Cold Solutions Kenya Limited (CSKL)

Proposed Temperature Controlled Storage Facility at Colfax Industrial Park, Bonje, Miritini, Mombasa Metropolitan area, Kwale County, Kenya

ESIA Project Report (Final Copy)

10 December 2021

Project No.: 0552902

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Document title	Proposed Temperature Controlled Storage Facility at Colfax Industrial Park, Bonje, Miritini, Mombasa Metropolitan area, Kwale County, Kenya
Document subtitle	ESIA Project Report (Final Copy)
Project No.	0552902
Date	10 December 2021
Version	2.0
Author	As per the Document History Below
Client Name	Cold Solutions Kenya Limited (CSKL)

Document history

				ERM approval to issue		
Version	Revision	Author	Reviewed by	Name	Date	Comments
1.0	00	Alistair de Sousa, Gideon Owaga and Nahida Khamis	Kelly Horton and Barnabas Busheshe	Mike Everett	05.11.2021	Draft Report for Client Review
2.0	01	Alistair de Sousa, Gideon Owaga and Nahida Khamis	Barnabas Busheshe		10.12.2021	Final Report incorporating Client comments

Signature Page

10 December 2021

Proposed Temperature Controlled Storage Facility at Colfax Industrial Park, Bonje, Miritini, Mombasa Metropolitan area, Kwale County, Kenya

ESIA Project Report (Final Copy)

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ACRONYMS AND ABBREVIATIONS

AfDB:	African Development Bank
AoI:	Area of Influence
BID:	Background Information Document
CBD:	Convention on Biological Diversity
CCSEAF:	Cold Chains Solutions East Africa Fund LP
CCSEAL:	Cold Chain Solutions East Africa Limited
CFCs:	Saturated Chlorofluorocarbons
CSKL:	Cold Solutions Kenya Limited
DOSHS:	Directorate of Occupational Safety and Health Services
ECO:	Environmental Control Officer
EHS:	Environmental, Health and Safety
EIA:	Environmental Impact Assessment
EMCA:	Environmental Management and Coordination Act
ERM:	Environmental Resources Management Consulting East Africa Limited
ERP:	Emergency Response Plan
ESG:	Environmental and Social Governance
ESIA:	Environmental and Social Impact Assessment
ESMMP:	Environmental and Social Management and Monitoring Plan
ESMS:	Environmental and Social Management System
FGD:	Focus Group Discussions
GIS:	Geographical Information System
GPS:	Global Positioning Systems
GWP:	Global Warming Potential
HFCs:	Hydrofluorocarbons
IAQM:	Institute of Air Quality Management
IFC:	International Finance Corporation's
ISS:	Integrated Safeguards System
IWRM:	Integrated Water Resource Management
KCAA:	Kenya Civil Aviation Authority
KII:	Key Informant Interviews
NEMA:	National Environment Management Authority
NGO:	Non-Governmental Organisation
NLC:	National Land Commission
NTSA:	National Transport and Safety Authority
ODP:	Ozone Depleting Potential
OHS:	Occupational Health and Safety
PM:	Project Manager
PPE:	Personal Protective Equipment

SEA:	Strategic Environmental Assessment
SERC:	Standard and Enforcement Review Committee
SEZ:	Special Economic Zone
SIA:	Social Impact Assessment
SME:	Small and Medium Enterprise
SOP:	Standard Operating Procedures
TCSF:	Temperature-controlled Cold Storage Facility
TMP:	Traffic Management Plan
U-HFCs:	Hydrofluorocarbons
UNFCCC:	United Nations Framework for Convention on Climate Change
WHO:	World Health Organisation
WMP:	Waste Management Plan
WRA:	Water Resource Authority
WWTP:	Wastewater Treatment Plant

EXECUTIVE SUMMARY

Project: Environmental and Social Impact Assessment (ESIA) Project Report for Proposed Temperature Controlled Storage Facility at Colfax Industrial Park, Bonje, Miritini, Mombasa Metropolitan area, Kwale County, Kenya

Project Proponent: Cold Solutions Kenya Limited (CSKL)

ESIA Consultants: Environmental Resources Management Consulting East Africa Limited (ERM)

Project Description: The Project entails the construction, operation and decommissioning of a TCSF of up to 12,000 m^2 in area and capable of storing 10,000 pallets, with end-to-end logistics for customers. Key components of the Project include:

- Warehouse facility with different refrigeration temperature zones. Refrigeration technology will be ammonia based.
- Supporting facilities including plant room, chiller area, power system (roof-top solar, with backup diesel-powered generator in case of grid outages to service 2-3 MW power demand), guardhouses and pallet repair areas.
- 10-15 loading and unloading dock bays.
- Small wastewater treatment plant (WWTP) to treat cooling water effluent to national discharge standards and recycle 60% back into the cooling system.

A detailed description of the Project components is presented in *Chapter 4* of this report.

This ESIA Project Report has been compiled as part of the Kenyan Environmental Impact Assessment (EIA) Process in accordance with regulatory requirements stipulated in the Environmental Management and Coordination Act of 1999 (and 2015 Amendments) (EMCA) and the Environmental (Impact Assessment and Audit) regulations of 2003 (and the Amendments of 2009, 2016 and 2019). The ESIA has also been undertaken in line with the requirements of the International Finance Corporation's (IFC) Performance Standards on Environmental and Social Sustainability (2012) and the Integrated Safeguard System of the African Development Bank (AfDB).

Figure 011: Conceptual Model

ESIA Process/Methodology

The ESIA is being undertaken in fulfilment of the Legal Notices No. 149 of the National Environment (Impact Assessment and Audit) (Amendment) Regulations of 2016 and no 31 National Environment (Impact Assessment and Audit) (Amendment) Regulations of 2019 classifies the proposed Project (specifically, agriculture and related activities, including Moderate size agricultural and livestock produce storage facilities, and, go-downs for storage and warehouses) as Moderate Risk which can be approved through the preparation and submission of ESIA.

Legal Notice No. 32 of the National Environment (Impact Assessment and Audit) (Amendment) Regulations of 2019 which states that every proponent undertaking a project specified in the Second Schedule of the Act as being a low risk project or a Moderate risk project, shall submit to the Authority a Summary Project Report of the likely environmental effects of the project;

Data Collection: Various data collection methods were used as follows:

Remote Sensing and GIS Analysis

Remote sensing and Geographic Information Systems (GIS) was undertaken and ground-truthed in the field by the consultants at the time of the site visit. Remote sensing was based on available satellite imagery of the Project Site. The main E&S aspects identified include: land use, vegetation cover, surface water flow, ground water direction and topography.

Document Review

A literature review was undertaken based on the findings of the reconnaissance process, which involved reviewing legislation, policies, the County Integrated Development Plan, and previous studies carried out in the area to determine the baseline setting of the Project area.

The desk-based study also included the development of fieldwork tools, fieldwork schedules as well as the approach to stakeholder engagement as outlined in the Stakeholder Engagement Plan (**Appendix C** of this Project Report).

Site Visits

A site investigation was undertaken on Thursday 21st October 2021 during which detailed environmental and social baseline data was collected and stakeholder engagement was undertaken. Data was collected through:

- Sharing the Project's Background Information Document (BID), and presented as **Appendix D**) to identified formal stakeholders and requesting them to share their views/ comments on the proposed Project;
- Key Informant Interviews (KII) especially with the technocrats of the relevant institutions;
- Focus Group Discussions (FGD) with the Area Chief, village elders, community policing representatives and management of Colfax Industrial Park representatives; and
- Site walkovers.

Impact Assessment

The purpose of impact assessment is to identify and evaluate the significance of potential impacts on identified receptors and resources according to defined assessment criteria and to develop and describe mitigation measures that will be taken to avoid or minimise any potential adverse effects and to enhance potential benefits.

The impacts of the proposed Project were identified based on the findings of stakeholder consultation, the existing baseline conditions, the proposed Project activities and professional knowledge of the consultants. Impacts are first distinguished as either positive or negative (Chapter 9 of this Project Report). The cross-sectoral issues and aspects are: health; safety; air quality, especially dust; waste

management; social aspects particularly labour recruitment and management; infrastructure, and utilities.

ESIA Project Report Objectives

The objectives of the ESIA are to:

- Identify all potentially significant adverse environmental and social impacts of the Project and recommend measures for mitigation to reduce the impacts to moderate, small or negligible.
- Gather baseline data to inform the assessment of impacts and to monitor changes to the physical, biological and socio-economic environment as a result of the Project.
- Gather stakeholder concerns and inputs to be used, where appropriate and applicable, into the design of the Project, and in the formulation of appropriate mitigation measures.
- Recommend measures to be used to avoid or reduce the anticipated negative impacts and enhance the positive impacts.
- Evaluate the success of the mitigation measures implemented through an applicable and appropriate monitoring plan.
- Prepare an ESIA Project Report compliant to EMCA and the Environmental (Impact Assessment and Audit) Regulations of 2003 (and the Amendments of 2016 and 2019), detailing findings and recommendations for review by NEMA.

Stakeholder Engagement

Stakeholder Engagement ensures that the views and concerns of stakeholders (including the community) are incorporated as early as possible into the project development (i.e., at the planning, implementation and operations phase), to minimise any potential unexpected opposition to the proposed development, and to incorporate the views of stakeholders into the design process.

The main objective of the Stakeholder Engagement process is to inform stakeholders and the public about the proposed Project and its likely effects, and in turn incorporate their inputs, views and concerns into project planning. A summary of stakeholder engagement conducted during the ESIA process is presented in Table 0.1 whilst Table 0.2 summarises the key questions, concerns and comments raised by stakeholders. Further detail is included in the Stakeholder Engagement Plan (SEP) provided in **Appendix C**.

Table 0.1: Details of ESIA Process Stakeholder Engagement

Stakeholder	Mode of Engagement	Engagement Date	Venue
▪ Director of Environment Natural Resources and Climate Change- Kwale County Government. ▪ NEMA County Director of Environment- Kwale.	Virtual	14th October 2021	Online via zoom
▪ Village Elders. ▪ Surrounding Communities. ▪ Assistant County Commissioner (ACC). ▪ Area Chief and Assistant Chief. ▪ Youth. ▪ Women. ▪ Community Policing Representative. ▪ Colfax Industrial Park Representative.	Public Meeting	22nd October 2021.	Project Site
▪ Community Policing Representative. ▪ Colfax Industrial Park Representative. ▪ Area Chief. ▪ Cold Storage Facility Project Manager.	Focused Group Discussion (FGD)	22nd October 2021	Project Site

Stakeholder	Mode of Engagement	Engagement Date	Venue
▪ Village Headmen Representative.			

Table 0.2 Outcome of Key Stakeholder Engagement

Main Theme brought up by Stakeholders	Key stakeholders issues/ comments
Hydrofluorocarbons	▪ The Proponent should ensure that the project is compliant to the Kigali Amendment of the Montreal Protocol (an international agreement to gradually reduce the consumption and production of hydrofluorocarbons (HFCs)). It is a legally binding agreement designed to create rights and obligations in international law.
ESIA approval process	▪ Prior to the approval of the ESIA report, NEMA in conjunction with the County government will form a small team to visit the site for comments.
Employment opportunities	▪ Locals should be given the first priority on employment and business opportunities especially for the unskilled and semi-skilled positions. ▪ Employment opportunities should be channelled through the chief's office who work closely with the community policing (Nyumba kumi) representative and village elders to identify the required workforce and ensure the recruitment process is transparent process.
Disposal	▪ Measures should be put in place to ensure proper disposal of any food, medicine or chemicals that will be unclaimed or no longer be stored in the facility. The location and procedures of disposing such waste should be made clear.
Access routes	▪ The contractor should ensure that the access routes used by the communities will not be blocked and there should be provision of alternative routes.
Resettlement and compensation	▪ Discussion with CIP management revealed that in 2009, a process of compensation and relocation of 12 households (squatters) with a population of 150 persons residing within the broader CIP site was undertaken. ▪ After consultation, 9 of the 12 families accepted to relocate voluntarily, however 3 families with about 20 members did not accept the relocation offer. The families who have not accepted the compensated reside outside of the Colfax Industrial Park. Discussions regarding relocation are still ongoing. ▪ The rates used for compensating the housing and other properties was reached through discussions and agreements with the affected households. A signed agreement and copies of other relevant documentation (e.g. cheques, vouchers etc.) was processed. ▪ Any crops upon the site were compensated in line with the Ministry of Agriculture (MoA) rates. A government-registered valuer undertook the valuation of crops. ▪ The management of CIP also purchased land for the families to rebuild and provided a three acre burial site near the Miritini-Mombasa road. ▪ The families were given a notice period of three months to relocate. Discussions with the Area chief and other village representatives also

Main Theme brought up by Stakeholders	Key stakeholders issues/ comments
	revealed that the community was satisfied with the process of compensation and livelihood restoration. ▪ In general the process of resettlement and compensation was conducted in a voluntary and consultative manner. The community members were satisfied in the compensation process.

Potential Impacts and Mitigation Measures

The Physical, Biological and Socio-economic impacts identified for the construction and operations phase that have been identified and assessed in the ESIA, are summarised in Table 0.3 and Table 0.4.

Table 0.3 Summary of Construction Phase Impacts

Impact	Significance (pre-mitigation)	Residual Impact
Impacts on Local Air Quality	Minor Negative	Negligible
Impacts on the Noise Environment and Vibrations	Minor Negative	Minor Negative
Impacts on Water Resources	Minor Negative	Negligible
Impact on Biodiversity	Negligible	Negligible
Waste and Effluent	Moderate Negative	Minor Negative
Impacts on Employment, Procurement and the Economy	Positive Impact	Positive Impact
Impact on Disease Transmission	Minor Negative	Negligible
Traffic Impacts	Moderate Negative	Minor Negative
Labour and Working Conditions (Including Occupational Health and Safety)	Moderate Negative	Minor Negative
Community Health, Safety and Security	Minor Negative	Negligible

Table 0.4 Summary of Operation Phase Impacts

Impact	Significance (pre-mitigation)	Residual Impact
Impacts on Local Air Quality	Minor Negative	Negligible
Climate Change Impacts	Minor Negative	Negligible
Waste and Effluent	Moderate Negative	Minor Negative
Impacts on Employment, Procurement and the Economy	Positive Impact	Positive Impact
Traffic Impacts	Moderate Negative	Minor Negative
Labour and Working Conditions (Including Occupational Health and Safety)	Moderate Negative	Minor Negative

Impact	Significance (pre-mitigation)	Residual Impact
Community Health, Safety and Security	Minor Negative	Negligible

All the identified impacts are either of moderate or minor significance even prior to the application of the appropriate mitigation measures. With proper implementation of the recommended mitigation/management measures, the significance of the residual impacts are all reduced to a minor or negligible significance, which is mainly attributed to the fact that:

- It is a small-scale project.
- The project site is located within an industrial park where a number of other industrial developments are planned and are being constructed.
- The project site is located within the Mombasa metropolitan area, with local community members already used to construction activities as well as urban environment.
- The developer is committed to good environmental and social governance.
- The Project will be developed on two plots; that is Plot 35 (2.889 hectares) and Plot 36 (3.490 hectares), together forming one parcel of land located at the Colfax Industrial Park, Bonje, Miritini Kwale County, Kenya. The plots for the proposed Project are currently owned by Colfax Holdings Limited on a 99 year lease, with title deeds. The Project Proponent is in the process of securing the land on a willing seller-willing buyer basis from Colfax Holdings Ltd, in accordance with the requirements of this Act.
- Given the above early planning and approval process was completed, there are no settlements in or the immediate surroundings of the Project Site. The Project will therefore not result in any displacement (neither physical, nor economic).
- There are no sensitive environmental or social resources present at the Project Site that would constrain the Project layout, thus making the Project a low risk with respect majority of the impacts.

An Environmental and Social Management and Monitoring Plan (ESMMP) has been prepared as an output of this ESIA process, to ensure that social and environmental impacts and risks identified during the ESIA process are effectively managed during the construction and operations of the Project. The ESMMP specifies the mitigation and management measures to which CSKL and the Contractor are committed and provides for the organizational capacity and resources to implement these measures.

The ESMMP also shows how the implementation of mitigation and management measures will ensure

Project compliance to applicable laws and regulations within Kenya, as well as the requirements of international good practice and lender requirements.

ERM is confident that every effort will be made by CSKL to implement the mitigation measures as recommended in this report. In summary therefore, and based on the findings of this assessment,

ERM finds no reason why the Project should not be authorised, contingent on the mitigations and monitoring for potential environmental and socio-economic impacts are implemented, as outlined in the ESMMP.

1. INTRODUCTION

1.1 Overview

Cold Solutions Kenya Limited (hereafter referred to as the Project Proponent/ CSKL), appointed Environmental Resources Management Consulting East Africa Limited (ERM) to act as independent environmental and social consultants to undertake the Environmental and Social Impact Assessment (ESIA) for the construction, operation and decommissioning of the proposed Temperature-Controlled Storage Facility (TCSF), and associated logistics operations (hereafter referred to as the Project) at Colfax Industrial Park, Bonje, Miritini, Kwale County, Kenya. ERM is a NEMA-registered and practicing firm of experts (Registration No. 7264 and 2021 practicing License No. NEMA/EIA/ERPL/13736) – refer to **Appendix A**.

The proposed Project will be developed on two plots; that is Plot LR No 29437/35 (2.889 hectares) and Plot LR 29437/36 (3.490 hectares), together forming one parcel of land located at the Colfax Industrial Park, Bonje, Miritini, Kwale County, Kenya (Table 1.1 and Figure 1.1). The plots for the proposed Project are currently owned by Colfax Holdings Limited on a 99-year lease, with title deeds (Appendix B). The Project Proponent is in the process of securing plots within the existing industrial estate on a willing seller-willing buyer process from Colfax Holdings Ltd. The land was acquired by Colfax Holdings in 2011 and subdivided for sale into portions ranging from 2 to 12 acres. Prior to the development of the Industrial Park, stakeholder feedback indicated that the land was previously used for small-scale agriculture and informal settlement of about 12 households as described in *Section* 7.5.2.

The Project entails the construction, operation and decommissioning of a TCSF of up to 12,000 m^2 in area and capable of storing 10,000 pallets, with end-to-end logistics for customers. Key components of the Project include:

- Warehouse facility with different refrigeration temperature zones. Refrigeration technology will be ammonia based.
- Supporting facilities including plant room, chiller area, power system (roof-top solar, with backup diesel-powered generator in case of grid outages to service 2-3 MW power demand), guardhouses and pallet repair areas.
- 10-15 loading and unloading dock bays.
- Small wastewater treatment plant (WWTP) to treat cooling water effluent to national discharge standards and recycle 60% back into the cooling system.

A detailed description of the Project components is presented in *Chapter 4* of this report.

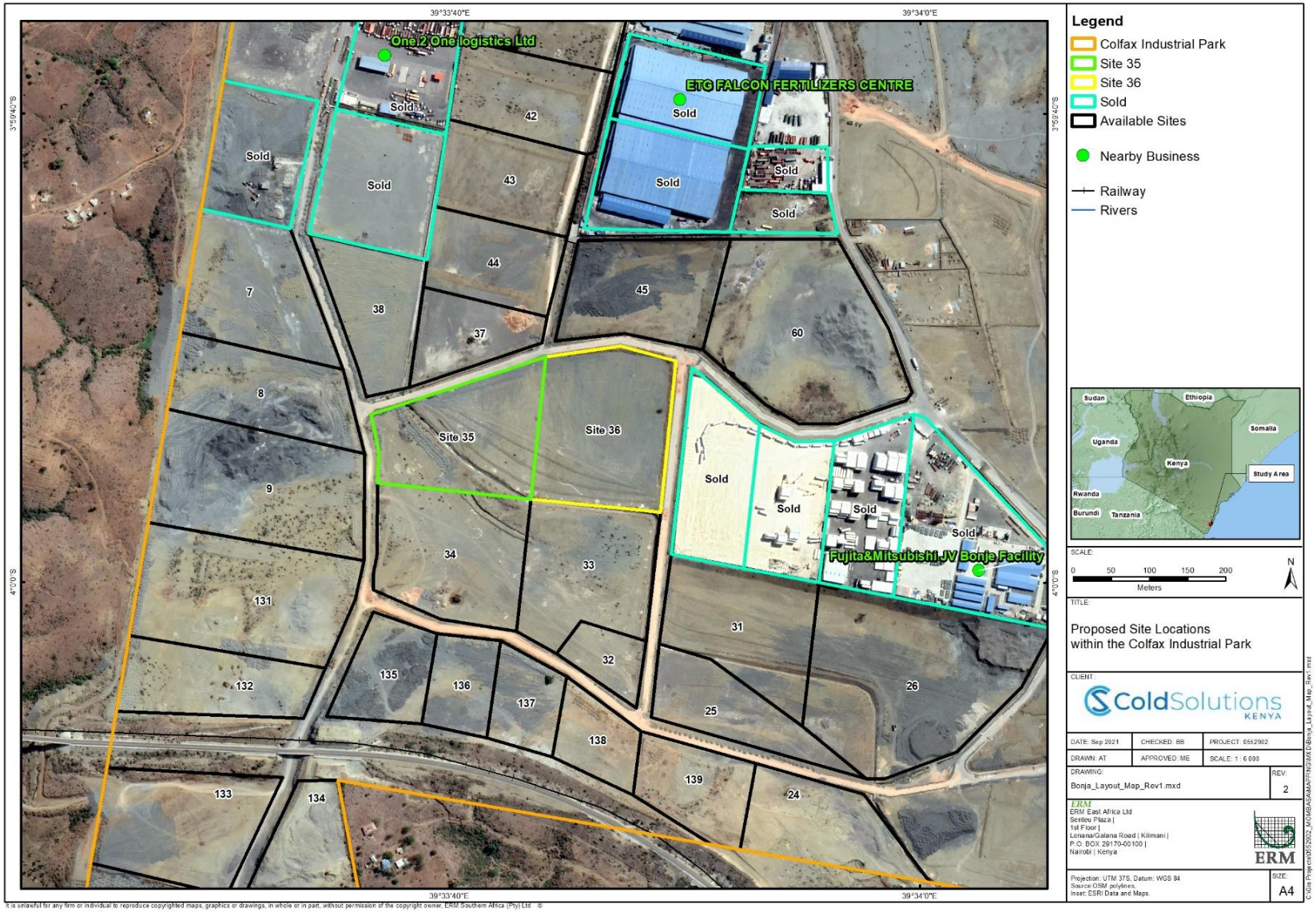
This ESIA Project Report has been compiled as part of the Kenyan Environmental Impact Assessment (EIA) Process in accordance with regulatory requirements stipulated in the Environmental Management and Coordination Act of 1999 (and 2015 Amendments) (EMCA) and the Environmental (Impact Assessment and Audit) regulations of 2003 (and the Amendments of 2009, 2016 and 2019). The ESIA has also been undertaken in line with the requirements of the International Finance Corporation's (IFC) Performance Standards on Environmental and Social Sustainability (2012) and the Integrated Safeguard System of the African Development Bank (AfDB).

Table 1.1 Beacon Coordinates of the Project Site

Plot Number	ID	Coordinates (Reference System: UTM37S WGS84) *Note: Based on georeferenced site layout*	
		Easting	Northing
Plot 35	1	562181.6	9558071
	2	562192.2	9558023

Plot Number	ID	Coordinates (Reference System: UTM37S WGS84) *Note: Based on georeferenced site layout*	
		Easting	Northing
	3	562190.2	9557982
	4	562391.3	9557960
	5	562411.2	9558147
Plot 36	1	562561.3	9557943
	2	562581.8	9558142
	3	562509.1	9558161
	4	562391.3	9557960
	5	562411.2	9558147

Figure 1.1 Project Locality Map



1.2 Purpose of the Report

The information contained in this ESIA Project Report, along with comments and inputs received from stakeholders and commenting authorities, will assist the competent authority, the National Environment Management Authority (NEMA), in deciding whether or not to grant environmental authorisation for the proposed Project, and to inform the conditions associated with such authorisation.

The ESIA process involves the identification, prediction and evaluation of actual and potential environmental and social impacts of the Project and outlines the proposed mitigation measures for negative impacts and enhancement measures for positive impacts which the Project Proponent will implement.

The objectives of this document are to:

- Communicate the results of the ESIA process for the proposed Project and alternatives considered;
- Ensure that the impacts identified during the ESIA process are assessed;
- Present the mitigation and enhancement measures which will be implemented by the Project Proponent to manage the impacts identified;
- Provide a record of comments received from Stakeholders and responses given by the Project Proponent during the ESIA process, and to demonstrate where possible and appropriate, how stakeholder comments and concerns have been incorporated into project design, and development of impact mitigation measures; and
- Facilitate an informed decision-making process by the relevant authorities.

1.3 Project Justification

There is a severe shortage of cold chain solutions across East Africa resulting in large post-harvest food losses and seasonally affected supply chains causing volatility in market pricing. The cold storage facilities and logistics operations developed by CCSEAL will result in positive development outcomes both directly, by reducing food losses and flattening market pricing, and also indirectly, through businesses that will develop within the value chain.

Food loss is a significant contributor not only to food insecurity, but also to Green House Gases (methane) emissions in Africa, therefore a reduction in food losses will also contribute to a related reduction in Greenhouse Gas (GHG) emissions. As such, from the offset, CSKL's activities are geared towards achieving positive environmental and social impacts.

A similar facility which is currently being developed by the ARCH subsidiary, Cold Solutions Kiambu SEZ Limited is the flagship facility and provides the blueprint for the development, construction, and operations of other such facilities, in other targeted areas, including this proposed Project, located in Colfax Industrial Park, Bonje, Miritini, Kwale County, Kenya.

1.4 Project Proponent

The Project Proponent, CSKL, is a corporate entity incorporated in Kenya with the objective of developing a portfolio of TCSFs and end-to-end logistics to help close the current gap of a severe shortage of cold chain solutions in Kenya.

CSKL is a portfolio company of ARCH Cold Chains Solutions East Africa Fund LP (CCSEAF), set up to develop, construct and operate the projects in Kenya. CCSEAF is developing a cold chains solutions network across East Africa including Kenya, Uganda, Rwanda, Ethiopia, and Tanzania. The proposed Project in Colfax Industrial Park, Bonje, Miritini will be CSKL's second facility, with the first

one currently being developed in Tatu City, Kiambu County. In total, two facilities and associated logistics operations are to be developed in Kenya within the next three years.

CCSEAF is funded by Development Finance Institutions (DFIs) and other institutional investors. As such, all projects are developed in accordance with the standards of these institutions – detailed further in Chapter 2

1.5 Environmental and Social Impact Assessment Consultant

ERM was appointed by the Project Proponent to undertake the ESIA for the proposed Project. ERM have no financial ties to, nor are they a subsidiary, legally or financially, of the Project Proponent.

ERM is a leading global provider of integrated environmental, health, safety, risk, social consulting and sustainability related services with over 160 offices in more than 40 countries and territories. ERM has operated throughout Africa for over thirty-five years and our Africa Business Division with over 200 employees is currently based in South Africa (Cape Town, Durban and Johannesburg), Mozambique (Maputo), Kenya (Nairobi) and Tanzania (Dar es Salaam).

The ESIA team for this Project is presented in *Table 1.2*.

Table 1.2 ERM Project Team

Position	Name	Qualifications and Certifications
Partner in Charge	Michael (Mike) Everett	▪ M.Sc. Hydrology, ▪ B.Sc. (Hons) Hydrology and Soil Science ▪ NEMA Kenya Lead EIA/Audit Expert (Reg. No 7263)
Project Manager and Environmental Lead	Barnabas Busheshe	▪ Bachelor of Science in Forestry (Honours). ▪ NEMA Kenya Associate EIA/Audit Expert (Reg. No 11663).
Environmental Lead	Alistair De Sousa	▪ Bachelor of Science in Environmental Science and Natural Resources Management. ▪ NEMA Kenya Associate EIA/Audit Expert (Reg. No 11749).
Social Lead	Kelly Horton	▪ Graduate Certificate of Social Impact. ▪ Bachelor of Science, Environmental Science. ▪ Bachelor of Arts, International Development.
Social Consultant and Stakeholder Engagement Lead	Gideon Owaga	▪ Master's in Rural Sociology and Community Development. ▪ Bachelor of Arts in Sociology and Public Administration. ▪ NEMA Kenya Associate EIA/Audit Expert (Reg. No 10452).
Stakeholder Engagement	Nahida Khamis	▪ Master of Science in Environment and Development. ▪ Bachelor of Arts in Geography.

1.6 Report Structure

The structure of this ESIA Project Report is outlined in *Table 1.3*.

Table 1.3 Report Structure

Section	Contents
Chapter 1: Introduction	Contains an overview of the Project, Project justification, Project Proponent, Environmental and Social Impact Assessment Consultant and an outline of the report structure.
Chapter 2: Legal and Institutional Framework	Outlines the legislative, policy and administrative requirements applicable to the proposed Project.
Chapter 3: Approach and Methodology	Outlines the approach to the ESIA and summarises the process undertaken by the Project to date.
Chapter 4: Project Description	Includes a detailed description of the proposed Project activities.
Chapter 5: Consideration of Alternatives	Describes the alternatives that have been considered and the reasons for the selection of the preferred alternative.
Chapter 6: Biophysical Baseline	Describes the receiving biophysical baseline environment.
Chapter 7: Socio-economic Baseline	Describes the receiving socio-economic baseline environment.
Chapter 8: Stakeholder Engagement	Describes the approach to and outcomes of the stakeholder engagement and public participation process.
Chapter 9: Impacts Assessment and Mitigation Measures	Describes and assesses the potential environmental and social impacts of the proposed Project. Mitigation measures are also presented.
Chapter 10: Environmental and Social Management and Monitoring Plan (ESMMP)	Specifies the mitigation and management measures to be undertaken and shows how the Project will mobilise organisational capacity and resources to implement these measures.
Chapter 11: Conclusions and Recommendations	Summarises the key findings of the ESIA process and provides recommendations for the mitigation of potential impacts and the management of the proposed Project.
References	Contains a list of references used in compiling the report.

In addition, the Report includes the following Appendices:

Appendix A: ERM NEMA Registration and 2021 Practicing Licence

Appendix B: Land Title Deeds of the Project Site

Appendix C: Stakeholder Engagement Plan (SEP)

Appendix D: Background Information Document (BID) used during the Stakeholder engagement exercise

Appendix E: Detailed minutes of stakeholder engagement meetings conducted during the ESIA process, including meeting photos and attendance registers/ stakeholders' comments

2. NATIONAL LEGISLATION AND INTERNATIONAL GOOD PRACTICE REQUIREMENTS

2.1 General Overview

This *Chapter* outlines the existing national and international environmental and social legislation, policies and institutions applicable to the Proposed Project that will guide the development of the Project, which is subject to this ESIA Project Report. This includes a summary of the IFC's Performance Standards on environmental and social sustainability and the Integrated Safeguard System of the African Development Bank (AfDB). As Kenya is a signatory to various international conventions and laws, relevant international conventions are also presented.

2.2 Kenya Policy Provisions

2.2.1 Session Paper No.10 of 2014 on the National Environment Policy, 2014

The overall goal of this Session Paper is to ensure better quality of life for present and future generations through sustainable management and use of the environment and natural resources.

Section 5.6 of this Session Paper focusses on infrastructure development and environment and makes explicit policy statements to ensure sustainable management and use of the environment and natural resources during the construction and operation of infrastructure developments including roads. These policy statements require the commitment of the Government to:

- Ensure Strategic Environmental Assessment (SEA), Environmental Impact Assessment (EIA), Social Impact Assessment (SIA), and Public Participation in the planning and approval of infrastructural projects.
- Develop and implement an environmentally friendly national infrastructural development strategy and action plan; and
- Ensure that periodic Environmental Audits are carried out for all infrastructural projects.

Relevance to this Project

In line with the above policy statements, this ESIA has been conducted for the proposed TCSF to ensure that environmental and social issues are appropriately addressed.

2.2.2 Vision 2030

Kenya Vision 2030 is the country's development blueprint covering the period 2008-2030. It aims to transform Kenya into a newly industrialised, ‘*'middle income country providing a high-quality life to all its citizens by the year 2030"*.

Vision 2030 is based on 3 key pillars namely: Economic, Social, and Political. These pillars are anchored on the following foundations:

- macro-economic stability;
- continuity in governance reforms;
- enhanced equity and wealth creation opportunities for the poor;
- infrastructure;
- energy;
- science, technology and innovation;
- land reform;
- human resources development;

- security; and
- public sector reforms.

Relevance to this Project

Vision 2030 aspires for a country firmly interconnected through, among others, improved food security and recognises that in order to achieve this, investment in the nation's food infrastructure will be given the highest priority. The proposed Project is geared towards development and operation of large-scale cold chain facilities with integrated distribution offered by third party providers as part of the actions towards improvement of food security within the country, which is in line with the objectives of Vision 2030.

2.2.3 National Policy on Water Resources Management and Development, 1999

The National Policy on Water Resources Management and Development promotes the systematic development of water facilities in all sectors while recognising wastewater as a by-product of this process. The Policy therefore calls for development of appropriate sanitation systems to protect people's health and water resources from institutional pollution. This implies that industrial and business development activities should be accompanied by corresponding waste management systems to handle the wastewater and other waste emanating there from.

Relevance to this Project

The policy advocates for appropriate waste management to avoid pollution of water resources. There is no identified river or water body at or in the immediate vicinity of the Project Site, however, there are natural storm water drainage channels that can potentially end into the Indian Ocean during periods of heavy storms. All the wastes (including effluents) from the Project activities will need to be appropriately managed, guided by an effective Waste Management Plan (WMP) to avoid potential pollution of any storm water, run-off from the Project Site.

2.3 National Legal Framework

2.3.1 Administrative Framework

In 2001, the Government established the administrative structures to implement the Environmental Management and Co-ordination Act of 1999 (EMCA). The main administrative structures are described in the following sections.

The National Environmental Council

The National Environmental Council is responsible for policy formulation and directions in relation to the EMCA. The Council also sets national goals and objectives and determines policies and priorities for the protection of the environment.

The National Environment Management Authority (NEMA)

The responsibility of NEMA is to exercise general supervision and co-ordination over all matters relating to the environment and to be the principal instrument of Government in the implementation of all policies relating to the environment.

Standard and Enforcement Review Committee (SERC)

EMCA provides for the establishment and enforcement of environmental quality standards by a technical committee of NEMA known as the Standards and Enforcement Review Committee (SERC).

Public Complaints Committee

EMCA also established a Public Complaints Committee, which provides the administrative mechanism for addressing environmental harm. The Committee has the mandate to investigate

complaints relating to environmental damage and degradation. The members of the Public Complaints Committee include representatives from the Law Society of Kenya, non-governmental organisations (NGOs) and the business community.

Water Resource Authority (WRA)

The WRA is responsible for the regulation of water resources such as water allocation, source protection and conservation, water quality management and pollution control and international waters. Its roles and responsibilities are as follows:

- Planning, management, protection and conservation of water resources;
- Planning, allocation, apportionment, assessment and monitoring of water resources;
- Issuance of water permits;
- Water rights and enforcement of permit conditions;
- Regulation of conservation and abstraction structures;
- Catchment and water quality management;
- Regulation and control of water use; and
- Co-ordination of the Integrated Water Resource Management (IWRM) Plan.

Relevance to this Project

The above established institutions are relevant to the CSF Project to ensure appropriate and compliant management of both environmental and social issues associated with the Project. In particular, the Project Proponent must obtain the NEMA EIA Certificate of approval prior to the commencement of the construction activities, confirming that adequate mitigation measures have been proposed and will be implemented during the Project lifecycle to reduce any identified environmental and social impacts to acceptable levels.

2.4 Relevant Statures

The current legal provisions for natural resource management in Kenya are contained in over seventy sector-specific statutes. In 1999, the Government of Kenya enacted the Environmental Management and Co-ordination Act (EMCA) which is an umbrella legal framework and institutional framework under which the environment is managed. The Act prevails over all other sectoral laws relating to the environment in cases of conflict or contradictions. It also grants the public a *locus standi* in matters of the environment.

2.4.1 The Constitution of Kenya

In the Constitution of Kenya, 2010, Part II (Environment and Natural Resources), (I), the State clearly undertakes to carry out the following:

- Ensure sustainable exploitation, utilization, management and conservation of the environment and natural resources, and ensure the equitable sharing of the accruing benefits;
- Work to achieve and maintain a tree cover of at least ten per cent of the land area of Kenya;
- Protect and enhance intellectual property in, and indigenous knowledge of, biodiversity and the genetic resources of the communities;
- Encourage public participation in the management, protection and conservation of the environment;
- Protect genetic resources and biological diversity;
- Establish systems of environmental impact assessment, environmental audit and monitoring of the environment;

- Eliminate processes and activities that are likely to endanger the environment; and
- Utilise the environment and natural resources for the benefit of the people of Kenya.

It further stipulates in Part II that "*Every person has a duty to cooperate with State organs and other persons to protect and conserve the environment and ensure ecologically sustainable development and use of natural resources*."

Relevance to this Project

The Project should observe the above stated conditions in as far as environmental protection is concerned.

2.4.2 The Environmental Management and Co-ordination Act, 1999 (and amendments made in 2015)

The Environment Management and Co-ordination Act (EMCA), 1999, and amendments made in 2015, is implemented by the guiding principle that every person has a right to a clean and healthy environment and can seek redress through the high court if this right has been, is likely to be or is being contravened.

Section 58 of the Act makes it a mandatory requirement for an EIA to be carried out by proponents intending to implement projects specified in the second schedule of the Act [(1)]. Such projects have a potential of causing significant impacts on the environment. Similarly, Section 68 of the same Act requires operators of existing projects or undertakings to carry out environmental audits in order to determine the level of conformance with statements made during the EIA.

Relevance to this Project

The proposed CSF Project falls within the category of medium risk projects for which an EIA Project Report is required. More specifically:

- *Agriculture and related activities, including medium size agricultural and livestock produce storage facilities;*
- *Medium scale processing and manufacturing industries, including:*
  - *food-processing plants or agro-based processing plants; and*
  - *go-downs for storage and warehouses.*

This EIA has therefore been carried out in line with the requirements of this Act, and the Project Proponent is required to commit to implementing the Environmental and Social Management and Monitoring Plan (ESMMP) laid out in this Project Report, as well as any other conditions as stipulated by NEMA, prior to being issued an EIA licence.

2.4.3 The Environmental (Impact Assessment and Audit) Regulations, 2003 (and amendments made in 2009, 2016 and 2019)

The Environmental (Impact Assessment and Audit) Regulations state in Regulation 3 that "the Regulations should apply to all policies, plans, programmes, projects and activities specified in Part IV, Part V and the Second Schedule of the Act". Part II of the Regulations indicates the procedures to be taken during preparation, submission and approval of the ESIA Project Report, i.e., this Report. Specifically, the Environmental (Impact Assessment and Audit) (Amendment) Regulations, 2016 and 2019 contains an updated version of the Second Schedule in which the proposed Project falls in the category of medium risk projects for which an EIA Project Report is required.

Relevance to this Project

[(1)] The Second Schedule of the EMCA was updated in the Environmental (Impact Assessment and Audit) (Amendment) Regulations, 2016 and 2019.

This ESIA Project Report has been undertaken to comply with the requirements of these Regulations.

2.4.4 The Environmental Management and Co-ordination (Water Quality) Regulations, 2006

The Regulations provide for sustainable management of water resources including prevention of water pollution and protection of water sources. It is an offence under Regulation No. 4 (2), for any person to throw or cause to flow into or near a water resource any liquid, solid or gaseous substance or deposit any such substance in or near it, as to cause pollution. Regulation No. 11 further makes it an offence for any person to discharge or apply any poison, toxic, noxious or obstructing matter, radioactive waste or other pollutants or permit the dumping or discharge of such matter into the aquatic environment unless such discharge, poison, toxic, noxious or obstructing matter, radioactive waste or pollutant complies with the standards for effluent discharge into the environment.

Relevance to this Project

The provision of the water quality regulations will need to be observed to avoid potential pollution of storm water that might end up into the Indian Ocean. Furthermore, any effluent discharged to the municipal sewer will also need to meet permit requirements.

2.4.5 The Environmental Management and Co-ordination (Waste Management) Regulations, 2006

The Regulations provide details on management (handling, storage, transportation, treatment and disposal) of various waste streams including:

- domestic waste;
- industrial waste;
- hazardous and toxic waste;
- pesticides and toxic substances;
- biomedical wastes; and
- radioactive wastes.

Regulation No. 4 (1) makes it an offence for any person to dispose of any waste on a public highway, street, road, recreational area or in any public place except in a designated waste receptacle.

Monitoring the product cycle from beginning to end is also required by:

- identifying and eliminating potential negative impacts of the product;
- enabling the recovery and re-use of the product where possible;
- reclamation and recycling; and
- Incorporating environmental concerns in the design and disposal of a product.

Regulation 6 requires waste generators to segregate waste by separating hazardous waste from non-hazardous waste for appropriate disposal. Regulation 15 prohibits any industry from discharging or disposing of any untreated waste in any state into the environment. Regulation 17 (1) makes it an offence for any person to engage in any activity likely to generate any hazardous waste without a valid Environmental Impact Assessment license issued by NEMA.

Relevance to this Project

The Project will generate wastes during the construction and operation phases, which will need to be disposed of as per the Regulations.

2.4.6 The Environmental Management and Co-ordination (E-Waste Management) Regulations, 2013 - Draft.

The draft Environmental Management and Co-ordination (E-Waste Management) Regulations (2013) provide a legal and institutional framework and mechanisms for the management of E-waste handling, collection, transportation, recycling and safe disposal of E-waste. It also provides for improved legal and administrative co-ordination of the diverse sectoral initiatives in management of E- waste as a waste stream in order to improve the national capacity for the management of the E-waste.

Relevance to this Project

Electrical and electronic equipment will be used within the proposed Project, with E-waste expected to be generated in offices and cold storage equipment / facilities associated with the Project. Also, e-waste will be generated from the solar power components such as waste batteries, waste solar panels and other electronic accessories.

2.4.7 The Environmental Management and Co-ordination Act (Noise and Excessive Vibration Pollution) (Control) Regulations, 2009

These Regulations were published as legal Notice No. 61 being a subsidiary legislation to the Environmental Management and Co-ordination Act, 1999. The Regulations provide information on the following:

- prohibition of excessive noise and vibration;
- provisions relating to noise from certain sources;
- provisions relating to licensing procedures for certain activities with a potential of emitting excessive noise and/or vibrations; and
- noise and excessive vibrations mapping.

According to Regulation 3 (1), no person shall make or cause to be made any loud, unreasonable, unnecessary or unusual noise which annoys, disturbs, injures or endangers the comfort, repose, health or safety of others and the environment. Regulation 4 prohibits any person to (a) make or cause to be made excessive vibrations which annoy, disturb, injure or endanger the comfort, repose, health or safety of others and the environment; or (b) cause to be made excessive vibrations which exceed 0.5 centimetres per second beyond any source property boundary or 30 metres from any moving source.

Regulation 5 further makes it an offence for any person to make, continue or cause to be made or continued any noise in excess of the noise levels set in the First Schedule to these Regulations, unless such noise is reasonably necessary to the preservation of life, health, safety or property.

Regulation 12 (1) makes it an offence for any person to operate a motor vehicle which- (a) produces any loud and unusual sound; and (b) exceeds 84 dB(A) when accelerating. According to sub-Regulation 2 of this Regulation, no person shall at any time sound the horn or other warning device of a vehicle except when necessary to prevent an accident or an incident. Regulation 13 (1) provides that except for the purposes specified in sub-Regulation (2) there under, no person shall operate construction equipment (including but not limited to any pile driver, steam shovel, pneumatic hammer, derrick or steam or electric hoist) or perform any outside construction or repair work so as to emit noise in excess of the permissible levels as set out in the Second Schedule to these Regulations.

Regulation 19 (1) prohibits any person to carry out activities relating to fireworks, demolitions, firing ranges or specific heavy industry without a valid permit issued by the Authority. According to sub-Regulation 4, such permit shall be valid for a period not exceeding three months.

Table 2.1 presents the maximum permissible noise levels for construction sites in Kenya per these regulations.

Table 2.1 Maximum Permissible Noise for Construction Sites in Kenya

	Facility	Maximum Permissible Noise Level in dB(A)	
		Day (06:01 – 18:00, LAeq, 12 hour)	Night (18:01 – 06:00, LAeq 12 hour)
(i)	Health facilities, educational institutions, homes for disabled etc.	60	35
(ii)	Residential	60	35
(iii)	Areas other than those prescribed in (i) and (ii) (and of applicability to this Project).* * which is applicable to this Project	75	65

Relevance to this Project

The Proponent will be required to ensure compliance with the above Regulations (as set out in (iii)) in order to promote a healthy and safe working environment throughout the construction and operation phases. This shall include regular inspection and maintenance of equipment to reduce noise and vibration, prohibition of unnecessary noise emitted from movement of construction equipment and Project heavy and light vehicles, adherence to the noise levels stipulated for day and night etc.

2.4.8 The Environmental Management and Co-ordination Act (Air Quality), Regulations, 2014

The Kenyan Air Quality Standards as part of *The Environmental Management and Co-ordination Act 1999*, were transposed into Kenyan legislation through *The Environmental Management and Co-ordination (Air Quality) Regulations, 2014*. These standards include a consideration of the type of area within which the proposed Project is located – i.e. industrial area.

Relevance to this Project

The Project is located in an industrial zone where a number of light industrial developments are on-going. Dust (particulate) creating activities during the construction phase will largely be associated with land clearing and earthworks. Air quality considerations during the operations phase will be associated with truck movements and the infrequent operation of a backup generator for power. As such NO_x, CO_2, CO and particulates are the applicable potential air quality pollutants for the Project.

Table 2.2 presents the ambient air quality tolerance limits for industrial areas.

Note - where Kenyan standards are set out in terms of parts per million, these have been converted to µg/m^3 for ease of comparison.

Table 2.2 Kenya's Ambient Air Quality Tolerance Limits for Industrial Areas

Pollutant	Time Weighted Average	Tolerance Limit
SO_X	Annual average	80 µg/m^3
SO_X	24 hours	125 µg/m^3
NO_X	Annual average	80 µg/m^3
NO_X	24 hours	150 µg/m^3
NO_2	annual average	150 µg/m^3
NO_2	24 hours	100 µg/m^3
Suspended Particulate Matter (SPM)	Annual average	360 µg/m^3
Suspended Particulate Matter (SPM)	24 hours	500 µg/m^3
Respirable Particulate Matter (<10µm) (RPM)	Annual average	70 µg/m^3

Pollutant	Time Weighted Average	Tolerance Limit
Respirable Particulate Matter (<10µm) (RPM)	24 hours	150 µg/m^3
$PM_{2.5}$	Annual average	35 µg/m^3
$PM_{2.5}$	24 hour maximum	75 µg/m^3
Lead	Annual average	1.0 g/Nm^3
Lead	24 hours	1.5 g/m^3
Carbon monoxide (CO)/ carbon dioxide (CO_2)	8 hours	5.0 mg/m^3
Carbon monoxide (CO)/ carbon dioxide (CO_2)	1 hour	10.0 mg/m^3
Hydrogen Sulphide	24 hours	150 µg/m^3
Non-methane hydrocarbons	instant Peak	700 ppb
Total Volatile organic Compounds (VOC)	24 hours	600 µg/m^3
Ozone	1-Hour	200 µg/m^3
Ozone	8 hour (instant Peak)	120 µg/m^3

2.4.9 Traffic Act (Cap 403, revised in 2015 and the Amendments of 2017) 2017

This Act consolidates the law relating to traffic on the roads. Part III of this Act details the procedure for licensing of vehicles while Part IV details the process of obtaining a driving license. Part V of this Act lists the driving and other offenses relating to the use of vehicles on the road.

Section 69 of this Act makes it the duty of the police:

- to regulate all traffic and to keep order and prevent obstruction in all roads, parking places and other places of public resort; and
- to divert traffic temporarily, or to restrict or close and deny public access to any road, parking place or other place of public resort, where any emergency or any assembly or other event appear to render advisable such a course.

Section 70 of this Act further makes it a requirement for the relevant authority to install road signs on or near a road including road traffic signs prescribing speed limits on the road.

Relevance to this Project

A number of vehicles and equipment will be used for the Project during both construction and operation. All of these vehicles and pieces of equipment need to be licensed, as well as their drivers, in line with the requirements of this Act. Where necessary, the Project Proponent will liaise with the police for the regulation of Project related traffic as well as the installation of any additional Project road signs, as required.

2.4.10 Urban Areas and Cities Act, 2011

This Act provides for the classification, governance and management of urban areas and cities, among others. Part V of this Act focusses on integrated development planning which shall give effect to the development of urban areas and cities as required by this Act and any other written law, among others.

Relevance to this Project

Implementation of the Project will be aligned to the integrated development planning of Kwale County and Colfax Industrial Park in particular.

2.4.11 The National Transport and Road Safety Act, 2012

This Act provides for the establishment of the National Transport and Safety Authority (NTSA), the powers and functions of the Authority, and for connected purposes. Section 22 of this Act provides for the establishment of county transport and safety committees in each county whose roles are to:

- Oversee the management and regulation of the road transport system by the Authority at the county level;
- Prepare and submit to the Authority such audit reports as the Authority may require on the safety, reliability and efficiency of the road transport system within the county;
- Advise the Authority on matters affecting the road transport system within the county; and
- Perform such other functions as may be assigned to it by the Authority.

Relevance to this Project

In implementing the proposed Project, the Project implementation team will liaise with County transport and safety committees as well as the management of Colfax Industrial Park in planning for Project related road transportation.

2.4.12 Land Act, 2012

This is an Act of Parliament intended to give effect to Article 68 of the Constitution, to revise, consolidate and rationalise land laws, to provide for the sustainable administration and management of land and land-based resources, and for connected purposes.

Parts 1 and 2 of Section 4 of the Act outline the main guiding principles in land management and administration, binding to all land actors including State officers. These principles are to be applied when enacting, applying or interpreting any provisions of this Act; and when making or implementing public policy decisions. In discharging their functions and exercising of their powers under this Act, the Commission and any State officer or Public officer shall be guided by the following values and principles:

- equitable access to land;
- security of land rights;
- sustainable and productive management of land resources;
- transparent and cost-effective administration of land;
- conservation and protection of ecologically sensitive areas;
- elimination of gender discrimination in law, customs and practices related to land and property in land;
- encouragement of communities to settle land disputes through recognised local community initiatives;
- participation, accountability and democratic decision making within communities, the public and the Government;
- technical and financial sustainability;
- affording equal opportunities to members of all ethnic groups;
- non-discrimination and protection of the marginalized;
- democracy, inclusiveness and participation of the people; and
- alternative dispute resolution mechanisms in land dispute handling and management.

