The Environmental and Social Impact Assessment Report for the proposed Etete Solvent Extraction Plant, Ethiopia

Project Applicant: Etete Milk Processing S.C.

Project Location: Chole Kebele, Aleltu Woreda, Oromia

Prepared By: *Hamen Consultancy Service Plc.*

For Authority Submission: *Oromia Environment, Forest and Climate Change Authority*

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Addis Ababa, Ethiopia

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Project Location: Chole Kebele, Aleltu Woreda, Oromia, Ethiopia

Project Applicant: Etete Milk Processing S.Co

Consultant Name: Hamen Consultancy Service Plc.

Declaration of the Applicant

Etete Milk Processing S.Co confirms that the content of this report is a true representation of the Environmental and Social Impact Assessment Report of the proposed Etete Solvent Extraction Plant.

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Declaration of the Consultant

Hamen Consultancy Service Plc, as a registered firm of experts by the Environmental, Forest and Climate Change Commission of Ethiopia, confirms that the contents of this report was compiled independently and with no financial interest in the Project. The facts presented here are a true representation of the findings for the proposed Etete Solvent Extraction Plant.

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	Name	Company	Signature	Date
Drafter	Mengistu Birhanu	Hamen consultancy Service PLC		24/04/2021
Peer Reviewer	S. Aken	IBIS Consulting		23/04/2021
Peer Reviewer	D. Dunne	IBIS Consulting		23/04/2021

Executive Summary

Hamen Consultancy Services has been appointed by Blue Bird Holdings Limited on behalf of the Project applicant, Etete Milk Processing S.Co to conduct an Environmental and Social Impact Assessment in Ethiopia. The proposed Project is for the construction and operation of a Solvent Extraction Plant with a processing rate of 200 Tonnes per day to supply high quality extracted crude oil from oil seeds. These locally available seeds include soyabean, sesame, ground nut, cotton seed and sunflower. It is anticipated that the Project will supply high quality extracted oil to local refineries for export as well as meet the growing demand for locally produced oil. In addition, the Project will decrease the dependency on imports (of crude oil) within the Ethiopian edible oil sector and create additional export opportunities from the produced by-products (e.g. defatted cake). The Project has been estimated at having an investment value of $15 million and shall take a large share of the domestic crude oil extraction market (around 41% in the first year).

Two separate sites for the Project were assessed focusing on the availability of materials, labour, access routes and services. The preferred location is a 3-hectare property on a government lease located on a main highway route approximately 58 km east of the Ethiopian capital city of Addis Ababa. The property currently houses a decommissioned dairy plant and its ancillary infrastructure operated by the applicant, Etete Milk Processing S. Co. until it ceased operations in 2019. The surrounding land use is classified as light industrial due the small developments in the area which are predominantly servicing the dairy or milk processing sector. The adjacent land to the site in all directions are dairy farms with processing and storage facilities attached. Within the direct area of influence i.e. 150m of the site on these farmlands, there are scattered farm dwellings (approximately 5-6 in total) where workers or farm owners reside as well as boreholes servicing these occupants. For the purpose of the impact assessment, these residents and workers have been classified as sensitive receptors due to their proximity to Project activities and their current limited access to resources. There were no environmentally sensitive areas identified around the Project site which is considered to be disturbed land with minimal natural ecology remaining. Similarly, no sources of surface water or formally protected areas were found to be in close proximity.

Currently on site, the existing decommissioned plant consists of several buildings as well as four settling ponds for water treatment and a half-constructed Effluent Treatment Plant that is still to be completed. The site is serviced by the municipal electricity supply however two 1500kVa diesel fired generators will be installed as a back-up power supply as the national supply is considered to be unstable. The frequency and the duration that these generators will be required are unknown at this stage. The wastewater infrastructure will remain on site as will the main building which will house the

new plant whilst the general buildings will be demolished. Additional infrastructure to be constructed consists of sections to accommodate oil seed storage, seed pre-cleaning, an oil mill, solvent extraction, meal and oil tanks as well as facilities for administration, fuel supply and packaging.

The standard process for solvent extraction consists of the following basic steps using minimal raw materials i.e. seeds, solvent and white mineral oil:

- Seed Preparation by husking and rolling;
- Oil Extraction or Pressing;
- Solvent Extraction using food grade Hexane;
- Solvent Recovery through distillation; and
- Meal Desolventising via stages of steaming and toasting.

From the feasibility assessment, undertaken separately from the ESIA, it is calculated that a daily volume of approximately 360m^3 of water is required for the extraction process as well as the general operations of the site. It has been proposed that the water supply be sourced from the borehole on site which is permitted to the applicant under the previous operation. The approved volume for abstraction is still to be confirmed as is whether pump testing was undertaken on the borehole as part of the permitting process to confirm that the daily water requirements can be met without affecting the surrounding boreholes. The analyses on the water quality indicates that total coliforms are currently present in the borehole which may require treatment for potable use.

As the site will be producing crude oil and not undertaking the final refinement steps, the waste to be generated is considered to be organic in nature with the solvent (Hexane) being recovered during the process. The main sources of effluent will be from general washing and from the hexane recovery with the main types of pollutants being fats and oils. The solid waste is sold as by-products (husks and seed cake) and general waste (packaging etc.) will be recycled or transferred to a landfill. The effluent will be transferred to the effluent treatment plant along with greywater where it will be treated through the standard steps of filters and biological activation and released into the settling ponds before being ultimately discharged into the neighbouring field if the water quality meets the required Ethiopian standards for wastewater.

The current status of the receiving environment, from both an environmental and social perspective, related to the Project area of influence was assessed by the Hamen team during visits to the area and the collection of primary and secondary environmental and social data. Relevant literature has been reviewed and relevant information has been collected for the baseline. Short-term monitoring and

samples were recovered to assist in establishing the existing air quality (H_2S, NO_2, SO_2, CO_2, CH_4, PM_{10}, $PM_{2.5}$), noise levels (dB) and soil conditions both inside and outside the site. Water samples were also recovered from the borehole as well as the settling ponds to determine the current water quality on-site. Ethiopia has established national standards for various pollutants with reference to WHO guideline targets. The results from the sampling indicated that, at the time of the visits, no parameters were exceeded for air quality, noise levels or soil composition however the sampling point alongside the main road delivered higher levels of pollutants due to the traffic. As mentioned above, the borehole water contained total coliforms at a count exceeding Ethiopian and WHO standards however the samples were within limits for the metals, salts and *Escherichia coli* tested for and compared to drinking water standards.

Using the baseline information, the impact assessment process identifies any potential significant impacts on environmental or social receptors as a result of the Project activities. To determine the significance, for the purpose of this ESIA, the methodology has considered two main factors: impact magnitude and receptor sensitivity/vulnerability. Magnitude is a measure of the change to a receptor that will potentially result from the Project, while sensitivity/vulnerability is a measure of how sensitive or vulnerable a receptor (e.g. people, flora, or fauna) is to these changes. An impact will be judged significant if, in isolation or in combination with other impacts, it will cause a notable change from baseline conditions and may require mitigation to manage the effects on/risks to a receptor from this change. The table below presents a summary of the impact ratings pre- and post- mitigation.

Area of Impact	Project Phase	Impact Significance (Pre-mitigation)	Residual Impact Significance (Post-mitigation)
Air Quality	Construction	Moderate	Minor
	Operation	Moderate	Minor
Noise Emissions	Construction	Moderate	Minor
	Operation	Major	Moderate
Groundwater	Construction	Major	Moderate
	Operation	Major	Moderate
Community Health	Construction	Moderate	Minor
	Operation	Minor	Minor
Community Safety & Security	Construction	Minor	Negligible
	Operation	Minor	Negligible
Labour & Working Conditions	Construction	Moderate	Minor
	Operation	Minor	Negligible
Unplanned Events	Project Life	Minor	Minor

The impact of the Project activities on the levels of noise during operations and the quantity or availability of groundwater is considered to be of major significance. This assessment has taken into

account that a large volume of groundwater has been proposed to be abstracted on a daily basis from a borehole within close proximity to other boreholes which supply surrounding water users with their only source of water. To manage the risk or to understand the impact further, the mitigation measures recommended include filling the information gaps by assessing the recharge of the borehole and the potential pumping rate. By further refining the feasibility assessment to include a process water balance and options for recycling and reusing the wastewater, the water requirements for the borehole can be decreased making the abstraction more sustainable and less impactful. Similarly the noise levels are expected to increase with the commissioning of the plant due to the increase in activity, people and vehicles on site during working hours. The current ambient noise level around the site is low due to inactivity and is expected to increase with the Project activities. The main sources of noise pollution will be from the plant (rollers, grinders, the use of steam etc.) as well as the two generators whose usage is unknown. The receptors are assessed to be sensitive to this impact due to the close proximity to the activities, the minimal screening or buffering and the hours of the plant operations. As the ambient noise levels on site are low due to inactivity and very few existing noise sources, the Project activities will certainly impact the noise experienced by the receptors. The selected design of the plant infrastructure can mitigate the increase on the noise and air emissions to an acceptable standard if implemented correctly however the impact of the two large generators are yet to be quantified as the extent that they will be used is unknown. The unknown events which may occur on site and result in a moderate impact are as a result of the increased traffic levels around the site as well as the potential for spills contaminating soil or groundwater within the direct area of influence. The likelihood and expected frequency of these events occurring are low however, as discussed, the receptors (farmlands, farm workers, boreholes etc.) are seen to be sensitive to these potential impacts and therefore control measures are required.

As the majority of the labour is expected to be sourced from previous employees in the area or from the neighboring villages (within 8km), an influx of workers is not anticipated for the Project. Apart from the increased risk of contagious diseases spreading from having a large number of people on site together (i.e. COVID-19), the Project does not expect to impact on current community health or security conditions. As the majority of the proposed workforce already live in the area, there will be no additional strain on the existing medical, educational or general services in the communities. The inherent risks that come with a contracted construction team for the temporary period can be effectively managed through contracts and site management.

A draft Environmental and Social Management Plan, as well as a Monitoring Program, have been included in the ESIA. These management tools include recommendations on actions to be taken to fill the gaps in information as well as control measures to be implemented to avoid and minimize the

impacts that the Project activities may have on the surrounding environment. This ESIA Report has been drafted in accordance with Ethiopian EIA Regulations (176/2012) as well as Oromia Regional State Proclamations. It is also compiled to align with international lender standards, specifically the International Finance Corporation Performance Standards on Environmental and Social Sustainability (2012) as Etete is committed to aligning with International Best Practice.

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Abbreviations

BBHL	Blue Bird Holdings Limited
ESIA	Environmental and Social Impact Assessment
SEP	Solvent Extraction Plant
Ha	Hectares
S.Co	Share company
ESMP	Environmental and Social Management Plan
EPE	Environmental Policy of Ethiopia
CSE	Conservation Strategy of Ethiopia
CSR	Corporate Social Responsibility
NAP_GE	National Plan of Action for Gender Equality
IEC	Information Education and Communication
EPA	Environmental Protection Authority
EFCCC	Environment, Forest and environment Change commission
CITES	Convention on International Trade in the Endangered Species of Fauna and Flora
DAoI	Direct Area of Influence

Part 1: Project Description

1. Introduction

Hamen Consultancy Service Plc. ('Hamen') has been appointed by Blue Bird Holdings Limited ('BBHL') on behalf of the project applicant, Etete Milk Processing S.Co ('Etete') to conduct an Environmental and Social Impact Assessment (ESIA) Report for the proposed Solvent Extraction Plant (SEP) in Ethiopia. The ESIA is conducted under the requisites of the Environmental Impact Assessment Proclamation (176/2012) of Ethiopia and its Guideline for the Oromia Region.

1.1. Background

This Report presents the findings of the ESIA for the proposed SEP located in Chole Kebele in Aleletu Woreda within the Oromia Region of Ethiopia. The site is 3 hectares (Ha) in size and is approximately 58 km from the capital city Addis Ababa. The proposed Project is for the construction and operation of a SEP with a processing rate of 200 Tonnes (200MT) per day to supply high quality extracted oil, for refining, from locally available oil seeds i.e. soyabean, sesame, ground nut, cotton seed etc. In addition, the Plant will also be utilised to extract oil from sunflower seeds, using lower value seeds rather than importing higher value crude sunflower oil. It is anticipated that this will reduce the dependency on imports within the Ethiopian edible oil sector as well as create export opportunities from the defatted cake[1] as well as high value sesame oil. The Project has also been estimated at having an investment value of $15 million.

This ESIA Report has been drafted in accordance with Ethiopian EIA Regulations (176/2012) as well as Oromia Regional State Proclamations. It is also compiled to align with international lender standards, specifically the International Finance Corporation (IFC) Performance Standards on Environmental and Social Sustainability (2012) as Etete is committed to aligning with international Best Practice as per investor requirements.

[1] Defatted cake is the residue from solvent extraction which is free of fats

1.2. Project Applicant

Etete Milk Sc is an already established business located in Aeltu, Oromia. It is 100% owned by BBHL, a British Virgin Islands based investment platform created by foreign investors (primarily from the UK), to invest in Ethiopia's highly growth manufacturing sector. BBHL is already involved in the food, soap and detergent, and water bottling industries in Ethiopia. The company has bought shares in locally branded companies such as Health Care Food Manufacturing Sc , Gullele Sc, ZAK Trading and Manufacturing, ASTCO Food Complex, Aquasafe Bottled Water.. The brands produced by these companies include; 555, Tena Oil, Chef Luca and Aquasafe

Etete Sc is one of the pioneering food processing enterprises in Ethiopia specializing in Dairy products since 2013. Etete Sc proposes to enter the larger Edible Oil Processing sector by setting up a SEP. Etete is entering into an MOU with Health Care Food Manufacturing S.C. ("HCFM"), the largest locally based Edible Oil producer in Ethiopia, supplying Addis Ababa and the surrounding towns with edible soya and sunflower oils and their associated by-products. With HCFM, Etete Sc will be supplying extracted oil which will be used as a raw material to HCFM and other local oil refineries. BBHL has expanded its own existing oil refinery capacity from 5 MT/day to 175 MT/day.

1.3. Project Desirability

The Project will contribute to the national economy of Ethiopia through the following actions:

- Job creation: Direct employment of more than 100 skilled and unskilled people in the plant and indirect employment for more than 200 people (through 3rd Party Procurement);
- Potential Export: Additional revenue to be generated through the export of sesame oil and defatted cake;
- Reduction of imports: The volume of crude vegetable oil to be imported will be decreased due to the production in-country. This will also assist in reducing the country's Foreign Exchange spend out of country.

1.4. Summary of ESIA process

As per the legislated requirements, several steps were undertaken to complete the ESIA process for the Project. These include the following, which are discussed in detail below:

- Screening Phase;
- Scoping Phase;
- Baseline Data Collection;
- Stakeholder Engagement; and
- Impact Assessment.

1.4.1. Screening

The Screening process involves the determination of whether an ESIA assessment is required for a particular development activity. The proposed Project was understood to require an ESIA since the anticipated activities have the potential for both negative and positive impacts on the environment above a threshold or triggering particular listed activities in the legislation.

1.4.2. Scoping

The scoping phase involves identifying the project location and its area coverage, sensitive environmental components from field observations and pre-screening reviews as well as developing a Scoping document. The study includes a detailed characterization of the existing status of the environment in an area around the proposed project for various identified components, such as air, noise, water, land, and socio-economic. Thus, the scoping exercise has been carried out with the following main objectives:

- To define the limits of the project's direct impact and its area coverage (area of influence);
- To define the type and magnitude of the proposed project activities; and
- To define a list of Impacts to be studied.

1.4.3. Baseline Data Collection

The assessment is based on data obtained from a review of relevant legal documentation and accessible project related literature review, and by conducting a field visit to the project area. Surveys were carried out to determine the existing socio-economic and environmental conditions at the site and the surrounding area likely to be affected by the proposed project development. The preparation of this base line study was planned from the following documents and investigation.

- Feasibility study report for '*The establishment of edible oil Refinery plant'* (Industrial Project service (IPS), October 2019);
- Information from secondary sources were collected from different offices and institutions; and
- Project site assessment with sampling by Hamen Consultants, 2020.

1.4.4. Stakeholder engagement activities

Public consultation in the ESIA process is legislated and requires a transparent and all-inclusive process to be undertaken. The field visits also included consultation with various stakeholders through prepared questionnaires to gather information that has been subsequently synthesized and incorporated into the ESIA study report. The purpose was to obtain supplementary information on social, socio-economic and socio-cultural conditions, and views on various aspects of the project. The consultation also obtained background information relevant to potential impacts and environmental management and, to identify any areas of specific concern which needed to be addressed.

1.4.5. Impact Assessment

The impact assessment and development of mitigation measures is an ongoing process that begins during the project planning stage and continues as the Project progresses.

The key objectives of the impact assessment process are to:

- Analyze how the Project may interact with resources and receptors identified during baseline studies in order to define, predict, and evaluate the likely extent and significance of environmental and social impacts that may be caused by the Project.
- Develop and describe effective, realistic, and practical mitigation measures that avoid, reduce, control, remedy, or compensate for negative impacts and enhance positive benefits.
- Evaluate the predicted positive and negative residual impacts of the Project.
- Develop a system whereby mitigation measures are integrated into Project activities and become Project commitments. This is achieved through the development of an Environmental and Social Management Plan (ESMP).

1.5. Structure of the ESIA Report

The structure of this ESIA is summarized in Table 1-1 below.

Table 1-1: Structure of ESIA

	Title	Content
Section 1	Introduction	Describes the Project background, type, owner, justification, as well as the purpose of the ESIA, summary of the ESIA process, and structure of the ESIA Report
Section 2	Project description	Technical description of the Project schedule, facilities and activities.
Section 3	Limitations	Limitations and Assumptions to the ESIA
Section 4	Project alternatives	Presents the results of an alternatives analysis.
Section 5	Policy and legal framework	Describes the environmental and social legislation applicable to the Project, as well as applicable international standards.
Section 6	Public consultation/stakeholder engagement	Describes requirements for stakeholder engagement, identification and mapping, and activities conducted as part of the ESIA.
Section 7	Environmental and Social setting	Describes the relevant environmental and social existing conditions and review of sensitive resources that may be affected by the Project.
Section 8	Impact identification and analysis	Describes the impact assessment methodology utilized and outcome of the scoping process. Evaluation of positive impacts. Evaluation of potential negative impacts, description of proposed mitigation measures, and evaluation of residual impacts.
Section 9	Environmental and Social Management Plan	Compilation of the Project's mitigation and compensation measures in the form of a detailed plan to ensure that they are implemented at each stage of the Project.
Section 10	ESMP Monitoring Program	Recommended Monitoring program
Section 11	Conclusion and Recommendations	Summarizes the results of the ESIA.
Section 12	References	List of reference materials used for this ESIA Report

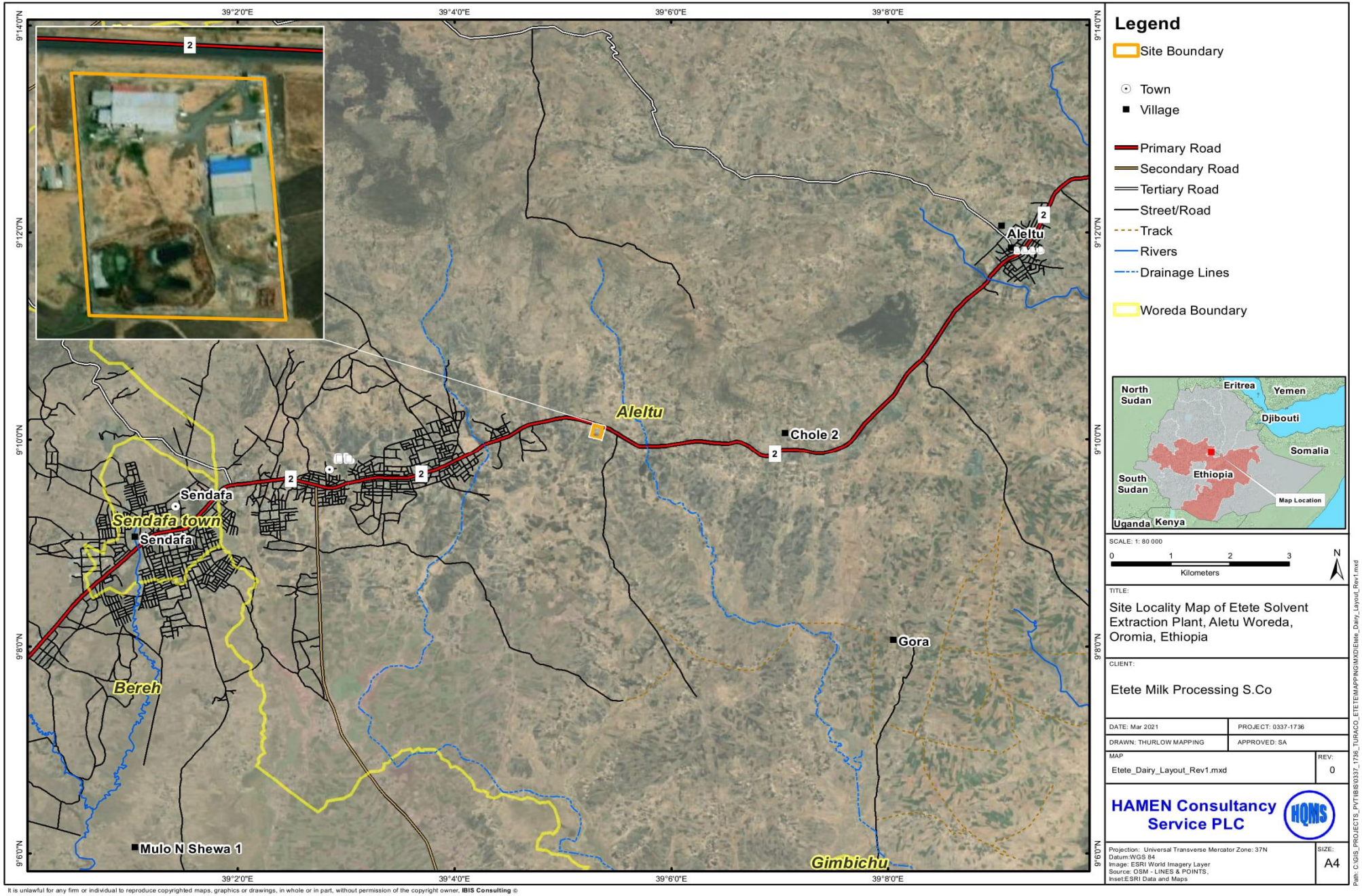
2. Project Description

The proposed Project is for the construction and operation of a SEP with a processing rate of 200MT per day to supply high quality extracted oil to local refineries for export as well as to meet the growing demand for locally produced oil in Ethiopia. The Project is expected to start with construction of the SEP during 2021. This will be dependent on the receipt of authorizations as well as the timing for construction activities outside of the wet season. It is anticipated that following a temporary construction phase, the Project will require approximately 100 temporary and 86 permanent local staff as well as 18 expatriates during the operational phase which will commence in 2022. It is anticipated that former employees of the applicant (Etete Dairy) who previously worked on site when there was an operational dairy processing facility, will be employed as part of the workforce.

2.1. Site and Location

The 3ha site for the proposed SEP is located in an established light industrial business area approximately 58 km east of the capital city of Ethiopia Addis Ababa. Etete has a 25 year lease agreement with the Oromia Rural Land Administration and Use Bureau (included in Appendix 1) which expires in 2025. The property is located on the main A2 Road which connects Addis Ababa to the Amhara Region in Northern Ethiopia and ultimately to the border with Eritrea. The surrounding area is characterised by scattered farm dwellings and light industrial sites however the closest residential settlement is Sendafa, approximately 3km to the west and Aleltu Woreda located 8km to the east of the site (this can be seen in the Locality map in Figure 1.

Figure 1. Site Locality Map



The surrounding land use consists of dairy farms and milk or dairy processing plants with storage facilities and scattered dwellings occupied by farmers and farm workers. This includes the access road and associated infrastructure on the farmlands i.e. 5-6 scattered dwellings that farmers and farmworkers are occupying as well as the commercial infrastructure i.e. dairy processing and milking infrastructure on both adjacent properties.

As can be seen in Figure 2, the property is a developed site occupied by an existing milk processing plant belonging to Etete. The existing plant consists of several buildings namely a milk processing factory (Figure 3), three storage facilities and one administrative building. There are also four settling ponds which were used previously to settle out and treat wastewater from the plant. In the southern corner of the site, alongside the ponds, there is a half-constructed Effluent Treatment Plant (ETP) that is still to be completed by Etete (Figure 4). This was originally intended for the use of the milk processing plant however will be utilized for treating wastewater from the SEP since the dairy plant has been decommissioned in 2019.

At the time of the report compilation there was no information available with regards to future projects or spatial development plans for the area. No issues were raised by the authorities or stakeholders in this regard.

Figure 2. Current site layout and surrounding land uses (Google Earth image, 2019)

Figure 3.The existing milk processing hall on-site

Figure 4. Effluent Treatment Plant under construction

2.2. Infrastructure

The infrastructure for the envisaged solvent extraction consists of an oil seed storage section, seed pre-cleaning sections, an oil mill section, solvent extraction section, meal section and oil

tanks. The table below provides the dimensions for the infrastructure that will be constructed or installed on-site.

Table 2-1: Dimensions of Infrastructure on site.

Sr. no.	Name of block	Diameter	Length x Breadth	Height
1	Security room		3 m x 3 m	5 m
2	Weigh bridge room		3 m x 3 m	4 m
3	Office , lab , canteen and change room		12 m x 20 m	/
4	Seed silo 2500 MT x 4	dia. 18 m	/	23 m
5	Preparatory section		24 m x 42 m	21 m
6	Hexane tanks storage underground (2 Nos.)	45 KL storage	9.5 m x 12 m	/
7	Solvent extraction plant		20 mx 20 m	17 m
8	Cooling tower with pond		11.7 mx 8.4 m	7 m
9	Tank Farm		24 m x60 m	10 m
10	Boiler house		20 m x27 m	8 m
11	Generator room		15 mx 15 m	7.5 m
12	Workshop		8 mx 10 m	6 m
13	Store		8 m x 10 m	5 m
14	Toilet block for workers		4 m x 20 m	6 m
15	Power panel room		15 m x 15 m	7.5 m

2.3. Service Requirements

As with all proposed Projects, certain utilities and services are required and need to be secured for the construction and operations of the Project.

2.3.1. Power

The existing site currently has access and is connected to the main grid supply for electricity (Figure 5). The availability of power in Ethiopia, from Ethiopian Electric Power, is largely based on hydro-electric generation and is considered to be reliable. A generator will be used on site for back-up supply. The total power requirements for the initial and subsequent phases of the project are as follows:

- Mains Electricity - 80 kwh/MT;
- High Speed Boiler & Seed Drier - 750 kgs/hour (diesel fired); and
- 2 x 1500 kVa Back up Generators (diesel fired).

Figure 5. Electricity mains supply to the site

2.3.2. Water Supply

The daily water requirement for the proposed SEP is estimated as follows:

- For the Cooling Towers - 86m^3
- Boiler and process water- 288m^3
- Sanitary and Potable Uses will be additional.

It is proposed that all of the water will be sourced from the current borehole on site which is permitted to Etete under the previous operation (copy of permit still to be sourced). The quality of the water from the boreholes can be seen in Section 8 Indicating that total coliforms are present in the borehole which may require treatment for potable use.

It is unconfirmed whether capacity and recharge testing was undertaken on the borehole when it was drilled or permitted therefore the water supply rate or maximum pumping rate has not yet been determined. Consideration will need to be given to water recycling and reuse to decrease the demand on the borehole.

2.3.3. Wastewater

An Effluent Treatment Plant was in the process of being constructed on the site for the dairy plant and this will be completed during the construction phase (Section 2.2). A process water balance is not yet available for the Project and therefore the volume available for reuse or recycling and the volume requiring to be treated or discharged has not been calculated.

As the site will be producing crude oil and not undertaking the final refinement steps, the waste to be generated is considered to be organic in nature with the solvent (Hexane) being recovered during the process. According to research done for the South African Water Research Commission (Water and Waste-Water Management in the Edible Oil Industry, SRK, 1989), the main sources of effluent will be from general washing and from the hexane recovery with the main types of pollutants being fats and oils. The effluent from the process as well as the grey water and limited stormwater run-off will feed into the ETP before discharge or reuse.

The ETP consists of several compartments for the treatment of the effluent water before discharge.[2] The ETP is a standard system used and the steps are summarised below:

- Pre-Treatment – Physical screening (coarse and fine screens) for the removal of large debris, settling of sediment;
- Primary Treatment - Addition of flocculant and scraping of sludge or skimming of the surface;
- Secondary Treatment - Aeration and biological treatment with activated sludge; and
- Tertiary Treatment – Final carbon filter and chlorination dosage if required.

The compartments allow for easy sampling and monitoring for water quality and flows. The water is released into unlined settling ponds which have a natural outflow point into the neighbouring farmlands when the water levels rise to a particular level. The discharge point releases wastewater into the neighboring farmlands at the lowest point of the property and is only to be released once it meets the required Ethiopian standards.

