PREPARATION OF GENDER SENSITIVE AND CLIMATE-RESILIENT CITY WASH MASTERPLANS, MANAGEMENT MODALITIES AND TECHNICAL FEASIBILITY STUDIES FOR QARDHO AND SOUTH GALKAYO, SOMALIA

CONTRACT NO. 43428762

ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT (ESIA) FOR CONSTRUCTION AND INSTALLATION OF WATER TREATMENT PLANT WITH TOTAL PRODUCTION 2000M3/DAY LOCATED WITHIN KULEEJKA AND XINGOOD AREAS OF QARDHO - SOMALIA

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SUBMITTED BY

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LIST OF ABBREVIATIONS

AfDB		African Development Bank
BOD	-	Biological Oxygen Demand
C-ESMP		Construction – Environment and Social Management Plan
CoC		Code of Conduct
DEWATS		Decentralized Wastewater Treatment Systems.
ESIRT		Environment and Social Incidence Reporting Toolkit
EHS		Environmental Health and Safety
ESIA		Environmental and Social Impact Assessment
ESMP		Environment and Social Management Plan
FAO SWALIM		Food and Agriculture Organization of the United Nations (FAO) Somalia Water and Land Information Management
FGS		Federal Government of Somalia
GRC		Grievance Redress Committee
GM		Grievance Mechanism
GRM		Grievance Redress Mechanism
GPN		Good Practice Note
IDP		Internally Displaced Person
IFC		International Finance Cooperation
ILO		International Labour Organization
LACP		Land Acquisition and Compensation Plan
H&S		Health and Safety
MHM		Menstrual Hygiene Management
MOWDAFA		Ministry of Women Development and Family Affairs.
NGO		Non-Governmental Organization
NOx		Sulphur Oxides
SOx		Nitrogen Oxides
SEA		Sexual Exploitation and Abuse
SEP		Stakeholder Engagement Plan
SH		Sexual Harassment
SPD		Standard Procurement Documents
OHS		Occupational, Health and Safety
Pm		Particulate Matter
PPE		Personal Protective Equipment
PWDA		Puntland Water Development Agency
TMP		Traffic Management Plan
ToR		Terms of Reference
UNICEF		United Nations Children Fund
WB		World Bank
WBG		World Bank Group
WWTP		Waste Water Treatment Plant

GLOSSARY

Water Treatment Technology

- **Adsorption:** A process where contaminants (like dissolved impurities) stick to the surface of a filter material. The plant is described as "adsorption-based".
- **Aeration:** The process of mixing air with water, often used as a step to remove dissolved gases or to help precipitate minerals like iron.
- **Backwash:** The process of reversing the flow of water back through a filter (like an Ultra-Filtration module) to clean it by removing trapped particles.
- **Brackish Water:** Water that has a higher salinity (salt content) than freshwater but less than seawater. The plant is designed to treat this type of water.
- **Brine (Reject Brine):** A highly concentrated saltwater solution that is the waste byproduct of a desalination process like Nano-Filtration or Reverse Osmosis.
- **Chlorination:** The use of chlorine to disinfect water by killing pathogens like bacteria and viruses.
- **Coagulation / Flocculation:** A chemical process where substances (like alum) are added to water to make tiny suspended particles clump together into larger, heavier particles (floc) that can be more easily removed by settling or filtration.
- **Commissioning:** The final phase of the project where equipment is tested and processes are fine-tuned to ensure the plant operates as designed before it's handed over.
- **Disinfection:** The final stage of water treatment focused on killing or inactivating disease-causing microorganisms (pathogens). Methods mentioned include chlorination and UV light.
- **Granular Activated Carbon (GAC):** A filter material with a highly porous surface that is effective at removing organic compounds, odors, and certain chemicals through **adsorption**.
- **Nano-Filtration (NF):** An advanced membrane filtration process that operates at a lower pressure than Reverse Osmosis. It is used to remove dissolved salts (for softening or reducing salinity) and other contaminants from **brackish water**.
- **Non-Revenue Water (NRW):** Water that is pumped and treated but is lost before it reaches the customer, typically due to leaks in the pipe network or theft.
- **Pathogens:** Disease-causing microorganisms, such as bacteria, viruses, and protozoa, that are targeted for removal during disinfection.
- **Potable Water:** Water that is safe for human consumption (drinking water).
- **Pre-treatment:** The initial stage of water treatment designed to remove larger solids and particles (like sand and silt) to protect more sensitive downstream equipment, such as **Ultra-Filtration** or **Nano-Filtration** membranes.
- **Raw Water:** The untreated water taken from the source (in this case, boreholes) that flows into the treatment plant.
- **Residual Chlorine:** The low, safe level of chlorine that remains in the water after disinfection, which provides ongoing protection against re-contamination as the water moves through the distribution pipes.
- **Reverse Osmosis (RO):** A high-pressure membrane filtration technology that removes a very high percentage of dissolved salts, used for full desalination. It was considered but deemed too energy-intensive for this project.
- **Salinity:** The concentration of dissolved salts in water. The groundwater in Qardho is noted as having high salinity, making treatment necessary.
- **Sand Filtration:** A common water treatment method where water flows through a bed of sand, which physically traps suspended solids and particles.
- **Sludge:** The semi-solid waste and settled particles that are removed during water treatment processes like sedimentation or filtration.

- **Turbidity:** The cloudiness or haziness of water caused by suspended solid particles. High turbidity is a key water quality issue to be treated.
- **Ultra-Filtration (UF):** A membrane filtration process that removes suspended solids, bacteria, and viruses, used in this project as a **pre-treatment** step before Nano-Filtration.
- **UV Disinfection:** A treatment method that uses ultraviolet (UV) light to kill or inactivate pathogens by damaging their DNA.

Environment & Geology

- **Aquifer:** An underground layer of rock or sediment that holds and transmits groundwater.
- **Bimodal (Rainfall):** A climate pattern with two distinct rainy seasons per year (Gu' and Deyr).
- **Ephemeral (Stream/Wadi):** A river or stream bed (like Wadi Qardho) that is usually dry and flows only temporarily after rainfall.
- **Groundwater:** Water held underground in aquifers; the primary source of **raw water** for this project.
- **Karstic Aquifer:** An aquifer formed in soluble rock (like limestone) characterized by fractures and channels that hold and transport water.
- **Over-abstraction:** Withdrawing groundwater from an **aquifer** at a rate faster than it can be replenished, leading to declining water levels.
- **Wadi / Toga:** A dry riverbed or valley that temporarily carries water after rain.

Social & Assessment

- **Bankable (Project):** A project that is technically, financially, and socially sound, making it suitable for receiving funding.
- **Mitigation:** Actions taken to prevent, reduce, or compensate for the negative impacts of a project
- **Receptor:** Any entity (person, community, animal, or environmental feature like a wadi or aquifer) that could be affected by the project's impacts
- **Stakeholder:** Any individual, group, or organization that has an interest in or may be affected by the project.

E. EXECUTIVE SUMMARY

E.1 Project Information

The Federal Government of Somalia has applied for funding from the African Water Facility, to help improve adaptability to climate change and create society resilience through the Building Resilience to Climate Change through WASH in Qardho, Project. The Project will support immediate key interventions, undertake preparation studies for bankable projects, which will include identification of site-specific climate risks and vulnerabilities, determination of appropriate climate adaptation and mitigation measures including strengthening watershed and WASH management in the targeted towns of Qardho and its respective peripheral urban poor settlements and villages.

UNICEF Somalia appointed Tertiary Consulting Engineers Ltd in Joint venture with Vital Care Consultancy Limited to carry out the study in six months and come up with bankable investment projects to address the water and sanitation inadequacy in the city of Qardho.

The consultant is required to perform a water and supply infrastructure and management baseline assessment. In this regard, the team shall be required to analyze current and stormwater drainage conditions and modality/functionality of the water supply service providers. The Environment and Social Impact Assessment discussed in this report discusses Water Treatment and Supply Short-Term Interventions proposed for Qardho, Somalia
The project- Construction and installation of two new water treatment plant -Adsorption based- 2000m3/day at the selected borehole sites is set to cost $1,000,000 and $127,000 for construction/establishment of one water quality monitoring laboratory including the supply of equipment's and machines, totaling to $ 1,127,000 for the cost of construction.
The cost of the projects ESMP implementation is estimated at 41,000

E.1.1 Project site description

The proposed water treatment plant site is situated in Kuleejka at geographic coordinates latitude 9.5053253 and longitude 49.0920145. The area lies at an elevation of approximately 10 meters above ground level, which is favorable for gravity-driven water distribution. The design incorporates a reinforced concrete (RC) storage tank with a capacity of 400 m^3, ensuring reliable storage for treated water.
The second water treatment plant site is situated in Xingood at geographic coordinates latitude 9.4977197 and longitude 49.0825547. The area lies at an elevation of approximately 10 meters above ground level, which is favorable for gravity-driven water distribution. The design incorporates a reinforced concrete (RC) storage tank with a capacity of 400 m^3, ensuring reliable storage for treated water.
The project sites are accessible via existing local roads, facilitating the transport of construction materials and future operational access. The surrounding terrain is generally flat with slight undulations, offering stable ground conditions suitable for civil works and tank installation. Land use in the vicinity is predominantly community-oriented, with small-scale settlements and agricultural activities forming the main socio-economic backdrop.

The locations have been selected for their proximity to the beneficiary population, availability of land, and suitability for accommodating both the treatment plant and associated infrastructure. The positioning of the tank at elevated ground enhances the potential for gravity-fed distribution, thereby reducing the need for extensive pumping and ensuring energy efficiency.

The plots slotted for water treatment plant and water monitoring quality laboratory projects were secured through a formal process involving the Local Government based on the standard operating procedures of the project financier and nature of the WASH project.

Table E.1 Project location

	Name	Latitude	Longitude	Tank size(m3)	Materials	Elevation (m)	condition
1	Kuleejka	9.5053253	49.0920145	400	RC	10	working
2	Xingood	9.4977197	49.0825547	400	RC	10	working

E.2 Water Treatment Interventions

The scope of works for Qardho water treatment plant and monitoring laboratory is as detailed in the **Table E.1** below.

Table E.2 Summary of the Proposed Water treatment works in Kuleejka and Xingood- Qardho

No.	**Position/Description**	**Unit**	**Quantity**
1	Construction and installation of new water treatment plant - Adsorption based- 2000m3/day at the selected borehole sites and also identified location where several boreholes can connect to the treatment sites.	No.	2
2	Construction/establishment of water quality monitoring laboratory including the supply of equipment's and machines	No.	1

E.3 Objectives of ESIA

Reference is made to the African Development Bank adopted an Integrated Safeguards System (ISS) (also referred to as the "2013 ISS", Amended in 2023) Environmental and Social Operational Safeguard 1: Assessment and Management of Environmental and Social Risk and Impact. The aim of this overarching Operational Safeguard (OS), together with the other Operational Safeguards (Oss) that complement it, is to mainstream environmental and social (E&S) considerations, including those related to climate change vulnerability. into Bank operations and thereby contribute to sustainable development in the continent. Therefore, the Objectives of the ESIA was done as per the AfDB and Somalia E&S laws.

E.4 Legal and Policy Regulatory Instruments

Federal Government of Somalia

The ESIA made reference to below listed Legal and Policy provisions in Federal Government of Somalia

Table E.3 Legal and policy regulatory Instruments relevant to ESIA

Instrument	Year	Brief Summary	Relevance to OS1 (E&S Assessment)
Constitution of Somalia	2012	Establishes the right to a clean and healthy environment (Art. 25) and obligates the state to protect ecosystems, biodiversity, and natural resources (Art. 45).	Provides the **constitutional mandate** for ESIA and environmental governance; forms the legal foundation for safeguards.
National Environmental Policy (NEP)	2017	Aims to promote sustainable development through integrated environmental management, pollution control, and natural resource conservation.	Sets **policy principles** for environmental sustainability and supports project-level ESIA requirements.
Climate Change Policy	2020	Provides national direction for climate mitigation and adaptation, focusing on resilience in water, agriculture, health, and energy sectors.	Aligns projects with **climate risk screening** and adaptation planning under OS1.
National Adaptation Plan (NAP) Framework	Ongoing (post-2020)	Framework for implementing Somalia's adaptation priorities under the Paris Agreement.	Guides **climate resilience measures** in project design, as required in OS1.
Climate Change Education Policy	Draft (2020s)	Promotes awareness, curricula, and public engagement on climate change.	Supports **capacity building and stakeholder engagement** in safeguards process.
Environmental Management Bill	Draft (2020s)	Establishes environmental governance institutions, introduces a formal ESIA process, and defines penalties for non-compliance.	Core **legal framework for ESIA** compliance in Bank-financed projects.
Environmental Protection and Management Act	2024	Recently enacted, consolidates environmental protection measures, formalizes ESIA and environmental audits, and strengthens enforcement.	Provides a **binding legal basis** for ESIA, audits, and mitigation—directly mirrors OS1 requirements.
National Environmental Policy (updated)	2020 Draft	Updated NEP includes climate change, disaster risk reduction, and sustainable resource management.	Strengthens **policy consistency** with ISS safeguards.
ESIA and Audit	Draft/under	Provide detailed procedures for	Directly regulates **screening,**

Regulations	adoption	conducting ESIAs, audits, public participation, and disclosure.	**assessment, and monitoring** (core of OS1).
Water Resources Law	2014 (Drafts earlier)	Governs sustainable use, allocation, and protection of water resources; prohibits pollution of water sources.	Relevant to **wastewater projects**—sets standards for water quality, pollution prevention.
Forests and Wildlife Law	Draft/various	Provides for protection of forests, wildlife conservation, and biodiversity management.	Links to OS3 but triggered by OS1 screening; requires biodiversity considerations in ESIA.
Fisheries Law	1985 (revised drafts)	Regulates exploitation of marine resources, prohibits discharge of pollutants into coastal waters.	Ensures **marine and coastal protection** for projects affecting water bodies, aligned with OS1 + OS3.

Institutional Framework for bodies with direct relevance to the project

Table E.4 Institutional Framework – Qardho Decentralized Wastewater Treatment Project

Institution / Body	Type	Roles / Influence on Project
Ministry of Environment & Climate Change (MoECC) – Federal Government of Somalia	Public (Federal)	National policy oversight on environment, climate change, and safeguards; custodian of the Environmental Protection and Management Act (2024) and ESIA regulations. Provides approvals and guidance for compliance with national laws relevant to AfDB OS1.
Ministry of Water Resources (MoWR) – Federal Government	Public (Federal)	Oversees water policy, water quality standards, groundwater/water source protection, and wastewater regulation at national level.
Ministry of Health (MoH) – Federal Government	Public (Federal)	Ensures wastewater systems in the public institutions meet health and sanitation standards; oversees infection prevention and control.
Ministry of Education, Culture and Higher Education (MoE)	Public (Federal)	Ensures WASH infrastructure in schools meets education policy and hygiene standards; responsible for integration of hygiene awareness/education.
Puntland Ministry of Environment, Agriculture and Climate Change (MoEACC)	Public (State – Puntland)	Direct state-level regulator in Qardho. Issues ESIA permits, monitors compliance, and enforces environmental management law. Primary institution for environmental approvals.
Puntland Ministry of Water and Energy (MoWE)	Public (State – Puntland)	Regulates water use, water supply, and sanitation infrastructure within Puntland. Supports technical oversight and alignment with water resources law.
Puntland Ministry of Health (MoH-P)	Public (State – Puntland)	Supervises sanitation, hygiene, and health safety within health institutions in Qardho; ensures

		medical wastewater is safely treated.
Qardho District Local Government / Municipality	Public (Local)	Provides permits for construction and land use; engages communities in planning; supports O&M (operation and maintenance) through municipal service frameworks.
African Development Bank (AfDB)	Development Financier	Project financier; requires compliance with 2013 ISS (and updated 2023 ISS). Provides technical guidance, safeguard screening, and monitoring during project lifecycle.
UNICEF Somalia / Puntland Office	Development Partner	Supports WASH programming in schools and health centres; often co-funds or provides technical support in sanitation projects.
FAO Somalia	Development Partner	Implements water/land resource management projects; relevant for climate-resilient design and technical assistance on water reuse.
NGOs (e.g., ADRA, CARE, NRC, local NGOs)	Non-state / Implementing partners	Active in Qardho on WASH-in-Schools and health facility sanitation; potential implementers for community engagement, training, and system operation.
Private Contractors / Consultants	Private	Design and construct decentralized wastewater treatment systems (DEWATS); provide O&M training; ensure technical compliance with ESMP/ESIA.
Community Groups (Hospital Boards, School Management Committees, Parent Associations, Water User Committees)	Civil Society	Key stakeholders for project acceptance, monitoring, and sustainability; ensure local ownership, report grievances, and participate in decision-making.
Academic/Research Institutions (e.g., Puntland State University)	Academia	Provide technical expertise, research on wastewater management, training programs for students and professionals.

The African Development Bank Integrated Safeguards System (ISS)and Somali E&S Laws

This ESIA follows the following Somali E&S laws and the AfDB ISS standards

Somalia Environmental laws relevant to the project

1. Provisional Constitution of the Federal Republic of Somalia (2012)

- **Article 25**: Every person has the right to an environment that is not harmful to their health and well-being.
- **Article 45**: The Federal Government must give priority to the protection, conservation, and preservation of the environment against anything that may cause harm to natural biodiversity, ecosystems, or the environment.

2. Environmental Management Bill (Draft, 2020s)

- Somalia has developed a draft **Environmental Management Bill**, with support from UNEP/UNDP. It establishes an **environmental and social impact assessment (ESIA) system**, requiring screening, assessment, mitigation, and monitoring before project approval.

3. National Environmental Policy (NEP) – 2015 (updated 2020 in draft form)

- Sets out principles for sustainable development, including pollution control, ecosystem protection, and ESIA requirements. It recognizes the need for environmental safeguards in development projects (water, energy, infrastructure).

4. Somali Environmental and Social Impact Assessment (ESIA) Regulations (under development)

- Somalia (through the Ministry of Environment & Climate Change) has been developing **ESIA regulations** that:
    - Define categories of projects requiring ESIA.
    - Outline consultation and disclosure obligations.
    - Specify review and approval roles.

5. Puntland Environmental Management & Climate Change Laws

The state-level laws and regulations that apply:

- Puntland has its own **Environmental Management Law (2016)**, which requires:
    - Environmental impact assessments for major projects.
    - Pollution control and waste management standards.
    - Institutional oversight through the Puntland Ministry of Environment, Agriculture and Climate Change.

AfDB ISS standards

In 2013, the African Development Bank adopted an Integrated Safeguards System (ISS) also referred to as the "2013 ISS", Revised 2023), which established the Bank Group's commitment to sustainable development, consolidating and building on the Environment (2004) and Involuntary Resettlement (2003) safeguard1 policies, as well as cross-cutting policies and strategies on gender (Gender Strategy for 2021–2025, "Investing in Africa's Women to Accelerate Inclusive Growth"), and then the Civil Society Engagement Framework (2012).

The updated ISS improves the consistency of the Bank's approach to key thematic issues, Environmental and Social Assessment (ESA), and stakeholder engagement activities by adopting 10nr Oss. The 10nr E&S OSs set out the requirements for Borrowers relating to the identification and assessment of E&S risks and impacts associated with operations supported by the Bank.

The ten E&S OSs establish the standards that Borrowers shall meet, as appropriate, in projects, activities, and initiatives supported through Bank financing throughout the life cycle of operations, the OS are summarized below.

Table E.5 ISS Operational safeguards

No	OS	Provisions
1	Operational Safeguard 1	Assessment and Management of Environmental and Social Risk and Impact
2	Operational Safeguard 2	Labour and Working Conditions
3	Environmental and Social Operational Safeguard 3	Resources Efficiency and Pollution Prevention and Management
4	Environmental and Social Operational Safeguard 5	Community Health, Safety and Security
7	Environmental and Social Operational Safeguard 8:	Vulnerable Groups
10	Environmental and Social Operational Safeguard 5	Stakeholder Engagement and Information Disclosure

E.5 Baseline Setup

In Qardho Town the water supply is managed by Hodman Water Management (HODMAN Co.) which is a private water company established in 2006 with the mandate to provide safe drinking water and expand water services to all of Qardho town. The Water Utility provide water to the population and nomads living in the surroundings of the town and their cattle through operating, managing and connecting the water supply system to the customers of the city of Qardho and distributing the waters to the nomads. HODMAN Co. operates under a 10-year lease agreement of the State-owned infrastructure under the close supervision of PWDA. HODMAN is responsible for operation and maintenances for water supply systems.

The baseline of the water supply situation in Kuleejka and Xingood, Somalia, suggests it's a typical rural area struggling with severe water scarcity and a lack of formal infrastructure. The area depends on a mix of limited and often unsafe water sources, mirroring the broader challenges facing Somalia's arid regions.

The primary water sources in Kuleejka and Xingood is groundwater from boreholes and shallow wells, supplemented by seasonal rainwater catchments called berkads. Due to the scarcity of safe alternatives, residents often resort to using unprotected and contaminated water sources. This widespread use of unsafe water leads to a high incidence of waterborne diseases such as cholera. The absence of a public water system also means that communities are heavily reliant on expensive private water trucking, which makes clean water unaffordable for many of the most vulnerable families.

Biophysical Baseline – Water Treatment Sites in Kuleejka and Xingood

Climate and Meteorology

Qardho is situated in a semi-arid to arid climate zone, characterized by very hot and dry conditions. Average daily high temperatures range from 30°C to 38°C, frequently exceeding 40°C during the peak of the dry season. The region experiences a bimodal and erratic rainfall pattern, with the Gu rains from April to June and the Deyr rains from October to December, contributing to a low annual average of 150 to 300 mm. Prolonged dry spells, known as the Jilaal and Hagaa seasons, dominate the year and often result in severe water scarcity.

Geology and Soils

Geologically, Qardho is situated within the Dharoor Valley basin, which is composed of limestone, sandstone, and alluvial deposits. The soils in the area are predominantly sandy-loamy and calcareous, characterized by low fertility and high infiltration rates, making them prone to erosion when vegetation is cleared. Consequently, groundwater is the primary water source for the region, with boreholes tapping into shallow to medium-depth aquifers found at depths of 50 to 150 meters.

Hydrology and Water Resources

Permanent surface water is absent in the area, although ephemeral seasonal streams, known as toggas, flow briefly after heavy rainfall and can cause flash floods. As a result, the region relies almost exclusively on groundwater, which is accessed through boreholes and shallow wells. The quality of this groundwater varies, with known concerns regarding high levels of salinity, hardness, and fluoride. The water table is generally deep and declining, primarily due to over-abstraction, a problem that intensifies during prolonged dry periods.

Flora and Vegetation

The vegetation cover is characteristic of a semi-arid environment, consisting of sparse Acacia-Commiphora bushland interspersed with shrubs, thorny trees, and grasses in wetter patches. Common species include *Acacia tortilis*, *Commiphora africana*, *Boswellia spp.* (frankincense), and various drought-resistant grasses. This vegetation is generally degraded due to overgrazing, fuelwood collection, and drought stress, though the scattered tree cover provides some soil stability. While there are no formally protected ecological areas at the proposed treatment sites, localized biodiversity loss could occur from clearing and trenching activities.

Fauna

Wildlife in the region is limited to species adapted to semi-arid rangelands, such as small mammals, reptiles, and various birds like the guinea fowl. However, wildlife populations are low due to pressures from urban expansion, competition for grazing, and deforestation. In contrast, livestock dominate the landscape, with camels, goats, sheep, and donkeys being integral to local livelihoods and the economy.

Air Quality and Noise Baseline

The air quality is generally good due to the absence of heavy industry; however, dust levels can be high, particularly during the dry seasons and along unpaved roads. Similarly, the baseline noise level is low to moderate, originating primarily from traffic, marketplace activities, and small generators. Key sensitive receptors to potential noise increases include schools, health centers, and IDP camps located near construction zones.

Water Quality in Kuleejka and Xingood

The groundwater quality in the area presents several challenges. Many boreholes exhibit high salinity and hardness, making the water unpalatable and less suitable for direct human consumption. In addition, elevated fluoride levels have been reported in some sources, posing a health risk of dental and skeletal fluorosis. Bacteriological contamination is also a major concern, particularly in peri-urban areas and IDP camps, where shallow wells are prone to contamination from pathogens like *E. coli* due to poor sanitation. Furthermore, some water sources experience high turbidity during the rainy season because of sediment infiltration.

Existing Water Treatment Interventions

At the household level, water treatment primarily relies on point-of-use methods, such as chlorination tablets distributed during emergency WASH interventions, while boiling is limited by high fuel costs. Institutional support for schools, health centers, and IDP camps includes inconsistent chlorine dosing programs and basic chlorination for trucked water. At the community level, some boreholes have chlorination units, and NGOs have piloted solutions like solar-powered disinfection.

Despite these efforts, significant gaps remain. There is a lack of regular water quality monitoring and an absence of centralized water treatment facilities, with most interventions being reactive and emergency-driven rather than part of a sustainable, long-term system.

Current situation in Kuleejka and Xingood (water Treatment)

Qardho, with an estimated population of over 100,000 including host and IDP communities, faces significant water-related challenges. The primary issue is water scarcity, which forces a heavy reliance on deep boreholes and leads to high pumping costs for fuel and maintenance. Paradoxically, poor drainage infrastructure means seasonal rains often cause flooding, which damages and contaminates these essential water sources.

The town's water situation is further complicated by the overuse of groundwater and quality issues, such as high salinity and other contaminants exceeding safe limits. To address these problems, there is planned support from donors like the AfDB and the African Water Facility

for WASH projects aimed at expanding the water supply, improving sanitation, and strengthening local utility management.

Baseline For a Water Treatment System in Qardho

The proposed water treatment system for Qardho will source its raw water from a mix of deep boreholes and wells, supplemented by harvested rainwater, to meet an estimated daily demand of 1.2-1.5 million liters for its ~100,000 residents. The primary water quality challenges that the system must address are high turbidity, especially during the rainy season, microbial contamination, and potential chemical issues like high salinity, fluoride, or nitrates. The main goal is to treat the water to meet World Health Organization (WHO) drinking water standards, reducing disease risk and ensuring the water is safe and acceptable for consumption.

To achieve this, a multi-stage treatment technology is envisioned, likely involving coarse filtration, sedimentation, and disinfection through chlorination or UV. More advanced and costly methods like reverse osmosis may be considered if salinity is a severe issue. The system will be powered by diesel generators or solar energy and will distribute treated water through a rehabilitated and extended pipeline network to serve the community, including IDP camps. The institutional setup is expected to be a public-private partnership, with a focus on building the capacity of trained operators and establishing regulatory oversight to ensure sustainable management.

E.6 Stakeholder Consultations

A total of 5 key informant interviews and 6 Focused Group Discussions (FGD) were conducted with representatives from the following sectors. Additionally, Public participation forums were held on 3rd September 2025 at Mayor Office Qardho.

Table E.6: Key Informant Interviews

Date	Stakeholder/Office Visited	Key Issues Discussed
12th June 2025	Ministry of Women Development and Family Affairs (MOWDAFA) – Qardho-Social Department	Women's representation in WASH planning, lack of menstrual hygiene services, need for gender mainstreaming in local development plans.
11th June 2025	Qardho Municipality (Mayor's Office & Public Works Dept.)	Infrastructure gaps, urban sanitation planning, challenges in maintaining public toilets.
9th June 2025	Ministry of Water and Environment – Hoodman Water Management Company	Access to clean water, distance to water points, maintenance issues, low women involvement in user committees.
12th June 2025	Ministry of Health – Shabeellee Health Centre	WASH-related health concerns, diarrhea outbreaks, link between sanitation and maternal health.
13th June 2025	Local NGOs (including women's associations)	Gender-based violence risks at water points, lack of sanitary pads, women's limited access to funding.

Table E.7: Focus Group Discussions

Date	Group Composition	Key Themes
12th June 2025	Women from IDP camps (5 participants)	Long distances to water points, lack of safety and privacy at latrines, stigma around menstruation.
11th June 2025	Waste services provider	Poor school sanitation, need for capacity building, establishment of recycling facilities
16 May 2025	Men and male youth (community leaders)	Limited awareness of gender-specific needs in WASH, support for improved community hygiene.
12th June 2025	Mixed group: nurses, CHWs	Importance of inclusive WASH education, role of schools and health centers, capacity-building needs.

Outcomes and Measures from Stakeholder Consultations

1. **Limited access to water (long distances to water points)**
    - **Outcome:** Heavy burden on women/children, reliance on unsafe sources.
    - **Measures:** Construct water points closer to communities and schools; install storage tanks and pipelines to reduce walking distance.
2. **Unsafe and inadequate sanitation (lack of privacy/safety at latrines, poor school sanitation, stigma around menstruation)**
    - **Outcome:** Protection risks, open defecation, school absenteeism for girls, spread of diseases.
    - **Measures:** Build gender-segregated and disability-friendly latrines with lighting and privacy; provide menstrual hygiene facilities and supplies; improve sanitation in schools and health centers.
3. **Low awareness and limited inclusion in WASH (gender-specific needs not considered, stigma, weak capacity)**
    - **Outcome:** Exclusion of women and vulnerable groups, poor hygiene practices, weak facility maintenance.
    - **Measures:** Conduct inclusive WASH education, hygiene promotion campaigns, and menstrual hygiene awareness; ensure women and vulnerable groups participate in decision-making; strengthen capacity of WASH committees, teachers, and health staff.
4. **Poor waste management (need for recycling facilities and hygiene support)**
    - **Outcome:** Solid waste buildup, environmental pollution, increased disease risks.
    - **Measures:** Establish recycling and waste segregation systems; promote composting/reuse; support community hygiene programs led by local champions.

5. **Underutilized institutions (schools and health centers not fully engaged in WASH promotion)**
    - **Outcome:** Lost opportunity for behavior change and sustained hygiene improvement.
    - **Measures:** Equip schools and health centers with adequate WASH facilities; use them as platforms for hygiene education, awareness campaigns, and training.

Outcomes of Public engagement meetings held on 11th and 12th June, 2025 at Shabelee

Table E.8: Public Meeting

Suggestion / Question	Response
Community Members wanted to be informed How do you plan to mitigate the noise and air pollution from construction vehicles and drilling machinery, especially in residential areas, during the initial implementation phase?	Residents were informed that during implementation of the project there is a plan to limit and minimize noise. For air pollution, we will use modern, well-maintained vehicles and water down construction areas to control dust.
Community Members wanted to know if youths in the area will get employment opportunities during project implantation.	Residents were informed that all unskilled labour and some skilled will be sourced from the local community. Youths were encouraged to organize themselves into groups and avail themselves for the job opportunities for consideration.
Community Members wanted to be informed when the Project will commence, and if they should proceed with their plans of digging pit latrines or they should stop now that the new emergency latrines that will come along the project.	Residents were informed that, at this stage, the program is dedicated to conducting feasibility studies. It was conveyed that the project's commencement is contingent upon the securing of funding by the donor. Subsequently, implementation will be initiated based on the most pressing emergency needs of the community. In light of the new emergency latrines planned for the project, residents are advised to suspend their individual plans for digging new pit latrines.

In addition to interviews, visits were made to:

- District Administration Office: Discussed governance and coordination of basic services.
- Water Service providers and Boreholes: Observed operation, tariff practices, and community usage patterns.
- Health Centers and IDP Camps: Inspected hygiene facilities, water availability, and MHM provisions.
- Women's Centers and Safe Spaces: Engaged with service providers supporting GBV survivors and awareness programs.

E.7 Project Positive Impacts

Construction phase positive impacts

- Employment Creation: At construction stage, an estimate 50-80 workers will be deployed per site on temporary employment basis to help in construction and land preparation activities. This will include both skilled and unskilled personnel especially from the local population.
- Income/Revenue to Government: Income to government will be realized in terms of taxes generated during the acquisition of relevant statutory licenses such as Environmental and Social Impact Assessment (ESIA) License, Water Abstraction and Use Permit, Wastewater Discharge / Effluent Disposal Permit, Construction Permit, Laboratory Accreditation / Certification for Water Quality Testing, Public Health and Safety Approval, Occupational Health and Safety Compliance, Land Use / Site Development Permit, Fire Safety and Emergency Preparedness Certification.

  Materials to be used during construction will also be taxable through revenues generated, the government will be capable of financing its responsibility to her citizens.
- Income to Other Businesses: During implementation of the project, there will be need for transporters, suppliers of raw materials and other service providers, who will benefit from the proposed development.

Water treatment plant: Operation phase positive impacts

Environmental Impacts

Reduced groundwater overuse → Efficient treatment allows safe use of surface water or harvested rainwater, easing pressure on boreholes.
Pollution control → Prevents untreated or contaminated water from entering distribution, reducing environmental contamination.
Support for climate resilience → Reliable treated water supply helps communities cope with droughts and seasonal water scarcity.

Public Health Impacts

Safe drinking water → Removal of pathogens, sediments, and chemicals reduces waterborne diseases (cholera, diarrhoea, typhoid).
Improved hygiene → Reliable supply encourages handwashing, sanitation, and food safety.
Lower child mortality and malnutrition → Healthier water reduces illness that contributes to undernutrition in children.

Water Resource & Service Impacts

Consistent supply → Treated water meets quality standards, ensuring reliable access for households, schools, and hospitals.
Better water taste/acceptance → Removal of turbidity and odour increases public trust and willingness to use safe water instead of unsafe alternatives.

Potential for reuse → Treated water enables safe use in agriculture, livestock, or small industries.

Socio-Economic Impacts

Reduced healthcare costs → Fewer disease outbreaks lower household and government spending on treatment.

Job creation → Plant operations employ engineers, technicians, operators, and maintenance workers.

Capacity building → Local staff gain technical training in water quality monitoring and plant management.

Economic productivity → Healthy populations spend less time sick and more time in school, work, or trade.

Urban growth support → A dependable water system attracts investment, supports institutions, and improves quality of life.

E.8 Construction Phase Negative Impacts

A summary of negative Impacts anticipated during construction stage are summarized in the table below.

Table E.9 Construction Stage Negative Impacts and Mitigation Measures

Impact Area	Negative Impact	Ranking	Mitigation Measures
Water Resources	Risk of surface/groundwater contamination from spills, construction runoff, or improper waste disposal	**High**	Bund storage areas, proper containment, designated waste disposal sites
Soil Resources	Excavation and compaction leading to erosion and soil degradation	**Medium**	Controlled excavation, backfilling, soil stabilization, revegetation
Noise & Vibration	Disturbance to nearby communities and institutions	**High**	Limit works to daytime, use silencers, notify stakeholders in advance
Flora	Loss of vegetation during site clearance	**Low**	Minimize clearing, replant disturbed areas, preserve mature trees where possible
Solid & Liquid Waste	Generation of construction debris, packaging, oils, and wastewater	**High**	Waste segregation, recycling, proper disposal in designated facilities
Traffic & Safety	Risk of accidents from increased heavy vehicle movement	**High**	Traffic management plan, signage, speed control, community awareness

E.9 Operation Phase Negative Impacts

Table E.10 Operations Phase Negative Impacts and Mitigation Measures

Impact Area	Negative Impact	Ranking	Mitigation Measures
Water Resources	Risk of contamination from improper handling/discharge of sludge, wastewater, and lab effluents	**High**	Install effluent treatment system, regular water quality monitoring, safe sludge disposal
Soil Resources	Potential contamination from chemical leaks or spills	**Medium**	Secondary containment for chemicals, spill response plan, regular inspections
Air Quality	Odor emissions from treatment processes and possible chemical fumes from laboratory	**Medium**	Odor control systems, safe chemical storage/ventilation, PPE for workers
Noise	Noise from pumps, blowers, and lab equipment	**Low–Medium**	Acoustic insulation, regular maintenance, restrict operations to acceptable noise limits
Solid Waste	Generation of sludge, spent filters, broken glassware, and lab consumables	**High**	Segregation, safe disposal of hazardous lab waste, reuse/recycling where possible
Chemical Handling & Safety	Risks to workers from exposure to chlorine, acids, and reagents	**High**	Safety training, PPE, emergency response systems, proper chemical storage
Public Safety	Unauthorized access to treatment plant or lab posing hazards	**Medium**	Secure fencing, signage, restricted access policies, trained security personnel

E.10 Project Categorization

Under the African Development Bank's Integrated Safeguards System (2023), this project is classified as **Environmental Category 2**, a designation for initiatives likely to cause site-specific, reversible, and readily mitigated impacts. Similarly, Somalia's national legal and policy framework, including the Environmental Protection and Management Act (2024), designates it as a **Medium-Risk Project**, which is the national equivalent of the AfDB's Category 2. This consistent classification is driven by key project features such as the planned wastewater discharge, generation of solid waste, temporary construction disturbances like dust and noise, and localized effects on the biodiversity and ecosystem services of Wadi Qardho, thereby triggering multiple operational safeguards and requiring the preparation of an Environmental and Social Management Plan (ESMP) or a preliminary environmental assessment pending final regulatory screening.

