GENDER-SENSITIVE AND CLIMATE-RESILIENT CITY WASH MASTERPLANS, MANAGEMENT MODALITIES AND TECHNICAL FEASIBILITY STUDIES FOR DOLLOW TOWN, SOMALIA

LRPS-2024-9193250

D8-ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT (ESIA) PROJECT REPORT FOR DECENTRALIZED TREATMENT FACILITY (DTF) IN DOLLOW TOWN, SOMALIA

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EXECUTIVE SUMMARY

Overview of the Project

Somalia, particularly regions in the Horn of Africa like Dollow, continues to experience recurring droughts, political instability, and displacement crises that have severely impacted access to water, sanitation, and hygiene (WASH) services. The growing number of internally displaced persons (IDPs) in urban centres such as Dollow has strained already inadequate water infrastructure and sanitation issues leading to high costs of living and increased health risks.

The Federal Government of Somalia has applied for funding from the African Water Facility (AWF) to help improve adaptability to climate change and create society resilience through the 'Building Resilience to Climate Change through WASH in Qardho, Dollow and South Galka'ayo, Project'. This initiative focuses on immediate interventions and the development of long-term, investment-ready plans for sustainable WASH infrastructure. In this context, Dollow town has been selected as one of the key towns to benefit from technical planning, feasibility assessments, and infrastructural development under the project.

Earth Water Limited has been tasked with preparing bankable, investment-ready project documents for Dollow town, focusing on climate-resilient WASH systems and informed by gender-sensitive and disaster risk reduction (DRR) principles. Tasks include reviewing or developing WASH master plans, conducting feasibility studies, and designing infrastructure for water supply, solid waste, sanitation, and stormwater management. One of the key components proposed is the construction of decentralized treatment facility DTF) to manage human water. This Environmental and Social Impact Assessments (ESIAs) aims at ensuring minimal adverse impacts on the environment and communities by identifying potential risks, propose mitigation measures, and ensure that projects comply with both Somali regulatory frameworks and AfDB safeguard policies. The ESIA will also promote sustainability of the project by ensuring positive social and environmental impacts are enhanced and negative impacts reduced or eliminated. The scope is to identify the most viable and sustainable solution for improving sanitation in Dollow, concluding that the DTF, with appropriate mitigation measures, is the optimal path forward with no significant adverse environmental or social impacts anticipated.

Description of Project Site

The proposed project site for a decentralized treatment facility is located Dollow town. The town is strategically located in south western Somalia, near the border with Ethiopia. It is situated in the Gedo Region and serves as the administrative capital of the Dollow District. The town lies on the banks of the Juba River, one of Somalia's most significant rivers and directly across the border is the Ethiopian town of Dolo Ado, making Dollow an important border trade and transit hub. The town is home to both host communities and internally displaced persons (IDPs) due to past conflicts and droughts.

Two locations have been identified by CES and Earth Water Ltd consultants to be suitable for the proposed DTF.

Table 1: Proposed Decentralised Treatment Facility Locations

Location (UTM, WGS84, 38N)		Remarks
X	Y	
184,963.17	457,633.47	Site no.1 identified by CES
179,938.65	460,590.78	Site no.2 identified by EWL

Methodology

The ESIA study was conducted from May to September 2025 in accordance with the AfDB's ISS and Somalia's EIA Regulations (2016). This assessment was aimed in identifying the baseline bio-physical and socio-economic conditions in the project areas, possible interactions with the proposed project activities, and in addition proposes their mitigation and enhancement measures. To achieve that, the following methods were used: Kick-off Meeting, Desk Review, Reconnaissance Survey Report Structure, and Community Consultation.

Institutional and Legal Framework

The table below underlines the key institutions or agencies that are closely involved in water and sanitation services in Somalia. This is essential for joint planning, implementation and coordination of different activities related to the proposed project.

Institution	Mandate
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.
Ministry of Energy and Water Resources, Jubbaland State	The Ministry is in charge of the protection and preservation of surface and ground water resources, including rivers.
Municipal Authorities of Dollow	Municipal authorities across the three target districts are headed by Mayors who are the political wings. The leaders at these levels of local administration are closer to residents and therefore important in effective community engagement, sensitization and dispute resolution given that the water supply and sanitation project will serve communities.
Dollow Water Management Company	The water operator is responsible to provide clean and safe water to all residents, including the IDPs. This entity is responsible for operation and maintenances for water supply systems and sanitation facilities.

For better and effective implementation of the project and realization of its intended objectives, the project will operate under various policies and legal frameworks. These include laws and policies of the Federal Republic of Somalia (FRS), as well as the African Development Bank's (AfDB's) Integrated Safeguards System (ISS), international conventions, environmental laws with the intention of promoting the positive impacts of the project, while minimizing the negative effects. Specifically, the various policies and laws were reviewed in relation to the proposed project and among them include:

No.	Policies, Legal Frameworks, and International Conventions and Agreements
National Level Policies	
1	National WASH Sector Policy, 2019
2	National Environmental Policy, 2019
3	National Climate Change Policy, 2020
4	National Water Resources Strategy, 2021-2025
5	National Gender Policy, 2016
National Level Legal Frameworks	
1	Constitution of the Federal Republic of Somalia, 2012
2	The Labour Code of 1972
3	Penal Code, 1962
State Level	
1	Jubbland Environmental Protection and Management Code, 2018
International Conventions and Agreements	
1	United Nations Convention on Biological Diversity, 1992
2	United Nations Convention to Combat Desertification, 2002
3	African Convention on Conservation of Nature and Natural Resources, 2003
4	Convention on International Trade Against Endangered Species (CITES), 1986

The applicable OSs to this project are listed below, while more details on their relevance for the project interventions are highlighted in below.