Article 5 of the Land Act lists forms of land tenure: Freehold; Leasehold; such forms of partial interest as may be defined under this Act and other law, including but not limited to easements and customary

land rights, where consistent with the Constitution. This article also provides for equal recognition and enforcement of land rights arising under all tenure systems and non-discrimination in ownership of, and access to land under all tenure systems.

Article 56 of the Land Act on the power to lease land states that the owner of private land may:

(a) Lease that land or part of it to any person for a definite period or for the life of the lessor or of the lessee or for a period which though indefinite, may be terminated by the lessor or the lessee; and

(b) Subject the lease to any conditions that may be required by this Act or any other law or that the lessor may impose.

Relevance to this Project

The Project will be developed on two plots; that is Plot 35 (2.889 hectares) and Plot 36 (3.490 hectares), together forming one parcel of land located at the Colfax Industrial Park, Bonje, Miritini Kwale County, Kenya. The plots for the proposed Project are currently owned by Colfax Holdings Limited on a 99 year lease, with title deeds. The Project Proponent is in the process of securing the land on a willing seller-willing buyer basis from Colfax Holdings Ltd, in accordance with the requirements of this Act.

2.4.13 National Land Commissions Act, 2012

This is an Act of Parliament to make further provision as to the functions and powers of the National Land Commission, qualifications and procedures for appointments to the Commission, to give effect to the objects and principles of devolved government in land management and administration, and for connected purposes.

The mandate of the Commission, as provided for in the Act, Pursuant to Article 67(2) of the Constitution, shall be:

- to manage public land on behalf of the national and county governments;
- to recommend a national land policy to the national government;
- to advise the national government on a comprehensive programme for the registration of Title in Land throughout Kenya;
- to conduct research related to land and the use of natural resources, and make recommendations to appropriate authorities;
- to initiate investigations, on its own initiative or on a complaint, into present or historical land injustices, and recommend appropriate redress;
- to encourage the application of traditional dispute resolution mechanisms in land conflicts;
- to assess tax on land and premiums on immovable property in any area designated by law;
- to monitor and have oversight responsibilities over land use planning throughout the country;
- on behalf of, and with the consent of the national and county governments, alienate public land;
- to monitor the registration of all rights and interests in land;
- to ensure that public land and land under the management of designated state agencies are sustainably managed for their intended purpose and for future generations;
- develop and maintain an effective land information management system at national and county levels;
- manage and administer all unregistered trust land and unregistered community land on behalf of the county government; and

- develop and encourage alternative dispute resolution mechanisms in land dispute handling and management.

Relevance to this Project

Any land ownership documents required for the Proposed Project must be confirmed by the National Land Commission (NLC).

2.4.14 Land Registration Act, 2012

This is an Act of Parliament intended to revise, consolidate and rationalise the registration of titles to land, to give effect to the principles and objects of devolved government in land registration, and for connected purposes.

Land Registry

Section 7(1) of the Act provides for establishment of a land registry in each registration unit which shall keep registers of the following regarding land:

- a land register, in the form to be determined by the Commission;
- the cadastral map;
- parcel files containing the instruments and documents that support subsisting entries in the land register;
- any plans which shall, after a date appointed by the Commission, be geo-referenced;
- the presentation book, in which shall be kept a record of all applications numbered consecutively in the order in which they are presented to the registry;
- an index, in alphabetical order, of the names of the proprietors; and
- a register and a file of powers of attorney.

Maintenance of Documents, including Land Title Deeds

Further, Section 9 (1) provides that the Registrar shall maintain the register and any document required to be kept under this Act in a secure, accessible and reliable format. These documents include:

- publications, or any matter written, expressed, or inscribed on any substance by means of letters, figures or marks, or by more than one of those means, that may be used for the purpose of recording that matter;
- electronic files; and
- an integrated land resource register.

The register, as provided for in Part 2 of Section 9, shall contain the following particulars;

- name, personal identification number, national identity card number, and address of the proprietor;
- in the case of a corporate body, name, postal and physical address, certified copy of certificate of incorporation, personal identification numbers and passport size photographs of persons authorised and where necessary attesting the affixing of the common seal;
- names and addresses of the previous proprietors;
- size, location, user and reference number of the parcel; and
- any other particulars as the Registrar may, from time to time, determine.

Relevance to this Project

The land lease agreement for the Project land will need to be registered in the names of the Project Proponent, in accordance with the provisions of this Act.

2.4.15 Water Act, 2016

The Water Act No. 43 of 2016 provides for the regulation, management and development of water resources, water and sewerage services; and for other connected purposes. As stated in Section 63, every person in Kenya has the right to clean and safe water in adequate quantities and to reasonable standards of sanitation as stipulated in Article 43 of the Constitution.

Section 21(1) of this Act provides for national monitoring and information systems on water resources. Section 21(2) that follows mandates the Water Resources Authority (WRA) to demand from any person, within a reasonable time or on a regular basis, to provide it with specified information, documents, samples or materials in relation to the system referred to in Section 21(1). Under these rules, specific records may require to be kept by a site operator and the information thereof furnished to the authority.

Section 36 makes it a requirement to obtain a permit for any of the following purposes:

- any use of water from a water resource, except as provided by Section 37 [(2)];
- the drainage of any swamp or other land;
- the discharge of a pollutant into any water resource; and
- any other purpose, to be carried out in or in relation to a water resource, which is prescribed by Regulations made under this Act to be a purpose for which a permit is required.

Section 38 makes it an offence for any person who:

- without a permit, constructs or employs works for a purpose for which a permit is required; or
- being the holder of a permit, constructs or employs any such works in contravention of the conditions of the permit.

In line with Section 5(1) of the Second Schedule of this Act, the permit holder shall submit a completion certificate in the prescribed form upon the expiration of the time limited by a permit for construction of works authorised by the permit, or where the construction is completed before the expiration of that time.

Section 143 (1) further prohibits any person from participating in any of the following activities without authority conferred under this Act:

- wilfully obstruct, interfere with, divert or obstruct water from any watercourse or any water resource, or negligently allow any such obstruction, interference, diversion or abstraction; or
- throw, convey, cause or permit to be thrown or conveyed, any rubbish, dirt, refuse, effluent, trade waste or other offensive matter or thing into or near to any water resource in such manner as to cause, or be likely to cause, pollution of the water resource.

Relevance to this Project

[(2)] Section 37 lists water use practices that are exempted from the acquisition of a water use permit. These include:

(a) for the abstraction or use of water, without the employment of works, from any water resource for domestic purposes by any person having lawful access to the water resource;

(b) for the abstraction of water in a spring which is situated wholly within the boundaries of the land owned by any one landholder and does not naturally discharge into a watercourse abutting on or extending beyond the boundaries of that land; or

(c) *for the storage of water in, or the abstraction of water from a reservoir constructed for the purpose of such storage and which does not constitute a water course for the purposes of this Act.*

Water at the Project site will be provided by Colfax Industrial Park in liaison with the Coast Water Services Board (CWSB); however, discharges from the on-site wastewater treatment plant will need to be done in line with the provisions of this Act and conform to the permit requirements. A permit for the onsite WWTP will be obtained from NEMA, via the management of Colfax Industrial Park once detailed designs are completed.

2.4.16 Water Quality Regulations, 2006

The Water Quality Regulations (2006) are contained in the Kenya Gazette Supplement No 68, Legal Notice No 120. Of immediate relevance to the proposed project for the purposes of this ESIA Project Report is Part II, Sections 4 - 5, as well as Part V, Section 24.

Part II, Section 4 states that "Every person shall refrain from any act which directly or indirectly causes, or may cause, immediate or subsequent water pollution."

Part V, Section 24 states that "No person shall discharge or apply any poison, toxic, noxious or obstructing matter, radioactive wastes, or other pollutants or permit any person to dump or discharge any such matter into water meant for fisheries, wildlife, recreational purposes of any other uses."

Relevance to this Project

Effluent discharges from the Project WWTP will need to comply with the provisions of these Regulations. In particular, an effluent discharge permit for the onsite WWTP will be obtained from NEMA, via the management of Colfax Industrial Park once detailed designs are completed.

2.4.17 Water Resources Management Rules (2007)

In addition to the Water Act 2016, the main document outlining applicable Regulations is the Water Resource Management Rules 2007. The rules set out the procedures for obtaining water use permits and the conditions placed on permit holders.

Relevance to this Project

Water for the Project will be provided by management of Colfax Industrial Park in liaison with the CWSB; however, discharges from the on-site Wastewater Treatment Plant will need to conform to the effluent permit provisions/conditions.

2.4.18 Climate Change Act, 2016

This is an Act to provide for a regulatory framework for enhanced response to climate change; to provide for mechanisms and measures to achieve low carbon climate development. Section 3 stipulates in part, that the national and county governments shall promote low carbon technologies, improve efficiency and reduce emissions intensity by facilitating approaches and uptake of technologies that support low carbon, and climate resilient development. According to section 15 of the Act, each state department and national government public entity shall integrate the climate change action plan into sectoral strategies, action plans and other implementation projections for the assigned legislative and policy functions and report on sectoral greenhouse gas emissions for the national inventory.

Relevance to this Project

While designing the Project, low carbon technologies are supposed to be evaluated and considered where feasible to minimise greenhouse gas emissions. (These are discussed in the Project Description chapter (Chapter 4)).

2.4.19 The Public Health Act (Cap 242)

This is an Act of Parliament to make provision for securing and maintaining health. Section 115 of this Act prohibits causing nuisance or other condition liable to be injurious or dangerous to health. Section 118 provides a list of nuisances which includes any noxious matter, or wastewater, flowing or

discharged from any premises, wherever situated, into any public street, or into the gutter or side channel of any watercourse, irrigation channel or bed thereof not approved for the reception of such discharge.

Relevance to this Project

Implementation of the Project will pose potential health risks especially to the Project workers such as dust and noise impacts, and Occupational Health and Safety (OHS) risks. These risks and impacts will need to be appropriately managed as recommended in Chapter 9 of this report.

2.4.20 The Public Health (Drainage and Latrine) Rules, Cap 130, 1958

Rule 85 provides that every owner or occupier of every workshop, workplace or other premises where persons are employed shall provide proper and sufficient latrines for use by employees.

Rule 87 requires every contractor, builder or other person employing workmen for the demolition, construction, reconstruction or alteration of any building or other work in any way connected with building to provide in an approved position sufficient and convenient temporary latrine for use by such workmen. Rule 91 provides that no person shall construct a latrine in connection with a building other than a water closet or a urinal, where any part of the site of such building is within 200 feet of a sewer belonging to the local authority which is at a suitable level, and where there is sufficient water supply.

Relevance to this Project

Human waste particularly from the construction and operations workers will need to be properly managed in line with the provisions of these rules. For instance, there should be appropriate lavatories for the Project workers at the workplace, with discharge into either a sewage network, or collection for discharge by a licensed NEMA waste contractor.

2.4.21 The Physical Planning Act, 1996

This is the main Act that governs land planning. It stipulates that all proposed developments must be approved by the respective local authority and a certificate of compliance issued accordingly.

This Act provides for the preparation and implementation of physical development plans for connected purposes. It establishes the responsibility for the physical planning at various levels of Government in order to remove uncertainty regarding the responsibility for regional planning.

Relevance to this Project

A key provision of the Act is the requirement for an Environmental Impact Assessment (EIA) to be conducted prior to the issuing of a certificate of compliance for the Project Facility. In addition, the building plans of the proposed Project will need to be approved by the management of of Colfax Industrial Park and by the appropriate officials of Kwale County.

2.4.22 Civil Aviation Act, 2013

This is an Act of Parliament to provide for the control, regulation and orderly development of civil aviation in Kenya and for connected purposes and Safety of aircraft and persons on board.

Section 46 (1) of the Act stipulates that a person shall not wilfully or negligently:

a) Imperil the safety of an aircraft or any person on board, whether by interference with any member of the crew of the aircraft or by tampering with the aircraft or its equipment, or by disorderly conduct or by any other means;

b) Cause or permit an aircraft to endanger any person or property;

c) Interfere or tamper with an air navigation facility.

(2) A person who contravenes the provisions of subsection (1) commits an offence and shall be liable upon conviction to a fine not exceeding two million shillings.

Relevance to this Project

In approving the Project's Development Plans, Kwale County in liaison with the management of Colfax Industrial Park will evaluate and consider applicability of this Act.

2.4.23 The Occupational Safety and Health Act, 2007

This is an Act of Parliament to provide for the safety, health and welfare of all workers and all persons lawfully present at workplaces, to provide for the establishment of the National Council for Occupational Safety and Health and for connected purposes.

It applies to all workplaces where any person is at work, whether temporarily or permanently.

The purpose of this Act is to:

- secure the safety, health and welfare of persons at work; and
- protect persons other than persons at work against safety and health arising out of, or in connection with the activities of persons at work.

Relevance to this Project

The Act establishes codes of practices to be approved and issued by the Directorate of Occupational Safety and Health Services (DOSHS) for practical guidance of the various provisions of the Act. For the purposes of this Project, the Contractor will be required to have in place an adequate Health and Safety Plan, which may be subject to inspection as to the adequacy of its implementation by the DOSHS. During operations, a valid certificate of occupancy will be required for the Project. Annual DOSH audits will also be required during operations.

7 tons of ammonia will be stored on site (indoors) during Operations, and will need to be the subject of a Major hazard installation certificate, to be issued by DOSH.

2.4.24 The Employment Act No 11, 2007

The Act is enacted to consolidate the law relating to trade unions and trade disputes, to provide for the registration, regulation, management and democratisation of trade unions and employers organisations and federations. Its purpose is to promote sound labour relations through freedom of association, the encouragement of effective collective bargaining and promotion of orderly and expeditious dispute the protection and promotion of settlement conducive to social justice and economic development for connected purposes. This Act is important since it provides for an employer – employee relationship that is important for the activities that would promote management of the environment at a workplace.

Relevance to this Project

The contractor and Project Proponent, being the primary employer, during the construction and operational phases of the Project, are bound by this law to abide to its stipulations on employee management and relations.

2.4.25 HIV/AIDS Prevention and Control Act (Act No.14 of 2006, Revised in 2012)

This is an Act of Parliament to provide measures for the prevention, management and control of HIV and AIDS, to provide for the protection and promotion of public health and for the appropriate treatment, counselling, support and care of persons infected or at risk of HIV and AIDS infection, and for connected purposes.

Part II, Section 7 of this Act requires HIV and AIDs education in the workplace. In accordance with the requirements of this Act, the government is expected to ensure provision of basic information and instruction on HIV and AIDs prevention and control to: Employees of all Government ministries, Departments, authorities, and other agencies; and, Employees of private and informal sectors. The

information on HIV and AIDs is expected to be treated with confidentiality at the workplace and positive attitudes shown towards infected employees and workers.

Relevance to this Project

HIV and AIDs prevention and control is one of the main challenges facing many countries in Sub-Saharan Africa, including Kenya. The Project Proponent will need to implement awareness programmes to share information with regards to HIV and AIDS prevention and control to all Project employees as well as other measures to curb the spread of HIV/AIDS, in conformance to this Act.

2.4.26 List of Environmental and Social Permits Required for the Project, as per the Requirements of Kenyan Law

Table 2.3 provides a summary of the environmental and social permits and licences required for the Project for both the construction and the operations phases.

Table 2.3 Relevant Environmental and Social Permits Required for the Project

Phase	Sector	Legislation	Authority	Permit/Licence	Comments
Construction Phase	Environment	EMCA	NEMA	EIA Licence	The EIA licence will give the decision criteria for NEMA and associated conditions of approval, which will need to be met. An annual audit report to NEMA will be required to indicate conformance to these permit conditions are achieved.
		Water Act, 2016	NEMA	Effluent discharge permit	Acquire an effluent discharge permit for WWTP and comply with its conditions throughout the operations phase.
		Environmental Management and Coordination (Waste Management) Regulations, 2006	NEMA	Ensure that the contracted waste handlers (transport and disposal) are licensed by NEMA	All Project waste to be disposed of appropriately.
	Land	Land Act 2012, National Land Commissions Act, 2012, Land Registration Act, 2012	National Land Commission	Title Deeds/ lease	Acquire a long-term lease from the management of Colfax Industrial Park.
		Physical Planning Act, 1996	Planning Department (Ministry of Lands) through Colfax Industrial Park	Development Approval	Relates to building and urban planning.
	Occupational Health and Safety	Occupational Health and Safety, 2007	Directorate of Occupational Health and Safety (DOSH)	Registration of workplace	Prior to construction
	Height Safety	Civil Aviation Act, 2013	Kenya Civil Aviation Authority (KCAA)	Height Permit	Relates to flight restrictions for developments in the Project area
Operation Phase	Environment	EMCA	NEMA	Initial Environmental Audit Acknowledgement Letter and Self-Audit Acknowledgement thereafter	Annual NEMA audit per the EIA licence that will be issued for the Project.

Phase	Sector	Legislation	Authority	Permit/Licence	Comments
	Occupational Health and Safety	Occupational Health and Safety, 2007	Directorate of Occupational Health and Safety (DOSH)	Registration of workplace Major Hazard Installation (MHI) certification for storage of bulk ammonia	Permit renewed annually subject to annual DOSH Audits. In particular, the annual audits will also need to include fire safety inspections. These audits are to be conducted by DOSH accredited independent parties. 7 tons of ammonia will be stored indoors on site. This will require MHI certification.

2.5 International Conventions, Protocols and Agreements

Kenya is signatory to a number of international conventions and agreements relating to environmental and social matters (refer to Table 2.4). In certain cases, these have influenced the promulgation of domestic policy, guidelines and regulations.

Although not all treaties/ conventions listed below have been enacted into domestic legislation; good practice would require that the ethos of each treaty be taken into consideration during the planning, construction and operations phases of the Project.

Table 2.4 Summary of International Conventions

International Convention	Objective	Relevance to this Project
Montreal Protocol on substance that deplete the ozone layer, 1987 (and the Kigali Amendment of 15th October 2016)	Control of manufacture and use of ozone depleting substances.	Many refrigerants have both Global Warming Potential (GWP) and Ozone Depleting Potential (ODP). The selection of the refrigerants for the Project should avoid those phased out under this protocol as described in the analysis of alternatives in Chapter 5 of this report. CCSEAF is committed to ensure that no hydrofluorocarbons (HFCs) or other ozone depleting substances listed under the Montreal Protocol and its Amendments are used in the facilities refrigeration technology.
United Nations Framework for Convention on Climate Change (UNFCCC)	Its main objective is to achieve the stabilisation of greenhouse gas concentrations in the atmosphere at a level that prevents dangerous anthropogenic interference with climate systems and within a specific timeframe which will allow ecosystems to adapt naturally to climate change, to ensure that food production is not threatened and to enable economic development to proceed in a sustainable manner.	The emission of greenhouse gases during the implementation of the proposed Project should be controlled to avoid compromising the objective of this convention. CCSEAF is committed to ensure that no hydrofluorocarbons (HFCs) or other ozone depleting substances listed under the Montreal Protocol and its Amendments are used in the facilities refrigeration technology.
Bamako Convention, 1991	This convention focusses on the ban of the import of hazardous wastes into Africa and the control of transboundary movement and management within Africa.	Any Project associated hazardous wastes will need to be appropriately managed to avoid contravention of this convention. Moreover, Project Procurement will need to screen all Project goods and products exported from the Country. Appropriate and authorised destinations for the export of hazardous waste will need to be identified.

International Convention	Objective	Relevance to this Project
Basel Convention, 1989	Transboundary transportation and disposal of hazardous wastes. Its objective is to protect human health and the environment against the adverse effects of hazardous wastes.	Any Project waste will need to be correctly classified to identify what qualifies as hazardous waste according to this convention. Appropriate and authorised destinations for the export of hazardous waste will need to be identified.

2.6 International Good Practice and Lender Requirements

2.6.1.1 ARCH's Environmental and Social Framework

CCSEAF has developed an Environmental and Social Management System (ESMS) that will guide all investments into East Africa. CCSEAF is committed to developing and operating best-in-class cold storage and logistics operations in its target countries.

The objective of CCSEAF's ESMS is to continually endeavour to enhance effective environmental and social (E&S) management practices in all its activities, products, and services with a special focus on the following considerations:

- Ensuring that applicable E&S requirements are met for all Investments;
- Integrating environmental and social risk assessments into investment due diligence processes;
- Ensuring appropriate consultation and transparency in project activities;
- Working together with the portfolio companies and business partners to put into practice applicable E&S requirements; and
- Actively seek investments with positive development benefits.

CCSEAF's ESMS includes the following policy statements:

2.6.1.2 CCSEAF E&S Compliance Framework

- IFC E&S Performance Standards (2012) and associated Guidance Notes;
- African Development Bank's (AfDB) Integrated Safeguards System – Operational Safeguards (2013);
- The World Bank Group (WBG) General and relevant sector-specific Environmental, Health and Safety (EHS) Guidelines
- International Bill of Human Rights
- The International Labour Organisation (ILO)'s Core Labour Conventions;
- GIIP in the cold chain sector, including membership conditions and guidance issued by the Global Cold Chain Alliance (GCCA) on energy efficiency, workplace health and safety, greenhouse gases, water conservation, ammonia spill and fire prevention and emergency response, driver safety, food safety; and
- All national laws and regulations pertaining to E&S relevant to each investment.

2.6.1.3 2.6.22.6.32.6.4*Environmental and Social Commitments*

General

- Achieve Leadership in Energy and Environmental Design (LEED) certification for the building design and construction of the new facilities.
- Do not invest in any E&S Category A developments or companies, meaning "business activities with potential significant adverse environmental or social risks and/or impacts that are diverse, irreversible, or unprecedented" (IFC, 2012).

Climate Change

- Use on-site renewable energy to power the facilities to the extent feasible.
- Quantify the amount of GHG emissions displaced through the operation of the assets.
- Monitor and report Scope 1 and 2 (and where appropriate Scope 3) GHG emissions on an annual basis.

Environment

- Do not use hydrofluorocarbons or other ozone depleting substances listed under the Montreal Protocol and its Amendments in the facilities refrigeration technology.
- Remain committed to utilising Best Available Technique (BAT) for our logistics fleet.

Community

- Avoid physical and economic displacement, and where this is not possible identify land that is the least impacting and within a Category B profile.
- Avoid all impacts to critical cultural heritage as defined by IFC PS8[3].
- Avoid projects that directly impact Indigenous Peoples, triggering obtaining their Free, Prior and Informed Consent.
- Prioritise affected communities in the distribution of project benefits, e.g. employment, procurement of goods and services and community investment.

Biodiversity

- Avoid investing in projects with significant impacts to Legally Protected and Internationally Recognized Areas and Critical Habitat as defined by IFC PS6.

Food Safety

- Achieve local and international food safety certifications (those necessary for customer's clients) for CCSEAF's facilities.

Governance and Business Integrity

- Conduct all business dealings with honesty, integrity, fairness, diligence and respect.
- Zero tolerance for bribery, corruption, fraud and unethical behaviour, whether under UK law or the law of the jurisdiction in which the portfolio company's asset(s) is located.
- Properly record, report and review financial and tax information.

2.6.1.4 Managing E&S Sustainability across the investment lifecycle

CCSEAF is responsible for implementing its ESMS requirements for managing E&S risks and opportunities across each stage of the investment lifecycle, including:

- E&S screening against an exclusion/prohibited activities list (as a minimum based on the IFC Exclusion List (2007), but tailored to LP requirements) and identification of potential E&S red flags and opportunities;
- E&S impact assessment (ESIA) and other E&S studies scoped and scaled to the E&S risk level of the facilities;

- Review and consideration of E&S risks/impacts and opportunities identified by the ESIA by the Investment Advisory Committee;
- Incorporation of E&S terms including definition of standards and E&S Management and Monitoring Plan (ESMMP) devolved from the ESIA, and requirements for development of HSES management plans in line with these, into contractor and operating company legal agreements and contracts;
- Active stewardship and monitoring of E&S issues and opportunities, achieving alignment with the Applicable E&S Standards, and guiding positive E&S and climate outcomes where possible during ownership; and
- Articulation of E&S value creation during ownership at exit.
-

2.6.2 International Finance Corporation (IFC) Performance Standards on Environmental and Social Sustainability, 2012

The International Finance Corporation (IFC), a division of the World Bank Group that lends to private investors, has a Sustainability Policy and set of Performance Standards (PSs) on Social and Environmental Sustainability (January 2012). It should be noted that even for Projects that do not anticipate seeking financing from the IFC, the IFC PSs are typically applied as a benchmark of international good practice.

The PSs are directed towards providing guidance on how to identify risks and impacts, and are designed to help avoid, mitigate and, manage risks and impacts as a way of doing business in a sustainable way, including stakeholder engagement and disclosure obligations of the client in relation to project-level activities. In the case of direct investments for the IFC (including project and corporate finance provided through financial intermediaries), the IFC requires that its clients apply the PSs to manage environmental and social risks and impacts so that development opportunities are enhanced (IFC, 2012). A number of lenders have adopted these IFC PSs.

It should be noted that the project falls under Category B: "*Business activities with potential limited adverse environmental or social risks and/or impacts that are few in number, generally site specific, largely reversible, and readily addressed through mitigation measures*." (also refer to Section 3.2.1: Screening of the Project per Kenya laws and regulations).

A summary of the scope of the IFC PSs and the applicability to the Project is set out in Table 2.5.

Note that Performance Standards (PSs) 5, 6, 7 and 8 are not applicable to this Project. The reasons for their non-applicability is provided in Table 2.5 below.

Table 2.5 IFC Performance Standards

No.	Title	Key Requirement	Relevance to the Project
1	Assessment and Management of Social and Environmental Risks and Impacts.	This PS relates to integrating and managing environmental and social performance throughout the life of a project in line with national regulations and international standards. The standard requires the development of an Environmental and Social Management System (ESMS) that entails a structured approach to managing environmental and social risks and impacts.	The proposed Project will be associated with some environmental and social impacts which will need to be appropriately managed.
2	Labour and Working Conditions	This standard aims to ensure that the client establishes, maintains and improves a worker-management relationship that promotes the fair treatment, non-discrimination and equal opportunity of workers, and compliance with national labour and employment laws and international standards (as defined by the International Labour Organisation (ILO). In particular, PS2 addresses child labour and forced labour, and promotes safe and healthy working conditions, and protecting and promoting the health of workers by recognising the role of employees.	Project workers (for all Project phases) will need to be provided with fair labour and working conditions. This will apply to all categories of workers irrespective of whether directly engaged by the developer or contractor (direct workers), engaged through third parties (contracted workers), and workers engaged by the client's primary suppliers (supply chain).
3	Resource Efficiency and Pollution Prevention	This PS aims to abate pollution to air, water, and land that may threaten people and the environment at the local, regional, and global levels. This Performance Standard promotes the ability of private sector companies to adopt such technologies and practices where feasible.	All required resources will need to be used efficiently and all wastes managed in accordance with the waste management hierarchy, where avoidance of waste generation is the first priority to avoid or minimise pollution as much as possible.
4	Community, Health, Safety and Security	The role of this PS is to anticipate and avoid adverse impacts on the health and safety of the affected communities throughout the life of the project as a result of routine and non-routine events. The PS also requires an assessment of how use of security by the Project to safeguard personnel and property could impact on community security considering human rights.	Implementation of the proposed Project will need to ensure that the health, safety and security of local community members is not compromised.
5	Land Acquisition and Involuntary Resettlement	PS5 aims to anticipate and avoid physical and economic displacement or, where avoidance is not possible, to minimise adverse social and economic impacts.	**Not applicable to this Project,** since the Project site is located in an industrial park devoid of any settlement and will not result in physical or economic displacement. Project land already acquired by the management of the Colfax Industrial Park.

No.	Title	Key Requirement	Relevance to the Project
6	Biodiversity Conservation and Sustainable Management of Living Resource	This PS aims to protect and conserve biodiversity based on the Convention on Biological Diversity. It divides habitat into three categories, modified, natural, and critical, and guides on the required level of assessment for Projects in each type of habitat. For modified habitats [3], impacts on biodiversity should be minimised and mitigation measures implemented appropriately. For projects in natural habitat, mitigation measures should be designed to achieve no net loss of biodiversity where feasible. For projects in critical habitats, the project's mitigation strategy should be described in a Biodiversity Action Plan and be designed to achieve net gains of those biodiversity values for which the critical habitat was designated.	**Not applicable to this Project,** since the Project is located within modified habitats without any significant biodiversity value as described in detail in Chapter 6 of this report. However, reference has been made to this standard when designing the mitigation measures such as those for the appropriate management of invasive plant species.
7	Indigenous Peoples	This PS deals with safeguarding Indigenous Peoples. The aim of this PS is to protect the interests of Indigenous Peoples during project implementation. On a broader scale, it requires project implementation to avoid adverse impacts on Indigenous Peoples as well as ensuring their participation and consent.	**Not applicable to this Project**, since the Project Site is located within an industrial park devoid of any settlement. There are no people currently dependent on the Project Site and thus the Project will not result in either physical or economic displacement. There are no critical cultural heritage sites near the project site that will be impacted by the project. Lastly, the project will not require relocation of IPs subject to traditional land ownership.
8	Cultural Heritage	Cultural heritage, according to this PS, refers to tangible forms of cultural heritage, such as tangible movable or immovable objects, property, sites, structures, or groups of structures, having archaeological (prehistoric), paleontological, historical, cultural, artistic, and religious values; unique natural features or tangible objects that embody cultural values, such as sacred groves, rocks, lakes, and waterfalls; and certain instances of intangible forms of culture that are proposed to be used for commercial purposes, such as cultural knowledge, innovations, and practices of communities embodying traditional lifestyles.	**Not applicable to this Project,** since the Project is located within an industrial park devoid of any cultural heritage of significance.

[3] This Performance Standard applies to those areas of modified habitat that include significant biodiversity value, as determined by the risks and impacts identification process.

2.6.3 IFC General Environmental, Health and Safety (EHS) Guidelines

The Environmental, Health and Safety (EHS) Guidelines are technical reference documents that address the IFC's expectations regarding the EHS performance of its projects. They are designed to assist managers and decision makers with relevant industry background and technical information. This information supports actions aimed at avoiding, minimising, and controlling EHS impacts during the construction, operation, and decommissioning phase of a project or facility. The EHS Guidelines serve as a technical reference source to support the implementation of the IFC Performance Standards.

General EHS Guidelines exist which contain information on cross-cutting environmental, health, and safety issues potentially applicable to all industry sectors; these are listed Box 2.1.

Box 2.1 IFC General EHS Guidelines

1. Environmental
1.1 Air Emissions and Ambient Air Quality
1.2 Energy Conservation
1.3 Wastewater and Ambient Water Quality
1.4 Water Conservation
1.5 Hazardous Materials Management
1.6 Waste Management
1.7 Noise
1.8 Contaminated Land

2. Occupational Health and Safety
2.1 General Facility Design and Operation
2.2 Communication and Training
2.3 Physical Hazards
2.4 Chemical Hazards
2.5 Biological Hazards
2.6 Radiological Hazards (Likely to be Not Applicable to the Project).
2.7 Personal Protective Equipment (PPE)
2.8 Special Hazard Environments (Likely to be Not Applicable to the Project).
2.9 Monitoring

3. Community Health and Safety
3.1 Water Quality and Availability
3.2 Structural Safety of Project Infrastructure
3.3 Life and Fire Safety (L&FS)
3.4 Traffic Safety
3.5 Transport of Hazardous Materials
3.6 Disease Prevention
3.7 Emergency Preparedness and Response

4. Construction and Decommissioning
4.1 Environment
4.2 Occupational Health and Safety
4.3 Community Health and Safety

2.6.4 Integrated Safeguard System of the African Development Bank

The Integrated Safeguards System (ISS) were adopted by the African Development Bank (AfDB) on 7th December, 2013. The ISS outlines the AfDB's strategy to promote growth that is both socially inclusive and environmentally sustainable.

The AfDB requires that all borrowers/clients comply with the ISS requirements during all Project preparation and implementation processes. A brief description of each of the Operational Safeguards is included in Box 2.2.

Box 2.2 AfDB ISS Operational Safeguards

Operational Safeguard 1: Environmental and Social Assessment
This overarching safeguard governs the process of determining a project's environmental and social category and the resulting environmental and social assessment requirements.

Operational Safeguard 2: Involuntary Resettlement, Land Acquisition, Population Displacement and Compensation
Does not apply to this Project

Operational Safeguard 3: Biodiversity and Ecosystem Services
Does not apply to this Project

Operational Safeguard 4: Pollution Prevention and Control, Hazardous Materials and Resource Efficiency
This safeguard covers the range of key impacts of pollution, waste, and hazardous materials for which there are agreed international conventions, as well as comprehensive industry-specific and regional standards, including greenhouse gas accounting, that other multilateral development banks follow.

Operational Safeguard 5: Labour Conditions, Health and Safety
This safeguard establishes the Bank's requirements for its borrowers or clients concerning workers' conditions, rights and protection from abuse or exploitation. It also ensures greater harmonisation with most other multilateral development banks.

2.6.5 Parameter Specific International Guidelines

2.6.5.1 IFC EHS Guidelines – 1.1 Air Emissions and Ambient Air Quality

Table 2.2 sets out the Kenyan Air Quality Emission Standards for industrial areas (as defined in *Section2.4.8*), which will be used for this assessment.

The Project is located in an industrial zone where a number of light industrial developments are on-going. Dust (particulate) creating activities during the construction phase will largely be associated with land clearing and earthworks. Air quality considerations during the operations phase will be associated with truck movements and the infrequent operation of a backup generator for power. As such NO_x, CO_2, CO and particulates are the applicable potential air quality pollutants for the Project.

Given the Project location in an industrial area, and distance to closest sensitive receptors, the Project is a low risk with respect to air quality impacts.

2.6.5.2 IFC EHS Guidelines – 1.3 Wastewater and Ambient Water Quality

IFC EHS Guideline 1.3 specifies that discharges should not result in contaminant concentrations in excess of local ambient water quality criteria or, in the absence of local criteria, other sources of ambient water quality. Receiving water use and assimilative capacity, taking other sources of discharges to the receiving water into consideration, should also influence the acceptable pollution loadings and effluent discharge quality.

As Kenya has water quality criteria / standards for effluent discharge into the environment (refer to *Section 2.4.4*), these will be used in this assessment.

2.6.5.3 IFC EHS Guidelines – 1.4 Water Conservation

Mechanisms included in the water conservation guidelines include –

- The setting of targets for water use, and monitoring of water flows against these targets;
- Water reuse where possible; and
- Reducing leaks and making more efficient use of water within the water reticulation system.

Relevance to the Project:
Daily cooling water demand is 60 m^3. Water will also be required for staff, ablution facilities and food processing activities, in significantly smaller quantities than the cooling system demand.

The site will have an onsite wastewater treatment plant (WWTP) for treatment and recycling of water used in the refrigeration system and for water used in light food processing (washing and packaging of fruits and vegetables). Up to 60% of treated water will be recycled back into the cooling system.

Given the large roof area, an opportunity also exists for capturing runoff water to use for the storage of fire suppression water.

2.6.5.4 IFC EHS Guidelines – 1.7 Noise

The IFCs EHS Guidelines – *General EHS Guidelines: Environmental Noise Management 1.7 Noise* (IFC 1.7 Noise) is an internationally recognised guideline document containing information for the assessment and management of noise.

Table 2.6 presents the IFC noise guidelines that should not be exceeded at the nearest Noise Sensitive receptor (NSR) locations offsite. In addition to the absolute values provided in

Table 2.1, the IFC also requires that noise increase above existing (background) levels should not exceed 3 dB.

Table 2.6 IFC Noise Level Guidelines

Receptor	One Hour L_{Aeq} (dB(A))	
	Daytime (07:00 – 22:00)	Night (22:00 – 07:00)
Industrial; commercial	70	70

LAeq = A-weighted equivalent sound levels over a measurement period, dB(A) = A-weighted decibel

IFC Guidelines are designed to apply to noise emissions from facilities and stationary noise sources such as factories. The value of 70 dB(A) applied to industrial receptors differs to the Kenyan standard (

Table 2.1). The standard to be applied to this Project should be the most stringent of the two noise standards, which is 70 dB(A) during the day (IFC standard) and 65 dB(A) during the night (Kenyan noise standard), at the nearest industrial receptor.

2.6.6 Institutional Framework

The overall authority for implementation of the environmental and social mitigation measures and management plans will be the Project Proponent's Environmental and Social Governance (ESG) Director (or equivalent) who will have oversight of the ESMS implementation on a day-to-day basis, including management and supervision of the onsite EHS Manager (or equivalent). The Project Proponent's Managing Director will be ultimately responsible in ensuring that the Project team discharge their respective E&S duties.

A summary of other organisations that are relevant to the proposed TCSF Project are provided in Table 2.7 and explained in more details in Chapter 10 of this report.

Table 2.7 Institutional Framework

Organization	Responsibilities
National Environmental Management Authority (NEMA)	▪ General supervision and, co-ordination of all matters relating to the environment. NEMA is the principal instrument in Government in the implementation of all policies relating to the environment. ▪ NEMA is also responsible for monitoring compliance with all the environmental regulations. ▪ Permit for effluents resulting from the WWTP will be required ▪ NEMA waste handling permit will be required. ▪ NEMA annual audit report required to be submitted.
Kenya Civil aviation Authority (KCAA)	▪ Regulation and oversight of Aviation Safety & Security; regulation and issuing height approval permits
Colfax Holdings Limited (management of Colfax Industrial Park)	▪ This is the established entity in charge of Colfax Industrial Park, responsible for the review and approval of the plans for all developments within the Park, before relevant approvals from other third parties is sought. It also monitors the implementation of all projects within the Park. In particular, the Project's designs/ plans will be approved by the through the management of Colfax Industrial Park.
Department of Occupational Health and Safety (DOSH)	▪ Monitor the implementation of health and safety plans for construction and operation workers and members of public coming into contact with construction activities. ▪ Annual Health and Safety and Fire Inspection audits are required to be submitted to DOSH. ▪ Certification for MHI's
County Government	▪ Monitor developments within the Kwale County. ▪ Review master plans for compatibility with the approved zoning.
Ministry of Health	▪ Surveillance of public health with respect to workers and affected communities, especially in regard to HIV/AIDS and other communicable diseases. ▪ Identify suitable linkages between the Project and health facilities including emergency access.
Lands, Housing and Urban Development/National Land Commission	▪ Facilitate land acquisition. ▪ Monitor compliance with the approved land zone requirements.

3. METHODOLOGY AND APPROACH

3.1 ESIA Objectives

The objectives of the ESIA are to:

- Identify all potentially significant adverse environmental and social impacts of the Project and recommend measures for mitigation to reduce the impacts to medium, small or negligible.
- Gather baseline data to inform the assessment of impacts and to monitor changes to the physical, biological and socio-economic environment as a result of the Project.
- Gather stakeholder concerns and inputs to be used, where appropriate and applicable, into the design of the Project, and in the formulation of appropriate mitigation measures.
- Recommend measures to be used to avoid or reduce the anticipated negative impacts and enhance the positive impacts.
- Evaluate the success of the mitigation measures implemented through an applicable and appropriate monitoring plan.
- Prepare an ESIA Project Report compliant to EMCA and the Environmental (Impact Assessment and Audit) Regulations of 2003 (and the Amendments of 2016 and 2019), detailing findings and recommendations for review by NEMA.

3.2 Methodology

3.2.1 Screening

The proposed Project was screened to determine the need to undertake an ESIA based on:

- Project activities and characteristics, as well as the prevailing environmental and social context within which the Project will operate;
- The Second Schedule of EMCA (as amended in the Environmental (Impact Assessment and Audit) Regulations amendments of 2016, which lists the projects that must undergo an EIA; and
- International Finance Performance Standards on Environmental and Social Sustainability, 2012.

ERM carried out a reconnaissance site visit on 12th October 2021. The purpose of the site visit was to familiarise the Project Team with the Study Area and to collect primary environmental and social baseline data to inform the required level of assessment.

Based on the above criteria, it was concluded that an ESIA resulting in the preparation of an ESIA Project Report would be required for the proposed Project due to the following aspects:

- Legal Notices No. 149 of the National Environment (Impact Assessment and Audit) (Amendment) Regulations of 2016 and no 31 National Environment (Impact Assessment and Audit) (Amendment) Regulations of 2019 classifies the proposed Project (specifically, agriculture and related activities, including medium size agricultural and livestock produce storage facilities, and, go-downs for storage and warehouses) as Medium Risk which can be approved through the preparation and submission of ESIA Project Reports [(4)];
- Legal Notice No. 32 of the National Environment (Impact Assessment and Audit) (Amendment) Regulations of 2019 which states that every proponent undertaking a project specified in the Second Schedule of the Act as being a low risk project or a medium risk project, shall submit to the Authority a Summary Project Report of the likely environmental effects of the project;

[(4)] As per the 2016 and 2019 amendments of the National Environment (Impact Assessment and Audit) Regulations, Projects are classified as Low, Medium and High Risk based on their environmental and social risks. Low and Medium Risk projects maybe approved through the submission of ESIA Project Reports; however, these amendments specify that High Risk projects shall require submission of an ESIA Study Report.

- The fact that the proposed Project is located within the approved Colfax Industrial Park, thus, fits within the planning of the Study Area; and
- The nature and extent of the potential impacts of the Project (all the associated facilities such as electricity supply, piped water supply, sewerage management and solid waste management will be catered for by the management of the Colfax Industrial Park.

3.2.2 Baseline Data Collection

In order to understand the existing baseline environmental and social conditions in the Study Area, a variety of data collection methods were used. These are described below.

3.2.2.1 Remote Sensing and GIS Analysis

Remote sensing and Geographic Information Systems (GIS) was undertaken and ground-truthed in the field by the consultants at the time of the site visit. Remote sensing was based on available satellite imagery of the Project Site. The main E&S aspects identified include: land use, vegetation cover, surface water flow, ground water direction and topography.

3.2.2.2 Document Review

A literature review was undertaken based on the findings of the reconnaissance process, which involved reviewing legislation, policies, the County Integrated Development Plan, and previous studies carried out in the area to determine the baseline conditions i.e. biophysical, geomorphology and topography, hydrology, geology and soils, biodiversity, and establish the legal, institutional and biophysical/socio-economic environmental setting of the Project area.

The desk-based study also included the development of fieldwork tools, fieldwork schedules as well as the approach to stakeholder engagement as outlined in the Stakeholder Engagement Plan (**Appendix C** of this Project Report).

3.2.2.3 Site Visits

A site investigation was undertaken on Thursday 21st October 2021 during which detailed environmental and social baseline data was collected and stakeholder engagement was undertaken. Data was collected through:

- Sharing the Project's Background Information Document (BID), and presented as **Appendix D**) to identified formal stakeholders and requesting them to share their views/ comments on the proposed Project;
- Key Informant Interviews (KII) especially with the technocrats of the relevant institutions;
- Focus Group Discussions (FGD) with the Area Chief, village elders, community policing representatives and management of Colfax Industrial Park representatives; and
- Site walkovers.

Photography and Global Positioning Systems (GPS) were used to record the salient features and baseline conditions at the Project sites and surroundings environs.

3.2.3 Impact Assessment Methodology

3.2.3.1 Impact Assessment Process

The purpose of impact assessment is to identify and evaluate the significance of potential impacts on identified receptors and resources according to defined assessment criteria and to develop and describe mitigation measures that will be taken to avoid or minimise any potential adverse effects and to enhance potential benefits.

The impacts of the proposed Project were identified based on the findings of stakeholder consultation, the existing baseline conditions, the proposed Project activities and professional knowledge of the consultants. Impacts are first distinguished as either positive or negative (*Chapter 9* of this Project Report). The cross-sectoral issues and aspects are: health; safety; air quality, especially dust; waste management; social aspects particularly labour recruitment and management; infrastructure, and utilities.

3.2.3.2 Definition of Key Terminology

- **Project:** The features and activities that are a necessary part of the Project Developer's development plans without which the Project cannot proceed. The Project is also the collection of features and activities for which authorisation is being sought.
- **Project Site:** The (future) primary operational area for the Project activities.
- **Project Footprint:** The area that may reasonably be expected to be directly affected by Project activities, across all phases. The Project Footprint includes land used on a temporary basis such as construction lay down areas, materials yards, borrow pits or construction haul roads, as well as disturbed areas in transport corridors, both public and private.
- **Area of Influence**: The area where impacts could reasonably be expected.
- **Project Area**: Also referred to as the Study Area is the area that needs to be studied in order to adequately understand and describe the baseline likely to be affected by the Project. The Project Area encompasses the Project Footprint, Project Site and the Area of Influence.

3.2.3.3 Impact Types and Definitions

An impact is any change to a resource or receptor brought about by the presence of a Project component or by the execution of a Project related activity. The evaluation of baseline data provides crucial information for the process of evaluating and describing how the Project could affect the bio-physical and socio-economic environment.

Impacts are described according to their nature or type, as summarised in *Table 3.1*.

Table 3.1 Impact Nature and Type

Nature or Type	Definition
Positive	An impact that is considered to represent an improvement on the baseline or introduces a positive change.
Negative	An impact that is considered to represent an adverse change from the baseline or introduces a new undesirable factor.
Direct impact	An impact that results from a direct interaction between a planned project activity and the receiving environment/receptors (e.g. between occupation of a site and the pre-existing habitats or between an effluent discharge and receiving water quality).
Indirect impact	An impact that results from other activities that are encouraged to happen as a consequence of the Project (e.g. in-migration for employment placing a demand on resources).
Induced impact	An impact that results from other activities (which are not part of the Project) that happen as a consequence of the Project (e.g., influx of camp followers resulting from the importation of a large Project workforce).
Cumulative impact	An impact that acts together with other impacts (including those from concurrent or planned future third-party activities) to affect the same resources and/or receptors as the Project.

3.2.3.4 Assessing Significance

Impacts are described in terms of 'significance'. Significance is a function of the **magnitude** of the impact and the **sensitivity/vulnerability/importance of resource/receptor**.

3.2.3.5 Determining Impact Magnitude

Impact magnitude (sometimes termed severity) is a function of the **type, extent, duration, scale** and **frequency** of the impact. These characteristics apply to both planned and unplanned events/ impacts and are briefly described in *Table 3.2*.

An additional characteristic that pertains **only to unplanned events** is **likelihood**. The likelihood of an unplanned event occurring is designated using a qualitative scale, as described in *Table 3.3*.

Table 3.2 Impact Characteristics Terminology

Characteristic	Definition	Designations
Type	A descriptor indicating the relationship of the impact to the Project (in terms of cause and effect) as explained in *Table 3.1*.	Direct Indirect Induced
Extent	The "reach" of the impact (e.g., confined to a small area around the Project Footprint, projected for several kilometres, etc).	**Local** - impacts that affect an area in a radius of 20km around the development site. **Regional** - impacts that affect regionally important environmental resources or are experienced at a regional scale as determined by administrative boundaries, habitat type/ecosystem. **International** - impacts that cross national borders, affect nationally important environmental resources or affect an area that is nationally important/or have macro-economic consequences.
Duration	The time period over which a resource / receptor is affected.	**Temporary** - impacts are predicted to be of short duration and intermittent/occasional. **Short-term** - impacts that are predicted to last only for the duration of the construction period. **Long-term** - impacts that will continue for the life of the Project but ceases when the Project stops operating. **Permanent** - impacts that cause a permanent change in the affected receptor or resource (e.g. removal or destruction of ecological habitat) that endures substantially beyond the Project lifetime.
Scale	The size of the impact (e.g., the size of the area damaged or impacted, the fraction of a resource that is lost or affected, etc)	[no fixed designations; intended to be a numerical value or a qualitative description of "intensity"]
Frequency	A measure of the constancy or periodicity of the impact.	[no fixed designations; intended to be a numerical value or a qualitative description]

Table 3.3 Definition for Likelihood Designations

Likelihood	Definition
Unlikely	The event is unlikely but may occur at some time during normal operating conditions.
Possible	The event is likely to occur at some time during normal operating conditions.
Likely	The event will occur during normal operating conditions (i.e., it is essentially inevitable).

The overall magnitude of an impact is a combination of the above characteristics. The universal magnitude designations are:

- Negligible;

- Small;
- Medium; and
- Large.

3.2.3.6 Determining sensitivity/vulnerability/importance of resource/receptor

There are a range of factors to be considered when defining the sensitivity/vulnerability/importance of the resource/receptor, which may be physical, biological, cultural or human. Other factors may also be considered when characterising sensitivity/vulnerability/importance, such as legal protection, government policy, stakeholder views and economic value.

As for the case of magnitude, the sensitivity/vulnerability/importance designations themselves are universally consistent, but the definitions for these designations vary on a resource/receptor basis. The sensitivity/vulnerability/importance designations used herein for all resources/receptors are:

- Low;
- Medium; and
- High.

Table 3.4 presents an illustrative example of the sensitivity/vulnerability/importance of the resource/receptor.

Table 3.4 Illustrative Example of Sensitivity/Vulnerability/Importance of the Resource/Receptor

Designation	Receiving environment	
	Biophysical environment	Socio-economic environment
Low	The impact affects the environment in such a way that natural functions and processes are not affected.	People/communities are able to adapt with relative ease and maintain pre-impact livelihoods.
Medium	Where the affected environment is altered but natural functions and processes continue, albeit in a modified way.	People/communities are able to adapt with some difficulty and maintain pre-impact livelihoods but only with a degree of support.
High	Where natural functions or processes are altered to the extent that they will temporarily or permanently cease.	Affected people/communities will not be able to adapt to changes or continue to maintain-pre impact livelihoods.

3.2.3.7 Determining Impact Significance

As earlier stated above, Impact Significance is a function of the magnitude of the impact and the sensitivity/vulnerability/importance of resource/receptor. As presented in Table 3.5 below, the impact significance can be Negligible, Minor, Moderate or Major.

Table 3.5 Impact Significance

SIGNIFICANCE				
		Sensitivity/Vulnerability/Importance of Resource/Receptor		
MAGNITUDE		Low	Medium	High
	Negligible	Negligible	Negligible	Negligible
	Small	Negligible	Minor	Moderate
	Medium	Minor	Moderate	Major
	High	Moderate	Major	Major

Table 3.6 below presents a brief description of the different categories of Impact Significance.

