

ENVIRONMENTAL MANAGEMENT PLAN (EMP)

ENVIRONMENTAL ENGINEERING SOLUTIONS (EES)

MOHAMED'S FARM

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1 Introduction

1.1 Purpose

An Environmental Management Plan is a written document which basically outlines mitigation measures and principles for the management of various operations in order to reduce potential negative impacts to the environment. The environmental measures implemented should also take into consideration feasible options in order to factor in viable sustainable and economic elements.

Therefore, according to EPA Guyana, an Environmental Management Plan (EMP) can be defined as an environmental management tool used to ensure that undue or reasonably avoidable adverse impacts of the construction, operation and decommissioning of a project are prevented, and that the positive benefits of the projects are enhanced (EPA Guyana, 2013).

As such an EMP is recognised as a tool that can be used to provide assurance that developers make suitable provisions for counteracting negative impacts that occur through the project implementation and operation (EPA Guyana, 2013). Furthermore, a complied Environmental Management Plan together with proper implementation mechanisms such as monitoring, record keeping and pollution abatement measures, will result in improved environmental performance of an operation.

Key overriding principles of an EMP are that:

- The EMP document should provide a description of the methods and procedures for mitigating and monitoring impacts.
- The EMP should be balanced, objective and concise, and be easily understood by other parties.
- The document should also:
 - Ensure responsibility for the content and commitments contained in the plan.
 - Set out environmental objectives and targets which the developer needs to achieve in order to reduce negative impacts.
 - Include adaptive management strategies and a description of the methods and procedures for mitigating and monitoring impacts and,
 - State any limitations that apply.

(DEAT, 2004) (Environmental Management Plan Guidelines, 2014)

1.2 Objectives of the EMP

The objectives of the EMP are aimed at ensuring that the developer maintains adequate control over the project operation in order to:

- Minimise the extent of impact during design, construction and operations
- Identify the environmental issues/risks associated with operation
- Provide the context of the local and regional environment
- Describe the activity to determine permit conditions by the Agency
- Prevent long term environmental degradation.
- Contribute to environmental awareness of the workforce.
- Ensure commitment to implementation of mitigation actions.
- Facilitates progress towards environmental targets
- Act as a tool for continual improvement of environmental performance.
- Outline the mitigation measures that will be taken, and the procedures for their implementation.

(DEAT, 2004)(EPA Guyana, 2013)

The EMP document therefore, as a guideline tool will assist in minimising the potential environmental impact of the operation activities, and as a consequence the operation activities will be maintained at an environmentally acceptable level.

1.3 Components of the EMP

This Environmental Management Plan has been developed for the handling and processing of poultry production and will cover the following items:

- Prevention and Control
- Mitigation Measures
- Health and Safety
- Training and Awareness
- Emergency Response
- Waste Management

Monitoring, implementation, and supervision are fundamental aspects to the successful execution of this EMP. It is important therefore, that the implementation and monitoring of this EMP are adhered to by the Developer. Consequently, all potential impacts, mitigation measures and procedures to be

implemented, which are outlined and described within this EMP document, will be the responsibility of the Mohamed's Farm will take every step to adhere to the EMP and appoint oversight personnel for the implementation, monitoring and dealing with Environmental related matters.

This Environmental Management Plan (EMP) has been prepared by a team from Environmental Engineering Solutions for the poultry production operations on behalf of the Mohamed's Farm. The EMP has been developed in accordance with EPA Guyana guidelines to establish specific safeguards and controls to be employed at the design, development and operations phase. It provides environmental management guidance to Mohamed's Farm and assigns oversight responsibilities to specific personnel.

This Environmental Management Plan is provided by the Mohamed's Farm in compliance with the condition process for the Application for an Environmental Authorisation (Permit) (in accordance with EPA's Guidelines for the Preparation of Environmental Management Plan). The EMP document for the Operation will assist in the decision making process of the Agency to determine the conditions under which the Permit will be approved and granted in accordance with the Environmental Protection Act 1996.

1.4 Company Profile

Mohamed's Farm originated from a very small project by Company patriarch Shameer Mohamed in 1994. This small venture grew until Mohamed's Farm was expanded 20 years later in 2014. Back then, its main focus was the supply of live birds to local farmers. Mr. Mohamed's focus at the time was in supplying local farmers and establishments with approximately 50 live birds per week. By the year 2014, the Mohamed's Farm Poultry Processing Plant was opened at Garden Of Eden, East Bank Demerara. The Farm sits on 12 acres of land at Garden of Eden East Bank Demerara and at that location a fully integrated poultry farming operation takes place. The operation site comprises, a Hatchery, a Feed Mill (under construction), Processing Plant, Stores, Poultry Unit, and Workshop.

Figure 1: Mohamed's Farm



Mohamed's Farm is now one of Guyana's largest supplier of chicken. It supplies most of the major fast food outlets, a number of supermarkets in Guyana.

2 Legal Framework and Policy

Mohamed's Farm, Garden of Eden, East Bank Demerara operations falls under the jurisdiction of the laws of the Co-operate Republic of Guyana. The relevant legal requirements, national policies, guidelines, regulatory bodies governing the implementation, operation and efficient management of the processing plant are outlined and explained in the chapter.

2.1 Policies, Strategies and Plans

A number of key policies, strategies & plans established to guide development activities in Guyana in an effort to ensure that natural resources are sustainably utilized and environmental impacts minimized are as follow:

2.1.1 Green State Development Strategy (GSDS) 2017

The Green State Development Strategy (GSDS) was developed to guide Guyana's economic and sociocultural development outlining a long term vision over the next 15 years. The Strategy provides a framework for achieving a green state economy, the sustainable development goals (SDG), and other related targets. The objective of the strategy is to reorient and diversify Guyana's economy, reducing reliance on traditional sectors and opening up new sustainable income and investment opportunities in higher value adding and higher growth sectors. The central themes to contribute to the transition includes structural transformation, sustainable management of natural resources, renewable energy transition, development of resilient infrastructure, capacity building for human development, improved institutional governance and international cooperation for green trade and investment.

2.1.2 Low Carbon Development Strategy (LCDS) 2013

The Low Carbon Development Strategy was launched June 2009. After a series of consultations, revised versions of the document were published in 2010 and 2013. The document basically sets out Guyana's strategy to forge a low carbon economy over the coming years and outlines the focus of implementation for the period 2013 to 2015. The LCDS aims to achieve two goals, these goals are the transformation of Guyana's economy to deliver greater economic and social development for the people of Guyana by following a low carbon development path; and the provision of a model for the world on how climate change can be addressed through low carbon development in developing countries, if the international community takes the necessary collective actions, especially relating to REDD+.

2.1.3 National Development Strategy (NDS) 2001-2010

The National Development Strategy, 2001 – 2010 was developed to achieve Guyana’s national economic development, social harmony and well-being. Therefore, taking this into consideration, the strategy sets out a number of objectives and strategies to meet the goal of socio-economic development across different sectors, inclusive of the agricultural sector. These objectives are to attain high rates of economic growth as possible; eliminate poverty in the country; achieve geographical unity; attain equitable geographical distribution of economic activity; and to diversify the economy.

2.1.4 National Environmental Action Plan (NEAP) 1994

The National Environmental Action Plan (NEAP), was developed in 1994, to identify the major environmental problems in the country and to formulate appropriate policies to address those problems. The plan further outlines the main environmental policy objectives for the sound management of the environment and natural resources. Twelve stated policy objectives were outlined, one of which called for the conduct of environmental assessments for proposed development activities that may significantly affect the environment. In keeping with this environmental policy objective, the Environmental Protection Act was enacted in June 1996 and includes the legal framework for undertaking an environmental impact assessment.

2.1.5 Environmental Guidelines: Poultry Rearing Operations (2013)

The Environmental Guidelines: Poultry Rearing Operations were developed and approved by EPA board in 2013. These guidelines were therefore developed by EPA to provide guidance for environmentally healthy poultry production development in Guyana. The guidelines encourage the use of best management practices and technologies to safeguard the environment, the health and safety of workers, and the well-being of residents in close proximity to Poultry Production Operations.

2.2 Legislation

The main legislations governing the operation of Mohamed’s Farm processing plant are discussed as follows:

- Environmental Protection Act (1996)
- Environmental Protection (Authorisations) Regulations (2000)
- Environmental Protection (Water Quality) Regulation 2000
- Environmental Protection (Air Quality) Regulation 2000

- Environmental Protection (Hazardous Waste Management) Regulation 2000
- Environmental Protection (Noise Management) Regulation 2000
- Environmental Protection (Litter Enforcement) Regulations 2000
- Pesticides and Toxic Chemicals Control Act (2000)
- Occupational Safety & Health Act (1997)
- Labour Act (1942)
- National Insurance and Social Security (1969)

2.2.1 Environmental Protection Act (1996)

The Environmental Protection Act Cap 20:05 act no. 11 of 1996 (amended by act no. 17 of 2005), which established the Environmental Protection Agency and the agencies functions, is the principle act which governs the environmental regulatory framework of Guyana.

The Act provides for the management, conservation, protection and improvement of the environment and governs the prevention and control of pollution; the assessment of potential impacts from economic development on the environment through the development of an Environmental Impact Assessment (if required). These methods, procedures, and criteria are mandated by law in order for the need for the preservation and stability of the eco-systems, diversity of species and to protect and improve human welfare, and the environment.

To assist in the effective management of the environment, the Environmental Protection Act has accompanying regulations which aids in governing environmental protection in Guyana. These regulations are as follows:

- Environmental Protection (Authorisations) Regulations 2000, 2005
- Environmental Protection (Water Quality) Regulations 2000
- Environmental Protection (Air Quality) Regulations 2000
- Environmental Protection (Hazardous Wastes Management) Regulations 2000, 2005
- Environmental Protection (Noise Management) Regulations 2000
- Environmental Protection (Litter Enforcement) Regulations 2000)

2.2.2 Environmental Protection (Authorisation) Regulations 2000, 2005

The Regulations outlines the procedure and requirements for issuing of Environmental Authorisations (Permit) for any developmental activity which may possibly have adverse impacts on the environment and renewal of such permits. The Environmental Authorisation issued would stipulate permitted conditions for ensuring and maintaining the environmental integrity of the area throughout the life of the operation. After issuance of the permit, the operations are hereafter monitored by the EPA to ensure compliance. As such, it should be noted that this EMP Report Document is a direct result of the Environmental Authorisation decision making process governed under the laws of Guyana.

2.2.3 Environmental Protection (Water Quality) Regulation 2000

The water quality regulation was established to protect Guyana's inland/ coastal waters by controlling effluent discharge. This regulation requires that any developer involved in any operation, construction, modification/ extension of facilities discharging effluents must apply for an **Environmental Authorisation**. The regulation states that effluents discharged in inland/ coastal water or land shall not exceed established discharge parameter limits set by Guyana National Bureau of Standards (GNBS). The GNBS Effluent discharge parameter limits are indicated in *Table 1* below:

Table 1: General Environmental Guideline Values for Effluent Discharge

Categories	GNBS Limits
pH	5.0 – 9.0
Temperature	< 40
BOD for 5 days	< 50 mg/L
COD	< 250 mg/L
DO	--
TSS	< 50 as TSS
N as NH₃	< 10 mg/L
Total N	--
Phosphorous (P)	< 2 mg/L
CN Total (Cyanide)	< 1 free: 0.1
Phosphate (PO₄⁻)	--
Chlorine (Cl)	< CL: 0.2

Surfactant	--
Phenols	< 0.5 mg/L
Coliforms	< 400 MPN per 100 mls
Oil and Grease (O&G)	< 10 mg/L

Source:(GNBS, 2002)

The provisions reiterate the establishment of sampling points; effective keeping of records; reports on effluent discharges, water quality and biological integrity; management of spills/ accidental discharge and encouragement of proper disposal/ treatment of effluents discharge. Mohamed's Farm will ensure adherence to the water quality regulations through the implementation of appropriate measures to keep possible discharge within the prescribed limits set by the GNBS. This will not only help to protect the environment, but will also ensure that the activities are conducted in keeping with the legal requirements of the country.

2.2.4 Environmental Protection (Air Quality) Regulation 2000

The air quality regulation outlines the requirement to limit and control the amount of air pollutants emitted into the atmosphere. The regulation requires that any developer involved in any construction, installation, operation, modification/ extension of any facility that emits air contaminant must apply for an **Environmental Authorisation**. The regulation also states the air contaminant for which parameter limits are to be established.

There is no air quality parameters (limits) established to date in Guyana. Nevertheless, Mohamed's Farm will ensure that their operations are controlled and restricted to a minimum emission value, through the implementation of appropriate measures to protect the health of workers and the environment. The Company will be guided by International ambient air quality standards recommended and used by the EPA to show its commitment to a healthy work environment.

