

WASTE-TO-ENERGY PROJECTS

II. ENVIRONMENTAL IMPACTS AND MANAGEMENT PLAN

[illegible]

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

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		<input checked="" type="checkbox"/> Cost of preventive/mitigating as well as monitoring integrated in the construction /operation cost		
<input type="checkbox"/> Change in surface landform/ topography/ terrain/slope <input type="checkbox"/> Soil Erosion	Slope: <input type="checkbox"/> Flat (0-3%) <input type="checkbox"/> Gently sloping to rolling (3-18%) <input type="checkbox"/> Steep (>18%) Is the project site located in an area identified by MGB/PAGASA/ PHIVOLCS as hazard prone? <input type="checkbox"/> Yes <input type="checkbox"/> No	Considering the natural hazards and climate projections in the area: <input type="checkbox"/> Employ erosion control and slope protection measures <input type="checkbox"/> Designate a spoils storage area, with topsoil set aside for later use and allow maximum re-use of spoils <input type="checkbox"/> Construct during dry season <input type="checkbox"/> Stabilization of embankment with grasses or other soil cover <input type="checkbox"/> Conduct Engineering Geological and Geo-hazard Assessment (EGGA) and implement corresponding recommendation <input type="checkbox"/> Others, specify	<input type="checkbox"/> Regular inspection of slope protection measures in erosion-prone areas <input type="checkbox"/> Regular inspection for new eroded areas near the site <input type="checkbox"/> Others, specify	