Table 3.6 Significance Definitions

Negligible	An impact of negligible significance (or an insignificant impact) is where a resource or receptor (including people) will not be affected in any way by a particular activity, or the predicted effect is deemed to be 'negligible' or 'imperceptible' or is indistinguishable from natural background variations.
Minor	An impact of minor significance is one where an effect will be experienced, but the impact magnitude is sufficiently small (with and without mitigation) and well within accepted standards, and/or the receptor is of low sensitivity/value.
Moderate	An impact of moderate significance is one within accepted limits and standards. The emphasis for moderate impacts is on demonstrating that the impact has been reduced to a level that is as low as reasonably practicable (ALARP). This does not necessarily mean that 'moderate' impacts have to be reduced to 'minor' impacts, but that moderate impacts are being managed effectively and efficiently.
Major	An impact of major significance is one where an accepted limit or standard may be exceeded, or large magnitude impacts occur to highly valued/sensitive resource/receptors. A goal of the ESIA process is to get to a position where the Project does not have any major residual impacts, certainly not ones that would endure into the long term or extend over a large area. However, for some aspects, there may be major residual impacts after all practicable mitigation options have been exhausted (i.e. ALARP has been applied). An example might be the visual impact of a development. It is then the function of regulators and stakeholders to weigh such negative factors against the positive factors such as employment, in coming to a decision on the Project.

Note: It is important to note that the positive impacts are not rated, merely stated. It is considered sufficient for the purpose of the Impact Assessment to indicate that the Project is expected to result in a positive impact, without characterising the exact degree of positive change likely to occur. However, positive impacts are presented quantitatively where possible.

3.2.3.8 Identification of Mitigation and Enhancement Measures

For activities with significant impacts, the ESIA process is required to identify, in collaboration with the Project Developer/Proponent, suitable and practical mitigation measures that can be implemented. Mitigation that can be incorporated into the Project design, in order to avoid or reduce the negative impacts or enhance the positive impacts, have been defined and require final agreement with the Project Proponent as these are likely to form the basis for any conditions of approval by NEMA. The implementation of the mitigation is ensured through compliance with the Environmental and Social Management and Monitoring Plan (ESMMP).

3.2.3.9 Residual Impact Evaluation

After first assigning significance in the absence of mitigation, each impact is re-evaluated assuming the appropriate mitigation measure(s) is/are effectively applied, and this results in a significance rating for the residual impact.

3.3 Reporting

As a result of the ESIA process, a comprehensive ESIA Project Report (this document) was developed for submission to NEMA for review and consideration for approval.

3.4 Assumptions and Limitations

ESIA is a process that aims to identify and anticipate possible impacts based on past and present baseline information and details of the proposed Project. As the ESIA deals with the future, there is, inevitably, always some uncertainty about what will happen.

Impact predictions have been made based on field surveys and with the best data, methods and scientific knowledge available at this time. However, some uncertainties could not be entirely resolved. Where significant uncertainty remains in the impact assessment, this is acknowledged, and the level of uncertainty is provided.

In line with best practice, this ESIA Project Report has adopted a precautionary approach to the identification and assessment of impacts. Where it has not been possible to make direct predictions of the likely level of impact, limits on the maximum likely impact have been reported and the design and implementation of the Project (including the use of appropriate mitigation measures) will ensure that these are not exceeded. Where the magnitude of impacts cannot be predicted with certainty, the team has used professional experience and available scientific research from similar projects worldwide to judge whether a significant impact is likely to occur or not. Throughout the assessment, this conservative approach has been adopted to the allocation of significance.

4. PROJECT DESCRIPTION

4.1 Introduction

This Chapter provides an overview of the Project location, the design and the activities that will be undertaken during the different Project phases including construction, operation and maintenance (O&M) and decommissioning.

The information contained in this chapter is sourced from:

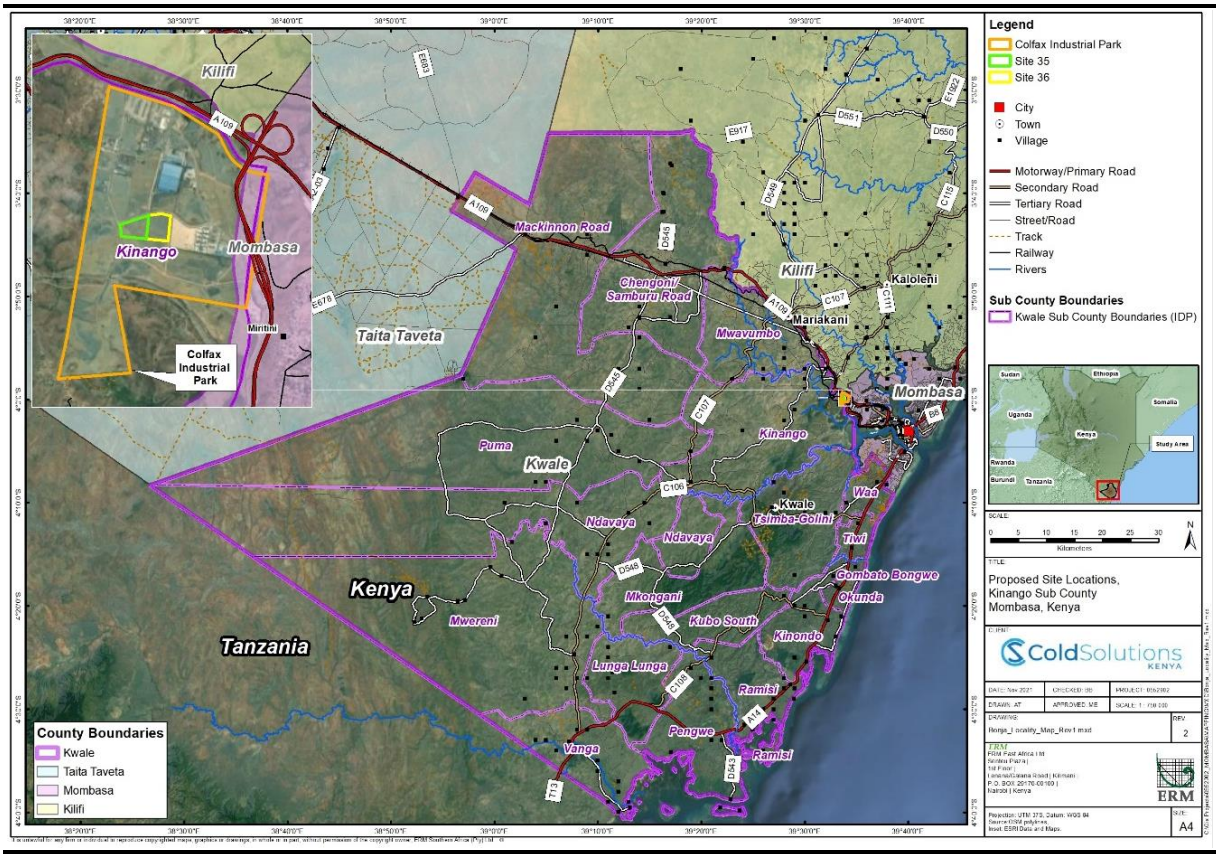
- The Project Concept Design Report
- Engineering drawings; and
- The experience of the ARCH/CSKL development team in constructing and operating similar facilities globally.

4.2 Project Location and Regional Setting

The proposed Project site is located in the Colfax Industrial Park, Bonje, Miritini, Kwale County, Kenya. The proposed Project will be developed on two plots; that is Plot LR No 29437/35 (2.889 hectares) and Plot LR No 29437/36 (3.49 hectares), together forming one parcel of land. It is accessible via the A109 (Mombasa Road) and Dongo Kundu Bypass south of Mombasa Road and Colfax Industrial Park, leading to the Mombasa SGR Terminus and Port Reitz Road.

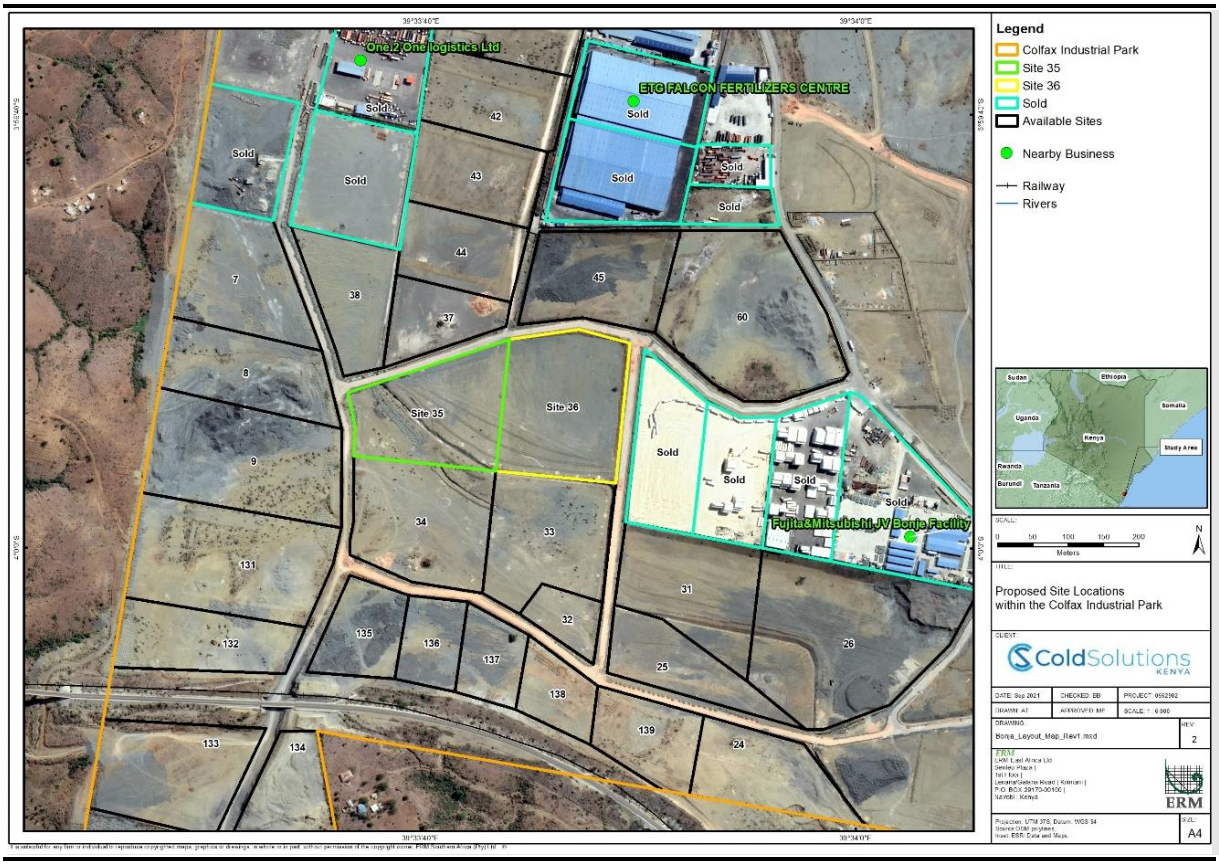
Figure 4.1 shows the Project location in relation to these roads.

Figure 4.1 Location of the Project Site



An overview of the Colfax Industrial Park is presented in Figure 4.2. The Project location is on Plot Nos. 35 and 36.

Figure 4.2 Overview of Colfax Industrial Park



4.3 Project Overview and Layout

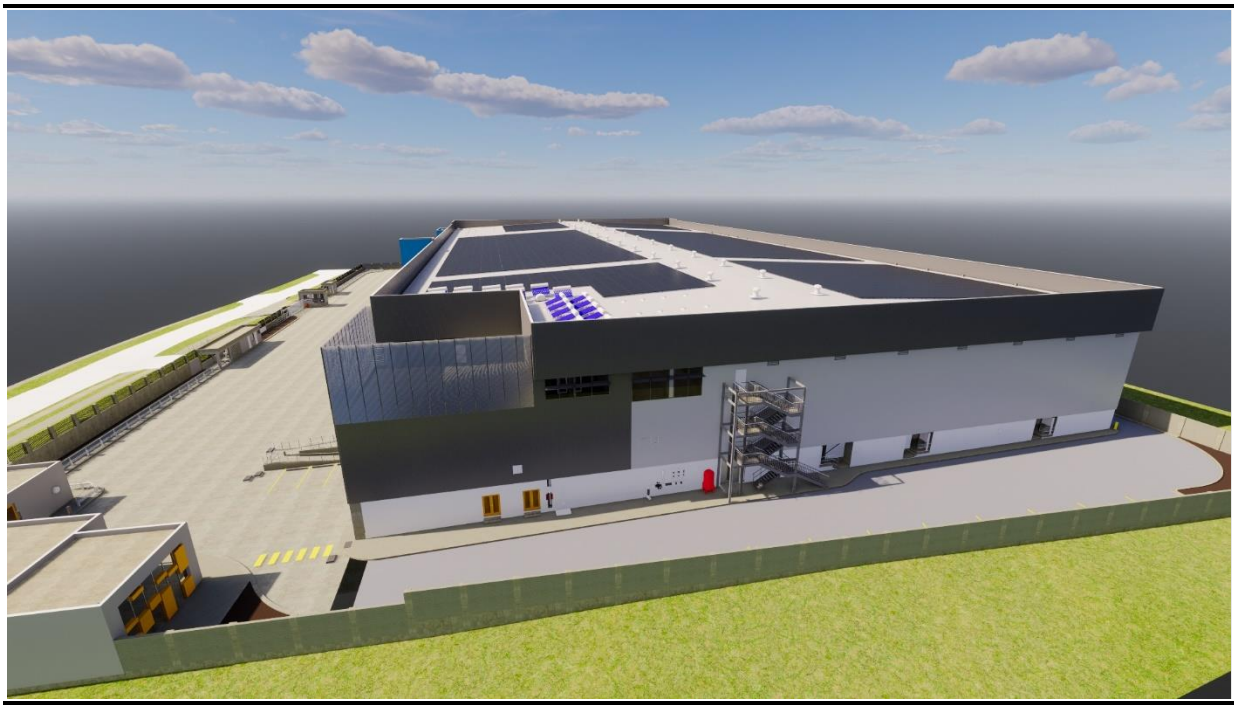
The Project involves the construction and operation of up to 12,000 m^2 cold storage warehouse, including end to end logistics for customers. As such, the main Project components comprise:

- The collection, storage and distribution of the various products including those in:
  - Agriculture
  - Pharmaceuticals S
  - Poultry, Meat and Seafood
  - Supermarkets & Quick Service Restaurants
  - Food manufacturing
- Capacity for approximately 10,000 pallets of storage.
- Utility infrastructure including:
  - an onsite wastewater treatment plant (WWTP) for treatment and recycling of water used in the refrigeration system and for water used in light food processing (washing and packaging of fruits and vegetables). Up to 60% of treated water will be recycled back into the cooling system;
  - An integrated power system comprising roof-top solar Photovoltaic (PV) system and a diesel-powered backup generator in case of grid outages (to service 2-3 MW power demand);
  - Supporting facilities including office space, ablution facilities, and a guardhouse.
- 10-15 cross-docking bays for loading and un-loading of goods.

- End-to-end customer logistics serviced by 40 refrigerated vehicles.

Figure 4.3 provides conceptual layout of the Project facility including the superstructure and docking bays.

Figure 4.3 Conceptual Layout of the proposed Project



4.4 Key Project Components

This section outlines key Project components outside of the warehouse structure itself which is covered under construction activities.

4.4.1 Superstructure Components

Table 4.1 outlines the main structural components of the superstructure.

Table 4.1 Superstructure Structural Components

Component	Description
Below ground infrastructure	Utility infrastructure including mains water, sewage drainage and surface water/stormwater drainage. A wastewater treatment plant will also be installed below ground (see Section 4.4.2 on Utilities Infrastructure section below).
Foundations and ground floor slab	Suitable subgrade will be installed to support the carry loads imposed by the structure outlined in the detailed design. The ground floor slab will be reinforced concrete able to withstand a uniformly distributed loading of 50kN/m^2 and the racking load.
Steel frame	The steel frame structure will be constructed to a height of 24 metres and allow for 9 m spacing between columns for bay spacing. The steel framework will be designed to accommodate the building loads specified in the detailed design.
Warehouse roof cladding	Roof cladding will be steel sheeting supported by galvanised steel/purlin system capable of supporting the roof-top solar installation.
Warehouse external walls	Concrete pre-cast panels at the ground floor level to a height of 4.5 m. The remaining warehouse walls shall consist of vertically laid proprietary composite polyisocyanurate (PIR) insulated panels.

Warehouse internal walls	Partition walls for separating zoning for operational purposes in conformance with the detailed design.
Dock system	The building is to accommodate dock levellers, dock shelters (collapsible / inflatable) and dock doors & required steel structure & cladding.

4.4.2 Utilities Infrastructure

Utility infrastructure required includes grid-connected power, water supply and sewage treatment which are all provided by the management of Colfax Industrial Park to its customers. The Project will have its own wastewater treatment plant and power back-up solutions in addition to these services.

4.4.2.1 Power

There is existing power supply to Colfax Industrial Park provided by the government.

In addition to the grid supplied power, the Project will install:

- Roof-top solar PV sized to the maximum supporting capacity and size of the roof space (approximately 1 MW);
- Diesel powered back-up generator sized to meet the total power demand of the facility. Given that power is critical for maintaining a temperature-controlled environment, a back-up generator is required. (approximately 2,000kVa)

4.4.2.2 Water Supply

Water within the Colfax Industrial Park is provided by the government, Coast Water Services Board (CWSB).

4.4.3 Wastewater Treatment

There are no existing arrangements for sewage management for the Colfax Industrial Park; each of the developers is expected to devise independent sewerage management system such as through use of septic tanks.

The Project will also have an on-site WWTP installed below the ground floor of the facility. This will treat and recycle water used in the refrigeration technology and also from light food processing undertaken on site, for example packaging of fruits and vegetables. The WWTP will discharge effluent treated to national discharge standards into a soak pit. Daily cooling water demand is 60$m^{3.}$ Water will also be required for staff, ablution facilities and food processing activities in significantly smaller quantities than the cooling system demand.

4.4.4 Cooling System

The choice of cooling technology will be finalised during the detailed design and procurement of the EPC contractor. In all cases, the system will be based on a natural refrigerant gas from one of: Ammonia, Carbon Dioxide, Glycol or a combination of these. An overview of the choice of refrigerants is presented in Chapter 5 (Analysis of Alternatives). The option considered most likely at this juncture in the design process is an entirely ammonia-based chiller system. This will include an indoor (fully secured) ammonia storage tank with a capacity of about 7 tonnes. The developer will obtain a ‘’Major Hazard Installation Certification’’ at the commencement of operations phase.

This system is considered acceptable from an environmental and social perspective. All natural refrigerants have zero Ozone Depletion Potential (ODP) and zero Global Warming Potential (GWP) in the case of Ammonia and a GWP of 1 in the case of Carbon Dioxide. Ammonia however is both toxic and flammable and therefore presents additional health and safety risks arising from leaks or system malfunctions. However, these are managed successfully globally as assessed in detail in Chapter 9 and included in the ESMMP in Chapter 10.

4.4.5 Building Management System

A fully integrated computer (PC) based Building Management System (BMS) incorporating Direct Digital Control (DDC) Energy Management, Equipment Monitoring and control of building services installations shall be installed.

The Building Management System shall be fully integrated to provide the end-users with full control, monitoring and management functions, based on a common computer operating system and operating procedures.

The BMS shall interface with the master control system whereby if an alarm is triggered (fire alarm, leak) a full shutdown of plant will be implemented.

4.4.6 End-to-End Logistics

The Project will include end-to-end logistics to service its customer base comprising 30-40 refrigerated trucks ranging in size from 3 tonne to 20 tonne weight. The fleet will likely comprise of diesel trucks with a self-powered refrigeration unit attached to the trailer. CSKL will procure new trucks to ensure the most efficient and up to date technology is used. Examples of the type of trucks envisaged are presented in Figure 4.4.

The Project fleet are expected to service the Mombasa metropolitan area but there will also be long-haul trips to produce aggregators and customers located in areas throughout Kenya. At this stage, it is impossible to determine the profile of trips since this is based on a CSKL customer base, which will become clearer closer to Project Commercial Operation Date (COD).

Figure 4.4 Examples of Refrigerated Trucks

4.5 Project Development Programme

The main Project development milestones are outlined in Table 4.2. The construction phase is expected to be up to 12 months with operations commencing in Q1 2023.

Table 4.2 Project Development Programme

Development Milestone	Timeline
Project Design and Construction Permits	Q2 2021 – Q1 2022

Procurement and Construction Phase	Q1 2022 – Q1 2023
Commercial Operations Date (COD)	Q1 2023

4.6 Project Preparation and Construction Phase Overview

4.6.1 Construction Phase Activities

Table 4.3 presents the activities that will take place during the Project preparation and construction phases of the Project. These are illustrated in Figure 4.5.

Table 4.3 Construction Phase Activities

Phase	Activity	Description
Project Preparation	Land Acquisition	Negotiation and completion of long-term leasehold with Colfax Holdings Limited for the project land.
	Technical Studies	Topographical, geotechnical and ESIA studies.
	Facility Design	Concept and detailed design of the facility to feed into the ESIA and for Colfax Industrial Park/ NEMA design approval.
Construction Phase	Site Preparation	Site clearing and enabling works including cut and fill for plot levelling.
	Below ground works	Civil works associated with the installation of surface, stormwater, foul water and sewage drainage.
	Foundations and concrete slab	Installation of a concrete foundation with uniform distributed loading capacity of 50/kN/$m^{2.}$
	Warehouse superstructure	Construction of the warehouse superstructure including steel framework, roof cladding and external walls.
	Internal structures	Construction of internal refrigeration chambers, racking and supporting facilities.
	Electrical and Mechanical	Installation of refrigeration technology and power solution
	Finishing Works	Installation of windows, doors and finishing activities such as painting and landscaping.

Figure 4.5 Illustrative Images

Site Preparation

Civil Works

Superstructure

Internal components

Finishing

4.6.2 Land Acquisition

The proposed Project will be developed on two plots; that is Plot 35 (2.889 hectares) and Plot 36 (3.490 hectares), together forming one parcel of land located at the Colfax Industrial Park, Bonje, Miritini, Kwale County, Kenya (Table 1.1 and Figure 1.1). The plots for the proposed Project are currently owned by Colfax Holdings Limited on a 99-year lease, with title deeds. The Project Proponent is in the process of securing the land on a willing seller-willing buyer process from Colfax Holdings Ltd.

4.6.3 Materials, Waste and Emissions

The materials required and waste streams associated with the construction of the Project are outlined in Table 4.4.

Table 4.4 Project Materials and Waste Streams

Item	Local/Imported	Description
Materials		
Fill	Local	The two plots are relatively flat; however, there is a 3-meter level difference between them and will require the standard cut and fill along with retainer walls.
Concrete (cement)	Local	Concrete foundation for the superstructure and docks.
Steel	Local	For the framework of the warehouse superstructure.
Roof cladding	Local	Steel sheets for roof cladding capable of supporting the solar PV installation.
External wall	Local (if available)	External wall panelling typically in prefabricated modules.
Internal cooling chambers	Imported	Module panels made from Polyisocyanurate foam (PIR).
Internal racking system	Local/Imported	Steel framed racking system for storing pallets within the refrigerated chambers. Racking will be up to six pallets equivalent high.
Cooling System	Imported	Cooling system based on natural gas technology.
Power system	Imported	Solar PV based power solution with option of battery storage being considered. A back-up generator sized to facility demand will be necessary for grid outages.
Finishing items	Local	Paints, office furniture, landscaping materials.
Fuel	Local	Diesel, in small quantities for generators.
Waste and Emissions		
Vegetation	n/a	Grass and small shrubs from plot clearing.
Packaging	n/a	General construction packaging waste including pallets and plastics from construction materials and electrical and mechanical equipment.
Construction/ civil works waste	n/a	From civil work activities such as excavations, levelling, and existing debris.
General household type waste	n/a	From presence of construction workforce onsite.
Liquid waste	n/a	From temporary ablution facilities.
Hazardous waste	n/a	Paints/lubricants/solvents used for finishing.

Liquid waste	n/a	From ablution facilities, food processing and refrigeration cooling water. All the liquid waste will be managed as described in Section 4.4.3.
Oils and lubricants	n/a	Small quantities used in maintenance of vehicles and electrical and mechanical equipment.
Emissions	n/a	Emissions to air from the operation of diesel fuelled plant and generators including NO_x, CO_2, CO and PM/ dust from land clearing activities. These are expected to be short in duration and localised. There will also be short periods of dust generation associated with site preparation and civil works.

4.6.4 Utilities Demand during Construction

Demand for power and water during construction is expected to be low based on the construction activities outlined and the prefabricated nature of the infrastructure. These will be serviced as follows:

- Power demand associated primarily with handheld mechanical tools, will be serviced by small generators.
- Water demand, used for dust suppression, cleaning and drinking water for workers, will be provided by municipal through the existing mains system.
- Wastewater associated with temporary ablution facilities on site will be collected by a licensed liquid waste disposal company or discharged directly to the sewer system if feasible.

4.6.5 Construction Equipment

Table 4.5 outlines the type of equipment that will be present on site during the construction phase. It does not include vehicles and equipment used to transport materials to and from the site (e.g. concrete mixers and trailers).

Table 4.5 On-site Construction Plant

Type of Plant	Number
Bulldozer	1
Grader	1
Excavator	2
Crawler Crane	1
Trucks (20 tonne)	2

4.6.6 Construction Workforce and Accommodation

The construction workforce will vary at different times during construction phase but will have a peak on site presence of approximately 150 people during the superstructure construction. With the exception of construction oversight and complex electrical and mechanical work, most importantly the cooling system installation, the majority of positions will be filled through the local workforce. CSKL, through its Local Content Policy, promotes the full use of local resources (supplies and workforce) where they are available.

The following workers are envisaged for the construction phase:

- 50 to 100 general labourers;
- 30 plant operators;
- 10 skilled workers including electricians, plumbers and cooling specialists;
- Construction oversight team of the main EPC Contractor; and

- 8 security guards for 24-hour shifted site supervision.

Since the majority of the workforce is drawn from the local labour pool, only expats, who will be few in number (if any), will require accommodation. In these instances, they will be accommodated in hotels or guesthouses meeting DFI requirements[5].

4.7 Operations and Maintenance Phase Overview

The operations phase is concerned with the movement and storing of goods within the warehouse. It is typically low impacting with the main environmental and social impacts associated with the energy demand, occupational health and safety and movement of vehicles as assessed in detail in Chapter 9.

4.7.1 Operations Phase Activities

Table 4.6 outlines the activities performed during this phase.

Table 4.6 Operation Phase Activities

Activity	Description
Packing	Un-packing of pallets received and packing of goods to deliver to clients.
Storage of Pallets	Storing of pallets in the cooling chambers and ripening rooms.
Food Processing	Light food processing including vegetables and fruits for packing for end-user.
Maintenance of Plant	General maintenance of the facility and cooling system and light maintenance of the truck fleet.
Docking Activities	Un-loading and loading of trucks at the docking bays.
Office Administration	Office based administration activities including accounts and customer administration.

4.7.2 Operational Flow

The facility will be constructed to include a total of 5 to 7 individual temperature-controlled chambers for storage purposes. Each of these chambers will have a temperature control ranging from +26°C to --30°C). The chambers will be designated for the following specific sectors and products to avoid the risk of mixing different products and contamination during storage, among others:

- One chambers for the storage of pharmaceutical products (at -25°C);
- One chamber for storage of frozen food or pharmaceuticals depending on demand for storage space – to be determined during the operations phase (at -25°C);
- Two Chambers for storage of frozen foods (at -25°C);
- One chamber for storage of frozen food that require much lower temperatures such as seafood and ice cream (at -30°C);
- One chamber for storage of flexible chilled and frozen products (at +25°C to -25°C); and
- One chamber for storage of chilled products such as fresh fruit and vegetables (at +25°C to 0°C).

In addition to the storage chambers/rooms there will be four blast freezing rooms capable of reducing the product temperature by -18°C in a 24-hour period on average and four chilled rooms capable of reducing warm product to chilled temperatures (above 0°C).

For ease of loading and offloading at the different storage chambers, the facility will have a total of seven temperature-controlled loading bays. This will enable the trucks/vehicles to dock and be loaded/offloaded close to the various storage chambers as much as possible (depending on the type of goods that require

[5] As specified in the IFC/EBRD Guidance Note: Workers' Accommodation: Processes and Standards (2009). Available at: https://www.ebrd.com/downloads/about/sustainability/Workers_accomodation.pdf

loading/offloading). The loading/offloading bays will be capable of handling, from 30-ton rear loading refrigerated vehicles, 40-foot and 20-foot containers to one-ton pickup vehicles, making the facility very adaptable to the manner with which the goods are received and dispatched.

The goods will be mechanically or physically offloaded onto 1m by 1.2m pallets with a maximum weight of 1 metric ton and placed into the loading/offloading temperature-controlled chamber.

Fixed racking will be placed inside the storage chambers holding the 1ton, 1m by 1.2m pallets with a height of 1.6m. The product pallets will be stacked 6m high in the storage chambers. In total, the facility will have approximately 10,000 static racking pallet positions within the storage chambers. In addition to this, rails will be placed into the concrete floor to enable mobile racks to be fitted at a later stage as and when the additional storage space is required.

The facility will be managed by a computerised Warehouse Management System (to be decided upon before the commencement of the operations phase). Each racking position inside the facility will be numbered by room/chamber and pallet position. They will be allocated a barcode number, and this will be placed at the racking position. Consequently, each pallet entering the facility will be given a number barcoded sticker which will be attached to the product/good. Each pallet will be scanned into its racking position via a hand-held scanner. This will enable complete live tracking of each pallet into and out of the facility and further avoid the risk of mixing different products.

All the above aspects will be expanded to include detailed operations procedures and plans as part of the operational manual that will be developed prior to the commencement of the operations phase.

4.7.3 Operations Workforce

A workforce of approximately c.135 people is expected during the operations phase, roles outlined in Table 4.7. CSKL will ensure that both direct and indirect employees apply GIIP labour and working conditions aligned to IFC PS 2.

Table 4.7 Operations Workforce Profile

Employee	Estimated Number	Description
Management and based team	10	Facility manager and office team (HR, accounts, admin).
Warehouse team	25	Commercial heads (subject matter experts), supervisors, maintenance, plant operators and warehouse general labourers.
Drivers	30	Drivers of trucks.
Outsourced workers*	70	Lumpers for unloading and loading of trucks.

* typically, lumpers are employed by third party operators

During the operational phases of the business, business development functions will be developed based on the five focus sectors in Kenya:

- Commercial Head for agriculture;
- Commercial Head for meat, poultry and seafood;
- Commercial Head for food manufacturing;
- Commercial Head for pharmaceuticals; and
- Commercial Head for supermarket/ Quick-service restaurant (QSR) chains.

Business development functions will conduct holistic research to attract and retain potential client bases. In addition, there will be a Logistics and Warehouse Manager to foresee all the logistical activities.

4.7.4 Waste and Emissions from Operations

Table 4.8 outlines waste streams associated with the operations and maintenance of the Project. A waste sorting area is included in the facility design, and it is likely that the Project will use the existing licensed waste disposal firms that service Colfax Industrial Park.

Table 4.8 Waste Streams during Operations

Waste Type	Description
General household type waste	From office and workforce.
Packaging	Typically, plastics and carton from pallets received.
Food waste	Food waste associated with food processing activities.
Oils and lubricants	From vehicle and facility maintenance activities – small quantities expected.
Emissions to Air	NO_x, CO_2, CO and particulates from truck movements and use of the backup generator. Local emissions are expected to be small due to the expected infrequent use of the generator and truck cooling/ freezing units will plug into the mains during docking to prevent truck engines having to be maintained on idle to run the truck mounted cooling/freezing units.

4.7.5 Power, Water and Wastewater

Table 4.9 outlines the demand for utilities during the operations phase.

Table 4.9 Utility Demand during Operations

Utility	Description
Power	Power demand for the facility will be approximately 2 MW serviced by a rooftop solar PV installation and grid supplied power by KPLC A backup diesel generator will be installed for use during power outages.
Water	Daily cooling water demand is 60 m^3. Water will also be required for staff, ablution facilities and food processing activities, in significantly smaller quantities than the cooling system demand.
Wastewater	Wastewater associated with cooling system (60% recycled, about 20m^3 treated discharged) and general facility demand.
Foul water	Foul water will be discharged directly to a soak pit.

4.8 Supply Chain Management

4.8.1 Risks associated with supply chain

4.8.1.1 Risks

- **Supply of counterfeit goods:** This risk occurs when goods are deliberately and fraudulently produced and/or mislabelled with respect to identity and/or source to make them appear to be genuine. Counterfeit goods are a real threat to public health and safety and can penetrate the market through weak points along the supply chain.
- **Stolen products:** Illegal importation, storage and distribution of stolen or substandard goods can enter the markets if the supply chains are not appropriately controlled and managed. The methods by which such products enter the supply chain have become increasingly complex and have resulted in the development of thriving secondary and grey markets globally.
- **Unauthorised repackaging and relabelling:** Unauthorised repackaging and relabelling of goods presents a risk to the safety and security of the supply chain. Without proper mechanisms for the

identification and authentication of repackaged and relabelled goods, the public health and safety is at risk.

4.8.1.2 Management Measures

CSKL will require all customers to have relevant certifications for their respective sectors where applicable and licensed/permitted by the relevant government authorities. The CSKL cold chain storage facility will be constructed to international standards. The facility will collaborate with several Small and Medium Enterprises (SMEs), local and regional traders and in some cases international traders. As such, the customers will be expected to be complaint with the international market requirements such as those of the European Union Markets.

For every customer, CSKL will conduct a due diligence such as through completion of a “Know Your Customer” (KYC) form in which all the relevant certifications and licenses/permits will be checked.

All the goods received at the facility will be scanned to ascertain their contents and barcoded for the duration of the storage at the facility.

4.8.2 Management of risks associated with handling and storage of health products/ pharmaceuticals

4.8.2.1 Risks

- **Contamination and cross-contamination of heath products:** This can occur when chemicals, microbial, or physical substances are unintentionally transferred from one substance or object to medicines or other health products thus compromising their quality. The most typical sources of contamination and cross-contamination are poor storage design of buildings, clothing and footwear, equipment, insects and pests, entry of unauthorised persons, interior surfaces of walls, floors and ceilings (e.g. cracks and open joints) and poor ventilation.
- **Loss of potency during storage of health products:** Pharmaceutical and health products require controlled storage and transit conditions in order to ensure that their quality is not compromised. Storage is an important aspect of the total control system. Proper environmental control such as proper temperature, light, and humidity, conditions of sanitation, ventilation and segregation are important factors to consider during storage. Potency can be adversely affected if the product is left out for too long or exposed to multiple out-of range temperatures that can have a cumulative negative effect.
- **Risk of storing obsolete and outdated products:** If products are not checked regularly for their expiry dates, there is a high chance that obsolete and outdated products will eventually find their way to the market. This can also be a source of contamination and cross contamination.
- **Damage of the products:** This can be caused by fire, electrical failures, power outages, aging equipment, or even natural disasters. Poor handling of the health products during off-loading/loading and storage can also cause damage.

4.8.2.2 Management Measure

The operational flow described in Section 4.7.2 will significantly reduce the above risks.

In addition, the handling and storage of the pharmaceuticals will be headed by the Commercial Head for pharmaceuticals who will foresee all the associated activities.

The handling and storage of pharmaceuticals will be organised to meet the requirements of relevant international standards such as:

- The World Health Organisation (WHO) Good Distribution Practices (GDP) for pharmaceutical products;
- Good Storage Practice (GSP) and Good Distribution Practice (GDP); and

- Good Warehousing Practice (GWP).

4.8.3 Risks associated with food handling and storage

4.8.3.1 Risks

- **Contamination and cross contamination of the food products:** The contamination and cross-contamination that can occur during food storage results from the transfer of harmful bacteria between foods by direct contact or indirect contact via the hands, clothing, cloths, equipment or other surfaces. Also, foods containing specific allergens such as nuts, milk and eggs may mix with other foods due to damaged packaging or spillage or via hands, clothing, cloths or other surfaces.
- **Pests:** Pests are animals that live in or on food, such as rodents and insects. Pests in food storage facilities are a serious hazard and risk to health; they do not only contaminate food with foreign bodies such as faeces and hair, but they aid disease spread. Food products are at a high risk of contamination if adequate control measures are not in place. Pests are carriers of food poisoning microorganisms and viruses that pose major hazards to consumer health.
- **Equipment hygiene:** Equipment that comes into regular contact with food products during transportation and storage such as forklifts, trucks, pallets and other material handling equipment can be a source of contamination.

4.8.3.2 Management Measure

The operational flow described in Section 4.7.2 will significantly reduce the above risks.

In addition, there will be a number of Commercial Heads for the various food sectors (agriculture, meat, poultry, seafood and food manufacturing) who will foresee the associated food handling activities.

The handling and storage of food and food products will be organised to meet the requirements of relevant international standards such as:

- Foundation for Food Safety Systems Certification (FSSC 22000);
- Safe Quality Food (SQF) certification;
- Hazard Analysis Critical Control Point (HACCP) certification;
- British Retail Consortium Global Standards (BRCGS/BRC) for food safety, packaging and packaging materials, storage and distribution, and consumer products; and
- Quality Management Systems (ISO 9001).

4.9 Decommissioning Phase Overview

It is expected that the warehouse superstructure will have a lifespan in excess of 50 years and demand for cold storage will only grow during this period in Kenya. As such, two options are considered for decommissioning:

- Components that have a shorter lifespan such as the cooling system and vehicles will be replaced and the facility will continue to function. It is likely that the cooling system, at least in part, will need to be replaced after 20 years and this provision is made in the design of the facility.
- On the basis that the facility is no longer required it will be dismantled and the site returned to its original state.

Should option 2 materialise, then the decommissioning phase will be similar to the construction phase in terms of environmental and social impacts. The majority of the warehouse superstructure is made of steel and recyclable components. The concrete foundations and other non-recyclable elements will be disposed of to landfill or in other most appropriate manner depending on advancements in technology at the time of decommissioning. Given that the lifespan is over 50 years, provisions will be made in the Environmental

and Social Management Plan (ESMP) for a decommissioning plan to be developed at least one year prior to decommissioning.

5. ANALYSIS OF PROJECT ALTERNATIVES

5.1 Project Location Alternatives

CSKL, on the basis of market studies and proximity to the largest customer base in Kenya, selected to locate the facility in the Mombasa environs, in addition to the first project already being developed in Nairobi. From an initial screening by the development team, two location options were analysed:

Option 1: Plot in Kibarani area, Mombasa County

- Approximately 7 acre plot owned by Mitchell Cotts on A109 Mombasa Road.
- There is a mangrove forest on the coastline to the north of the site, during high tide the water reaches the boundary edge of the plot.
- Plot is surrounded by other light industrial installations.
- The plot purchase was not considered due to adverse commercial terms.

Option 2: Plot 60 in Colfax Industrial Park

- Approximately 12.2 acres owned by Colfax Industrial Park.
- Plot is irregularly shaped and not level.
- Adjacent plot is a fertiliser plant.
- The purchase of this plot was not considered as it is too big for CSKL current needs, its irregular shape and the contamination and fire risks associated with the fertiliser plant.

5.2 Project Layout Alternatives

The layout of the facility is constrained by the land available at the outlined Project Site, the cost of land and the size of the warehouse. The two plots (plots 35 and 36) are sufficient to accommodate all Project components. There are two primary layouts for storage warehouses and associated logistics which are driven by the docking arrangement:

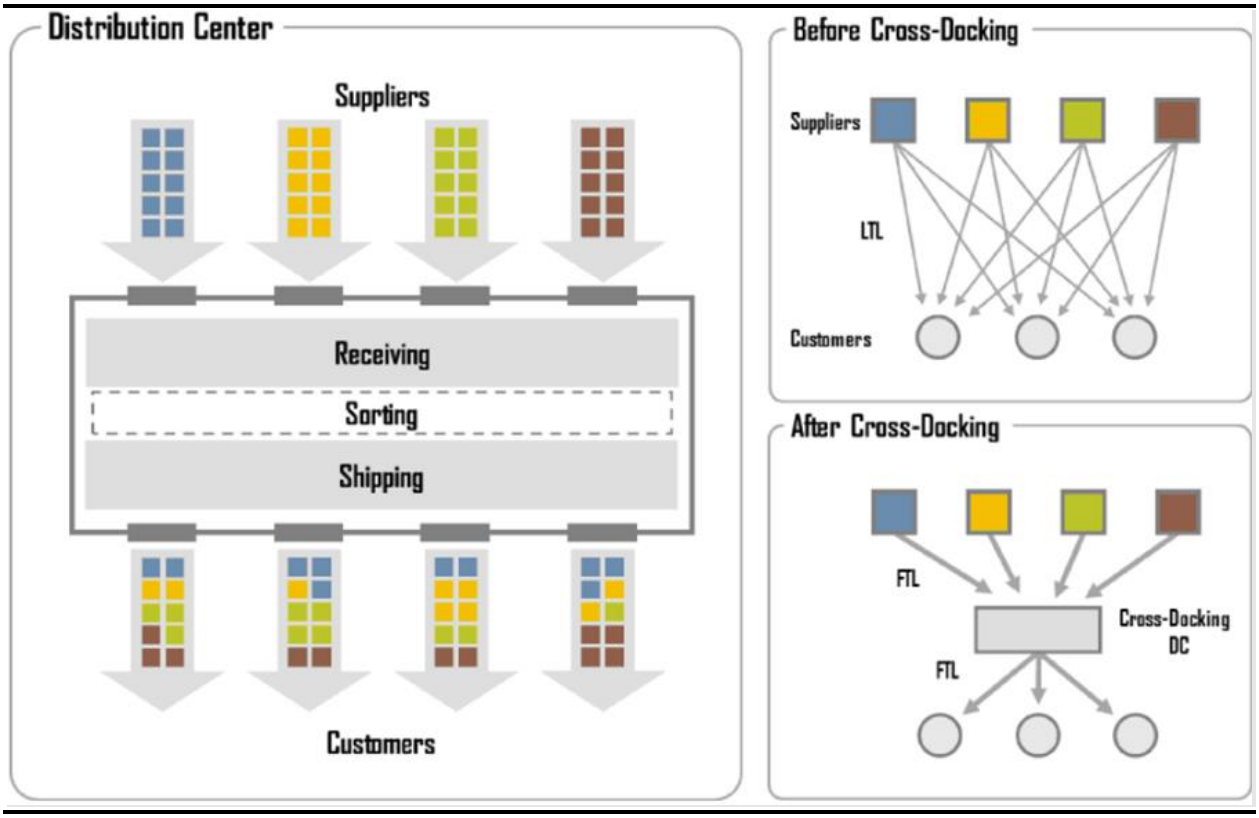
- Standard docking – bays on one side of the warehouse to receive and delivery goods to customers; and
- Cross-docking – bays on both sides of the warehouse to allow for efficient sorting and distribution.

Each option provides benefits and limitations from an operational perspective – standard docking allows for a larger facility size whilst the cross-docking allows for faster handling times and through-out of goods, considered essential for temperature-controlled items. The latter also allows for a smaller facility size without compromising (in significant terms) the volume of goods the facility can handle. The benefits of cross-docking are most easily communicated in

Figure 5.1 and this is the preferred facility design.

There are no sensitive environmental or social resources present at the Project Site that would constrain the Project layout.

Figure 5.1 Benefits of Cross-docking



5.3 Technological Alternatives

5.3.1 Refrigeration Technologies

The choice of refrigeration technology is arguably the most important component of the Project since it has a large energy demand and needs to be reliable. In turn, it is a significant Project cost and, depending on the choice of refrigerant, a contributor of greenhouse gas (GHG) emissions. There are three main categories of refrigerants available on the market:

- Saturated chlorofluorocarbons (CFCs) and hydrochlorofluorocarbons (HCFCs and HFCs);
- Unsaturated hydrofluorocarbons (U-HFCs); and
- Natural gases such as ammonia, carbon dioxide, propane and glycol.

Although now phased out under the Montreal Protocol (1987) and its subsequent Kigali Amendment (2016), saturated CFCs and HCFCs are still widely available. These refrigerants have both high ozone depletion potential (ODP) and global warming potential (GWP). Kenya, as signatory to these agreements, has made them illegal and therefore these refrigerants are not considered an option.

U-HFCs have emerged as a replacement of CFCs and HFCs in order to meet the requirements of these multilateral agreements and have low GWP and zero ODP. However, whilst these refrigerants solve this problem, they produce persistent wastes. Through the decomposition of U-HFCs they produce trifluoroacetic acid (TFA), a strong acid with toxicity to some organisms. There is also no known degradation mechanism for them (GIZ, 2015). As such, these refrigerants will also not be considered for the Project.

The choice of refrigerant technology will therefore be based on a natural gas. These gases share similar GWP profiles (0-20 over 100-year life) and zero ODP. The principal differences between them are around:

- Energy efficiency - carbon dioxide has lower efficiency in warmer climates;
- Human safety - ammonia, propane and glycol are both toxic and hazardous if leaks occur; and

- Cost – ammonia, as a direct supply cost, is more expensive; however, compared to other gases these costs may be offset in energy efficiency.

All of these gases are considered acceptable from an environmental and social perspective with the appropriate mitigation measures implemented. Whilst carbon dioxide presents the least risks when considering health and safety, it is a relatively new technology that has not been deployed at scale in sub-Saharan Africa (with the exception of South Africa). Therefore, parts availability and ongoing maintenance needs to be considered carefully as part of this decision.

In consideration of the above, the choice of refrigerant technology will be:

- A system based on one of the natural gases discussed above;
- A cascade system using a combination of ammonia and carbon dioxide.

The final decision will be made as part of the detailed design and procurement phase for the Project.

5.4 Power Supply Technology Alternatives

The power demand for the facility will be 2-3 MW and, as previously stated, needs to be reliable. As such, the following three power supply options have been assessed for the Project:

- Grid supply with a backup generator;
- Roof-top solar, grid supply and backup generator;
- Roof-top solar with battery storage, grid supply and backup generator.

In order to meet the requirements of the Green Building certification, the Project is required to include renewable energy supply. This decision, given the energy tariffs in Kenya, also makes sense commercially – i.e. it will reduce the operating costs of the facility. The use of roof-top solar will reduce the GHG emissions associated with the facility's power demand, the level of which is determined by the sizing of the solar installation which is largely dependent on available roof space. However, in all cases solar technology directly supplied by the facility will not be sufficient to power the entire Project and so grid supply will always be required.

The decision to adopt battery storage is driven by technical considerations of system integration and space availability but also the waste streams associated with batteries and lack of current recycling options available in Kenya. In addition, the decision to include storage may be taken at a later date to capture the significant advances that battery technology is undergoing including more sustainable options.

Whilst the grid has been generally stable in the region, there will always be a need for backup power sized to total facility power demand. The backup generator technology is still to be decided but will include the following fuel options: diesel, liquefied natural gas (LNG) and hydrogen fuel cell. The latter two options are preferable from an emissions perspective but may not be viable in Kenya due to lack of availability, running costs and ongoing maintenance requirements. Given the criticality of this component, reliability is a primary consideration.

5.5 No-Go Alternative

A No-Go/ No Project alternative will mean that any potential Project specific impacts are not manifested but the Project benefits of providing the needed cold storage facilities will not be realised. Whilst the Project is not of sufficient size to address all the market issues associated with a lack of temperature-controlled storage solutions in Kenya, the benefits that this sector generates are well documented and until there are market entrants into the country, these issues will continue to be faced, including:

- Significant seasonal fluctuations of fruit and vegetable prices;
- Food losses and associated impacts including food insecurity and GHG emissions;
- Reduced food hygiene and public health;

- Inadequate temperature controlled storage facilities for pharmaceutical products including vaccines that require to be stored at very low temperatures; and
- Reduced economic development opportunities including product export and businesses moving up the value chain.

The main barrier to entry for cold chain solutions businesses is the very high initial capital costs which many investors will not take the risk on without the confidence that a proven market exists. As such, until a facility is operational and proven, Kenya is unlikely to see an influx of other facilities required to address these market deficiencies in the near to medium term future. Where CSRL differs from other cold chains businesses is through their funding from DFI investors with a mandate to achieve development goals. This secured funding for the Project and patient capital from these investors provides the platform for the Project as a new market entrant to be successful.

Another challenge to operation of the business is the large consumption of electricity as well as its reliability, which will be addressed via the construction of solar PV within the facility.

In addition to the market shifting platform the Project provides, there will also be a relatively significant number of direct permanent jobs (100-150) and indirect jobs created as businesses move up the value chain. Secure employment will in turn provide benefits at the household level including financial security. In the no Project scenario these benefits would not be realised for the Project affected communities and potentially further afield should no cold chains businesses materialise in the short to medium term.

Given the above analysis, the No-Go/ No Project is not a favourable alternative and not considered further in this assessment.

6. BIOPHYSICAL BASELINE

6.1 Introduction

This *Chapter* of the Report provides a description of the existing physical and biological conditions of the Project Area, which will directly or indirectly be affected by the proposed Project Activities. It is essential that the baseline conditions of an environment are characterised in order to accurately predict the potential effects the Project will have on the environment. The collection of baseline data therefore focused on providing information to support the assessment of any potential impact on or as a result of the Project. To put the Project into context, information was collected at the following levels:

- *County Level*: Secondary information was collected at the county level aimed at providing a contextual overview of the host county.
- *Project Area*: Secondary and primary information was collected within the Project Area specifically within and in the immediate vicinity of the Project Site/Plot (biophysical Area of Influence).

6.2 General Overview

The Project Site is located in Colfax Industrial Park located in Bonje, Miritini, Kwale County, bordering Mombasa Road to the North, and approximately 6 km north-west of the Moi International Airport, Mombasa (Figure 4.1). Colfax Industrial Park is still a developing industrial park, with a number of plots not yet developed; however, its management, Colfax Holdings Limited, has a 99 year lease for all the required land. The Industrial Park is devoid of settlements, and the plots have been surveyed, and where necessary, levelled to make them suitable for development.

6.3 Climate

Kwale County has a moderately hot and dry climate throughout the year. The average temperature is greater than 23°C throughout the majority of the County, with areas along the coast generally above 25°C annually. The Project site is situated in a region with an annual mean temperature of 25-27°C (Figure 6.1), with very high humidity.

