plan.

The plan shall also include the following specific details:

- Proper documentation and accounting of large volume of chemicals and other
- materials utilized during the operation of the plant including the dump site/waste
- holding areas;
- Plants, shops and other facilities that will be dismantled;
- Open areas including plant site and other disturbed areas that will be stabilized and
- re-vegetated to make them blend with the natural landscape;
- Altered areas must adapt to the existing land-use; and
- Re-engineering of oil-water separator area and catch basins.

8 INSTITUTIONAL PLAN FOR EMP IMPLEMENTATION

8.1. Introduction

OMCPC adopts a system for continued monitoring to determine whether the environmental management programs are achieving their objectives and to ensure that procedures are in place to minimize negative impacts from occurring as well as enhance positive impacts. In implementing management programs, OMCPC adheres to the following:

- Commitment to comply with all environmental regulations and legislations;
- Implementation of pollution prevention and control systems;
- Monitoring and assessment of environmental performance;
- Conservation of resources through judicious use and reuse;
- Commitment of all personnel working for and on its behalf through awareness and training on environmental issues and concerns of the mining operations;
- Demonstrated environmental performance through continual improvement; and
- Involvement of all relevant stakeholders in addressing sustainable development issues.

OMCPC set objectives and targets in order to formulate a tool to implement opportunities for improvement in environmental performance. Succeeding sections will discuss the organizational structure of OMCPC that implements the commitments stipulated in the Impact Management Plant (IMP), Environmental Monitoring Plan (EMoP) and other commitments.

Figure 8.1 is the organizational set-up of OMCPC.

8.2. Organizational Set-up

In order to properly address the environmental, socio-economic, political and public health issues related to the project and the host community, OMCPC established a coordinating body. To ensure that the different issues are addressed in a timely manner, environmental issues is handled by Environmental, Health and Safety Unit (EHS) while the community issues as well as the CSR is handled the Community Relations Office (ComRel).

To ensure the implementation of all the environmental programs, OMCPC established an institutional linkage with the BLGU and LGU. In addition to this institutional linkage, management allots budget for the full implementation and support of all the environmental and CSR programs.

8.2.1. Environmental, Health and Safety Unit (EHS)

The EHS directly reports to the power plant manager. The unit have the following functions:

- Plan and implement the environmental management plan;
- Implement health and safety procedures and programs;
- Institutionalize Emergency Response Plan;
- Monitor compliance of contractors implementation of the EMP;
- Identify sources of pollution;
- Monitor and evaluate the effectiveness of mitigating/enhancement measures;
- Plan, propose, and implement modifications, or additional environmental measures that are deemed necessary to more effectively protect the environment; and

- Coordinate with relevant oversight agencies and other entities including the local government and the community to ensure their effective participation in the implementation of the environmental management plan.

The EHS Manager is also the Pollution Control Officer (PCO) and heads the EHS Unit. The PCO was given enough authority and competence on decision-making with reference to environmental management. The EHS Manager also coordinates with DENR EMB and DOLE for governmental compliances.

