

ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN

Leidebril Livestock Farm
Methane Recovery and Power Generation Project

Ref. No. 5979-0016
CPA-23 Methane Recovery and Combustion with Renewable Energy Generation from Anaerobic Animal
Manure Management Systems under the Land Bank of the Philippines' Carbon Finance Support Facility

June 2019

LIST OF ACRONYMS

BOD	Biological Oxygen Demand
CDM	Clean Development Mechanism
CFSF	Carbon Finance Support Facility
CMR	Compliance Monitoring Report
CSR	Corporate Social Responsibility
DENR	Department of Environment and Natural Resources
DNA	Designated National Authority
DO	Dissolved Oxygen
DOE	Designated Operational Entity
DP	Discharge Permit
ECC	Environmental Compliance Certificate
EMB	Environmental Management Bureau
EMF	Environmental Monitoring Fund
EPMD	Environmental Program and Management Department
ERPA	Emissions Reduction Purchase Agreement
ESMP	Environmental and Social Management Plan
ESSF	Environmental and Social Safeguards Framework
FIBECO	First Bukidnon Electric Cooperative
LBP	Land Bank of the Philippines
MOA	Memorandum of Agreement
MRF	Methane Recovery Facility
MSDS	Materials Safety Data Sheet
PCO	Pollution Control Officer
P.D.	Presidential Decree
PoA	Program of Activity
PPE	Personal Protective Equipment
PTO	Permit to Operate
R.A.	Republic Act
SMR	Self-Monitoring Report
SPA	Subproject Agreement
TSD	Treatment / Storage / Disposal
TSS	Total Suspended Solids
WTF	Water Treatment Facility

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PURPOSE OF THE DOCUMENT

This Environmental and Social Management Plan (ESMP) is prepared as part of the requirements of the Safeguards Framework for Clean Development Mechanism (CDM) projects implemented under the Carbon Finance Support Facility (CFSF) of the Land Bank of the Philippines (LBP). The Environmental and Social Safeguards Framework (ESSF) was developed to ensure the establishment of protection, compliance, and mitigation measures for relevant environmental and social aspects of projects under the CDM program which covers the Methane Recovery and Power Generation of Leidebril Livestock Farm (Leidebril).

Scope

Since the Methane Recovery and Power Generation Project is a key component of the Leidebril Livestock Farm's wastewater treatment facility (WWTF) – which handles the primary waste (manure) produced by its operations – this ESMP thus encompasses the operations of the entire farm described herein.

1 PROJECT SUMMARY

The Methane Recovery and Power Generation Project of Leidebril Livestock Farm owned by Mr. Leonilo C. Go is an initiative developed under LANDBANK's CFSF. Its goal is to capture greenhouse gases, particularly methane from piggery wastewaters that would otherwise dissipate into the atmosphere, and convert them into electrical energy.

1.1 Proponent Profile

Proponent: Mr. Leonilo C. Go / Leidebril Livestock Farm
Business Address: Barangay Bagontaas, Valencia City, Bukidnon, Philippines
Owner / CEO: Mr. Leonilo C. Go

Farm Name: Leidebril Livestock Farm
Project Site: Barangay Bagontaas, Valencia City, Bukidnon, Philippines
Farm Coordinates: 7.949782, 125.099657

Project Type: Livestock Project
Philippine Standard
Industrial Classification: 0145 - Hog Farming

Contact Persons **Leidebril Livestock Farm**
Farm Manager: King Go
Contact details: 088-315-0132
leidebrilfarm@gmail.com

Pollution Control Officer: Bryan Steve Go
Contact details: 088-315-0132
leidebrilfarm@gmail.com

LANDBANK
Lending Programs
Management Group: Emellie V. Tamayo
Designation: Head / First Vice President
Telephone No.: (632) 405-7309
Fax No.: (632) 528-8542

Environmental Program &
Management Department: Prudencio E. Calado III
Designation: Head / Assistant Vice President
Telephone No.: (632) 405-7339
Fax No.: (632) 528-8484

1.2 The Pig Farm

Farm area: 171,918 m²
Production: Farrow-to-Finish
Housing type: Conventional, open-sided

Capacity: 600 sow level

Start of operation: 1973
No. of Employees: 50
Operating hours: 24

Leidebril Livestock Farm is a family-run business engaged in hog breeding and raising. Currently, it is able and licensed (as per its Environmental Compliance Certificate) to house stock at 600 sow level. The site layout in Figure 1 shows the basic facilities of the farm.

The farm is was initnally powered through a grid by First Bukidnon Electric Cooperative (FIBECO), but now utilizes electricity from biogas through the project. Water for its operations is sourced from deep wells within its premises.

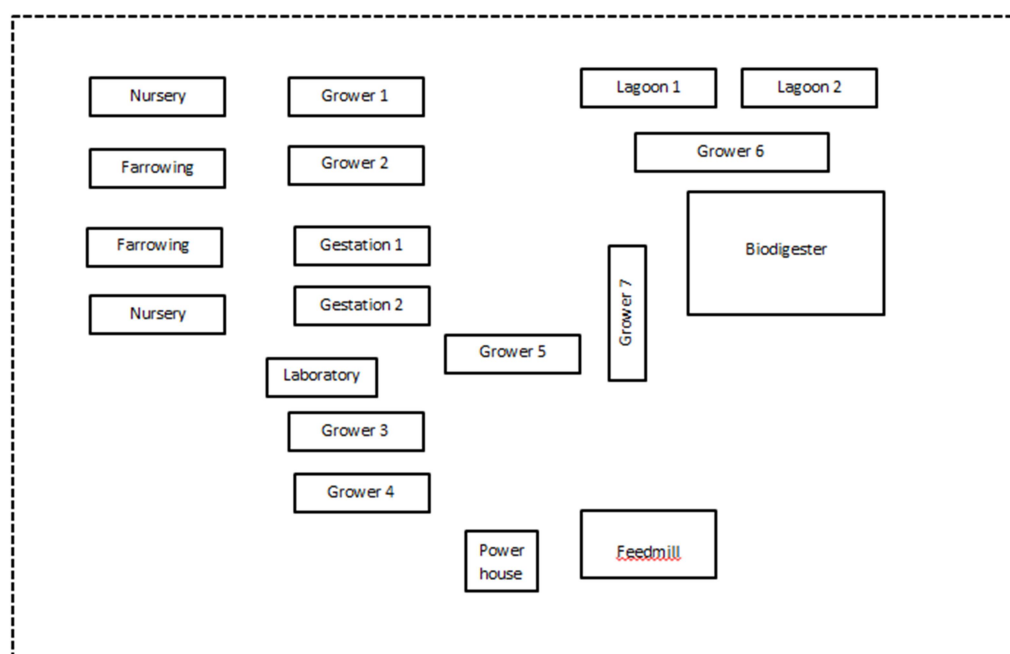


Figure 1. Site layout of Leidebril Livestock Farm

1.3 Project Description

The project covers the installation and operation of an anaerobic digester system and its ancillary facilities, including post-treatment wastewater lagoons and a biogas-powered electricity generation system, collectively referred to herein as methane recovery facilities (MRF).

1.3.1 Components and Design

Leidebril Livestock Farm's wastewater treatment process features two phases:

- *Anaerobic digestion*, or the disintegration of biodegradable materials in the wastewaters through biological processes facilitated by microbes which thrive in the conditions promoted by the reactor; and
- *Post-Treatment* of biogas, effluent, and sludge resulting from anaerobic digestion.

In general, the WWTF is mainly composed of a covered earthen lagoon, an aeration lagoon, a filtration system, and a clarifying lagoon. (see Fig 2). The MRF basically consists of biogas generator sets.

Overall, the anaerobic digester system has been intended to accommodate wastes generated by up to the maximum number of pigs the farm could house (600 sow level) and capture enough biogas to run the project's facilities between 8 to 14 hours per day. The design and layout of the WWTF are in the construction plans in Appendix A. Properties and specifications of the WWT-MRFs, including capacities, outputs, and efficiencies, will be detailed in the succeeding version of this ESMP (see Section 4).

Table 1. Specifications of Leidebril Livestock Farm's Wastewater Treatment Facility-Methane Recovery Facility

Phase	Process	Component	No. of Units	Description / Equipment
Pre-treatment	settling	pre-storage settling tank	1	-not specified-
	Filtration	Effluent filter	1	-not specified-
Anaerobic treatment	anaerobic digestion / fermentation	Biogas fermentation chamber	1	-not specified-
Post-treatment	Biogas	scrubber system	1	-not specified-
		generator set	1	225 kWh
	Effluent	clarification (settling, aeration)	2	-not specified-
	Sludge	drying bed	1	-not specified-

1.3.2 Operation

Wastewaters from pig sheds are conveyed through drains along the sides of the buildings into the anaerobic digester. They remain in the chamber until they are displaced by newly flushed influent. From the biodigester, partially treated wastewaters flow onto the aeration lagoon equipped with paddle motors.