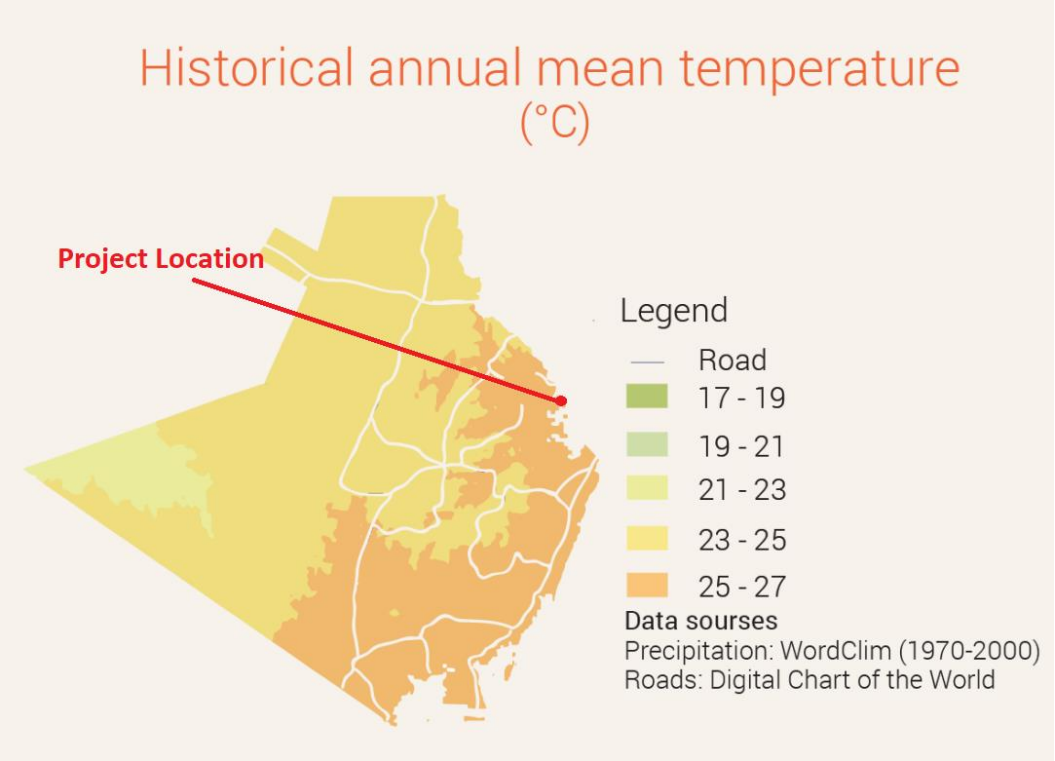


Figure 6.1 Kwale County annual mean temperature patterns

(Source: Modified from MOALF, 2016)

Rainfall is bi-modal with short rains experienced from October to December, while the long rains are experienced from March/April to July. There is a strong east to west gradient of decreasing precipitation with eastern (coastal) parts of the County receiving greater than 1,000 mm of precipitation per year. The climate of the area is characterised by heat stress, dry spells, and drought. However, flooding due to intense rains has also occurred historically, especially in the central to eastern parts (including the coast) of the County. The Project Site is located in a region that receives an annual mean precipitation of 750-1000mm/year (Figure 6.2).

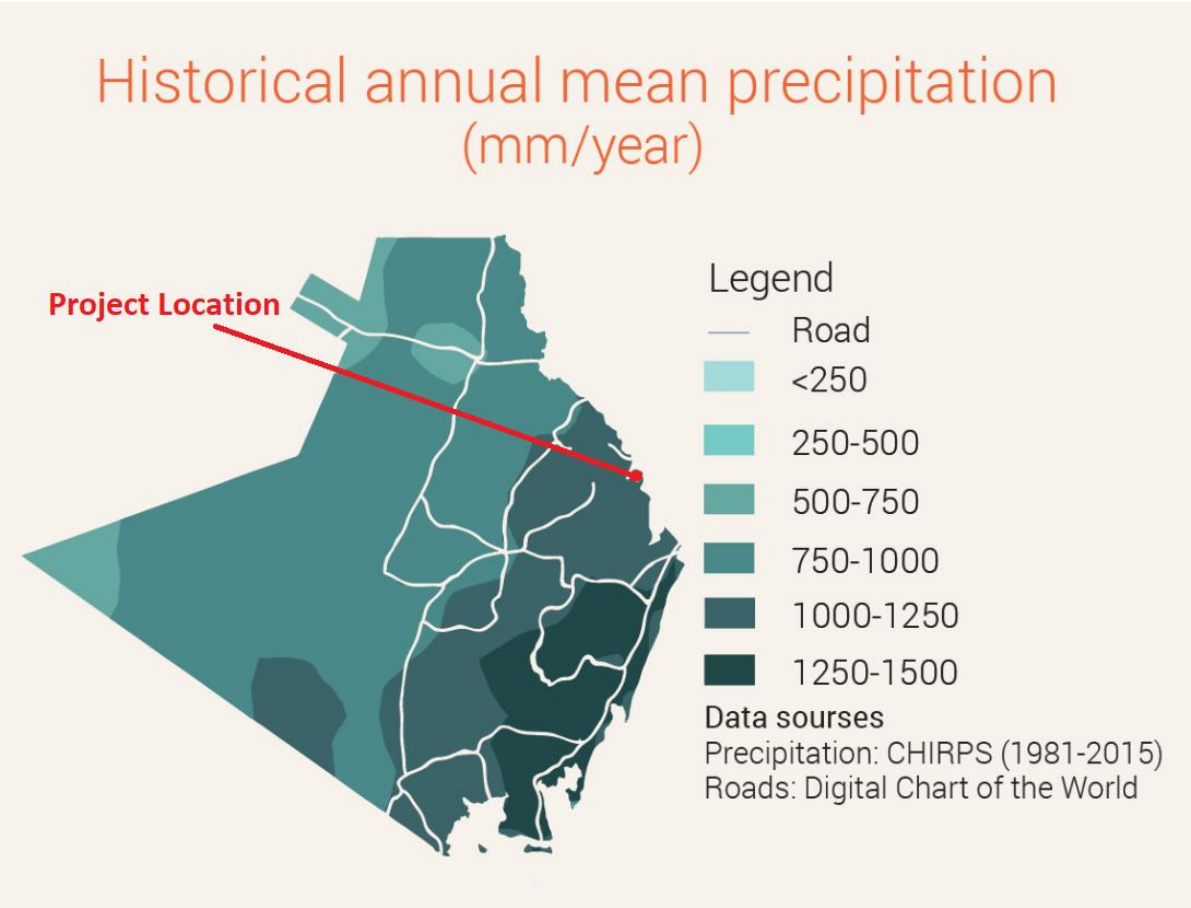


Figure 6.2 Kwale County rainfall patterns

(Source: Modified from MOALF, 2016)

Historically, the County has experienced an average increase in temperatures and a decrease in precipitation. However, there have been interfaces between years of extensive droughts and intense precipitation leading to floods, especially in the central to eastern parts of the County, where the Project Site is located[6].

The wind rose for Mombasa, based on the ADM sourced data for 2015 - 2019, is provided in Figure 6.3. This data shows that the wind predominantly blows from the southwest. However, there is also a smaller north-eastern component. This north-eastern component is associated with the dry season when hot, dry and dusty winds blow from the Arabian Peninsula.

[6] MoALF (2016) Climate Risk Profile for Kwale County. Kenya County Climate Risk Profile Series. The Ministry of Agriculture, Livestock and Fisheries (MoALF), Nairobi, Kenya.

Wind direction is important given any Project air emissions or emergency ammonia leaks. Sensitive receptors (tenants and other industrial facilities, as well as residential areas) will need to be considered downwind of the prevailing wind directions.

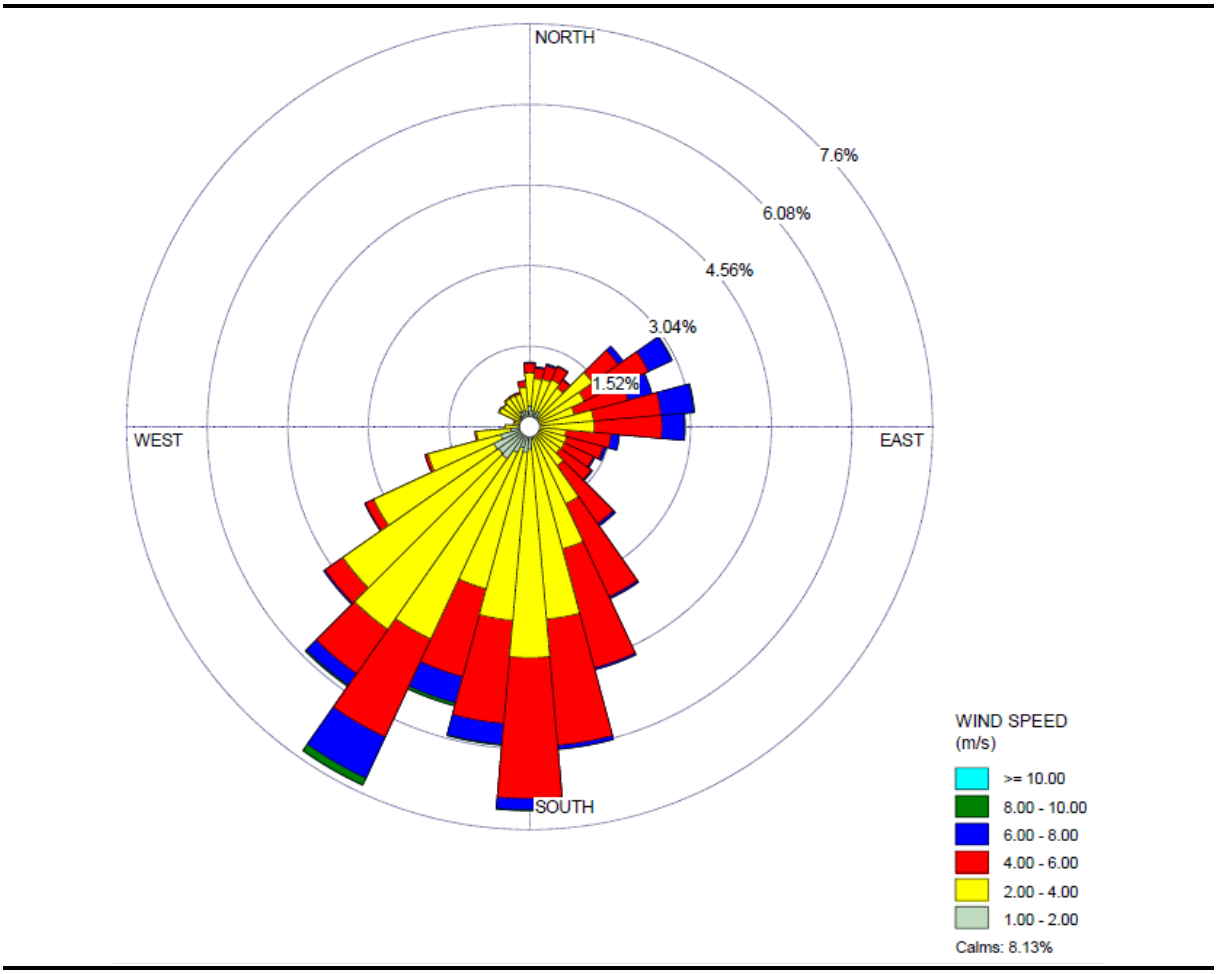


Figure 6.3 Wind Rose for Mombasa, 2015-2019

6.4 Geomorphology and Topography

6.4.1 County Level

Geologically, the County is underlain by the Karoo Sediments also called Duruma Sandstones consisting of the Taru Formation, the Maji-ya-Chumvi Formation, the Mariakani Formation and the Mazeras Formation which cover the middle strip of the County to the foot of Shimba Hills.

The County comprises of the following main topographic features which are closely related to the geological characteristics:

The Coastal plain (sometimes referred as the “coral rag”), is a narrow strip of land, three to ten kilometres wide, with a distance of approximately 255 kilometres from Likoni to Vanga. It lies 30 meters above sea level (m.a.s.l) and extends 10 kilometres inland. This strip of land consists of corals, sand and alluvial deposits.

Behind the coastal plain is the foot plateau. It lies at an altitude of between 60 and 135 m.a.s.l on a flat plain surface with high potential permeable sand hills and loamy soils. This is the sugar cane zone of the region.

The coastal range/uplands (commonly known as the Shimba Hills) is an area that rises steeply from the foot plateau to an altitude between 150 and 462 m.a.s.l. This topographical zone is made up of many sandstone hills. This is an area of medium to high agricultural potential.

The Nyika Plateau is a zone stands at an altitude of about 180 to 300 m.a.s.l on the western boundary of the region.

6.4.2 Project Area

The Project Area generally slopes from the north to the south (Figure 6.4). The Project Site is largely located at an altitudinal range of 31 to 42 m.a.s.l, and generally slopes towards the south; the altitudinal range of the southern portion of the plot is between 17 to 30m.a.s.l. Given this topography, the Project Site drains southwards. Given the altitudinal range, the project site falls on the coastal plains, and given the geology of the site (corals, sand and alluvial deposits), consists of soils that are highly permeable with implications for groundwater contamination.

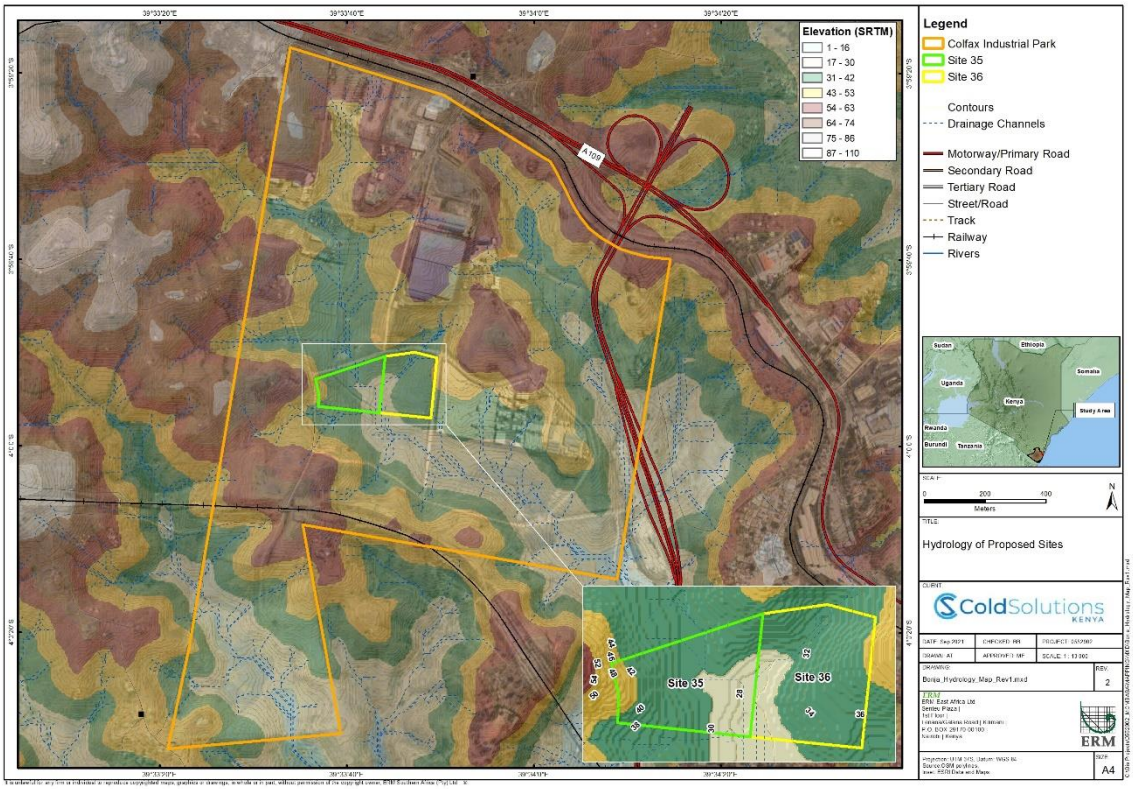


Figure 6.4 Topography of the Project Area

6.5 Hydrology

6.5.1 County Level

Generally, the County is well drained by seven major rivers and numerous minor streams, as shown in Figure 6.5. Of the seven rivers, three are permanent which drain into the Indian Ocean. Table 6.1 shows water potential and yields for the rivers and streams in the County.

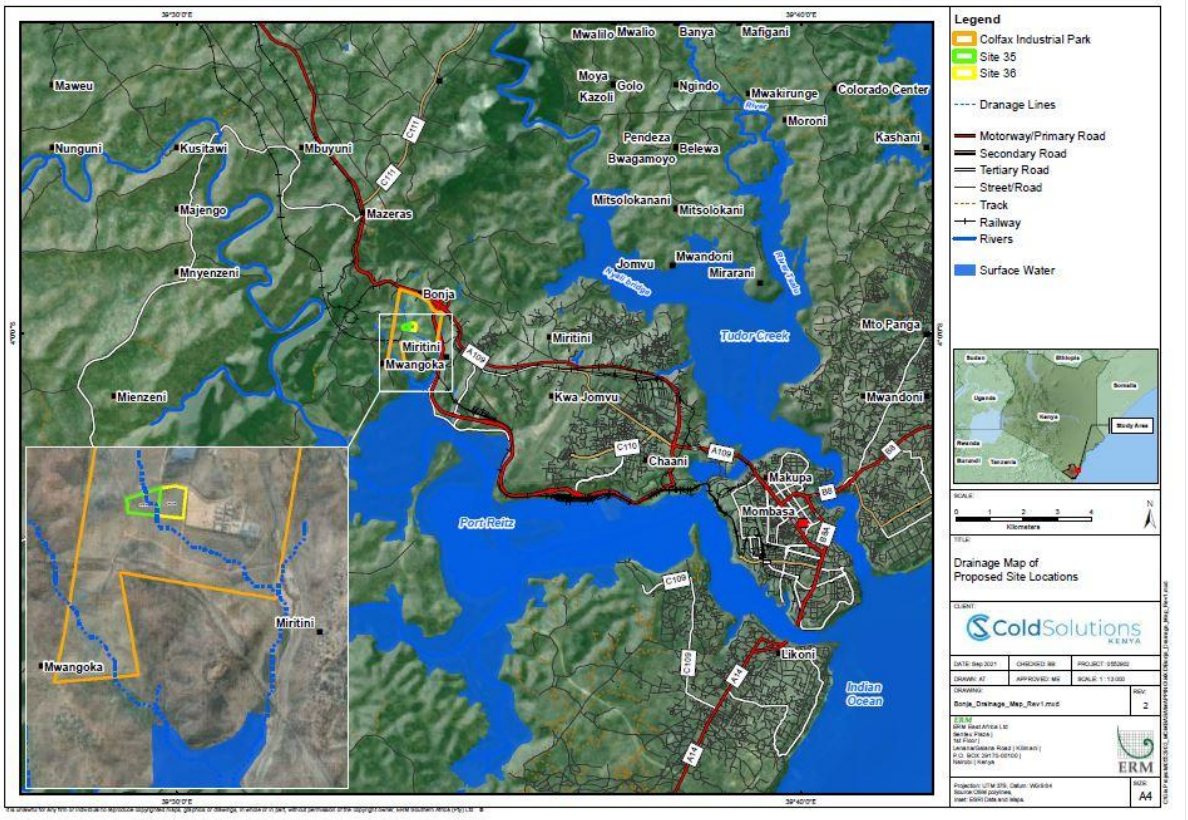


Figure 6.5 Distribution of rivers in the County

(Source: Geo-Water RCMRD SERVIR, 2015)

Table 6.1 Main Rivers with estimated volume

(Source: Modified from Kwale County Integrated Development Plan 2018-2022, 2018)

River/Springs	Source	Area Traversed	Volume (m^3/day)	Destination
Marere	Marere Spring Shimba forest	Shimba Hills National park	9087	Indian Ocean at Mteza Creek
Pemba	Marere Spring, Kirazini river and Chitsanze springs	Kinango-Tsunza	7605	Indian Ocean at Mteza Creek
Mkurumudzi	Shimba Hills	Shimba Hills – Msambweni	9917	Indian Ocean at Vanga
Umba	Usambara Mountains	Lunga-Lunga – Vanga	6104	Indian Ocean at Vanga
Ramisi	Chenze Ranges and Mkanda river	Mwereni – Shimoni	8190	Indian Ocean at Bodo
Mwachema	Majimboni – Msulwa	Majimboni – Gombato Diani	341.73	Indian Ocean at Diani
Mwache*	Samburu, Makamini	Samburu,Kasemeni, Mwavumbo	-	Indian Ocean at Mwamdudu

*The River Mwache is the closest major river in the Kwale County, situated close to the Project location.

6.5.2 Project Area

There is no river or stream at the Project Site. However, there exists tributaries to the west of the Industrial Park that flow in a south easterly direction, passing south of the Industrial Park (Figure 6.5). Within the Colfax Industrial Park, there existed natural storm water drainage channels that drained southwards (Figure 6.4); however, due to the developments at the Industrial Park, these have been generally blocked resulting in pooling of storm water at the Industrial Park's north western boundary.

If any runoff would occur from the Project Site, it would potentially flow south /south east towards the tributaries / mangrove that drain into the River Mwache, and eventually into Port Reitz (into the Indian Ocean), located approximately 2 kilometres to the south of the site.

Effluent discharge from the Project activities if not well controlled, could potentially impact the water quality and mangroves downstream of the Project Site. The Project's effluent discharge management is described in Chapter 4 and the associated impacts assessed in detail in Chapter 9 of this report.

6.6 Geology and Soils

6.6.1 County Level

As discussed in Section 6.4, the County comprises of the following main topographic features which are closely related to the geological characteristics of the area: The Coastal Plain; the Foot Plateau; the Coastal Range / Uplands; and the Nyika Plateau (Hinterland).

The Coastal Plain consists of corals, sand and alluvial deposits, while the Foot Plateau which is behind the Coastal Plain, is made up of high potential permeable sand hills and loamy soils.

6.6.2 Project Area

Based on borehole findings as well as the geotechnical laboratory testing conducted on selected representative samples from the Project site (Figure 6.6), the following stratigraphy was confirmed.

In general, the stratigraphy conditions encountered in the boreholes vary across the site (Figure 6.7). The boreholes consisted of greyish to brownish, high to medium to low plasticity gravelly clayey silt, gravelly clayey sand, clayey sand and gravel sands and sandy silts with some gravels. These residual soils are underlain by moderately weathered, highly stratified, fissile and flaky, fine grained, very soft shale characterised by open, rough and undulating sub-vertical fracture surfaces. These shales extend to the final depth of the investigation in all boreholes.

The trial pits are made up of greyish to brownish, fissile and flaky, fine grained, very soft shale, highly decomposed to sandy gravel with some silt that show medium plasticity (Figure 6.7). These residual soils extend to different depths in the trial pits as shown on the logs. Shale rock was encountered at the bottom of these trial pits.

These soil characteristics indicate a firm ground suitable for construction activities such as the proposed Project. Soil and geological characteristics also indicate soils that are potenitally highly permeable with implications for groundwater contamination.

Figure 6.6 Soil Sample Locations at the Project Site

Soil Sample from Borehole 102 (1.50-3.00 metres)

Soil Sample from Trial Pit 01 (0.00-0.30 metres)

Soil Sample from Trial Pit 02 (0.00-0.30 metres)

Soil Sample from Trial Pit 02 LR36 (0.00-1.98 metres)

Soil Sample from Trial Pit 03 (0.00-2.30 metres)

Soil Sample from Trial Pit 05 (0.00-1.70 metres)

Soil Sample from Trial Pit 06 (0.00-1.90 metres)

Figure 6.7 Soil Characteristics at the Project Site

6.7 Biodiversity

6.7.1 General Overview

Kwale has a wide variety of natural resources ranging from mangrove forests, wetland systems, forests and marine products, through to diverse land resources including agriculture, lime production, and mineral deposits. There is evidence of increasing land pressure due to large swathes of land being taken over by large scale farming, large scale mining and open cast sand mining.

The distribution of vegetation and wildlife in Kwale County as a region is controlled by climate, the geological formation (soil) and human interaction (deforestation, clearing and grazing). The total area covered by forests in the region is about 7 per cent; 54,544 hectares (35,043 hectares gazetted and 19,500 hectares not gazetted). The remnant of the tropical forest in the region has been gazetted for conservation as the Shimba Hills National Reserve and the Mwaluganje Elephant Sanctuary. The Mwachi Forest, also a gazetted protected area of 417 hectares in size, is located approximately 2.5 km southwest of the Project Site.

6.7.2 Project Area

The Colfax Industrial Park is fully modified, with the land already cleared and graded as part of the initial activities for preparation of the Industrial Park. Therefore, it is devoid of reasonable vegetation and not of any conservation concern or value (Figure 6.8). Discussions with the local community members confirmed that prior to its current landuse and acquisition as an Industrial Park, its previous landuse included some

settlements with crop gardens. The habitat was therefore already modified prior to its development. The resettlement process conducted by Colfax Industrial Park was consultative and voluntary, the informal settlers were fairly compensated and provided with alternative land to relocate. This is documented in the Squatter Agreement document attached in **Appendix F**.

Figure 6.8 Project Site sowing land clearance and grading

6.8 Summary of Physical and Biophysical Sensitivities

- Bi-modal rainfall, with the coastal areas in particular being prone to flooding.
- The Project Site location on the coastal plains, which are permeable to groundwater and hence soil contamination and leaks can result in implications for groundwater quality.
- There is no rivers or streams at the Project Site. Drainage is however towards the south and south east, with mangroves and the coastline downstream of the Project site.
- Potential stormwater blockages as a result of land modification, leading to the build-up of stormwater at the Industrial Park's north western boundary.
- Soil characteristics indicate a firm ground suitable for construction activities such as the proposed Project.
- Colfax Industrial Park is fully modified, with modified habitat, and is cleared of vegetation and graded as part of the initial activities for preparation of the Industrial Park. The site is therefore not of any conservation concern or value.

7. SOCIO-ECONOMIC BASELINE

7.1 Introduction

The purpose of this Chapter is to describe the socio-economic environment within which the Project is located. The baseline provides a contextual component for identifying and assessing any potential socio-economic impacts of the Project.

A brief description of the County's socio-economic context is provided below, with further details provided for the Project Area, particularly, the Project Site / Site Specific information which forms the key focus of the socio-economic baseline.

7.2 Project Location

The Project is located in Kwale County, one of the six counties in the coastal region of Kenya. It borders Taita Taveta County to the North West, Kilifi County to the North and North East, Mombasa County and Indian Ocean to the East and South East and the United Republic of Tanzania to the South West. The County covers an area of about 8,270.2 Square Kilometres, of which 62 Square Kilometres is water surface (Kwale County Integrated Development Plan (CIDP), 2018-2022)

Specifically, the Project Site is located within the Colfax Industrial Park (CIP), Plots 35 and 36, at Kasemeni location, Mwamdudu Sub-location, Miritini town, Bonje area, Kinango Sub-county, Kwale County, Kenya (Figure 7.1). The Site is about 10km from the Mombasa new port.

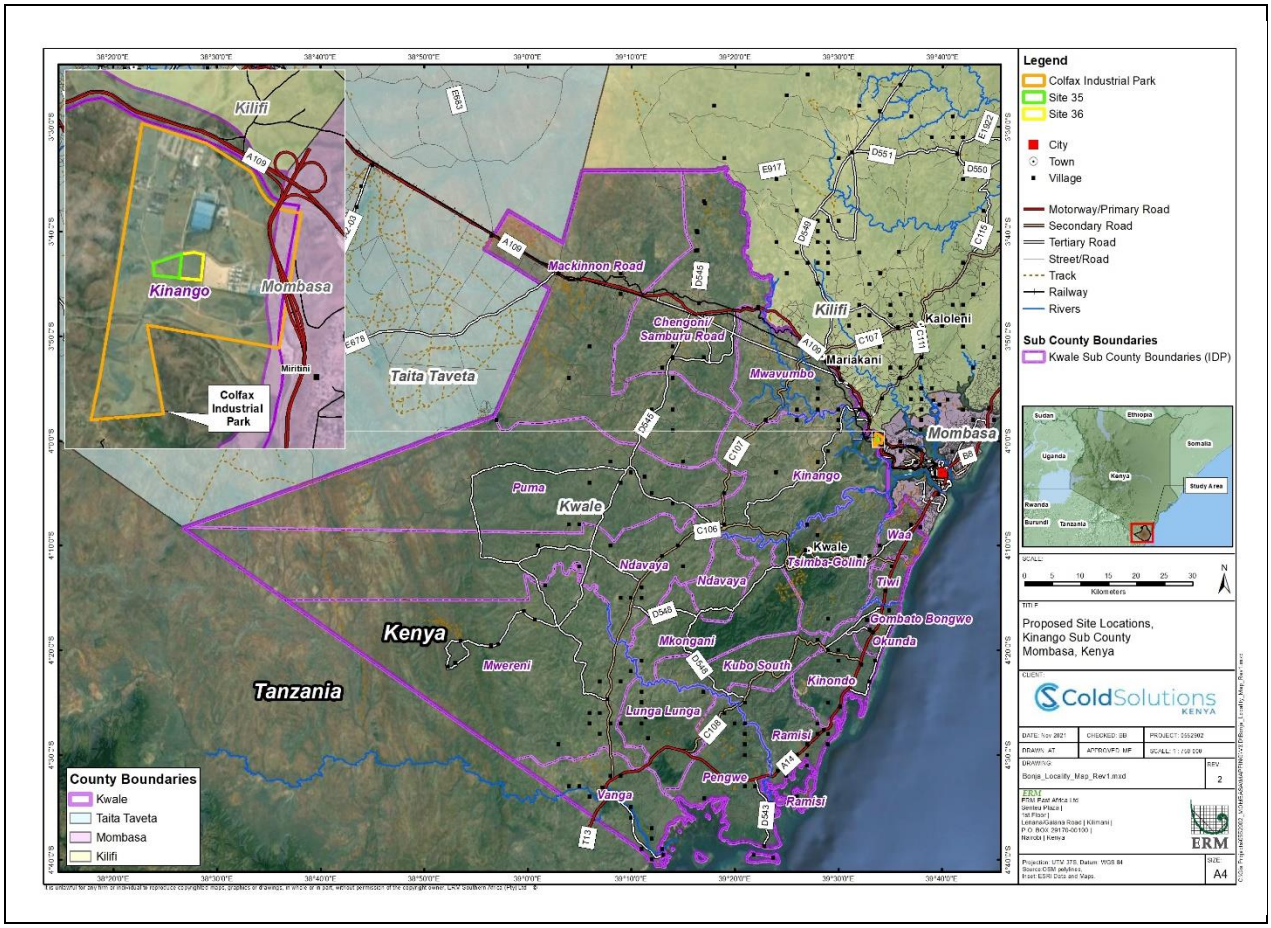


Figure 7.1 Locality Map of the Project Site

7.3 Profile

7.3.1 County Level

Drawing from the 2019 Kenya Population and Housing Census (KPHC Vol.1, 2019), Kwale County has a total population of 866,802; of which 425,121 persons are male and 441,681 persons are female. The County also has 173,176 households, with an average household size of five members.

The Project site is located within Kasemeni Location, which has a population of 94,219 persons with 45,413 male and 48,806 female. There are 16,043 households with an average size of 5.8 members (KPHC Vol.1, 2019).

7.3.2 Project Area

The Project site is located within Colfax Industrial Park (CIP) which is owned and operated by Colfax Holdings Limited. The CIP was approved for industrial development by the County Government of Kwale since 2010. Colfax Holdings Ltd. purchased the land in 2011 and subdivided into several plots for sale. The plot sizes range from two to 12 acres. Each plot has individual titles with a 99-year lease since 2013. Approvals for any development in the CIP go through the Kwale County government who work closely with Colfax Holdings Ltd. A process of land acquisition was undertaken in 2009, resulting in the relocation of nine households, with three households remaining within the CIP Area to date (detailed in Section 7.4.2).

There are four villages near the Project site with the nearest one being Chongongwe village, approximately 1 km southwest of the CIP..Other villages and their proximity to the Project site include: Mwangoka village (3km southwest of the CIP), Zagwaru village (6km southwest of the CIP) and Bonje village (7km north of the CIP). Table 7.1 below gives a summary of the population distribution and Household size (HH) of each village.

Table 7.1 Population distribution of the Villages within the Project Area

Village	Male	Female	Total/Households (HHs)
Chongongwe	110	190	**300 (65 HHs)**
Mwangoka	600	700	**1300 (315 HHs)**
Bonje	400	550	**950 (250 HHs)**
Zagwaru	300	375	**675 (180 HHs)**

Source: Chief's Office, Kasemeni Location, October 2021.

7.3.2.1 Ethnicity

The main ethnic groups in the Project area are the Digo and Duruma. They belong to the Mijikenda ethnic group of coastal Kenya. The Mijikenda are a Coastal Bantu community. They inhabit the region from the Tanzania border to the Sabaki and the Umba rivers. 'Mijikenda' means nine villages, namely: Giriama, Digo, Duruma, Rabai, Kambe, Chonyi, Jibana, Kauma and Ribe. Each community speaks its own dialect. The Mijikenda originated from Shungwaya, a region in southern Somalia around the 17th century and settled along the coastal hinterlands in fortified villages called 'kaya'. Today, 11 'makaya' are inscribed into the list of UNESCO World Heritage Sites[7].

[7] Arts and Culture- The Duruma Community of Kenya (https://artsandculture.google.com/exhibit/the-duruma-community-of-kenya, Accessed 2nd November 2021)

7.3.2.2 Settlement patterns

The Digo and Duruma groups are the main settlers within the Project area. There are also other tribes such as Luo, Kikuyu and Kamba who have migrated into the area[8]. In the arid and semi-arid areas, the population is scattered due to harsh climatic condition and poor infertile soils.

7.3.2.3 Religion and Culture

The main religions dominating the area include Christians, Traditionalists[9] and Muslims. There are two churches (City of Zion Church and Seventh Day Adventists at Mwangoka village) and a mosque (Masbit Mosque at Bonje village) within the Project area. The Swahili culture is dominant within this area, characterised by expressions of local attire including the Swahili Buibui, Arabic Kanzu, Kitenge and Khanga/Lesso.

7.3.2.4 Household Size

Within the Project Area, the average household size is four persons per household, slightly lower than the County average of 5.8. Based on discussions with the Area Chief, majority of the household heads in the area were male (90%) with female heads accounting for 10%.

7.3.2.5 Neighbouring facilities

Field observations made during the site investigations in October 2021 indicated that the Project site is wholly within the CIP and surrounded by other industrial developments such as:

- Fujita & Mitsubishi JV Bonje Facility and Alpha Logistics (West inside the Site perimeter wall),
- ETG Falcon Fertilizer centre and Kilimanjaro Biscuits (Northeast inside Site the perimeter wall),
- One 2 One Logistics Ltd (Northwest outside the Site perimeter wall),
- Shell-Bonje Premium Fuels Ltd and Scania East Africa (EA) Mombasa Branch (to the Northwest outside the site perimeter wall) - Figure 7.2.

There were also informal business structures observed outside the perimeter wall that serve food and refreshment to the workers at the CIP and other industries around the industrial park (Figure 7.3).

[8] Based on discussions with the Area Chief

[9] Follow traditional religion

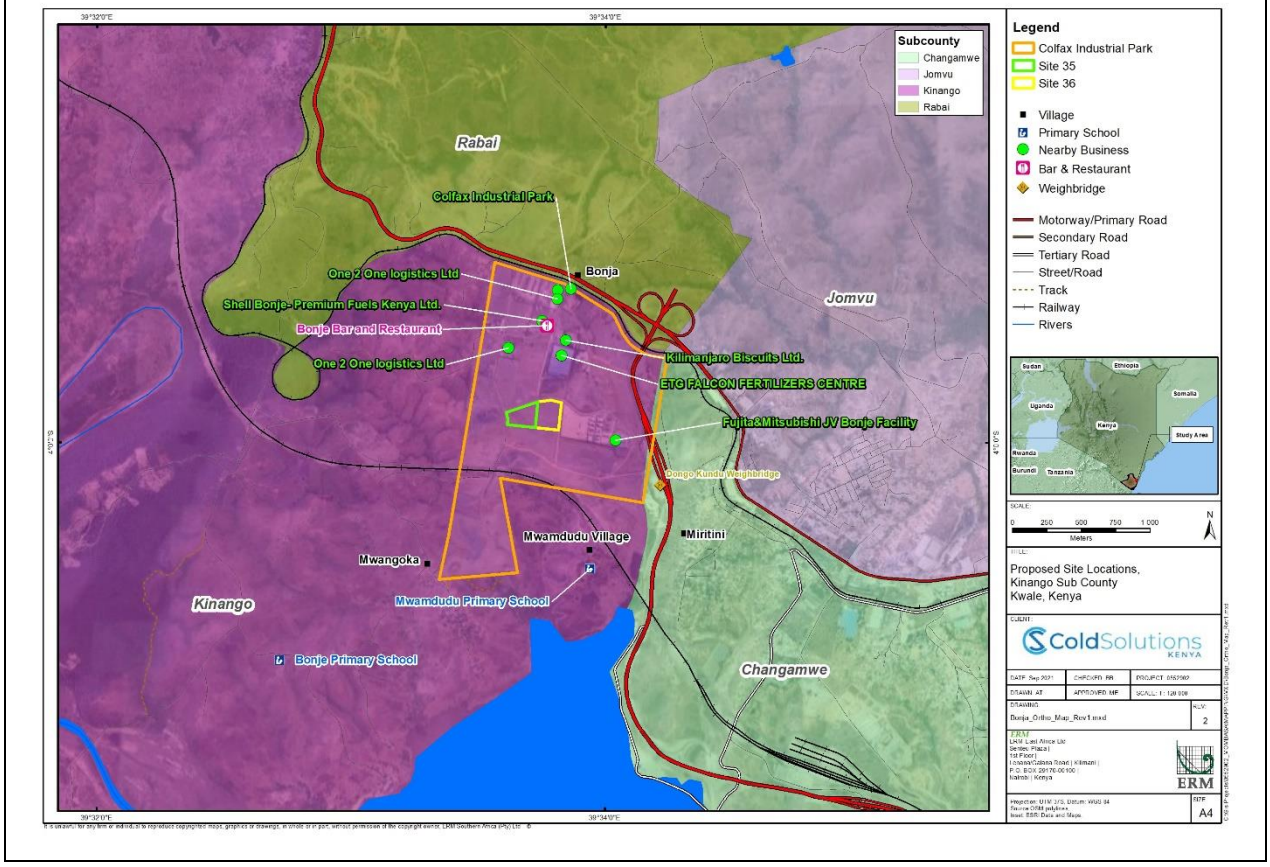
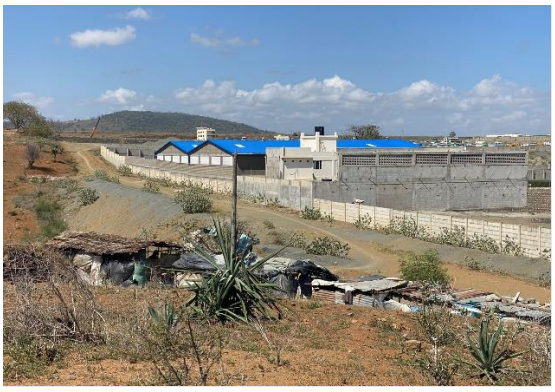


Figure 7.2 Developments in the immediate surroundings of the Project Site

One 2 One Logistics Ltd., Shell-Bonje and Scania E.A to the Northwest of the Project site outside the perimeter wall



ETG Falcon Fertilizer and Kilimanjaro Biscuits viewed from outside the CIP. Also note the informal business structures outside the factory

Alpha Logistics, one of the industries at the CIP

Perimeter wall and entry to the CIP

Figure 7.3 Photo Log of Industrial Developments Surrounding the Project Site within the CIP

Source: ERM Site Visit, October 2021

7.4 Land and Land Use

7.4.1 County Level

According to information obtained from the Kwale County Department of Lands, most smallholders who are the majority farmers do not have title deeds. Only 22.5% of the farmers in Kwale have title deeds to their farms. Most of them are informal settlers who may be evicted at any time, thus limiting the farmer's capacity to use land for sustainable development due to an inability to commit to long term investments such as irrigation. Consequently, this has led to poor land use systems leading to environment degradation. Further, the lack of titles limits farmers' ability to access credit facilities, as they cannot use the land as collateral[10].

7.4.2 Project Area

The land use within the CIP is typified by industrial and commercial enterprises (Figure 7.2). The two plots (Plot Number 35 and 36) identified for the development of the Project are currently vacant and undeveloped (Figure 7.4). In the wider Project area outside of the CIP, the land is generally semi-arid with scattered bushes and settlements.

Based on discussions with the Area Chief, the communities in the Project area mainly use the land for subsistence farming of crops such as: maize, cassava, cowpeas and green peas and grazing of cattle, goats and sheep.

[10] Kwale County Government (https://kwalecountygov.com/kwale. Accessed 2nd November 2021)

Figure 7.4 Undeveloped land at the Project Site

Source: ERM Site Visit, October 2021

Discussion with CIP management revealed that in 2009, a process of compensation and relocation of 12 households (informal settlers) with a population of 150 persons residing within the broader CIP site was undertaken. The process undertaken was led by Colfax Holdings and further information can be sought via the CIP Management[11]. After consultation, nine of the 12 households accepted to relocate voluntarily, however three families (comprising approximately 20 family members) did not accept the relocation offer.

The rates for compensation determined through a valuation process conducted by a private valuer hired by CIP, the values were then reviewed by a government valuer to ensure rates reflected the market value of the housing and land. After, the rates were agreed upon by the valuer, an agreement was reached through discussions with the affected households. A signed agreement and copies of other relevant documentation (e.g. cheques, vouchers etc.) was processed. Any crops upon the site were compensated in line with the Ministry of Agriculture (MoA) rates. The valuation was undertaken by a government registered valuer.

The management of CIP also purchased land for the families to rebuild and provided a three acre burial site near the Miritini-Mombasa road. The families were given a notice period of three months to relocate. Discussions with the Area chief and other village representatives also revealed that the community was satisfied with the process of compensation and livelihood restoration.

As of October 2021, the three households who did not accept compensation are yet to relocate and discussions between them and CIP management are still on-going. It is important to note that the three remaining households are residing outside the Plots 35 and 36 which are hallmarked for the Project within the CIP.

7.5 Economic Activities

7.5.1 County Level

7.5.1.1 Crop Production

Agriculture is one of the main economic activities carried out in Kwale County, with 85 percent of farmers practicing subsistence farming. The agricultural sector plays a crucial role in food security, poverty reduction and employment creation in the County. Despite the emphasis on crop production within the

[11] Sample relocation and compensation agreements with between Colfax Holdings Ltd. and the informal settlers was shared with ERM but because of the agreements contained personal information, it cannot be shared in the report without the permission of the parties involved.

County, food insecurity is still a challenge for many parts of the year. Most of the farmers in the county practice mixed farming (i.e. growing of crops and raising of livestock). The County is divided into various agro-ecological zones (AEZs) in terms of agricultural potential as shown in the Table 7.2 below:

Table 7.2 Agro-Ecological Zones and their agricultural potential

Zones	Percentage of Land Area	Economic Activities
Coastal lowlands CL2 zone (lowland marginal sugar cane zone)	3	Main production area for rain fed rice. Most of the food crops grown in the district are found here
Coastal lowlands CL3 zone (coconut and cassava zone)	13	Tree crops, food crops and livestock. Crops includes cashew nuts, maize and beans while livestock includes dairy animals.
Coastal lowlands CL4 zone (cashew nut and cassava zone)	12	Marginal agricultural potential with cashew nuts dominating the cash crops. Livestock is kept and crops produced on small scale
Coastal lowlands CL5 zone (livestock and millet zone)	40	Livestock (cattle, poultry and goats). Subsistence crops (maize, sorghum, cowpeas, groundnuts, cassava and green grams)
Coastal lowlands CL6 zone (ranching zone)	32	Very little crop production potential. Majority of farmers concentrate on keeping of local cattle and goats as their main source of livelihood

Source: Department of Agriculture Kwale County

The total area under food crop production within Kwale County is 27,606 ha. Crops include Cowpea, cassava and green gram in the hot and dry coastal hinterland, and in the semi-arid areas of Kinango.

Cash crops include cashewnuts (all over the County), sugarcane (mostly in Lunga-Lunga sub- County and Ramisi), cotton (held on trial in Msambweni) and Bixa/Achiote (in Lunga-Lunga, Msambweni, Matuga)) and are spread on 44,868 ha of agricultural land.

Semi-commercial crops, such as coconuts and mangoes are found throughout the entire County, particularly in Msambweni and Matuga sub counties (Kwale CIDP 2018-2022).

7.5.1.2 Livestock

Livestock production (primarily cattle and goats) is the main economic activity in the drier parts of the County (< 700mm annual rainfall). This region covers about two thirds of the county. Kwale County has an estimated 190,988 zebu cattle, 5,475 dairy cross, 3,371,126 goats, 54,578 sheep and 725,000 poultry (Kwale CIDP 2018-2022).

Livestock is kept for both food and income generation and contributes around 25 percent of the County income annually. Under this sub-sector, the County implemented livestock breed programmes for dairy, beef cattle and goats for distribution to livestock farmers (Kwale CIDP, 2018 – 2022).

7.5.1.3 Fisheries

Kwale has abundant fisheries reserves along the coastline. Major fish reserves include: Shimoni, Vanga, Msambweni, Diani, and Tiwi. There are 20 beach management units (BMUs) and 54 landing sites. The main types of fish caught include:

- Rabbit Fish (Taffi),
- Scavengers,

- Snappers,
- Parrot Fish,
- Octopus,
- Squids and
- Variety of ornamental fish as household pets.

In addition, there are 338 freshwater fish ponds for fish farming in the county, mainly focused on Salmon and Tilapia for domestic consumption.

7.5.1.4 Bee Keeping

Bee keeping (apiculture) is a livestock subsector with the potential to contribute to improving nutrition and income to rural households within Kwale County. Both modern and traditional beekeeping methods are being practiced throughout the County. The county government donated 100 modern beehives and 100 beekeeping kits to farmers with an aim of encouraging modern beekeeping technologies and increase honey production (Kwale CIDP, 2018 – 2022).

7.5.1.5 Mineral Resources

Kwale County is home to Kenya's largest operating rutile mine, operated by Base Titanium. As a result, Base Titanium is one of the biggest employers within Kwale Country, employing about 700 persons at their facilities.

There is potential for extended mineral exploration, with deposits identified including Titanium (rutile, ilmenite, zircon) at Nguluku and Shimba Hills; Gemstones at Kuranze; Rare Earth Elements (niobium, phosphates) at Mrima Hills and Samburu; Silica Sands at Waa, Tiwi and Ramisi; Zinc, Lead and copper at Mkang'ombe, Mwache, Dumbule and Dzitenge; Baryte at Lunga-lunga; Coal at Maji ya Chumvi; Sandstones at Mariakani; Limestone at Shimoni and Waa; Coral rocks at coastline and a potential for offshore oil and gas ((Kwale CIDP, 2018 – 2022)..

7.5.1.6 Tourism

The tourism sector in Kwale is a source of employment opportunities in areas such as food and beverage establishments, transportation services, travel agencies, tour operation companies, natural and cultural attractions site. The County has invested in developing Kwale as a tourist destination through improved infrastructure (e.g. roads), marketing and capacity building in the hospitality sector (Kwale CIDP, 2018 – 2022).

7.5.1.7 Labour force

According to the Kenya Population and Housing Census Report, 2019 (Volume IV), approximately 44,175 persons are actively seeking employment while economically inactive 350,840 as shown in

Table 7.3 below.

Table 7.3 Distribution of Persons in the labour Force in Kwale County

Gender	Working	Seeing work	Outside the labour force[12]	Not stated	TOTAL
Male	157,818	27,397	169,892	87	355,194
Female	175,762	16,776	180,943	78	373,559
TOTAL	**333,587**	**44,175**	**350,840**	**165**	**728,767**

KPHC Volume IV, 2019

The number of those actively seeking employment (44,175) compares to the total at national level, which is 2,621,158 persons (KPHC 2019 Vol. IV).

7.5.2 Project Area

Based on discussions held with the Area Chief and village headmen, the main economic and livelihood activities in the villages adjacent to the CIP include: subsistence farming, grazing, fishing and collecting and selling firewood. The main town centre in the Project area is called Mai Centre at Miritini that has hotels, banks and other small-scale business such as retail shops and kiosks, Boda (Motorcycle) business and supermarkets. In addition, the proximity of Miritini to the Mombasa SGR Terminus (3km) and the Moi International Airport (6.8km) make it ideal for hotels and other businesses that target domestic tourists.

In addition, the CIP currently employs about 80-150 workers from the Project area who work as waged workers for the companies operating within the industrial park, as well as day labour for construction and maintenance within the industrial park such as wall construction laying cabro blocks (paving blocks) and construction machine operations e.g. trucks, excavators and dumpers.

7.6 Water and Sanitation

7.6.1 County Level

7.6.1.1 Water Resources

Water availability can be an issue within Kwale County due to the seasonality of rivers. s. According to the Kenya Population and Housing Census Report, 2019 (Volume IV), the main water resources in the County can be summarised as shown in the

Table 7.4 below:

Table 7.4 Percentage Distribution of Water Resources in Kwale County (KPHC Volume IV, 2019)

Water sources	Percentage (%)
Pond	17.2
Dam/Lake	10.4
Stream/River	3.2
Protected Spring	1.3

[12] Persons outside the labour force is what was formally referred to as the economically inactive and includes full-time students, home makers, the retired, incapacitated persons and those who are either too young or too old to work. 182

Water sources	Percentage (%)
Unprotected Spring	1.7
Protected Well	10.3
Unprotected Well	8.3
Borehole/Tube well	12.7
Piped into dwelling	4.3
Piped into yard or plot	5.5
Bottled water	2.1
Rain harvested water	1.7
Water vendor	2.9
Public Tap and standpipe	18.3

Kwale Water and Sewerage Company is mandated by the Coast Water Services Board to supply, control and manage all the water supply schemes within the county. Private water service providers in liaison with the Kwale water services board have been supplying water to the community to ensure water is available for all. Other water supply schemes include community owned and managed boreholes, dams and even water pans. Local community participation in the projects has been poor, thus creating problems of operation and maintenance (Kwale CIDP, 2018 – 2022).