2.2.5 Environmental Protection (Hazardous Waste Management) Regulation 2000, 2005

The hazardous waste management regulation was developed with the primary aim of protecting the environment by controlling hazardous waste discharges. The regulation requires that any developer involved in any operations that generates, transports, treats, stores or disposes of hazardous waste, must submit an application for an **Environmental Authorisation**. The regulation also stipulates and outlines the provisions for reporting; record keeping; emergency preparedness planning; and transportation of

hazardous waste, while at the same time encouraging Developers to utilise appropriate disposal/ treatment mechanisms of hazardous waste identified in the regulations.

Mohamed's Farm will take all precautionary measures required to ensure the safe handling and disposal of hazardous material/ substances utilised in the different stages of the operations. This will be done in an effort to ensure that the integrity of the environment is protected and that all workers and nearby residents are protected from negative health-related implications.

2.2.6 Environmental Protection (Noise Management) Regulation 2000

The environmental protection (noise management) regulation manages and controls noise emissions within Guyana. According to this regulation, it is required that any Developer involved in any operation, construction, installation, modification/ extension of a facility that emits noise must apply for an **Environmental Authorisation** from the Agency (EPA). The Regulation also stipulates that noise decibel levels are not to be greater than the established permissible noise level/ limits by the Guyana National Bureau of Standards (GNBS) which have been adopted by EPA. The permissible Noise levels are indicated in *Table 2* below:

Table 2: GNBS Guideline Values for Noise in Specific Environment

Categories	Daytime Limits in dB (06:00 – 18:00h)	Night time Limits in dB (18:00 – 06:00)	
Residential	75	60	
Institutional	75	60	
Educational	75	60	
Industrial	100	80	
Commercial	80	65	
Construction	90	75	
Transportation	100	80	
Recreational	100	18:00 – 01:00hr	100
		01:00 – 08:00hr	70

Source:(GNBS, 2010)

Mohamed's Farm will take all necessary action to ensure that there is adherence to the stipulated noise regulations by the implementation of measures, to maintain minimal noise levels to protect the environment and to safeguard the health of workers.

2.2.7 Environmental Protection (Litter Enforcement) Regulations 2013

The Litter Enforcement regulations address among other aspects, litter offences, penalties and the power of the local authority to enter premises and to remove derelict vehicles. The Regulations are enforced by the EPA through its recently established Enforcement and Compliance Division.

Under the Litter Regulations, it is an offence to litter in a public place and persons who are found guilty of littering shall be liable to a fine of between fifty to one hundred thousand dollars (\$50,000 - \$100,000) or three months' imprisonment. Mohamed's Farm will ensure that there is adherence to the stipulated litter enforcement regulations by implementation of measures where necessary to protect the environment from solid waste pollution at the facility.

2.2.8 Pesticides and Toxic Chemicals Control Act (2000)

The Pesticides and Toxic Chemicals Control Act no. 13 of 2000, resulted in the establishment of the Pesticides and Toxic Chemicals Control Board, which is intended to regulate the manufacture, importation, transportation, storage, sale, use and disposal of pesticides and other toxic chemicals. In this Act, toxic chemicals refer to "any disinfectant or any other substance known to be poisonous, corrosive, irritating and capable of causing a sensitive reaction or sensitive to man or animal that is used in agriculture, the arts, commerce or industry or for any domestic or other purposes". As a consequence, Mohamed's Farm will take every precaution in the proper use and storage of any chemicals used in the day to day operation at the facility.

2.2.9 National Insurance and Social Security Act (1969)

The National Insurance and Social Security Act cap 36:01 establishes the national insurance and social security system, which covers and protects workers. The persons/ individuals to be insured under this act by payment of contributions must be sixteen (16) years and older, under sixty (60) years of age, self-employed, and gainfully employed. The national insurance and social security system provides benefits for old age, invalidity, survivors' benefits, sickness, maternity, funeral and industrial benefits. Mohamed's Farm intends to comply with Guyana's social security laws to ensure the welfare of all the staff employed by the Company.

2.2.10 Labour Act (1942)

The Labour Act cap 98:01 provides for the establishment of the Department of Labour, for the regulation of the relationship between the employer and the employees. The Act stipulates and establishes procedures regulating wages paid; minimum rate wages payable; hours of work; the rights and obligation of the employees; and provides for settlement of differences between employees and employers. Mohamed's Farm intends to comply with Guyana labour laws and policies to protect and safeguard the welfare of all the staff employed by the operation

2.2.11 Occupational Safety and Health Act (1997)

This OSH Act cap 99:06 provides for the registration and regulation of industrial establishments/operation to ensure the occupational safety and health of workers, and inevitably prevent, as far as possible, avoidable injuries due to negligence and/or oversights in safety. The Act stipulates that companies and employers must ensure that measures are implemented to ensure the safety of all operating facilities and machinery, the provision of adequate ventilation, lighting, sanitary facilities and access to potable water; the identification of hazardous chemicals, physical and biological agents to be used during operations of the facility, and regulation of both the usage and storage of these. Mohamed's Farm fully intends to comply with the OS&H Act to protect and safeguard the welfare of all the staff employed by the Company.

2.3 Permits/ Licenses

The permits/licences/certificates issued by the Guyana Livestock Development Authority and the Environmental Protection Agency as a requirement for the operation of the processing facility in Guyana are:

2.3.1 Environmental Permit

The Environmental Protection Act 1996 under *Part 4 Environmental Impact Assessment Section (11)* and the Environmental Protection (authorization) Regulation 2000 under *Part 2 General Section (12) and Part 3 Power to Grant Environmental Authorization Section (17)*; requires that an environmental permit must be issued by the Agency (EPA) to any project which may significantly affect the environment. The Permit is issued by the Agency upon review and analysis of the application for an Environmental Authorization and other relevant documentations requested by the EPA. Such documents include the Environmental Management Plan (EMP) or Environmental Social Impact Assessment

(ESIA); which is submitted by the developer. The holder of the permit is required to take all the necessary steps to minimize, prevent and/ mitigate adverse environmental impacts from the operation.

2.4 Institutions

The central institution which governs the operation of Mohamed's Farm processing plant is discussed as follows:

2.4.1 Department for the Environment (DOE)

The Department of Environment, Ministry of Presidency has oversight and policy coordination over the Environmental Protection Agency, Protected Areas Commission and the Wildlife Commission. The Department has the mandate to coordinate and lead all efforts in transforming Guyana into a sustainable and green state by effective management of the Environment. Its efforts entail working to develop an environmental system that safeguards the integrity of the natural environment and protects public health through the development and adoption of appropriate, sustainable and coherent policies and programmes (DOE, 2018).

2.4.2 Environmental Protection Agency (EPA)

The Environmental Protection Agency established under the EPA Act Cap 20:05 act no. 11 of 1996 is the principal authority for *environmental management* in Guyana. The EPA falls under the umbrella of the Department of Environment, Ministry of Presidency with the responsibility to oversee the effective management, conservation, protection, and improvement of the environment. Whereby in Sec. 4 (1) (a), the EPA is given the mandate to *“take such steps as are necessary for the effective management of the natural environment so as to ensure conservation, protection and sustainable use of its natural resources”*

In addition, the Agency is given the overall responsibility to *“co-ordinate the environmental activities of all persons, organizations and agencies”* [Sec. 4(1) (c)]; and is mandated *“to play a coordinating role in the preparation and implementation of cross-sectored programmes of environmental contents”* [Sec. 4(1) (1)]. The mandate to serve as the highest authority for granting Environmental Authorizations, where they are required, is supported by Sec. 5 which states that *“any person or authority under any other written law, vested with power in relation to the environment shall defer to the authority of the Agency and shall request an environmental authorization from the agency before approving or*

determining any matter...”. The EPA therefore is the body in charge of granting environmental permits for projects, including those for the Mohamed’s Farm.

2.4.3 Ministry of Agriculture

The Ministry of Agriculture has direct oversight over the Agricultural sector in Guyana. The Ministry main function is to “ensure the formulation and implementation of policies and programmes which facilitate the development of agriculture and fisheries in Guyana” So as to contribute to the enhancement of rural life; sustainable improvement in agricultural production and market chain; the maintenance of a sound physical and institutional environment for present and future productive activities. This function is addressed through Administration; Crops and Livestock Support Services; Fisheries Department; and Hydrometeorological Services (Ministry of Agriculture, 2018).

2.4.4 Guyana Livestock Development Authority (GLDA)

The Guyana Livestock Development Authority (GLDA) falls under the purview of the Ministry of Agriculture. The GLDA emerged as a semi-autonomous agency to develop the architecture that will support the drive in satisfying mankind’s need to access safe, wholesome and affordable food, particularly food emanating from livestock. As such the thrust of the agency is to “promote greater efficiency in the livestock production industry and to enhance services in livestock husbandry, livestock health and research, and to make provision for effective administration; also for internal competition between industries and the regulation of trade, commerce and export of livestock or livestock products.” As established, the GLDA, also delivers public services related to animal production, animal health, animal genetics, marketing, training and extension services as well as regulatory services (Ministry of Agriculture, 2018).

2.4.5 Ministry of Social Protection

The Ministry of Social Protection functions to regulate the relationship between the employers and employees, and ensure OH&S standards in the workplace. The Ministry also provide public support programmes for suicide prevention, childcare protection, and human trafficking prevention, special cases such as disabilities, domestic violence, and rape. Additionally, the Ministry caters for the provision of old age pension for the elderly.

2.4.6 National Insurance Scheme (NIS)

The National Insurance Scheme (NIS) is a social security organisation, which maintains a system of social security by securing contributions from both employees and employers to generate benefits during sickness and accidents. NIS also provides other benefits for example old age, invalidity, industrial etc.

2.5 International Conventions

International conventions are global agreements in which various countries signal their commitment to work together in an effort to meet numerous obligations and targets in order to maintain the environment, minimise impacts and ensure mankind's well-being. The key international conventions Guyana has assented to or ratified, which relates to the Mohamed's Farm Poultry Production operation are as follows:

- Occupational Safety and Health Convention
- Basel Convention on the Control of Trans boundary Movements of Hazardous Wastes and Their Disposal
- United Nations Framework Convention on Climate Change (UNFCCC)
- Montreal Protocol on Ozone Depleting Substances
- Vienna Convention for the Protection of the Ozone Layer
- Protocol Concerning Pollution from Land Based Sources and Activities.

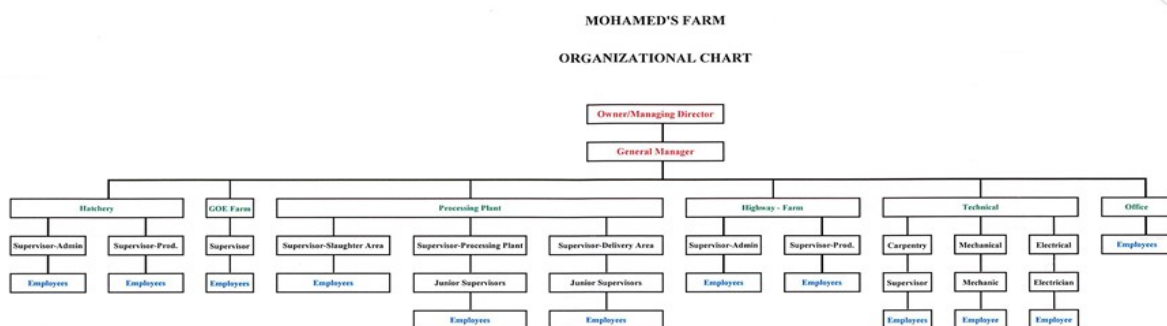
3 Operations Description

3.1 Overview

Mohamed's Farm, home of Royal Chicken Farms was established in 1994 by Mr. Shameer Mohamed who at the time was a well-known local supplier of poultry to local customers. Starting off as a small family oriented business, the years have proven most successful to Mohamed's Farm as they have now established themselves as a leader in Poultry production, distribution and quality. January, 2013 recorded a major investment by Mr. Mohamed as he commissioned his new Poultry Processing Plant equipped with the most modern technology on the market. A modernized Hatchery followed in March, 2014 to assist Mohamed's Farm in solidifying themselves as a leading competitor in the poultry business across Guyana. The overall operations of the company include: hatchery, broiler production, chicken production, feed manufacturing, distribution, marketing and customer service.

Mohamed's Farm head office for Royal Chicken is located on the East Bank of Demerara, within the same compound has their poultry operations. Royal Chicken products are supplied nationwide to various supermarkets, restaurants, meat centers, wholesalers, retailers, hotels and overseas markets. Operational services provided by Mohamed's Farm occur six (6) days per week, Monday to Saturday between the hours of 6:00 am to 4:00 pm. Monday to Friday focuses on production while Saturday is reserved for maintenance and servicing.