After aeration, wastewaters are made to pass through the filtration system and then drain onto the clarifying lagoon where they are stored prior to being reused in the farm for cleaning and irrigation.

Biogas produced in the anaerobic digester is directed to a biogas storage tank. From here, gas is propelled towards one of the two generator sets for conversion to electrical energy. Electricity from the biogas is used to power the farm. The generator sets operate alternately for 200 hours each before being shut down for maintenance activities.

Sludge is removed from the anaerobic chambers through gravity release pipes and dried on a concrete bed. Dried sludge is used as fertilizer.

Figure 2 illustrates the processes involved and the project components employed in the wastewater treatment and power generation process in Leidebril. A manual presenting a more detailed description of the WWTF-MRF's operations, including process times, flushing schedules, and water usage, will be prepared and appended to the succeeding version of this ESMP (see Section 4).

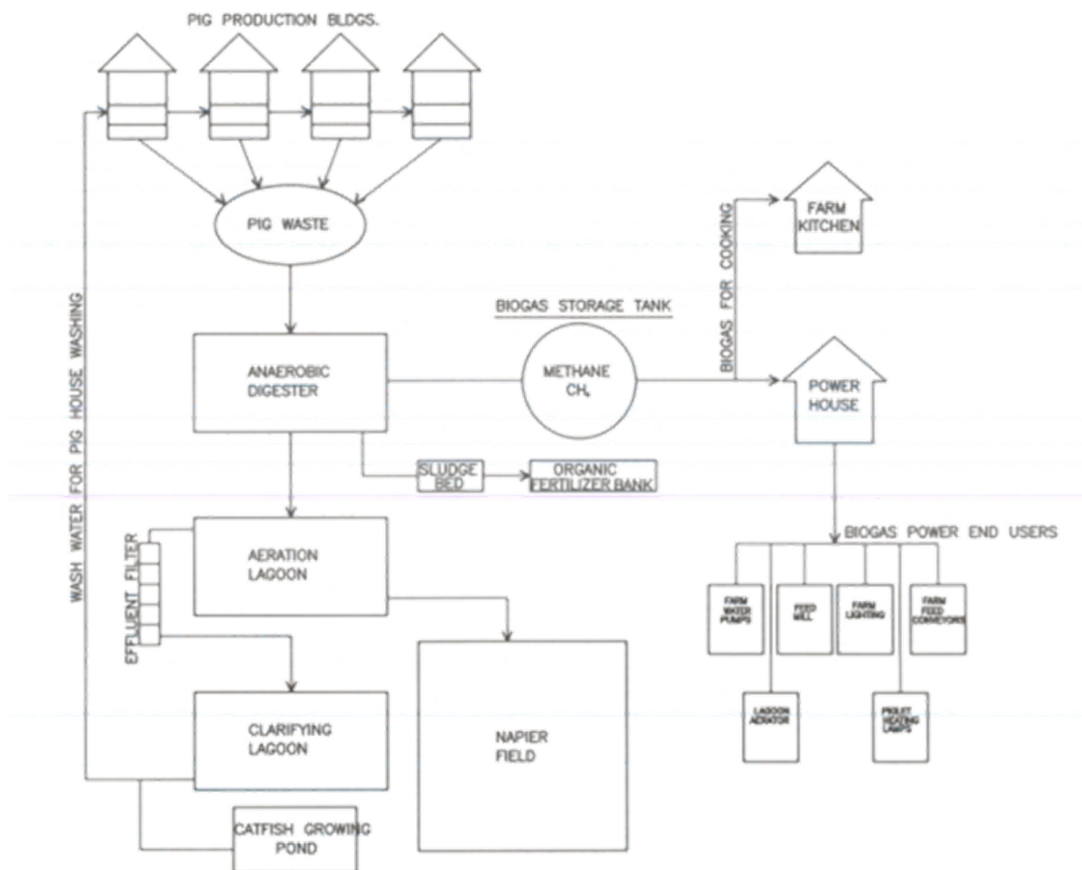


Figure 2. Wastewater treatment and power generation process in Leidebril Livestock Farm

1.4 Existing Environmental Conditions in the Farm / Project Site

Leidebril Livestock Farm (7.949782, 125.099657) is a 79,462-m² property in Barangay Bagontaas, Valencia City, Bukidnon. Bukidnon is in the northern central part of the island of Mindanao (see Map).



Figure 3 . Map of the Philippines showing the location of the Province of Bukidnon

1.4.1 Land Classification and Use

The farm's site is currently classified as an agricultural land, but has been used for piggery activities since 1973. Although still flanked by croplands, the farm is now surrounded various commercial establishments (including other livestock farms) and institutional and residential buildings. Sayre Highway, a major thoroughfare traversing central Mindanao, is only about 600 m from the farm. (see Map)



Figure 4. Satellite image of Leidebril Farm and its vicinity (red broken arrow = unnamed creek)

1.4.2 Climate

Köppen-Geiger system classifies the climate in Valencia City as a Tropical Rainforest, experiencing a lot of rainfall even during the dry season. The city has an average annual temperature of 25.0 °C and average precipitation of 2587 mm.¹

1.4.3 Topography and Soil

The farm sits on a land that generally slopes down from west to east and which soil is primarily classified as Mailang clay loam.

1.4.4 Water Resources

The closest surfacewater to the farm is a tributary of the Malingon Creek which drains to Sugod River. The unnamed creek seems to originate somewhere along the north-northeastern border of the farm.

1.4.5 Natural Hazards

The location of the unnamed creek / depression along the farm's perimeter appears to be susceptible flooding.³ Landslide is not a risk in the area. Typhoons are also not very frequent in the region.

1.4.6 People and Communities

A significant number of houses and other various establishments, including schools and churches, are within the 500-m to 1-km radius of the farm. The property however has been used for piggery activities long before these were established.

2 ENVIRONMENTAL DUE DILIGENCE

2.1 Impact Assessment

2.1.1 Positive Impacts

Leidebril Livestock Farm provides employment opportunities to residents of Barangay Bagontaas and to people from neighboring towns. It also generates revenue for the local government.

The project was built to improve Leidebril's method of handling and disposing pig manure and liquid waste. Compared to open lagoons, the biodigester has significantly amended the farms' wastewater treatment process, resulting in better effluent quality. Foul odors from effluents have also been greatly abated, improving the environment for both workers and livestock, as well as for surrounding communities. This is particularly important given the proximity of various establishments to the property.

Using biogas-generated electricity reduces the farms' reliance on the grid (and on power from conventional fuels), translating to savings for the business.

By providing a mechanism to capture methane and use it as a source of energy, the project has lowered the Leidebril's overall carbon footprint. With inputs coming from about its current average population, through the project, the farm is estimated to be capable of reducing greenhouse gas emissions equivalent to around 3,200 tCO₂e annually.

Finally, having been registered as a component project activity (CPA) in the CDM Program, Leidebril has an opportunity to earn monetary incentives by selling carbon credits to World Bank. It may also opt to trade its carbon credits in the wider carbon market.

2.1.2 Negative Impacts

Certain aspects of the pig farms' and the project's operations inevitably result in potential harm to the environment, including generation of wastewaters; hazardous and non-hazardous wastes; air pollutants; foul odors, noise, dust and other nuisance; and depletion of natural resources. These pose inherent risks to environmental quality and natural ecosystems and to health and safety of workers, communities, and livestock.

2.2 Due Diligence

Leidebril Livestock Farm commits to undertake environmental due diligence in its dealings and operations through compliance with relevant regulatory safeguards and implementation of the measures provided in the environmental management and monitoring plan in Table 3 and of other relevant provisions herein.

2.2.1 Legal Framework

Leidebril Livestock Farm operates in the context of laws prescribing the regulatory safeguards in Tables 1 and 2.

Table 2. Environmental documents and statutory requirements regulating the operation of Leidebril Livestock Farm

DOCUMENT	PARTICULARS	
Environmental Compliance Certificate (ECC)	Reference No.	96-ECC-LSR/PIG-1013-946
	Issuing Agency	EMB Region 10
	Date of Issuance	March 21, 1996
	Valid Until	- no expiration -
	Conditions	<ul style="list-style-type: none"> • area of operation: 1,800 m² • maximum population: 600 sow level • submission of SMR and CMR
Discharge Permit (DP) for Water Pollution Source / Control Facilities	Reference No.	2017-DP-K-1013-348
	Issuing Agency	EMB Region 10
	Date of Issuance	November 17, 2017
	Valid Until	November 8, 2021
	Conditions	<ul style="list-style-type: none"> • effluent discharge rate: 11,329 m³ / year • submission of SMR
Permit to Operate (PTO) Air Pollution Source Control Installations	Reference No.	2017-POA-I-1013-2532
	Issuing Agency	EMB Region 10
	Date of Issuance	September 18, 2017
	Valid Until	2020
	Conditions	<ul style="list-style-type: none"> • For the following equipment: <ul style="list-style-type: none"> - (1 unit) 250 kVA / 200 kW biogas-fueled generator set
Hazardous Waste Generator ID	Registration No.	GR-R10-13-0013
	Approving Agency	EMB Region 10
	Date of Approval	October 1, 2015
	Valid Until	- no expiration -
	Conditions	-
PCO (Pollution Control Officer) Accreditation Certificate	Accreditation No.	2016-2718-80
	Issuing Agency	EMB Region 10
	Date of Issuance	<ineligible>
	Valid Until	<ineligible>

a permit has been secured from the Department of Agriculture for the safe reuse of wastewater.