7.6.1.2 Sanitation

Kwale County was ranked number 23 out of 47 in the county sanitation benchmarking by the Ministry of Health with open defecation (OD) at 51.2 percent (WSP 2014) which compares to the national average of 14 per cent (Public Health BioMed Central)[13]. Latrine coverage is a key component of household sanitation, particularly with respect to disease prevention and human dignity. The main type of toilet facility in the county is the pit latrine. The latrine coverage in the County is at 55 percent, which is below the national target of 90 percent, with improved toilets accounting for 19.5 percent, unimproved toilets at 14.3 percent with open defecation reduced to 31.6 percent (Agris 2017). The county is committed to deliver its rural villages and communities to open defecation free (ODF) and raise household sanitation coverage to above 85 percent to address the burden of diarrhoeal and related illness. (Kwale CIDP, 2018 – 2022).

7.6.2 Project Area

The CIP is supplied with water by the local municipality, Coast Water Services Board (CWSB). The Industrial Park is serviced by piped municipal water that is available to tenants of the CIP. The CIP does not have sewerage connection and each developer is required to install a soak pit to manage grey water.

Water supply to the communities surrounding the CIP is mainly from the Mzima water pipeline that sources water from the Mzima Springs, one of the biggest water supply schemes in the coastal region that has a yield capacity of about 35,000 m^3. The Marere water pipeline also that sources its water from Simba Hills and has a capacity of 12,000m^3 distributes water to various parts of the Coastal area South of Mombasa.

Because most of the community members do not have access to piped water, there are several water points where households purchase potable water for Kshs 5 for a 20 litre jerry cans and have to walk between 10-30 minutes from their homes to the water points.

The majority of households in the villages use covered pit latrines or Ventilated Improved Pit (VIP) latrines.

[13] Public Health Biomed Central (https://bmcpublichealth.biomedcentral.com/articles/.Accessed 2nd November 2021)

7.7 Education and Literacy

7.7.1 County Level

According to the 2019 Kenya Population and Housing Census Report, about 192,001 (24.5 percent) of the population have never been to school with a high percentage (29.1 percent) being women. Table 7.5 below gives a summary of the distribution of the population aged three years and above by Primary school attendance status within Kwale County.

Table 7.5 Distribution of Population by School Attendance

Gender	Number at School	%	Left school after completion	%	Left School before completion	%	Never been to school	%	Total
Male	171,696	44.9	83,012	21.7	49,352	12.9	75,281	19.7	382,538
Female	162,911	40.7	69,162	17.3	49,457	12.3	116,716	29.1	400,636
Total	**334,612**	**42.7**	**152,178**	**19.4**	**98,811**	**12.6**	**192,001**	**24.5**	**783,189**

KPHC Volume IV, 2019

The KPHC Report (2019) also shows that 207,769 persons have attended primary education and 36,756 persons have attended secondary education. There is a slight balance of male and female who have attended primary education while for secondary education there are more male than female. Table 7.6 below shows the distribution of the population by current school attendance.

Table 7.6 Distribution of Population by Currently Attending School

Crop	Pre-Primary	Primary	Secondary	Middle Level/ Technical and Vocational Training (TVET	University	Adult Basic Education	Madrasa/ Duksi
Male	42,535	106,020	19,415	1,883	1,195	185	185
Female	40,285	107,747	17,340	2,224	741	170	170
Total	**82,822**	**207,769**	**36,756**	**4,107**	**1,936**	**355**	**355**

KPHC Volume IV, 2019

7.7.2 Project Area

There are four Primary schools and two High schools in the Project area namely: Mwamdudu Primary school (1.03km southeast of the CIP) and Bonje Primary school (2.54 km southwest of the CIP) of the Project site. Further northwest of the Project site is Mpirani Primary school (5.42 km) and Fulugani Primary school (3.91km). The nearest high schools are Mazeras High school (4 km northwest of the of the CIP) and Mazeras Memorial Girls Secondary school (2.41 km northwest of the CIP).

Mwamdudu Primary School (Figure 7.5) is a public primary school in Kasemeni. The school is run by central government and it is a day school. The pupil to classroom ratio in this school is 78:1 and the pupil to toilet ratio is 98:1. The school has total 10 classrooms, four boys' toilets, four girls' toilets and three teacher's toilets. The total numbers of students enrolled in this school are 781.

Figure 7.5 Sign post of Mwamdudu Primary school

Source: ERM Site Visit, October 2021

Bonje Primary School is a public primary school in Kasemeni with 243 day students. Fulugani Primary school is a public mixed day school with 597 students and eight teaching staff. Mpirani Primary school is a public mixed school with 14 teachers and 742 students.

Mazeras High school is a public boy's boarding school with 348 students and 20 teaching staff. Mazeras Memorial Girls Secondary school is a Public Secondary School with 16 teaching staff and 226 students.

7.8 Health

7.8.1 County Level

The County has a total of five (5) government hospitals, ten (10) health centres and ninety (90) dispensaries located in Msambweni, Matuga, Lunga-Lunga and Kinango Sub-Counties. The doctor and nurse population ratio stands at 1:76,741 and 1: 3,133 respectively. In addition, the county has a total of thirty six (36) private health facilities and nine (9) health facilities owned by faith based organizations.

The average distance to the nearest health facility within the County is seven (7) kilometres as compared to the required maximum of three (3) kilometres by the Ministry of Health (MoH). (Kwale CIDP, 2018 – 2022).

The conditions which cause high disease burden in Kwale County are malaria, anaemia, HIV, diarrhoea, respiratory conditions and non-communicable diseases. These conditions highly contribute to the high morbidity and mortality in the County. (Kwale CIDP, 2018 – 2022).

7.8.2 Project Area

The nearest health facility in the Project area is Mazeras Dispensary which is about 3.1km northwest of the CIP. The dispensary offers services in Anti-retroviral Therapy (ART), Home Based Care (HBC), and Inpatient services (Figure 7.6).

Figure 7.6 Mazeras Dispensary in the Project area

Source: ERM Site Visit, October 2021

Apart from the dispensary most people in the Project area seek medical attention in Mombasa which has several hospitals e.g. Port Reitz Sub-County Hospital (20.4km), Port Reitz District Hospital (20.1km) and Bomu hospital (24.5km).

Based on discussions with the village headmen, common ailments among the communities in the area include: Malaria, Urinary Tract Infections (UTIs) and Upper Respiratory Tract Infection (URTI). Skin infections are also common among children below the ages of eight years.

7.9 Infrastructure

7.9.1 County Level

Transport

Physical infrastructure within Kwale County remains underdeveloped. Kwale County has a total of 2,028 Km of classified roads, of which 212.5 Km are Bitumen surface (paved surface), 425.2 Km is gravelled and 1,695.5 Km of earth surface roads/rural access roads. An international trunk road traverses the county from Mombasa to Lunga-Lunga on the Kenya –Tanzania border. On the northern side the Mombasa – Nairobi Highway virtually forms the boundary of Kwale and Kilifi County.

Aside from roads, there is 4 Km of railway line (the Standard Gauge Rail) connecting Nairobi and Mombasa. There is no train station within Kwale County; however the nearest SGR station is 3km south of the Project site in Mombasa.

Within Kwale County, there are four (4) airstrips at the following locations: Ukunda/Diani, Shimba Hills National Reserve, Msambweni and Kinango. Despite this, only Ukunda/Diani is operational and is used as a common route for tourism from Nairobi. Air transport has contributed to the growth of tourism sector, which significantly contributes to the economic growth of the county. There is a small port at Shimoni which is mostly used for water transport by boats controlled by Kenya Wildlife Service. The County Government through partnership with the Kenya Ports Authority and the National government intends to develop the Shimoni port facility (Kwale CIDP, 2018 – 2022).

Telecommunications

The county has 14 branches of the public post office available at Kwale, Msambweni, Kinango, Ukunda, Shimba Hills, Lunga-Lunga, Vanga, Kikoneni, Shimoni, Lukore, Diani, Matuga, Mackinnon Road and Samburu. With emergence of mobile phones and courier services, utilization of Telkom Kenya services and those of the Postal Corporation of Kenya has since declined which has led to neglect of these facilities and vandalism of equipment. The three major mobile telephone service providers cover about 75 percent of the County with major towns such as Kwale, Ukunda/Diani, Msambweni and Kinango well covered. Equally, most of the highway from Likoni to Lunga-Lunga and Mombasa – Nairobi Highway are also well covered. However, most of the hinterland areas are either completely uncovered or experience difficulty in accessing mobile network. The most affected areas include Kubo Division, Vanga, Samburu, Ndavaya and parts of Lunga-Lunga. Access and uptake of ICT has increased. Securicor courier services are available in Ukunda and Kwale Towns (Kwale CIDP, 2018 – 2022).

Radio, television and the print media are powerful tools for information dissemination, entertainment and education. The county is well covered by KBC among other FM stations. Over 75% of households in the region own radios making it the most prevalent medium of communication. Television coverage is mainly concentrated in urban centres. KTN, KBC, Citizen, KISS, NTV TV channels cover the area. The region is supplied by nationally distributed newspaper editions such as Daily Nation, Standard, The Star and Taifa Leo concentrated mainly in urban centres (Kwale CIDP, 2018 – 2022).

7.9.2 Project Area

The main infrastructure around the Project area include a tarmacked and cabro paved access roads, electricity transmission lines. The Standard Gauge Railway (SGR) line transverses near the Project site (0.36km) on the southern side (Figure 7.7).

Figure 7.7 Mombasa–Nairobi Standard Gauge Railway (SGR)

7.10 Cultural Heritage

Kwale County has Kaya forests (commonly called Kayas), which are sacred natural forests found on hilltops but also on coastal plain land of Kenya. They are residual patches of forests averaging 10-400 ha of once-extensive diverse lowland forest found in coastal eastern Africa. The historical development, existence, location and shape of the Kayas are intertwined with the belief and culture of the coastal Mijikenda (nine houses) ethnic groups which claim descent from one ancestral area of Singwaya (Shunhwaya, and thought to be in modern-day southern Somalia). The Kayas thus are strategic and symbolic grounds, and as the ancestors found resting places within the Kayas, so did the spiritual, social and symbolic significance of the Kayas increase to the communities. Thus, even after the Kayas were abandoned to become uninhabited forested areas, the laws governing their protection and the rituals associated with them remained intact.

7.10.1 Project Area

There are no know cultural heritage sites within the Project area.

7.11 Summary of the Socio-economic Baseline

- Project Site is located within the Colfax Industrial Park (CIP), Plot LR 29437/35 and LR 29437/36, at Kasemeni location, Mwamdudu Sub-location, Miritini town and Bonje area of Kwale County, Kenya. The Site is about 10km from the Mombasa new port.
- Communities in the Project area mainly use the land for subsistence farming of crops such as: maize, cassava, cowpeas and green peas and grazing of cattle, goats and sheep.
- The main economic and livelihood activities in the villages include: subsistence farming, grazing, fishing and collecting and selling firewood.
- The main town centre in the Project area is called Mai Centre at Miritini, that is comprised of hotels, banks and other small-scale business such as retail shops and kiosks, Boda (Motorcycle) business and supermarkets.
- Water supply to the communities is mainly from the Mzima Springs and Marere Springs. Most of the community members do not have access to piped water and there are several water points where household can purchase potable water.
- Majority of households in the villages use covered pit latrines or Ventilated Improved Pit (VIP) latrines.
- There are four Primary schools and two High schools in the Project area namely: Mwamdudu Primary school (1.03km southeast of the CIP) and Bonje Primary school (2.54 km southwest of the CIP) of the Project site. Further northwest of the Project site is Mpirani Primary school (5.42 km) and Fulugani Primary school (3.91km). The nearest high schools are Mazeras High school (4 km northwest of the of the CIP) and Mazeras Memorial Girls Secondary school (2.41 km northwest of the CIP).The nearest health facility in the Project area is Mazeras Dispensary that is about 3.1km northwest of the site. In addition to the dispensary most people in the Project area seek medical attention in Mombasa which has several hospital e.g. Port Reitz Sub-County Hospital (20.4km), Port Reitz District Hospital (20.1km) and Bomu hospital (24.5km).
- Common ailments among the communities in the area include: malaria, Urinary Tract Infections (UTIs) and Upper Respiratory Tract Infection (URTI). Skin infections are also common among children below the ages of eight years.
- The main infrastructure around the Project area include a tarmacked and Cabro paved access roads, and electricity transmission lines. The Standard Gauge Railway (SGR) line transverses near the Project site (0.36km) on the southern side however there is no station accessible to the site.
- There are no know cultural heritage sites within the Project area.

8. STAKEHOLDER ENGAGEMENT

This Chapter presents a summary of the stakeholder engagement undertaken as part of the ESIA process for the Proposed Project. It also serves as a summary of a more detailed Stakeholder Engagement Plan (SEP), which presents the engagement approach and identifies stakeholders and the mechanisms through which stakeholders have been engaged. The complete SEP is provided as **Appendix C** to this document.

Since the project is a Category B project, the engagement process has been scaled to ensure all affected parties are consulted and engaged with adequately. This includes establishing an external communication and maintaining an open line of communication throughout the project cycle. Additionally, the engagement process has been designed to meet both Kenyan legal requirements for public participation in relation to an ESIA Project Report, and international requirements for engagement as outlined in the IFC Performance Standards.

8.1 Objectives of Stakeholder Engagement

The objectives of engaging stakeholders and the community during the ESIA process and beyond include:

- **Ensuring understanding:** An open, inclusive and transparent process of culturally appropriate engagement and communication is undertaken to ensure that stakeholders are well informed about the proposed Project as it develops. Information is disclosed as early and as comprehensive as possible and appropriate.
- **Involving stakeholders in the assessment:** Stakeholders are included in the scoping of issues, the assessment of impacts, the generation of mitigation and management measures and the finalisation of the ESIA Project Report. They also play an important role in providing local knowledge and information for the baseline to inform the impact assessment.
- **Building relationships:** Through supporting open dialogue, engagements help establish and maintain a productive relationship between the Project and stakeholders. This supports not only an effective ESIA, but also strengthens the existing relationships and build new relationships between the Proponent and stakeholders.
- **Engaging vulnerable peoples:** An open and inclusive approach to consultation increases the opportunity of stakeholders to provide comment on the Project and to voice their concerns. Some stakeholders, however, need special attention in such a process due to their vulnerability. Special measures are to be considered to ensure that the perspectives of vulnerable stakeholders are heard and considered.
- **Managing expectations:** It is important to ensure that the Project does not create or allow unrealistic expectations to develop amongst stakeholders about Project benefits. The engagement process serves as one of the mechanisms for understanding and then managing stakeholder and community expectations, where the latter is achieved by disseminating accurate information in an accessible way.
- **Ensuring compliance:** The process is designed to ensure compliance with both local regulatory requirements and international best practice.

8.2 Project Stakeholders

A stakeholder is defined as any individual or group which is potentially affected by the Project or who has an interest in the Project and its potential impacts. Different issues are likely to concern different stakeholders; as such stakeholders have been grouped based on their connections to the Project.

Table 8.1 presents the range of stakeholder groups that have been identified and included within the stakeholder engagement process to date.

Table 8.1 Project Stakeholders

Stakeholder Category	Stakeholder Group	Connection to the Project	Stakeholders Required to be consulted	Stakeholders	Comment
National Government	National Regulatory Bodies Government Agencies	National Government are of primary importance in terms of establishing policy, granting permits or other approvals for the proposed Cold Storage Facility, and monitoring and enforcing compliance with Kenyan Law throughout all stages of the Project life cycle.	National Environment Management Authority (NEMA)	▪ Ministry of Transport, Infrastructure Housing, Urban Development and Public Works ▪ Ministry of Health ▪ Ministry of Agriculture, Livestock, Fisheries and Irrigation ▪ Ministry of Lands and Physical Planning	The aim is to conduct a stakeholder engagement meeting with the relevant departments at the County Level and determine whether further engagements are required at the national level. In all cases NEMA will be consulted.
County Government	Kwale County Government	The County Government is also of primary importance as it is responsible for implementation of legislation, and development plans and policies at the County level. The County Government will also have a role in issuing permits and processing applications. Finally, the County Government has a role in ensuring the views of the communities it represents are presented to the Project.	▪ Office of County Governor Ministries (Departments) – Department of Water, Environment, Energy & Natural Resources – Department of Agriculture, Livestock and Irrigation – Department of Lands, Housing, Physical Planning, Municipal Administration & Urban Development – Department of Education, Gender, Culture and social Services – Department of Health	N/A	These are the departments identified as being relevant to the project development for example approvals of the drawings and designs, undertaking of inspections as well as issuing a letter of no objection. The aim is to have one meeting with all relevant departments.

Stakeholder Category	Stakeholder Group	Connection to the Project	Stakeholders Required to be consulted	Stakeholders	Comment
			services – Department of Roads, Transport & Public Works – NEMA County Director of Environments ▪ Assistant County Commissioner (DCC)		
Colfax Industrial Park (CIP)	Management of the Colfax Industrial Park	The Management play an important role in the management and oversight of the CIP	Management team	N/A	The aim is to conduct a stakeholder engagement meeting to help in understanding all the requirements for operating in the CIP
Traditional Authorities	Administrative and Customary authorities such as Village Elders	Local community leaders acting as representatives of their local community. The traditional leaders and local authorities are the gatekeepers and play a key role in mobilization and maintaining law and order	▪ Area Chiefs ▪ Sub-Chief ▪ Elders	N/A	The meeting with the Area Chief and Elders will be organised in coordination with Kwale Assistant County Commissioner (ACC)
Neighbours	Neighbouring Companies within the CIP	Companies that may be directly or indirectly affected by Project activities	▪ E.g. Fujita & Mitsubishi JV Bonje Facility, Alpha Logistics, ETG Falcon Fertilizer centre, Kilimanjaro Biscuits, One 2 One Logistics Ltd, Premium Fuels Ltd. and Scania East Africa (EA)	N/A	The aim is to contact and inform the stakeholders about the project and any impacts (i.e. traffic related etc)

8.3 Approach to Stakeholder Engagement

Stakeholder engagement for the proposed Project will be and was undertaken using a staged approach in line with the various phases of the project, which will include engagements during:

- The ESIA process (i.e. pre-project implementation);
- Project implementation; and
- Post project implementation

8.3.1 ESIA Process Engagement

The Objectives of the ESIA process engagement were to:

- To meet/communicate with key stakeholders and introduce them to the Project and ESIA process.
- To discuss the Project with the stakeholders including identified impacts and the plans in place to manage them.
- To obtain stakeholders' view on the Project.
- To obtain stakeholders' concerns on the Project.
- To understand stakeholders' expectation from the Project.
- To establish an open line of communication to ensure that all project concerns and grievances are address in an adequate and timely manner.
- To collect baseline data through a variety of methods including using participatory tools.
- To notify stakeholders of the next steps of the Project development.

Table 8.2 presents a summary of the stakeholder engagements conducted during the ESIA process, while a summary of the key issues raised/ comments made is presented in Table 8.3. Figure 8.1 shows sample photos taken during stakeholder engagement exercise. The results of the stakeholder consultations have been incorporated into the baseline information as well as into the impact assessment and mitigation measures Chapter (Chapter 9 of this ESIA Project Report).

Table 8.2 Details of ESIA Process Stakeholder Engagement

Stakeholder	Mode of Engagement	Engagement Date	Venue
▪ Director of Environment Natural Resources and Climate Change- Kwale County Government. ▪ NEMA County Director of Environment- Kwale.	Virtual	14th October 2021	Online via zoom
▪ Village Elders. ▪ Surrounding Communities. ▪ Assistant County Commissioner (ACC). ▪ Area Chief and Assistant Chief. ▪ Youth. ▪ Women. ▪ Community Policing Representative. ▪ Colfax Industrial Park Representative.	Public Meeting	22nd October 2021.	Project Site
▪ Community Policing Representative. ▪ Colfax Industrial Park Representative. ▪ Area Chief. ▪ Cold Storage Facility Project Manager. ▪ Village Headmen Representative.	Focused Group Discussion (FGD)	22nd October 2021	Project Site

Photo 1: Area Chef making introductory remarks during the public meeting held at the CIP Project site

Photo 2: Focused Group Discussion at the Project site with the Area Chef, village headman, community policing representative and CIP representative

Figure 8.1 Stakeholder Engagement meetings

8.3.2 Maximising Attendance and Representation in Engagements

In order to ensure that all groups were represented in the engagements, ERM consulted with the Area Chief to determine who the relevant local representatives are in the project affected area. Various representatives and groups were contacted including the village elders group or 'chama', women's representative, and youth group. This was done to ensure that all marginalised and vulnerable groups are included as well.

Due to the limitations of COVID Protocols for participation in the engagement sessions, targeting representatives of youth and women groups was important. The representatives are responsible for liaising with the community, who will then channel any questions and queries through the contact provided.

In addition to targeting marginalised groups during the process of invitation, ERM's structure of the consultations were designed with flexibility with sessions in the early morning and afternoon, in order to accommodate groups that may have limited availability (e.g. women with domestic responsibilities).

In terms of approach for ensuring accessibility, the location of the engagement was crucial. The engagements were held in very close proximity to the local residents as opposed to the public hall located in Mazeras (where the government offices are located). Although, there were no disabled peoples as disclosed by the Area Chief, the car hired by ERM was also made available for transporting those who encountered challenges in their journey to the meeting.

8.3.3 Outcomes of Engagement Conducted to Date

As indicated in *Table 8.2* stakeholder engagement meetings were held during the ESIA process of the Project.

The key questions and concerns raised by stakeholders during the ESIA process are outlined in Table 8.3 and further details included in the SEP (**Appendix C**). The Background Information Document (BID), detailed minutes of the stakeholder engagement meetings conducted during the ESIA process, meeting photos, attendance registers, and the developed stakeholder engagement database, are all presented **in Appendix D** and **Appendix E**.

Table 8.3 Outcomes of ESIA Process Stakeholder Engagements

Main Theme brought up by Stakeholders	Key stakeholders issues/ comments
Hydrofluorocarbons	▪ The Proponent should ensure that the project is compliant to the Kigali Amendment of the Montreal Protocol (an international agreement to gradually reduce the consumption and production of hydrofluorocarbons (HFCs)). It is a legally binding agreement designed to create rights and obligations in international law.
ESIA approval process	▪ Prior to the approval of the ESIA report, NEMA in conjunction with the County government will form a small team to visit the site for comments.
Employment opportunities	▪ Locals should be given the first priority on employment and business opportunities especially for the unskilled and semi-skilled positions. ▪ Employment opportunities should be channelled through the chief's office who work closely with the community policing (Nyumba kumi) representative and village elders to identify the required workforce and ensure the recruitment process is transparent process.
Disposal	▪ Measures should be put in place to ensure proper disposal of any food, medicine or chemicals that will be unclaimed or no longer be stored in the facility. The location and procedures of disposing such waste should be made clear.
Access routes	▪ The contractor should ensure that the access routes used by the communities will not be blocked and there should be provision of alternative routes.
Resettlement and compensation	▪ Discussion with CIP management revealed that in 2009, a process of compensation and relocation of 12 households (squatters) with a population of 150 persons residing within the broader CIP site was undertaken. ▪ After consultation, 9 of the 12 families accepted to relocate voluntarily, however 3 families with about 20 members did not accept the relocation offer. The families who have not accepted the compensated reside outside of the Colfax Industrial Park. Discussions regarding relocation are still ongoing. ▪ The rates used for compensating the housing and other properties was reached through discussions and agreements with the affected households. A signed agreement and copies of other relevant documentation (e.g. cheques, vouchers etc.) was processed. ▪ Any crops upon the site were compensated in line with the Ministry of Agriculture (MoA) rates. A government-registered valuer undertook the valuation of crops. ▪ The management of CIP also purchased land for the families to rebuild and provided a three acre burial site near the Miritini-Mombasa road. ▪ The families were given a notice period of three months to relocate. Discussions with the Area chief and other village representatives also revealed that the community was satisfied with the process of compensation and livelihood restoration. ▪ In general the process of resettlement and compensation was conducted in a voluntary and consultative manner. The community members were satisfied in the compensation process.

All stakeholder comments were noted and were considered in the assessment of the Project at all phases. Where necessary, responses were given by both the ERM team and the Project Proponent present in the various meetings (refer to Appendix D for detailed minutes of the stakeholder engagement meetings).

8.3.4 Post ESIA Engagement

The Project is committed to continuous engagement with stakeholders throughout the life of the Project, from the current stages of planning and design, through construction into operation, and eventually to closure and decommissioning.

Plans and activities implemented during the next stages of Project planning and development will therefore feed into and inform on-going stakeholder engagement as the Project moves into these

stages, ensuring that two-way dialogue with those affected, both positively and negatively by the proposed Project is maintained.

The aim will be to ensure that the Project remains in contact with all interested parties and cognisant of their concerns, and that these are addressed in an effective and timely manner. At each stage, a detailed schedule of activities and events will be developed and widely disseminated so that people know how to interact with and participate in the Project.

In particular, post ESIA stakeholder engagement is expected at the following Project stages:

- **Mobilisation phase:** At this stage, information regarding the exact locations of specific Project infrastructure, detailed construction schedule, expected construction team (including employment opportunities) will be shared with the Project stakeholders.
- **Construction phase:** Periodic Project updates as well as any changes in planning will be shared with Project stakeholders. The IFC PS also requires consultation with stakeholders and the implementation of a worker and community grievance mechanism (see Section 8.4).
- **Construction Demobilisation phase:** Notifying the stakeholders the end of the construction activities and close-out of outstanding construction phase related grievances. This is also expected to mark the start of the operation phase.
- **Operations Phase:** Periodic updates to Project stakeholders on the operations issues, share operation information where required or deemed necessary and communicate any changes in operation plans. The IFC PS also requires consultation with stakeholders and the implementation of a worker and community grievance mechanism (see section 8.4).
- **Decommissioning Phase:** Inform stakeholders when the Project comes to an end as well as future plans for the Project Site.

8.4 Project Grievance Mechanism

In accordance with international good practice, the Project has established a specific mechanism for dealing with grievances. A grievance is a complaint or concern raised by an individual or organisation who judges that they have been adversely affected by a project during any stage of its development.

Further detail on the grievance mechanism process is outlined in the SEP in **Appendix C.**

9. ANTICIPATED IMPACT AND MITIGATION MEASURES

The predicted impacts to the physical, biological and socioeconomic environment as a result of the Project are described in this *Chapter*. This *Chapter* also details potential mitigation measures in order to avoid, minimise, reduce, remedy or compensate for potentially negative impacts, and enhance potential benefits of the proposed Project. Furthermore, this *Chapter* provides a prediction of the residual impacts that will remain, assuming that the appropriate mitigation measures are implemented.

The development of mitigation/management measures and the management of residual impacts are fully described in the Environmental and Social Management and Monitoring Plan (ESMMP) (see Chapter 10). The methodology to identify and assess impacts is explained in Chapter 3.

The impact assessment laid out in this *Chapter* is as follows:

- Each section begins with the type of impact being assessed (e.g. *Section 9.2.1* – Impacts on local air quality, and *Section 9.2.2* – Impacts on the noise environment).
- Background information relating to the impact is then provided. This includes a description of the baseline environment that will be affected, the Project aspect or activities that will cause the impact and a description of the effected receptors.
- The significance of the impact pre-mitigation is then assessed and rated through use of a rating table.
- Following the pre-mitigation rating tables, a section describing the recommendations and mitigation/management measures proposed are provided.
- Once the recommended mitigation/management measures are provided, a residual impact (post-mitigation) is rated through use of a less detailed rating table.

Descriptions of impact assessment terminology are provided in *Chapter 3.*

***Note**: It is important to note that the positive impacts are not rated, they are merely stated. It is considered sufficient for the purpose of the Impact Assessment to indicate that the Project is expected to result in a positive impact, without characterising the exact degree of positive change likely to occur.*

9.1 Construction Related Impacts

9.1.1 Impacts on Local Air Quality

9.1.1.1 Description of the Baseline Environment

The Project Site is located in the developing CIP where a number of light industrial projects have been established, a number of other plots are yet to be developed. Ambient air quality for the Project Area is generally influenced by the light industrial activities within the CIP as well as traffic along the Mombasa Highway and access roads. Air quality impacts are also influenced by the predominant wind direction which blows mainly from the south and south west.

9.1.1.2 Proposed Project Activities

During the construction phase, the main sources of air pollution will be earthworks and transport of construction materials along construction and other access roads, which will likely lead to a rise in nuisance and particulate dust.

In addition, exhaust emissions from construction equipment and machinery are expected to include CO_2, NO_2, SO_2 and Volatile Organic Compounds (VOCs) from diesel/ petrol engines.

9.1.1.3 Sensitive Receptors

The main sensitive receptors are the neighbouring facilities within the CIP, and construction workers. There are no affected households (residential areas) at the Project Site given its location in an industrial area, with the nearest settlements located approximately 1 km to the southwest (and upwind) of the CIP. To the north, which is downwind of the prevailing wind direction, the nearest village is Bonje which is located approximately 7 km away. As such, these settlements are not likely to be affected by dust emissions from the Project site.

9.1.1.4 Significance of Impact (Pre-mitigation)

Based on the analysis provided above, impacts on local air quality during the construction phase will be "**Minor Negative Impact**" pre-mitigation as per the assessment below.

Type of Impact		
Direct Negative Impact		
Rating of Impact		
Characteristic	**Designation**	**Summary of Reasoning**
Extent	Local	The gaseous and dust emissions will be localised within the CIP.
Duration	Short term	Gaseous and dust emissions will reduce significantly shortly after the construction phase.
Scale	Medium	This impact will be manifested within the Project Site. However, if the emissions exceed the maximum levels permitted in the National Environmental Management and Coordination Act (Air Quality) Regulations, 2014 and IFC guidelines (*Chapter 3*) at source, this will pose health concerns to receptors, and will result in a breach of relevant legal requirements.
Frequency	Continuous	This impact will be manifested throughout the construction phase.
Magnitude		
Small Magnitude		
Sensitivity/Vulnerability/Importance of the Resource/Receptor		
Medium		
Although the Project site is devoid of settlements, there will be Project workers as well as well as receptors along access/ delivery routes that will be used.		
Significant Rating Before Mitigation		
Minor Negative		

9.1.1.5 Mitigation/Management Measures

- Develop and implement a grievance procedure (for both workers and other stakeholders) to manage any dust complaints.
- Where feasible, regular wetting or chemical treating of exposed open earthworks such as at the levelled and material laydown areas, may be required. Upon completion of earthworks, stabilization of temporary used surfaces (i.e., establishing vegetative cover as part of the landscaping activities, or placing ground cover) should occur as soon as possible.
- Regular wetting of construction access routes. This will not only lower dust levels but will improve visibility, and hence lower the risk of accidents.
- Vehicles to maintain speed limits imposed.
- Drop heights of material should be minimised, as far as reasonably possible.
- Soil and aggregate stockpiles should be managed in accordance with the mitigation / management measures provided for Impacts on Water Resources (refer to *Section 9.1.3*).

- Where feasible and reasonable, vehicles that are compliant with recent emission standards (for example, EURO Tier 3) should be used. These vehicles should be maintained in reasonable working order. When not in use, vehicles should be switched off, unless impractical for health and safety reasons (for example maintenance of air conditioning).
- Construction equipment should be maintained and serviced on a regular basis to ensure that they function optimally and to reduce excessive emissions, this will also apply to all stationary generators utilised on site.
- Issue all Project workers appropriate Personal Protective Equipment (PPE) including dust masks where required.
- Develop and implement an appropriate Traffic Management Plan (TMP) throughout the construction phase.
- Keep neighbouring developments up to date with the construction programme and activities.
- Any spillages at the Project Site or along access routes should be cleaned up within a reasonable time in line with the spill response procedure to prevent secondary emissions.

9.1.1.6 Residual Impact (Post-Mitigation)

Based on the implementation of the proposed mitigation measures, the significance of the impact on local air quality will be a "**Negligible Negative Impact**" post mitigation per the assessment below.

Rating of Impacts		
Characteristic	**Designation**	**Summary of Reasoning**
Extent	Local	The gaseous and dust emissions will be localised within CIP.
Duration	Short term	Gaseous and dust emissions will reduce significantly shortly after the construction phase.
Scale	Small	The concentration of emissions will be kept below the maximum levels permitted in the National Environmental Management and Coordination Act (Air Quality) Regulations, 2014 and IFC guidelines (*Chapter 3*).
Frequency	Continuous	This impact will be manifested throughout the construction phase.
Magnitude		
Negligible Magnitude		
Significant Rating After Mitigation		
Negligible Negative Impact		

9.1.2 Impacts on the Noise Environment and Vibrations

9.1.2.1 Description of the Baseline Environment

The Project Site is located in a light industrial park where potential sources of noise and vibrations include light motor traffic along access roads and construction and operational activities at other sites within the CIP. The ambient noise within the Project Area is therefore influenced by the construction and operational activities at a number of sites within the CIP currently as well as traffic along the Mombasa Highway.

9.1.2.2 Proposed Project Activities

The main source of noise and vibrations will be attributed to construction machinery and construction vehicles that will be used during the construction phase as well as other onsite construction activities. There will be no blasting at the Project Site; the required gravel will be obtained from available commercial suppliers. Soil required for fill material will be obtained from elsewhere on the site.

No construction activities will take place at night.

9.1.2.3 Sensitive Receptors along the Project Road

CIP in which the Project Site is located is devoid of settlements, so the main noise sensitive receptors will be Project workers (casual contractors and permanent employees) and workers at neighbouring light industrial developments. Households are located approx. 1km away and are upwind of the predominant wind direction.

9.1.2.4 Significance of Impact (Pre-mitigation)

Based on the analysis provided above, impacts on the noise environment during the construction phase will be "**Minor Negative Impact**" pre-mitigation as per the assessment below.

Type of Impact		
Direct Negative Impact		
Rating of Impacts		
Characteristic	**Designation**	**Summary of Reasoning**
Extent	Local	The noise and vibration impacts are expected to be limited within the CIP.
Duration	Short term	This impact will cease as soon as the construction activities are completed.
Scale	Moderate	The noise and vibrations generated may at times exceed the maximum levels permitted in the National Environmental Management and Coordination Act (Noise and Excessive Vibration Pollution) (Control) Regulations, 2009 and IFC guidelines (*Chapter 3*) on the Project site, but will be significantly lower at noise sensitive receptors located off the project site.
Frequency	Continuous	Noise and vibrations will be generated throughout the construction phase (daytime); however, no noise will be generated at night since construction activities are expected to be limited to daytime activities only.
Magnitude		
Medium		
Sensitivity/Vulnerability/Importance of the Resource/Receptor		
Low		
The sensitive receptors will mainly comprise of construction workers and other workers at the neighbouring light industries within the CIP		
Significant Rating Before Mitigation		
Minor		

9.1.2.5 Mitigation/Management Measures

General Measures

The following mitigation measures are recommended to keep the noise and vibration levels below the applicable national standards:

- Develop and implement a grievance procedure in the event of any noise and vibration impact complaints being received.
- Site management should periodically check the site and nearby developments for noise and vibration related issues so that solutions can be efficiently and timeously applied.
- Regular inspection and maintenance of all machinery and vehicles.
- Installation of silencers or acoustic enclosures on machinery, where applicable, such as installation of suitable mufflers on engine exhausts and compressor components as well as the use of portable sound barriers around noisy equipment like generators.
- As far as reasonably possible, avoid or minimise Project traffic routing through community areas and the implementation of speed limits for all construction vehicles. This needs to be stipulated in a Traffic Management Plan.

- Limiting hours of operation for specific equipment or operations (e.g. trucks or machines). In particular, limit use of heavy construction machinery to daytime only (06:01 am – 8:00 pm).
- Noise monitoring against the performance criteria presented above should be implemented if persistent noise complaints are received.
- All employees are to be provided with, and are to wear, appropriate hearing protection such as earmuffs and earplugs where necessary.
- Avoid idling of Project vehicles and equipment when not in use.

9.1.2.6 Residual Impact (Post-Mitigation)

Based on the implementation of the proposed mitigation measures, the significance of the impact on the noise environment will remain a "**Minor Negative Impact**" post mitigation per the assessment below.

Rating of Impacts		
Characteristic	**Designation**	**Summary of Reasoning**
Extent	Local	The noise and vibration impacts are expected to be limited within the CIP
Duration	Short term	This impact will cease as soon as the construction activities are completed.
Scale	Low	The noise and vibration levels on the property boundary is likely to be less than 70 dB(A) – to be confirmed by monitoring, and in conformance to the National Environmental Management and Coordination Act (Noise and Excessive Vibration Pollution) (Control) Regulations, 2009 and IFC guidelines.
Frequency	Intermittent	Noise and vibrations will only be generated when Project equipment and machinery are being operated. No Project associated noise will be generated at night.
Magnitude		
Small		
Significant Rating After Mitigation		
Minor		

9.1.3 Impacts on Water Resources

9.1.3.1 Description of the Baseline Environment

There is no river or stream at the Project Site. However, there exists tributaries to the west of the Industrial Park that flow in a south easterly direction, passing south of the CIP, towards sensitive receptors such as mangroves and the coast. Within the CIP, there existed natural storm water drainage channels that drain southwards; however, due to the developments at the Industrial Park, these have been generally blocked resulting in pooling of storm water at its northwestern boundary.

9.1.3.2 Proposed Project Activities

The construction phase will be associated with earthwork activities. Earthworks will involve excavations and levelling, stock piling and dumping, in some cases. The working and movement of soil will loosen it and facilitate potential water and wind erosion. Water erosion, through surface run-off, carries with it sediments, which may be deposited into the tributaries / mangroves that drain into the River Mwache and eventually into the Indian Ocean, located approximately 2 kilometres to the south, impacting on water quality and causing sedimentation. However, given the small size of the Project Site (a maximum of 6.4 Ha) on a relatively flat area, material to be excavated will be in relatively small quantities.

Typical for construction activities, small and heavy trucks as well as heavy machinery will be utilised for earthworks and material and equipment transport. Any spillages of oils, or other wastes may contaminate surface and stormwater and lead to contamination and sedimentation downstream.

The Project's water requirements will be small during the construction phase and will either be sourced from water storage tanks or from the water supply network of CWSB. There will be no competing water demands with the local communities or from neighbouring industries.

Sensitive Receptors

The main sensitive receptors of any potential water quality impact are the tributaries that flow south of the CIP, towards mangroves and into the Indian Ocean. The impact of the Project on water availability will be negligible.

9.1.3.3 Significance of Impact (Pre-mitigation)

Based on the analysis provided above, impacts on water resources during the construction phase will be "**Minor Negative Impact**" pre-mitigation as per the assessment below.

Type of Impact		
Direct Negative Impact		
Rating of Impacts		
Characteristic	**Designation**	**Summary of Reasoning**
Extent	Regional	Any negative impacts on the tributaries that flow into Indian Ocean are of a regional concern since they are not limited to the Project Area.
Duration	Medium term	Once contaminated, the effects of this impact will continue to be manifested after the construction phase.
Scale	Medium	The scale of this impact is dependent on the type of water contaminants as well as their concentrations.
Frequency	Continuous	Continuous during the construction phase.
Magnitude		
Small Magnitude		
Sensitivity/Vulnerability/Importance of the Resource/Receptor		
Medium Sensitivity		
Tributaries that flow south of the CIP towards mangroves and the Indian Ocean.		
Significant Rating Before Mitigation		
Minor Negative Impact		

9.1.3.4 Mitigation/Management Measures

- Communicate all the construction related plans and schedules to the local Project stakeholders prior to the commencement of the construction activities.
- Regularly maintain the Project equipment as per the manufacturer's instruction to avoid the possibility of any leaks and oil spills.
- Liaise with the management of CIP on wastewater discharge and stormwater management requirements.
- Method Statements detailing spill emergency response and clean-up procedures for spills should be developed.
- Training regarding proper methods for transporting, transferring and handling hazardous substances that have the potential to impact surface and groundwater resources, should be undertaken.
- Areas where spillage of soil contaminants occurs should be excavated (to the depth of contamination) and suitably rehabilitated. If any other minor spillage occurs, it should be cleaned as soon as possible, but within the same shift and the contaminated area should be reinstated. All contaminated material should be suitably disposed of.

- The ad hoc maintenance, with the exception of emergency repairs; of vehicles in and around the Project Site should be prevented, as far as reasonably possible. All major services and ad hoc maintenance of vehicles and equipment should be done at a designated workshop. The workshop should be properly constructed to prevent pollution and should as far as reasonably practical include containment berms and an oil/grease trap.
- All construction areas and associated facilities should be maintained in a good and tidy condition; debris and wastes should be contained in such a way that they cannot become entrained in surface runoff during periods of heavy rain.
- Where practical, exposed surfaces and friable materials should be covered/sheeted.
- Sufficient portable toilets at active work areas should be provided for site staff and workers and these should be serviced regularly by a competent and suitably qualified person.
- The sewage treatment/ containment system should be managed in a manner that results in zero discharge of raw sewage to the environment, and if treated sewage is discharged into the environment then this should conform to recognised Kenyan discharge standards prior to discharge.
- All wastewater which may be contaminated with oily substances should be managed in accordance with an approved Waste Management Plan, and no hydrocarbon-contaminated water should be released into the environment.
- The management of the CIP should develop and implement a comprehensive stormwater management plan for the Park.

Specific Measures – Flow (including stormwater water)

- Connect stormwater channels from the Project Site to the main stormwater ducts to be established by the management of CIP or following natural drainage channels. Outlets of any stormwater drains should ensure reduction in velocity of stormwater to prevent erosion and sedimentation.
- Ensure protection of soil adjacent to the side drains and the constructed drainage facilities.
- Spoil/excavations should be visually assessed to determine if it is contaminated. In the event that the spoil is contaminated, it should be handled as a hazardous material and disposed of under supervision and into controlled dumping areas.

9.1.3.5 Residual Impact (Post-Mitigation)

Based on the implementation of the proposed mitigation measures, the significance of the impact on water resources will be a "**Negligible Negative Impact**" post mitigation as per the assessment below.

Rating of Impacts		
Characteristic	**Designation**	**Summary of Reasoning**
Extent	Regional	Any negative impacts on the tributaries that flow into Indian Ocean are of a regional concern since they are not limited to the Project Area.
Duration	Short term	Any residual impacts in water resources will cease to be manifested after the completion of the construction phase.
Scale	Low	The scale of this impact is dependent on the type of water contaminants as well as their concentrations.
Frequency	Rare	This impact will be largely prevented through the implementation of the above measures
Magnitude		
Small Magnitude		
Significant Rating After Mitigation		

Negligible Negative Impact

9.1.4 Impact on Soils

9.1.4.1 Description of the Baseline Environment

Results of the geotechnical survey conducted at the Project Site indicate that the soils are made up of greyish to brownish, fissile and flaky, fine grained, very soft shale, highly decomposed to sandy gravel with some silt that show medium plasticity. Shale rock was encountered at the bottom of these trial pits. These soil characteristics indicate a firm ground suitable for construction activities such as the proposed Project.

9.1.4.2 Proposed Project Activities

Preparation of the Project Site for the construction of the Project will require vegetation clearance, site levelling (site observations indicated that the management of the CIP has already cleared and generally levelled the site), grading and soil compaction. Given that the Project Site is located on a plain with a very gentle slope, Site observations indicated that final levelling is achievable using soil excavated/cut from within the Project Site and will not require importation of soil except for specific construction materials such as gravel and aggregates which will be sourced from operational commercial quarries.

Vegetation cover is an important physical factor that influences soil erosion. Intact vegetation cover reduces the impact of raindrops or wind action on the soil, slows down the rate of surface runoff allowing for percolation, filters sediment load in the surface runoff and binds the soil together providing stability. However, given that the Project site is already cleared, additional vegetation clearance is not envisaged. After the construction phase, much of the Project Site will be covered by the warehouse and the remaining surfaces such as parking areas paved while the rest of the compound will be planted with landscaping plants.

In addition, excavation activities are known to alter the soil's physical properties like structure, aeration and porosity, all of which affect soil fertility; however, given that the Project Site is located in an industrial area, soil fertility within the Project footprint is not of any value and thus not an issue of concern.

9.1.4.3 Sensitive Receptors

The sensitive receptor for this impact is the soils within the Project footprint; however, given that the Project Site is located within an approved industrial area where construction and operation of light industries is expected; they are of negligible sensitivity.

9.1.4.4 Significance of Impact (Pre-mitigation)

Based on the analysis provided above, impacts on soils during the construction phase will be "**Negligible**" pre-mitigation and has therefore not been discussed further.

9.1.5 Impact on Biodiversity

9.1.5.1 Description of the Baseline Conditions

CIP is fully modified, with the land already cleared and graded as part of the initial activities for preparation of the Industrial Park. Therefore, it is devoid of reasonable vegetation and not of conservation concern or value.

9.1.5.2 Proposed Project Activities

Construction activities will include final levelling of the Project footprint to make it suitable for the Project. Wastes from the Project Site (including small volumes of soil and vegetation) will be collected and disposed of at identified disposal Sites off-site (14).

9.1.5.3 Significance of Impact (Pre-mitigation)

Based on the analysis provided above, impacts on biodiversity during the construction phase will be "**Negligible**" pre-mitigation and has therefore not been discussed further. However, the following management measures should be implemented to improve vegetation cover at the Project Site.

Control Measures for Invasive Plant Species

- Monitoring for growth and control of alien invasive vegetative.

Landscaping Measures

- In liaison with the management of the CIP, appropriate landscaping plants should be planted in the compound of the Project. Where possible, landscaping should be done with indigenous plant species. Avoid the use of exotic plant species, and especially avoid the use of lantana as a decorative plant (which is commonly used in Kenya).

9.1.6 Waste and Effluent

9.1.6.1 Description of the Baseline Environment

Currently, there is no coordinated waste management system for the CIP. Each developer currently manage their generated waste independently, through NEMA-licensed waste handlers where necessary.

9.1.6.2 Proposed Project Activities

The Project activities will be associated with a number of wastes ranging from general construction packaging waste including pallets and plastics from construction materials, electrical and mechanical equipment, earth material from excavations, hazardous waste such as paint residues and any fuel (or oil leakages) and domestic waste that will be generated during the construction process.

In addition, effluent waste will be generated in the form of both grey and black water by the construction workforce.

If the generated waste is not well managed, it will cause a nuisance and become of a hygiene concern in the Project Area.

9.1.6.3 Sensitive Receptors

The sensitive receptors to poor waste and effluent management will be other developers within the Project Area as well as the tributaries that flow south of the CIP.

9.1.6.4 Significance of Impact (Pre-mitigation)

Based on the analysis provided above, impact of effluent and waste management during the construction phase will be "**Moderate Negative Impact**" pre-mitigation as per the assessment below.

Type of Impact
Direct Negative Impact
Rating of Impacts

(14) The Impact of wastes and effluents assessed in details in Section 9.1.6

Characteristic	Designation	Summary of Reasoning
Extent	Local	This impact will only be manifested within the Project Area.
Duration	Medium term	If appropriate waste management measures are not put in place, the impacts of poor waste and effluent management will continue to be manifested even after the construction phase.
Scale	Medium	The scale of this impact refers to the amount of waste that is likely to be generated.
Frequency	Daily	Wastes will be generated daily throughout the construction phase.
Magnitude		
Medium Magnitude		
Sensitivity/Vulnerability/Importance of the Resource/Receptor		
Medium		
Any poor waste management practices will be of a major concern in the Project Area.		
Significant Rating Before Mitigation		
Moderate Negative Impact		

9.1.6.5 Mitigation/Management Measures

- Spoil generated should be disposed of on pre-identified and approved locations (impact assessment should be completed for the locations if not already approved).
- A Waste Management Plan (WMP) will be produced for the construction phase:
  - following the principles of:
    - waste minimisation at source,
    - segregation for reuse,
    - recycling, and
    - safe disposal of waste through a NEMA waste approved contractor.
  - With detailed measures stipulated such as:
    - using waste minimisation techniques;
    - allocating responsibilities for waste management;
    - identifying all sources of waste;
    - ensuring wastes are handled by personnel licensed to do so especially in the case of hazardous waste;
    - making suitable facilities available for the collection, segregation and safe disposal of the waste, also ensuring wastes are not blown off site by wind contributing to wind-blown litter in the area;
    - creating waste collection areas with clearly marked facilities such as colour coded bins and equipment for handling the various waste types; and
    - The collection of wastes that cannot be reused or recycled to be collected by approved waste contractors and transferred to an appropriate waste management facility for treatment and ultimate disposal (NEMA licensed).
- Construction vehicles and equipment will be serviced off site at designated and approved servicing locations.
- The use, storage, transport and disposal of hazardous materials used for the Project will be carried out in accordance with all applicable Kenyan regulations, and Material Safety Data Sheets (MSDS). As Kenya does not have a specific hazardous waste facility, any hazardous

wastes to be disposed of should be documented beforehand, treated as per any requirements of the MSDS sheets, and disposed of in consultation with the County Authorities and via NEMA approved waste handlers.

- The Contractor will be required to supply the required temporary ablution facilities and be responsible for the treatment and/or removal of sewage wastes off site. The Contractor will also be required to ensure that any sub-contracting company is accredited and has the necessary NEMA permits to remove transport and dispose of waste.
- All construction laydown areas shall comply with the Project Waste Management Plan (WMP) and be provided with appropriate waste handling equipment.
- In line with the requirements of the Waste Management Regulations, any generated hazardous waste should be transported and managed by NEMA permitted hazardous waste handlers.

9.1.6.6 Residual Impact (Post-Mitigation)

Based on the implementation of the proposed mitigation measures, the significance of the impact of waste and effluent management will be a "**Minor Negative Impact**" post mitigation as per the assessment below.

Rating of Impacts		
Characteristic	**Designation**	**Summary of Reasoning**
Extent	Local	This impact will only be manifested within the Project Area.
Duration	Short term	With application of appropriate waste and effluent management measures, the impact of waste and effluent management will cease to manifest shortly after the construction phase.
Scale	Low	The scale of this impact refers to the amount of waste that is likely to be generated. With the application of appropriate waste management measure including the application of the waste management hierarchy, less waste will be generated.
Frequency	Daily	Wastes will be generated daily throughout the construction phase.
Magnitude		
Small Magnitude		
Significant Rating After Mitigation		
Minor Negative Impact		

9.1.7 Impacts on Employment, Procurement and the Economy

9.1.7.1 Description of the Baseline Environment

The CIP currently employs between 80-100 workers from the surrounding communities for unskilled and semi-skilled labour at the CIP including:

- land clearing and levelling;
- laying of cabro paving blocks;
- construction of the boundary walls; and
- operation of construction machinery and equipment such as tractors and dumpers.

CIP requires their contractors to prioritise employment within the local and surrounding communities.