Figure 2: Mohamed's Farm Organization Chart



Source: Mohamed's Farm (2019)

Commitments

Mohamed's Farms is committed to providing its customers with the best products and services through the pursuit of the highest quality available whilst simultaneously maintaining its integrity and ethical views. The company's aim is to have a safe and hygienic approach to its products and services. As such,

Mohamed's Farm is currently putting measures in place, seeking relevant guidance and the appropriate information to be ISO 9001 certified under the most recent ISO certification standard. Mohamed's Farm is also dedicated to continue practicing sound environmental, health and safety protocols in attempt to continue protecting the environment, and safeguard the safety and health of their valued employees and community in accordance with the laws of the Co-operative Republic of Guyana.

3.1.1 Resources

Access Road

The established access road leading to the Mohamed's Farm Production facility leads from the East Bank Demerara Highway. Upon entering the facilities compound, a small network of well-established and maintained internal roads are clearly visible for the purpose of vehicular transport of stock.

Land Resource

Mohamed's Farm has an approximate land size of 12 acres, to enclose all the plant operation described earlier in this report.

Infrastructure

The general established infrastructure of Mohamed's Farm location utilized on a day to day basis of its managerial and operational activities of Poultry production consist of:

- Offices,
- Housing,
- Workshop,
- Feeding Mill,
- Processing Plant,
- Storage (freezer),
- Farm

Equipment

The main equipment utilized at the Mohamed's Farm poultry production operation at Garden of Eden, East Bank Demerara consists of the following:

- Tek Pro Poultry Processing Line (processing plant)
- Freezers (5 Walk In, 6 Refrigerator Containers)

- Centrifuge
- Super Brix Mill Line (under construction)
- Delivery Trucks
- Extraction Fans
- Generator (250 kva)
- Black Water Tanks (10)
- KRACK compressor units

Employment Details

Mohamed's Farm has a total of 240 staff employed with the Company of which the poultry operation with a fully integrated broiler facility has a staff complement of approximately 210+ persons. The 210 employees which span across the facility work in maintenance, transportation, quality control and processing etc, while approximately 30 staff members work in the Administrative department.

Due to the operations at the facility being an on-going process, the company has implemented a system of staff uniforms which can easily be identified by the white aprons and rubber boots for use while inside the facility. Safety equipment is provided for the staff members in every department and consist of but are not limited to safety gloves, goggles, ear plugs, dust masks, respirators, coats, freezer coats, and insulated boots (rubber boots).

Bio-Security

Mohamed's Farms is highly committed to food quality control and as such mandates analytical tests, namely testing of chicken for shipment, testing of finished products, testing of processing equipment and water analysis. Key microbiological parameters checked are total plate count, E. coli, coliforms, salmonella, and listeria.

In an effort to ensure quality control and bio-security through the prevention and control of pathogens at the site, Mohamed's Farm also has strict personal hygiene and health stipulations for employees to avoid contamination. Strict sanitary measures have been put in place by the provision of sanitary stations (inclusive of foot operated sinks, sanitizers, tissues dryers) at strategic locations. Personal hygiene apparels are also provided to workers such as long boots, hair nets, beard nets, coats, aprons, gloves. Visitors to the plant are also required to wear the same apparel when touring the production facility to prevent the introduction of any foreign contaminants.

Foot baths are also placed at the entrance of the processing rooms to disinfect footwear before entering the processing area. The Company also ensures that no food, smoking, drinks, and jewellery is allowed in the processing plant. In addition, at the end of each daily production, the processing area and equipment are cleaned and disinfected.

Pest control management is also taken seriously by the use and placement of rodent traps around the compound. Fly traps in the interior of the different buildings are checked and replaced weekly.

Water Consumption

Water used for cleaning and Poultry production and processing is provided through a system of water tanks and an artificial aquifer on site. The estimated water consumption amounts to approximately 2000 gallons per day (6 days per week). Approximately 60000 gallons of water is consumed monthly. The water utilized for poultry production and processing at the plant undergoes strict pre-requisite protocols to ensure its safety for food processing and quality control as a precautionary measure. The water utilized undergoes chlorine treatment and filtration.

FIGURE 3 WATER TANKS USED FOR THE STORAGE OF WATER AT SITE LOCATION



Energy Consumption

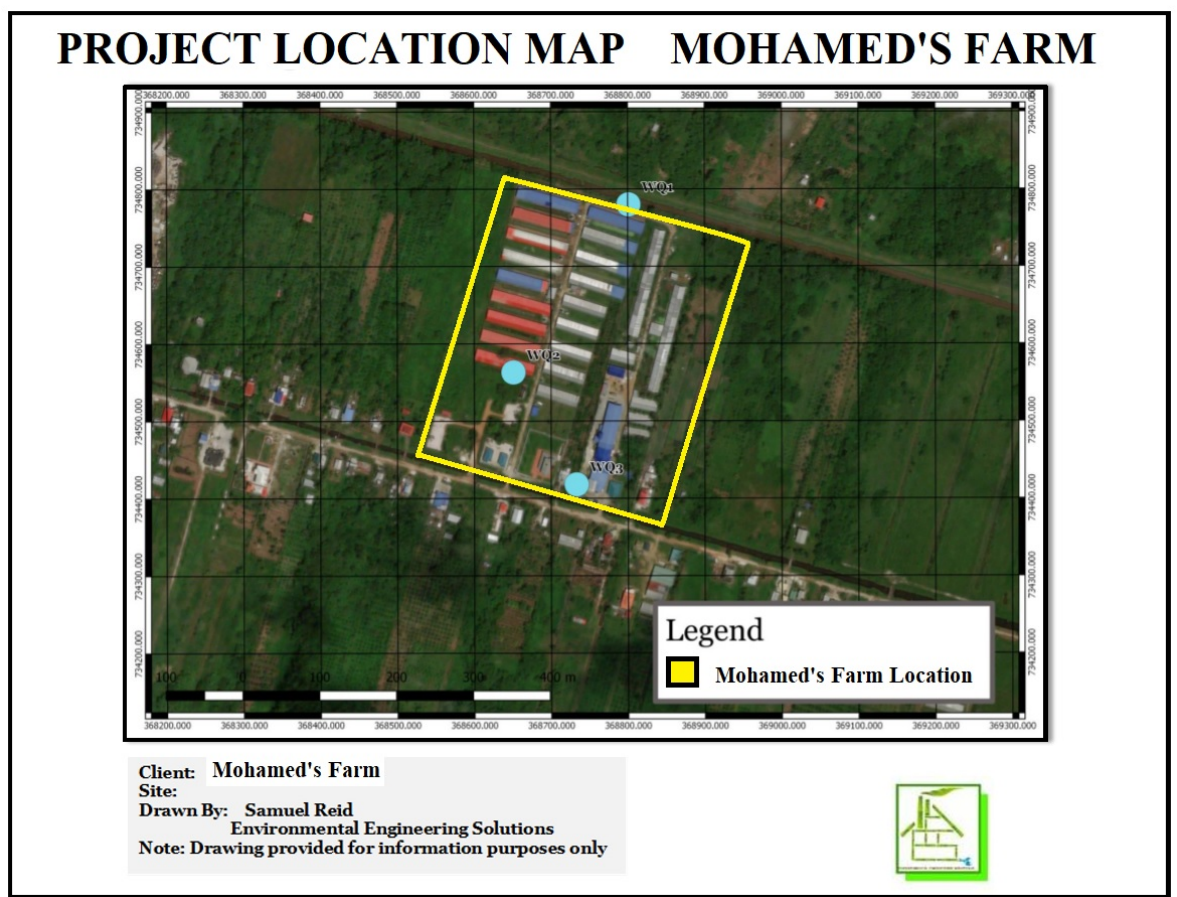
The energy consumed by the Mohamed's Farm Processing Plant is supplied and obtained by the Guyana Power and Light Corporation (GPL). The average monthly energy consumed from GPL amounts to approximately \$9 million per month on average. However, in the event of a GPL power failure

Mohamed's Farm has a backup generators which allows for the assurance of constant power flow and continued processing operation production. The generator possesses a generating capacity of 250 KVA.

3.1.2 Site Location

Mohamed's Farm poultry operations are located at Garden of Eden, East Bank Demerara as seen on the following page in *Figure 13*. The Garden of Eden village is approximately thirteen (13) miles or twenty one (21) kilometers from the Capital City of Georgetown.

FIGURE 4 SITE LOCATION FOR MOHAMED'S FARM, GARDEN OF EDEN, E.B.D.



3.1.2 Waste Management

Poultry production by nature will result in large amounts of generated waste, therefore the constant preservation and protection of the natural environment and health is of great importance to Royal Chicken Farms and its members of staff. Royal Chicken Farms is committed to make the necessary

adjustments and effort towards minimizing their impact upon the natural environment. Royal Chicken Farms has already implemented several waste management practices in effort to tackle the weekly waste generated at their facility.

Solid and Liquid condemn waste is drained from the processing areas via system of internal drains into a collection area outside of the facility. The accumulated waste will then gather and be passed through a centrifuge which will then separate the solid waste from the liquid waste. The solid waste that is removed is bagged off and given free of charge to pig farmers, feathers will go directly to the municipal landfill site while the waste water that remains is discharged into external drains which further drain into the Demerara River. Along the processing line, the rejected heads and feet of birds are separated and bagged off. The visceral and veins are reused as feed for animals.

FIGURE 5 CENTRIFUGE.



FIGURE 6 WASTE WATER DISCHARGE POINT



Collected feed waste is separated into two categories, solid condemned feed and edible condemned feed. The solid condemned feed is bagged off and is set aside for disposal while the edible condemned feed is separated, bagged and given away free of cost to pig farmers who come on a daily basis to collect. Puran Brothers Waste Disposal Service is the contracted service used at Royal Chicken Farms for the collection and removal of the general residential waste that is generated at the facility. This residential waste is transported from the facility to the state issued landfill site at Haags Bosch approximately three (3) times per week. With regard to sanitation, Royal Chicken Farm Ltd has installed flush toilet facilities in the compound based on the principal of twenty (20) persons per toilet.

FIGURE 7 SOLID ORGANIC WASTE PACKING AREA



3.1.3 Production Operation Process

Royal Chicken (Mohamed's Farms) operation activity at their Garden of Eden location include a broiler production process to produce poultry for meat consumption. The production process activities entail the following components:

Feed Mill Production

The Feeding Mill's purpose is to produce and stores a source of top quality, well balanced feed (*see figure*) necessary for the production of the best live birds at that location. Presently the Feed Mill is still under construction and as such is inoperable. Royal Chicken Farms currently purchase feed from Guyana Stock Feed Limited to the amount of 1200 tons per month in addition to purchasing approximately 300 tons of feed per month from Bounty Farm Limited. An approximate total consumption of 1500 tons of feed per month. Upon completion, Mohamed's Farms is projected to produce approximately 1500- 2000 tons of premium, high quality feed per month for both personal consumption and sale.

Live Chicken Production

Live Chicken Production entails the rearing of broiler birds on site. Mohamed's Farm also use reared chicken from contracted farmers who simply rear the birds. The live chicken production starts at the Hatchery, where fertile eggs are incubated to further produce healthy chicks. Once hatched, these chicks are nurtured under specific moisture and temperature conditions in order to produce the healthiest broiler birds possible for meat processing. The Hatchery produces approximately 500,000 successfully hatched chicks per month.

Once the Broiler birds have achieved 'prime weight' (approximately 42 days or seven weeks to reach optimal weight), the birds will then be considered ready for meat processing. The completion of the growth cycle will end when the birds are caught and transported to the processing facility. Live chicken production produces approximately 50- 60,000 live birds per week, which will give a monthly approximate figure of 200,000 live birds.

Processing Plant.

The poultry processing plant, a modernized facility operates under the strictest hygienic protocols at the processing plant, the live broiler birds are received at the loading area, then off loaded and prepared for meat processing via suspending the live birds by their feet on a conveyor belt that enters the facility. Two members of staff are tasked with this duty. The following stages of meat processing entail:

➤ Defeathering:

- Humane stunning to calm and immobilize the birds;
- Euthanizing birds and bleeding (birds are prayed upon to meet halal standards)
- Scalding by putting the birds in warm water to relax feathers
- Removal of feathers (defeathering)
- Washing

➤ Evisceration:

- Opening of the body cavity
- Removal of internal organs
- Removal of giblets
- Removal of neck, hock & legs.
- Washing

- Packaging:
 - Whole chickens
 - Cut-up meat into portions
 - Further processing such as deboning
 - Blast freezer storage
- **Retail Market:** After the production process, the final processed meat products are then supplied and delivered to various supermarkets, retail supermarkets, shopping centers and stores across Guyana.

FIGURE 8 CHICKEN OFFLOAD AREA.



FIGURE 9 DEFEATHERING AREA.



FIGURE 10 EVISCERATION ROOM.



FIGURE 11 PACKAGING ROOM



FIGURE 12 RETAIL MARKET PACKING ROOM



4 Description of the Environment

This chapter presents and discusses information on the existing environmental and socioeconomic condition of the immediate surrounding environment of the Mohamed's Farm Poultry Production Operation, 60 Garden, East Bank Demerara, Guyana South America.