No.	Description
1	OS 1: Environmental and Social Assessment
2	OS 2: Labour and Working Conditions
3	OS 3: Resource Efficiency and Pollution Prevention and Management
4	OS 4: Community Health, Safety and Security
5	OS 5: Land Acquisition, Restriction on Access to Land and Land Use, and Involuntary Resettlement
6	OS 6: Habitat and Biodiversity Conservation and Sustainable Management of Living Natural Resources
7	OS 7: Vulnerable Groups
8	OS 8: Cultural Heritage
10	OS 10: Stakeholder Engagement and Information Disclosure

Impacts and Mitigation Measures

The study has shown that the project will have both positive and negative impacts on the physical, biological and human environment from the construction, operation and decommissioning of activities. Key positive impacts envisaged will include: improved sanitation, improved health and decent human waste management; improved livelihood, improved protection of women and girls; reduced communal disputes over human waste disposal; and provision of employment opportunities. However, the development of the project will also bring negative impacts which are not adverse impacts because they can be avoided or minimized by adhering to the suggested mitigation measures. The table below summarizes the key significant negative impacts and proposed mitigation measures.

CONSTRUCTION PHASE	
Physical Environment	
Issue/Impact	**Mitigation Measures**
Soil erosion	Use of excavated materials for backfilling Spoiled earth/rock should be disposed of in the appropriate approved areas.
Water pollution	Prevent run-off loaded with sediment and other harmful materials from the site from discharge to river. Water containing pollutants such as cement, concrete, chemicals and fuel shall be removed from site where applicable
Noise pollution	Workers should be provided with adequate PPE item such as ear muffs as appropriate; Works should be performed during day hours.
Biological Environment	
Vegetation clearing and loss of biodiversity	Vegetation clearing should be minimized as much as possible Limit vegetation clearing for works to the required area; and Use only indigenous plant species for re-vegetation. Where possible avoid areas with fragile environment or endangered species
Socio-economic Environment	
GBV	The Contractor's code of conduct should be translated into Somali language and each worker should be sensitized and signed prior to the commencement of works; and Train all workers on existing laws and policies on GBV and other sexual offences.
Child Labour	The Contractor will ensure to register all workers by checking their birth certificates and/or identity cards; and Confirming that children and minors are not employed directly or indirectly on the project.
Disease Spread	Conduct awareness campaigns on hygiene and sanitation and how diseases spread; and

	Information dissemination about the danger of STDs to the community will be done throughout the period of the project.
OPERATIONAL PHASE	
Diseases and other health related issues to the DTF workers	Provide effective PPEs to workers and operators Offer training on facility operation and management and health and safety measures
Socio-economic Environment	
GBV impacts	Establish effective mechanisms that safeguards women and girls working at DTF Undertake continuous sensitization and awareness raising program on GBV/SEA/SH prevention and protection of vulnerable and minor groups.

Consultation

Consultation meetings and discussions were held at administrative and local community levels. The ESIA team had meetings with local government authority, NGOs representatives, chiefs and local community. In summary, all stakeholders consulted were supportive of the project, and emphasized for speedy implementation of the project.

Date	Mode of Consultation	Stakeholders	Venue	No. of Participants (F/M)	Total	Key Issues Discussed	Key Outcomes
20/05/2025	Focus Group Discussion, Key Informant Interview	Communities from Kabasa, Qansaxley, Kaharey, Ladan & Qurdubey	Community Centres within IDP sites	17F / 23M	40	Flood impacts on shelters & wells Droughts & reliance on trucked water Burden of water collection on women/children Inadequate sanitation & waste management Community vulnerabilities (elderly, disabled, pastoralists)	Communities committed to active participation in water user committees. Agreed on priority for women, elderly, and disabled in service provision. Requested inclusion of livelihood support within project design.
20/05/2025	Key Informant Interview	Dollow Water Company	Dollow Water Office	2F / 4M	6	Floods disrupt pumping Drought reduces recharge High O&M costs Resilience gaps in storage & generators	Company pledged technical support & data sharing for design. Requested project to include climate-proof infrastructure. Agreement to strengthen coordination with Ministry and NGOs.
21/05/2025	Community Meeting	Ladan IDP Camp	Ladan Social Hall	5F / 11M	16	Equitable water distribution Prioritization of vulnerable groups Role of committees in grievance redress	Camp leaders endorsed the project. Agreement to form a grievance redress committee with gender balance.

							Prioritized siting of facilities in safe, accessible areas.
25/05/2025	Institutional Meeting	Ministry of Energy & Water Resources & Dollow Water Management Co.	Dollow Water Company Hall	2F / 3M	5	Alignment with WASH priorities, Roles & responsibilities, Safeguards compliance, Implementation modalities	Ministry endorsed project alignment with national WASH strategy. Agreement to designate a focal person for coordination. Commitment to provide technical oversight & safeguards compliance.
26/05/2025	Meeting with Local Authorities	Chiefs & Elders, District Commissioner		8M	8	Community mobilization role, Land allocation issues, Conflict sensitivity	Elders agreed to engage in water & sanitation activities. Chiefs pledged to support awareness campaigns. Agreement to integrate conflict-sensitive approaches.
26/05/2025	Consultative Session	IOM, UNICEF, FAO, NRC, SHRA, UNHCR, NCA		3F / 13M	16	Harmonization with existing WASH programs, Gender-responsive designs, Joint monitoring & reporting	Agencies agreed to coordinate activities to avoid duplication.