The Water Treatment Plant and Water Quality Monitoring Laboratory Projects in Kuleejka and Xingood falls under Category 2 (Medium Risk) according to both AfDB and Somalia's environmental regulations. The potential adverse impacts are moderate, site-specific, and reversible, and can be effectively mitigated through a well-prepared ESMP covering:

- Water resource protection and quality monitoring
- Safe handling and disposal of chemicals and laboratory wastes
- Occupational health and safety safeguards
- Community engagement and grievance mechanisms

Table E.11 Environmental and Social Management Plan (ESMP) – Kuleejka and Xingood water treatment plant and water quality monitoring laboratory project

Project Phase	Potential Impact	Mitigation Measures	Monitoring / Frequency	Responsibility	Monitoring Budget (USD)
Construction	Dust & Air Pollution	Water sprinkling; cover trucks; maintain equipment	Daily visual checks; weekly dust level logging	Contractor / Supervision Engineer	$2,500 (for project duration)
	Noise & Vibration	Restrict work to daytime; silencers; inform institutions nearby	Weekly noise readings at sensitive locations; log community feedback	Contractor	$600 (for project duration)
	Soil Erosion & Disturbance	Controlled excavation, backfilling, soil stabilization	Weekly visual checks of site stability, especially after rain	Contractor / Local Authority	$500 (for project duration)
	Waste Generation	Segregation, proper disposal, recycling, designated waste sites	Weekly inspection of waste disposal records and site	Contractor / Municipality	$500 (for project duration)
	Traffic & Safety Risks	Traffic management plan, signage, flagmen, PPE use	Daily checks on signage & traffic management compliance	Contractor / Police	(part of H&S budget)
	Occupational Health & Safety	Training, PPE, first aid kits, emergency plan	Daily safety checks; monthly formal safety audits	Contractor / MoEWR	$1,000 (for project duration)
Operation	Water Abstraction Stress	Regulate pumping, install meters, periodic monitoring	Daily logging of abstraction volumes; monthly reporting	Plant Operator / MoEWR	$50 per month
	Water Contamination Risks	Sealed well-heads, sanitary zones, routine water testing	Weekly sanitary inspections; continuous lab test results	Plant Operator / Health Dept.	$80 per month
	Chemical Handling Risks	Provide PPE, safe storage, emergency spill kits	Monthly OHS inspections of chemical storage/handling	Laboratory Manager	$50 per month
	Laboratory Waste Disposal	Segregate waste, incinerate where needed, comply with MoE regulations	Monthly checks of waste logs; quarterly audit of disposal certificates	Laboratory Manager / MoE	$200 per quarter
	Noise from Pumps & Generators	Use soundproofed enclosures; limit night operations	Quarterly noise level checks at the plant boundary	Plant Operator	$100 per year
	Community Conflicts	Stakeholder engagement, grievance redress mechanism	Log grievances as they occur; hold quarterly feedback meetings	Municipality / Community Committee	$400 per quarter

E.11 ESIA Recommendations

Assessment Recommendations:

- The Bid documents prepared for the Project incorporate the Environment, Social Health and Safety Provisions discussed under Chapter 7 of this report (Environment and Social Impact Assessment and Mitigation Measures).
- The contractors through the support of ESHS officer will ensure that all workers sign Code of Conduct (CoC) before site deployment
- The supervising and contractor will undertake training of personnel on Environment, Social, Health and Safety matters tailored to the Project Scope prior to commencement of works
- The contractor will through the ESHS officer apply the provision of Environment and Social Management Toolkit (ESIRT) in management of incidences and accident's during project implementation stage
- The contractor will prepare monthly and quarterly reports on status of implementation of Environment and social compliance measures discussed in this report.
- Contractor will be required to commit to implementing the Environment, Social Health and Safety (ESHS) Provisions by
  (i) Hiring ESHS officers,

  (ii) Developing site specific (C-ESHS) and Sub Plans as listed

  (iii) Implement Provisions of the Plans and Undertake Monthly and Quarterly reporting of ESHS compliance.

1. BACKGROUND INFORMATION

1.1 Project Information

The proposed project is intended for the area of Kuleejka and Xingood areas, located– Qardho, a historical town in Somalia. It is the capital of Karkar region in Puntland State of Somalia an autonomous state in north-eastern Somalia. It serves as the administrative capital of the Qardho District and is an important commercial and cultural hub in the region. The town is located at approximately 237 km South of Bosaso port city.

The distance from the project location to Somalia's Capital City of Mogadishu is approximately 1,153 km and 205 KM from Garowe City the administrative capital of Puntland State. The area 's Global Positioning is at 9.5053253◦N,49.0920145◦E.

The Terms of Reference (ToR) for this project stress the urgent need to develop climate-resilient, scalable, and context-appropriate Construction and installation of new water treatment plant with Total Production 2000m3/Day and construction/establishment of water quality monitoring laboratory including the supply of equipment's and machines at Kuleejka area located within Qardho

To address these gaps, the Federal Government of Somalia—with support from the African Water Facility—is implementing the "Building Resilience to Climate Change through WASH in Qardho" project.

1.2 The Project Location

The project locality lie within the catchment of Wadi Qardho (also known as Togga Qardho), a prominent seasonal river (Qardho river) that flows through the heart of the town. This river, although dry for most of the year, becomes active during the rainy seasons, often carrying flash floods that affect low-lying areas and informal settlements along its banks. The project areas are situated in a broad, shallow natural valley formed by seasonal watercourses.

While the valley may not have a widely documented or officially named separate identity beyond its association with Togga Qardho, "Qardho Valley" is the commonly used local term to describe the natural depression and drainage basin that shapes the town's topography. This valley collects runoff from the surrounding highlands and plateaus, channelling it through seasonal rivers and gullies that feed into Togga Qardho during the rainy season. The location of the town is as presented in the figure below in the Federal Republic of Somali.

The water treatment plant, including the water quality monitoring laboratory, will be located at WGS-84 coordinates 9.5053253, 49.0920145, in Qardho town, Puntland Region."

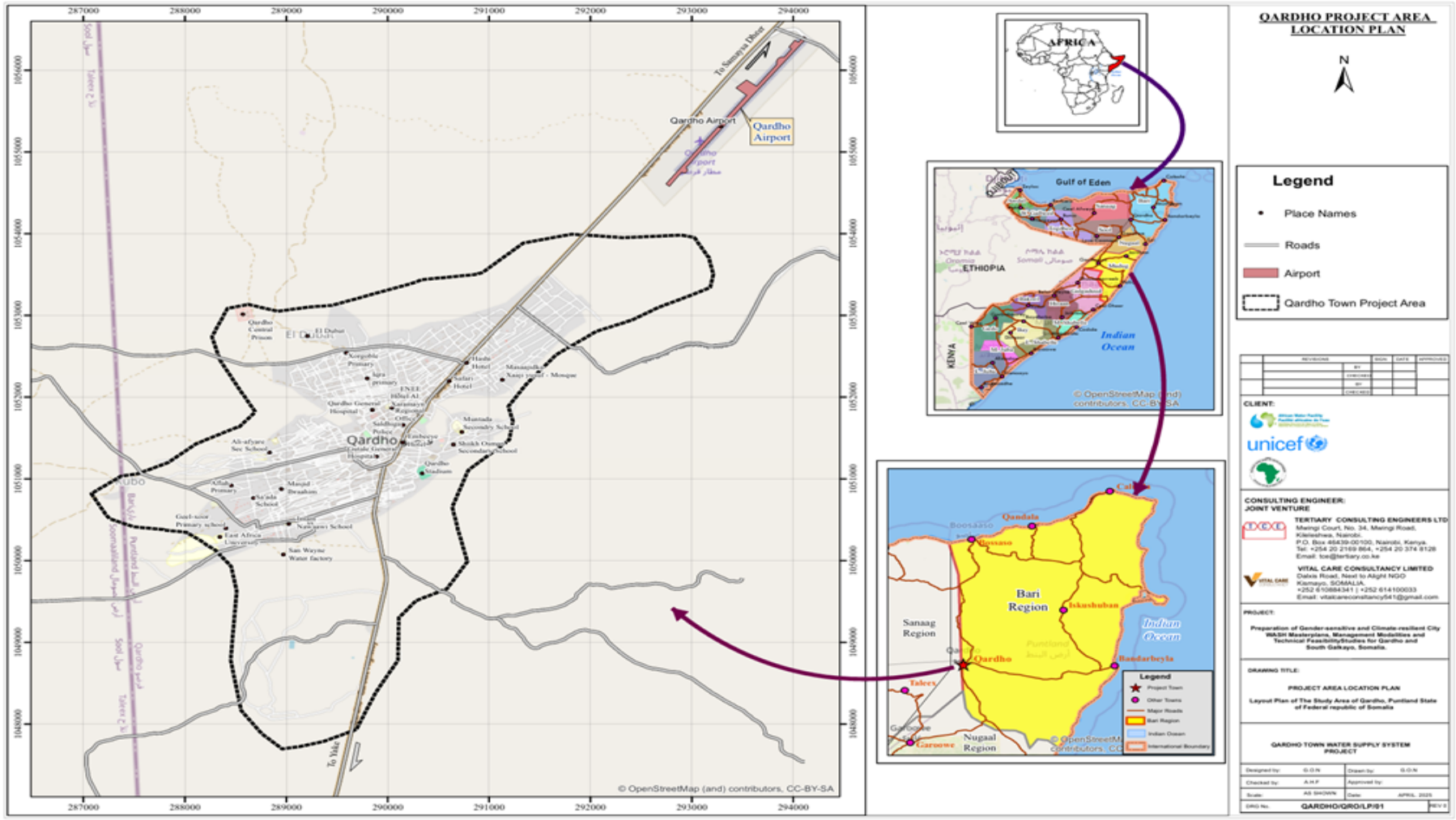

Figure 1.1: Study Area of Qardho Town

The Town of Qardho with the locations of water treatment plant is as presented in the figure below;

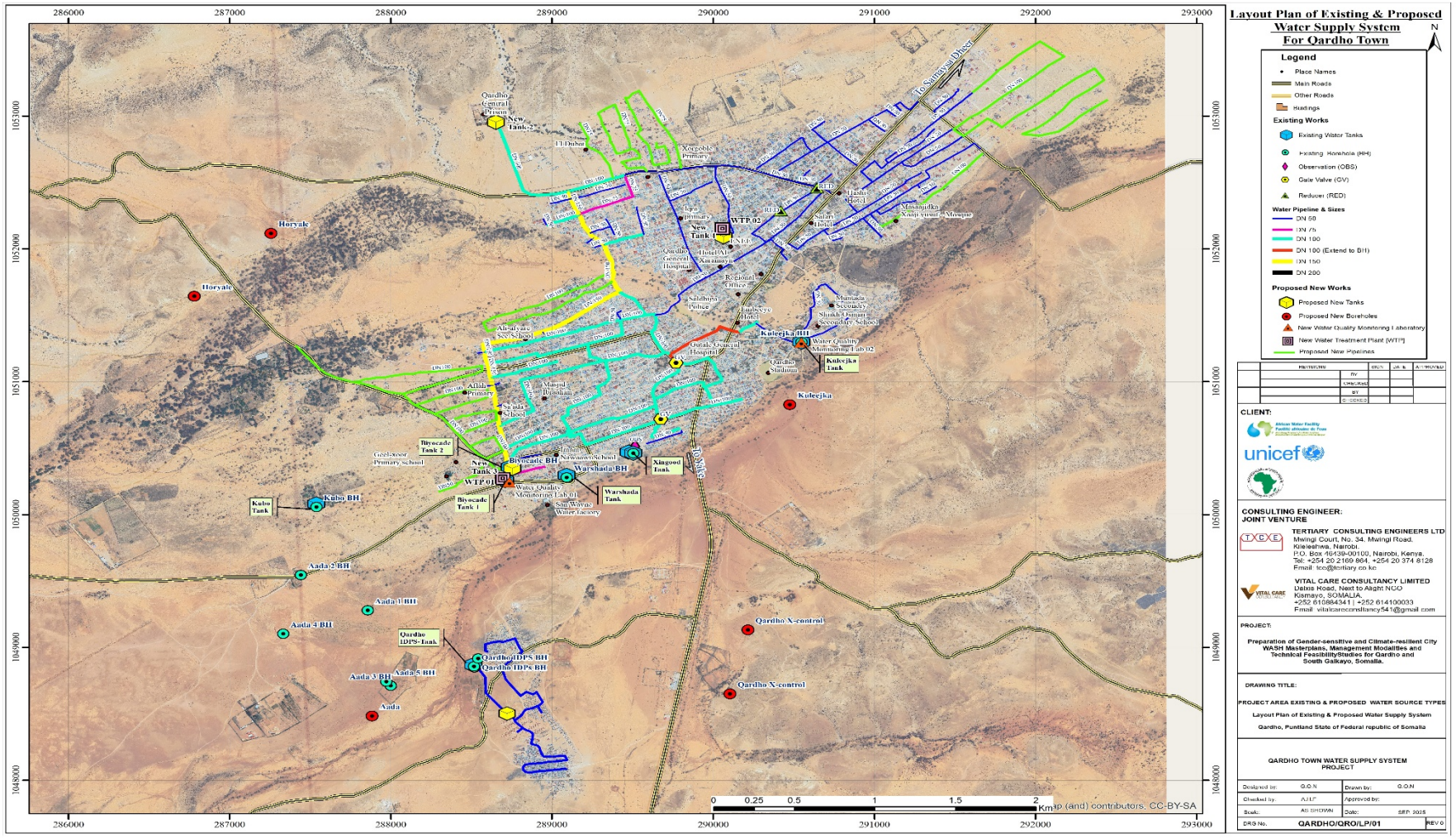

Figure 1.2: Qardho Town - water treatment infrastracture

Source: Google Earth

1.3 Local Administration

Kuleejka and Xingood operates under Qardho, which functions as a district and the capital of the Karkaar region in Puntland, an autonomous federal state of Somalia. The administration of Qardho is shaped by its growing and diverse population. The local council and mayor are responsible for ensuring equitable service delivery and inclusive governance, especially after the introduction of direct elections. Population data (though limited) is central to planning, budgeting, and prioritization of services like water supply, housing, and health. Qardho town, is home to a variety of Somali clans, though it is primarily dominated by clans from the Darod clan family

1.4 Objectives of ESIA

Reference is made to the African Development Bank adopted an Integrated Safeguards System (ISS) (also referred to as the "2013 ISS", Amended in 2023) Environmental and Social Operational Safeguard 1: Assessment and Management of Environmental and Social Risk and Impact. The aim of this overarching Operational Safeguard (OS), together with the other Operational Safeguards (Oss) that complement it, is to mainstream environmental and social (E&S) considerations, including those related to climate change vulnerability. into Bank operations and thereby contribute to sustainable development in the continent. Therefore, the Objectives of the ESIA are aligned to the provisions of OS 1 as summarized below.

- **Screen and categorize the project** according to the significance of its potential environmental and social impacts, in line with the AfDB's Operational Safeguard 1 (OS 1) classification system.
- **Define the scope of assessment (scoping)** to identify key environmental and social issues, areas of influence, and project components requiring detailed study.
- **Establish baseline environmental and social conditions** to provide a factual reference for assessing potential changes and for future monitoring.
- **Identify and assess potential environmental and social impacts** (positive and negative, direct and indirect, cumulative, and transboundary) associated with all project phases—design, construction, operation, and decommissioning.
- **Integrate environmental and social considerations** into the project planning, design, and decision-making processes to enhance sustainability, resilience, and long-term benefits.
- **Develop feasible mitigation and enhancement measures**, and consolidate these into a practical **Environmental and Social Management Plan (ESMP)** with clear roles, responsibilities, timelines, and budget provisions.
- **Ensure compliance with applicable national environmental and social legislation**, as well as AfDB's safeguard requirements
- **Facilitate inclusive stakeholder participation** through effective consultation, information disclosure, and a culturally sensitive, gender-responsive approach.
- **Promote transparency and accountability** by establishing mechanisms for documentation, disclosure, and grievance redress throughout the project cycle.
- **Provide a decision-support framework** for the Government of Somalia, the AfDB, and other stakeholders to ensure environmentally and socially responsible project implementation.

1.5 Assessment Methodology

The assessment was guided by Good International Industry Practice (GIIP) guide on preparation of Environmental and Social Impacts assessments as presented in figure below.

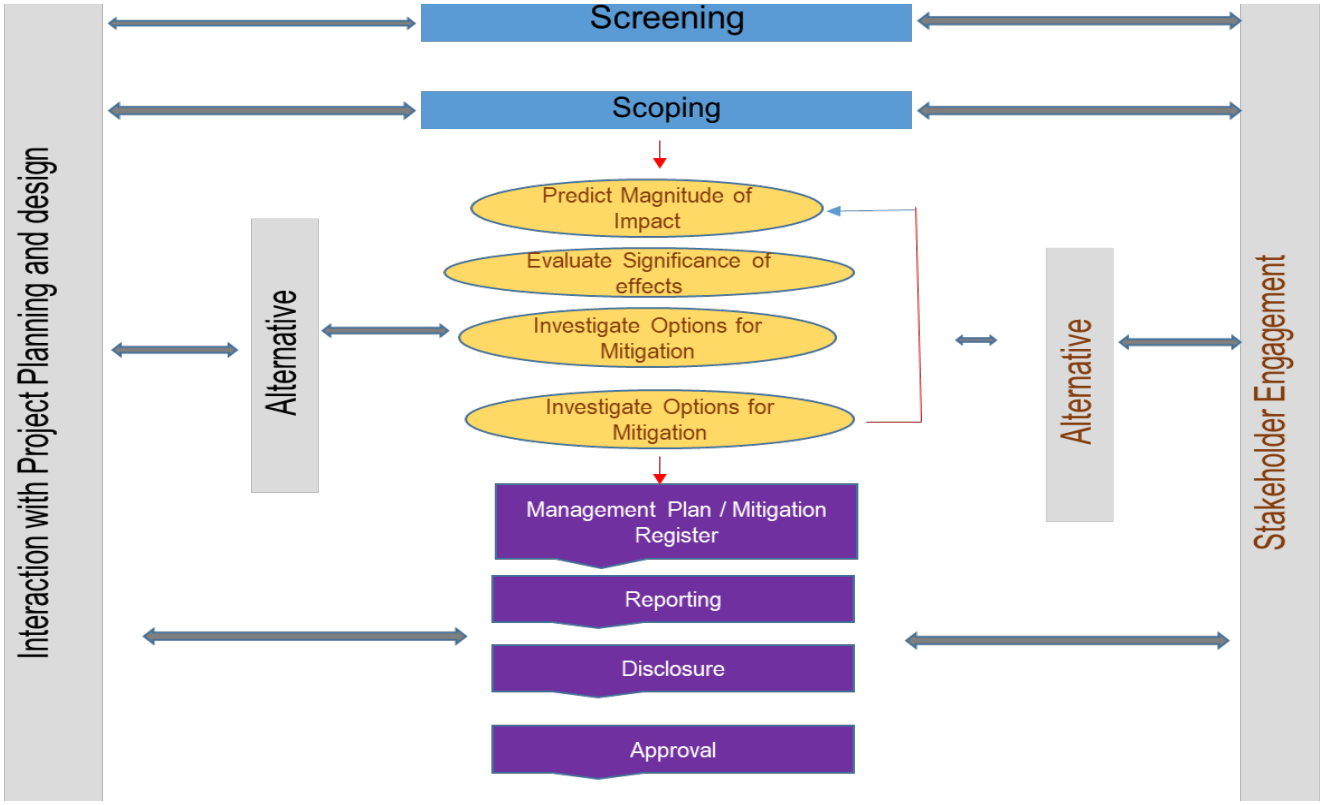

Figure 1.3: Impact Assessment Process

1.5.1 Initial Screening and Baseline Assessment

To provide a context within which the impacts of the Project can be assessed, a team of environmentalists undertook a site visit in the month of June, along the proposed water pipeline alignments using the Project KML files. The purpose of the visit was to identify bio physical and socio-economic data and receptors. The focus was to understand the baseline setup of flora and fauna, water resources, soils, land use and landscape as well as secondary literature review.

1.5.2 Stakeholder Engagement

Stakeholder engagements inform of community meetings, Key Informant Interviews (KII) and Focused Group Discussions (FGD) were conducted during the ESIA process to inform project stakeholders of the proposed project and explain the likely impacts, both positive and negative, during the project life cycle. Stakeholder Identification and analysis was done in close liaison with the local administration with Qardho Town. Detailed Stakeholder Consultation process is presented separately under chapter 5 of this report.

1.5.3 Impact Assessment Methodology

Impact identification and assessment starts with scoping and continues through a structured impact assessment process. The principal steps followed are summarized in **Figure 1.3** above and comprises the below listed steps.

Table 1.1 Steps in Impact assessment

Step 1 -	**Impact prediction –** This step involves identifying and forecasting the potential environmental and social impacts that could result from the proposed Project and its related activities. Environmental resources likely to be impacted may include air, water, soil and biodiversity while social receptors include land use, business disruptions, and vulnerable groups
Step 2 -	**Impact evaluation** -Once potential impacts are identified, they are assessed to determine their overall significance. This evaluation considers, the magnitude of the impacts, the sensitivity and values of the affected environmental or social receptors.
Step 3 -	**Mitigation and enhancement –** Appropriate measures are proposed to address the impacts identified. For negative impacts, mitigation measures are designed to avoid, minimize, reduce or compensate for the adverse effects on the environment and communities. As for positive impacts, enhancements measures are developed to strengthen the beneficial outcomes
Step 4 -	**Residual impact evaluation –** This final step involves reassessing the significance of impacts after applying the proposed mitigation and enhancement measures. It helps in determining residual impacts that would remain even with effective implementation of the measures. This evaluation is essential in analysing the sustainability of the proposed mitigation measures and in making informed decision making including the need for additional safeguards

1.5.4 Impact Evaluation Methodology

Impact evaluation is a structured and detailed assessment process used to determine the significance of the identified impacts in Step 1. This process involves key steps, commencing with the characterization of each potential impact and finalising with an overall significance rating. The process is outlined below.

Characterizing Impact Attribute.

The terminology used to describe impact characteristics is shown in the table below

Table 1.2: Impact characteristics

Characteristic	Definition	Designation
Type	A Descriptor indicating the relationship of the impact to the Project (in terms of cause and effect	Direct, Indirect, Induced
Extent	The 'reach' of the impact (e.g., confined to a small area around the Project Footprint, Projected for several km etc.)	Local, Regional, International
Duration	The time period over which a resource/ receptor is affected	Temporary, Short term, long term Permanent
Scale	The size of the impact (e.g., the size of the area damaged or impacted, the fraction of a resource	No fixed designation, intended to be a numerical value or a qualitative

	that is lost or affected, etc.)	description of intensity
Frequency	A measure of the constancy or periodicity of the impact	No fixed designation, intended to be a numerical value or a qualitative description

2. Impact Type Definitions

The type of impact is further defined as follows in the table below

Table 1.3: Impact Type Definitions

Definition	Designation
Direct	Impacts that result from a direct interaction between the Project and a resource/receptor (e.g., between occupation of a plot of land and the habitats which are affected
Indirect	Impacts that follow on from the direct interactions between the Project and its environment as a result of subsequent interactions within the environment (e.g., viability of a species population resulting from loss of part of a habitat as a result of the Project occupying a plot of land).
Induced	Impacts that result 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).

3. Unplanned Events and Likelihoods

For unplanned events such as accidental spills or equipment failures, an attribute described as likelihood is assessed. This refers to the probability of an event occurring during the Projects lifecycle under normal operating conditions. The likelihood of an unplanned event occurring is designated using a qualitative scale, as described in the table below

Table 1.4: Definition of Likelihood

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.
Induced	Impacts that result 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).
Likely	The event will occur at normal operating conditions (i.e., it is essentially inevitable).

4. Assigning Magnitudes.

Once an impact's characteristics are defined, each impact is assigned a magnitude which is a measure of the severity of the impact on the resource or receptor. Magnitude is a function of a combination of the following impact characteristics:

- Extent
- Duration
- Scale
- Frequency

The magnitude designations themselves are universally consistent, but the descriptions for these designations vary on a resource/receptor-specific basis. The universal magnitude designations are:

- Positive
- Negligible
- Small
- Medium
- Large

In the case of a positive impact, no magnitude designation (aside from 'positive') is assigned. It is considered sufficient for the purpose of the area of influence to indicate that the Project is expected to result in a positive impact, without characterizing the exact degree of positive change likely to occur.
In the case of impacts resulting from unplanned events, the same resource/receptor-specific approach to concluding a magnitude designation is utilized, but the 'likelihood' factor is considered, together with the other impact characteristics, when assigning a magnitude designation.

5. Evaluating Sensitivity, Vulnerability and Importance

Parallel to magnitude, the sensitivity, vulnerability and importance of each affected resource or receptor are assessed. These terms collectively describe how susceptible the receptor/resource is to be impacted. Considerations may include legal protection, government policy, stakeholder views and economic or cultural value.
As in 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
- High

6. Determining Impact Significance

Once the magnitude of impact and sensitivity/vulnerability/importance of resource/receptor are characterized, the significance was assigned for each impact. Impact significance was designated using the matrix shown in the table below.

Table 1.5: Impact Significance

		Sensitivity / Vulnerability / Importance of Resource / Receptor		
Magnitude of Impact		Low	Medium	High
	Negligible	Negligible	Negligible	Negligible
	Small	Negligible	Minor	Moderate
	Medium	Minor	Moderate	Major
	Large	Moderate	Major	Major

The matrix applies universally to all resources/receptors, and all impacts to these resources/receptors, as the resource/receptor-specific considerations were factored into the assignment of magnitude and sensitivity, vulnerability and importance designations that enter into the matrix.

1.5.5 Mitigation and Enhancement Measures

Further, once the significance of an impact was characterized, the next step was to evaluate what mitigation and enhancement measures are warranted. For the purposes of this assessment, the following order or hierarchy was applied for development of mitigation:

- Avoid at Source, Reduce at Source: avoiding or reducing at source through the design of the Project (e.g., avoiding by siting or re-routing activity away from sensitive areas or reducing by restricting the working area or changing the time of the activity).
- Abate on Site: add something to the design to abate the impact (e.g., pollution control equipment, traffic controls, perimeter screening and landscaping).
- Abate at Receptor: if an impact cannot be abated on-site then control measures can be implemented off-site (e.g., noise barriers to reduce noise impact at a nearby residence or fencing to prevent animals straying onto the site).
- Repair or Remedy: some impacts involve unavoidable damage to a resource (e.g., agricultural land and forestry due to creating access, work camps or materials storage areas) and these impacts can be addressed through repair, restoration or reinstatement measures.
- Compensate in Kind, Compensate Through Other Means: where other mitigation approaches are not possible or fully effective, then compensation for loss, damage and disturbance might be appropriate (e.g., planting to replace damaged vegetation, financial compensation for damaged crops or providing community facilities for loss of fisheries access, recreation and amenity space).

The priority in mitigation for the Project was to first apply mitigation measures to the source of the impact (i.e., to avoid or reduce the magnitude of the impact from the associated Project activity), and then to address the resultant effect to the resource/receptor via abatement or compensatory measures or offsets (i.e., to reduce the significance of the effect once all reasonably practicable mitigations have been applied to reduce the impact magnitude

Residual Impact

In addition, once mitigation and enhancement measures were specified the next step in the Impact Assessment Process was to assign residual impact significance. This is essentially a repeat of the impact assessment steps discussed above, considering the implementation of the proposed mitigation and enhancement measures.

1.5.6 Management and Monitoring and Audit

The final stage in the impact assessment process was the development of a management plan for implementing controls and mitigation and monitoring effectiveness. Monitoring is done to verify that: a) impacts or their associated project components remain in conformance with applicable standards; and b) mitigation measures are effectively addressing impacts and compensatory measures and offsets are reducing effects to the extent predicted. An Environmental and Social Management Plan (ESMP), which is a compilation of all actions identified in the impact assessment, is provided in Chapter 8. This includes mitigation measures, compensatory measures and offsets and management and monitoring activities.

2. PROPOSED PROJECT INTERVENTIONS

2.1 Project Description – Kuleejka and Xingood Water Treatment Plant and Laboratory

2.1.1 Project Proponent

The project is promoted by HODMAN Co. in collaboration with local authorities and development partners including the Puntland Ministry of Energy, Minerals and Water Resources (MoEMWR), the Ministry of Environment, Agriculture and Climate Change (MoEACC), the Qardho Municipality, and relevant regional health authorities, alongside community water committees and utility operators. Key development partners engaged are UNICEF, the African Development Bank (AfDB) through the African Water Facility, FAO Somalia, OCHA, and other WASH Cluster partners supporting technical, financial, and humanitarian aspects of the project, with technical support aligned to AfDB and UNICEF water sector interventions. The proponent is responsible for financing, construction oversight, and eventual operation and maintenance of the facility.

2.1.2 Project Location

The proposed facility will be established in **Qardho town, Puntland State of Somalia**, at an elevation of approximately **751.5 meters above sea level**. The exact coordinates for the treatment plant site are **Latitude 9.5053253, Longitude 49.0920145 (WGS-84 system)**. The plant and laboratory will be constructed on secure land identified by the municipality to allow sufficient space for buildings, tanks, pipelines, and future expansion.

2.1.3 Description of Project Components

The facility consists of the following main components:

- **Borehole Supply:** A dedicated productive borehole with a submersible pump (5.5 m^3/h capacity).
- **Pre-treatment System (Ultra-Filtration Modules):** To remove suspended solids and impurities before nano-filtration.
- **Nano-Filtration Plant:** Three NF modules (two operational, one standby), filtering brackish water and reducing salts by 85–90%.
- **Centrifugal Pumps:** For pressure boosting up to 7 bars for NF and delivery to the reservoir.
- **Ground Reservoir:** A 50 m^3 reinforced concrete structure, located at 751.5 meters above sea level for gravity-fed distribution.
- **Plant Building:** Secured 6 × 6 m structure to house NF equipment and controls.
- **Piping and Distribution Network:** Stainless steel piping ensuring hygiene and durability.
- **Laboratory:** Small on-site water quality laboratory for routine monitoring of salinity, fluoride, and microbiological parameters.

2.1.4 Project Design and Status

- **Design Basis:** Advanced nano-filtration (NF) technology, with pre-filtration and UV disinfection.
- **Status:** Pre-feasibility design completed; detailed engineering designs under preparation. Pilot-scale testing of water quality confirms NF as the recommended option due to brackish groundwater conditions.

2.1.5 Project Phases

1. **Planning & Design Phase:** Site selection, hydrogeological studies, design development, environmental and social assessments.
2. **Construction Phase:** Borehole drilling, civil works (reservoir, plant building), installation of pumps, NF/UF modules, piping, and laboratory setup.
3. **Commissioning Phase:** Testing of equipment, training of local operators, and water quality verification.
4. **Operation & Maintenance Phase:** Continuous water treatment and distribution, routine laboratory monitoring, equipment servicing, and reporting.
5. **Decommissioning/Closure Phase (long-term):** Safe dismantling of plant and disposal or reuse of infrastructure at the end of its lifecycle.

2.1.6 Equipment and Materials to be Used

- **Water Supply:** Submersible borehole pump.
- **Treatment Equipment:** Ultra-filtration modules, nano-filtration membranes, UV disinfection unit.
- **Mechanical Systems:** Centrifugal pumps, valves, stainless steel piping.
- **Civil Works Materials:** Reinforced concrete (reservoir, slabs), masonry walls, roofing materials.
- **Laboratory Equipment:** pH meters, turbidity meters, salinity/fluoride kits, microbiological testing equipment.
- **Support Materials:** Generators or solar units for backup power, monitoring sensors, safety equipment.

2.1.7 Waste Streams

1. **Liquid Waste:**
    - NF reject brine water (concentrated salts and contaminants) requiring controlled discharge.
    - Backwash water from UF and sand filters.
2. **Solid Waste:**
    - Spent filter media (sand, activated carbon).

- Used NF/UF membranes requiring safe disposal after end of life.
- Sludge and sediments from pre-treatment processes.

3. **Chemical Waste:**
   - Residual disinfectants (chlorine solutions).
   - Laboratory reagents.
4. **General Waste:**
   - Construction debris during building phase.
   - Office and domestic waste during operation.

Waste management will emphasize safe disposal, recycling where feasible, and strict environmental controls to avoid contamination.

2.2 Proposed Water Treatment Plant Interventions

A summary of the proposed water treatment plant and laboratory, based on the Detailed Design is given in **Table 2-1** below

Table 2.1: Summary of the Proposed water treatment in Kuleejka and Xingood - Qardho

No.	Position/Description	Unit	Quantity
1	Construction and installation of new water treatment plant - Adsorption based- 2000m3/day at the selected borehole sites and also identified location where several boreholes can connect to the treatment sites.	No.	2
2	Construction/establishment of water quality monitoring laboratory including the supply of equipment's and machines	No.	1

Figure 2.1 shows a Layout Plan of the Project Area with the Existing and Proposed Water and sewer Networks in Qardho.

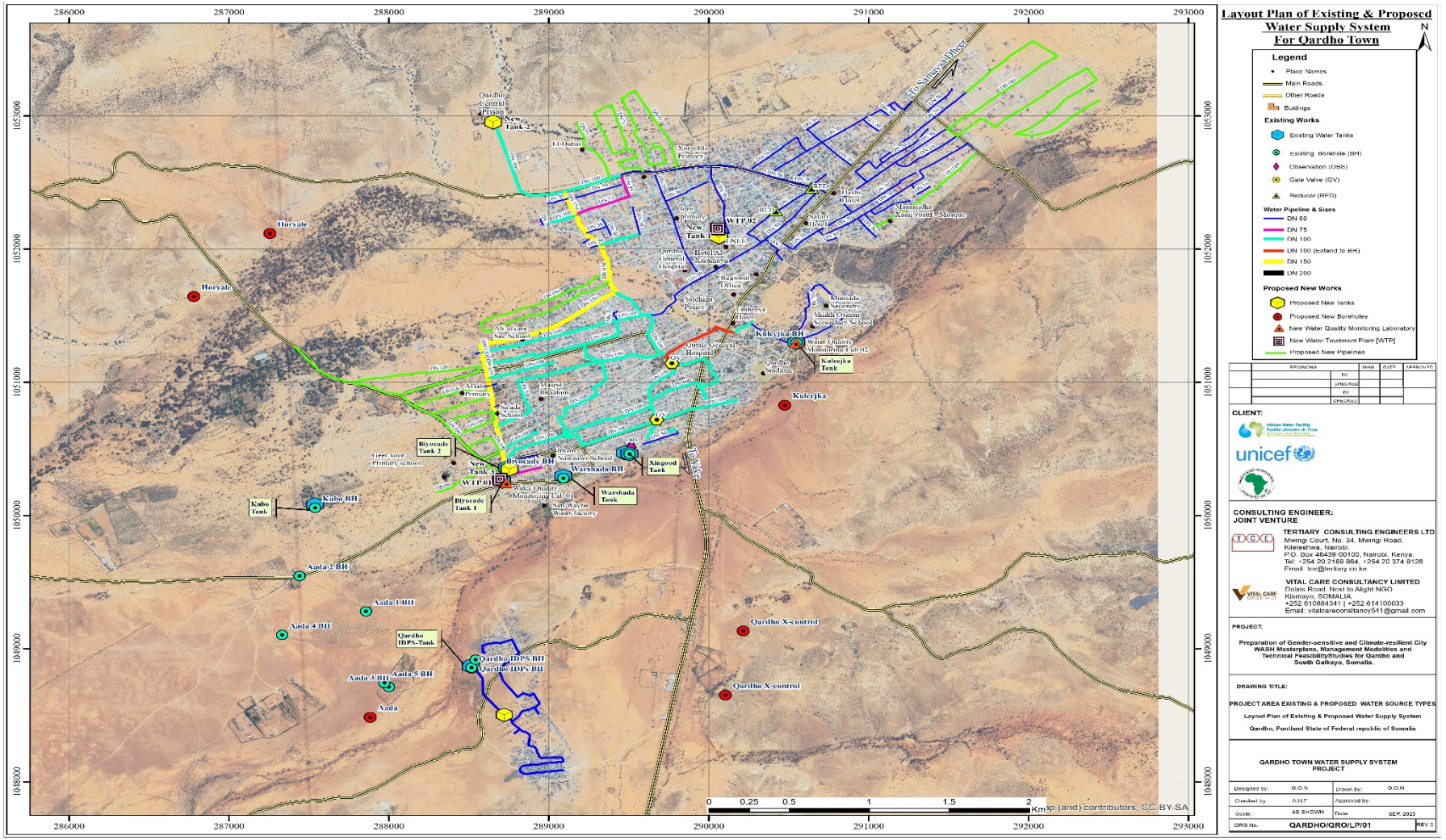

Figure 2.1 Layout of the Project Area with the Existing and Proposed Water treatment projects

2.3 Estimated Project Short Term Interventions for Qardho

Based on the adopted unit rates, the cost estimates for construction of water treatment plant and monitoring laboratory in Kuleejka and Xingood, Qardho are summarized in the table 2-2 below

Table 2.2: Estimated Project Costs

No.	Position/Description	Unit	Quantity	Unit Cost (USD)	Total Cost (USD)
1	Construction and installation of new water treatment plant -Adsorption based- 2000m3/day at the selected borehole sites and also identified location where several boreholes can connect to the treatment sites. (Total Production 2000m3/Day from 2 plants)	No.	2	500,000	1,000,000
2	The construction/establishment of water quality monitoring laboratory including the supply of equipment's and machines	No.	1	127,000	127,000

2.4 Project Activities Related to Construction of Water Treatment Interventions

For a water treatment plant (WTP) construction project, the activities usually move through phases that ensure safe, reliable, and sustainable operation. In a place like Qardho, Somalia, where projects often focus on resilience and community-scale infrastructure, the activities would look like this:

2.4.1 Pre-Construction Activities

- Feasibility studies & site selection – identify water sources (borehole, surface water, rainwater catchment) and determine capacity needs.
- Environmental & Social Impact Assessments (ESIA) – evaluate risks (land use, sludge disposal, water source sustainability).
- Design & engineering plans – layout of intake, treatment units, storage tanks, pipelines, and discharge points.
- Community engagement – consultations with local authorities, water committees, and residents for buy-in.