Additionally, materials for construction can be sourced from within Kwale, particularly in Miritini further benefiting the local economy.

9.1.7.2 Proposed Project Activities

The proposed Project will create both direct and indirect employment opportunities across different skill levels (unskilled, semi-skilled). According to the current estimates, the workforce size will vary at different times however will have a peak of approximately 150 workers during the construction phase. Discussions with communities revealed that employment opportunities are usually advertised and channelled through the Chief's Office who works closely with the village headmen and community policing (*Nyumba Kumi*) representative. The Project proponent and any EPC Contractor will be required to coordinate with the Area Chief, village headmen and community policing representative for all recruitment on site.

Impacts from the Project include:

- Direct employment opportunities.
- Indirect employment generated by the procurement of construction materials, meals and services for the workforce, as well as any other goods and services required for the Project.
- Induced employment related to jobs ensuing from the expenditure of incomes associated with direct and indirect Project related jobs.

9.1.7.3 Sensitive Receptors

The inhabitants of communities around the CIP i.e. Chongongwe, Mwangoka, Bonje and Zagwaru will be able to benefit from direct and indirect employment opportunities.

9.1.7.4 Impact Summary (Pre-enhancement)

Type of Impact
Positive Impact
Direct and indirect employment opportunities and the procurement of construction materials, goods and services, and combined multiplier effect of this economic growth will result in increased incomes for successful candidates and their local communities; promoting some degree of an increase in standards of living.

9.1.7.5 Enhancement/ Management Measures

In order to enhance this positive impact, the following management measures will be implemented:

- The contractor will prioritise the recruitment of workers (unskilled, semi-skilled) from the local communities around the CIP where available, and in accordance with Cold Solutions Kenya Limited (CSKL) Local Content Policy, and in conjunction with the Area Chief, community policing representative and village headmen.
- The contractor will adhere to CSKL's equal Opportunities and Diversity Policy that prevent any form of nepotism, favouritism or discrimination.
- The Contractor will notify identified representatives of the County Government and Local Administration (i.e. the Area Chief, village headmen and community policing representative) of the specific jobs and the skills required for the Project, during the recruitment process.
- Advertisements on the employment and procurement opportunities during the construction phase will be placed at the Chief's Office. In the event that the position cannot be filled from within the Project Area, it will be advertised further within Kwale County, and then nationally.
- No recruitment is to take place on the Project site. This is particularly important with respect to casuals to avoid the risk of attracting large unsolicited crowds or job seekers using bribes at the gate to access jobs.
- The Contractor will aim at procuring locally available materials where feasible and use local suppliers where appropriate.

9.1.8 Impact on Disease Transmission

9.1.8.1 Description of the Baseline Environment

As identified during baseline data collection, the major health issues in the area includes; Malaria, Urinary Tract Infections (UTIs), Upper Respiratory Tract Infection (URTI) and skin infections. At the time of preparing this report, the COVID-19 pandemic continues to poses a major health risk, both within Kenya and globally.

9.1.8.2 Proposed Project Activities

The main health risk at the moment is the COVID-19 pandemic which is a concern within Kenya and globally, particularly due to the low vaccine availability and uptake being experienced in country. There is a risk of increasing its spread amongst the Project workers and their contacts; therefore, workers and supervisors must ensure that all government-mandated COVID-19 preventative measures are observed throughout construction.

In addition to increases in disease prevalence related to direct interactions with the workforce, absence of adequate sanitation could contribute to an increased incidence of infectious disease, in particular, water borne diseases. Standing water created during construction activities could also serve as breeding grounds for mosquitoes, spreading malarial and dengue risk within the area. Construction activities including increased traffic may result in increased dust levels, which have the potential to exacerbate respiratory illnesses, an existing health concern within Kwale County.

In the event of water stagnation at the project site as a result of earthworks including excavations, this will provide breeding grounds for various vectors and pose a risk of increased vector borne diseases such as malaria which is already one of the top five most prevalent diseases in the Project Area

Given the location of the proposed project area within the vicinity of the already highly industrialised and urbanised Mombasa city, the low number of construction workers that will be needed, the fact that majority of the construction workers will be locally recruited hence minimising the risk of labour influx, and the fact that the project area is located within an industrial park where a number of other industrial projects have been already developed, with more to be developed, the risk of increased spread of communicable and sexually transmitted diseases including HIV/AIDS attributable to the Project will be negligible.

9.1.8.3 Sensitive Receptors

The receptors of increased disease transmission will be the neighbouring community of the CIP as well as Project workers (casual workers and permanent employees).

9.1.8.4 Significance of Impact (Pre-mitigation)

Based on the analysis provided above, impacts on disease transmission during the construction phase will be "**Minor Negative**" pre-mitigation as per the assessment below.

Type of Impact		
Direct Negative Impact		
Rating of Impacts		
Characteristic	**Designation**	**Summary of Reasoning**
Extent	Local	It is anticipated that the potential impacts of increased disease transmission will be limited to the Project Area.
Duration	Short-term	The impacts identified are expected to be linked to the construction period and therefore short-term.
Scale	Medium	Any increase in disease transmission will result in negative impacts to the health system.

Frequency	Intermittent	The incidence of communicable disease is likely to recur in the absence of mitigation and monitoring measures.
Magnitude		
Small Magnitude		
Sensitivity/Vulnerability/Importance of the Resource/Receptor		
Medium Sensitivity		
Vulnerability of receptors is dictated by the local people not having access to sexual health and family planning services, the current prevalence of disease, the health status of receptors as well as the limited access to health care.		
Significant Rating Before Mitigation		
Minor Negative Impact		

9.1.8.5 Mitigation/Management Measures

- The Contractor will prepare a COVID-19 Response and Management Plan based on a risk assessment considering international guidance, e.g. from World Health Organisation (WHO), and in accordance with Kenyan regulatory requirements.
- Workers should receive awareness training as part of their induction and then at least every 6 months on potential high risk communicable and vector borne diseases, symptoms, preventative measures and transmission routes as well as treatment options. This will be particularly important for diseases with which non-local workers are unfamiliar and in case of any emerging disease outbreaks.
- In the event of a new disease, increased transmission or outbreak compared to the baseline, the Contractor should interact with local health care facilities and workers to ensure there is an appropriate response in place to make workers aware and to ensure proper precautionary measures are implemented.
- The Contractor will adhere to CSKL's Supplier Code of Conduct providing a worker code of behaviour including worker-worker interactions, worker-community interactions and development of personal relationships with members of the local communities.
- Given the expected small number of Project workers (peaking at 150 workers during the construction phase) and the intention to recruit locally, provision of accommodation by the Project Proponent will not be provided. Any workers not from the local area will be expected to source their own accommodation.
- The following will be implemented at a minimum in order to minimise disease transmission:
    - Providing workers with appropriate sanitary facilities, which are appropriately designed to prevent (spread of disease.
    - Developing a robust waste handling system to avoid the creation of new vector breeding grounds or attracting rodents to the area.
    - Implementing measures to reduce the presence of standing water onsite through environmental controls and source reduction to avoid the creation of new malarial breeding grounds.
    - Ensuring appropriate food preparation and monitoring measures are in place.
- The workforce will be provided with access to treatment at health facilities at or near the Project Site as deemed necessary for this Project. The requirements for these health facilities should be based on a risk assessment considering access to existing health facilities and travel time to facilities that offer international standards of care. Access to health care should include direct employees and sub-contractors working on site.

- Pre-employment screening protocols will be put in place within the framework of equal opportunities and non-discrimination. This should include pre-employment medicals and follow up medicals as appropriate. The screening protocols should consider heath conditions related to the nature of the work undertaken, employee residential details and legal requirements. Workers should not be denied employment on the basis of the outcomes of the screening but should be provided treatment or alternative roles as appropriate.
- The Project should prepare and implement a Communicable Disease Management Plan (CDMP) during the construction phase. This plan should be explained clearly to the workforce.
- No recruitment is permitted on the construction site. This will serve to prevent in migration of work seekers from outside the local area.
- The development and implementation of vector borne and communicable disease policies and information documents for all workers directly related to the project.
    - The information document will address factual health issues as well as behaviour change issues around the transmission and infection of vector borne and communicable diseases (including HIV/AIDS as well as malaria).

9.1.8.6 Residual Impact (Post-Mitigation)

Based on the implementation of the proposed mitigation measures, the significance of the impact on disease transmission will be a "**Negligible Negative**" post mitigation as per the assessment below.

Rating of Impacts		
Characteristic	**Designation**	**Summary of Reasoning**
Extent	Local	This impact will be limited to the Project Area.
Duration	Low	With the implementation of the mitigation measures, community and worker exposure to diseases attributed to the Project will be avoided or effectively controlled within a short period of time.
Scale	Low	With the implementation of the mitigation measures, the increase in disease prevalence attributable to the Project will be avoided.
Frequency	Rare	The incidence of communicable diseases and other diseases attributable to the Project will be avoided or only occur rarely.
Magnitude		
Negligible Magnitude		
Significant Rating After Mitigation		
Negligible Negative Impact		

9.1.9 Traffic Impacts

9.1.9.1 Description of the Baseline Environment

Kwale County has a total of 2,028km of classified roads, of which 212.5km are Bitumen (paved surface), 425.2km is gravelled and 1,695.5km of earth surface roads/rural access roads. The Mombasa Southern by-pass (Dongo Kundu) as well as the existing Nairobi-Mombasa highway are less than 1km from the Project site.

Within the CIP, the management is in the process of constructing tarmacked and cabro paved access roads access roads that currently have very light traffic, mainly limited to operations within developing the CIP.

9.1.9.2 Proposed Project Activities

During the construction phase, trucks will deliver materials such as cement, sand and gravel as well as warehouse super structures, internal structures and electro-mechanical components. These trucks will be using the available local and wider roads (including the Nairobi-Mombasa highway). Although the existing road network is open to traffic, increased traffic due to transportation of the required Project materials and equipment has a potential of slowing down road traffic along the routes that will be used, as well as resulting in dust, and damage to the roads.

The risk of injuries from road traffic accidents are generally low but may increase during civil construction work (including site mobilisation and demobilisation) associated with the movement of equipment and people by road. Human presence within the CIP will largely comprise of workers at the different projects within the CIP.

The increase in traffic could also create dust, noise and safety (including injury or even death due to accidents) impacts for other road users and people living or working within close proximity to the roads on the selected transport routes. Traffic impacts will be further exacerbated if the selected equipment and/or delivery routes are through neighbouring Miritini Town.

9.1.9.3 Sensitive Receptors

The receptors for traffic impacts will be the existing users of the roads that will also be used during the transportation of Project equipment, machinery and workers.

9.1.9.4 Significance of Impact (Pre-mitigation)

Based on the analysis provided above, traffic impacts during the construction phase will be "**Moderate Negative**" pre-mitigation as per the assessment below.

Type of Impact		
Direct Negative Impact		
Rating of Impacts		
Characteristic	**Designation**	**Summary of Reasoning**
Extent	Local	To a great extent, traffic impacts will be limited to the Project Area and its environs; however, it is understood that some of the required Project components such as electrical and mechanical equipment will be imported from overseas. Increased traffic attributed to transportation of project equipment along major in-country highways will be negligible since such highways (e.g. Nairobi-Mombasa) are already approved and continuously used for transportation of large volumes of goods in addition to general transport services.
Duration	Short term	This impact will cease to be manifested after the completion of the construction phase.
Scale	Medium	Given the population of the communities at Bonje area (about 3225 persons) a big number of people will be potentially affected; however, this will be largely dependent on the selected transportation routes.
Frequency	Continuous	This impact will be continuously felt throughout the construction phase.
Magnitude		
Medium Magnitude		
Sensitivity/Vulnerability/Importance of the Resource/Receptor		
Medium Sensitivity		
Traffic impacts will inconvenience the current road users and businesses along them.		
Significant Rating Before Mitigation		
Moderate Negative Impact		

9.1.9.5 Mitigation/Management Measures

- Develop and implement a Traffic Management Plan covering the routes to be used by the contractor vehicles, vehicle safety, speed limits on roads, minimum driver qualifications and experience, driver and passenger behaviour, use of drugs and alcohol, hours of operation, rest periods and location of rest stops, and accident reporting and investigations.
- Prepare and implement an appropriate community Grievance Redress Mechanism (GRM). The GRM should be communicated to all the local community members and neighbours around the CIP.
- As much as possible, avoid transportation of Project equipment and materials through busy trading centres, schools and towns by using by-passes as appropriate.
- Regularly maintain Project vehicles and equipment as per the manufacturers' recommendations.

9.1.9.6 Residual Impact (Post-Mitigation)

Based on the implementation of the proposed mitigation measures, the significance of traffic impacts will be a "**Minor Negative**" post mitigation as per the assessment below.

Rating of Impacts		
Characteristic	**Designation**	**Summary of Reasoning**
Extent	Local	To a great extent, traffic impacts will be limited to the Project Area and its environs; however, it is understood that some of the required Project components such as electrical and mechanical equipment will be imported from overseas. Increased traffic attributed to transportation of project equipment along major in-country highways will be negligible since such highways are already approved and continuously used for transportation of large volumes of goods in addition to general transport services.
Duration	Short term	Given the nature of the facility there will still be cold storage trucks coming and going (but at a reduced rate) transporting goods
Scale	Low	With the implementation of the mitigation measures, the number of affected persons will be low.
Frequency	Regular	With the scheduling of the Project Activities, noticeable traffic impacts will occur regularly; only during scheduled transportation of Project materials and equipment.
Magnitude		
Small Magnitude		
Significant Rating After Mitigation		
Minor Negative Impact		

9.1.10 Labour and Working Conditions (Including Occupational Health and Safety)

9.1.10.1 Description of the Baseline Environment

Labour and working conditions, including occupational health and safety, will need to be considered to avoid any occupational incidents and/or injuries. Issues that need to be considered include fair treatment of workers, non-discrimination, and freedom of association, equal opportunities, as well as the provision of a safe and healthy working environment. These issues should be considered not only for those employed directly by the Proponent, but also employees of the Contractor and any other sub-contractors during the construction phase

9.1.10.2 Proposed Project Activities

OHS risks during the construction phase will include:

- Movement of vehicles both internally and externally [15];
- Use / operation of mobile and immobile construction equipment;
- Working at heights; and
- Ergonomic risks related to lifting of heavy loads.

Risks related to labour include human rights violations associated with unfair working conditions, including: discrimination, unfair treatment, prevention of freedom of association, use of child/forced labour, poor housing conditions and poor working conditions (i.e. provision of breaks, access to sanitary facilities, working hours, terms of payment, lack of contracts in place etc.).

9.1.10.3 Sensitive Receptors

General

Sensitive receptors will be Project employees. Given the industrial nature of the Project Area, and the fact that some of these workers will have previously worked at already completed projects in the CIP as well as in the neighbouring town, these workers will at least have a fair understanding of general construction conditions and common construction related OHS risks and how they can be minimised.

Without careful OHS management, the workforce employed may be exposed to occupational health and safety risks, potentially resulting in occupational accidents and injury or death.

Labour laws in Kenya are aligned with international labour laws, and Kenya has ratified seven of the eight core[16] ILO conventions, including:

- Right to Organise and Collective Bargaining Convention, 1949 (No. 98);
- Forced Labour Convention, 1930 (No 29);
- Abolition of Forced Labour Convention, 1957 (Mo 105);
- Minimum Age Convention, 1973 (No 138);
- Worst Forms of Child Labour Convention, 1999 (No 182); and
- Equal Remuneration Convention, 1951 (No 100); and
- Discrimination (Employment and Occupation) Convention, 1958 (No 111).

Casual Workers

There will be use of casual workers during the construction phase who will likely be engaged in labour intensive activities. It is crucial that OHS related risks are considered and managed, this will also include sensitisation of workers. In particular, casual workers are generally unskilled, have limited information regarding the labour and human rights, can be engaged at an irregular basis (depending on availability of work tasks where they are needed), low-income earners who can easily be tempted to expose themselves to significant occupational risks including excessive working hours with the hope of earning money as well as a poor safety culture.

It is important to note that while the labour laws exist, there are issues with regards to their implementation. Also due to the lack of employment in Kenya, workers are willing to sacrifice their rights in order to secure employment. There is therefore the risk that the Contractor and sub-

(15) Traffic impacts are assessed separately in Section 9.2.7.
(16) Kenya has not ratified the 'Freedom of Association and Protection of the Right to Organise Convention', 1948 (no 87)

contractors will not operate in line with international best practice if measures to manage such risks are not enforced.

With regards to on-site worker welfare, the Contractor will be required to adhere to IFC PS 2: Labour and Working Conditions, Kenyan Labour Law and the ratified ILO conventions.

9.1.10.4 Significance of Impact (Pre-mitigation)

Based on the analysis provided above, impacts to exposure of the workforce to poor labour and working conditions will be a "**Moderate Negative Impact**" pre-mitigation as per the assessment below.

Type of Impact		
Direct Negative Impact		
Rating of Impacts		
Characteristic	**Designation**	**Summary of Reasoning**
Extent	Local	The impact is only relevant for the workforce (including direct, third party and supply chain workers) all of whom are at a local level (although a few of them may come from elsewhere in Kenya or globally).
Duration	Short term	Generally, the implications of inadequate labour and working conditions will cease to manifest after the construction phase; however, some of the effects such as major injuries will continue to affect the concerned individuals.
Scale	Large	This impact will affect a proportion of the 150 workers estimated to be employed at the Project during the peak of the construction phase. Some of the emanating impacts such as major injuries can be severe including loss of life which can significantly affect households and communities ability to maintain their quality of life and livelihoods.
Frequency	Intermittent	Impact is likely to recur / occur intermittently throughout the construction phase.
Magnitude		
Medium Magnitude		
Sensitivity/Vulnerability/Importance of the Resource/Receptor		
Medium Sensitivity		
Receptors to this impact will include those contracted or subcontracted to work on the Project. The Project workers will be highly sensitive to any inadequate labour and working conditions if this happens at the Project.		
Significant Rating Before Mitigation		
Moderate Negative Impact		

9.1.10.5 Mitigation/Management Measures

Management System

- The contractor should develop and implement an Occupational Health and Safety Management System in line with good industry practice, including the requirements of the IFC Performance Standard 2, and in accordance with Kenya's Occupational Health and Safety Act (OSHA). This OH&S system will need to consider hazard identification, risk assessment and control, use of Personal Protection Equipment (PPE), incident investigation and reporting, reporting and tracking of near misses, incidents etc. The management system will also include emergency response plans that tie in with existing emergency response procedures of the CIP. Roles and responsibilities for the implementation of the OH&S Plan should be clearly defined.
- The contractor will have a Human Resources Policy in place that adheres to the requirements of the IFC Performance Standard 2, Kenyan Law and the ILO Core Labour Conventions, to which Kenya is a signatory. The HR policy will include a Labour and Employment Plan,

conditions of employment and Worker Grievance Mechanism. These requirements will also be passed on to any sub-contractors. Key aspects of the HR policy which should be included, are the following:

- Provision of clear and understandable information regarding rights under national labour and employment law, and any applicable collective agreements, including those related to hours of work, wages, overtime, compensation, etc.;
- Provision of reasonable working conditions and terms of employment;
- Provision of employment terms, compensation/remuneration and working conditions, including working hours, based on equal opportunity and fair treatment, avoiding discrimination on any aspects;
- Provision of adequate welfare facilities on site;
- Implementation of a workers grievance mechanism;
- Adoption and implementation of a sexual harassment policy; and
- Adoption of an open attitude towards freedom of association.

Contractor Management

- In all contracts, explicit reference should be made to the need to abide by Kenyan law, international standards (in particular IFC PS2), ratified ILO conventions and the Proponent's policies in relation to health and safety, labour and welfare standards.
- As part of the contractor and supplier selection process, the CSKL will take into consideration performance with regard to worker management, worker rights, and health and safety as outlined in Kenyan law and international standards.
- Regular checks should be undertaken to ensure the relevant labour laws and occupational health and safety plans are adhered to at all times.
- All workers (including those of contractors and subcontractors) should, as part of their induction, receive training on health and safety guidelines (including awareness-raising of disease vectors) and should receive updated training routinely, as well as when undertaking new tasks, such as working at heights or working in confined spaces.
- Daily toolbox talks will be held with the Project workers to discuss the health and safety risks associated with the tasks at hand.
- A 'fitness for work' programme should be established to ensure that all employees are physically able to undertake their work without impact to their health;
- An occupational health and safety monitoring and surveillance programme should be established;
- Specific OHS training programmes should be provided for workers assigned to tasks associated with particular H&S risks;
- The provision and enforcement of use of appropriate Personal Protective Equipment (PPE) based on task based hazard analysis;
- Visual warning signs should be put in place, including those for the electrical and mechanical equipment safety warnings, and chemical hazard warnings;
- Working hours should be regulated in accordance with national legislation and international guidelines.

Workers' Rights

- The Contractor should put in place hiring mechanisms to ensure no employee or job applicant is discriminated against on the basis of his or her gender, marital status, nationality, ethnicity, age, health status, religion or sexual orientation.
- All workers (including those of the contractor and subcontractors) will, as part of their induction, receive training on worker rights in line with Kenyan legislation to ensure that positive benefits around understanding labour rights are enhanced. This process will be formalised within the Code of Conduct that will be provided by the contractor.
- All workers (including those of the contractor and subcontractors) will have contracts which clearly state the terms and conditions of their employment and their legal rights. Contracts will be verbally explained to all workers where this is necessary to ensure that workers understand their rights. Contracts must be in place prior to workers commencing work.
- The contractor will put in place a worker grievance mechanism that will be accessible to all workers, whether permanent or temporary, or directly or indirectly employed. The worker grievance mechanism shall be open to all the Project workers in the event that their grievance is not adequately resolved by their direct employer. Workers will also have access to CSKL's grievance management system, to raise any issues with their employer.
- All workers (including those of the contractor and subcontractors) will have access to training on communicable diseases and STDs and community interactions in general. This training will be developed in collaboration with local health institutions.
- Surveillance and assurance that no children or forced labour is employed directly by the contractor, and to the extent possible by third parties related to the Project and primary suppliers where any such risk may exist.
- Mitigation measures related to human rights violation are presented below:
    - Labour rights in the supply chain and contractors - The risk of non-observance of labour laws (including freedom of association, health and safety, non-discrimination, regular payment of wages, working hours, overtime, rest or leave by construction contractors and/or suppliers of materials or services) can be mitigated by:
        - The screening of contractors and suppliers on the basis of whether they are able to comply with the Project's commitments and policies.
        - Monitoring and evaluation visits to contractors and suppliers to verify compliance with company policies
        - Formal induction on company policies for all appointed contractors and supplier sensitisation programme
        - Implementation of a worker grievance system

Specific measures for the management of casual workers

- Workers shall receive regular and recorded Health & Safety training, and such training shall be repeated for new or reassigned workers. This is particularly important for casual workers since their recruitment will generally be irregular depending on availability of tasks where they are needed, and their tasks will also vary from time to time as the construction process progresses.
- All workers shall be provided with written and understandable information about their employment conditions including expected working hours, wages and health and safety requirements before they enter employment, even if they are to be engaged for a few days.

- Wages and benefits paid for a standard working day for casual workers shall as a minimum be pro-rated minimum monthly wage salary per Kenya's minimum wage requirements. For instance, the recommended minimum wage for a general worker in Mombasa is KES 653.10 per day (The Regulation of Wages (General) (Amendment) Order, 2018, Legal Notice Number 2).
- The same laws regarding rest days, working hours and overtime shall apply to casual workers as contracted workers per Kenyan labour laws.
- In the event of a work accident resulting in (i) permanent incapacity (ii) temporary incapacity or (iii) fatal injury leading to death of a casual worker, medical insurance and compensation shall be provided for their treatment, and wages based on average monthly earnings shall paid per Kenyan labour law as would apply to a contracted worker.
- Where the services of a casual worker are required for more than a period of one month (continuous) or is required to performs work which cannot reasonably be expected to be completed within a period, or a number of working days amounting in the aggregate to the equivalent of three months or more, such a worker shall be engaged as a contract worker in line with the requirements of Section 37 of Kenyan' Employment Act, 2007 (Revised in 2012).

9.1.10.6 Residual Impact (Post-Mitigation)

Based on the implementation of the proposed mitigation measures, the significance of the residual impact related to exposure of the workforce to Occupational Health and Safety (OHS) risks will be a "**Minor Negative Impact**" post mitigation as per the assessment below.

Rating of Impacts		
Characteristic	**Designation**	**Summary of Reasoning**
Extent	Local	The impact is only relevant for the workforce (including direct, third party and supply chain workers) all of whom are at a local level (although they may come from elsewhere in Kenya or globally).
Duration	Long-term	The implications of poor health and safety practices can be severe including loss of life which can significantly affect households and communities ability to maintain their quality of life and livelihoods.
Scale	Very Small	With the implementation of the management measures, the number of Project workers exposed to OHS risks will be very small.
Frequency	Rare	With the implementation of the management measures, exposure of Project workers to OHS risks will be rare.
Magnitude		
Small Magnitude		
Significant Rating After Mitigation		
Minor Negative Impact[17]		

9.1.11 Community Health, Safety and Security Risks

9.1.11.1 Description of the Baseline Environment

The Project Site is located in the Colfax Industrial Park, Bonje, Miritini, Kwale County, Kenya, surrounded by other industrial plots most of which have been graded and are to be developed. The nearest settlements are located approximately 1 km to the southwest of the CIP. To the north, the nearest village is Bonje which is located approximately 7 km away. Although the settlements are quite far away, the introduction of the proposed Project workforce is likely to result in regular interaction with local people where the project is located.

[17] Provision of OHS awareness training to the Project workers will reduce the sensitivity to Medium thus resulting in a Minor Negative residual impact.

Impacts may be brought about by the interaction of project workers (including contractors) with the communities in these settlements, outside of the Project site. The Project will also potentially have impacts on communities located around / who utilise the transport networks used by the construction workforce.

Community, health, safety and security will need to be considered to avoid any community related incidents and/or injuries. These issues should be considered not only for those employed directly by the Proponent, but also employees of the Contractor and any other sub-contractors during the construction phase.

9.1.11.2 Proposed Project Activities

The following Project activities, but not exclusively so, may result in risks to community health, safety, and security:

- Construction of Project infrastructure as well as the movement of vehicles and construction equipment through or near communities.
- The peak demand for temporary contract workforce by either the Proponent or the Construction Contractor for the duration of the construction phase.
- Improved economic, employment and business opportunities provided by the presence of the Project / the Colfax Industrial Park over time may induce slow and long-term immigration of economic migrants and work-seekers into communities immediately surrounding the Project.
- The storage, management and transport of any Project goods, materials, equipment, and waste (including general and hazardous waste) on any existing or new public roads or land, as well as the transport of such materials through local communities and towns.
- The Project's use of private security forces to secure their operations, and the level of interaction between these forces with local communities during (1) routine operations (2) emergency events, (3) conflicts, strikes or demonstrations.

The establishment of the Project will result in a broad range of community health, safety and security risks, and these risks cross through a range of technical expertise (i.e. occupational health and safety, air emissions, water pollution etc.). Community Health, Safety and Security is however an umbrella term, and the potential project risks may specifically include:

- Community exposure to noise and air emissions,
- Community exposure to ground and surface water pollution,
- Community exposure to general and hazardous waste storage and transport,
- Community exposure to communicable and vector-borne diseases (including STDs).
- Public vehicle and pedestrian traffic on private and public roads,
- Community relations and conflict with private security personnel,
- Community incidents related to Project emergency events,
- Gender-based violence and harassment (GBVH) - Money circulation and community-workforce interactions may trigger cases of GBVH in the area. GBV includes sexual exploitation, abuse and harassment, including violence and harassment that is physical and/or psychological; and financial. GBVH can be perpetrated between workers and community members, whether the workers come from or reside in local communities, or are visiting from other areas. Interactions can take place before, during or after work, for example, at break times or on daily commutes or through company-led processes, such as community engagement exercises. GBV can be perpetrated by workers against community members, and vice versa.

- In addition, the establishment of the Project may result in a range of indirect or induced risks to community health, safety, and security via:
    - Increased pressure on existing public services and facilities related to worker use and labour influx,
    - The use of violence, theft and improper behaviour by local people and workforce,
    - Increased transactional sex and associated STDs risk, and
    - Increased social pathologies associated with labour influx and Project workforce.

9.1.11.3 Sensitive Receptors

Sensitive receptors will be communities surrounding the Project and transport corridor.

9.1.11.4 Significance of Impact (Pre-mitigation)

Based on the analysis provided above, impacts to exposure of the community to poor community, health, safety and security standards will be a "**Minor Negative Impact**" pre-mitigation as per the assessment below.

Type of Impact		
Direct Negative Impact		
Rating of Impacts		
Characteristic	**Designation**	**Summary of Reasoning**
Extent	Local	It is anticipated that the potential impacts of increased disease transmission will be limited to the Project Area.
Duration	Short term	Generally, the implications of inadequate community health, safety and security conditions will cease to manifest after the construction phase; however, some of the effects such as major injuries will continue to affect the concerned individuals.
Scale	Large	Without any effective management, the potential for a major community incident and emergency events is more than likely.
Frequency	Intermittent	Impact is likely to recur / occur intermittently throughout the construction phase.
Magnitude		
Small Magnitude		
Sensitivity/Vulnerability/Importance of the Resource/Receptor		
Medium Sensitivity		
Communities are vulnerable to health, safety, and security impacts. The potential for a community incident and emergency events, and impact on community health, is all but guaranteed when construction commences if there are no active management measures in place.		
Significant Rating Before Mitigation		
Minor Negative Impact		

9.1.11.5 Mitigation/Management Measures

Contractor Management

- A Worker Code of Conduct should be developed for all project personnel that include guidelines on worker-worker interactions, worker-community interactions and development of personal relationships with members of the local communities. As part of the Worker Code of Conduct, all project personnel should be prohibited from engaging in illegal activities including any form of gender-based violence and harassment (GBVH), the use of commercial sex workers and transactional sex. There should be a zero-tolerance for the sale, purchase or consumption of drugs and alcohol; as well as involvement in gambling and fighting. Anyone

caught engaging in illegal activities will be subject to disciplinary proceedings. If workers are found to be in contravention of the Code of Conduct, which they will be required to sign at the commencement of their contract, they will face disciplinary procedures that could result in dismissal.

- The contractor should not allow creation of potential breeding places for vectors at the Project Site, such as stagnant water which are potential breeding places for mosquitoes.
- Ensure sufficient health services are available to meet the day to day needs of Project personnel without impacting on access to health care for communities. First aid training should be provided to Project personnel.
- Implement and disseminate information on the Grievance Mechanism. The grievance mechanism will provide a clear process for informing stakeholders of the process for reporting complaints about security personnel and addressing any such complaints in a timely manner.
- Specifically related to GBVH, the Project can take action and respond to reports of GBVH by integrating measures into existing systems. This can be done by:
    - strengthening leadership and company culture, so that GBVH risks are understood, clear and consistent messages are communicated, necessary partnerships are developed, inclusive organisational structures are developed, and adequate resources are invested, proportional to the size of the Project and workforce.
    - developing and communicating policies and codes of conduct that define GBVH, set out prevention and response measures and outline behaviours that are not tolerated, with clear links to sanctions and disciplinary procedures.
    - strengthening recruitment and performance assessments so that they address GBVH risks and enable fair and transparent decision-making on hiring, promotions and performance-related pay.
    - working with contractors and suppliers to address GBVH through procurement processes, contract selection and negotiation and regular engagement along the supply chain.
    - improving the physical design of worksites and service delivery locations, with safety assessments to identify potential GBVH hotspots for workers, service users and community members.

Traffic-related Mitigations

Refer to Section 9.1.9

Plans to develop

- Development of a Security Management Plan that will set out the process for recruitment and management of security personnel. This will include:
    - conducting background checks on security personnel to ensure that they have no records of human rights abuse;
    - provision of training on upholding community and employee rights and appropriate use of force; and
    - provisions for investigating any unlawful or abusive behaviour and appropriate disciplinary action, including potential termination of contract. Unlawful and abusive acts will be reported to the appropriate public authorities.
- Develop an Emergency Prevention, Preparedness and Response Plan (EPPRP) that considers incidents that could impact or involve the surrounding community.

9.1.11.6 Residual Impact (Post-Mitigation)

Based on the implementation of the proposed mitigation measures, the significance of the residual impact related to exposure of the community to Community health, safety and security risks will be a "**Minor Negative Impact**" post mitigation as per the assessment below.

Rating of Impacts		
Characteristic	**Designation**	**Summary of Reasoning**
Extent	Local	It is anticipated that the potential impacts of increased disease transmission will be limited to the Project Area.
Duration	Long-term	Generally, the implications of inadequate community health, safety and security conditions can be severe including loss of life which can significantly affect households and communities ability to maintain their quality of life and livelihoods.
Scale	Very Small	With the implementation of the management measures, the number of community members exposed to community health, safety and security risks will be very small.
Frequency	Rare	With the implementation of the management measures, exposure of Project workers to community health, safety and security risks will be rare.
Magnitude		
Negligible Magnitude		
Significant Rating After Mitigation		
Negligible Negative Impact[18]		

9.2 Operations Related Impacts

9.2.1 Impacts on Local Air Quality

9.2.1.1 Description of the Baseline Environment

Same as that described for the construction phase under Section 9.1.1.1.

9.2.1.2 Proposed Project Activities

The main Project activities that will have an impact on local air quality during the operations phase are:

- Vehicular movements used by the operational staff and in the transportation of goods (to and from the Project Site); however, it is important to note that transportation of goods during the operations is an associated development but not part of the Project since this will be carried out by independent third parties/ owners of goods; and
- Power backup generator (likely to be diesel but potentially LNG). The Project Area has a stable supply of electricity from the national grid; therefore, outages are expected to be infrequent and short term.

Exhaust emissions from vehicular movements and power back-up generator are expected to include CO_2, NO_2, SO_2 and Volatile Organic Compounds (VOCs) since most of them will be powered by diesel/ petrol engines.

9.2.1.3 Sensitive Receptors

The main sensitive receptors during the operations phase will be the Project workers at the Project Site and other operators along the transportation routes. However, it is important to note that the

[18] Provision of OHS awareness training to the Project workers will reduce the sensitivity to Low thus resulting in a Negligible Negative residual impact.

transportation routes to be used are already existing and approved roads for road traffic. Given the many other road users (vehicles), additional impact attributed to the proposed Project will be negligible.

9.2.1.4 Significance of Impact (Pre-mitigation)

Based on the analysis provided above, impacts on the local air quality during the operations phase will be "**Minor Negative Impact**" pre-mitigation as per the assessment below.

Type of Impact		
Direct Negative Impact		
Rating of Impacts		
Characteristic	**Designation**	**Summary of Reasoning**
Extent	Local	This impact will be limited to the Project Site and along the transportation routes.
Duration	Long term	This impact will continue to be manifested through the operations phase.
Scale	Low	The air emissions generated will be within the limits permitted in the National Environmental Management and Coordination Act (Air Quality) Regulations, 2014.
Frequency	Intermittent	This impact will intermittently be manifested during transportation and use of the power back-up generator (during power outages).
Magnitude		
Medium Magnitude		
Sensitivity/Vulnerability/Importance of the Resource/Receptor		
Low Sensitivity		
The receptors are used to vehicular movements and operation of generators during power outages and are thus less sensitive to emissions from their normal operation.		
Significant Rating Before Mitigation		
Minor Negative Impact		

9.2.1.5 Mitigation/Management Measures

- Locate the generator as far as possible away from people, both employees and working areas of neighbouring plots.
- Ensure that the generator uses best available technology and is regularly maintained as per the manufacturer's instructions.
- Vehicles will not be permitted to idle whilst stationary.
- All the customers will be encouraged to use vehicles in good mechanical condition that are regularly maintained as per the manufacturer's advice.
- Implement applicable requirements of the Traffic Management Plan for the Operations phase.

9.2.1.6 Residual Impact (Post-Mitigation)

Based on the implementation of the proposed mitigation measures, the significance of the impact on the air quality will be a "**Negligible Negative Impact**" post mitigation as per the assessment below.

Type of Impact		
Direct Negative Impact		
Rating of Impacts		
Characteristic	**Designation**	**Summary of Reasoning**
Extent	Local	This impact will be limited to the Project Site and along the transportation routes.
Duration	Long term	This impact will continue to be manifested through the operations phase.

Scale	Very Low	The air emissions generated will be significantly below the limits permitted in the National Environmental Management and Coordination Act (Air Quality) Regulations, 2014.
Frequency	Intermittent	This impact will intermittently be manifested during transportation and use of the power back-up generator (during power outages).
Magnitude		
Small Magnitude		
Significant Rating Before Mitigation		
Negligible Negative Impact		

9.2.2 Climate Change Impacts (Greenhouse Gas Emissions)

9.2.2.1 Description of the Baseline Environment

Same as that described for the construction phase under Section 9.1.1.1.

9.2.2.2 Overview and Methodology

The methodology used in this Section is in-line with IFC PS3 (IFC, 2012), which requires that where a project is expected to or currently produces more than 25,000 tonnes of carbon dioxide equivalent annually (t CO2/e p.a.), GHG emissions are quantified 'in accordance with internationally recognised methodologies and good practice'. Whilst the project will not reach this threshold, a GHG screening calculation has been undertaken since the facility is a relatively high energy user and there are emissions associated with the logistics operation.

It is typical in an ESIA to assess the significance of impacts with reference to the magnitude of the impact and the sensitivity of the receptor as outlined in Chapter 3. GHG emissions are global in nature and, unlike other environmental impacts, it is difficult to link the emissions of a single project to a specific receptor.

Transboundary effects have not been considered within this assessment, as none of the topic study areas reach other countries. It is noted that unlike some other impacts, the nature of GHG emissions means that the ultimate receptor is the global climate system. Climate change resulting from GHG emissions will lead to social, environmental and economic impacts felt globally, regardless of where the GHGs are emitted. While acknowledging this fact, the GHG contributions from this Project are not of a large enough scale to be considered significant at a national or international level or considered to place any commitments made with respect to international agreements at risk. Therefore, in line with the approach taken for other projects of this scale, transboundary effects have not been considered further in this assessment.

In addition, GHG emissions are closely related to economic growth. In international agreements such as the UNFCCC and the Kyoto Protocol, developing countries are given greater scope to increase their emissions. This is in contrast to developed countries which are expected to reduce their emissions to a greater extent, given that they are starting with greater per-capita emissions and have historically contributed a greater proportion of GHGs. Kenya has signed the Paris Agreement and agreed to the global target of keeping global average temperatures well below 2°C.

There are currently no published guidelines for determining the significance of project GHG emissions in ESIAs. However, the Guidance Notes for IFC PS3 (IFC, 2012) suggest the following criteria for evaluating project GHG emissions, outlined in Table 9.1.

Table 9.1 IFC GHG Assessment Criteria

IFC Criteria	Comments
The Project's GHG emissions relative to the host country's total national emissions	This has been considered in comparison to national emissions

The project's GHG emissions performance relative to good international performance or host country's national average performance	This has been considered in comparison to national emissions
The annual trend of the project's GHG emissions performance over time	This has been considered in the operations impact assessment
Opportunities to further improve the project's GHG emissions performance	This has been considered in the discussion and mitigation measures.

Project GHG Emissions Sources

Table 9.2 outlines the most significant expected GHG emission sources for the Project and whether they are included or excluded in the assessment. In determining this, two factors were considered:

- Whether they will contribute in excess of 5% of the Project's annual direct emissions;
- Whether they are third party associated GHG emissions (and thus double counting if included) or impossible to quantify.

Table 9.2 The most significant expected GHG emissions sources for the Project

Emissions Source	Quantified	Rationale for Exclusion
Embodied GHG emissions in the facility materials	No	Based on the ERM's experience of other infrastructure projects, a project of this type and size will not result in significant GHG emissions, especially when considered over the lifetime of the facility. They will be well below 5% of annual emissions when considered over the life of the Project.
Biogenic land use change	No	The plot is modified and not of a sufficient size for this to be material. They will be well below 5% of the Project's annual GHG emissions.
Fugitive emissions from refrigerant leakage	No	Ammonia is the most likely refrigerant technology and has a GWP of 0. Further, these emissions are not of sufficient magnitude even if CO_2 or other natural gas is chosen due to their low GWP of 1. If CO_2 or another natural based gas is used, they will be below 5% of the Project's annual GHG emissions.
GHG emissions due to onsite energy consumption	Yes	N/A
GHG emissions from directly operated logistics operation (truck movements)	Yes	N/A
GHG Emissions from solid waste generated	No	At this stage it is not possible to quantify the level of waste generated by the facility. Waste streams will mainly comprise of recyclable packaging materials from pallets received and food waste from fruit and vegetable processing. A licensed recycling facility will be used. The level of waste is unlikely to contribute 5% of annual GHG emissions.
GHG emissions from third parties (customer vehicles)	No	The facility in addition to their own operated logistics operation will receive goods directly from customer/their logistics partners. These are not quantifiable at this stage and under the control of those parties, thus not estimated due to double counting.
Indirect GHGs in the value chain	Partially	The Project will ultimately impact emissions in the value chain, for example decreasing GHGs from food waste and conversely increasing emissions associated with export of products. An estimate of GHGs avoided from food waste is outlined in the discussion.

Assumptions

At this stage in the Project development where detailed design has not been completed it is necessary to make some assumptions in order to estimate the GHG emissions from the activities outlined Table 9.2. The assumptions used to estimate GHG emissions from energy consumption and transport are outlined below.

The general approach that has been adopted is to use a reasonable worst-case scenario – that is to say based reality of what may occur should no GHG reduction strategies outside of the accepted design criteria outlined in the Project Description Chapter.

Energy supply and consumption

The Project will have a 1.5 MVA grid connection and based on a worst-case scenario of using full capacity 365 days of the year this equates to a consumption of 13,140 MWh. Using 80% of the available roof space (allowing for shading) a rooftop solar installation of approximately 1.5 MW can be installed. With a 20% efficiency rate (Monocrysalline panels) this equates to an output of approximately 2,628 MWh per annum, or 20% of the total facility energy requirements in the worst-case energy consumption scenario.

The grid at CIP is generally stable. Therefore, the backup generator will only be used during the grid outages for essential cooling requirements where the solar installation is not in operation. This has been assumed to be no more than the equivalent of 4 full days per annum using a conservative assessment (or 1% of the total time). The size of the generator will be approximately 1 MW to power essential components during these outages.

No battery storage has been assumed for the purposes of this assessment since this is still being determined as to whether it is both commercially and technically viable. If storage is included, the overall GHG footprint of the facility would be less than is presented in this assessment.

In considering the above, the energy split for the facility is 79% grid, 20% solar and 1% diesel backup generator.

Transport

The facility will primarily service the Mombasa metropolitan area and the surrounds. The vehicle fleet will range from 2-tonne to 20-tonne longer haul trucks, the majority at the lower end. A total fleet of approximately 30 trucks at full capacity is expected. An average of a 6-tonne truck has been used as representative of the fleet make-up for the purposes of this assessment.

The facility is located within the Mombasa metropolitan city– therefore a return trip within the Mombasa area will be generally within a total distance of 50 km. Longer haul trips will range anywhere from 50 km up to 600 km but are less frequent in number. Therefore, a return trip of 150 km has been used in this assessment as the estimate for average trip length and all vehicles are assumed to be diesel fuelled for a worst-case scenario assessment. The full fleet is assumed to run daily at maximum capacity (i.e. 100% of truck capacity).

The fleet will use a self-contained diesel-powered vapour compression system which utilised between 1-5 litres of diesel per hour depending on the size and temperature of the truck[19]. 3 litres per hour has been used in this assessment considering the size of the truck and it is assumed the truck can cover a distance of 20 km per hour (allowing for traffic in the Mombasa metropolitan area). Therefore, each truck's daily fuel consumption is 22.5 litres.

[19] Food Transportation Refrigeration, Tassou et Al, available at : https://www.grimsby.ac.uk/documents/defra/trns-refrigeenergy.pdf

GHG Emissions Estimation

Table 9.3 outlines the GHG emissions estimation for the Project on the basis of the assumptions presented. The emissions factors used are detailed below.

Table 9.3 Project annual GHG Emissions Estimation

Source	Unit	Value	Emission Factor	t CO_{2e} p.a.
Grid supplied energy	MWh	10,512	0.317 g CO_{2e}/KWh	3,332
Roof-top solar	MWh	2,628	0	0
Diesel generator	Litres	19,200[20]	2.67 kg CO_{2e}/litre	51
30 6-tonne trucks with 150 km trip every day (diesel)	Km	1,642,500	0.52563 kg CO_{2e}/km	864
Truck refrigeration unit	Litres	246,275	2.67 kg CO_{2e}/litre	658
Total				**4,905**

Emission Factors

- Grid supplied energy: the combined margin grid emission factor for Kenya as presented in the EIB Carbon Footprint Methodologies p.32 (July 2020). Available at: https://www.eib.org/attachments/strategies/eib_project_carbon_footprint_methodologies_en.pdf
- Rooftop solar: build margin factors as presented in the EIB Carbon Footprint Methodologies p.35.
- Diesel generator: liquid fossil fuels emission factors as presented in the EIB Carbon Footprint Methodologies p.26
- Trucks: UK GHG Conversion Factors for Company Reporting (2020) by the Department for Business, Energy and Industrial Strategy. Available at: https://www.gov.uk/government/publications/greenhouse-gas-reporting-conversion-factors-2020
- Truck refrigeration unit: liquid fossil fuels emission factors as presented in the EIB Carbon Footprint Methodologies p.26 (on the basis of fuel consumption outlined in the Assumptions Section.

9.2.2.3 Impact Assessment

Comparing the estimated direct GHG emissions from the operation of the Project of 4,905 t CO_2e p.a. to the IFC threshold of 25,000 t CO_2e/annum for which a detailed carbon footprint is required, it is very clear that that the Project's GHG emissions are significantly below this (approximately 1/5). The most significant GHG emissions have been captured and therefore even allowing for a 20% margin of error and including all other smaller GHG contributors (embodied emissions, construction plant etc) the Project will remain significantly below this threshold.

In line with the methodology, Table 9.4 presents the impact assessment using the IFC's recommended criteria. The conclusion of the assessment is that the Project's direct emissions in the context of Kenya's annual GHG emissions is negligible. This assessment does not include avoided emissions from food waste, an overview of which is outlined in the discussion. It is very likely that the Project's overall contribution to GHG emissions when this is included will be beneficial.

[20] A 1 KVA generator running 100% capacity for 96 hours (4 days) using 200 litres of diesel per hour

Table 9.4 GHG Impact Assessment vs. IFC Criteria

IFC Criteria	Assessment
The Project's GHG emissions relative to the host country's total national emissions	According to climatelinks.org (a knowledge portal for USAID staff), Kenya's GHG emissions for the year 2013 were 60.2 Mt CO_2/e. The Project's emissions represent 0.0008% of this total.
The project's GHG emissions performance relative to good international performance or host country's national average performance	The Project's GHG performance will be favourable compared to the national average performance in the cold chains sector since existing businesses use outdated refrigeration technology with much higher GHG emissions and have not been designed to a green building certification for energy and water efficiency. The Project is utilising best available technology for refrigeration and transport, therefore GHG emissions will be favourable compared to the industry.
The annual trend of the project's GHG emissions performance over time	As outlined in this assessment, the largest contributor of GHGs is the energy consumption of the facility. Kenya's national grid over time will decarbonise further reducing the associated Project GHGs. Therefore, the GHG performance (even considering loss of insulation efficiency in refrigeration) is likely to improve over time.
Opportunities to further improve the project's GHG emissions performance	See discussion and mitigation measures outlined in the ensuing sections.

Discussion

The impact assessment has looked at direct GHG emissions related to the Project's operation on the basis of a reasonable worst-case scenario. As such, it is likely that GHG emissions will be lower than this considering:

- Facility energy consumption is estimated at full capacity and on the full grid connection power rating. The sizing of the connection has been made on the basis that it can handle above the estimated full load – as such these emissions are over-stated. In addition, it is expected the facility will not reach full operational capacity until year 3 or 4.
- Energy demand for the facility is the single highest contributor of Project GHGs (70%) of which the majority is driven by the carbon intensity of Kenya's grid. As older power plants are replaced with renewable energy plants over the next 5-20 years, the carbon intensity of the grid (already relatively low) will reduce significantly – therefore over the lifetime of the Project, direct GHG emissions are expected to fall significantly as well.
- The Project, on the basis of it being commercially and technically feasible, will use battery storage thereby increasing the renewable energy contribution. This has not been considered in this assessment.
- The trucks have all been assumed to be diesel fuelled. Whilst this will most likely hold true for the long-hauliers, electric vehicles (EVs) may pose an attractive option commercially for smaller trucks/vans servicing the Mombasa metropolitan area. This is dependent on the availability in-country and maintenance needs as outlined in the Analysis of Alternatives Chapter.

In addition to the direct emissions which have been quantified, the Project will also impact indirect emissions in the value chain - most notably in reducing the GHGs associated with food loss. Food loss creates methane during the putrefaction process – a gas with a GWP of 25. BIO Intelligence Service undertook a research report for the Global Food Cold Chain Council ("GFCCC") with support from United Technologies ("UTC"), to assess the potential of the cold chain sector to reduce Green House Gas (GHG) emissions through food loss and waste reduction. The report found:

- The global carbon footprint alone of food produced and not eaten is estimated to be 3.3 Gtonnes of CO_2 equivalent – in other words, food loss and waste would rank as the third top GHG emitter after USA and China, if it were a country
- In all scenarios modelled, the decrease of food loss and waste (FLW) carbon footprint from cold chain expansion clearly outbalances the newly created emissions, by a factor ten approximately

Using the facility capacity of approximately 10,000 pallets, of which 64% as a conservative estimate will be used for perishable goods, this equates to 7,680 tonnes turnover a week (6,400 pallets at 1.2 tonnes per pallet). As such, equating this to a like for like food loss reduction over the year would result in 400,000 tonnes of food loss avoided through the implementation of this facility.

GHG emissions from food loss or waste depends heavily on the available treatment type (if any) and also the stage at which the food is lost (production, post-harvest losses, consumer). For the purposes of this assessment, it is assumed that food waste is disposed of in unmanaged shallow landfill which is the most likely scenario.

Methane emissions from food loss are calculated are calculated using the IPCC 1996 Default Methodology Tier 1, as follows: CH_4 (t/y) = [MSWT x L0 - R] x [1 - OX]

1. Annualised mass of MSW to be deposited, MSWT (t/y)
2. L0 = methane generation potential
3. R = mass of methane recovered for energy use or flaring
4. OX = Fraction of CH_4 released that is oxidised below surface within the site, OX. Default is OX = 0.1 for well-managed sites, otherwise 0.