Table 3. Permits ensuring the safety of Leidebril Livestock Farm's facilities and operation

DOCUMENT	PARTICULARS	
Business Permit	Permit No.	2019-2-R10
	Issuing Agency	Office of the Mayor - Valencia City
	Date of Issuance	February 1, 2019
	Valid Until	December 31, 2019
	Prerequisites	compliance with the requirements of the following: <ul style="list-style-type: none"> • Building Permit • Occupancy Permit • Locational / Zoning Clearance • Fire Clearance • Sanitary Permit
Zoning Clearance	Reference No.	(For application for land conversion)
	Approving Agency	-
	Date of Approval	-
Fire Clearance	Reference No.	AVAILABLE and UP TO DATE
	Issuing Agency	Bureau of Fire Protection Regional Office 10
	Date of Issuance	January 2019
	Valid Until	December 31, 2019
	Prerequisites	<ul style="list-style-type: none"> • compliance with R.A. 9514 (Revised Fire Code)
Sanitary Permit	Permit No.	NF-190-456
	Issuing Agency	City Health Office – Valencia City
	Date of Issuance	February 19, 2019

	Valid Until	December 31, 2019
	Prerequisites	<ul style="list-style-type: none"> • compliance with P.D. 522 ('Sanitation Requirements'), P.D. 856 (Code on Sanitation), and pertinent local ordinances

Copies of the permits and licenses in the lists and other relevant documents are in Appendix B.

2.2.2 Preventive and Mitigating Actions for Major Negative Impacts and Risks

Wastewaters

- ↪ Surfacewater contamination is prevented by treating all pig wastewaters in the WWTFs. The WWTF is kept in optimal working condition through regular inspection and maintenance activities. This ensures that effluents meet Class C quality standards set by EMB (Appendix C).
- ↪ Biodigesters have been constructed with durable materials.
- ↪ Adequate separation of rainwater and wastewater have been provided.
- ↪ Technical specifications and actual performance of the WWTF-MRF will be determined to know the system's efficiency. Information on these will enable the farm to optimize its operations and improve (or maintain) the WWTF-MRF's performance.

Hazardous Wastes

- ▮ The farm will register as hazardous waste generator to be able to dispose through accredited TSD (transport, storage, disposal) providers.
- ▮ Currently, pig carcasses and potentially hazardous wastes are placed in a concrete vault.

Odor

- ▮ Treatment in the WWTF-MRF has significantly abated odors coming from effluents.
- ▮ Trees have been planted within and around the farm.
- ▮ The biogas collection system has been constructed with durable materials and is kept in good working condition through regular inspection and maintenance activities.

Groundwater Depletion

- ▮ Water conservation measures are being implemented in the farm.
- ▮ The farm will secure a Water Permit to comply with existing regulations and recompense for its consumption of groundwater.

2.2.3 Environmental Management and Monitoring Plan

Table 3 summarizes the measures intended to address the environmental impacts and risks identified in Section 2.1.2. Adequate training will be given to concerned employees to ensure that the content of this environmental management plan will be properly carried out.

Table 3. Environmental Management and Monitoring Plan of Leidebril Livestock Farm

IMPACT	SOURCE / ACTIVITY	MEASURES	STATUS			MONITORING METHOD	FREQUENCY	PARAMETER / INDICATOR	RESPONSIBLE ENTITY	REPORTING TO	Cost, Php
			Existing / Current Practice	For Implementation / Under Construction	Adoption Under Review						
A. Wastewater											
a.1 generation of wastewater	pig raising	water conservation strategies	✓			quantify wastewater production	monthly	volume of wastewater produced	Farm pesronnel	Farm Manager	
		treatment of wastewater in WWTF	✓								
a.2 generation of domestic wastewater	general farm activities	water conservation strategies	✓			check siphoning and hauling records	every 5 years	volume of sewage hauled	PCO	Farm Manager	Siphoning costs
		sewage septic tanks	✓								
		sewage disposal and hauling by accredited hauler	✓								
B. Solid Waste											
b.1 generation of manure, sludge	pig raising, feed wastage, WTF	minimize feed wastage - fixed feeding schedule;	✓			quantify (dried) sludge produced	monthly	amount of sludge produced	biodigester operators	PCO	Feed costs
		treatment of manure in WWTF	✓								
		sludge used as soil conditioner	✓								
b.2 generation of (non-infectious) carcasses, blood	injuries, adverse environmental conditions, etc.	observe sound pig raising practices and biosecurity measures	✓			weigh disposed materials	Daily, or as needed	weight of materials disposed	Farm personnel	PCO	Php 350,000 for staff salaries
		carcass disposal burial in mortality pit	✓								
b.3 generation of general solid wastes	general farm activities	waste segregation	✓			weigh solid wastes disposed of (recyclables and residuals)	every hauling	weight / details on wastes generated, stored, and disposed of	Farm personnel	PCO, Farm manager	
		provides adequate collection bins, storage area in strategic locations	✓								
		reduce, reuse, recycle of materials	✓								
C. Hazardous Materials											
c.1 generation of hazardous, toxic wastes	facilities' operation and maintenance	monitor resource usage to avoid expiration of chemicals, etc.	✓			quantify each type of hazardous waste produced / stored and disposed of (check hazardous waste manifests)	every hauling and disposal	quantity of each hazardous waste type stored and disposed	PCO	Farm manager	Disposal and hauling costs Php 350,000 for staff salaries
		disposal through accredited TSD	✓								
		reusing, recycling certain materials (for various construction and maintenance activities)	✓								
c.2 generation of infectious, pathological wastes, carcasses	veterinary activities, infections, outbreaks	carcass disposal through burial in mortality pit	✓								
		pathological / innfectious materials disposed in mortality pit	✓								
D. Air Pollution											
d.1 generation of biogas	anaerobic digestion	capturing through biodigesters and combustion using biogas-fueled engine	✓			record electric meter reading of biogas gensets	daily	kWh produced	biodigester operators	Farm manager	Project cost
d.2 generation of air pollutants	stand-by generator sets (fossil fuel combustion)	operate machineries according to manufacturer’s instruction	✓			review inspection and maintenance record	monthly	number and details of machinery issues noted	Farm personnel	Farm manager	Php 11,000 maintenance costs
		regular inspection and preventive maintenance of equipment	✓				every 200 running hours				
E. Risk of Environmental Degradation											
e.1 (risk of) surface water and groundwater quality degradation, disruption of soil properties, contamination	e.1.1 wastewater collection, transport, treatment, disposal	operates WWTF as prescribed	✓			effluent sampling and testing by an EMB-accredited laboratory	quarterly - more frequently during rainy seasons	effluent quality indicators: BOD, TSS, ammonia, phosphate (must meet standards for Class C effluent)	PCO	Farm manager	Testing fees Php 11,000 maintenance costs
		regular inspection and preventive maintenance of WWTF; regular desludging	✓								
		maintainance of vegetation (filter strips) around lagoons	✓								
		ensures effluents meet EMB standards^	✓								
	e.1.2 sludge management, storage, leachate	drying of sludge and using it as soil amendment	✓			review inspection and maintenance record	monthly - more frequent during rainy seasons	number and details of leak / breach incidents	biodigester operator	PCO	Php 11,000 maintenance costs
		regular inspection and preventive maintenance of drying bed	✓								
		maintainance of vegetation (filter strips) around drying bed	✓								

