THERMAL POWER PLANT PROJECTS (EXCEPT GEOTHERMAL)

II. ENVIRONMENTAL IMPACTS AND MANAGEMENT PLAN

Possible Environmental/ Social Impacts	Baseline Environment	Preventive/ Mitigating Measures	Monitoring Parameters/ Implementation	Remarks
		☑ Cost of preventive/mitigating as well as monitoring integrated in the construction /operation cost		
LAND				
☑ Consistency with land use	Current land use w/in 1km radius (as per zoning ordinance): ☐ Residential ☐ Commercial/ Institutional ☐ Industrial ☐ Agricultural/ Recreational ☐ Protected Areas ☐ Others, specify Actual land uses w/in 1 km radius: ☐ Residential ☐ Commercial/ Institutional ☐ Industrial ☐ Agricultural/ Recreational ☐ Protected Areas ☐ Others, specify	☑ See attached proof of compatibility with land use ☑ Limit project activities to what is compatible to the land use ☑ Others, specify	Actual land uses w/in 1km radius: ☐ Residential ☐ Commercial/ Institutional ☐ Industrial ☐ Agricultural/ Recreational ☐ Protected Areas ☐ Others, specify	

Possible Environmental/ Social Impacts	Baseline Environment	Preventive/ Mitigating Measures	Monitoring Parameters/ Implementation	Remarks
		☑ Cost of preventive/mitigating as well as monitoring integrated in the construction /operation cost		
☐ Land tenure / compatibility issue	Identify land tenure / compatibility issues: ☐ CARP ☐ CADC/ CADT/ CALC/ CALT ☐ ROW ☐ Informal settlers ☐ Ecologically sensitive or protected area ☐ Others, specify	☐ Obtain appropriate clearances/ permits from concerned agencies: ☐ Resettlement Plan prepared ☐ Provide relocation/disturbance compensation packages ☐ Ensure participation of IPs in consultations and dialogues ☐ MOA prepared/signed ☐ Provide adequate buffer ☐ Others, specify	☑ Regularly monitor presence/absence of complaints ☑ Regular coordination with LGU or appropriate agencies ☐ Others, specify	
☐ Disturbance to wildlife due to vegetation clearing	Existing vegetation in the area: ☐ Forestland ☐ Marshland ☐ Grassland ☐ Mangrove ☐ Wetland	☑ Compliance with conditions of DENR/LGU SLUP, Tree Cutting Permit, ROW, PCA Permit ☑ Limit land clearing as much as possible ☑ Provide temporary fencing for vegetation that will be retained	☑ Annual inspection of area replanted/ re-vegetated ☐ Others, specify	

Possible Environmental/ Social Impacts	Baseline Environment	Preventive/ Mitigating Measures	Monitoring Parameters/ Implementation	Remarks
		☑ Cost of preventive/mitigating as well as monitoring integrated in the construction /operation cost		
	☐ Others, specify	☑ Promote restoration of damaged or destroyed vegetation where possible (e.g. tree planting); ☐ Provide adequate buffer zone		
☐ Change in surface landform/ topography/ terrain/slope ☐ Soil Erosion	Slope: ☐ Flat (0-3%) ☐ Gently sloping to rolling (3-18%) ☐ Steep (>18%) Is the project site located in an area identified by MGB/PAGASA/ PHIVOLCS as hazard prone? ☐ Yes ☐ No	Considering the natural hazards and climate projections in the area: ☐ Employ appropriate erosion control and slope protection measures ☐ Designate a spoils storage area, with topsoil set aside for later use and allow maximum re-use of spoils ☐ Construct during dry season ☐ Stabilization of embankment with grasses or other soil cover ☐ Conduct Engineering Geological and Geo-hazard Assessment (EGGA) and implement corresponding recommendation ☐ Others, specify	☐ Regular inspection of slope protection measures in erosion-prone areas ☐ Regular inspection for new eroded areas near the site ☐ Others, specify	

Possible Environmental/ Social Impacts	Baseline Environment	Preventive/ Mitigating Measures	Monitoring Parameters/ Implementation	Remarks
		☑ Cost of preventive/mitigating as well as monitoring integrated in the construction /operation cost		
☐ Soil/Land contamination due to materials leakage ☐ Depletion of soil nutrient content/soil productivity/Change in acidity/alkalinity of soil	Existing soil type in the area: ☐ Sandy ☐ Clay ☐ Sandy-loam ☐ concrete/cement ☐ Others, specify Soil acidity/alkalinity ☐ acidic ☐ basic Soil test/analysis (secondary data) N = P = K = Trace metals/micro nutrients =	☑ Secondary containment (pls. specify) : ☑ Engage third party company for waste collection ☐ Others, specify	☑ Regular inspection for leakage of materials that can cause land/soil contamination. ☑ Monitoring of soil physical and chemical properties ☐ Others, specify	