Therefore:

CH_4 (t/y) = [400,000 x 0.02 - 0] x [1-0]= 8,000

Using a methane to CO_2 conversion factor of 25 this equates to 200,000 t CO_2e p.a. avoided from food loss, or otherwise expressed approximately 40 times the direct emissions from the Project. Whilst this is undoubtedly a crude method and likely to be overstated, it is sufficiently demonstrating that the Project will positively contribute towards GHG reductions associated with food losses.

Climate Change Risks to the Project (Physical)

Acute physical risks refer to those that are event-driven, including increased severity of extreme weather events, such as cyclones, hurricanes, or floods. Chronic physical risks refer to longer-term shifts in climate patterns (e.g., sustained higher temperatures) that may cause sea level rise or chronic heat waves.

Physical risks may have financial implications for organisations, such as direct damage to assets and indirect impacts from supply chain disruption. An organisation's financial performance may also be affected by changes in water availability and sourcing, disruption to energy supplies, food security, transport needs (Impacts to associated infrastructure / transport networks e.g. rail links and ports), and extreme temperature changes affecting premises, operations, supply chain, and employee safety.

The potential financial impacts on the project which fall within this category are as follows:

- Reduced revenue from decreased production capacity (e.g. transport difficulties, supply chain interruptions);
- Reduced revenue and higher costs from negative impacts on workforce (e.g. health, safety, absenteeism);
- Write-offs and early retirement of existing assets (e.g. damage to property and assets in "high-risk" locations);

- Increased operating costs;
- Increased capital costs (e.g., damage to facilities);
- Reduced revenues from lower sales/output, and
- Increased insurance premiums and potential for reduced availability of insurance on assets in "high-risk" locations.

While current climate conditions and weather variability may affect construction, projected longer term climate change scenarios may affect Operation and into Closure and Post-Closure. To address these environmental effects, proactive design, planning, and maintenance are required in consideration of the potential normal and extreme conditions that might be encountered throughout the life of the Project.

Impacts of climate change most relevant to the project include an unreliable supply of power and water, and increase in the occurrence of floods events and droughts.

9.2.2.4 Mitigation Measures

From the assessment carried out, the clear opportunity for the Project to reduce GHG emissions is from energy efficiency measures both from energy consumption at the facility level and fuel consumption from the logistics operation. As such the following mitigation measures should be implemented:

Design measures

- Achieve a green building certification (LEED, IFC Edge, Energy Star) to demonstrate that energy efficiency measures have been carried out to as far as commercially and technically feasible;
- When selecting technologies, be it the refrigeration technology or the logistics fleet composition, this should be on the basis of best available technology in Kenya and from a cost-benefit analysis;
- For key components, e.g. refrigeration technology, design the system as far as reasonably practicable so that it can be easily retrofitted/replaced at the end of its technical or economic lifespan with the current most efficient technology.

Construction

Although the construction phase of the Project will not result in significant GHG emissions it should nevertheless make efficiencies where ever possible, not least because it reduces costs in most cases. Measures will include:

- Local procurement of good and materials wherever possible through the implementation of CSKL's Local Content Policy;
- Contractor to develop and implement a Waste Management Plan applying the waste hierarchy;
- Contractor to develop and implement a Traffic Management Plan to include measures to reduce as far as practical the number of trips;
- Contractor to use plant that is in good working order and regularly maintained.

Operation

The GHG Management Plan for the facility will include:

- Measuring of energy and fuel use data to calculate an accurate direct carbon footprint for the facility;

- On the basis of the results of the carbon footprint, seek to make efficiencies in areas of high GHG emissions;
- Develop and implement a facility Waste Management Plan applying the waste hierarchy

Mitigation measures against Climate Change Risk to the Project

- Conduct a climate risk assessment (CRA)
    - A CRA typically uses a combination of scientific data and local field assessments. Two comprehensive methodologies, a climate risk matrix and resilience score card, are used to identify key risks along value chains, as well as the strengths and weaknesses in actors' adaptive capacity. In this way, the climate risk assessment tool helps to comprehend and visualise rather complex concepts and to define effective and contextualised adaptation strategies.
- The risk of having an unreliable power supply can be mitigated through a transition through to decentralised, 'clean' sources of energy, which may be low emission alternatives that can also help reach emission reduction goals (solar has been integrated into the Project design). The same can be applied to the risk on the supply of fossil fuel based energy for the Project's equipment and transport. A shift towards electric drive technologies and electric mobility will help mitigate the impact of this.
- Application of green infrastructure strategies to mitigate the impacts related to more intense rainfall / storm events such as:
    - Use of Permeable pavement to allow runoff to flow through and be temporarily stored prior to discharge; and
    - Use Underground storage systems to detain runoff in underground receptacles
- Water utility protection mitigations that can be implemented include:
    - Conduct sea-level rise and storm surge modelling - Modelling sea-level rise and storm surge dynamics will better inform the placement and protection of critical infrastructure (the Project Site is largely located at an altitudinal range of 31 to 42 m.a.s.l).
    - Flood proofing, which involves elevating critical equipment or placing it within waterproof containers or foundation systems.
    - Building water storage infrastructure thus increasing climate resilience for seasonal or extended periods of drought / low water supply
    - Diversify options for water supply and expand current sources
    - Diversifying sources helps to reduce the risk that water supply will fall below water demand. Examples of diversified source water portfolios include using a varying mix of surface water and groundwater, employing desalination when the need arises and establishing water trading with other utilities in times of water shortages or service disruption.
    - Finance and facilitate systems to recycle water (which the Project has already considered in the design)

9.2.3 Impacts on the Noise Environment (including vibration)

9.2.3.1 Description of the Baseline Environment

Same as that described for the construction phase under Section 9.1.2.1.

9.2.3.2 Proposed Project Activities

The main source of noise and vibration during the operations phase will be attributed to the trucks transporting the goods that will be stored at the warehouse, and the operation of the power backup generator. Given that the Project Site has a steady electricity supply from the national grid and solar energy will be incorporated in the Project Design, the power backup generator will be rarely used, thus resulting in cumulatively negligible noise emissions. Approved standard trucks will be used in the transportation of goods to and from the Warehouse along the already existing road networks. Given the many other roads users (trucks and all other forms of vehicles that ply the roads in the Project Area and beyond), the additional contribution of the Project trucks to noise along the transportation routes will be negligible.

Based on the above discussion, the impact of the Project on noise and vibration will be **Negligible** during the operations phase and has therefore not been discussed further. However, the following noise mitigation measures will be implemented to keep noise levels as low as possible:

- The Project trucks will be regularly maintained, as per the manufacturers' and mechanics' recommendations.
- The power backup generator will be located away from sensitive receptors as much as possible.
- The power backup generator will be fitted with silencers based on available best technology.
- Refrigerated trucks, when docking at the facility, will not use their engines to run the refrigeration units; rather these trucks will plug in to the facility's mains, as opposed to idling.
- All Project drivers will be required to observe applicable traffic rules and regulations as per the national laws.

9.2.4 Impacts on Water Resources

9.2.4.1 Description of the Baseline Environment

Same as that described for the construction phase under Section 9.1.3.1.

9.2.4.2 Proposed Project Activities

The impact on water resources discussed in this section relates to stormwater management and supply of the Project's water needs; the impact related to effluents is assessed separately in Section 9.2.5.

The infrastructure for appropriate stormwater management will be constructed during the construction phase as discussed in Section 9.1.3 and regularly maintained as required during the operations phase. Given the large roof area, and area of hard stand, stormwater from the site may be significant.

The Project's water requirements will be met by CWSB, which is an independently established entity for water supply at the coastal region.

The actual water requirement for this Project is small (60 m^3), and of this volume, approximately 60% of this water will be recycled after treatment at the Project Wastewater Treatment Plant (WWTP).

Based on the above discussion, the impact of the Project on water resources will be **Negligible** during the operations phase and has therefore not been discussed further. However, the following measures will be implemented to keep it more insignificant as much as possible:

- Regularly maintain the drainage system as required, ensuring no blockages.
- Ensure wastewater at the point of discharge does not cause erosion to natural stream and water courses.

- Monitor and report on water utilisation and recycle wastewater as appropriate using available technology to the greatest extent possible.
- Any effluent discharge to the environment to meet the requirements of the effluent discharge permit.

9.2.5 Wastes and Effluents

9.2.5.1 Description of the Baseline Environment

Same as that described for the construction phase under Section 9.1.6.1.

9.2.5.2 Proposed Project Activities

There will be ablution facilities at the Project Site. Given that there is currently no sewer system at CIP, this will be managed through a Project septic tank and soak pits.

The Project will also have a small on-site wastewater treatment plant (WWTP) installed below the ground floor of the facility. This will treat and recycle water used in the refrigeration technology and also from light food processing undertaken on site, for example, packaging of fruit and vegetables. The WWTP will discharge effluent treated to national discharge standards into the natural drainage system.

General waste will be generated from the operations activities such as packaging wastes and wastes produced from sorting.

Should battery storage also be included as part of the planned solar panel power solution, spent batteries will also need to be adequately discarded.

9.2.5.3 Sensitive Receptors

The sensitive receptors to waste and effluent management will be other developers within the Project Area.

9.2.5.4 Significance of Impact (Pre-mitigation)

Based on the analysis provided above, impact of effluent and waste management during the operations phase will be "**Moderate Negative Impact**" pre-mitigation as per the assessment below.

Type of Impact		
Direct Negative Impact		
Rating of Impacts		
Characteristic	**Designation**	**Summary of Reasoning**
Extent	Local	This impact will only be manifested within the Project Area.
Duration	Long term	This impact will last for the entire operations phase which is planned to be more than 50 years.
Scale	Medium	The scale of this impact refers to the amount of waste that is likely to be generated.
Frequency	Daily	Wastes will be generated daily throughout the operations phase.
Magnitude		
Medium Magnitude		
Sensitivity/Vulnerability/Importance of the Resource/Receptor		
Medium		
Any poor waste management practices will be of a major concern in the Project Area.		
Significant Rating Before Mitigation		
Medium Negative Impact		

9.2.5.5 Mitigation/Management Measures

- A Waste Management Plan (WMP) will be produced for the operations phase:
  - following the principles of:
    - waste minimisation at source,
    - segregation for reuse,
    - recycling, and
    - safe disposal of waste.
  - With detailed measures stipulated such as:
    - using waste minimisation techniques;
    - allocating responsibilities for waste management;
    - identifying all sources of waste;
    - ensuring wastes are handled by personnel licensed to do so especially in the case of hazardous waste;
    - making suitable facilities available for the collection, segregation and safe disposal of the waste, also ensuring wastes are not blown off site by wind contributing to wind-blown litter in the area;
    - creating waste collection areas with clearly marked facilities such as colour coded bins and equipment for handling the various waste types; and
    - The collection of wastes that cannot be reused or recycled to be collected by approved waste contractors and transferred to an appropriate waste management facility for treatment and ultimate disposal (NEMA licensed).
- Operations vehicles and equipment will be serviced off site at designated and approved servicing locations.
- The use, storage, transport and disposal of hazardous materials used for the Project will be carried out in accordance with all applicable Kenyan regulations, and Material Safety Data Sheets (MSDS). As Kenya does not have a specific hazardous waste facility, any hazardous wastes to be disposed of should be documented beforehand, treated as per any requirements of the MSDS sheets, and disposed of in consultation with the County Authorities and via NEMA approved waste handlers.
- In line with the requirements of the Waste Management Regulations, any generated hazardous waste should be transported and managed by NEMA permitted hazardous waste handlers.
- Any waste batteries and/or broken or discarded solar panels, should be recycled through an applicable e-waste recycler, and handled through an appropriate NEMA waste contractor, certified to handle such wastes, as per the E-waste regulations.
- Any waste effluent discharged to the natural drainage system will need to conform to the permit conditions for such waste effluent.
- Waste volumes produced, waste volumes recycled, and the quality of effluent relative to permit conditions, must be monitored and reported as part of the facility ongoing HSE programme.

9.2.5.6 Residual Impact (Post-Mitigation)

Based on the implementation of the proposed mitigation measures, the significance of the impact of waste and effluent management will be a "**Minor Negative Impact**" post mitigation as per the assessment below.

Rating of Impacts		
Characteristic	**Designation**	**Summary of Reasoning**
Extent	Local	This impact will only be manifested within the Project Area.
Duration	Long term	This impact will last for the entire operations phase which is planned to be more than 50 years.
Scale	Low	The scale of this impact refers to the amount of waste that is likely to be generated. With the application of appropriate waste management measure including the application of the waste management hierarchy, less waste will be generated.
Frequency	Daily	Wastes will be generated daily throughout the operations phase.
Magnitude		
Small Magnitude		
Significant Rating After Mitigation		
Minor Negative Impact		

9.2.6 Impacts on Employment, Procurement and the Economy

9.2.6.1 Description of the Baseline Environment

Same as that described for the construction phase under Section 9.1.7.1

9.2.6.2 Proposed Project Activities

The proposed Project will create both direct and indirect employment opportunities across different skills levels (unskilled, semi-skilled and skilled) during the operations phase. A workforce of approximately 50 people are expected to be directly employed at the Project during the operations phase. Indirect employment is also expected from customers, and induced employment related to jobs ensuing from the expenditure of incomes associated with direct and indirect Project related jobs.

9.2.6.3 Sensitive Receptors

The inhabitants of communities around the CIP will be able to make the most of the direct and indirect employment opportunities offered. The Project customers are expected to come from across Kenya.

9.2.6.4 Impact Summary (Pre-enhancement)

Type of Impact
Positive Impact
Direct and indirect employment opportunities, and combined multiplier effect of this economic growth will result in increased incomes; promoting some degree of an increase in standards of living.

9.2.6.5 Enhancement/ Management Measures

In order to enhance this positive impact, the following management measures will be implemented:

- The Project will prioritise the recruitment of workers (unskilled, semi-skilled and skilled) from the local communities around CIP where available, and in accordance with CSKL Local Content Policy.
- The Project will develop a fair and transparent employment and procurement policy, and will implement processes, that prevents any form of nepotism and favouritism. CSKL will develop a recruitment plan, in conformance with their Local Content policy.

- Advertisements on the employment and procurement opportunities during the operations phase will be undertaken in liaison with the Area Chief, village headmen and community policing representative. In the event that the position cannot be filled from within the Project Area, it will be advertised county-wide, and only then, nationally.
- No recruitment will take place at the entrance gates of the facility.

9.2.7 Traffic Impacts

9.2.7.1 Description of the Baseline Environment

Same as that described for the construction phase under Section 9.1.9.1.

9.2.7.2 Proposed Project Activities

During the operations phase, Project traffic will mainly comprise of trucks transporting customer goods to and from the Project Site as well as a few vehicles for the operations staff. These trucks and other vehicles will be using the available local and wider road network and regulated as per the Traffic Act (Cap 402, Revised in 2013 and 2015) and the Traffic (Amendment) Act of 2017. Although the existing road network is open to traffic and will thus be serving its purpose, increased traffic due to transportation of the Project's goods has a potential of slowing down road traffic along the routes that will be used.

The risk of injuries from road traffic accidents are generally low; nevertheless, this is assessed separately in Section 9.2.3.

The increase in traffic could also create dust, noise and may impact on safety (including injury or even death due to accidents) of other road users, and on people living or working within close proximity to the roads on the transport routes.

9.2.7.3 Sensitive Receptors

The receptors for traffic impacts will be the other users of the roads that will also be used during the transportation Project goods.

9.2.7.4 Significance of Impact (Pre-mitigation)

Based on the analysis provided above, traffic impacts during the operations phase will be "**Moderate Negative**" pre-mitigation as per the assessment below.

Type of Impact		
Direct Negative Impact		
Rating of Impacts		
Characteristic	**Designation**	**Summary of Reasoning**
Extent	Local	Increased road traffic attributed to the Project will be only noticeable within the Project Area. Increment on road traffic along distant major highways which are already subjected to heavy traffic volumes will be insignificant.
Duration	Long term	This impact will occur throughout the operations phase.
Scale	Low	The expected Project's contribution to increased traffic along the existing road network within the Project Site will be low.
Frequency	Daily	This impact will occur daily during the operations phase.
Magnitude		
Medium Magnitude		
Sensitivity/Vulnerability/Importance of the Resource/Receptor		
Medium Sensitivity		

Traffic impacts will inconvenience the other road users and businesses along them.

Significant Rating Before Mitigation
Moderate Negative Impact

9.2.7.5 Mitigation/Management Measures

- Develop and implement a “Driving Policy”.
- Project drivers will undergo the necessary driver training and will be trained in defensive driving. Drive training will be mandatory for all drivers.
- The Project will develop and implement an Operations Phase Traffic Management Plan. The implementation of this Plan will be regularly monitored and audited, and the results of such audits and monitoring will be regularly reported.
- Regularly maintain Project vehicles and equipment as per the manufacturers’ recommendations.

9.2.7.6 Residual Impact (Post-Mitigation)

Based on the implementation of the proposed mitigation measures, the significance of traffic impacts will be a “**Minor Negative**” post mitigation as per the assessment below.

Rating of Impacts		
Characteristic	**Designation**	**Summary of Reasoning**
Extent	Local	Increased road traffic attributed to the Project will be only noticeable within the Project Area. Increment on road traffic along distant major highways which are already subjected to heavy traffic volumes will be insignificant.
Duration	Long term	This impact will occur throughout the operations phase.
Scale	Very Low	The expected Project’s contribution to increased traffic along the existing road network within the Project Site will be very low.
Frequency	Daily	This impact will occur daily during the operations phase.
Magnitude		
Small Magnitude		
Significant Rating After Mitigation		
Minor Negative Impact		

9.2.8 Labour and Working Conditions (Including Occupational Health and Safety)

9.2.8.1 Description of the Baseline Environment

Same as in Section 9.1.7.

9.2.8.2 Proposed Project Activities

OHS risks during the operations phase will include:

- Movement of vehicles both internally and externally [(21)];
- Operation of heavy machinery
- Working in refrigerated spaces;
- Working at heights;
- Ergonomic risks related to packing and unpacking of goods in the warehouse such as lifting of heavy loads; and

(21) Traffic impacts are assessed separately in Section 9.2.73.

- Ammonia leaks from the refrigeration and bulk storage system.

Risks related to labour include human rights violations associated with unfair working conditions, including: discrimination, unfair treatment, prevention of freedom of association, use of child/forced labour and poor working conditions (i.e. provision of breaks, access to sanitary facilities, working hours, terms of payment, lack of contracts in place etc.).

9.2.8.3 Sensitive Receptors

Same as that described for the construction phase in Section 9.1.10.

9.2.8.4 Significance of Impact (Pre-mitigation)

Based on the analysis provided above, impacts to exposure of the workforce to inappropriate labour and working conditions (including OHS risks) during the operations phase will be a "**Moderate Negative Impact**" pre-mitigation as per the assessment below.

Type of Impact		
Direct Negative Impact		
Rating of Impacts		
Characteristic	**Designation**	**Summary of Reasoning**
Extent	Local	The impact is only relevant for the direct workforce all of whom will generally be at a local level (although a few of them may come from elsewhere in Kenya or globally).
Duration	Long term	This impact will continue to be manifested throughout the operations phase.
Scale	Large	This impact will affect a proportion of the 50 workers estimated to be employed at the Project during the operations phase. Some of the emanating impacts such as major injuries can be severe including loss of life which can significantly affect households and communities ability to maintain their quality of life and livelihoods.
Frequency	Intermittent	Impact is likely to recur / occur intermittently throughout the operations phase.
Magnitude		
Medium Magnitude		
Sensitivity/Vulnerability/Importance of the Resource/Receptor		
Medium Sensitivity		
Receptors to this impact will include the workers at the Project during the operations phase.		
Significant Rating Before Mitigation		
Moderate Negative Impact		

9.2.8.5 Mitigation/Management Measures

- The Project will develop and implement an Operations Phase Occupational Health and Safety (OH&S) Management System in line with good industry practice. This system should include consideration of hazard identification, risk assessment and control, use of Personal Protection Equipment (PPE), incident investigation and reporting, reporting, training of workers on OHS risks and tracking of near misses, incidents etc. The management system should also include emergency response plans that tie into existing emergency response plans at CIP. Roles and responsibilities for the implementation of the OH&S Management System should be clearly defined.
- The Project will develop a Human Resources Policy to guide labour recruitment and labour management. This will include a Labour and Employment Plan and Worker Grievance Mechanism. Key issues covered by such Plans will include but not be limited to the following:

  - Provision of clear and understandable information regarding rights under national labour and employment law, and any applicable collective agreements, including those related to hours of work, wages, overtime, compensation, etc.;
  - Provision of reasonable working conditions and terms of employment;
  - Provision of employment, compensation/remuneration and working conditions, including working hours, based on equal opportunity and fair treatment, avoiding discrimination on any aspects;
  - Provision of adequate welfare facilities on site;
  - Implementation of a grievance mechanism;
  - Adoption and implementation of a sexual harassment policy;
  - Prohibition of child and forced labour (including mechanisms for monitoring); and
  - Adoption of open attitude towards freedom of association.
- All workers will have contracts which clearly state the terms and conditions of their employment and their legal rights. Contracts will be verbally explained to all workers where this is necessary, to ensure that workers understand their rights. Contracts must be in place prior to workers commencing work.
- Mitigation measures related to human rights violations are presented in Section 9.1.10.
- All workers (including those of contractors and subcontractors) should, as part of their induction, receive training on health and safety guidelines (including awareness-raising of disease vectors) and should receive updated training routinely, as well as when undertaking new tasks, such as working at heights or working in confined spaces.
- Daily toolbox talks will be held with the Project workers to discuss the health and safety risks associated with the tasks at hand.
- A ‘fitness for work’ programme should be established to ensure that all employees are physically able to undertake their work without impact to their health;
- An occupational health and safety monitoring and surveillance programme should be established;
- Specific OHS training programmes should be provided for workers assigned to tasks associated with particular H&S risks;
- The provision and enforcement of use of appropriate Personal Protective Equipment (PPE) based on task based hazard analysis;
- Visual warning signs should be put in place, including those for the electrical and mechanical equipment safety warnings, and chemical hazard warnings;
- Working hours should be regulated in accordance with national legislation and international guidelines.
- Annual DOSH and fire safety audits will be conducted by appropriately registered and independent consultants.
- Major Hazard Installation certification for the bulk storage of ammonia.

9.2.8.6 Residual Impact (Post-Mitigation)

Based on the implementation of the proposed mitigation measures, the significance of the residual impact related to exposure of the workforce to Occupational Health and Safety (OHS) risks will be a “**Minor Negative Impact**” post mitigation as per the assessment below.

Rating of Impacts		
Characteristic	**Designation**	**Summary of Reasoning**
Extent	Local	The impact is only relevant for the direct workforce all of whom will generally be at a local level (although a few of them may come from elsewhere in Kenya or globally).
Duration	Long term	This impact will continue to be manifested throughout the operations phase.
Scale	Small	This impact will be largely avoided, and n case of occurrence only lightly affect a few workers.
Frequency	Rare	With the implementation of the recommended mitigation measures, this impact will be largely avoided and only rarely occur.
Magnitude		
Small Magnitude		
Significant Rating After Mitigation		
Minor Negative Impact[22]		

9.2.9 Community Health, Safety and Security Risks

9.2.9.1 Description of the Baseline Environment

Same as Section 9.1.11.

9.2.9.2 Proposed Project Activities

The following Project activities, but not exclusively so, may result in risks to community health, safety, and security:

- Operation of Project infrastructure as well as the movement of vehicles through or near communities.
- The Project's use of private security personnel to secure their operations, and the level of interaction between these forces with local communities during (1) routine operations (2) emergency events, (3) conflicts, strikes or demonstrations.

The establishment of the Project will result in a broad range of community health, safety and security risks, and these risks cross through a range of technical expertise (i.e. occupational health and safety, air emissions, water pollution etc.). Community Health, Safety and Security is however an umbrella term, and the potential project risks may specifically include:

- Community exposure to ground and surface water pollution,
- Community exposure to general and hazardous waste storage and transport, and
- Public vehicle and pedestrian traffic on private and public roads (although incremental traffic will be negligible given that existing roads will be used, which are already accommodating heavy traffic).

9.2.9.3 Sensitive Receptors

Sensitive receptors will be communities surrounding the Project and transport corridor.

9.2.9.4 Significance of Impact (Pre-mitigation)

Based on the analysis provided above, impacts to exposure of the community to poor community, health, safety and security standards will be a "**Minor Negative Impact**" pre-mitigation as per the assessment below.

[22] The conduct of OHS awareness trainings amongst the Project workers will reduce their sensitivity to Medium thus resulting in a Minor Negative residual impact.

Type of Impact		
Direct Negative Impact		
Rating of Impacts		
Characteristic	**Designation**	**Summary of Reasoning**
Extent	Local	It is anticipated that the potential impacts of increased disease transmission will be limited to the Project Area.
Duration	Short term	Generally, the implications of inadequate community health, safety and security conditions will cease to manifest after the construction phase; however, some of the effects such as major injuries will continue to affect the concerned individuals.
Scale	Large	Without any effective management, the potential for a major community incident and emergency events is more than likely.
Frequency	Intermittent	Impact is likely to recur / occur intermittently throughout the construction phase.
Magnitude		
Small Magnitude		
Sensitivity/Vulnerability/Importance of the Resource/Receptor		
Medium Sensitivity		
Communities are vulnerable to health, safety, and security impacts. The potential for a community incident and emergency events, and impact on community health, is all but guaranteed when construction commences if there are no active management measures in place.		
Significant Rating Before Mitigation		
Minor Negative Impact		

9.2.9.5 Mitigation/Management Measures

Management System

- The Project should update and implement a Community Health, Safety and Security Management System in line with good industry practice, including the requirements of the IFC Performance Standard 4.

Employee Management

- The Worker Code of Conduct to be developed for the construction phase should be updated for Project employees in the operations phase.
- The development and implementation of vector borne disease policies and information documents for all workers directly related to the project.
    - The information document will address factual health issues as well as behaviour change issues around the transmission and infection of vector borne diseases e.g. Malaria
- Ensure sufficient health services are available to meet the day to day needs of Project personnel without impacting on access to health care for communities. First aid training should be provided to Project personnel.
- Implement and disseminate information on the Grievance Mechanism. The grievance mechanism will provide a clear process for informing stakeholders of the process for reporting complaints about security personnel and addressing any such complaints in a timely manner.

Traffic-related Mitigations

Refer to Section 9.2.7

Plans to develop / update

- Prepare a Security Management Plan developed for the operational phase
- Update the Emergency Prevention, Preparedness and Response Plans and associated procedures to align with operational activities. This should be done in collaboration with the local and regional Government and local emergency providers and local health care facilities.

9.2.9.6 Residual Impact (Post-Mitigation)

Based on the implementation of the proposed mitigation measures, the significance of the residual impact related to exposure of the community to Community health, safety and security risks will be a "**Minor Negative Impact**" post mitigation as per the assessment below.

Rating of Impacts		
Characteristic	**Designation**	**Summary of Reasoning**
Extent	Local	It is anticipated that the potential impacts of increased disease transmission will be limited to the Project Area.
Duration	Long-term	Generally, the implications of inadequate community health, safety and security conditions can be severe including loss of life which can significantly affect households and communities ability to maintain their quality of life and livelihoods.
Scale	Very Small	With the implementation of the management measures, the number of community members exposed to community health, safety and security risks will be very small.
Frequency	Rare	With the implementation of the management measures, exposure of Project workers to community health, safety and security risks will be rare.
Magnitude		
Negligible Magnitude		
Significant Rating After Mitigation		
egligible Negative Impact[23]		

9.3 Unplanned Events

Unplanned events are activities that are not expected to occur during a project's normal activities, such as accidental leaks and spills. The significance of impacts associated with unplanned events is cannot be determined using the framework described in Chapter 3, because:

- The range of possible effects of a single event is highly variable (i.e. the impact intensity is almost infinitely variable); and
- The kind of unplanned event that may result in a severe environmental impact is, by definition, undesirable, and the Project has substantial built-in controls to avoid such occurrences. Therefore, the probability of such an event occurring should always be very low, whereas the framework described in Chapter 3 is designed for the assessment of impacts that are considered reasonably likely to happen.

Therefore, while consideration is given in this EIA Project Report to some of the Project design measures designed to prevent undesirable events, the assessment of potential impacts resulting from unplanned events is restricted to comments regarding the relative sensitivity of the receiving environment should such an event occur and potential levels of consequence. The management measures included in this section are to be in-built in the Project design to further minimise the possibility of occurrence of the unplanned events. In addition, Emergence Management Plans (EMPs) are recommended for the management of impacts from unplanned events in the event that they occur.

9.3.1 Accidental Leaks and Spills

9.3.1.1 Description of the Baseline Environment

Same as that described for the construction phase under *Section 9.1.6* (Wastes and Effluents).

9.3.1.2 Proposed Project Activities

Accidental leaks and spills by their nature are undesirable and unplanned since their effects are largely unpredictable depending on the extent of the leak or spill. Therefore, the Contractor (during construction phase) and the Project Developer (throughout the project life cycle) will incorporate best industry standard controls to minimise the possibility of having an accidental leak or spill.

Despite the above, accidental leaks and spills can potentially occur in areas where liquids (including condensed gases) are stored or used. In reference to the proposed Project, the Project equipment and machinery will use fuel (diesel and/or petrol) as well as oil for lubrication during both the construction and operations phase. If there are any unnoticed leaks on the fuel or oil tanks, the fuel and/or oil will flow to the ground thus contaminating the soils and can potentially flow in storm water to the nearby dam thus reducing its water quality.

In addition, refrigerants such as ammonia and carbon dioxide will be used during the operations phase. In particular, ammonia is toxic and hazardous with irritating and corrosive effects. Contaminations at a level above 300 ppm or higher are life threatening. However, due to its distinctive acrid smell, which can be noticed in very low concentrations starting at 5 ppm, humans normally notice it well below the threshold of a harmful concentration.

Another risk associated with use of ammonia is explosion and fire. Ammonia is a flammable gas and can form flammable or potentially explosive compounds in dry air when in a gaseous state. The concentration threshold is between 15 and 28 volume percent. However, the required ignition temperature is rather high at least 1202 °F/650 °C. Due to this and other chemical properties of ammonia, explosions and fires purely caused by it are very rare (the possibility of its occurrence only happens if its concentration in unventilated rooms exceeds the explosion limit (15 volume percent) or if high-energy ignition sources such as high-temperature welding are present).

9.3.1.3 Sensitive Receptors

Same as that described for the construction phase under Section 9.1.6 (Wastes and Effluents). In addition, Project workers are another category of sensitive receptors for this impact.

9.3.1.4 Mitigation/Management Measures

General Leaks and Spills Management

- All Project equipment and machinery will be properly maintained as per the manufacturer's recommendations. In particular, the status of fuel and oil tanks will be checked.
- At the start of every work day, Project vehicles and equipment will be checked for spills and leakages.
- Project equipment and machinery will be serviced off site.
- Fuel, oil and used oil storage areas will be contained in bunds of 110 percent capacity of the stored material. Fuels will be stored in above-ground storage tanks.
- Spill containment and clean up kits will be available onsite and clean-up from any leakage or spill will be appropriately contained and disposed of.

Specific Management Measures for Use of Ammonia as a Refrigerant

Outlined below are specific management measures for use of ammonia as a refrigerant; however, it is understood that the Project Proponent has contracted a refrigerant consultant, who will be responsible for the maintenance and monitoring of such:

- Maintenance work at ammonia refrigeration systems requiring welding, soldering or cutting must be performed with extreme caution: existing oil mists can lower the explosion limit of ammonia/air mixtures. Ammonia systems should; therefore, be purged with air or a non-flammable gas prior to starting the welding work in order to remove residual ammonia.
- Early leakage detection through installation of an automatic and specific chemical detection system depending on available technology as well as smell detection by the Project workers. In particular, this will require training of all the operations phase Project workers on early detection of ammonia smell.
- Conduct regular maintenance of both the refrigeration system and the leakage detection technology.
- Prepare an emergency response plan for implementation in case of major leakages or explosion.

9.4 Cumulative Impacts

Cumulative impacts are a result of effects that act together (including those from concurrent or planned future third-party activities) to affect the same resources and/or receptors as the Project under consideration (e.g. the combined effect of other similar projects in the general area).

An effect to a resource in itself may not be considered significant but may become significant when added to the existing and potential effects eventuating from similar or diverse developments in the area.

In practice, effective design and implementation of complete CIA processes is often beyond the technical and financial capacity of a single developer as recognised in IFC's Good Practice Handbook for CIA. CIA thus transcends the responsibility of a single project developer. However, occasionally, it may be in the best interest of a private sector developer to lead the CIA process, but the management measures that will be recommended as a result of the process may ultimately be effective only if the government and other relevant institutions are involved. CIAs are multi-stakeholder, iterative processes that:

- Require the involvement of multiple multi-disciplinary teams and an effective, efficient governance structure, and
- Tend to be time and data intensive.

In light of the above and in relation to the proposed Project, a number of other Projects are proposed within the CIP. The management of CIP and lead government agencies such as NEMA and the County Government of Kwale oversees all developments in Park which puts into consideration CIA. The Project Developer will continue to liaise with the management of the CIP to identify and implement synergies and minimise environmental and social cumulative impacts as much as possible.

9.5 Decommissioning Impacts

As mentioned in Chapter 4, the Project will have a lifespan in excess of 50 years and demand for cold storage will only grow during this period in Kenya. As such, two options are considered for decommissioning:

- Components that have a shorter lifespan such as the cooling system and vehicles will be replaced, and the facility will continue to function. It is likely that the cooling system, at least in

part, will need to be replaced after 20 years and this provision is made in the design of the facility.

- On the basis that the facility is no longer required it will be dismantled and the site returned to its original state (this is most unlikely potential changes/developments that will have occurred in its neighbourhood).

Should option 2 materialise then the decommissioning phase will be similar to the construction phase in terms of environmental and social impacts. The majority of the warehouse superstructure is made of steel and recyclable components. The concrete foundations and other non-recyclable elements will be disposed of to landfill. Given that the lifespan is over 50 years, the exact practical measures at the time of decommission cannot be ascertained at this time given expected changes in its neighbourhood and advances in technology; therefore, the following general recommendation is made:

- Prepare an appropriate decommissioning plan at least one year in advance. The decommissioning plan should put into consideration advances in technology and development.

9.6 Summary of Impacts and Residual Impacts

Table 9.5 Summary of Construction Phase Impacts

Impact	Significance (pre-mitigation)	Residual Impact
Impacts on Local Air Quality	Minor Negative	Negligible
Impacts on the Noise Environment and Vibrations	Minor Negative	Minor Negative
Impacts on Water Resources	Minor Negative	Negligible
Impact on Biodiversity	Negligible	Negligible
Waste and Effluent	Moderate Negative	Minor Negative
Impacts on Employment, Procurement and the Economy	Positive Impact	Positive Impact
Impact on Disease Transmission	Minor Negative	Negligible
Traffic Impacts	Moderate Negative	Minor Negative
Labour and Working Conditions (Including Occupational Health and Safety)	Moderate Negative	Minor Negative
Community Health, Safety and Security	Minor Negative	Negligible

Table 9.6 Summary of Operations Phase Impacts

Impact	Significance (pre-mitigation)	Residual Impact
Impacts on Local Air Quality	Minor Negative	Negligible
Waste and Effluent	Minor Negative	Negligible Negative
Impacts on Employment, Procurement and the Economy	Positive Impact	Positive Impact
Traffic Impacts	Moderate Negative	Minor Negative
Labour and Working Conditions (Including Occupational Health and Safety)	Moderate Negative	Minor Negative
Community Health, Safety and Security	Minor Negative	Negligible

10. ENVIRONMENTAL AND SOCIAL MANAGEMENT AND MONITORING PLAN (ESMMP

10.1 Introduction

The purpose of this Environmental and Social Management and Monitoring Plan (ESMMP) is to ensure that social and environmental impacts and risks identified during the ESIA process are effectively managed during the construction and operations of the Project. The ESMMP specifies the mitigation and management measures to which the Project Proponent and the Contractor are committed and shows how the Project will mobilize organizational capacity and resources to implement these measures. The ESMMP also shows how mitigation and management measures will be scheduled and will ensure that the Project complies with the applicable laws and regulations within Kenya, as well as the requirements CSKL's E&S Compliance Framework (Section 10.2).

The key objectives of the ESMMP are to:

- Formalize and disclose the programme for environmental and social management; and
- Provide a framework for the implementation of environmental and social management initiatives.

Best practice principles require that every reasonable effort is made to reduce, and preferably to prevent, negative impacts while enhancing the Project benefits. These principles have guided the ESIA process.

The overall responsibility for the ESMMP lies with the Project Proponent (CSKL) and the Contractor that will be appointed and responsible for carrying out the specific Project activities.

10.2 CSKL E&S Compliance Framework

In the development, construction and operation of the Project CSKL and its contractors and business partners will adhere to the following standards:

- All applicable legislation and regulations in Kenya;
- IFC Environmental and Social Performance Standards (2012) and the World Bank Group (WBG) General Environmental, Health and Safety Guidelines (2007);
- The African Development Bank Group's (AfDB) Integrated Safeguards System (2013).

This ESMMP has been developed in accordance with the requirements of these regulations and standards.

10.3 Environmental and Social Management and Monitoring Plan (ESMMP)

The ESMMP covers information on the management and/or mitigation measures that will be taken into consideration to address impacts with respect to:

- The construction phase (including mobilisation and demobilisation activities associated with the construction phase); and
- The operations/ Maintenance phase.

In practice, some of the recommended management measures will be incorporated into the Project design/ influence the Project design, to avoid or minimise the identified negative Project impacts as indicated in this ESMMP.

Table 10-1 summarises the ESMMP for the Project. It describes the mitigation measures to be undertaken, and, to ensure the mitigation measures are adequately implemented, a monitoring programme is also described. This programme provides for parameters that can be monitored, and suggests how monitoring should be done, how frequently, and who should be responsible for such monitoring.

Table 10-1 Environmental and Social Management and Monitoring Plan (ESMMP)

Issue	Mitigation/Management Measure	Responsibility for Implementation	Completion Indicator	Frequency of Monitoring	Cost
Construction Phase					
General	Contractor is required to develop and implement a contractor's Construction Environmental Management Plan (C-ESMP) meeting the conditions set out in the environmental authorisation (EIA Certificate for this Project once issued by NEMA), as well as this ESIA Project Report (PR) and lender requirements. All applicable elements of this ESMMP should be used in drafting and finalising the contractor specific C-ESMP, which is to be used for the construction phase, and against which the E&S performance of the contractor will be monitored.	Contractor	A comprehensive and appropriate C-EMP in place	Once – off (prior to commencement of construction activities, but after obtaining NEMA EIA PR Approval)	No additional cost (expected to be undertaken by the contractor's environmental and social team)
Impacts on Local Air Quality (*Section 9.1.1*)	▪ Develop and implement a grievance procedure (for both workers and other stakeholders) to manage any dust complaints. ▪ Where feasible, regular wetting or chemical treating of exposed open earthworks such as at the levelled and material laydown areas, may be required. Upon completion of earthworks, stabilization of temporary used surfaces (i.e., establishing vegetative cover as part of the landscaping activities, or placing ground cover) should occur as soon as possible. ▪ Regular wetting of construction access routes. This will not only lower dust levels but will improve visibility, and hence lower the risk of accidents. ▪ Vehicles to maintain speed limits imposed. ▪ Drop heights of material should be minimised, as far as reasonably possible. ▪ Soil and aggregate stockpiles should be managed in accordance with the mitigation / management measures provided for Impacts on Water Resources (refer to Section9.1.3). ▪ Where feasible and reasonable, vehicles that are compliant with recent emission standards (for example, EURO Tier 3) should be used. These vehicles should be maintained in reasonable working order. When not in use, vehicles should be switched off, unless	Contractor	No recorded incidents or dust-related grievances to surrounding land users Records of audits/visual inspection Air quality emissions at respective receptors not exceeding the maximum permitted limits	Daily	All associated costs presumed included in overall construction costs

Issue	Mitigation/Management Measure	Responsibility for Implementation	Completion Indicator	Frequency of Monitoring	Cost
	impractical for health and safety reasons (for example maintenance of air conditioning). ▪ Construction equipment should be maintained and serviced on a regular basis to ensure that they function optimally and to reduce excessive emissions, this will also apply to all stationary generators utilised on site. ▪ Issue all Project workers appropriate Personal Protective Equipment (PPE) including dust masks where required. ▪ Develop and implement an appropriate Traffic Management Plan (TMP) throughout the construction phase. ▪ Keep neighbouring developments up to date with the construction programme and activities. ▪ Any spillages at the Project Site or along access routes should be cleaned up within a reasonable time in line with the spill response procedure to prevent secondary emissions. For GHG emissions: Although the construction phase of the Project will not result in significant GHG emissions it should nevertheless make efficiencies where ever possible, not least because it reduces costs in most cases. Measures will include: ▪ Local procurement of good and materials wherever possible through the implementation of CSKL's Local Content Policy; ▪ Contractor to develop and implement a Waste Management Plan applying the waste hierarchy; ▪ Contractor to develop and implement a Traffic Management Plan to include measures to reduce as far as practical the number of trips; ▪ Contractor to use plant that is in good working order and regularly maintained.				
Impacts on the Noise Environment (including	▪ No construction related activities during the night. ▪ Develop and implement a grievance procedure in the event of any noise and vibration impact complaints being received.	Contractor	No recorded noise-related incidents or grievances to surrounding land users	Monthly	Noise management costs presumed included in

Issue	Mitigation/Management Measure	Responsibility for Implementation	Completion Indicator	Frequency of Monitoring	Cost
vibration) (*Section 9.1.2*)	▪ Site management should periodically check the site and nearby developments for noise and vibration related issues so that solutions can be efficiently and timeously applied. ▪ Regular inspection and maintenance of all machinery and vehicles. ▪ Installation of silencers or acoustic enclosures on machinery, where applicable, such as installation of suitable mufflers on engine exhausts and compressor components as well as the use of portable sound barriers around noisy equipment like generators. ▪ As far as reasonably possible, avoid or minimise Project traffic routing through community areas and the implementation of speed limits for all construction vehicles. This needs to be stipulated in a Traffic Management Plan. ▪ Limiting hours of operation for specific equipment or operations (e.g. trucks or machines). In particular, limit use of heavy construction machinery to daytime only (06:01 am – 8:00 pm). ▪ Restrict noise levels at the nearest NSRs to 70 dB LAeq during the day and 65 dB LAeq at night, in conformance to Kenyan regulations. ▪ Noise monitoring against the performance criteria presented above should be implemented if persistent noise complaints are received. ▪ All employees are to be provided with, and are to wear, appropriate hearing protection such as earmuffs and earplugs where necessary. ▪ Avoid idling of Project vehicles and equipment when not in use		Noise monitoring records Noise emissions at respective receptors not exceeding the maximum permitted limits		overall construction costs
Impacts on Water Resources (*Section 9.1.3*)	**General Measures** ▪ Communicate all the construction related plans and schedules to the local Project stakeholders prior to the commencement of the construction activities. ▪ Regularly maintain the Project equipment as per the manufacturer's instruction to avoid the possibility of any leaks and spills. ▪ Liaise with the management of CIP on wastewater discharge and stormwater management requirements. ▪ Method Statements detailing spill emergency response and clean-up procedures for spills should be developed. ▪ Training regarding proper methods for transporting, transferring and handling hazardous substances that have the potential to impact surface and groundwater resources, should be undertaken.	Contractor in liaison with the management of CIP	No recorded water (quality, quantity or stormwater flow) -related incidents or grievances from surrounding land users Visual audits/spot checks Good housekeeping at the Project site	Weekly	Included in overall construction costs as good practice

Issue	Mitigation/Management Measure	Responsibility for Implementation	Completion Indicator	Frequency of Monitoring	Cost
	▪ Areas where spillage of soil contaminants occurs should be excavated (to the depth of contamination) and suitably rehabilitated. If any other minor spillage occurs, it should be cleaned as soon as possible, but within the same shift and the contaminated area should be reinstated. All contaminated material should be suitably disposed of. ▪ The ad hoc maintenance, with the exception of emergency repairs; of vehicles in and around the Project Site should be prevented, as far as reasonably possible. All major services and ad hoc maintenance of vehicles and equipment should be done at a designated workshop. The workshop should be properly constructed to prevent pollution and should as far as reasonably practical include containment berms and an oil/grease trap. ▪ All construction areas and associated facilities should be maintained in a good and tidy condition; debris and wastes should be contained in such a way that they cannot become entrained in surface runoff during periods of heavy rain. ▪ Where practical, exposed surfaces and friable materials should be covered/sheeted. ▪ Sufficient portable toilets at active work areas should be provided for site staff and workers and these should be serviced regularly by a competent and suitably qualified person. ▪ The sewage treatment/ containment system should be managed in a manner that results in zero discharge of raw sewage to the environment, and if treated sewage is discharged into the environment then this should conform to recognised Kenyan discharge standards prior to discharge. ▪ All wastewater which may be contaminated with oily substances should be managed in accordance with an approved Waste Management Plan, and no hydrocarbon-contaminated water should be released into the environment. ▪ The management of the CIP should develop and implement a comprehensive stormwater management plan for the Park. **Specific Measures – Flow (including stormwater water)**		Well drained Project site Areas used for temporary construction activities fully restored		

Issue	Mitigation/Management Measure	Responsibility for Implementation	Completion Indicator	Frequency of Monitoring	Cost
	▪ Project infrastructure should be designed and located to minimise the impacts to natural water flow. ▪ Connect stormwater channels from the Project Site to the main stormwater ducts to be established by the management of CIP or following natural drainage channels. ▪ Ensure protection of soil adjacent to the side drains and the constructed drainage facilities. ▪ Ensure velocity attenuation measures for stormwater at the point of discharge into natural streams and rivers. ▪ Spoil/excavations should be visually assessed to determine if it is contaminated. In the event that the spoil is contaminated, it should be handled as a hazardous material and disposed of under supervision and into controlled dumping areas.				
Impacts on Biodiversity *(Section 9.1.5)*	**Control Measures for Invasive Plant Species** ▪ Monitoring for growth and control of alien invasive vegetative. **Landscaping Measures** ▪ In liaison with the management of the CIP, appropriate landscaping plants should be planted in the compound of the Project. Where possible, landscaping should be done with indigenous plant species. ▪ Avoid the use of lantana as a decorative plant (which occurs regularly in Kenya).	Contractor	Landscaping designs approved by Kwale County	Monthly	Included in overall construction costs
Wastes and Effluents (*Section 9.1.6*)	▪ Spoil generated should be disposed of on pre-identified and approved locations (impact assessment should be completed for the locations if not already approved). ▪ A Waste Management Plan (WMP) will be produced for the construction phase. ▪ Construction vehicles and equipment will be serviced off site at designated and approved servicing locations. ▪ The use, storage, transport and disposal of hazardous materials used for the Project will be carried out in accordance with all applicable Kenyan regulations, and Material Safety Data Sheets (MSDS). As Kenya does not have a specific hazardous waste facility, any hazardous wastes to be disposed of should be documented beforehand, treated as per any requirements of the MSDS sheets,	Contractor	An effective WMP in place No recorded grievances at the waste sources or related to the supply of construction materials Records of audits/visual inspection	Monthly	Included in overall construction costs

Issue	Mitigation/Management Measure	Responsibility for Implementation	Completion Indicator	Frequency of Monitoring	Cost
	and disposed of in consultation with the applicable County Authorities and via NEMA approved waste handlers. ▪ Depending on the waste types, a contracted waste handler will sort out recyclable waste and liaise with competent recycling operators to have such waste recycled. ▪ Occasional audits to monitor company performance should be undertaken by the Project proponent. ▪ The Contractor will be required to supply the required temporary ablution facilities and be responsible for the treatment and/or removal of sewage wastes off site. The Contractor will also be required to ensure that any sub-contracting company is accredited and has the necessary permits to remove sewage waste. ▪ The sewage will be treated in accordance with the applicable laws like the Environmental Management and Coordination (Waste Management) Regulations, 2006. ▪ All construction laydown areas shall comply with the Project WMP and be provided with appropriate waste handling equipment. ▪ Work sites will have appropriate solid waste holding receptacles for the expected different types of waste, and waste is to be managed according to the waste management hierarchy. Waste is to be sorted for ease of segregation, reused, recycled, and disposed of only as a last resort.				
Impacts on Employment, Procurement and the Economy (*Section 9.1.7*)	▪ The contractor will prioritise the recruitment of workers (unskilled, semi-skilled) from the local communities around CIP where available in accordance with CSKL Local Content Policy and in conjunction with the Community Liaison Team. ▪ The contractor will adhere to CSKL's equal Opportunities and Diversity Policy that prevent any form of nepotism and favouritism. ▪ The Contractor will notify identified representatives of the County Government and Local Administration (i.e. the Area Chief) of the specific jobs and the skills required for the Project, during the recruitment process. ▪ Advertisements on the employment and procurement opportunities during the construction phase will be placed at the Chief's Office notice board and in liaison with the village headmen and community policing representative. In the event that the position cannot be filled	Contractor	Contractor recruitment plan Employment records	Preparation of Human Resources guiding documents (including recruitment guidelines) prior to construction Employment records checked monthly	Internal costs

Issue	Mitigation/Management Measure	Responsibility for Implementation	Completion Indicator	Frequency of Monitoring	Cost
	from within the Project Area, it will be advertised further county-wide then nationally. ▪ The Contractor will aim at procuring locally available materials where feasible and use local suppliers where appropriate.				
Impact on Disease Transmission (*Section 9.1.8*)	▪ The Contractor will prepare a COVID-19 response and management plan based on a risk assessment considering international guidance, e.g. from World Health Organisation (WHO), and in accordance with Kenyan regulatory requirements. ▪ Workers should receive awareness training as part of their induction and then at least every 6 months on potential high risk communicable and vector borne diseases, symptoms, preventative measures and transmission routes as well as treatment options. This will be particularly important for diseases with which non-local workers are unfamiliar and in case of any emerging disease outbreaks. ▪ In the event of a new disease, increased transmission or outbreak compared to the baseline, the Contractor should interact with local health care facilities and workers to ensure there is an appropriate response in place to make workers aware and to ensure proper precautionary measures are implemented. ▪ The Contractor will adhere to CSKL's Supplier Code of Conduct providing a worker code of behaviour including worker-worker interactions, worker-community interactions and development of personal relationships with members of the local communities. ▪ Providing workers with appropriate sanitary facilities, which are appropriately designed to prevent contamination. ▪ Developing a robust waste handling system to avoid the creation of new vector breeding grounds or attracting rodents to the area. ▪ Implementing measures to reduce the presence of standing water onsite through environmental controls and source reduction to avoid the creation of new breeding grounds. ▪ Ensuring appropriate food preparation and monitoring measures are in place. ▪ The workforce will be provided with access to selected treatment at health facilities at or near the Project Site as deemed necessary for this Project. The requirements for these health facilities should be based on a risk assessment considering access to existing health	Contractor in liaison with CSKL	HIV/AIDS/Malaria/TB Policy COVID-19 Response and Management Plan Worker Code of Conduct Disciplinary procedures for workers who contravene the Code of Conduct	Monthly	Internal costs