4.1 Physical Environment

4.1.1 Climate

Guyana has a Tropical Humid Climate, the tropical heat and humidity is influenced by the north easterly winds blowing from the Atlantic Ocean. Temperatures vary with the geographic land scape, with high altitude regions experiencing cooler temperatures than the coastal, lowland and savannah zones. The temperatures at the north side vary between 20°C to 23°C. Across Guyana the temperature vary within the range from 25°C to 27.5°C, high temperatures from 31°C to 34°C, due to the stabilizing effect of the sea and the north-easterly trade winds (Ministry of the Presidency, 2015).

Precipitation appears during the two wet seasons approximately April-July and November-January, having an annual average precipitation above 2000 mm/year in compare with Savannah where the annual average shows 1400-1800 mm/year.

4.1.2 Water Quality

Water samples were collected and analyzed in-situ to determine the quality of surface within and around the Mohamed's Farm Compound. During the monitoring three (3) water samples were collected and analyzed. Samples were collected on October 12, 2019. The sample locations were selected based on water availability due of the layout of the chicken processing plan to provide an indication of the baseline surface and groundwater quality.

The locations where the samples were collected are identified on the map below as the WQ1, WQ2 and WQ3 locations (figure 13) and described in the Table 4 below. These locations should also become permanent monitoring sites, since, if there are any impacts on water quality by the operation, the impacts can be detected by testing these locations.

TABLE 3 DESCRIPTION WATER QUALITY SAMPLES.

Surface Water Quality Description					
Sample ID	Coordinates		Collection Time	Weather Condition	Sample Location
	21N	UTM			
WQ1	0368801	0734780	15:23 hrs.	Sunny/dry	Chicken Pens Water Discharge
WQ2	0368651	0734563	15:34 hrs.	Sunny/dry	Feed Plant
WQ3	0368733	0734418	15:50 hrs.	Sunny/dry	Entrance

Samples collected by Andre McCurdy.

FIGURE 13 SURFACE WATER QUALITY SAMPLE POINT LOCATION

file:///C:/Users/USER/Downloads/WATER%20Quality%20Location%20Map.pdf



The samples collected were analyzed for several parameters which are key indicators generally used to determine the quality of water. The parameters measured are mainly that of Temperature, pH, Turbidity, Dissolved Oxygen (DO), Total Dissolved Solids (TDS). High occurrences and changes in these

parameters will aid in providing a good indication assessment of possible water pollution that can affect aquatic life and human health.

Consequently, the data set sample point measurement taken were then assessed for reference with the threshold water quality standards set by the Guyana National Bureau of Standards (GNBS) General Environmental Guideline Values for Effluent Discharge (*Table 4*), as well as acceptable water quality limits by the EPA Guyana.

TABLE 4. GENERAL ENVIRONMENTAL GUIDELINE VALUES FOR EFFLUENT DISCHARGE

Categories	GNBS Limits
pH	5.0 – 9.0
Temperature	< 40
BOD for 5 days	< 50 mg/L
COD	< 250 mg/L
DO	--
TSS	< 50 as TSS
N as NH ₃	< 10 mg/L
Total N	--
Phosphorous (P)	< 2 mg/L
CN Total (Cyanide)	< 1 free: 0.1
Phosphate (PO ₄)	--
Chlorine (Cl)	< CL: 0.2
Surfactant	--
Phenols	< 0.5 mg/L
Coliforms	< 400 MPN per 100 mls
Oil and Grease (O&G)	< 10 mg/L

Source: (GNBS, 2002)

Results and Discussion: As part of conducting the environmental baseline assessment, the following water quality parameter data below was recorded, demonstrated and analyzed.

TABLE 5 PRELIMINARY SURFACE WATER QUALITY SAMPLING RESULTS.

Table 6: Preliminary Surface Water Quality Sa

Surface Water Quality							
Sample ID	Temp.*	pH*	Turbidity*	DO*	TDS*	Conductivity*	Total Hardne
	°C		NTU	mg/L	mg/L	Ms/cm:	mg/I
	<40		30 50			0-2000	

Temperature - The surface water temperature sample readings were 31.8, 32.9 and 32.1°C during the time of collection in the field. Based on observations the data collected was within the GNBS accepted Guidelines for Industrial effluent, general environment limit range of <40 °C (as can be seen clearly on the temperature *Table 5*), which is considered healthy for aquatic living organisms to strive in. No other samples were above 40 °C, the GNBS threshold being considered negligible to have any significant impact on the aquatic environment.

pH - The pH analysis of the surface sample readings collected were 6.67, 6.56 and 7.25 pH, indicating that water in the area is slightly acidic. The pH measurement collected were all within the 5.0 - 9.0 pH GNBS accepted Guidelines for Industrial effluent, general environment range (as can be clearly seen on the pH *Table 5*). This indicates that the water samples measured are from a healthy environment for aquatic organisms to live and strive.

Turbidity - The turbidity level of the water sample readings were 77.5, 48.6 and 19.2 NTU. Based on the results, WQ1 (77.5 NTU) and WQ2 (48.6 NTU) were above the acceptable limit of 50 NTU by EPA Guyana (*Table 5*). The sample point areas WQ1 (Outside Discharge) and WQ2 (Feed plant) indicates high level of poor water clarity in water discharged, which further will reduce sunlight penetration in the

area. Turbidity generally increases closer to the bank of a stream/ flowing canal or the source of erosion/ effluent run off.

Mohamed’s Farm reiterates its commitment to the maintenance of the environment and is committed to the continual improvement of its environmental system to ensure that the operations have minimal impact on the aquatic environment. Consequently, the company has plans to further treat the processing plant wastewater before discharge.

TABLE 6 SURFACE WATER QUALITY SAMPLE POINT LOCATIONS: WQ1, WQ2 AND WQ3 RESPECTIVELY.



4.1.3 Noise Condition

Noise pollution by definition is the regular exposure to elevated sound levels that can possibly lead to adverse effects in humans or other living organisms (Environmental Pollution Centers, 2017). As such, the intensity of the sound generated by various activities is of key concern to health. Prolonged exposure to sounds louder than 80dB is considered hazardous to hearing (EPA Guyana, 2017). Therefore, as human hearing is only receptive to certain sound levels, an A-weighting noise assessment would provide data on existing noise levels. This assessment establishes baseline conditions of the surrounding environment and determines to what extent if any, noise from the operations can affect the general environment and the health of staff and community.

Noise measurements were taken at various strategic locations within, and around Mohamed’s Farm. The existing sound environment in, and around Mohamed’s Farm is characterized as an Industrial zone because of operational activities. Noise level measurements were recorded at seven (7) sample locations

on October 5th 2019. The sample locations were selected at strategic points within the area in order to provide an indication of the baseline noise level. The locations where the samples were collected are visually identified on the map (*Figure 14*). *Table 11* outlines the data collected and analyzed in comparison with the Guyana National Bureau of Standards (GNBS) Guideline values for Noise in specific environment (*Table 7*).

TABLE 7 GNBS GUIDELINE VALUES FOR NOISE IN SPECIFIC ENVIRONMENT

Categories	Daytime Limits in dB	Night time Limits in dB	
	(06:00 – 18:00h)	(18:00 – 06:00)	
Residential	75	60	
Institutional	75	60	
Educational	75	60	
Industrial	100	80	
Commercial	80	65	
Construction	90	75	
Transportation	100	80	
Recreational	100	18:00 – 01:00hr	100
		01:00 – 08:00hr	70

Source: (GNBS, 2010)

Results and Discussion: As part of conducting the environmental baseline assessment, the following noise level data below was recorded, demonstrated and analyzed.

During the time of monitoring, the noise level readings recorded in the area ranged from 57.8 to 82.6 dB. Based on results obtained, the highest noise level recorded was at AQ3 (82.6 dB). Additionally, it was also observed that all the data recorded was within the Guyana National Bureau of Standards (GNBS) Guideline Values for Noise in Specific Environment daytime limit (06:00 – 18:00h) for Industrial zone (100 dB).

The recorded noise level results obtained clearly indicate a healthy conducive surrounding environment for the sustenance of life. The results also highlight that any noise activities generated from the poultry production operation at Mohamed's Farm has no noticeable impact on the surrounding environment of the community. This is in keeping with the maintenance of a healthy environment and staff welfare.

4.1.4 Air Quality

Air pollution is contamination of the indoor or outdoor environment by any chemical, physical or biological agent that modifies the natural characteristics of the atmosphere (WHO, 2012). This is becoming an increasingly significant problem to growth and development of cities and communities. The air pollutants of major public health concern include: particulate matter, carbon monoxide, ozone, nitrogen dioxide, sulphur dioxide and metals, such as lead (Hedges, 2004), (WHO, 2012). Therefore, air quality assessment was done to establish baseline conditions of the surrounding environment and to determine to what extent if any, emissions from the operations can affect the atmosphere.

Seven (7) air sample readings were recorded on October 5th 2019 within, and around the Mohamed's Farm Compound. The sample locations were selected at strategic points within the area in order to provide an indication of the baseline air quality. The locations where the samples were collected are visually identified on the map (*Figure 14*) on the following page as the AQ points. *Tables 14* outlines the data collected, were the sampled readings analyzed in comparison with the threshold limits for air quality parameters.

The measured parameters recorded are some of the key indicators generally used to determine air quality. These parameters of primary focus for this assessment are mainly that of Total Suspended Solids (TSS), Particulate Matter (PM_{2.5} and PM₁₀), Formaldehyde (HCHO) and Total Volatile Organic Compounds (TVOC). High occurrences and changes in these parameters will aid in providing a good indication assessment of possible air pollution that can affect the atmosphere and human health. As a consequence, the parameter measurements recorded were assessed in comparison with the USA National Ambient Air Quality Standards (NAAQS) (Table 8).

FIGURE 14. AIR QUALITY AND NOISE SAMPLE POINT LOCATIONS

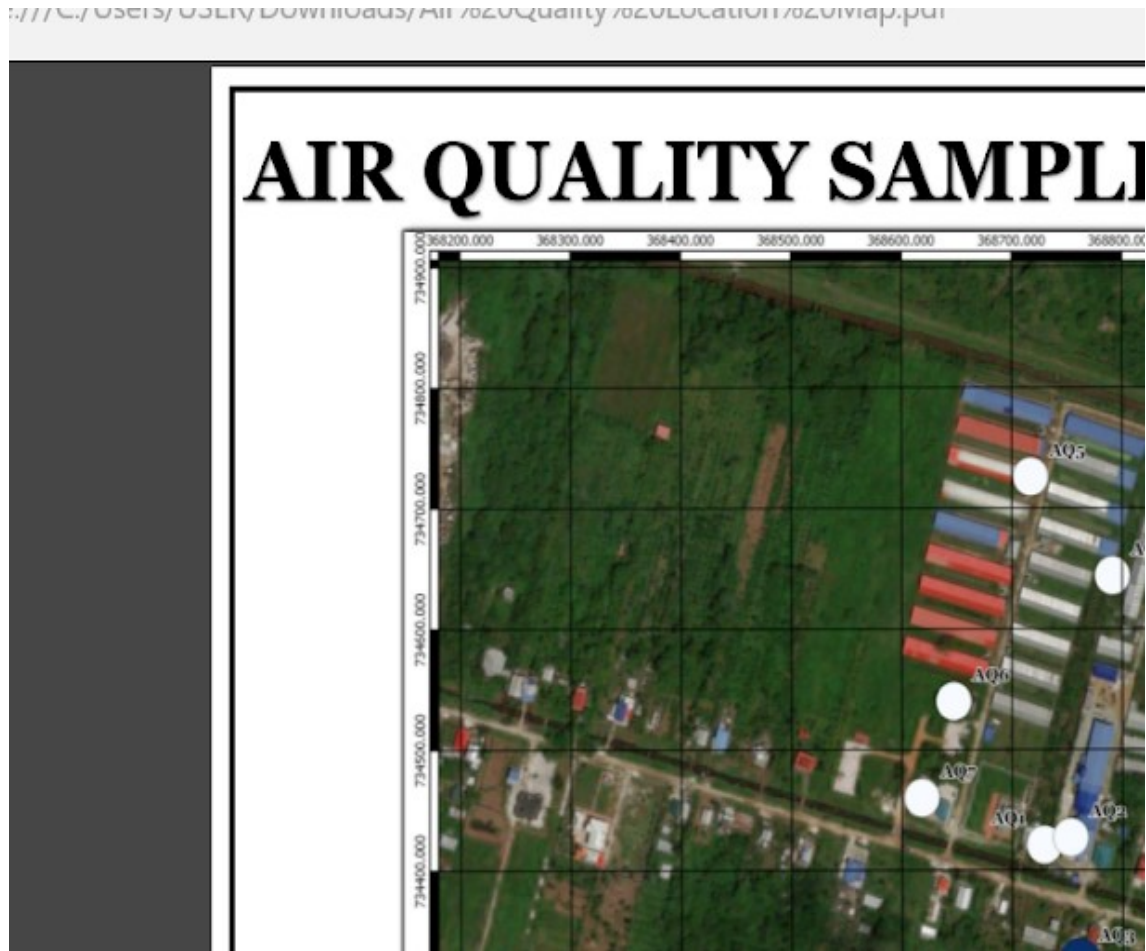


TABLE 8 NATIONAL AMBIENT AIR QUALITY STANDARDS.

