

ESSENTIAL FOODS GROUP

ENVIRONMENTAL MANAGEMENT PLAN

RICE MILL AND AGRO PROCESSING FACILITY

UITKOMST, CANAL #1
WEST BANK DEMERARA



APRIL 2025

Essential Foods Group Inc.

Rice Mill and Agro-
processing Facility

Environmental Management Plan

April 2025

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List of Acronyms

ADI	Area of Direct Influence
AII	Area of Indirect Influence
AOI	Area of Influence
AQGs	Air Quality Guidelines
BOD	Biological Oxygen Demand
CHPA	Central Housing and Planning Authority
CO	Carbon Monoxide
COD	Chemical Oxygen demand
COPD	Chronic Obstructive Pulmonary Disease
DHB	Demerara Harbour Bridge
EFG	Essential Foods Group
EHS	Environmental Health and Safety
EMP	Environmental Management Plan
EPA	Environmental Protection Agency
ERP	Emergency Response Plan
GLSC	Guyana Lands and Survey Commission
GNBS	Guyana National Bureau of Standards
GoG	Government of Guyana
GPL	Guyana Power and Light
GRDB	Guyana Rice Development Board
GWI	Guyana Water Incorporated
HSE	Health Safety and Environment
LCDS	Low Carbon Development Strategy
MoPW	Ministry of Public Works
NDC	Neighbourhood Democratic Council
NDS	National Development of Strategy
NEAP	National Environmental Action Plan
NIOSH	National Institute of Occupational Safety and Health
NLUP	National Land Use Plan
NO _x	Nitrogen oxides
O ₃	Ozone
OCC	Office of Climate Change
PM	Particulate Matter
PPE	Personal Protective Equipment
PTCCB	Pesticides and Toxic Chemicals Control Board
RDC	Regional Democratic Council
SDGs	Sustainable Development Goals
SO ₂	Sulphur Dioxide

SOPs	Standard Operating Procedures
TDS	Total Dissolved Solids
TMP	Traffic Management Plan
TSS	Total Suspended Solids
UNFCCC	United Nations Framework Convention on Climate Change
USEPA	United States Environmental Protection Agency
VOCs	Volatile Organic Compounds
WHO	World Health Organization

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1. Introduction

“Food security exists, when all people, at all times, have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life” (Caricom 2010, adapted from World Food Summit, Plan of Action, Rome 1996). Food security continues to be a key priority for Caricom and its member states. The Regional Food and Nutrition Security Policy (2011-2025) aims to achieve four main overarching food and nutrition policy objectives, namely, food availability, food access, food utilisation/nutritional adequacy and stability of food supply (Caricom. 2010).

The Government of Guyana (GoG) has recognised the critical role of the agricultural sector to food security and has budgeted a total of GY \$104.6 billion to continue to aggressively invest in and support the agricultural sector in 2025 (Ministry of Finance, 2025). More specifically, GY \$430.9 million has been set aside to improve efficiency and productivity of the rice industry (Ministry of Finance, 2025). Agro-processing was also identified as important, with GY \$800 million being budgeted to support investments in value-chain development. The need for a stable and affordable supply of food within Caricom, has prompted Essential Foods Group Inc. (EFG) to embark on this project, which will rely on the use of advanced technology and expertise to create and market high value products, generated from one source crop, i.e. rice, Guyana’s chief crop.

Vision 25% by 2025 aims to tackle the Caricom Region’s food import bill, improve intra-regional trade and create wealth and economic opportunity for every Caricom member state. Critical to the achievement of this vision, is the involvement of a multi-faceted stakeholder group including the Regional Private Sector, Regional Organisations, Producer Groups, Development Partners, and Civil Society. EFG understands the critical role stakeholders play in achieving this objective and decided to invest in this project which has clear economic benefits, but more importantly involves producers and civil society who can benefit economically and socially.

Generally, this project provides many benefits, from the local level to the regional level. Through its successful implementation, the sustainable development goals (SDGs) of no poverty (goal 1), zero hunger (goal 2), good health and well-being (3), gender equality

(goal 5) and decent work and economic growth (goal 8) are being addressed. Table 1 identifies the actions taken by EFG to achieve 5 of the 17 SDGs.

Table 1: SDGs Implemented by EFG

Overarching SDG	Goals	Project's Action
Goal 1- No Poverty	End poverty in all its forms everywhere	The project provides sources of direct (employees of EFG) and indirect employment (e.g., contractors and suppliers)
Goal 2- Zero Hunger	End hunger, achieve food security and improved nutrition and promote sustainable agriculture	Rice farmers will be paid a higher price for their paddy, therefore encouraging them to sustain rice farming
Goal 3-Good Health and Well-being	Ensure healthy lives, and promote well-being for all, at all ages	The direct and indirect economic benefits will place farmers, employees, and suppliers in a more stable financial position, enabling them to provide an improved quality of life for themselves and families
Goal 5- Gender Equality	Promote gender equality, and empower all women and girls	Seeking to employ and train single mothers from the community, and addressing foreseen challenges with childcare through provision of a daycare facility
Goal 8-Decent Work and Economic Growth	Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all	A significant financial investment made; employment of more than 50 people during the construction and operational phases; addresses unemployment at the micro level (i.e. within the community)

1.1 Company Background

EFG is an agro-processing venture, incorporated in the Co-operative Republic of Guyana. The company has a strong leadership foundation, with extensive expertise and skill sets in strategic business leadership and marketing, financial management and fluid extraction among others (see figure 1 for EFG's organisational chart).

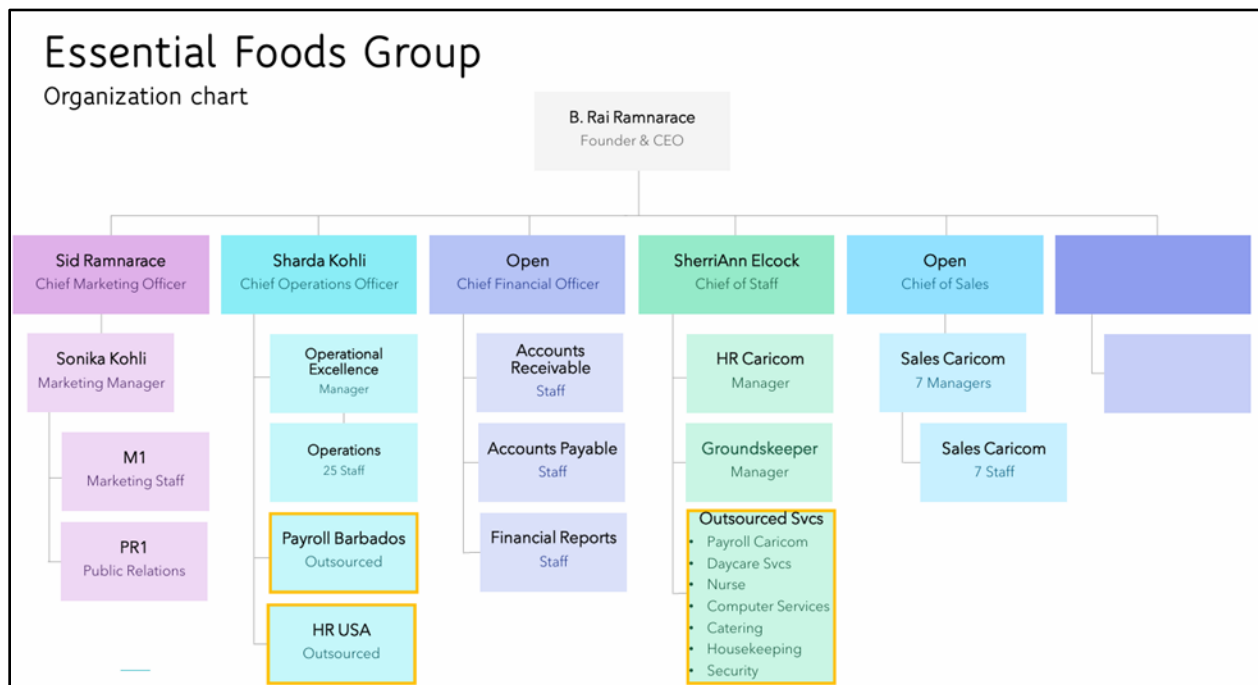


Figure 1: EFG's Organisational Chart

EFG's vision is to create a sustainable, innovative and community-focused rice agri-business model, that can serve as a blueprint for similar initiatives worldwide. However, more than the direct economics of this venture, is the push to ensure the social benefits are realised, and extend to the community, through fostering strong partnerships with regional farmers and encouraging a collaborative environment.

As it continues to be built on the pillars of sustainable development, EFG has made environmental stewardship a top priority. As such, the design, construction and operation of the facility will adhere to environmentally sound business practices that involve the use of energy efficient technologies, sustainable water management practices and reduction, reuse and recycling of waste as far as possible.

In keeping with its environmental stewardship objectives, EFG applied to the Environmental Protection Agency for Environmental Authorisation, to construct and operate its facility. An Environmental Permit, valid for 5 years, was granted on December 03, 2024, and the preparation of this Environmental Management Plan (EMP) is in response to condition 2.2 of the permit.

1.1.1 Environmental Health and Safety Policy

EFG Inc. is committed to establishing a state-of-the-art processing facility that incorporates rigorous environmental practices throughout its operational lifecycle. This commitment will be realised through the following measures:

- Utilising renewable energy sources and implementing energy-efficient technologies to reduce our carbon footprint
- Developing a comprehensive Waste Management Plan aimed at achieving zero agro-processing waste
- Conducting continuous environmental monitoring of air, noise, and water to ensure compliance with environmental standards
- Assessing Environmental Health and Safety Risks associated with our operations and implementing mitigation actions to reduce or eliminate these impacts
- Acquiring all necessary regulatory permits required for our operations
- Providing all employees with the appropriate Personal Protective Equipment (PPE) to minimize job-related hazards
- Ensuring that all employees have the necessary knowledge about the technologies and materials involved in our operations
- Promoting continuous training for employees to facilitate effective knowledge transfer
- Ensuring equal opportunities for all individuals from nearby communities

These goals align with the values of sustainability envisioned at EFG Inc. and will be reviewed annually to ensure they remain relevant to the organisation's vision.

A signed copy of the EHS Policy is included in **Annex 1**.

1.2 Scope and Objectives of the EMP

Scope

The EMP outlines the construction and operational activities that will be conducted at the project site and identifies potential environmental and social impacts, along with socio-economic benefits which may arise. Furthermore, it presents the measures which will be implemented to mitigate unavoidable impacts and enhance socio-economic benefits. This EMP only applies to the operation of EFG's proposed facility at Uitkomst, West Bank Demerara, and does not apply to any other facilities operated by EFG.

The EMP was developed within applicable national legal and institutional framework and provides guidance for emergency response, as well as institutional arrangements to ensure the protection of human health and the environment.

Objectives

The overarching objective of the EMP is to provide strategic guidance to EFG, relative to avoiding and mitigating potential adverse environmental and health issues, as well as identifying, monitoring, and managing risks.

More specially, the EMP aims to achieve the following objectives as outlined in EPA's Environmental Management Plan Guidelines (EPA, 2013):

- To place the activity in the context of the local and regional environment
- To clearly define the project by adequately describing all components
- To identify the environmental issues/risks associated with the activity
- To provide the basis of the environmental management program outlined in the EMP, which shows that the environmental impacts resulting from the activity can be acceptably managed

- To prepare a document that clearly sets out the reasons why the project should be considered environmentally acceptable.

1.3 Approach to EMP Preparation

The EMP was prepared by a multidisciplinary team of women, each with more than a decade of experience in their respective disciplines; ranging from stakeholder engagement to risk and impact assessments (see **Annex 2** for Team of Experts)

The EMP involved a series of stages geared towards capturing, in its entirety, the construction and operational aspects of the project. This was necessary to enable the identification of all reasonably foreseeable potential impacts, and report on the planned mitigation measures to address them.

The approach utilised for the preparation of the EMP was comprehensive and entailed the following:

1. Preliminary Review of Project Documents- To understand the project's scope and requirements, key project documents were reviewed. This included the project summary submitted to the EPA, and the permit reference #20240704-EFGAP, issued by the EPA for the operation of the agro-processing facility
2. Reconnaissance Site Visit- On January 28, 2025, a reconnaissance visit was conducted which allowed the team to ground truth some of the information provided in reviewed documents. The reconnaissance visit also put into perspective aspects of the project such as site access, surrounding land uses, and the availability of site amenities (e.g. water, electricity, washroom facilities). This visit confirmed that no work had commenced at the site and provided a good opportunity to identify locations for baseline assessments. During this visit, the team was accompanied by the project's Chief of Staff and Project Consultant who provided responses to initial questions.

3. Request for Additional Supporting Documents – Subsequent to the reconnaissance visit, the team requested additional information and supporting documents from EFG. These included copies of all regulatory approvals, site and building plans, and process flow diagrams. On February 13, 2025, a virtual meeting was held with EFG’s representatives, to clarify the requests and to verify that the information being provide accurately represented what was needed
4. Baseline Data Collection and Stakeholder Engagement- During the period February 27, 2025, to March 10, 2025, baseline data collection and stakeholder engagement were conducted. Baseline measurements for noise levels and particulate matter were conducted, with particulate matter being measured for a period of 24 hours in keeping with the World Health Organization’s 2021 Air Quality Guidelines. Additionally, in-situ measurement of pH and temperature in the surrounding drains were conducted, while samples were collected for laboratory analysis of turbidity and total suspended solids. Further, nine residents of the Canal Number One and La Parfaite Harmonie communities were engaged and provided useful information on the socio-economic and infrastructural changes experienced over the years
5. Literature Review and Writing EMP - to complement the information provided by EFG, peer-reviewed literature related to rice milling and agro-processing were examined. Each team member commenced preparation of their assigned chapters and submitted this to the team leader for compilation and editing. A draft EMP was sent to EFG for review and was thereafter finalised for submission to the EPA.

1.4 Organisation of the EMP

The EMP, prepared in accordance with EPA's guidelines, is an active document and will be reviewed and updated throughout the project's lifespan, as needed. The EMP has been divided into 9 chapters, as follows:

- Chapter 1: Introduction- includes the company's background, EHS Policy Statement, objectives and scope of the EMP and methodology its preparation
- Chapter 2: Project Description-includes an overview of the project and spatial location, project components and activities
- Chapter 3: Administrative Framework-provides the national legislative and policy framework governing the project; applicable international conventions and protocols and the project's institutional arrangements, specifically the government agencies responsible for regulatory oversight of the project.
- Chapter 4: Description of the Project Environment and Baseline includes an overview of the existing biophysical and socio-economic environment of the project, along with a report on the air, noise and water quality baseline of the site.
- Chapter 5: Potential Environmental and Social Impacts-discusses the impacts associated with the construction and operational aspects of the project, and includes the impact assessment methodology
- Chapter 6: Mitigation Measures- Presents the mitigation measures for all impacts identified, during the construction and operational aspects of the project, Measures to enhance the project's benefits are also included in this chapter.
- Chapter 7: Environmental Management Plans and Procedures: This section identifies the existing and recommended systems required to ensure the environmental and social safeguards are efficient and effective. As such, the

requirements for reporting and record keeping, EMP implementation cost estimates and plans for emergency response and traffic management are also covered in this section.

- Chapter 8: References- Provides a list of all literature cited in the EMP.
- Chapter 9: Annexes- Provides a list of documents with additional supporting information, which were not included in the body of the document in its entirety.

2. Project Description

2.1 Project Overview

Essential Foods Group (EFG) is a private, medium-scale Agro-processing venture which aims to provide food security to the Caricom region through affordable and accessible products. The project has a total investment of \$5.5 million USD. EFG plans to utilise advanced technology to process agricultural crops into multiple product streams with no environmental impact. The planned facility will encompass approximately 77,000 square feet of factory space with surrounding infrastructure and amenities to ensure smooth operation. EFG intends to meet market demands by providing high-quality output of 120,000 metric tons of paddy annually. In the first year, EFG plans to process rice and by-products including rice protein, bran, rice wax, and rice oil. After the first five years, the company intends to commence processing cocoa to diversify. By the sixth year, EFG plans to include coconut processing in their range of products.

2.2 Project Location

The project site is situated on Guyana's coastal plain and is located in Uitkomst, Canal No. 1, West Bank Demerara, Region 3 (Fig. 2). The property has an area of 10 acres with boundaries measuring 179 feet (S), 227 feet (N) and 2143 feet (E &W). Figure 3 shows the layout of the property on GLSC cadastral plan No. 28005.

The area is accessed through a trail/secondary road, heading north, off the main Canal No. 1 Road. The GPS coordinates for the turn-off junction is 6°45'56.2"N 58°14'56.8"W.

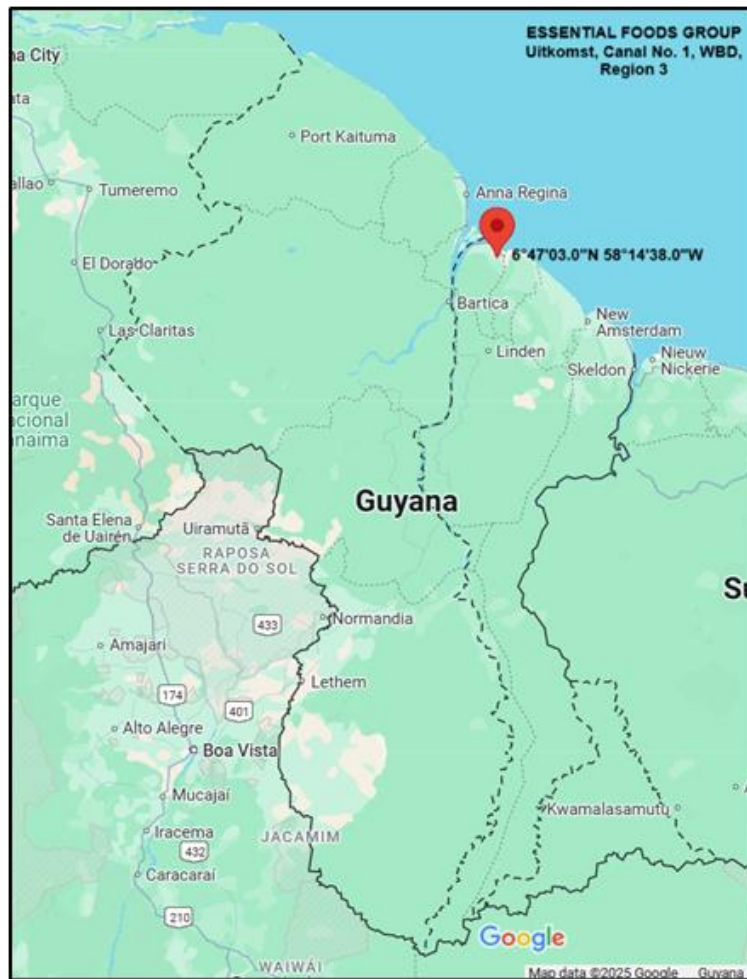


Figure 2: Map of Guyana showing the Project's Location

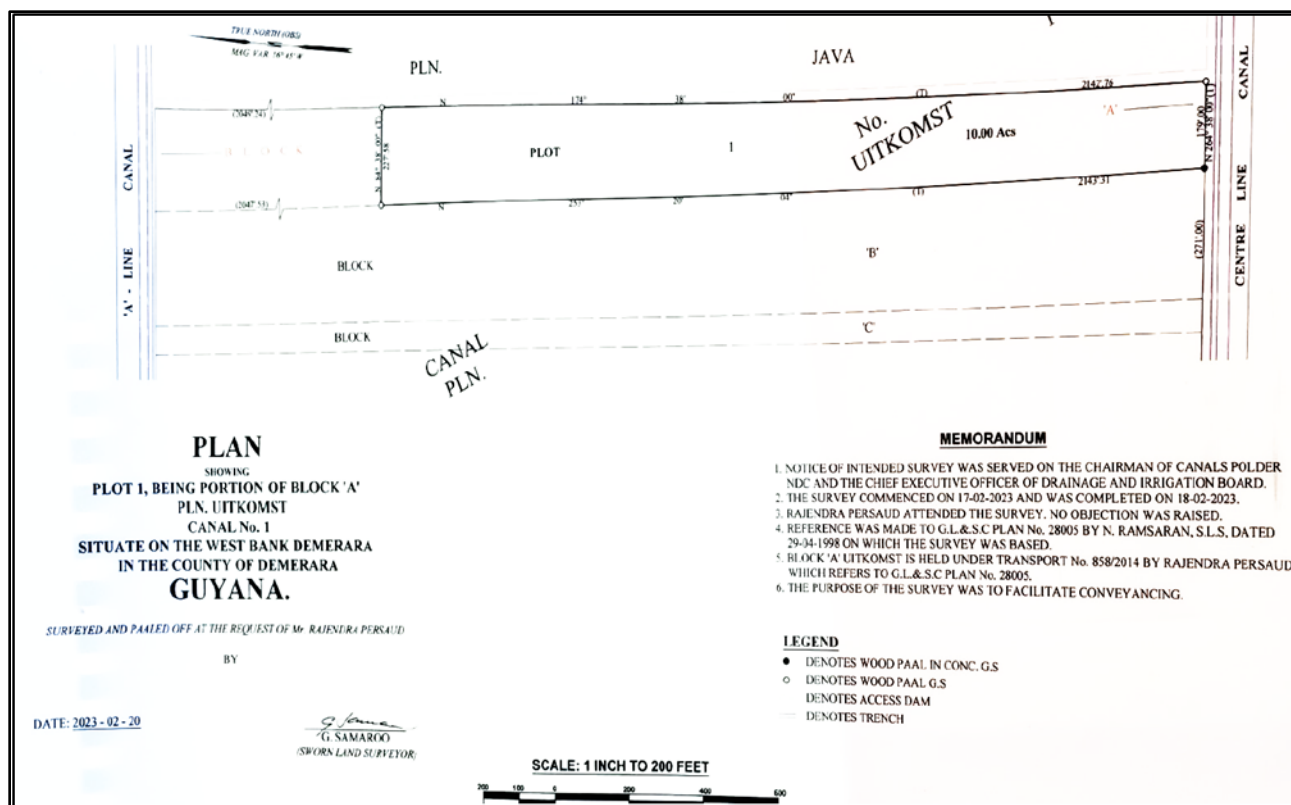


Figure 3: Map showing GLSC's Cadastral Plan of EFG 's Plot

2.3 Area of Influence

An area of direct influence (ADI) of 500m and an area of indirect influence (AII) of 1000m was used for this project (Fig. 4). These distances were determined based on desk reviews of studies and reports of similar projects in other countries. It must be noted that the closest residents to the project site are approximately 400m away. Additionally, based on EFG's commitment to sustainable practices and utilization of innovative technologies, the project seeks to have low to minimal pollution or waste discharge to the environment, thereby radically reducing the risk to human health.

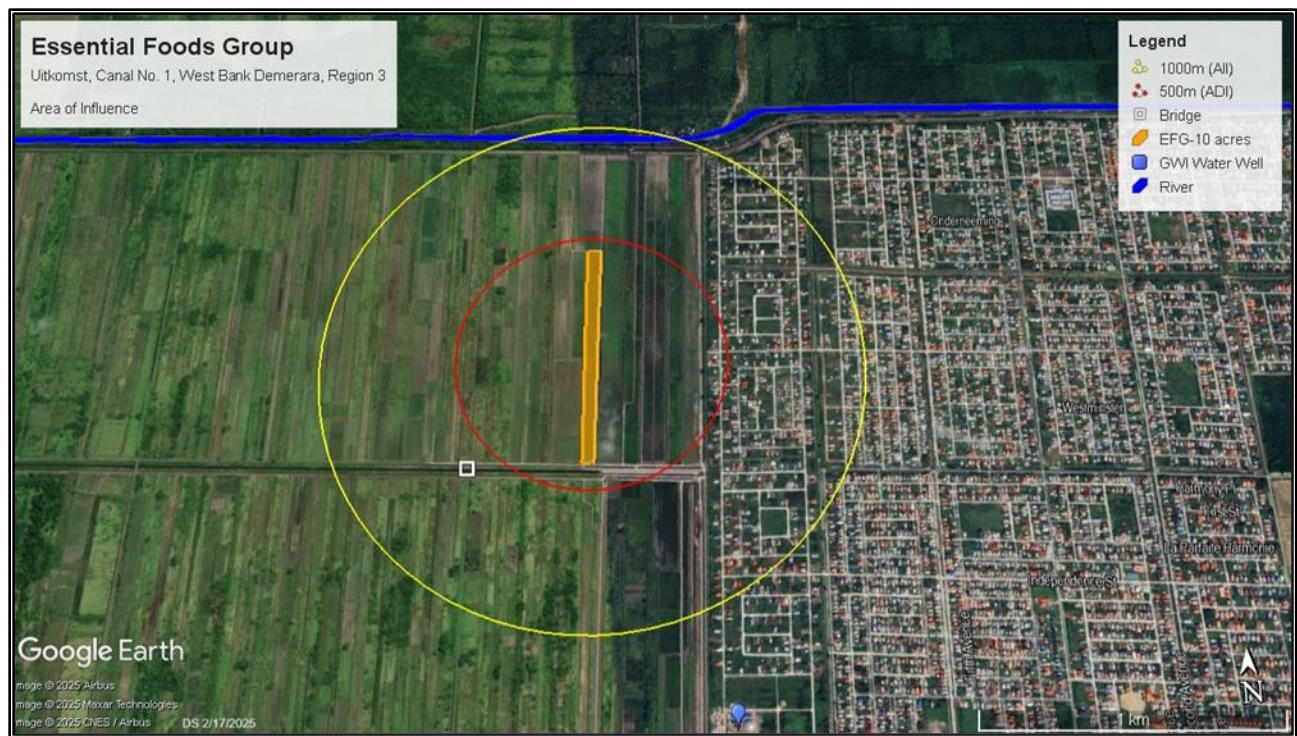


Figure 4: Google Image showing Project's AOI

A recent study about the impact of rice mill pollution on the surrounding environment in Bangladesh suggests that in order to reduce the effects of rice mill pollution, mills should be established at more than 500m away from settlements and arable land. The study found that the impact levels of pollution decreased as the distance of residents from the rice mill increased. This was based on data collected from surrounding residents at 100m, 500m and 1000m away from the milling operation (Mannan, et al, 2022). These results correlate to another study done in India regarding the impact of rice mills on the environment, agriculture and health of residents at the same distances of 100m, 500m and 1000m. It was found that the residents at 100m away had a high impact of pollution while those at 500m had medium impact. The residents furthest away at 1000m had minimal impact (Arpitha, et al, 2023).

A study on the environmental damages caused by rice mills in India indicated that residents of nearby villages were affected by air pollution, water pollution and land pollution as a result of discharge from rice mills. However, this research was done in a densely populated area of 5km range and 2km range in which there were 77 and 48 rice

mills located within each range. It was found that population density and number of rice mills in an area exacerbated the situation. Common health problems which were reported include asthma, bronchitis, cough, cold, corneal infection, eye irritation and allergies. Additionally, uncontrolled discharge of wastewater created unhygienic conditions, malodour and mosquito breeding ground (Agrawal & Agrawal, 2018). Other significant causes of pollution associated with rice milling are from processing of paddy and its by-products, noise pollution from machinery and solid waste disposal which includes paddy husk (Zaman, et al, 2006).

Considering the literature available on the impacts of rice milling activities on communities, it is evident that the positioning of the project, at approximately 400 m from the nearest community (La Parfaite Harmonie), is already a measure taken to minimise impacts. The implementation of additional robust pollution prevention and mitigation measures will also further mitigate project impacts.

2.4 Project Components and Activities

This section describes the phases of the EFG operation and gives a detailed explanation of the various activities which would be carried out. It also gives an overview of the layout of the processing facility.

Staffing

The estimated number of employees for the construction phase is 30 personnel and for the operational phase is 25. These included skilled labourers, specialised staff and administrative employees. Employees for the plant will be recruited locally, and preference will be placed on single mothers as the main source of employees.

Construction

In addition to the agro-processing facility, EFG is constructing a main office for the EFG Plant. This building will serve as the control center for all aspects of processing and production. The complex will house staff responsible for administrative functions, finance and operation management. An added convenience for employees is the establishment of daycare facilities within the main office building (**see Annex 3** for detailed site and building plans).