2.4.2 Civil Works & Infrastructure Construction

- Raw water intake construction – borehole headworks, intake channels, or pumping stations.
- Treatment units building – sedimentation tanks, coagulation/flocculation chambers, filtration units (sand/gravel filters), disinfection chambers.
- Chemical storage & dosing systems – small facilities for chlorine, alum, or lime handling.

- Sludge management facilities – drying beds, sludge lagoons, or disposal areas.
- Storage & distribution structures – elevated tanks, clear water reservoirs, and pipelines to connect to community kiosks or households.
- Operator & control building – office space, laboratory, and control room for water quality monitoring.

2.4.3 Mechanical & Electrical Installation

- Pumping equipment – submersible or surface pumps, often solar-powered in Puntland.
- Pipes, valves, and fittings – installation of conveyance and treatment plant piping.
- Power supply systems – solar arrays, backup diesel generators, or hybrid systems.
- Monitoring systems – flow meters, pressure gauges, and water quality testing equipment.

2.4.4 Testing & Commissioning

- Hydraulic testing of tanks, pipelines, and pumps.
- Water quality testing to ensure WHO and national drinking water standards.
- Operator training in plant operation, safety, and routine maintenance.
- Trial operation period to fine-tune processes before full handover.

2.4.5 Post-Construction / Handover Activities

- Community awareness campaigns – promote use of treated water.
- Capacity building for local water utilities – financial management, billing, and maintenance systems.
- Handover to municipality or water authority with clear operation manuals.
- Establishment of monitoring systems – periodic reporting on water quality and system performance.

3. SITE BASELINE INFORMATION

3.1 Climate

Regionally Somali has an arid to semi-arid climate as shown in climate map of Somalia on figure 2.5. The project area in Qardho District, located in Puntland state has a hot arid climate, classified as a hot desert climate according to the Köppen climate classification. The average high temperature is 91°F (33°C), and the average low is 70°F (21°C). Precipitation is generally low, with an average of 0.48 inches per year. The town is characterized by the following climatic conditions

- High Temperature: The highest average high temperature is in May, at 91°F (33°C).
- Low Temperature: The lowest average low temperature is also in May, at 81°F (27°C).
- Precipitation: May has the highest average precipitation at 27.7 millimetres
- Humidity: The average humidity is 71%.
- Wind: The average wind speed is 19 mph.

The Rainfall has great spatial and temporal variability. Seasonal rainfall is dominated by the north and south movement of the Inter-Tropical Convergence Zone (ITCZ), delineated into four seasons:

- Jiilaal: dry season from December to March. The north-east monsoon is in dominance and conditions are generally dry and warm/hot. The northern parts of the country experience some cool and dry air during this season, while the central and southern parts experience very hot conditions.

- 2Gu': rainy season starts from April to June. Relatively wet and hot conditions prevail, with Gu' considered as the major rainy season in the country. The southern regions receive more rains than the north. Occasionally, the Gu' season extends into June or July because of the Xagaa rains, which are produced by the onset of the moist onshore winds.

- Xagaa: dry season is from July to September. The south-west monsoon dominates, bringing relatively cool conditions, with showers along the coast, but dry inland.

- Deyr: rainy season is from October to November. The rainfall received in this season is less than that of the Gu' rainy season..

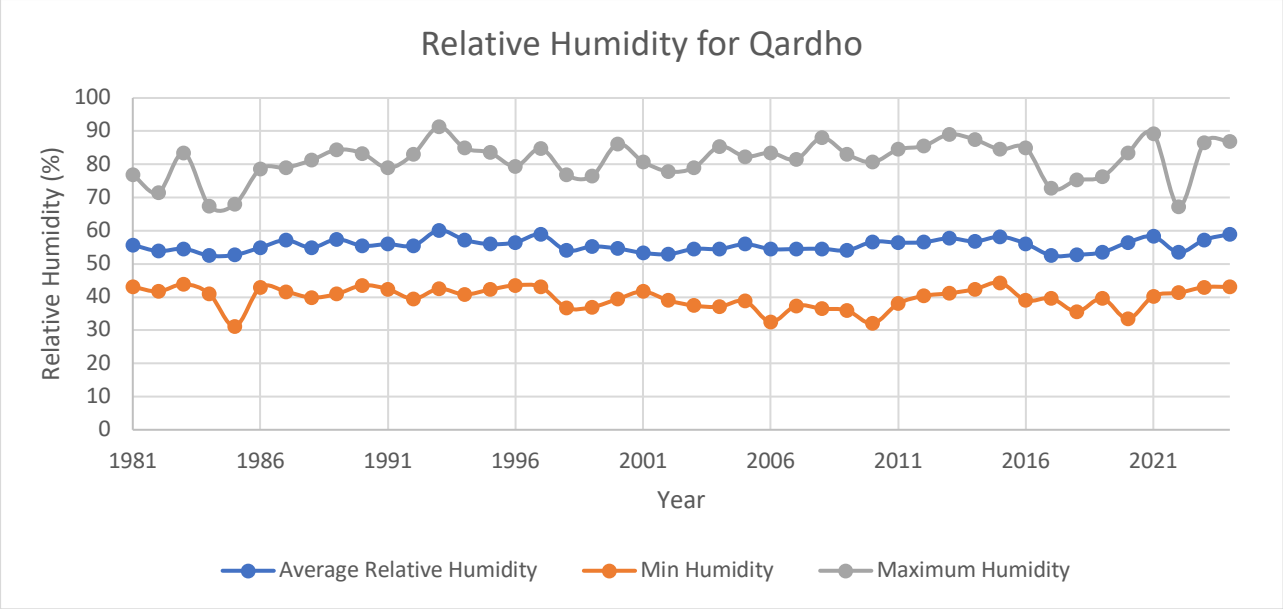

Figure 3.1: Relative Humidity of Qardho

The Average high and low temperatures are as presented in the figure below. The months of March and October having the highest average high temperatures.

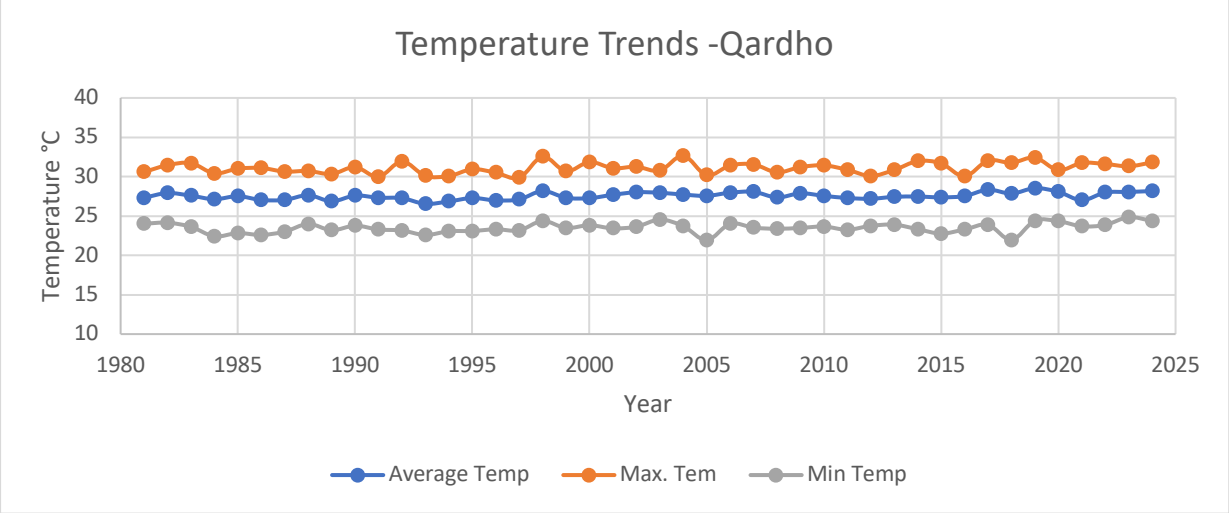

Figure 3.2: Average High and Low Temperature in Qardho from 1981 - 2024

The figure below shows the annual rainfall patter from 1981 to 2023. The trend shows that 1981 -1985 was the worst dry period while from 2021 rainfall has been at its peak.

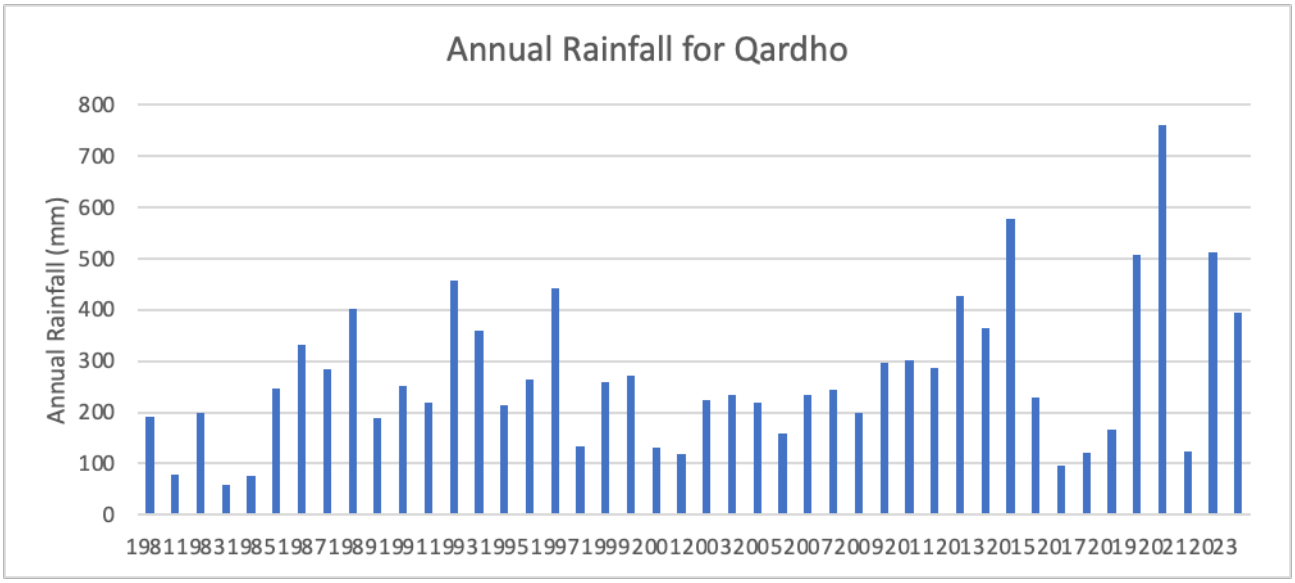

Figure 3.3: Annual rainfall for Qardho

3.2 Physical and Topographic Conditions

3.2.1 The Project Town Location

Kuleejka and Xingood areas in Qardho town lie within the catchment of Wadi Qardho (also known as Togga Qardho), a prominent seasonal river (Qardho river) that flows through the heart of the town. This river, although dry for most of the year, becomes active during the rainy seasons, often carrying flash floods that affect low-lying areas and informal settlements along its banks. Qardho is definitely situated in a broad, shallow natural valley formed by seasonal watercourses.

While the valley may not have a widely documented or officially named separate identity beyond its association with Togga Qardho, "Qardho Valley" is the commonly used local term to describe the natural depression and drainage basin that shapes the town's topography. This valley collects runoff from the surrounding highlands and plateaus, channelling it through seasonal rivers and gullies that feed into Togga Qardho during the rainy season.

The location of the town is as presented in the figure below in on the Federal Republic of Somali.

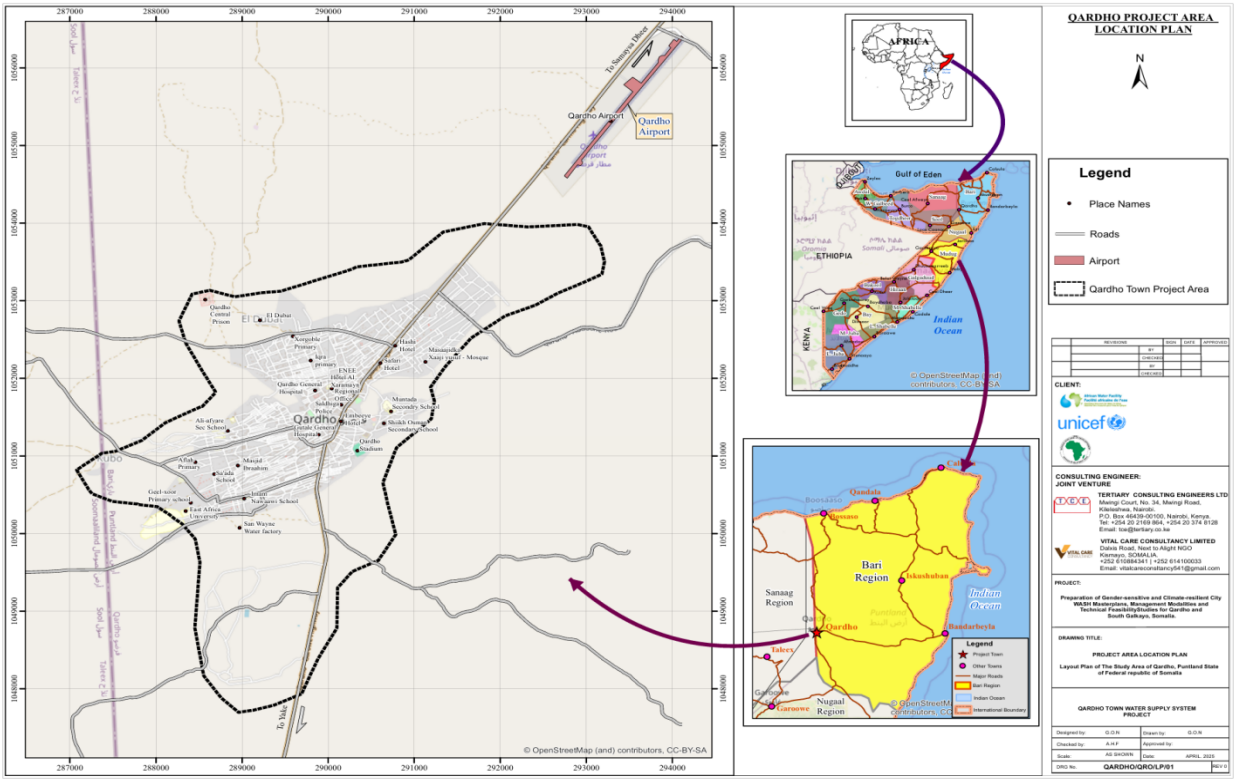

Figure 3.4: Study Area of Qardho

The project site is located in Kuleejka – Coordinates: Latitude 9.5053253 and Longitude 49.0920145 and Xingood – Coordinates: Latitude 9.4977197 and Longitude 49.0825547

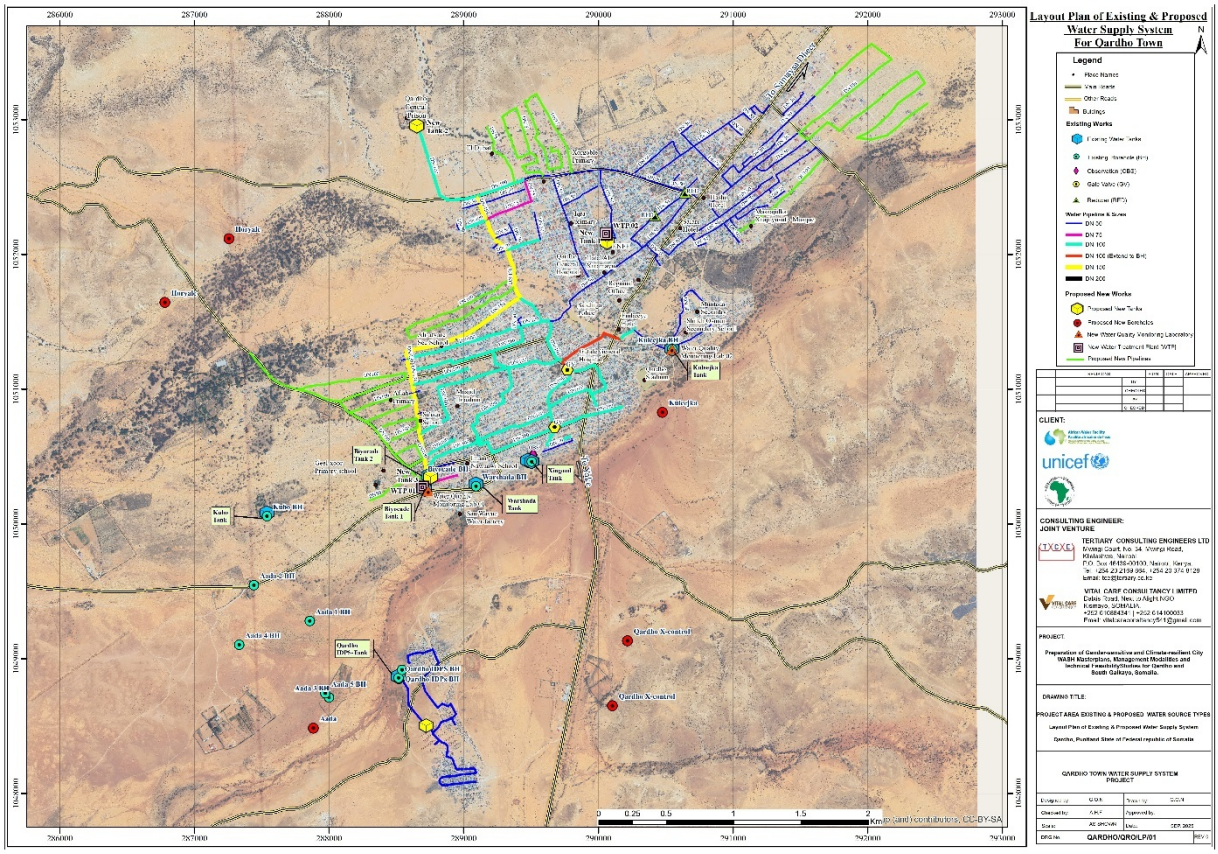

Figure 3.5 Water treatment and laboratory site
Source: Google Earth

3.2.2 Topography and Landscape

The topography of Qardho is generally flat with gentle sloping plains towards the North-East. In the north, parallel to the Gulf of Aden coast is a maritime plain varying in width from roughly twelve kilometres in the west to as little as two or three kilometres in the East. Shrub-covered, semi-arid, and generally drab, this plain, is known as the Guban (burnt land), because of its heat and dryness during much of the year. It is crossed by broad, shallow watercourses that are beds of dry sand except in the rainy seasons. Inland from the gulf coast, the plain rises to the precipitous north-facing cliffs dissected by highlands. These form rugged mountain ranges that extend from Somalia's northwestern border with Ethiopia, eastward to the tip of the Horn where they end in the sheer cliffs of Caseyr

3.2.3 Geology and Soils

Kuleejka and Xingood's geology is characterized by generally thin, rocky, and low in fertility. These soils are primarily calcareous, meaning they have a high content of calcium carbonate and gypsum. They have poor water retention capacity, which is a major challenge given the region's sparse and irregular rainfall. Consequently, these soil types are not suitable for extensive rain-fed agriculture but are well-adapted for rangeland and pastoral activities, which form the basis of the local economy.

The geology of the Kuleejka and Xingood is characterized by ancient crystalline basement rocks covered by thick layers of sedimentary rock from the Mesozoic and Cenozoic eras. The most significant geological formations are the Karkar and Auradu limestone aquifers from the Eocene period. These limestones are crucial for forming karstic aquifers, which serve as the primary source of groundwater for the wells and springs that are vital for human and animal survival in this arid environment. The region's geological structure has been heavily influenced by the rifting of the Somali and Arabian Plates, which has created the sedimentary basins that hold these critical groundwater resources.

3.2.4 Vegetation Cover

Qardho Somalia falls within Arid and Semi-Arid (ASALs) zone within ecological zone V-VI. Zone V receives rainfall between 300mm-600mm annually and is characterized by low trees, grass and shrubs while zone VI receives annual rainfall of 200mm to 400mm. The Project area receives an average of 240mm of rainfall per year, the rainfall is erratic and short making it unfavorable for vegetation growth. However, the area was once covered exhibits arid characterizes with dominant species noted as cactus family and Acacia spp including; Acacia species (A. mellifera, A. tortilis), Commiphora spp., Dobera glabra, Boscia coriacea

Vegetation at the Project Site

The proposed water treatment plant and laboratory lies within a semi-arid landscape characterized by sparse to moderately scattered vegetation. Field observations show that the dominant vegetation types include Acacia species such as *Acacia tortilis* and *Acacia bussei*, forming low open woodland and thorny thickets, alongside *Commiphora* shrubs common in rocky and shallow soils. Scattered *Boswellia* species (frankincense trees) are also present in the drier rocky patches typical of the Bari and Karkaar escarpments. Ground cover is largely seasonal, with grasses such as *Cenchrus ciliaris* and *Panicum turgidum* appearing after rains but remaining sparse during dry months, while herbaceous plants and forbs emerge briefly following rainfall. Other vegetation features include low-lying shrubs like *Cadaba rotundifolia* and *Euphorbia tirucalli*, interspersed with bare soil and gravel surfaces, as well as occasional drought-resistant trees valued by local communities for fodder and fuelwood. Ecologically, much of the vegetation shows signs of overgrazing and browsing by goats and camels, and the area is prone to soil erosion, with vegetation mainly confined to pockets where soil moisture is retained.

3.3 Biological Baseline Data

3.3.1 Flora

The project area in Kuleejka and Xingood are primarily peri-urban with patches of semi-arid vegetation. The dominant plant species: Acacia spp., Commiphora spp., drought-resistant shrubs, and scattered grasses. Vegetation is mostly disturbed due to urban development, livestock grazing, and human activity. There is limited presence of trees within institutional compounds (schools, hospitals) which may provide shade but are few.

3.3.2 Fauna

The fauna within the project area is limited and primarily composed of species adapted to urban and peri-urban environments. Mammals include small species such as rodents, as well as domestic animals like cats, dogs, goats, and sheep that are commonly found in surrounding areas. Birdlife is dominated by urban-adapted species such as pigeons and sparrows, with occasional sightings of migratory birds. Reptiles and insects typical of semi-arid urban settings are also present, including lizards, scorpions, and a variety of insect species.

3.3.3 Environmental Sensitivity

There are no significant protected areas or endangered species within the immediate project area. Wildlife presence is minimal, largely due to the urbanized nature of the site and the disturbance caused by human activities.

3.4 Social Baseline Information

3.4.1 Demographic Data:

Qardho town has an estimated population of approximately 65,000–70,000 people, including internally displaced persons (IDPs) and surrounding communities. The population is predominantly ethnic Somali, with clan structures playing a central role in shaping social organization and decision-making processes. Vulnerable groups within the community include low-income households, women, children, and IDPs, many of whom rely on communal water and sanitation facilities. Specifically, the estimated population around the project area in Kuleekja is between 1,000 and 3,000 people.

3.4.2 Land Ownership:

Land ownership in Qardho consists of a mix of state-owned, community-managed, and privately held land. The proposed construction sites for the project are located primarily on public or institutionally leased land, which minimizes the risk of displacement or conflict over land use.

3.4.3 Administrative Setup:

Qardho District falls under the Bari Regional Government, with district administration providing overall governance and oversight. At the local level, ward committees and traditional elders play a significant role in community engagement and land-use decision-making. In terms of WASH governance, Community Water and Sanitation Committees (CWSCs) are responsible for overseeing water points and treatment facilities to ensure equitable access, proper operation, and regular maintenance.

3.4.4 Infrastructure & Services:

Qardho town is served by a basic road network that connects key public institutions and residential areas. The water supply is primarily sourced from existing boreholes, while sanitation coverage remains limited and inadequate for the growing population. Health and educational institutions largely depend on community water sources, underscoring the urgent need for improved and reliable water supply systems.

3.4.5 Health Institutions in Qardho

Gardo General Hospital serves as the main hospital in Qardho. It includes a Microbiology Laboratory. **A new health centre** was inaugurated in February 2023 by Save the Children, in partnership with the Puntland Ministry of Health and funding from Sheikh Thani bin Abdullah Al Thani. This centre provides primary health services: prenatal care, safe deliveries, vaccinations, and maternal & child nutrition services.

3.4.6 Educational Institutions

Educational institutions in Qardho, form a developing system composed of public, private, and religious schools, ranging from primary to university levels.

Levels of Education

- Primary and Secondary Education: Qardho has a number of primary and secondary schools that serve the city and surrounding areas. These include both government-run and privately-managed institutions, which form the foundation of formal education in the region. Notable schools include Al-Azhar Primary and Secondary School, Haji Ali Bihi Secondary School, and Sheikh Osman Secondary School.

- Koranic Schools: Alongside the formal system, traditional Koranic schools (*Dugsi*) play a crucial role in providing foundational religious education and basic literacy for many children.

- Higher Education: Qardho is a regional hub for higher learning, most notably hosting a major campus of East Africa University (EAU). This institution offers various undergraduate degree programs, providing vital opportunities for post-secondary education and professional training within the region.

3.5 Socio Economic Baseline Information

3.5.1 Land Ownership and Settlements Patterns

Land use in Kuleejka and Xingood, in the Qardho area of Somalia is a blend of traditional pastoralism in the rural outskirts and increasingly concentrated urban activities within the town center. This pattern is a direct result of the region's semi-arid environment and the long-standing nomadic traditions of its inhabitants, which have been influenced by recent urbanization.

The predominant land use outside the urban center is pastoralism and livestock grazing. The vast, open rangelands surrounding Qardho are vital for the local economy, which is based on raising camels, goats, and sheep. Nomadic and semi-nomadic pastoralists traverse these lands seasonally in search of water and pasture, a lifestyle that requires extensive use of land to sustain their herds. Their survival is heavily dependent on the availability of water points like boreholes, wells, and traditional rainwater catchments known as berkads.

Within Qardho town, land use is more diverse and concentrated. Residential areas are expanding rapidly, especially on the town's northern and western edges, as the city's

population grows. The urban core is a hub of commercial activity, featuring a mix of small shops, workshops, and markets. The town's infrastructure, including public buildings, schools, and health centers, also occupies a significant amount of land.

3.5.2 Water Supply Situation

There are no permanent rivers in the region; only flashy streams exist which have surface water only after high rainfall events and normally drain into either the Indian Ocean, or the Gulf of Aden. These ephemeral water courses are important for water sources (wells dug at the river banks / beds), and for their relatively rich vegetation.

The water supply situation in is not adequate, particularly in rural areas where women and children travel long distances to a water source in the dry season to collect water for domestic and livestock use. Surface water resources are generally scarce because of their dependency on seasonal climatic variations that leave traditional surface water storage facilities either partially filled or empty.

3.5.3 Water sources

Surface water Sources

Qardho town's primary surface water source is the Kubo River, which experiences frequent flooding due to urbanization impacting its water flow capacity. A project focuses on reducing flood risks and improving the river's productive potential, including its use for irrigation. Additionally, water harvesting and storage systems are being implemented to provide water during dry seasons.

Ground Water Sources

Kuleejka and Xingood areas primarily rely on groundwater sources, specifically boreholes, for its water supply. These boreholes are a key component of the town's water infrastructure, ensuring a regular supply to the community. In Qardho town there are 12 number boreholes which collects water to one overhead painted steel panel tank installed on a reinforced concrete frame 10,0 m high. However, out of the 12 only 8 boreholes are functional while 2 have been faced out due to flooding effects.

3.5.4 Power / Energy Sources

The source of energy for the water abstraction from boreholes are solar, power grid and generator. However, the cost of power grid and generators is expensive to sustain due to high costs involved. On the other side solar power is cheap despite the initial cost of installation.

3.5.5 Water Distribution

Water Abstraction Sources

There are boreholes abstracted as ground water source for Kuleejka and Xingood areas. Based on each borehole yield in Table 3.1 the approximate yield per day based on the numbers of hours the pump is working **2,820 m3** per day.

Water Transmission

From the storage tanks, water gravitates to town water distribution network through uPVC pipes ranging 200mm to 25mm. The distribution network includes the followings pipe sizes;

Table 3.1: Pipeline Summary in Qardho

Pipeline Summary	**Pipeline Lengths (m)**
DN 50	17,886
DN 75	770
DN100	11,635
DN150	2,854
DN200	155
	33,300

3.5.6 Water Storage

Water from the boreholes Water is pumped directly to elevated steel tank of 550m3 capacity located in Beiyo-cadde area at an elevation of 8 meters high. All the boreholes have been fitted with 100mm diameter steel pipes that draw water from the deep boreholes. There exist other smaller elevated concrete tanks located within the borehole sites which are currently not in use due to excessive leakage.

Figure 3.6: Beiyo-cadde Water Tanks for Qardho Town

Table 3.2: List of storage tanks in Qardho Town

	Name	Latitude	Longitude	Tank size(m3)	Materials	Elevation (m)	condition
1	Kuleejka	9.5053253	49.0920145	400	RC	10	working
2	Xingood	9.4977197	49.0825547	100	RC	8	Faulty
	Xingood	9.4977197	49.0825547	240	RC	9	Faulty
3	Warshada	9.4960567	49.0788059	45, 23	RC	8	Faulty
4	Biyocade	9.496573	49.075586	324	steel	15	working
5	Kubo	9.493965	49.064671	50	RC	9	working
6	Qardho IDPS	9.4831673	49.0736369	40	RC	8	working

3.5.7 Water Treatment

The only water source to secure the water demand of the town is the deep aquifer, which unfortunately produces saline water. Currently there is no treatment provided for the water being supplied to Qardho town. The solution to secure drinkable water to the inhabitants is the construction of a desalinization plant and distribution system.

Proposed Water Treatment Process – Qardho

The following treatment train is proposed to ensure raw groundwater extracted from boreholes in Qardho meets WHO drinking water standards, with a focus on microbiological safety, turbidity reduction, and chemical contaminant removal (if present):

Water Treatment Process (Kuleejka and Xingood Plants)

1. Water Abstraction
    - Groundwater is pumped from a dedicated productive borehole using a submersible pump (5.5 m^3/h).
2. Pre-Treatment (Ultra-Filtration)
    - Water passes through ultra-filtration (UF) modules to remove suspended solids and turbidity.
    - Three UF modules provided (two in operation, one standby) with automatic backwashing.
3. Pressure Boosting
    - Centrifugal pumps increase pressure to about 7 bars (5 bars for NF + 2 bars for delivery).
4. Nano-Filtration (NF)
    - Brackish groundwater is treated using nano-filtration membranes, removing 85–90% of salts, sulphates, carbonates, and heavy metals.
    - Three NF modules (two operational, one standby).
    - Produces potable water with residual salinity within WHO drinking water standards (~600–800 mg/L).
5. Disinfection
    - Post-treatment UV disinfection (or chlorine as backup) to inactivate microorganisms and ensure hygienic safety.
6. Treated Water Storage
    - Clean water is stored in a 50 m^3 reinforced concrete ground reservoir at ~751.5 masl elevation, enabling gravity-fed distribution to the community.

3.5.8 Connections

Each household is metered with a consumer meter which is read once a month for billing purposes. According to the Hodman water company, it has about **5,000** Water Connections. The connections include for schools, mosques and hospitals which do not pay for the water services they enjoy.

3.5.9 Water supply Tariff

At every household there is a water meter to measure the consumption and for monthly billing. The water supply tariff for domestic and commercial consumption is 1.6USD/m^3 while the one supplied to the IDP camps is subsidized at 0.8USD/m^3. Institutions such as schools, mosques

and hospitals are supplied with water free of charge. They are currently metered but there will be a proposal to meter each and every consumer 100% for accountability on Non-Revenue Water.

3.5.10 Non-Revenue Water

From the available data it is not possible to define the unaccounted water losses present in the system quantitatively, in the opinion of the technicians of HODMAN Co. the quantities of water loss due to abuses or leakages of the system is negligible according to the management. However, it is worth noting that based on the billing information to be provided by the company, the Consultant will be able to estimate the non-revenue water.

3.5.11 Water Supply Deficit

Based on the current borehole productions provided, it was calculated, and it was estimated that currently, the company provides 2820m3/day for supply to Qardho Town. Considering water supply demand above, Qardho has a water deficit of 1564.77m3/d currently in 2025 and will grow to an ultimate deficit of 15,090.52m3/day in the year 2047. Table 3-3 below shows the water deficit for the entire period. The deficits need to be bridged in the water master plan under consideration for preparations.

Table 3.3: Water Demand in Qardho Town

Year	2015	2025	2027	2032	2037	2042	2047
Qardho Population	80000	109,619	116,747	136,661	159,972	213,362	255,865
per capita use(l/c/d)		40	50	50	60	70	70
Water demand(M3/d)		4,384.77	5,837.36	6,833.05	9,598.31	14,935.32	17,910.52
Current Water Supply (M3/day)		2,820.00	2820.00	2820.00	2820.00	2820.00	2820.00
Deficit		1564.77	3017.36	4013.05	6778.31	12115.32	15090.52

3.5.12 Gaps Identified

The current water supply for Kuleejka and Xingood is from deep boreholes and the existing infrastructure requires rehabilitation and expansion due to the growth of the town and the IDP camps located in the various parts of the town.

The increased demand for water, combined with insufficient investments in the maintenance and expansion of the water supply infrastructure, has led to significant inadequacies in the various components of the water supply systems within the town.

The main challenge of the water utility is the operation and maintenance of the water supply infrastructure. It was indicated in our discussion by the management of Hodman Company that the current tariff is not adequate to cover the cost of pumping and the staff cost. They get a top up from the Qardho local Government to cover the cost.

a) The main challenges of the water supply are as follows;
b) The pressure management – since there pipe network was laid without following any hydraulic analysis and the rapid expansion of the town most areas are receiving water with low pressure.
c) Old pipe network – it was noted that the pipe network within the town is old and some of the pipes are blocked due to the salinity of the water.
d) Pipe network layouts -it was noted that the pipe network was not mapped therefore difficult to establish the extend of the water coverage.
e) High operation and maintenance costs necessitated the private operator to inject in funds from other sources especially when there is a breakdown of the pumps.
f) Need for a new elevated tanks to enhance more pumping and thus more storage during daytime which utilizes solar energy compared to the grid power and generator sets which is expensive to run.
g) Estimation of water demand and compare it with Production

3.6 Existing water Service Provision

3.6.1 The Ministry of Energy and Water Resources (MoEWR), Federal Government of Somalia

MoEWR is responsible for water at federal and state levels. Its main functions focus on ensuring that all citizens have access to adequate water services. Also, determines and develop sub-policies, laws and from time-to-time review policies and legislations. The Ministry is responsible for sector coordination and integration, cross-sectoral planning, evaluation of programs for water supply and sourcing adequate funds for water project.

3.6.2 The Ministry of Energy, Minerals and Water (MoEMW), Puntaland state

The Ministry is in-charge of the protection and preservation of surface and ground water resources, including rivers.

3.6.3 Municipal Authority of Qardho District

Municipal authority of Qardho district is headed by Mayor who is the political wing. The leader at this level of local administration is closer to residents and therefore important in effective community engagement, sensitization and dispute resolution given that the water supply project will serve communities

3.6.4 Puntland Water Development Agency (PWDA)

Sole institution responsible for water, energy and minerals and was established as an autonomous agency under the Office of the President. The current mandate of the agency is to report on the water situation, plan locations for service delivery in collaboration with implementing partners, and put into operation projects funded by partners through private companies or local NGOs

3.6.5 Qardho Water Company (HODMAN Co.)

It's a Public private partnership water company established in 2006 with the mandate to provide safe drinking water and expand water services to all Qardho town population and nomads living in the surroundings of the town and their cattle through operating, managing

and connecting the water supply system to the customers of the city of Qardho and distributing the waters to the nomads. HODMAN Co. operates under a 10-year lease agreement of the State-owned infrastructures under the close supervision of PWDA. This entity is responsible for operation and maintenances for water supply systems.

3.6.6 Income, Livelihoods and Expenditure

In Qardho town a significant portion of the population has completed primary education, with about 61.7% having received that level of education. While literacy rates are high, particularly among mothers, maternal education levels still have room for improvement, despite notable increases. The county also boasts a substantial number of educational institutions, including ECD centers, primary schools, and secondary schools, as well as institutions for adult and vocational training

3.7 Health

The health status in Qardho, Somalia, is marked by a fragile healthcare system and significant public health challenges. The region faces a high prevalence of communicable diseases, including water-borne illnesses like cholera, as well as malaria and acute respiratory infections. Maternal and child health is a major concern, with high rates of mortality and widespread malnutrition.

Healthcare Access and Challenges

Access to healthcare is severely limited due to a lack of infrastructure, with most services provided by NGOs and international aid agencies. The public system is under-resourced, and the private sector is often too expensive for the general population. Geographic and financial barriers, coupled with a lack of access to safe water and sanitation, further complicate efforts to provide adequate care.

Key Issues

- Communicable diseases: Outbreaks of cholera and other waterborne illnesses are common.
- Maternal and child health: High rates of mortality and malnutrition persist.
- Limited infrastructure: The public health system is weak, relying heavily on NGOs.
- Access barriers: Poverty, long distances, and inadequate water and sanitation are major challenges.

3.8 Security

The security baseline for Qardho town is one of moderate stability, but with persistent underlying risks from terrorism and local conflicts that could impact infrastructure projects.

General Context

- Qardho (Puntland) is more stable than much of southern Somalia but remains part of a fragile, high-risk environment.
- Risks include: inter-clan tensions, petty crime, weak institutional capacity, and spillover from militant groups (ISIS-Somalia, Al-Shabaab).
- Regional counter-terror operations occur intermittently.