Possible Environmental/ Social Impacts	Baseline Environment	Preventive/ Mitigating Measures	Monitoring Parameters/ Implementation	Remarks
		☑ Cost of preventive/mitigating as well as monitoring integrated in the construction /operation cost		
Building of Structure and Improper solid waste disposal leading to ☐ Impairment of visual aesthetics ☐ Devaluation of land values	Solid Waste Management Scheme in the area: ☐ SLF ☐ MRF ☐ Composting ☐ Regular Collection of Solid Wastes Presence of visually significant landforms/landscape/structures? ☐ Yes ☐ No	☑ Implement landscaping and other beautification measures ☑ Provide adequate buffer ☐ Composting of Organic Wastes ☑ Coordinate with the municipal / city waste collectors ☐ Implement landscaping and other beautification measures ☑ Provide adequate buffer ☐ Compensate adjacent property owners ☐ Others, specify	☑ Daily inspection for presence of garbage in the facility ☑ Weekly inspection of waste accumulated ☑ Regular inspection of landscaping and other beautification activities ☑ Regular monitoring of buffer zones ☑ Regularly monitor presence/absence of complaints from adjacent property owners ☐ Others, specify	
WATER				
☐ Increased siltation due to project activities ☐ Water quality degradation ☐ Thermal pollution ☐ Others, specify	Specify nearest/receiving water body: Distance to nearest/receiving water body: ☐ 0 to less than 0.5 km	☑ Set-up proper and adequate sanitary facilities ☑ Ensure strict observance of proper waste handling and disposal and proper sanitation including by the contractors and its workers (if any) Provision of wastewater treatment facility ☑ For process wastewater, specify	Regular (ocular) inspection of: ☑ Drainage / canal systems ☑ Water treatment facility Regular monitoring of ambient water quality: **Parameter**: ☑ **pH** **Frequency**: ☐ **Annual** ☐ **Semi-annual** ☐ **Quarterly**	

Possible Environmental/ Social Impacts	Baseline Environment	Preventive/ Mitigating Measures	Monitoring Parameters/ Implementation	Remarks
		☑ Cost of preventive/mitigating as well as monitoring integrated in the construction /operation cost		

Baseline Environment

☐ 0.5 to 1 km
☐ More than 1 km

Classification of nearest/receiving water body:

☐ Freshwater	☐ Marine/ coastal water
☐ AA	☐ SA
☐ A	☐ SB
☐ B	☐ SC
☐ C	☐ SD
☐ D	

Current Water Use:

- ☐ Fishery
- ☐ Tourist Zone / Park
- ☐ Recreational
- ☐ Industrial
- ☐ Agricultural

Distance of project area to the nearest well used:

- ☐ 0 to less than 0.5 km
- ☐ 0.5 to 1 km
- ☐ More than 1 km

Preventive/ Mitigating Measures

type of treatment facility:

☑ For domestic wastewater, specify type of treatment facility:

☑ Set up silt traps to minimize downstream siltation

☐ Thermal pollution control system, please specify:

☑ Provide oil containment system (ie. ring canal, grease traps) for fuel tanks/ motor pool/ maintenance areas

☑ Others, specify

Monitoring Parameters/ Implementation

☑ **TSS concentration**	☐ **Annual** ☐ **Semi-annual** ☐ **Quarterly**
☑ **BOD**	☐ **Annual** ☐ **Semi-annual** ☐ **Quarterly**
☑ **Color**	☐ **Annual** ☐ **Semi-annual** ☐ **Quarterly**
☑ **Oil and Grease**	☐ **Annual** ☐ **Semi-annual** ☐ **Quarterly**
☐ Trace Metals (Pb, Cd, Hg, Cr(VI), As)	☐ **Annual** ☐ **Semi-annual** ☐ **Quarterly**

Regular monitoring of plant effluent:

Parameter	Frequency
☑ **pH**	☐ **Annual** ☐ **Semi-annual** ☐ **Quarterly**
☑ **TSS concentration**	☐ **Annual** ☐ **Semi-annual** ☐ **Quarterly**
☑ **BOD**	☐ **Annual**