Operational

Rice milling is the process in which rice grain (paddy) is processed into a suitable form for human consumption. There are several methods of rice milling which result in varying quality of rice (Kumar, et al, 2017). Generally, the paddy grain is harvested and must be dried prior to processing in the mill. The milling operation includes de-husking (removal of the paddy shell) and polishing (removal of bran layers) (Batsungneon & Kulworawanichpong, 2011).

The following outline details the stages of production for EFG's rice milling process:

Stages of Production (schematic presented in figure 5)

1. Paddy intake – Raw materials received, weighed and assessed based on quality and quantity. The target for intake is 120,000 metric tons annually
2. Grading – Paddy is graded through a systematic procedure to categorise it based on various characteristics.
3. Drying – The graded paddy is then dried to reduce moisture content to optimal levels which would enhance storability and preserve quality.
4. Milling – Paddy is processed to extract and refine the rice kernels into their final form.
5. Quality testing – This is done to verify the quality and characteristics of the rice by ensuring that it meets stringent standards and specifications.

6. Packaging – The rice is then packaged after passing quality tests. Packaging is done to preserve the freshness of the product.
7. Final Quality assessment – A final quality assessment to done to ensure that the end product meets specifications for the highest quality benchmarks before reaching the market for distribution and consumption.
8. Extraction – The final stage involves extraction of all remaining materials from the production process to ensure maximum utilisation and minimal waste. The extracted materials are tested to confirm quality and suitability for use. These outputs are then packaged in a sustainable way using eco-friendly methods. There is a final quality check at the end of the process to guarantee the products are of a high standard and are ready for distribution.
9. Furnace – After the milling process, the paddy husk is taken to the furnace. Waste paddy husk is used as the primary fuel. The output ash is useful for EFG as it would be stored for downstream processing.

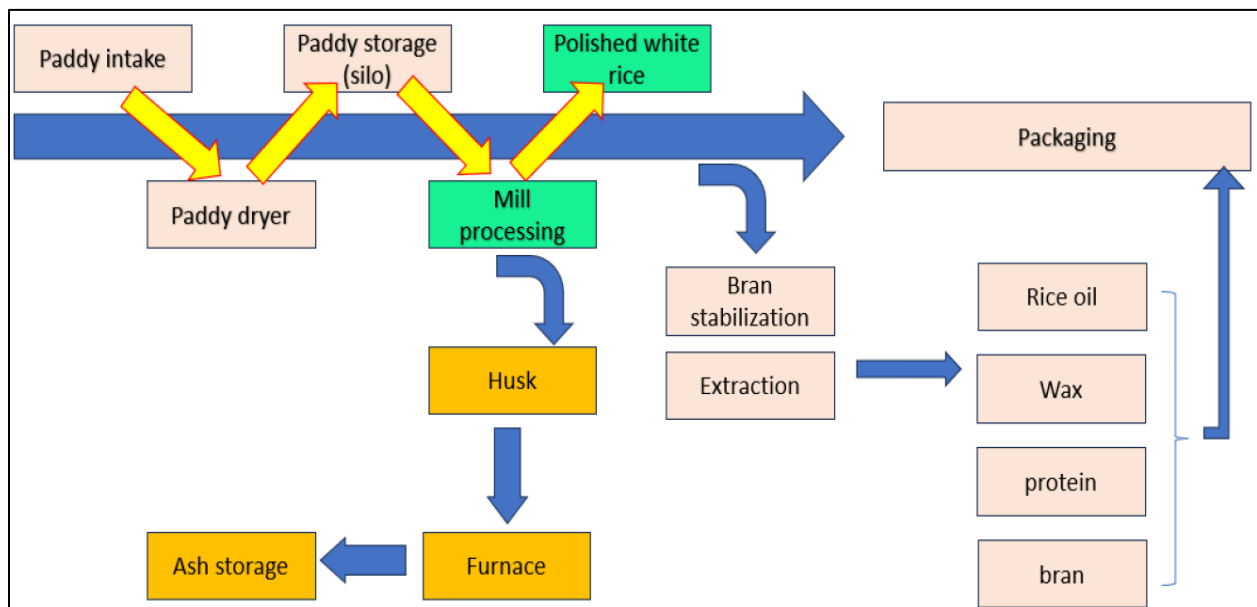


Figure 5: Process Flow – Raw materials to Finished Products

(Source: EFG Project summary)

Figure 6 shows the general floor layout of the processing facility and gives a visual depiction of the areas where the various production stages will be taking place.

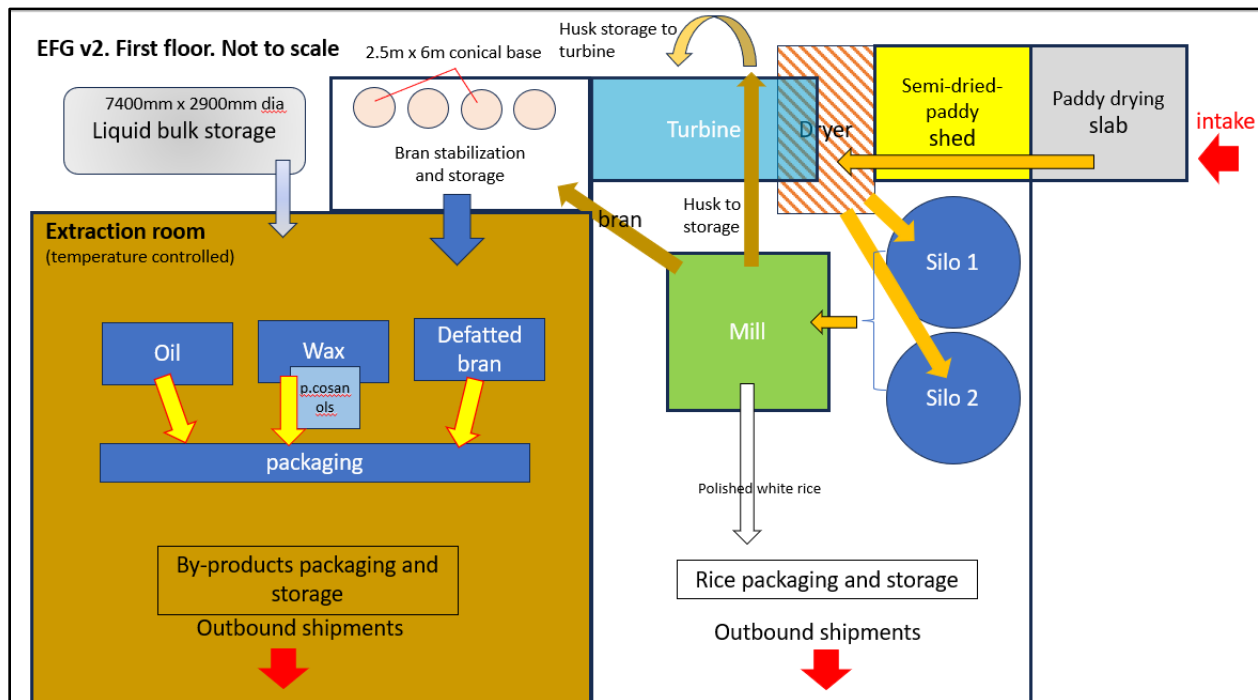


Figure 6: General Floor Layout of Processing Facility

(Source EFG Project summary)

Waste Management

Water from the rice polishing process is anticipated to be the only waste generated throughout the production process. This water would be repurposed for use in landscaping and shrubbery watering systems. EFG intends to minimise environmental impact during all phases of its operations while maximizing efficiency through the use of technology and promoting waste circularity.

Operational Time

The processing facility is expected to operate on a 24-hour basis, 7 days per week. The administrative section is likely to function on Monday to Friday from 08:00-17:00 and on Saturdays from 08:00 h-13:00 h.

2.5 Project Alternatives

The project site for EFG operations was selected based on accessibility and proximity to available raw materials for processing. The plan to construct and establish the facilities was identified after careful consideration of the market, labour supply and the needs of the community. The design and layout of the agro-processing facility was strategically placed to minimise potential downwind pollution to surrounding communities. Additionally, there is adequate space for the main office building along with other amenities such as parking, utilities, daycare facilities for employees and a secure perimeter. Consequently, there is no project alternative at this time which can be deemed more economically, socially or environmentally feasible.

3. Administrative Framework

With the establishment of its Agro-processing facility EFG and its affiliates, is committed to fully complying with Guyana's national environmental and developmental policies, strategies, plans, legislation and institutional framework. Strict compliance with applicable laws, institutional procedures, and guidelines will foster sustainability of this facility's operation. This will further enhance the Agro-processing facility's environmental and socioeconomic value. The sections which follow in this chapter identifies the policies/Strategies and legislation which are pertinent to this project and the national institutions that are responsible for regulatory oversight.

3.1 National Policy and Strategic Framework

To foster a sustainable process of operation, EFG is committed to implementing a strict approach towards adherence to national and internationally established policies, strategies and plans. It is an area of high priority since this project proposes to contribute significantly to economic and social development both locally and regionally. Further, it is with this initiative that EFG intends to establish its Agro-processing project and operate in a manner that results in little to no environmental impacts on air, noise, water, and waste.

3.1.1 National Development Strategy (2001-2010)

The National Development Strategy (NDS) was launched in 1997 and outlined objectives and fundamental policy conditions for Guyana's economic development. Some main objectives of the NDS are to support the promotion of sustainable development and environmental protection, the development of agricultural research as well as the promotion of rural employment, among others. The NDS portrays a detailed classification of the industrial structure of Guyana's economy where the agricultural sector is

highlighted under the primary sector, with three established sectors defined (primary, secondary and tertiary). The NDS promotes the diversification of the agricultural sector and illustrates the goals to promote the export of local agriculture products. EFG's agro-processing project supports the achievement of the goals for agricultural development in Guyana as it seeks to diversify the agricultural sector (by producing value added rice products) and support rural employment.

3.1.2 National Land Use Plan

In 2005 the Guyana Lands and Surveys Commission (GLSC) drafted The National Land Use Plan (NLUP). In 2013, it was approved and implemented. The NLUP does not zone areas of the country for specific land uses but aims to bridge development gaps to encourage improved land use planning. This is done by highlighting the availability of lands with various potential for development, using tools such as maps, which further feed into the decision-making process for land use planning. In this way, investments in various developments can be made as guided.

The NLUP prioritises sustainable developments within various areas in the country. Some of these include agriculture (crop cultivation, livestock and aquaculture), housing, developing renewable energy potential from solar and wind, and fostering connectivity.

The selection of the site for establishment of this facility is a clear example of considering the current land use of the surrounding environment, and investing in development that complements, and supports the existing socio-economic culture of the area, as opposed to investing in development that can result in land use conflicts.

3.1.3 National Environmental Action Plan

The Government of Guyana (GoG) outlined its environmental policy objectives for the sound management of the environment and natural resources in the National Environmental Action Plan (NEAP), developed in 1994 and updated in 2000. The NEAP outlined sound principles of environmental management and guides towards the promotion of sustainable development. Further, the NEAP sets out strategies to govern

development in an integrated manner, prioritising environmental concerns. Here, the Action Plan outlined a thematic approach to environmental management where baseline data collection systems, monitoring and regulation, the development of institutional and legislative capacity, and improving public awareness and participation were promoted.

EFG's agro-processing project will remain committed to complying with the environmental management approach outlined in the NEAP, by virtue of the establishment and implementation of prevention and mitigation measures for all potential environmental impacts and the required monitoring measures to be implemented during its construction and operation.

3.1.4 Low Carbon Development Strategy

In June 2009, the GoG instituted the Low Carbon Development Strategy (LCDS) intending to transform Guyana's economy into a low-carbon, sustainable one, while tackling climate change. The broad goals of the strategy included mechanisms to transform the economy to deliver greater economic and social development by following a low-carbon development pathway.

The LCDS was updated in 2010 and 2013 and in October 2021, the Government released a draft version of an expanded LCDS for public consultations. While the three objectives of the first iterations of the strategy remained unchanged, a fourth objective was added to align Guyana with global climate goals. This objective recognised that the emergent oil and gas sector had transformed Guyana's development prospects. In the context of this project, EFG will be utilising energy-efficient technologies and renewable energy sources to minimise its carbon footprint.

3.1.5 The Paris Agreement

The Paris Agreement is an international treaty that provides aid to countries in formulating suitable strategies to combat climate change. Ninety-six (96) countries adopted the Paris Agreement in 2015, and in 2016 this Agreement came into force. Guyana being one of the signatories agreed to achieve the goal of ensuring food security

and ending hunger. Signatories to the Paris Agreement are obligated to establish policies that govern development to foster sustainable productivity, considering waste management from agriculture development, while exploring and implementing more sustainable methods for cropping. With knowledge of the impact of agriculture activities, including farming and agricultural processing on climate change, EFG with the implementation of its agro-processing facility supports the nation in its bid towards ensuring food security.

3.1.6 The United Nations Sustainable Development Goals (2030)

All member states of the United Nations adopted the 2030 Agenda for Sustainable Development. This strategy aims to promote action plans for peace and prosperity for people and the planet we inhabit. As such, seventeen goals known as the 17 Sustainable Development Goals (SDGs) were established. These goals promote mechanisms to aid the ending of poverty, improve health and education, reduce inequality, preservation of the oceans and forests while tackling climate change and fostering economic growth. SDGs that align with developments that fall under the agricultural sector, include SDG 2 on ending hunger, improving food security and nutrition, and promoting sustainable agriculture; SDG 13 on mitigating and adapting to climate change; SDG 15 on ecosystems, biodiversity, forests and land, which provide the foundation of all food and agriculture systems. Further, as in every development, fostering gender equality and female empowerment must be implemented, which is captured under SDG 5.

EFG fully understands its role in the implementation of the SDGs and is doing its part in directly implementing 5 of the 17 SDGs (see *Chapter 1, table 1* for reference).

3.1.7 National Climate Change Policy and Action Plan (2020 – 2030) (Draft 2.0 2019)

This Policy and Action Plan was drafted for the Office of Climate Change (OCC) in Guyana, as commitments made under international agreements, treaties and regional strategies. It reflected a cross-sectoral approach towards tackling climate change. The overall

objective of this policy is to ensure climate change adaptation and mitigation following the United Nations Framework Convention on Climate Change (UNFCCC). This action plan proposed clear steps to establish partnerships and facilitate access to technical and financial support for low-carbon initiatives, climate change mitigation and adaptation, and an integrated approach towards development. As part of this action plan, one of the main steps incorporated was to attain associated SDGs. The main SGD under this action plan is Goal 13, to take urgent action to combat climate change and its impacts. While there is a global need to ensure that the world's growing population is fed, there are also impacts that do not go unnoticed, such those emanating from the agriculture sector.

EFG has integrated in its planning and operation, several safeguards and strategies to minimise carbon emission during construction and operation.

3.2 Legislative and Regulatory Framework

Many laws within Guyana's legal framework have been enacted to ensure that developmental projects adequately address environmental and social concerns. Foremost amongst these laws are the Constitution of Guyana with amendments, the Environmental Protection Act and its subsidiary regulations. Other legislations that play important roles in the establishment and operation of this project include the Occupational Safety and Health Act and the Guyana Rice Development Board Act 1994.

EFG continues to remain committed to abiding by the laws of Guyana and will therefore conduct all aspects the project in keeping with national legislation and directives issued by regulatory bodies.

3.2.1 The Constitution of the Cooperative Republic of Guyana (1980 and 2003 Reforms)

The Constitution of Guyana is the highest governing legal document and supreme law for the country. The importance of protection and management of the environment is

recognised and given particular attention to environmental-related principles by the Constitution. This is as follows:

- Article 25: “Every citizen has to participate in activities to improve the environment and protect the health of the nation.”
- Article 36: “The well-being of the nation depends upon preserving clean air, fertile soils, pure water and the rich diversity of plants, animals.”
- Article 149J: (1) “Everyone has the right to an environment that is not harmful to his or her health or wellbeing.”
- Article 149(J): (2) “The State shall protect the environment, for the benefit of present and future generations, through reasonable legislative and other measures designed to prevent pollution and ecological degradation; Promote conservation; Secure sustainable development and use of natural resources while promoting justifiable economic and social development.

3.2.2 Environmental Protection Act (1996 and 2005 Amendments)

The Environmental Protection Act establishes the basic institutional and regulatory framework within which all activities that may significantly impact the environment and public health are effectively governed. The Act provides effective management, conservation, protection and improvement of the natural environment, the prevention or control of pollution, the assessment of the impact of economic development on the environment and the sustainable use of natural resources. The Act also provides that the Environmental Protection Agency (EPA) is the central coordinating agency for environmental management in Guyana.

Given that this project has the potential to impact the surrounding environment, abiding by the guides outlined in the EP Act and Regulations, will be highly prioritised by the company.

3.2.3 Environmental Protection Regulations

There are several subsidiary Environmental Protection Regulations to the Environmental Protection Act. These Regulations were developed to regulate and control the activities of development projects during construction and operation. The EPA has the responsibility to ensure the compliance of both new and existing activities to these Regulations by issuing the required authorisations and conducting continuous monitoring of these operations. Mentioned below are the Environmental Protection Regulations to which EFG will be required to adhere to.

Environmental Protection (Authorisations) Regulations, 2000

The Environmental Protection Authorisation Regulations outline the requirements of applications for environmental authorisation and the rules governing the processing and issuance of such authorisation. Environmental authorisations typically have specified conditions that Permit Holders must comply with to avoid, minimise, and/or mitigate environmental impacts. As part of their proposed development process EAG has applied for and has been granted environmental authorisation by the EPA.

Environmental Protection (Air Quality) Regulations, 2000

These Regulations provide rules for the reduction and prevention of air pollution in Guyana. Any person that conducts activities that emit air contaminants shall register with the Environmental Protection Agency and a person who emits any air contaminant in the construction, installation, operation, modification or extension of any facility relating to (a) industry; (b) commerce; (c) agriculture; or (d) any institution, shall apply to the Agency for an environmental authorization. The Regulation states that no new stationary source or facility shall emit any contaminant in concentrations greater than those established as parameter limits (by the Agency). The Regulations also place restrictions on new and altered sources of air emissions and provide for control of pollution by mobile sources. Currently, there are no nationally determined or established Air Quality standards. However, the Agency is guided by and utilizes the World Health Organization

(WHO) guideline values which are applicable to this project. The permit issued by the EPA specifies allowable limits for particulate matter by which the project must abide.

Environmental Protection (Water Quality) Regulations, 2000

In its efforts to protect the water resources in Guyana, the Environmental Protection Agency (EPA) developed the Environmental Protection Regulations in 2000. As a part of these Regulations, specific emphasis was placed on water through the Environmental Protection (Water Quality) Regulations, which are meant to protect Guyana's waters by controlling the discharge of any effluent (liquid waste matter) into any of the coastal and inland waterways. The Regulations encourage proper disposal of effluent, which in turn minimises contamination of existing or potential sources of water.

The Regulation's main aim is to reduce threats to public health, as well as reduce or eliminate the possibility of actual or potential contamination of our water bodies, by illustrating stringent protocols and guides which are to be followed by developments with potential to impact waters directly or indirectly. The EPA also adopts the WHO and USEPA standards for surface and potable water quality, when required.

The Water Quality Regulations require all operations that will discharge effluent during construction, installation, operation, modification or extensions to obtain environmental authorization. The Regulations also outline the requirements and guidelines on the discharge of effluents and disposal of sludge. Moreover, the Guyana National Bureau of Standards (GNBS), in collaboration with the EPA and other relevant stakeholders, have developed Interim Guidelines for Industrial Effluent Discharges into the Environment. Currently, these Guidelines provide maximum allowable limits for 16 parameters and are used by the EPA to inform permissible limits for effluents discharged into the environment. Effluent discharge limits have been specified in EFG's permit.

Environmental Protection (Noise Management) Regulations (2000)

These Regulations provide rules for the emission of noise. Emission of any noise in the construction, installation, operation, modification or extension of any facility relating to (a) industry; (b) commerce; (c) transport; (d) construction; or (e) any institution, requires environmental authorisation from the EPA. The GNBS, in collaboration with the EPA and other national institutions, developed a standard that provides allowable limits for noise emissions into the environment. Although the GNBS guidelines do not provide limits for agricultural activities, the EPA has stipulated that EFG's project complies with Industrial limits of 100dB during the daytime and 80 dB at night.

Environmental Protection (Hazardous Waste Management) Regulations, 2000

These Regulations provide rules for generating, treatment, storage, disposal and transportation of hazardous waste and the use of imported chemicals. If a person or company provides services involving any such activities, environmental authorisation must be obtained. Once permitted, permit holders have obligations regarding data collection and reporting. Additionally, these Regulations also provide for permit holders to submit an emergency preparedness plan to the EPA for approval. Moreover, every person who knowingly uses a chemical substance or mixture which is imported, manufactured, processed or distributed in contravention of these Regulations shall be guilty of an offence and liable on summary conviction to a fine.

Given that this project does not plan on having a backup generator, there will be no use of fuel on site, hence no waste oil generation. However, in cases where there may arise the need for the use of such chemicals as pesticides, and any other hazardous materials, all measures will be put in place to prevent potential related environmental impacts.

Environmental Protection (Litter Enforcement) Regulations (2013)

These Regulations provide for the enforcement against litter offences. It is an offence under these regulations to place litter in a public place, permit or cause another person to litter a public place or have litter on private premises that poses a health risk. The fine for an individual found littering in a public place is GYD 50,000, while for a body corporate it is GYD 100,000. A fixed penalty of fifteen thousand dollars (GYD 15,000) is offered to offenders who accept liability for the offence committed. Under the Litter Prevention Regulations, the NDCs and Regional Democratic Councils (RDCs) are to provide receptacles in public places. The enforcement of this regulation in the context of the project will be the sole responsibility of EFG.

3.2.4 Public Health Ordinance (1934)

The Public Health Ordinance makes provisions for promoting public health concerns in Guyana. The Ordinance is dated and was enacted during Guyana's colonial past. The Ordinance makes provisions for centralised, decentralised and local health administration including the prevention of infectious, epidemic, endemic and venereal diseases, as well as management of public health facilities and services. The Ordinance also makes provisions for regulating 'offensive trades', that is, trade that can be damaging to the health of the people engaged in the trade. The Ministry of Health has convened a committee for the management of offensive trades. This Committee is chaired by the Chief Medical Officer and is aimed at regulating activities that can damage the health of employees during their routine duties. A draft Public Health Bill has been prepared to supersede the Ordinance.

EFG remains dedicated to ensuring all guidelines are followed to prevent any potential harm that can result from the implementation of this project.

3.2.5 Occupational Safety and Health Act (1997)

The Occupational Safety and Health Act 1997 defines the responsibilities of management and workers concerning safety and health and applies to every workplace in Guyana. The

Act makes provisions for the registration of industrial establishments, the establishment of an Occupational Safety and Health Authority, the establishment of a National Advisory Council on Occupational Safety and Health, the duties of employers, workers and other persons, treatments of accidents and occupational diseases, and occupational safety and health regulations.

The Act authorises Occupational Health and Safety Inspectors to enter and inspect workplaces. Under this Act, a joint workplace safety and health committee must be established at operations where more than 20 people are regularly employed. For workplaces with fewer than 50 people, the committee should consist of at least four persons of which at least half the number are workers who do not exercise managerial functions and should be selected by the workers themselves.

Employers also have duties of providing protective devices for workers, providing instructions and supervision to ensure the safety of workers, maintaining a medicine chest and establishing an occupational health service for workers. The Act requires all industrial establishments to keep a General Register containing the particulars of workers younger than the age of eighteen; particulars as to the washing, whitewashing or odour washing; painting or varnishing of the workplace; and particulars on every accident and industrial disease. Specifically, concerning the Accident Register, notice should be submitted using the form in the First Schedule of the Act within four days of the accident. If the accident results in death, a notice of death should be sent to the Authority, the joint workplace safety and health committee and trade unions if applicable, as soon as the employer becomes knowledgeable of the death.

Adhering to guidelines stipulated within the Occupational Safety and Health Act (1997) is of high priority to EFG. In this regard, EFG has registered as an industrial establishment, under section 6 (1) of the OSH Act. A copy of the certificate of registration is included in **Annex 4**.

3.2.6 Town and Country Planning Act (1946)

The Town and Country Planning Act provides for the (orderly and progressive) development of urban and rural lands and the preservation and improvement of amenities for such development.

Development activities under this Act are related to the construction of buildings and roadworks subsidiary to buildings. The Act focuses on town planning schemes and regional schemes (out of urban areas). Such schemes comprise buildings, sanitation, coordination of roads, facilities and public services, provision of amenities and the conservation and development of resources.

Implementation and enforcement are vested in the Central Housing Planning Authority (CHPA). The Act provides for cooperation with local authorities and permits processing for building operations. The Act also includes provisions for zoning and the regulation of buildings, site designs, roads, amenities, public services, transport and communications. For the establishment and operation of this proposed project, this company is fully compliant with the requirements under this Act and has been granted approval by the CHPA.

3.2.7 Guyana Rice Development Board Act (1994)

This Act was established with the aim to provide for the regulation of the manufacture and marketing of rice, for securing effectively the development of the rice industry through the establishment of the Guyana Rice Development Board (GRDB). One of the most important functions of the GRDB, which the Act stipulates, is to promote the development of the rice industry in Guyana and the expansion of the export trade in this industry. In this way, the Act further caters for there to be established mechanisms and systems in place where assistance can be given to rice producers to export their goods. Available schemes which aim to aid in negotiation with foreign governments, agencies or persons in relation to rice and its products to be exported, were also established under this Act. EFG has obtained a non-objection from the GRDB (see approval in **Annex 5**),

3.2.8 Food and Drugs Act

The Food and Drugs Act was passed in Parliament in 1971. The main aim of this Act was to ensure the safety of the Food, Drugs and Cosmetic industry. This Project will produce food products for retail; therefore, this Act will provide the guidance as necessary. Following this Act, any person who sells an article of food that was manufactured, prepared, preserved, packaged or stored under unsanitary conditions is guilty of an offence.

3.2.9 The Pesticides and Toxic Chemicals Control Act, 2000

The Pesticides and Toxic Chemicals Control Act was passed in August 2000 with the aim to regulate the manufacture, importation, transportation, storage, sale, use and disposal of pesticides and toxic chemicals. This Act also provided for the establishment of the Pesticides and Toxic Chemicals Board (PTCCB), which is the institutional authority that manages pesticides and toxic chemicals in Guyana. EFG will comply with this Act as necessary.

3.2.10 Food Safety Act 2019

This Act was established to promote the health and well-being of consumers. Further, the Food Safety Act details guidance for effective management of food safety along the food chain, prioritising an integrated approach to achieve this objective. The establishment of the Food Safety Authority, the implementation and enforcement organ aligned with this Act, was also stipulated therein. With consumers involved, as a critical part of this project, this legislation will be essential in building the foundation for EFG to remain compliant with the food safety requirements.

3.2.11 Labour Act (1942)

Although considered dated, the Labour Act specifies the conditions that an employer must observe in contracting employees. Part V specifies that the entire wages of the employee must be paid as money and not otherwise. However, in occupations where it is customary

to make a partial payment of allowances in the form of food, toiletries, housing etc., these are acceptable and not considered illegal if both the employer and employee agree on such terms. Within the framework of this Act, all employers are required to ensure workers are adequately paid as prescribed by the laws of Guyana and are also required to ensure the workers are not mistreated.

The company will remain committed to ensuring that all guidelines are followed as required, including paying rice farmers a competitive price for their paddy.

3.2.12 Guyana Standard for Occupational Health and Safety Management Systems (2018)

The GNBS, in collaboration with relevant stakeholders, released a standard for Occupational Health and Safety Management Systems. This standard specifies the requirements for an Occupational, Health and Safety management system to enable an organisation to formulate policies and objectives. This takes into account legislative requirements and information regarding significant hazards and risks that the organisation can control and over which it can be expected to influence the project, its employees and others whose health and safety may be affected by the activities of the organisation. One of the primary goals of EFG after construction is the development of the Company's Environmental, Occupational, Health, Safety and Quality Management Systems.

3.3 Institutional Framework

3.3.1 Environmental Protection Agency

The Environmental Protection Agency (EPA) oversees the effective management, conservation, protection and improvement of the environment and takes the necessary measures to ensure the prevention and control of pollution, assess the impact of economic development on the environment and the sustainable use of natural resources. The Agency was established in 1996 by the Environmental Protection Act and is responsible for the enforcement of national environmental legislation and regulations as well as the development and implementation of environmental policies and standards. It also undertakes the inspection and enforcement of matters dealing with the environment, conservation and natural resources and administers the environmental permitting process in Guyana.