- Humanitarian pressures (IDPs, drought, floods) heighten tensions and resource competition.

Qardho Town – Security Profile

- Overall- the town relatively calm but unpredictable; localized disputes and occasional criminal incidents are common.
- Threats could include theft, vandalism, inter-clan violence, displacement-related unrest, sporadic militant activity in surrounding areas.
- Puntland maintains security forces and has response capacity, but law enforcement and emergency response remain limited.

Threat Scenarios (Likelihood) around the project sites

- Petty crime/asset theft - High probability without security measures.
- Community protests/access disruption - Moderate probability.
- Militant incidents - Low–to-moderate probability (mainly regional, not town-centre).
- Displacement or inter-clan violence impacts: Moderate probability in wider area.

Qardho benefits from relative stability within Puntland, reports indicates significant contextual vulnerabilities — episodic militant operations in the region, drought-driven resource stress, and documented incidents of theft and abandonment of water infrastructure across northern Somalia.

For the water treatment plant, these factors translate into tangible risks such as theft, vandalism and sabotage of plant equipment and laboratory reagents; unauthorized access or illicit tapping of networks; operational disruptions from security operations or roadblocks; and protection risks to staff and operators near the sites.

4. POLICY, LEGAL AND INSTITUTIONAL FRAMEWORK FRAMEWORKS

4.1 National Regulatory and Policy Framework

4.1.1 The Provisional Constitution of the Federal Republic of Somalia

Institutional
The key legal instrument for the management of environmental and social risks in Somalia is the Provisional Constitution, and especially Article 25 ("Environment"), Article 43 ("Land"), Article 44 ("Natural Resources") and Article 45 ("Environment"). Article 25 of the Constitution states that "[every Somali] has the right to an environment that is not harmful to their health and well-being, and to be protected from pollution and harmful materials." The article proceeds to declare that "[every Somali] has the right to have a share of the natural resources of the country, whilst being protected from excessive and damaging exploitation of these natural resources."

Article 45 (in Chapter 3 – "Land, Property and Environment") exhorts "all people in … Somalia" to "participate in the development, execution, management, conservation and protection of the natural resources and environment." Article 43, on its part, provides guidelines on environmental and social risk management that can be observed. However, there is a dearth of sufficient environmental or social safeguards in terms of legislated and or drafted regulations. The Article also affirms that the federal government shall give priority to the protection, conservation, and preservation of the environment against anything that may cause harm to natural biodiversity and the ecosystem.

Additionally, Article 12 of the Constitution addresses issues of application of fundamental rights. Further, the Provisional Constitution has made commitments on women's empowerment and gender mainstreaming. Article 15 (1, 2, 4) together with Article 24(5) of the Constitution provides for the protection of women against all forms of violence and provides for protection from sexual abuse, segregation, and discrimination. Article 15 prohibits Female Genital Mutilation (FGM).

Article 11 (1) together with sub article (3) respectively provides that all citizens have equal rights regardless of sex, religion, social or economic status, political opinion, clan, disability, occupation, birth or dialect shall have equal rights and duties before the law, and that the State must not discriminate against any person on the basis of age, race, colour, tribe, ethnicity, culture, dialect, gender, birth, disability, religion, political opinion, occupation, or wealth. Article 14 stipulates that a person may not be subjected to slavery, servitude, trafficking, or forced labor for any purpose, while Article 24 (5) prohibits sexual abuse in the workplace. The Puntland Sexual Offences Act 2016 prohibits sexual harassment.

Article 24 – Labor Relations: Every person has the right to fair labor relations. All workers, particularly women, have a special right of protection from sexual abuse, segregation and discrimination in the workplace. And, every labor law and practice shall comply with gender equality in the workplace.

Article 111J – The Office of the Ombudsman: The office is protected against interference from any other person or entity. As such, independence, integrity and effective service delivery are also maintained. The Ombudsman shall: (i) Investigate complaints against government workers regarding: allegations/ outright violations concerning basic rights and freedom, abuse of power, unfair behavior, mercilessness, lack of clemency, indiscipline or disrespect, corruptive act, illegal behavior, or those that could lead to mischief or injustice; (ii) Investigate complaints in relation to the activities of the Public Service Commission and other administrative institutions of the government, including defense and police forces that could lead to unequal services, unfair recruitment, or administration; (iii) Take appropriate steps to rectify or change items mentioned in earlier clauses through a fair, and appropriate process of consultations and sacrifices among the people concerned; (iv) Report on the complaints and issues raised and submit to the head of the offender; (v) Forward cases to the Attorney General and bring them before a court, as appropriate.

- **Trigger:** Article 25 of the Constitution guarantees the right to a clean and healthy environment, while Article 43 emphasizes that land and natural resources must be managed in the public interest.
- **Relevance to Project:** The proposed project directly contributes to the realization of these constitutional rights by improving sanitation and water management systems, thereby enhancing public health and environmental protection.
- **Compliance Measures:** To align with constitutional requirements, land for project facilities must be acquired transparently and without forced displacement. In addition, environmental safeguards, including the preparation and implementation of Environmental and Social Impact Assessments (ESIA) and Environmental and Social Management Plans (ESMP), must be applied to protect ecosystems and ensure community health.

4.1.2 Legislation and Policies on the Environment and Social Sectors

Somalia National Environment Policy: The Somali Cabinet, on February 13, 2020, approved the National Environmental Policy. The stated goal of environmental policy is to improve the health and quality of life of the Somali people. The development of this policy was backstopped by the Global Environment Facility (GEF) and the United Nations Development Program (UNDP). This is the first time that an environmental policy has been developed and taken to Cabinet level for approval, since the collapse of the previous central administration in 1991.

In November 2020, an Environmental Impact Assessment Bill was approved by the Somali cabinet and sent to parliament for ratification. The Directorate is also the operational focal point for multilateral environmental agreements and funds, such as GEF, and Green Climate Fund (GCF). It is also tasked with conducting Sectoral Environmental Assessments, Environmental and Social Impact Assessments (ESIAs) and EAs, although at present there is no enabling legislation or regulations in place, other than the aforementioned Impact Assessment Bill.

Environmental and Social Impact Assessment Regulations of 2021 (draft). The Somali authorities have since moved to give effect to the aforementioned Environmental Assessment Bill of 2020. As of March 2021, the Directorate of Environment and Climate Change has published draft environmental and social impact assessment (ESIA) regulations.

Occupational Safety and Health. Legislation on OSH in Somalia is limited, with the labor code known as Act No. 31 of 2004: Private Sector Act1 as the main reference on OHS issues. This law

[1] Referred to in Somali as "Wax ka Bedelka iyo Kaabista Xeerka Shaqaalha Rayidka (Xeer Lam 32/2004)"

addresses hours of work, holidays and rest periods, employees' pay and emoluments, contracts, recruitment procedures, etc., but does not directly address OHS concerns. Instead, the Labor Code establishes the general rights, duties and responsibilities of the parties of labor relations, as well as conditions for ensuring the safety and health of workers.

The revised draft Somalia Labor Code2 has more emphasis on OSH requirements. It makes the Director of OSH responsible for the registration of hazards and risks, regulation and supervision of all workplaces and monitoring or enforcing compliance with the Labor Code and any other labor law to the extent that they regulate safety, health and welfare in the workplaces. Part VI of the Revised Draft Labor Code covers the administration of occupational accidents, injury and disease provisions at workplace, employer's general duties towards to OSH, insurance requirements, employees' general duties, medical support, compensations, offenses, and penalties, etc.

The Labor Code covers protection against risks to workers, notification procedures in occupational accidents, medical requirements at site and conveyance of injured workers to hospitals, among others. Below is the list of relevant provisions of the Labor Code with regard to OHS.

Trigger: The project is subject to the provisions of the National Environmental Policy (2017), the Environmental Protection and Management Act (2024), and the Draft Environmental Impact Assessment and Audit Regulations.
Relevance to Project: In line with these instruments, the project must undergo a full Environmental and Social Impact Assessment (ESIA) prior to implementation. It is also required to integrate principles of climate resilience, waste reuse and recycling, and pollution prevention and control into its design and operation.
Compliance Measures: The ESIA report must be submitted for review and approval to Puntland's Ministry of Environment, Climate Change and Wildlife. Mitigation measures will include dust suppression, safe waste disposal, and routine water quality monitoring. Furthermore, stakeholder consultations must be conducted to ensure community participation and alignment with the guidelines of the National Environmental Policy.

4.1.3 The Somali Labor Code

The *Labor Code of 1972* stipulates that all employment contracts must include provisions on: a) the nature and duration of the contract; b) the hours and place of work; c) the remuneration payable to the worker; and d) the procedure for suspension or termination of contract. Furthermore, all contracts must be submitted to the competent Labor Inspector for pre-approval. With regards to OHS standards, the employer is obligated to provide adequate measures for health and safety, protecting staff against related risks, including provision of a safe and clean work environment and of well-equipped, constructed and managed workplaces that provide sanitary facilities, water and other basic tools and appliances ensuring workers' health and safety.

The Code further stipulates that the workers have the right to submit complaints and the employer must give the complaints due consideration. Remuneration must be adequate in view

[2] Under development in a process that includes the International Labor Organisation

of the quality and quantity of the work delivered, and must be non-discriminatory with regard to age, gender and other aspects. Maximum number of working hours per week are 8 hours per day and 6 days per week. Some work is considered dangerous and unhealthy, and forbidden for women and youth (defined as 15-18 years of age). This includes the carrying of heavy weights or working at night. More details on the labor code are provided in the updated LMP for this Project.

The Labor Code further forbids work for children below the age of 12 but allows employment of children between the ages of 12-15, but employment has to be compatible with proper protection, health and the moral of children. The Code also recognizes freedom of association. Employers are prohibited from engaging in any kind of discrimination or restriction of the right of freedom of association. Workers are allowed to join trade unions. Further, the Labor Code stipulates the right to equal pay for the same work and women are entitled to 14 weeks of maternity leave at half pay.

The *Somali Penal Code of 1962* criminalizes rape and other forms of sexual violence as well as forced prostitution. Articles 398-9 provide that 'carnal intercourse' and 'acts of lust committed with violence' are punishable with 5-15 years and 1-5 years of imprisonment, respectively. Abduction for the purpose of lust or marriage is prohibited under Art 401. The *Family Code of 1975* sets the minimum age for marriage at 18 years for males and females. Females between the age of 16 and 18 can marry with their guardian´s consent. Marriage is based on equal rights and duties.

Trigger: National labor laws provide for worker safety, employment rights, regulated working hours, and fair compensation.

Relevance to Project: The construction phase will involve both local and possibly migrant laborers, exposing the workforce to occupational health and safety (OHS) risks, potential accidents, and social impacts associated with labor influx.

Compliance Measures: All contractors must provide written contracts, fair wages, personal protective equipment (PPE), and insurance coverage for workers. Site safety protocols, including toolbox talks, first aid availability, and regular emergency drills, must be implemented. The project will also strictly prohibit child labor and forced labor in compliance with national labor standards and international safeguards.

4.1.4 Legislation and Policies for the Health Sector

Somalia also developed Immunization Policy 2020 – which provides strategic guidance on vaccine quality, target population, administration of vaccines, ensuring safe injections, immunization service delivery strategies, cold chain and vaccine management, roles and responsibilities of health workers and vaccinators, social mobilization, immunization data management, among others.

The *National Health Sector Strategic Plan (HSSP-II 2017-2021):* The Strategy is based on nine building blocks. It prioritizes governance and leadership, followed by human resources, services delivery, health financing, pharmaceuticals and medical technology, health intelligence and information system, social determinants of health, emergency preparedness and response,

and health infrastructure. The project will also apply the strategic guidance of the third phase of the health sector strategic plan (HSSP-III 2022-2026).

The HSSP II takes a pragmatic approach to the provision of Essential Package of Health Services (EPHS) including community-based health services across the FMS/BRAs and Regions of Somalia. However, implementation is limited to some regions; due to funding limitations and insecurity. The package is largely implemented by NGOs with emergency support from humanitarian partners. It is also continuously updated, with the priority to consolidate and scale-up essential health services in all areas, where access and security permits.

The plan provides a framework for future health programs to work within, expanding access to quality services, encouraging better targeting of disease specific programs, in coordination with government's strategic priorities, and more effective use of external support. The HSSP-II has set a target of developing and/or adopting the following health sector policy and legal frameworks by 2021: Public Health Act; Drug Policy – already developed and endorsed; Drug Act – the draft bill has been submitted to the parliament – pending for approval; Health Policy – the last one developed was in 2014; Health Regulatory Framework: National Health Professional Act was developed and signed by the President – currently in force; WATSAN and Environmental Health Policy and Strategy – this has been developed and endorsed; as well as Community Health Strategy, which was developed in 2015.

Although poorly managed at the national level, the FMoH is currently revising the EPHS, with the aim of delivering health services through a five-tiered system: National/Regional hospitals; Referral Health Centers; Health Centers, Primary Health Units; and community-based health workers. Most services comprise of basic PHC and outpatient services and cater to women and children. Public sector service points are often managed, financed and at least partially staffed by employees of international and/or national NGOs and community-based organizations (CBOs).

Trigger: Somalia's Essential Package of Health Services (EPHS) and the Public Health Regulations under the Puntland Ministry of Health provide the framework for safeguarding public health in relation to water supply and sanitation services.

Relevance to Project: The establishment of clean water provision facilities directly contributes to reducing the prevalence of waterborne diseases such as cholera and diarrhea. At the same time, construction activities may introduce temporary risks, including dust, noise, poor sanitation, and workplace accidents, which could affect both workers and nearby communities.

Compliance Measures: The project will integrate occupational health and safety measures for workers throughout construction, including proper sanitation facilities and health awareness. It will coordinate with local health authorities to ensure safe handling of any medical waste and to establish health surveillance mechanisms. Post-construction, all treated effluent must comply with Somali water quality standards to protect community health and ensure safe, sustainable service delivery.

4.1.5 Legislation and Policies for the Water and Sanitation

The Somalia's Provisional Constitution (2012) guarantees the right to clean water, sanitation, and a healthy environment. The National Environmental Policy (2017) and Environmental Protection and Management Act (2024) require ESIAs and safeguards for all water and sanitation projects. The Water Resources Law and draft National Water Policy regulate water use, waste discharge, and pollution prevention. The Public Health Law links sanitation to disease control, ensuring protection against waterborne illnesses. The Climate Change Policy (2020) and National Adaptation Plan Framework emphasize climate-resilient WASH systems to address droughts, floods, and water scarcity.

The project is anchored in the Somali Constitution (2012), which guarantees the right to clean water, sanitation, and a healthy environment. It complies with key environmental and water sector regulations, including the National Environmental Policy (2017), the Environmental Protection Act (2024), and the Water Resources Law, through ESIA approval, pollution control, and safe water discharge practices. In addition, the project supports public health and climate resilience policies, such as the Public Health Law, the Climate Change Policy (2020), and the National Adaptation Programme (NAP) Framework, by reducing disease risks and integrating climate-smart design approaches. Finally, it adheres to the Somali Labor Code by ensuring worker safety, fair labor practices, and community safeguards during both construction and operation phases.

Relevance to the project

The Water Resources Law and the Environmental Protection and Management Act (2024) directly regulate the design and operation of the proposed Water Treatment Plant (WTP) by setting standards for wastewater collection, treatment, and safe discharge into the environment. These laws require that the facility incorporate technologies ensuring that effluent quality meets national and WHO standards, preventing contamination of surface and groundwater sources. The Act further mandates an approved Environmental and Social Impact Assessment (ESIA) and ongoing monitoring of effluent, sludge, and chemical use to minimize pollution risks. The Public Health Law complements this by emphasizing protection against waterborne diseases and enforcing requirements for safe sludge handling, storage, and disposal, ensuring treated water remains fit for human use. Additionally, the National Environmental Policy (2017) and Climate Change Policy (2020) promote climate-resilient wastewater management technologies—such as energy-efficient treatment systems and controlled reuse of treated effluent for irrigation—helping to mitigate drought and resource stress. Collectively, these policies guide the WTP's compliance with environmental permitting, occupational health and safety (OHS) standards, and sustainable operation, ensuring that the plant functions safely, efficiently, and in harmony with Somalia's environmental and public health goals.

4.1.6 Provisional Constitution of Somalia (2012) – Land & Natural Resources

Article 43 of the Somali Constitution requires that land and natural resources be managed in the public interest, with allocation guided by law. In the context of this project, the proposed borehole facilities will be located within public institutions such as schools and health centers. To ensure compliance, land allocation will follow transparent procedures through Qardho

Municipality and Puntland State authorities, with safeguards in place to prevent displacement or encroachment on community and private land.

Relevance to the project

The Provisional Constitution of Somalia (2012) provides the foundational legal framework governing land and natural resources management in the country. It emphasizes equitable access, sustainable use, and environmental protection of natural resources. This is directly relevant to the Gender-Sensitive and Climate-Resilient City WASH Masterplans project, as it guides how land and water resources should be utilized and protected during project planning and implementation. Specifically, it ensures that land acquisition, water abstraction, and sanitation infrastructure development are undertaken in a manner that respects community rights, promotes environmental sustainability, and aligns with national principles of equitable resource distribution.

4.1.7 Puntland Land Policy (Draft, 2018)

The draft Puntland Land Policy aims to clarify urban land tenure, prevent conflicts, and strengthen municipal authority in land allocation. For this project, the trigger arises from the need to ensure that institutional land in Qardho is formally allocated and properly recorded to avoid future disputes. Compliance will require obtaining official land-use permits from Qardho Municipality and engaging community elders and stakeholders in the site selection process to prevent potential clan-based conflicts.

Relevance to the project

The Puntland Land Policy (Draft, 2018) is relevant to the project as it provides the guiding framework for land tenure, allocation, and management within Puntland State, where one of the project towns—Qardho—is located. The policy promotes equitable and transparent land use planning, safeguards community and public interests, and supports sustainable development through proper land administration. Its relevance lies in ensuring that the project's land acquisition, right-of-way demarcation, and infrastructure development are conducted lawfully, minimize displacement, and align with Puntland's spatial planning and environmental sustainability principles.

4.1.8 Customary Land Tenure (Xeer Somali)

Somali customary law plays a central role in governing land ownership and usage, particularly in peri-urban and rural areas. While the proposed project sites within public institutions are under municipal ownership, adjacent lands may still fall under clan-based customary tenure. To ensure compliance, the project will engage local elders and religious leaders to verify land boundaries, confirm community acceptance, and prevent overlapping claims or disputes.

Relevance to the project

The Customary Land Tenure system (Xeer Somali) is highly relevant to this project as it governs local land ownership, access, and use rights across Somalia, particularly in rural and peri-urban areas where formal land registration is limited. Under Xeer Somali, land and water resources are traditionally managed through clan-based agreements that emphasize communal access, conflict resolution, and equitable sharing. For the WASH Masterplan and Feasibility Studies, recognizing and aligning project activities with Xeer principles is essential to ensure

community acceptance, prevent land disputes, and facilitate smooth acquisition or use of land for infrastructure development such as water points, pipelines, and sanitation facilities.

4.1.9 National Security & Safety Frameworks (Federal & Puntland Levels)

Provision: The Federal Government of Somalia and Puntland State are mandated to ensure security and public safety, including the protection of critical infrastructure.
Trigger in Project: Construction activities may attract risks such as theft, vandalism, or community tensions, while the presence of heavy equipment could create additional safety hazards.
Compliance: The project will coordinate with local police and Puntland security authorities to ensure site safety, provide on-site security guards during construction, and develop a Security Management Plan to safeguard workers, assets, and surrounding communities.

4.1.10 Urban Planning and Land Use Regulations (Municipal Guidelines, Puntland)

Provision: Municipal councils regulate urban planning, zoning, and building permits.

Trigger in Project: New facilities within institutions require compliance with local urban planning/zoning.

Compliance: Secure building permits from Qardho Municipality; comply with construction codes and institutional land-use restrictions.

4.1.11 Conflict Prevention & Social Cohesion Policies (Puntland Development Plan, 2020–2024)

Provision: Encourages inclusive governance, clan consensus, and conflict prevention in development projects.

Trigger in Project: Potential disputes over land use, employment opportunities, or resource allocation.

Compliance: Implement a Stakeholder Engagement Plan (SEP); prioritize local labor recruitment; establish a grievance redress mechanism (GRM).

Relevance to the project

The Conflict Prevention and Social Cohesion Policies outlined in the Puntland Development Plan (2020–2024) are highly relevant to this project as they promote inclusive governance, equitable resource distribution, and community participation—all essential for sustainable WASH service delivery. By integrating these principles, the project supports peacebuilding through improved access to safe water and sanitation, reduces competition over scarce resources, and strengthens social cohesion among host communities and internally displaced persons (IDPs). This alignment ensures that project implementation contributes to both environmental resilience and social stability in Puntland.

4.2 Institutional Capacity for Environmental Management in FGS

The institutional basis for improving the management of environmental risks in projects in Somalia is being established. The Environmental Management and Coordination Bill is currently being reviewed by the Somali Parliament. The House of the People approved the Bill in March 2023 and further reviews by the Senate are expected in May 2023, during the next parliamentary session. Once enacted, the Environmental Management and Coordination Act is expected to improve environmental governance and intergovernmental cooperation, as well as lay a foundation for undertaking environmental and social impact assessments in the country. The procedures for environmental and social impact assessments have already been elaborated in regulations that have been issued by the Ministry of Environment and Climate Change (MoECC).

The MoECC has commenced negotiations with departments and ministries in charge of the environment from the various Federal Member States, with a view of sharing responsibilities for managing environmental issues, including licensing procedures for development projects. Furthermore, an institutional capacity and structural assessment of the MoECC is underway with the support of the World Bank and the United Nations Environment Program. The statutory mandate for national environmental management in lies with the Ministry of Environment and Climate Change (MoECC). It is mandated to draft relevant policies and legislation, including establishing of the Environmental Quality Standards, and Sectoral Environmental Assessments, Environmental and Social Impact Assessments (ESIA).

Laws on environmental governance in South West Somalia (SWS), Jubaland and Hirshabelle are at infancy stages and environmental impact assessment capacity are nascent. Environmental decision-making arrangements includes the FGS signing international conventions, and parliament approving Environmental Acts and Laws. However, necessary laws have not been formulated yet.

Ministries have passed regulations on Environmental and Social Impact Assessments (ESIAs). The State Ministries of Environment are to be consulted before any infrastructure activities in their respective state with potential environmental and social risks and impacts. The Ministries are mandated to supervise all matters relating to the environment. They are mandated to review and approve ESIAs and RAPs. Some States, such as South West State and Jubaland, have Land Authorities, which are responsible for land adjudication matters. For the project implementation, this project will rely fully on AfDB ISS

4.2.1 Institutional and Stakeholder Framework for Environmental & Social Management in Somalia

1. Federal-Level Institutions

- **Federal Ministry of Environment & Climate Change (MoECC):** Provides national policy guidance on environment and climate change. Influences project compliance with environmental protection frameworks (e.g., 2024 Environmental Protection & Management Act).

- **Federal Ministry of Energy & Water Resources (MoEWR):** Oversees water policy, water allocation, and wastewater regulation. Influences project design standards on wastewater reuse and water quality.
- **Federal Ministry of Health (MoH):** Ensures sanitation projects reduce public health risks. Influences monitoring of hygiene and disease prevention outcomes.
- **Federal Ministry of Labor & Social Affairs (MoLSA):** Oversees occupational health and safety. Influences worker protection, fair labor, and OHS enforcement in construction.

2. State-Level Institutions (Puntland)

- **Puntland Ministry of Environment, Climate Change & Wildlife:** Main authority for ESIA approval, environmental monitoring, and compliance in Qardho. Direct regulator of project's environmental safeguards.
- **Puntland Ministry of Health:** Oversees sanitation and health linkages at institutional level. Influences operational health standards at schools and health centers.
- **Puntland Ministry of Public Works & Transport:** Provides building permits and urban planning approvals. Influences land allocation and compliance with municipal building codes.
- **Puntland Ministry of Planning & International Cooperation (MoPIC):** Coordinates development projects and donor-funded initiatives. Influences alignment of project with regional development priorities.

3. Local-Level Institutions

- **Qardho Municipality (Local Government):** Controls land use, zoning, and building permits for institutional sites. Directly influences site selection, land allocation, and local oversight.
- **Traditional Authorities (Clan Elders, Religious Leaders):** Manage customary land tenure and community acceptance. Influence conflict prevention, grievance resolution, and community buy-in.
- **Community-Based Organizations (CBOs) & School Management Committees:** Ensure community participation and O&M support. Influence sustainability and ownership of sanitation systems.

4. Private Sector Actors

- **Local Contractors/Construction Companies:** Responsible for facility construction. Influence quality, safety, and timely delivery of infrastructure.
- **Waste Management Service Providers:** Potentially engaged for sludge management or solid waste disposal. Influence long-term sustainability of treatment operations.

- **Suppliers (Equipment, Materials):** Provide construction and treatment system components. Influence cost and technical reliability.

5. Development Partners & NGOs

- **African Development Bank (AfDB):** Project financier and safeguard enforcer. Influences categorization, ESIA compliance, and monitoring.
- **UNICEF Somalia:** Active in Puntland WASH programs. Influences technical support, standards for WASH in schools/health facilities, and possible co-financing.
- **NGOs/INGOs (e.g., CARE, NRC, Save the Children):** Implement WASH and community health interventions. Influence awareness campaigns, hygiene promotion, and community acceptance.

4.3 Key International Instruments Ratified or Acceded to by Somalia:

Federal government of Somalia has ratified below listed Conventions

(i) **Universal Declaration of Human Rights (UDHR) –** Affirms the equal rights of men and women and the right to non-discrimination, dignity, and freedom for all individuals.
- Triggered through the right to health and a clean environment. The project complies by improving sanitation and reducing disease risks in schools and health centers.

(ii) **Convention on the Rights of the Child (CRC) –** Ratified by Somalia in 2015, it emphasizes the protection of children's rights, including those of girls, and calls for the elimination of harmful practices like early marriage and FGM.
- Triggered as the project targets schools and child health. Compliance is ensured by providing safe sanitation facilities that protect children's dignity and health

(iii) **Convention on the Elimination of All Forms of Discrimination Against Women (CEDAW) –** Somalia has **not yet ratified CEDAW**, which significantly limits formal international obligations on women's rights protection. However, civil society and international partners continue to advocate for its ratification and domestication.
- Triggered through gender-sensitive sanitation needs. The project complies by providing separate, safe sanitation facilities for women and girls.

(iv) **African Charter on Human and Peoples' Rights –** Somalia is a party to the Charter, which supports gender equality and women's rights within the African human rights system.
- Triggered through the right to a healthy environment and protection from harmful waste. Compliance is achieved through ESIA, pollution control, and sustainable waste management.

(v) **African Charter on the Rights and Welfare of the Child (ACRWC) –** Ratified by Somalia, reinforcing children's rights, including protection from early and forced marriage, discrimination, and abuse.

- Triggered by the project's direct benefits to children in schools. Compliance is ensured by providing safe, accessible WASH services for children.

(vi) **Sustainable Development Goals (SDGs) –** Somalia has committed to the 2030 Agenda, with SDG 5 specifically focusing on achieving gender equality and empowering all women and girls, especially in access to education, health, water and sanitation, and economic opportunities.

- Triggered mainly SDG 6 (Clean Water & Sanitation), SDG 3 (Good Health), SDG 13 (Climate Action), and SDG 11 (Sustainable Cities). The project contributes by expanding access to improved sanitation and climate-resilient systems.

(vii) **Kyoto Protocol (2005):** Aim at reducing greenhouse gas emissions and combat climate change by setting binding emission reduction targets for developed countries.

- Triggered as wastewater treatment reduces methane and other GHG emissions from unmanaged waste. Compliance is supported through climate-smart, low-carbon designs.

(viii) **Bamako Convention on (1991):** It ensures ban on the Import into Africa and the Control of Transboundary Movement and Management of Hazardous Wastes within Africa (1991)

- Triggered through control of hazardous waste imports and management. Compliance is ensured by safely handling wastewater sludge and avoiding hazardous waste transfer.

(ix) **Basel Convention on the (1989):** It seeks to control Transboundary Movement of Hazardous Wastes and their Disposal.

- Triggered in relation to transboundary movement of hazardous waste. While the project is local, compliance means ensuring that no untreated sludge or hazardous material is exported improperly.

(x) **Rotterdam Convention (1998):** It stipulates the prior informed consent procedure for certain hazardous chemicals and pesticides

- Triggered for chemicals and pesticides. Compliance is ensured by avoiding banned chemicals in construction/operation (e.g., avoiding asbestos pipes, toxic disinfectants).

(xi) **Convention on Oil Pollution Preparedness, Response, and Co-operation (1990):** It aims to ensure that countries develop and maintain adequate measures for dealing with oil pollution incidents

- Triggered by construction machinery and fuel storage risks. Compliance includes site-specific spill prevention and emergency response plans.

(xii) **International Energy Charter (2015):** It aims to enhance energy security, encourage open and competitive energy markets, support sustainable energy development, and promote energy efficiency and environmental protection among member states

- Triggered through the project's potential use of renewable/efficient energy for treatment plants. Compliance is achieved by integrating energy-efficient systems (solar pumping, low-energy treatment technologies).

4.4 Relevant International Labour Organization (ILO) and Human Rights Instruments

- Convention concerning Safety in the use of Chemicals at Work (Entry into force: 04 Nov 1993) Adoption: Geneva, 77th ILC session (25 Jun 1990) - Status: Up-to-date instrument (Technical Convention);
  - ✓ Triggered during construction/operation where chemicals (e.g., disinfectants, treatment reagents, fuels) are handled.
  - ✓ Compliance → Safe storage, PPE, training for workers, and spill management protocols

- Occupational Safety and Health Convention (1981) and its Protocol of (2002);
  - Triggered in ensuring safe working conditions at construction sites.
  - Compliance → Risk assessments, OHS plans, PPE provision, and accident reporting procedures.

- Promotional Framework for Occupational Safety and Health Convention, (2006) (No. 187);
  - ✓ Triggered in establishing a safety culture across the project.
  - ✓ Compliance → Integration of OHS policies into contractor management and routine safety training.

- Convention concerning the Prohibition and Immediate Action for the Elimination of the worst forms of Child Labour (2002);
  - ✓ Triggered due to risks of child labor in construction supply chains.
  - ✓ Compliance → Strict contractor clauses against child labor, verification of worker age, and engagement of labor inspectors.

- International Convention on the Elimination of All Forms of Racial Discrimination (CERD) (1976);
  - ✓ Triggered in hiring and community engagement.
  - ✓ Compliance → Non-discriminatory hiring, equal access to project benefits, and inclusive community participation.

- Optional Protocol to the Convention on the Rights of Persons with Disabilities (2007);
  - ✓ Triggered by the need to ensure accessibility in public institutions.
  - ✓ Compliance → Designing sanitation facilities with ramps, handrails, and inclusive toilets.

- The Convention on the Elimination of All Forms of Discrimination against Women (CEDAW) (1985);
  - ✓ Triggered in gender-sensitive WASH provision.
  - ✓ Compliance → Separate, safe toilets for women and girls; women's involvement in decision-making committees.

- The Convention on the Rights of Persons with Disabilities (CRPD) (2012);
  - ✓ Triggered in ensuring equitable access to sanitation.
  - ✓ Compliance → Universal design standards integrated into facility construction.

- The International Covenant on Civil and Political Rights (ICCPR) (2004);
  - ✓ Triggered by the project's obligation to respect community rights (participation, consultation, grievance redress).
  - ✓ Compliance → Transparent consultations, stakeholder engagement, and functioning GRM.

- The International Covenant on Economic, Social and Cultural Rights (ICESCR) (2004).
  - Triggered by the right to water, sanitation, health, and safe work.
  - Compliance → Expanding access to WASH, protecting worker welfare, and reducing disease risks.

4.5 Regional Treaties Relevant to GBV, SEA, VAC and Persons Living with Disability (PLWD)

- African Charter on Human and Peoples' Rights (1981);
- Protocol to the African Charter on Human and Peoples' Rights on the Rights of Women in Africa (Maputo Protocol) (2003);
- Violence and Harassment Convention (2019) No.190;
- AU Disability Protocol (Protocol to the African Charter on Human and Peoples' Rights on the Rights of Persons with Disabilities in Africa) (2018);
- Economic Community of West African States (ECOWAS) Gender Policy (2005, revised 2020);
- COWAS Plan of Action to Address Gender-Based Violence (2020–2030);
- Convention Against Torture & other Cruel, Inhuman or Degrading Treatment or Punishment (CAT) (2001);
- Convention on the Rights of Persons with Disabilities (2007);
- The Convention on the Rights of the Child (CRC) (1990);
- The National Action Plan for the Implementation of United Nations Security Council Resolution 1325 (2009);
- The Protocol to the ACHPR on the Rights of Women in Africa (the "Maputo Protocol") (2007).

4.6 African Development Bank Integrated Safeguards System)

In 2013, the African Development Bank adopted an Integrated Safeguards System (ISS) (also referred to as the "2013 ISS" Amended in 2023), which established the Bank Group's

commitment to sustainable development, consolidating and building on the Environment (2004) and Involuntary Resettlement (2003) safeguard1 policies, as well as cross-cutting policies and strategies on gender (Gender Strategy for 2021–2025, "Investing in Africa's Women to Accelerate Inclusive Growth"), and then the Civil Society Engagement Framework (2012).

1. The updated ISS improves the consistency of the Bank's approach to key thematic issues, Environmental and Social Assessment (ESA), and stakeholder engagement activities by adopting 10nr Oss. The 10nr E&S OSs set out the requirements for Borrowers relating to the identification and assessment of E&S risks and impacts associated with operations supported by the Bank.

2. The ten E&S OSs establish the standards that Borrowers shall meet, as appropriate, in projects, activities, and initiatives supported through Bank financing throughout the life cycle of operations, the OS are summarized in the table sub sections below.

Environmental and Social Operational Safeguard (OS) provisions and Applicability to the Project

Table 4.1: Social operation safeguards provision

#	OS	Provisions	Project Applicability
1	Environmental and Social Operational Safeguard 1: Assessment and Management of Environmental and Social Risk and Impact.	Environmental and Social Operational Safeguard 1: Assessment and Management of Environmental and Social Risk and Impact. The aim of this overarching Operational Safeguard (OS), together with the OSs that complement it, is to mainstream environmental and social (E&S) considerations, including those related to climate change vulnerability. into Bank operations and thereby contribute to sustainable development in the continent. The objectives of OS1 are to Identify and assess the E&S risks and impacts including those related to gender inequalities, climate change, and vulnerability of Bank lending, investment, and grant-supported operations, in their areas of influence in a manner consistent with the Oss among others	Conduct an Environment and Social Assessment (ESA) of the proposed project, including stakeholder engagement; Undertake stakeholder engagement and disclose appropriate information in accordance with OS10; Develop an Environmental and Social Plan (ESMP) and implement all measures and actions set out in the financing agreement including the ESMP; and Conduct monitoring and reporting on the E&S performance of the project against the OSs.
2	Environmental and Social Operational Safeguard 2: Labour and Working Conditions	The objectives of OS2 are as follows: To protect workers' rights., To promote safety and health in the workplace and to promote the fair treatment, non-discrimination, and equal opportunity of project workers among others. The categories of workers include; People employed or engaged through third parties to perform work related to the core functions109 of the project, regardless of location (contracted workers). People employed or engaged by the Borrower's primary suppliers110 (primary supply workers); People employed or engaged in providing community labour (community workers).	The borrowers shall undertake below listed prior to implementation of the Project Labour Management Procedures (LMPs) that will detail Working conditions and management of worker relationships Preparation of Occupational Health and Safety Management Plan prior to commencement of works Registration with applicable occupational health and safety

3	Environmental and Social Operational Safeguard 3: Resources Efficiency and Pollution Prevention and Management	This Operational Safeguard (OS) recognizes that economic activities often cause air, water, and land pollution, and The OS provides that the Borrower shall implement technically and financially feasible measures for improving the efficient consumption of energy, water, and raw materials, as well as other resources. The Borrower shall apply pollution prevention and control measures consistent with national legislation and standards, applicable international conventions, and internationally recognized standards and good practice, particularly the Environment Health and Safety Guidelines (EHSGs)	The BORROWER at design Stage shall; Implement Resources efficiency technologies that supports efficient consumption of energy, water, and raw materials, as well as other resources Prepare Pollution Management Plans such as E-Waste Management Plan, Solid and Liquid Waste Management Plan
4	Environmental and Social Operational Safeguard 4: Community Health, Safety and Security	OS4 addresses the health, safety, and security risks to and impacts on project-affected communities and the corresponding responsibility of the Borrower to avoid or minimize them, with particular attention to people who, due to their particular circumstances, may be vulnerable. This OS addresses potential risks to and impacts on communities that may be affected by project activities. Occupational health and safety (OHS) requirements for project workers are set out in OS2, and measures to avoid or minimize impacts on human health and the environment due to existing or potential pollution are set out in OS3	The BORROWER will prepare Community health and safety Management Plan Ensure Worker Sign Code of Conduct Prepare and Implement Traffic Management Plan Prepare and implement labour Influx Management Plan Emergency preparedness and response Plan Prepare Security Management Plan
5	Environmental and Social Operational Safeguard 7: Vulnerable Groups	This OS recognizes that some cultural groups, due to their lifestyle, culture, and strong dependence on the natural environment, have identities and aspirations that are distinct from mainstream groups in national societies and are often disadvantaged by traditional models of development. In many instances, they are among the most economically marginalized and vulnerable segments of the population The objectives of OS7 is to ensure that vulnerable groups and individuals are identified as early as possible in Bank Group operations and that engagement is meaningful, taking into account individuals' and communities' specificities, and delivered in an appropriate form	If the cable interphase with such communities, the BORROWER will undertake below listed Early identification of vulnerable groups Social assessment Special considerations related to highly vulnerable rural minorities Adequate Public consultation and participation Vulnerable groups and broader development planning Timely address of Grievances from such communities

7	Environmental and Social Operational Safeguard 10: Stakeholder Engagement and Information Disclosure	The OS provides that Borrowers shall engage with stakeholders throughout the project life cycle, commencing as early as possible in the project development process and in a time frame that enables meaningful consultations with stakeholders on project design. The nature, scope, and frequency of stakeholder engagement will be proportionate to the nature and scale of the project, and its potential risks and impacts The objectives of OS10 is to establish a systematic approach to stakeholder engagement that will help Borrowers identify stakeholders, and build and maintain a constructive relationship and channels of communication with them, in particular project-affected parties among other objectives	The OS requires below listed with respect to the Project Engagement during project preparation Preparation of The Stakeholder Engagement Plan Establishing a functioning Grievance mechanisms . Engagement during project implementation and external reporting Organizational capacity and commitment

4.7 Comparison between the FGS Frameworks and other international standards

Table 4.2 Comparison of the FGS Frameworks vs other international standards adopted in this project

Thematic Area	FGS Frameworks	AfDB ISS (2013) Safeguards	Other International Standards	Relevance to the Project
Environmental Protection & ESIA	Environmental Protection & Management Act (2024); ESIA & Audit Regulations	**OS 1: Environmental & Social Assessment –** comprehensive ESIA required	Basel Convention (1989), Bamako Convention (1991)	Project requires ESIA approval, mitigation of borehole drilling impacts, and safe waste management.
Water & Sanitation	Water Resources Law; National Environmental Policy (2017)	**OS 4: Pollution Prevention and Control –** efficient resource use & pollution prevention	SDG 6 (Water & Sanitation), ICESCR (Right to Water)	Ensures sustainable water use, borehole construction standards, and safe sanitation facilities.