Parameter	Type	Averaging Time	Level	Form
PM _{2.5}	Primary	Annual	12.0 µg/m ³	Annual arithmetic mean, averaged over 3 years.
	Secondary	Annual	15.0 µg/m ³	Annual arithmetic mean, averaged over 3 years.
	Primary and Secondary	24-hour	35 µg/m ³	98 th percentile, averaged over 3 years.
PM ₁₀	Primary and	24-hour	150	Not to be exceeded more than once

	Secondary		$\mu\text{g}/\text{m}^3$	per year on average over a 3-year period.
Total Suspended Particles (TSP)	Primary	24-hour	260 $\mu\text{g}/\text{m}^3$	Not to be exceeded more than once per year.
		Annual	75 $\mu\text{g}/\text{m}^3$	Annual geometric mean.
	Secondary	24-hour	150 $\mu\text{g}/\text{m}^3$	Not to be exceeded more than once per year.
		Annual	60 $\mu\text{g}/\text{m}^3$	Annual geometric mean.

Source: (USEPA, 2016)(USA EPA, 2016)

TABLE 9 INDOOR AIR QUALITY GUIDELINES FOR TVOC AND HCHO.

Parameter	Guideline		Notes
TVOC	0.3 mg/m^3	300 $\mu\text{g}/\text{m}^3$	Low Level of Concern
	0.5 mg/m^3	500 $\mu\text{g}/\text{m}^3$	Acceptable Level
HCHO	0.1 mg/m^3	100 $\mu\text{g}/\text{m}^3$	Short-term (30 min)

Source:(EAS Inc, 2015)(WHO, 2010)

Results and Discussion: As part of conducting the environmental baseline assessment, the following air quality parameter data below was recorded (Table 14)

TABLE 10 AIR QUALITY AND NOISE SAMPLING RESULTS.

Table 14: Air Quality Sampling

Sample ID	Air Quality						
	Coordinates		Start Time	Data RAM			PM ₁₀
	21N	UTM		TWA	Max. Con	Avg. Con	
AQ1	0368729	0734421	10:30	0.0	0.043	0.000	6.5
AQ2	0368753	0734487	10:38	0.0	0.043	0.000	7.1

FIGURE 15 AIR QUALITY PARAMETER SAMPLES POINTS.



Particulate Matter: The Total Suspended Particulates (TSP) sample readings recorded, varied among the sample points and ranged from 0.0 $\mu\text{g}/\text{m}^3$ to 152 $\mu\text{g}/\text{m}^3$ Time Weighted Average (TWA) and 0.0 $\mu\text{g}/\text{m}^3$ to 7.3 $\mu\text{g}/\text{m}^3$ Average Concentration (Avg. Conc.), during the monitoring period.

The recorded air quality measurements obtained clearly indicates a healthy conducive surrounding atmosphere for the sustenance of life. The results obtained also clearly highlights that Mohamed's Farm poultry production operation has no noticeable impact on the surrounding environment of the community. This is in keeping with the maintenance of a healthy environment and staff welfare.

4.2 Biological Environment

Guyana's floral diversity is estimated to include over 8,000 species (inclusive of Ferns, Mosses etc.) with approximately 6,500 of those species identified, and 50% endemic. There are approximately 1,815 known species of fishes, amphibians, birds, reptiles and mammals. Fishes are very diverse, with 352 species of freshwater bony fishes and 501 species of marine fishes (EPA Guyana, 2010)(CBD, 2018)

The Garden of Eden biological environment has been influenced and modified due to development activities for housing, agriculture, road infrastructure, production, service utility supply to name a few. These development activities have thus resulted in a reduction of the flora diversity of the area. Additionally, the Fauna in the area consist of animals which are domesticated and have adapted to a built-up environment of human settlement

4.2 Socio-Economic Environment

Garden of Eden, East Bank Demerara is a residential community located in Region four (4) Demerara Mahaica. The village is 21.6 km south of the capital city, Georgetown and falls under the jurisdiction of the RDC Triumph Village, Region 4. The name Garden of Eden is a biblical name meaning "earthly paradise created by god". The East Bank of Demerara village is the proud home to the:

- Mohamed's Farm (Royal Chicken Farm Estate), since
- Power Producers and Distributors Inc (GPL), proud producers of lighting and electricity needs to all Guyanese.
- Guyana Defence Force Agriculture Corps, Garden of Eden.

The village of Garden of Eden has a total population of approximately 700 inhabitants of which the gender distribution follows with 49% are males and 51% females.

5 Potential Environmental Impacts

The following chapter outlines the potential environmental impacts that maybe associated with the operation Mohamed's Farm Poultry Production. This section also identifies any mitigation measures that may be implemented to better manage the effects imposed on the environment by this development.

5.1 Operation Phase

The operation phase of the Mohamed's Farm development process aims to undertake the activities associated with the operation of the Processing Plant. Therefore, it is the goal of the Mohamed's Farm that all operational activities are well managed, to ensure that the surrounding environmental integrity is protected and maintained, and complies with the Environmental Protection Act 1996. Additionally, Mohamed's Farm will also ensure that regular inspections and reporting on Environmental, OS&H and Quality Control is done. The potential environmental impacts and mitigation measures to be implemented by Mohamed's Farm for the duration of the operation phase of is outlined in *Table 11* below:

TABLE 11 OPERATION PHASE IMPACT & MITIGATION MEASURES.

Aspect	Environmental Impacts	Mitigation Measures
Operation Phase		
Air Quality	Dust emissions	• Shut down idle vehicles and equipment when appropriate
		• All Vehicles and equipment must be regularly checked and maintained.
		• Establish appropriate speed limit within compound
		• Have in place and use an efficient work schedule for feed mill operation.
		• Feedstock, manure, and litter must be stored in an enclosed area.
		• Ensure, to securely cover loads such as feedstock, manure & litter when transporting.
		• Proper housekeeping to manage build-up of dust. Keep place tidy.
		• Ensure that all staff are provided with, and wear dust mask when handling feed stock or litter.
	VOC and GHG emissions	• Develop a management plan to organise the sustainable delivery of goods, materials and

		products to and from the plant.
		<ul style="list-style-type: none"> • Vehicles should be retrofitted with emission control equipment (such as exhaust mufflers)
		<ul style="list-style-type: none"> • Ensure regular checks and maintenance of vehicles, freezer, and machines/equipment.
		<ul style="list-style-type: none"> • Turn-off all the machinery and equipment when not in use.
		<ul style="list-style-type: none"> • Have in place and use an efficient machinery and work schedule.
	Odour Nuisance	<ul style="list-style-type: none"> • Proper housekeeping and hygiene practices should be applied on a daily basis
		<ul style="list-style-type: none"> • Manure and bedding material should be removed from site on a regular basis.
		<ul style="list-style-type: none"> • Proper ventilation system in the plant
		<ul style="list-style-type: none"> • Keep dust levels low as odour are absorbed and carried by dust particles
		<ul style="list-style-type: none"> • Chicken waste must be maintained at optimal moisture content and temperature to control odours.
		<ul style="list-style-type: none"> • No processing of waste should occur at the plant.
		<ul style="list-style-type: none"> • Dead chickens should be collected and disposed of regularly.
		<ul style="list-style-type: none"> • Chicken pens must be well ventilated to avoid odours.
Noise& Vibrations	Noise levels	<ul style="list-style-type: none"> • Ensure the plant and machinery onsite is in proper working condition.
		<ul style="list-style-type: none"> • Ensure all equipment and vehicles are maintained regularly.
		<ul style="list-style-type: none"> • Restrict noise activities to daylight hours
		<ul style="list-style-type: none"> • Provision of PPE for hearing protection to staff.
		<ul style="list-style-type: none"> • Use of modernised low noise machinery and vehicles
		<ul style="list-style-type: none"> • Shut down idle vehicles and equipment when not in use.
	Vibrations	<ul style="list-style-type: none"> • Machinery must be installed on cast concrete floor foundation to absorb any vibrations.
		<ul style="list-style-type: none"> • Place cushions on operator's and driver's seats.
		<ul style="list-style-type: none"> • Use suspension seats where possible
		<ul style="list-style-type: none"> • Cover hand tools with insulation rubber/ tool wraps
		<ul style="list-style-type: none"> • Maintain operating machinery, equipment and tools on a regular basis.
Water Quality	Water Pollution	<ul style="list-style-type: none"> • Regular maintenance of centrifuge.

		<ul style="list-style-type: none"> • Installation of Grease Interceptor to further treat waste water.
		<ul style="list-style-type: none"> • Spills should be cleaned up promptly and disposed correctly by the authority.
		<ul style="list-style-type: none"> • Surface water quality should be routinely sampled and analysed for potential pollutants.
		<ul style="list-style-type: none"> • During general cleaning use environmentally friendly disinfectants.
		<ul style="list-style-type: none"> • Feed stock, manure, litter and other processing materials stored away from enter waterways.
		<ul style="list-style-type: none"> • Designated area for vehicles maintenance should be maintained.
		<ul style="list-style-type: none"> • Vehicles and equipment/machinery should be properly maintained to prevent contamination of water due to spills/leaks.
Aesthetic	Waste Generation	<ul style="list-style-type: none"> • Chicken Manure and bedding material should be removed from pens on a regular basis.
		<ul style="list-style-type: none"> • Chicken Manure should be stored in enclosed area.
		<ul style="list-style-type: none"> • Rejected chicken parts should be collected and appropriately removed.
		<ul style="list-style-type: none"> • Spills should be cleaned up promptly and disposed correctly by the authority.
		<ul style="list-style-type: none"> • Mortalities should be stored in bio-hazard bins at a suitable holding facility until removed from site.
		<ul style="list-style-type: none"> • All personnel handling general and hazardous waste must be issued with appropriate PPE.
		<ul style="list-style-type: none"> • The compound and plant must be maintained in a neat and tidy condition.
		<ul style="list-style-type: none"> • All fuels must be stored safely and well labelled.
		<ul style="list-style-type: none"> • Waste drums should be placed at strategic locations (away from drains) for disposal use.
		<ul style="list-style-type: none"> • All drums should be covered and cleared on a regular basis.
		<ul style="list-style-type: none"> • Waste oil and other hazardous waste must be stored in a designated impermeable container and disposed of appropriately.
		<ul style="list-style-type: none"> • No littering by staff to be allowed within the plant or compound.
OS&H	Safety &Health	<ul style="list-style-type: none"> • Workers must be adequately trained to follow all safety procedures.
		<ul style="list-style-type: none"> • Workers should be provided with appropriate

		PPE protective clothing and footwear at all times.
		<ul style="list-style-type: none"> • Sanitary facilities and changing rooms provided for staff must be regularly cleaned and maintained.
		<ul style="list-style-type: none"> • Maintenance of appropriate Health and Safety signage
		<ul style="list-style-type: none"> • Safe drinking water should be provided for consumption by personnel.
		<ul style="list-style-type: none"> • Wash and disinfect all equipment.
		<ul style="list-style-type: none"> • Proper housekeeping and sanitation measures should be up kept on a regular basis.
		<ul style="list-style-type: none"> • Mortalities must be collected and removed on a regular basis.
		<ul style="list-style-type: none"> • Maintain a safe workplace, plant and work systems
		<ul style="list-style-type: none"> • Provision of first aid kits for staff and spill equipment.
		<ul style="list-style-type: none"> • No Person must enter the site unless authorised to do so by security.
		<ul style="list-style-type: none"> • Chemicals must be stored in a designated enclosed area
		<ul style="list-style-type: none"> • Sanitise bird housing and storage areas on a regular basis
		<ul style="list-style-type: none"> • Chickens must be healthy and vaccinated. (Proper animal care)
		<ul style="list-style-type: none"> • Transport Vehicles must be disinfected regularly.
		<ul style="list-style-type: none"> • Maintenance and checks for rodent bait and fly traps. Pest control management measures
		<ul style="list-style-type: none"> • Regular quality control checks to prevent contamination.
		<ul style="list-style-type: none"> • Emergency Preparedness plan in place
		<ul style="list-style-type: none"> • Have regular monitoring and auditing checks by health inspector and Vet.
Biological	Biodiversity	<ul style="list-style-type: none"> • Pollution prevention measures to ensure protection of the water environment.
		<ul style="list-style-type: none"> • Pollution prevention measures to ensure protection of the soil environment.