Analysis of Alternatives

The analysis of alternatives for the proposed Decentralized Wastewater Treatment Facility (DTF) in Dollow reviewed the "no project" option, alternative sites, and other treatment systems such as sewer lines, constructed wetlands, and membrane bioreactors. The "no project" option was deemed unviable as it would worsen sanitation challenges, while sewer lines and MBRs were found economically and technically unsuitable and constructed wetlands posed risks to groundwater. After assessing two proposed sites, the location identified by Earth Water Limited was considered the most viable due to accessibility, stakeholder approval, and security assurances. The DTF was selected as the preferred option because it is cost-effective, environmentally sustainable, adaptable, and capable of improving sanitation through safe faecal sludge management, with no significant adverse environmental or social impacts anticipated if mitigation measures are applied

Environmental and Social Management Plan (ESMP)

The Environmental and Social Management Plan (ESMP) for the Dollow Decentralized Treatment Facility (DTF) is structured to ensure that both construction and operation phases deliver maximum public health benefits while minimizing environmental and social risks. It prescribes targeted mitigation measures for physical, biological, and socio-economic impacts. For example, vegetation clearance is to be strictly limited, spoil reused for backfilling, and dust controlled through water spraying. Noise and air emissions are addressed through provision of PPE and equipment maintenance, while water pollution risks are mitigated by strict runoff management and professional desludging practices. Social safeguards are equally prominent: codes of conduct for workers, prohibition of child labour, GBV/SEA/SH training, and community awareness campaigns on hygiene and disease prevention are all embedded in the plan.

Institutional responsibilities are clearly delineated. The Federal Ministry of Energy and Water Resources (MoEWR) retains overall oversight, while the Jubbaland State MoEWR, Dollow Municipal Authority, and the Dollow Water Management Company (DWMC) provide local implementation and monitoring. Contractors are required to prepare a Contractor-ESMP (C-ESMP) and sub-management plans covering OHS, waste, traffic, labour, and emergency response. Monitoring is multi-tiered: contractors and PMTs conduct daily and monthly checks, while AfDB provides external oversight. Indicators include vegetation conserved, spoil disposal compliance, PPE usage, and grievance cases resolved. This layered accountability ensures that safeguards are not just theoretical but operationalized in the field.

The ESMP is backed by a detailed budget that reflects both capital investments and safeguard costs. The short-term sanitation component allocates **USD 321,000** for the DTF itself, **USD 100,000** for two sewer lorries, **USD 200,000** each for hygiene promotion and women/youth empowerment, **USD 300,000** for engineering consultancy and monitoring, and **USD 100,000** specifically for ESMP implementation, totalling **USD 1.221 million**. In addition, a dedicated ESMP/ESMMP budget of **USD 20,000** is earmarked for safeguard-specific activities: capacity building for PIUs/PMTs (USD 2,000), stakeholder engagement (USD 2,000), grievance redress (USD 6,000), monitoring (USD 5,000), audits (USD 3,000), and environmental restoration/tree planting (USD 3,000). These allocations demonstrate that safeguards are not an afterthought but a funded, integral part of project delivery.

For an ESMP expert, the strength of this plan lies in its integration of mitigation, monitoring, and institutional capacity building with clear financial commitments. It balances hard infrastructure with soft measures such as gender inclusion, grievance redress, and community sensitisation, ensuring that the DTF is not only technically sound but socially accepted and environmentally sustainable. By embedding AfDB safeguard standards (OS1–OS8) and Somali regulatory requirements, the ESMP provides a robust compliance framework. With its modest but targeted safeguard budget and a larger envelope for hygiene and empowerment, the plan reflects a holistic approach: infrastructure, people, and environment are treated as interdependent pillars of resilience in Dollow and its five IDP camps.

Ministry of Energy and Water Resources and the water company will coordinate with other stakeholders on ensuring that environmental and social issues are addressed effectively

throughout the lifecycle of the project. Implementation of environmental issues is done through the relevant government institutions at all levels. Both will be required to report every quarter.

Project Costs for the Short-Term Duration

The project costs are broken down into the following tables:

Costs for Decentralised Treatment Facility and Supporting Components (Short Term)

Description	Total Cost (USD)
Construction of 1 no. onsite decentralised treatment facility (44m^3/day) with a baffled anaerobic reactor and vertical flow constructed wetland	321,000
Purchase of 2 no. sewer carrying boozers / lorries	100,000
Hygiene promotions/ awareness campaign	200,000
Women empowerment and youth engagement	200,000
Engineering consultancy firms for specialized studies/ monitoring/ certification	300,000
Implementation of Environmental Social Management Plan	100,000
Subtotal – Component 2	**1,221,000**

Costs for Environmental and Social Management and Monitoring Plan for the short-term phase

No	ESMMP Requirements	Budget Basis and Assumptions	Total Cost (US$)
1	Capacity building for PIU/PMTs	Training sessions will be held in the country	**2,000**
2	Stakeholder engagement workshops and meetings in project sites	Continuous stakeholder engagement throughout the implementation of activities	**2,000**
3	Grievance redress mechanism and its functionality	Effective grievance mechanisms for both public and workers in subproject. The amount cover establishment of a simple GRM such as having a hotline or assigning some members of staff the role of addressing grievances and training them on how to approach the process	**5,000**
4	Environmental and social impact monitoring	Allocated amounts for E&S plans are prioritized and executed by all stakeholders	**5,000**
5	Environmental and social audits	An independent environmental and social audit	**3,000**
6	Environmental restoration and tree planting	Allocated to restore the environment natural vegetation and improve the catchment	**3,000**
Total Estimated Budget (US$)			**20,000**

Conclusion

This ESIA has developed an ESMMP to guide the relevant institutions and other stakeholders for construction of decentralized treatment facility for Dollow town. Based on AfDB's ISS, this project has been classified as Category 2 due to its limited, site-specific, and reversible environmental and social impacts. No irreversible biodiversity loss or significant displacement is anticipated. The ESMMP was based on environmental and social baseline

conditions and identification of potential impacts of the proposed project with consideration of minimizing adverse impacts before, during and implementation of interventions. With implementation of mitigation measures herein proposed, potential negative impacts of project activities will be minimized or eliminated and positive ones enhanced.