2.3.4. Solid Waste

General waste (paper, cardboard, packaging waste and kitchen waste) generated on the site will continue to be stored in bins and then transported and disposed of at the municipal landfill site in nearby Sendafa or Aleltu or recycled.

Expected waste from the production process includes husks or hulls and defatted meal or cake these will either be sold as by-products including as a supplementary fuel source.

[2] The EFT was originally designed for the larger volumes of contaminated water from the milk processing plant.

Large volumes of hazardous waste is not anticipated to be produced by the site and would be limited to chemical containers or diesel related waste (i.e. rags, spill kits etc) which would be stored separately in a bunded area.

2.3.5. Raw Materials

The daily seed requirement (which are stored in silos until needed) can be based on the following capacities in the preparatory steps of the process:

- Soybean – 200T/day
- Groundnut/ Sesame – 330 T/day
- Sunflower - 375T/day
- Cotton Seed/ Niger – 330T/day
- Corn/ Maize – 300T/day

The Solvent n-Hexane (Food Grade) as well as White Mineral Oil will be stored on site and used as raw materials. Packing materials will also be stored on site.

2.4. Construction Activities

The construction of the proposed Project is expected to take 14 months and will be undertaken in the following sequence:

- Pre-construction Phase – Planning of schedules, tenders/bids for construction companies and sourcing of local materials.
- Site Clearance – Minimal levelling and removal of vegetation is expected due to the disturbed area.
- Demolition of existing buildings – All the existing building on site (other than the milk processing hall) will be demolished. Neutral building rubble is anticipated due to the basic materials used.
- Construction camp – Set up of temporary offices and lay down areas.
- Groundworks, civils and construction – Excavating and laying of foundations as well as the construction and fabrication of the SEP and infrastructure. It is expected that a Light goods vehicle, crane and forklift will be operating on site. An excavator and dumper will be used temporarily for the civil requirements.

2.5. Operational Activities

The main activities of crude oil product manufacturing during the operational phase are:

- Sourcing, transportation, delivery and storage of raw materials;
- Office and administration functions;
- Operations activities of the SEP (See section below for the processing description);
- Effluent treatment and waste management;
- Packaging and distribution of finished product; and
- Security.

2.6. Decommissioning Activities

At the end of the production life (estimated at 20 years), the project will be decommissioned and either sold or utilized for a different purpose. This will affect the final activities and whether infrastructure will be removed or not.

2.7. Process Description

A standard process for solvent extraction is proposed for the Project (See Figure 6) and described below:

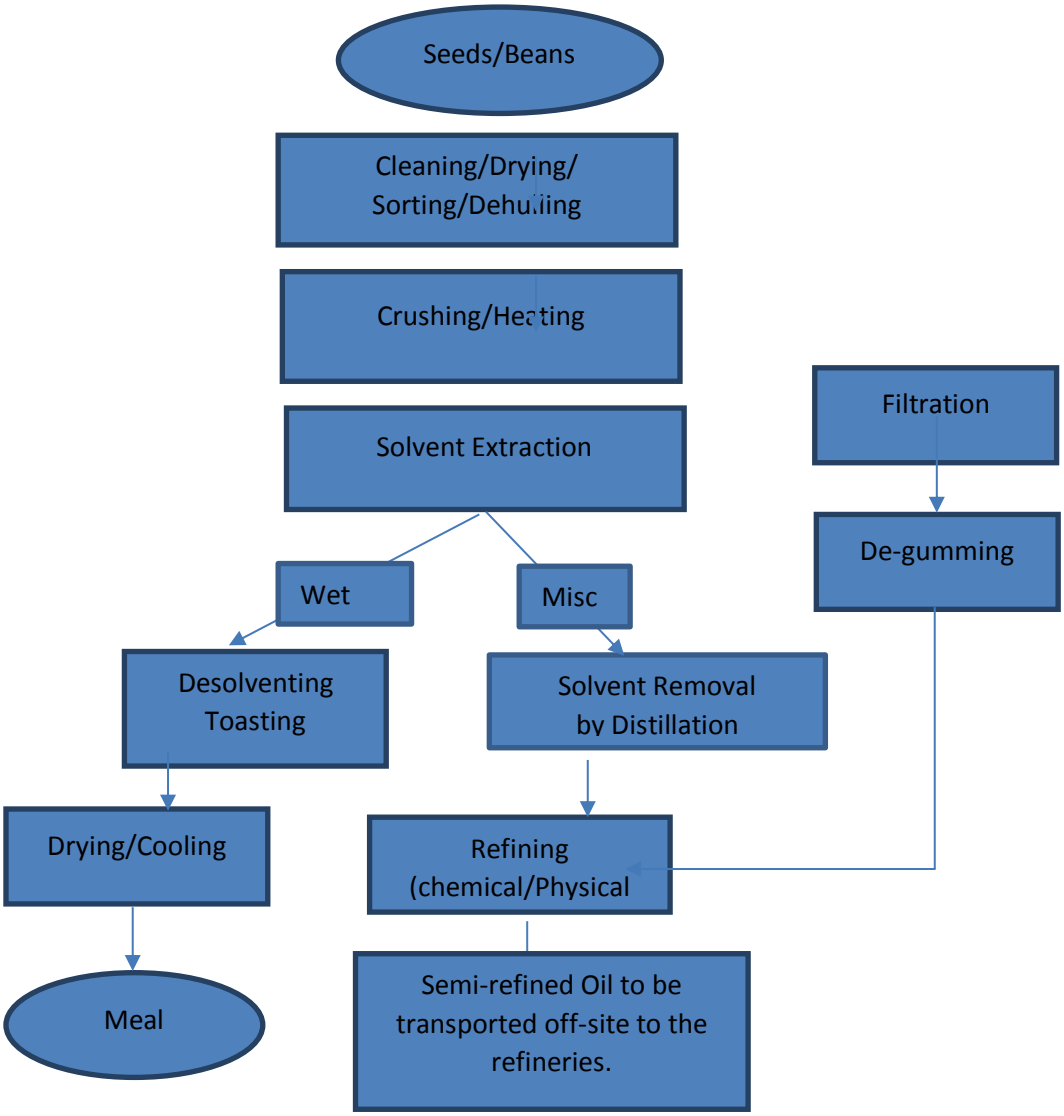


Figure 6: General Solvent Extraction Process flow diagram

2.7.1. Seed Preparation

The initial step consists of seed cleaning which removes any impurities including fines, soil and silica. This is done in a multi deck seed cleaner and consists of various sized vibrating screens. The aspiration system (cyclone) along with cleaner is used to remove light particles and loose hulls. Heavier particles that are the same size as the seeds are removed during de-stoning where the seeds are washed, and the heavier particles sink. The cracking of seeds in a roller mill is done to reduce the particle size sufficiently to ensure uniform cooking without producing an excessive quantity of fines and seed dust.

The next step is to precondition the clean cracked seeds (seed meat) by heating using steam. This decreases the moisture content and prevents mold. The seed is then passed through smooth rollers to produce flakes which increases surface area for oil extraction.

2.7.2. Oil Extraction

The extraction of oil by pressing, using a screw press, is only possible for seed of high oil content. Sesame, ground nut and Niger seeds pass through the pressing unit. The remaining seed with low oil content is transferred directly to the solvent extraction steps. During pressing, the oil is drained out of the press into an oil screening tank and a column of compressed meal (wet cake) is formed at the discharge end of the barrels. The oil expelled at this stage still contains some small oil-bearing particles and fine impurities and the oil is separated from the 'foots' in the tank. The pre-cleaned oil is transferred to filters for removal of fine impurities. Filtered oil is delivered to the crude oil storage tank.

The seed meat of soybean and other low oil seeds are transferred from the flaking step to the cake breaker consisting of additional roller mills and is heated up to a temperature of 55-60 °C before being transferred to the solvent extraction process.

2.7.3. Solvent Extraction Process

Flake from the seed preparation process of soybean and preconditioned seeds are fed to the solvent extractor. The Extractor is a slow-moving articulated band conveyor inside a totally enclosed chamber where a series of sprays are located above the band conveyor for spraying solvent (food grade Hexane) on top of the moving material bed of the extractor. The miscella (the oil/solvent mixture) percolates through the meal bed is passed through

bottom and flows to the miscella holding tank. The extracted meal (wet cake) from the band conveyor falls into the discharge bin conveyed to the desolventising section.

2.7.4. Solvent Removal

The miscella from the solvent extraction unit is transferred to the distillation section to recover oil and recycle the solvent. Distillation comprises of a series of heat exchanges working at temperatures up to 95°C to yield an oil of good color and quality, free of volatiles and moisture. Steam heated rising films and a stripping column operating under vacuum is where 98% of the hexane removal is done. The final stage of stripping is carried out in presence of steam and under higher vacuum.

A series of water-cooled condensers, vent condensers and a mineral oil absorber are used for condensing the hexane vapors for recirculation. The vent gases are scrubbed with mineral oil before discharge into the atmosphere. The hexane content of the gases leaving the system are well below the lower explosion limits.

2.7.5. Meal Desolventising

The wet cake from the solvent extraction step is conveyed to the Desolventizer Toasters with 6 stages of steaming and toasting to produce light colored meal, free of solvent and high in protein making an ideal protein feed. The vapors from the DT (steam/hexane mixture) are used to provide thermal energy in the first stage of the evaporation and also passes through a condenser system before discharge into the atmosphere.

3. Limitations

The assessment of impacts are based on the available technical descriptions of the proposed SEP and baseline information collected through field and desktop reviews. The assessment therefore relies on the accuracy of the data and information sources. Any methodology used to collect baseline data has limitations, either due to data availability or accuracy of the techniques applied. The Project description available is that at a level of a limited feasibility assessment and certain areas are still to be refined and expanded. The following gaps were come across by Hamen during the assessment:

- Due to limited feasibility study, there were assumptions made on the selected SEP design and extraction process.
- The construction phase will be contracted out once the Project has been approved and therefore the size and procurement of the workforce is unknown as well as the schedule of activities to be undertaken.
- It is understood that two 1500kVa diesel fired generators will be installed as a back-up power supply in a stand-alone generator room. These are to be utilized when the municipal power supply is not stable and to ensure that production can continue. The frequency and duration that the generators will be required is unknown and therefore the extent of emission and noise levels have not been quantified.
- The borehole on site has been permitted by the relevant authorities for the abstraction of groundwater under the previous operations (the diary processing plant). However, this certificate has not been sourced and therefore the volumes permitted are yet to be confirmed.
- From the feasibility assessment, undertaken separately from the ESIA, it is proposed that a large volume (approximately 360m^3) is required for the daily operations of the site. It is still to be confirmed whether pump testing or recharge assessments were undertaken on the borehole to confirm that the daily water requirements can be met and without affecting the surrounding boreholes (this impact is still to be quantified).
- At this phase in the Project no alternative water supply has been sourced and the recycling and reuse options are still to be investigated. A process water balance will be completed which will quantify volumes of water required and the amount available for reuse or discharge.
- A soil contamination study was not undertaken as part of this scope however can be considered upon sale of the property or if contamination is detected in the borehole during the life of the Project.
- A Hazard and Operability Analysis (HAZOP) looking at process safety is currently underway.

- There was limited interest in the Project amongst the stakeholders, particularly the government authorities that were involved and therefore minimal attendance at meetings and comments were provided. Some of the participants did not wish to be named.

These limitation and gaps have been addressed by commitments included in the Environment and Social Management Plan drafted for the Project where possible.

4. Analysis of Alternatives

Alternatives have been considered for the proposed Project and are evaluated and discussed with particular emphasis on environmental and social considerations.

4.1. No-Go Project Option

The 'No-Go project option' considers that the SEP will not be constructed, and the site would continue to remain abandoned and disused since the dairy processing plant has been decommissioned. Failure to implement the proposed Project would involve the following:

- Failure to utilize the local resources available in the project area to manufacture oil as opposed to importing the products;
- Loss of opportunity to increase revenue capacity at a local and regional level;
- Loss of opportunity to create direct employment and indirect employment.

The development at the proposed location will also ensure that the site is cleared up and that there are no potential latent environmental issues remaining from the previous development.

According to a comprehensive market survey carried out as per feasibility study conducted by Etete, the new SEP at Aleltu shall take a large share of the domestic market. Etete is expected to command a market share of crude oil extraction of around 41% in its first year of operation, which will increase to 50% in its fourth year of operation. Etete will achieve 100% capacity utilization in its fourth year of operation.

4.2. Alternative location

An alternative location was assessed during the feasibility stage of the Project. The alternative option considered was to construct the proposed SEP on the same property as the existing BBHL oil refinery plant. The location of the new SEP has been selected based on the following parameters:

- Suitability of property – the proposed location has sufficient space for storage and is level with minimal site clearance required. The alternative location has limited space available for the required infrastructure.
- Raw material availability – the proposed location has easy access to materials based on its proximity to the capital and a main transport route. The alternative site considered would incur additional costs to transport raw materials to site.
- Services / Utilities – the proposed location is currently serviced with a power supply and a permitted borehole. The alternative site, which currently houses a refinery, may experience a strain on the services with additional requirements needed.
- Labour force – Skilled and unskilled personnel can be recruited in the neighboring towns of Aleltu and Sendafa. Bus transport will be provided for employees of Etete between nearby city Aleltu and the plant site. The alternative site would utilize some existing staff from the refinery and would recruit less from the surrounding areas.

By providing financial incentives, Ethiopia supports the establishment of private industries outside the established commercial and industrial centers in order to decentralize economic activities. According to the feasibility study, there is currently a large upsurge in demand for edible oil products in the target market area i.e in and around Addis Ababa. This demand cannot be met from the existing oil factory plants due to their limited production capacities and therefore, the decision to locate a new SEP in Aleltu not far from the capital.

4.3. Alternative Technology or Design

The proposed technology used in the SEP is a standard process utilized internationally in the production of edible oil. The design is a modular which is fabricated on site. The process maximizes output i.e. volume of oil produced per ton of seed whilst recovering and recycling water and solvent to reduce resource requirements. The by-products are produced at a quality for re-sale and therefore minimal waste is produced. The proposed technology and design is the preferred option.

5. Policy, Legal and Administrative Framework

5.1. Overview

This Chapter provides an overview of the national and international policy and legal framework within which the Project is being developed. It discusses the overall policy and legal framework in Ethiopia together with specific sectoral laws on environment as well as health and safety, and labour. This Chapter provides an overview of the following:

- Applicable Ethiopian legislation covering environmental protection, worker health and safety and labour management;
- Applicable environmental health and safety standards;
- Relevant international agreements; and
- Requirements and guidelines of international financial institutions (IFIs) with regard to environmental and social matters, where applicable.

5.2. National Legislation

This Section describes the main Ethiopian Policies and Legal framework for environmental impact assessment, environmental protection, and relevant national standards including permitting requirements. Table 5-1 below outlines the applicable policies.

Table 5-1: Relevant National Policies

Applicable policy	Description of policy
The Environmental Policy of Ethiopia (EPE)	The overall policy goals of the EPE are described as "... to improve and enhance the health and quality of life of all Ethiopians and to promote sustainable social and economic development through the sound management and use of natural, human made and cultural resources and the environment as a whole so as to meet the needs of the present generation without compromising the ability of future generations to meet their own needs. ▪ Every person has the right to live in healthy environment; ▪ Sustainable environmental conditions and economic production systems are impossible in the absence of peace and personal security. This shall be assured through the acquisition of power by communities to make their own decision on matters that affect life and environment; ▪ The development, use and management of renewable resources shall be based on sustainability; ▪ The use of non-renewable resources shall be minimized and where possible their availability extended (e.g., through recycling);

Applicable policy	Description of policy
	▪ Appropriate and affordable technologies which use renewable and non-renewable resources efficiently shall be adopted, developed and disseminated; ▪ When a compromise between short-term economic growth and long-term environmental protection is necessary, then development activities shall minimize degrading and polluting impacts on ecological and life support systems. When working out a compromise, it is better to err on the side of caution to the extent possible, as rehabilitating a degraded environment is very expensive, and bringing back a species that has gone extinct is impossible. ▪ Full environmental and social costs (or benefit forgone or lost) that may result through damage to resources or the environment as a result of degradation or pollution shall be incorporated into public and private sector planning and accounting, and decisions shall be based on minimizing and covering these costs; ▪ Regular and accurate assessment and monitoring of environmental conditions shall be undertaken and the information widely disseminated within the population; ▪ It further points out that; Preliminary and full EIA are undertaken by the relevant sectoral ministries or department if in the public sector and by the developer if in the private sector; ▪ Need for public consultation is met; ▪ Environmental impact assessments consider not only physical and biological impacts but also address social, socio-economic, political and cultural conditions; ▪ Need for environmental audit at specified intervals during the project implementation
Conservation Strategy of Ethiopia	Countrywide studies of the existing natural resource base and environmental conservation and protection strategies have been conducted in early 1990's and Conservation Strategy of Ethiopia (CSE) has been approved. The CSE emphasises the importance of incorporating environmental issues into development activities at the initial stage of development. Accordingly, this project is highlighting environmental issues to be considered before project implementation.
Oromia Regional Environmental Impact Assessment Guideline, 176/2012	The Oromia region Environment, forest and wildlife protection and development authority (OEFWDA) has developed general EIA guidelines based on the federal EIA guideline as an overall framework to integrate environmental concerns in its Regional Development Strategies. The document outlines the guiding principle underlying the objectives of EIA studies for the Project.
Health Policy of Ethiopia	Ethiopia's health policy was issued in 1993, with the aim of giving special attention to women and children, to neglected regions and segments of the population, to victims of manmade disasters. The priority areas of the policy are in the field of Information, Education and Communication (IEC) of health to create awareness and behavioural change of the society towards health issues, emphasis on the control of communicable diseases, epidemic, and on diseases that are related to malnutrition and poor living condition, promotion of occupational health and safety, development of environmental health, rehabilitation of health infrastructures, carrying out applied health research

Applicable policy	Description of policy
	provision of essential medicines, expansion of frontline and middle level health professionals.
National Policy on HIV/AIDS	The general objective of the policy is "to provide and enabling environment for the prevention and control of HIV/AIDS in the country". The policy also urges government ministries and civil society to assume responsibility for carrying out HIV/AIDS awareness and prevention campaigns. The policy introduces and outlines the large social, psychological, demographical and economic impact that HIV/AIDS will be having and introduces a number of issues relating to HIV/AIDS. These are: • That HIV/AIDS is not only a health problem but also developmental problem; • That gender inequality contributes to the further spread of HIV/AIDS; • That women, including women living with HIV/AIDS, need access to information and services regarding HIV/AIDS and to family planning provision to help them make reproductive choices and decisions; • That the magnitude of the problem will need considerable resources and a multi-sectoral effort to control the HIV/AIDS epidemic, • That there is a need for a holistic approach in the provision of care to people living with HIV/AIDs; • That the human rights of people living with HIV/AIDS needs to be recognized; In light of this, the proposed project owners commit to create a supportive and non-discriminatory working environment through dispelling of myths and stereotypes and by ensuring that infected employees are treated in the same manner as other employees; seeks minimize the social, economic and developmental consequences to the authority and its staff; and commits itself to offering support, counselling and education services to infected & affected employees.

5.2.1. Applicable Legal Framework

There are several proclamations provided related to environmental protection issues. Among these are shown in Table 5-2 below:

Table 5-2: The National Legal Framework

Applicable Legal Framework	Description of the applicable Legal framework
The Federal Constitution	The Federal Constitution of 1995 sets out important articles related to development and Environmental rights; ***Article 43*** discusses the right to development. The constitution under ***Article 44*** highlights environmental rights as follows: • All persons have a right to live in a clean environment; • All persons who have been displaced or whose livelihoods have been adversely affected as a result of the state programs have the right to

Applicable Legal Framework	Description of the applicable Legal framework
	commensurate monitory or alternative means of compensation, including relocation with adequate state assistance. Under ***Article 92*** the constitution discusses environmental objectives as: • Government shall endeavour to ensure that all Ethiopians live in a clean and healthy environment. • The design and implementation of programs and projects of development shall not damage or destroy the environment; • People have the right to full consultation and to the expression of views in planning and implementation of environmental policies and projects that affect them directly.
Environmental Authority Proclamations	The objective of the Authority is to ensure that all matters pertaining to the country's social and economic development activities are carried out in manner that will protect the welfare of human beings as well as sustainability of the project, to develop and utilize the resource bases on which they depend for survival. The EFCCC is the Competent Agency at the Federal level in Ethiopia. It is, therefore, the responsibility of this authority in the EIA process to: • Ensure that the project owner complies with requirements of the EIA process; • Maintain co-operation and consultation between the different Sectorial agencies throughout the EIA process; • Maintain a close relationship with Etete and to guide on the process; and Evaluate and take decisions on the documents that arise from the EIA process. At the regional level, the Federal Authority has devolved responsibility to the Regional equivalent of EFCCC. The regional authorities should ideally establish an EPA-type institution to deal with environmental issues at the regional level.

5.2.2. Environmental Licensing and Permitting

A project shall not be implemented until the project proponents' project brief or an environmental impact assessment (ESIA) report has been concluded in accordance with Ethiopia's Environment Impact Assessment Proclamation. They should also be in receipt of a decision letter from the Environmental and Social Impact Assessment (ESIA) Directorate of the federal or regional EFCCC.

The applicant needs to approach the Ethiopian Investment Commission (EIC) which will guide the investor on the appropriate route for obtaining an environmental license. Proposed projects that shall require an ESIA is listed in the EIA Proclamation, subject to the discretion of the ESIA Directorate. The Directorate's duty is to understand and consider the context and environmental sensitivity of the proposed site location and nature of proposed operations. A robust screening process undertaken by the ESIA Directorate based on the information given by the project proponent determines whether an ESIA shall be required for a proposed project or not. For investments that are in the low risk category, producing a project report that

lays down the best practices that shall be adopted to minimize any impact on the environment is enough. Listed below are the requirements that need to be complied with for projects that require an ESIA.

- The project proponent needs to appoint one or more independent experts or a firm of experts to undertake the EIA, based on the agreed terms of reference and EIA regulations. Selection of these experts can be made through a register maintained by authority of accredited experts available in federal and regional EFCCC offices.

- If the project is of a nature that shall cause displacement of the local population and require them to relocate, appropriate resettlement provisions are to be followed, ideally based on IFC standards.

- A report is submitted to the EFCCC's head office, duly signed by the investor and the EIA experts involved in assessment preparation on completion of the EIA. This report is then circulated amongst the leading agencies for internal review and harmonization on decision making.

- Decision making by the EFCCC takes a maximum of 30 days for a project report, and 60 days for EIA study reports (from the date of submission to the EFCCC).

Once the investment has been approved by the EIA process and commissioned for operations, an environmental audit (EA) is required to be undertaken. There is provision for up to two per year in the legislation and the first is usually required in the first three to six months.

All relevant permits applicable to the Project are seen in Table 5-3.

Table 5-3: List of key Environmental Permits

S.N	Regulation	Permit/ Condition	Issuing Authority	Duration & Renewal of the Permit
1	Environmental Impact Assessment Proclamation (Proclamation No. 299/2002)	Post environmental impact assessment (EIA) process, obtain environmental license	Ethiopia's Environment, Forest and Climate Change Commission	Not explicitly covered in the regulations
2	Hazardous Waste Management and Disposal Control Proclamation (Proclamation No.1090/2018)	Hazardous waste authorization is required for following operations: - Transportation of Hazardous Waste	Environment, Forest and Climate Change Commission	Renewal is required Annually

S.N	Regulation	Permit/ Condition	Issuing Authority	Duration & Renewal of the Permit
		- Treating and recycling of Hazardous Waste - Transboundary movement of Hazardous Waste - Storage of Hazardous Waste		
3	Environmental Pollution Control Proclamation (Proclamation No. 300/2002)	Permit required for generation, keeping, storage, transportation, treatment or disposal of any hazardous waste	Environmental Protection Authority or the relevant regional environmental agency	Not explicitly covered in the regulations
4	Solid Waste Proclamation (Proclamation 513/2007)	Permit required for collection, transportation, use or disposal of solid waste.	Concerned body of an urban administration	Not explicitly covered in the regulations
5	Water Resources Management Proclamation (197/2000)	Permit required water use, release or discharge of waste, and waterworks construction permits	Ministry of Water, Irrigation and Energy	Annually

Once approved, the proposed development of the SEP will require a change in the land use permit (not an environmental permit). The Project is proposing to use borehole water for the process and will therefore require valid water abstraction permits. The current water abstraction permit for the site has to be renewed annually (existing permit still to be sourced).

5.3. Social and Labour Requirements

The requirements for social compliance mandates as per Labour Proclamation No. 1156/2019 are listed in the table below:

Table 5-4: Labour compliance Requirements

Key Provision	Description
Minimum Wage	• A Wage Board, comprising of representative of the government, employees and trade unions, and other stakeholders is established by the government. • The Board will periodically revise minimum wages based on studies which consider the country's economic development, labour market and other considerations.
Working Hours	• 8hours/ day, and 48 hours/ week. • Working hours can be increased to a maximum of 12 hours/ day.
Paid leave	• A worker is entitled to 16 days of paid annual leave on completion of one year of service plus one working day for every 2 years of additional service.
Work injuries	• Work injuries are divided into four categories: (i) permanent total incapacity; (ii) permanent partial incapacity; (iii) temporary incapacity; and (iv) fatal injury leading to death of a worker. • Compensation must be provided in accordance with the relevant legislation (i.e. the 2019 Labour Proclamation, and the 2011 Private Organization Employees' Pension Proclamation)

Key Provision	Description
OHS requirements	• Employers must ensure compliance with Part 7 of the 2019 Labour Proclamation and the National Policy on Occupational Health and Safety, which provide provisions and standards for securing a safe and healthy working environment
Resolving workplace disputes	• Disputes may be settled via Ethiopia's Labour Courts or by alternative lawful means (see Chapters 2 and 3 of the Labour Proclamation).
Preventing child labour	• It is prohibited to employ a person less than 15 years of age. Employers must comply with restrictions on overtime and hours of work for young workers (between the ages of 15 and 18) in Article 89 of the Labour Proclamation
Medical Insurance	• All workers are required to be a member of a social health insurance scheme as explained in Ethiopia's 2010 Social Health Insurance Proclamation.
Labour inspection	• The Labour Proclamation provides for labour inspection services, which can be used for the purpose of planned and follow-up inspections, complaint-based, or accident-based inspections.

5.4. International Environmental Agreements

There are a number of multilateral agreements in the environment sector to which Ethiopia has become a party. These agreements form part of the body of laws of the country as per Article 9 of the Ethiopian Constitution and are hence important to be considered when checking for the compliance of economic activities with laws in force in Ethiopia. Some of the main MEAs (such as UNFCCC, UNCCD, and UNCBD) are briefly stated below.

United Nations Framework Convention on Climate Change (UNFCCC)

Ethiopia has ratified the Convention through Proclamation No. 97/1994 on May 2/1994. This Convention takes into account the fact that climate change has trans-boundary impacts. Its basic objective is to provide for agreed limits regarding the release of greenhouse gases into the atmosphere and to prevent the occurrence or minimizes the impact of climate change.

United Nations Convention to Combat Desertification

This Convention has been ratified by Ethiopia in 1997 through Proclamation No. 80/1997. The objective of the Convention is to combat desertification and mitigate the effects of droughts in countries experiencing serious drought and/or desertification, particularly in Africa.

United Nations Convention on Biological Diversity (UNCBD)

Ethiopia has ratified this Convention by Proclamation No. 98/94, on May 31, 1994. The Convention has three goals: (I) the conservation of biodiversity; (ii) the sustainable use of the components of biodiversity; and (iii) the fair and equitable sharing of the benefits arising from the use of genetic resources.

Convention on International Trade in the Endangered Species of Fauna and Flora (CITES)

Ethiopia ratified the convention in 1989.It provides an international umbrella for management and control of trade in endangered fauna and flora. Its aim is to ensure that international trade in specimens of wild animals and plants does not threaten their survival. It is initiated because of the crosses borders nature of the trade in wild animals and plants, which necessitates international cooperation to safeguard certain species from over-exploitation. CITES provides a framework to be respected by each Party, which has to adopt its own domestic legislation to ensure that CITES is implemented at the national level.

Stockholm Convention on Persistent Organic Pollutants

Ethiopia has ratified this Convention by Ethiopia by Proclamation No. 279/2002, on July 2,2002. The Convention aims to ban the use of persistent organic pollutants (POPS). Originally, the POPs Convention contain 12 chemicals that were slated for total elimination or decreased use in industrial and agricultural processes. The list is expanding as parties to the convention ascertain the POPs character of other chemicals through the evolution of knowledge and experience.

Rotterdam Convention on Prior Informed Consent Procedures in International Trade of Hazardous Chemicals

Ethiopia ratified this Convention by Ethiopia by Proclamation No. 278/2002, on July 2, 2002. This Convention relates to prior informed consent in the context of international trade in specific hazardous industrial chemicals and pesticides. The Ministry of Trade in Ethiopia regulate (ban or severely restrict) the trade of such chemicals that have hazardous chemical formulation or serious use implications.

Basel and Bamako Conventions

Both of these Conventions have been acceded to by Ethiopia. The agreements regulate the trans-boundary movement of hazardous waste for the purpose of reclamation, or final disposal.