5.2 Decommissioning Phase

In the event of a decommissioning phase in the Mohamed's Farm operation, the Company will aim to undertake the activities associated with the decommissioning of the Processing Plant in a safe manner. Therefore, it is the goal of the Mohamed's Farm that all decommissioning activities are well managed to ensure that the surrounding environmental integrity is protected and maintained and complies with the Environmental Protection Act 1996. The potential environmental impacts and mitigation measures to be implemented by Mohamed's Farm for the duration of the decommissioning phase of project is outlined in *Table 12* below:

TABLE 12 DECOMMISSIONING PHASE IMPACTS AND MITIGATION MEASURES.

Parameters	Environmental Impacts	Mitigation Measures
Decommissioning Phase		
Rehabilitation	Environmental Degradation	<ul style="list-style-type: none"> Area must be rehabilitated as soon as possible.
		<ul style="list-style-type: none"> Removal of infrastructure, equipment and waste materials
		<ul style="list-style-type: none"> Vegetation establishment
		<ul style="list-style-type: none"> Erosion prevention
		<ul style="list-style-type: none"> End land use requirement
Air Quality	GHG & VOC	<ul style="list-style-type: none"> Ensure regular checks and maintenance of vehicles and machinery
		<ul style="list-style-type: none"> Turn off equipment when not in use.
		<ul style="list-style-type: none"> Have in place and use an efficient machinery and work schedule.
		<ul style="list-style-type: none"> Develop a management plan to organise the efficient removal of materials and debris.
		<ul style="list-style-type: none"> Vehicles should be retrofitted with emission control equipment (such as exhaust mufflers)
	Dust	<ul style="list-style-type: none"> Spray water during demolition to control dust
		<ul style="list-style-type: none"> Transport and handling of material must be avoided under high wind conditions.
		<ul style="list-style-type: none"> All loads must be securely covered when being transported.
		<ul style="list-style-type: none"> Limit the height of stockpiles that face exposure to winds.
		<ul style="list-style-type: none"> Exposed stockpiles should be protected against strong winds.
		<ul style="list-style-type: none"> Shut down idle vehicles and equipment when appropriate.
		<ul style="list-style-type: none"> All vehicles and equipment should be regularly checked and maintained.
		<ul style="list-style-type: none"> Establish appropriate speed limit with the compound.

Aesthetics	Visual	<ul style="list-style-type: none"> • Ensure, to remove and clear waste from site and demolish facilities to Haags Bosch landfill
		<ul style="list-style-type: none"> • Confine clearing and construction work only to the area for demolition.
		<ul style="list-style-type: none"> • Ensure that the site and general surroundings are kept in a tidy and neat manner.
		<ul style="list-style-type: none"> • Stipulate period for demolition and through careful planning and implementation stick to scheduled timelines to complete demolition in a timely fashion.
Socio-economic	Loss of employment	<ul style="list-style-type: none"> • Ensure that all social security payments are made during the project for workers
	Project closure	<ul style="list-style-type: none"> • Severance package for employees
		<ul style="list-style-type: none"> • See how best to absorb some of the workers in other production areas of the company
	Loss of Revenue	<ul style="list-style-type: none"> • Research & Development to Invest in other ventures

5.3 Compliance

In the Co-operate Republic of Guyana, sources of air emissions must comply with the EPA Act 1996 cap 20:05 and accompanying Environmental Regulations and GNBS emission standards. The Mohamed's Farm will ensure compliance with all the relevant Acts, Regulations, policy and standards. The Company will also comply with all the specific conditions outlined in the Environmental Permit to be issued Mohamed's Farm will adhere to the Mitigation measures outlined in the EMP for the processing project. The Company's environmental policy reiterates and outlines Mohamed's Farm Commitment to Environmental Compliance and will take all necessary precautions to ensure minimum impacts to the environment and human health, ensuring environmental integrity and workers wellbeing.

6 Monitoring Plan

This chapter outlines the Environmental parameters that will be monitored during the project implementation. The plan also takes into consideration the documentation of information and the roles and responsibilities of key organisations/institutions/ personnel during the operation of the Mohamed's Farm processing plant.

6.1 Responsibility

The Mohamed's Farm will appoint a designated personnel (*Table 13*) who will have direct oversight and responsibility to implement the EMP mitigation measures and monitoring programme for the operation plant. The designated personnel will coordinate with the plant operation management staff to ensure environmental integrity and workers health and safety. The designated personnel will also work in coordination with the EPA, and externally contacted environmental services to ensure compliance with the details of the EMP and the laws of Guyana.

TABLE 13 APPOINTED ENVIRONMENTAL LIAISON.

Name	Designation	Office Contact No.
Mr. Rasheed Baksh	General Manager	(592) 6432110

6.2 Training

The Mohamed's Farm will implement Environmental, and OS&H Awareness Training for staff to ensure adequate understanding of the Environmental and OS&H matters. The training will entail:

- OS&H and environmental risks associated with the work.
- General operation of the plant;
- Environmental management and mitigation measures in place;
- Specific job roles and procedures;
- Contingency plans and emergency procedures.
- Food safety, defence & fraud.

Training will also include:

- Induction training on appointment;
- Specialist training (as required for specific job role); and
- Refresher training as required.

In addition to the regular internal programmes for staff, the Mohamed's Farm also allows selected staff to undergo external training with agencies such as the Guyana Red Cross Society, the Pesticide Control Board and Food Safety Preventative Control Alliance.

6.3 Monitoring Programme

This Monitoring Programme below (*Table 14*) outlines the environmental parameters to be monitored during the operation of the Mohamed's Farm.

TABLE 14 MONITORING PROGRAMME.

Parameters	Responsibility	Frequency	Location of monitoring
Air Quality <ul style="list-style-type: none"> • Particulate Matter (PM) • Total Suspended Particulate (TSP) • Total Volatile Organic Carbon (TVOC) • Formaldehyde (HCHO) 	Mohamed's Farm/ EES	Quarterly/ Biannually	1. Boundaries of the compound 2. Within the Project area
Noise Levels <ul style="list-style-type: none"> • Decibels (dB) 	Mohamed's Farm/ EES	Quarterly/ Biannually	1. Boundaries of the compound 2. Within the Project area
Surface Water Quality <ul style="list-style-type: none"> • pH • Temperature • Biological Oxygen Demand (BOD) • Chemical Oxygen Demand (COD) • Total Suspended Solid (TSS) • Oil & Grease • Conductivity • Turbidity • Total Nitrogen • Nitrate • Phosphate 	Mohamed's Farm/ EES	Quarterly/ Biannually/ Monthly	Drains Within the Compound
Aesthetics	Mohamed's Farm	Daily/ Weekly	1. Waste Disposal Containers

<ul style="list-style-type: none"> • Visual • Waste Management 			2. General area in compound
OS&H <ul style="list-style-type: none"> • Site Inspection • Health Inspection 	Mohamed's Farm	Daily/ Weekly	Project area and compound
Documentation <ul style="list-style-type: none"> • Auditing 	Mohamed's Farm/ EES	Annually	Data Filing and Records

6.3 Documentation of Information

Mohamed's Farm will establish and maintain relevant documentation/ report of records that are necessary to facilitate an effective and efficient operation. The reports established will comprise:

- Incident Report
- Complaint Report
- Equipment Fault & Maintenance Report
- OS&H and Environmental Inspection Report
- Monitoring Sampling Report

These reports will be used to maintain and determine the effectiveness of environmental measures and procedures implemented by the monitoring/ inspecting and reporting of key aspects to minimise environmental and OS&H effects.

6.3.1 Report Management

6.3.1.1 Incident/ Accident Reports

An incident report is a report where all the details of specific incident is recorded. This report is submitted to the Quality Control Department for further actions and investigations on the specific incident. The report will also define steps for solutions and improvement.

Mohamed's Farm will make all efforts to safeguard the health and safety of workers with the provision of personnel protective gears, and employee training in environmental and OS&H awareness. Hence, to maintain a safe and healthy work environment at the operation, a thorough accident investigation will be undertaken, immediately after an incident or accident in order to ascertain the cause, and the risk, and to recommend and implement corrective actions and/ preventative measures.

The persons discovering an incident/accident or fault must report the matter to the Supervisor and/ Quality Control Officer immediately. The relevant officer will gather and record the details about the matter/ occurrence. This report will be submitted to the Quality Control Manager for review and the necessary corrective action implemented.

6.3.1.2 Complaint Reports

A complaint is an expression of dissatisfaction; however it is made, about the standard of service, lack of action, or a matter of concern affecting an individual or group. The approach Mohamed's Farm will take to address complaints from groups or individuals, which can comprise staff/ communities/ customers/ or other stakeholders, is to be objective and conduct relevant investigations to address the matter of concern documented/ recorded.

Any complaint made against the service/ actions of Mohamed's Farm will be comprehensively documented by the Supervisor on the ground and reported to the Quality Control Officer within 8 hours. All complaints received must then be acknowledged within five (5) working days. An investigation of the complaint is to be undertaken by the appropriate officers to analyse and recommend actions to resolve the complaint. The appropriate department will then be required to take the necessary actions recommended.

A response must be provided to the complainant within 30 working days on the outcome of their complaint and the action taken. If the complaint is still pending after 30 working days, feedback must be provided to the complainant at 15-day intervals until resolved. If the complaint cannot be resolved internally it must be referred to an external agency.

6.3.1.3 Maintenance

Maintenance is critical for Mohamed's Farm to be able to compete successfully in the poultry industry, both at the national and international levels. To be successful, the Company's production systems and equipment performance must be efficient to enhance the operating effectiveness, increase production quality, and maintain customer satisfaction, while reducing overhead costs. For this to be effective, regular schedule maintenance will need to be aligned with the production logistic operation.

The principal responsibility of maintenance is to keep assets and equipment in good, safe, configured working condition to perform their intended functions; ensure the health and safety of workers; perform

all maintenance activities in an efficient and effective manner; conserve and control the use of spare parts and material; operate utilities and conserve energy.

The regular scheduled or emergency maintenance at the plant will be performed by the maintenance technicians. Maintenance and fault reports will be submitted to the Maintenance Manager/ Superintendent for review. After maintenance, the conformation of the effectiveness shall be verified by the Department Manager, Supervisor, Maintenance Foreman and the Quality Control Officer at an agreed time.

6.3.1.4 Monitoring

Environmental monitoring is an important feature of Mohamed's Farm environmental programme. Monitoring is key to knowing whether the quality of our environment is maintained within the set parameter threshold or has worsen and needs to be addressed. Environmental Monitoring will provide the basis for making informed decisions about the quality of the environment; measure and evaluate the Company's environmental performance, analyse root cause of problems, assess compliance with legal requirements and ensure the health, well-being of workers/ visitors in the facility.

The Environmental Engineering Solutions (EES) in collaboration with the Quality Control Officer will conduct regular scheduled monitoring within, and around Mohamed's Farm operation at Garden Of Eden, E.B.D. Data measured and recorded will be analysed and evaluated by EES and a report will be submitted to the Quality Control Department Manager for review and the implementation of appropriate recommendations. After the implementation of the appropriate corrective/ preventative measure, confirmation of their effectiveness shall be verified by the Department Manager, Supervisor and the Quality Control Officer at an agreed time.

6.3.1.5 Inspections (Audits)

Effective safety and health inspections would be one of the most important incident prevention tools in the Mohamed's Farm safety and health programme. The main purpose of the audit is to reveal potential dangers, confirm smooth working operation and ensure compliance of the Company's environmental, occupational safety and health:

- Guidelines,
- Measures implemented,
- Policies,

- Monitoring,
- Effective documentation/record keeping,
- Dissemination/ posting of material safety data sheets, instructions, and emergency procedures.
- Appropriate signage and notifications

The environmental/ OS&H inspection will be conducted by the Quality Control Officer based on scheduled inspections times. Upon the completion of the scheduled environmental, occupational safety and health inspections, non-conformity issues discovered will be recorded and submitted to the Manager of the Quality Control Department. The non-conformities represent potential breaches or a need for improvement. The root cause of the non-conformity will be investigated by the Quality Control Officers and the recommended appropriate corrective and/ preventative measure adopted for mitigation by the relevant department manager/ supervisor. After the implementation of the appropriate corrective/ preventative measure, confirmation of their effectiveness shall be verified by the Department Manager, Supervisor and the Quality Control Officer at an agreed time.

6.3.2 Annual reporting

The Mohamed's Farm Quality Control Department in conjunction with the Environmental Engineering Solutions (EES) will prepare an Environmental Annual report, which will provide a record of all the complaints, incidents, enhancements and inspections documented on a monthly basis within the accounting year for the plant operation. This annual data will be made available to the relevant external governing bodies such as the Environmental Protection Agency upon request on compliance related matters or during the renewal process for an environmental permit.