	e.1.3 pathological wastes, carcass disposal, leachate	established vegetative filter strips around disposal site	✓			review inspection and maintenance record	monthly - more frequent during rainy season	number and details of leak / breach incidents	Farm personnel	Farm manager	Landscape maintenance costs						
	e.1.4 handling, transport, storage, disposal of hazardous and infectious materials	uses materials according to registered use / manufacturer's instruction	✓			review inspection and maintenance record	weekly	number and details of leak / breach incidents	Farm personnel	PCO, Farm manager	Php 350,000 staff salaries						
		use of suitable containers with labels	✓								Signage costs						
		provides secured collection and storage area	✓								Spill kit costs						
		regular inspection of storage, disposal facilities	✓														
		will make MSDS available on-site of use		✓													
		will develop and observe safety protocols		✓													
		will install appropriate signage, warnings		✓													
		will provide spill kits on storage areas		✓													
		will prepare a contingency response plan		✓													
		will provide adequate training to staff on handling of hazardous materials		✓													
e.2 (risk of) pollution from fugitive biogas	biogas collection, storage, combustion	operates MRF as prescribed	✓			review inspection and maintenance record	monthly	number and details of leak / breach incidents (odor detection)	biodigester operator	PCO	Php 11,000 maintenance costs						
		regular inspection (leak test) and preventive maintenance of MRF	✓														
F. Health and Safety – Anaerobic Digester System																	
f.1 explosion hazards	biogas collection, storage, combustion	No smoking or hot works in the vicinity of biogas facility	✓			review inspection and maintenance records, incident reports, complaints register	monthly	number and details of explosion, fire incidents	Farm personnel	Farm manager, PCO	Php 11,000 maintenance costs						
		Restrict access to biogas facility															
		Place signages															
		Regular maintenance of biogas system															
f.2 asphyxiation	biogas	Buddy system when conducting work	✓			review incident reports	monthly	number and details of asphyxiation, poisoning incidents	Farm personnel	Farm manager, PCO							
		Restrict access to biogas facility															
		Regular maintenance of biogas system															
f.3 chemical hazards	sludge	Use appropriate PPE	✓			review incident reports	monthly	number and details of infection, infestation incidents	Farm personnel	Farm manager, PCO	PPE costs						
						review results of health checks	annually				Doctor’s fees						
G. Health and Safety – General Farm Operations																	
f.1 odor - nuisance, discomfort, health issues	f.1.1 pig houses, manure	regular cleaning of pig houses and maintenance of drains	✓						PCO	Farm manager	Disposal and hauling costs						
		maintains existing vegetation	✓								Php 350,000 for staff salaries						
		provision and use of appropriate PPE	✓														
	f.1.2 WTF, effluent, MRF	gas trapping and combustion through MRF	✓														
		will ensure adequate retention time of wastewaters in the biodigester is achieved	✓														
		regular inspection and preventive maintenance of WWTF- MRF	✓														
		provision and use of appropriate PPE	✓														
		ensure sludge pile is well aerated, prevent waterlogging	✓														
	f.1.3 decomposing materials (sludge and organic solids)	provision and use of appropriate PPE	✓														
	f.1.4 decomposing materials (placental materials and carcasses)	disposal through burial, composting	✓														
		prevent leakage of leachate in disposal sites (see e.1.3)	✓														
		provision and use of appropriate PPE	✓														

f.2 noise - nuisance, discomfort	f.2.1 pigs	Fixed feeding schedule	✓			review complaints register	monthly	number and details of noise complaint	PCO	Farm manager	Feed costs Php 5,000 for change oil services and general maintenance
		provision and use of appropriate PPE	✓								
		Maintains existing vegetation, will plant trees	✓								
	f.2.2 vehicles, machineries	operate equipment, machineries according to manufacturer's instruction	✓								
		regular inspection and preventive maintenance of machineries	✓								
		generator sets are fitted with mufflers	✓								
	provision and use of appropriate PPE	✓									
f.3 dust - nuisance, discomfort, health issues	f.2.1 pig houses, feed handling	limits dust-generating activities during day time, low wind movement (as much as it is practical)	✓			review complaints register	quarterly - more frequent during typhoon (windy) season	number and details of dust complaints	PCO	Farm manager	Php 350,000 for staff salaries
		tunnel ventilation system prevents dust build up	✓								
	f.2.2 composting areas, dried compost handling	use of appropriate containers, barriers	✓								
		damping of dried materials	✓								
		limit dust-generating activities during day time and low wind movement (as much as it is practical)	✓								
		provision and use of appropriate PPE	✓								
	f.2.3 vehicles, machineries	sealing and damping of unpaved roads	✓								
		limits vehicular speed on unsealed roads	✓								
		operates feedmill in an enclosed area	✓								
		limit dust-generating activities during day time, low wind movement (as much as it is practical)	✓								
		provision and use of appropriate PPE	✓								
f.4 pest and vermin proliferation / infestation - nuisance, health issues	decomposing materials and sources of odors	implement odor control measures (see f.1)	✓			review inspection results records and complaints register	monthly - more frequent during rainy season	number and details of incidents, complaints	Farm personnel	PCO	Php 5,000 maintenance costs
		imlement pest, vermin control measures (use of baits and traps)	✓								
		observes good houskeeping practices	✓								
		regular inspection of farm facilities, surroundings	✓								
f.5 health hazards, (risk of) contracting infectious diseases, sustaining injuries, livestock outbreak	handling, transport, storage of hazardous and infectious materials, movement of carrier pests and vermin, handling of ill pigs	adequate training on handling of hazardous, infectious materials	✓			review incident reports, inspection records and complaints register, results of employees' regular health checks	monthly	number and details of illness, injury incidents, complaints	PCO	Farm manager	Php 350,000 for staff salaries
		provision and use of appropriate equipment for handling and storage of hazardous and infectious materials	✓								
		enforce, observe biosecurity measures, health and safety protocols	✓								
		observe measures for safe handling of hazardous and infectious materials (see e.1.3 & e.1.4)	✓								
		implement pest and vermin control measures (see f.4)	✓								
		regular inspection of farm facilities, surroundings	✓								
f.6 explosion, fire hazard	biogas collection, storage, combustion	WWTF-MRF constructed with durable materials	✓			review inspection and maintenance records, incident reports, complaints register	monthly	number and details of explosion, fire incidents	PCO	Farm manager	Php 11,000 maintenance costs
		operates WWTF-MRF according to design	✓								
		regular monitoring of pressure within the MRF system	✓								
		regular inspection (leak test) and preventive maintenance of MRF	✓								
		restricts access to MRF	✓								
		prohibits ignition sources (smoking) near MRF	✓								
		will install signage and warnings			✓						
		reporting and recording of explosion, fire incidents			✓						
f.7 drowning hazard	open ponds, lagoons, tanks	restrict access to WTF, install fences			✓	review incident reports	monthly	number and details of drowning incidents	Farm pesronnel	PCO	Signage costs Construction costs
		install signage and warnings			✓						
		reporting and recording of drowning incidents			✓						
f.8 freshwater depletion	pig raising and general farm activities	water conservation strategies			✓	quantify volume of freshwater consumption	monthly	volume of freshwater consumed	Farm pesronnel	Farm manager	
		effluent recycling	✓								
f.9 consumption of	pig raising and	energy conservation strategies	✓			estimate power consumption from billing	monthly	kWh consumed	Farm personnel	Farm manager	Php 11,000

non-renewable resource (fossil fuels for power)	general farm activities	use of energy-efficient equipment	✓			for electricity					maintenance costs
		uses electricity generated using biogas	✓								
		pig buildings have concrete walls and roofing, providing efficient insulation against ambient heat	✓								
f.11 (risk of erosion)	rainwater runoff	plant various tree species and vegetation along roads and slopes	✓			review inspection records	monthly - more frequent during rainy season	number and details of erosion incidents	Farm personnel	Farm manager	Landscaping costs

- BOD

Biological Oxygen Demand
- MSDS

Materials Safety Data Sheet
- PCO

Pollution Control Officer
- PPE

Personal Protective Equipment
- SMR

Self-Monitoring Report
- TSD

Treatment, Storage, Disposal
- TSS

Total Suspended Solids

The Environmental Management and Monitoring Plan of Leidebril Livestock Farm will be updated to reflect the cost of implementing the same. It will be presented in the succeeding version of this ESMP.

2.2.4 Contingency Response

Below is an overview of Leidebril Livestock Farm's current preparation and action plan in response to the following:

- a. Fire
 - Fire extinguishers are available at strategic locations around the farm. Pig houses are also equipped with water taps and sprinklers from which water for putting out fire can be sourced.
- b. Earthquake
 - The open grounds inside the farm are designated as evacuation areas for when an earthquake occurs.
- c. Outbreak
 - In the event of a livestock outbreak, quarantine measures are instinctively applied. Movement of humans and animals in and out of the farm is restricted and instructions from the farm's consultant veterinarian are carried out.
- d. Power outage
 - Should there be power interruption, a diesel-fueled standby generator is able to supply the farm's electricity needs, in addition to the biogas genset.
- e. Health emergencies
 - First aid kits are readily available on site for minor injuries. Farm personnel also have access to vehicles which can be used for transporting cases needing more advanced medical care.

In the interim, Leidebril Livestock Farm hereby commits to develop a more comprehensive contingency preparedness and response plan that will address incidents of fire; natural hazards (typhoon, earthquake); outbreak; health emergencies; and environmental emergencies (leaks and spills of wastewaters and hazardous wastes, WWTF-MRF system breakdowns). This plan will be appended in the succeeding version of this ESMP.