5.5. International Good Practice

This Environmental and Social Impact Assessment is also used to satisfy the applicable requirements of international financial institutions that are prospective lenders to the project. For the purpose of the ESIA, Etete has aligned with the IFC's Environmental and Social Performance Standards (IFC Performance Standards) as the main international standard for guidance during the execution of Project activities.

IFC's Environmental and Social Performance Standards (IFC Performance Standards) define IFC clients' responsibilities for managing their environmental and social risks.

There are eight Performance Standards, that are summarised in Table 5-5.

Table 5-5 Summary of IFC Performance Standards

Performance Standard	Summary
Performance Standard 1: Assessment and Management of Environmental and Social Risks and Impacts	Environmental and social risks will be identified, avoided, minimised, mitigated or where necessary compensated for. Social and environmental performance will be promoted through effective management systems and a sound grievance procedure will be in place
Performance Standard 2: Labour and Working Conditions	Workers will be employed fairly and in compliance with national laws and regulations. There will be no forced or child labour in the workforce.
Performance Standard 3: Resource Efficiency and Pollution Prevention	Pollution risks on human health and environment will be identified, avoided, minimised or mitigated.
Performance Standard 4: Community Health, Safety and Security	Adverse impacts on the health and safety of surrounding communities both from routine and non-routine activities will be identified and avoided and security measures in place (to protect people and property) will be carried out in a manner that avoids risks to affected communities.
Performance Standard 5: Land Acquisition and Involuntary Resettlement	To avoid or where avoidance is not possible, minimise displacement of local communities. (Involuntary resettlement and forceful eviction be exceptionally executed by the borrower/legal land owner on illegal squatters and conditions apply according to host country laws).
Performance Standard 6: Biodiversity Conservation and Sustainable Management of Living Natural Resources	Protect and conserve biodiversity, maintain ecosystem services and their benefits, promote sustainable management of natural living resources through sustainable development
Performance Standard 7: Indigenous Peoples	Ensure that full respect for the human rights, dignity, aspirations, culture and natural resource-based livelihoods of indigenous peoples.

Performance Standard 8: Cultural Heritage	Protect cultural heritage from adverse impacts from business activities, support its preservation and ensure equitable sharing of benefits from the use of cultural heritage

The EHS Guidelines are technical reference documents with general and industry-specific examples of Good International Industry Practice (GIIP) and are referred to within the IFC Performance Standards. The EHS Guidelines contain the performance levels and measures that are normally acceptable to the World Bank Group, and that are generally considered to be achievable in new facilities at reasonable costs by existing technology. As with the IFC Performance Standards, they have been adopted under the Equator Principles for use in "Non-Designated" countries (in conjunction with the IFC Performance Standards).

The General EHS Guidelines contain information on cross-cutting environmental, health, and safety issues potentially applicable to all industry sectors. The General EHS Guidelines are then used together with the relevant Industry Sector Guideline(s) i.e. *Environmental, Health, and Safety Guidelines for Vegetable Oil Production and Processing, 2014.*

When host country regulations differ from the levels and measures presented in the EHS Guidelines, projects are expected to achieve whichever is more stringent. If less stringent levels or measures than those provided in the EHS Guidelines are appropriate, in view of specific project circumstances, then a full and detailed justification for any proposed alternatives is needed as part of the site-specific assessment. The EHS Guidelines also require that these should demonstrate that the choice for any alternative performance levels is protective of human health and the environment.

6. Public Consultation and Participation

6.1. Introduction

The National Constitution (1994) highlights the importance of Public Consultation in connection with development projects as per Article 92 (Environmental Objectives) which specifies:

"People have the right to full consultation and to the expression of their views in the planning and implementation of environmental policies and projects that affect them directly."

The Environmental Policy of Ethiopia (EPE) recognizes the need for an ESIA to address social, socio-economic, political and cultural impacts, in addition to physical and biological impacts, and for public consultation to be integrated within ESIA procedures. The Environmental Assessment Proclamation and related procedures also place emphasis on the need for public consultation. Therefore, in response to the requirements of the EPA guidelines, a detailed Public Consultation has been carried out as an integral part of the ESIA for the proposed SEP.

To meet the requirements of both the national and regional regulatory authorities and the project owners, different stages of consultation have been implemented by the Hamen team.

6.2. Objectives of Public Consultation and Participation

The main objective of the public consultation process was to involve all stakeholders and community at the initial stages and provide ample opportunity to identify potential negative impacts, consult on sensitive issues and find ways to minimize the negative impacts and enhance the positive impacts of the project. The specific objectives of the consultation process for this ESIA study are to:

- provide clear, timely and accurate information about the proposed project to the communities- to ensure the community understands the proposed project and the anticipated impacts;
- obtain feedback (the main concerns and perceptions) of the population and their representatives regarding the proposed project- this included impacts, alternatives, and opportunities;
- enable early identification of contentious issues;
- improve project design and, thereby, minimize conflicts and delays in implementation and create a sense of self-ownership to the project by the community;

- obtain opinions and suggestions directly from the affected communities and interested parties on their preferred mitigation measures- this included ensuring their concerns and priorities were understood and act as input into the decision-making process and inform the solutions;
- Increase long term project sustainability and ownership;
- Enhance institutional co-ordination especially where different organizations and institutions are affected or of interest, e.g. utility companies and social amenities**.**

6.3. Methodology of Public Consultation

Reasonable timeframes should be provided for the public to prepare and participate in the consultation process. The results of consultation should be recorded and taken into account during the project development. The national requirements do not address a detailed identification of stakeholders or detailed, meaningful and empowered consultation. There is also no explicit requirement for a grievance mechanism. The ESIA documents, including this are intended to be publicly disclosed for comments locally at a later stage.

6.3.1. Stakeholder Analysis

Stakeholder analysis involves stakeholder identification, analysis of stakeholders' interests and experience with participation of the stakeholders in accordance with their capacity and relevance to each issue.

As the project is on a developed site already leased by the applicant, there has been no vulnerable displaced stakeholders and no resettlement or compensation is required. Vulnerable stakeholders for the Project fall within the community category and include women, the elderly and those who may be unemployed or unable to read and apply for jobs or understand the details of the Project. In consultation with officials of Kebele and Woredas, Hamen Consultancy selected communities and representatives of those who are directly affected.

Based on this the following stakeholders are selected as shown in the table below:

Table 6-1: Stakeholder Categories

Stakeholder Category	**Stakeholders**	**Interest in Project**
Affected Stakeholders	Project affected individuals, businesses and communities,	Households and communities that will be directly or indirectly affected by the proposed Project activities including residents in surrounding kebele and

Stakeholder Category	Stakeholders	Interest in Project
		neighboring land and water users. Also included in this category was the previous workers for Etete Dairy who reside in close proximity.
National Authorities	Environmental authorities	The Project must comply with the Environmental and Social Impact Assessment (ESIA) requirements and to develop environmental management and monitoring plans. The Department is responsible for issuing the Environmental Certificate after an ESIA has been approved.
Local Authorities	Kebele leaders Woreda leader	When there are any complaints from the stakeholders, including environmental issues, these will be raised to the local authorities.

Based on the identified groups of stakeholders, a consultation engagement was held at Aleltu Woreda at Chole kebele on 30/12/2020 with the following group representatives of stakeholders:

1. Mr. Lloyd Manhivi (EHS Director54 Capital)
2. Mr Tariku Adane (Legal advisor 54 Capital)
3. Mr Teshome Abate Kebele administration)
4. Mr Kassahun Sudane (Aleletu Woreda Environment, forest and climate commission commissioner)
5. Consultants Expert
    - Mr.Tsegaye Boru-Tura (Biodiversity Expert),
    - Mr.Megistu Birhanu (Environmentalist),
    - Mr.Gizachew Merin (Environmental Public Health Specialist and GHG emission expert),
    - Mr.Addise Mekonnen (Geologist),
    - Mr.Fekadu Kassa (Soil scientist)
7. Individuals who are living or own businesses around the project area in Project Area of Influence (AoI) and who are directly affected by the project activities (Listed in Appendix 2).

Figure 7: Public Consultation pictures

7.1.1. Community Consultations

7.1.1.1. Methodology

The following Engagement was undertaken with the community and directly affected parties:

- A focus group discussion was held with the neighbouring landowners and directly affected individuals residing within close proximity to the site.
- The engagement was hosted on a Sunday (03/01/2021) as this was communicated as the most suitable day of the week for the attendees.
- The discussions were held at the Project site to provide easy access for those in close proximity.

- Approximately 25 individuals (including male and female) participated in focus group discussions.

7.1.1.2. Summary of issues raised

The main issues of discussion for the consultation forum were: (a) attitude of the community towards the upcoming project; (b) Expected positive and negative impacts of the project; (c) the main environmental and socio-economic impacts around the project area; (d) existence of environmental, social and historical places around the project area; (e) community benefits during construction and operation phases; (f) views and fears of the community on the project implementation. The following queries in Table 6-2 were raised during the engagement:

Table 6-2: Comments Register - Community

Comments raised	Stakeholder:
'The study team members have described the discussion agendas to the consultation meeting participants by giving more emphasis on the advantages and disadvantages of the solvent extraction during construction and operation phases in the area'	Community representatives
'This consultation is good. But we have doubts on the importance of the project for the chole kebele community. How many job opportunities can it create for the local community? How much is its capacity? We expect answers from the study team and owner of the project.'	Community representatives
'When the company comes to the area for who does it provide first priorities in the job creation? How many workers do you think the construction and operation phases of the project participate? Does the project owner take part his effort to solve this problem. The project has many advantages to our kebele community especially for youth. If the plant is taken to another area the youth cannot get job opportunities. Therefore, not to lose this opportunity, we support construction of the plant at the proposed site.'	Community representatives
'The kebele administration will give priority for their family and relatives. So that, the job creation activity should be transparent based on skill requirements. '	Community representatives
'If the project creates job opportunities for skilled and unskilled workers, we support it to be constructed at the proposed site. '	Community representatives
The solvent extraction provides many advantages for the kebele community. It will create job opportunities for lucky people. Therefore, we badly need its construction in the near future.	Community representatives
'Now a days, corruption is increasing in all aspects. Hence, the project owner should be aware of during hiring of workers since some administration offices try to create job opportunities for their family and relatives.'	Community representatives
'The construction of the solvent extraction in the area will attract other investments to the kebele. Therefore, we support the solvent extraction plant construction in our kebele. However, care should be taken during heiring of the workers by making it transparent. '	Community representatives
'Finally, the study team members have provided answers for technical questions. Job opportunities will be for locals based on skill requirements, however, for special skill requirements workers will come from other areas. Transparency will also be created by posting job descriptions with required skills at the kebele office.'	Community representatives

7.1.2. Authority Consultation

Key informant interviews were held with the authorities of the project namely the Kebele administration, Environmental authorities as well as with experts of the various line offices operating in the Kebele. The Zonal and Woreda level discussions were attended by the respective representatives of different offices. The issues discussed and information gathered included the following:

- Briefing on objectives of the Environmental and Social Impact Assessment study of the project;
- Benefits of the upcoming Solvent extraction project at a local level and beyond;
- Main problems and threats related to the upcoming project;
- Measures to be taken to mitigate the negative impacts and optimize benefits;
- Major socio-economic problems and potentials in the Woreda as well as in the project target Kebeles;
- Major environmental and social impacts (positive and negative) expected to result due to the implementation and operation of the envisaged project with mitigation measures; and
- Their opinions and suggestions related to the proposed projects activities.

The major issues that were raised during the discussion and consultation processes have included the following in Table 6-3:

Table 6-3: Comments Register - Authorities

Comment Raised	**Stakeholder:**
The project is useful for the Kebele community. Since it creates job opportunities. Therefore, we support its construction;	Authority representatives
The job creation activity should take into consideration the local community. Especially it should participate the youth of the project target Kebele community;	Authority representatives
All of the kebele communities should be consulted by undertaking outstanding community consultation;	Authority representatives
The local people should get job opportunities during construction and operation phases of the project. Thus, we are eagerly waiting its implementation;	Authority representatives
Good solid and liquid waste management system should be established since the solvent extraction plant is located at the nearby distance of the main asphalt road. Thus, it requires detail study.	Authority representatives

Part 2: Baseline and Impacts

8. Environmental and Social Baseline

This chapter provides the current status of the receiving environment, from both an environmental and social perspective, related to the Project Area of Influence (AoI). It is based on the observations made by the Hamen team during visits to the area and the collection of primary and secondary environmental and social data. Relevant literature has been reviewed and relevant information has been collected for the baseline. The sampling and monitoring locations have been identified based on:

- Topography and physical features of the site;
- Locations of water bodies;
- Locations of potential receptors (including residential dwellings) and sensitive ecological areas; and
- Proximity to the potential project activities.

This section presents an overview of the biophysical and socioeconomic characteristics of the area in which the development will take place (i.e., within the Project "footprint"), as well as the surrounding areas that may be directly or indirectly affected by the proposed Project. The IFC Performance Standards requires the Project to identify and manage environmental and social risks and impacts within their AoI). The AoI is defined in IFC Performance Standard 1 as:

The area likely to be affected by: (i) the project and the client's activities and facilities that are directly owned, operated or managed (including by contractors) and that are a component of the project; (ii) impacts from unplanned but predictable developments caused by the project that may occur later or at a different location; or (iii) indirect project impacts on biodiversity or on ecosystem services upon which Affected Communities' livelihoods are dependent. Associated facilities, which are facilities that are not funded as part of the project and that would not have been constructed or expanded if the project did not exist and without which the project would not be viable.

For this Project it has been further defined as the following:

- The Direct Area of Influence (DAoI) includes the Project footprint as well as the receiving environment surrounding the site that may be affected by activities during construction, operation, and decommissioning (e.g. noise, dust, traffic). It is defined as the 3ha fenced site (also referred to as the proposed Project site) as well as the adjacent farmlands in a 150m radius from the fence line. This includes the access road and associated infrastructure on the

farmlands i.e. 5-6 scattered dwellings that farmers and farmworkers are occupying as well as the commercial infrastructure i.e. dairy processing and milking infrastructure on both adjacent properties.

- The Indirect Area of Influence (IAoI) encompasses communities beyond the DAoI that may be affected by the Project, although to a lesser extent.

8.1. Biophysical Baseline

The environmental baseline chapters address the following topics in turn:

- Climate and Air Quality;
- Noise;
- Topography, Landscape, Geology and Soils;
- Water Resources; and
- Biodiversity

8.1.1. Climate and Air Quality

According to data from the Ethiopian National Meteorology Agency, the regional state of Oromia experiences two wet seasons. The short rain period of February – April followed by the main wet season being June – September, with the month of May being a drier month of transition between the two. The months of May and June provides the maximum temperatures of the year (average of 23°C) with December being the coolest month (average of 20°C) and an average annual rainfall of 187mm. The regional climate is temperate and consistent (based on the country's proximity to the equator) with little variances throughout the year. The dominant wind direction is from the E and ESE directions. Extensive climatic data is recorded in Addis Ababa City to represent the region however in terms of the site data Figure 8 presents basic meteorological data for the nearby settlement of Aleltu.

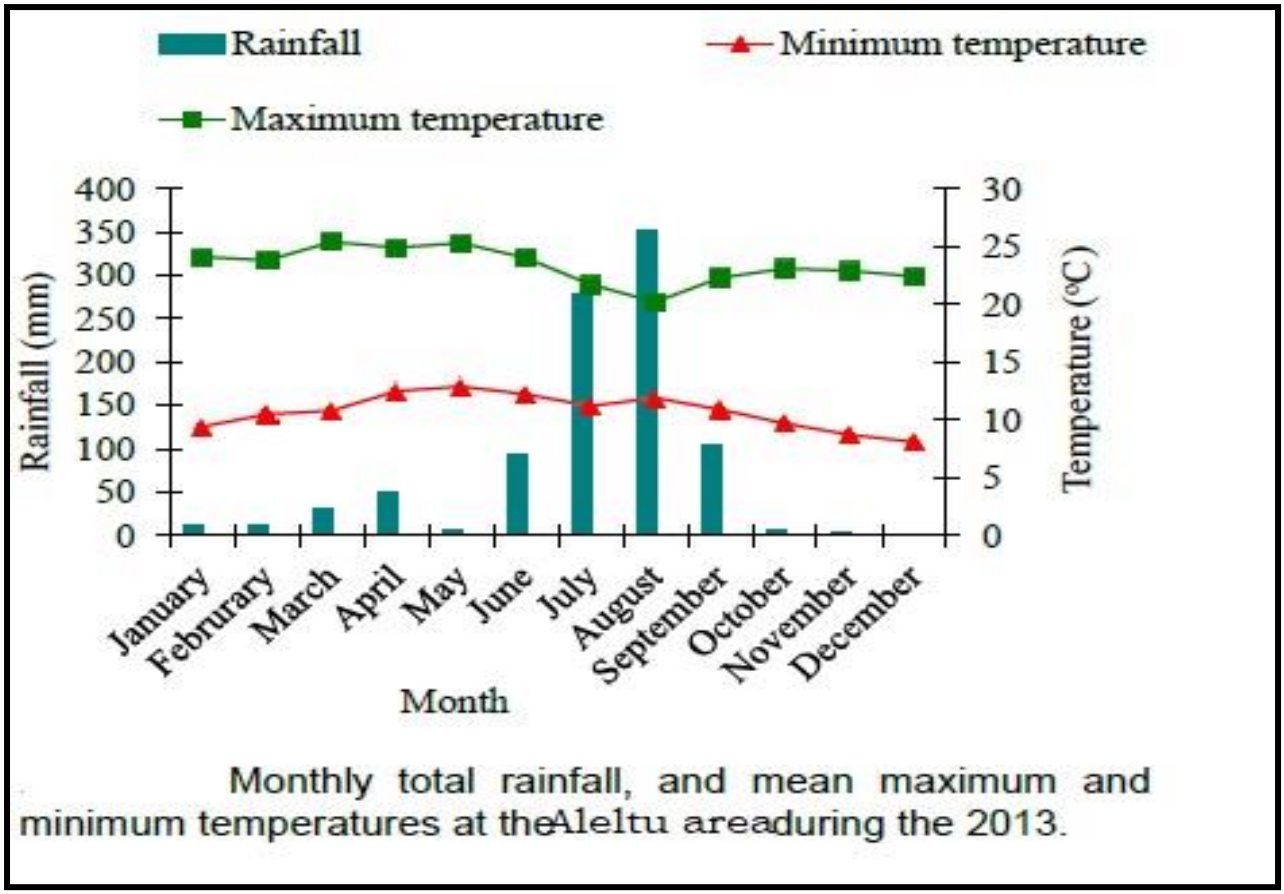


Figure 8: Monthly total rainfall and mean maximum/minimum temperatures at Aleletu (NMA, 2013)

For the air quality baseline assessment, real time data were collected from ten sampling points inside and outside of perimeter fence for the Project or the DAoI. The monitoring was undertaken during December 2020 in the dry season as this was considered to be representative of the season where dust issues would be more prevalent. In each sampling period data was collected between 06:00-7:00am, 7:30-10:30 am and 11:00 am -14:00 pm.

Ambient air quality parameters (H_2S, NO_2, SO_2, CO_2, CH_4, PM_{10}, $PM_{2.5}$) were measured using 'Aeroqual' portable air quality monitors. Particulate matter pollutant concentrations (PM_{10}, $PM_{2.5}$) were measured with a separate 'Hinaway' handheld air tester (Figure 9). Using the calibrated sensors, ambient air pollutant parameters were measured above ground at 1m to 1.5m height for a specified time period per each sample point.

Figure 9: Air Quality monitoring equipment used.

Ten sampling positions were selected in and around the site as shown below in Figure 10.

Figure 10: Air Quality and Noise sampling positions

Comparison of the monitored baseline concentrations (Table 8-1) against the Ethiopian and WHO ambient air quality guidelines.

Table 8-2) show that there are no exceedances of any of the standards for the current air quality. There are no national ambient air quality limits for CO_2, CH_4 and H_2S compliance however they form an important part of baseline information for future greenhouse gas recording.

As a result of traffic movement on the road, higher concentrations of PM_{10} and $PM_{2.5}$ are recorded, however these are still well within national and WHO air quality guideline values.

Table 8-1:Maximum ambient air quality readings on site

Sample Code	Name of the sample points	*CO_2 ppm*	*H_2S ppm*	*CH_4 ppm*	NO_2 µg/m³	SO_2 µg/m³	$PM_{2.5}$ µg/m³	PM_{10} µg/m³
1.	Milk processing hall	*819*	*1.2*	*265*	83	400	5	10
2.	Near Pond 1	*864*	*1.1*	*310*	79	100	6	12
3.	Outside Main Gate	*819*	*1.19*	*264*	82	200	5	10
4.	Neighboring industry Borehole (outside)	*833*	*1.17*	*243*	82	400	5	11
5.	Internal Borehole	*855*	*1.12*	*206*	80	300	6	12
6.	ETP Construction (inside)	*863*	*1.10*	*192*	79	300	6	12
7.	Discharge Point (outside)	*863*	*1.10*	*192*	79	400	6	12
8.	Pond 3 (inside)	*825*	*1.19*	*288*	83	400	5	10
9.	Community Borehole (outside)	*859*	*1.11*	*200*	79	200	6	12
10.	Roadside (outside)	*819*	*1.20*	*265*	83	400	7	14

Ethiopia has established national ambient air quality standards for various pollutants with reference to WHO guideline targets. At the time of developing the standards in 2003, there was no national baseline air quality data in place hence the reliance on the WHO guidelines. The standards mostly range between the WHO interim targets 1 & 2 that are to assist countries progressively to develop their own air quality management standards and demonstrate improvement over time. Appendix 3 contains the baseline air quality maps.

Table 8-2: Air emission standards

Ambient Air Pollutants	Guideline values in µg/m^3	
	WHO (International)[3]	Ethiopian ambient air quality standards (national)[4]
Particulate Matter (PM_{10})	50	50
Particulate Matter ($PM_{2.5}$)	25	15
Sulfur dioxide (SO_2)	500	500
Nitrogen dioxide (NO_2)	200	200

8.1.2. Noise

Ten sampling positions were selected in the DAoI (in and around the site) as shown below in Figure 10. As per the air quality data, the noise sampling was done at different times in the day (according to WHO Guidelines, before 7:00am is classified as Nighttime whilst between 7:00-22:00 is a Daytime measurement) with the maximum readings being presented below. The Guidelines for commercial land use is the same for both Day and Night levels. The sample locations both inside and outside the property recorded noise levels (Table 8-3) below the recommended standards except for the sampling point alongside the road outside the property (Appendix 4) .

Table 8-3: Noise Monitoring results for the Project area compared to Noise level standards.

Sample Code	Name of the sample points	Noise (dB)
1.	Milk processing hall	51
2.	Near Pond 1	41
3.	Main Gate	41
4.	Neighboring industry Borehole (outside)	53
5.	Internal Borehole	43
6.	ETP Construction (inside)	40
7.	Discharge Point (outside)	44
8.	Pond 3 (inside)	41
9.	Community Borehole (outside)	55
10.	Roadside (outside)	72
	WHO Noise Level Guidelines for Commercial area[5]	*70*
	Noise Standards for Ethiopia (EPA)	*65*

[3]World Health Organization (WHO). Air Quality Guidelines Global Update, 2005.

[4] The Ethiopian Guideline Air Quality Standards are part of the Ambient Environmental Quality Standards set in 2003.

[5] Guidelines for Community Noise, World Health Organization (WHO), 1999.

8.1.3. Topography, Geology and Soils

The project area is characterized by relatively flat lying and gentle slopes. The relief in the surrounding region is relatively high, the altitude is around 2500m above sea level. The landscape of the Aleltu woreda has been described as undulating mountains covered by a scattered settlement pattern.

The geology of the project area is part of the Debre Brihan 1:250,000 scale geological map sheet (NC37-11) characterized by the major exposed Tertiary Volcanic flows underlain by Mesozoic Sedimentary rocks, which in turn is underlain by Precambrian rocks.

Observation of core samples from a shallow drill hole in the compound indicates the lithologies are fine grained plagioclase phyric basalt and Ignimbrite, in addition an exposure of basalt is also observed at one of the water settlement ponds.

Soil texture implies a relative proportion of sand, silt and clay in the fine earth fraction (the soil material smaller than 2mm in diameter). It was described by feeling method in the field and by hydrometer method in the laboratory. The particle size analysis using USDA standards showed that the texture of soils in the study area generally fine textured. Therefore, the overall soil textural class of the project area is silty clay.

A contamination assessment was not undertaken by the applicant considering the previous land use, however a 2kg soil sample was recovered from alongside the main building for the purposes of a baseline. A full analysis was undertaken by Horticoop PLC (Registration: HST4057/20) found in Appendix 5. Traces of Arsenic, Lead and Mercury were detected in the sample but not at levels exceeding the natural occurrence. The sample did contain high levels of salts (Potassium, Calcium, Magnesium) and irons (Iron, Manganese, Zinc and Boron). The levels did not exceed the Dutch Pollutants Standard (2009) requiring intervention for contamination and were not located in the borehole on site.

8.1.4. Water Resources

There are no water courses in DAoI, with the nearest potential small stream being 250m to the west, however there is surface water in the form of settling ponds, previously used by the dairy plant, on site for effluent management (Figure 11). These ponds are unlined and the outlet discharges into the neighbouring fields.

Figure 11: Photos of the borehole and three of the settling ponds currently on site

The site will be abstracting water from a permitted borehole on the property (Figure 10) which was already installed and operational for the dairy plant. It is unknown if any pump testing or quantitative modelling was undertaken to determine the recharge and sustainability of the borehole before it was drilled or permitted. The pump is calibrated and fitted with a meter to record usage. Boreholes are used extensively in the area as there is no connection to a main supply. There are two boreholes located on the properties on either side of the site (within 150m), it is understood that these are utilized however the usage and water quality is unknown.

The on-site borehole (

Table *8-5*), along with the old water treatment ponds (Table 8-4) observed on the site were also sampled for laboratory analysis.

Table 8-4: Composite sample results for the wastewater (settling ponds)

Parameters	Test Method	Pond 1	Pond 2	Pond 3	Pond 4
pH	ES ISO 10523	6.3	6.6	6.2	6.5
Total dissolved Solids	ES ISO 10523	1560	2000	1060	1480
Total suspended solids (TSS)	ES609	477.68	/	/	/

The sample recovered from a settling pond underwent a basic analysis. The ponds have not been used since Etete decommissioned the dairy plant and the water is stagnant and below the outflow (although seepage is likely taking place as there are no liners). The analyses indicated a slightly acidic wastewater present in the ponds with elevated TDS and TSS. The source of the wastewater is unknown and therefore the attributes to the high parameters were not confirmed and additional sampling has been recommended before the water is discharged.

Table 8-5: Test result of borehole water in the project area

Parameters	Test Method	Result	Ethiopian Standard [6]	WHO Standard[7]	Unit
Total Dissolved solids	ES 609	211.92	1000	/	Mg/lt
Total Hardness	ES 607	< 5.00	300	/	Mg/lt
Total Alkalinity	ES ISO9963-1	10.00	600	/	Mg/lt
Nitrate	ES ISO7890-3	2.18	45	50	Mg/lt
Sodium	ES ISO9964-1	3.61	200	200	Mg/lt
Iron	AOAC 974.27	< 0.10	0.3		Mg/lt
Arsenic	AOAC 974.27	<0.01	0.01	0.01	Mg/lt
Chromium	AOAC 974.27	<0.01	0.05	0.05	Mg/lt
Nickel	AOAC 974.27	0.02	0.02	0.07	Mg/lt
E.coli	ES ISO 9308-1	<10	Undetectable	Undetectable	Cfu/100
Total coliform count[8]	ES ISO 9308-1	**68**	Undetectable	Undetectable	Cfu/100

The results above indicate that the parameters analyzed fall below the required standards for drinking water quality. The presence of a total coliform count does not indicate that faecal pathogens are present in the water supply however standards do indicate that treatment will be necessary before consumption as potable water. The quality of the water may be impacted by the non-use of the borehole since the decommissioning of the dairy

[6] Ethiopian Drinking Water Quality Standard 2013
[7] WHO Edition F. Guidelines for drinking-water quality. WHO Chronical 2011
[8] According to WHO Guidelines (2011) Total coliforms are not useful as an index of faecal pathogens, but they can be used as an indicator of treatment effectiveness.

plant and frequent monitoring has been recommended in the report. The laboratory test results are attached in Appendix 6 and 7.

8.1.5. Biodiversity

Within the DAoI and IAoI (or within the region) there is no indication of protected areas and conservancies or ecologically sensitive ecosystems. As seen in the locality plan, the surrounding land use is that of agricultural and commercial or light industry and the land is considered to be disturbed with limited, if any, natural vegetation still present.

On site there is minimal natural vegetation remaining as a result of the disturbance from the previous industry and the landcover has been cleared previously. The settlement ponds in the south west corner of the site has resulted in an artificial 'wetland' area with different species being observed in the is part of the property.

8.2. Socio-Economic Baseline

Primary data was collected through questionnaires and interviews from Aleltu Woreda and Chole Kebele officials during engagements in December 2020.