6.4 Monitoring and Mitigation Cost

The estimated costs budget for the implementation of the monitoring plan and mitigation measures are outlined in *Table 15* below.

TABLE 15 MONITORING AND MITIGATION COST.

Activity	Estimate Cost (Guy\$) per year
<i>Training</i>	
Environmental & OS&H	Internal Expenditure
<i>Monitoring & Inspection</i>	

Air Quality	\$250,000
Noise Levels	\$65,000
Water Quality	\$340,000
Aesthetics, OS&H	Internal Expenditure
Documentation	Internal Expenditure
Mitigation Measures	Internal Expenditure

7 Environmental Preparedness and Response Plan

The chapter outlines the Emergency Preparedness and Response Plan (EPRP) for the Mohamed's Farm plant operation as follows:

7.1 Overview

According to the UNEP's Governing Council, an environmental emergency is defined as, "sudden-onset disasters or accidents resulting from natural, technological or human-induced factors, or a combination of these, which causes or threatens to cause severe environmental damage as well as loss of human lives and property" (UNEP, 2002). In addition, an emergency is defined as a serious, unexpected, and potentially dangerous situation requiring immediate action (Concise Oxford English Dictionary 11th Edition). Therefore, in light of the operation activities that will be undertaken by the Mohamed's Farm plant operations, possible emergencies can arise. The Mohamed's Farm has taken a precautionary approach to establish an Emergency Preparedness and Response Plan in the event of the occurrence of an emergency. The developed plan is intended to provide an overview of the Company's emergency procedures and contact details in the event of an emergency.

7.1 Purpose of the EPRP

The purpose of this Emergency Preparedness and Response Plan is to provide clear planned procedures, coordinated strategy and information that will enable Mohamed's Farm to prepare for and effectively respond to emergency situations. The primary objective of this plan is to help prepare for, and plan for potential impacts that could result from the operation, and maintenance of the plant. The overall goals of the plan will be by all means necessary to:

- Ensure the preservation of life
- Identify and assess potential hazards and emergencies,
- Prevent potential adverse impacts to human health, safety, property, and the environment,
- Prevent the occurrence of incidents and accidents,
- Assure preparedness in the event of an emergency,
- Provide an early organised response to emergencies,
- Ensure effective communication of emergency procedures,
- Restore essential operations as soon as possible, and

- Ensure product quality control.

7.2 Responsibility

The protection of the environment, product quality control, the health and safety of all employees, and the public are integral aspects of the Mohamed's Farm operation activities. As such the Mohamed's Farm Crisis Management Committee is responsible for the emergency planning and the effective management and response to any emergency situation related to the operation, and maintenance of the processing plant. The Company is thus highly committed to the process to ensure timely and appropriate responses, as Mohamed's Farm values highly the contribution of their staff to safeguard their health and well-being.

7.3 Identification of an Emergency

Mohamed's Farm is very highly committed to quality control, so much so that it has implemented a Hazard Analysis and Critical Control Points (HACCP) plan for possible food contamination hazards such as microbial, allergens, chemical, physical and GMO material covering the poultry processing operation process.

The operation and general maintenance of the company can possibly poses a number of potential hazards to both the operation and life of personnel. As such the most effective response to any given situation is to have awareness of the hazards, its potential effects and consequences. Additionally, one must have a good understanding of the resources and actions necessary to respond. Therefore, the possible types of Emergencies that can possibly arise and be encountered at the Mohamed's Farm, Plant are:

- Medical emergencies such as injuries and heart attack,
- Hazardous Material spills (release) from chemicals and fuels.
- Natural events such as flooding
- Security such as crime and threats to personnel and plant.
- Fires such as electrical and fuel
- Product Contamination such as broken glass

7.4 Emergency procedures

Emergency response procedures manage events that are not anticipated, almost totally unlikely to occur or reasonably anticipated. It is therefore imperative to plan for worst case scenarios or adopt general procedures. It is also important to recognize that although highly unlikely, an emergency can have serious impacts well beyond the individual or the operation involved. Therefore, every precautionary measure will be taken and put in place to ensure the life and safety of all staff and visitors to the plant.

Hence, all staff has a role to play in the event of an emergency and are constantly made aware of emergency procedures. The roles may include rescue, sounding of the alarm, extinguishing of fires, first aid attendance, or simply staying out of the way of designated emergency response personnel. Possible emergencies include, but are not limited to the following:

- Fires/ explosions
- Accidents/ medical situations
- Oil/ Fuel/chemical Spills (Hazardous)
- Criminal activity/ violence (Security)
- Product contamination (Quality Control)

The reactions of workers in the event of an emergency depend on how well the workers are prepared for an emergency. Henceforth, Mohamed's Farm will ensure that all employees are familiar with, and know of the following:

- Layout of the Plant identifying all emergency exits,
- Location of alarm points,
- Location of fire extinguisher,
- Location of spill kits with instructions,
- A place of safe refuge in the event of an emergency.
- Excavation procedure,
- The internal and external emergency contact list.

7.4.1 Emergency events

Fires

In the event of a fire anywhere in the compound:

- Activate the building fire alarm system closest to you. Notify security, emergency contacts and the fire station.
- Place a towel over your nose and mouth, if smoke is present.
- Rescue/ remove individuals in immediate danger/ harm by assisting them from the area. If possible when leaving, close all doors behind you.
- If possible
 - Confine/ contain the fire/ smoke/ toxic combustion to the area where the fire started as much as possible. Close all doors and windows, cutting flow of oxygen to the fire and preventing smoke from spreading.
 - Extinguish fires; staff should only attempt to extinguish small, contained fires where their safety is assured, have an escape route behind them and other staff members are available to assist.
 - Turn off all equipment.
- Evacuate the building immediately via the nearest exist and move to the closest area furthest away from the event. Points to remember when evacuating are:
 - Do not delay on hearing the alarm- evacuate immediately.
 - Walk don't run
 - When evacuating, do not return for personal belongings
 - Keep calm and assist others to exist.
 - If on fire, stop drop and roll.
 - Before opening any door check knobs, if hot use alternate, exist. If the knob is cool, open slightly and if there is hot draft or smoke visible use alternate exist.
 - If you are not near your work area/ station when the alarm sounds, DO NOT RETURN to the work area/ station until further instructed.
- If unable to evacuate
 - Close any doors and seal all cracks to reduce fire and smoke spread.
 - Call security/ and contact from emergency list and inform where you are located. If possible, signal to emergency team by waving out any window or by any means possible.
 - Turn off and unplug all electrical equipment.
 - Move to the most protected area in the room for refuge.
 - Crouch low to the floor, if smoke enters the room/ area.

- Cover nose and mouth with towel.
- If on fire, stop drop and roll.
- Remain calm, do not panic and listen for any instructions given by rescuers.

Considerations:

1. Workers are to follow the directions of emergency personnel.
2. Emergency evacuation drills will be done periodically.
3. Unauthorised workers are not to tamper with the fire extinguishers or alarms.
4. Workers are asked to report any malfunction of fire equipment.
5. Audits should be performed routinely to ensure path to exists are lit, cleared and never blocked.

Medical Situation

In the event of a medical situation or accident:

- Assess the situation to the best of your ability.
- Call for the trained first aid attendant, providing as much information as possible.
- The first aid attendant provides the necessary first aid care.
- If seriously ill/ injured, alert the nearest hospital and transfer the patient to the hospital
 - Do not attempt to move seriously injured persons without instructions from the trained medical first aid attendants'/ hospital paramedics.

If Burnt

- Cool the burn in cold running water until pain is relieved.
 - Do not use ice, since this can freeze skin and cause more damage.
 - Do not pop the burn blisters
- Alert/ call the first aid attendant, providing as much information as possible.
- The first-aid attendant provides the necessary first aid care.
- If required, seek further medical attention.

If Chemical Exposure

- Immediately remove contaminated clothing.
- Flush the affected area (skin/ eyes) with running water for 15 minutes.
- Alert/ call the first-aid attendant, providing as much information as possible and the chemical involved.

- Alert the hospital and seek medical attention from the Doctor.

Glass/Brittle Plastics (Quality Control)

- No glass or brittle plastics are to be used in the Processing Plant, except where absolutely necessary.
- No glass should be brought into Processing Plant by the employees in their personal belongings.
- Employees must report eyeglass breakage and lost contacts lenses.
- A specific cupboard dedicated to the “broken glass” equipment is located in the Store Room. There is a brush, a pan, and a covered box to use for waste disposal. The cupboard is secured by a padlock (keys available in the office).
 - If glass or hard plastic breakage happens, the Supervisors and Quality Control Department Personnel must be informed immediately,
 - All production activity 10 feet around the breakage must stop,
 - Broken glass or hard plastic is thrown away in specific bin for broken glass,
 - The floor must be swept in order to remove the smallest shards,
 - All products in open bags and crates must be emptied and thrown away,
 - Ten (10) feet around the breakage must be swept; full product already sealed must be swept too,
 - The Quality Control Department Personnel and Supervisor verify that the area is correctly cleaned and then can authorize the work to resume,
 - The Quality Control Department Personnel records the incident in the “Broken glass form”,
 - Glass or brittle plastic breakage must be disposed in a trash bag and removed from the Processing Plant and the compound as soon as possible,
 - Potentially contaminated products must be disposed and inspected prior to release.
- List of Glass and Brittle Plastics is maintained by the Quality Control Department; and a monthly inspection is conducted to ensure that any accidental breakage is noted. All glass, brittle and hard plastic items on the list cover the entire Processing Plant where it could jeopardize the product.

Infectious Diseases (Quality Control)

If Employees of the Company, Visitors or External Service Providers have or are suspected to have the following symptoms:

- Upset stomach, vomiting
 - Diarrhoea
 - Skin rash or disease, sores, boils, infected wounds or are known to have a food-borne disease, they must immediately
-
- Inform the security guard who will report this immediately to the Processing Plant Manager.
 - The Processing Plant Manager will take the appropriate measures to protect the food line.
 - If at work or during the visit, they must not engage in food handling and
 - Should seek medical attention.

Spill

In the event of spillage, the following steps must be respected:

- In case of spillage, the staff must inform the Supervisor immediately,
- The Supervisor and/or the Quality Control Personnel isolate the spillage by the creation of a secured perimeter of 10 feet around the incident,
- A worker can be appointed to secure the perimeter and ensure that no activities continue and that nobody will walk within the perimeter (risk of spreading and contamination),
- The Supervisor identifies and removes the source of spillage with protective equipment,
- The Supervisor designates two (2) workers to keep the area safe,
- The Supervisor uplifts the spillage kit from the cupboard located in the Plant Store (keys are in the office),
- With the spillage kit, the two (2) workers designated commence the spillage cleaning operation under the control of the Supervisor. If products are affected, they must be discarded,
- At the end of the spillage cleaning operation, the Supervisor inspects the area to ensure that cross contamination has been avoided, and gives the authorization to resume activities in the area,
- Supervisors and or Quality Control Personnel must fill up an incident report.

Intrusion and Theft (Criminal Activity)

- The Security Guard must do the turn of security checks every two (2) hours to secure the site and to prevent unauthorized entry and theft.
- In case of an intrusion by unauthorized person,
 - The Security Guard must escort him to the entrance of the Processing Plant.
 - He must call the Processing Plant Manager or the Assistant Managing Director and report the incident. The Processing Plant Manager is in charge to authorize or non-authorize the entrance to the site.
- In case of termination of job of an Employee, the Processing Plant Manager will advise Security Guard to deny the entrance to the concerned staff.
- If the person is authorized, the control of non-employees' policies shall be applied, if not, the unauthorized person must leave the site as soon as possible. During his/her presence, the Security Guard or the Processing Plant Manager must remain with him/her.
- In accordance of the truck schedule, the loading and unloading of trucks are scheduled to prevent risk of intrusion and theft. The Security Guard or the Stores Manager must control the items.
- The cameras (CCTV) are in place to prevent intrusion and theft.
- Periodically, a perimeter of the site is randomly chosen to be monitored for suspicious activities. The Quality Control Officer shall do a report and an action plan if it is necessary to be applied by the relevant persons.
- Out of the period of activity, after the production, the Security Guards shall ensure that the high risk areas have by padlocks. The high risk areas are:
 - The gas and diesel tanks
 - The water station area and tanks
 - The finished products storage
 - The store
 - The generator area
 - The production areas
 - Refrigeration areas
- Unexpected changes in inventory (product or equipment) are reported to the appropriate personnel by Administrative Department or Supervisors.
- Any intrusion or theft must be reported and investigated by the Security Guard, the Assistant Managing Director and the Processing Plant Manager.

- If the situation by severity requires the support of the relevant authorities (Police, Coast Guard, Bombers), the Assistant Managing Director is required to call and to involve the relevant authorities.