The Agency is governed by a Board of Directors. Under the Act, the EPA is mandated to “take such steps as are necessary for the effective management of the natural environment to ensure the conservation, protection and sustainable use of its natural resources” (section 4 (1) (a)). The Act also provides for the EPA to have overall responsibility for the management of the natural environment to ensure the conservation, protection and sustainable use of its natural resources; assess any developmental activity, which may harm the natural environment before such activity commences; and coordinate and maintain a programme for the conservation of biological diversity and its sustainable use.

The EPA is mandated to ensure that any operation that may have a significant impact on the environment must acquire Environmental Authorisation from the EPA. Projects are considered to have an environmental impact when they threaten the health, safety and natural life-supporting systems of humans and other living things. The EPA therefore has environmental regulatory oversight for EFG’s project at the national level.

3.3.2 Neighbourhood Democratic Council/Regional Democratic Council (Region 3)

Regional Democratic Council (RDC) is overseen by the Ministry of Local Government. In a case where developments do not fall under the jurisdiction of a Neighbourhood Democratic Council (NDC), then the next Authority that will have the responsibility to approve development activities within such locations would be the RDC. The RDC has a mandate to oversee activities related to development within the Region. In the case of this Project, however, the Canals Poulder NDC has oversight and has approved the establishment and operation of this project within the Uitkomst, West Bank Demerara area (NDC approval included in **Annex 6**).

3.3.3 The Guyana Rice Development Board

This institution enforces the Guyana Rice Development Board Act, which is responsible largely for the sustainable development of the rice industry in Guyana. It offers farmers and rice producers assistance with export as well as guidance in rice production, for local and international markets.

3.3.4 Food Safety Authority

The Food Safety Authority was established to monitor the implementation of the Food Safety Act. This Authority is tasked with the establishment of a risk-based food safety and quality framework to protect, enhance, ensure food safety, and protect consumers from food fraud. This Authority also holds responsibility for certifying food business operators.

3.3.5 Ministry of Health – The Government Analyst Food and Drugs Department

The Government Analyst - Food & Drug Department, Ministry of Health aims to protect the health and well-being of consumers and to enhance the competitiveness of industries regulated under the Food and Drug Act 1971, through:

- Monitoring the implementation of the Food and Drugs Act and enforcing it as necessary.
- Ensuring the safety and quality of food, beverages, cosmetics, medical devices, drugs and water through the establishment of safety and quality assurance systems.
- Providing precise and accurate analytical results that are “fit for purpose” and meet customer satisfaction.
- Aiding International Trade through import and export inspection and certification.

3.3.6 Pesticides and Toxic Chemicals Control Board

The Pesticides and Toxic Chemicals Control Board (PTCCB) was established under the mandate of the Pesticide and Toxic Chemicals Control Act 2000, and its associated Regulation which governs the importation, sale, storage, use and distribution, and transportation of pesticides in Guyana. The Board is tasked with responsibility for licensing, registration, training, inspection and enforcement with the aim of ensuring sound chemicals management in Guyana, reduction of risk to human health and environmental, and food safety in agriculture production.

3.3.7 Ministry of Public Works

The Ministry of Public Works (MoPW) plans, builds and maintains Guyana’s road network, and sea and river defense system to protect life and property; support the movement of people, goods and services; reduce the cost of transportation; and promote economic growth and quality of life and the environment. The MoPW will play a critical role in supporting the infrastructural developments, particularly access roads which are critical to this project, as well as residents and farmers.

4. Project Environment and Baseline

4.1 Physical Environment

The generation of baseline data is essential to understand the possible environmental impacts that may occur due to EFG's project; and being able to distinguish it from pre-project environmental conditions. The baseline data generated together with the post-operational monitoring can give insight into critical impacts, which can determine which environmental safeguards need to be modified or improved. The environmental characteristics of the project area were established through extensive literature research, field sampling/measurements, stakeholder consultation and data interpretation.

Data from literature research (topography, geology, climate etc.) were obtained from several existing sources. Fieldwork for the baseline was conducted on February 27- 28, March 5-6, and March 10, 2025, the Consultancy team members. The environmental data covers the EFG operations prior to any developmental activities on-site and serves strictly as baseline data for the project against which future assessments can be measured.

This section provides a brief overview of the project environment; and covers the entire project area as well as its immediate surroundings and includes the physical, biological and socio-economic components.

4.1.1 Geology

Soils of the coastal plain are described as low humic gleys of high base status and marine "frontland clay". It is further characterised as Hydraquents with Sulfaquents, Fluvaquents of poor drainage capacity with medium-high fertility. These soils have areas of high salinity, acid sulphate and aluminum toxicity and require drainage solutions for agricultural purposes (GLSC, 2013). The soil type of the project site is described as level, coastal and riverain deposits of reddish-brown organic soils (EuDASM).

4.1.2 Topography and Landscape

The EFG project site lies on relatively flat land with elevations varying from 1m to 2m. The land cover of the project site is categorized as agricultural cropland, specifically rice production (GLSC, 2013).

Agricultural lands lie west, south and north of the project boundaries and residential communities of Onderneeming, Parfait Harmonie and Westminster are located to the east of the site (table 3).

Table 2: Surrounding Land Use at the Project Site

<i>North</i>	Agricultural lands (rice fields), canal (West to East)
<i>South</i>	Agricultural lands (rice fields), access road, drainage canal
<i>East</i>	Residential communities - Onderneeming, Parfait Harmonie and Westminster, Gas to shore pipeline is being constructed in the eastern area and runs North to South
<i>West</i>	Agricultural lands (rice fields), cash crops (pineapples, cassava)

The Demerara River runs further east of the project area approximately 5.5km away. There is a canal which runs west to east, further north of the project area and a parallel canal runs south of the project site (Fig. 7).

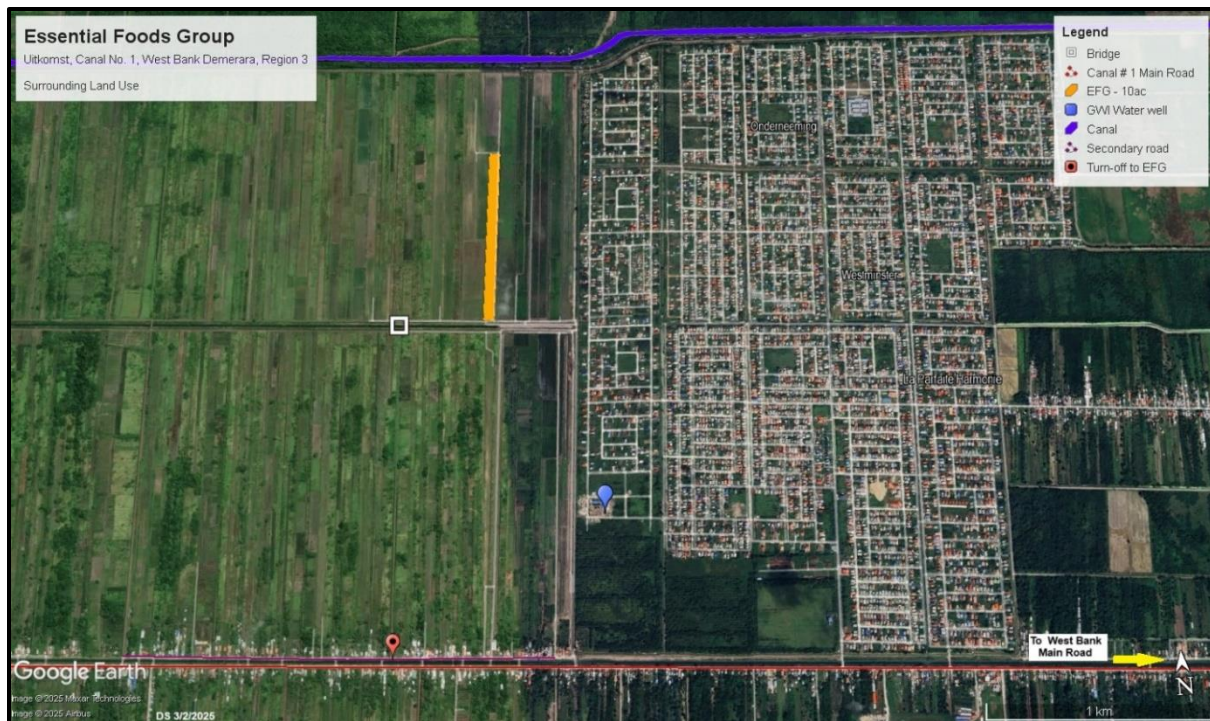


Figure 7: Google Image showing EFG and Surrounding Land Use

Figures 8, 9 and 10 show the present condition of the site and environs.



Figure 8: Southern Boundary Facing West of the Property



Figure 9: Southern Boundary Showing Access Trail



Figure 10: Southern Boundary Facing North

4.1.3 Climate and Air Quality

Climate

The project site is located along Guyana's coast which normally experiences a tropical humid climate with uniformly high temperatures and rainfall humidity. Seasonal rainfall

variability is generally the dominant characteristic of climate in Guyana as the coastal area experiences two distinct wet and dry seasons. The annual rainfall in the Coastal zone is between 1500 mm – 3500 mm per year, the normal wet seasons are from mid-April to mid-August and from mid-November through January.

Along the coast of Guyana, average daily maximum temperatures are 29.6°C while the average daily minimum temperatures are 24.0°C. Diurnal variation of temperature is smallest here because the maritime effect is more pronounced (McGregor and Nieuwolt, 1998). Seasonally, temperatures are higher in the dry periods with the highest temperatures occurring in September and October and the lowest in May and June. Overcast days are rare; most days include 4 to 8 hours of sunshine from morning through early afternoon. Humidity averages 70% annually.

Precipitation data sourced from the World Meteorological Organization Climate Normals for 1991-2020 reveals an annual average precipitation of 2629.8 mm recorded by Uitvlugt weather station, and 2895.7mm recorded by Leonora weather station, the weather stations in closest proximity to the project site.

Air Quality

Air pollution is contamination of the indoor or outdoor environment by any natural or man-made chemical, physical or biological agent that modifies the natural characteristics of the atmosphere (World Health Organization 2012). The air pollutants of major public health concern include: Volatile organic compounds (VOCs), particulate matter (PM), carbon monoxide (CO), ozone (O₃), nitrogen oxides (NO_x), sulphur dioxides (SO₂) and metals, such as lead (Hedges, 2004; World Health Organization, 2012; National Institute of Environmental Health Sciences, n.d).

Particulate Matter (PM) is the term used to refer to a mixture of solid particles (dust, dirt, soot, and smoke) and liquid droplets suspended in the air. These PM emissions originate from a variety of sources, such as vehicles, factories, industrial sites, construction sites, tilled fields, unpaved roads, stone crushing, and burning of wood (Hedges, 2004). Particulate Matter comprises both coarse and fine particles. The coarse particles (PM₁₀)

have an aerodynamic diameter between 2.5µm and 10µm. They are formed by mechanical disruption (e.g., crushing, grinding, abrasion of surfaces), evaporation of sprays, and suspension of dust. Fine particles have an aerodynamic diameter less than 2.5µm (PM_{2.5}). These particles are formed from gas by chemical reactions; and condensation of high-temperature vapours during combustion (Fierro, 2000).

The purpose of the ambient air quality standards is to establish maximum limits on parameters of air quality (such as those listed above) considered desirable for the preservation and enhancement of the quality of air resources and health. The WHO Air Quality Guidelines (AQGs) are intended for worldwide use but have been developed to support actions to achieve air quality that protects public health. Air quality standards are set by each country to protect the public health of their citizens and as such are an important component of national risk management and environmental policies. National standards will vary according to the approach adopted for balancing health risks, technological feasibility, economic considerations and various other political and social factors, which in turn will depend on, among other factors, the level of development and national capability in air quality management (World Health Organization, 2006). Table 3 below shows the WHO 2021 Air Quality guideline values for particulate matter.

Table 3: WHO Air Quality Guideline Values, 2021

Air Pollutant	WHO (2021) Guideline
PM _{2.5}	15 µg/m ³ 24-hour mean
PM ₁₀	45 µg/m ³ 24-hour mean

Monitoring Procedure

Ambient air quality measurements of particulate matter (PM₁₀ and PM_{2.5}) were done both upwind and downwind of the project site (see figure 11 for the monitoring location).

Air quality was monitored using a portable hand-held Aeroqual 500 Series monitor with the PM₁₀/PM_{2.5} sensor head attached (figure 12). The sensors are enclosed within an interchangeable sensor head which must be attached to the monitor's base. A single

sensor simultaneously measures PM_{2.5} and PM₁₀. The monitor registers data in real-time using a built-in data logger. The logged data was downloaded into MS Excel for further analysis. The monitor has a ±0.2 per cent degree of accuracy. The calibration certificates for the air quality sensors are presented in **Annex 7**.

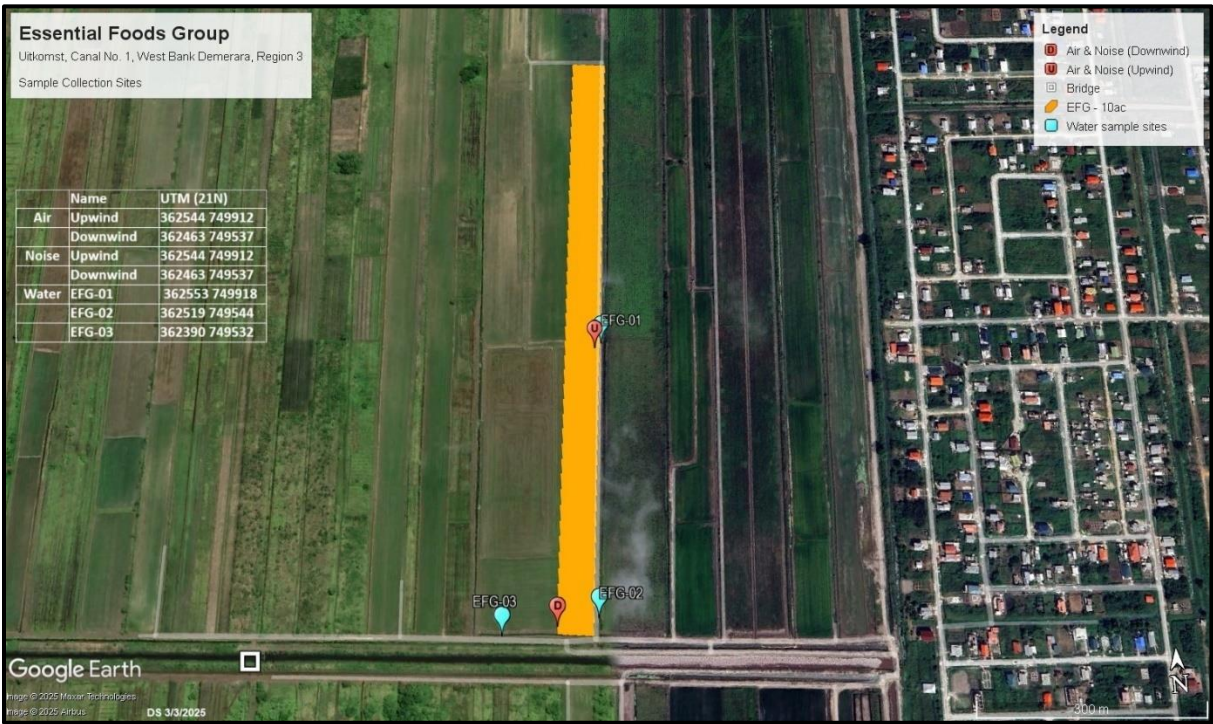


Figure 11: Google Image of Environmental Baseline Monitoring Locations



Figure 12: Baseline Monitoring of Particulate Matter

Particulate matter was measured continuously over 24 hours, so that the results could be compared with the WHO's daily mean guideline value.

It should be noted that while both upwind and downwind PM measurements were initially taken on the same day, the downwind measurement was repeated due to challenges downloading the data from the meter. As such, the downwind measurement was retaken on another day for 24 hours.

Data Results

The following table shows the results of air quality data obtained in ppm during the monitoring period (and converted to $\mu\text{g}/\text{m}^3$ for comparison with WHO Standards).

Table 4: Results of Air Quality Monitoring

Location	PM _{2.5} (ppm)			PM ₁₀ (ppm)		
	Max	Min	Avg	Max	Min	Avg
<u>Upwind</u>	0.012	0.005	0.008	0.061	0.0025	0.043
GPS coordinates:						
21 N 0362544						
UTM 0749912						
	PM _{2.5} (µg/m ³)			PM ₁₀ (µg/m ³)		
	Max	Min	Avg	Max	Min	Avg
	12	5	8	61	2.5	43
WHO (2021) Guideline:	15 µg/m³ 24-hour			45 µg/m³ 24-hour		
<u>Downwind</u>	PM _{2.5} (ppm)			PM ₁₀ (ppm)		
	Max	Min	Avg	Max	Min	Avg
GPS coordinates:	0.007	0.001	0.003	0.028	0.008	0.016
21 N 0362463						
UTM 0749537						
	PM _{2.5} (µg/m ³)			PM ₁₀ (µg/m ³)		
	Max	Min	Avg	Max	Min	Avg
	7	1	3	28	8	16

Analysis

The analysis of particulate matter revealed that both PM_{2.5} and PM₁₀ had average concentrations that were below the WHO standard of 15 µg/m³ daily mean and 45 µg/m³ daily mean respectively both upwind and downwind of the project site. The average PM₁₀ concentration at the upwind location was very close to the WHO limit, measuring 43 µg/m³. Likewise, the maximum value recorded for PM₁₀ upwind exceeded the WHO standard, measuring 61 µg/m³. The dry earthen conditions, less vegetative cover, intense sunlight and heavy winds at the upwind location, may have accounted for higher PM₁₀ values. Additionally, the lower average PM₁₀ concentrations measured at the downwind location may have been attributed to the fact that monitoring was repeated at this location after a period of rainfall, making the soil in the surrounding environment less airborne due to wet suppression. All minimum values were well below the WHO standard. These values serve as baseline air quality PM data for the project site, since no developmental activities have occurred at the site.

4.1.4 Noise Baseline

Noise pollution can be generally described as unwanted or excessive sound that can have deleterious effects on human health, wildlife, and environmental quality. Noise pollution is commonly generated inside many industrial facilities and some other workplaces; however, it also comes from highways, railways, aeroplane traffic and outdoor construction activities (Nathanson & Berg, 2024). Industries must, therefore, be mindful of their emission of noise and consider how their activities can affect the environment, including residents living within earshot.

Procedure

Sound measurements were taken at two locations (upwind and downwind), at various time periods, for a duration of one hour (figure 13). These levels were measured using two calibrated REED 8090 sound level meters, bearing serial numbers 230604542 and 220106871 (see **Annex 7** for calibration certificates).

Compliance with noise standards means that noise decibel levels should not be greater than the established permissible noise limits of the GNBS which have been adopted by the EPA.

Table 5 shows GNBS guideline values for noise emissions into the environment.



Figure 13: Noise Baseline Monitoring

Table 5: GNBS Guideline Values for Noise in Specific Environment

(Source: GNBS, 2010)

Categories	Daytime Limits (dB) (06:00 - 18:00h)	Nighttime Limits (dB) (18:00h - 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 - 01:00h	100
		01:00 - 08:00h	70

**Applicable standard for Essential Foods Group's Operation*

Data Results

The following table shows the results of noise emission data obtained during the monitoring period.

Table 6: Noise Levels Upwind and Downwind of the Project Site

Location Upwind	Date	Time	Sound level (dB)		
		Start	Max	Min	Average
21 N 0362544 UTM 0749912	Feb 27, 2025	12:00PM	82.0	35.6	54.0
SN 230604542		2:53PM	74.4	35.1	51.0
		6:00PM	65.7	39.3	51.7
	Feb 28, 2025	4:50AM	60.9	44.9	49.3
		7:35AM	67.9	35.7	45.8
Downwind					
21 N 0362463 UTM 0749537	Feb 27, 2025	9:30AM	76.2	37.5	50.9
SN 220106871		12:30PM	82.0	34.3	46.9
		3:27PM	65.6	33.6	35.1
		6:30PM	67.8	41.7	46.2
	Feb 28, 2025	4:20AM	61.0	40.7	46.4
		7:00AM	67.8	40.3	49.2

**Bolded rows represent monitoring conducted during the GNBS nighttime period*

Analysis

As the project site is currently undeveloped and is an empty plot of land, the data from the noise assessment illustrates baseline noise quality data for the project site.

None of the levels recorded during the daytime exceeded 100 dB at any of the locations, with the average noise level ranging from 45.8 to 54 dB upwind and 35.1 to 50.0 dB downwind of project site. The maximum sound level also did not exceed the 100dB

daytime limit, measuring 82 dB both upwind and downwind of the project site between 12:00PM and 12:30PM. This was attributed to vehicles, including those of nearby farmers, traversing the site. Average nighttime levels at the upwind and downwind locations ranged from 46.2 to 51.7 dB; while maximum noise levels ranged from 60.9-67.8 dB, remaining well below the allowable nighttime limit of 80dB. The results of noise monitoring are presented graphically in **Annex 8**.

4.1.5 Water Quality

Groundwater

The most important aquifers can be found in the unconsolidated, poorly sorted deltaic sands underlying the coastal lowlands (Spillman et al. 1998). Ninety percent (90%) of Guyana's population residing along the Coastal Plain receive their water supply from aquifers, while the remaining ten percent (10%) of the population receive water from surface water (Spillman et al. 1998). Groundwater exploration is concentrated in the towns and villages along the Coastal Plain. Groundwater is the most abundant, reliable and key source of fresh water for public use along the Coastal Plain. According to T. Spillman *et al* in 1998, in Guyana, approximately 60% of groundwater produced from wells is used for domestic purposes and it has become an increasingly important water source with a growing demand for surface water for agricultural and industrial needs. For the last century within Guyana's coastal aquifer system, a series of three separate but hydro geologically connected aquifers have been providing water for the coastal inhabitants of the country (Spillman *et al.* 1998).

Coastal Aquifer System

Large quantities of fresh water are available from Guyana's coastal aquifer system. This system occupies a subsurface area of about 20,000 km², extending about 250 km along the Atlantic coast and 40 to 150 km inland (Spillman *et al.* 1998). Sediments reach a thickness of 1,800 m onshore and become progressively thicker offshore and toward the east. The coastal aquifer system is composed of three connected but hydro-geologically

distinct aquifers (Spillman *et al.* 1998). The lower two aquifers are confined by overlying layers of clays which protect them from contamination by overlying sources. The three aquifers are named, from upper to lower, the Upper Sands, the A Sand, and the B Sand, with each capable of yielding large amounts of water (Spillman *et al.* 1998).

The A Sand aquifer was first developed in 1913 and is now considered the principal water source for Georgetown and the coastal lowlands region (Spillman *et al.* 1998). The Intermediate Clay Formation, which is about 90 m thick and composed of clay and shale, acts as an impermeable barrier between the Upper Sands and the A Sand aquifers (Spillman *et al.* 1998). The A Sand aquifer is composed of quartz sand and fine gravel, and ranges from 150 to 215 m deep and 12 to 27 m thick (Spillman *et al.* 1998).

In general, the aquifer increases in thickness and depth south eastward from the village of Enterprise to Berbice. From Berbice to the Corentyne River, the A Sand aquifer decreases in thickness and depth (Spillman *et al.* 1998). This aquifer yields between 4,000 and 40,000 L/min year-round (Spillman *et al.* 1998). The quality of water withdrawn from this aquifer is good with a low chloride content; however, its high carbon dioxide and iron content can corrode ferrous and cement-based materials, with the excessive iron requiring treatment (Spillman *et al.* 1998). When this aquifer was first used, it had a piezometric head 4.5 m above ground level. By 1993, dewatering of this aquifer caused the head to fall to 14 m below ground level (Spillman *et al.* 1998). Within the study area drinking water is supplied by Guyana Water Inc. from groundwater. The number of private wells in the area is currently unknown.

Surface Water

The quality of water is generally used as an indication of the health of the ecosystem it supports. This is determined by measuring important chemical, physical and biological parameters of the water such as total coliforms, pH, turbidity, dissolved oxygen, total dissolved solids (TDS), total suspended solids (TSS), biological oxygen demand (BOD), chemical oxygen demand (COD) and the concentration of various ions. These parameters can also indicate whether water is safe for consumption and how effluent from industries or other environmental factors may be affecting the environment itself.

Procedure

Water quality testing was done *in situ*, and water samples were taken at various strategic points surrounding the project site to provide an indication of the baseline surface water quality (refer to figure 11).

Important parameters which contribute to determining the quality of water were measured and the baseline data obtained would serve to determine the extent to which any effluent discharge from the operation may affect these areas in the future.

Tests were done for pH and temperature *in situ* by BrinsJen SDS at three surface water sampling locations on February 27, 2025 (see figure 14). In addition, water samples were collected from these same locations on March 5, 2025, for measurements of turbidity and total suspended solids. The analyses of these samples were done by Guyana Water Inc's laboratory. The results of the water quality assessments are attached in **Annex 9**).



Figure 14: In-situ Water Sampling (pH and Temperature)

Data Results

Figure 15 shows the results of surface water quality measured in-situ on February 27, 2025 by BrinJen SDS.

Results				
Location	Sample ID	Parameter		Time
		pH	Temperature	
Eastern Canal Boundary (section close to the furthest tent) (N 06.782828 W 058.243739)	EFG-01	3.36	86.6F (30.33C)	12:05 pm
Eastern Canal Boundary (section close to the road intersection) (N 06.779438 W 058.244068)	EFG-02	3.65	88.6F (31.44C)	12:23 pm
Southern Canal Boundary (close to the ploughed/cleared section) (N 06.779330 W 058.245234)	EFG-03	3.55	87.1F (30.61C)	12:35 pm

Figure 15: Results of In-situ Measurements of pH and Temperature

The following table shows the results of water quality analysis by GWI's laboratory on March 5, 2025.

Table 7: Results of Turbidity and TSS Concentration in Water Samples

Samples	Turbidity (NTU)	Total Suspended Solids (mg/L)
#1	11.9	35.25
#2	22.2	14.50
#3	19.1	10.50

The locations where the samples were collected are identified on the map in figure 11, and as and described in figure 14. These locations should also become permanent monitoring sites, if effluent from the operation is being discharged into these canals. Nevertheless,

consideration must also be given to the presence of farmlands from which effluent may also be discharged.

Analysis

The results of the surface quality analysis conducted for EFG serve as the baseline for surface water quality parameters prior to commencement of any construction or operations of the project. For the parameters that were analysed the results were as follows:

pH - The detected pH levels ranged from 3.36 to 3.65, which indicates that the water is acidic and below the 5.0 – 9.0 range recommended by the GNBS Interim Guidelines for Industrial effluent into the environment. This is an important observation as it indicates that the natural baseline water quality pH is acidic even before any project development has commenced, and any future measurements should be compared to this baseline measurement.

Water temperature - The daytime temperature of the surface water (which ranged from 30.33°C to 31.44°C) was within the GNBS accepted range of below 40°C which is considered healthy for living organisms.

Turbidity - The turbidity level of the water samples ranged from 11.9 to 22.2 NTU and were below the <30 NTU limit prescribed by EPA (as referenced in condition 5.2 of the permit). Values recorded serve as baseline data of the project environment before commencement of construction and operation activities.

Total Suspended Solids (TSS) - TSS results of the water samples collected ranged from 10.5 to 35.25 mg/L indicating that baseline results obtained are all below the GNBS Interim Guidelines for Industrial effluent into the Environment (i.e., <50mg/L).

4.2 Biological Environment

Flora

Agricultural lands are to the west, south, and north of the project so the surrounding area is covered with secondary vegetation. Agriculture and other anthropogenic activities (clearing of land for housing and road construction) have removed the vegetation in the area and the secondary vegetation that has regrown is greatly simplified. Some of the surrounding areas that are under agricultural practice are cultivated with pineapples, rice and cassava. The plots under active cultivation are to the north (pineapple) and west (rice) of the project site.

A rapid floral survey was conducted on the 10th of March 2025 to document the baseline vegetation of the facility. During the survey, the different plant species were identified to determine the diversity of species at the project site. The dominant vegetation type at the proposed project site was grass (family Poaceae). Some of the species observed were *Brachiaria mutica* (para grass), *Echinochloa colonum* (bird seed grass), *Paspalum virgatum* (razor grass), *Andropogon bicornis* (cow tail), *Hymenachne amplexicaulis* (bamboo grass), *Setaria glauca* (fox tails). Some of the species observed at the project site are shown below.