Possible Environmental/ Social Impacts	Baseline Environment	Preventive/ Mitigating Measures	Monitoring Parameters/ Implementation	Remarks
		☑ Cost of preventive/mitigating as well as monitoring integrated in the construction /operation cost		
	Use of the nearest well: ☐ Drinking/Domestic ☐ Industrial ☐ Agricultural		☐ **Semi-annual** ☐ **Quarterly** ☑ **Color** ☐ **Annual** ☐ **Semi-annual** ☐ **Quarterly** ☑ **Oil and Grease** ☐ **Annual** ☐ **Semi-annual** ☐ **Quarterly** ☐ Heavy Metals (Pb, Cd, Hg, Cr(VI), As) ☐ **Annual** ☐ **Semi-annual** ☐ **Quarterly**	
☑ Competition in water use ☑ Depletion of water resources	Size of population using receiving surface water: ☐ ≤ 1,000 persons ☐ >1,000 and ≤ 5,000 persons ☐ >5,000 person Current Water Use: ☐ Fishery ☐ Tourist Zone / Park ☐ Recreational ☐ Industrial ☐ Agricultural Available/nearest water source. ☐ Deep well ☐ Water district/LGU ☐ Surface water	☐ Implement rainwater harvesting, community ponds and/ or similar measures as an alternative source of water ☐ Observe water conservation measures; ☐ Careful selection of project site to avoid disruption of traditional water uses ☐ Obtain Water Permit from NWRB ☐ Improve efficiency of water supply and distribution system ☐ Increase, when practical, storage capacities of water supply structures for resilience to greater climate variations and extremes ☐ Others, specify	☑ Regularly monitor presence/absence of complaints ☑ Regular coordination with concerned agencies ☑ Regularly monitor occurrences of water shortages ☐ Others, specify	

Possible Environmental/ Social Impacts	Baseline Environment	Preventive/ Mitigating Measures	Monitoring Parameters/ Implementation	Remarks
		☑ Cost of preventive/mitigating as well as monitoring integrated in the construction /operation cost		
	☐ Others, specify			
☐ Increased occurrence of flooding	Is the project site located in an area identified by MGB/PAG-ASA as flood prone? ☐ Yes ☐ No	☐ Use appropriate design for project facilities ☐ Implement appropriate drainage system ☐ Regularly remove debris and other materials that may obstruct water flow ☐ Use appropriate technology (e.g., raised hand-pumps) to protect drinking water from flood contamination ☐ Others, specify	☑ Regularly monitor presence/absence of complaints ☑ Regular coordination with concerned agencies ☑ Regularly monitor increased frequency of flooding ☐ Others, specify	
AIR / NOISE				
☑ Air quality degradation	Distance to nearest community: ☐ 0 to less than 0.5 km ☐ 0.5 to 1 km ☐ More than 1 km	☑ Properly operate and maintain all emission sources (e.g. vehicles, pumps, generator, etc) ☑ Install appropriate air pollution control device/s, please specify:	☑ Regularly monitor presence/absence of complaints Regular (ocular) inspection of: ☑ Absence of white or black	

Possible Environmental/ Social Impacts	Baseline Environment	Preventive/ Mitigating Measures	Monitoring Parameters/ Implementation	Remarks
		☑ Cost of preventive/mitigating as well as monitoring integrated in the construction /operation cost		
		☑ Strictly enforce good housekeeping practices ☐ Control vehicle speed to lessen suspension of road dust ☐ Conduct water spraying to suppress dust sources and minimize discomfort to nearby residents ☑ Use covered vehicles to deliver materials that may generate dust ☐ Other, specify	smoke from vehicles, heavy equipment and generator ☑ Absence of black smoke from stack/s ☑ Presence of truck cover during deliveries Regular monitoring of ambient air quality:	

Parameter	Frequency
☑ PM10	☐ Annual ☐ Semi-annual ☐ Quarterly
☑ TSP	☐ Annual ☐ Semi-annual ☐ Quarterly
☑ NO_2	☐ Annual ☐ Semi-annual ☐ Quarterly
☑ SO_2	☐ Annual ☐ Semi-annual ☐ Quarterly
☐ Trace metals:	☐ Annual ☐ Semi-annual ☐ Quarterly
☐ Others , specify	☐ Annual ☐ Semi-annual

Possible Environmental/ Social Impacts	Baseline Environment	Preventive/ Mitigating Measures	Monitoring Parameters/ Implementation	Remarks
		☑ Cost of preventive/mitigating as well as monitoring integrated in the construction /operation cost		
			☐ Quarterly Regular monitoring of stack emissions: Parameter / Frequency ☑ PM10 — ☐ Annual ☐ Semi-annual ☐ Quarterly ☑ TSP — ☐ Annual ☐ Semi-annual ☐ Quarterly ☑ NO_x — ☐ Annual ☐ Semi-annual ☐ Quarterly ☑ SO_x — ☐ Annual ☐ Semi-annual ☐ Quarterly ☐ Trace metals: [ ] — ☐ Annual ☐ Semi-annual ☐ Quarterly ☐ Others specify [ ] — ☐ Annual ☐ Semi-annual ☐ Quarterly	