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		<input checked="" type="checkbox"/> Cost of preventive/mitigating as well as monitoring integrated in the construction /operation cost						
Building of Structure and Improper solid waste disposal leading to <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Impairment of visual aesthetics <input checked="" type="checkbox"/> Devaluation of land values 	Solid Waste Management Scheme in the area: <ul style="list-style-type: none"> <input type="checkbox"/> SLF <input type="checkbox"/> MRF <input type="checkbox"/> Composting <input type="checkbox"/> Regular Collection of Solid Wastes Presence of visually significant landforms/landscape/structures? <ul style="list-style-type: none"> <input type="checkbox"/> Yes <input type="checkbox"/> No 	<ul style="list-style-type: none"> <input checked="" type="checkbox"/> Implement landscaping and other beautification measures <input checked="" type="checkbox"/> Provide adequate buffer <input type="checkbox"/> Composting of Organic Wastes <input checked="" type="checkbox"/> Coordinate with the municipal / city waste collectors <input type="checkbox"/> Implement landscaping and other beautification measures <input checked="" type="checkbox"/> Provide adequate buffer <input type="checkbox"/> Compensate adjacent property owners <input type="checkbox"/> Others, specify 	<ul style="list-style-type: none"> <input checked="" type="checkbox"/> Daily inspection for presence of garbage in the facility <input checked="" type="checkbox"/> Weekly inspection of waste accumulated <input checked="" type="checkbox"/> Regular inspection of landscaping and other beautification activities <input checked="" type="checkbox"/> Regular monitoring of buffer zones <input checked="" type="checkbox"/> Regularly monitor presence/absence of complaints from adjacent property owners <input type="checkbox"/> Others, specify 					
WATER								
<ul style="list-style-type: none"> <input checked="" type="checkbox"/> Increased siltation due to project activities <input checked="" type="checkbox"/> Water quality degradation <input type="checkbox"/> Thermal pollution <input type="checkbox"/> Others, specify 	Specify nearest/receiving water body: Distance to nearest/receiving water body: <ul style="list-style-type: none"> <input type="checkbox"/> 0 to less than 0.5 km 	<ul style="list-style-type: none"> <input checked="" type="checkbox"/> Set-up proper and adequate sanitary facilities <input checked="" type="checkbox"/> 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	Regular (ocular) inspection of: <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Drainage / canal systems <input checked="" type="checkbox"/> Water treatment facility Regular monitoring of ambient water quality: <table border="1" style="width: 100%;"> <thead> <tr> <th>Parameter</th><th>Frequency</th></tr> </thead> <tbody> <tr> <td><input checked="" type="checkbox"/> pH</td><td> <input type="checkbox"/> Annual <input type="checkbox"/> Semi-annual <input type="checkbox"/> Quarterly </td></tr> </tbody> </table>	Parameter	Frequency	<input checked="" type="checkbox"/> pH	<input type="checkbox"/> Annual <input type="checkbox"/> Semi-annual <input type="checkbox"/> Quarterly	
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Possible Environmental/ Social Impacts	Baseline Environment	Preventive/ Mitigating Measures	Monitoring Parameters/ Implementation		Remarks
		<input checked="" type="checkbox"/> Cost of preventive/mitigating as well as monitoring integrated in the construction /operation cost			
	Use of the nearest well: <ul style="list-style-type: none"> <input type="checkbox"/> Drinking/Domestic <input type="checkbox"/> Industrial <input type="checkbox"/> Agricultural 		<input checked="" type="checkbox"/> BOD <div> <input type="checkbox"/> Annual <input type="checkbox"/> Semi-annual <input type="checkbox"/> Quarterly </div>		
			<input checked="" type="checkbox"/> Color <div> <input type="checkbox"/> Annual <input type="checkbox"/> Semi-annual <input type="checkbox"/> Quarterly </div>		
			<input checked="" type="checkbox"/> Oil and Grease <div> <input type="checkbox"/> Annual <input type="checkbox"/> Semi-annual <input type="checkbox"/> Quarterly </div>		
			<input type="checkbox"/> Heavy Metals (Pb, Cd, Hg, Cr(VI), As) <div> <input type="checkbox"/> Annual <input type="checkbox"/> Semi-annual <input type="checkbox"/> Quarterly </div>		
<input type="checkbox"/> Competition in water use <input type="checkbox"/> Depletion of water resources	Size of population using receiving surface water: <ul style="list-style-type: none"> <input type="checkbox"/> ≤ 1,000 persons <input type="checkbox"/> >1,000 and ≤ 5,000 persons <input type="checkbox"/> >5,000 person Current Water Use: <ul style="list-style-type: none"> <input type="checkbox"/> Fishery <input type="checkbox"/> Tourist Zone / Park <input type="checkbox"/> Recreational <input type="checkbox"/> Industrial <input type="checkbox"/> Agricultural 	<input type="checkbox"/> Implement rainwater harvesting, community ponds and/ or similar measures as an alternative source of water <input type="checkbox"/> Observe water conservation measures; <input type="checkbox"/> Careful selection of project site to avoid disruption of traditional water uses <input type="checkbox"/> Obtain Water Permit from NWRB <input type="checkbox"/> Improve efficiency of water supply and distribution system <input type="checkbox"/> Increase, when practical, storage capacities of water	<input checked="" type="checkbox"/> Regularly monitor presence/absence of complaints <input checked="" type="checkbox"/> Regular coordination with concerned agencies <input checked="" type="checkbox"/> Regularly monitor occurrences of water shortages <input type="checkbox"/> Others, specify		

Possible Environmental/ Social Impacts	Baseline Environment	Preventive/ Mitigating Measures	Monitoring Parameters/ Implementation	Remarks
		<input checked="" type="checkbox"/> Cost of preventive/mitigating as well as monitoring integrated in the construction /operation cost		
	Available/nearest water source. <input type="checkbox"/> Deep well <input type="checkbox"/> Water district/LGU <input type="checkbox"/> Surface water <input type="checkbox"/> Others, specify	supply structures for resilience to greater climate variations and extremes <input type="checkbox"/> Others, specify		
<input type="checkbox"/> Increased occurrence of flooding	Is the project site located in an area identified by MGB/PAG-ASA as flood prone? <input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Use appropriate design for project facilities <input type="checkbox"/> Implement appropriate drainage system <input type="checkbox"/> Regularly remove debris and other materials that may obstruct water flow <input type="checkbox"/> Use appropriate technology (e.g., raised hand-pumps) to protect drinking water from flood contamination <input type="checkbox"/> Others, specify	<input checked="" type="checkbox"/> Regularly monitor presence/absence of complaints <input checked="" type="checkbox"/> Regular coordination with concerned agencies <input checked="" type="checkbox"/> Regularly monitor increased frequency of flooding <input type="checkbox"/> Others, specify	
AIR / NOISE				