2.2.5 Occupational Health and Safety

In addition to the health and safety measures presented in Table 3, Leidebril Livestock Farm will develop a more comprehensive health and safety risk management plan which will deal with general occupational health and safety issues associated with work in the farm. Health complaints and accidents will be recorded in a register and will serve as indicators of the plans effectiveness, together with results of workers' annual health check-ups. This plan will be appended in the succeeding version of this ESMP.

2.2.6 Biosecurity

The particulars of the farms' biosecurity protocol will be appended in the succeeding version of this ESMP.

2.4 Monitoring, Reporting and Auditing

The proponent will perform the monitoring plan in Table 3 and conduct regular inspection of its facilities not only for internal purposes but also to satisfy the requirements of the Environmental Management Bureau (EMB) for periodic self-monitoring reports (SMR). In addition, assessments will also be initiated during or immediately after incidents that may have compromised the integrity of the farm's facilities, especially the WWTF-MRF, and caused the release of pollutants in the environment. A registry of such incidents and other environmental emergencies and accidents will be maintained in the farm and its details reported in the SMR.

The SMR will contain the results of audits on the farm's environmental performance in terms of resource utilization, waste management, regulatory compliance, and fulfillment of environmental

commitments among others. This document will be tendered to EMB quarterly. LBP-EPMD (Environmental Program and Management Department) will also be provided with copies of this document for reference and review purposes.

The owner and as well as the farm's Pollution Control Officer (PCO), Mr. Bryan Steve Go, have been tasked to ensure that the farm is compliant with pertinent environmental regulations, including those listed in Table 3, and is performing its environmental commitments, including the implementation of this ESMP.

During the implementation of the CDM Program, LBP-EPMD will conduct monitoring activities in the farm at least twice a year to help the proponent execute, identify gaps in, and improve and update this management plan.

3 SOCIAL DUE DILIGENCE

3.1 Consultation and Participation

Prior to construction, the Proponent, together with LBP-EPMD, identified the Project's stakeholders who were afterwards invited, through letters and notices, to a consultative meeting for the Project's establishment on September 24, 2014. A total of 44 attendees from various institutions, including local officials and residents of communities near the project site were present during the consultation.

All relevant information, especially those that pertain to the Project's environmental and social impacts, was communicated to the stakeholders during the consultations. Issues and queries raised were satisfactorily addressed by the Proponent and the other presenters.

3.2 Grievance Redress Mechanism

The farm's manager and PCO, Mr. King Go and Mr. Bryan Steve Go, respectively, are hereby designated as the main contact persons for grievances, feedbacks, and queries related to the project. She is to ensure that the details of complaints and the actions made to address the same will be recorded completely and truthfully in a register. Such information shall be part of the regular monitoring report for the project and will be made available to relevant stakeholders.

The proponent will make every effort to settle any concern at the project level. Should his attempts be unsuccessful, issues will be raised to the following third party institutions for arbitration and possible resolution:

- Office of the Barangay Chairman
Complaints shall be entertained in the *barangay* where the Farm is situated. The *barangay* office concerned will facilitate the negotiation process and LBP-EPMD will ensure that the complainant is properly represented.
- Municipal Office
Should no agreement be reached at the *barangay* level, the matter will be elevated to a municipal government office. Depending on the nature of the complaint, grievances may be addressed to the Municipal Health Office, Agriculturist Office, Environment and Natural Resources Office, or other relevant municipal agency.
- LBP
LBP through EPMD will take part on the resolution process only after the aggravated party has gone through the previous levels and finds the decisions rendered there unacceptable. EPMD will coordinate with the Proponent to ensure that issues regarding the latter's project are resolved to the best interest of the complainant.

To further ensure the proponent's accountability, contact details of the farm's management and LPB-EPMD shall be provided to stakeholders during consultations and through postings at public notice boards (in Barangay Naguilayan's community hall), including at the farm's main gate. For this project, the following individuals will serve as grievance administrators:

- Prudencio E. Calado III
Head/Assistant Vice President, LBP-EPMD
Telephone No.: (632) 405-7339
Fax No.: (632) 528-8484
- Mr. King Go and Mr. Bryan Steve Go
Farm Manager and PCO, Leidebril Livestock Farm
Telephone No.: 088-315-0132
leidebrilfarm@gmail.com

3.3 **Information Disclosure**

This ESMP and other relevant information regarding the Project will be published in LANDBANKS's website where it can be readily accessed by the public. Printed copies of this document will be submitted to EMB Region 5 and will also be available in Barangay Cararayan's office, in LANDBANK's library (1598 M.H. Del Pilar cor Dr. J. Quintos St., Malate, Manila, Philippines), and in the World Bank InfoShop.

3.4 **Equal Opportunity**

Leidebril Livestock Farm is an equal opportunity employer, not regarding gender, age, disability, and ethnicity in evaluating and hiring potential employees. Presently, the Farm's roster is consisted of 50 employees, with 47 males and 3 females. Male workers are primarily assigned to do manual, physically demanding work such as animal handling and facility maintenance. Females are assigned to do administrative work as well as being involved in farrowing activities.

3.5 Resettlement

The project is located inside the premises of Leidebril Livestock Farm, a private property. No individual was displaced for nor were there any indigenous peoples affected by the establishment of the farm and the project.

3.6 Others

Employees of Leidebril Livestock Farm receive standard basic salary at the minimum, 13th month pay, and other regular statutory benefits, in addition to free meals and incentives.

4 ESMP REVIEW AND UPDATING

This ESMP shall be reviewed annually and will be updated subject to the results of the semiannual monitoring activities conducted by Leidebril Livestock Farm and LBP-EPMD. Reviews may be done more frequently or earlier than schedule, especially after events resulting in significant adverse effect to the environment.

In the first updated version of this ESMP, which will be published in the last quarter of this year (2019), the following information and documents will be provided:

- properties, specifications, and performance parameters of the WWT-MRFs;
- WWTF-MRF Operations Manual;
- cost of implementing the Environmental Management and Monitoring Plan;
- Contingency Preparedness and Response Plan; and
- Health and Safety Risk Management Plan
- Biosecurity protocol

5 INSTITUTIONAL ARRANGEMENTS

5.1 The Proponent

The proponent, Mr. Leonilo C. Go, will be responsible in all the aspects of the project, including the implementation of this ESMP. He will shoulder all costs associated with the construction and operation of the project, internal monitoring activities, and meeting various statutory requirements. Specifically, he shall cause the accomplishment of the following:

- exercise environmental and social due diligence in implementing the project
- incorporate sound practices in environmental, health, and safety management
- comply with relevant national and local laws and satisfy regulatory obligations
- perform diligent environmental and system monitoring
- prepare and submit on schedule accurate monitoring reports to EMB and LBP
- cooperate with the LBP and other regulatory agencies by providing assistance and correct and relevant information regarding the project and its environmental performance for reference, review, and monitoring purposes
- promote transparency by maintaining open lines of communication with project stakeholders and giving them access to relevant information
- initiate resolution of conflicts that may arise as a result of the project's operation

The proponent, in close coordination with LBP, shall implement the project based on LBP's ESSF and on the agreed activities and timelines stipulated in the memorandum of agreement (MOA) and subproject agreement (SPA) between the said entities.

5.2 LANDBANK

LBP shall serve as the financial and technical intermediary for the CDM Program of Activity (PoA) under which the project of Leidebril Livestock Farm is being implemented. It shall provide the proponent carbon and investment finance assistance for the installation of an anaerobic wastewater treatment facility equipped with a biodigester and methane-fueled power generator. Moreover, it shall act as the entity in charge of project validation and verification activities, and of collation of relevant information and monitoring data for the undertakings mentioned. Specifically, LANDBANK, through EPMD, shall:

- make available financing facilities to the proponent, subject to existing lending policies of LBP
- coordinate and facilitate communications and transactions between the proponent and World Bank or other carbon buyers, Designated Operational Entity, and when necessary, with other project partners
- administer the agreements (MOA, SPA) forged between LBP and the Proponent
- provide technical support and relevant trainings to farm owners and personnel in partnership with other institutions
- ensure compliance of the Project and its proponent with the rules governing PoAs and with its commitments in the MOA and SPA
- ensure compliance of the Project and its proponent with relevant standards and regulations and environmental commitments by conducting onsite monitoring and evaluation and desk reviews
- provide assistance to the proponent in complying with statutory requirements for the project
- ensure the project's sustainability by monitoring the long-term implementation of the safeguards specified in this ESMP and its environmental performance in general
- gather, collate, and review pertinent information and documents (including safeguard instruments, reports, and permits and clearances) concerning the project
- participate in conflict resolution initiated by the proponent
- prepare and submit monitoring reports to World Bank regularly
- satisfy its obligations under the Emissions Reduction Purchase Agreement between LBP and World Bank

LBP shall assist the proponent in its implementation of the project in accordance with LBP's Safeguards Framework and the agreed activities and timelines stipulated in the MOA and SPA.