Climate Change & Resilience	Climate Change Policy (2020); NAP Framework	**OS 2: Climate Change –** low-carbon, climate-resilient development	Kyoto Protocol, Paris Agreement, SDG 13	Design integrates climate resilience (e.g., solar pumping, flood-resistant structures).
Land & Natural Resources	Constitution (2012) on land ownership; Land Tenure (customary + municipal laws)	**OS 3: Biodiversity & Ecosystem Services –** protect ecosystems	African Charter on Human & Peoples' Rights (Right to Environment)	Facility siting must respect land tenure, avoid riparian damage, and maintain Wadi Qardho ecology.
Biodiversity & Ecology	Forests & Wildlife Law; Fisheries Law (1985)	**OS 3: Biodiversity Conservation**	Ramsar Convention, CBD (Biodiversity)	Water systems must prevent disruption of seasonal Wadi Qardho aquatic life.
Gender & Social Inclusion	Constitution (2012) guarantees equality; Gender Policy mainstreaming	**Cross-cutting Safeguard –** gender mainstreaming & inclusion	CEDAW, CRC, CRPD	Separate facilities for women/girls, inclusion of persons with disabilities, child-sensitive designs.
Community Engagement	NEP (2017) requires public participation; Local Government Act	**OS 1 & OS 2: Stakeholder Engagement, Disclosure, Grievance Mechanisms**	UDHR, ICCPR (Civil Rights), ICESCR (Social Rights)	Community consultations, GRM, and stakeholder engagement must be central to planning.

5. STAKEHOLDER CONSULTATIONS

The Stakeholder Engagement Strategy for this water and sanitation project is designed to ensure inclusive participation and ownership at all levels, particularly among those who are directly or indirectly affected by sub-project activities. It aims to identify and address stakeholder needs, expectations, concerns, and grievances through proactive engagement and feedback mechanisms. By doing so, the strategy seeks to promote transparency, collaboration, and accountability throughout the project's lifecycle, fostering trust between stakeholders and implementers. Ultimately, this approach will strengthen the social license to operate, helping to reduce the risks of resistance or conflict and ensuring smoother implementation and sustainable outcomes.

5.1 Identified stakeholders and their roles

The Qardho WASH Project involves a wide range of stakeholders drawn from government institutions, development partners, local authorities, traditional leaders, and community organizations, each playing a key role in ensuring the project's successful implementation and sustainability.

- **Government Ministries:**

The Ministry of Energy, Minerals and Water Resources leads implementation, design approval, and supervision, while the Ministry of Environment, Agriculture and Climate Change oversees ESIA approval, compliance, and climate safeguards. The Ministry of Health ensures water quality, hygiene, and disease control.

- **Local Authorities:**

Qardho Municipality and District Administration manage land allocation, permits, and community engagement. Community Water and Sanitation Committees oversee local water points, maintenance, and equitable access, while local elders mediate land issues and support social acceptance.

- **Development Partners:**

UNICEF and AfDB (through AWF) provide financial and technical support, enforce safeguard standards, and strengthen institutional capacity. FAO (via SWALIM) offers hydrological data and groundwater monitoring. The Ministry of Planning ensures project alignment with national frameworks.

- **Private Sector and Beneficiaries:**

Contractors and consultants handle design, construction, and rehabilitation under PMU supervision for quality and compliance. Local communities and IDPs participate in consultations and benefit from improved water access.

- **Civil Society and Security:**

CSOs and NGOs promote hygiene, gender inclusion, and capacity building. Security agencies ensure safety at project sites and protect personnel and assets.

5.2 Methodology of stakeholder engagement

Stakeholder engagement was conducted in the following ways;

a) **Key informant interviews (KIIs)** with local authorities, WASH service providers, women's groups, and elders. Focus was to establish for any existing UNICEF gender programmatic review (if one has been conducted), especially if WASH programming was reviewed.

b) **Focus group discussions (FGDs)** disaggregated by sex and age to capture diverse perspectives; (i) The first FGD was held with a government official from the department of physical planning about the interventions they would require help with in terms of WASH from the project. (ii) The other FGD was held with CISP an NGO dealing with Gender issues in Somalia and specifically Qardho and (iii) The last one was held at Qardho Hospital with the General Manager to understand the gaps and challenges they face in terms of providing services especially with focus on WASH activities.

Table 5.1 Stakeholder Engagement Matrix

Stakeholder	Category / Level	Interest in Project	Influence	Roles and Responsibilities
Puntland Ministry of Energy, Minerals & Water Resources (MoEMWR)	Government / Lead Implementing Agency	High – responsible for water sector policy, coordination, and infrastructure development	High	Lead implementing agency; oversight of design and construction; ensures project aligns with Puntland Water Policy and national WASH objectives.
Puntland Ministry of Environment, Agriculture & Climate Change (MoEACC)	Government / Regulator	High – ensures environmental protection and sustainability	High	Reviews and approves ESIA; issues Environmental Compliance Certificates; monitors environmental safeguards and climate resilience measures.
Puntland Ministry of Health (MoH)	Government / Health Authority	High – focuses on public health and sanitation outcomes	Medium	Oversees water quality monitoring and health risk management; coordinates with project on hygiene promotion and disease surveillance.
Qardho Municipality / District Administration	Local Government	High – manages land, permits, and community coordination	High	Facilitates land allocation and construction permits; coordinates urban planning and community engagement; supports local conflict resolution.
Community Water and Sanitation Committees (CWSCs)	Community / Local Governance	High – directly manage and maintain water facilities	Medium	Oversee local water points and treatment plants; ensure equitable access and community participation in operation and maintenance.
Local Elders and Clan Leaders	Traditional Authority	High – influence social acceptance and land access	Medium–High	Confirm land ownership and boundaries; mediate disputes; facilitate community buy-in and peaceful coexistence.
UNICEF	Development Partner / Financier	High – provides funding and technical support	High	Finances and supports project implementation; ensures adherence to UNICEF Environmental and Social Standards (ESS); monitors social and gender impacts.
African Development Bank (AfDB) / African Water Facility (AWF)	Development Partner / Financier	High – co-funding and safeguard oversight	High	Provides financing, ensures compliance with AfDB Integrated Safeguards System (ISS), and monitors environmental and social performance.
FAO – Somalia Water and Land Information Management (SWALIM)	Technical Partner / Research Institution	Medium – supports data collection and water resource management	Medium	Provides hydrological data, groundwater monitoring, and technical inputs for sustainable water resource management.

Ministry of Planning, Investment, and Economic Development (MoPIED)	Government / Coordination	Medium – ensures national alignment and donor coordination	High	Ensures project aligns with national plans; coordinates with donors and oversees reporting.
Contractors and Consultants	Private Sector / Service Providers	High – responsible for design and construction	High	Execute construction, rehabilitation, and installation of water infrastructure; adhere to EHS standards; implement ESMP measures.
Supervising Engineer / Project Management Unit (PMU)	Technical Oversight	High – ensures quality and compliance	High	Supervises works, ensures adherence to specifications and safeguards, and prepares progress and compliance reports.
Local Communities and IDPs	Beneficiaries	Very High – direct users of improved WASH services	Low–Medium	Participate in consultations; provide local knowledge; benefit from improved access to safe water and sanitation.
Civil Society Organizations (CSOs) / NGOs	Development / Advocacy	Medium – promote community empowerment and inclusion	Medium	Support community sensitization, gender inclusion, hygiene promotion, and grievance redress.
Security Agencies (Police, Local Administration)	Public Safety / Law Enforcement	Medium – responsible for protection of assets and personnel	Medium–High	Provide site security, protect equipment and workers, and respond to safety or conflict incidents.

5.3 Stakeholder Consultation Summary

A total of 5 key informant interviews and 6 Focused Group Discussions (FGD) were conducted with representatives from the following sectors. Additionally, Public participation forums were held on 3rd September 2025 at Mayor Office Qardho.

5.3.1 Key Informant Interviews

A total of 5 KIIs have been conducted with representatives from the following sectors:

Table 5.2 Key Informant Interviews

Date	Stakeholder/Office Visited	Key Issues Discussed
12th June 2025	Ministry of Women Development and Family Affairs (MOWDAFA) – Qardho-Social Department	Women's representation in WASH planning, lack of menstrual hygiene services, need for gender mainstreaming in local development plans.
11th June 2025	Qardho Municipality (Mayor's Office & Public Works Dept.)	Infrastructure gaps, urban sanitation planning, challenges in maintaining public toilets.
9th June 2025	Ministry of Water and Environment – Hoodman Water Management Company	Access to clean water, distance to water points, maintenance issues, low women involvement in user committees.
12th June 2025	Ministry of Health – Shabeellee Health Centre	WASH-related health concerns, diarrhea outbreaks, link between sanitation and maternal health.
13th June 2025	Local NGOs (including women's associations)	Gender-based violence risks at water points, lack of sanitary pads, women's limited access to funding.

Outcomes and Measures from Stakeholder Consultations

1. **Limited access to water (long distances to water points)**
    - **Outcome:** Heavy burden on women/children, reliance on unsafe sources.
    - **Measures:** Construct water points closer to communities and schools; install storage tanks and pipelines to reduce walking distance.
2. **Unsafe and inadequate sanitation (lack of privacy/safety at latrines, poor school sanitation, stigma around menstruation)**
    - **Outcome:** Protection risks, open defecation, school absenteeism for girls, spread of diseases.
    - **Measures:** Build gender-segregated and disability-friendly latrines with lighting and privacy; provide menstrual hygiene facilities and supplies; improve sanitation in schools and health centers.

3. **Low awareness and limited inclusion in WASH (gender-specific needs not considered, stigma, weak capacity)**
    - **Outcome:** Exclusion of women and vulnerable groups, poor hygiene practices, weak facility maintenance.
    - **Measures:** Conduct inclusive WASH education, hygiene promotion campaigns, and menstrual hygiene awareness; ensure women and vulnerable groups participate in decision-making; strengthen capacity of WASH committees, teachers, and health staff.
4. **Poor waste management (need for recycling facilities and hygiene support)**
    - **Outcome:** Solid waste buildup, environmental pollution, increased disease risks.
    - **Measures:** Establish recycling and waste segregation systems; promote composting/reuse; support community hygiene programs led by local champions.
5. **Underutilized institutions (schools and health centers not fully engaged in WASH promotion)**
    - **Outcome:** Lost opportunity for behavior change and sustained hygiene improvement.
    - **Measures:** Equip schools and health centers with adequate WASH facilities; use them as platforms for hygiene education, awareness campaigns, and training.

5.3.2 Focus Group Discussions

Table 5.3: Focus Group Discussions

Date	Group Composition	Key Themes
12th June 2025	Women from IDP camps (5 participants)	Long distances to water points, lack of safety and privacy at latrines, stigma around menstruation.
11th June 2025	Waste services provider	Poor school sanitation, need for capacity building, establishment of recycling facilities
16 May 2025	Men and male youth (community leaders)	Limited awareness of gender-specific needs in WASH, support for improved community hygiene.
12th June 2025	Mixed group: nurses, CHWs	Importance of inclusive WASH education, role of schools and health centers, capacity-building needs.

5.4 Government and Institutional Visits

In addition to interviews, visits were made to:

- District Administration Office: Discussed governance and coordination of basic services.
- Water Service providers and Boreholes: Observed operation, tariff practices, and community usage patterns.
- Health Centers and IDP Camps: Inspected hygiene facilities, water availability, and MHM provisions.
- Women's Centers and Safe Spaces: Engaged with service providers supporting GBV survivors and awareness programs.

Outcomes of Stakeholder Visits

1. **District Administration Office**
    - Gained insights into the governance structures responsible for coordination of water, sanitation, and hygiene (WASH) services.
    - Identified gaps in capacity and resources, highlighting the need for stronger institutional support and better alignment between district authorities and service providers.
    - Confirmed willingness of the administration to collaborate with development partners on WASH infrastructure and service delivery.
2. **Water Service Providers and Boreholes**
    - Observed that operations are functional but constrained by aging equipment, high maintenance costs, and irregular supply.
    - Tariff practices revealed inconsistencies, with affordability challenges for vulnerable households.
    - Community reliance on boreholes underscored the urgency of upgrading infrastructure and ensuring fair pricing mechanisms.
3. **Health Centers and IDP Camps**
    - Inspections showed inadequate hygiene and sanitation facilities, with limited or intermittent water availability.
    - Menstrual hygiene management (MHM) materials and private facilities were insufficient, contributing to reduced dignity and poor health outcomes, especially for women and girls.
    - The findings emphasized the need to integrate WASH improvements into health centers and IDP settlements to reduce disease risks and improve well-being.
4. **Women's Centers and Safe Spaces**
    - Discussions revealed ongoing support for gender-based violence (GBV) survivors, but facilities were under-resourced.
    - Awareness and advocacy programs were ongoing, yet limited in reach due to funding and staffing constraints.
    - Consultations highlighted the importance of embedding gender-sensitive WASH solutions and linking them with GBV awareness initiatives to strengthen protection and empowerment.

5.5 Planned Stakeholder Engagement Activities

5.5.1 Stakeholder Engagement Plan (SEP)

1. Introduction

The SEP outlines how stakeholders will be identified, consulted, informed, and engaged throughout the project lifecycle. It ensures compliance with AfDB ISS Guidance Note 10 and Somali regulatory frameworks on community engagement.

2. Objectives of the SEP

- Identify and analyze stakeholders (interest, influence, and vulnerability).
- Provide a framework for transparent and culturally appropriate engagement.
- Ensure timely disclosure of information to all stakeholders.
- Establish a functional grievance redress mechanism (GRM).
- Build ownership and support for sustainable project operation.

3. Stakeholder Identification and Analysis

Table 5.4 Stakeholder Mapping Matrix

Category	Stakeholder	Interest/Concerns	Influence/Power	Engagement Approach
Primary (Directly Affected)	School students & teachers	Safe, hygienic sanitation facilities	Medium	Awareness sessions, school committees
	Health centre staff & patients	Reduced disease risks, safe wastewater handling	Medium	Workshops, staff training, noticeboards
	Local communities (adjacent households)	Safety, local employment	Medium	Community meetings, flyers, grievance desk
Secondary (Indirectly Affected)	Traditional elders & religious leaders	Land access, social acceptance	High	Consultative forums, inclusion in GRM
	Women's groups	Safety, menstrual hygiene management	Medium	Gender-focused consultations
	Youth groups	Local jobs, training opportunities	Low	Public consultations, skills programs
Institutional Stakeholders	Puntland Ministry of Environment, Climate Change & Wildlife	ESIA approval, monitoring	High	Formal meetings, compliance reporting
	Puntland Ministry of Health	Sanitation-health linkages	High	Joint inspections, technical coordination

	Puntland Ministry of Public Works & Urban Development	Building approvals, siting	High	Planning coordination, site inspections
	Qardho Municipality	Land allocation, service delivery	High	Regular coordination meetings
Development Partners	AfDB	Safeguards compliance, financing	Very High	Formal reporting, AfDB missions
Private Sector	UNICEF Somalia	Technical standards for WASH	High	Coordination workshops, joint monitoring
	Local contractors	Project delivery, safety	Medium	Contractor agreements, OHS monitoring
	Waste service providers	Sludge management, O&M	Medium	Partnership agreements

4. Stakeholder Engagement Activities

- **Preparation & Design Phase:** Public consultations, ESIA disclosure, validation of site selection.
- **Construction Phase:** Continuous community updates, safety briefings, OHS monitoring, job opportunities.
- **Operation Phase:** Hygiene promotion, capacity building of school/health staff, periodic community outreach.

5. Information Disclosure

- **What:** ESIA/ESMP summaries, project timelines, OHS measures, GRM procedures.
- **How:** Flyers in Somali language, public noticeboards at schools/health centers, radio programs, AfDB website.
- **Principle:** Timely, accessible, culturally sensitive disclosure.

6. Grievance Redress Mechanism (GRM)

- **Community-level complaint desks** at schools and health centers.
- **Escalation** to Qardho Municipality and Puntland Environment Ministry.
- **Final appeal** through AfDB safeguard focal points.
- Free, accessible, and inclusive for all groups, including women and children.

7. Feedback Mechanisms

- Biannual community meetings to share project updates.
- Publicly displayed summaries of resolved grievances.
- AfDB and Puntland government disclosure of monitoring results.

8. Budget for SEP Implementation

Table 5.5 SEP implementation budget

Activity	**Estimated Cost (USD)**
Consultations & Meetings	2,500
Information Disclosure (media, flyers, translation)	2,500
Grievance Mechanism (training, staff, desks)	3,000
Monitoring & Reporting	1,500
Contingency	500
➞ **Total Estimated SEP Budget:**	10**,000 USD**

9. Monitoring and Reporting

- **Indicators:** Number of consultations held, % of vulnerable groups consulted, grievances resolved, community satisfaction rate.
- **Frequency:** Quarterly monitoring reports; annual review with AfDB.

5.5.2 Project implementation phase

OS 10 (Stakeholder Engagement and Information Disclosure) ensures that the SEP will remain fully operational throughout construction. During the construction Phase the stakeholders will be engaged and key activities will include:

- Regular information updates to communities on construction schedules, traffic management, safety protocols, and anticipated disruptions, to mitigate rumors and opposition.
- Real-time impact monitoring through community feedback channels to track and adaptively manage dust, noise, labour influx, and other construction-related effect.
- Ongoing grievance-redress support, ensuring new or evolving concerns particularly those affecting local livelihoods are addressed before escalation.

5.5.3 Project closure phase

During the completion stage the stakeholders will be involved in activities encompassing final inspections, ex-post RAP evaluation, and commissioning. The following engagement activities will be conducted to secure sustainable handover-

- Validation of compensation and restoration outcomes, co-verified with affected persons to confirm delivery of agreed entitlements
- Lessons-learned workshops with stakeholders to capture effective practices and areas for improvement, informing future projects.
- Transition planning sessions with communities and local authorities to formalize long term monitoring and maintenance responsibilities.

Table 5.6: Summary of planned stakeholder engagement in project implementation phase

Engagement Type	Purpose
Pre-Construction Sensitization	Meetings Ensures early disclosure of construction plans, timelines, and risks to promote informed stakeholder participation.
Construction Kick-Off Meeting	Promotes coordination and clear communication of roles/responsibilities, aligned with inclusive engagement principles.
Monthly Community Feedback	Forums Fulfils OS 10's requirement for continuous consultation to manage emerging issues and maintain social license.
Grievance Redress Meetings	Provides access to an effective GRM as required by OS 10 to address construction-related complaints in real-time.

Environmental & Social Risk	Monitoring Sessions Ensures that construction risks (dust, waste, labour influx) are monitored with stakeholder involvement, as required.
Labour Engagement Meetings	Promotes non-discriminatory employment practices, working conditions, and grievance channels for workers.
Traffic and Public Safety Meetings	Informs stakeholders of potential access disruptions and ensures inclusion of vulnerable road users (per OS 10)
Women and Vulnerable Group	Dialogues Supports equitable participation, safeguards vulnerable populations, and captures gender-specific concerns.
Emergency Response and	Preparedness Meetings Ensures communities are informed and prepared to respond to construction-related incidents or health risks.
Decommissioning meeting	A decommissioning meeting will be convened to formally mark the closure of project activities and to ensure a transparent, inclusive, and accountable handover process. The meeting will bring together key stakeholders, including representatives from the implementing agency, local government officials, community leaders, project-affected persons (PAPs), and the project team.

5.5.4 Process to be followed for arranging engagement activities

- Engagement planning & scheduling: This will involve drafting of an engagement calendar aligned with project timelines, selection of venues based on accessibility and security considerations.
- Notification & mobilization: This will involve issuing of formal invitations or public notices (radio, posters, local leaders), and mobilization at least 5 working days in advance.
- Logistics and resource preparation: This will include securing venues, arranging refreshments, transport support for vulnerable group, prepare communication materials (presentations, banners, feedback forms), setting up the venue etc.
- Conduct of engagements: This will be the recording of proceedings and gathering feedback systematically.
- Post-engagement follow-up: This will involve compiling of meeting minutes and sharing with participants, integration of feedback into project planning.

5.5.5 Engagement protocols

During engagement, the following protocols shall be applied; -

- Respect and Inclusivity: Ensure respectful, inclusive participation with attention to gender, age, and disability considerations.
- Free, Prior and Informed Consent (FPIC): Engagements must be voluntary, based on complete and timely information.
- Language and Communication: Use local languages and culturally appropriate methods to ensure understanding.

- Documentation and Transparency: Maintain detailed minutes, attendance records, and audio/visual documentation (if permitted).
- Feedback and Grievance Mechanism: Inform stakeholders of grievance procedures and encourage constructive feedback.
- Security and Ethics: Ensure safe environments and adhere to ethical standards of engagement.

6. ANALYSIS OF ALTERNATIVES

6.1 Alternative Materials for Water Pipes

The choice of water supply material is influenced various factors as summarized below:

- Capacity to withstand internal and external pressure
- Resistance to soil corrosively
- Internal surface smoothness
- Thrust restraining requirements at bends and tees
- Pipe jointing methods
- Future expansion and maintenance needs
- Expected pipeline lifespan
- Availability, procurement origin and cost

6.2 Water Supply Pipes

Taking these factors into account, HDPE (High-Density Polyethylene) pipes is preferred for the proposed works. From a safeguard's perspective, HDPE is a suitable material due to its corrosion and chemical resistance, and overall durability and subsequently its sustainability. It does not pose environmental or health hazards under normal operating conditions. When assessed against other available materials, there is no clear justification for selecting an alternative that would offer significantly better environmental or social performance within the context of this project and the defined design requirements. For this project in particular, the safeguards approach prioritized minimizing population displacement and avoiding the use of hazardous materials. The adoption of HDPE aligns with these objectives and supports compliance with applicable environmental and social standards.

6.3 Water Treatment Plant Construction alternatives

1. Civil Structures (tanks, sedimentation basins, reservoirs)

- Reinforced concrete → standard choice; durable and widely used.
- Ferrocement → thinner, cheaper, uses less cement and steel; good for small/medium tanks.
- Masonry (stone or bricks) → locally available, affordable; requires waterproof plaster lining.
- Prefabricated steel tanks → quick to install, but prone to corrosion if water is saline.
- HDPE/FRP (fiberglass reinforced plastic) modular tanks → lightweight, corrosion-resistant; good for small-scale systems but higher cost.

2. Piping & Conveyance

- PVC/uPVC → affordable, corrosion-resistant; most common in Somalia.
- HDPE → strong, flexible, ideal for buried pipelines.

- Galvanized steel → robust, but prone to rust in saline/alkaline water.
- Ductile iron → durable for main lines; costly and heavy.

3. Filtration Media

- Locally available sand and gravel → standard and low-cost.
- Crushed stone or recycled concrete → substitute for gravel.
- Biochar/charcoal → adds adsorption capacity; can be made locally.
- Ceramic beads/glass media → high efficiency but imported.

4. Disinfection Systems

- Chlorination (calcium hypochlorite, sodium hypochlorite) → widely used and available.
- UV disinfection units → effective, but require power and spare parts.
- Solar disinfection (SODIS) → low-tech option for small-scale or backup.

6.4 Water Quality Monitoring Laboratory Construction

1. Laboratory Structure

- Concrete block or masonry buildings → durable and affordable.
- Prefabricated modular buildings (steel/FRP panels) → faster construction, portable.
- Converted shipping containers → increasingly used as mobile labs; low-cost and relocatable.

2. Workbenches & Surfaces

- Concrete slabs with ceramic tiles → affordable, durable, easy to clean.
- Stainless steel benches → highly durable, chemical-resistant; more expensive.
- Epoxy resin worktops → resistant to chemicals and heat, but imported.

3. Laboratory Furniture & Fittings

- Locally made wooden or metal benches/cabinets → cheaper, customizable.
- Prefabricated lab-grade fittings → durable but imported and costly.

4. Water Testing Equipment

- Field kits (portable test kits) → affordable, easy to use; limited precision.
- Basic bench instruments (pH meters, turbidity meters, conductivity meters, incubators) → mid-range cost, sufficient for routine testing.

- Advanced analysers (spectrophotometers, chromatography) → high precision but require skilled staff and stable power.

6.5 Location Alternatives

A. Option 1 — Kuleejka site (proposed: 9.5053253, 49.0920145) and Xingood site (proposed: 9.4977197, 49.0825547)

Merits

- Close to beneficiary population clusters (reduces distribution costs / distance to water points).
- Sufficient elevation (existing design uses reservoir at ~751.5 masl) for gravity distribution — lowers pumping energy after filling.
- Land availability for plant, reservoir and future expansion.

Constraints

- May be semi-remote from main service hubs (access/transport during rainy season).
- Proximity to IDP sites and settlements requires sensitive design (security, gender/privacy, community integration).

B. Option 2 — Centralized plant inside Qardho town (larger, near municipal infrastructure)

Merits

- Better access to electricity, roads, skilled staff, and municipal maintenance services.
- Easier integration with existing distribution networks.

Constraints

- Higher land / siting costs; may require significant distribution pumping to reach outlying settlements.
- Potentially more complex land acquisition and social impacts in denser areas.

C. Option 3 — Multiple decentralized mini-plants (clustered near IDP camps and peri-urban villages)

Merits

- Brings water physically closer to users — reduces walking time and household burden.
- Localized systems can be simpler, lower flow, and tailored to local water quality.

Constraints

- Multiple installations increase overall capital, O&M complexity, and require trained local operators at each site.
- Economies of scale are reduced; spare parts/logistics multiply.

Location trade-offs

- **Kuleejka and Xingood (proposed)** balances proximity, gravity distribution, and available space → **selected** as preferred single decentralized site for a compact NF plant with a 50 m³ reservoir.
- **Centralized in town** favours operations/logistics but increases distribution energy/costs to outlying users.
- **Multiple mini-plants** maximize access but raise capex/O&M complexity.

6.6 Alternatives by Operating Conditions / Treatment Technology

A. Option A — Conventional Groundwater Treatment

(Process: Aeration → Sand filtration → GAC/softening (optional) → UV / chlorination)
Suitable when: TDS and salinity are low-to-moderate; contaminants largely particulate, iron/manganese, microbial.
Strengths

- Low energy demand and simpler operation.
- Lower capital & O&M costs.
- Easier for local technicians to operate/repair.

Limitations

- Ineffective for brackish (high TDS) water — will not remove dissolved salts, fluoride at problematic levels.
- May need additional treatment for specific chemical contaminants.

B. Option B — Nano-Filtration (NF) with UF pre-treatment *(Recommended / proposed)*

(Process: Borehole → UF → Centrifugal Pump → NF → UV → Reservoir)
Suitable when: Groundwater is brackish (moderate salinity), contains dissolved ions (sulphates, some heavy metals), or partial desalination is required.
Strengths

- Removes 85–90% of many salts and specific contaminants; produces potable water from brackish sources.
- Lower operating pressure and energy than RO; simpler than full desalination.
- Manageable by trained local technicians (with supplier support).

Limitations

- Higher capital and ongoing O&M energy needs than conventional systems.
- Generates a brine/reject stream requiring responsible disposal.
- Requires reliable power or adequate backup (generator/solar).

C. Option C — Reverse Osmosis (RO)

Suitable when: Very high TDS/brackish or seawater feed where near-complete desalination is required.

Strengths

- Highest salt removal (near total desalination).

Limitations

- Very high energy demand, more complex maintenance, higher costs — generally not suitable for this setting.

Operating conditions trade-offs

- **Conventional** is cheapest and simplest but may fail to meet drinking water quality where salinity/TDS or fluoride are high.
- **NF** offers an intermediate, technically appropriate solution for Qardho: adequate removal of salts at moderate energy, lower complexity than RO — **selected** because feed groundwater is brackish but not seawater.
- **RO** is over-specified (and unsustainable) for the present socio-technical context.

Table 6.1 Comparison of Treatment Options for Qardho

Criteria	Option A – Conventional Groundwater Treatment	Option B – Advanced Nano-Filtration
Capital Cost	Low to Moderate (simple equipment: aerators, sand filters, UV units)	High (membranes, high-pressure pumps, control systems)
Operating Cost	Low (mainly electricity for pumps and periodic media replacement)	Moderate to High (membrane replacement, higher energy demand)
Energy Demand	low (1–2 bars pressure, small pumps)	Moderate (≈5–7 bars pressure, continuous pumping)
Water Quality Output	Effective for low-salinity water: removes iron, manganese, pathogens, particulates; may not reduce salts	Produces potable water from brackish sources: reduces 85–90% of salts, heavy metals, sulfates, pathogens
Salinity Reduction	Minimal – not suitable for high TDS water	Significant – residual salt 600–800 mg/L (within WHO standards)

Technical Complexity	Low – simple operation, easy to train local staff	Higher – requires trained operators, more advanced maintenance
Suitability in Qardho	Only if fresh or slightly brackish sources are found	Recommended – applicable to existing brackish groundwater
Long-Term Reliability	High (robust, low-maintenance) but limited by water salinity	High if properly maintained; dependent on power supply and spare parts availability

6.7 No-Action Option

Description

Proceeding with no new treatment project, leaving current supplies and practices unchanged.

Likely outcomes / risks

- Continued reliance on untreated or inadequately treated groundwater: persistent health risks (waterborne disease, fluorosis, salt-related health concerns).
- Long distances to functioning water points persist, disproportionately affecting women and children.
- Continued stress on existing boreholes: over-abstraction, equipment failure, inequitable access, and higher long-term costs.
- Missed opportunity to provide stable, affordable drinking water — negative socioeconomic and public health impacts.
- Donor/partner interest and government plans may shift elsewhere if unaddressed.

Conclusion

No-action carries significant public health and social risks and is not recommended.

6.8 How the Project Arrived at the Selected Alternative (Decision Logic)

1. **Assessment of Resource (Hydrogeology & Water Quality):**
    - Groundwater is the dependable source, but some boreholes show elevated TDS/salinity and fluoride — conventional low-energy treatment would be insufficient in those cases.
2. **Feasibility & Local Capacity:**
    - RO is technically effective but energy-intensive and requires high technical capacity. Local utility and energy conditions make RO impractical.
    - NF provides required water quality improvement (85–90% salt removal) while keeping energy and operational complexity manageable.

3. **Service Objectives & Affordability:**
    - The project must deliver potable water affordably to low-income households. NF's lower energy and simpler maintenance compared to RO help meet affordability objectives.
4. **Operational Resilience & Sustainability:**
    - Gravity-fed reservoir placement (751.5 meters above sea level) reduces pumping costs during distribution. NF with UF pre-treatment minimizes membrane fouling and prolongs equipment life.
    - Supplier training and modular design (2 working + 1 standby modules) increase reliability.
5. **Environmental & Social Considerations:**
    - NF produces reject brine, but the volume and concentration are lower than RO. A brine management plan (controlled discharge, evaporation ponds, or safe dilution) is feasible.
    - Single decentralized site and water quality laboratory at Kuleejka balances proximity and operational practicality while allowing inclusive access and risk mitigation for women/IDP communities.

Net decision: Nano-filtration at the Kuleejka and Xingood project sites (single decentralized plant with UF pre-treatment, a 50 m^3 reservoir, and gravity distribution) represents the best balance of water quality, cost, energy, local manageability and social impact.

Table 6.2 Comparative Trade-Off Table

Criterion	Conventional	Nano-Filtration (Selected)	RO
Salinity reduction	Low	Moderate–High (85–90%)	Very High
Energy demand	Low	Moderate	Very High
Capital & O&M cost	Low	Moderate	Very High
Technical complexity	Low	Moderate	High
Brine production	Minimal	Moderate	High
Suitability for Qardho (brackish)	Limited	Good (Preferred)	Over-specified

6.9 Recommendations & Mitigations for Selected NF Option

- **Brine management:** Develop controlled disposal (evaporation ponds, infiltration in designated areas, or co-discharge with care) with environmental monitoring.
- **Power resilience:** Provide hybrid power (grid if available + generator and/or solar + battery backup) to ensure continuous NF operation and reduce fuel costs.

- **Capacity building:** Robust training program for local technicians, spare parts stock, and O&M manuals in local language.
- **Hybrid fallback:** Keep scope for conventional treatment units to treat low-salinity boreholes or act as emergency/low-energy fallback.
- **Community engagement:** Ensure siting and security address gender, safety and IDP needs; integrate tariff policy with social protection for vulnerable households.

6.10 Final Conclusion

Given Kuleejka and Xingood's hydrogeological profile (groundwater as the main source with some brackish boreholes) and the local operational context (limited energy reliability, need for manageable O&M), **the** NF option at the project's proposed water treatment plant and water quality monitoring laboratory site is the most pragmatic alternative; it meets water quality targets, remains technically feasible for local operators, and balances costs and sustainability. The main trade-offs are moderate higher cost and management of NF reject, both addressable by design measures (power mix, brine management, local training).

7. ASSESSMENT OF ENVIRONMENT AND SOCIAL IMPACTS

7.1 Introduction

This chapter identifies the potential environmental impacts resulting from the proposed project activities. The nature of impacts on the identified resources and receptors are categorized as either positive or negative, direct or indirect, long term or short term. The purpose of this assessment is to identify the significant impacts and to determine the appropriate measures to mitigate the negative impacts and to enhance the positive impacts. Significant impacts are defined as being those that:

- Relate to protected areas or to historically and culturally important areas
- Area of public concern and importance
- Trigger subsequent secondary impacts
- Elevate the risk of life-threatening situations

7.2 Project Positive Impacts

Project positive impacts during construction phase are summarized below.

- **Employment Creation:** At construction stage workers will be deployed to help in construction and land preparation activities. This will include both skilled and unskilled personnel especially from the local population with approximately 200 direct and indirect jobs.
- **Income/Revenue to Government:** Income to government will be realized in terms of taxes generated during the acquisition of relevant statutory licenses such as Environmental and Social Impact Assessment (ESIA) License, Water Abstraction and Use Permit, Wastewater Discharge / Effluent Disposal Permit, Construction Permit, Laboratory Accreditation / Certification for Water Quality Testing, Public Health and Safety Approval, Occupational Health and Safety Compliance, Land Use / Site Development Permit, Fire Safety and Emergency Preparedness Certification.
  Materials to be used during construction will also be taxable. Through revenues generated, the government will be capable of financing its responsibility to her citizens.
- **Income to Other Businesses:** During implementation of the project, there will be need for transporters, suppliers of raw materials and other service providers, who will benefit from the proposed development.

7.2.1 Water treatment plant and monitoring laboratory - Operation phase positive impacts

Environmental Impacts

- Cleaner environment → Treated water reduces reliance on unsafe sources,

preventing pollution of rivers, shallow wells, and soil.

- Sustainable water use → Continuous monitoring prevents over-extraction or misuse of boreholes.
- Climate resilience → Reliable supply during droughts reduces pressure on fragile ecosystems.

Public Health Impacts

- Safe drinking water → Continuous treatment removes pathogens, sediments, and chemicals, lowering risks of cholera, typhoid, and diarrhoea.
- Early detection of risks → The laboratory ensures contaminants are identified quickly, preventing outbreaks.
- Improved hygiene and nutrition → Safe water supports maternal/child health, sanitation, and better food safety.

Service Delivery & Water Resource Impacts

- Reliable supply → Plant ensures steady access to clean water for households, schools, health centers, and businesses.
- Trust in water services → Monitoring builds community confidence in municipal supply.
- Data-driven management → Lab results guide operators on dosage, maintenance, and protection of water sources.