Possible Environmental/ Social Impacts	Baseline Environment	Preventive/ Mitigating Measures	Monitoring Parameters/ Implementation	Remarks										
		<input checked="" type="checkbox"/> Cost of preventive/mitigating as well as monitoring integrated in the construction /operation cost												
<input checked="" type="checkbox"/> Air quality degradation	Distance to nearest community: <input type="checkbox"/> 0 to less than 0.5 km <input type="checkbox"/> 0.5 to 1 km <input type="checkbox"/> More than 1 km	<input checked="" type="checkbox"/> Properly operate and maintain all emission sources (e.g. vehicles, pumps, generator, etc) <input checked="" type="checkbox"/> Install appropriate air pollution control device/s, please specify: <input checked="" type="checkbox"/> Strictly enforce good housekeeping practices <input type="checkbox"/> Control vehicle speed to lessen suspension of road dust <input type="checkbox"/> Conduct water spraying to suppress dust sources and minimize discomfort to nearby residents <input checked="" type="checkbox"/> Use covered vehicles to deliver materials that may generate dust <input type="checkbox"/> Other, specify	<input checked="" type="checkbox"/> Regularly monitor presence/absence of complaints Regular (ocular) inspection of: <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Absence of white or black smoke from vehicles, heavy equipment and generator <input checked="" type="checkbox"/> Absence of black smoke from stack/s <input checked="" type="checkbox"/> Presence of truck cover during deliveries Regular monitoring of ambient air quality: <table border="1"> <thead> <tr> <th>Parameter</th><th>Frequency</th></tr> </thead> <tbody> <tr> <td><input checked="" type="checkbox"/> PM10</td><td> <input type="checkbox"/> Annual <input type="checkbox"/> Semi-annual <input type="checkbox"/> Quarterly </td></tr> <tr> <td><input checked="" type="checkbox"/> TSP</td><td> <input type="checkbox"/> Annual <input type="checkbox"/> Semi-annual <input type="checkbox"/> Quarterly </td></tr> <tr> <td><input checked="" type="checkbox"/> NO₂</td><td> <input type="checkbox"/> Annual <input type="checkbox"/> Semi-annual <input type="checkbox"/> Quarterly </td></tr> <tr> <td><input checked="" type="checkbox"/> SO₂</td><td> <input type="checkbox"/> Annual <input type="checkbox"/> Semi-annual <input type="checkbox"/> Quarterly </td></tr> </tbody> </table>	Parameter	Frequency	<input checked="" type="checkbox"/> PM10	<input type="checkbox"/> Annual <input type="checkbox"/> Semi-annual <input type="checkbox"/> Quarterly	<input checked="" type="checkbox"/> TSP	<input type="checkbox"/> Annual <input type="checkbox"/> Semi-annual <input type="checkbox"/> Quarterly	<input checked="" type="checkbox"/> NO ₂	<input type="checkbox"/> Annual <input type="checkbox"/> Semi-annual <input type="checkbox"/> Quarterly	<input checked="" type="checkbox"/> SO ₂	<input type="checkbox"/> Annual <input type="checkbox"/> Semi-annual <input type="checkbox"/> Quarterly	
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Possible Environmental/ Social Impacts	Baseline Environment	Preventive/ Mitigating Measures	Monitoring Parameters/ Implementation		Remarks
		<input checked="" type="checkbox"/> Cost of preventive/mitigating as well as monitoring integrated in the construction /operation cost			
			<input type="checkbox"/> Trace metals:	<input type="checkbox"/> Annual <input type="checkbox"/> Semi-annual <input type="checkbox"/> Quarterly	
			<input type="checkbox"/> Others, specify	<input type="checkbox"/> Annual <input type="checkbox"/> Semi-annual <input type="checkbox"/> Quarterly	
			Regular monitoring of stack emissions:		
			<input checked="" type="checkbox"/> PM10	<input type="checkbox"/> Annual <input type="checkbox"/> Semi-annual <input type="checkbox"/> Quarterly	
			<input checked="" type="checkbox"/> TSP	<input type="checkbox"/> Annual <input type="checkbox"/> Semi-annual <input type="checkbox"/> Quarterly	
			<input checked="" type="checkbox"/> NO _x	<input type="checkbox"/> Annual <input type="checkbox"/> Semi-annual <input type="checkbox"/> Quarterly	
			<input checked="" type="checkbox"/> SO _x	<input type="checkbox"/> Annual <input type="checkbox"/> Semi-annual <input type="checkbox"/> Quarterly	
			<input type="checkbox"/> Trace metals:	<input type="checkbox"/> Annual <input type="checkbox"/> Semi-annual	