Figure 16: *Paspalum virgatum*



Figure 17: *Brachiaria mutica*



Figure 18: *Andropogon bicornis* (brown inflorescence)



Figure 19: *Nephrolepis multiflora*

Shrubs, ferns and sedges also colonised the project site. These include *Montricardia arborescens* (Monk moko), a species that is very common along canals and swampy areas, *Ipomoea aquatica* (morning glory), which inhabits lowland rice fields, canals and damp wastelands, *Heloconia* sp, and *Nephrolepis multiflora* (Hasar), a fern commonly found on wastelands. Generally, the vegetation at the project site and the surroundings are species that colonise lowland rice fields, roadsides, waste grounds, irrigation and drainage canals. All the species observed are colonizers of disturbed areas.

Fauna

Very few bird species were observed (seen or heard) during the faunal survey which was conducted on March 10, 2025. Additional information on the fauna at the project site and surrounding landscape was obtained from the Environmental Impact Assessment for the gas-to-shore project. The gas-to-shore pipeline lies approximately 400 to 500 metres from the project site.

The low bird diversity in the project area could be linked to the absence of complex vegetation structures which are likely to provide diverse habitats and food sources for avifauna and attract a variety of birds. Most of the birds observed were species that inhabit grassy and shrubby vegetation. The male and female, red-breasted meadowlark (*Leistes militaris*) was observed feeding on the birdseed grass in the area (figure 20). This was the dominant species observed during the survey and the only species documented on the recorder. The meadowlark is known to be associated with open areas such as moist grasslands and cultivated areas.

Swifts and kiskadee were seen flying over the project site. The tropical mockingbird (*Mimus gilvus*) was also observed during the survey. The tropical mockingbird inhabits open areas where they forage on the ground or low vegetation. This species may also perch on vegetation and fly to capture insects. The egret was observed in a nearby rice field while four crows were seen in the nearby abandoned agricultural land to the west of the project site.

Although only a few bird species were observed, the area is expected to harbour predominantly granivores and species found in human disturbed landscapes. Reports indicate that the savannah fox (*Cerydocon thous*) inhabits the area. This species is nocturnal but there was no indirect evidence (footprints, droppings) of this species during the survey.



Figure 20: A male, Red-breasted meadowlark perched on the grass

4.3 Socio-economic Environment

4.3.1 Demography

The residential communities surrounding the project site include Onderneeming, La Parfaite Harmonie, and Westminster, located to the east, while the Uitkomst community is situated to the south. The demographic data presented in this section were extracted from the Guyana Population and Housing Census 2012.

According to the 2012 census, Onderneeming had a total population of 1,414 residents, with 47% males and 53% females. The La Parfaite Harmonie community recorded a population of 1,495, comprising 49% males and 51% females. In Westminster, the census reported a population of 2,463, with 49% males and 51% females. The Uitkomst community, located south of the project site, had a significantly smaller population of 86 residents, consisting of 43% males and 57% females.

The ethnic composition of these communities, as recorded in the 2012 census, is as follows:

- Onderneeming: 46% African descent, 27% East Indian, and 26% mixed ethnicity.
- La Parfaite Harmonie: 42% African descent, while both East Indian and mixed-race residents each accounted for 27% of the population.
- Westminster: 39% African descent, 33% East Indian, and 26% mixed ethnicity.
- Uitkomst: Predominantly East Indian (61%), with 8% Afro-Guyanese, and 14% mixed ethnicity.

It is important to note that, given the rapid expansion of the oil and gas sector and its associated support industries, along with the transition from sugarcane cultivation to more diversified economic activities, it is reasonable to assume that the demographic composition of these communities has evolved since the last census.

4.3.2 Community Consultations

Previous Consultations

The project team during their feasibility study consulted with farmers within the project area of influence. The farmers have endorsed the project for its direct and indirect benefits. In this regard, a signed petition was shared with the Ministry of Agriculture pledging this support of the construction of the road to facilitate smooth project implementation.

EFG in its business model will seek to work closely with existing rice farmers to provide raw materials for their operation. The farmers alluded to benefits of the road in support of EFG's operation which includes improving local farmers' ability to access their lands, boost local employment, and create economic opportunities. Additionally, it will attract more investors, leading to increased investment and business prospects in the area.

Community Consultation Summary

Consultations were conducted through one-on-one interviews with residents to inform them about the project and gather insights into the existing community dynamics. The majority of participants have resided or worked in their respective communities for 7 to over 60 years. Approximately nine (9) households in the Canal Number One and La Parfaite Harmonie communities were engaged, providing valuable perspectives on socio-economic and infrastructural changes over the years.

Residents highlighted significant developments within their communities, including new housing projects, improved infrastructure, and enhanced social services. They expressed support for the project, recognising its potential benefits to the community. However, they also emphasised the need for greater access to project-related information, particularly regarding employment opportunities. Stakeholders suggested the dissemination of information through pamphlets or other visible communication channels as the project progresses.

Key Concerns Raised by Stakeholders

1. **Flooding** of residential yards during the rainy season
2. **Increased transportation costs** during off-peak hours
3. **Limited access** to advanced healthcare and social services
4. **Restricted employment opportunities** within the communities
5. **Absence of recreational facilities**
6. **Lack of meaningful support services** for senior citizens

Community Development Priorities Identified by Stakeholders:

- Establishment of **recreational facilities**
- Expansion of **local employment opportunities**
- Improved **access to reliable healthcare**, particularly in Uitkomst, where the nearest health center is over one mile away

These findings emphasise the need for targeted interventions to address infrastructure, employment, and social service gaps within the communities.

Key knowledge Holder Interview

A key knowledge holder interview was conducted with one of the long-standing farmers in the area to gather insights into past and current agricultural operations in and around the EFG project site.

Historically, the area was utilised for sugarcane cultivation. However, due to the decline in sugarcane yields, the land was leased to farmers for the cultivation of alternative crops. Rice cultivation commenced in 2015, though currently, only two rice farmers remain in the area. The primary agricultural activity is pineapple cultivation, complemented by the

production of watermelon, plantain, bananas, and various cash crops. While most crops are harvested manually, rice farming employs mechanized harvesting techniques.

Crops are sold in Georgetown, at local markets, and exported to Suriname. Rice production follows a biannual cropping cycle, with harvests occurring in March and September. Irrigation water is sourced from surrounding canals. Additionally, local residents utilise the area for fishing and hunting, with Labba, Aruri, and iguana being the most commonly hunted wild animals. The area also supports a diverse range of insects and other biodiversity.

Challenges in Farming Operations:

- **Flooding** during the rainy season
- **Unpredictable weather patterns** impacting crop yields
- **Inadequate road infrastructure** for farm access
- **Crop destruction by Acoushi ants**, though this issue has declined over time

These findings highlight the agricultural potential of the area while underscoring the challenges that require targeted interventions to improve farming conditions and productivity.

4.3.3 Socio economic overview of communities

The communities surrounding the project site have experienced significant infrastructural development and economic growth. Improved road networks have enhanced accessibility across all four communities, facilitating transportation and connectivity. Waste management services are available on a weekly basis, predominantly provided by Puran Brothers Disposal Service.

Residents have access to essential services, including primary and secondary schools, daycare facilities, and healthcare centers. While small businesses such as grocery shops and fast-food stalls are present, large supermarkets, primarily owned by Chinese nationals, serve as the main commercial outlets. Telecommunication services are provided mainly by One Communications and E-Networks, while potable water and

electricity are supplied by Guyana Water Inc. and Guyana Power and Light (GPL), respectively.

Public transportation is available through buses and short-drop taxis. Buses operate from Vreed-en-Hoop and Georgetown, while short-drop cars provide localised transport services within the communities. Additionally, residents have access to religious institutions, including churches, mosques, and temples. However, recreational facilities are absent within these communities.

Employment opportunities remain limited in diversity, with residents primarily engaged in farming, small business entrepreneurship, government employment, sales, and construction. A significant number of individuals also commute to Georgetown and other areas within Region 3 for work. Notably, no commercial banks are located within these communities.

The socio-economic landscape of these communities continues to evolve, influenced by major developments such as the construction of the New Demerara River Bridge, the Vreed-en-Hoop Shore base, and oil and gas support services. Historically, these areas were agriculturally driven, but rapid conversion to housing developments has reshaped their economic profile. Nevertheless, farming remains a key economic activity for many residents.

5. Potential Environmental and Social Impacts

5.1 Impact Assessment Methodology

The impact assessment was conducted following a series of steps. Potential impacts expected from projects of this nature were obtained from various literature sources and the project documents. Baseline conditions at the project site which were used to predict impacts were obtained during field visits to the project site. Information sources consulted to characterise anticipated impacts included Environmental Impact Assessment for the Gas to energy project.

The following steps were followed to conduct the impact assessment for this project:

- (i) **Characterisation of ambient conditions:** The ambient/baseline conditions of the environment were assessed. Ambient conditions represent the existing state of the environment during the operational phase of the project.
- (ii) **Impact Identification:** Identification of the sources (activities/processes) of the existing and potential impacts of the project. For the identification and prediction of impacts, ambient environmental conditions were used as reference points. The potential impacts on the different receptors were identified, described and analysed. Impacts were described based on their nature (positive, negative, direct, indirect, cumulative).
- (iii) **Determination of impact significance:** the third step involved the determination of the significance of the impacts identified
- (iv) **Identification of mitigation measures:** mitigation measures for negative impacts were proposed to avoid or minimise the adverse potential impacts of the project. However, mitigation measures were not developed for negative impacts that were deemed to be of negligible significance. Impacts were rated after the implementation of mitigation to produce a “residual” impact rating.

- (v) For positive impacts, enhancement measures were proposed but no magnitude was assigned to these impacts.

Impact Rating Criteria

The impact rating is the product of two elements: (1) the magnitude of the potential impact and (2) the sensitivity of the impacted resource or receptors.

Impact Magnitude

The magnitude of each impact (the nature and degree of change impacts are expected to have on resources or receptors) was determined using the characteristics below:

- (i) **Geographical extent/ location** (area impacted, volume covered, distribution). The geographic extent is defined as how far an effect is observable, that is the geographical reach of an impact area. Geographic extent considers the extent to which environmental effects caused by the project may occur in areas far removed from it.
- (ii) **Intensity:** Concentration of emission or discharge with respect to standards of acceptability that include applicable legislation and international guidance, its toxicity or potential for bioaccumulation, and its likely persistence in the environment.
- (iii) **Duration** (short-term, long-term, intermittent, continuous, regularity and periodicity). Duration describes the length of time during which an impact is observable. It also considers the period over which an environmental impact occurs. Long-term environmental impacts may be significant. Short-term impacts may also be significant, especially if the short-term impacts negatively affect public perception of a project.

The impact magnitude rating is presented in table 8.

Table 8: Rating of Impact Magnitude

Criteria	Impact Magnitude			
	Negligible (1)	Low (2)	Moderate (3)	Severe (4)
Geographical Extent	Impact confined to the project site	Impact in the range of tens to hundreds of meters from the project site	Impact at an intermediate distance from the source (in the range of hundreds to thousands of meters)	Impact ranges a far distance from the source (in the range of thousands of meters and above)
Intensity	Impact/emissions are lower than or marginally higher than permissible limits; do not persist in the environment or can be reversed; no disturbance of species; not immediately dangerous to health and human life	Impact/emissions marginally higher than permissible limits; do not persist in the environment or can be reversed; no disturbance of species; not immediately dangerous to health and human life	Impact/emissions noticeably higher than permissible limits; may persist in the environment; may cause minor disturbance of species; not immediately dangerous to health and human life	Impact/emissions significantly higher than permissible limits; may persist in the environment; high likelihood of disturbance of species; may be immediately dangerous to health and human life
Duration	Impact instantly resolves (ex: minutes to hours) without intervention	Impact is short-term (ex: days) and resolves without intervention	Impact is medium term (ex: weeks to months); may require intervention to resolve	Impact is long term (> 3 months); high possibility of an intervention being required

N.B- The number near each impact magnitude represents the value of the magnitude

Sensitivity of the Receiving Environment or Receptors

The sensitivity of the physical and human receptors to the proposed Project was also used to rate impacts. Physical parameters considered were air, water quality and noise level. The sensitivity designations below were used for the assessment.

- **Low sensitivity:** the receptor/resource has some tolerance to accommodate, adapt or recover from the anticipated impact.
- **Medium sensitivity:** Receptors/Resources have limited capacity to accommodate, adapt or recover from the anticipated impact.
- **High sensitivity:** the receptor/resource has very limited or no capacity to accommodate, adapt or recover from the anticipated impact.

The values assigned to the sensitivity designation are shown in brackets in the table below.

Table 9: Sensitivity Criteria and Values

Resource/Receptor	Sensitivity Designations		
	Low (1)	Medium (2)	High (3)
Ecological/Ecosystem	Built-up land ex: industrialized areas, highly urban areas	Wetlands, poorly drained soils, arable land, meadows, pastures	Waterways ex: rivers, lakes, coastal habitats, ground water and other nutrient-rich water sources; Natural heritage sites; Forests; Agricultural lands; Protected lands; Poor resilience to negative environmental impacts i.e., unable to adapt
Flora and Fauna	Not belonging to medium or high classifications	Internationally threatened species/protected area outside of periods of high sensitivity or during routine or reliably predictable peak presence; Nationally protected species and/or species which are of importance to the local and regional ecosystem within the area	Internationally threatened species, or protected species during periods of high sensitivity (e.g., during breeding, spawning, or nesting) and during routine or reliably predictable peak presence; Poor resilience to negative impacts i.e., unable to migrate or adapt

		impacted by the project activities; Moderate capacity to adapt or absorb impacts, ex: migration such that sustainability of the species is maintained	
Human	People seldom found in the geographic area; Least vulnerable group; Ambient conditions (e.g., air quality, noise levels) below regulatory standards	Transient contact with the geographic area ex: commercial or recreational activities; vulnerable to environmental changes; Ambient conditions (e.g. air quality , noise levels) below regulatory standards	People dwelling permanently e.g.: Residential areas; Low resilience/groups most sensitive to environmental changes ex: schools, elderly dwellings, childcare centres; Ambient air quality conditions above regulatory standards

Rating of Impacts

The magnitude of the anticipated impacts ranged from negligible to severe. This rating was derived from the various characteristics (explained above) of a particular impact. Some of the potential impacts associated with this project are very small and therefore would be undetectable. Consequently, these impacts were characterized as having a **Negligible** magnitude. Based on the above characteristics, impacts were rated as:

- (i) **Negligible**
- (ii) **Low**
- (iii) **Moderate**
- (iv) **Severe**

The impact rating matrix is shown in the figure below.

Impact Magnitude	Sensitivity of the Resource/Receptor			
		Low	Medium	High
	Negligible	Negligible	Negligible	Negligible
	Low	Negligible	Minor	Moderate
	Moderate	Minor	Moderate	Major
	Severe	Moderate	Major	major

Figure 21: Impact Rating Matrix

5.2 Impacts on Physical Resources

5.2.1 Air Quality

There will be several sources of air emissions during the construction and operation of the proposed facility. Gaseous and particulate air emissions will arise from the operation of excavators, trucks, loaders, generators, compactors and concrete mixers used particularly during the construction phase of the project. PM₁₀ and PM_{2.5} would be emitted from the resuspension of dust on unpaved roads or areas devoid of vegetation, which are likely to be exacerbated during the transportation of construction materials to the site, earthworks (e.g., grading and excavating), pile driving. Gaseous emissions such

as carbon dioxide, carbon monoxide, sulphur dioxide and nitrogen dioxide will be generated when fuel is combusted (completely or incompletely) during the operation of vehicles and heavy-duty equipment.

During the project's operational phase, the drying of paddy and burning of paddy husks are the primary source of emission. The burning of paddy husk especially at high temperatures is known to generate ash and smoke which can have adverse effects on the environment due to the incomplete conversion of carbon (Sigalingging et al, 2020). Further, due to their small particulate size (approximately 50% of the particles are less than 0.005mm) and rich silica content (more than 90% silica content), long-term exposure to rice husk ash may cause lung cancer, silicosis, chronic obstructive pulmonary disease (COPD) and tuberculosis (Hossain, et al, 2024). Incidentally, it is these properties of rice husk ash which them suitable for alternative use as a secondary raw material in cement production (Das, et al, 2022).

Although minimal, vehicles transporting paddy and other materials to the facility during operation are another source of gaseous air emissions.

Elevated levels of particulate matter in the air could adversely impact human health and the environment. Particulate matter may settle on trees and reduce their productivity. This is particularly important considering that there are crop production activities surrounding the project.

In terms of geographical extent, without any mitigation measures, emissions from the facility could extend in the range of hundreds to thousands of meters from the facility and cause air quality to be significantly higher than permissible limits. Since the wind blows predominantly from the east, residents of Onderneeming and Westminster are not expected to be affected by particulate matter emissions because they are on the eastern side of the project. However, residents to the west of the facility, especially those with pre-existing respiratory illness could be particularly vulnerable to the adverse effects this project can have on air quality in the absence of appropriate mitigation measures. When inhaled PM₁₀ can irritate the respiratory tract while exposure to PM_{2.5} can cause diseases of the respiratory and cardiovascular systems. Emissions into the air can therefore be long-term and dangerous to health and human life.

The physical and biological receptors can be considered as having low sensitivity since the area is built up, and the baseline particulate matter levels were below regulatory limits. Also, no communities are within 400 m of the facility.

Without the implementation of mitigation measures, the impact of the project on PM₁₀ and PM_{2.5} levels will be of **Minor Significance (Moderate Magnitude and Low Sensitivity)**.

5.2.2 Noise

During the construction phase of the project, noise and vibrations will be generated from the operation of heavy-duty machinery (e.g. forklifts, rollers, trucks, lifts, excavators and loaders), the use of generators and from pile driving activities. During plant operation, noise will be emitted from the operation of turbines, generators, processing equipment and machinery, and vehicles transporting materials to and from the facility. Noise will also be generated during the movement of the conveyor, rice milling and packaging, and operation of the boiler and furnace. Noise levels are also expected to be elevated when large trucks are used to deliver the products to the port in Georgetown or the processing facility. The intensity of noise generated at the facility when in operation will be influenced by the number of machines, equipment and vehicles operating simultaneously and the distance between the noise source and the employees.

Noise can affect residents living close to a project. The closest residential housing area is approximately 400 metres west of the facility. Noise generated during the operation of the facility will be periodic, long-term, of medium intensity and will extend over a small geographical location (will be confined to the Project site) since the agro-processing facility will be enclosed. The primary human receptor in this case will be employees who may be occupationally exposed to noise.

The human receptors at the project site will be able to tolerate the noise emission levels since ambient levels did not exceed the acceptable threshold levels during the day and night and they are not expected to exceed these during operation, since the noise producing activities will occur in an enclosed building. The effects of noise on human

receptors will be of negligible intensity. With regard to the geographic extent, noise generated by the operation of the facility will be confined to the project site (localized) since the plant will be enclosed. Considering the foregoing, the impacts of noise on human receptors would be **Negligible (Low Magnitude; Low Sensitivity)**. This impact therefore does not need to be mitigated.

5.2.3 Water Quality

Any discharge from the facility directly into the surface water towards the western side of the facility may have a localised impact on surface water quality and aquatic biodiversity. The key sources of potential impacts on surface water quality from planned Project activities are the discharge of wastewater, oil and sanitary waste from the facility, or the runoff of sediment-laden water during construction activities. Discharge of wastewater can alter other water quality parameters such as pH and temperature and impact overall water quality.

The drain to the west of the proposed facility is colonised by semi-aquatic and aquatic plants including *Echinochola pyramidalis* (antelope grass) and plants belonging to the *Nymphaea* family. Dragonflies were also seen hovering above the water. The discharge of oils into the nearby waterway can increase the total oil and grease concentration in surface water, making the water uninhabitable for organisms. Agricultural lands form the western, southern and northern boundaries of the project, and a drain borders the eastern side of the proposed facility. Some of these lands are still under cultivation, and farmers were observed applying fertilizers to pineapples that were under cultivation northwest of the proposed location. Fertilizers and other agricultural inputs can contaminate surface water via runoff. The waterway bordering the proposed facility is likely to be degraded because of its proximity to agricultural lands.

During operation, wastewater will be produced from the rice polishing process; however, this water will not be discharged into the surrounding drains. Instead, it will be repurposed for use in the landscaping and shrubbery watering systems. All water used in processing will be captured and repurposed for groundskeeping. Grey and black water

from washroom facilities will be directed to the septic tanks constructed on site. As a result, no untreated effluent will be discharged into the nearby water bodies.

Without the implementation of mitigation measures, any effluent discharged into the nearby waterways would be considered minor given the low sensitivity of the nearby waterways and the small impact it may have on water quality and aquatic fauna and flora. Thus, the impact on water quality is expected to be **Minor (Moderate Magnitude, Low Sensitivity)**.

5.2.4 Waste Management

Poor waste management can create a breeding ground for pests and pathogens, negatively impact the aesthetics of the environment and create malodour. During construction, waste concrete, wood, steel, soil, sand, aggregates and PVC pipes will be generated. Municipal waste such as plastic bottles, food boxes, aluminium cans and glass bottles will be generated by construction workers. In instances where the construction company may be servicing vehicles and equipment such as generators on site, waste oil, which is considered hazardous waste, will be generated for disposal.

Different waste streams will be generated at the project site during the operation of the facility. Waste streams will originate from the administrative office, routine vehicle maintenance, rice mill and general agro-processing facility. There will be no dumping of materials from the processing of paddy since the paddy husk will be collected and used for fuel regeneration. Ash production will be reduced by burning at low temperatures and any fly ash released from the process will be captured by the use of electrostatic arrestors which trap airborne particulate matter. The ash generated from the operation will be recovered and recycled for use in the Company's downstream operation. Waste oil generated from vehicle maintenance will be disposed appropriately.

Waste generation is not expected to pose a significant adverse impact on the environment since most of the agricultural waste will be reused. Additionally, with the implementation of the appropriate mitigation measures, waste generation will not have a significant

impact on the environment. Therefore, the impact of the project on waste generation will be **Negligible (Low Magnitude, Low Sensitivity)**.

5.3 Impacts on Biological Environment

There are no anticipated significant impacts on the biological environment since the project site is agricultural land that is now colonised mainly by several species of grasses. The areas surrounding the proposed facility consist of agricultural lands that are being cultivated by rice or pineapples. The agricultural lands have been reduced to monocultures and as a result, the plant diversity at the project site has been drastically reduced. This reduction can explain the low faunal diversity in the area. Very few birds use the habitats at the proposed project site. There are no critical or protected habitats or species at the project site. Thus, the introduction of this project will have **Negligible Impacts on Biodiversity (Low Magnitude, Low Sensitivity)**. As a result of the negligible rating, no mitigation measures are required for this impact.

5.4 Occupational Health and Safety Impacts

During site preparation and construction, workers may be exposed to several hazards. These may result in impacts to the construction workers and persons traversing the construction site, especially in instances where the appropriate safeguards are not implemented.

The clearing and leveling of the land and construction of the facility's buildings and parking lot may result in construction hazards such as falls from heights, slips and trips. Machinery hazards such as vehicular accidents and power tool incidents may also occur. Further, if construction workers are not adequately hydrated, especially on hot days, heat stress and dehydration may result.

During operation employees of EFG may be occupationally exposed to risks that can result in adverse effects on their safety and health. At various stages of milling and processing, exposure to dust and noise, accidents and injuries may occur. More specifically, the drying, milling and processing activities may cause inhalation of dust and

respiratory complications in mill workers, noise induced hearing loss, burns and fire from grain dust accumulation. Failure to follow standard operating procedures (SOPs) and safety guidelines can also result in injuries to employees or in an extreme case cause fatalities. Finally, the loading, unloading and transportation of materials can cause accidents, injuries from improper lifting and vehicular incidents and mishaps.

In the absence of appropriate preventive and mitigation measures, impacts related to occupational health and safety may be categorised as **Major (Severe Magnitude, Major Sensitivity)**.

5.5 Socio-economic Impacts

The construction and operation of this project can pose significant social impacts (including occupational health and safety risks). However, due to the significant investment and EFG's drive to work with the local communities, several socio-economic benefits will be realised.

5.5.1 Social Risks

The table below presents the social risks associated with the project.

Table 10: Social Risks Associated with the Project

Impact factor	Description	Potential risks
Safety and security	Multiple access points to the project site create potential entryways for animals and unauthorised individuals, posing risks such as accidents, theft, and vandalism	Potential harm to individuals and property may result in injuries, project delays, and financial losses

Natural hazards and social risks	Factors including extreme weather events such as flooding and droughts, power disruptions, and damage to equipment and machinery	Worker injuries, decreased productivity, operational downtime, and financial losses
Incidents/accidents	Transportation of construction materials through residential communities, development of the access road, construction of the rice mill and agro-processing facility, potential leaks or mechanical failures, and the operation of the daycare center at the facility, Construction and operation of the Well	Risks include potential injuries or fatalities affecting community members, subcontractors, and staff, as well as financial implications associated with equipment and machinery repairs, project delays, and revenue losses
Fires/explosions	Potential hazards include fuel leakage, accidental chemical spills, and combustion risks resulting from improper handling or inadequate storage practices	Potential harm includes damage or destruction to property and personnel, disruptions in service delivery, and financial losses
Insects and pests	The proliferation of mosquitoes, cockroaches, rats, and other pests from poor waste management practices	Damage to agricultural produce, disruption to staff well-being, and economic setbacks
Occupational safety and health	Non-compliance with occupational health and safety protocols by staff, subcontractors, and service providers, including inadequate or improper use of personal protective equipment (PPE)	Elevated risk of occupational hazards, workplace injuries, and fatalities
Communication	Insufficient and improperly designed communication procedures and equipment may result in safety and security risks	May lead to incidents and accidents, customer dissatisfaction, reduced productivity, and financial losses
Compliance	Non-compliance by subcontractors and staff with the requirements outlined in the Environmental	Heightened risk of negative environmental and public health impacts

	Management Plan, Environmental Permit, Fire Safety License, and other applicable legal and administrative frameworks governing the project	
Grievances and complaints	Potential challenges may emerge involving subcontractors, employees, and the general public during both the construction and operational phases	This may lead to reduced productivity, project delays, increased employee dissatisfaction, and high staff turnover
Unskilled staff	Improper operation of machinery and equipment, as well as failure to adhere to established processes and procedures	Heightened occupational hazards, increased risk of accidents and incidents, potential harm to individuals and property damage, resulting in financial losses.

5.5.2 Socio-economic Benefits

The construction of the access road, and operation of the rice mill, and agro-processing facility is anticipated to generate significant socioeconomic benefits for the surrounding communities while contributing to national economic development. The key benefits include:

1. Employment Generation

The project will create direct employment opportunities, with a strategic focus on hiring personnel from local communities. Additionally, it will facilitate indirect employment through supply chain activities such as farming, logistics, and retail. Special provisions will be made to enhance employment opportunities for women (including single mothers) from adjacent communities.

2. Enhancement of Livelihoods

The establishment of the facility will provide local businesses with opportunities to supply goods and services across all phases of the project, thereby fostering economic growth and improving income levels within the community.

3. Infrastructure Development

The project includes the construction and upgrading of the main access road and installation of lighting systems. These improvements will not only enhance accessibility to the facility but will also provide surrounding farmers with better transportation routes to their farms, facilitating improved agricultural productivity and market access.

4. Technology Transfer and Modernisation

The implementation of a modern rice mill and agro-processing facility, equipped with state-of-the-art technology, will introduce advanced processing techniques. This will lead to increased operational efficiency, improved product quality, and the promotion of technological innovation within the local agricultural sector.

Overall, the project is expected to drive economic development, improve infrastructure, and enhance the livelihoods of the surrounding communities while ensuring a sustainable and technologically advanced agricultural processing framework.

6. Mitigation Measures

Development activities in every sector are accompanied by associated risks which may result in potential harm to environmental resources. Mitigation measures are developed in response to the reality that impacts are unavoidable; and as such are designed to minimise those impacts, after accepting that they will most likely occur. In the context of this project, control measures have also been integrated into the planning process, which instead of reducing the effects of the impact, removes the effect altogether. Therefore, the measures outlined below, while titled “mitigation measures” also include those impact control/preventive measures. A schematic of the activities, impacts and mitigation measures associated with paddy delivery, paddy drying, rice milling and polishing is included in **Annex 15**.