Socio-Economic Impacts

- Lower healthcare costs → Reduced disease burden eases financial pressure on families and government.
- Employment opportunities → Plant operators, lab technicians, maintenance staff, and support workers get stable jobs.
- Skill development → Staff gain technical expertise in treatment processes and laboratory techniques.
- Economic productivity → Healthy populations spend more time in work, education, and trade instead of being sick.
- Urban development support → Reliable safe water attracts investment, strengthens institutions, and improves living standards.

7.3 Construction Phase Negative Impacts

7.3.1 Impacts on Water Resources

Qardho Municipality, located within Puntland state which has mainly groundwater-fed boreholes and shallow wells. The Project activities will either indirectly or directly interact with these water reservoirs through sedimentation and possible pollution from raw sewerage leaking from rehabilitation works within the area

Potential Impacts

Project activities on water lines listed above will interact with water resources within the Project area highlighted above in the following ways.

- Site activities such as trench excavations could result to loosening of soils that could result to sedimentation and siltation that in turn affect the water reservoirs.
- There will be direct interaction from the abstraction of water from surface water bodies for construction (e.g. for dust control).
- Un-serviced plant and equipment on site could result to oils and fuels leaks that could contaminate water resources.
- The nature of the construction activities of the proposed water lines will render the soils susceptible to agents of erosion subsequent siltation of rivers and stream along the Water alignment. The small magnitude of this impact on surface water quality and the low sensitivity of the rivers to increased turbidity means the significance of this impact is assessed as minor.

Pre- Mitigation Impact Assessment is presented in the table below

Table 7.1: Pre-Mitigation Impact Assessment

Impact	**Siltation and pollution of Surface Waters Resources**			
Nature of Impact	Negative	Positive	Neutral	
	Eroded soil and leaked oils and fuels entering groundwater-fed boreholes and shallow wells			
Type of Impact	Direct	Indirect	Induced	
	Impact is a result as a direct interaction between Project activities and the environment along the footprint of the water alignments.			
Duration of Impact	Temporal	Short term	Long term	Permanent
	The impact is expected to be short term, however in the case of serious erosion the impacts of siltation of surface water may be experienced long term (into the operational phase).			
Impact Extend	Local	Regional	International	
	The impact will be limited to the footprint of the Water alignment and immediate surrounds. The dilution of sediments in the river will render this impact negligible at the regional scale			

Impact scale	The impact is considered as small (local) scale.				
Frequency	Continuous				
Livelihood	Possible				
Impact magnitude	Positive	Negligible	Small	Medium	Large
	Based on the above the impact magnitude is considered small.				
Resource / receptor sensitivity	Low	Medium	High		
	The sensitivity of the rivers along the proposed Water Lines to Siltation and pollution is considered to be medium to low.				
Impact significance	Negligible	Minor	Moderate	Major	
	Considering the impact magnitude is small and the sensitivity is medium to low, the overall significance is considered to be minor				

Mitigation

The following mitigation measures will be implemented to minimize the potential for siltation and sedimentation of surface water by soils eroded from construction sites

- Activities shall be conducted > 100 m away from water bodies, except where crossings are required.
- All waste water which may be contaminated with oily substances must be managed in accordance with an appropriate Waste Management Plan (WMP).
- No hydrocarbon-contaminated water may be discharged to the environment.
- At construction stage, the contractor will prepare Specific Construction Environment and Social Management Plan (C-ESMP) which included among other; *Soil and Sedimentation Control Plan, Spoil Management Control Plan and Waste Management Plan.*

Residual Impact

The implementation of the proposed mitigation measures reduces the significance of the residual impact to negligible from minor within water bodies identified. The table below presents residual impact significance following mitigation measures

Table 7.2: Residual Impact Significance

Impact	**Project Phase**	**Significance (Pre-mitigation)**	**Residual Impact Significance (Post-mitigation)**
Availability and Quality of Water Resources (groundwater-fed boreholes and shallow wells)	Construction	Minor	Negligible

7.3.2 Impacts on Soil Resources

Baseline

The dominant soil type in Qardho is shallow sandy and/or stony soils and deeper calcareous soils, with the central part of Somalia also having moderately deep loamy soils high in calcium carbonate or gypsum. The region features Vertosols on clay plains and is subject to moisture stress, low fertility, and potential salinity

Potential Impacts

The excavation of soil for the construction of water lines will disrupt the soil cohesion and also may result in surplus soil due to the installation of water pipes within the same excavated trenches. If not properly restored or managed, such soils may be eroded off. Temporary soil stockpiles established during construction of infrastructure will be at risk of erosion from wind and rainfall. Soil contamination as a result of possible oil and fuel leaks from un-services plant and equipment on site is also a potential impact.

Impact Assessment

The table presents Pre- Mitigation Impact Assessment.

Table 7.3: Pre-Mitigation Impact Assessment

Impact	**Soil Erosion during Construction**				
Nature of Impact	Negative		Positive		Neutral
	Loss of soil cohesion contributing to erosion.				
Type of Impact	Direct		Indirect		Induced
	Impact is a result as a direct interaction between project activities and the environment along the footprint of the project.				
Duration of Impact	Temporal	Short term		Long term	Permanent
	The impact is expected to be short term, however in the case of serious erosion the impacts may be experienced long term.				
Impact Extend	Local		Regional		International
	The impact will be limited to the footprint of the project and immediate surrounds.				
Impact scale	The impact is considered as small (local) scale.				
Frequency	Continuous				
Livelihood	Possible				
Impact magnitude	Positive	Negligible	Small	Medium	Large
	Based on the above the impact magnitude is considered small.				
Resource / receptor sensitivity	Low		Medium		High
	The sensitivity of the rivers along the proposed Water Lines to erosion is considered to be medium to low.				
Impact significance	Negligible	Minor		Moderate	Major
	Considering the impact magnitude is small and the sensitivity is medium to low, the overall significance is considered to be minor				

Mitigation

The following mitigation measures will be implemented to minimize the potential for soil erosion:

- Vegetation clearing and topsoil disturbance will be minimised.
- Contour temporary and permanent access roads / laydown areas so as to minimise surface water runoff and erosion.
- Sheet and rill erosion of soil shall be prevented where necessary through the use of sand bags, diversion berms, culverts, or other physical means.
- Topsoil shall be stockpiled separate from subsoil. Stockpiles shall not exceed 2 m height, shall be located away from drainage lines, shall be protected from rain and wind erosion, and shall not be contaminated.
- Wherever possible construction work will take place during the dry season.
- Topsoil shall be evenly spread across the cleared areas when reinstated.
- Accelerated erosion from storm events during construction shall be minimised through managing storm water runoff (e.g. velocity control measures).
- Soil backfilled into excavations shall be replaced in the order of removal in order to preserve the soil profile.
- Spread mulch generated from indigenous cleared vegetation across exposed soils after construction
- At construction stage, the contractor will prepare Specific Construction Environment and Social Management Plan (C-ESMP) which included among other; *Soil and Sedimentation Control Plan, Spoil Management Control Plan and Waste Management Plan.*

Residual Impact

The implementation of the proposed mitigation measures reduces the significance of the residual impact to negligible from minor along the entire water lines alignment. The table below presents residual impact significance following mitigation measures

Table 7.4: Residual Impact Significance

Impact	Project Phase	Significance (Pre-mitigation)	Residual Impact Significance (Post-mitigation)
Loss of soil resources due to erosion	Construction	Minor	Negligible

7.3.3 Impact on Air quality within the Air

Baseline

As provided by Air quality index (AQI[+]) and PM2.5 air pollution in Somalia, the ambient air quality status of South Qardho is summarized in the tables below

Table 7.5: Ambient Particulate Matter ($PM_{2.5}$ and PM_{10})

Peri Urban Centers in Somalia	**Parameter**	**Concentration (µg/m³)**	**Guideline (µg/m³)[3]**
	Particulate matter ≤2.5 ($pm_{2.5}$)	15 to 20	35
	Particulate matter ≤10 (pm_{10})[4]	20 to 35	100

Table 7.6: Ambient NOx SOx, CO2 and O3

Peri Urban Centers in Somalia	**NO_2**		**SO_2**		**CO**		**0_3**	
	Conc. (ppm)	EMC AQR guide 2014 (ppm)	Conc. (ppm)	EMC AQR guide 2014 (ppm)	Conc. (mg/m³)	EMC AQR guide 2014 (mg/m³)	Conc. (ppm)	EMC AQR guide 2014 (ppm)
	<0.01	0.5	0.011	0.191	0.07	10.0	0.015	0.12

Activities associated with the Project including machineries and equipment's are not anticipated to generate significant volumes of gases emissions to warrant this impact assessed as significant

Potential Impacts

The following would be expected during construction.

- Emissions of oxides of nitrogen (NO_2 in particular) mainly from construction-related vehicles (and to a lesser degree from construction generators and other hydrocarbon powered equipment); and
- Dust and particulate matter (as PM_{10}) created by construction-related vehicle traffic on unpaved roads.

Impact Assessment

The assessment identified a list of receptors including mosques, schools, markets and health facilities that could be affected by polluted air as a result of Project Activities that release SOx, NOx Co and O_3 and PM_{10} and $PM_{2.5}$

Pre- Mitigation Impact Assessment in the table below.

Table 7.7: Pre-Mitigation Impact Assessment

Impact	**Degradation of the Air-shed during Construction**		
Nature of Impact	Negative	Positive	Neutral
	Increase in airborne pollution.		
Type of Impact	Direct	Indirect	Induced

[3] Environmental Protection Agency (EPA) National Ambient Air Quality Standards (NAAQS)
[4] EMCA 1999 Air Quality Regulation of 2014

	Impact is a result as a direct interaction between project activities				
Duration of Impact	Temporal	Short term	Long term	Permanent	
	The impact is expected to be temporary as emissions arise throughout the construction phase.				
Impact Extend	Local	Regional	International		
	The impact will be limited to the footprint of the project and immediate surrounds.				
Impact scale	The impact is considered as small (local) scale.				
Frequency	Intermittent – impacts will typically only arise during working hours				
Livelihood	Inevitable				
Impact magnitude	Positive	Negligible	Small	Medium	Large
	Based on the above the impact magnitude is considered medium.				
Resource / receptor sensitivity	Low	Medium	High		
	The sensitivity of human receptors is Medium in dwellings and settlements				
Impact significance	Negligible	Minor	Moderate	Major	
	Dust emissions have the potentially to have Moderate significant impacts at nearby sensitive human receptors.				

Mitigation

As general measures for all locations:

- Regular dust suppression through water spraying on dusty roads and worksites
- Undertake monitoring close to dusty activities, noting that this may be daily visual inspections, or passive/active monitoring as parameter
- Undertake inspections to ensure compliance with the Dust Management Plan;
- Plan potentially dusty activities so that these are located as far from receptors as feasible;
- Erect solid screens if feasible around stockpiles and concrete batching;
- Avoid run off of mud and water and maintain drains in a clean state;
- Remove dusty materials form site as soon as possible if not being re-used. If being re-used, cover or vegetate if possible;
- Impose speed limits on haul routes and in construction compounds to reduce dust generation;
- Minimise drop heights when loading stockpiles or transferring materials; and
- Expose the minimum area required for the works, and undertake; and exposure on a staged basis to minimise dust blow.

Residual Impact

With the implementation of suitable mitigation and with adequate monitoring, residual impacts associated with dust and PM_{10} from construction activities are **Negligible** as presented in the table below

Table 7.8: Residual Impact Significance

Impact	Project Phase	Significance (Pre-mitigation)	Residual Impact Significance (Post-mitigation)
Road Traffic Exhaust Emissions	Construction	Negligible	Negligible
Dust and PM from construction activities	Construction	Moderate	Negligible

7.3.4 Impacts related to Noise and Vibration

Baseline

World Bank Group General EHS Guidelines provide guidance on acceptable noise levels based on WHO standards and these are set out in the table below.

Table 7.9. World Bank Group Noise Level Guidelines

	Maximum Allowable Ambient Noise Levels, LAeq,1hr, dBA Free field	
	Daytime	**Night-time**
	07:00 – 22:00	22:00 – 07:00
Residential, institutional, educational	55	45
Industrial, commercial	70	70

Impact Assessment

Potential Impact

The assessment identified a list of receptors including mosques, schools, markets and health facilities that could be affected by excessive noise beyond recommended MoEACC Guidelines.

Pre mitigation Impact Assessment is presented in the table below.

Table 7.10: Pre-Mitigation Impact Assessment

Impact	Noise during Construction			
Nature of Impact	Negative	Positive	Neutral	
	Elevated noise levels from operation of construction equipment.			
Type of Impact	Direct	Indirect	Induced	
	Impact is a result of noise generated by construction activities.			
Duration of Impact	Temporal	Short term	Long term	Permanent
	Impacts are expected to be short term (up to one month) at any			

	individual water line within each of the target drainage area.				
Impact Extend	Local	Regional	International		
	The impact will be limited to the footprint of the project and immediate surrounds.				
Impact scale	The impact is considered as small (local) scale.				
Frequency	Impacts may occur during daytime periods over a short-term duration at each water line alignment.				
Livelihood	Inevitable				
Impact magnitude	Positive	Negligible	Small	Medium	Large
	Based on the above the impact magnitude is considered negligible to small.				
Resource / receptor sensitivity	Low	Medium	High		
	Dwellings are considered to have a high sensitivity to noise				
Impact significance	Negligible	Minor	Moderate	Major	
	Considering the impact magnitude is small to negligible and the sensitivity is high, the overall significance is considered to be minor				

Mitigation

The following standard mitigation measures will be employed

- Siting noisy plant and equipment as far away as possible from human settlement, and use of barriers (e.g. site huts, acoustic sheds or partitions) to reduce the level of construction noise at receptors wherever practicable;
- Where practicable noisy equipment will be orientated to face away from the nearest Human settlement and other receptors;
- Working hours for significant noise generating construction work (including works required to upgrade existing access roads or create new ones), will be daytime only;
- Alternatives to diesel and petrol engines and pneumatic units, such as hydraulic or electric-controlled units, will be used, where practicable;
- Where practicable, stationary equipment will be located in an acoustically treated enclosure;
- For machines with fitted enclosures, doors and door seals will be checked to ensure they are in good working order; also, that the doors close properly against the seals;
- Throttle settings will be reduced and equipment and plant turned off, when not being used;
- Equipment will be regularly inspected and maintained to ensure it is in good working order. The condition of mufflers will also be checked; and fitting of mufflers or silencers of the type recommended by manufacturers.

Residual Impact

Residual Impact Significance is presented in the table below.

Table 7.11: Residual Impact Significance

Impact	Project Phase	Significance (Pre-mitigation)	Residual Impact Significance (Post-mitigation)
Noise from construction activities affecting nearby dwellings	Construction	Minor	Negligible

7.3.5 Impacts on Flora

Baseline

Qardho falls within Arid and Semi-Arid (ASALs) zone within ecological zone V-VI. Zone V receives rainfall between 300mm-600mm annually and is characterized by low trees, grass and shrubs while zone VI receives annual rainfall of 200mm to 400mm. The Project area which is estimated to cover roughly 1-2 hectares receives an average of 240mm of rainfall per year, the rainfall is erratic and short making it unfavorable for vegetation growth. However, the area was once covered exhibits arid characterizes with dominant species noted as cactus family and Acacia spp including; Acacia species (*A. mellifera*, *A. tortilis*), Commiphora spp., Dobera glabra, Boscia coriacea

Potential Impact

There are not protected vegetation cover within the water alignment routes that is considered a fragile ecosystem, sensitive to changes to its components. Pre mitigation Impact Assessment is presented in the table below.

Table 7.12: Pre-Mitigation Impact Assessment

Impact	**Flora and Vegetation during Construction**			
Nature of Impact	Negative	Positive	Neutral	
	Disturbance to vegetation cover along the Water alignment.			
Type of Impact	Direct	Indirect	Induced	
	Impact is as a result of a direct interaction between the project (i.e. Construction activities) and the existing vegetation along the water and sewer lines			
Duration of Impact	Temporal	Short term	Long term	Permanent
	The effect is considered permanent as the areas where vegetation will be removed for the construction of the line will have to be permanently kept with vegetation for maintenance purposes during the operational phase			
Impact Extend	Local	Regional	International	

	The impact will be limited to the footprint of the project and immediate surrounds.				
Impact scale	The impact is considered as small (local) scale.				
Frequency	Once off				
Livelihood	Inevitable				
Impact magnitude	Positive	Negligible	Small	Medium	Large
	Based on the above the impact magnitude is considered negligible				
Resource / receptor sensitivity	Low	Medium	High		
	The Water Lines will be constructed with disturbed or modified environment therefore the sensitivity is considered low.				
Impact significance	Negligible	Minor	Moderate	Major	
	Considering the impact magnitude is negligible and the sensitivity is low, the overall significance is considered to be negligible				

Mitigation

The following standard mitigation measures will be employed.

- Avoidance of impacts should be prioritised. However, if not possible then compensatory planting of trees that will be cut by the contractor during excavation of water pipeline trenches will be undertaken.
- Vegetation shall only be cleared along the Water alignment only if the vegetation and will interfere with Project construction and/or present a hazard.
- Areas to be cleared shall be agreed and demarcated before the start of the clearing operations to minimize exposure.
- Stage vegetation clearance is also recommended so as not to clear the entire corridor all at once.
- The use of existing cleared or disturbed areas for the Contractor's Camp, stockpiling of materials etc. shall be encouraged.
- Whenever possible, all damaged areas shall be reinstated and rehabilitated upon completion of the contract to as near pre-construction conditions as possible.
- Rehabilitation of temporary construction sites and pioneer camps (if needed) should be done as swiftly as possible and always with suitable native grasses and other plants

Residual Impact

Residual Impact Significance is presented in the table below

Table 7.13: Residual Impact Significance

Impact	**Project Phase**	**Significance (Pre-mitigation)**	**Residual Impact Significance (Post-mitigation)**
Disturbance to vegetation	Construction	Negligible to Minor	Negligible

cover			

7.3.6 Summary of Anticipated Construction Negative Impacts

Impact Area	Impact Characteristics	Impact Identification & Analysis	Impact Ranking
Water Resources	Potential contamination of groundwater and surface runoff from construction wastewater, fuel/oil leaks, and improper handling of chemicals.	Localized but significant risk to water quality if controls are weak; may affect nearby wells and drainage.	**High**
Soil Resources	Soil erosion from excavation, compaction from heavy machinery, and potential contamination from spills.	Short-term but moderate to high severity if topsoil is not conserved; could reduce site productivity and cause sedimentation.	**High–Medium**
Air Quality	Dust emissions from excavation, cement mixing, and vehicle movement; exhaust fumes from machinery.	Localized and temporary; most severe during dry/windy conditions but can be mitigated.	**Medium**
Noise and Vibration	Noise from drilling, concrete mixing, and vehicle operations; vibrations from heavy equipment.	Temporary and localized; may disturb nearby residents and institutions during construction.	**Medium–Low**
Flora	Removal of small shrubs/vegetation during site clearance; risk of accidental damage to surrounding vegetation.	Minimal due to sparsely vegetated semi-arid environment; impact mostly confined to site footprint.	**Low**

7.4 Traffic Management on Site

The Construction Environmental and Social Management Plan (C-ESMP) before commencement of Works is required to include detailed aspects related to traffic safety as discussed below.

Key Issues

- Movement of heavy trucks carrying construction materials (cement, steel, aggregates, tanks).
- Frequent movement of construction machinery (mixers, excavators, cranes, drilling rigs).
- Narrow local roads and community paths around Qardho town.
- Risk to pedestrians, especially children near schools and residents near markets/IDP camps.

Table 7.14 Traffic Management Measures

Potential Traffic Issue	Proposed Management Measure	Responsibility
Increased road congestion from material delivery trucks	Schedule deliveries during off-peak hours; stagger vehicle movements	Contractor / Site Manager
Risk of accidents (vehicles vs. pedestrians)	Install warning signs ("Construction Ahead," "Slow Down"); enforce site speed limit (20 km/h)	Contractor / Traffic Controllers
Unsafe access to construction site	Designate separate entry and exit gates; restrict public access	Contractor / Security Team
Pedestrian safety near work zones	Provide marked walkways and safe crossings; deploy flaggers at busy crossings	Contractor / CLO
Dust and visibility reduction from vehicles	Water sprinkling on access roads; cover material trucks with tarpaulins	Contractor / Site Supervisor
Confusion and inconvenience to the community	Announce schedules/road disruptions via community leaders, posters, and radio	Contractor / Community Liaison Officer
Emergency vehicle access blocked	Maintain clear access lanes at all times; coordinate with police, ambulance services	Contractor / Site Manager

7.5 Waste Management on Site

Wastes on Site will include both liquid and solid wastes, such wastes will be managed as summarized below

- The contractor shall develop a comprehensive Waste Management Plan (WMP) prior to commencement of works
- Properly labelled and strategically placed waste disposal containers shall be provided at all places of work
- Litter bins should have secured lids to prevent animals and birds from scavenging
- All personnel shall be instructed to dispose of all waste in a proper manner
- Recycling of construction material shall be practiced where feasible e.g. containers and cartons
- Earth spoils shall be disposed of in pre identified sites
- The contractor shall develop a comprehensive Waste Management Plan (WMP) prior to commencement of works
- Properly labelled and strategically placed waste disposal containers shall be provided at all places of work
- Litter bins should have secured lids to prevent animals and birds from scavenging
- All personnel shall be instructed to dispose of all waste in a proper manner
- Recycling of construction material shall be practiced where feasible e.g. containers and cartons
- Earth spoils shall be disposed of in pre identified sites

- Water containing pollutants such as concrete or chemicals should be directed to a conservancy tank for removal from the site where applicable
- Potential pollutants of any kind and form shall be kept, stored and used in a manner that ensures no escape
- In case of any form of pollution, the contractor should notify the Resident Engineer (RE)
- Wash areas shall be placed and constructed in a manner that ensures the surrounding areas including groundwater are not polluted
- No grey water, runoff or uncontrolled discharges from the site or working areas to any adjacent Storm water channels.

Liquid Wastes that will be associated to the project

- Untreated wastewater from toilets, kitchens, washrooms, and laboratories.
- Greywater from sinks and showers.
- Treated effluent from DEWATS units.
- Cleaning and maintenance water from tanks, pumps, and filters.
- Minor spills of fuels, oils, and lubricants during construction.

Solid Wastes that will be associated to the project

- Sludge from DEWATS treatment units.
- Screenings (rags, plastics, sanitary products) from inlet screens.
- Excavated soil, sand, gravel, and debris from construction.
- Packaging materials (plastic, cardboard) and construction offcuts.
- Used personal protective equipment (PPE).
- Minor metal scraps and broken tools.
- Routine institutional wastes

7.6 Social Resources and Receptors

7.6.1 Workers, Community Health Safety and Security

Baseline

The Assessment recorded receptors that could be exposed due to Project activities. The risks will be to both; (i) Project Workers, (ii) School Children and Students and (iii) General Community Members

Below are the typical receptors for the plant and their approximate distances from the site.

Human and Social Receptors

These include residential areas and community facilities where people live, gather, and access services. The primary concern is potential nuisance from odor and traffic during operation and construction.

- **Nearest Residential Areas:** The southeastern edge of Qardho's main built-up area is the closest human settlement.
    - **Distance:** Approximately **1.5 - 2 kilometers** northwest of the site.
- **Qardho City Center:** The central market and administrative heart of the city.
    - **Distance:** Approximately **3.5 kilometers** northwest of the site.
- **East Galkayo University (Qardho Branch):** A key educational institution.
    - **Distance:** Approximately **3 kilometers** northwest of the site.
- **Qardho General Hospital:** The primary healthcare facility for the region.
    - **Distance:** Approximately **4 kilometers** northwest of the site.
- **Al-Azhar Primary & Secondary School:** A major school in the city.
    - **Distance:** Approximately **3.2 kilometers** northwest of the site.

Environmental Receptors

These are natural features, particularly water resources, that could be impacted by the project, primarily through potential contamination if not managed properly.

- **Qardho Toga (Wadi):** This is the most critical environmental receptor. It is a large, dry riverbed that cuts through the region and is vital for groundwater recharge and channeling seasonal floodwaters.
    - **Distance:** The project site is located very close to the Toga, approximately **400 - 500 meters** to the south.
- **Groundwater Wells (Boreholes):** The primary source of drinking water for the entire city is groundwater. The project's location relative to these wells is crucial. Specific community and private boreholes are scattered around the city periphery.
    - **Distance:** The closest known community wells are likely **1 to 1.5 kilometers** away, located closer to the residential areas.
- **Grazing Land:** The land surrounding the project site is primarily arid shrubland used by local pastoralists for grazing livestock.
    - **Distance:** The area **immediately adjacent** to the project site is active grazing land.

Potential Impact

The presence of the Project could affect the health, safety and wellbeing of the communities along the proposed water alignment routes including increased project-related traffic during site preparation including site clearance and excavation works and inappropriate waste handling or disposal, and accidental leaks and spills could result to be below listed risks.

- Accidents associated with plant and equipment movement within the market or open barricaded trenches or without warning tapes.
- Air pollution beyond thresholds provided by national legislations
- Noise and excessive vibrations beyond the levels provided by national legislations
- Drowning risks to school children and community Members who might trip and fall into trenches that have percolated runoff water.
- Cave-Ins- The greatest danger in trenching and excavation is cave-ins. Unstable soil and inadequate shoring or sloping can lead to sudden collapses, burying workers and causing serious injuries or fatalities to workers
- Falls and Falling Loads: Workers or equipment near the edge of a trench can fall in, leading to injuries. Additionally, tools, machinery, or materials can fall into the trench, posing risks to those working inside.
- Utility Strikes; Contact with underground utilities, such as electrical cables, internet, or water mains, can cause severe injuries or disrupt services leading to community unrest and grievances
- Equipment-Related Accidents, heavy machinery used for digging or transporting materials can create additional risks, such as accidental contact with workers or trench edges

Impact Assessment

Pre mitigation Impact Assessment is presented in the table below.

Table 7.15: Pre-Mitigation Impact Assessment

Impact	**Community Safety and Environment Health**				
Nature of Impact	Negative		Positive		Neutral
	ESHS risks to Community and Workers				
Type of Impact	Direct		Indirect		Induced
	Impact that result from a direct interaction between the Project (i.e. increased plant and equipment traffic) and the local population along the water lines.				
Duration of Impact	Temporal	Short term		Long term	Permanent
	The increased traffic effect and risks to injuries is temporary, as construction activities will take place in a sequential manner during the length of the construction period				
Impact Extend	Local		Regional		International
	The impact will be limited to the footprint of the project and immediate surrounds.				
Impact scale	The impact is considered as small (local) scale.				
Frequency	The frequency is considered to be occasional or one time at each temporary along the Water Lines over the duration of the construction phase.				
Livelihood	Inevitable				
Impact	Positive	Negligible	Small	Medium	Large

magnitude	Based on the above the impact magnitude is considered negligible to small.			
Resource / receptor sensitivity	Low	Medium	High	
	The sensitivity of the receptors (local population along the Water Lines and road users including vehicle users, pedestrians and cyclists) is considered medium.			
Impact significance	Negligible	Minor	Moderate	Major
	Considering the magnitude and sensitivity are medium, the impact on the community safety during construction activities is considered to be of moderate significance.			

Mitigation

- Conduct a Pre-Work Assessment, assess the soil type, weather conditions, and proximity to structures or utilities. Identify potential hazards and plan the excavation accordingly.
- Use Protective Systems, implement appropriate protective systems, such as: (i) Shoring: Positioning supports to prevent soil movement. (ii) Shielding: Creating interior trench boxes to protect workers and (iii) Sloping: Cutting back trench walls at an angle to reduce collapse risk.
- Inspect Trenches Daily, a competent person should inspect trenches daily and after events like rainstorms or vibrations to ensure continued stability.
- Maintain Safe Access and Egress, provide ladders, ramps, or other safe means of entry and exit in trenches that are four feet or deeper. Always place these within twenty-five feet of workers, for deep cut provide reinforced cage for workers.
- Stay Aware of Utility Locations: Use "Call Before You Dig" services to locate and mark underground utilities before excavation begins.
- Monitor Hazardous Atmosphere, test the air quality inside trenches over four feet deep for oxygen levels, toxic gases, and flammable atmospheres. Use ventilation if necessary.
- Control Water Accumulation, use pumps or diversion systems to keep water out of the trench. Avoid working in trenches with standing water unless proper precautions are taken.
- Secure the Site, keep heavy equipment and materials away from trench edges. Install barriers and warning signs to protect workers and prevent accidental falls.
- Train Workers, ensure all workers are trained in trench safety, recognizing hazards, and responding to emergencies.
- Ensure that work sites are fenced and that signs are put up around work fronts and construction sites advising people of the risks associated with trespass. When work fronts are less than 10 metres from a community or house, employ security guards from the local community to prevent trespass.

Residual Impact

The significance of the residual impacts on community health and safety after the implementation of mitigation measures is presented in the table below.

Table 7.16: Residual Impact Significance

Impact	Project Phase	Significance (Pre-mitigation)	Residual Impact Significance (Post-mitigation)
ESHS risks to Community and Workers	Construction	Moderate	Minor

7.6.2 Children Protection

The possibility of contractor children abuse is through hiring of child labour, also labour force on site might abuse children within the Project area through sexual advances that could lead to early pregnancies and school dropout, including exposure to communicable diseases such as HIV and AIDS. The contractor will undertake the below listed mitigation measures.

Mitigation Measures

- The contractor will develop and implement a Children Protection Strategy that will ensures minors are protected against negative impacts associated by the Project including SEA.
- All staff of the contractor must sign, committing themselves towards protecting children, which clearly defines what is and is not acceptable behaviour
- Wherever possible, ensure that another adult is present when working in the proximity of children.
- Not invite unaccompanied children to workers home, unless they are at immediate risk of injury or in physical danger.
- Refrain from physical punishment or discipline of children
- Refrain from hiring children for domestic or other labor, which is inappropriate given their age, or developmental stage, which interferes with their time available for education and recreational activities, or which places them at significant risk of injury.
- Comply with all relevant local legislation, including labor laws in relation to child labor specifically provisions of Somalia's Employment Act Cap 226 of 2007 Part VII on protection of children against exploitation.

7.6.3 Sexual Exploitation and Abuse (SEA)

This impact refers to sexual exploitation and abuse committed by Project staff against

communities and represents a risk at all stages of the Project, especially when employees and community members are not clear about prohibitions against SEA in the Project.

Mitigation Measures

- Develop and implement a SEA action plan with an Accountability and Response Framework as part of the C-ESMP. The SEA action plan will follow guidance on the World Bank's Good Practice Note for Addressing Gender-based Violence in Investment Project Financing involving Major Civil Works (Sept 2018).
- Prevention of SEA: including COCs and ongoing sensitization of staff on responsibilities related to the COC and consequences of non-compliance; project-level IEC materials;
- Response to SEA: including survivor-cantered coordinated multi-sectoral referral and assistance to complainants according to standard operating procedures; staff reporting mechanisms; written procedures related to case oversight, investigation and disciplinary procedures at the project level, including confidential data management;
- Engagement with the community: including development of confidential community-based complaints mechanisms discrete from the standard GRM; mainstreaming of Sexual Exploitation and Abuse (SEA) awareness-raising in all community engagement activities; community-level IEC materials; regular community outreach to women and girls about social risks and their SEA-related rights;
- Management and Coordination: including integration of SEA in job descriptions, employments contracts, performance appraisal systems, etc.; development of contract policies related to SEA, including whistle-blower protection and investigation and disciplinary procedures; training for all project management; management of coordination mechanism for case oversight, investigations and disciplinary procedures; supervision of dedicated PSEA focal points in the project and trained community liaison officers.

7.7 Operation Phases Negative Impacts

7.7.1 Waterlines Operational Impacts

The most significant challenges currently facing water distribution systems are aging infrastructure, increasing demand for potable water, maintaining potable water quality, weakened infrastructure as a result of system inefficiencies, Microbial Growth, Biofilms and Sediments, Disinfectants and Disinfection Byproducts, Nitrification, Corrosion, Permeation and Leaching and Water Losses and Main Breaks which will be addressed by the water treatment and supply departments at the operation stage of the Project.

8. ENVIRONMENTAL AND SOCIAL MANAGEMENT AND MONITORING PLAN (ESMP)

8.1 C-ESMPs and Sub Plans

The contractor upon signing of civil works contract will prepare Construction Environmental and Social Management Plans (C-ESMPs) and Sub Plans for review and approval. The table below presents details of Sub plans

Table 8.1: C-ESMPs and Sub plans

#	C-ESMPs and Sub Plans	Preparation Stage	Responsibility	Estimated Cost (USD)
1	C-ESMP	After signing of Works Contract	Contractor	
2	GBV/SH/SEA	After signing of Works Contract	Contractor	
3	Campsites Management Plan	After signing of Works Contract	Contractor	
4	Labor Management Plan	After signing of Works Contract	Contractor	
5	Labor Influx Management Plan	After signing of Works Contract	Contractor	
6	Water Resources Protection Plan	After signing of Works Contract	Contractor	
7	Waste Management Plan	After signing of Works Contract	Contractor	
8	Traffic Management Plan	After signing of Works Contract	Contractor	
9	Drug Abuse and Substance Awareness Plan	After signing of Works Contract	Contractor	
#	**Approximate Cost**			**1500**

8.2 Licenses and Permits (Occupational Health and Safety Related)

The contractor will be required to comply to below listed provisions as required by Occupational Health and safety provisions as detailed in the table below

Table 8.2: Permits and Licenses

#	Permits and Licenses	Preparation Stage	Responsibility	Estimated Cost (USD)
1	Workplace registration certificates from DOSH	After signing of Works Contract	Contractor	

2	Fire clearance certificates from DOSH – Ministry of Labor and Social Services Somalia	After signing of Works Contract	Contractor	
3	Additional Statutory requirements, as per OSHA Act • Risk Assessment • Safety and Health Audit • Fire Safety Audit	Within the 1st Quarter of Works	Contractor	
4	Development and implementation of Polices required at the Work place • Safety & Health Policy • Fire Safety Policy • Environment Policy	Within the 1st Quarter of Works	Contractor	
5	Personnel Trainings Required • Fire marshal training • Statutory: First Aid Training • Statutory: Safety and Health Committee	After signing of Works Contract	Contractor	
6	Occupational Health Programmes at Workplace •Statutory Medical Examinations. • Pre-employment • Periodical • post-employment (exit medical checkup)	After signing of Works Contract	Contractor	
7	Operations Safety: • All plants, lifting equipment and machinery inspected • Inspection of ladders / scaffoldings	Monthly	Contractor	
8	Permit to Works (PTW) are required for non-routine hazardous work.	Whenever required	Contractor	
9	Fire Safety Requirements: • Fire drill • firefighting equipment • Fire escapes	Bi Annually	Contractor	
10	Emergency Response Plan Required: • Injury emergency response; • Non entry rescue mission to persons in confined space; • Fire emergency response;	One off	Contractor	
	Approximate Cost			**2000**

8.3 Purpose and Objectives of ESMP

The specific objectives of the ESMP are to:

- **Screen and categorize the project** according to the significance of its potential environmental and social impacts, in line with the AfDB's Operational Safeguard 1 (OS 1) classification system.
- **Define the scope of assessment (scoping)** to identify key environmental and social issues, areas of influence, and project components requiring detailed study.
- **Establish baseline environmental and social conditions** to provide a factual reference for assessing potential changes and for future monitoring.
- **Identify and assess potential environmental and social impacts** (positive and negative, direct and indirect, cumulative, and transboundary) associated with all project phases—design, construction, operation, and decommissioning.
- **Integrate environmental and social considerations** into the project planning, design, and decision-making processes to enhance sustainability, resilience, and long-term benefits.
- **Develop feasible mitigation and enhancement measures**, and consolidate these into a practical **Environmental and Social Management Plan (ESMP)** with clear roles, responsibilities, timelines, and budget provisions.
- **Ensure compliance with applicable national environmental and social legislation**, as well as AfDB's safeguard requirements
- **Facilitate inclusive stakeholder participation** through effective consultation, information disclosure, and a culturally sensitive, gender-responsive approach.
- **Promote transparency and accountability** by establishing mechanisms for documentation, disclosure, and grievance redress throughout the project cycle.
- **Provide a decision-support framework** for the Government of Somalia, the AfDB, and other stakeholders to ensure environmentally and socially responsible project implementation.