Issue	Mitigation/Management Measure	Responsibility for Implementation	Completion Indicator	Frequency of Monitoring	Cost
	facilities and travel time to facilities that offer international standards of care. Access to health care should include direct employees, and sub-contractors working on site. ▪ Pre-employment screening protocols will be put in place within the framework of equal opportunities and non-discrimination. This should include pre-employment medicals and follow up medicals as appropriate. The screening protocols should consider heath conditions related to the nature of the work undertaken, employee residential details and legal requirements. Workers should not be denied employment on the basis of the outcomes of the screening but should be provided treatment or alternative roles as appropriate. ▪ The Project should prepare and implement a Communicable Disease Management Plan during the construction phase. This plan should be explained clearly to the workforce. ▪ No recruitment is permitted on the construction site. This will serve to prevent in migration of work seekers from outside the local area.				
Traffic Impacts (*Section 9.1.9*)	▪ In consultation with the County Transport and Safety Committee and the management of CIP, develop and implement a Traffic Management Plan covering the routes to be used by the contractor vehicles, vehicle safety, speed limits on roads, driver and passenger behaviour, use of drugs and alcohol, hours of operation, rest periods and location of rest stops, and accident reporting and investigations. ▪ Prepare and implement an appropriate community Grievance Redress Mechanism (GRM). The GRM should be communicated to all the local community members and neighbours around the CIP. ▪ As much as possible, avoid transportation of Project equipment and materials through busy trading centres and towns by using by-passes as appropriate. ▪ Regularly maintain Project vehicles and equipment as per the manufacturers' recommendations.	Contractor in liaison with the Project Proponent and Kenya Police	Incident records Records of complaints Traffic Management Plan Grievance mechanism in place, where traffic incidents are recorded and addressed	Monthly	Internal costs
Labour and Working Conditions (*Section 9.1.10*)	**OH&S Management System** ▪ The Contractor will develop and implement an Occupational Health and Safety Management System in line with good industry practice including IFC Performance Standard 2 and Kenya's Occupational Health and Safety Act (OSHA). This system will include consideration of hazard identification, risk	CSKL (contractual arrangements) Contractor (implementation)	Employment records and other key performance indicators (KPIs) for worker rights	Monthly	Internal costs

Issue	Mitigation/Management Measure	Responsibility for Implementation	Completion Indicator	Frequency of Monitoring	Cost
	assessment and control, use of Personal Protection Equipment (PPE), incident investigation and reporting, reporting and tracking of near misses, incidents etc. The management system will also include emergency response plans that tie in with existing emergency response procedures are the CIP. Roles and responsibilities should be clearly defined. ▪ The Contractor will have a Human Resources Policy in place that adheres to IFC Performance Standard 2, Kenyan Law and the ILO Core Labour Conventions to which Kenya is a signatory. The policy will include a Labour and Employment Plan, conditions of employment and Worker Grievance Mechanism. These requirements will also be passed on to any sub-contractors. **Contractor Management** ▪ In all contracts, explicit reference should be made to the need to abide by Kenyan law, international standards (in particular IFC PS2), ratified ILO conventions and the Proponent's policies in relation to health and safety, labour and welfare standards. ▪ As part of the contractor and supplier selection process, CSKL will take into consideration performance with regard to worker management, worker rights, and health and safety as outlined in Kenyan law and international standards. ▪ Regular checks should be undertaken to ensure the relevant labour laws and occupational health and safety plans are adhered to at all times. ▪ All workers (including those of contractors and subcontractors) should, as part of their induction, receive training on health and safety guidelines (including awareness-raising of disease vectors) and should receive updated training routinely, as well as when undertaking new tasks, such as working at heights or working in confined spaces. ▪ The development and implementation of vector borne and communicable disease policies and information documents for all workers directly related to the project.		A record of workers' grievances (including those of third party's) Emergency Response Plan development Induction and training documentation for all workers on site Development of a Workers' Code of Conduct		

Issue	Mitigation/Management Measure	Responsibility for Implementation	Completion Indicator	Frequency of Monitoring	Cost
	▪ The information document will address factual health issues as well as behaviour change issues around the transmission and infection of vector borne and communicable diseases (including HIV/AIDS as well as malaria). ▪ Daily toolbox talks will be held with the Project workers to discuss the health and safety risks associated with the tasks at hand. ▪ A 'fitness for work' programme should be established to ensure that all employees are physically able to undertake their work without impact to their health; ▪ An occupational health and safety monitoring and surveillance programme should be established; ▪ Specific OHS training programmes should be provided for workers assigned to tasks associated with particular H&S risks; ▪ The provision and enforcement of use of appropriate Personal Protective Equipment (PPE) based on task based hazard analysis; ▪ Visual warning signs should be put in place, including those for the electrical and mechanical equipment safety warnings, and chemical hazard warnings; ▪ Working hours should be regulated in accordance with national legislation and international guidelines. **Workers' Rights** ▪ The Contractor should put in place hiring mechanisms to ensure no employee or job applicant is discriminated against on the basis of his or her gender, marital status, nationality, ethnicity, age, health status, religion or sexual orientation. ▪ All workers (including those of the contractor and subcontractors) will, as part of their induction, receive training on worker rights in line with Kenyan legislation to ensure that positive benefits around understanding labour rights are enhanced. This process will be formalised within the Code of Conduct that will be provided by the contractor. ▪ All workers (including those of the contractor and subcontractors) will have contracts which clearly state the terms				

Issue	Mitigation/Management Measure	Responsibility for Implementation	Completion Indicator	Frequency of Monitoring	Cost
	and conditions of their employment and their legal rights. Contracts will be verbally explained to all workers where this is necessary to ensure that workers understand their rights. Contracts must be in place prior to workers commencing work. ▪ The contractor will put in place a worker grievance mechanism that will be accessible to all workers, whether permanent or temporary, or directly or indirectly employed. The worker grievance mechanism shall be open to all the Project workers in the event that their grievance is not adequately resolved by their direct employer. Workers will also have access to CSKL's grievance management system. ▪ All workers (including those of the contractor and subcontractors) will have access to training on communicable diseases and STDs and community interactions in general. This training will be developed in collaboration with local health institutions. ▪ Surveillance and assurance that no children or forced labour is employed directly by the contractor, and to the extent possible by third parties related to the Project and primary suppliers where any such risk may exist. Mitigation measures related to human rights violation are presented below: ▪ Labour rights in the supply chain and contractors- The risk of non-observance of labour laws (including freedom of association, health and safety, non-discrimination, regular payment of wages, working hours, overtime, rest or leave by construction contractors and/or suppliers of materials or services) can be mitigated by: ▪ The screening of contractors and suppliers on the basis of whether they are able to comply with the Project's commitments and policies. ▪ Monitoring and evaluation visits to contractors and suppliers to verify compliance with company policies ▪ Formal induction on company policies for all appointed contractors and supplier sensitisation programme				

Issue	Mitigation/Management Measure	Responsibility for Implementation	Completion Indicator	Frequency of Monitoring	Cost
	▪ Implementation of a worker grievance system *Management of Casual workers* ▪ Workers shall receive regular and recorded Health & Safety training, and such training shall be repeated for new or reassigned workers. This is particularly important for casual workers since their recruitment will generally be irregular depending on availability of tasks where they are needed, and their tasks will also vary from time to time as the construction process progresses. ▪ All workers shall be provided with written and understandable information about their employment conditions including expected working hours, wages and health and safety requirements before they enter employment, even if they are to be engaged for a few days. ▪ Wages and benefits paid for a standard working day for casual workers shall as a minimum be pro-rated minimum monthly wage salary per Kenya's minimum wage requirements. For instance, the recommended minimum wage for a general worker in Mombasa is KES 653.10 per day (The Regulation of Wages (General) (Amendment) Order, 2018, Legal Notice Number 2). ▪ The same laws regarding rest days, working hours and overtime shall apply to casual workers as contracted workers per Kenyan labour laws. ▪ In the event of a work accident resulting in (i) permanent incapacity (ii) temporary incapacity or (iii) fatal injury leading to death of a casual worker, medical insurance and compensation shall be provided for their treatment, and wages based on average monthly earnings shall paid per Kenyan labour law as would apply to a contracted worker. ▪ Where the services of a casual worker are required for more than a period of one month (continuous) or is required to performs work which cannot reasonably be expected to be completed within a period, or a number of working days				

Issue	Mitigation/Management Measure	Responsibility for Implementation	Completion Indicator	Frequency of Monitoring	Cost
	amounting in the aggregate to the equivalent of three months or more, such a worker shall be engaged as a contract worker in line with the requirements of Section 37 of Kenyan' Employment Act, 2007 (Revised in 2012).				
Community Health, Safety and security Risks	**Contractor Management** ▪ A Worker Code of Conduct should be developed for all project personnel that include guidelines on worker-worker interactions, worker-community interactions and development of personal relationships with members of the local communities. As part of the Worker Code of Conduct, all project personnel should be prohibited from engaging in illegal activities including any form of gender based violence and harassment, the use of commercial sex workers and transactional sex. There should be a zero-tolerance for the sale, purchase or consumption of drugs and alcohol; as well as involvement in gambling and fighting. Anyone caught engaging in illegal activities will be subject to disciplinary proceedings. If workers are found to be in contravention of the Code of Conduct, which they will be required to sign at the commencement of their contract, they will face disciplinary procedures that could result in dismissal. ▪ The development and implementation of vector borne policies and information documents for all workers directly related to the project. The information document will address factual health issues as well as behaviour change issues around the transmission and infection of vector borne diseases such as malaria ▪ The contractor should not allow creation of potential breeding places for vectors at the Project Site, such as stagnant water which are potential breeding places for mosquitoes. ▪ Ensure sufficient health services are available to meet the day to day needs of Project personnel without impacting on access to health care for communities. This will include the provision of a health clinic with trained medical personnel at construction camps or sites. ▪ Management of security providers in line with the Voluntary Principles on Security and Human Rights. The Voluntary Principles guide companies in maintaining the safety and security of their operations within an operating framework that ensures respect for human rights and fundamental freedoms.	CSKL (contractual arrangements) Contractor (implementation)	Development of a Workers' code of conduct Inclusion of community requirements in any new Health and Safety Plans. A record of community incidents, emergency events and responses. Records of inductions such as health awareness trainings Records of community grievances A developed Security Management Plan	Monthly	Internal costs

Issue	Mitigation/Management Measure	Responsibility for Implementation	Completion Indicator	Frequency of Monitoring	Cost
	▪ Implement and disseminate information on the Grievance Mechanism. The grievance mechanism will provide a clear process for informing stakeholders of the process for reporting complaints about security personnel and addressing any such complaints in a timely manner. ▪ Specifically related to GBVH, the Project can take action and respond to reports of GBVH by integrating measures into existing systems. This can be done by: ▪ strengthening leadership and company culture, so that GBVH risks are understood, clear and consistent messages are communicated, necessary partnerships are developed, inclusive organisational structures are developed, and adequate resources are invested ▪ developing and communicating policies and codes of conduct that define GBVH, set out prevention and response measures and outline behaviours that are not tolerated, with clear links to sanctions and disciplinary procedures ▪ strengthening recruitment and performance assessments so that they address GBVH risks and enable fair and transparent decision-making on hiring, promotions and performance-related pay ▪ delivering training and awareness raising, both internally among workers and externally among communities and service users, providing essential information and enhanced training for those with specific responsibilities for GBVH prevention and response ▪ working with contractors and suppliers to address GBVH through procurement processes, contract selection and negotiation and regular engagement along the supply chain ▪ improving the physical design of worksites and service delivery locations, with safety assessments to identify potential GBVH hotspots for workers, service users and community members. **Plans to develop** ▪ Development of a Security Management Plan that will set out the process for recruitment and management of security personnel. This will include: ▪ conducting background checks on security personnel to ensure that they have no records of human rights abuse;				

Issue	Mitigation/Management Measure	Responsibility for Implementation	Completion Indicator	Frequency of Monitoring	Cost
	▪ provision of training on upholding community and employee rights and appropriate use of force; and ▪ provisions for investigating any unlawful or abusive behaviour and appropriate disciplinary action, including potential termination of contract. Unlawful and abusive acts will be reported to the appropriate public authorities. ▪ Develop Emergency Prevention, Preparedness and Response Plan that considers incidents that could impact or involve the surrounding community				
Operations Phase					
General	▪ Develop and implement an operational phase Environment, Health and Safety (EHS) Management Plan meeting the conditions set out in the environmental authorisation, as well as this ESIA PR and lender requirements.	CSKL	An effective operations phase EHS Plan	Developed once and implemented throughout the operations phase	Internal costs
Impacts on Local Air Quality (*Section 9.2.1*)	▪ Locate the generator as far as possible away from people, both employees and working areas of neighbouring plots. ▪ Ensure that the generator uses best available technology and is regularly maintained as per the manufacturer's instructions. ▪ Vehicles will not be permitted to idle whilst stationary. ▪ All the customers will be encouraged to use vehicles in good mechanical condition that are regularly maintained as per the manufacturer's advice. ▪ Implement applicable requirements of the Traffic Management Plan for the Operations phase.	CSKL and operators of the various Project components	No recorded incidents or grievances to surrounding land users	Daily	No additional costs
Climate Change Impacts (Greenhouse Gas Emissions) (*Section 9.2.2*)	The GHG Management Plan for the facility will include: ▪ Measuring of energy and fuel use data to calculate an accurate direct carbon footprint for the facility; ▪ On the basis of the results of the carbon footprint, seek to make efficiencies in areas of high GHG emissions; ▪ Develop and implement a facility Waste Management Plan applying the waste hierarchy.	CSKL	Appropriate GHG management plan Appropriate technology with minimal GHG emissions used.	Quarterly	Internal costs

Issue	Mitigation/Management Measure	Responsibility for Implementation	Completion Indicator	Frequency of Monitoring	Cost

	Mitigation measures against Climate Change Risk to the Project
	▪ Development of a climate risk assessment tool
	▪ The risk of having an unreliable power supply can be mitigated through a transition through to decentralised, 'clean' sources of energy, which may be low emission alternatives that can also help reach emission reduction goals (solar has been integrated into the Project design). The same can be applied to the risk on the supply of fossil fuel based energy for the Project's equipment and transport. A shift towards electric drive technologies and electric mobility will help mitigate the impact of this.
	▪ Application of green infrastructure strategies to mitigate the impacts related to more intense rainfall / storm events (https://www.epa.gov/arc-x/strategies-climate-change-adaptation)
	  ▪ Use of bioretention, which is an adapted landscape feature that provides onsite storage and infiltration of collected stormwater runoff.
	  ▪ Use of a Blue Roof to hold precipitation after a storm event and discharge it at a controlled rate
	  ▪ Use of Permeable pavement to allow runoff to flow through and be temporarily stored prior to discharge
	  ▪ Use Underground storage systems to detain runoff in underground receptacles
	▪ Water utility protection mitigations that can be implemented include:
	  ▪ Conduct sea-level rise and storm surge modelling - Modelling sea-level rise and storm surge dynamics will better inform the placement and protection of critical infrastructure.
	  ▪ Flood proofing, which involves elevating critical equipment or placing it within waterproof containers or foundation systems.
	  ▪ Building water storage infrastructure thus increasing climate resilience for seasonal or extended periods of drought / low water supply
	  ▪ Diversify options for water supply and expand current sources
	  ▪ Diversifying sources helps to reduce the risk that water supply will fall below water demand. Examples of diversified source water portfolios include using a varying mix of surface water and
			No use of outlawed or banned GHG compounds or Ozone depleting substances		

Issue	Mitigation/Management Measure	Responsibility for Implementation	Completion Indicator	Frequency of Monitoring	Cost
	groundwater, employing desalination when the need arises and establishing water trading with other utilities in times of water shortages or service disruption. ▪ Finance and facilitate systems to recycle water (which the Project has already considered in the design)				
Impacts on the Noise Environment (including vibration) (*Section 9.2.3*)	▪ The Project trucks will be regularly maintained as per the manufacturers' and mechanics' recommendations. ▪ The power backup generator will be located away from sensitive receptors as much as possible. ▪ The power backup generator will be fitted with silencers based on available best technology. ▪ All Project drivers will be required to observe applicable traffic rules and regulations as per the national laws.	Project Proponent	No recorded noise-related incidents or grievances to surrounding land users Occupational noise monitoring records within the Premises Noise emissions at respective receptors not exceeding the maximum permitted limits	Monthly	Internal operations costs
Impacts on Water Resources (*Section 9.2.4*)	▪ Regularly maintain the drainage system as required. ▪ Monitor and report on water utilisation and recycle wastewater as appropriate using available technology. ▪ Any effluent discharge to the environment to meet the requirements of the effluent discharge permit.	Project Proponent	No recorded water (quality, quantity or stormwater flow) -related incidents or grievances to surrounding land users Visual audits/spot checks Good housekeeping at the Project site Well drained Project site	Monthly	Internal maintenance costs

Issue	Mitigation/Management Measure	Responsibility for Implementation	Completion Indicator	Frequency of Monitoring	Cost
Wastes and Effluents (*Section 9.2.5*)	▪ A Waste Management Plan (WMP) will be produced for the operations phase ▪ Operations vehicles and equipment will be serviced off site at designated and approved servicing locations. ▪ The use, storage, transport and disposal of hazardous materials used for the Project will be carried out in accordance with all applicable Kenyan regulations, and Material Safety Data Sheets (MSDS). As Kenya does not have a specific hazardous waste facility, any hazardous wastes to be disposed of should be documented beforehand, treated as per any requirements of the MSDS sheets, and disposed of in consultation with the County Authorities and via NEMA approved waste handlers. ▪ In line with the requirements of the Waste Management Regulations, any generated hazardous waste should be transported and managed by NEMA permitted hazardous waste handlers. ▪ Any waste batteries and/or broken or discarded solar panels, should be recycled through an applicable e-waste recycler, and handled through an appropriate NEMA waste contractor, certified to handle such wastes. ▪ Any waste effluent discharged to the natural drainage system will need to conform to the permit conditions for such waste effluent. ▪ Waste volumes produced, waste volumes recycled, and the quality of effluent relative to permit conditions, must be monitored and reported as part of the facility ongoing HSE programme.	Project Proponent	An effective operations phase WMP in place No recorded grievances related to inappropriate waste management at the Project Site Records of audits/visual inspection	Monthly	Internal operations costs
Impacts on Employment, Procurement and the Economy (*Section 9.2.6*)	▪ The Project will prioritise the recruitment of workers (unskilled, semi-skilled) from the local communities around CIP where available in accordance with CSKL Local Content Policy. ▪ The Project will develop a fair and transparent employment and procurement policy and processes that prevent any form of nepotism and favouritism. . ▪ TCSKL will develop a recruitment plan and work with local stakeholders to carry out the recruitment. ▪ Advertisements on the employment and procurement opportunities during the operations phase will be placed at the Chief's Office notice board. In the event that the position cannot be filled from within the Project Area, it will be advertised further county-wide and then nationally.	Project Proponent Maintenance Contractor	Employment records	Preparation of Human Resources guiding documents (including recruitment guidelines) prior to construction	Internal costs

Issue	Mitigation/Management Measure	Responsibility for Implementation	Completion Indicator	Frequency of Monitoring	Cost
	▪ No recruitment will take place at the entrance gates of the facility			Employment records checked monthly	
Traffic Impacts (*Section 9.2.7*)	▪ Develop and implement a "Driving Policy" which should prohibit use of phones while driving ▪ The Project drivers will undergo the necessary driver training course and defensive driving ▪ Develop and implement an operations Phase Traffic Management Plan for the Project. ▪ Regularly maintain Project vehicles and equipment as per the manufacturers' recommendations.	Project Proponent and customers Maintenance Contractor	Incident records Records of complaints Traffic Management Plan	Quarterly	Internal costs
Labour and Working Conditions (Including Occupational Health and Safety) (*Section 9.2.8*)	▪ The Project will develop and implement an operations phase Occupational Health and Safety Management System in line with good industry practice. This system should include consideration of hazard identification, risk assessment and control, use of Personal Protection Equipment (PPE), incident investigation and reporting, reporting, training of workers on OHS risks and tracking of near misses, incidents etc. The management system should also include emergency response plans that tie into existing emergency response plans at CIP. Roles and responsibilities should be clearly defined. ▪ The Project will develop a Human Resources Policy to guide labour recruitment and management. ▪ All workers will have contracts which clearly state the terms and conditions of their employment and their legal rights. Contracts will be verbally explained to all workers where this is necessary to ensure that workers understand their rights. Contracts must be in place prior to workers commencing work. ▪ Mitigation measures related to workers' rights and human rights violations are the same as presented in the construction phase management plan. ▪ All workers (including those of contractors and subcontractors) should, as part of their induction, receive training on health and safety guidelines (including awareness-raising of disease vectors) and should receive updated training routinely, as well as when undertaking new tasks, such as working at heights or working in confined spaces.	Project Proponent and customers	Employment records and other key performance indicators (KPIs) for worker rights A record of workers' grievances Induction documentation for all workers to include necessary items Major Hazard Installation certification for the bulk storage of ammonia will be attained. Annual DOSH and fire safety audits will be conducted by appropriately registered	Monthly	Internal costs

Issue	Mitigation/Management Measure	Responsibility for Implementation	Completion Indicator	Frequency of Monitoring	Cost
	▪ Daily toolbox talks will be held with the Project workers to discuss the health and safety risks associated with the tasks at hand. ▪ A 'fitness for work' programme should be established to ensure that all employees are physically able to undertake their work without impact to their health; ▪ An occupational health and safety monitoring and surveillance programme should be established; ▪ Specific OHS training programmes should be provided for workers assigned to tasks associated with particular H&S risks; ▪ The provision and enforcement of use of appropriate Personal Protective Equipment (PPE) based on task based hazard analysis; ▪ Visual warning signs should be put in place, including those for the electrical and mechanical equipment safety warnings, and chemical hazard warnings; ▪ Working hours should be regulated in accordance with national legislation and international guidelines. ▪ Annual DOSH and fire safety audits will be conducted by appropriately registered and independent consultants. ▪ Major Hazard Installation certification for the bulk storage of ammonia.		and independent consultants		
Community Health, Safety and security Risks *(Section 9.2.8)*	**Management System** ▪ The Project should update and implement a Community Health, Safety and Security Management System in line with good industry practice, including the requirements of the IFC Performance Standard 4. **Employee Management** ▪ The Worker Code of Conduct to be developed for the construction phase should be updated for Project employees in the operations phase. ▪ The development and implementation of vector borne disease policies and information documents for all workers directly related to the project. ▪ The information document will address factual health issues as well as behaviour change issues around the transmission of vector borne and communicable diseases e.g. malaria	CSKL and customers	Update and implementation of a Community Health, Safety and Security Management System Development of a Workers' code of conduct Inclusion of community requirements in any new Health and Safety Plans.	Monthly	Internal costs

Issue	Mitigation/Management Measure	Responsibility for Implementation	Completion Indicator	Frequency of Monitoring	Cost
	▪ Health awareness training will be provided to all employees. This will include knowledge and awareness around how communicable diseases are transmitted, diseases to be aware of, their symptoms and the benefits of early treatment. Health awareness training should be provided as part of workers induction. Training will be done in line with the policies developed as discussed in the point above. ▪ Ensure sufficient health services are available to meet the day to day needs of Project personnel without impacting on access to health care for communities. First aid training should be provided to Project personnel. ▪ Implement and disseminate information on the Grievance Mechanism. The grievance mechanism will provide a clear process for informing stakeholders of the process for reporting complaints about security personnel and addressing any such complaints in a timely manner. **Plans to develop / update** ▪ Develop a Security Management Plan for the operational phase ▪ Update the Emergency Prevention, Preparedness and Response Plans and associated procedures. In collaboration with the local and regional Government and local emergency providers and local health care facilities,		A record of community incidents, emergency events and responses. Records of inductions such as health awareness trainings Records of community grievances An updated Security Management Plan and associated procedures is in place An updated Emergency Prevention, Preparedness and Response Plans and associated procedures are in place		
Supply Chain Risks (*Section 4.8*)	▪ CSRL will require all customers to have valid certifications for their respective sectors where applicable and licensed/permitted by the relevant government authorities. ▪ For every customer, CSRL will conduct a due diligence such as through completion of a “Know Your Customer” (KYC) form in which all the relevant certifications and licenses/permits will be checked. ▪ All the goods received at the facility will be scanned to ascertain their contents and barcoded for the duration of the storage at the facility.	CSKL’s Logistics Manager in liaison with the Commercial Heads for the various sectors.	All received and stored goods compliant with applicable standards (both local and international)	Monthly	Internal costs
Risks associated with handling and	▪ There will be dedicated chambers/rooms for the storage of pharmaceuticals at -25^{0}C.	CSKL’s Commercial Head	Appropriate handling and storage of pharmaceutical products	Monthly	Internal costs

Issue	Mitigation/Management Measure	Responsibility for Implementation	Completion Indicator	Frequency of Monitoring	Cost
storage of health products/ pharmaceuticals (*Sections 4.7.2 and 4.7.3*)	▪ There will be blast freezing rooms capable of reducing the product temperature by - 18°C in a 24-hour period on average and chilled rooms capable of reducing warm product to chilled temperatures (above 0 °C) which will be used where needed. ▪ The goods will be stored in stacked racks within pallets. ▪ A computerised Warehouse Management System which will include scanning and barcoding of all goods which will enable complete live tracking of each pallet into and out of the facility and avoidance of the risk of mixing different products. ▪ Temperature-controlled loading bays will be used to avoid temperature fluctuations during loading and offloading. ▪ The handling and storage of pharmaceuticals will be organised to meet the requirements of relevant international requirements such as WHO's GDP, GSP/GDP and GWP. ▪ Where needed, specific detailed plans or procedures will be prepared for efficient management of pharmaceutical products.	for pharmaceuticals	Maintenance of quality standards for pharmaceutical products		
Risks associated with food handling and storage (*Sections 4.7.2 and 4.7.3*)	▪ There will be dedicated chambers/rooms for the storage of various foods and food products at the required temperatures. ▪ There will be blast freezing rooms capable of reducing the product temperature by - 18°C in a 24-hour period on average and chilled rooms capable of reducing warm product to chilled temperatures (above 0 °C) which will be used where needed. ▪ The goods will be stored in stacked racks within pallets. ▪ A computerised Warehouse Management System which will include scanning and barcoding of all goods will enable complete live tracking of each pallet into and out of the facility and avoidance of the risk of mixing different products. ▪ Temperature-controlled loading bays will be used to avoid temperature fluctuations during loading and offloading. ▪ The handling and storage of foods and food products will be organised to meet the requirements of relevant international requirements such as FSSC 22000, SQF, HACCP, BRCGS/BRC and ISO 9001. ▪ Where needed, specific detailed plans or procedures will be prepared for efficient management of various foods and food products.	CSKL's Commercial Heads for the various food sectors (agriculture, meat, poultry, seafood, food manufacturing and supermarket/ QSR chains	Appropriate handling and storage of various foods and food products Maintenance of quality standards for the various food and food products	Monthly	Internal costs

Issue	Mitigation/Management Measure	Responsibility for Implementation	Completion Indicator	Frequency of Monitoring	Cost
All Project Phases					
Accidental Leaks and Spills (*Section 9.3.1*)	**General Leaks and Spills Management** ▪ All Project equipment and machinery will be properly maintained as per the manufacturer's recommendations. In particular, the status of fuel and oil tanks will be checked. ▪ At the start of every work day, Project vehicles and equipment will be checked for spills and leakages. ▪ Project equipment and machinery will be serviced off site. ▪ Fuel, oil and used oil storage areas will be contained in bunds of 110 percent capacity of the stored material. Fuels will be stored in above-ground storage tanks. ▪ Spill containment and clean up kits will be available onsite and clean-up from any leakage or spill will be appropriately contained and disposed of. **Specific Management Measures for Use of Ammonia as a Refrigerant** ▪ Maintenance work at ammonia refrigeration systems requiring welding, soldering or cutting must be performed with extreme caution: existing oil mists can lower the explosion limit of ammonia/air mixtures. Ammonia systems should; therefore, be purged with air or a non-flammable gas prior to starting the welding work in order to remove residual ammonia. ▪ Early leakage detection through installation of an automatic and specific chemical detection system depending on available technology as well as smell detection by the Project workers. In particular, this will require training of all the operations phase Project workers on early detection of ammonia smell. ▪ Conduct regular maintenance of both the refrigeration system and the leakage detection technology. ▪ Prepare an emergency response plan for implementation in case of major leakages or explosion. ▪ Major hazard Installation certification for bulk storage of ammonia.	Project Proponent Maintenance Contractor	An appropriate Spill Management Plan Maintenance Schedule Maintenance records Records of accidental leaks/ spillages	Monthly	Internal costs

10.4 Topic Specific Management Plans

The following Sections present the specific management plans foreseen for construction and operations, based on the outcomes of the impact assessment. Table 10-2 presents a summary of the topic specific management plans that will be prepared for the Project by the different directly involved parties. Please note that this is in addition to the SEP which has been prepared during the ESIA process (**Appendix C**).

Table 10-2 Summary of Topic Specific Management Plans

CSKL Policies/Plans for Construction Phase	Contractor Management Plans and Procedures for Construction Phase	CSKL Operational Management Plans and Procedures
▪ Supplier Code of Conduct ▪ Local Content Policy ▪ Contractor General HSES requirements	Contractor's Construction Environmental Management Plan (CEMP) including the following (to a minimum): ▪ Air Quality Management Plan ▪ Noise Management Plan ▪ COVID-19 Management Plan ▪ Emergency Response Procedure ▪ Spill Response Procedure ▪ OHS Plan ▪ Waste Management Plan ▪ Water Management Plan ▪ Traffic Management Plan ▪ Workforce Management Plan/ Human Resource Policy Manual	▪ CSKL Corporate E&S Policies ▪ CSKL Environmental and Social Management System ▪ OHS Management System ▪ Waste Management Plan ▪ Traffic Management Plan ▪ GHG Management Plan

Outlined below is a summary of the contents of the key management plans. It is important to note that all the topic specific management plans.

10.4.1 Waste Management Plan

The Waste Management Plan (WMP) will be developed to manage solid and liquid wastes and to avoid any discharges into the soil or water for both the construction and operation phases. It will establish procedures for the storage, collection and disposal of waste, including liquid and solid waste, as well as hazardous and non-hazardous waste.

The WMP will provide for the following:

- Compliance with the Environmental Management and Coordination (Waste Management) Regulations of 2006;
- Compliance with the National Solid Waste Management Strategy, 2015;
- Compliance with the National Environment Policy, 2014;
- Outline of waste characteristics and sufficient capacity for managing different waste streams and waste quantities; and
- The WMP will be developed following CSKL's Policies and will consider IFC PS 3.

Furthermore, it will contribute to ensuring that the capacity and the nature of waste collection and treatment systems are in line with the wastes to be managed.

The overall objective is to minimise impact of waste generated during the construction and operational phases through the following:

- minimise the amount of waste that is generated;
- maximise the amount of waste that is recovered for recycling – including segregation of recyclable wastes at source;

- ensure any hazardous wastes (e.g. used oils) are securely stored and transferred to appropriate facilities;
- avoid dust impacts from handling of construction wastes;
- ensure all wastes are properly contained, labelled and disposed of in accordance with local regulations; and
- ensure waste is disposed of in accordance with the waste management hierarchy.

10.4.2 Emergency Response Plan

The Emergency Response Plan (ERP) will assemble and describe in one document the site-specific actions and procedures to be taken in emergency situations occurring during construction and operation phases.

The objective of the ERP is to be prepared to respond to process upset, accidental, and emergency situations in a manner appropriate to the operation risks and to prevent their potential negative consequences. The ERP will clearly make a distinction between all the project phases, since the actions to be undertaken will be different during the construction, operation and decommissioning phases.

The content of the ERP can be summarized as follows:

- Kenyan legal provisions on civil emergencies;
- The identification of the potential hazards (i.e. natural disasters, civil disturbances, fire or explosions, malfunctioning of the devices during the processes, pressure issues, etc.) related with the Project and its construction and operation and the possible impact to the environment and health;
- Identification of the governmental authorities, the media and other relevant stakeholders to be notified and description of the procedures for communicating with them;
- The necessary measures to limit human and environmental consequences associated with Project related accidents; co-operation between the Contractor, local and central authorities, as well as the local community;
- Safety technical measures to be described and appropriate measures to protect the public safety or property from potential hazards;
- Preliminary description of the organization structure, and explain interactions with Project and operation procedures;
- Preliminary identification of the system and procedures for providing personnel refuge, evacuation, rescue, medical treatment and repatriation; and
- Preliminary description of training activities and the arrangement for training response teams and for testing emergency systems and procedures.

Finally, the Plan shall include provisions for the training of all workers on the emergency response procedures and will include procedures related to communication to stakeholders and community improvement opportunities.

10.4.3 Water Management Plan

The Water Management Plan will have the following objectives:

- Monitor water use: The Plan will set procedures for estimating water used by the Project, identifying activities that use this resource, and will document water use reporting needs.
- Minimize water use: The Plan will provide a series of measures to be considered for minimising the use of water;

- Document water sources; and
- Record all communications with Water Authorities.

The Water Management Plan will be developed following CSKL's policies and will consider all the relevant IFC PSs.

Finally, the Plan will include provisions for the training of all workers on how to use water efficiently.

10.4.4 Traffic Management Plan

A Traffic Management Plan (TMP) will be developed to manage traffic attributed to the Project, minimise traffic disruption and road user delay and provide for the on-going safety of road users, including pedestrians and cyclists. All of the traffic related impacts described previously can be mitigated very effectively by the implementation of standard best practices in terms of environmental controls and management practices during construction. These measures will be detailed in the TMP, which will describe in detail the measures that the Contractor and Project Proponent will implement during the construction and operation phases of the Project, respectively.

The key issues that will be addressed by the TMP in terms of mitigation measures will include:

- Access to construction areas;
- Routing of construction traffic;
- Prevention of road user delay;
- Temporary traffic control and management;
- Reducing the probability of traffic accidents and improving safety for road users and others;
- Preventing and remedying road degradation;
- Road crossings; and
- Parking facilities.

The Contractor shall regularly update their TMP as their construction methods are developed and vehicle movement requirements are identified in detail. The Contractor will consult with the principal representative of any communities that will suffer a significant increase in traffic in order to develop awareness of the mitigation measures within the TMP.

A TMP is important both in ensuring the safety of construction personnel and local communities. The TMP is intended to be a 'live' document and its traffic management principles will form the basis for subsequent detailed construction traffic management arrangements between the appointed Contractor and the road authorities.

The TMP will include the following minimum requirements:

- Levels of development related to traffic that will use this road network;
- Identification of key sensitivities along proposed access routes;
- Measures to provide for the on-going safety of road users, including pedestrians and cyclists;
- Project driver training requirements with respect to road safety and environment;
- Project Schedule;
- Roles and responsibilities for implementation of the TMP;
- Measures to prohibit "off-route" driving;
- Speed limits and methods of enforcement;
- Means to inform the community of traffic risks;

- Vehicle equipment;
- Vehicle maintenance and refuelling locations;
- Inspection, auditing and reporting; and
- Driver competency.

10.4.5 Health and Safety Management Plan

The Health and Safety (H&S) Management Plan will be a tool that will provide a framework for the following:

- Planning for Health and Safety;
- Accident and Incident Investigation; and
- Health and Safety Auditing.

The H&S Management Plan will be developed following all the relevant IFC PSs. The H&S Management Plan will include, at a minimum, the following elements:

- CSKL's HSE Policy.
- H&S Organisation: detailed organisation chart and description of roles and responsibilities associated with managing H&S. The organization proposed in the Plan will consider the competency of the proposed professionals and will provide mechanisms to ensure co-operation and communication between the H&S management team members.
- H&S Standards, including site safety inductions; hazards identification and risk assessment, including task analysis and construction hazards; H&S targets, and a procedure for safety performance evaluation and review; emergency procedures; toolbox meeting procedure; site visit registers; and MSDS sheet register.
- Accidents and Incidents, including: definitions; reporting and registering procedures; root-cause analysis.
- H&S Auditing, including the following: auditing plan; setting audit objectives and measuring H&S performance; site safety inspection checklists and first-aid equipment checklist.

The Plan will include provisions for the training of all workers on H&S and will include procedures related to communication to stakeholders and community improvement opportunities.

10.4.6 Supplier Code of Conduct

The Supplier Code of Conduct will set out the CSKL's expectations of worker behaviour (also applicable to contractors), consistent with the national labour laws and international good practice standards. Specifically, the Workers Code of Conduct will be explicit on the following:

- The scope of the Workers Code of Conduct;
- A requirement by all the Project employees to comply with all the Contractor's rules and regulations;
- Prohibited and restricted activities at the work place like drug abuse;
- Respect at the work place including respect for other Project workers as well as the local community members;
- Protection of Project property;
- Professionalism;
    - Working hours,
    - Personal appearance,

- Leave policy,
- Absenteeism and tardiness,
- Conflict of Interest,
- Pronouncement on giving and receiving gifts,
- Confidentiality, and
- Communication.

- Contractor's pronouncement on all forms of harassment;
- Grievance management; and
- Discipline of workers who bleach the requirements of the Workers' Code of Conduct.

10.5 Roles and Responsibilities

10.5.1 Contractual Obligation

In order to ensure that this ESMMP and/or derivatives thereof are enforced and implemented, these documents must be given legal standing. This shall be achieved through incorporating the ESMMP and/or derivative documents as an addendum to the contract documents for the Contractor and sub-contractors (if any) and specifying that the requirements of this ESMMP and/or derivative documents apply and must be met. This will ensure that the obligations are clearly communicated to Contractors.

10.5.2 Responsibilities and Duties

10.5.2.1 The Project Proponent (CSKL)

The Project Proponent has overall responsibility for ensuring that the construction and development of the Project is undertaken in an environmentally sound and responsible manner, and in particular, reflects the requirements and specifications of the ESMMP and recommendations from the relevant authorities.

The responsibilities of the Project Proponent will include:

- Appoint or designate a suitably qualified Project Manager to manage the implementation of the proposed Project;
- Appoint the Project Contractor;
- Establish and maintain regular and proactive communications with the designated/appointed Project Manager (PM) and Environmental Compliance Officer (ECO); and
- Ensure that the ESMMP is reviewed and updated as necessary.

Reporting Structure

The Project Proponent will liaise with and/or take instruction from the following:

- Government/regulatory authorities such as NEMA; and
- General Public.

10.5.2.2 Project Proponent's Project Manager (PM)

The primary role of the PM is to ensure that the Contractor and Project Proponent's staff complies with the environmental specifications in the ESMMP. The PM shall further:

- Oversee the general compliance of the Contractor with the ESMMP and other pertinent site specifications; and

- Liaise with the Contractor and ECO on environmental matters, as well as any pertinent engineering matters where these may have environmental consequences.

In addition, the PM shall:

- Designate or appoint a suitably qualified Environmental Manager (EM) that will manage all environmental aspects on behalf of the PM and the Project Proponent;
- Review and approve Method Statements produced by the Contractor in connection with the ESMMP;
- Assume overall responsibility for the effective implementation and administration of the ESMMP;
- Be familiar with the contents of the ESMMP, and his/her role and responsibilities as defined therein;
- Ensure that the ESMMP is included in the Contractor's contract;
- Communicate to the Contractor, verbally and in writing, the advice of the ECO and the contents of the ECO reports;
- In conjunction with the Construction Supervisor; undertake regular inspections of the Contractor's site as well as the installation works in order to check for compliance with the ESMMP in terms of the specifications outlined therein. Inspections shall take place at least once a week and copies of the monitoring checklist contained in the file;
- Review and approve drawings produced by the Contractor or professional team in connection with, for example, the construction site layout, access/haul roads, etc.;
- Issue site instructions giving effect to the ECO requirements where necessary;
- Keep a register of all complaints and incidents (spills, injuries, legal transgressions, etc.) and other documentation related to the ESMMP;
- Report to the ECO any problems (or complaints) which cannot first be resolved in co-operation with the Contractor(s);
- Implement recommendations of possible audits;
- Implement Temporary Work Stoppages as advised by the ECO, where serious environmental infringements and non-compliances have occurred;
- Facilitate proactive communication between all role-players in the interests of effective environmental management; and
- Ensure that construction staff is trained in accordance with requirements of the ESMMP.

Reporting Structure

The PM will report to the Project Proponent (CSKL). Weekly meetings between the contractor and Project Proponent, and monthly reporting will be required.

10.5.2.3 Project Proponent's Environmental Control Officer (ECO)/ Environmental Health and Safety (EHS) Officer

Through the PM, the Project Proponent will appoint an ECO/EHS Officer to monitor and oversee implementation of the ESMMP for the proposed construction works. The ECO/ EHS Officer is given authority to ensure that the ESMMP is fully implemented and that appropriate actions are undertaken to address any discrepancies and non-compliances.

The role of the ECO/EHS Officer shall be to:

- Act as site 'custodian' for the implementation, integration and maintenance of the ESMMP in accordance with the contractual requirements;
- Ensure successful implementation of the ESMMP; and
- Ensure that the Contractor, his employees and/or sub-contractors receive the appropriate environmental awareness training prior to commencing activities.

The responsibilities of the ECO/EHS Officer will be to:

- Liaise with the PM on the level of compliance with the ESMMP achieved by the Contractor on a regular basis for the duration of the contract;
- Advise the PM on the interpretation and enforcement of the Environmental Specifications (ES), including evaluation of non-compliances;
- Supply environmental information as and when required;
- Review and approve Method Statements produced by the Contractor, in conjunction with the PM;
- Demarcate particularly sensitive areas (including all No-Go areas) and to pass instructions through the PM concerning works in these areas;
- Monitor any basic physical changes to the environment as a consequence of the construction works according to an audit schedule;
- Attend regular site meetings and Project steering committee meetings;
- Undertake regular monthly audits of the construction works and to generate monthly audit reports. These reports are to be forwarded to the PM who will communicate the results and conclusions with the Project Proponent;
- Communicate frequently and openly with the Contractor and the PM to ensure effective, proactive environmental management, with the overall objective of preventing or reducing negative environmental impacts and/or enhancing positive environmental impacts;
- Advise the PM on remedial actions for the protection of the environment in the event of any accidents or emergencies during construction, and to advise on appropriate clean-up activities;
- Review complaints received and make instructions as necessary; and
- Identify and make recommendations to minor amendments to the ESMMP as and when appropriate.

Reporting Structure

The ECO will report to the PM, who in turn will report to the Project Proponent.

10.5.2.4 Contractor

The Contractor will implement the development. The Contractor will be contractually required to undertake their activities in an environmentally responsible manner, as described in the ESMMP.

The role of the Contractor shall be to:

- Ensure that the environmental specifications of this document (including any revisions, additions or amendments) are effectively implemented. This includes the on-site implementation of steps to mitigate environmental impacts;
- Preserve the natural environment by limiting any destructive actions on site;
- Ensure that suitable records are kept and that the appropriate documentation is available to the PM;

- Take into consideration the legal rights of the individual Landowners, Communities and Project Proponent's staff;
- Ensure quality in all work done, technical and environmental;
- Underwrite the Project Proponent's Environmental Policy at all times, and
- Ensure that all sub-contractors and other workers appointed by the Contractor are complying with and implementing the ESMMP during the duration of their specific contracts.

The responsibilities of the Contractor will be to:

- Discuss implementation of and compliance with this document with staff at routine site meetings;
- Designate, appoint and/or assign tasks to personnel who will be responsible for managing all or parts of the ESMMP. The Contractor must appoint or designate a Safety, Health, Environment and Quality Officer (SHEQO) to monitor daily implementation of the ESMMP on the Contractor's behalf as a minimum;
- Monitor environmental performance and conformance with the specifications contained in this document during site inspections;
- Report progress towards implementation of and non-conformances with this document at site meetings with the PM;
- Advise the PM of any incidents or emergencies on site, together with a record of action taken;
- Report and record all accidents and incidents resulting in injury or death; and
- Resolve problems and claims arising from damage immediately to ensure a smooth flow of operations.

Reporting Structure

The Contractor will report to the PM and ECO, as and when required.

10.5.2.5 Sub-contractors

The Contractor may from time to time appoint sub-contractors.

The role of the sub-contractors shall be to:

- Perform certain services and/or provide certain products on behalf of the Contractor. The sub-contractors will be contractually required to undertake their activities in an environmentally responsible manner, as described in the ESMMP; and
- Ensure environmental awareness among employees so that they are fully aware of and understand the Environmental Specifications and the need for them.

The responsibilities of the sub-contractor will be to:

- Be familiar with the contents of the ESMMP, and his/her roles and responsibilities as defined therein;
- Comply with the Environmental Specifications in the ESMMP and associated instructions issued by the Contractor to ensure compliance;
- Notify the Contractor verbally and in writing, immediately in the event of any accidental infringements of the Environmental Specifications and ensure appropriate remedial action is taken; and
- Notify the Contractor, verbally and in writing at least 10 working days in advance of any activity he/she has reason to believe may have significant adverse environmental impacts, so that mitigation measures may be implemented timeously.

Reporting Structure

Sub-contractors will report to and receive instructions from the Contractor.

10.5.3 Monitoring

10.5.3.1 Undertaking Audits

The PM shall appoint a qualified and experienced ECO/EHS Officer to ensure implementation of and adherence to the ESMMP.

The ECO/EHS Officer shall conduct audits to ensure that the system for implementation of the ESMMP is operating effectively. The audit shall check that a procedure is in place to ensure that:

- The ESMMP and the Method Statements being used are the up to date versions.
- Variations to the ESMMP, Method Statements and non-compliances and corrective actions are documented.
- Emergency procedures are in place and effectively communicated to personnel.

The audit programme shall consist of the following at a minimum:

- First audit no later than 1 month after construction commences;
- Thereafter audits at monthly intervals, at a minimum;
- An audit one week prior to practical completion of the Project is granted; and
- A post construction audit within 1 week after the Contractor has moved off site.

The contractor and the Project Proponent will also be required to meet at least weekly to discuss and check progress of implementing the ESMMP.

10.5.3.2 Compliance with the ESMMP

The Contractor and/or his agents are deemed not to have complied with the ESMMP and remedial action if:

- There is evidence of contravention of the ESMMP clauses within the boundaries of the site or extensions;
- Environmental damage ensues due to negligence; and
- The Contractor fails to comply with corrective or other instructions issued by the PM, within a time period specified by the PM.

11. CONCLUSIONS AND RECOMMENDATIONS

11.1 Conclusions

The ESIA process undertaken has identified and assessed a range of potential impacts to the physical, biological and socio-economic environments. Where impacts have been identified, mitigation measures to manage those impacts have been provided in this ESIA Project Report. All the identified impacts are either of moderate or minor significance, even prior to the application of the appropriate mitigation measures. With proper implementation of the recommended mitigation/management measures, the significance of the residual impacts will be reduced to a minor or negligible level which are mainly attributed to the fact that:

- The Project Site is located within the Colfax Industrial Park, which is zoned light industrial/commercial, and has already been developed. The Project site applicable to this Project is cleared, devoid of vegetation (and hence already heavily modified), and has been levelled.
- The Project Site is located within a planned industrial area and will be surrounded by other light industries, and thus fits within the land use planning of the Project Area.
- The site has no biodiversity value, or value for agriculture, already being heavily modified.
- The closest sensitive receptors, include the settlement of Chongongwe village, which is located approx. 1 km to the southwest of the site, upwind of the prevailing wind direction, which makes impacts from dust and other potential air pollutants, as well as noise, unlikely.
- Discussion with CIP management revealed that in 2009, a process of compensation and relocation of 12 households (squatters) with a population of 150 persons residing within the broader CIP site was undertaken. After consultation, nine of the 12 families accepted to relocate voluntarily, however three families with about 20 members did not accept the relocation offer. These families still need to be relocated, but are not on the plots of land earmarked for this development.
- Stakeholders consulted as part of the EIA process were supportive of the Project (but requested that GHG's be minimised, that wastes and traffic be properly managed, and that the local communities surrounding the development be given first opportunity for any employment).
- There is a large local labour pool (of mainly unskilled workers) in the Project vicinity.

11.2 Recommendations

ERM is confident that every effort will be made by the Propjet Proponent and Contractor to accommodate the mitigation measures recommended during the ESIA process to the extent that is practically possible, without compromising the economic viability of the Project or having a lasting impact on the environment. The implementation of the mitigation measures detailed in *Chapters 9* and listed in the ESMMP (*Chapter 10*) will provide a basis for ensuring that the potential positive and negative impacts associated with the establishment of the development are enhanced and mitigated, respectively, to a level which is deemed adequate for the development to proceed.

In summary, based on the findings of this assessment, ERM finds no reason why the Project, should not be authorised, contingent on the mitigations and monitoring for potential environmental and socio-economic impacts as outlined in the ESMMP.

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NEMA, 2015: The National Solid Waste Management Plan.

APPENDIX A ERM NEMA REGISTRIATION AND PRACTICING LICENSE FOR 2021

APPENDIX B LAND TITLE DEEDS OF THE PROJECT SITE (PLOT NO. 35 AND 36)

APPENDIX C STAKEHOLDER ENGAGEMENT PLAN (SEP)

APPENDIX D BACKGROUND INFORMATION DOCUMENT USED IN STAKEHOLDER ENGAGEMENTS

APPENDIX E DETAILED MINUTES OF STAKEHOLDER ENGAGEMENT MEETINGS CONDUCTED DURING THE ESIA PROCESS, MEETING PHOTOS AND ATTENDANCE REGISTERS/ STAKEHOLDER COMMENTS

APPENDIX F SQUATTERS AGREEMENT (PROVIDED BY COLFAX INDUSTRIAL PARK)

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