6.1 Mitigation Measures for Physical Components

6.1.1 Air Quality

Construction

During construction activities, impacts on air quality result from particulate matter (dust) and gaseous emissions. Therefore, strategies to address this impact must address the root causes, i.e. the source of emissions. Therefore, the measures which will be implemented during the construction phase are as follows:

- Materials being transported to and from the site, which can become easily airborne, such as sand, loam, and clay, will be securely covered with tarpaulin or other suitable material
- During the baseline assessment, it was noted that the existing environment already has a high concentration of particulate matter. Therefore, to address this concern, wet suppression of the area will be conducted using a sprinkler system or other suitable wet suppression techniques. The frequency of wet suppression will increase on hot, windy days and during activities such as pile

driving and other earth works likely to resuspend particles/dust into the atmosphere

- Stockpiles of construction materials will remain covered with suitable material at the end of the working day. This is to minimise the amount of dust which becomes airborne, given that the area is already windy and does not include any nearby vegetative barriers at the height to trap dust particles
- In accordance with the traffic management plan (TMP), a speed limit of 30 km/h for all vehicles accessing the site will be instituted, to avoid excessive amounts of particulate matter being emitted into the atmosphere
- Vehicles, machinery and equipment used during construction will be adequately maintained and serviced in accordance with the manufacturer's specifications, to minimise the release of gaseous air pollutants, commonly associated with poorly maintained vehicles. Vehicle maintenance will be documented, and records will be kept using the vehicle maintenance form (**Annex10**).
- As far as practical, idling of vehicle and machinery engines will be avoided
- All construction workers will be issued with appropriate PPE such as dust mask and eye protection to prevent any residual dust from being inhaled or causing irritation of the eyes
- Air quality monitoring for particulate matter will be conducted at least once during the construction process

Operation

Rice mills have been known to result in air emission (primarily particulate matter) and are a source of complaints from residents. The open burning of paddy husk

releases toxic air pollutants which can cause severe respiratory complications to humans (Mannan et al, 2022; Phuong, et al, 2021; El Safty, 2020). However, during the conceptualisation and subsequent planning of this project, EFG addressed the concern of potential dust pollution by including the use of pollution control devices as part of their system. This, along with other measures, will be implemented during operation as a means of significantly reducing air emissions. These measures are as follows:

- The compound of the facility will be paved prior to operation, to minimise the release of dust from unpaved land surfaces into the atmosphere. Further, in collaboration with the community, EFG will continue to engage the Ministry of Agriculture to have an all-weather road constructed from the Canal #1 access road to EFG's site
- The 30 km/h speed limit instituted as part of the TMP and applied during construction activities, will be maintained during operation
- Paddy being transported to the site will be covered using suitable material, to avoid them from becoming airborne. Apart from the environmental considerations, it would also be in the best economic interest of the suppliers, to ensure that the maximum amount of paddy is delivered to the facility
- Cyclone dust separators will be used to capture dust emitted during the drying and milling processes, to prevent them from becoming airborne
- The drive towards energy efficiency would see the use of rice husk as the primary energy source; as such no diesel or gasoline-powered generators will be used to provide electricity to the facility, therefore avoiding the release of emissions associated with the operation of such generators
- Paddy husk is an input to the power generation process and as such there will be no open burning of paddy husk. This will, however, be burned under

controlled conditions (durations, temperatures and time) to significantly minimise the release of smoke and fly ash.

- Electrostatic precipitators, known to have a 99% particulate matter removal rate, will be installed in the exhaust flue to further minimise the release of fly ash
- All equipment and machinery will be maintained in accordance with the manufacturer's specifications. Preventive maintenance schedules will be prepared and strictly followed.
- The facility will be inspected frequently to ensure that there are no system breaches which can cause the release of dust into the atmosphere. Inspections will also ensure that pollution control devices are working effectively
- All components of the facility will be enclosed in a building, thereby reducing the likelihood of dust being released into the atmosphere in the unlikely event of a breach in the system.
- All employees working in the mill and processing facilities will be outfitted with PPE which are suitable for dust protection
- Particulate matter at the facility will be monitored annually, especially during peak operations to ensure that ambient air quality is not affected

With the implementation of the aforementioned mitigation measures, the impact of the project on PM₁₀ and PM_{2.5} levels in the environment will be **Negligible (Low Magnitude; Low Sensitivity)**.

6.1.2 Noise

Several factors, such as site selection and building designs are geared towards minimising the impacts of noise from the facility. The facility will be constructed in an area already zoned for agricultural purposes. Additionally, the nearest community is located 400 m from the project. Despite this, noise mitigation measures will be instituted during the construction and operational phases of this project, to ensure residents and employees are not affected and simultaneously remain in compliance with the noise levels stipulated by the GNBS.

Construction

Measures to mitigate noise emissions during construction are as follows:

- General construction activities, specifically pile driving, will occur during the period 08:00 h-17:00 h (i.e. within GNBS stipulated daytime period) when the vibrations and residual noise from these activities are likely to be more tolerable
- Where possible and practical, all noise producing equipment used during construction will be equipped with noise attenuation devices such as mufflers and will be placed in suitable enclosures where applicable
- Indiscriminate honking of horns will be avoided
- Construction workers will be equipped with appropriate PPE. This will provide adequate protection against noise, but will not hinder the ability of construction workers to communicate appropriately
- Although EFG's operation has been prescribed a 100 dB noise limit during the daytime, the third-party construction company will be required to comply with the GNBS limit prescribed for construction activities (i.e. a daytime limit of 90 dB).
- In the unlikely event that construction activities will be required to extend beyond 18:00 h, residents of the surrounding communities will be duly notified

Operation

During operation, the following mitigation measures will be implemented:

- The agro-processing building will be strategically positioned at the section of the property, furthest away from the communities such that any noise emitted from the operation will decrease as it travels downwind
- The primary noise producing activities, i.e drying, milling and operation of turbines for power generation, will be conducted in an enclosed building. Although the turbines will produce noise at 108dB, their enclosure within the building will significantly reduce ambient (outdoor) noise levels
- The rooms in the administrative building (e.g. offices and daycare) will be sound-proofed.
- All sound making devices will have appropriate sound attenuation measures (such as mufflers) as far as practical
- Employees within the processing facility will be equipped with suitable noise protection PPE. Additionally, the duration of employees' exposure will be carefully monitored to ensure that occupational exposure does not exceed that recommended by NIOSH.
- EFG will conduct quarterly noise monitoring during the first year of start up to ensure that noise levels are within the GNBS allowable limit stipulated in the Environmental Permit

The measures implemented for noise emission control will ensure that the project's impact on noise quality remains negligible.

6.1.3 Water Quality

In an area where there is only access to water via a personal well, water conservation is a key requirement. Therefore, mitigation measures will be implemented to avoid water contamination, as well as to prevent the overuse of water for project activities.

Construction

- Construction stockpiles stored at least 100 m from any nearby waterway to minimise the runoff of sediments into the surrounding drains
- Water used for wet suppression will be sufficient to reduce airborne emissions of PM, but will be limited to prevent the release of sediment-loaded runoff into the nearby canals
- A temporary washroom facility will be made available for workers' use during the construction phase
- Garbage receptacles will be used during construction to ensure that waste generated by workers and the construction activities are not disposed of in nearby canals

Operation

- Potable water required for the production processes will be purified using a specially designed steam application system, thereby reducing the reliance on water from external sources
- The agro-processing facility was designed to allow for the reuse of process-generated water, such that there will be no discharges of effluent into the waterway

- Wastewater from the rice polishing process (i.e. the only waste generated from the production process) will be repurposed for use in the landscaping and shrubbery watering systems. This innovative approach allows for conservation through lower water extraction rates, since water for landscaping is not used directly from the well
- Stormwater will be captured in drains, and the discharge outlets will be equipped with appropriately sized grids/screens to minimise the entry of solids into the receiving waters
- Routine vehicle maintenance such as oil changes and mechanical work will be conducted in a specially designated area, far removed from water bodies. The area designated for these activities will have a concrete base, and drip pans will be used to capture oil released during maintenance. All waste oil will be stored securely and removed offsite for disposal by an EPA-approved hazardous waste disposal company.
- Spill kits will be housed in the vicinity of the vehicle maintenance area, so that in the unlikely event of an oil spill, clean up can occur immediately.
- Black and grey water generated from washroom facilities will be channeled into septic tanks on site. Two septic tanks will be constructed (one serving each building) in accordance with the specifications outlined in the GNBS *“Code of Practice for the design and construction of septic tanks and associated treatment and disposal systems”*
- Septic tanks will be cleared as required, to ensure there is no overflow of septic waste
- Stormwater discharges from the facility will be measured biannually, to ensure compliance with the GNBS water quality parameters referenced in condition 5.2 of the Environmental Permit.

Through the implementation of the mitigation measures, the impact of EFG's operation on water quality will be Negligible (Magnitude; Low Sensitivity).

6.1.4 Waste Management

As part of its commitment to sustainability, EFG has carefully designed this project to promote waste circularity, ensuring little to no waste output from the project's operational phase. Although some waste will be generated during the construction and operational phases of the project, policies and programmes will be implemented to ensure options for waste management align with the waste management hierarchy where waste avoidance is preferred over waste disposal.

The following mitigation measures will be implemented:

Construction

- Construction activities will be planned to minimise waste generation. As such, the contractor will be required to ensure that there is no over-purchasing of materials needed for construction
- All waste from construction activities will be placed in a skip bin pending removal by an authorised waste disposal company
- Waste generated by construction workers must also be placed in covered receptacles which will be strategically placed around the site and removed as required.
- Hazardous waste generated onsite (e.g. waste oil from servicing of generators used during construction), will be placed in a secure container and removed from the site for disposal by an EPA-authorized hazardous waste facility

Operation

The primary wastes of concern from the operation of rice mills are rice husks and rice husk ash produced after burning. However, in the context of EFG's operation, these typically problematic waste streams are considered a valuable resource. Through careful planning and design, the following measures implemented during operation will minimise the project's waste impact:

- **Waste Diversion**

- Based on the estimated annual intake of paddy (120,000 MT), approximately 33,600 MT of rice husk will be generated annually, since rice husk accounts for approximately 28% of the weight of paddy. All rice husk produced from the milling process will be used as an energy source and as such will be diverted from landfilling or other disposal options.
- When rice husk is burnt, the ash produced accounts for approximately 25% of the weight of the rice husk. Therefore, approximately 8,400 MT of ash will be generated. However, this will not be disposed but will be repurposed in EFG's downstream operations

- Covered waste receptacles will be placed strategically in and around the facility. These receptacles will be labelled to facilitate waste separation at source
- Waste will be removed regularly by an authorised waste management company (likely Puran Brothers Disposal which has its base on the West Bank of Demerara)
- Waste records will be maintained to allow for the preparation of a waste strategy tailored to EFG's operations
- EFG will make employees aware of the waste management hierarchy and take practical measures to implement the principles of this system (e.g. providing employees with company-branded reusable water bottles, and ensuring water is available for refilling).

- A waste management plan will be developed and will be used as a training tool for employees. This plan will be informed by the waste strategy and the waste generation and disposal records maintained by EFG. A waste management plan framework is included in **Annex 14**.

6.2 Mitigation for Occupational Health and Safety

The health and safety of EFG's employees and subcontractors is a top priority. Therefore, the following measures will be implemented to mitigate impacts to occupational health and safety.

Construction

- EFG will require the contractor to implement safety training and daily toolbox talks on construction hazards and machinery operation
- Equipment will be maintained regularly to ensure its optimal functioning. Well-maintained equipment is less likely to cause injury and accidents
- As far as possible, work will be scheduled during cooler hours. However, in instances where this may not be possible, construction workers will be appropriately attired, and will have access to enough drinking water
- PPE such as gloves, safety boots, harnesses and goggles must be provided to construction workers

Operation

EFG will implement the following measures during its operation to safeguard the health and safety of employees, subcontractors and visitors:

- During the first year of operation the company will build its health, safety, environmental and quality management systems. A key component of this system will be the development of SOPs for safe operation of the facility
- All new employees will be inducted prior to the commencement of any activity on site
- All drying and milling areas will be properly ventilated and have dust extraction systems installed
- Employees working areas prone to the release of particulate matter (e.g. those handling paddy husk, bran and ash) will be provided with dust masks and other respiratory protection as required
- Employees entering the rice mill will be required to wear ear protection
- Fire prevention measures will be implemented in accordance with the directives issued by the Guyana Fire Service.
- Intrinsically safe electrical equipment will be utilised in the facility.
- Milling and processing machinery will be regularly inspected
- Floors and surfaces will be cleaned regularly to reduce dust accumulation
- Materials will be stored in well-ventilated, pest-proof, and moisture-controlled environments.

- Safe loading procedures will be implemented
- Regular vehicle maintenance and safety inspections will be conducted. Pre-transport safety talks will be conducted, and expectations will be communicated to the drivers
- First -aid kits will be placed strategically around the project site

With the implementation of the measures above, major accidents and incidents are unlikely to occur. Thus, the potential impacts of the EFG's operation on occupational safety and health will be localised, short- to long-term and of low intensity. Humans are the receptors at the worksite and will, without any mitigation measures, show high sensitivity to the operation of the facility. Thus, the impact of the project on occupational health and safety will be Negligible (High sensitivity, Low magnitude).

6.3 Socio-economic Mitigation Measures

During EFG's operation, the measures implemented to mitigate negative socio-economic impacts will indirectly serve as a means of enhancing the project's benefits. The following measures will be implemented to mitigate the negative socio-economic impacts of the project:

- Security measures will include perimeter fencing, controlled entry points, surveillance systems, and regular patrols. Warning signs, adequate lighting, and CCTV monitoring will enhance site security. Community awareness initiatives and an emergency response plan will further support risk management
- Implementing climate-resilient infrastructure, regular maintenance of equipment, and backup power systems to minimize disruptions. Emergency response plans, construction of a Well for water storage, drainage systems for flood management,

and protective measures for machinery will help reduce risks associated with extreme weather and operational failures

- Proper storage, handling, and disposal protocols, regular inspections, spill containment systems, and staff training on hazardous material management
- Proper storage and handling protocols, regular inspections, spill containment systems, and staff training on hazardous material management to prevent leaks, spills, and combustion risks.
- Strict enforcement of health and safety protocols, mandatory PPE usage, regular training sessions, compliance monitoring, and corrective actions for non-adherence.
- Implementation of clear communication protocols, providing reliable communication equipment, conducting regular training, and establishing emergency response procedures to enhance safety and security.
- Enforcing strict compliance through regular monitoring, conducting training programs, implementing penalties for violations, and establishing clear accountability mechanisms to ensure adherence to environmental, safety, and legal requirements
- Enforcing compliance with project policies, implementing effective communication and grievance mechanisms, conducting regular training, and fostering stakeholder engagement to prevent and address conflicts.
- Comprehensive training programs as identified in the training plan for the project, strict adherence to operational protocols, regular equipment maintenance, and continuous monitoring to ensure compliance with safety and procedural standards.

Since the construction activities will not be conducted directly by EFG, the selected contractor will be made aware of the mitigation measures outlined in this EMP and the permit issued by the EPA. The contractor must have an appointed HSE representative who will liaise with EFG and provide reports on the actions taken to implement all mitigation measures required during the construction process.

7. Environmental Management Plans and Procedures

7.1 Mitigation Implementation Plan

The Mitigation Implementation Plan would be integrated within activities throughout the project cycle as is described in Project Description and therefore would be implemented continuously within each phase of the project, i.e., construction, and operational phases. The environmental monitoring programme outlined below will be implemented to measure the effectiveness of the mitigation measures which are integrated within the project cycle.

7.1.1 Environmental Monitoring Programme

The primary objective of the environmental monitoring programme is to verify that the mitigation measures proposed are implemented and effective in reducing identified impacts. Monitoring throughout the lifetime of the project will enable EFG to highlight any new or previously identified impacts which still persist and allow for an appropriate response/ corrective action to be taken. In short, monitoring environmental and social impacts is one step the Company will take to ensure all project activities adhere to environmental provisions outlined in this EMP, the Environmental Permit, and any other directive issued by the EPA. As part of an effective monitoring programme, the results of monitoring will be recorded and maintained so that trends can be observed overtime.

In accordance with EPA's guidelines, the monitoring programme would comprise the following three aspects:

1. **Baseline measuring:** This has been done and is reported herein prior to the start of the project activities in order to determine the level and status of the environmental parameters prior to any impacts associated with the project

2. **Impact (or performance) monitoring:** This type of monitoring would be ongoing throughout the project's life-cycle as highlighted below in table xxx. This monitoring would be implemented to ensure that environmental impacts are within the predicted levels and that specified environmental performance targets are being achieved.

3. **Compliance monitoring:** This type of monitoring would also be conducted to ensure that the prescribed mitigation measures are being implemented and that all conditions of the Environmental Permit are adhered to. Further, it ensures that environmental parameters are compliant with the laws, regulations, and standards stipulated in the legal framework for environmental protection by the EPA and as identified in this EMP.

Generally, the responsibility for environmental and social monitoring will lie with EFG; however, the EPA will play a critical role in auditing the operation's implementation with the terms and conditions of the environmental permit, via the submission of annual reports or site visits.

Table 11: EFG's Environmental Monitoring Plan

Impacts Summary	Parameters Monitored	Monitoring Indicator	Frequency	Responsible Party
Air Quality				
Emissions from operations and fuel burning activities occurring on project site	PM ₁₀ PM _{2.5}	Results of PM ₁₀ , PM _{2.5} , monitoring received, documented and monitoring report prepared	Bi-annually	EFG via third-party service provider
Noise				
Noise emissions from operation	Sound Pressure	Results of noise assessment	Bi-annually	EFG via third-party service provider

	Levels (decibels)	received, documented and noise assessment report prepared		
Water Quality				
Effluent discharges from operations	pH, Temperature, Total suspended solids Turbidity	Results of water quality monitoring received, documented and water quality assessment report prepared	Bi-annually	EFG via third- party service provider
Waste Management				
Improper disposal of hazardous and non-hazardous waste	-	All wastes managed in accordance with the waste management plan which requires disposal by EPA- approved Facilities Inspection reports prepared and waste disposed weekly	Daily (observations) Weekly (inspections)	EFG and authorised disposal company
Social Issues				
Health and Safety - Accidents or injuries to employees, visitors and subcontractors	Health and Safety KPIs	Monthly reporting of statistics relative to health and safety	Monthly	EFG

Complaints about operation received from stakeholders	-	Grievance redress mechanism implemented Complaints investigation form completed, and Corrective actions taken if deemed valid Stakeholder Engagement report prepared	Monthly (review of complaints register) Annually (Stakeholder engagement)	EFG
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7.2 Auditing Plan

As part of its monitoring framework, EFG will ensure its operations are audited on a regular basis. This will be a two-fold system where internal environmental audits will be conducted by the HSE department monthly and by an independent third-party every two years. This plan however, focuses specifically on the internal audits that will be conducted at EFG.

Monthly Environmental Audits

Environmental audits will be conducted monthly, using a checklist which will be guided by the conditions of the Environmental Permit, the mitigation measures outlined in this EMP, and any other lawful directives issued by the EPA.

The auditing process will be divided into three distinct phases as follows:

1. Pre-Audit- the planning and preparation phase where the scope and objectives of the audit are defined by the audit team
2. On-Site Investigation- commences with a kick-off meeting with the audit team and the employees in charge of the aspects of the operation being audited. This will be followed by a site walk-through and interviews
3. Analysis and Reporting- includes audit team debriefing meeting, discussion and verification of findings of the audit.

Pre-Audit

1. The HSE team responsible for conducting internal environmental audits, shall meet during the first week of each month to discuss and refine the objectives and scope of the upcoming audit. EFG will ensure that the first three (3) audits are thorough and focus on all aspects of environmental, health and safety. After this, the leader of the auditing team may decide on which areas subsequent audits will focus; however, areas where non-compliances have been identified will take priority. Nevertheless, in all cases, audits must evaluate EFG's compliance with relevant legislation, policies, and permits, and document potential liabilities, risks, and hazards associated with the operation.
2. In preparation for the audit, the team shall review applicable legislation, policies, the EMP and permits relevant to EFG's operation.
3. Pre-existing auditing checklists shall be reviewed by the team leader prior to commencement of the audit, to determine whether all important areas have been included , or if modifications may be necessary.

On-Site Investigation

1. The on-site investigation shall commence with a kick-off meeting between the auditing team and site personnel overseeing the aspect of the operation being audited. The meeting shall re-iterate the scope and objectives of the audit, highlight any safety concerns at the site and conclude with a reminder of the procedures which need to be followed in case of an emergency.
2. A site walk-through will be conducted to observe the operations and take note of any non-compliances. Interviews with appropriate on-site personnel will also be conducted during the walkthrough. All findings and observations must be documented in real-time (i.e. as the walk-through is being conducted). The Audit team leader shall decide if sufficient information has been collected, or if additional information is required
3. Upon completion of the audit, the team leader shall conduct a close out meeting with the team members to briefly review the day's work and confirm the next steps.

Analysis and Reporting

1. The team leader shall convene a debriefing meeting for which an agenda must be prepared and circulated to the audit team members, prior to the meeting
2. During the debriefing meeting, the following activities shall occur:
 - The team shall document all significant findings (positive, negative, deficiencies) which should be reflective of the scope and objectives of the audit
 - Prioritise and group audit findings on the basis of overall risk, or deficiencies within a specific system under review. Findings which require immediate action shall be discussed in more detail.

- The team leader shall assign/clarify report writing responsibilities; however, all members of the audit team must be given an opportunity to read the final report and provide comments where needed.
 - Determine additional follow-up actions which may be required such as further document reviews and meetings
3. Audit team members shall utilise additional documents (e.g. legislation, permits, SOPs) to substantiate the findings of the audit.
 4. Report should be written in a clear, concise manner with adequate supporting evidence. While different team members may be responsible for specific sections of the report, it is the responsibility of the HSE manager to review and organise the final output. The report shall include the following:
 - a. Administrative aspects of the audit (e.g. date, time, location)
 - b. Executive Summary which highlights key findings and recommendations
 - c. Detailed description of each audit finding
 - d. Recommended corrective actions to achieve compliance
 - e. Evidence to support findings (e.g., photographs, analytical data, copies of records)
 5. Final copies of the audit report shall be reviewed by EFG's Chief-of-Staff
 6. Audit findings and recommendations shall be entered into a tracking system.
 7. A programme of corrective actions, timelines for implementation and responsible personnel shall be developed by the HSE Manager based on the findings of the report
 8. EFG's HSE Manager shall conduct necessary follow-up inspections to ensure all corrective actions have been implemented.

7.3 Reporting Procedures

As prescribed in the Environmental Permit, EFG will establish and document procedures for reporting any operational changes or environmental incidents to the EPA and other relevant regulatory authorities. These procedures will however be guided by the following requirements as outlined in section 9.0 of the Environmental Permit:

- Informing the EPA of any changes in ownership of the operation within 30 days of the change
- The EPA will be informed within 21 days of bankruptcy, death, liquidation, receivership of the permit holder, or if the company becomes a party to an amalgamation
- EPA will be informed within 1 hour of an environmental emergency that causes or threatens to cause severe environmental damage, and harm to human health or livelihood
- EPA will be notified within 24 hours of the permit holder becoming aware of any non-compliances with the permit conditions which may endanger human health and the environment. A written report will also be provided to the EPA within 72 hours, regarding the non-compliance inclusive of a description of the non-compliance, the cause and period of non-compliance including exact dates and times
- Annual reporting to the EPA by March 31st each year on implementation of monitoring activities and conditions of the permit

7.4 Training and Environmental Awareness

EFG's agro-processing project is still in the initiation phase of development and no work commenced on the land during the period this assessment was conducted. However, investing in staff development will enhance the overall performance of the project, leading to higher production efficiency, improved market reputation, and long-term business sustainability. Furthermore, properly trained employees can operate machinery efficiently, reducing downtime, minimising errors, and optimising production output.

Advanced planning ensures that training is scheduled without disrupting daily operations. Modern rice mills as envisioned by EFG incorporate automation, digital monitoring, and energy-efficient systems.

In this regard, strategic and consistent training will ensure that staff stay updated on new technologies, thereby improving overall productivity. Table 12 proposed an inexhaustive list of recommended training for the EFG staff. These recommendations are with the assumption that EFG will ensure environmental and social safeguards are in place during project construction and third-party contractors employ the service of trained personnel.

Table 12: Proposed Training for EFG Employees

Type of training	Target groups	Frequency
Rice Milling Operations & Equipment Handling	Factory/field staff	Bi annually – stagger training
Quality Control & Food Safety Standards	Factory staff	Annually
Storage & Inventory Management	Inventory/database staff	Bi-annually
Occupational Safety and Health	All staff	Bi-annually
First Aid	Selected staff	Re-occurring every 24 months
Fire Safety	All staff	Re-occurring every 12-months

Supervisory Management	Supervisory staff,	Re-occurring every 24 months/as required
Customer Service, Communication and Marketing	Sales and administrative staff	Re-occurring every 24 months
Hazardous waste/materials management	Factory/field staff	Re-occurring every 12-months
The Grievance Redress Mechanism	Supervisory staff	Once
Operation/maintenance of machinery/equipment	Selected technical staff	Re-occurring every 24 months/as required

7.5 Documentation and Record-keeping

Documentation empowers staff through knowledge sharing, reduces errors, and preserves vital information. Proper record-keeping enables easy retrieval of documents and provides proof that the company complies with various standards and regulations. Additionally, effective record-keeping allows the company to monitor its processes and gather relevant information for stakeholders as needed.

Considering this knowledge, EFG will implement a system of documentation and record-keeping, to help its organisation maintain quality records. As the company develops new documents and records, the documentation and record-keeping system will be updated for optimal effectiveness. A review of the system will be conducted at least once a year.

7.5.1 Procedures

Documentation

- Documentation is important. All documents generated as part of the requirement of the EMP will be labelled.

- When a document is created the document will be labelled using the initials of the document followed by a document number and the current version of the document.
- The figure below illustrates the difference between the document name and the label, while also breaking down the document label for easier interpretation.

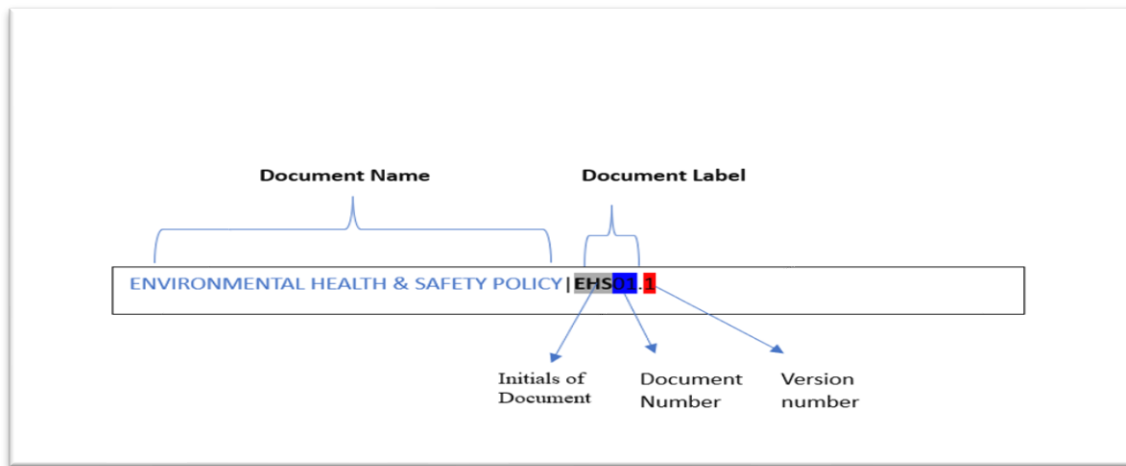


Figure 22: Document Labelling

Record Keeping

- Maintaining records of created documents is as important as the documents themselves. All documents must be kept by the company for five (5) years, after which the company may choose to dispose of them.
- For record-keeping purposes, the company will create **a List of Records** to track all documents collected. This list will include the following information:
 - Document name
 - Document label
 - Version
 - Status (active or inactive)
 - Storage location

- Department or individual responsible for maintaining the document
- The head of each department will be responsible for determining where the documents for their department are stored. Additionally, a designated person will be responsible for updating and maintaining the ***List of Records*** (**Annex 11**).

7.6 Emergency Response Plan

EFG. aims to ensure that its name is synonymous with high standards and responsible management of its social and environmental responsibilities. To uphold and protect this reputation, the company has developed a response plan to safeguard its employees and investments.