The Environmental, Social Management and Monitoring Plan (ESMP) is summarized in the table below

Table 8.3: Environment and Social Management Monitoring Plan – Construction Phase – Water supply and treatment works

Risk / Aspect	Anticipated Impact	Mitigation Measures	Responsibility	Monitoring Parameter	Budget (USD)
Impacts on Water Resources (installation of pipelines, site drainage)	Contamination, disruption of drainage	Proper pipeline alignment; install silt traps; no waste dumping in water sources	Contractor, Supervising Engineer	Water quality checks; drainage condition	4,500
Impacts on Soil Resources (excavation, stockpiling, compaction)	Erosion, loss of topsoil, contamination	Stockpile topsoil; erosion control; safe fuel/oil storage	Contractor, EHS Officer	Area disturbed vs. footprint; evidence of erosion; spill records	5,000
Impacts on Air Quality (dust, machinery exhaust)	Dust nuisance, respiratory impacts	Water spraying; cover stockpiles; maintain equipment	Contractor, EHS Officer	Dust levels (visual); service logs; complaints	3,500
Noise & Vibration Impacts (machinery, vehicles, excavation)	Nuisance to communities/workers	Restrict works to daytime; maintain equipment; provide ear protection	Contractor, Clerk of Works	Noise readings; PPE use; complaints	2,500
Impacts on Vegetation Cover (site clearance, pipeline trenches)	Vegetation loss, habitat disturbance	Minimize clearance; avoid unnecessary removal; restore disturbed areas	Contractor, District Environmental Office	Area cleared vs. design; restoration evidence	3,000
Community Health, Safety & Security (traffic, open trenches, hazards near communities)	Accidents, restricted access, conflicts	Fence sites; provide signage; traffic management plan; awareness sessions	Contractor, Local Administration	Records of accidents; fencing/signage present; grievance log	5,500
Worker Health & Safety (machinery, excavation, hazardous tasks)	Accidents, injuries, unsafe exposure	Provide PPE; training; enforce protocols; emergency preparedness	Contractor, Supervising Engineer	Incident records; PPE provision; training logs	6,500
Workers' Management (labor influx, GBV/SEA risks, conflict with locals)	Strain on services, GBV/SEA incidents, tension	Hire locally; enforce Code of Conduct; GBV/SEA awareness and reporting	Contractor, District Labor Office	% local hires; GBV/SEA cases resolved; grievances	5,500
Construction Waste Management (solid, liquid, hazardous waste)	Pollution, soil/water contamination	Segregate waste; provide bins; licensed hauler; prohibit open burning	Contractor, Local Authority	Waste disposal records; site condition	4,000
Chance Finds (archaeological/cultural remains)	Loss of cultural heritage	Train workers; stop work & notify authorities	Contractor, Supervising Engineer	Records of chance finds & actions taken	1,000
					41,000

Decommissioning Plan

The Project has been designed to operate effectively for over 30 years. In the event that the infrastructure will be required to be overhauled, then the following steps should be considered in order to undertake the procedure in a structured manner with minimum impact to both human and natural environment.

Table 8.4: Decommissioning Flow Chart

#	Action	Actor
Step 1	**Initiation** Development of an Objective Worksheet and checklist incorporating references, legal, stakeholder engagement and policies Undertake decommissioning audit	**Proponent**
Step 2	**Prepare Road Map for Decommissioning Design** Conduct design review to validate elements of the design and ensure design features are incorporated in the decommissioning design. Public consultations	**Proponent**
Step 3	**Prepare and Award Contract** Prepare a contract that incorporates validated project information and award to a contractor as per the Procurement rules.	**Proponent**
Step 4	**Execute Decommission Works** Implement design elements and criteria on the Project in accordance with specifications and drawings. Inspect during decommissioning and at Project completion to ensure that all design elements are implemented according to design specifications.	**Contractor**
Step 5	**Non-Conformance, Corrective/ Preventive Action** Determine root cause Propose corrective measures Propose future preventive measures	**Proponent**

8.4 Monitoring Plan

The final stage in the impact assessment process is the development of a Management Plan for implementing controls and mitigation and monitoring the effectiveness. Monitoring is done to verify that: a) impacts or their associated Project components remain in conformance with applicable standards; and b) mitigation measures are effectively addressing impacts and compensatory measures and offsets are reducing effects to the extent predicted.

All the activities to be financed under the Project will follow the AfDB ISS provisions, Ministry of water and Environment will make sure that all bid documents and contracts include the ESMP and require compliance with it. Environmental and social monitoring seeks to check the effectiveness and relevance of mitigation measures through the implementation/operation phase. Environment and Social focal points shall monitor Project activities as detailed in the table below

Table 8.5: Monitoring Plan – During Construction Phase

MATERIAL MEASURES AND ACTIONS		TIMEFRAME	RESPONSIBLE ENTITY
MONITORING AND REPORTING			
A	**REGULAR REPORTING** Prepare and submit to AfDB regular monitoring reports on the environmental, social, health and safety (ESHS) performance of the Project, status of preparation and implementation of E&S instruments required, stakeholder engagement activities, and functioning of the grievance mechanisms.	Submit quarterly E&S reports to the AfDB throughout the first year of Project implementation commencing after the Effective Date and biannually thereafter throughout Project implementation.	HODMAN Co
B	**INCIDENTS AND ACCIDENTS** Promptly notify the AfDB of any incident or accident related to the Project which has, or is likely to have, a significant adverse effect on the environment, the affected communities, the public or workers, including, inter alia, cases of sexual exploitation and abuse (SEA), sexual harassment (SH), and accidents that result in death, serious or multiple injuries. Provide sufficient details regarding the scope, severity, and possible causes of the incident or accident, indicating immediate measures taken or that are planned to be taken to address it, and any information provided by any contractor and/or supervising entity, as appropriate	Notify the Association within 48 hours after learning of the incident or accident using such reporting formats as the Association may specify. A detailed report of the incident shall be provided within fifteen (15) days of notifying the Association of the incident or accident, unless a different timeline is agreed with the Association.	HODMAN Co
C	**CONTRACTORS MONTHLY REPORTS** Require contractors and supervising firms to provide monthly monitoring reports on ESHS performance in accordance with the metrics specified in the respective bidding documents and contracts and submit such reports to the Association.	Submit the monthly reports to the Association as annexes to the reports to be submitted under action A above.	Contractor and Supervising Engineer
ESS 1: ASSESSMENT AND MANAGEMENT OF ENVIRONMENTAL AND SOCIAL RISKS AND IMPACTS			
1.1	**ORGANIZATIONAL STRUCTURE** Establish and maintain an organizational structure within the MOECC with qualified staff and resources to support management of ESHS risks and impacts of the Project including one full-time environmental and social specialist.	Establish and maintain E&S staff no later than four weeks after the Effective Date and maintain throughout Project	HODMAN Co

		implementation.	
1.2	**ENVIRONMENTAL AND SOCIAL INSTRUMENTS** Prepare, disclose, consult upon, adopt Stakeholder Engagement Plan (SEP) Prepare, disclose, consult upon, adopt and implement site-specific Environmental and Social Impact Assessments (ESIAs), Environmental and Social Management Plans (ESMPs)	ESIA and SEP shall be prepared, disclosed, consulted upon and adopted before Effective Date, and thereafter implemented throughout Project implementation.	HODMAN Co
ESS 2: LABOUR AND WORKING CONDITIONS			
2.2	**GRIEVANCE MECHANISM FOR PROJECT WORKERS** Establish, maintain, and operate a grievance mechanism for Project workers, as described in the LMP and consistent with OS 10.	Establish grievance mechanism prior to engaging Project workers, and thereafter maintain and operate it throughout Project implementation.	HODMAN Co
2.3	**OCCUPATIONAL HEALTH AND SAFETY (OHS) MEASURES** Develop and implement occupational, health and safety (OHS) measures, based on World Bank EHS Guidelines, as part of the ESMF and ESMPs including through, *inter alia*, implementing adequate OHS measures and incorporating LMP and SRAMF and SEA/SH requirements into the ESHS specifications of the procurement documents and contracts with contractors and supervising firms.	Measures to be operational prior to engaging Project workers.	HODMAN Co
ESS 3: RESOURCE EFFICIENCY AND POLLUTION PREVENTION AND MANAGEMENT			
3.2	**RESOURCE EFFICIENCY AND POLLUTION PREVENTION AND MANAGEMENT** Resource efficiency and pollution prevention and management measures shall be incorporated in the ESMPs to be prepared under the project	Prepare Construction Specific Environmental and Social Management Plans	Contractor
ESS 4: COMMUNITY HEALTH AND SAFETY			

4.1	**TRAFFIC AND ROAD SAFETY** Incorporate measures to manage traffic and road safety risks as required in the ESMPs to be prepared	Prior to commencement of civil works	Contractor
4.2	**COMMUNITY HEALTH AND SAFETY** Assess and manage specific risks and impacts to the community arising from Project activities [including, inter alia,] [specify any areas of risks that may require emphasis, e.g., behaviour of Project workers, risks of labor influx, response to emergency situations], and include mitigation measures in the ESMPs	Prior to commencement of civil works	Contractor
4.3	**SEA AND SH RISKS** Adopt and implement a SEA/SH as part of the C-ESMP, to assess and manage the risks of SEA and SH.	Prior to commencement of Project Activities	Contractor
ESS 8: CULTURAL HERITAGE			
8.1	**CHANCE FINDS** Describe and implement the requirements Chance Finds procedures in ESMF and site-specific ESMPs. This procedure shall be followed if cultural heritage is encountered during Project activities. Ensure relevant workers shall be trained in the requirements of the procedure prior to ground disturbance during actual construction work.	Prior to commencement of Project Activities	Contractor
ESS 10: STAKEHOLDER ENGAGEMENT AND INFORMATION DISCLOSURE			
10.1	**STAKEHOLDER ENGAGEMENT PLAN (SEP) PREPARATION AND IMPLEMENTATION** Prepare a Stakeholder Engagement Plan (SEP) for the Project, consistent with OS10, which includes measures to, inter alia, provide stakeholders with timely, relevant, understandable and accessible information, and consult with them in a culturally appropriate manner, which is free of manipulation, interference, coercion, discrimination and intimidation. The Recipient shall conduct additional stakeholder consultations targeting communities and other disadvantaged groups and update the SEP and thereafter implement the SEP throughout project implementation.	SEP prepared, disclosed, and adopted. .	HODMAN Co

9. GRIEVANCE REDRESS MECHANISM

9.1 Introduction

The Grievance Redress Mechanism (GRM) for the Qardho New borehole drilling and rehabilitation project is designed to provide a transparent, accessible, and culturally appropriate channel for addressing concerns, complaints, or disputes that may arise during project preparation, construction, and operation.
It ensures compliance with:

- AfDB ISS (2013), OS1 & GN10 (Stakeholder Engagement & Information Disclosure).
- Somali Constitution (2012) – Right to participation and access to justice.
- Public participation in ESIA.

9.2 Purpose of GRM

9.2.1 Purpose of Grievance Redress Mechanism (GRM)

The purpose of the Greivance Redress Mechanms (GRM) is to offer project stakeholders an opportunity to seek and receive grievance redress and strengthen project's team to identify, track, resolve and refer eligible grievances thereby enhancing project's efficiency and development results and outcomes. The GRM further provides guidance, guidelines and modalities for managing and addressing grievances that may emerge from SERP implementation process. The GRM framework provides modalities for raising awareness,visibility, and understanding of the project interventions and providing feedback on its implementation

The AfDB Integrated Safeguards System (ISS) require that bank supported projects facilitate mechanisms that address concerns and grievances that arise in connection with a project. The ISS 10 (Stakeholder Engagement and Information Disclosure) provides under one of the objectives that project-affected parties are provided with accessible and inclusive means to raise issues and grievances, and allow borrowers to respond and manage such grievances.

As good practices, this GRM makes the following distinctions:

- **Project-related complaints and grievances**: it focuses on Project-related complaints and grievances and defines the different steps of handling such;
- **GBV/SEA/SH related complaints and grievances**: complaints and grievances relating to Gender-Based Violence (GBV) / Sexual Exploitation and Abuse (SEA) / Sexual Harassment (SH), given their sensitivities and considerations related to a survivor-based approach, are reported to the available GRM grievance recipients, but the grievances follow a different process.

- **Labor-related complaints and grievances:** Complaints from project workers raising workplace concerns, terms of employment and other related concerns will be registered through the Workers' GRM, which is a separate GRM elaborated in this document;
- **Second tier / escalated complaints and grievances:** This concerns complaints and grievances that cannot be solved by the first tiers (Project-wide and workers' complaints and grievances) or have been escalated by users dissatisfied with the resolutions from the first tiers. This GRM describes procedures how these grievances shall be addressed through an appeals mechanism.

9.3 Objectives of GRM

The primary purpose of the GRM is to ensure the collect and address the complaints or the concerns of aggrieved parties to a fair extent and on time. Dissatisfaction can cause an aggrieved party to act beyond expectations, which would culminate in some unforeseen repercussions that would negatively affect project implementations and stall project progression. Consequently, the Project's GRM will seek to achieve the following objectives:

- Encourage registration, acknowledgment, and recording of all concerns or issues raised by aggrieved;
- Ensure that complaints are properly registered, tracked and documented, with due regard for confidentiality;
- Address the composition of a committee that would handle all grievances; Inform people of the public information center establishment and access;
- Establish procedures for the GRM to enhance easy access, transparency and accountability, and tackle escalation of grievances beyond expectations;
- Manage the concerns raised by aggrieved parties to achieve a win-win situation within a reasonable time frame that would comply with national and international best practices; and
- Record all resolutions agreed upon by all parties involved and ensure that aggrieved persons are satisfied with every outcome of remedial resolution to foster harmony during project implementation.

The GRM is expected to contribute to continuous improvement in performance of the SERP through an analysis of trends and lessons learned. The GRM does not prevent access to judicial and administrative remedies. It is designed in a culturally appropriate way and is able to respond to all needs and concerns of project-affected parties

9.4 GRM Core Principles

The GRM is based on six core principles summarized below:

- **Fairness:** Grievances are treated confidentially, assessed impartially, and handled transparently.
- **Objectiveness and independence:** The GRM operates independently of all interested parties in order to guarantee fair, objective, and impartial treatment in each case. GRM officials have adequate means and powers to investigate grievances (e.g., interview witnesses, access records).
- **Simplicity and accessibility:** Procedures to file grievances and seek action are simple enough that PAPs can easily understand them. Project PAPs have a range of contact options including, at a minimum, a telephone number. The GRM is accessible to all stakeholders, irrespective of the remoteness of the area they live in, and their level of education or income. The GRM does not use complex processes that create confusion or anxiety.
- **Responsiveness and efficiency:** The GRM is designed to be responsive to the needs of all complainants. Accordingly, staff handling grievances are trained to take effective action, and respond quickly to grievances and suggestions.
- **Speed and proportionality:** All grievances, simple or complex, are addressed and resolved as quickly as possible. The action taken is swift, decisive, and constructive.
- **Participation and social inclusion:** A wide range of PAPs, including community members, members of vulnerable groups, project implementers, civil society, and the media, are encouraged to bring grievances and comments to the attention of the Project staff. Special attention is given to ensure that marginalized or vulnerable groups, including those with special needs, are able to access the GRM

9.5 GRM Framework

9.5.1 Grievance Category

Grievances will be categorized using the guidance summarized below, including basic information communication; public administration ethics and conduct; governance; human rights; environmental compliance; corruption and economic crimes. Grievances outside the SERP mandate will be referred to the appropriate statutory institution. The table below summarized;

Table 9.1 Categories of Grievances

#	Categories of Grievances	Federal Republic of Somalia Provisional Constitution 2012 Provisions
1	**Basic information**	Article 32
	Access to information	
2	**Ethics and conduct**	Article 115 to 119
	Government entities and staff	
	Implementing Partner staff	
3	**Violation and breach of codes of ethics**	Article 115 to 119
	Violation of codes of ethics;	
4	**Breach of the code of ethics by government officers:**	Article 115 to 119
	Breach of Code of Conduct and Ethics by staff of Implementing Partners	
5	**Violation of human rights and fundamental freedoms**	Article 111B
	Gender equality and general equality matters.	
	Equality and freedom from discrimination (Equality -every person; Equality of men and women to opportunities in political, economic, cultural and social)	
	Economic and Social Rights (health, sanitation, freedom from hunger, adequate and quality food, clean safe and adequate water, social security, education, emergency medical treatment)	
	Non-discrimination of special needs groups	
6	**Corruption and Economic crimes**	Article 111C
	Unethical conduct	
7	**Labor and working conditions**	Article 24
	Termination/Summary Dismissal,	
	Breach of Employment Contract Terms	
	Conflicts with Trade Unions	
	Work Injury	
	Discrimination	
	Sexual Harassment	

Figure 9.1 Categories of Grievances

9.5.2 GRM Provisions

All project affected persons will be informed of their rights to raise grievances pertaining to national GRM frameworks. Mechanisms are put in place to ensure that grievances are recorded and considered fairly and appropriately. Project management will issue and publicize a grievance redress policy that clearly states that management embraces grievance reports and views them as opportunities for project improvement and identified a guiding principle; defining the scope and types of grievances to be addressed; setting out a user- friendly procedure for lodging grievances; outlining a grievance redress structure; describing performance standards; and spelling grievance review mechanisms.

The GRM will be a project wide GRM and will work inter-connectedly with local level actors at the FMS, community, District, and municipal levels. This is to ensure that all measures are taken to address the grievance. The GRM will be housed at both Ministry of Finance (MoF) at Federal Government of Somalia (FGS) and provide access to SERP stakeholders and contractors to register complaints received at sub-project level or the field.

At the project level, a Grievance Redress Committee (GRC) will be established and will comprise, legal advisor, gender specialist, environmental and social safeguard specialists of the project. Local, state and municipality level GRC that consists of local leaders, municipal representatives, community-based organizations, Legal advisor and law enforcement will be established after the first of the project or once the construction activities start. This GRC will be headed through a consensual appointment done with affected communities, and steps will be taken to ensure that all grievances are properly documented and transferred to the digital platform for tracking of resolution.
The project shall explore and collaborate with existing network of service providers to setup and ethically manage SEA/SH complaints as documented in the separate GBV and SEAH Action Plan. Detailed structure of the GRM for the project workers will be finalized and described in the LMP and project implementation manual.

9.6 GRM Implementation Steps

The GRM structure provides multiple channels to aggrieved parties to file their grievances and receive feedback with regards to the project. The aggrieved party must be able to select the most efficient institution, the most accessible means of filing a grievance, and must be able to circumvent partial stakeholders in the Project, which may be implicated in the complaint. He or she must further be able to bypass some grievance channels that are perceived as potentially not responsive or biased.

STEP 1: Identification of Focal Person

The SERP management will identify experienced (Focal Points) at all levels of their projects and assign them responsibility for handling (receiving and registering) grievances. GRMs can have multiple focal points to receive and register grievances. This GRM is designed to give the aggrieved parties access to seek redress to their perceived or actual grievance using this mechanism or other existing mechanisms such as the National legal system (i.e. Courts), mediation boards (elders), GRCs and traditional systems (village courts). It is equally important to have someone who has overall responsibility for tracking and following up on issues and complaints raised. The descriptions of the GRM functions should clearly stipulate the official designations and the roles of the focal points so that they can really be held accountable for performing their functions. The GRM for the SERP will have identified the focal point persons from community to national level and their tasks have been formulated.

At community level, the project grievance redress structure will be linked and interface to the existing traditional authority structure as this already provides for resolving conflicts in the communities. This will ensure accessibility to the GRM as the traditional structures are close to the people. The Focal Person will be someone with knowledge of the local and/or official language of communication and should be able to record the grievances where need be.

The Project will implement training program to teach staff, Focal Points, community members and other stakeholders how to handle grievances and why the GRM is important to the project's success. This training should include information about interacting with beneficiaries about grievances, the organization's internal policies and procedures in relation to grievance redress. It will also be useful to establish or build on local and community based GRMs by providing grievance redress training for stakeholders at the local level. This greatly reduces GRM costs while enhancing beneficiary satisfaction with, and ownership of, the grievance redress process.

STEP 2: Registration of Grievances:

A register of grievances which will be held by the GRM Officer or any other appointed person by the project. The Aggrieved Party (AP) must register their grievances with the GRM focal point.

To register the grievance, the contractors and suppliers will provide information to the GRM focal point to be captured in the Grievances Registration Form as presented in the annex. The GRM will accept complaints from the APs submitted through verbal, email, phone, Facebook, WhatsApp, meeting or letter to the office of the GRM, in English or local language. The focal point persons handling grievances will transcribe verbal submissions. Receipt of grievances shall be acknowledged as soon as possible, by letter or by verbal means.

When a complaint is made, the GRM will acknowledge its receipt in a communication that outlines the grievance process; provides contact details and, if possible, the name of the GRM officer who is responsible for handling the grievance; and notes how long it is likely to take to resolve the grievance. Complainants will receive periodic updates on the status of their grievances. This GRM has established clearly defined timetables for acknowledgment and follow-up activities. And to enhance accountability, these timetables will be disseminated widely to various stakeholders, including communities, civil society, and the media.

Means of Filing a Grievance

Diverse methods for reporting grievances that are culturally appropriate are to be used and they should permit for self-identified, confidential, or anonymous procedures (professional letter writers, suggestion boxes, Email, toll-free telephone etc).

Avenues for verbal complaints are:

- Complaints to members of the local Grievance Redress Committee (GRC)
- Social Safeguards & Communications desks at the SERP -PCU
- Open community mediation sessions
- Operators' Customer Care Unit
- Town hall meetings

Avenues for written complaints are:

- Complaint Boxes in the community, operator's office or by hand
- Letters or Email to the SERP-PCU
- Dedicated telephone lines shall include:
- SERP -PCU hotlines
- Operator Costumer Care hotlines

STEP 3: Assessment and Investigation:

This step involves gathering information about the grievance to determine its validity and resolving the grievance. The merit of grievances should be judged objectively against clearly defined standards. Grievances that are straight forward (such as queries and suggestions) can often be resolved quickly by contacting the complainant.

Having received and registered a complaint, the next step in the complaint-handling process is for the focal points to establish the eligibility of the complaint received. The Grievances

Registration Officer once a complaint or grievance is registered shall within 5 days assess the registered complaint or grievances to determine its validity and relevance i.e. is it within the scope of the SERP-GRM as defined in this document. The following criteria can be used to assess and verify eligibility:

- The complainant is affected by the project.
- The complaint has a direct relationship to the project.
- The issues raised in the complaint fall within the scope of the issues that the GRM is mandated to address.

Having completed the complaint assessment, a response can be formulated on how to proceed with the complaint. This response should be communicated to the complainant. The response should include the following elements:

- Acceptance or rejection of the complaint
- Reasons for acceptance or rejection
- Next steps – where to forward the complaint
- If accepted, further documents and evidence required for investigation e.g. field investigations

Once the registered grievance or complaint has been determined as falling within the scope of this GRM, the focal point shall investigate the complaint. Investigation of the complaint may include the following:

- On site visit and verification.
- Focus Group discussions and interviews with key informers.
- Review of secondary records (books, reports, public records); and
- Consultations with local government and traditional authorities.

The PCU GRM Committee will ensure that investigators are neutral and do not have any stake in the outcome of the investigation. At the end of the field investigation, the GRM officer shall compile a Grievance Investigation Report (GIR) using a standard template as provided in annex on the outcomes of the investigations and the specific recommendation to resolve the grievance or complaint.

STEP 4: Recommendation and Implementation of Remedies:

After the investigations, the GRM officer shall inform the AP of the outcome of the investigations and the recommended remedies if any. The AP shall be provided with written response clearly outlining the course of action the project shall undertake to redress the

grievances and the specific terminal date by which the recommended remedies shall be completed. Potential actions will include responding to a query or comment, providing users with a status update, imposing sanctions, or referring the grievance to another level of the system for further action. The project will take some action on every grievance. If the recommended remedy involves monetary compensation, the GRM must then seek the approval of the Grievance Committee through the SERP project coordinator.

The Aggrieved Party shall, provide a response agreeing or disagreeing with the proposed course of action within a minimum reasonable period after receiving the recommended actions.

STEP 5: Referral to the State Office:

In the likely event that the AP is not satisfied with the recommended remedy. The GRM officer shall forward the copy of Grievance Registration Form (GRF) and the Grievances Investigation Report (GIR) to the State GRM focal point (SFP).

The SFP shall once has received the GRF and the GIR from the District must conduct own investigations and complete his own GIR and communicate to the AP within 30 working days (i.e. repeat stages 2-3). The SFP in his recommendation shall take into consideration the reasons why the AP rejected the remedies offered by the district GRM focal point. He may decide to offer the same remedies as the GRM officer or different and improved offer.

Once the SFP has concluded the investigations and communicated to the AP. The AP shall have 7 days or less to agree or disagree with the proposed remedies. If the AP is agreeable to the remedy the SFP shall ensure that the remedy is implemented within the agreed time frame. For a remedy that requires monetary compensation the SPF submit the information to the relevant government department(s).

STEP 6: Referral to the Grievances Committee:

When the AP disagrees with the recommendation of the SFP, the SFP shall within 7 days of receiving the notice of rejecting the offer from the AP compile all the necessary documents regarding the grievance from district and the province to the Grievance Committee through the grievance Chairperson who will be elected by the Committee.

The government implementing partners at the national level shall investigate the matter further and taking into consideration the recommendation of the coordinator and PCU. The Environmental and Social safeguards Officers shall compile the GIR and submit to the Grievance Committee for consideration. Once the Grievance Committee arrives at a decision it

is the responsibility of the SERP to implement the remedies within the agreed time. If the AP disagrees with the remedy offered by the Grievance Committee, the AP reserves the right to appeal to other external GRMs outside SERP.

The above-described steps and timeframes will be followed to address grievances emanating from implementing of project activities. For grievances that need quick and urgent attention, the described steps will be adhered to. However, in terms of timeframe, the grievances will be addressed in the shortest feasible period based on case-to-case basis.

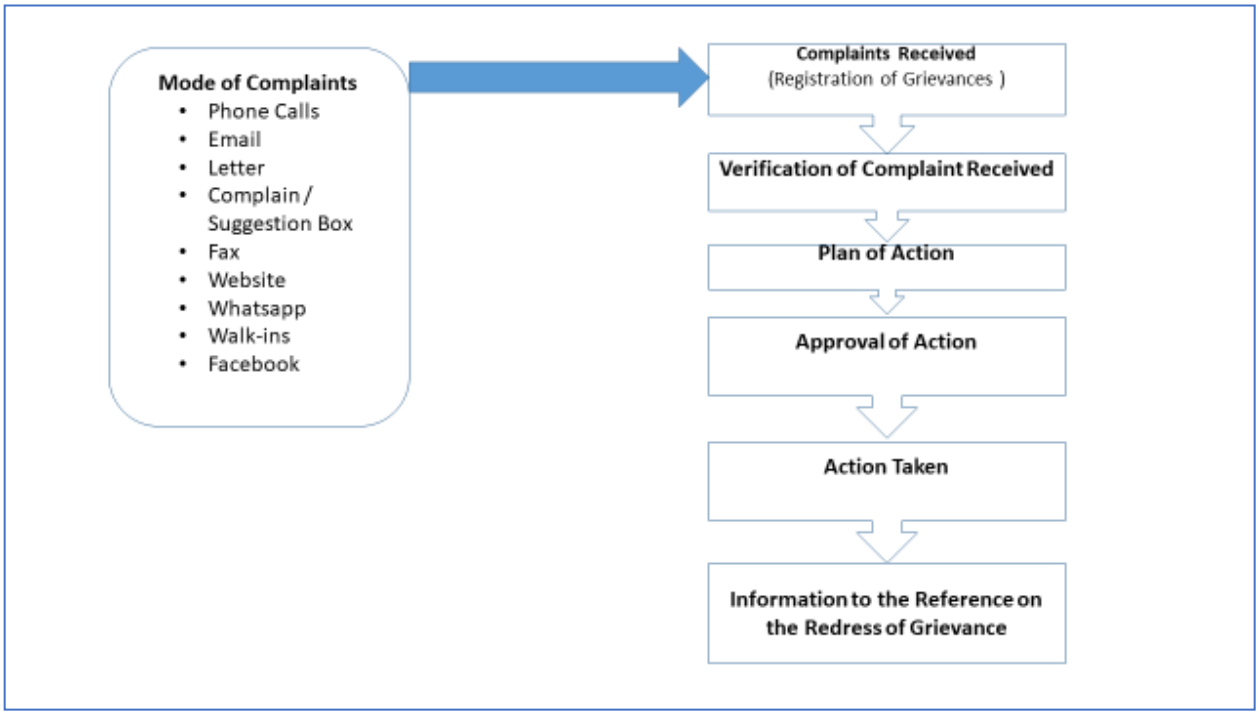

Figure 9.2 Grievance Flow in Basic GRM

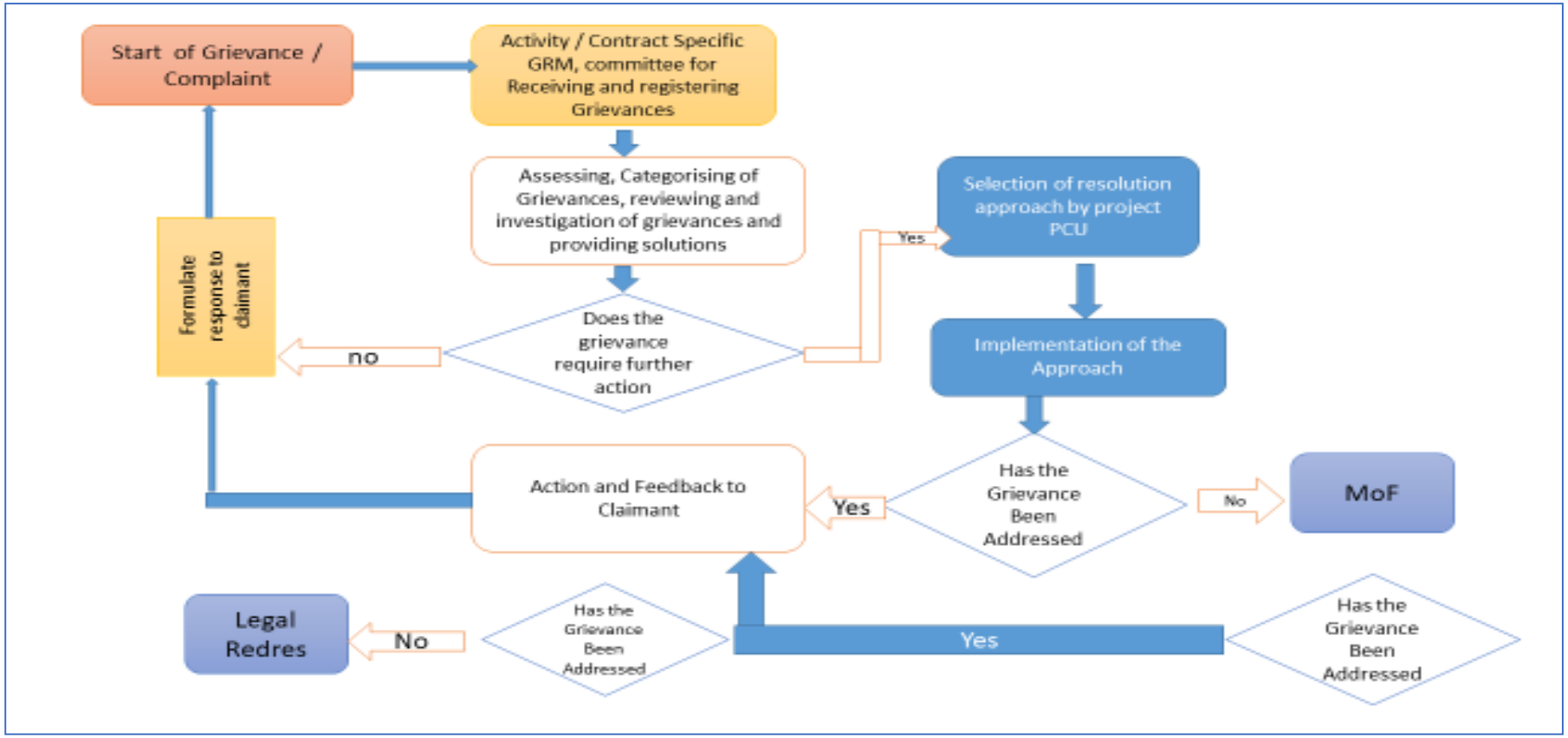

Figure 9.3 Detailed GRM Flow Chart

9.7 Institutional Responsibilities

- **Contractor:** First line of response for construction-related grievances (noise, dust, safety).
- **Qardho Municipality:** Coordination and oversight of local grievances.
- **Puntland Ministry of Environment:** Oversight of environmental and ESIA-related complaints.
- **AfDB:** Safeguard monitoring and final appeal body for unresolved grievances.

9.8 Monitoring and Reporting

- Quarterly reports on number of grievances received, resolved, and pending.
- Disaggregated data (by gender, age, vulnerable groups).
- Annual review of GRM effectiveness with AfDB and Puntland authorities.

9.9 Budget for GRM Implementation

Item	**Estimated Cost (USD)**
Establishment of complaint desks	500
Training of GRM focal points	1,000
Communication materials (posters, radio, leaflets)	1,000
Monitoring, reporting & community feedback sessions	500
Total GRM Budget:	**3,000 USD**

9.10 Conclusion

The GRM is a vital safeguard tool to ensure that the Qardho Borehole drilling and rehabilitation project is implemented in an inclusive, transparent, and accountable manner. It promotes community trust, prevents conflict, and ensures compliance with both Somali legal frameworks and AfDB's ISS (2023) requirements.

10.FINDINGS AND PROVISIONS

10.1 Assessment Recommendations:

- The Bid documents prepared for the Project incorporate the Environment, Social Health and Safety Provisions discussed under Chapter 7 of this report (Environment and Social Impact Assessment and Mitigation Measures).
- The contractors through the support of ESHS officer will ensure that all workers sign Code of Conduct (CoC) before site deployment
- The supervising and contractor will undertake training of personnel on Environment, Social, Health and Safety matters tailored to the Project Scope prior to commencement of works
- The contractor will through the ESHS officer apply the provision of Environment and Social Management Toolkit (ESIRT) in management of incidences and accident's during project implementation stage
- The contractor will prepare monthly and quarterly reports on status of implementation of Environment and social compliance measures discussed in this report.
- Contractor will be required to commit to implementing the Environment, Social Health and Safety (ESHS) Provisions by
    i. Hiring ESHS officers,
    ii. Developing site specific (C-ESHS) and Sub Plans as listed
    iii. Implement Provisions of the Plans and Undertake Monthly and Quarterly reporting of ESHS compliance.

10.2 Pre-Construction Safeguards Readiness

10.2.1 Permits and Licenses

The Contractor shall ensure that all pertinent permits, certificates and licenses have been obtained prior to any activities commencing on site and are strictly enforced/ adhered to

- Obtain the license in Department of Occupational Health and Safety Registration Department of Occupational Health and Safety domicile within Ministry of Labour and Social Affairs of the Federal Government of Somalia,
- Obtain Approval of Plans from Qardho County Government Physical Planning Department for any structures on site
- Acquire Permits from the State's Public Health Department of sanitation facilities installed on site
- The Contractor shall maintain a database of all pertinent permits and licenses required for the contract as a whole and for pertinent activities for the duration of the contract

10.2.2 Engage ESHS Officers

Prior to construction, the contractor will engage a qualified ESHS expert who will be responsible for below listed tasks

- Prepare and implement Construction Specific Environmental and Social

Management Plan for the Project (CESMP)

- Train all staff on ESHS and ensure all staff sign Code of Conduct (CoC) prior to commencement of works.
- Report all accidents and incidents timely as required by World Bank Environment and Social Incident Reporting Tool kit (ESIRT)
- Audit of compliance with the environmental protection, and pollution prevention and control regulations;
- Monitor and report implementation of environmental mitigation measures;
- Monitor the compliance with the environmental protection clauses/specifications in the Contract;
- Investigate and evaluate complaints and identify corrective measures;
- Liaise with the Engineer on all environmental performance matters and timely submission of all relevant environmental monitoring reports;
- Advice the contractor on environmental improvement, awareness, enhancement matters, etc. on site; and
- Modify the ESMP and monitoring program in consultation with the Engineer, if necessary, throughout the period of works.

10.2.3 Preparation of C-ESMP and Sub Plan

The contractor upon signing of civil works contract will prepare Construction Environmental and Social Management Plans (C-ESMPs) and Sub Plans for review and approval by the project's Implementation body, a summary of the Sub Plans is presented below

- GBV/SH/SEA
- Labor Management Plan
- Labor Influx Management Plan
- Water Resources Protection Plan
- Drug Abuse and Substance Awareness Plan

10.2.4 ESHS Training

The supervising and contractor will undertake training of personnel on Environment, Social, Health and Safety matters tailored to the Project Scope prior to commencement of works

10.3 General Outcome of the Assessment

10.3.1 Positive Impacts Identified

- **Improved Water Quality:** Safe and treated water for households, schools, and health centers, reducing waterborne diseases.
- **Strengthened Public Health:** Reliable water testing capacity in Qardho improves disease surveillance and outbreak response.
- **Institutional Capacity Building:** Establishing a monitoring laboratory enhances local technical capacity in water quality management.

- **Employment Opportunities:** Creation of short-term construction jobs and long-term operational positions.
- **Climate Resilience:** Improved water security supports adaptation to droughts and dry season shortages.

10.3.2 Medium and High Negative Impacts Identified

- **Water Resources (High):** Risk of contamination from construction wastewater, fuel, and chemicals.
- **Soil Resources (High–Medium):** Erosion and compaction during excavation and heavy equipment use.
- **Air Quality (Medium):** Dust emissions and machinery exhaust, especially during dry/windy conditions.
- **Noise and Vibration (Medium–Low):** Disturbance from drilling, mixing, and machinery operation.
- **Flora (Low):** Minor clearance of shrubs and grasses within the project site.

10.3.3 Trade-offs

- Higher upfront costs for semi-automated treatment technologies and laboratory equipment, but with long-term benefits of efficiency and water safety.
- Temporary construction nuisances (dust, noise, traffic disruptions) against the permanent improvement in water access, health, and resilience.
- Localized vegetation loss versus the greater community benefit of improved sanitation and water safety.

10.3.4 Mitigation Measures to Address Medium and High Impacts

- Proper containment and disposal of drilling wastewater, fuel, and chemicals.
- Soil stabilization measures (controlled excavation, re-vegetation after works).
- Dust suppression (water spraying, covering trucks).
- Limiting noisy works to daytime hours, using well-maintained equipment.
- Replanting trees/shrubs after site works to restore vegetation cover.