5.3 Department of Environment and Natural Resources

The Department of Environment and Natural Resources (DENR) is the primary government institution mandated to manage and protect the Philippines' environment and natural resources. It is also the Designated National Authority (DNA) of the CDM Program in the Philippines. As DNA, its main role is to review and endorse PoAs to the United Nations Framework Convention on Climate Change.

5.3.1 Environmental Management Bureau

Through the EMB, DENR sanctions and regulates the activities of the Project by means of various legal instruments. EMB also leads (whether or not as part of a Multi-partite Monitoring Team) the periodic monitoring of the Project's compliance and impacts, including the fulfillment of the commitments stated in this ESMP. Prior to construction, EMB was the agency tasked to review and evaluate the environmental soundness of the Project and authorize its establishment through the issuance of an Environmental Compliance Certificate.

5.4 Municipal Government

The local government unit of Valencia City licenses the operation of Leidebril Livestock Farm through the issuance of a business permit. This permit is only given to businesses after satisfying its prerequisites – building and occupancy permits, zoning clearance, sanitary permit, fire clearance – all of which are also issued by the city government.

Agencies and offices under the government Valencia City, will also, if necessary, lead / facilitate the resolution of complaints arising from the farm and project's operations.

5.5 World Bank

The World Bank is the main Carbon Buyer of the Project, but will also serve as an advisor to LPB in carrying out the latter's responsibilities as the coordinating and managing entity for CDM projects. The Bank will conduct regular monitoring, audits, and appraisals on the Project's safeguards performance against its established policies, as well as provide technical guidance to LBP and to the Proponent.

6 SUB-PROJECT ACCOUNTABILITY

In line with Section 3.02 on *Sub-Project Development and Operation by the Sub-Project Entity*, Item (q) of the Sub-Project Purchase Agreement (SPA) signed by the Farm Management, stating that the Sub-Project Entity (Farm Management) agrees and undertakes to:

- (q) implement and operate the Sub-Project in compliance with the World bank Operational Policies, including without limitation and as applicable, the Environmental Management Plan, Resettlement Plan, Indigenous Peoples Plan, and any other requirement resulting from the application of the World Bank Operational Policies.

Having signed the SPA, the Farm Management is accountable to comply with the commitments stated in this document.

APPENDICES

**STAKEHOLDERS' CONSULTATION MEETING ON THE CLEAN DEVELOPMENT
MECHANISM – METHANE RECOVERY AND COMBUSTION PROJECT OF
LEIDEBRIL LIVESTOCK FARM**

**Valencia City, Bukidnon
September 24, 2014**

I. Opening of the Consultation Meeting

At about 9:00 A.M., Mr. Dennis Go, Farm Manager of Leidebril Livestock Farm, formally started the meeting by welcoming all the participants and appreciating their presence.

II. Overview of Climate Change, Kyoto Protocol, Clean Development Mechanism (CDM), & LANDBANK Carbon Finance Support Facility (CFSF)

Mr. Rizaldo Vargas of LBP presented the overview of Climate Change, Kyoto Protocol, Clean Development Mechanism while Mr. Andro Salvosa, also from LBP presented LBP's Carbon Finance Support Facility. Among others, LBP emphasized that the consultation was conducted as part of the requirements of Leidebril Livestock Farm's application to be an eligible project under the CDM. Under the CDM, Leidebril Livestock Farm can earn carbon credits or CER by mitigating the emission of methane from pig waste of the establishment and operation of a biogas digester which also improves its existing wastewater management system.

III. Overview of Leidebril Livestock Farm

Mr. Dennis Go presented Leidebril Livestock Farm's existing set up of the farm focusing on the wastewater management system wherein the wastewater is treated in an open lagoon system. After which, he presented the new design of the farm's biodigester which is a highly-improved version of the existing system. Among the basic features of the new system are the following:

- a) pre-filter
- b) equalization tank
- c) solid waste separator
- d) closed anaerobic digester
- e) clarifier
- f) Utilization of the existing lagoons
- g) treated water of the end pond which will be recycled back to the farm for cleaning
- h) power generation system

Mr. Go emphasized that under the new design, the issue on odor and wastewater discharge will be properly addressed since the biogas will be captured thereby reducing odor and at the same time there will be no wastewater to be discharge since this will be recycled/re-used. The participants greatly appreciated the plan to recycle the treated wastewater and that there will be no discharge to the river. Mr. Go mentioned that they committed to DENR to make the project as a model in the region for other farms to see and learn.

A city councilor asked the capacity of the farm since it may cause odor nuisance to nearby residence. Mr. Dennis Go of Leidebril and Livestock Farm confirmed that the present population of the farm is 400 to 450 sow level. They are planning to maximize the farm capacity to 600 sow level in 2015. The said capacity is stated in the approved Environmental Compliance Certificate

(ECC). Mr. Go said that the proposed project to put up biodigester will minimize the odor since pig wastes will be contain in an enclosed biodigester.

A resident asked if the project is safe. They are concerned of the possible explosion of the biodigester and may harm the nearby community surrounding the farm. Leidebril assured that the project will not explode. The design of the project will see to it that the gas generated will be converted to electricity thru generator, and a flaring system will be provided in the system to cater excess gas.

Mr. Go further mentioned that by 2015, the digester will be constructed while the generator set will be commissioned hopefully in the same year. Subsequently, the barangay captain inquired if the community will benefit from the project or the electricity generated by the farm. Mr. Go mentioned that the power generation will be used for the farm and feedmill operation. If there are excess electricity, this can be shared with the nearby barangays at low cost. Nonetheless, the farm will consider hiring of capable residents during the construction of the project within the barangay for employment.

The barangay council representatives expressed their appreciation to Leidebril Livestock Farm management for being open in addressing their concerns. They also appreciated the conduct of the consultation and further mentioned that they can now explain to their constituents what the project is all about.

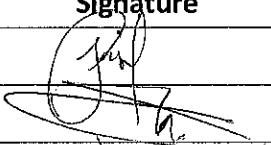
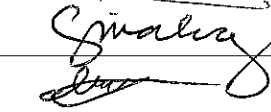
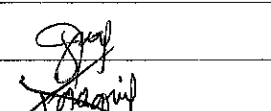
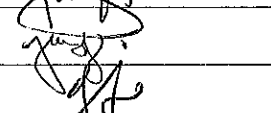
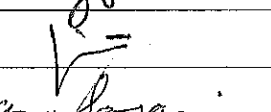
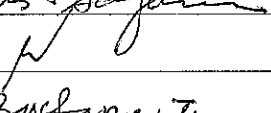
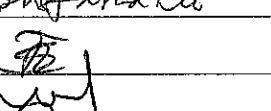
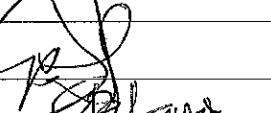
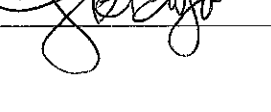

Having no other issues raised, the consultation was adjourned after the expression of appreciation from all stakeholders present. The consultation ended at around 12:00 PM.

Appendix B. Health and Safety Risks Management Plan of Leidebril Livestock Farm



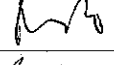
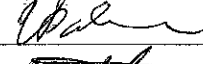
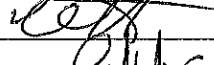
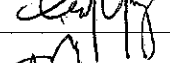
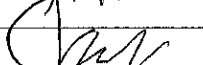
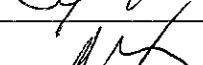
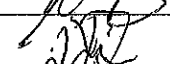

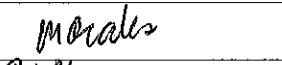
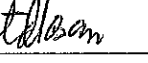
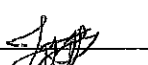
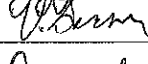
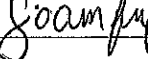