This Emergency Response Plan (ERP) aims to identify potential emergencies that may arise at the project site and outline preparedness measures. Additionally, the plan guides the appropriate actions to take in the event of an emergency.

7.6.1 Facility Information

Name of Facility: Essential Foods Group Inc.

Physical Address: Uitkomst, Canal No. 1, West Bank Demerara

Telephone No.: (592)682-1262

Owners Name: Mr. Bheesham Ramnarace

Emergency Contact: Mrs. Sherriann Elcock- Martin (Chief of Staff):

Contact No.: (592) 682-1262

7.6.2 Layout of Facility

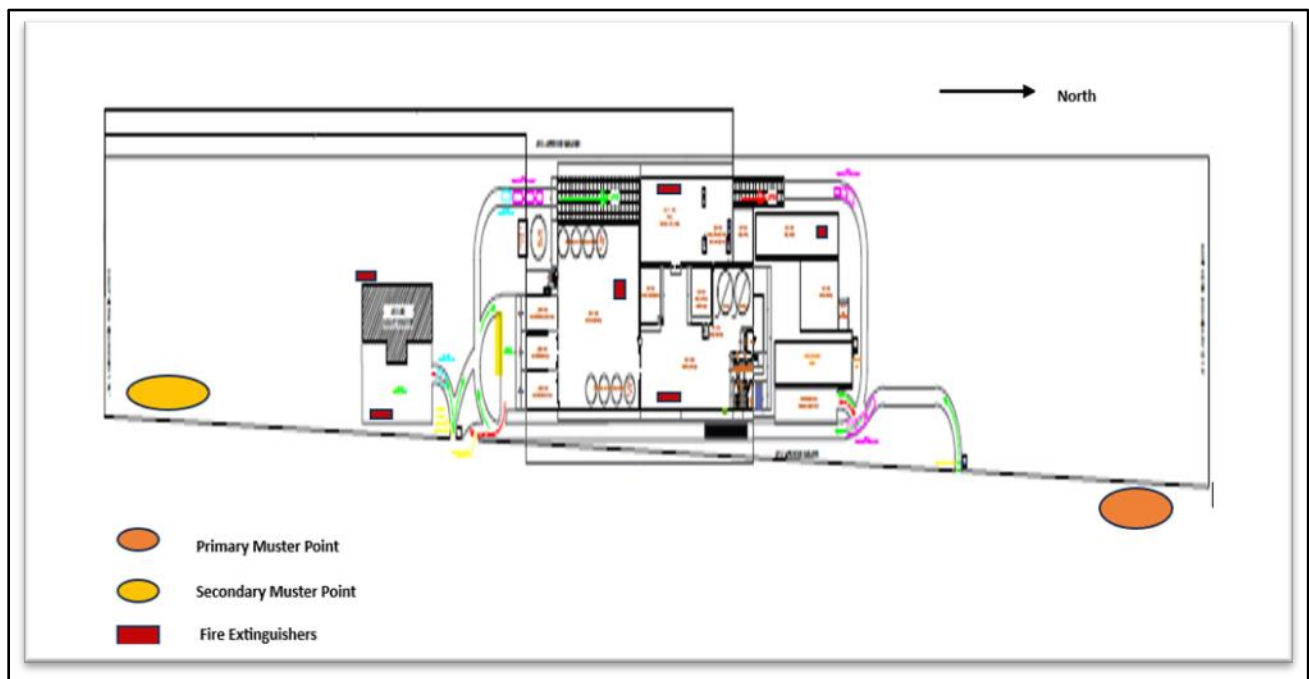


Figure 23: Site Layout with Proposed Muster Point and Fire Extinguisher Locations

7.6.3 Emergency Contacts

Contact	Contact Number
Facility Manager	682-1262
Main Office Contact	682-1262
La Grange Fire Station	264 9112
Ambulance	912
West Demerara Regional Hospital	254-0311/0313
La Grange Health Centre	263-5622
La Grange Police Station	264-2357

7.6.4 Classes of Emergencies

There will be two (2) classes of emergencies outlined in the Emergency Response Plan (ERP) namely:

- **Class 1 Emergencies:** These are emergencies caused by the facility's operations. Types of emergencies that fall into this category include:
 - **Fires**
 - **Medical Emergencies**
- **Class 2 Emergencies:** These are emergencies outside the Company's control but may still impact the facility's operations. Types of emergencies in this category include:
 - **Earthquakes**
 - **Flooding**

7.6.5 Preparation for Emergencies

To prepare for any potential emergencies outlined in this document, the company will take the following measures:

- Conduct drills at least twice per year
- Ensure all employees receive appropriate training in fire safety, first aid and the content of this Plan
- Place the emergency contact lists at strategic and conspicuous locations around the facility
- Ensure first aid kits, fire extinguishers and eyewash stations are present and inspected regularly
- Designate a vehicle to be used in the event of an emergency

7.6.6 Emergency Response Equipment

The Facility will have the following equipment that will be used for any Emergency Response:

Vehicle/Equipment Type	Quantity	Identification Number*
Fire Extinguishers	20	
First Aid Kits	To be determined (TBD)	
Emergency Vehicle		
Fire Hose		
Excess Water (litres)		
Automatic Sprinkler System		
Dust Masks		
Water Pumps		

**This record will be updated when the facility becomes operational and serial numbers assigned*

7.6.5 Emergency Response Procedures

7.6.5.1 Class 1 Emergencies

Fires

- When a fire is detected, sound the alarm immediately. At the same time, the Fire Service should be contacted.
- Following the activation of the alarm, all activities must cease, and all individuals must promptly proceed to the nearest muster point.
- Designated personnel will conduct a thorough check of the area where it is safe to do so, to ensure that no individuals remain within the facility.
- Depending on the scale of the fire and the training received, designated personnel may attempt to extinguish the fire utilising the available firefighting equipment.

- At the muster point, a designated individual shall perform a headcount to confirm that all individuals present within the facility are accounted for.
- No individual is permitted to leave the muster point until it has been deemed safe to do so.

Medical Emergency

- When someone is injured at the facility, the trained first aider on-site must be notified. It is crucial for the first aider to accurately assess the severity of the injury.
- For minor injuries, the trained first aider can provide initial treatment to the injured individual.
- Once the person can walk independently, they should be taken to the nearest health centre for further evaluation and care.
- In the case of serious injuries, the first aider should call for an ambulance and focus on stabilising the patient until emergency medical services (EMS) arrive.
- The first aider should closely monitor the patient's condition and provide detailed information to the paramedics upon their arrival.

7.6.5.1 Class 2 Emergencies.

Earthquakes

If an earthquake occurs while inside a building, it is crucial to stay inside.

During the Earthquake the following steps should be taken:

- Drop under a desk or table, hold on to one of its legs, and protect your eyes by tucking your head down.
- Stay put and remain in your safe position until the shaking stops and you have assessed yourself for injuries.
- Before coming out, check for unstable objects, loose or broken electrical wires, and other potential hazards.

- Once the area is clear, head to your designated muster point and wait for further instructions.
- If you are outdoors when an earthquake occurs stay outside and do not enter any buildings. Move to a safe area away from buildings, trees, and overhead wires. Crouch down and cover your head to protect yourself.
- Allow the shaking to stop before moving.

Flooding

If flooding occurs and water begins to rise and threatens entry into the buildings, the following steps should be taken:

- Stop the entire operation immediately and turn off the main electric switch
- All staff should move to higher ground. Avoid walking in the water as much as possible.
- Wash your hands, feet, and any clothing that may have come into contact with the floodwaters.
- Inform management of the situation and actions taken so far.
- Workers may return to the facility only after all waters have receded.
- Ensure the area is cleaned and dried before operations resume.
- All individuals involved in cleaning the facility after the flooding must wear appropriate Personal Protective Equipment (PPE).

7.6.6 Post Emergency Response

After an emergency occurs, the designated individual will investigate to determine the root cause of the incident. The investigation will be documented using the ***Emergency Reporting and Investigation Form (Annex 12)***.

Depending on the severity of the incident, it may need to be reported immediately to the relevant authorities. All findings will be reviewed by management and updated as necessary. All findings from the investigation must also be communicated to all staff members.

7.7 Traffic Management Plan

This Traffic Management Plan (TMP) outlines strategies to manage vehicular and pedestrian movement associated with the rice mill and agro-processing activities at EFG's West Bank Demerara facility. The plan considers the facility's impact on local traffic conditions, safety concerns, and the need for efficient logistics management.

An appropriate systematic traffic management system is essential for safety and smooth traffic flows in and around the facility, making a maximum effort to achieve smooth traffic, reducing vehicular accidents, and creating a pedestrian-friendly facility.

Safety management remains critical to our activities and the Company's guiding principles. As such, the objectives of this TMP are to:

- Ensure the safe movement of vehicles and pedestrians in and around the facility.
- Establish clear entry and exit points for the facility.
- Reduce the risk of accidents involving heavy vehicles transporting paddy, rice, and agro-processed products.
- Comply with Guyana's road safety regulations and local transport guidelines.

7.7.1 Facility Traffic Flow & Operations

Project Support Vehicles and Equipment

The vehicles and equipment which will support the construction and operation of the project are presented in the table below.

Table 13: Project Support Vehicles

Large Storage and Dump Trucks	Scissor Lifts
Cranes	Man Lifts
Pile Drivers	Excavators
Forklifts	Skid Steers
Rollers	Loaders
Hiab Trucks	Concrete Mixers
Telehandlers	Tractor Scrapers

Primary Access Routes

The facility is located in Uitkomst, West Bank Demerara. Access to that location from Georgetown means crossing the Demerara River, via the Demerara Harbour Bridge (DHB). The closest access route is the Canal #1 Access Road, a lengthy road which runs from east to west. Direct access to the site then diverts north onto a dirt road (mud trail), perpendicular to the Canal #1 access road. At this present stage of the project, off-road vehicles are the ideal type of transport to reach the project site. Likewise, off-road vehicles, in addition to off-road motorcycles, can be used to move around the site.

However, a secondary route has since been proposed and can be seen on the map below via the blue and green lines. When that is confirmed, details of those directions will be included in an updated version of the Traffic Management Plan (see map below for further details).



Figure 24: Map of Existing and Proposed Access Roads to the Project Site

Entry & Exit Points

At this stage, both the entry and exit points are the same. It is used for the main ingress and egress for heavy-duty and project vehicles. This too will be the primary access for staff and visitors. When the secondary routes have been confirmed, the project team will determine which roads are used for the exit and entrance, or if it will be multi-use to better accommodate the ease of movement to and from the site.

7.7.2 Traffic Risks & Mitigation Measures

Heavy Duty Vehicle Movement & Congestion:

- Truck movements will be strategically planned to commence in tandem with the completion of milling or agro-processing activities. This will ensure that trucks for transport or delivery operate outside peak traffic hours (06:00 h – 09:00 h and 16:00 h-19:00 h).

- There will be designated parking/staging areas for waiting trucks within the facility.

Parking & Staging Areas:

- **Truck and Heavy-duty Vehicle Staging:** Areas within the site will be designated to facilitate parking for trucks and various heavy-duty vehicles
- **Staff Parking:** Separate parking zones for employees and visitors will be provided.
- **Loading Bays:** These areas will be clearly marked and efficiently designed to minimise turnaround time.

Road Safety & Pedestrian Risks:

- When internal roads are being constructed, road signs warning of turning trucks will be installed near the entrance, areas of high foot traffic and blind corners.
- A speed limit of 30 km/h will be implemented and enforced within facility premises.
- Designated pedestrian walkways and crossings for staff and visitors will be available.

Emergency Response

- EFG will prepare and share an *Emergency Contact List* with all vehicle users (primarily employees and suppliers) to ensure they can contact management, law enforcement and applicable emergency services

7.7.3 Monitoring & Review

Management and the Health and Safety Representative will conduct the following activities to ensure the effectiveness of this document:

- Regularly review the effectiveness of the TMP and adjust schedules as necessary
- Conduct safety audits every six months to assess compliance and identify areas for improvement.
- Gather feedback from truck drivers, employees, and local authorities to improve traffic flow management.

TMP Support Documents

The following documents will support the implementation of the TMP:

- Emergency Response Plan
- Vehicle Maintenance Form (**Annex 10**)
- Emergency Reporting and Investigation Form (**Annex 12**)
- Journey Management Form (**Annex 13**)

7.8 EMP Implementation Cost Estimates

The cost of implementing and managing the environmental and social mitigation measures identified in this EMP is estimated at fifteen million Guyanese Dollars (GY \$ 15,000,000). This estimation covers EMP implementation costs for both the construction and operational phases of the project. However, the cost associated with implementing the EMP during construction will be borne by the contractor, and this requirement should be made clear prior to the commencement of activities

The table below presents a breakdown of the EMP implementation cost.

Table 14: EMP Implementation Cost Estimates

Activity	Cost (GY \$)	Responsible Party
Construction		
Dust suppression mechanisms	300,000	Contractor
Covering for Stockpiles	250,000	
Traffic/Safety Signs		
Personal Protective Equipment (PPE)	2,500,000	
Environmental Monitoring (Air, Water, Noise)	1,200,000	
Operation		
Environmental Monitoring (Air, Quality)	1,500,000	EFG via third-party
Environmental Monitoring (Water Quality)	500,000	
Environmental Monitoring (Noise Levels)	350,000	
Procurement of Safety Signs	500,000	EFG
Procurement of Emergency Response Equipment	2,000,000	
Procurement of PPE	1,7000,000	
Environmental Auditing (Internal)	1,200,000.00	
Training and Capacity Building	1,000,000.00	
Stakeholder Engagement	2,000,000.00	

The cost of implementing this EMP is expected to decrease after construction is completed.

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9 Annexes

Annex 1: Signed EHS Policy Statement

Annex 2: Team of Experts

Annex 3: EFG Site and Building Plans

Annex 4: OSH Certificate of Registration

Annex 5: GRDB No-objection

Annex 6: NDC Approval

Annex 7: Noise & Air Quality Meter Calibration Certificates

Annex 8: Graphical Representation of Noise Assessment Results

Annex 9: Water Quality Results

Annex 10: Vehicle Maintenance Form

Annex 11: List of Records

Annex 12: Emergency Reporting and Investigation Form

Annex 13: Journey Management Form

Annex 14: Framework for Waste Management Plan

Annex 15: Schematic of EFG's Rice Milling Process-Activities, Impacts and Mitigation Measures

Annex 1:

Signed EHS Policy Statement



EFG Inc. is committed to establishing a state-of-the-art processing facility that incorporates rigorous environmental practices throughout its operational lifecycle. This commitment will be realised through the following measures:

- Utilising renewable energy sources and implementing energy-efficient technologies to reduce our carbon footprint
- Developing a comprehensive Waste Management Plan aimed at achieving zero agro-processing waste
- Conducting continuous environmental monitoring of air, noise, and water to ensure compliance with environmental standards
- Assessing Environmental Health and Safety Risks associated with our operations and implementing mitigation actions to reduce or eliminate these impacts
- Acquiring all necessary regulatory permits required for our operations
- Providing all employees with the appropriate Personal Protective Equipment (PPE) to minimize job-related hazards
- Ensuring that all employees have the necessary knowledge about the technologies and materials involved in our operations
- Promoting continuous training for employees to facilitate effective knowledge transfer
- Ensuring equal opportunities for all individuals from nearby communities

These goals align with the values of sustainability envisioned at EFG Inc. and will be reviewed annually to ensure they remain relevant to the organisation's vision.

A handwritten signature in blue ink, appearing to read 'B. Raj Kumar', is written over a dotted line.

.....

Chief Executive Officer

3/18/2025

.....

Date

Annex 2:

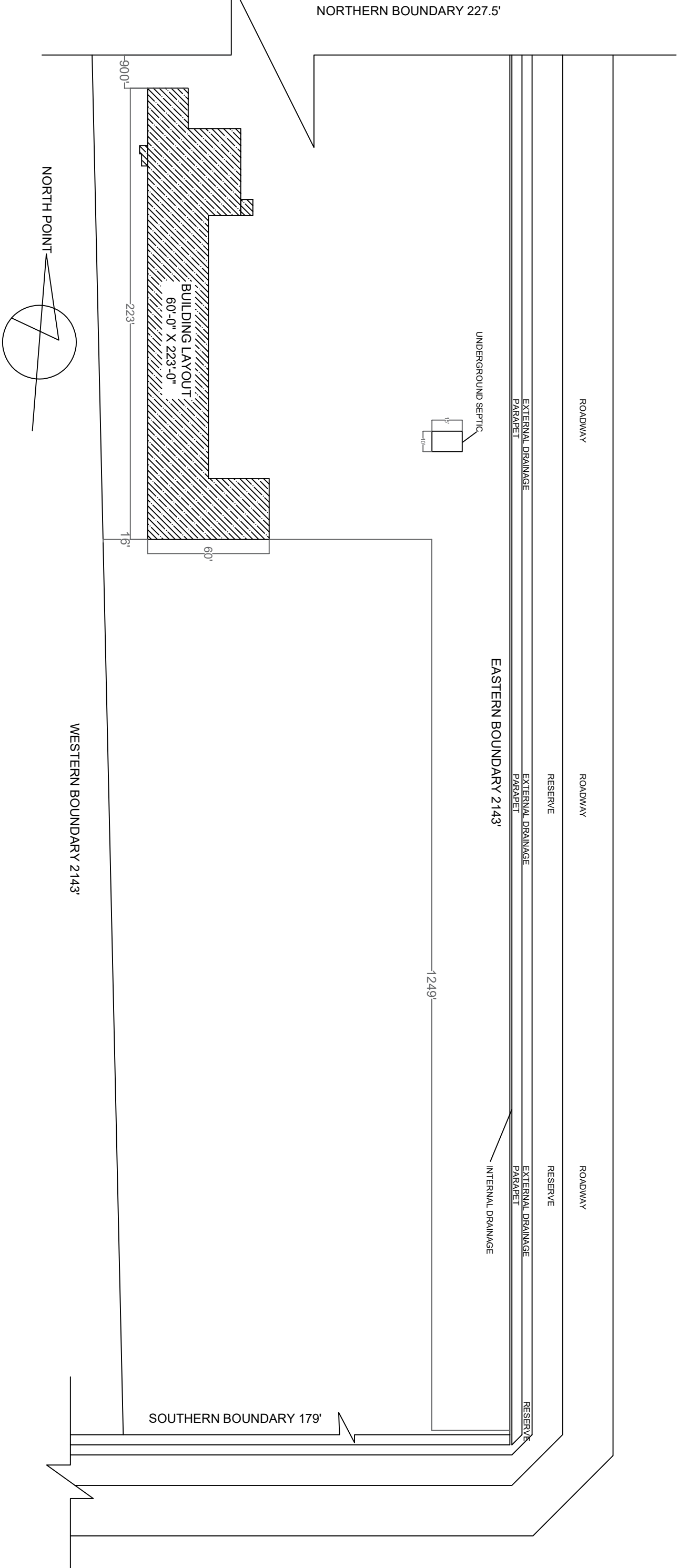
Team of Experts

Name	Qualification	Years of Experience	Role on Project Team
Melinda Franklin-Lynch	MSc Environmental Pollution	15	Team Leader, Waste Management & Mitigation Specialist
Jewel Liddell	PhD., Biological Sciences MSc. Environmental Impact Assessment	20	Biodiversity and Impact Assessment Specialist
Candacie Brower-Thompson	MA. Environmental Education & Communication	17	Communications & Stakeholder Engagement Specialist
Jenell Williams-Pinder	MSc. Environmental Studies	15	Safety & Quality Specialist
Latoya Farinha	BSc. Environmental Studies	15	Environmental & Quality Specialist
Geeta Singh	MSc. Environmental Science and Engineering MA. International Business Administration	11	Environmental and monitoring and compliance Specialist
Darshini Seeram	MSc. Tropical Forestry	14	GIS Specialist

Annex 3:


Site and Building Plans

WORKING SITE PLAN
1"-1/16"

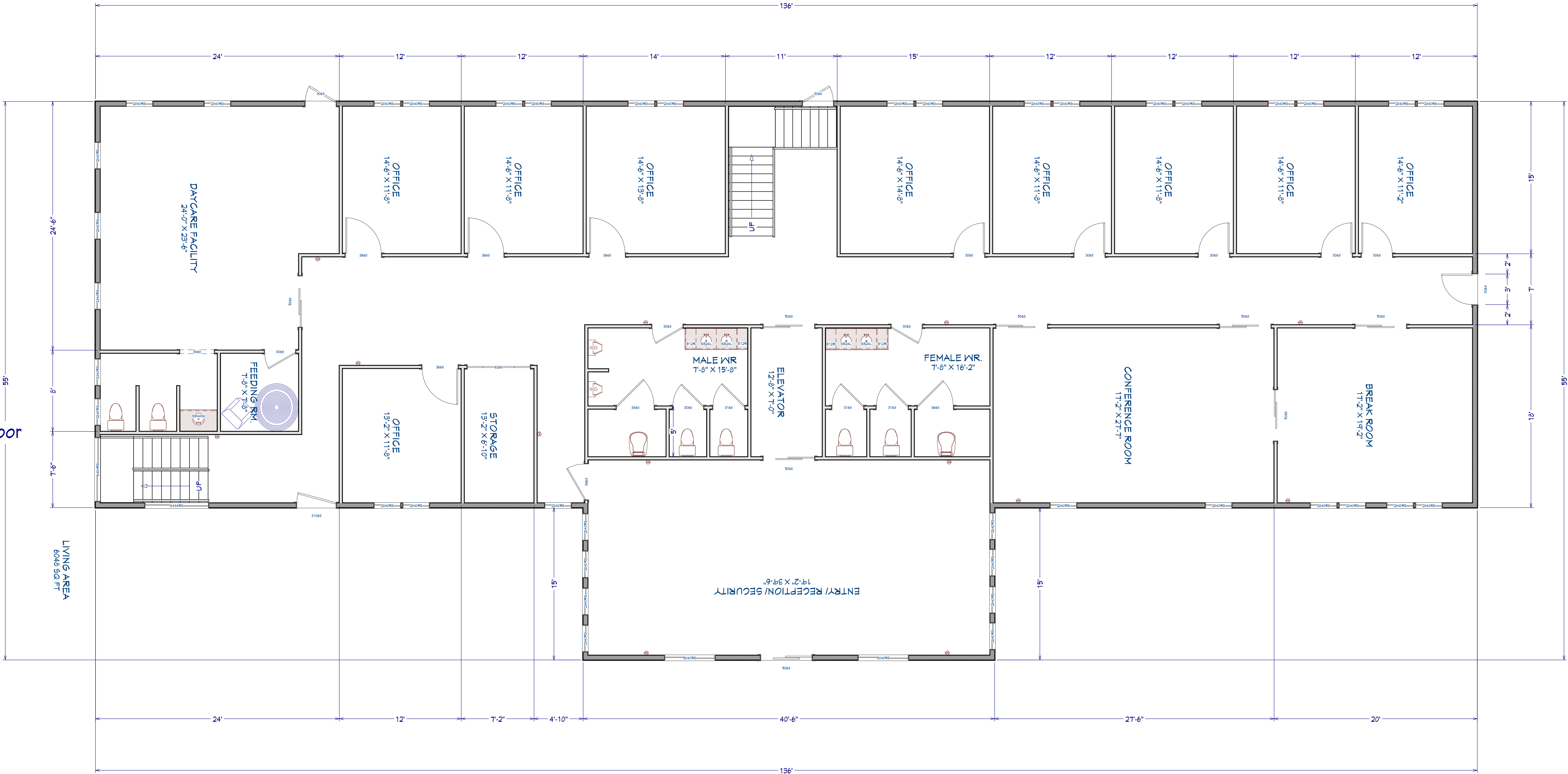


SITE PLAN.

SHEET ONE (1).

<div>Proposed Drawings of Rice Milling & Packaging Factory.</div>	<div>Client: Bheesham Ramnarace</div>	<div>Architect: Deshawn K. Abrams</div>	<div>Address: Plot 1 Pln. Uitkomst, Canal No. 1 West Bank Demerara, Guyana.</div>	<div>Scale: 1'-$\frac{1}{8}$" & 1'-$\frac{1}{16}$"</div>	<div>Drawn On: February 12th, 2024</div>	Revisions		<div>MALD</div> <div>Modern Architectures and Land Development. 31 Friendship East Bank Demerara. Georgetown, Guyana. Toll: 592-621-4934 deshawn@kharans2@gmail.com</div>
<div><div><div>MODERN DESIGNS</div><div>Architectural & Engineering Solutions</div></div><div></div></div>								

1st Floor



REVISION TABLE		REVISION BY	DESCRIPTION
NUMBER	DATE		

PAGE TITLE

DRAWINGS PROVIDED BY:

DATE:

11/22/2023

SCALE:

SHEET:

P-1

REVISION TABLE		REVISION BY		DESCRIPTION	
NUMBER	DATE				

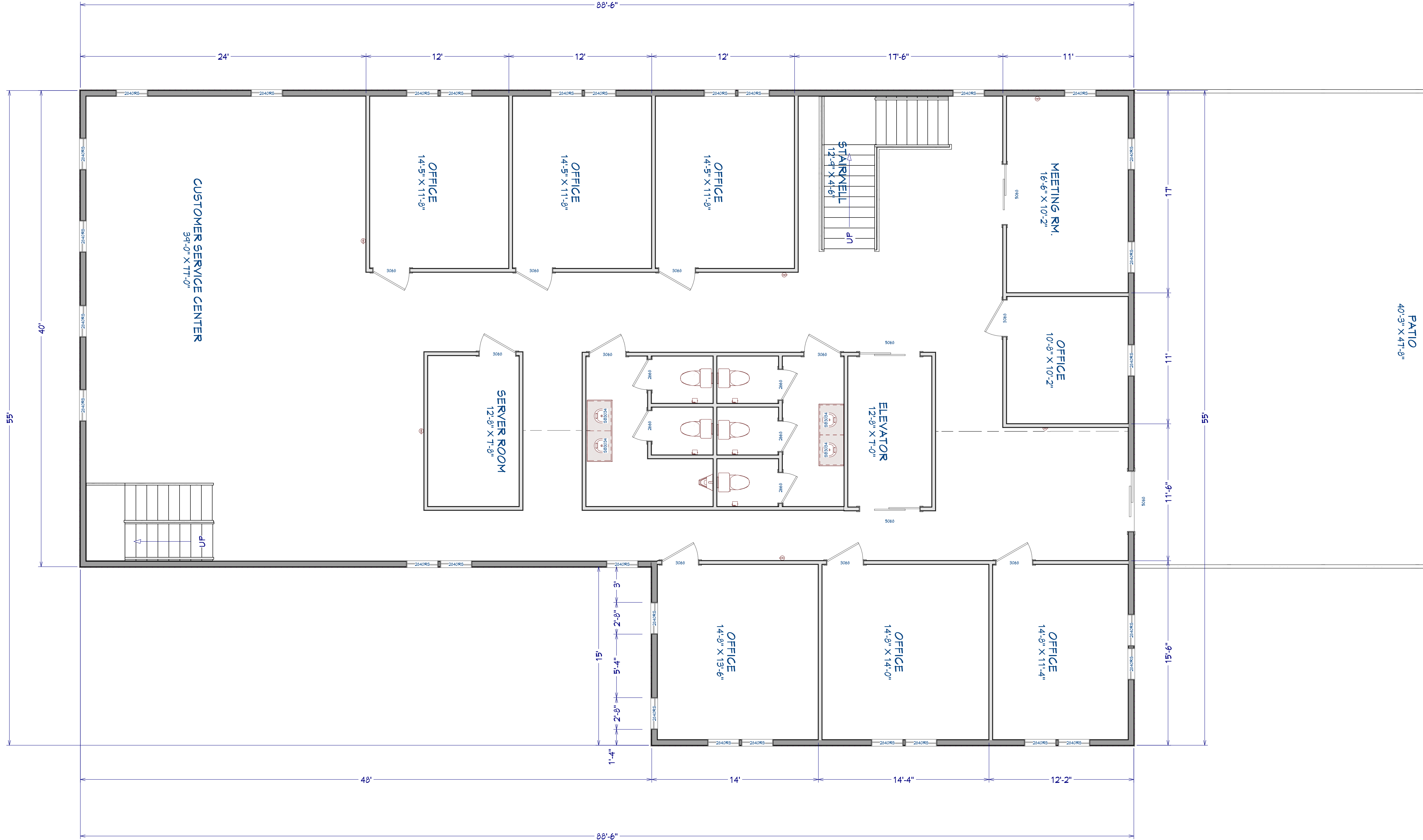
DRAWINGS PROVIDED BY :

DATE:

11/22/2023

SCALE:

SHEET:



2nd Floor
LIVING AREA
4054 SQ. FT.