Recommendations

Federal and State Level Ministries

These include the following:

- Prioritize the establishment of Project Management Teams (PMTs) within the first 3 months of project mobilization for coordination and implementation of the project;
- Ensure the compliance of environmental and social requirements of the AfDB during the implementation of the project; (continuous through the project)
- Hire qualified experts for environmental and social safeguards who will be responsible for monitoring and ensuring that all environmental and social safeguards are followed consistently during the implementation of the project;
- Make sure that environmental and social requirements (i.e., backfilling, PPE items, soil and water erosion control, etc) are well embedded in bidding documents and contracts during tendering of the project
- Continue stakeholder consultation and participation throughout the project lifetime;
- Develop or review standard of operations and/or agreements of the existing water service providers (i.e., water operators); and
- Improve the institutional capacity of water operators through training programs, to be initiated in the first year of the project and continued periodically.

Water Operators

These include the following:

- Consider environmental and social responsibilities during all works; particularly addressing waste management and occupational health; (continuous through the project)
- Empower gender inclusion in water related decision making by setting up inclusive water user committees within the first 12 months of project implementation, who shall be consulted throughout the project implementation.

Contractors

These include the following:

- Contractors should develop and implement a Contractor ESMP for the project's construction phase.
- In addition to the C-ESMP, contractors shall prepare and implement the following sub-management plans 1–3 months of mobilization
    - Occupational Health and Safety Plan (OHS Plan)
    - Waste Management Plan
    - Traffic Management Plan
    - Chance Find Procedure for Cultural Heritage
    - Community Health and Safety Plan
    - Labor Management Plan (including workers' code of conduct and GBV/SEA measures)
    - Emergency Preparedness and Response Plan

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Acronyms and Acronyms

AfDB	African Development Bank
AWF	African Water Facility
CDI	Combined Drought Index
DWMC	Dollow Water Management Company
DRR	Disaster Risk Reduction
ESIA	Environmental and Social Impact Assessment
ESMMP	Environmental and Social Management and Monitoring Plan
ESMP	Environmental and Social Management Plan
FAO	Food and Agriculture Organization
FGS	Federal Government of Somalia
FRS	Federal Republic of Somalia
FMSs	Federal Member States
GBV	Gender Based Violence
GDK	Government of Denmark
GRM	Grievance Redress Mechanism
HHs	Households
IDPs	Internally Displaced Persons
ISS	Integrated Safeguard System
MoEWR	Ministry of Energy and Water Resources
NDF	Nordic Development Fund
O&M	Operation and Maintenance
PAD	Project Appraisal Document
PIU	Project Implementation Unit
PMT	Project Management Unit
PSC	Project Steering Committee
SWALIM	Somali Water and Land Information Management
WASH	Water Sanitation and Hygiene

GLOSSARY OF TERMS

Term	Definition
Environmental and Social Impact Assessment (ESIA)	A systematic process used to identify, predict, and evaluate potential environmental and social effects of a proposed project. It provides mitigation and enhancement measures to ensure that development is sustainable and socially responsible.
Environmental and Social Safeguards (ESS)	Policies, principles, and procedures adopted by development partners such as the African Development Bank (AfDB) to prevent or minimise adverse environmental and social impacts during project design, implementation, and operation.
Operational Safeguards (OS)	The AfDB's specific environmental and social policy standards set out requirements for borrowers to identify, assess, and manage environmental and social risks throughout the project lifecycle.
Environmental and Social Assessment (ESA)	The broader analytical process that examines potential environmental and social impacts associated with a proposed project, including the ESIA and other related management tools.
Environmental and Social Management Plan (ESMP)	A framework detailing mitigation, monitoring, and institutional measures required to manage identified environmental and social impacts during project implementation and operation.
Environmental and Social Management and Monitoring Plan (ESMMP)	An integrated plan combining management and monitoring measures to ensure that mitigation actions are implemented effectively and that environmental and social performance is tracked and reported.
Contractor Environmental and Social Management Plan (C-ESMP)	A detailed, site-specific plan prepared by the contractor to guide implementation of environmental, social, health, and safety measures during construction and installation works.
Baseline Study	An assessment of the existing environmental, social, and economic conditions prior to project implementation, serving as a reference point for measuring change and assessing impacts.
Scoping	The initial stage of the ESIA process that identifies key environmental and social issues, potential impacts, and the extent of studies required for comprehensive assessment.
Impact	Any positive or negative change to the environment or society resulting wholly or partially from project activities.
Cumulative Impacts	The combined environmental and social effects of a project's activities together with other existing, planned, or foreseeable projects in the same area.
Mitigation Measures	Specific actions or interventions designed to prevent, minimise, or compensate for adverse environmental and social impacts.
Monitoring	The continuous or periodic collection and analysis of environmental and social data to ensure effective implementation of mitigation measures and compliance with relevant standards.
Stakeholder	Any individual, group, institution, or organisation that has an interest in, may affect, or may be affected by the project's activities or outcomes.
Stakeholder Engagement Plan (SEP)	A framework outlining how stakeholders will be identified and engaged throughout the project lifecycle to ensure transparency, inclusion, and accountability.