8.2.1. Governance Structure and Human Rights

As per the Ethiopian Governance Profile (African Development Bank, 2009), the federal constitution provides for a four-tier decentralization framework consisting of regions (or states), zones (cluster of districts), woredas (or districts) and kebeles (wards or neighborhoods). Ethiopia has nine regions, which are: Oromia, Amhara, Southern Nations Nationalities and Peoples (SNNP), Tigray, Somalia, Afar, Benishangul-Gumuz, Gambella, and Harari, plus the two municipal cities (urban administrations) of Addis Ababa and Dire Diwa. The first five regions account for over 88% of the country's population and 82% of its surface area.

Each level of governance, except kebeles, has a multilateral structure of:

- Council;
- Executive cabinet; and
- Sector bureaus (offices)

The Constitution (Proclamation No. 1/1995 as amended) is the foundation for all human rights, natural resources and environmental management within Ethiopia and all legislation stems from this source (See Section 5).

8.2.2. Demographics and Employment

Different sized settlements are found within 10km from the Project site varying from a small settlement, a village and then larger towns. Scattered dwellings are found within the DAoI.

Table 8-6: Distance to Nearest formal Settlements from the Project site

Settlements	Distance
Chole Kebele	3km (East)
Sendafa	3km (West)
Aleltu	8km (East)

As shown in Figure 12, the total population of the district (Aleltu Woreda) is 74 791 individuals (division across age groups is unknown) of which 49% are women. Those employed are involved in small scale farming and cattle rearing. The area of is known for the rearing of cattle and production of milk and dairy products and there are mining or quarrying activities. During community and authority consultations the priorities of the nearby communities was identified as employment opportunities and technology transfer.

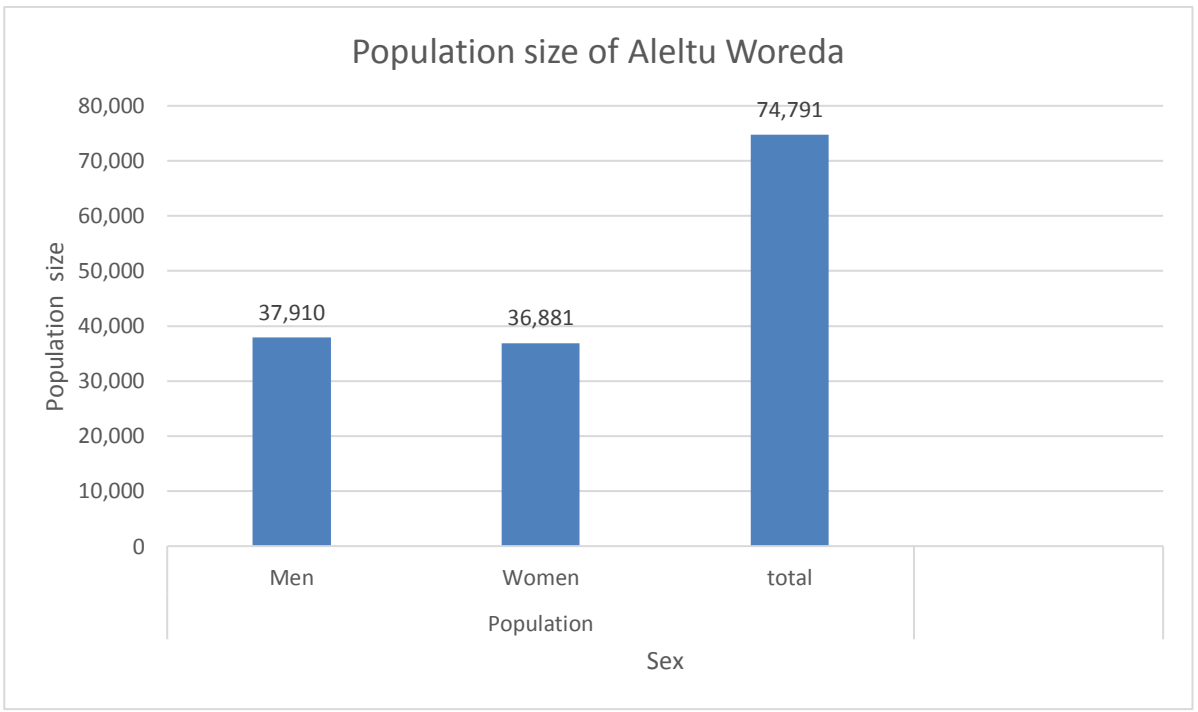


Figure 12: Population of Aleltu Wordea

8.2.3. Health

The main health concerns in Ethiopia include maternal mortality, malaria, tuberculosis and HIV/AIDS compounded by acute malnutrition and lack of access to clean water and sanitation.

According to a publication in March 2021[9], Ethiopia reported its first case of COVID-19 on 13 March 2020, and the number of reported cases has shown a slow but steady increase ever since. As at 01 April 2021 the total number of cases in the country were 239,000. On 1 November 2020 the number of confirmed positive cases in the Oromia Region reached 18,509. Oromia acquired the first COVID-19 testing facility as of 30 April 2020. However, testing capacity was scaled up only in August 2020 as part of a new national campaign. Thus, the marked increase in the number of cases recently could be due to both improved testing and widespread community transmission of the disease. Social factors also challenged the COVID-19 surveillance and control activities in Oromia. For instance, during July 2020, most testing facilities in the region did not perform adequate tests due to community unrest. Moreover, according to the cited report, during the unrest the protesters gathered in large crowds with no social distancing and use of masks. It is thus likely that the surge in the number of cases and test positivity rates since late July is partly attributable to these factors.

Detailed in the World Health Organization's 2016 Country Profile for Ethiopia (2017), The life expectancy at birth is 66 years with the estimated number of people living with HIV to be 710, 000. In Ethiopia, the annual number of HIV infected people showed declining trends since 2002. Over the past two decades HIV prevalence rate decreased from 3.3% in 2000 to 0.9% in 2017[10]. Regionally, one of the highest prevalence's was observed in Oromia but specifically in Addis Ababa (3.4%) due to the dense urban areas.

[9] Gudina EK, Gobena D, Debela T, et alCOVID-19 in Oromia Region of Ethiopia: a review of the first 6 months' surveillance data, 2021.
[10] Kibret, G.D., Ferede, A., Leshargie, C.T. et al. Trends and spatial distributions of HIV prevalence in Ethiopia.

8.2.4. Public Services

During public consultation and interview with officials of Chole Kebele and Aleltu Woreda, it was confirmed that there was a total of 56 educational facilities in the district to service the population. The se consisted of:

- 3 kindergartens,
- 49 primary schools,
- 2 secondary schools,
- 1 preparatory school; and
- 1 TVET school.

Information obtained during public consultation and officials of Chole Kebele, there are a total of 26 public health care facilities available to the district. These consist of:

- 4 health care centres (located in larger towns);
- 20 health posts (in the rural areas); and
- 2 clinics (in small villages).

The Sendafa Health Centre is located approximately 7km west of the site and is easily accessed by the main road.

The community of Chole Kebele has access to electricity by the government from the main electricity grid operated by the Ethiopia Electric Utility Company who aims to connect 100% of the community by the year 2025. The district is also connected by the main highway that passes the main entrance to the site and therefore providing access to main cities.

9. Environmental Impacts Identification and Mitigation Measures

9.1. Methodology Overview

The purpose of the impact assessment process is to identify any potential significant impacts on environmental or social receptors as a result of the Project activities and to develop appropriate mitigation measures to effectively manage these impacts. To determine the significance, this ESIA considers two main factors: impact magnitude and receptor sensitivity/vulnerability. Magnitude is a measure of the change to a receptor that will potentially result from the Project, while sensitivity/vulnerability is a measure of how sensitive or vulnerable a receptor (e.g., people, flora, or fauna) is to these changes. There is no statutory or internationally agreed upon definition of significance; however, this assessment will use the following practical definition: An impact will be judged significant if, in isolation or in combination with other impacts, it will cause a notable change from baseline conditions and may require mitigation to manage the effects on/risks to a receptor from this change.

9.1.1. Determining Impact Magnitude

This ESIA considers the aspects of magnitude listed below to assign a rating and design appropriate mitigation measures.

- **Nature of impact**: Is it positive/beneficial or negative/adverse?
- **Type of impact**: Does the impact occur because of a direct or indirect interaction with an aspect of the Project?
- **Duration**: How long will the impact occur?
    - Temporary: Maintaining for a portion of the construction phase.
    - Short-term: Maintaining for the entire construction phase or a portion of the operation phase.
    - Long-term: Maintaining for the entire operation phase.
    - Permanent: Maintaining indefinitely.
- **Geographic Extent**: What is the geographical extent and distribution of the impact?
    - Limited: Impacts will occur within a relatively small geographic area (e.g., the site and directly affected individuals).
    - Local: Impacts will occur within a single district (but potentially multiple villages).

- Regional: Impacts will occur in two or more districts.
- Transboundary: Impacts will occur beyond Ethiopian national boundaries.

- **Frequency**: Will the impact be continuous or intermittent?
  - Remote: Occurs once over the entire Project life cycle.
  - Rare: Occurs about once a year.
  - Occasional: Occurs at least once every six months.
  - Often: Occurs at least once a month.
  - Constant: Occurs on a daily basis (construction or operations).
- **Likelihood**: What is the probability of the impact occurring? This is applied to unplanned events only.
  - Unlikely: The event is unlikely but may occur at some time during normal conditions.
  - Possible: The event is likely to occur at some time during normal conditions.
  - Certain: The event will occur at normal conditions (i.e., it is essentially inevitable, for example, construction impacts such as site clearing and grading).

Though the above aspects provide guidance to assessing magnitude, subject matter experts in each discipline evaluate the magnitude rating holistically. Based on these characterizations, one of the following magnitudes is assigned:

- Positive;
- Negligible;
- Small;
- Medium; or
- Large.

9.1.2. Resource/Receptor Vulnerability/Sensitivity

Vulnerability can apply to physical, biological, cultural, or human receptors and considers some combination of sensitivity to change, vulnerability of the receptor with respect to the change, and importance of the receptor. With respect to importance, this is usually based on a consideration of factors such as legal protection, government policy, stakeholder views, and economic value. For example, habitats that meet the definition of “critical habitat,” “natural habitat,” or “legally protected and internationally recognized areas” under IFC Performance Standard 6 are assigned a high vulnerability rating. Standard vulnerability levels used in this ESIA are summarized below.

- **Low**: The receptor has ample capacity to assimilate the impact.
- **Medium**: The receptor has some capacity to assimilate the impact.
- **High**: The receptor has little to no capacity to assimilate the impact.

Where sufficient information is available, the assignment of a vulnerability rating may take into consideration any identifiable trends in receptor vulnerability. Note that in the case of beneficial/positive impacts, no vulnerability rating is assigned.

9.1.3. Significance Rating

An overall significance rating of Negligible, Minor, Moderate, or Major is assigned by combining the magnitude rating and the sensitivity/vulnerability rating using the matrix shown in Table 9-1. These ratings are provided on a pre-mitigation basis (i.e., assuming no implementation of mitigation measures). It is important to note that impact prediction and evaluation consider any embedded controls (i.e., physical or procedural controls that are already planned as part of the Project design, regardless of the results of the impact assessment process). An example of an embedded control is a standard acoustic enclosure installed around a piece of major equipment. This avoids assigning a magnitude based on a hypothetical version of the Project that disregards the embedded controls. Note that only negative impacts are assigned one of these significance ratings (positive impacts are simply designated “positive”).

Table 9-1: Impact Rating Table (Negative)

Magnitude of Impact	**Sensitivity Vulnerability/Importance of the receptor or resource**		
	Low	**Medium**	**High**
Negligible	Negligible	Negligible	Negligible
Small	Negligible	Minor	Moderate
Medium	Minor	Moderate	Major
Large	Moderate	Major	Major

Residual significance ratings are also provided, based on re-evaluation of the magnitude and vulnerability ratings after implementation of the recommended mitigation measures.

In most cases, the sensitivity/vulnerability/importance of a receptor is unaffected by proposed mitigation measures. The mitigation measure is typically intended to reduce the magnitude of a predicted impact, thereby reducing its overall significance.

9.1.4. Scope

The scope of the assessment falls under three broad categories:

- Spatial scope (the Area of Influence, or AoI, as defined);
- Temporal scope (the time periods over which the impacts may be experienced, as described; and
- Technical scope (the Project activities and how they interact with potentially relevant environmental and social resources and receptors as described.

Potential environmental and social issues have been evaluated as part of the scoping exercise in order to determine whether they are likely to give rise to significant risks and impacts and, therefore, the extent to which they should be included in the ESIA. Based on an understanding of the design and location of the Project and the local and regional environmental issues that are likely to be relevant, Hamen has identified and reviewed those issues that may be material considerations. These have been "scoped in" to this ESIA and will form the technical scope of the ESIA. Some impacts have been "scoped out" of the ESIA and will not be investigated further.

9.1.5. Spatial Scope

As defined above in Section 6, the Area of Influence (AoI) for assessment includes the directly affected area i.e Project Site (within the property boundaries), the area surrounding the site potentially affected by the Project (the adjacent properties and farmlands within 150m) whilst the indirectly affected include the nearby communities. The IFC Performance Standards requires that the environmental and social risks and impacts are identified and managed within their AoI.

9.1.6. Temporal Scope

The temporal scope of the assessment refers to the time periods over which impacts may be experienced. The Project phases to be assessed in the ESIA are:

- Site preparation and construction;
- Operation; and

- Decommissioning.

9.1.7. Technical Scope

The range of environmental and social topics to be addressed in the ESIA is referred to as the technical scope. As part of the legislated screening, an assessment has been undertaken by Hamen and the specialists for each of the environmental and social topics that have been scoped in for the ESIA. The environmental and social issues that comprise the technical scope of the ESIA and the reasons for their inclusion are listed in Table 9-2.

Table 9-2:Technical Scoping Table

Topic	Phase	Potential source of impact	Scoped In	Scoped out	Potential affected receptors
Employment and the Economy	Construction	Employment opportunities and the need for the supply of goods and services	x		Neighboring villages and wider district/regional/national economy
	Operation	Production edible crude oil	x		
Air Quality	Construction	Earthworks and construction vehicles. Equipment emissions and use of generator	x		Human health (Note: air quality impacts to ecology receptors have been scoped in)
	Operation		x		
Noise	Construction	Earthworks, construction activities, vehicles and Equipment	x		Adjacent businesses or farm houses
	Operation		x		Adjacent businesses or farm houses
Soil	Construction	Earthworks		x	
	Operation			x	(covered under spill events)
Ground water	Construction	Water abstraction and wastewater	x		Neighboring boreholes
	Operation		x		
Biodiversity	Construction	Site clearance and construction activities		x	Flora and fauna
	Operation			x	
Land scape and Visual	Construction	Construction of buildings		x	Adjacent businesses or farm houses
	Operation			x	
Land acquisition and displacement	Construction	Leased land, new owners and new industry		x	
	Operation			**x**	
Community Health	Construction	Site housekeeping and worker/community interactions	x		Adjacent businesses or farm houses
	Operation		x		Adjacent businesses or farm houses
Community Security and Safety	Construction	Increase in individuals in the area	x		Neighboring Villages and residents
	Operation			x	
Labour and	Construction	Presence of workforce	x		Work Force

Topic	Phase	Potential source of impact	Scoped In	Scoped out	Potential affected receptors
Working Conditions	Operation		x		
Cultural Heritage	Construction	Site clearance and earthworks		x	None idenitifed
	Operation			x	
Unplanned Events	Life of Project	Spills and traffic accidents	x		Human health and safety

9.2. Assessment and Enhancement of Potential Positive Impacts

Positive impacts are those that have the potential to create beneficial or uplifting effects on an environmental or social receptor. Enhancement measures should be identified to maximise expected benefits.

9.2.1. Production of local crude oil

This section assesses the positive impacts that would occur during the operational phase from the extraction of crude edible oil.

Impact Assessment

The edible oil sector in Ethiopia remains highly import dependent, with crude sunflower and crude soyabean oil being imported for processing at local refineries, as well as large volumes of refined sunflower oil purchased as a finished product. Similarly, seeds are currently exported in low-value raw form. The operation of the proposed SEP will provide the next step required in the manufacturing process within Ethiopia. High quality crude oil will be extracted locally, using local seeds and sent to local refineries. This will significantly reduce the import needs (and the spend outside the country) in the oil sector, and also create export opportunities from the sale of the by-products (defatted cake) as well as high value sesame oil.

The increased supply of local crude oil to the national market as well as the export opportunities will be a direct, positive impact. The extent of the impact will be national, as the crude oil extracted by the Project will supplement the country demand. The duration of the impact will be long-term, lasting throughout the operational phase, and the Project will boost the capacity of the national edible oil supply.

Table 9-3: Impact Assessment Table – Crude Oil Production

Impact	**Production of local crude oil**				
	Negative	**Positive**			
Impact Nature	*The increase of Ethiopia's manufacturing sector considered as a positive impact*				
Impact Type	**Direct**	Indirect			
	The product has a direct impact on Foreign spend as well as foreign income for the country				
Impact Duration	Temporary	Short Term	**Long Term**	Permanent	
	The impact would occur for the full life of the operation as the product is produced and sold				
Impact Extent	Limited	Local	**Regional / National**	Transboundary	
	The solvent extraction plant oil can be distributed or sold to local oil refinery plants across the country and the boost of the National economy will impact the country				
Frequency	Remote	Rare	Occasional	Often	**Constant**
	The feasibility of the market has been undertaken to confirm the demand and the likelihood is certain that the by-product can be sold and that this manufacturing step will substitute the current imports.				
Impact Magnitude	**Positive**	Negligible	Small	Medium	Large
	Based on the parameters above, and the stated methodology for this exercise, the magnitude is considered positive.				
Resource/Receptor Vulnerability	*No vulnerability rating is assigned as the impact is positive.*				
Impact Significance	**The impact is positive.**				

Enhancement Measures

To enhance the positive impact related to the manufacturing, the following measures are recommended:

- Ensuring correct management of the supply chain (including contracts, traceability and supplier standards) to ensure that the sourcing and provision of raw materials is done sustainably and does not impact the production rate or quality; and
- Continuous market trend analysis to manage product supply and demand.

The implementation of these measures will ensure the continuation of the positive impacts for the Project life.

9.2.2. Employment

Positive impacts are associated with the direct and indirect employment opportunities during the construction and operational phases of the Project.

Impact Assessment

Concerns around employment levels[11] for the district were raised by the authorities as well as stakeholders during engagements. As per the socio-economic baseline, the majority of employment is taken up in the farming sector (according to district officials), and therefore an increase in employment opportunities in manufacturing is seen as diversity for the job seekers.

This Project will positively impact the local (IAoI) as well as the regional unemployment levels by creating direct employment opportunities of more than 100 skilled and unskilled people at the proposed SEP and indirect employment opportunities for more than 200 people (through 3rd Party Suppliers/ Procurement). The duration of the impact can be long-term as the employment and the supply chain will be required through the life of the Project continuously providing indirect opportunities for local businesses.

Table 9-4: Impact Assessment Table - Employment

Impact		**Employment opportunities**			
	Negative	**Positive**			
Impact Nature	*Job creation and use of local supply goods and services will create a positive impact for individuals, households, and businesses in the local community.*				
Impact Type	**Direct**	**Indirect**			
	The employment opportunities are considered to be direct and indirect through Etete as well as indirectly through the supply chain for the life of the Project..				
Impact Duration	Temporary	Short Term	**Long Term**	Permanent	
	The impact would largely be concentrated during the construction and operational phases.				
Impact Extent	Limited	**Local**	Regional	Transboundary	
	The impact extent is local as the labour will be prioritized from the district before looking on a regional level.				
Frequency	Remote	Rare	Occasional	**Often**	Constant
	The SEP is anticipated to operate for 20 years after a 14 month construction period and therefore the operational employment opportunities and indirect opportunities are considered to be often through the Project.				
Impact Magnitude	**Positive**	Negligible	Small	Medium	Large
	Based on the parameters above the magnitude is considered positive.				
Resource/Receptor Vulnerability	*No vulnerability rating is assigned as the impact is positive.*				
Impact	**The impact is positive.**				

[11] Employment statistics for the district could not be sourced.

Significance	

Enhancement Measures

In order to enhance the positive impact related to job creation, the following measures are recommended:

- A plan for procurement (including a skills survey) is to be established and implemented for staff required for construction and the operational phase to enable the community to access job opportunities.
- For the construction activities to be contracted, local procurement will be included in the tender or contract requirements.
- Although recruits will require a basic level of skills prior to recruitment, training opportunities and apprenticeships will be provided to males and females in local communities to enhance their skills, increasing employability and career development opportunities at a later stage.
- A Gender Development Plan will be developed and implemented to promote gender equality in job opportunities as well as to support the mitigation of gender based violence and other gender-related issues within the workforce and externally (e.g., in Project-affected communities).

With the enhancement measures listed above, the impact significance is expected to remain positive.

9.3. Assessment and Mitigation of Potential Negative Impacts

9.3.1. Air Quality

Air quality impacts are anticipated during the construction and operational activities; these are assessed in turn.

Due to the rural nature of the area, there are no major sources of air pollution within the AoI. Baseline conditions are shown in Section 8 which demonstrate low concentrations of pollutants of concern such as PM_{10}, $PM_{2.5}$, NO_2, VOCs and SO_2. All pollutants monitored were within the National Ethiopian and WHO air quality limit guideline values. The dominant wind direction on site is from the E and ESE which indicates the area most likely to be impacted.[12]

9.3.1.1. Impact Assessment: Construction

Dust emissions would arise during construction from the following activities resulting in an increase of dust deposition on the road to airborne and dust deposition:

- Site clearance and levelling;
- Demolition of buildings;
- Traffic and movement of vehicles over open ground and on unpaved roads; and
- Material stockpiles from clearance and related site preparation activities.

Dust emissions will result in nuisance issues at nearby sensitive receptors within the DAoI for a short term (14 month) as a result in the increase in ambient concentrations of particulate matter (PM_{10}). The vulnerability of the receptors is classified as high due to the proximity to the activities i.e. the neighbouring farmers are all within 150m of the site boundary including their milk processing facilities to the east and west of the site which may be sensitive to dust due to the hygiene standards required. With the winds from the E and ESE direction, a change in air quality may result in an increase in the

[12] Wind strength could not be sourced for this district.

dust deposition on the main road. There is currently limited vegetation on site and no screening with trees or bushes along the brick and palisade walls.

Table 9-5: Impact Assessment - Air quality during construction activities

Impact	**Air quality during construction activities**			
	Negative	Positive		
Impact Nature	*The potential impacts (dust emissions and particulate matter) are negative.*			
Impact Type	**Direct**	Indirect		
	The impacts would be a direct result of construction activities.			
Impact Duration	Temporary	**Short Term**	Long Term	Permanent
	The impacts would be short term, occurring only during construction (anticipated to last 14 months).			
Impact Extent	**Limited**	Local	Regional	Transboundary
	The impacts would be largely confined to within 150 m of the Project Site.			
Frequency	Remote	Rare	Occasional	Often	**Constant**
	The impacts would be constant, occurring not only during times of wind and during the day when activities were taking place but also on a daily basis from stockpiles and cleared areas.				
Impact Magnitude	Positive	Negligible	**Small**	Medium	Large
	Based on the above, the impact magnitude is considered to be small.				
Resource/Receptor Vulnerability	Low	Medium	**High**		
	The sensitivity of the receptors (residential dwellings and milk processing industry) is considered to be High due to their proximity (being within 150 m of the site boundary) and with no buffer (other than brick wall).				
	Negligible	Minor	**Moderate**	Major	
Impact Significance	*Even the impact magnitude is considered to be small, based on the high sensitivity of the receptors and the certainty of the impact taking place during construction, the impact significance is assessed to be Moderate within 150m of the Project Site (DAoI).*				

9.3.1.2. Impact Assessment: Operational

The potential impact on air quality during the operational phase will be due to the following activities:

- The use of diesel-powered generators for back-up supply;
- The preparation of seeds; and
- The solvent extraction process;

Particulate matter (dust) and VOCs are the principal emissions from edible seed oil production and processing. Dust emissions are a result of the

processing, including cleaning, dehulling, and crushing, of large volumes of seeds as well as the storage in silos. These by-products are collected, dried and used either as a fuel source for the boiler or sold as feed.

The VOC emissions are caused by the use of oil-extraction solvents i.e hexane. Several sources within the process have the potential to release solvent emissions, including the solvent recovery unit, the meal dryer and cooler, leaks in piping and vents, and product storage. The vent gases are captured in a closed system and scrubbed with mineral oil before discharge into the atmosphere. The hexane content of the gases leaving the system are well below the lower explosion limits. The chimney which will be 24m high, is located alongside the boiler house.

Two 1500 kVA diesel operated generators will be housed in a separate generator room to be used when the main supply is interrupted.[13]

The impact magnitude is considered Small, and the receptor sensitivity is considered High. As a result, the impact significance is assessed as Moderate as shown in the table below

Table 9-6 Impact Assessment - Air quality during operational activities

Impact		**Air quality during operational activities**			
	Negative	Positive			
Impact Nature	*The potential impacts (dust emissions and particulate matter) are negative.*				
Impact Type	**Direct**	Indirect			
	The impacts would be a direct result of Operational activities.				
Impact Duration	Temporary	Short Term	**Long Term**	Permanent	
	The impacts would be Long Term for the life of the Project (operational phase).				
Impact Extent	Limited	**Local**	Regional	Transboundary	
	The diesel emissions and potential dust would be generated and released at ground level however the emissions and VOCs released through the chimney would be able to disperse further.				
Frequency	Remote	Rare	Occasional	**Often**	Constant

[13] The planned usage (hours or frequency) of the generators could not be confirmed and therefore the emissions could not be quantified.

	The impacts would be often as the processing of raw materials and the operational process will take place daily.				
Impact Magnitude	Positive	Negligible	Small	**Medium**	Large
	Based on the above, the impact magnitude is considered to be medium.				
Resource/Receptor Vulnerability	Low	**Medium**		High	
	The sensitivity of the receptors (residential communities) is considered to be Medium. Despite their proximity, the release of the emissions 24m in the air will disperse the emissions and decreases the receptor vulnerability				
	Negligible	Minor	**Moderate**	Major	
Impact Significance	Based on the medium impact magnitude and the medium sensitivity, the impact significance is assessed to be Moderate within the AoI.				

9.3.1.3. Mitigation Measures

Construction Phase

The following mitigation measures are recommended during construction activities:

- The removal of vegetation and soil cover (especially topsoil) should be avoided where possible and where not possible it should be restricted to that which is necessary for the Project;
- A speed limit of 30 kph on unpaved surfaces will be enforced and national speed limits on public roads will not to be exceeded.
- Surface binding agents will be utilized on exposed open earthworks, when feasible.
- Exposed ground, earthworks and transported material will be covered as much as possible with sheeting, shade cloth, or tarpaulin where wind generated dust occurs.
- Stockpiles of soil stored longer than six weeks will be vegetated or covered with sheeting, shade cloth, or tarpaulin to reduce soil loss from wind or storm water runoff.
- Stockpiles will be located as far away from receptors as possible and will be covered with sheeting, shade cloth, or tarpaulin.
- Wind breaks will be erected around key construction activities and, if possible, in the vicinity of potentially dusty works e.g area of demolition to minimize impacts to the neighboring businesses and individuals residing on adjacent farms.

- Good housekeeping practices will be implemented by the sub-contracted construction company particularly with regards to storage materials including rubble from demolished buildings.
- Construction vehicles will be regularly maintained to minimize exhaust emissions.
- Ensure SEP fabrication as to meet the operation mitigation measures for abatement.
- Vehicles will be switched off when not in use, unless impractical for health and
  safety reasons (e.g., maintenance of air conditioning).

Operational Phase

The following mitigation measures can be applied during the operational phase (these are in line with EHS sector specific Guidelines, 2014):

- Ensure the recovery of solvents is optimized by distilling the oil from the extractor.
- Back-vent to the solvent tanks during bulk storage tank filling and ensure the underground hexane tanks are connected to the plant via a low vacuum system.
- Ensure the exhaust air is vented through the condensers and then through the solvent absorber to minimize VOC emissions.
- Inspect and test the hexane leak prevention systems.
- Ensure the condensate is treated through the use of a wastewater reboiler and solvent trap to reduce solvent emissions.
- Ensure mineral oil is used to scrub emissions before discharged.
- Optimize the reduction of solvent emissions by treating the condensate.
- Install cyclones rather than filters on selected vents to remove odours.
- Install and maintain diesel exhaust scrubbers on the generators.
- Maintain a register on the hourly usage of the generators.
- Develop and implement an inspection checklist for daily and monthly inspections to ensure the abatement measures are working optimally and that the system is cleaned and maintained and operating optimally.

- Develop and implement a maintenance program (to include the generators).

The measures listed would be implemented to mitigate the Project's air quality impacts.

9.3.1.4. Residual Impact Significance

With the implementation of the mitigation measures listed, the residual impact significance during construction is anticipated to be Minor.