Hazard	Possible Harm	Source / Cause	Prevention / Minimization	Person Responsible
physical				
noise	discomfort, hearing damage	pig squeals	<ul style="list-style-type: none"> - pigs consistently feed to prevent stress - PPEs (ear protection) - Conventional pig houses prevent pig squeals from being confined to a small area 	Farm Personnel Farm Manager
		running machineries and vehicles	<ul style="list-style-type: none"> - loud equipment located in an area relatively far from normal working areas - install noise-control devices, when applicable - regular equipment inspection and maintenance - limit noise-generating activities during day time - rotating work schedule - signage and warnings - PPEs (ear protection) 	Farm Personnel Farm Manager
vibration	discomfort, ergonomic and nerve injuries, fatigue	running machineries	<ul style="list-style-type: none"> - position vibration-producing equipment in enclosed areas - install shock absorber - ensure all loose equipment are securely placed - regular equipment inspection and maintenance - signage and warnings - rotating work schedule 	Farm Manager
electricity	shock, electrocution, burns	faulty machineries and power lines	<ul style="list-style-type: none"> - get services of a licensed electrician - consult equipment manual - regular equipment inspection and maintenance 	Farm Manager Farm Personnel
		improper use (or servicing) of electrical equipment	<ul style="list-style-type: none"> - restrict access to equipment (fencing) - signage and warnings - train staff (consult equipment manual) - ensure electricians are provided with proper PPEs for working with electrical equipment (insulated gloves, boots, etc.) 	Electrician
heat	burns	running machineries (hot surfaces, vapors, liquids)	<ul style="list-style-type: none"> - use insulation where possible - signage and warnings - ensure workers wear proper PPE such as long sleeved shirts. 	Farm Manager
	discomfort, heat exhaustion, heat stroke	adverse hot weather	adequate hydration and rest breaks	Farm Manager
		working in enclosed spaces with limited ventilation		
dust	irritation, respiratory distress / diseases	Feeds	<ul style="list-style-type: none"> - open-sided sheds - spray amounts of water during feeding to limit the dissipation of small feed particles and dust; - calm work pacing to avoid exciting the pigs - thorough cleaning of indoor spaces - PPEs (mask) 	Farm Personnel
		dried sludge		
		Compost		
poor lighting	eye strain, can't see hazards	unlit / inadequately lit areas	<ul style="list-style-type: none"> - install light sources - carry portable light sources 	Farm Personnel
chemical				
harmful gases, dust, vapors (inhalation)	discomfort (odor), asphyxiation, poisoning, respiratory distress / diseases	degrading organic wastes	<ul style="list-style-type: none"> - measures for odor control (see Table 5) - protocol for working in CONFINED SPACES - signage and warning (entrance to confined spaces) - train staff (handling hazardous substances and wastes and working in confined spaces; review MSDS / product information sheets) - PPEs (mask) - ensure first aid kits are readily available 	Farm Manager
		hazardous substances (cleaning and pest control chemicals, veterinary medicines, fuels, hazardous wastes, etc.)		
		fuel burning (machineries, vehicles)	<ul style="list-style-type: none"> - air pollution control device - regular equipment inspection and maintenance 	Farm Manager PCO
hazardous substances (contact, ingestion)	irritation, burns, poisoning, skin problems	fugitive gases	regular inspection and maintenance of MRF	Farm Personnel
		hazardous substances (cleaning and pest control chemicals, veterinary medicines, fuels, hazardous wastes, etc.)	<ul style="list-style-type: none"> - proper labelling, containers, and storage - restrict access to chemical and hazardous waste storage - train staff (handling hazardous substances and wastes; review MSDS / product information sheets) - only competent staff should administer veterinary medicines - regular inspection and equipment maintenance - ensure first aid kits are readily available - PPEs (gloves, eye glasses) 	Farm Manager PCO Farm Personnel
		wastewaters	regular inspection and maintenance of MRF	

			- PPEs (gloves, goggles, boots)	
biological				
pathogens / infectious agents, toxins and other products	various infectious diseases, parasites, irritation	pathological materials / tissues	- proper disposal of animal and veterinary wastes (see Table 5) - quarantine measures - improve ventilation - good housekeeping practices (disinfection) - practice hygienic practices (especially hand hygiene) - workers’ regular health examination - train staff (animal handling, proper waste handling and disposal) - PPEs	Farm Personnel (Vets, Animal Science practitioner) PCO
		sick animals		
		animal excretions and fluids		
		manure (wastewaters)		
		sludge		
		veterinary wastes (especially sharps)		
		potential disease carriers (objects, people, dust)		
		insects, pests, vermin	- proper disposal of odorous wastes (see Table 5) - good housekeeping practices - pest control	Farm Personnel
ergonomic				
ergonomic stress	ergonomic injuries	repetitive actions, forceful exertions, sustained awkward posture	- purchase / design equipment with ergonomic features - use aid of appropriate equipment - train staff (proper techniques and postures) - buddy system - job rotation / adequate rest (in between tasks)	Farm Manager Farm Personnel
		improper use of equipment	- train staff (consult manuals)	Farm Manager
		use of faulty equipment	- repair or replace equipment	Farm Manager
other accidents and contingencies				
slips, trips, falls	injuries, wounds, contusions	spills (slips)	- daily safety briefings and regular trainings - barricading of work areas - PPEs	Farm Personnel
		various objects, debris (trips)		
		heights, slips (falls)		
	drowning	open lagoons and biodigester	- Barricading of said areas - signage and warnings - ropes in/near lagoons (for rescuing)	Farm Manager Farm Personnel
entanglement	injuries, wounds, strangulation	machineries	- install equipment safeguards - tie back long hair - wear long sleeve shirts - avoid wearing loose-fitting clothes and personal accessories - regular equipment inspection and maintenance	Farm Manager Farm Personnel
blows, punctures	injuries, wounds, contusions	pig handling	- animal restraints - ensure enough space to maneuver - train staff (animal handling techniques) - wear appropriate PPE (boots, gloves etc)	Farm Personnel Farm Manager
sharps	sharps injuries, wounds	veterinary activities, waste handling	- train staff (proper waste handling and disposal) - PPEs (gloves, goggles)	Farm Manager
lack of oxygen / harmful gases	suffocation, poisoning	confined spaces (power house, manure pits, biodigester, enclosed pens and other chambers)	- protocol for working in CONFINED SPACES - signage and warnings - ‘buddy system’ - train staff (on protocol and rescue plan) - consider the purchase of gas monitoring equipment	Farm Manager
fires	Burns	faulty electrical systems, explosions, fugitive gases, accidental ignition	- comply with requirements and regulations of fire authorities - provide adequate and proper (multipurpose) fire protection equipment - designate smoking areas away from digester, gas tanks, and electrical equipment and storage of combustible materials (compost, sludge, chemicals) - restrict access to MRF (fencing) - prohibit smoking and use of cellphones around MRF and gas storage facilities - regular clearing of vegetation near farm structures - signage and warnings - train staff (on contingency plan and proper equipment use) - regular inspection and maintenance of electrical systems and equipment	Farm Manager Farm Personnel
blast	blast injuries	excessive pressure in biodigester, fugitive gases, contained gases in confined spaces, fires	- keep sources of heat, including machineries, at a safe distance from MRF - restrict access to MRF (fencing) - prohibit smoking and use of cellphones around MRF and gas storage facilities - regular inspection and maintenance of MRF - signage and warnings - consider the purchase of gas monitoring equipment	Farm Manager Farm Personnel

LEIDEBRIL LIVESTOCK FARM
CLEAN DEVELOPMENT MECHANISM (CDM)
Methane Recovery and Combustion from Animal Waste Management System
Stakeholders' Consultation
 Barangay Bagonta-as
 Valencia City, Bukidnon
 September 24, 2014

Name	Organization / Affiliation	Address	Signature
Benante Senedo	CRK Robinson	P-12 Bagontaas	
Emgatang, Alexander	CRK 17	P-12 Bagontaas	
Joyce G. MAYCAY	CPDCO Staff	LAO-Valencia	
Elene T Gabyle		P-6	
Janet Enteliso		P-6 Bagontaas Val. City	
Jenelyn G. Bisquil		P-6 Bagontaas Val. City	
Terecita Nailga		P-6 Bagontaas Val. City	
Procas, Lycen J.	CB I - Teacher	P-6 Bagontaas, Val. City	
Marife, Balusa	P-6 Kagawad	P-6 Bagontaas	
Genla Segarino	R-6 Kagawad	P-6 Bagontaas	
Costadina Dalapo		P-3 Bagontaas	
Conchita Bustamante		P-3 Bagontaas	
SIMEON M. MONGAYA JR		P-13 UPPER BAGONTAAS	
ROX R. DOONGAN	Val. City of Val. City	Purok A	
Elsa P. Lucianara	Resident	Purok 13, Bagontaas	
Princess E- Pelayo		P-6 Bagontaas	

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Name	Organization / Affiliation	Address	Signature
Ma. Theresa B. Agustin		P-6 Bagontas	
Jasmin N. Tudlosan		P-6 Bagontas	
Marioneta Gallardo		P-6 Bagontas	
Veronica Palma		P-6 Bagontas	
WILFREDO POJAR	PUROK-PREIDENT	P-13 BAGONTAS	
Cecil Yanes		P-15 Bagontas	
JOHAN REQUILAN		P-8 Bagontas	
MARILYN MADUC	P-6 BAGONTAS	P-6 "	
LEO V. LINDY	P-6 "	P-6 "	
DARIO REMOROSA		P-6	
Norma Lebada	P-7 Bagontas	P-6	
Elisio Morales	P-6 "	P-6	
Lowena Tudlosan	P-6 "	P-6	
Jayson Fernan	P-6 "	P-6	
Virginia Suarez	P-16 "	P-16	
Joann Lalona	P-6	P-6	

LEIDEBRIL LIVESTOCK FARM
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 September 24, 2014

Name	Organization / Affiliation	Address	Signature
Margie Langcoyan		P-6 Bagontaas	Margie
Emelie Bustamante		PG Bagontaas	Emelie
JOEL L. SAUCLON		P-13 Bagontaas	Joel
RAMON V. KARAN	P. Kagawad	P-2 Bagontaas	Ramon
Rosenda M. Bern	Punong Pasy	P-5 "	Rosenda
Teresita Cabug	IPMR	P-7 Bagontaas	Teresita
Karen D. Cloran	Brig - Trean		Karen
Indira P. Pabun	Ms. Gu.	P-6	Indira
FRANCISCO S. BIEROU	PRBY. KAGAWAD	P-4	Francisco
BUSTAMANTE-DANIO	PRBY KAG.	P-13	Danio
ANDRO L. VALDORA	LBP	Manila	Andro
RIZALDO P. VARGAS	LBP	Manila	Rizaldo

LEIDEBRIL LIVESTOCK FARM

Bagontaas, Valencia City, Bukidnon

September 9, 2014

Hon. Rosenda Berou
Barangay Captain
Bagontaas, Valencia City, Bukidnon

Dear Madam:

Warm Greetings!