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		<input checked="" type="checkbox"/> Cost of preventive/mitigating as well as monitoring integrated in the construction /operation cost			
				<input type="checkbox"/> Quarterly	
			<input type="checkbox"/> Others, specify	<input type="checkbox"/> Annual <input type="checkbox"/> Semi-annual <input type="checkbox"/> Quarterly	
<input checked="" type="checkbox"/> Nuisance due to noise generation	Distance to nearest community: <input type="checkbox"/> 0 to less than 0.5 km <input type="checkbox"/> 0.5 to 1 km <input type="checkbox"/> More than 1 km	<input checked="" type="checkbox"/> Properly operate and maintain all noise sources (e.g. vehicles, pumps, generator, etc) <input checked="" type="checkbox"/> Install when applicable, the appropriate noise control device/s (e.g., mufflers, silencer, sound barriers, etc.) <input type="checkbox"/> Implement appropriate operating hours <input checked="" type="checkbox"/> Provide adequate buffer and/or planting of trees <input type="checkbox"/> Others, specify	<input checked="" type="checkbox"/> Regularly monitor presence/absence of complaints <input checked="" type="checkbox"/> Regular monitoring of buffer zones <input checked="" type="checkbox"/> Quarterly monitoring of noise level <input checked="" type="checkbox"/> Others, specify		
<input type="checkbox"/> Nuisance due to generation of obnoxious/unpleasant odor	Distance to nearest community: <input type="checkbox"/> 0 to less than 0.5 km <input type="checkbox"/> 0.5 to 1 km <input type="checkbox"/> More than 1 km	<input type="checkbox"/> Use of environment-friendly deodorizer or odor masking substances <input type="checkbox"/> Provide adequate buffer and/or planting of trees	<input checked="" type="checkbox"/> Regularly monitor presence/absence of complaints <input type="checkbox"/> Others, specify:		

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		<input checked="" type="checkbox"/> Cost of preventive/mitigating as well as monitoring integrated in the construction /operation cost		
	Is the wind direction blowing towards the nearest community most of the year? <input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Others, specify		
PEOPLE & CULTURE				
<input type="checkbox"/> Displacement of residents including indigenous (if any) people in the project site and within its vicinity <input type="checkbox"/> Enhanced employment and/or livelihood opportunities <input checked="" type="checkbox"/> Increased revenues for LGU <input type="checkbox"/> Disruption/Competition in delivery of public services (e.g., education, peace and order, etc.) <input type="checkbox"/> Enhanced delivery of public services (e.g., education, peace and order, etc.) <input type="checkbox"/> Increase in traffic volume and worsening of traffic flow	Size of population of host barangay/s: <input type="checkbox"/> ≤ 1,000 persons <input type="checkbox"/> >1,000 and ≤ 5,000persons <input type="checkbox"/> >5,000person <input type="checkbox"/> Indigenous People Size: Classification of host barangay: <input type="checkbox"/> Urban <input type="checkbox"/> Rural Employment/Livelihood Opportunity Rate in the host Municipality: <input type="checkbox"/> High	<input type="checkbox"/> Provide relocation/disturbance compensation packages <input checked="" type="checkbox"/> Prioritize local residents for employment <input checked="" type="checkbox"/> Promptly pay local taxes and other financial obligations <input checked="" type="checkbox"/> Regular coordination with LGU <input type="checkbox"/> Conduct prior consultation and coordination to minimize disruption of daily domestic activities <input type="checkbox"/> Ensure participation of IPs in consultations and dialogues & consider IP rights and cultural practices in the provision of relocation/disturbance compensation packages <input type="checkbox"/> Provide appropriate traffic/warning signs, lighting, etc <input type="checkbox"/> Others, specify		

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