Public Consultation and Participation	The process of engaging stakeholders, affected persons, and communities to obtain their input and feedback, ensuring participatory decision-making and ownership of project outcomes.
Grievance Redress Mechanism (GRM)	A structured process through which project-affected persons and other stakeholders can raise concerns, complaints, or grievances and receive timely, fair, and transparent resolutions.
Project Affected Persons (PAPs)	Individuals, households, or groups directly or indirectly affected by project activities through loss of assets, land, or access to resources.
Grievance Redress Mechanism (GRM)	A structured process through which project-affected persons and other stakeholders can raise concerns, complaints, or grievances and receive timely, fair, and transparent resolutions.
Project Affected Persons (PAPs)	Individuals, households, or groups directly or indirectly affected by project activities through loss of assets, land, or access to resources.
Resettlement Action Plan (RAP)	A document detailing the procedures and measures for compensating and resettling people displaced by a project, ensuring livelihood restoration and social inclusion.
Institutional Capacity	The ability of implementing agencies, local authorities, and partners to manage, monitor, and enforce environmental and social safeguards effectively.
Sustainability	The principle of meeting present development needs without compromising the ability of future generations to meet their own, by balancing environmental, social, and economic goals.
Borehole	A narrow, deep hole drilled into the ground to access groundwater from underground aquifers for domestic, agricultural, or industrial use.
Shallow Well	A relatively shallow excavation, typically less than 30 meters deep, constructed to access groundwater close to the surface.
Wellfield	A designated area containing a group of wells managed collectively to extract groundwater for community or municipal water supply.
Water Point	A communal access point for water collection, often equipped with a hand pump, tap, or standpipe.
Aquifer	Refers to a geological unit or a layer of permeable rock formations that can store and transmit pressurised water in significant quantities to wells, boreholes, or springs.
Groundwater	Water found beneath the earth's surface in soil pores and fractures of rock formations, used as a source for wells and boreholes.
Pump House	A small structure housing mechanical pumps and control systems used to extract and distribute groundwater.
Generator (Standby)	A backup power unit installed to ensure continuous operation of water supply systems during power outages.
Water Quality Monitoring	The regular sampling and analysis of water to assess its physical, chemical, and biological characteristics and ensure it meets safety standards.
Sanitation Facility	A structure designed for safe human waste disposal, improving hygiene and reducing disease transmission in communities.
Septic Tank	An underground chamber used for the primary treatment of sewage through sedimentation and anaerobic digestion before disposal or infiltration.

Drainage System	Infrastructure designed to collect, channel, and safely discharge stormwater or wastewater to prevent flooding and contamination.
Solid Waste Management	The collection, transport, treatment, and disposal of solid waste materials in a manner that minimizes environmental and public health risks.
Wastewater	Water that has been used in households, industries, or agriculture and contains waste materials requiring treatment before discharge or reuse.
Water Supply Reliability	The ability of a water supply system to consistently meet user demand under varying operational and climatic conditions.
Internally Displaced Persons (IDPs)	Individuals or groups forced to flee their homes due to conflict, disaster, or insecurity but who remain within their country's borders.
Gender-Based Violence (GBV)	Any harmful act directed at an individual based on gender, including physical, sexual, or psychological abuse.
Sexual Exploitation and Abuse (SEA)	Any actual or attempted abuse of a position of vulnerability, authority, or trust for sexual purposes, including transactional sex or coercion.
Vulnerable Groups	Populations more likely to experience negative project impacts due to factors such as gender, age, disability, poverty, or displacement.
Livelihood Restoration	Actions taken to restore or improve the income and living standards of persons whose livelihoods are adversely affected by a project.
Occupational Health and Safety (OHS)	Standards and practices designed to protect the safety, health, and welfare of workers during project activities.
Community Health and Safety (CHS)	Measures implemented to safeguard the health, safety, and well-being of communities potentially affected by project operations.
Labour Management Procedures (LMP)	Guidelines for managing labour issues, ensuring fair treatment, safe working conditions, and compliance with employment laws.
Emergency Preparedness and Response Plan (EPRP)	A plan outlining procedure for preventing, responding to, and mitigating accidents, spills, or disasters during project implementation.
Groundwater Recharge	The natural process through which water from rainfall or surface sources infiltrates the ground to replenish aquifers.
Environmental Audit	A systematic evaluation conducted to determine whether project activities comply with environmental regulations and standards.
Environmental and Social Monitoring Report (ESMR)	A periodic report summarizing the implementation status of environmental and social mitigation measures and their effectiveness.
Cumulative Impact Assessment (CIA)	A study evaluating the combined environmental and social impacts of a project in conjunction with other existing or planned activities.
Climate Resilience	The ability of a system, community, or project to anticipate, prepare for, and respond to climate-related hazards, minimizing damage and ensuring recovery.
Ecosystem	A dynamic system of living organisms interacting with each other and their physical environment.
Biodiversity	The variety and variability of living species within an ecosystem, contributing to ecological balance and sustainability.

1 INTRODUCTION

1.1 Background

Since 1991, Somalia has endured conflict, political instability, power and governance vacuums, and climate-related disasters. The ongoing civil conflict has resulted in massive human displacement across Somalia. As of 2025, Dollow town, with a population of 55,298 people and also home to about 139,417 IDPs distributed in the surrounding 5 IDP camps (Kabasa, Ladan, Kaharey, Qansaxley and Qurdubey), is one town where this influx has necessitated the need to search for extra sources of water to counter the increased demand and also improve the dysfunctional WASH services. This population data provided by DWMC, originated from a census survey by camp coordination and camp management (CCCM) report of May 2025. Inadequate water supply increases the cost of access and time spent collecting water. This takes a toll on women and girls; are they shoulder the burden of water collection.

The water and sanitation services for households, health, and educational facilities are significantly deficient in both quantity and quality. The high user ratio leads to quick filling-up of sanitation facilities, yet the town does not have a functional faecal sludge management system. There is a dire need to sustainably manage and protect the existing water supply infrastructure, rehabilitate WASH infrastructure, and expand the water supply network to alleviate the situation. Solid waste management is a key challenge in Dollow town and surrounding IDP Camps, as a lot of waste is generated with non-existent garbage collection and disposal systems. This has resulted in pollution of rivers and shallow wells, exacerbating the water security challenge in the area.

1.2 Project Objective

1.2.1 Overall Objective

The proposed project aims to enhance water, sanitation, and hygiene (WASH) services in Dollow town and the surrounding IDP settlements namely Kabasa, Ladan, Kaharey, Qansaxley and Qurdubey camps through a combination of immediate interventions and long-term, investment-ready planning that is both climate-resilient and socially inclusive. It involves the development of disaster risk reduction (DRR)-informed, gender-sensitive WASH master plans, comprehensive water resource assessments, environmental and social impact assessments, and detailed engineering designs for water and sanitation infrastructure. In addition, the project will conduct targeted studies on solid waste, faecal sludge, wastewater, and stormwater management to address critical service gaps within Dollow town (host community) and IDP camps. By improving access to safe and sustainable WASH services, the project seeks to reduce the time and burden of water collection, especially for women and girls, improve public health, enhance community resilience to climate change, and support inclusive economic growth and livelihood opportunities.