Possible Environmental/ Social Impacts	Baseline Environment	Preventive/ Mitigating Measures	Monitoring Parameters/ Implementation	Remarks
		☑ Cost of preventive/mitigating as well as monitoring integrated in the construction /operation cost		
☑ Nuisance due to noise generation	Distance to nearest community: ☐ 0 to less than 0.5 km ☐ 0.5 to 1 km ☐ More than 1 km	☑ Properly operate and maintain all noise sources (e.g. vehicles, pumps, generator, etc) ☑ Install when applicable, the appropriate noise control device/s (e.g., mufflers, silencer, sound barriers, etc.) ☐ Implement appropriate operating hours ☑ Provide adequate buffer and/or planting of trees ☐ Others, specify	☑ Regularly monitor presence/absence of complaints ☑ Regular monitoring of buffer zones ☑ Quarterly monitoring of noise level ☑ Others, specify	
☐ Nuisance due to generation of obnoxious/unpleasant odor	Distance to nearest community: ☐ 0 to less than 0.5 km ☐ 0.5 to 1 km ☐ More than 1 km Is the wind direction blowing towards the nearest community most of the year? ☐ Yes ☐ No	☐ Use of environment-friendly deodorizer or odor masking substances ☐ Provide adequate buffer and/or planting of trees ☐ Others, specify	☑ Regularly monitor presence/absence of complaints ☐ Others, specify:	
PEOPLE & CULTURE				

Possible Environmental/ Social Impacts	Baseline Environment	Preventive/ Mitigating Measures	Monitoring Parameters/ Implementation	Remarks
		☑ Cost of preventive/mitigating as well as monitoring integrated in the construction /operation cost		
☐ Displacement of residents including indigenous people (if any in the project site and within its vicinity ☐ Enhanced employment and/or livelihood opportunities ☑ Increased revenues for LGU ☐ Disruption/Competition in delivery of public services (e.g., education, peace and order, etc.) ☐ Enhanced delivery of public services (e.g., education, peace and order, etc.) ☐ Increase in traffic volume and worsening of traffic flow	Size of population of host barangay/s: ☐ ≤ 1,000 persons ☐ >1,000 and ≤ 5,000persons ☐ >5,000person ☐ Indigenous People Size: Classification of host barangay: ☐ Urban ☐ Rural Employment/Livelihood Opportunity Rate in the host Municipality: ☐ High ☐ Low Description: Available services within/near the host barangay:	☐ Provide relocation/disturbance compensation packages ☑ Prioritize local residents for employment ☑ Promptly pay local taxes and other financial obligations ☑ Regular coordination with LGU ☐ Conduct prior consultation and coordination to minimize disruption of daily domestic activities ☐ Ensure participation of IPs in consultations and dialogues & consider IP rights and cultural practices in the provision of relocation/disturbance compensation packages ☐ Provide appropriate traffic/warning signs, lighting, etc. ☐ Others, specify		

Possible Environmental/ Social Impacts	Baseline Environment	Preventive/ Mitigating Measures	Monitoring Parameters/ Implementation	Remarks
		☑ Cost of preventive/mitigating as well as monitoring integrated in the construction /operation cost		
	☐ Schools (e.g. elementary, high school, college) ☐ Health facilities (e.g., clinics, hospitals, etc.) ☐ Peace and order (e.g., police outpost, Brgy. Tanod, etc.) ☐ Recreation and sports facilities ☐ Others, specify			
☐ Destruction/disturbance of physical cultural resources. *(✓ if project site has been identified to have such by NM, NHCP, NCAA and LGUs)*	Physical Cultural resources within the vicinity of the project site:	☐ Implement appropriate protocols based on NM, NHCP, NCAA and LGU guidelines including those for chance finds (if any). Specify:		
☑ Impacts on community health and safety Safety Risks ☑ Fire ☐ Explosions ☐ Release of toxic materials	Source of risks (please specify) ☐ Explosives :	☑ Regular coordination with LGU ☐ Provide appropriate warning signs, lighting and barricades, whenever practicable ☑ Observe proper housekeeping ☐ Provide on-site medical services for any emergency.	☑ Presence/absence of complaints ☑ Regular coordination with LGU ☐ Others, specify	

Possible Environmental/ Social Impacts	Baseline Environment	Preventive/ Mitigating Measures	Monitoring Parameters/ Implementation	Remarks
		☑ Cost of preventive/mitigating as well as monitoring integrated in the construction /operation cost		
☑ Structural failure	☐ Flammable substances: ☐ Toxic substances: ☐ Others, specify	☐ Participate in public awareness programs on health and safety ☐ Implement appropriate safety programs for both community and workers ☑ Strictly comply with fire, safety and similar regulatory requirements ☐ Strictly comply with requirements of RA 6969 ☐ Others, specify		