Impact	Project Phase	Impact Significance (Pre-mitigation)	Residual Impact Significance (Post-mitigation)
Air Quality	Construction	Moderate	Minor
	Operational	Moderate	Minor

9.3.2. Noise

An increase in noise levels is anticipated from both the construction and operational phases of the Project. The baseline measurements taken on site ranged from 40-72dB with there being no significant noise sources at the south end of the site however moving to the north (as well as outside the property) the noise levels increase as a result of the main road as well as the general activity at the two properties either side of the site (movement of people and vehicles, light machinery for small scale dairy processing). This DAOI includes the access road and associated infrastructure on the farmlands i.e. 5-6 scattered dwellings that farmers and farmworkers are occupying as well as the commercial infrastructure i.e. dairy processing and milking infrastructure on both adjacent properties.

Noise from construction activities will include that produced by diesel mobile construction and earth moving equipment, drilling, and foundation work. During construction there will be LGV which will be bringing fabrication materials in containers to site. There will be a 30t crane and forklift working at site. There will be a large excavator and dumper trucks working on the civil components of construction. Traffic associated with the transportation of construction materials, other equipment and materials, and construction workers will also result in increased noise levels.

During operational activities noise will be generated from different machineries like generators, solvent extraction operational units, movement of vehicles. Factory workers will be exposed to increased level of noises.

9.3.2.1. Impact Assessment: Construction

During the construction phase of 14 months, the main potential impacts on the acoustic environment are related to the noise emissions from construction machinery and construction vehicles being utilized for the activities listed below.

- Site preparation: This includes noise-producing activities such as minor earthworks and the demolition of existing buildings. These activities would require heavy construction vehicles and equipment (e.g., excavators, dozers, dump trucks) for the first 4 - 6 months of construction.
- Civil works and installation: This includes noise-producing activities such as drilling trenches for service connections and the construction of buildings identified in Section 2.2.
- Road traffic offsite: The movement of vehicles for transportation of materials and personnel on local roads and/or new access roads close to communities would also generate noise emissions.

Noise impacts from construction activities will continue for the 14-month construction period and would therefore be short term in nature. The activities generating noise would be limited to the Project Area except the use of vehicles on the existing main road (which already has a high baseline level of noise). Noise emissions associated with construction would be variable in nature and depend on the particular activities being undertaken at the time, as well as the number and type of equipment in operation on any given day. All construction work and traffic movements would take place during the day from 07.00 to 18.00. As a result, there should be no activities with the potential to cause disturbance during the night hours when the baseline noise levels naturally decrease. In addition, noise emissions would peak during site preparation and fabrication of the SEP which are scheduled for the initial months and the final period of construction.

The magnitude of the impact is considered Small, as it would be short term, and the sensitivity of the receptors are considered to be High as there are individual residences on the adjacent farmlands as well as commercial premises (dairy processing plants) which will be operational during the same hours as construction. As a result, the impact significance is assessed to be Moderate within 150 m of the Project Site (DAoI).

Table 9-7: Impact Assessment – Noise Emissions in Construction Phase

Impact	**Noise Emissions**			
	Negative	Positive		
Impact Nature	*The potential impact of increased noise levels are negative.*			
Impact Type	**Direct**	Indirect		
	The impacts would be a direct result of construction activities.			
Impact Duration	Temporary	**Short Term**	Long Term	Permanent
	The impacts would be short term, occurring only during construction.			
Impact Extent	**Limited**	Local	Regional	Transboundary
	The impacts would be largely confined to within 150 m of the Project Site.			
Frequency	Remote	Rare	**Occasional**	Often	Constant
	The impacts would be occasional i.e. only during the day and during certain construction activities			
Impact Magnitude	Positive	Negligible	**Small**	Medium	Large
	Based on the above limited extent and duration, the impact magnitude is considered to be Small.			
Resource/Receptor Vulnerability	Low	Medium	**High**	
	The sensitivity of the receptors (limited numbers of individual farm residences and dairy processing plants) is considered to be High due to their proximity (within 150m) to the construction activities and that the sites will be occupied during the same work hours as the construction noise will be generated.			
	Negligible	Minor	**Moderate**	Major
Impact Significance	*Based on the small impact magnitude and the High sensitivity of the receptors, the impact significance is assessed to be Moderate within 150 m of the Project Site.*			

9.3.2.2. Impact Assessment: Operational

During the long-term operational phase, the main potential impacts on the ambient noise levels are related to the noise emissions from the SEP, which will operate during daylight hours, as well as the generator (when in use):

- SEP: The equipment and activities that form part of the initial seed preparation process i.e. the rollers, agitated screens and grinders will generate additional noise as well as the continuous use of steam and conveyors. The SEP will be housed indoors and will therefore have the building structure and palisade walls to buffer the noise. The selected SEP design generates a maximum of 85dB at the plant site but is anticipated to be reduced at the boundary fence owing to the inbuilt mitigation measures;
- Generators: As mentioned above, the two 1500 kVA generators to be installed are for the purpose of a backup power supply and are therefore not anticipated to be utilised frequently.[14] However when they are operated, they will generate an increase in noise levels.
- Road and pedestrian traffic off and onsite: This is considered to not be significant during the operational phase as the majority of the labourers will arrive by the company bus and alternative public transport will be utilized from other labour sending areas. Based on the noise measurements, the noise levels from the passing traffic on the main road is anticipated to be higher than the noise levels resulting from traffic relating to the site. The ambient noise levels on site will be increased by the presence of workers on site compared to the current situation whereby the property is vacant.

The magnitude of the impact is considered to be medium, as it would be long term with a certain likelihood of taking place. The current noise baseline (away from the main road) is low (40-55dB) as the area is rural despite having commercial activities nearby. The sensitivity of the receptors are considered to be High as there are 5-6 individual residences on the adjacent farmlands as well as commercial premises (dairy processing plants) which will be operational during the same hours as the SEP operational hours. As a result, the impact significance is assessed to be High within 150 m of the Project Site (DAoI).

[14] The stability of the power supply, and therefore the anticipated usage of the generators, is unknown.

Table 9-8: Impact Assessment – Noise Emissions in Operational Phase

Impact	**Noise Emissions**			
	Negative	Positive		
Impact Nature	*The potential impact of increased noise levels are negative.*			
Impact Type	**Direct**	Indirect		
	The impacts would be a direct result of activities during the operational phase.			
Impact Duration	Temporary	Short Term	**Long Term**	Permanent
	The impacts would be long term, occurring throughout the proposed 20 year operational phase.			
Impact Extent	**Limited**	Local	Regional	Transboundary
	The impacts would be largely confined to within 150 m of the Project Site.			
Frequency	Remote	Rare	Occasional	**Often**	Constant
	The impacts would be experienced often during the day depending on the level of activity and if the generators were in use.				
Impact Magnitude	Positive	Negligible	Small	**Medium**	Large
	Based on the above frequency and certain likelihood of noise, the impact magnitude is considered to be Medium.				
Resource/Receptor Vulnerability	Low	Medium	**High**		
	The sensitivity of the receptors (5-6 individual farm residences and dairy processing plants) is considered to be High. The receptors are within close proximity (within 150m) to the noise generating activities and the baseline noise levels for the air are low therefore an experience will certainly be experienced.				
	Negligible	Minor	Moderate	**Major**	
Impact Significance	*Based on the small impact magnitude and the High sensitivity of the receptors, the impact significance is assessed to be potentially High within 150 m of the Project Site.*				

9.3.2.3. Mitigation measures

The measures listed below will be implemented to mitigate the Project's noise impacts.

- Engineering measures to be considered during designs to reduce the impacts of Noise in addition to inbuilt design controls.
- Machines and equipment will be maintained in a good working condition and inspected regularly according to an inspection list and maintenance schedule.
- Operational hours of the machinery will be kept to daylight hours.

- The generators will only be utilized as a back-up power supply and a record of daily or weekly usage will be maintained.
- The generators will be housed in an acoustic container designed to achieve between 65-75dBA at 1m.
- The seed preparation steps will be undertaken indoors to buffer the noise from the rollers and grinders.
- Vehicle movements within and around the site will be minimized as much as possible.
- An external grievance mechanism (i.e. complaints procedure) will be implemented to enable the neighboring properties to report nuisance noise levels.

9.3.2.4. Residual Impact Significance

With the implementation of the mitigation measures listed above, the residual impact significance is anticipated to be Medium.

Impact	Project Phase	Impact Significance (Pre-mitigation)	Residual Impact Significance (Post-mitigation)
Noise Emissions	Construction	Moderate	Minor
Noise Emissions	Operation	Major	Moderate

9.3.3. Ground Water

A borehole is present on the site (Figure 2) drilled by the previous owners to provide water for their construction and operational activities. The current borehole is permitted with the relevant authorities for abstraction however the volume is still to be confirmed as well as information on the available water reserve or recharge of the borehole. Due to the presence of coliforms in the borehole water, the water would not be used as potable water without treatment.

Rural areas in Ethiopia are highly dependent on groundwater to support their livelihoods. Groundwater supply plays a leading role in terms of servicing the community's domestic and agriculture needs. Baseline studies identified the presence of two additional boreholes within the AoI (Figure 2) belonging to the neighboring properties. The usage of these boreholes are unknown.

9.3.3.1. Impact Assessment: Construction

During the 14-month construction period, planned building activities that would require water include concrete mixing, cleaning and sanitary facilities for workers. The water requirements for the construction phase has not been determined however it can be assumed that it will be less than the amount proposed during the operational phase.

The potential impact would be that of decreasing the water quantity or water available for other users. This would be as a result of the drawdown effect or by lowering the water table by abstracting and therefore impacting local boreholes. The potential for contamination or spills impacting the groundwater quality are addressed in Unplanned Events.

The magnitude of the impact is assessed to be medium as, despite the short duration and the minimal volume anticipated to meet the water requirements during construction, the likelihood has not been quantitively assessed. The receptors are considered to be highly sensitive due to the proximity of the boreholes and due to the reliance on the area on groundwater.

Table 9-9: Impact Assessment – Groundwater in Construction Phase

Impact	**Increased water demand**			
	Negative	Positive		
Impact Nature	The potential impacts (lowering of the water table leading to water shortages for other users) are negative.			
Impact Type	**Direct**	Indirect		
	The impacts would be a direct result of Project abstraction of water for construction uses.			
Impact Duration	Temporary	**Short Term**	Long Term	Permanent
	The impact is short term as the construction period is 14 months			
Impact Extent	Limited	**Local**	Regional	Transboundary
	The impacts would be restricted to the Project Area, potentially impacting the neighboring boreholes.			
Frequency	Remote	Rare	**Occasional**	Often	Constant
	The impacts would be Occasional depending on construction activities and number of people on site at any given time.				
Impact Magnitude	Positive	Negligible	Small	**Medium**	Large
	Based on the above, the impact magnitude is considered to be Medium				
Resource/Receptor Vulnerability	Low	Medium	**High**		
	The sensitivity of the resource is considered to be high due to the importance of groundwater to neighboring communities.				
	Negligible	Minor	Moderate	**Major**	
Impact Significance	Based on the Medium impact magnitude and the High sensitivity of the receptors, the impact significance is assessed to be Major.				

9.3.3.1. Impact Assessment: Operational

The daily water requirements provided for the operational phase of the SEP are in excess of 300m^3 and take into account the cooling towers as well as the process requirements but not the additional supply required for sanitary and potable use. A process water balance has not been completed for the Project and therefore the percentage of water available for reuse or for discharge has not been calculated. Currently the borehole is the only proposed supply of water for the site.

Due to the high volumes of daily water abstraction proposed and the uncertainty of the capacity or recharge capabilities of the borehole (i.e. the uncertainty of the water supply), the impact magnitude is considered to be Large. The receptors are considered to be highly vulnerable due to the dependency on borehole water and the proximity of the surrounding

boreholes to the site and therefore the potential impact is considered to be of Major significance without mitigations.

Table 9-10: Impact Assessment – Groundwater in Operational Phase

Impact					
	Increased water demand				
	Negative	Positive			
Impact Nature	The potential impacts (lowering of the water table leading to water shortages for other users) are negative.				
Impact Type	**Direct**	Indirect			
	The impacts would be a direct result of Project abstraction of water for operational uses.				
Impact Duration	Temporary	Short Term	**Long Term**	Permanent	
	The impact will be for the life of the Project.				
Impact Extent	Limited	**Local**	Regional	Transboundary	
	The impacts would be experience within the DAoI, potentially impacting the neighboring boreholes.				
Frequency	Remote	Rare	Occasional	Often	**Constant**
	The impacts would be Constant due to the large daily requirements for abstraction.				
Impact Magnitude	Positive	Negligible	Small	Medium	**Large**
	Based on the above, the impact magnitude is considered to be Large				
Resource/Receptor Vulnerability	Low	Medium	**High**		
	The sensitivity of the resource is considered to be high due to the importance of groundwater to neighboring communities and the close proximity of the neighboring boreholes.				
	Negligible	Minor	Moderate	**Major**	
Impact Significance	Based on the High impact magnitude and the High sensitivity of the receptors, the impact significance is assessed to be Major.				

9.3.3.2. Mitigation Measures

Construction Phase

The following mitigation measures are recommended during construction activities:

- The permit for water abstraction is currently being applied for to confirm volumes for abstraction as well as validity;
- A monitoring program will be required to be implemented (prior to construction) for water quality and water level monitoring of boreholes.

- Alternative water supply to be sourced for potable water as well as storage i.e tanks and bowsers if deemed necessary.
- Any water discharged to be within legal parameters.

Operational Phase

The following mitigation measures are recommended during operational activities:

- An assessment is required to establish recharge and pumping capabilities (l/min) of the borehole as well as the impact on surrounding boreholes.
- Monitoring to continue for the life of the operation.
- A water balance is to be compiled to assess water requirements, water reticulation and water discharge.
- Recycling and reuse of water to be incorporated into the water balance.
- Alternative water supply to be sourced for potable water as well as storage i.e tanks and bowsers.
- Recording of water usage (from the borehole).

9.3.3.3. Residual Impact Significance

With the implementation of the mitigation measures listed above, the residual impact significance is anticipated to be Moderate.

Impact	Project Phase	Impact Significance (Pre-mitigation)	Residual Impact Significance (Post-mitigation)
Groundwater	Construction	Major	Moderate
Groundwater	Operation	Major	Moderate

9.3.4. Community Health

This assessment identifies impacts on the health of communities and households within the AoI. This impact focuses on the potential increase in the spread of communicable diseases throughout the workforce and their communities where they reside. Communicable diseases are caused by viral, bacterial, parasitic, and fungal pathogens that are airborne or that are transmitted through an infected person, animal, or environmental source. Communicable diseases include illnesses such as tuberculosis, measles, and

bacterial infections such as colds and gastric infections (e.g. diarrhea). These diseases include HIV, and other sexually transmitted diseases, as well as COVID-19. An increase in cases can be associated with an influx of workers or job seekers into a new area (i.e. migrant workers) or with an increase in the concentration of workers on site.. The site can be serviced by health care facilities either in nearby Sendafa or in Aleltu, both of which are expected to be the main labour sending areas.

9.3.4.1. Assessment of Impacts: Construction

The presence of a contracted construction workforce (likely predominantly male), coupled with a potential number of migrant or on-local workers (depending on the selected contractor) to the Project AoI for the construction phase or for opportunities, may increase the risk of transmission of communicable diseases.

The impact magnitude is considered to be Small, as the workforce is not anticipated to be large (although the contractor is still to be appointed) for the 14-month construction period and local labour already residing in the area will be prioritized. The sensitivity of receptors (workers and local community members) is assessed to be High as rural communities are vulnerable to an increase in communicable diseases particularly in a period where the COVID-19 disease is still considered a risk. As a result, the impact significance is assessed to be Moderate.

Table 9-11: Impact Assessment – Community Health in Construction Phase

Impact		**Community Health**		
	Negative	Positive		
Impact Nature	An increase in communicable diseases would be negative.			
Impact Type	**Direct**	Indirect		
	The impact would be a direct result of Project activities (the presence of construction equipment and activities in combination with the workforce, in particular community-worker interaction).			
Impact	Temporary	**Short Term**	Long Term	Permanent

Duration	The impacts would be short term, occurring only during construction.				
Impact Extent	Limited	**Local**	Regional	Transboundary	
	The impact would likely only affect the AoI i.e. the surrounding villages where labour will be sourced or where migrant labour will be seeking accommodation unless residing in a construction camp.				
Frequency	Remote	Rare	**Occasional**	Often	Constant
	The impact would be present throughout construction, but is only predicted to occur occasionally during more intensive/shorter periods of peak construction when the largest number of people are on site and when a construction camp is needed.				
Impact Magnitude	Positive	Negligible	**Small**	Medium	Large
	Based on the above, the impact magnitude is considered to be small, as the workforce is not expected to be large and would be composed mostly of locals.				
Resource/Receptor Vulnerability	Low	Medium	**High**		
	The sensitivity of receptors (workers and local community members) are considered to be high as rural communities are vulnerable to an increase in communicable diseases.				
	Negligible	Minor	**Moderate**	Major	
Impact Significance	Based on the small impact magnitude and the high sensitivity, the impact significance is assessed to be moderate.				

9.3.4.1. Assessment of Impacts: Operation

The anticipated work force for the operational phase is 100 temporary, 86 permanent local staff and 18 expatriates. The local staff will be sourced from the nearby communities and will be transported on a daily basis via company buses or will use public transport on the accessible main road. The expatriates will be housed in one of the smaller towns within 5km from the site and will also travel daily. There is not expected to be any accommodation or staff permanently residing on the property. It is anticipated that former employees of the applicant (Etete Dairy) who previously worked on site when there was an operational dairy processing facility, will be employed as part of the workforce. As the Project will be staffed locally, it is not anticipated to be an influx of people, an increased strain on local medical facilities or a significant increase in worker-community interactions as the will be residing in their current dwellings however the risk of a highly contagious disease (e.g COVID-19) spreading through a workforce on site increases.

The magnitude of the potential impact of an increase in communicable diseases in the local communities is considered to be small. This is as a result of the potential frequency being constant however the likelihood being unlikely that the Project will increase the current baseline of disease cases. Particularly as the workforce will consist pre-dominantly of locals currently residing in the receptor villages. The receptors are considered to be inherently sensitive to impacts in health as they are rural communities with limited education and awareness and often poorer quality hygiene conditions.

Table 9-12: Impact Assessment – Community Health in Operational Phase

Impact	**Increase in Communicable Diseases**			
	Negative	Positive		
Impact Nature	An increase in communicable diseases would be negative.			
Impact Type	**Direct**	Indirect		
	The impact would be a direct result of Project activities.			
Impact Duration	Temporary	**Short Term**	Long Term	Permanent
	The impacts would be short term, occurring only during construction.			
Impact Extent	Limited	**Local**	Regional	Transboundary
	The impact would likely only affect the AoI i.e. the surrounding villages where labour will be sourced or where expatriates will be housed.			
Frequency	Remote	Rare	Occasional	Often	**Constant**
	The impact would be present throughout the life of the operation.				
Impact Magnitude	Positive	Negligible	**Small**	Medium	Large
	Based on the above, the impact magnitude is considered to be small, as the workforce is not expected to result in significant changes to the current social environment and there is not expected to be a large influx of migrant workers.				
Resource/Receptor Vulnerability	Low	Medium	**High**		
	The sensitivity of receptors (workers and local community members) are considered to be high as rural communities are inherently vulnerable to an increase in communicable diseases due to access to resources or education on risks.				
	Negligible	Minor	**Moderate**	Major	
Impact Significance	Based on the small impact magnitude and the low sensitivity, the impact significance is assessed to be minor.				

9.3.4.2. Mitigation Measures

Construction and Operational Phase

The measures listed below will be implemented during both the Construction and Operational phases to mitigate the Project's impact on community health. The following will also be incorporated into the contractor management where necessary:

- Workforce training will be provided on communicable diseases, disease prevention, and treatment to raise awareness.
- Project areas, project site toilet, and eating facilities, will be kept clean and free from accumulation of wastes as well as supplied with clean potable water. This includes ensuring appropriate food preparation and monitoring measures are in place.
- Workers will be provided with appropriate gender considerate sanitary facilities that are properly designed to prevent contamination.
- A waste handling system will be developed that is sufficient to avoid the creation of new vector breeding grounds.
- Environmental controls will be established that reduce the presence of standing water on site during the site preparation to avoid the creation of new breeding grounds.
- There will be a first aid area on site to avoid adding pressure on local health facilities. Arrangements will be made with nearby hospitals and clinics, however, so sick Project workers who cannot be fully treated at the Project first aid area can be referred for treatment.
- A worker Code of Conduct will be established that includes guidelines on worker-worker interactions, worker-community interactions, and development of personal relationships with members of local communities.
- An STI/HIV Management Plan will be developed and implemented.
- Any misconduct allegations will be monitored through stakeholder engagement and grievance management.

9.3.4.3. Residual Impact Significance

With the implementation of the mitigation measures listed above, the residual impact significance is anticipated to be Minor.

Impact	Project Phase	Significance (Pre-mitigation)	Residual Impact significance
Community Health	Construction	Moderate	Minor
Community Health	Operations	Moderate	Minor

9.3.5. Community Safety and Security

This assessment identifies potential impacts of the Project on community safety and security. Impacts would primarily occur in the construction phase and result in increased safety risks for communities in the Project Area.

According to the engagements, the community and dwellings in the AoI are generally considered to be very safe, and there is no known past conflicts or significant safety or security issues. Security incidents in the Project Area are infrequent and limited to minor theft, including theft of livestock.

9.3.5.1. Assessment of Impacts: Construction

Project safety hazards may arise from the presence of construction equipment and activities, infrastructure and traffic. The presence of such equipment and infrastructure may result in risk of theft due to high levels of poverty in communities in the Project Area. Incidents may also arise as a result of worker community interactions with security guards or other staff and perceptions that other people are benefitting from the Project more than others.

A potential decrease in community safety and security would be short term, occurring during construction. The impact would be restricted to the Project Area, impacting neighboring villages. The impact would be present throughout construction, but incidents are likely to occur occasionally. The impact magnitude is therefore considered to be Small. The sensitivity of receptors (local community members) is considered to be Medium for safety

and security impacts. As a result, the impact significance is assessed to be Minor.

Assessment of Community Safety and Security Impacts during Construction.

Table 9-13: Impact Assessment – Community Safety in Construction Phase

Impact	**Decreased Community Safety and Security**				
	Negative	Positive			
Impact Nature	Decreased community safety and security would be negative.				
Impact Type	**Direct**	Indirect			
	The impact would be a direct result of Project activities (presence of equipment and infrastructure, traffic).				
Impact Duration	Temporary	**Short Term**	Long Term	Permanent	
	The impact would be short term, occurring during construction.				
Impact Extent	Limited	**Local**	Regional	Transboundary	
	The impact would likely only affect adjacent residents.				
Frequency	Remote	Rare	**Occasional**	Often	Constant
	The impact would be present throughout construction, but incidents are likely to occur occasionally.				
Impact Magnitude	Positive	Negligible	**Small**	Medium	Large
	Based on the above, the impact magnitude is considered to be small.				
Resource/Receptor Vulnerability	Low	**Medium**	High		
	The sensitivity of receptors (local community members) is considered to be medium for safety and security impacts.				
	Negligible	**Minor**	Moderate	Major	
Impact Significance	Based on the small impact magnitude and the medium sensitivity of receptors, the impact significance is assessed to be minor.				

9.3.5.2. Assessment of Impacts: Operation

The impact would be the same as during construction and has not been reassessed.

9.3.5.3. Mitigation Measures

Construction and Operational Phase

The measures listed below will be implemented during both the Construction and Operational phases to mitigate the Project's impact on community safety and security. The following will also be incorporated into the contractor management where necessary:

- Security measures will be implemented to minimize safety risks and the possibility of theft in construction and storage areas.
- The property is currently fenced and have security personnel present at all times to avoid trespassers entering the site.
- Clear and visible signage will be established in hazardous areas to warn the community of any risks and hazards and engagement/communication efforts will be employed to ensure community members are aware of safety risks, as needed.

9.3.5.4. Residual Impact Significance

With the implementation of the mitigation measures listed above, the residual impact significance is anticipated to be Negligible during the life of the Project.

Pre and Post Mitigation Community Safety and Security Impacts.

Impact	Project Phase	Significance (Pre-enhancement	Residual Impact significance
Decrease in Community Safety and Security	Construction	Minor	Negligible
Decrease in Community Safety and Security	Operation	Minor	Negligible

9.3.6. Labour and Working Conditions

This assessment identifies potential impacts on workers from the working conditions they will experience. Impacts would occur in the construction and the operation phase.

The main human rights issues prevalent in the country include some labour-related issues, such as:

- Rights in relation to establishing unions and collective bargaining in the informal sector;
- Forced labour, including children subjected to domestic servitude and other forms of forced labour including rural/agricultural labour;
- Child labour where children often receive low or no wages with as many as 38% of children aged 5-17 engaged in some form of child labour;
- Discrimination in employment and occupation with respect to gender and disability; and
- Acceptable conditions of work, including minimum wages, working hours, and occupational health and safety.

9.3.6.1. Assessment of Impacts: Construction

Poor occupational health and safety, as a result of poor working conditions, can cause injuries and even fatalities if not managed, as well affect relationships with the workforce. During construction, activities may include intensive manual labour, the operation of heavy equipment and trucks, working at heights, working in confined spaces, construction traffic, use of electrical devices, handling of hazardous materials, and other hazardous activities. Due to the nature of the activities being undertaken during construction, worker health and safety is a key risk, with the potential for accidents that may result in injuries and fatalities as well as work stoppages. Activities during operation and regular maintenance activities could include hazardous activities such as the operation of heavy equipment and trucks, working on electrical devices including, working at heights, maintenance of machinery, and handling of hazardous materials. During these activities, workers may be at risk for accidents and injury.

Potential poor labour and working conditions would be short term, and constant during construction. The impact would be restricted to the Project Site, impacting workers. The impact is possible, given the generally poor status of labour and working conditions in the country and given that hazardous activities are involved in the construction of the Project. The impact magnitude is considered to be Small, as the workforce is anticipated to be small. The sensitivity of receptors (workers) is considered to be High,

given low levels of education, lack of formal wage-earning opportunities, and high levels of poverty, which could make potential workers prone to accepting poor labour and working conditions. As a result, the impact significance is assessed to be Moderate.

Table 9-14: Impact Assessment –Working Conditions in the Construction Phase

Impact	**Poor Labour and Working Conditions**			
	Negative	Positive		
Impact Nature	Decreased community safety and security would be negative.			
Impact Type	**Direct**	Indirect		
	Poor labour and working conditions are negative. Discrimination and non-compliant labour and working conditions have the ability to create delays to the Project, cause reputational risk, and create poor worker relations. In addition, poor occupational health and safety can cause injury or fatalities.			
Impact Duration	Temporary	**Short Term**	Long Term	Permanent
	The impact would be long term, occurring throughout construction.			
Impact Extent	**Limited**	Local	Regional	Transboundary
	The impact would be restricted to the Project Site.			
Frequency	Remote	Rare	**Occasional**	Often	Constant
	The impact would be present throughout construction, but incidents are likely to occur occasionally or rarely.				
Impact Magnitude	Positive	Negligible	**Small**	Medium	Large
	Based on the above, the impact magnitude is considered to be small.				
Resource/Receptor Vulnerability	Low	Medium	**High**		
	The sensitivity of receptors (workers) is considered to be high, given low levels of education, lack of formal wage-earning opportunities, and high levels of poverty, which could make potential workers prone to accepting poor labour and working conditions.				
	Negligible	Minor	**Moderate**	Major	
Impact Significance	Based on the small impact magnitude and the high sensitivity of receptors, the impact significance is assessed to be moderate.				

9.3.6.2. Assessment of Impacts: Operation

Similar assessment as per the construction phase except during the operations phase workers will be direct employees of Etete, and almost entirely skilled and semi-skilled labourers. The impact magnitude is considered Small as the workforce is limited and will be trained with company procedures. Receptor vulnerability is considered Medium given that these workers are skilled and directly employed by Etete they are expected to have reasonable levels of education and/ or technical training and employment opportunity, and thus less prone to accept poor labour and working conditions. As a result, the impact significance is assessed to be Minor.

Table 9-15: Impact Assessment –Working Conditions in the Operational Phase

Impact	**Poor Labour and Working Conditions**				
	Negative	Positive			
Impact Nature	Poor labour and working conditions are considered negative. Hazardous/risky operations activities can pose health and safety risks that can cause injury or fatalities.				
Impact Type	**Direct**	Indirect			
	The impact would be a direct result of Project operation activities.				
Impact Duration	Temporary	**Short Term**	Long Term	Permanent	
	The impact would be short term.				
Impact Extent	**Limited**	Local	Regional	Transboundary	
	The impact would be restricted to the Project Site.				
Frequency	Remote	Rare	Occasional	**Often**	Constant
	The impact would be often, or perhaps even occasional, given the need for workers and site maintenance is greatly reduced during operations.				
Impact Magnitude	Positive	Negligible	**Small**	Medium	Large
	The impact magnitude is considered to be small.				
Resource/Receptor Vulnerability	Low	**Medium**	High		
	The sensitivity of receptors (workers) is considered to be medium, given that operations phase workers will be direct employees of Etete and generally will be skilled workers with some education and/or technical training and are likely to have the ability to pursue other economic opportunities if desired.				