Malicious Acts (Criminal Activities)

- Each Employee, Supervisors, Security Guards and Managers have the ability to report any suspicious activity and unauthorized person or vehicle.
- The measures of the company to prevent the malicious acts are:
 - Suspicious packages are reported to appropriate personnel (Security Guard, Supervisors or Managers).
 - The fuel bond is protected.
 - The restricted areas must be respected (security map).
 - Previously unattended materials are checked before use.
 - Access to ingredients and packaged product are restricted.
 - The products are examined for possible tampering and are controlled.
 - The chemical and hazardous materials are in restricted area and locked with padlock.
 - Generator area is protected.
 - The boiler area is secured.
 - The water pump and water reserve are secured.
 - CCTVs are available on the food line and the site.
 - Access to computer system is protected through passwords.
 - Employees have restrictions on what they can bring in or take from facility (no phones and no cameras).
 - Color codes for uniform employees are in place to detect inappropriate person.
 - The customer complaints are investigated
 - Abnormal inventory must be reported

7.5 Emergency Equipment

Mohamed's Farm will have in place several key equipment on site that will be utilise in the event of an emergency. The equipment are as follows:

- Fire extinguishers,

- Sand Buckets,
- Spill kits,
- First aid kits,
- Alarms, and
- Smoke Detectors.

First-Aid Kits

By definition First-Aid is the immediate and temporary care/help given to the victim of an accident or sudden illness until professional medical treatment and help can be obtained. First-aid response is important in an emergency because, quick first-aid response:

- Could mean the difference between life and death.
- Can reduce the severity of a particular injury obtained/or illness.

Due to carelessness and/or negligence on the part of employees around equipment, possible injuries can occur. As such, Mohamed's Farm have numerous well-stocked First-Aid Kits on site within the plant. The company will ensure that each kit is clearly labelled and easily identifiable. There should also be instruction guidelines on the utilisation of the kit's contents. Mohamed's Farm will be responsible for the establishment, maintenance, and to visibly post all information regarding adequate first-aid supplies, providers, equipment and location in the event of an onsite injury.

The Company will take all necessary precautions to designate first-aid attendants or Medics. The names and contact number of the trained first-aid attendants will be posted alongside the first-aid kits sufficient for the number of employees within the operation. The first-aid kits will be regularly inspected and replenished as need requires by Managers and Supervisors. Records will be kept by Managers and Supervisors on what has been used from the first-aid kit at each point location, by whom, and the reason for its use. This will be done in order to keep an inventory record of the first-aid supplies.

It is the responsibility of all managers, supervisors and staff to be familiar with the contents of the first-aid kits and have basic first-aid knowledge to assess an injured person and provide any immediate medical assistance; such as CPR (if qualified), maintain open airways if breathing is an issue, prevent heavy blood loss; while awaiting a trained first-aid attendant. Hence, in the event of an accident or emergency, staff must immediately alert and summon the first-aid attendant or Medic and provide as

much information as possible. The injured party must not be moved unless it is of necessity to protect their lives or to prevent further injury from occurring.

First-aid attendants or Medics will be qualified health care professionals trained in first-aid for:

- Respiratory arrest, cardiac arrest (CPR), haemorrhage, lacerations/abrasions,
- Amputations, musculoskeletal injuries, shock, eye injuries, burns,
- Loss of consciousness, extreme temperature exposure (hypothermia/hyperthermia),
- Paralysis, poisoning, loss of mental functioning, and drug overdose.
- Application of dressings and slings.
- Treatment of strains, sprains, fractures, bites, stings, contact with poisonous plants/animals/material.
- Immobilization, handling and transporting injured persons.

First-Aid Content

The acceptable quantity of first-aid kits/materials to number of workers will be determined by the Quality Control Department. The Quality Control Department will also be responsible through the first-aid attendants/supervisors to maintain the contents of each first-aid kit/materials. The first-aid kit and materials should be stored in a dust/water proof appropriate container. Each first-aid kit shall contain, but not limited to the following items in *Table 16*.

TABLE 16 CONTENTS OF THE FIRST-AID KIT.

Contents of the First-Aid Kit	
Gauze pads	Latex gloves
Large gauze pads (at least 8" x 10")	Resuscitation equipment such as resuscitation bag, airway, or protective facemask
Box adhesive bandages (Band-Aids)	Elastic wraps
Package gauze roller bandage at least 2" wide	Splint
Triangular bandages	Directions for requesting emergency assistance
Rubbing alcohol / alcohol wipes	Burn cream
Scissors	Snake bite kit
Tweezers	Ammonia inhalants
Adhesive tapes	Cold packs
Butterfly closures	Anti-diarrhoeal Medicine
Eye wash kit	Ibuprofen, Panadol (Pain tablets)
Hand mirror	Hand Sanitizer

Cotton balls	Antiseptic Cream
Limacol	Antibiotic Ointment

Additional first-aid materials needed but not limited to the following are:

- Two (2) clean acceptable Blankets
- Rigid stretcher

Spill Kits

A spill is an accidental release of hazardous substances such as fuel, oil, lubricants or chemicals in the environment and if not controlled can have adverse impacts on the environment and potential fire hazard. Therefore, Mohamed's Farm has recognised that spills - relating to fuel, oil, and other lubricants - may emanate from the operation. If this occurs, it can pose a great threat and cause adverse impacts to the environment. In this regard, the company will acquire spill kits to be used for remedial actions against any spills occurring onsite. Basically, a spill kit is a collection of items that are used to control, contain and clean up spills in the environment.

A well-stocked spill kit saves on much needed time to contain and clean up the environment in the event of a spill, because all the items needed to manage the spill are in one place and ready for use and can be transported right to the spill. The spill kit usually comprises absorbent material, neutralising material, PPE, and disposal bags. Clearly labelled kits will be strategically placed in the plant and the Maintenance Department where oil, fuel, or any other lubricants are utilised. Key personnel whose duties include constant contact with these materials (such as drivers etc.) and supervisors will be identified and trained in the contents of all spill kits and the procedure(s) to be followed in the event of a spill.

Fire Extinguishers and Sand Buckets

A fire extinguisher basically is a portable device which is used to control and quench manageable fires in the event of an emergency. Therefore, fire extinguisher is an important equipment to have in fire defence and preventing loss of life and property and shouldn't be overlooked or brushed aside. The reason being is that a small fire in a matter of minutes can spread and destroy an entire structure. However, while proper procedure and training can minimize the chances of an accidental fire occurring in the plant, one must still be prepared to deal with a fire in the event it occurs. Mohamed's Farm will ensure that the plant is equipped with functional fire extinguishers. These extinguishers will be located

at strategic points within the compound. These strategic points will be clearly marked and accessible to employees who will have knowledge of their position.

Fire extinguishers will be inspected on a monthly basis by the Managers of the site. Moreover, the extinguishers will undergo an official inspection by an officer of the Guyana Fire Service (GFS), on a biannual (six months) basis to ensure that they are functioning effectively and are in accordance with recommendations of the GFS with regards to the maintenance of fire extinguishers. Additionally, all employees of the Mohamed's Farm are required to undergo basic training in the utilisation of a fire extinguisher. It is of vital importance that staff have a general understanding of the proper way to use and handle a fire extinguisher, so as to prevent damage to property and safeguard life in the event of a fire.

Further, sand buckets will be located at strategic locations throughout the site. These will be used to supplement the extinguishing actions in the event of a fire, especially if a fire extinguisher is not immediately available at that point. It should be noted that personnel must never try to use the fire extinguisher on an out of control fire, as this action can endanger the personnel. Therefore, in the event a fire becomes out of control, Managers/ Supervisors must ensure that the trained professionals are called i.e. the fire station to prevent loss of life.

Fire Alarms

Alarms are key electronic devices that can be used as early audio warning systems to notify all workers in the plant that an evacuation is required, or warn that danger is present such as a fire emergency. These alarms will be activated manually in the event of an emergency. Therefore, Mohamed's Farm has installed a fire alarm system to be able to effectively alert all staff in the event of an emergency situation. Due to the importance of the alarm system it is key that the system is not triggered or pranked so that when there is need for initiation persons respond promptly. Therefore, designated staff will be authorised by Mohamed's Farm to sound the alarm in the event of an emergency. Also, in the event of a system test being conducted, the staff will be notified of the day and time of the test or drill exercise, to ensure they are in proper working order.

Smoke Detectors

Visible identification of smoke more than often signifies that a fire is nearby which can be dangerous to life and property. A smoke detector can be used as a good early audio warning signal that a fire is occurring, and prompt action can extinguish the fire before it spreads. Therefore, smoke detectors are key devices that can be used as a reliable way to detect and sound an alarm that smoke is present. In addition, the smoke detectors can also be used as a prevention tool to deter smoking within the plant and near flammable substances to reduce possible risk of fire ignition and combustion. In this respect, Mohamed's Farm has installed smoke detectors in key strategic locations and will ensure that all detectors are regularly maintained and kept in good working order.

7.5 Training and Drills Exercises

Mohamed's Farm will be required to do training in environmental matters, and OS&H and conduct drill exercises such as fires, spills, mock recovery, and medical emergency scenario situations. Such training and drill exercise scenarios are to educate staff and develop their understanding of the elements, and the actions necessary to respond to an emergency, so that no life is loss and no one left behind. Mock recovery drills especially will also be conducted annually to practice a recall scenario to safeguard customer's health.

The training and drill exercises to be undertaken will also be used by the Company to test and evaluate compliance and implementation of the Emergency Preparedness and Response Plan. Such training and exercises conducted will also aid in the improvement and update of the plan as needed. Mohamed's Farm will conduct staff orientation training for all new employees and will conduct regular training and drill exercises on a biannual basis. The training and drill exercises will include, but not be limited to:

- Emergency contact list,
- Emergency identification,
- Evacuations and assembly point,
- Emergency scenarios,
- Emergency equipment use,
- Waste management.

7.6 Emergency Contact Details

In the event of an emergency the personnel and institutions that should be contacted are listed in *Table 17* on the following page. The internal contact list will be posted on the plant at a strategic location to be seen by staff. Contacts on the list will be called as appropriate in the event of an emergency. The primary duties of the emergency contacts are to ensure the safety of the staff and visitors to the plant site during an emergency.

Each member of the Crisis Management Committee must be available in case of an emergency situation 24hr/7 days a week. Registered Yum! Emergency contacts are shaded in the background.

TABLE 17 INTERNAL EMERGENCY CONTACT.

Name	Designation	Office Contact No.
Mr. Rasheed Baksh	General Manager	(592) 6432110

The external emergency contact list (*Table 18*) will be posted in the main administrative offices and offices of the internal contact. This external emergency contact list consists of a list of emergency contact numbers for the relevant external agencies, in the event that an emergency has gone beyond the control of the internal company's emergency response actions; or requires further attention. The Managers will therefore be able to contact the following relevant key agencies and institutions:

TABLE 18 EXTERNAL EMERGENCY CONTACT.

Organisation	Telephone Number
Supply Health Centre	(592) 266- 5550
Diamond Hospital	(592) 265-4681-5
Fire Station (Diamond)	(592) 216-2161
Environmental Protection Agency	(592) 225-5467-69, 225-5471-72, 225-6044/48, 225-0506
Guyana Police Station	(592) 261-2222
Guyana Police Force A Division	(592) 225-6940

8 Review

The emergency preparedness and response plan established by the Mohamed's Farm will be reviewed on an annual basis to determine relevancy and effectiveness of training, drill exercises, response process and emergency equipment. Where it is deemed necessary, improvements and updates to the plan will be made and instituted. The plan will also be reviewed, in the event an emergency was to occur at the Mohamed's Farm to ensure a smooth process and effectiveness. Any amendments to the plan will be further communicated to all staff.

9 Closing Statement

The preceding chapters of this Environmental Management Plan described the plant operation processes for the poultry operation activities of Mohamed's Farm, and the potential negative environmental impacts of the operations. The document also identified a range of mitigation measures, the monitoring plan and an emergency preparedness response plan.

Consequently, this Environmental Management Plan document provides a clear understanding of the environmental and social impacts from the poultry operations. The Environmental aspects of this operation have been closely analysed to minimise adverse social, environmental, safety and health impacts. With careful management and monitoring, there should be minimal adverse impacts on workers' safety, health and well-being; and also the environment.

9.1 Recommendations

Based on the reporting and assessment it is recommended that Mohamed's Farm Poultry Production Operation install a Grease Interceptor as an additional wastewater treatment measure. The Grease Interceptor would facilitate further wastewater processing to compliment the functional Centrifuge which removes large solids from the wastewater.

The main goal in the installation of a Grease Interceptor is to further process wastewater before discharge in order to remove fat, oil, grease and other sediments from the wastewater. Therefore, in keeping with environmental commitments Mohamed's Farm will look for option to install a Grease Interceptor that best fits, and compliments the operations' wastewater generation capacity.

Grease Interceptor sizes range from 350 to 550 gals. liquid holding capacity. If interceptors are required to be of larger capacity.

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