To achieve this objective, the project will have three main components: (i) Investment planning comprising preparation of investment-ready projects for WASH, integrated water resource management with climate risk and vulnerability assessments; (ii) Immediate interventions through rehabilitation and/or expansion of existing WASH systems in Dollow town and surrounding IDP Camps; and (iii) Technical assistance, institutional capacity development, and Programme management.

1.2.2 Specific Objectives

The overall impact of the proposed project is reduced waterborne diseases and more climate-resilient WASH services among the communities of Dollow and the surrounding IDP camps. This impact will be realized through the following specific objectives:

- Improved access to water supply services through water supply infrastructure development and rehabilitation;
- Improved access to sanitation services and hygiene practices through the development of sanitation infrastructure (to include wastewater / faecal sludge management structures) and the promotion of good hygiene practices;
- Improved solid management through the provision of solid waste disposal and management infrastructure (to include designed landfills and solid waste collection trucks);

- Improved storm water drainage through training of natural drainage channels, provision of cut-off drains, and construction of lined storm water channels in the camps;
- Improved governance and sustainability of water and sanitation services through strengthening of institutional capacity and improved management models; and
- Enhanced community resilience and adaptability to climate shocks through integration of environmental and social safeguards.

1.3 Project Components

The overall proposed project components encompass the development of new infrastructure, rehabilitation and augmentation of the existing infrastructure and implementation of activities geared toward attaining the project-specific objectives

1.3.1 Component 1: Enhanced Water Supply Infrastructure

On water supply, the population in the project area is projected to grow at 3% annually, reaching over 362,000 people by 2045. This will increase daily water demand from about 8,800 m^3 in 2025 to nearly 29,700 m^3 by 2045. The existing system relies on 19 boreholes and a few shallow wells, but these are vulnerable to seasonal fluctuations, low yields, and salinity risks. To close the demand gap, the project proposes drilling 21 new wells in phases, rehabilitating the existing wells, and integrating additional RWASH shallow wells. Improvements will also be made to water conveyance and distribution through new HDPE pipelines, reservoirs, and water points. Storage capacity will be expanded with new 3,000 m^3 tanks in each phase to meet peak demand. To ensure quality and sustainability, measures include a water testing laboratory, chlorine dosing systems, groundwater monitoring, and the construction of four recharge weirs along the Dawa River to boost groundwater levels.

1.3.2 Component 2: Improved Sanitation Services and Hygiene Practices

For sanitation and hygiene, the project addresses critical gaps such as the lack of faecal sludge treatment facilities and insufficient, flood-prone latrines in the camps. It proposes building gender-segregated, disability-inclusive, and flood-proof latrines, supported by decentralised and centralised sludge treatment facilities. Hygiene promotion campaigns will target handwashing, safe water storage, and menstrual hygiene, particularly for women and schoolgirls. Hygiene kits will also be distributed in schools, and trained hygiene promoters will support facility maintenance and community awareness.

Solid waste management is another major challenge in Dollow, where open dumping, inadequate bins, and poor transport systems pose environmental and health risks. The project proposes establishing an integrated waste management system, including waste collection bins, transport vehicles, and a properly located landfill site. Sorting, recycling, and treatment of plastics, organics, and e-waste will be introduced, with the Dollow Water Management Company (DWMC) taking overall responsibility for management and governance.

1.3.3 Component 3: Improved Storm Water Drainage

Flooding, particularly in IDP camps, exacerbates sanitation challenges by damaging latrines and promoting open defecation. To address this, stormwater drainage systems will be developed, including cut-off drains, drainage channels, and the training of natural waterways to safely evacuate floodwater. These interventions will help protect both infrastructure and public health.

1.3.4 Component 4: Strengthened Institutional Capacity and Sustainability

Institutional strengthening is a central component of the project, aimed at ensuring sustainability and efficient service delivery. The DWMC, Ministry of Energy and Water Resources, water operators, and local authorities will benefit from capacity building, improved financial management, and better project coordination. Measures will include training staff, holding steering committee meetings, improving revenue collection, and adopting stronger operational policies.

1.3.5 Component 5: Environmental and Social Safeguards Integrated

Finally, environmental and social safeguards are integrated throughout the project to mitigate risks and promote inclusivity. Environmental measures include vegetation restoration, erosion control, dust and noise reduction, water quality protection, and wildlife

management. Operational safeguards cover groundwater sustainability, solar hybrid power systems, and automatic chlorination. Social safeguards ensure gender-sensitive facilities, women's participation in decision-making, grievance redress mechanisms, and protection against gender-based violence. The project also aims to create livelihood opportunities, for example through waste management cooperatives.

1.4 Project Design and Status

The implementation of the project has been foreseen to occur in four phases across 20 years (short, medium 1, medium 2, and long term).