10.3.5 Contrast between Positive vs. Negative Impacts

- Positive impacts are long-term, widespread, and transformative, directly improving health, resilience, and institutional capacity.
- Negative impacts are localized, short-term, and manageable with proper mitigation measures.
- The benefits clearly outweigh the adverse impacts, as the project will significantly enhance water security, public health, and environmental sustainability in Qardho.

11. APPENDIXES

i. **Stakeholder Consultation (Minutes, Reports, List of Attendance)**

ii. **Appendix 1: Meeting Photographs**

iii. **Attendance List – Qardho Meeting**

iv. **Key Informant Interviews Forms**

v. **Project Designs**

APPENDIX 1: STAKEHOLDER CONSULTATION

(Minutes, Reports, List of Attendance)

ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT (ESIA)FOR CONSTRUCTION AND INSTALLATION OF NEW WATER TREATMENT PLANT AND CONSTRUCTION/ESTABLISHMENT OF WATER QUALITY MONITORING LABORATORY AT KULEEJKA AREA - QARDHO SOMALI

MINUTES OF PUBLIC PARTICIPATION FORUM HELD ON THE 3rd September 2025 AT MAYOR OFFICE QARDHO

MINUTES

Item	Minutes	Action By
1.	**Introduction** The meeting began with a warm welcome from Qardho's mayor, Mohamed Hayef. He explained that the meeting was called to thoroughly assess the social and environmental impacts of the city's new water treatment and supply projects. He emphasized that the day's discussion was a critical opportunity to get feedback on both the positive and negative effects of the new infrastructure. The mayor stressed that the projects must not only work well but also be sustainable for the long-term benefit of the residents and the environment. The mayor finally welcomed the project consultants and gave them time to provide the community and stakeholders with detailed information about the project.	Mayor Mohamed hayef
2.	**Project Information** The Consultant representative Mr. Abdinasir Farah thanked stakeholders for creating time to come and participate in the ESIA public participation forum. He gave a brief of the proposed Project scope which include; Drilling of new boreholes, rehabilitation of existing, new pipeline extension, rehabilitation of existing network, replacing of solar panels, replacement of standby-generators, construction of water storage tanks, construction of water treatment plant and construction of quality monitoring laboratory. Mr. Abdinasir Farah informed the meeting that the Government of Somalia received financing from the African Development Bank (AfDB) to support Somalia Sustainable Towns Water Treatment and Supply Programme. The	Tertiary Consulting Engineer /Abdinasir Farah

	main objective of the Programme is to improve the access, availability and sustainability of water supply and wastewater management services in multiple towns including Qardho. To achieve this objective, Qardho Town has been prioritized as one of the Towns to benefit from the Program with the Increasing of water supply system of the town and establishment of water treatment system. The Project Executing Agency (PEA) is UNICEF on behalf of Puntland Water Development Agency (PWDA). (PWDA) is state corporations under the Ministry of Energy, Minerals and Water responsible for development, maintenance and management of Water Infrastructure in their areas of jurisdiction.	
3.	**<u>Environment and Social Safeguard Reports</u>** Mr. Abdinasir Farah informed the meeting that they were going to prepare a report that would eventually help with the final preparation of the final design of the project. The reports are *Environmental and Social Impact Assessment Report* (ESIA). He added that the ESIA would capture all the environmental and social impacts of the project and provide mitigation measures. They were assured that all their opinions and objections would be put in the report so as to ensure that the project would run smoothly.	Tertiary Consulting Engineer /Abdinasir Farah
4.	**<u>Project Positive Impacts</u>** Mr. Abdinasir Farah pointed out to the meeting that water supply improvement will have enormous benefits as summarized below. • The projects prioritize efficiency to reduce waste. By fixing leaks in pipelines and boreholes and using modern meters, less water is lost, which helps conserve this critical resource. • A key goal is to keep our water clean. The new pipeline system, along with better latrines and septic tanks, stops waste from contaminating groundwater and other local water sources. • The project is making the city more environmentally friendly. Switching to solar-powered pumps and using efficient generators means less reliance on fossil fuels, leading to cleaner air and a quieter community. • The project is built for the future. By improving existing infrastructure, like boreholes and water tanks, the community has a reliable, long-lasting water supply without the need for constant new construction. • By improving clean water supply, the project is directly protecting public health and better facilities prevent the spread of diseases and create a safer, healthier place to live.	Tertiary Consulting Engineer /Abdinasir Farah

<table>
<tr>
<td>5.</td>
<td>Impacts to Environment (Natural and Social)
Mr. Abdinasir Farah informed the meeting that negative impacts likely to be triggered by the Project to the environment are as indicated below.
• Construction activities, such as drilling boreholes and excavating for pipelines, can lead to soil erosion and the destruction of local vegetation and wildlife habitats.
• The use of heavy machinery, construction vehicles, and desludging trucks creates noise and releases harmful emissions, impacting local air quality and disturbing communities.
• There is a constant risk of polluting water sources through accidental spills, poorly managed drilling fluids, or leaks from pipelines and wastewater systems.
• Over-pumping of water from new boreholes can cause the local water table to drop, which affects other wells and can harm ecosystems that rely on that water source.
• Solar panels and batteries used at borehole sites have a limited lifespan and contain heavy metals, posing an environmental challenge for their safe disposal at the end of their use.
• Despite being designed to be leak-proof, a pipe failure in the extension network could release water or, in the case of wastewater, contaminants into the environment.
He further added that all these impacts would be addressed comprehensively by the ESIA study report and appropriate mitigation measure provided.</td>
<td>Tertiary Consulting Engineer /Abdinasir Farah</td>
</tr>
<tr>
<td>6.</td>
<td><u>Question and Answer Session</u>
After discussion summarized above, the community were invited to a question-and-answer session under the guidance of the chief. Detailed questions and suggestion of the plenary session are presented in Table 1 below
Table 1: Plenary Session
<table>
<tr><th>Suggestion / Question</th><th>Response</th></tr>
<tr><td>Mr. Mohamed wanted to be informed How do you plan to mitigate the noise and air pollution from construction vehicles and drilling machinery, especially in residential areas, during the initial implementation phase?</td><td>Residents were informed that during implementation of the project there is a plan to limit and minimize noise. For air pollution, we will use modern, well-maintained vehicles and water down construction areas to control dust.</td></tr>
<tr><td>Mr. Bashiir wanted to know if youths in the area will get employment opportunities during project implantation.</td><td>Residents were informed that all unskilled labour and some skilled will be sourced from the local community. Youths were encouraged to organize themselves.</td></tr>
</table></td>
<td>Tertiary Consulting Engineer /Abdinasir Farah

Tertiary</td>
</tr>
</table>

	Mr. C.madoobe wanted to be informed when the Project will commence, and if they should proceed with their plans of digging pit latrines or they should stop now that the new emergency latrines that will come along the project.	Residents were informed that, at this stage, the program is dedicated to conducting feasibility studies. It was conveyed that the project's commencement is contingent upon the securing of funding by the donor. Subsequently, implementation will be initiated based on the most pressing emergency needs of the community. In light of the new emergency latrines planned for the project, residents are advised to suspend their individual plans for digging new pit latrines.	Consulting Engineer /Abdinasir Farah Tertiary Consulting Engineer /Abdinasir Farah
7.	**<u>Closing Remarks</u>** The meeting was brought to a close with final remarks from the Mayor of Qardho, Mr. Mohamed Hayef. He expressed deep gratitude to all the participants and stakeholders for their valuable input, acknowledging with pride the progress made in increasing the city's water treatment and supply systems. During the meeting, the social and environmental impacts of the projects were thoroughly assessed, and all concerns that were raised were carefully noted. The mayor committed to diligently addressing and mitigating any negative impacts. He concluded by emphasizing that the project's long-term success would be defined not only by the new infrastructure, but also by the continued collaboration with the community and the sustainability of the solutions provided.		Mayor Mohamed hayef

Minutes Prepared by:

Abdinasir Farah
Environment Consultant –Tertiary Consulting Engineer

Signed

For: Mayor Mohamed hayef

MINUTES OF PUBLIC PARTICIPATION MEETING – QARDHO WATER SUPPLY FACILITIES

Date: 23rd October 2025
Venue: Washingtone Borehole Site, Qardho
Time: 10:30 a.m. – 12:45 p.m.
Facilitator: Project Environmental and Social Safeguards Team
Participants: Local residents, elders, youth and women representatives and WASH Committee members.
Objective: To engage community members in discussions on the proposed water supply facilities under the Qardho WASH Project, including borehole rehabilitation, pipeline expansion, water tariffs, and community participation.
Minute Taker: Ibrahim Ahmed Raxooy

1. Opening and Introductions
The meeting commenced with a warm welcome, followed by introductions of the project team and community participants. The facilitator explained the objective of the session—to provide community members with detailed information about the proposed water supply interventions and to gather their feedback and concerns for inclusion in the project's design and environmental assessment.

2. Project Overview
The project team presented the scope of the **Qardho Water Supply Improvement Component**, including:

- Rehabilitation of **12 existing boreholes** and construction of **additional production wells** to increase water availability.
- **Expansion of water transmission pipelines** and construction of public water kiosks for IDP and low-income areas.
- **Installation of solar-powered pumping systems** to replace diesel use and reduce operational costs.
- Development of **water storage tanks and treatment systems** for quality assurance.

The community was encouraged to raise questions, share opinions, and make suggestions to ensure that the facilities reflect local needs and priorities.

3. Community Concerns and Responses

Issue/Concern Raised	Response / Clarification Provided	Responsible Party	Action / Follow-Up
1. Location of New Boreholes and Pipelines – *Mr. Bile Aadan Yusuf* inquired about where the new boreholes and pipeline routes would be located and whether any private land would be affected.	The team clarified that the new boreholes will mainly be developed within public or community land, prioritizing areas with poor access such as Kuleejka and Xingood zones. Pipeline routes will follow existing public easements and road reserves to avoid displacement.	Project Engineer / MoEMWR / Qardho Municipality	Conduct detailed site surveys and confirm final alignments with local leaders and landowners before construction.
2. Water Tariffs and Affordability – *Ms. Caasho Maxamud* asked how much the community will pay for water after the system is operational.	It was explained that water tariffs will be determined by the Hodman Water Company and the Qardho Municipality in consultation with the community, ensuring	Hodman Water Company / Municipality	Develop and disclose a transparent tariff framework before commissioning the system.

Issue/Concern Raised	Response / Clarification Provided	Responsible Party	Action / Follow-Up
	affordability and alignment with Puntland Water Pricing Guidelines. Vulnerable households and IDPs will receive subsidized rates.		
3. Pipeline Safety and Access – *Mr. Calco Cah Dashir* raised concerns about potential damage to roads and access routes during pipeline installation.	The project team assured that all construction will follow approved utility corridors, and affected access routes will be restored immediately after pipe laying. Traffic and pedestrian safety measures will be implemented during construction.	Contractor / Supervising Engineer	Include road reinstatement and safety procedures in the construction method statement.
4. Employment of Local Workers – *Ms. Mulki Xasan* asked if local community members would be considered for construction jobs.	The project will prioritize local labor, including youth and women, for unskilled and semi-skilled works such as excavation, pipe laying, and site maintenance.	Contractor / Project Implementation Unit (PIU)	Include local recruitment requirements in contractor agreements.
5. Project Timeline and Implementation Schedule – *Mr. Mahad Maxamud Raxooy* asked when the construction would begin and how long it would take.	The project is expected to commence in early 2026, following ESIA approval and tendering. Construction is projected to last 9–12 months, depending on seasonal conditions.	MoEMWR / UNICEF / Municipality	Share detailed construction schedule and updates during subsequent community meetings.

4. Closing Remarks

The facilitator thanked all participants for their active engagement and valuable insights. Community members expressed appreciation for being consulted and urged the project team to ensure transparency in employment and fair access to water services. The meeting concluded at **12:45 p.m.** with a word of thanks from the community chairperson.

Attendance Register

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PREPARATION OF GENDER SENSITIVE AND CLIMATE-RESILIENT CITY WASH MASTERPLANS, MANAGEMENT MODALITIES AND TECHNICAL FEASIBILITY STUDIES FOR QARDHO AND SOUTH GALKAYO, SOMALIA

ENVIRONMENTAL IMPACT ASSESSMENT (EIA) IMMEDIATE INTERVENTIONS- PUBLIC PARTICIPATION

ATTENDANCE LIST

Venue: Washinton Borehole Date: 23/10/2025

#	Name	Village	Tel	Sign
1	ibraahim axmed raaxoy.	Qoryaale Xaf	7737737	[illegible]
2	Maxamed xasan mehdi	Xingood	7662883	maxamed
3	Cali siciid cadde	Xorgoble	7697525	[illegible]
4	Bile aaden yuusuf	Qoryaale	7231149	[illegible]
5	Cirsaweg yacquub xuseen	Ganacsato	6735450	[illegible]
6	Abuukar Maxamed ibraahim	Raaxo Buraha	7773230	Abukar
7	Cabdinassir axmed muuse	Xa Qoryale	7417065	Abdinasir
8	sheek gaas cali ibraahim	Kaambo	7431268	Sheekhgaas
9	Xaliimo xuseen Maxamed	Ganacsatada	6525055	Xaliimo
10	Xabiibo Cabdi wasag	Xingood	5098679	Xabiibo
11	Wakhti ibraahim macalli	Shimbiraale	7617083	Wakhti
12	Maandeeq macalli isaaq	M.G.	6985286	[illegible]
13	xashaash cismaan cali	Hadman	6444432	Xashaash
14	Caasho abuukar maxamuud	Raaxo xigta	5253203	[illegible]
15	Bisilo Cali xasan	Raaxo	7122575	Bisilo
16	Fardowso Cabdinuur Cali	Calalay	7419433	fardows
17	Salmo Cali dahir	Qoryaale	4374797	Salmo
18	Mulki xasan Maxamed	Shimbiraale	5534081	Mulki
19	Sabariin aadan geele	Xorgoble	5990392	Sabiriin
20	Garsoore Cumar shiikh	Biyo cas	7743838	[illegible]
21	Mahad maxamuud raxooy	Qoryaale	7737737	[illegible]
22	Sharmaarke cisman - LG		7736592	[illegible]
23	maxamed Abdi - LG		7793454	[illegible]
24	Mahamed Mohamed - Consultancy		6793497	[illegible]
25	Mahamed Said - Ganacsato		7734171	[illegible]

Pictures


SHABEELLE
MyCash


GPS Map Camera
pipe line screening
Qardho, Bari, Somalia
Somalia, Qardho, Bari , Somalia طريق بدون اسم
Lat 9.476537° Long 49.078008°
23/10/2025 09:50 AM GMT +03:00
Google


GPS Map Camera
pipe line screening
Qardho, Bari, Somalia
Somalia, Qardho, Bari , Somalia طريق بدون اسم
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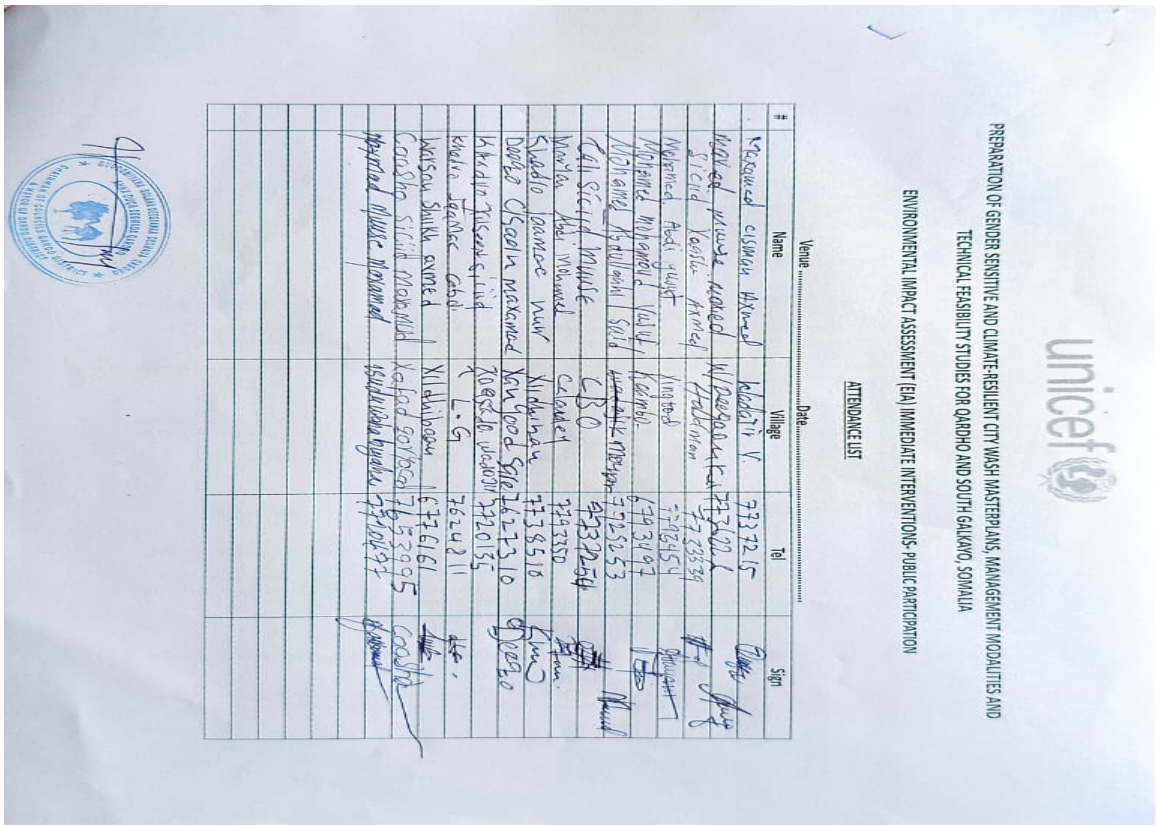
Google

APPENDIX 2: MEETING PHOTOGRAPHS

SAMPLE PHOTOS OF THE MEETING

APPENDIX 3: ATTENDANCE LIST – QARDHO MEETING



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PREPARATION OF GENDER SENSITIVE AND CLIMATE-RESILIENT CITY WASH MASTERPLANS, MANAGEMENT MODALITIES AND TECHNICAL FEASIBILITY STUDIES FOR QARDHO AND SOUTH GALKAYO, SOMALIA

ENVIRONMENTAL IMPACT ASSESSMENT (EIA) IMMEDIATE INTERVENTIONS- PUBLIC PARTICIPATION

ATTENDANCE LIST

Venue ..... Date .....

#	Name	Village	Tel	Sign
1	Mohamed Abdullahi Said	D. Magaar	6772 57 53	
2	Mohamed Abdirahman & Yusuf	Gaashaanle	6772 34 97	
3	Abdirashid Mahamud Nur	Bulsteero	7776 80 18	
4	Mare Sad Mare	Gaashaanle	7733 41 91	
5	Shirmarke Osman Yusuf	Gaashaanle	7726 59 92	
6	Mohamed Abdi Yusuf	LG	7726 54 54	
7	Hashim Ali Farah Ragal	LG	6723 61 16	
8	Abdirisak Mohamed Ciise	Dhelinyaroy	7735 56 46	
9	Ibrahim Ahmed Mahamud	Weerdhabtoole	7669 74 46	
10	Abdiqani Said Nur	Dagaha Yaraa	7711 12 39	
11	Ubah Mohamed Ibrahim	Dhagaha Yaraa	7711 12 39	
12	Abdulkadir Mohamed Abdulle	Hagarweyne	7727 15 61	
13	Ibrahim Ahmed Ali	Hagarweyne	7727 15 61	
14	Ubah Abdulle Ahmed	Hagarweyne	7727 15 61	
15	Ciise Mohamed	Ugaas	7733 44 88	
16	Bashir Sheikh Nur	Local Council	7733 44 88	
17	Xoliimo Cilmi	Dhamaal	7785 53 37	
18	Nafso Omer Sheikh	Hawiyeen	7737 38 48	
19	Qaasim Mukhtar Cabdi	Hawiyeen	7733 83 56	
20	Qaasim Bashir Cige	Hawiyeen	7786 08 31	
21	Sheikh Mohamud Yusuf	Hawiyeen	7735 35 41	

APPENDIX 4: Key Informant Interviews Forms

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GENDER SENSITIVE AND CLIMATE-RESILIENT CITY WASH MASTERPLANS, MANAGEMENT MODALITIES AND TECHNICAL FEASIBILITY STUDIES FOR QARDHO AND SOUTH GALKAYO, SOMALIA

FOCUSSED GROUP (FGD)DISCUSSION GUIDE

Qardho Town

1. **Entity / Name of Group/** Women from IDP camp (shabeelle)
2. **Date and Venue** 18th June 2025- mainoffice
3. **Attendance / Representation**
   - Women Leaders (chairpersons) and the consultant
4. **Topic of Discussion**
   Challenges faced in the camp:
5. **Key Issues Discussed**
   - Poor sanitation facilities
   - insecurity at night while going to the toilets
   - far distance to fetch water
   - not enough storage facilities
   - no ambulance at the local health centre
   - lack of gender sensitive toilets
6. **Way forward and Resolution**
   - Training of Better hygiene practises
   - women empowerment
   - more sanitation facilities
7. **Signature and Confirmation**

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GENDER SENSITIVE AND CLIMATE-RESILIENT CITY WASH MASTERPLANS, MANAGEMENT MODALITIES AND TECHNICAL FEASIBILITY STUDIES FOR QARDHO AND SOUTH GALKAYO, SOMALIA

FOCUSSED GROUP (FGD)DISCUSSION GUIDE

Qardho Town

1. **Entity / Name of Group/** Social Dep't / Disaster Mang't
2. **Date and Venue** 11th June - Mayor's Office
3. **Attendance / Representation**
   Workers from the department
4. **Topic of Discussion**
   general Women hygiene practies
5. **Key Issues Discussed**
   - Accessibility to the local Govt offices lacks disability access
   - No Sanitary pads disposal places
   - Expensive pad not accessible to many vulnerable homes
   - many women headed households lack income
   - flooding affects many small business
6. **Way forward and Resolution**
   - capacity building and training of entrepreneurs
   - dignity sensitive washrooms
   - better hygiene services
7. **Signature and Confirmation**

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GENDER SENSITIVE AND CLIMATE-RESILIENT CITY WASH MASTERPLANS, MANAGEMENT MODALITIES AND TECHNICAL FEASIBILITY STUDIES FOR QARDHO AND SOUTH GALKAYO, SOMALIA

FOCUSSED GROUP (FGD)DISCUSSION GUIDE

Qardho Town

1. **Entity / Name of Group/** Men from Shabeellee IDP camp
2. **Date and Venue** 12th June at the camp's facilities
3. **Attendance / Representation**
   Male leaders, religious elders
4. **Topic of Discussion**
   general safe WASH practises
5. **Key Issues Discussed**
   - better sanitation facilities for women & girls
   - improved access to clean and safe water
   - limited awareness in terms of better uses in hygiene
   - improved access to medicine in the health centre
6. **Way forward and Resolution**
   - the project to improve the existing facilities
   - more water points near the camp.
   - gender sensitive toilets
   - solar lights in the camp
7. **Signature and Confirmation**

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GENDER SENSITIVE AND CLIMATE-RESILIENT CITY WASH MASTERPLANS, MANAGEMENT MODALITIES AND TECHNICAL FEASIBILITY STUDIES FOR QARDHO AND SOUTH GALKAYO, SOMALIA

FOCUSSED GROUP (FGD)DISCUSSION GUIDE

Qardho Town

1. **Entity / Name of Group/** Dayreel Waste Management Company
2. **Date and Venue** 11th June 2025 → Dayreel Waste Mng7
3. **Attendance / Representation**
   Workers from the company and the consultant
4. **Topic of Discussion**
   → improvement of services
   → alternative land for waste disposal
5. **Key Issues Discussed**
   → more garbage trucks needed
   → solid waste segregation
   → solid waste handling.
   → introduction of recycling
   → alternative land for solid waste treatment
6. **Way forward and Resolution**
   → more training to the people on recycling of waste.
   → solid waste management practices.
   capacity building
7. **Signature and Confirmation**

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GENDER SENSITIVE AND CLIMATE-RESILIENT CITY WASH MASTERPLANS, MANAGEMENT MODALITIES AND TECHNICAL FEASIBILITY STUDIES FOR QARDHO AND SOUTH GALKAYO, SOMALIA

KEY INFORMANT INTERVIEW (KII) DISCUSSION GUIDE

Qardho Town, Puntland

1. **Entity / Organization / Department**

   Shabeellee Health Centre

2. **Name of officer and Position / Individual Consulted**

   → Medical Superintendant

3. **Date and Venue** 12th June 2025 → Shabeellee Heath Centre

4. **Topic of Discussion**

   Hospital challenges interms of servicing IDPs (women & Children)

5. **Key Issues Discussed**

   → insufficient water in the camp or rather the distance from the water points to the household is far
   → lack of Ambulance in the hospital that can help in the emergencies
   → disposal of hospital waste - small incernary
   → Gender Based violence among women

6. **Way forward and Resolution**

   → capacity building to the local NGOs → TASS
   → more programs especially in water and sanitation
   → water points to be brought closer to the camps

7. **Signature and Confirmation**

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GENDER SENSITIVE AND CLIMATE-RESILIENT CITY WASH MASTERPLANS, MANAGEMENT MODALITIES AND TECHNICAL FEASIBILITY STUDIES FOR QARDHO AND SOUTH GALKAYO, SOMALIA

KEY INFORMANT INTERVIEW (KII) DISCUSSION GUIDE

Qardho Town, Puntland

1. **Entity / Organization / Department**

   Shabeellee Health Centre

2. **Name of officer and Position / Individual Consulted**

   Patient at Shabeellee Health Centre Mrs → Halima

3. **Date and Venue** 12th June 2025 → Shabeellee Health Centre

4. **Topic of Discussion**

   Challenges in accessing good sanitation

5. **Key Issues Discussed**

   → lack of enough supplements for the kids
   → vaccinations for children sometimes is delayed
   → difficulty in getting water

6. **Way forward and Resolution**

   → NGO, to help with sanitation facilities
   → The project should bring water close to the IDP camps
   → The Govt Puntland to improve supplies of medicine

7. **Signature and Confirmation**

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GENDER SENSITIVE AND CLIMATE-RESILIENT CITY WASH MASTERPLANS, MANAGEMENT MODALITIES AND TECHNICAL FEASIBILITY STUDIES FOR QARDHO AND SOUTH GALKAYO, SOMALIA

KEY INFORMANT INTERVIEW (KII) DISCUSSION GUIDE

Qardho Town, Puntland

1. **Entity / Organization / Department**

   Hodman Water Mangonet

2. **Name of officer and Position / Individual Consulted**

   IDRIS

3. **Date and Venue** 9th June → Hodman Water Company

4. **Topic of Discussion**

   Improved services

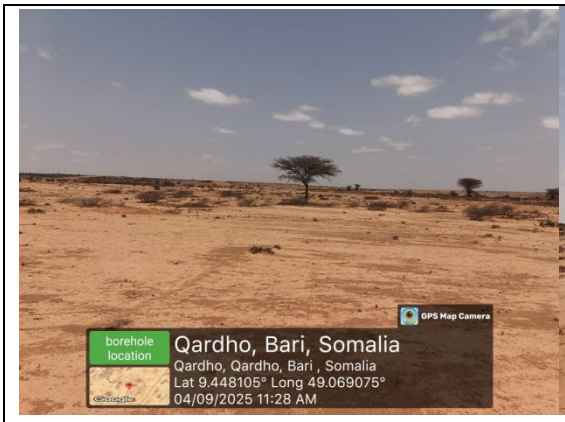
5. **Key Issues Discussed**

   → more accessible water points to camps
   → maintenance issues and rehabilitation of lines
   → Involvement of women in the water sector

6. **Way forward and Resolution**

   → increased women participation
   → the project to propose more places for boreholes

7. **Signature and Confirmation**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GPS Map Camera
borehole location
Qardho, Bari, Somalia
Somalia, Qardho, Bari , Somalia طريق بدون اسم،
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borehole location
Qardho, Bari, S
Qardho, Qardho, Bari , S
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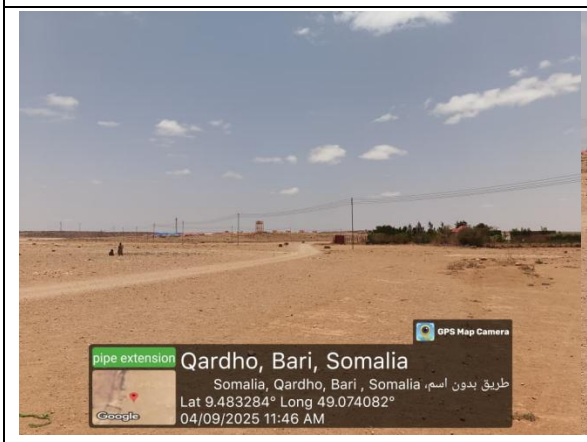
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pipe extension
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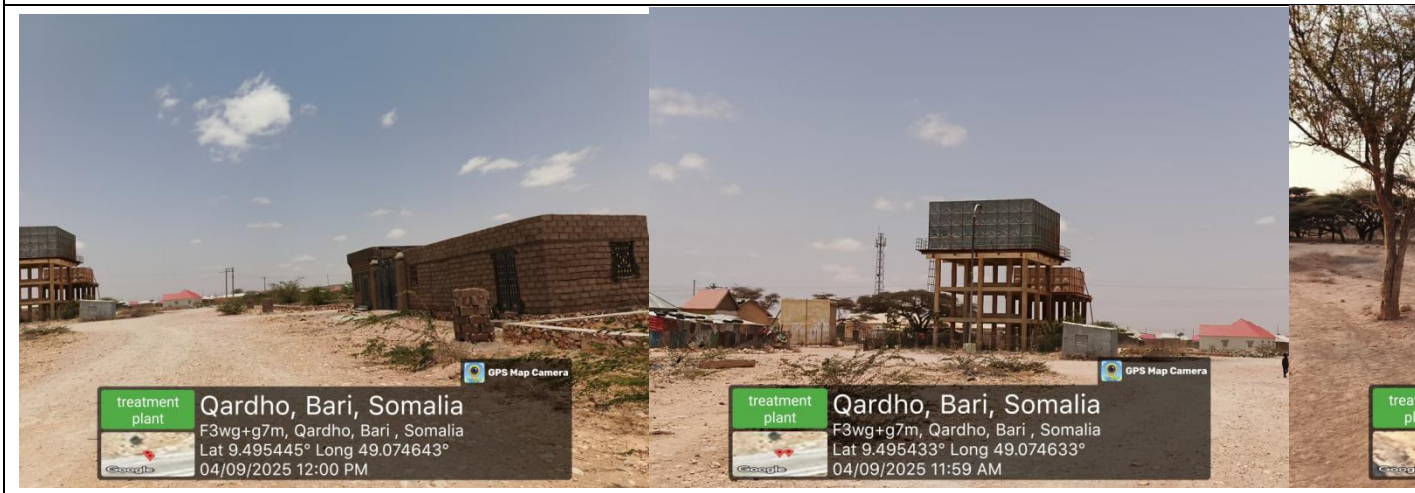
pipe extension
Qardho, B


GPS Map Camera
treatment plant
Qardho, Bari, Somalia
F3wg+g7m, Qardho, Bari , Somalia
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GPS Map Camera
treatment plant
Qardho, Bari, Somalia
F3wg+g7m, Qardho, Bari , Somalia
Lat 9.495433° Long 49.074633°
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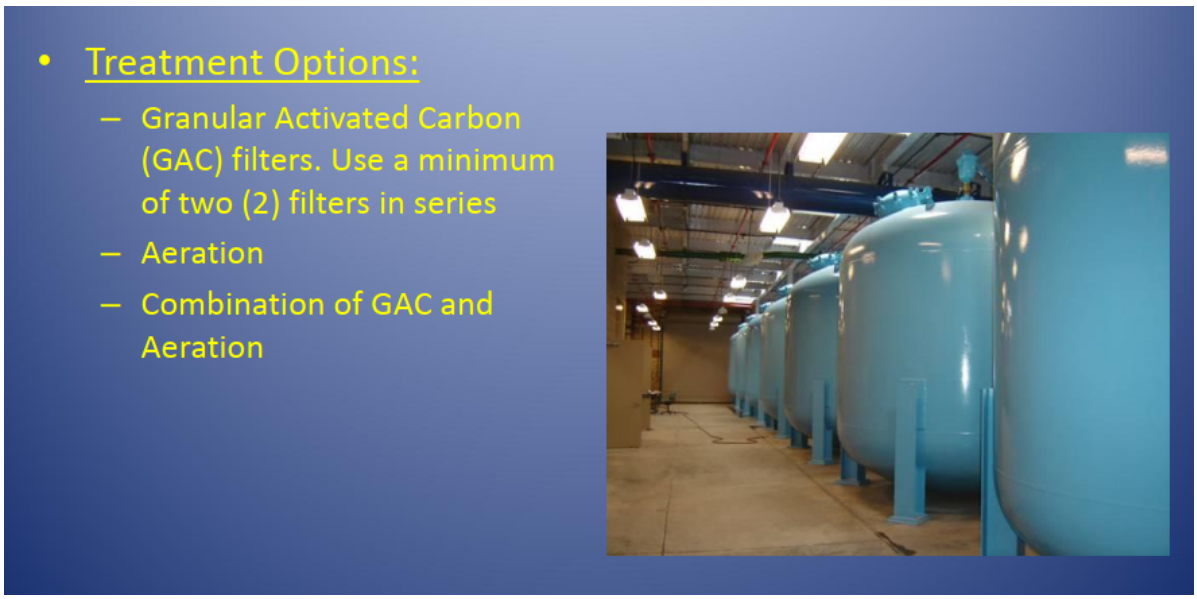
APPENDIX 5 : Project Designs

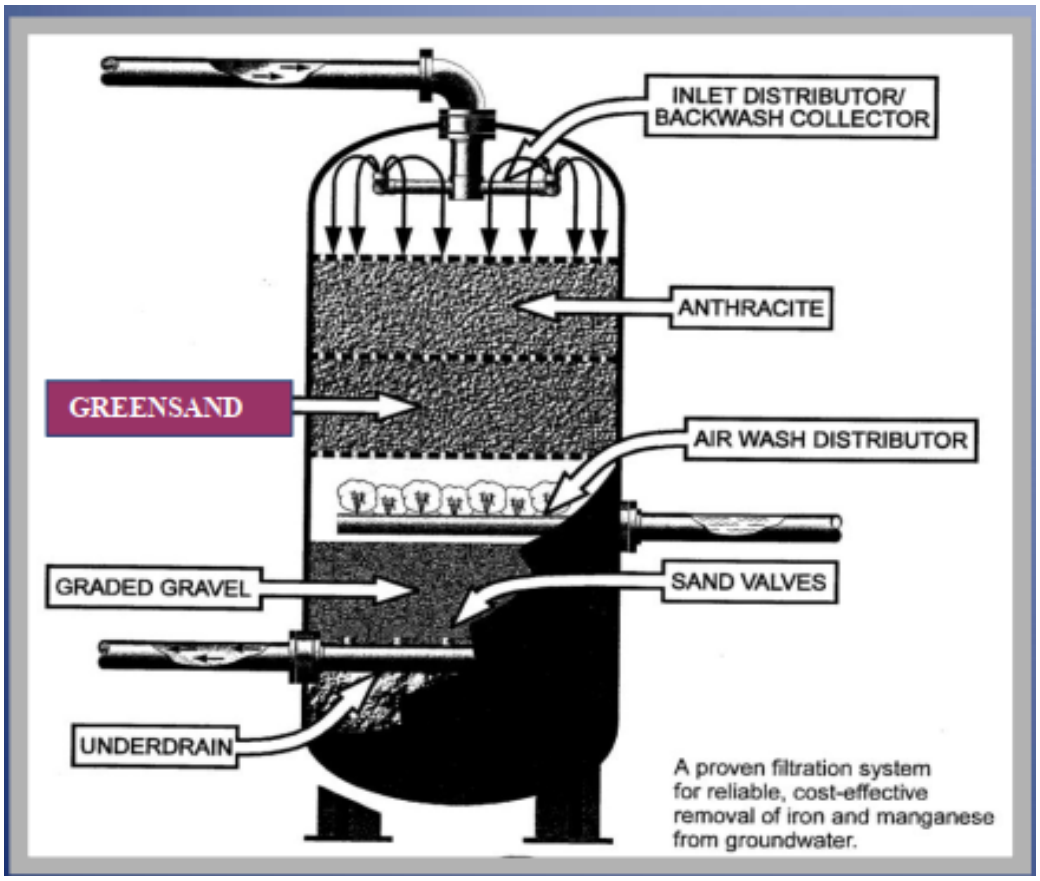
Simplified Treatment Train (Illustration)

```
Raw Groundwater
      |
      ▼
   Aeration
      |
      ▼
 Sand Filtration
      |
      ▼
(Optional: Softening / GAC Adsorption)
      |
      ▼
   UV Disinfection
      |
      ▼
   Treated Water
      |
      ▼
Distribution System
```

Water Treatment Options



Simple Filtration process diagram



Lists of Sites

1. Construction and installation of new water treatment plant

	Name	Latitude	Longitude	Tank size(m3)
1	Kuleejka	9.5053253	49.0920145	400

2. The construction/establishment of water quality monitoring laboratory

	Name	Latitude	Longitude	Tank size(m3)
1	Kuleejka	9.5053253	49.0920145	400