Impact			**Poor Labour and Working Conditions**	
	Negligible	Minor	**Moderate**	Major
Impact Significance	Based on the small impact magnitude and the medium sensitivity of receptors, the impact significance is assessed to be moderate.			

9.3.6.3. Mitigation Measures

Construction

The measures listed below will be implemented to mitigate the Project's labour and working conditions impacts during construction.

- Contractors will be supported in adhering to labour and working conditions in compliance with Ethiopian labour laws and in alignment with IFC PS 2 through awareness training and information provision, as necessary.
- The contractor and supplier selection process will ensure that performance with regards to worker management, worker rights, and health and safety as outlined in Ethiopian law and international standards will be managed and reported.
- Regular checks of contractors will be undertaken to ensure compliance with applicable labour laws.
- A health and safety program will be developed that includes risk assessments, work permit systems, and a H&S management system, in line with industry best practice, including worker performance safety tracking (safety observations) to assure worker safety. Workers will receive induction and regular training regarding this system.
- A hiring mechanism will be established to ensure no employee or job applicant is discriminated against on the basis of gender, marital status, nationality, ethnicity, age, religion, or sexual orientation.
- Workers (including contractors and subcontractors) will have contracts that clearly state the terms and conditions of their employment and their legal rights. Contracts will be verbally explained to workers in their native language when necessary for them to understand their rights.

Operation

The measures listed below will be implemented to mitigate the Project's labour and working conditions impacts during operation.

- The Human Resources Policy, Labour and Employment Plan, and Worker Grievance Mechanism developed for construction will continue to be implemented.
- Contractors will be supported in adhering to labour and working conditions in compliance with Ethiopian labour laws and in alignment with IFC PS 2 through awareness raising and information provision, as necessary.
- The Worker Grievance Mechanism developed for construction will continue to be implemented.

9.3.6.4. Residual Impact Significance

With the implementation of the mitigation measures listed above, the residual impact significance is anticipated to be Minor during construction and negligible during operation.

Pre and Post Mitigation Labour and Working Conditions Impacts.

Impact	Project Phase	Significance (Pre-enhancement)	Residual Impact significance
Poor Labour and Working Conditions	Construction	Moderate	Minor
Poor Labour and Working Conditions	Operation	Minor	Negligible

9.3.7. Unplanned Events: Impacts from Spill Events and Improper Disposal of Waste

Spills and improper disposal of waste, both solid and effluent, have the potential to affect the receiving environment and could lead to the contamination of soil and groundwater. This could result in impacts on the land use and adjacent residents or water users in any stage during the life of the Project.

During construction and operations, there is the potential for spills of fuels and oils during fueling, maintenance of machinery and vehicles and storage in tanks. There is also a risk that there may be a leak or spill from the ETP resulting in wastewater (untested)

overflowing the settling ponds and discharging straight into the neighboring field and impacting the soil quality and potentially the groundwater quality.

9.3.7.1. Assessment of Impacts: Project Life

The impact of spill events and improper disposal of waste to soils would be long term due to remediation time expected for contaminated soils. The impact would be limited to the Project Site. Spills are most likely to occur during refilling and transportation of substances or through a leak in fuel tanks or ETP containment tanks. Improper disposal of waste can occur throughout the construction and operational phase if appropriate disposal measures are not put in place and managed. The impact magnitude is therefore considered to be Small. The sensitivity of the resource is considered to be High due to the importance of soil quality in the agricultural economy of the Project Area and the reliance on groundwater i.e. boreholes . As a result, the impact significance is assessed to be Moderate.

Table 9-16: Impact Assessment – Unplanned Events (Spills)

Impact		**Accidental Spills to Soils**			
	Negative	Positive			
Impact Nature	Accidental spills and improper disposal of waste to soils would be negative.				
Impact Type	**Direct**	Indirect			
	The impact would be a direct result of Project activities (spillage during maintenance of machinery, improper storage of hazardous materials, spillage during transfers of fuel, improper disposal of waste).				
Impact Duration	Temporary	Short Term	**Long Term**	Permanent	
	The impact would be long term due to remediation time expected for contaminated soils and groundwater.				
Impact Extent	**Limited**	Local	Regional	Transboundary	
	The impact would be limited to the Project Site.				
Frequency	Remote	**Rare**	Occasional	Often	Constant
	It would be rare for a significant spill to take place that will impact the environment.				
Likelihood	**Unlikely**	Possible	Certain		

Impact					
	Accidental Spills to Soils				
	The impact likelihood is unlikely.				
Impact Magnitude	Positive	Negligible	**Small**	Medium	Large
	Based on the above, the impact magnitude is considered to be small.				
Resource/Receptor Vulnerability	Low	**Medium**		High	
	The sensitivity of the resource is considered to be medium due to the importance of soil quality and groundwater in the agricultural economy of the Project Area.				
	Negligible	Minor	**Moderate**	Major	
Impact Significance	**Based on the small impact magnitude and the medium sensitivity of the resource, the impact significance is assessed to be minor.**				

9.3.7.2. Mitigation Measures

The measures listed below will be implemented to prevent the Project's unanticipated soil and groundwater impacts from spill events and improper disposal of waste.

- A Hazardous Spill Response Plan will be developed and spill clean-up and response capability adequate for addressing spills for all phases of the Project will be maintained. Spills will be immediately contained and cleaned up. Contaminated areas will be remediated.
- A Waste Management Plan will be developed and implemented.
- Refueling of equipment and vehicles will be carried out in a designated area on hard standing ground to prevent seepage of any spills into the ground. Collection systems will be installed in these areas to manage any spills. Fuels will be collected and either reused or removed by a local contractor. Drip trays will be used when refueling and servicing vehicles or equipment where there is no hard standing surface.
- Hazardous material storage (fuel) will be on hard standing and impermeable surface and the storage facility will be bunded. The storage and handling of hazardous materials and fuels will be restricted to bunded areas of sufficient capacity to contain a release.
- A Maintenance Plan to be drafted to include the ETP.

9.3.7.3. Residual Impact Significance

With the implementation of the preventive measures listed above, the residual impact is reduced to acceptable levels.

Impact	Project Phase	Significance (Pre-mitigation)	Residual Impact significance
Spills impacting groundwater and soils	Project Life	Moderate	Minor

9.3.8. Unplanned Events: Traffic Accidents

Increased traffic and presence of heavy vehicles on local roads as a result of Project development increases the risk of road traffic accidents involving members of the community. Additional trucks would be needed during construction to transport construction equipment (materials, sand, soil, waste) and anticipated increase in traffic volumes will be determined with the construction contractor. Operational traffic movements would be lower but would include the frequent delivery of raw materials and dispatch of products.

The following construction vehicles/machinery are anticipated to be on site during the construction period:

- Dump trucks;
- Tractor;
- Water trucks;
- Pick-up trucks; and
- Excavator.

9.3.8.1. Assessment of Impacts: Project Life

The impact of vehicle accidents would be long term, occurring during construction and operations. The impacts would be regional, as vehicle accidents could occur along construction and delivery routes. The increased traffic volumes as result of the Project would increase the risk of potential vehicle accidents. The impact magnitude is therefore considered to be Medium and the sensitivity of receptors is considered to be Medium as the

local residents are used to residing alongside a main road. As a result, the impact significance is assessed to be Moderate.

Table 9-17: Impact Assessment – Unplanned Events (Traffic accidents)

Impact	**Vehicle Accidents**			
	Negative	Positive		
Impact Nature	Vehicle accidents would be negative.			
Impact Type	**Direct**	Indirect		
	The impact would be a direct result of Project activities (increased traffic).			
Impact Duration	Temporary	Short Term	**Long Term**	Permanent
	The impact is long term, occurring during construction and operations.			
Impact Extent	Limited	Local	**Regional**	Transboundary
	The impact could occur along construction and delivery routes.			
Frequency	Remote	Rare	Occasional	Often	Constant
	Not Applicable.			
Likelihood	Unlikely	**Possible**	Certain	
	While unplanned, the likelihood is considered to be possible.			
Impact Magnitude	Positive	Negligible	**Small**	Medium	Large
	Based on the above, the impact magnitude is considered to be medium.			
Resource/Receptor Vulnerability	Low	Medium	**High**	
	The sensitivity of the receptors (communities along the road network) is considered to be high.			
	Negligible	Minor	**Moderate**	Major
Impact Significance	Based on the medium small magnitude and the high sensitivity of the receptors, the impact significance is assessed to be Moderate.			

9.3.8.2. Mitigation Measures

With the implementation of the preventive measures listed above, the residual impact is reduced to acceptable levels.

- A Traffic Management Plan, driving codes of conduct, and enhanced driver safety awareness will be implemented.
- Traffic routes will be planned to limit road use by the Project during high traffic periods (including pedestrian traffic) and in sensitive areas such as near schools in order to reduce interaction with public road use.
- Local road conditions will be assessed and road maintenance discussed during Project construction to minimize traffic risks associated with roads deteriorated from Project activities.
- Awareness campaigns will be implemented to address traffic and road safety in communities along the transportation corridor.

- Driver training will be provided to promote safe and responsible driving behavior. The training will include contractors and subcontractors.

9.3.8.3. Residual Impact Significance

With the implementation of the preventive measures listed above, the residual impact is reduced to acceptable levels.

Impact	Project Phase	Significance (Pre-mitigation)	Residual Impact significance
Spills impacting groundwater and soils	Project Life	Moderate	Minor

Part 3: Controls and Monitoring

10. Environment and Social Management Plan (ESMP)

The ESMP is integrated into the overall project planning process covering all phases of project cycles. The prediction of impacts helps in the preparing of a robust management plan which is to be executed in order minimize the adverse impacts on the environment. Mitigation measures that are generally consistent with Good International Industry Practice have been built into the Project design and are expected to be implemented throughout construction and operations. For each area of impact, mitigation measures have been prepared taking into account the hierarchy of mitigation measures has been followed:

- "Designing-out" impacts by adopting an initial design that avoids impacts;
- Assessing alternatives and, where feasible, adopting those with fewer or less intense
- Modifying the initial design to reduce any remaining impacts; and
- Applying mitigation measures to manage remaining impacts.

Where possible, broad cost estimates have been included to provide an indication of resources required to successfully implement the control measures. These can be used for planning purposes or will assist in the prioritising the implementation and can be further refined by the Project team. Additional management plans may be required at a later stage to detail out specific aspects however, due to the scale of the Project, this has been avoided where possible in order to prevent a cumbersome management system which may not be implementable by the applicant. The mitigation measures that form part of the Construction Phase should be incorporated into the contractual conditions of the contractor as part of the contract management.

The roles and responsibilities for the implementation and enforcement of environmental and social controls (including health and safety) will need to be designated to individuals with the capacity and capabilities to undertake the work. The internal reports stipulated below should be submitted to management for record.

Table 10-1:Environmental Management Plan Etete Solvent Extraction Plant During Construction Phase

Potential Impact Managed/Enhanced	Objective	Proposed Mitigation Measures	Schedule for implementation	Institutional Responsibilities	Cost Estimates (Birr)
Positive Impacts					
Employment Employment opportunities and the need for the supply of goods and services has the potential to create jobs for local communities and improve income levels.	To include local communities in the opportunities to enhance income levels and skills/ employability and improve quality of life.	• A skills survey to be done within the Aleltu Wordea to assist during life of the Project as well as to be provided to the construction company; • Register of previous Etete employees from the area to be included in skill survey; • ToR for a construction company will include the following requirements: ○ A recruitment strategy indicating the commitment to hire from the nearby communities (a % can be included); and ○ An indication of the local spend[15] i.e. how much of the construction value will be spent within the area of influence through labour or sourcing of goods/services. • During the procurement process proof of residence (affidavit) should be supplied by the workers as well as the construction company. • Training opportunities, apprenticeships, opportunities[16] to be drafted as part of the recruitment strategy to males and females in local communities. • A Gender Development Plan to be developed by Etete and to be provided to the selected construction company. • An internal inspection process to be set up to monitor the construction company performance (against supplied E&S conditions i.e. mitigation measures for construction).	Before and during construction	Etete	50,000.00

[15] The potential spend should consider opportunities such as sourcing food (lunches) or washing of overalls/PPE within the local community, hiring of vehicles and drivers etc.

Potential Impact Managed/Enhanced	Objective	Proposed Mitigation Measures	Schedule for implementation	Institutional Responsibilities	Cost Estimates (Birr)
Adverse Impacts					
Air Quality Dust generated during construction from both construction traffic movements and earthworks/construction works.	Minimize deterioration of ambient air quality from construction activities. Adherence to Guideline values.	• Removal of vegetation and soil cover will be restricted to that which is necessary for the Project. • Land clearance will be sequential and clearly demarcated beforehand to ensure the smallest possible area for working will be exposed where ground and earthworks are undertaken. • Stripping of topsoil will not be conducted earlier than required (i.e., the Project will maintain vegetation cover for as long as possible) in order to prevent the erosion (wind and water) of organic matter, clay, and silt. • A speed limit of 30 kph on unpaved surfaces will be enforced and national speed limits on public roads will not to be exceeded. • Transported materials will be covered with a tarpaulin to prevent fugitive dust. • Exposed ground and earthworks will be covered as much as possible with sheeting, shade cloth, or tarpaulin where wind generated dust occurs. • Stockpiles stored longer than six weeks will be vegetated or covered with sheeting, shade cloth, or tarpaulin to reduce soil loss from wind or storm water runoff.	Regularly throughout construction phase	Contractor	50,000.00

Potential Impact Managed/Enhanced	Objective	Proposed Mitigation Measures	Schedule for implementation	Institutional Responsibilities	Cost Estimates (Birr)
		• Stockpiles will be in designated areas located as far away from receptors, including the road, as possible (taking into account the wind direction) and will be covered with sheeting, shade cloth, or tarpaulin. • Wind breaks will be erected around key construction activities and, if possible, in the vicinity of potentially dusty works to minimize impacts to the nearby temporary residential accommodation and permanent residential receptors. • Construction vehicles will be regularly maintained with evidence of such maintenance, to minimize exhaust emissions. • Vehicles will be switched off when not in use, unless impractical for health and safety reasons (e.g., maintenance of air conditioning).			
Noise Noise from construction activities will include that produced by diesel mobile construction and earth moving equipment, drilling, and foundation work.	Maintain ambient noise levels within required limits of 65 dBA during the day time (07:00-22:00)	• Machines and equipment will be maintained in good working condition and inspected regularly as per a schedule. • Equipment and vehicles will be selected in accordance with best available techniques for noise reduction. • Construction activities to take place during the day. • Implement a grievance system.	Continuous	Contractor	20,000.00

Potential Impact Managed/Enhanced	Objective	Proposed Mitigation Measures	Schedule for implementation	Institutional Responsibilities	Cost Estimates (Birr)
Soils Loss of topsoil; Soil compaction and rutting; and Soil erosion from wind and water runoff (and sediment release to land and water)	Avoid soil erosion and the loss of soil quality and quantity	• Removal of vegetation and soil cover will be restricted to that which is necessary for the Project. • Land clearance will be sequential and the smallest possible area for working will be exposed where ground and earthworks are undertaken. • Stripping of topsoil will not be conducted earlier than required (i.e., the Project will maintain vegetation cover for as long as possible) in order to prevent the erosion (wind and water) of organic matter, clay, and silt.	Continuous	Contractor	10,000.00
Ground Water Construction activities that would require water include concrete mixing and sanitary facilities for workers, may impact quality/quantity of groundwater.	Prevent the contamination of surface and ground water and avoid loss of water availability to other water users.	• Permit for water abstraction is required (source existing permit). • Adhere to limits of abstraction as per permit by using an installed meter on borehole pump. • Alternative drinking water supply to be sourced if borehole remains unsuitable according to drinking water standards. • Annual testing of boreholes for parameters stipulated for drinking water parameters. • Monthly monitoring of water levels of adjacent boreholes. Investigation required if boreholes level decrease continuously. To be checked as part of a monthly internal inspection, and the contactor is responsible to the water levels to study and take action means of obtaining water for the construction	Regularly throughout construction phase	Contractor	20,000.00
Community Health Communicable diseases are caused by viral, bacterial, parasitic, and fungal pathogens that are airborne or that are transmitted through an	Avoid increasing the prevalence of vector borne and communicable diseases	• Workforce training program to be compiled to include materials on communicable diseases (incl. HIV and COVID-19), disease prevention, and treatment to raise awareness. • Project areas, especially a construction site toilet, and eating facilities, will be kept clean and free from accumulation of wastes as well as supplied with clean	Regularly throughout construction phase	Contractor and Etete	50,000.00

Potential Impact Managed/Enhanced	Objective	Proposed Mitigation Measures	Schedule for implementation	Institutional Responsibilities	Cost Estimates (Birr)
infected person, animal, or environmental source.		potable water. This includes ensuring appropriate food preparation and monitoring measures are in place. • Workers will be provided with appropriate gender considerate sanitary facilities that are properly designed to prevent contamination. • A waste management system will be developed that is sufficient to avoid the creation of new vector breeding grounds. • Environmental controls will be established that reduce the presence of standing water (settling ponds) on site during the site preparation to avoid the creation of new breeding grounds. • There will be a qualified first aider on site. • A worker Code of Conduct will be established that includes guidelines on worker-worker interactions, worker-community interactions, and development of personal relationships with members of local communities. To be shared with contractors. • An STI/HIV Management Plan will be developed and implemented. • Work camp control protocols, while respecting freedom of movement, will be put in place to limit the interactions between non-local workers and the local community. • General stakeholder engagement and grievance management will be introduced.			
Community Safety and Security Project safety hazards may arise from the presence of construction equipment	Avoid risks associated with safety and security	• Security personnel will be trained in the use of force as well as in the grievance mechanism. • Security measures will be implemented to minimize safety risks and the possibility of theft in construction and storage areas.	Regularly throughout construction phase	Contractor and Etet	50,000.00

Potential Impact Managed/Enhanced	Objective	Proposed Mitigation Measures	Schedule for implementation	Institutional Responsibilities	Cost Estimates (Birr)
and activities, infrastructure, and traffic.		• Clear and visible signage will be established in construction areas to warn the community of any risks and hazards and other engagement/communication efforts will be employed to ensure community members are aware of safety risks, as needed. • A community engagement programme will be established to provide information about safety hazards and raise awareness of how these are being managed. This may include posters or meetings.			
Labour and Working Conditions The workforce may be subject to poor labour and working conditions	Prevent poor labour and Working conditions	• Contractors will be supported in adhering to labour and working conditions in compliance with Ethiopian labour laws and in alignment with IFC PS 2 through awareness training and information provision, as necessary. • The contractor and supplier selection process will ensure that performance with regards to worker management, worker rights, and health and safety as outlined in Ethiopian law and international standards will be managed and reported. • Regular checks of contractors will be undertaken to ensure compliance with applicable labour laws. • A health and safety program will be developed that includes risk assessments, work permit systems, and a H&S management system, in line with industry best practice, including worker performance safety tracking (safety observations) to assure worker safety. Workers will receive induction and regular training regarding this system. • A hiring mechanism will be established to ensure no employee or job applicant is discriminated against on the basis of gender, marital status, nationality, ethnicity, age, religion, or sexual orientation.	Regularly throughout construction phase	Contractor and Etete	30,000.00

Potential Impact Managed/Enhanced	Objective	Proposed Mitigation Measures	Schedule for implementation	Institutional Responsibilities	Cost Estimates (Birr)
		• Workers (including contractors and subcontractors) will have contracts that clearly state the terms and conditions of their employment and their legal rights. Contracts will be verbally explained to workers in their native language when necessary for them to understand their rights.			

Unplanned Events
Spills leading to soil and groundwater contamination and
Traffic accidents
	Minimize the impact of unplanned spills and reduce the risk of traffic
	accidents impacting community health and safety
		• A Hazardous Spill Response Plan will be developed and spill clean-up and response capability adequate for addressing spills for all phases of the Project will be maintained. Spills will be immediately contained and cleaned up.
		• A contamination assessment will be undertaken by a third party and areas will be remediated.
		• Water quality in the ETP will be monitored. Upon a spill the discharge point must be sealed and the water to be sampled and treated before discharged.
		• A basic Waste Management Plan will be developed for the site and implemented which will include:
		  ○ Waste streams (including hazardous and contaminated waste);
		  ○ Treatment and Disposal methods accepted by the company;
		  ○ Approved contractors with the correct registrations for handling, transporting and disposal of waste (including contaminated).
		• Refueling of equipment and vehicles will be carried out in a designated area on hard standing ground to prevent seepage of any spills into the ground.
		• Collection systems will be installed in these areas to manage any spills. Fuels will be collected and either reused or removed by a local contractor. Drip trays will
			On the occurrence of an unwanted event (throughout life cycle)	Contractor and Etete	80,000.00

Potential Impact Managed/Enhanced	Objective	Proposed Mitigation Measures	Schedule for implementation	Institutional Responsibilities	Cost Estimates (Birr)
		be used when refueling and servicing vehicles or equipment where there is no hard standing surface. • Hazardous material storage will be on hard standing and impermeable surface and the storage facility will be bunded. The storage and handling of hazardous materials and fuels will be restricted to bunded areas of sufficient capacity to contain a release. • Driving codes of conduct, and enhanced driver safety awareness will be implemented. • Traffic routes will be planned to limit road use by the Project during high traffic periods (including pedestrian traffic) and in sensitive areas such as near schools in order to reduce interaction with public road use. • The main road conditions and layout (entry and exit) will be assessed, and road maintenance discussed during Project construction with the local relevant authorities to minimize traffic risks associated. • Collaboration with relevant local and regional governments will take place to ensure the roads used by Project vehicles are well maintained, and that potential problems or hazards are communicated to the relevant authority in a timely manner. • Engagements with local communities and authorities will take place to inform them about plans and procedures. • Awareness campaigns will be implemented to address traffic and road safety in communities along the transportation corridor. • Driver training will be provided to promote safe and responsible driving behavior. The training will include contractors and subcontractors.			

Potential Impact Managed/Enhanced	Objective	Proposed Mitigation Measures	Schedule for implementation	Institutional Responsibilities	Cost Estimates (Birr)
					360,000.00

Table 10-2: Environmental Management Plan Etete Solvent extraction Plant Operation phase

Potential Impact Managed/Enhanced	Objective	Proposed Mitigation Measures	Schedule for implementation	Institutional Responsibilities	Cost Estimates (Birr)
Positive Impacts					
Extraction of Crude Edible Oil	The increased local crude oil supply to the national market	• Have contracts with farmers and suppliers for an on-going supply of raw materials to continuously supply oil seed etc. to the factory. • The contracts are to include quality requirements and time standards.	Continuously	Etete	200,000.00
Adverse Impacts					
Air Quality Dust and emissions generated from the process as well as the generator	Minimize deterioration of ambient air quality from construction activities. Adherence to Guideline values.	• Reduce fugitive dust from the raw materials through suitable storage measures. • Collect residue from preparation phase for by-product. • Recover solvent vapors. • Make use of condenser and reboiler to reduce emissions as part of SEP design. • Install cyclones or filters as part of the SEP design. • Make use of energy efficient equipment as part of SEP design. • Implement a maintenance plan to avoid dust build-up. • Implement a grievance system including the placement of a contact number on the gate or with security to report dust issues. • Upon receiving a grievance, air quality monitoring must be undertaken within the same working conditions that the compliant was received.	Continuously	Etete	500,000.00

Potential Impact Managed/Enhanced	Objective	Proposed Mitigation Measures	Schedule for implementation	Institutional Responsibilities	Cost Estimates (Birr)
Noise Noise emissions generated from the process as well as the generator	Maintain ambient noise levels within required limits of 65 dBA during the day time (07:00-22:00)	• Selection SEP design with integrated noise reduction measures. • Monitor and record usage of generator (time of day and duration). • Ensure generator is maintained as according to a maintenance schedule and housed in a noise-reducing insulator. • Implement a grievance system including the placement of a contact number on the gate or with security to report noise issues. • Upon receiving a grievance, a noise assessment must be undertaken within the same working conditions that the compliant was received. • Machines and equipment will be maintained in good working condition and inspected regularly. • Equipment and vehicles will be selected in accordance with best available techniques for noise reduction. • Vehicle movements within and around the site will be minimized as much as possible. • Implement a grievance system.	Continuously	Etete	100,000.00
Ground Water Some of the water to be utilized by the Project during operation is anticipated to be derived from groundwater, which may have an effect on other waters users	Prevent the contamination of surface and ground water and avoid loss of water availability to other water users	• Undertake a pump test to confirm borehole recharge rates; • Acquire permit for abstraction; • Record daily volumes of abstraction from the pump and do not exceed permitted allowance; • Develop a water balance; and if there is no sufficient water within the identified boreholes, in collaboration with the nearby administration identify solutions • Develop a water recycling or reticulation plan to decrease water required volume from borehole;	Continuously	Etete	100,000.00

Potential Impact Managed/Enhanced	Objective	Proposed Mitigation Measures	Schedule for implementation	Institutional Responsibilities	Cost Estimates (Birr)
		• Monitor water quality of borehole (quarterly) and compare against national drinking water standards; • Acquire alternative water supply for potable water if parameters are exceeded; • Undertake a soil contamination study if borehole water quality parameters is continuously exceeded; • Monthly monitoring and recording of borehole levels (inside and two neighbouring boreholes); • If borehole levels are impacted on neighbouring properties, develop a model to determine drawdown of groundwater; • Measure water quality of settlement ponds against national standards for wastewater before discharging; • Develop a weekly inspection checklist and report for general housekeeping and including inspection for leaks (including around tanks and ETP); • Implement a grievance mechanism (internal and external).			
Community Safety and Security Safety hazards may arise from the production of crude oil	Prevent Safety hazards in the production of curd oil	• The property will be securely fenced and have security personnel present at all times to avoid trespassers entering the site. • Clear and visible signage will be established in hazardous areas to warn the community of any risks and hazards and engagement/communication efforts will be employed to ensure community members are aware of safety risks, as needed. • Security will be trained in the grievance mechanism procedures for the site as well as use of force.	Continuously	Etete	100,000.00

Potential Impact Managed/Enhanced	Objective	Proposed Mitigation Measures	Schedule for implementation	Institutional Responsibilities	Cost Estimates (Birr)
Labour and Working Conditions Poor labour and working conditions	Prevent poor labour and working conditions	• The Human Resources Policy, Labour and Employment Plan, and Grievance Mechanism developed for construction will continue to be implemented. • Contractors will be supported in adhering to labour and working conditions in compliance with Ethiopian labour laws and in alignment with IFC PS 2 through awareness raising and information provision, as necessary. These will be assessed and monitored. • The Grievance Mechanism developed for construction will continue to be implemented. • Complete and implement HAZOP measures to identify OHS Hazards. • Classify areas according to hazard classes.	Continuously	Etete	100,000.00
Unplanned Events Spills leading to soil and groundwater contamination	Minimize the impact of unplanned spills	• A Hazardous Spill Response Plan will be developed and spill clean-up and response capability adequate for addressing spills for all phases of the Project will be maintained. Spills will be immediately contained and cleaned up. Contaminated areas will be remediated. • A Waste Management Plan will be developed and implemented. • Significant events that may cause pollution need to be reported to the authorities and communicated to stakeholders (neighboring residents to be prioritized). • Refueling of equipment and vehicles will be carried out in a designated area on hard standing ground to prevent seepage of any spills into the ground. Collection systems will be installed in these areas to manage any spills. Fuels will be collected and either reused or removed by a local contractor. Drip trays will be used when refuelling and servicing vehicles or equipment where there is no hard standing surface.	Continuously	Etete	100,000.00

Potential Impact Managed/Enhanced	Objective	Proposed Mitigation Measures	Schedule for implementation	Institutional Responsibilities	Cost Estimates (Birr)
		• Hazardous material storage will be on hard standing and impermeable surface and the storage facility will be bunded. The storage and handling of hazardous materials and fuels will be restricted to bunded areas of sufficient capacity to contain a release.			
TOTAL					600,000.00

10.1. ESMP Monitoring Program

The purpose of environmental monitoring is to evaluate the effectiveness of implementation of Environmental Management Plan (EMP) by periodically monitoring the important environmental parameters within the impact area, so that any adverse effects are detected and timely action can be taken.

Environmental monitoring is carried throughout project operation to detect changes in the key environmental quality parameters, which can be attributed to the project.

For each of the environmental components, the monitoring plan specifies the parameters to be monitored; location of monitoring sites; frequency and duration of monitoring. The monitoring plan also specifies the applicable standards, implementation and supervising responsibilities. Various physical, biological and social components identified as of particular significance in affecting the environment at critical locations in various stages of the project have been suggested as Performance Indicators (PIs) listed below shall be the focus for monitoring.

- Air quality with respect to CO, NOx, PM_{10}, $PM_{2.5}$ and VOCs;
- Water quality with respect to COD, BOD and *E.Coli* and total coliforms, Sulphates, Ammonium, Zinc, Iron, Lead, Cadmium (oil and grease if required).
- Noise levels around sensitive locations.

As per the ESIA guidelines of Oromia Region, environmental monitoring shall be required during construction and operational phases and records kept. The schedule for monitoring ambient air quality, ambient noise quality, ground water quality, and wastewater quality both during the construction and operation phases of the project is given in Table 10-3**.**

It is recommended that the monitoring program be reviewed and revised following the first year of operations to take into account the findings from the additional surveys and information recommended.