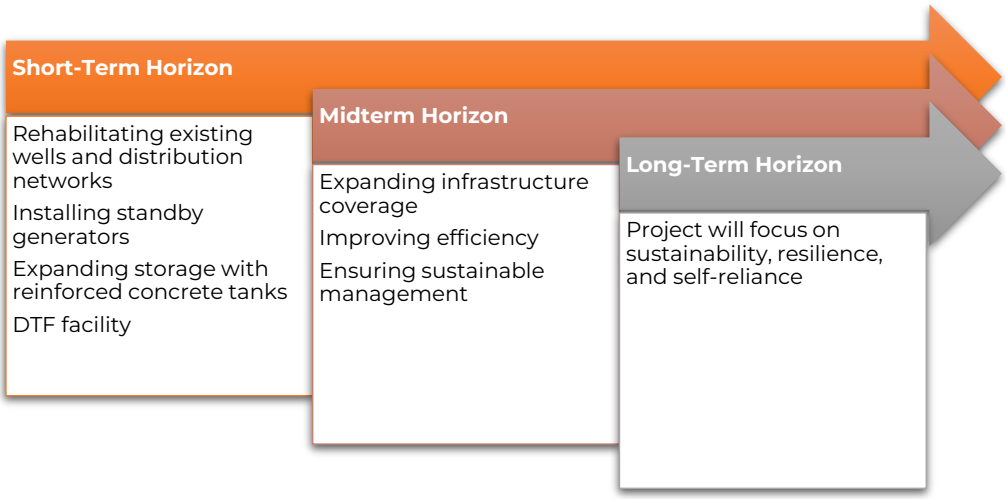

Figure 1: Project Design

In the current implementation, activities proposed for short term implementation under the first two components were approved for implementation.

1.4.1 Short-Term Horizon

In the short term, the project in Dollow prioritises urgent investments in water and sanitation to close service gaps and build resilience. On the water side, interventions will focus on rehabilitating existing wells and distribution networks, installing standby generators to ensure reliable supply, and expanding storage with reinforced concrete tanks. Water quality will be safeguarded through a new testing laboratory, chlorine dosing units, and digital monitoring systems, while groundwater sustainability will be supported by constructing recharge weirs along the Dawa River.

For sanitation and hygiene, the plan includes establishing a decentralised wastewater treatment facility, procuring sewer-carrying lorries, and constructing improved shared latrines. Hygiene promotion campaigns will run in all IDP camps with special attention to women, girls, and schools through training and hygiene kit distribution. Solid waste management will be strengthened with the development of an engineered landfill equipped for safe treatment and disposal of waste. Oversight will be ensured by engineering consultancies and guided by an Environmental and Social Management Plan.

1.4.2 Midterm Horizon

In the midterm phase, the project shifts from immediate gap-filling to scaling up and consolidating WASH services. The emphasis is on expanding infrastructure coverage, improving efficiency, and ensuring that systems are managed sustainably. By this stage, communities are expected to have reliable access to safe water, improved sanitation, and structured waste management, supported by stronger institutional capacity and governance frameworks. Hygiene promotion and social inclusion efforts will continue to deepen, ensuring widespread behavioural change and equitable service delivery.

1.4.3 Long-Term Horizon

In the long-term phase, the project will focus on sustainability, resilience, and self-reliance. Investments aim to secure lasting service continuity, strengthen climate resilience, and embed effective management systems within local institutions. Communities will benefit from universal WASH access, reduced vulnerability to disease outbreaks, and integrated environmental safeguards. By the end of this phase, the WASH systems in Dollow are

envisioned to be fully operational, climate-resilient, and institutionally anchored, providing equitable and sustainable services for both host and displaced populations.

1.5 Scope of the ESIA and ESIA Process

The study has been conducted to evaluate the potential and foreseeable impacts of the proposed construction of decentralized waste water treatment for Dollow town. The geographical scope is limited to the proposed town and their surrounding environments as they may affect or be affected by the proposed interventions of the project. Any potential impacts have been evaluated as guided by the AfDB's Integrated Safeguards System (ISS) and the National Regulations of Somalia.

The ESIA has been undertaken in accordance with the legislative requirements of the Federal Government of Somalia as well as policy requirements of the African Development Bank and other global good practices on safeguard provisions. Hence, the ESIA process has included the following steps:

Scoping: at this stage, the ESIA practitioner presented a description of the proposed project, the ESIA procedure, relevant policies and regulatory frameworks, bio-physical and socio-economic characteristics of the project areas, and perceived issues. Key stakeholders, including interested and affected parties were identified during this stage and provided with an opportunity to raise any comments, concerns and questions that they might have had on the proposed project.

Stakeholder Engagement: in this stage, the ESIA team ensured that all stakeholders should be engaged throughout the ESIA process. Key findings from the scoping process have been presented to government officials, local communities, and other interested groups.

Environmental, Social and Impact Assessment: this stage, the ESIA team analysed the potential environmental and social impacts through an in-depth objective study.

Environmental and Social Management Plan (ESMP): this provides a concise tabular framework of all the high-level mitigation measures, key performance indicators, responsibilities and related project plans aligned with the assessment of environment and social impacts.

1.6 Methodology

The ESIA study was conducted in accordance with the AfDB's ISS and Somalia's EIA Regulations (2016). This assessment was aimed in identifying the baseline bio-physical and socio-economic conditions in the project areas, possible interactions with the proposed project activities, and in addition proposes their mitigation and enhancement measures. To achieve that, the following methods were used:

1.6.1 Kick-off Meeting

At the commencement of the ESIA study, a kick-off meeting was held on 26th May 2025 between the ESIA Consultant, UNCEF representative and Dollow administration

The meeting was aimed at getting a detailed understanding of the scope of the study/work, timelines for the delivery of the assignment, and to confirm communication lines and secure available information for ESIA. The meeting participants also agreed on the dates of reconnaissance visits as well as availability different stakeholders for consultations.

1.6.2 Desk Review

To gain a clear insight on baseline parameters and project characterization, various planning, policies and regulatory documents and reports commissioned by the federal and state level authorities were analysed. Also, AfDB's Environmental and Social Safeguard Standards were among the documents reviewed. The following documents have been extensively reviewed:

- National Water Resources Strategy 2021-2025;
- National WASH Sector Policy, 2019;
- National Environmental Policy (2020);
- National Climate Change Policy (2020);

    - National Gender Policy, 2016;
    - Somali Penal Code, 1962;
    - Draft National EIA Regulation;
- Jubbaland Environmental Protection and Management Code, 2018
    - Project Appraisal Document (PAD);
    - National Labor Law;
    - AfDB's Updated Integrated Safeguards System (ISS), 2023; and
    - AfDB's Policy on Water, 2021;
    - AfDB's Policy for Integrated Water Resources Management, 2000.