The Leidebril Livestock Farm, in cooperation with the Land Bank of the Philippines, will conduct a Stakeholder Consultation for our proposed Biogas Project on September 24, 2014, 9:00 am at Bagontaas, Valencia City, Bukidnon.

Key points on CDM and in-depth information on the project, such as Environmental Management Plan and Sustainable Development benefits, will be presented. An open forum will be held after the presentation to allow participants to raise inquiries and clarification on the proposed Biogas Project.

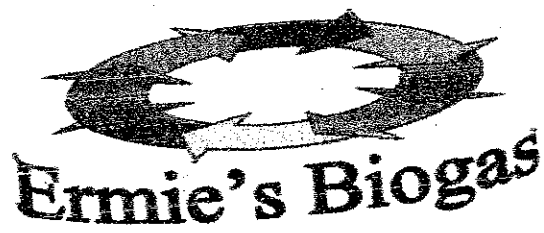
In this regard, we would like to invite you to participate in this consultation.

Thank you.

Sincerely yours,


Leonilo Go Sr.
Farm Owner

9-9-14
Gly



Ermie's Biogas
Ermie's Biogas Waste Management And Technology
Power Maker From Waste Materials

#026 Ermie's St. Tambubong, Bocaue, Bulacan
Tel #: (044) 805-6650
Cell# 09105015050

July 21, 2016

Attention: Mr. Dennis Go
Leidebril Farms
Valencia City, Bukidnon

PRO-FORMA INVOICE

Dear Sir:

I would like to offer my quotation for complete set up of Biogas
Generator 250KVA.

Technical Description

1 Unit Rebuilt Fuso Engine 8DC-9 converted to Biogas

**8 CYLINDER V-8 ENGINE WITH THE FOLLOWING
SPECIFICATION.**

1. Fuso v-8 engine 335 Hp. 1800RPM X 60HZ
2. Single Ignition Coil System & Sparkplugs per Cylinder
3. Biogas Adapted Valve Seats
4. Special Inlet and Exhaust Valve
5. Hi Temp = Iridium Spark Plugs
6. Wet Cylinder Liners / Piston Cooling Via Oil Spray Nozzles
7. Mechanically Controlled:
 - Gas Throttle Butterfly Valve
 - Gas- Air Venture Mixer
 - Speed Governor

8. 220v 60Hz Generator Elastically Coupled and Fitted on Common Steel Base Frame
9. Engine Sensor for Lube Oil Pressure

ACCESSORIES

1. Biogas Engine Governor
2. Set of distributor electronic module type with high tension wire, sparkplug and ignition coil
3. 1 Set combustion chamber
4. 1 Engine chassis with grills
5. 1 pc. Biogas muffler with 6 meter pipe 2½"Ø x 6m
6. 1 Set panel Board V.A.C.
7. 1 unit 3 phase Generator 250KVA
8. Air cleaner
9. 1 Pc. De watering tank

Brand New EBG continuous duty alternator 1,800RPM

Amounting to Php.1, 450,000.00

Terms & Condition

50% down payment

25% upon delivery

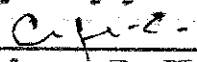
25% upon completion

Completion time – 90 working days upon receive of down payment.

Note:

1. Gas, cooling system and pipeline is not included.
2. 3 months parts and service warranty
3. batteries not included
4. The delivery is Freight Collect service in 10 footer container van.
5. Plane tickets and accommodation for 2 persons who are in charge of mounting of engine generator is charge to your company.

Very truly yours,


Ermicson P. Chew
(Contractor)

Conforme

NOTICE OF PUBLIC CONSULTATION

TO ALL CONCERNED STAKEHOLDERS:

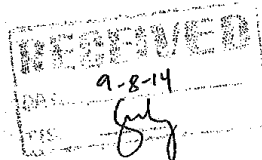
**Stakeholder consultation on the Clean Development Mechanism (CDM) project/
Proposed Methane Recovery and Combustion System (Biogas Project)
Leidebril Livestock Farm to be conducted
on:**

DATE : SEPTEMBER 24, 2014

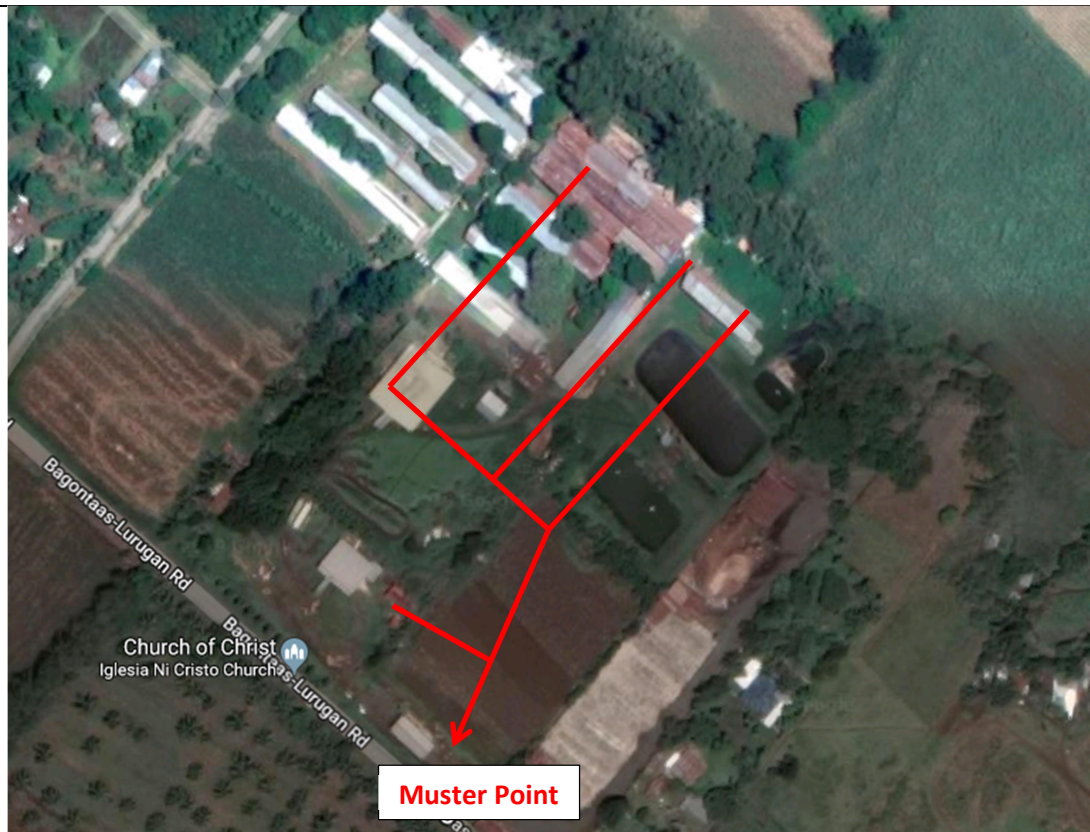
TIME : 9:00 AM

VENUE : LEIDEBRIL FARM (SHOP)


Leonilo C. Go, Sr.
Farm Owner



Appendix D. Site Evacuation Plan



Leidebril Livestock Farm Point Persons:

Farm Manager: King Go 088-315-0132

Pollution Control Officer: 088-315-0132

Biodigester and GenSet Supplier: Ermie's Biogas Waste Management and Technology, 044-805-6650

Local Emergency Contact Details:

Valencia City Police: 0917-718-9191 / 088-828-3721

Valencia City Fire: 0995-672-0331 / 088-828-1481

Valencia City Polymedic General Hospital: 088-828-800