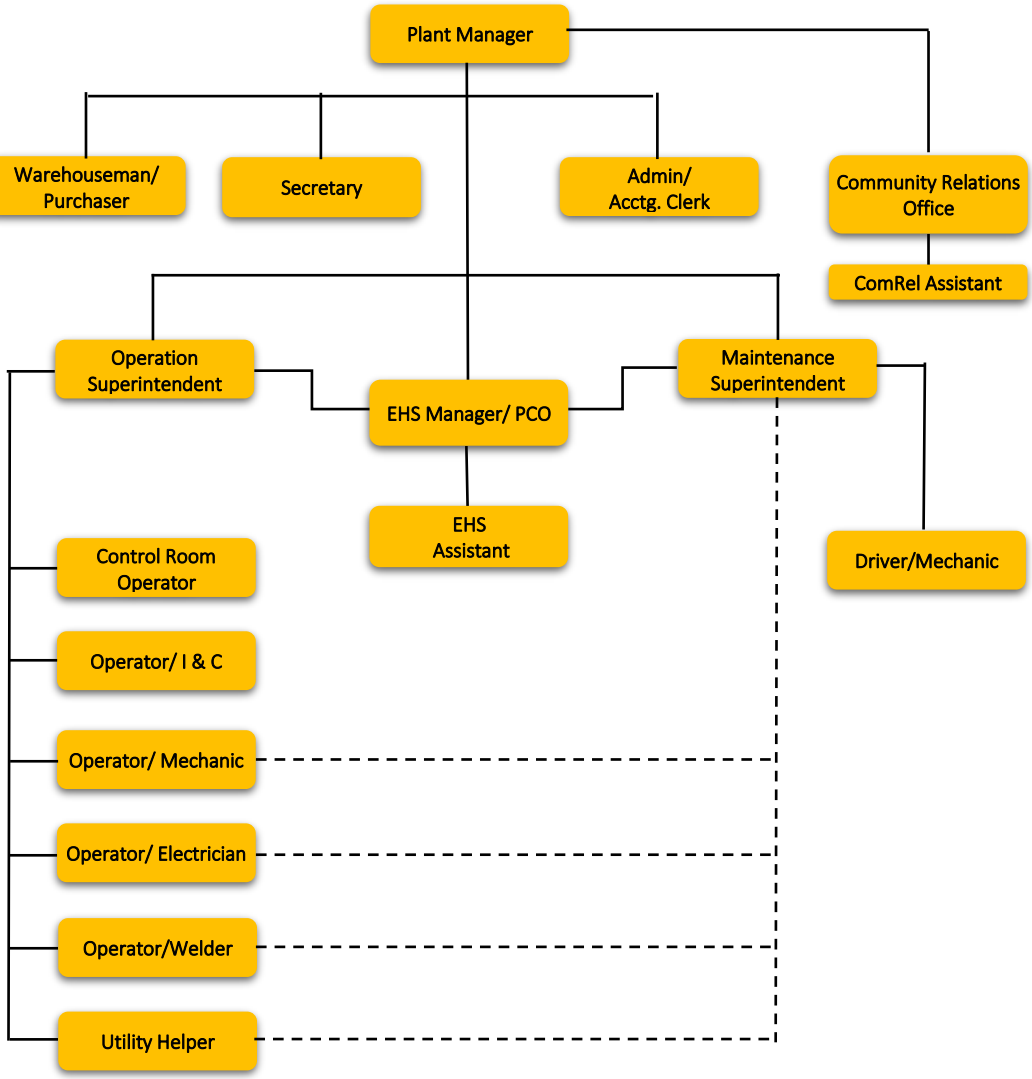

Figure 8.1. OMCPC organizational structure

8.2.2. Community Relations Office (CRO)

The CRO was also established to manage the interaction between the project and all stakeholders to ensure the social acceptability and sustainability of the project. The ComRel's main task is to initiate agreeable solutions to problems with balanced intentions and motion, implementation of the Information, Education and Communication (IEC) Program and the Social Development and Management Program (SDMP) of the project. The ComRel is also responsible for coordinating the company's activities with the concerned communities; LGUs and other government agencies.

The ComRel is headed by a Community Relation's Manager. At some point in time, it cannot be avoided that there will be disagreements and tension between the project proponent and various stakeholders. It should be the ComRel's task to initiate conflict resolution actions.

Apart from the above, the other functions of the ComRel are:

- Generating and sourcing of funds or networking community leaders with sources of funding for the community's various projects;
- Initiating livelihood activities, conducting a skills inventory survey, sponsoring livelihood training programs or networking host communities with organizations that can assist in setting up livelihood projects;
- Initiating social service and out-reach programs like medical missions, calamity assistance etc.; and
- Community organizing in general.

OMCPC's ComRel Officer Mr. Rolando Ilustre is a community organization and development specialist with a background in media broadcasting. His given authority to make decisions concerning the company and its interaction with the stakeholder. This level of authority is crucial in establishing the credibility to coordinate and deal with various stakeholders.

8.2.3. Multi-Partite Monitoring Team (MMT)

Since OMCPC is a Category B - Non-Environmentally Critical Project (NECP), the company is not obliged to establish an MMT.

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ISO9001:2015
Cert. Reg. # 44 100 21 93

SWORN STATEMENT OF ACCOUNTABILITY OF THE PROPONENT

This is to certify that all the information and commitments in this **ENVIRONMENTAL PERFORMANCE REPORT AND MANAGEMENT PLAN (EPRMP)** for the **Proposed OMCPC SMRA Diesel Power Plant Expansion** of **OCCIDENTAL MINDORO CONSOLIDATED POWER CORPORATION (OMCPC)** are accurate and complete to the best of our knowledge, and that an objective and thorough assessment of the Project was undertaken in accordance with the dictates of professional and reasonable judgment. Should I/we learn of any information which would make this **EPRMP REPORT** inaccurate, I shall immediately bring the said information to the attention of the DENR-EMB.

I hereby certify that no DENR-EMB personnel was directly involved in the preparation of this **EPRMP REPORT** other than to provide procedural and technical advice consistent with the guidelines in the DAO 03-30 Revised Procedural Manual.

I hereby bind myself to answer any penalty that may be imposed arising from any misrepresentation or failure to state material information in this **EPRMP REPORT**.

In witness whereof, we hereby set our hands this ____ day of OCT 02 2023 at QUEZON CITY.

CALVIN LUTHER R. GENOTIVA
Chief Operating Officer
Occidental Mindoro Consolidated
Power Corporation

OCT 02 2023

SUBSCRIBED AND SWORN to before me this _____ day of _____ 2023 at QUEZON CITY. Affiant exhibiting to me his/her Community Tax Certificate No. 07673080 issued on January 04, 2023.

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