Table 10-3: Monitoring Plan

Potential Impact Managed/Enhanced	Objective	Monitoring Indicator	Monitoring Frequency	Institutional Responsibility	Estimated Budget (birr)
Positive Impacts					
Employment Employment opportunities and the need for the supply of goods and services has the potential to create jobs for local communities and improve income levels.	Provide opportunities to local communities to enhance income levels and skills/employability, and improve quality of life	• Number of males and females employed from Project affected communities; • Number of males and females employed from local District; • Number/type/location of suppliers of goods and services.	Quarterly internal report	Contractor and Etete	50,000.00
Adverse Impacts					
Air Quality Increase in dust and emissions	Minimize deterioration of ambient air quality from Project activities	• Weekly inspection logs (housekeeping, dust); • Information to be compiled into a Quarterly Audit report for management; • Monthly dust monitoring; undertake air quality measurements(CH_4,CO_2,H_2S etc.) in a planned time period for 24 and hourly basis. • Emissions monitoring to be undertaken by a third party specialist in first year of operations (while generator in use). Following which the specialist recommendation on frequency can be used.	Weekly visual Inspection and Quarterly internal report by Etete	Contractor and Etete	50,000.00
Noise Noise from Project activities will include that produced by equipment, SEP and generators	Measure the sound levels. Provide PPE if above the limit	• Equipment/vehicle inspection logs or maintenance schedule • Equipment/vehicle manuals	Weekly visual inspection	Contractor and Etete	50,000.00

Potential Impact Managed/Enhanced	Objective	Monitoring Indicator	Monitoring Frequency	Institutional Responsibility	Estimated Budget (birr)
		• Noise monitoring to be undertaken (repeat of baseline sampling) by a third party specialist whilst generators are operational. • Measure noise levels (Decibel) in a planned period of time • Frequency of surveys can be advised by the specialist based on findings. • Information to be compiled into a Quarterly Audit report for management.	Quarterly internal report by Etete		
Soils Loss of topsoil; Soil compaction and rutting; and Soil erosion from wind and water runoff (and sediment release to land and water)	Avoid soil erosion and the consequent loss of soil quality and quantity	• Weekly visual inspection logs	Weekly visual inspection	Contractor and Etete	50,000.00
Ground Water Construction activities that would require water include concrete mixing and sanitary facilities for workers, use of the borehole significantly impacts the water production of boreholes in adjacent communities	Prevent the contamination of surface and groundwater and avoid loss of water availability to other water users	• Weekly visual inspection logs (housekeeping, leaks, discharge point) • Maintenance of borehole pump • Record of daily readings • Monitoring reports of monthly borehole levels	Quarterly internal report	Contractor and Etete	100,000.00
Community Health Communicable diseases are caused by viral, bacterial, parasitic, and fungal pathogens that are airborne or that are transmitted through an infected person, animal, or environmental source.	Avoid increasing the prevalence of vector borne and communicable diseases	• Incident Records • Worker Code of Conduct • Health worker outreach reports and number of people targeted by providers	Quarterly internal report	Contractor and Etete	100,000.00

Potential Impact Managed/Enhanced	Objective	Monitoring Indicator	Monitoring Frequency	Institutional Responsibility	Estimated Budget (birr)
Community Safety and Security Project safety hazards may arise from the presence of equipment and activities, infrastructure, and traffic.	Avoid risks associated with safety and security	• Incident records • Signage in hazardous locations • Community engagement records, including registers, photos, and communication materials	Quarterly internal report	Contractor and Etete	100,000.00
Labour and Working Conditions The workforce may be subject to poor labour and working conditions	Prevent poor labour and working conditions	• Incident records • Health and safety training records • Recruitment statistics • Gender Development Plan	Quarterly internal report	Contractor and Etete	100,000.00
Unplanned Events Spills leading to soil and groundwater contamination	Minimize the impact of unplanned spills and reduce the risk of traffic accidents impacting community health and safety	• Weekly visual inspection logs including of hazardous material and waste containment and clean up kits Incident records • Waste Management Plan • Hazardous Spill Response Plan Driving training records • Audit reports	Quarterly internal report	Contractor and Etete	100,000.00
TOTAL					800,000.00

11. Conclusion

This ESIA Report has been drafted in accordance with Ethiopian EIA Regulations (176/2012) as well as Oromia Regional State Proclamations. It is also compiled to align with international lender standards, specifically the International Finance Corporation Performance Standards on Environmental and Social Sustainability (2012) as Etete is committed to aligning with International Best Practice. A draft Environmental and Social Management Plan, as well as a Monitoring Program, have been included in the ESIA to provide a framework for a basic management system for the site. These management tools include recommendations on actions to be taken to fill the gaps in information as well as control measures to be implemented to avoid and minimize the impacts that the Project activities may have on the surrounding environment. It is recommended that the management plan and monitoring program be updated after the first year of operations taking into account the results from monitoring as well as the useage of the generator and the findings of the groundwater/borehole assessment or the permit.

An internal assessment of the effectiveness of the system, through well-planned procedures, should be included in tender documents for the contractor as well as implemented on site. The roles and responsibilities for the implementation and enforcement of environmental and social controls (including health and safety) will need to be designated to individuals with the capacity and capabilities to undertake the work. The internal reports should be submitted to management for record.

In order to alleviate the possible adverse impacts resulting from implementing the SEP Project, the following measures are recommended to be undertaken:

- The implementation of control measures recommended within this report;
- The HAZOP needs to be completed and commitments from there included in the management plan.
- A grievance mechanism is to be implemented (both internally and externally) as a form of monitoring for social and environmental impacts. Complaints received, of an environmental or social nature, need to be investigated and closed out with learnings incorporated into the management system.

12. Reference Material (additional to those publications cited in report)

- Feasibility study report for 'The establishment of edible oil Refinery plant' (Industrial Project service (IPS), October 2019);
- Constitution EFDRE.
- Oromia Environmental and social impact Assessment Guidelines.
- WHO Air quality guidelines for particulate matter, ozone, nitrogen dioxide and sulfur dioxide Global update 2005.
- IFC guideline for Environmental, Health, And Safety Guidelines Vegetable Oil Production and Processing February 12, 2015.

Annexes

Annex 1:	Property lease
Annex 2:	Meeting Register and Minutes
Annex 3:	Baseline Air Quality Results
Annex 4:	Noise Results
Annex 5:	Soil Analysis Results
Annex 6:	Water Quality of Settling Ponds
Annex 7:	Water Quality of Borehole

Annex 1: Property lease

WBILB Go/Sh/Kaabaa

Biiroo Bulchiinsa fi Itti fayyadama Lafa Baadiyyaa Oromiyaa
Oromia Rural Land Administration and Use Bureau
Waraqaa Ragaa Kiraa/Liizii Lafa Baadiyyaa

WARAQAA RAGAA LIIZII/KIRAA LAFAA

Bulchinsa Mootummaa Naannoo Oromiyaatti Biiroo Lafa fi Eegumsa Naannoo hundeessuu fi Aangoo fi hojii Biiriichaa murteessuuf bahe Labsii Lakk 147/2001 irratti hundaa'uudhaan lafa 3.00 Heek/30,000m² Goodina Sh/Kaabaa aanaa Alaltu Ganda Suura keessatti argamu ji'a 22/05/2000 irra kaasee hanga 21/05/2025 waggaa 25f kiraa/liiziidhaan akka ittifayyadaman **Dhaabbata ETETE Milk processing Sh. Company f** kennameera.

የመሬት ኪራይ/ሊዝ ምስክር ወረቀት

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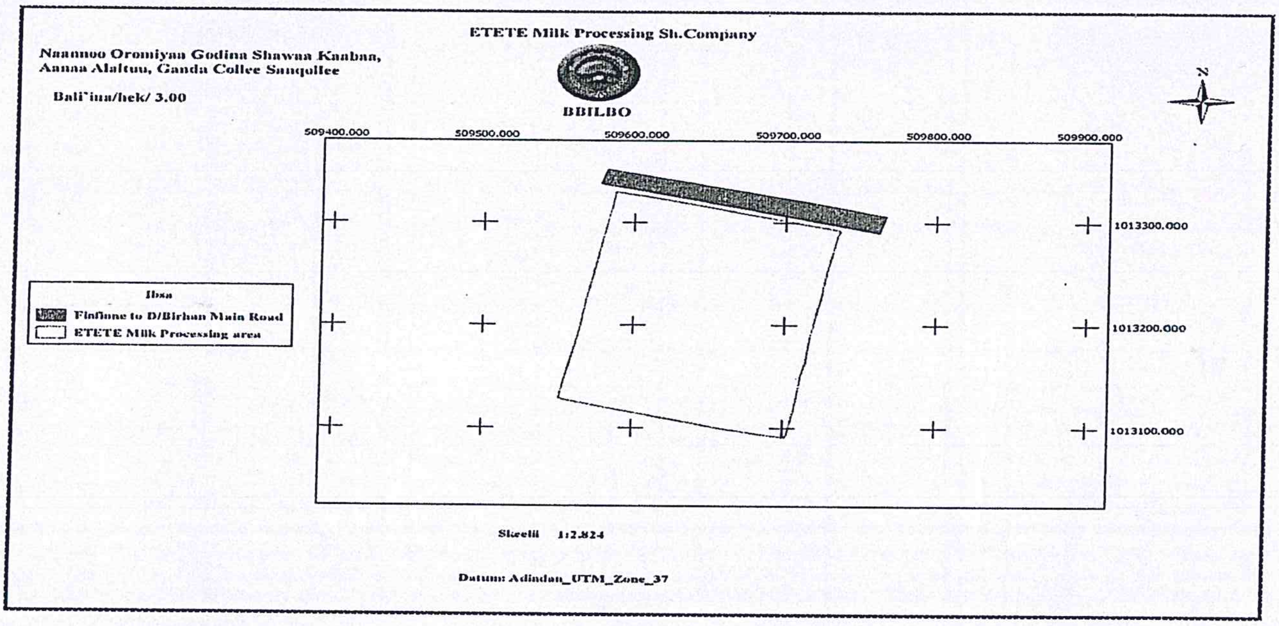
LAND LEASE /RENT/CERTIFICATE

Based on the Proclamation to provide for Establishment and definition of powers and duties of Bureau of Land and Environmental Protection of Oromia National Regional Government No.147/2009 3.00 ha./30,000m² of land located in N/Shewa zone **Aleltu** woreda **Sura** kebele is rented/ leased to **"ETETE Milk processing Sh. Company"** from 22/05/2000 to 21/05/2025 E.C. for 25 years.

Lakk/ቁጥር/Ref.No G-1/WIBLM/1639/85/62
Guyyaa /ቀን/Date 7/07/07



Teessoo//Address			Lakk. Addaa iddichaa የቦታ ቁጥር Unique ID	Sadarkaa Lafaa የቦታ ደረጃ Land standard	Bal'ina Lafaa (Heek/Sq.Meetrii) የቦታ ስፋት /ሄ/ር/ሜ.ካ/ Area of Land (Ha/Sq.Meter)	Tajaajila Lafaa የቦታ አገልግሎት Type of Service
Godina ዞን Zone	Aanaa ወረዳ Woreda	Ganda ቀበሌ Kebele				
Sh/Kaaba a ሰሜን ሸዋ	Alaltu አለልቱ	Collee Sanqollee	______	______	Heek.3.00 /m² 30,000/	Milk Processing

Kan qopheesse/Prepared By
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Gahee Hojii/Position/ሥራ ድርሻ cadastral surve
Mallattoo/Signature/ፊርማ

Kan Mirkanneessee/Approved By/
የፀደቀው
Maqaa/Name/ ስም Tasfaayee Waaqjiraa Roobii
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Gahee Hojii/Position/ሥራ ድርሻ
Mallattoo/Signature/ፊርማ

Itti Aanaa Waajjira Bulchiinsa fi Itti Fayyadama Lafa Baadiyyaa Go/Sh/Kaabaa
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Annex 2: Meeting Register and Minutes

Orabo-ya'ii

Iddoo-Dhabbata Itete

Sa'ati Calzabe: 3:00 Sa'ati Xummura -

Hirmattota, Jirattota Hawasa Nanno Dhabbata Itete Bayina (lakk)=

2, Gorsitota - Nama - 5

3. Mamota dhabbata Itete Bakka bu'an nama Lama

4. Ogessa ATEMBJA - nama 1.

Ajanda Mari:- Ooranno Egumsa Nanno (EIA) ilalchise mari hawasa Jaggessuu.

Akkuma beekamu dhabbanni Itete kana dura omisha Aannani (milk processing) hojjecha ture jira. Ammatti garu omisha Zayita itti dabalun humna isaa ol guddise hojjechuf jophirra jira. Hata'uti hojiiwwan dhabbanni kun hojjetu ilalchisee dhiibba inni nanno fi hawasa irratti jopha chu danda'u ogessota gorsitotaton ibsame jira.

Yaada Hawasni kasan - Dhabbanni kuni dura hawasa nanno kana misoman fayyadaman tasisa Gedhe waada gala garuu kuni hojitti hin hikamne itn - carra Hojii hin uumne, Dhangalan wajha kessa bahus gaberya fonna fi lafa marsa ballessa furejira, Dhugati ummatas bahes sirnan hawasni fayyadama hin tane Gechun kasani jiru. [signature]

[signatures]

- Dhabbanni kun Bishan dhugaatii qofaan hawaasa fayyadama tasiise, Ibsas akka hawaasa fayyadama tasiisu kosanii jiru.

- Bishan dhugaatii adda citee ture sababa hojjetaa dhabbata hojiirra gaggeeffamaniifi ture. Ammatti garuu yeroo gababa keessa sirrate tajaajila nii kenna jedhame jira.

- Dhangala'aan (Balfii dhangala'aan) warsha keessa baha ture kana dura omisha baay'ee ballessa ture ammas rakkoo wal fakkatan akka hin uumamne furmaatni kennamu akka jabu ibsame jira.

- Bishan cufamii deemun sirrii akka hin turre gara fulduratti gufun akkana uumamu akka hin jabne ibsame jira. Dhabbanni kun waan baay'en hawaasa fayyada turus ibsame jira.

Aanaris hojiiwwan dhabbilen dhuunfaa hojjetan kun bu'aa isaan hawaasaf busaan duka bu'ame ilaalun kallattii ka'a deemu jabu.

Dhabbanni kun rakko misoma hawsni nannicha jabu ilaale waan danda'e hundan gargaru jaba. jedhame jira.

- Rakko hojii dhabdumma jiru hiikuf dhabbanni kun dargaggota gandaf dursa kennuu akka jaban ibsame jira.

- Dhabbanni nanno fi hawaasa irratti gahuu danda'uf ofii-eganno fi sirreffanno kennaname hojjetamu jaba jedhame jira.

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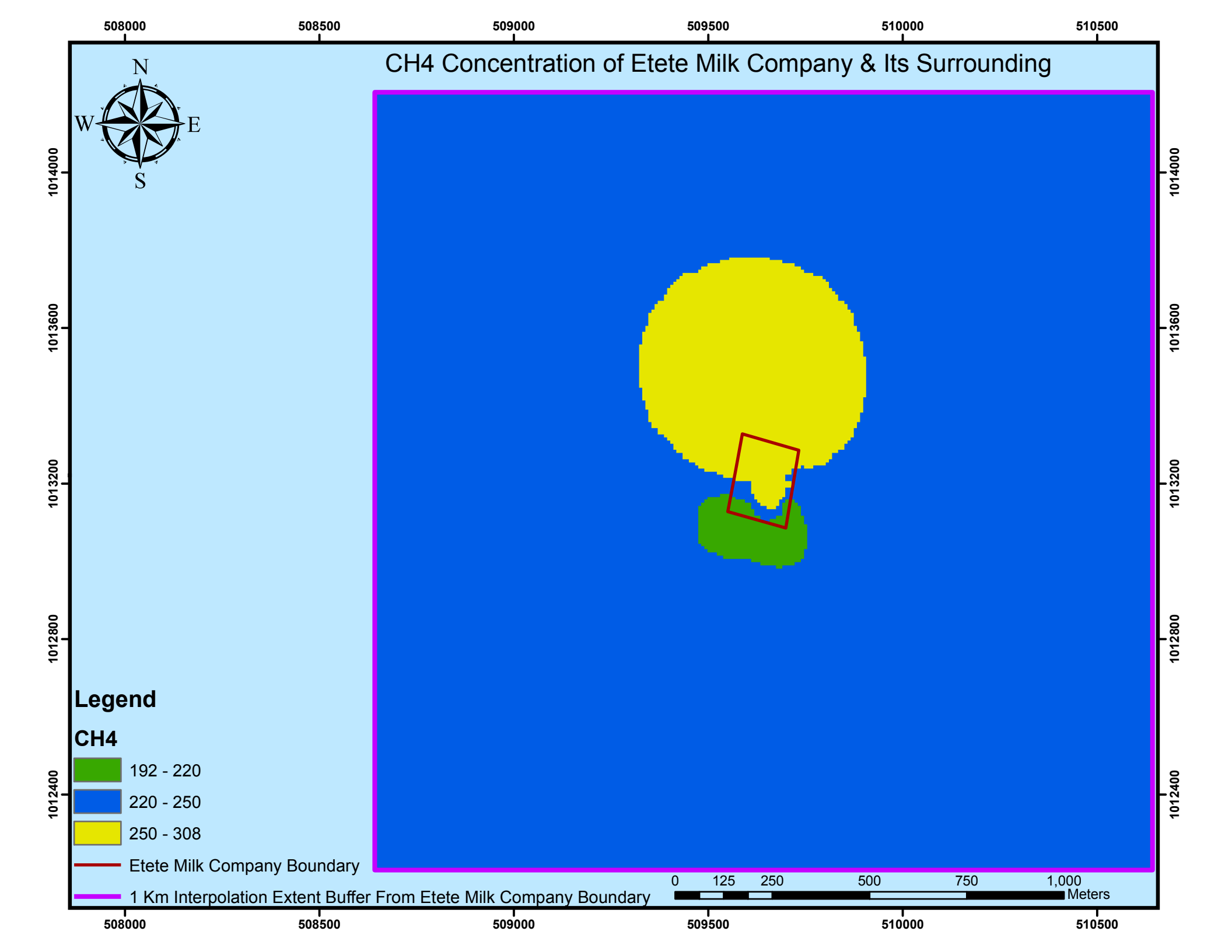
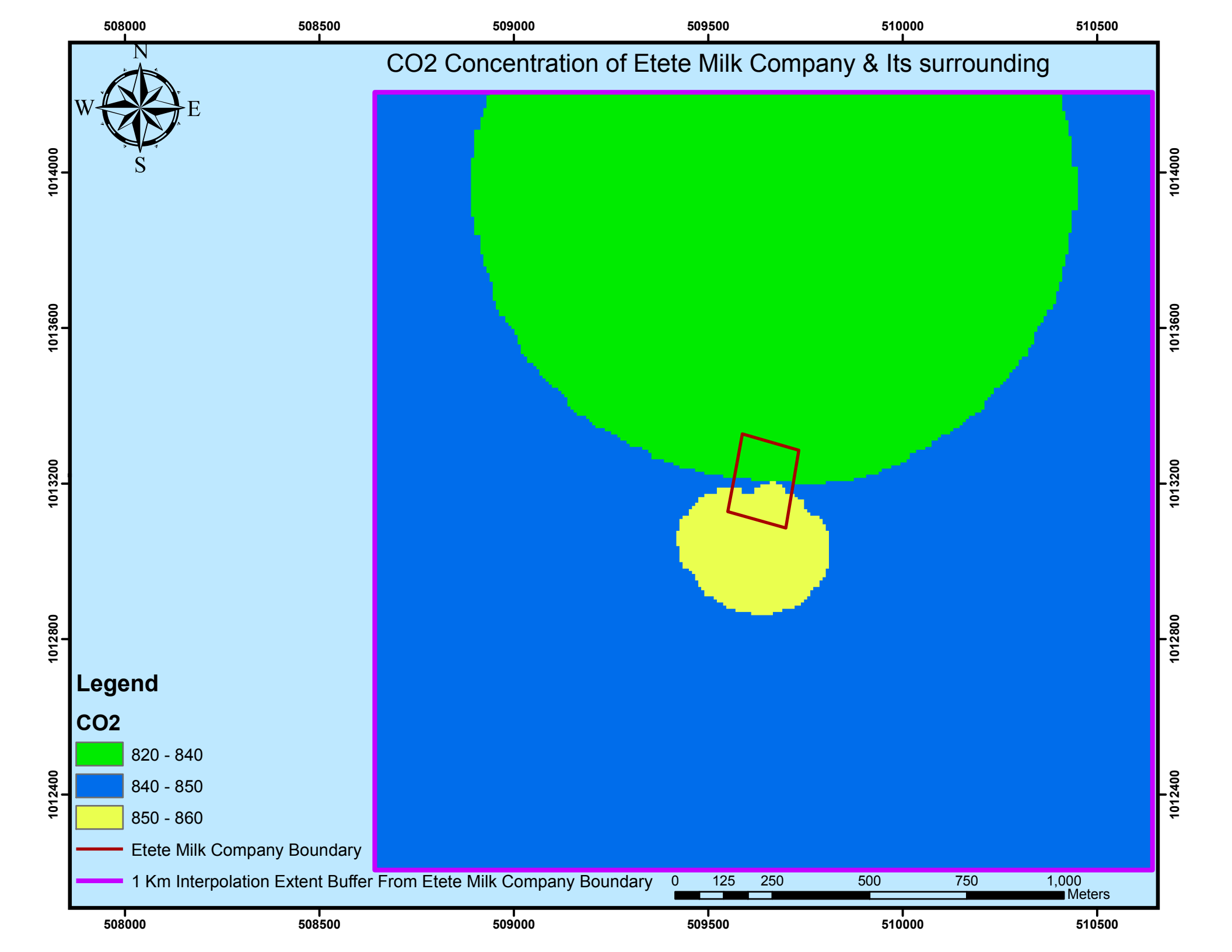
- Dhabbanni kun hawasa walin walitti dhufeenya (Hariiroo) gaarii qabachu qabu.
- Hawasni nanno dhabbata kanaf ilaalcha gaarii qaba.
- Hoggeettota qaqaramaniis kara iftoomina qabuun qocarroon raawwatamu akka qabu ibsame jira.
- Gara fulduratti'is dhabbanni Itete fi hawasni nanno sana jaalala fi hariiroo gaariin akka walin hojjechu dandaan ibsame jira.
- Dhabbanni kan Balfa dhangala'o akkamiin to'achu akka qabuu fi Sadarka midhaa inni geessisu danda'u qorannoon akka adda bahu danda'u ibsame jira.
- Zayitoon Nyata kun asitti omishamuun isaa hawasa nannichaa baasi'ee akka faayyadu fi hawasnis baasi'ee kan itti gammadan ta'u ibsan Ayyaanicha xummurame jira.

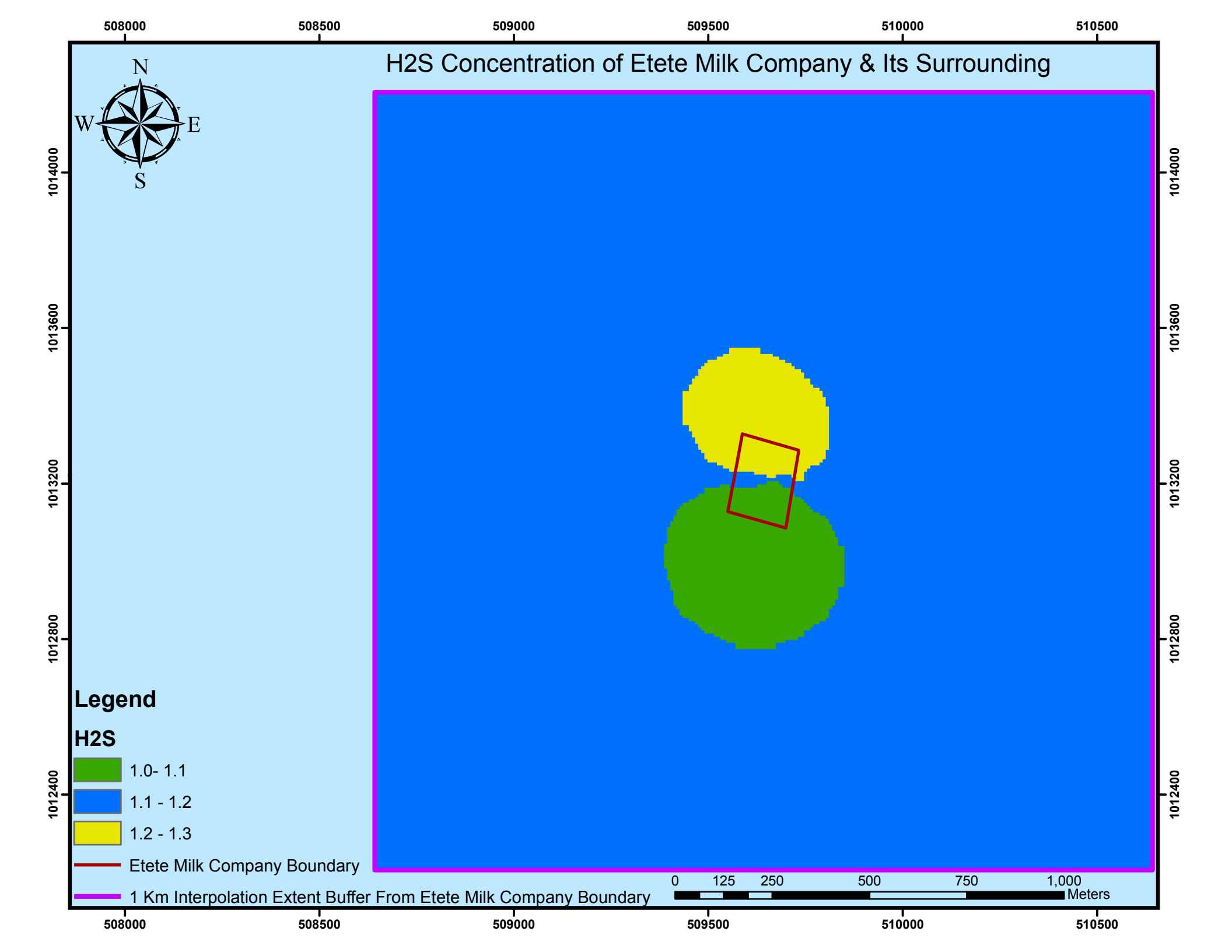
Lak	Maqaa	Tesso/Ganda	Gahee Hojii	Malato
1	Obb. Ishetuu Seefuu	C/Sonqolle	Q/bulaa	
2	Add. Ayyalach Amdee	Colle Sonqolle	Q/bultuu	
3	Obb. Mugusee Tarrafaa	Colle Sonqolle	Q/bulaa	
4	" Birihaanu Alamuu	" "	"	
5	" Kaasuu Kibruu	" "	"	
6	Add. Ayyalach Alamuu	" "	"	
7	Add. Innatunesh Dannaqaa	" "	"	
8	" Tawabech Gabree	" "	"	
9	" Tashomaa Abatee	" "	Hoo'ëfa mootumme	
10	" Warqinaa Mafoo	" "	Q/bulaa	
11	" Dassuu Bat sisaa	" "		
12	" Sisay Birhaanu	" "	"	
13	Daffaru Mollaa	" "	"	
14	Fantahun Ashannafi	" "	"	
15	Lerihun Leleke	" "	"	
16	ፋንታሁን	" "	"	
17	መንግስት አካለው	" "	"	
18	ሽመልስ [illegible]	" "	"	
19	ካሳሁን ቶላ	" "	"	
20	ሊጉ ጌታቸው	" "		
21	Kasahun Sudane A[illegible]		Ogessa Aana	
22	Mengistu Birhanu		consultant	
23	Tsegaaye Boorii			
24	Tarikhu Adugna		Lawyer	