3rd Floor

[illegible]

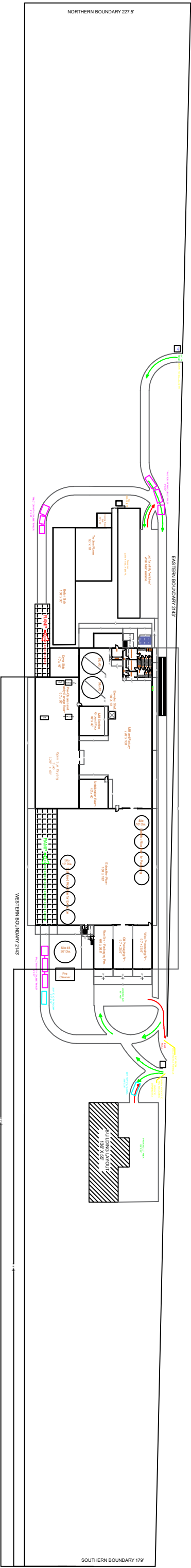
DRAWINGS PROVIDED BY:

DATE:

11/22/2023

SCALE:

SHEET:



Annex 4:

OSH Certificate of Registration as an Industrial Establishment

CERTIFICATE OF REGISTRATION/CONTINUATION OF
REGISTRATION/RENEWAL OF AN INDUSTRIAL ESTABLISHMENT

Occupational Safety and Health (Fees and Prescribed Forms) Regulations 2006, Reg. 3 (2).

This is to certify that the under-mentioned establishment has been registered by me in accordance with Section 6 (1) of the Occupational Safety and Health Act 1997 and that the following particulars in respect of the Industrial Establishment have been entered in the Register of Industrial Establishment.

- Name and Address of Owner: ESSENTIAL FOODS GROUP INC.
 - Name and Address of Occupier: PLOT 1, BEING PORTION OF BLOCK ‘A’ UITKOMST CANAL #1 WEST, BANK, DEMERARA
 - Name of Establishment: ESSENTIAL FOODS GROUP INC.
 - Address and Location of Industrial Establishment: PLOT 1, BEING PORTION BLOCK ‘A’ UITKOMST CANAL # 1 WEST, BANK, DEMERARA
-
- Type of Industrial Establishment: AGRICULTURE
 - Nature and Object of the process carried on in the Industrial Establishment: PROVIDE FOOD SECURITY TO CARICOM NATIONS AT AN AFFORDABLE COST
 - Hazardous chemicals and Industrial Establishment: NIL

Is Industrial Establishment or

Yes

No

-

Mine a major Hazardous Installation?

Number of Employees		Adults 18 years of age and over		Young Persons between 15 and 18 years of age	
		M	F	M	F
A	Number normally employed	5	20	-	-
B	Number employed at date of application	5	20	-	-

Reg. No:171/2024...



Occupational Safety & Health Authority

Dated this ...29th..... day ofFebruary.....2024

Annex 5:

No-objection from the GRDB



Guyana Rice Development Board

Ministry of Agriculture Complex, Guysuco Compound,

LBI, East Coast Demerara

Tel.: (592) 220-GRDB (4732) P.O. Box No.: 10247

info@grdb.gy Website: www.grdb.gy

Facebook: [//www.facebook.com/grdb.gy/](https://www.facebook.com/grdb.gy/)

09th December, 2024

Mr. Bheesham Ramnarace
Director
Essential Foods Group Inc.
Lot 217 South Road,
Lacytown,
Georgetown

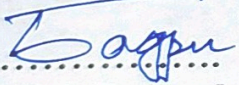
Dear Mr. Ramnarace,

Re: Permit for the Establishment of a Rice Mill

Essential Foods Group has met the regulatory requirements for constructing a rice mill at Plot 1, Being Portion of Block 'A' Uitkomst Canal Number 1, West Bank Demerara.

To this end, the Guyana Rice Development Board has no objections for the establishment of a rice mill at this location.

Kind Regards,


.....
Badrie Persaud
General Manager

Cc: Quality Control Manager – GRDB
Regional Superintendent, Region 3 - GRDB

Region 2 Sub-Office
Anna Regina,
Essequibo Coast
Tel: (592) 771-4158

Region 3 Sub-Office
Crane,
West Coast Demerara
Tel: (592) 254-0355

Region 6 Sub-Office
No. 56 Village,
Corentyne
Tel: (592) 339-4906-7

Rice Research Station
Burma, Mahaicony,
East Coast Demerara.
Tel: (592) 232-1020/1395/1301
Fax: (592) 232-1300

Annex 6:

Approval from Canals Poulder NDC

CANALS POLDER NEIGHBOURHOOD DEMOCRATIC COUNCIL

Lot 29-A South Section

Canal No. 2 Polder

West Bank Demerara

Tele: 663-4226

05th September, 2024

The Manager
Guyana Office for Investment (GO-Invest)
Camp & Church Street, Georgetown

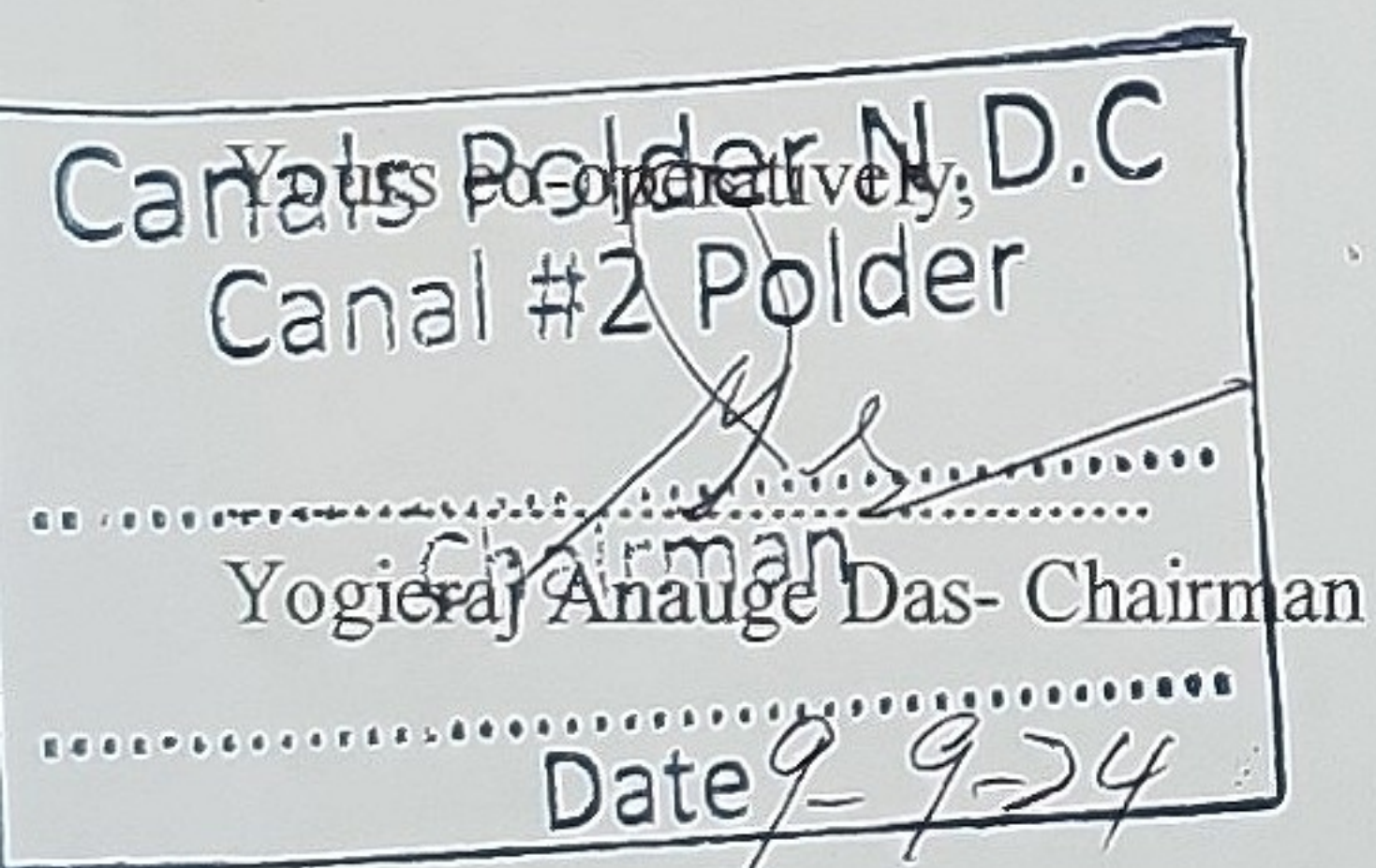
Dear Sir/Madam,

Re: - No objection

This is to inform you that the above named Council has no objection for Essential Food Group of Plot #1, Portion of Block 'A' Uitkomst, Canal No. 1 Polder, West Bank Demerara to construct an Agro-Processing Facility at the said address.

All for your information.

Thank you.



Annex 7:

Calibration Certificates for Noise and Air Quality Meters

Noise Meters



CALIBRATION CERTIFICATE

1-877-849-2127 | info@REEDInstruments.com
www.REEDInstruments.com

Calibration Certificate

Customer: *Microdaq LLC*

Certificate: U428069-00-01

Unit Identification

Manufacturer:
Model: R8080
Description: Sound Level Meter

Serial: 220106871
Unit ID: N/A

Calibration Date

Calibration Date: 21-Jun-2023
Due Date: 21-Jun-2025

Calibration Conditions

Temperature: 26.12°C
Humidity: 49.3 %
Barometric Pressure: N/A

General Information

Remark: N/A

Standards Used

Unit ID	Manufacturer	Model	Cal Date	Due Date
GTS024	IET Labs Inc	1986	3-Apr-2023	3-Apr-2024

The calibration was performed using measurement standards traceable to the National Measurement Institute Standards (NMIS) part of the National Research Council of Canada (NRC) or the National Institute of Standards and Technology (NIST), or to accepted intrinsic standards or measurement, or is derived by ratio type self-calibration techniques. Measurement uncertainties given in this report are based on a coverage factor of $k=2$ corresponding to a confidence level of approximately 95%.

Calibrated by: *W. Wood*

Approved by:

Certificate: U428069-00-01
Asset: ITM0065830

Calibration Certificate

Page 1/2



CALIBRATION CERTIFICATE

1-877-849-2127 | info@REEDInstruments.com
www.REEDInstruments.com

Calibration Certificate

Customer: *Microdaq LLC*

Certificate: U449659-00-03

Unit Identification

Manufacturer: Reed Instruments
Model: R8080
Description: Sound Level Meter

Serial: 230604542
Unit ID: N/A

Calibration Date

Calibration Date: 27-Oct-2023
Due Date: 27-Oct-2025

Calibration Conditions

Temperature: 23.00°C
Humidity: 52.4 %
Barometric Pressure: N/A

General Information

Remark: N/A

Standards Used

Unit ID	Manufacturer	Model	Cal Date	Due Date
GTS024	IET Labs Inc	1986	3-Apr-2023	3-Apr-2024

The calibration was performed using measurement standards traceable to the National Measurement Institute Standards (NMIS) part of the National Research Council of Canada (NRC) or the National Institute of Standards and Technology (NIST), or to accepted intrinsic standards or measurement, or is derived by ratio type self-calibration techniques. Measurement uncertainties given in this report are based on a coverage factor of $k=2$ corresponding to a confidence level of approximately 95%.

Calibrated by: *W. Wood*

Approved by:

W. Wood

[Signature]

Certificate: U449659-00-03
Asset: ITM0092232

Calibration Certificate

Page 1/2

Calibrator for Noise Meters



CALIBRATION CERTIFICATE

1-877-849-2127 | info@REEDInstruments.com
www.REEDInstruments.com

Calibration Certificate

Customer: *Microdaq LLC*

Certificate: U449659-00-04

Unit Identification

Manufacturer: Reed Instruments
Model: R8090
Description: Sound Calibrator

Serial: 230828833
Unit ID: N/A

Calibration Date

Calibration Date: 27-Oct-2023
Due Date: 27-Oct-2025

Calibration Conditions

Temperature: 23.01°C
Humidity: 52.5 %
Barometric Pressure: N/A

General Information

Remark: N/A

Standards Used

Unit ID	Manufacturer	Model	Cal Date	Due Date
GTS020	Brüel & Kjær	Nexus 2693-OS4	14-Mar-2023	14-Mar-2024
GTS021	Brüel & Kjær	4228	14-Mar-2023	14-Mar-2024
GTS022	Brüel & Kjær	4188/2671	13-Mar-2023	13-Mar-2024
GTS023	Hewlett Packard	34401A	21-Mar-2023	21-Mar-2024

The calibration was performed using measurement standards traceable to the National Measurement Institute Standards (NMIS) part of the National Research Council of Canada (NRC) or the National Institute of Standards and Technology (NIST), or to accepted intrinsic standards or measurement, or is derived by ratio type self-calibration techniques. Measurement uncertainties given in this report are based on a coverage factor of $k=2$ corresponding to a confidence level of approximately 95%.

Calibrated by: *W. Wood*

Approved by:

Wesley Wood

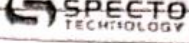
[Signature]


Certificate: U449659-00-04
Asset: ITM0092233

Calibration Certificate

Page 1/2

Air Quality Meter (Particulate Matter Sensor)

Calibration Due	
MAY 06 2025	
	



Aeroqual Limited
460 Rosebank Road, Avondale, Auckland 1026, New Zealand.
Phone: +64-9-623 3013 Fax: +64-9-623 3012
www.aeroqual.com

Calibration Certificate

Calibration Date: 19 Mar 2024

Model: PM2.5 / PM10 0 - 1,000 mg/m3

Serial No: SHPM 5005-ACA8-001

Measurements

	PM2.5 (mg/m3)	PM10 (mg/m3)
Reference Zero	0.000	0.000
AQL Sensor Zero	0.000	0.000
Reference Span	0.056	0.243
AQL Sensor Span	0.057	0.240

Calibration Standards

Standard	Manufacturer	Model	Serial Number	Calibration Due
Optical Particle Counter	MetOne Instruments	GT-526S	B13059	20 April 2025
Test aerosol	Powder Technology Inc.	ISO 12103-1, A1 ultrafine test dust	n/a	n/a

QC Approval: Marcus Tse

aeroqual⁸⁸

Aeroqual Limited

460 Rosebank Road, Avondale, Auckland 1026, New Zealand.
Phone: +64-9-623 3013 Fax: +64-9-623 3012
www.aeroqual.com

Calibration Certificate

Calibration Date: 28 May 2024

Model: PM2.5 / PM10 0 - 1.000 mg/m³

Serial No: SHPM 5005E1ED-001

SPECTRO
JUN 10 2025

Calibration

Measurements

	PM2.5 (mg/m ³)	PM10 (mg/m ³)
Reference Zero	0.000	0.000
AQL Sensor Zero	0.000	0.000
Reference Span	0.028	0.127
AQL Sensor Span	0.028	0.128

Calibration Standards

Standard	Manufacturer	Model	Serial Number	Calibration Due
Optical Particle Counter	MetOne Instruments	GT-526S	B13059	20 April 2025
Test aerosol	Powder Technology Inc.	ISO 12103-1, A1 ultrafines test dust	n/a	n/a

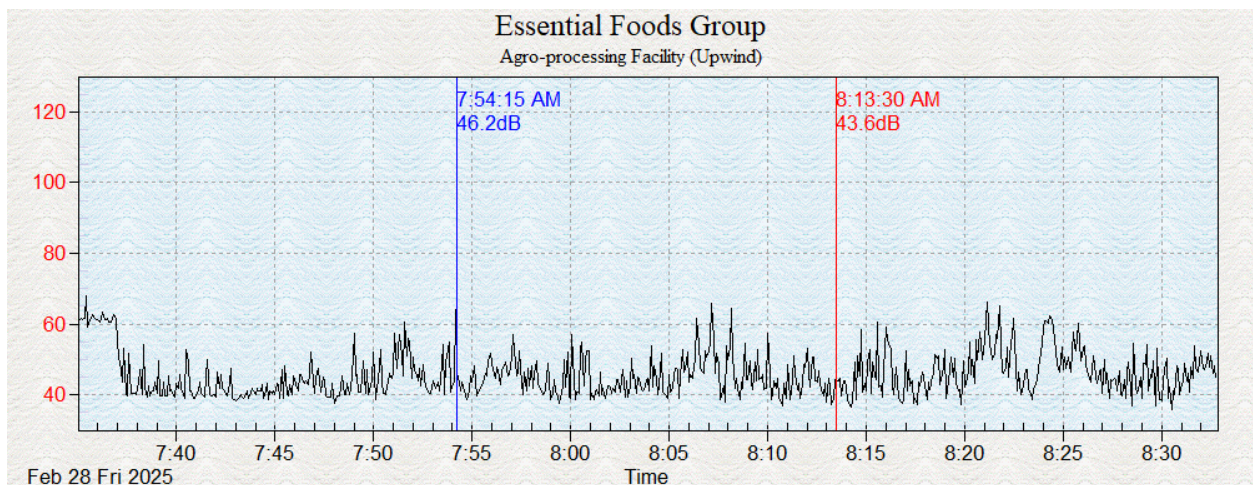
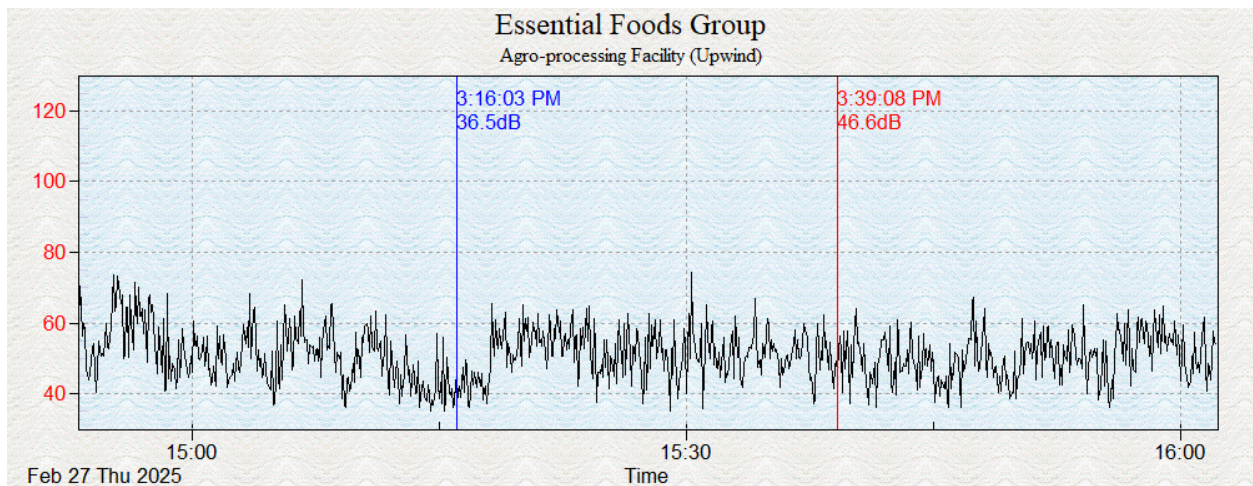
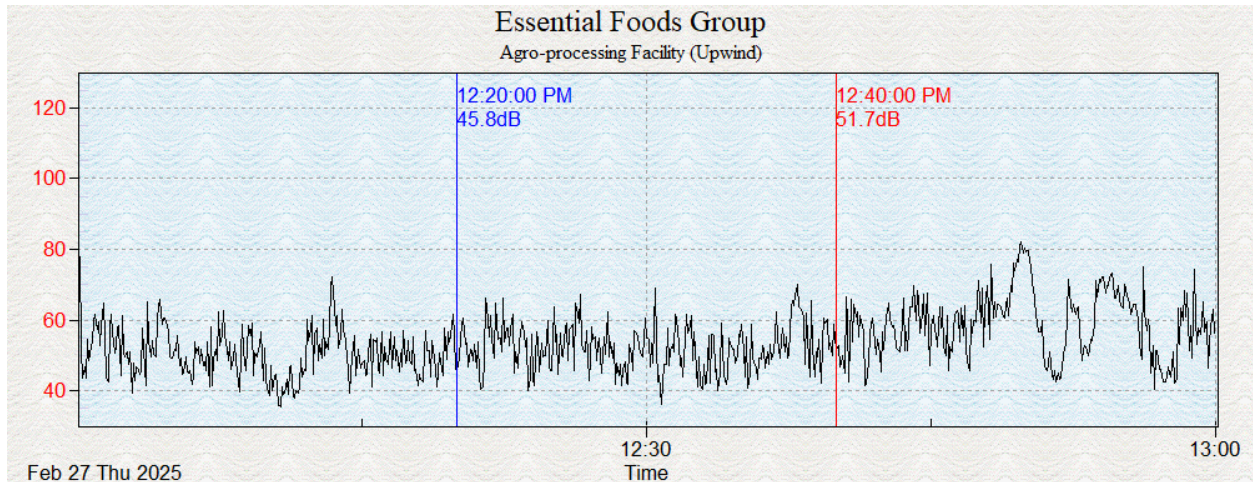
QC Approval: Marcus Tse

Annex 8:

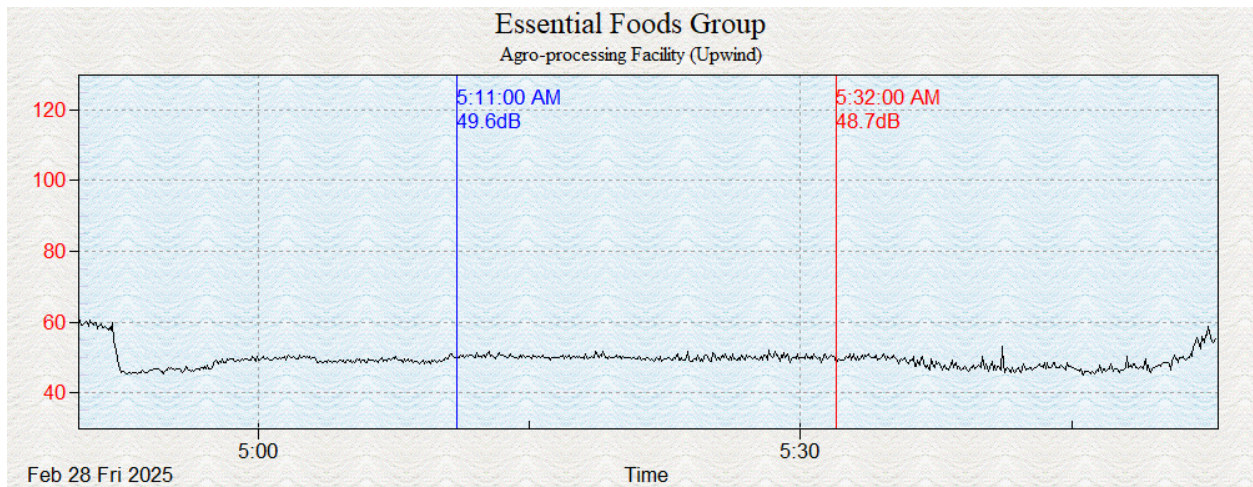
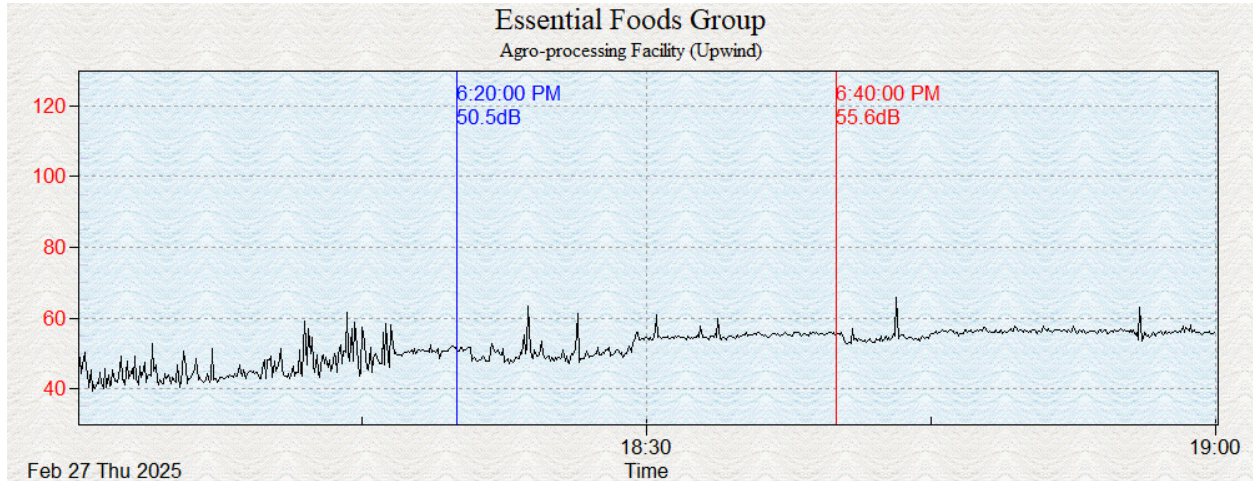
**Graphical
Representation of Noise
Assessment Results**

Upwind

Daytime

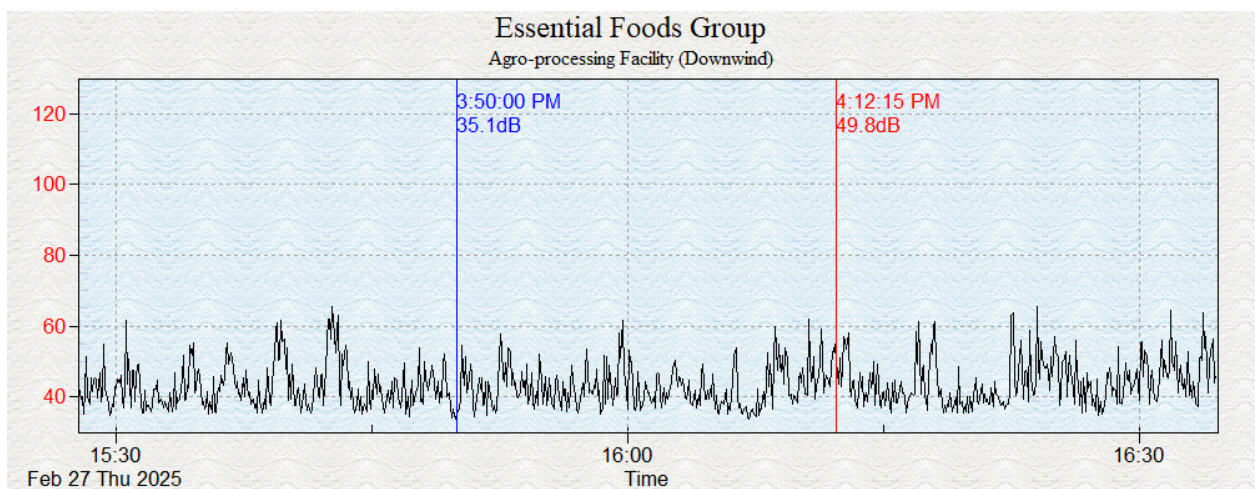
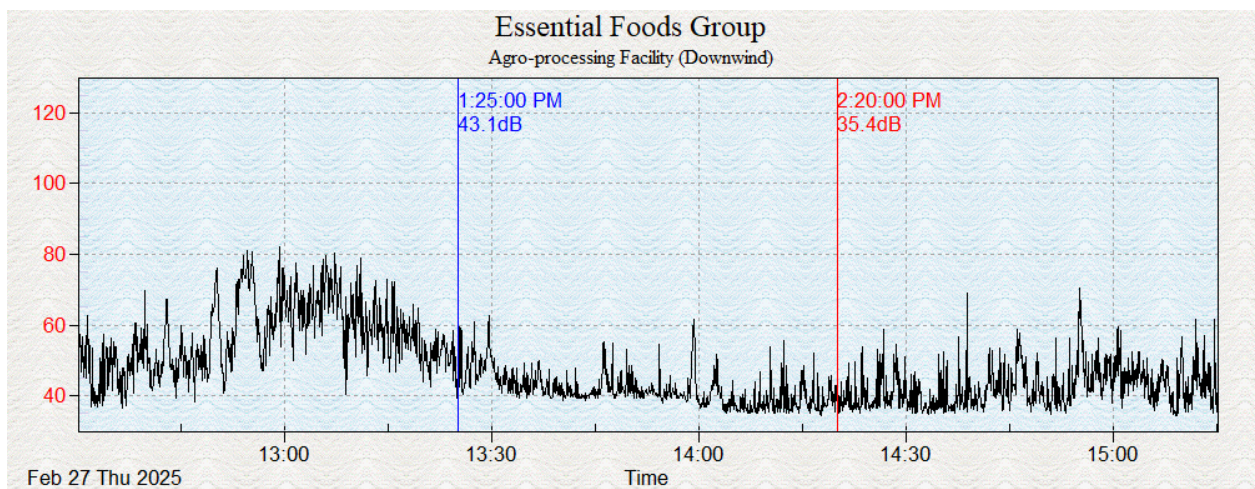
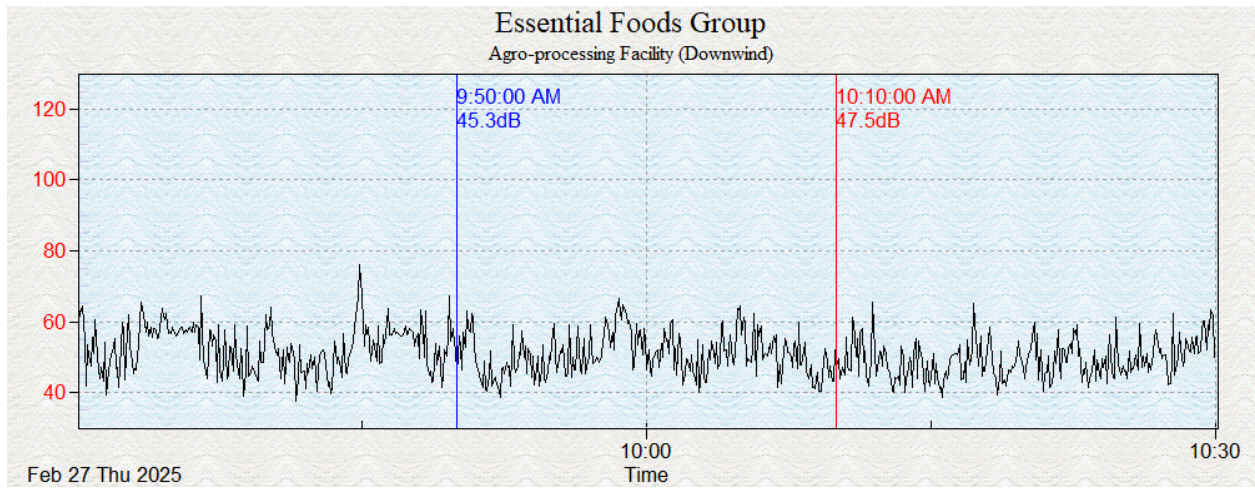