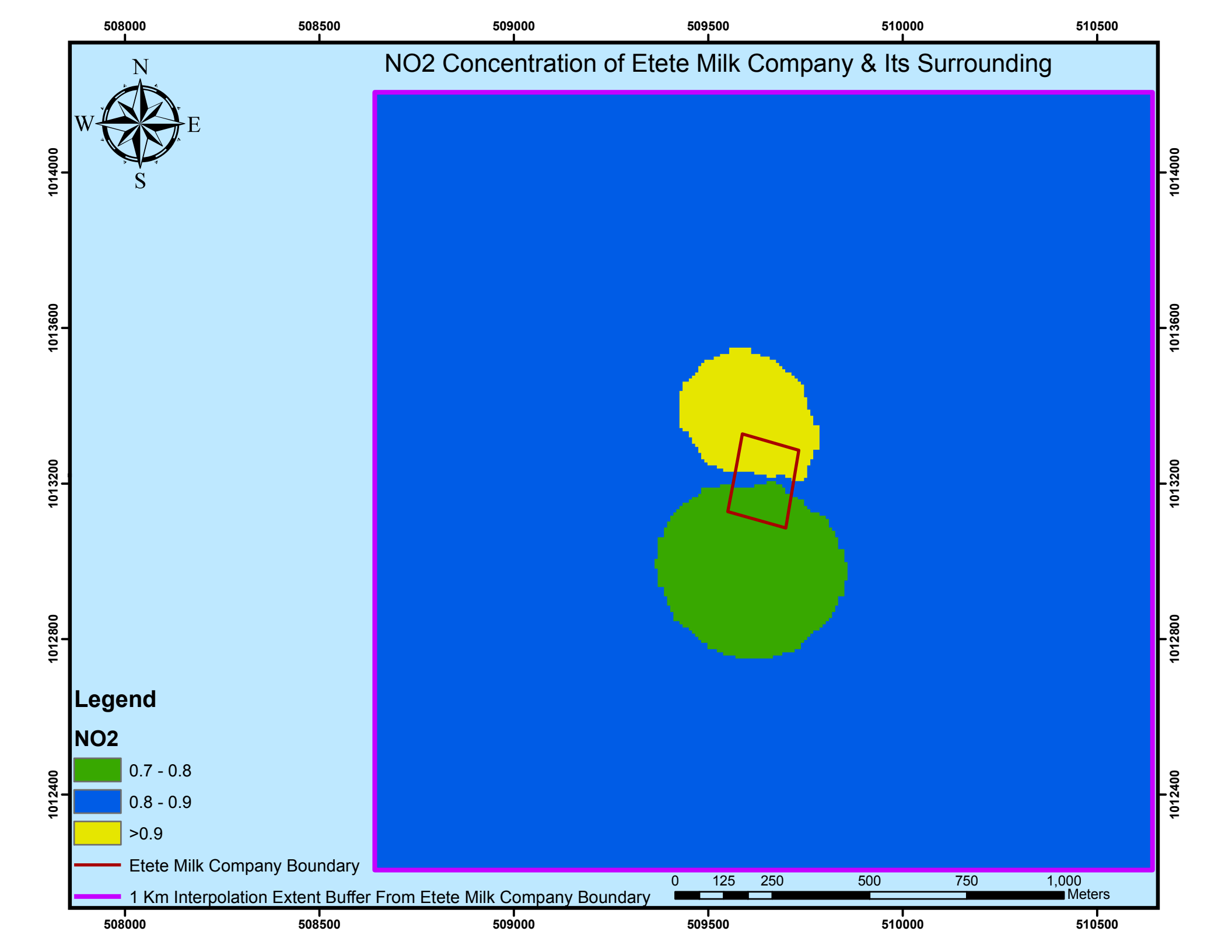
B.M.N. Godina Shawaa Kaabaa Aanaa Alamuutti Waajjira Bulchiinsa Ganda Collee Sanqollee

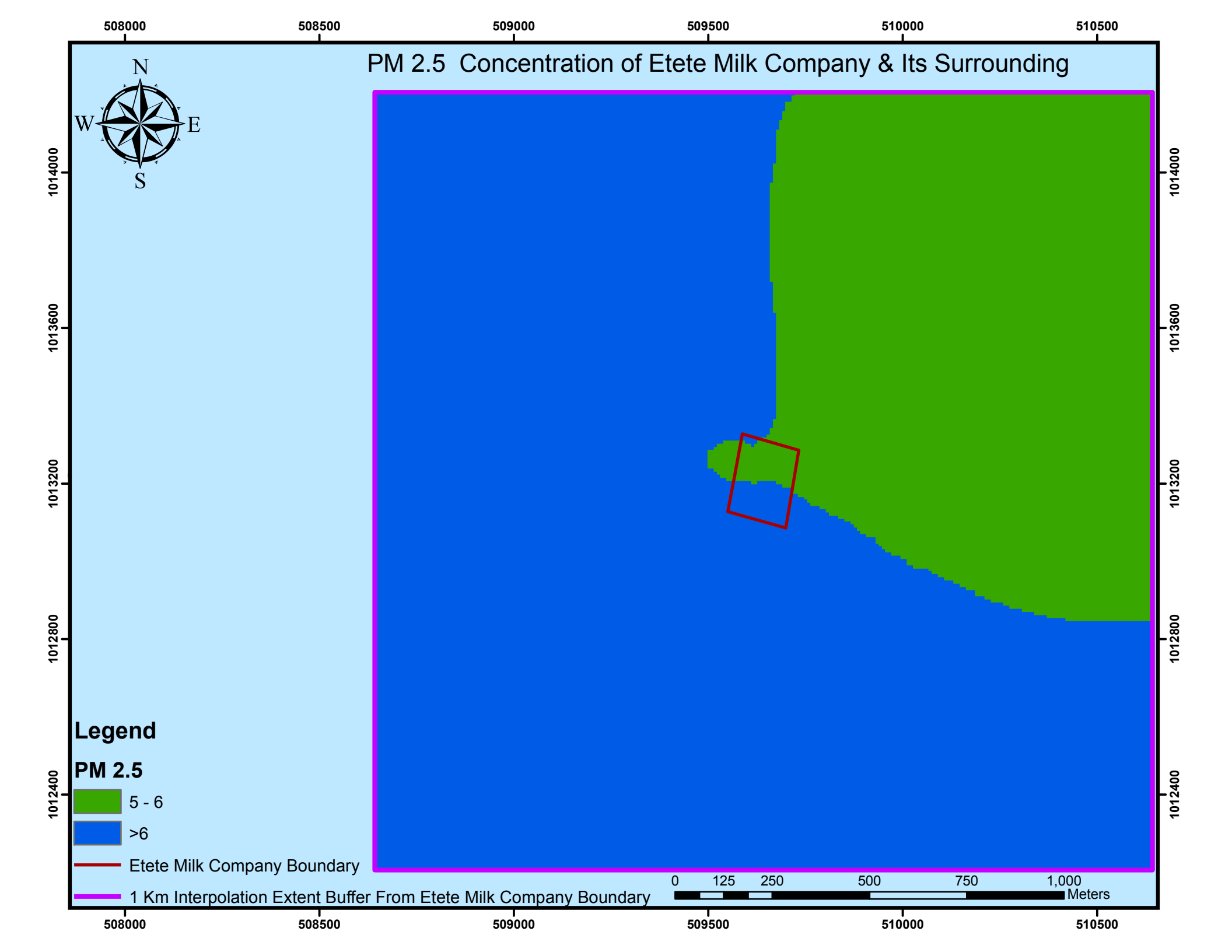
Annex3: Base Line Air Quality Results

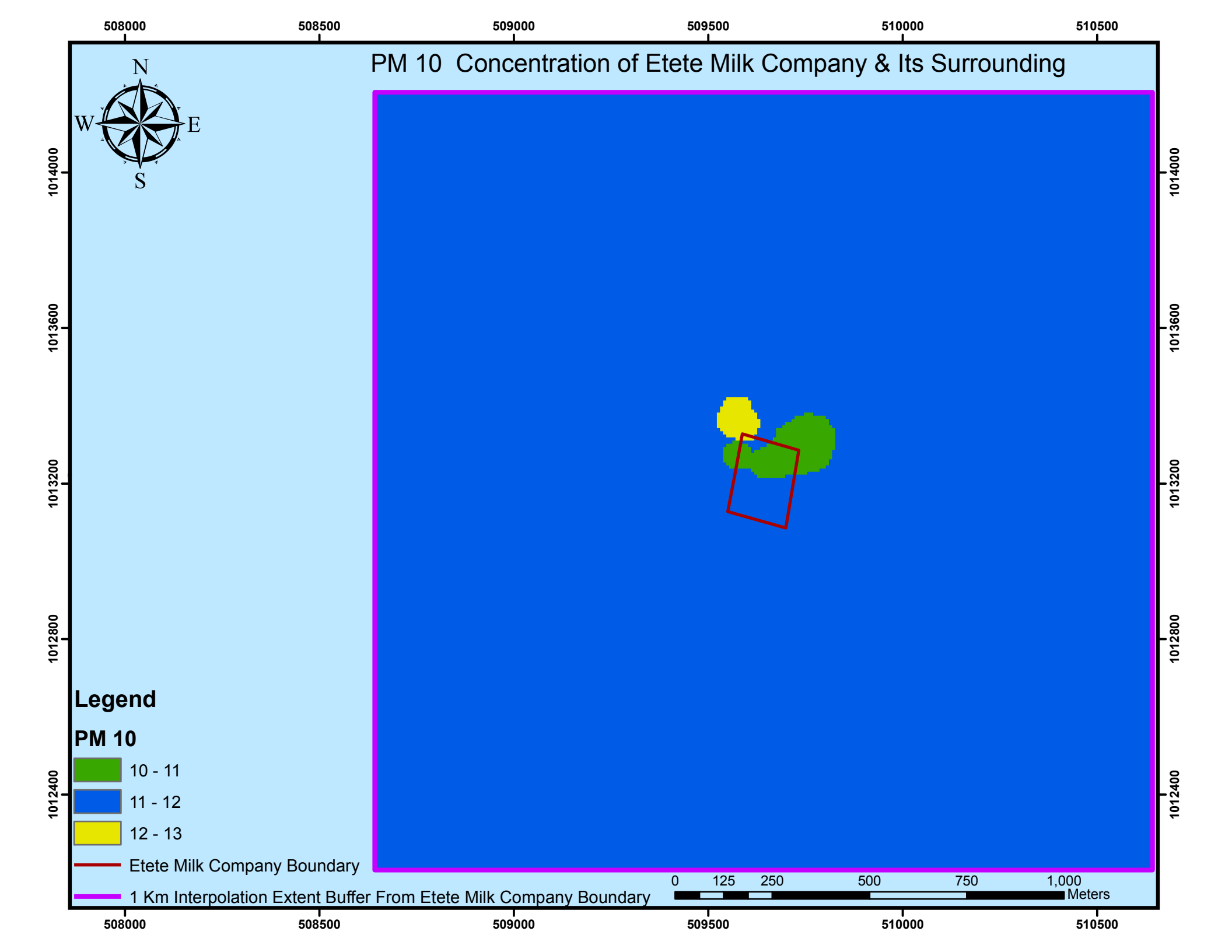

CH4 Concentration of Etete Milk Company & Its Surrounding
N
W
E
S
508000
508500
509000
509500
510000
510500
1014000
1013600
1013200
1012800
1012400
Legend
CH4
192 - 220
220 - 250
250 - 308
Etete Milk Company Boundary
1 Km Interpolation Extent Buffer From Etete Milk Company Boundary
0
125
250
500
750
1,000
Meters

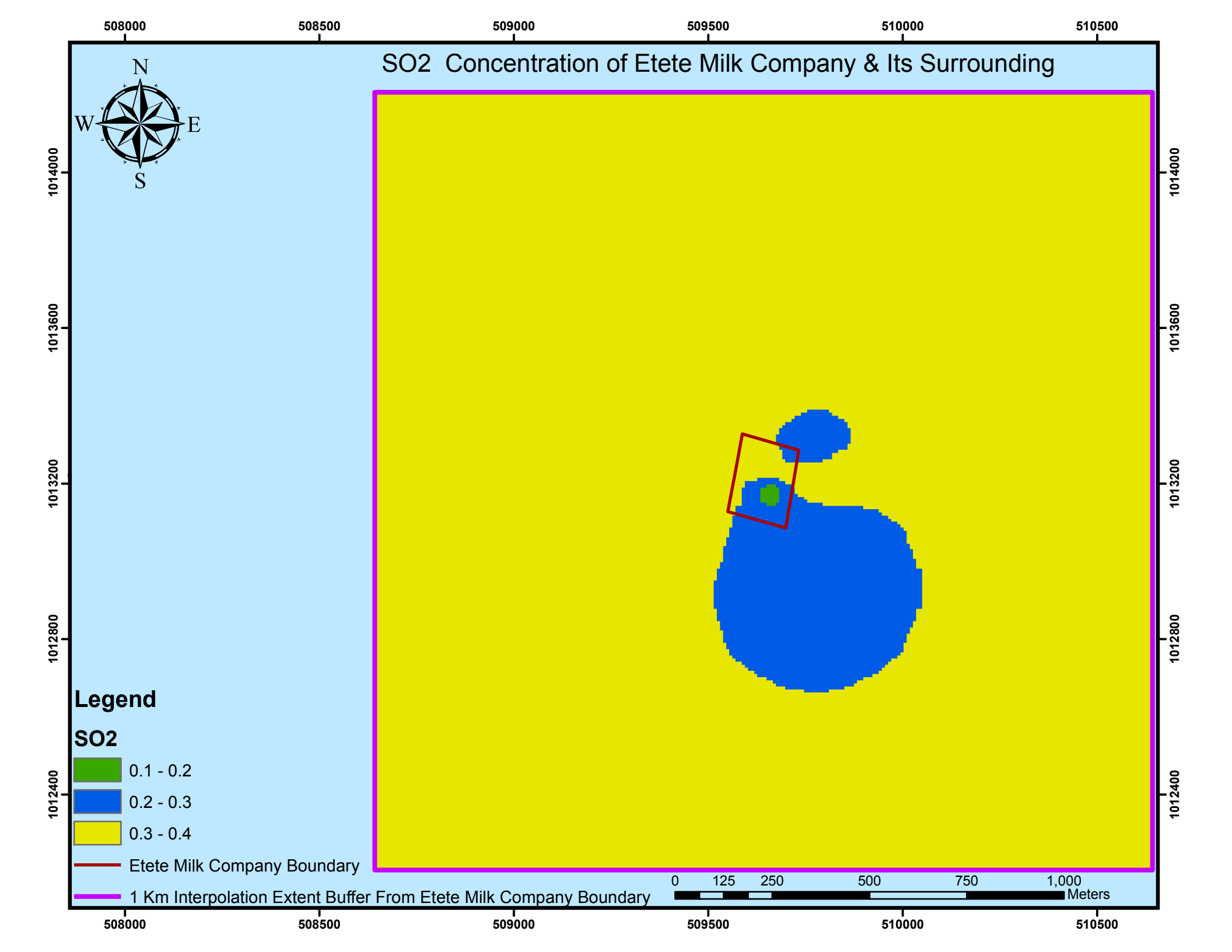

CO2 Concentration of Etete Milk Company & Its surrounding
N
W
E
S
508000
508500
509000
509500
510000
510500
1014000
1013600
1013200
1012800
1012400
Legend
CO2
820 - 840
840 - 850
850 - 860
Etete Milk Company Boundary
1 Km Interpolation Extent Buffer From Etete Milk Company Boundary
0
125
250
500
750
1,000
Meters


H2S Concentration of Etete Milk Company & Its Surrounding
N
W
E
S
508000
508500
509000
509500
510000
510500
1014000
1013600
1013200
1012800
1012400
Legend
H2S
1.0- 1.1
1.1 - 1.2
1.2 - 1.3
Etete Milk Company Boundary
1 Km Interpolation Extent Buffer From Etete Milk Company Boundary
0
125
250
500
750
1,000
Meters

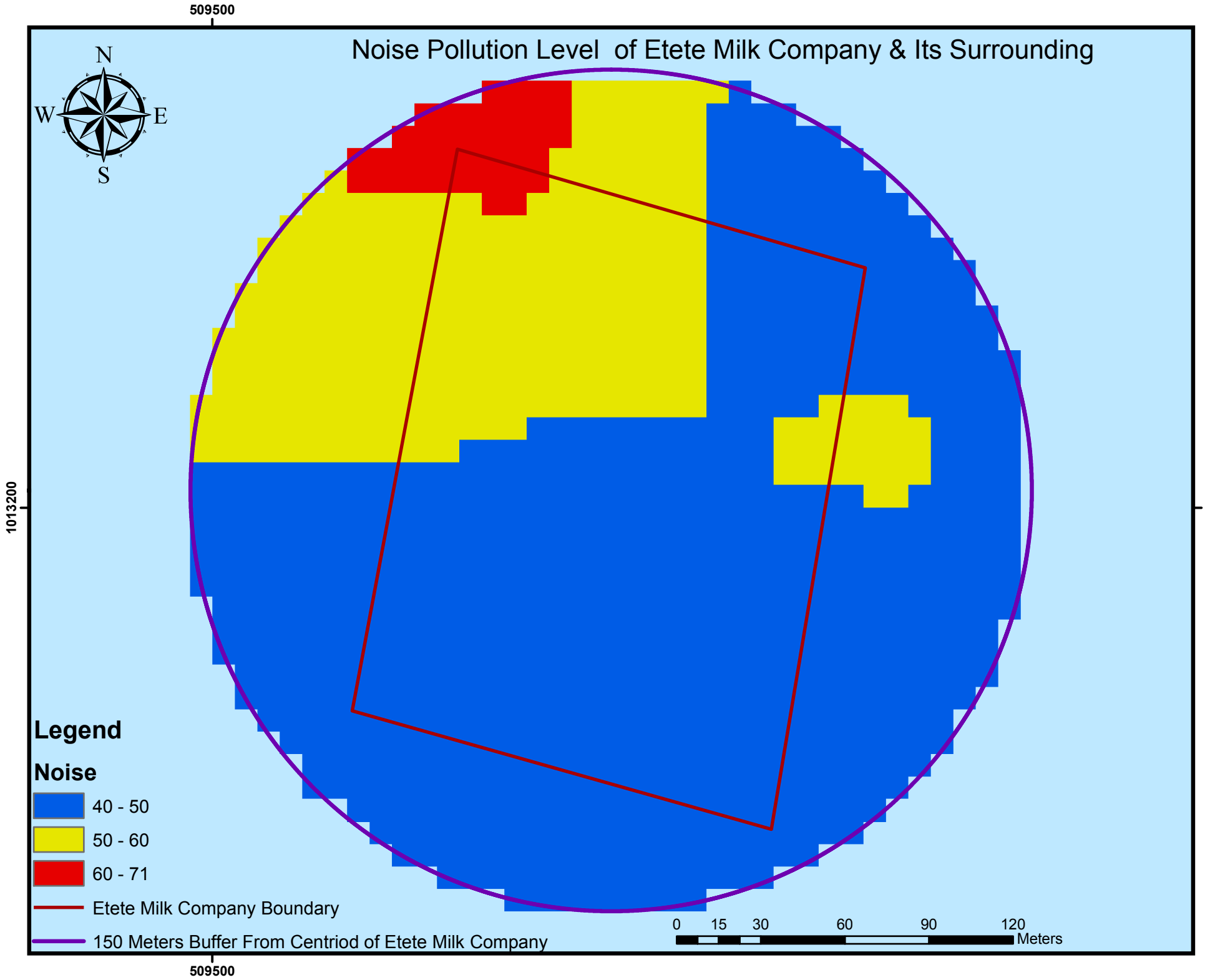

NO2 Concentration of Etete Milk Company & Its Surrounding
N
W
E
S
508000
508500
509000
509500
510000
510500
1014000
1013600
1013200
1012800
1012400
Legend
NO2
0.7 - 0.8
0.8 - 0.9
>0.9
Etete Milk Company Boundary
1 Km Interpolation Extent Buffer From Etete Milk Company Boundary
0
125
250
500
750
1,000
Meters


PM 2.5 Concentration of Etete Milk Company & Its Surrounding
N
W
E
S
508000
508500
509000
509500
510000
510500
1014000
1013600
1013200
1012800
1012400
Legend
PM 2.5
5 - 6
>6
Etete Milk Company Boundary
1 Km Interpolation Extent Buffer From Etete Milk Company Boundary
0
125
250
500
750
1,000
Meters


PM 10 Concentration of Etete Milk Company & Its Surrounding
N
W
E
S
508000
508500
509000
509500
510000
510500
1014000
1013600
1013200
1012800
1012400
Legend
PM 10
10 - 11
11 - 12
12 - 13
Etete Milk Company Boundary
1 Km Interpolation Extent Buffer From Etete Milk Company Boundary
0
125
250
500
750
1,000
Meters


SO2 Concentration of Etete Milk Company & Its Surrounding
N
W
E
S
508000
508500
509000
509500
510000
510500
1014000
1013600
1013200
1012800
1012400
Legend
SO2
0.1 - 0.2
0.2 - 0.3
0.3 - 0.4
Etete Milk Company Boundary
1 Km Interpolation Extent Buffer From Etete Milk Company Boundary
0
125
250
500
750
1,000
Meters

Annex4: Noise Results


509500
Noise Pollution Level of Etete Milk Company & Its Surrounding
N
W
E
S
1013200
1013200
Legend
Noise
40 - 50
50 - 60
60 - 71
Etete Milk Company Boundary
150 Meters Buffer From Centriod of Etete Milk Company
0 15 30 60 90 120
Meters
509500

Annex 5: Soil Analysis Results

Horticoop Ethiopia (Horticulture) PLC

Soil and Water Analysis Laboratory

Soil Analysis Certificate

Test Overview

Customer: Hamen Consultancy

Tel: +251 91 170 3253

Address: Addis Ababa

Country: Ethiopia

Information about sample			
Laboratory Code	*HST 4058/20*	*Order Number*	*300-HEON/20*
Crop	*-*	*Date Sampled*	*December 30, 2020*
Sampled By	*Client*	*Date Received*	*December 31, 2020*
Location	*Addis Ababa*	*Report Date*	*January 22, 2020*
Description	*ETT-02*		

Analytical Result				Interpretation	
Parameter		Result	Unit	Target Range	
Acidity	*PH-H_2O*	*7.14*	*-*	*5.50 - 7.00*	*High*
Acidity	*PH-Kcl*	*6.19*	*-*	*-*	*-*
Conductivity	*EC*	*0.51*	*mS/cm*	*0.40 - 0.80*	*Sufficient*
Ava. Phosphorus	*P*	*35.74*	*mg/kg(ppm)*	*20 - 30*	*High*
Potassium	*K*	*510.60*	*mg/kg(ppm)*	*150 - 250*	*High*
Calcium	*Ca^{2+}*	*9037.08*	*mg/kg (ppm)*	*1000 - 2000*	*High*
Magnesium	*Mg^{2+}*	*1153.59*	*mg/kg(ppm)*	*120 - 360*	*High*
Sulphate	*S*	*56.56*	*mg/kg(ppm)*	*20 - 80*	*Moderate*
Iron	*Fe*	*67.10*	*mgkg (ppm)*	*2.10 - 5.00*	*High*
Manganese	*Mn*	*30.04*	*mg/kg (ppm)*	*1.00 - 20.00*	*High*
Zinc	*Zn*	*2.46*	*mg/kg (ppm)*	*0.50 - 1.00*	*High*
Boron	*B*	*7.85*	*mg/kg (ppm)*	*0.80 - 2.00*	*High*
Copper	*Cu*	*0.80*	*mg/kg (ppm)*	*2.60 - 5.00*	*Low*
Sodium	*Na^{+}*	*167.05*	*mg/kg (ppm)*	*69 - 161*	*-*
Silicon	*Si*	*573.18*	*mg/kg(ppm)*	*-*	*-*
Arsenic	*As*	*17.18*	*mg/kg(ppm)*	*-*	
Lead	*Pb*	*18.78*	*mg/kg(ppm)*	*-*	
Chromium	*Cr*	*8.83*	*mg/kg(ppm)*	*-*	
Cadimium	*Cd*	*7.71*	*mg/kg(ppm)*	*-*	
Coballt	*Co*	*0.65*	*mg/kg(ppm)*	*-*	
Mercury	*Hg*	*18.78*	*mg/kg(ppm)*	*-*	

Analytical Result				Interpretation	
Parameter		Result	Unit	Target Range	
Organic Carbon	*OC*	*1.67*	*%*	*1.00 - 3.00*	*Moderate*
Total Nitrogen	*N*	*0.12*	*%*	*0.12 - 0.25*	*Moderate*
C:N	*C/N*	*13.92*	*-*	*-*	
Chloride	*Cl^-*	*< 0.05*	*mg/kg(ppm)*		
Total Phosphours	*TP*	*2339.33*	*mg/kg(ppm)*		
Calium Carbonate	*CaCo3*	*6.54*	*%*		
Cation Exchange Capacity	*CEC*	*49.64*	*Meq/100g soil*	*15 – 25*	*High*
Sand		*38*	*%*		
Clay		*36*	*%*		
Silt		*26*	*%*		
Textural Class		*Silty Clay*			

Analytical Methods		
Parameter		*Examination Standards*
Acidity	*PH-H2O*	*ES ISO 10390: 2014 (1:2.5)*
Conductivity	*EC*	*ES ISO 11265: 2014 (1:5)*
Acidity	*PH - KCL*	*ES ISO 10390: 2014 (1:2)*
Soil Texture	*Bouyoucos Hydrometer Method*	
Organic Carbon	*OC*	*Walkely And Black*
Total Nitrogen	*TN*	*ES ISO 11261:2015 (Kjeldahl Method)*
Ava. Phosphorus	*P*	*ES ISO 11263: 2015 (Olsens Method)*
Total Phosphorous	*TP*	*Acid Digestion+Colurometric method*
Chloride	*Cl*	*Mohor Method*
Calium Carbonate	*Caco3*	*Acid neutralization*
Available Potassium	*K*	*Ammonium Acetate Method*
Cation Exchange Capacity	*CEC*	*Ammonium Acetate Method*
Calcium (Ca), Potassium (K), Magnesium (Mg),		
Sulfur (S),Silicon (Si),Molybdenum (Mo), and Boron (B)		*Mehlich-3*
Copper (Cu), Iron (Fe), Manganese (Mn)and Zinc (Zn)		*DTPA Extraction*
Arsenis(As)Lead(Pb),Coballt(Co)Choromium(Cr),Cadimum(Cd)		
Mercurry(Hg)		*Mehlich-3*

Zufan Gikidan

Lab. Head

Annex 6: Water Quality of Settling Ponds

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Bless Agri Food Laboratory Services PLC

Test Report

Client Address
HAMEN CONSULTANCY SERVICE PLC
Tel: (+251) 925 96 02 93
ADDIS ABABA
ETHIOPIA

Bless Agri Food Laboratory Service P.L.C
Client ref no. : -
Letter dated : -
Tel : +251-116679226
Report No : BLR3740121
Customer Batch No : -

Lab Reg. No: 0530121
Date of Sampling: -
Date Sample received: 05-01-21
Date Analysis Conducted: 05 Jan - 18 Jan, 2021
Date of test report: 20-01-21
Reference of the sample: Waste water
Identification: BSC0119/20

Parameters	Test Method	Result	Unit
pH	ES ISO 10523	6.39	-
Total Dissolved Solids	ES 609	1044.90	mg/l
Total Suspended Solids	IS 3025	477.68	mg/l

Remark: Sampled by client

Authorized By:
For Bless Agri Food Laboratory Services P.L.C.
Kaleelias Agmuas
Chemistry Laboratory Manager

info@blesslaboratory.com www.blesslaboratory.com
Legetafo, Dessie Road, Ethiopia

Annex 7: Water Quality of Borehole

BLESS
Agri Food Laboratory Services

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Bless Agri Food Laboratory Services PLC

Test Report

Client Address
HAMEN CONSULTANCY SERVICE PLC
Tel: (+251) 925 96 02 93
ADDIS ABABA
ETHIOPIA

Bless Agri Food Laboratory Service P.L.C
Client ref no. : -
Letter dated : -
Tel : +251-116679226
Report No : BLR2180121
Customer Batch No : -

Lab Reg. No: 0790121
Date of Sampling: -
Date Sample received: 05-01-21
Date Analysis Conducted: 05-13 Jan, 2021
Date of test report: 14-01-21
Reference of the sample: Drinking water
Identification: BSC0120/21

Test parameter(s)	Test Method	Result	Unit
Total coliform count	ES ISO 9308-1	68	Cfu/100ml
E.coli count	ES ISO 9308-1	< 10	Cfu/100ml

Remark: < 10 Cfu/100ml implies no typical colony of the strains is detected
Sampled by Client.

Authorized By:
For Bless Agri Food Laboratory Services P.L.C

Berhanu Legesse
Microbiology Laboratory
Manager

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Bless Agri Food Laboratory Services PLC

Test Report

Client Address
HAMEN CONSULTANCY SERVICE PLC
Tel: (+251) 925 96 02 93
ADDIS ABABA
ETHIOPIA

Bless Agri Food Laboratory Service P.L.C
Client ref no. : -
Letter dated : -
Tel : +251-116679226
Report No : BLR3740121
Customer Batch No : -

Lab Reg. No: 0540121
Date of Sampling: -
Date Sample received: 05-01-21
Date Analysis Conducted: 05 Jan - 13 Jan, 2021
Date of test report: 18-01-21
Reference of the sample: Drinking water
Identification: BSC0120/20

Parameters	Test Method	Result	Unit
Total Dissolved Solids	ES 609	211.92	mg/l
Total Hardness	ES 607	< 5.00	mg/l
Total Alkalinity	ES ISO 9963-1	10.00	mg/l
Nitrate	ES ISO 7890-3	2.18	mg/l
Sodium	ES ISO 9964-1	3.61	mg/l
Iron	AOAC 974.27	< 0.10	mg/l
Arsenic	AOAC 974.27	< 0.01	mg/l
Chromium	AOAC 974.27	< 0.01	mg/l
Nickel	AOAC 974.27	< 0.02	mg/l

Remark: Sampled by client

Authorized By:
For Bless Agri Food Laboratory Services P.L.C

Belay Assefa
Deputy Chemistry Laboratory Manager

info@blesslaboratory.com www.blesslaboratory.com
Legetafo, Dessie Road, Ethiopia