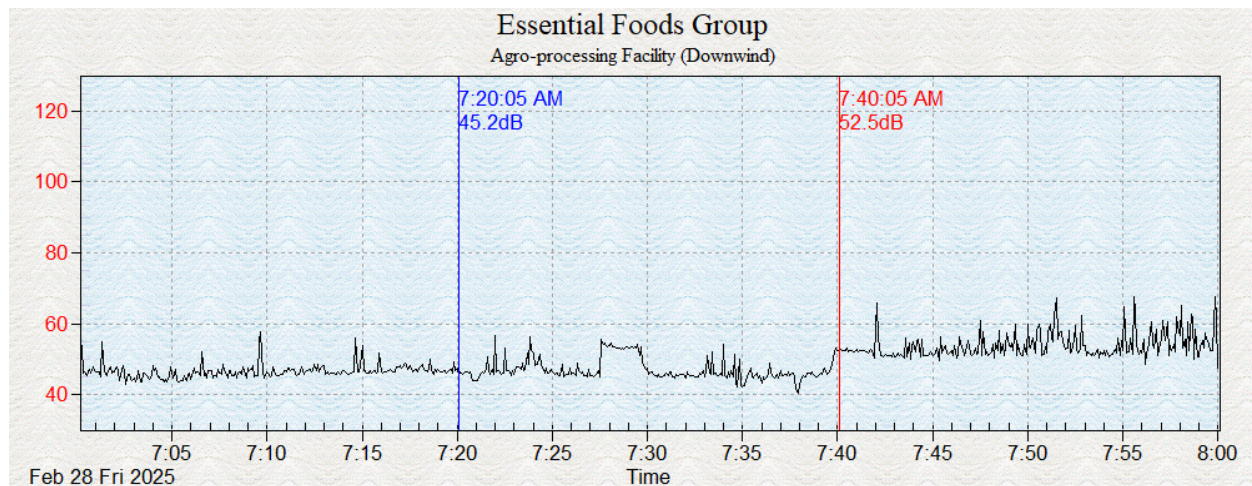
Nighttime



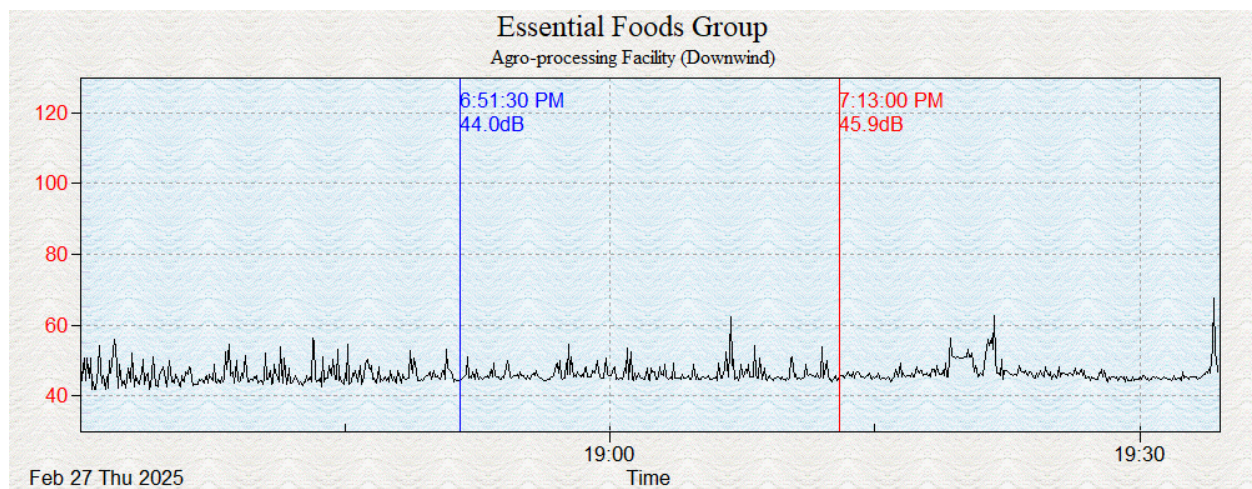
Downwind

Daytime



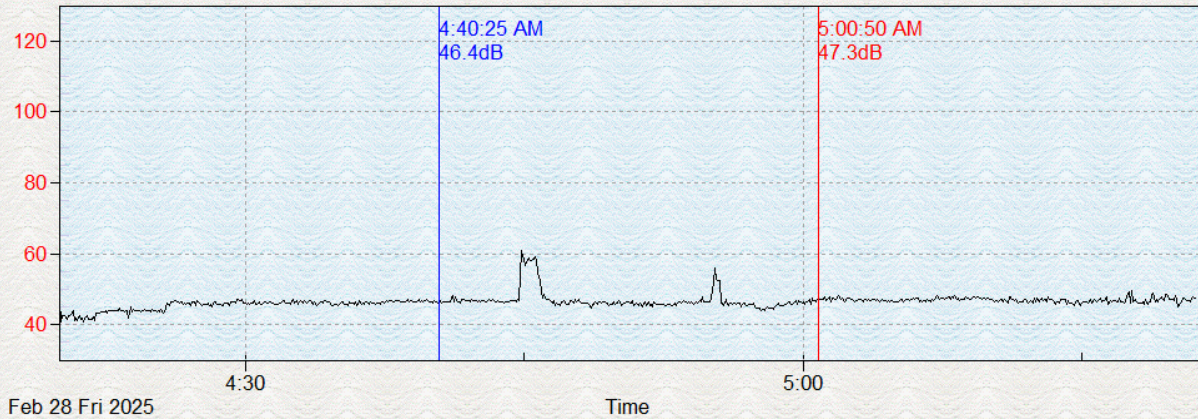


Nighttime



Essential Foods Group

Agro-processing Facility (Downwind)



Annex 9:

**Results of Water Quality
Analysis**

Water Sampling Results Sheet

Sample ID(s)	See description(s) below
Customer	Essential Foods Group
Contact Person (s)	Sherri Ann Elcock (Essential Foods Group) Melinda Franklin-Lynch (Franklin-Lynch Environmental and Engineering Services)
Primary Location	Canal #1, West Bank Demerara (WBD)
No. (#) Samples Collected, Retrieved, or Tested	Three (3)
Date of Retrieval	27/February/2025
Date of Analysis	27/February/2025

Results				
Location	Sample ID	Parameter		Time
		pH	Temperature	
Eastern Canal Boundary (section close to the furthest tent) (N 06.782828 W 058.243739)	EFG-01	3.36	86.6F (30.33C)	12:05 pm
Eastern Canal Boundary (section close to the road intersection) (N 06.779438 W 058.244068)	EFG-02	3.65	88.6F (31.44C)	12:23 pm
Southern Canal Boundary (close to the ploughed/cleared section) (N 06.779330 W 058.245234)	EFG-03	3.55	87.1F (30.61C)	12:35 pm

Notes:

- All sampling/testing was done in situ. The results reflect actual in-field environmental conditions.
- The primary environmental conditions observed during sampling/testing were notably windy, overcast and intermittently sunny.

Water Sampling Results Sheet

Parameters

Unit	Description	Scale/Range
pH	<ul style="list-style-type: none"> - $\text{pH} = -\log [\text{H}^+]$ - pH is the negative logarithm of the hydrogen ion concentration) 	<ul style="list-style-type: none"> - Complete Scale: 0pH – 14pH - Acidic: 0pH – 6pH (0 being the most acidic on the scale) - Neutral: 7pH - Alkaline (Basic): 8pH – 14pH (14 being the most alkaline on the scale)
°C	<ul style="list-style-type: none"> - The degree Celsius (°C) scale divides the range of temperature between the freezing and boiling temperatures of pure water at standard atmospheric conditions 	<ul style="list-style-type: none"> - Complete Scale: 0°C - 100°C - Freezing Point: 0°C - Boiling Point: 100°C
°F	<ul style="list-style-type: none"> - The degree Fahrenheit (°F) scale sets the freezing point of water at 32 degrees Fahrenheit and the boiling point at 212 degrees, placing the boiling and freezing points of water exactly 180 degrees apart. 	<ul style="list-style-type: none"> - Freezing Point: 32°F - Boiling Point: 212°F - Absolute Zero: -459.67 °F

Conversions:

- Celsius – Fahrenheit = $T (^{\circ}\text{F}) = 9/5 T (^{\circ}\text{C}) + 32$
- Fahrenheit – Celsius = $T (^{\circ}\text{C}) = 5/9 (T (^{\circ}\text{F}) - 32)$

Equipment

Name	ExStik Waterproof pH Meter
Manufacturer	Extech Instruments
Description	The Extech ExStik pH Meter uses a flat surface electrode to measure pH in liquids, semi-solids, and solids. The Extech ExStik pH Meter simultaneously displays pH and temperature, as well as an analog bar graph for sample trends
Range	<p>pH: 0.00 to 14.00 / $\pm 0.01\text{pH}$ typical</p> <p>Temp: 23 to 194o F (-5 to 90o C)</p> <p>Temp Accuracy:</p> <p>$\pm 1\text{o C}/1.8\text{o F}$ [from -5 to 50o C (23 to 122o F)]</p> <p>$\pm 3\text{o C}/5.4\text{o F}$ [from 50 to 90o C (122 to 194o F)]</p>
Calibration	Calibration is done 24 hours before field testing. The electrode is soaked in a pH 4 solution for about 10 minutes, during which time it stabilizes.
Last Calibration	26/February/2025

Field Technician: Jenell Williams-Pinder

Field Technician's Signature:





GUYANA WATER INC.

Water Quality Department: 255 Da Silva St., Newtown Kitty, Georgetown

RESULTS SHEET

Document ID: GWI-REC-Cust-25/03/004
Customer: Essential Food Group Inc.
Contact Person: Melinda Franklin-Lynch
Contact Number: 592 662-9060
Number of Samples: 3 Samples (3 Bottles)
Sample type: Water
Sampler(s): -
Sample(s) taken on: 5th March, 2025
Date of Analysis: 5th March, 2025

Location	Batch #	Sample # (Chemistry)	Turbidity (NTU)	Total Suspended Solids (mg/L)	Comments
Sample #1	B-25-98	2503/960	11.9	35.25	-
Sample #2	B-25-98	2503/961	22.2	14.50	-
Sample #3	B-25-98	2503/962	19.1	10.50	-

Notes: The results shown above are based exclusively on the samples received. All samples analyzed are water samples and have been submitted in acceptable condition to the laboratory (except where otherwise stated).



GUYANA WATER INC.

Water Quality Department: 255 Da Silva St., Newtown Kitty, Georgetown

Parameters	Method used
Turbidity	HACH Nephelometric Method 8195
Total Suspended Solids	USEPA Gravimetric Method

mg/L – milligrams per litre
CFU – Colony Forming Units

NTU – Nephelometric Turbidity Units
TNTC – Too Numerous To Count

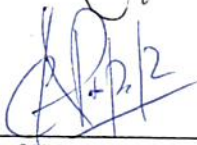
Comments:



Laboratory Manager

7-03-2025

Date



Head of Water Quality

10/3/2025

Date

Annex 10:

**Vehicle Maintenance
Form**

Essential Foods Group

Vehicle Maintenance Form

Vehicle Details			
Vehicle Type			
Registration Number			
Make & Model			
Date of Last Service			
Maintenance Inspection Checklist (Tick ✓ if completed)			
Engine Oil Level & Condition Checked			
Transmission Fluid Level Checked			
Brake Fluid Level & Brakes Inspected			
Battery Condition & Terminals Cleaned			
Coolant Level & Radiator Condition Checked			
Tires & Tread Depth Inspected			
Lights & Indicators Functional			
Windshield Wipers & Washer Fluid Checked			
Exhaust System & Emissions Checked			
Fuel System & Leaks Inspected			
Suspension & Steering Components Inspected			
Emergency Equipment (Fire Extinguisher, First Aid Kit) Present			
Repairs and Issues Identified			
Any Mechanical Issues?			
Description of Issues			
Urgency of Repairs	Low	Medium	High
Required Parts & Materials			
Maintenance Actions Taken			
Repairs Conducted			
Parts Replaced			
Additional Notes			
Authorization and Signature			
Maintenance Technician's Name			
Technician Signature			
Supervisor Signature			
Date			

Annex 11:

List of Records Template

Essential Foods Group

List of Records Template

Document Name	Document Label	Version	Status (active/Inactive)	Location	Responsibility
List of Records	LR01.0	-	Active		
Environmental Health Safety Policy	EHS01.0	-	Active		
Emergency Response Plan	ERP01.0	-	Active		
Emergency Reporting and Investigation Form	ERIF01/1.0	-	Active		
Documentation and Recordkeeping	DRK01.0	-	Active		

Annex 12:

Emergency Reporting & Investigation Form

Essential Foods Group Emergency Reporting and Investigation Form

Report

Date of Incident: _____

Time of Incident: _____

Location of Incident: _____

Type of Emergency:

☐ Fire

☐ Flood

☐ Earthquake

☐ Medical Emergency

Description of Incident

Reported by:

Date:

Investigation

What happened?

Essential Foods Group

Emergency Reporting and Investigation Form

Why did it happen? (Root cause)

Corrective Actions to Prevent Recurrence:

Corrective Actions	Person Responsible	Time Limit	Completed

Will there be any changes to the Operations processes? ☐Yes ☐No

If Yes what are the changes?

Will there be changes to the Emergency Response Plan? ☐Yes ☐No

If Yes, what are the changes?

Investigation completed by:

Name

Position

Date

Annex 13:

Journey Management Form

Essential Foods Group

Journey Management Form

Journey Details	
Date	
Departure Time	
Estimated Arrival Time	
Route to be taken	
Expected weather conditions	
Purpose of Journey	
Driver's Information	
Name	
Contact Number	
License Number	
Emergency Contact & Number	
Vehicle Information	
Vehicle Type	
Registration Number	
Safety Checklist	
Lights & Indicators working	
Tires inspected	
Mirrors inspected	
Fire extinguisher present	
First aid kit available	
Warning signs and emergency kits available	
Risk Assessment and Mitigation	
Road Hazards Identified	
Mitigation Measures	
Authorization and Signature	
Driver's Signature	
Supervisor's Signature	
Date	

Annex 14:

Waste Management Plan Framework

Waste Management Plan Framework

Introduction

Essential Foods Group (EFG) has carefully designed its project, to practically embrace its ethos of a 'green plant', by implementing systems to have minimal waste outputs during its lifespan. EFG's waste management plan will be developed, to document all measures the company will take to abide by the well-known waste management hierarchy, while simultaneously serving as a training tool for employees and subcontractors.

This framework waste management plan will be used as a guiding document for the development and implementation of a detailed waste management plan during the project's operational phase. The waste management plan will, as far as possible, prioritise waste reduction, recycling and reuse. The waste management plan will be an active document, and will be reviewed annually, and updated as needed.

Objective

The objective of this document is to identify all waste streams generated by EFG's rice milling and agroprocessing facility, and to demonstrate their management in accordance with environmentally-sound waste management principles, which align with the waste management hierarchy.

Scope

This framework addresses the approaches which will be taken to manage all wastes generated from EFG's facility. This document will identify each potential waste stream, although they may not require disposal. This document addresses non-hazardous solid and liquid waste management at EFG's Uitkomst, West Bank Demerara site, and has been developed on the basis of the project's design which will not result in the generation of hazardous waste. Further, this document does not address the construction phase of the

Waste Management Plan Framework

project but only the operational phase. Nevertheless, EFG through careful oversight of the construction activities will ensure that waste generated during the project's construction phase is managed in accordance with the provisions outlined in the EMP, Environmental Permit and any other reasonable directives issued by regulatory authorities.

Anticipated Waste Streams

Solid Waste

General Waste

This waste stream is expected to be generated from the day-to-day operation of the facility. Wastes such as paper, cardboard, plastic bottles, aluminum cans, food boxes and food scraps will be generated primarily from employees utilising the administrative building, daycare facility and rice mill. To a lesser extent, visitors and subcontractors will also contribute to this waste stream.

Soil, Stone and Straw

Some soil, stone and straw are likely to be present in the paddy when it is delivered to the facility. During the drying stage, soil, stone and straw will be separated from the paddy and will be removed for reuse.

Rice Husk

During milling, rice husk will be generated. The volume generated at any given time will be a function of how much paddy is being milled.

Waste Management Plan Framework

Rice Husk Ash

This waste stream will be generated from burning the rice husk, to generate power for the operation of the facility.

Liquid Waste

Grey Water

This refers to water generated from the use of sinks and showers at the facility. This waste stream usually contains very little contaminants and can be discharged without treatment.

Black Water

This waste stream is generated from the use of toilets, and is usually contaminated with pathogens. Black water will be channeled to the septic tanks which will be designed to cater for the potential occupancy of the facility. The design of the septic tanks will be in keeping with national guidelines.

Processing Wastewater

Wastewater generated from the rice polishing process is the only waste stream likely to be generated from the rice milling process at the facility. This will be repurposed for landscaping.

Waste Management Plan Framework

Waste Volume Estimates

Waste Stream	Estimated Volume	Method of Estimation
Solid Waste		
Paper and Cardboard	To be determined	Waste Audit conducted during operation
Plastic Bottles		
Aluminum Cans		
Food Scraps		
Grass from Landscaping		
Soil, Stone, Straw		
Rice Husk	33,600MT	28 %Annual paddy intake
Rice Husk Ash	8,400 MT	25 % of rice husk generated from milling
Liquid Waste		
Black and Grey Water	To be determined	Assessing water usage and occupancy during operation
Processing Water (Rice Polishing)		Auditing water use during the rice polishing process

EFG Waste Management Strategy

EFG will implement the waste management hierarchy where the least preferred option is disposal. As such, the following measures proposed will be further developed during operation so that waste reduction, recycling and reuse can be prioritized.

Waste Stream	Planned Waste Management Strategy
Paper and Cardboard	Segregation and Reused
Plastic Bottles	Segregation and Reduction through Company initiatives such as promotion of reusable bottles
Aluminum Cans	Segregation and disposal in short-term; Recycling options will be explored
Food Scraps	Segregated and used for composting where possible; Compost will be used to enhance soil supporting landscaping activities
Grass from Landscaping	Composted
Soil, Stone, Straw	Reused in landscaping
Rice Husk	Used for Energy Recovery

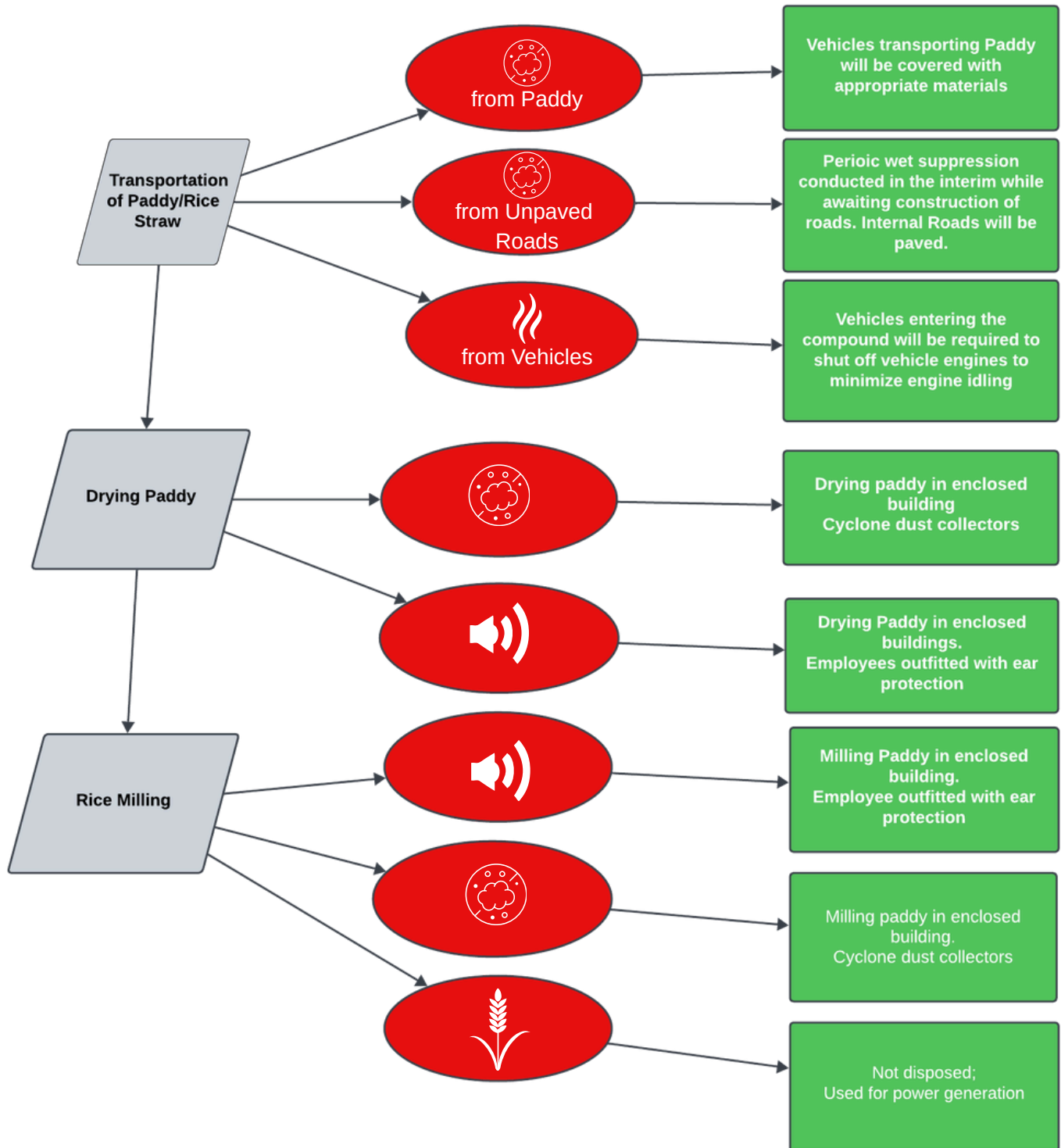
Waste Management Plan Framework

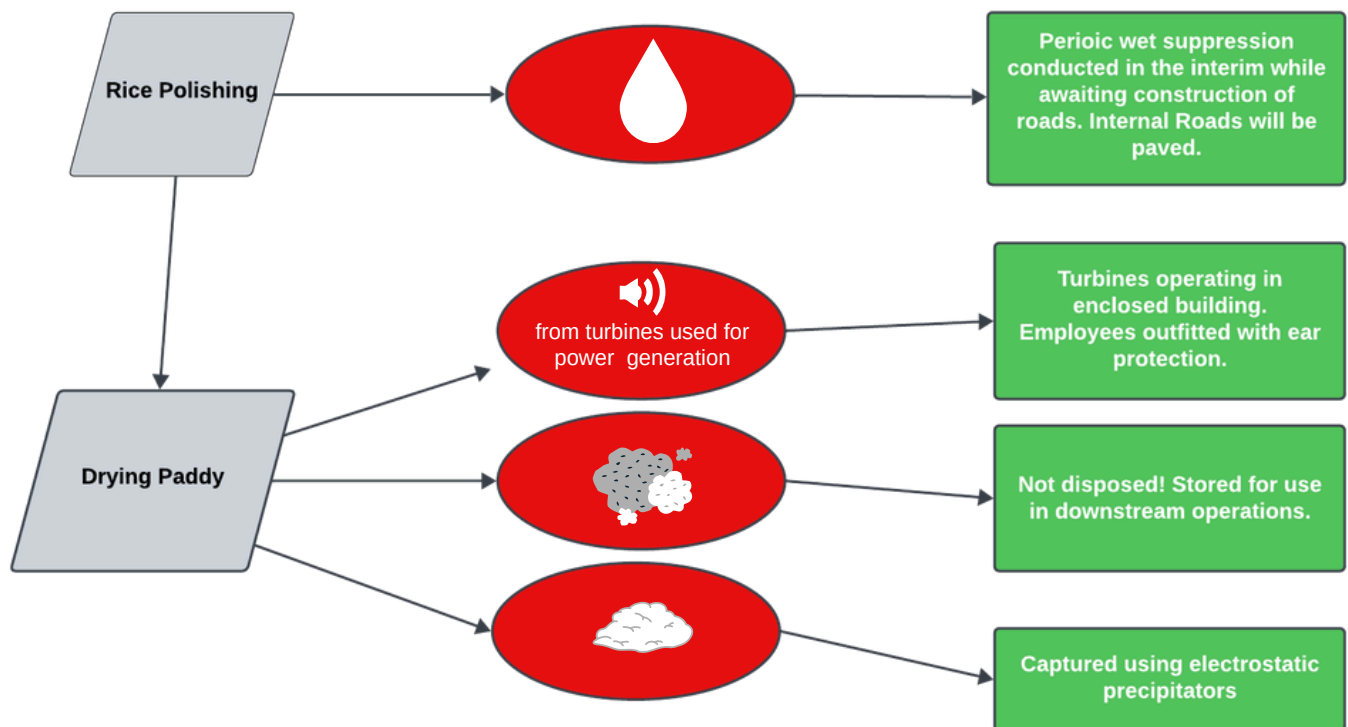
Rice Husk Ash	Stored for Recycling in Downstream Activities
Black and Grey Water	Discharged into and treated by septic tank
Processing Water (Rice Polishing)	Reused for landscaping and shrubbery watering systems

Annex 15:








Schematic of EFG's Rice Milling Process- Activities, Impacts and Mitigation Measures

EFG's Rice Milling Process- Activities , Impacts and Mitigation Measures





Key.

-  **Noise Emissions**
-  **Dust Emissions**
-  **Gaseous Emissions**
-  **Waste Paddy Husk**
-  **Wastewater**
-  **Rice Husk Ash**
-  **Fly Ash**