1.6.3 Reconnaissance Survey

A reconnaissance survey covering Dollow town and the five surrounding IDPs was performed from May 27 2025. This was a scoping visit to the sub-project. The survey was aimed at gaining an in-depth understanding of the type of land use, structures, nature and type of impacts that are likely to be happened in the project areas. The field visits helped in establishing boundaries of the study areas, evaluating extra data sets, and engaging key project stakeholders in consultations where applicable.

During the survey, the ESIA team with support from UNICEF staff in Dollow, Dollow Water Management Company (DWMC) and local authority led the field visits for the proposed sites. These areas included:

- The sites proposed for construction of shallow wells, rehabilitation of existing water structures, sites for construction of proposed sanitation facilities and areas for extension of water pipeline and the proposed sites for a decentralised treatment facility (DTF) for waste water treatment

To get an understanding of various issues, the ESIA team held on-site discussions with the various stakeholders that were representing local community leaders.

Primary data collection was done in all selected sites for construction works. Information on bio- physical, socio-economic, and environmental conditions were collected by engaging key stakeholders, including local communities. The impacts were analysed and categorized using a three steps method which involved:

1) description of baseline conditions;
2) assessment of magnitude of impacts according to duration, likelihood, and extent; and
3) combination of magnitude with environmental and social values.

1.6.4 Community Consultation

Community consultations with various stakeholders were conducted to get their inputs on issues pertinent to the project. The consultations aimed at highlighting project activities and soliciting their feedback and concerns about the project. The stakeholders were identified according to the level at which they were operating, their interest in the project, their influence, and how they could be impacted by project components

2 POLICY, LEGAL, ADMINISTRATIVE AND INSTITUTIONAL FRAMEWORK

This includes an outline of the current policies, laws, regulatory structures, and institutional frameworks related to the environmental and social aspects of the proposed waste water treatment facility. It shall also identify the ministries, agencies, and institutions responsible for implementing, monitoring, and enforcing the specified legal requirements.

2.1 Federal Government Legal and Policy Frameworks

The following are legal frameworks that could affect the implementation of this project and their relevance:

Framework	Relevant Section	Relevance / Application to Project
Provisional Constitution of Somalia (2012)	Article 11 (Equality)	Prevents discrimination against citizens regardless of their gender, clan, religion, or other distinctions. This is particularly relevant in consideration of employment opportunities during construction and O&M.
	Article 14 (Prohibition of Slavery and Forced Labour)	This ensures that all persons involved in the execution of this project will be duly compensated and willing to participate
	Article 25 (Environment)	Establishes the right to a clean and healthy environment and mandates protection from pollution; triggers pollution-control and ecological safeguards during construction and operation
	Article 26 (Property Rights)	Recognises the right to own and use property with fair compensation for compulsory acquisition; ensures compensation to landowners for any site required by the treatment facility
	Article 27 (Economic & Social Rights)	Affirms the right to clean and safe drinking water; underpins the facility's role in improving public health and water quality in Dollow
	Article 43 (Land Management)	Mandates equitable, efficient, and sustainable land use with federal–state consultation; obliges the project to engage Federal Member States and follow sustainable siting
	Article 45 (Environmental Protection)	Requires citizens to protect and conserve natural resources and biodiversity; compels re-vegetation, habitat protection, and desertification reversal around the plant
Environmental Protection and Management Act (2024)	Part III (ESIA Requirements)	Mandates environmental and social impact assessments for projects with ecological impacts; triggers full ESIA, stakeholder engagement, and mitigation planning
	Part IV (Licensing)	Requires environmental licensing and permits for infrastructure projects; the facility must secure all requisite licenses before construction.
	Part VI (Pollution Control & Waste Management)	Establishes pollution-prevention, wastewater-treatment, and sludge-handling standards; the plant must meet these environmental discharge limits.
National Water Resource	Strategic Goal 2	Prioritises investment in water infrastructure to improve access and resilience; justifies decentralised wastewater treatment as a national water-security measure

Strategy (2021–2025)	(Infrastructure)	
	Strategic Goal 3 (Service Delivery)	Seeks to improve priority water services; the facility directly enhances sanitation services in an underserved area.
	Decentralised Governance Framework	Promotes community-based water management and local oversight; requires the establishment of local Water Committees to manage plant operations
National Environmental Policy (2020)	Pollution Control	Reinforces the need for contaminant-containment measures; guides design of sedimentation, disinfection, and emergency spill protocols.
	Ecosystem Conservation	Calls for habitat protection and restoration; informs re-vegetation of cleared areas with indigenous species
National Adaptation Programme of Action (NAPA, 2013)	*Priority Area: Water Sector Resilience*	Identifies wastewater management as key to climate adaptation; the project reduces flood-related contamination and supports groundwater protection.
National Climate Change Policy (2020)	*Adaptation Pillar – Infrastructure and Water Management*	Promotes climate-resilient infrastructure; the project contributes to low-carbon development and disaster risk reduction.
Labour Code (1972)	Occupational Health & Safety	Requires safe workplaces with proper sanitation, PPE, training, and emergency procedures; applies to all construction and operational staff
	Labour Rights & Contracts	Mandates clear employment contracts, non-discrimination, grievance mechanisms, and limits on working hours; ensures fair treatment of project workers
Somali Penal Code (1962)	Article 398 (Rape)	Criminalizes rape with penalties; informs the project's GBV risk-mitigation plan and code of conduct for staff and contractors
	Article 401 (Abduction for Sexual Purposes)	Forbids abduction for sexual exploitation; requires project to include security and reporting protocols in ESMP
Urban Land Distribution Law (1973)	Public Ownership of Urban Land	Declares urban land as public property; plant must secure leases or authorization from municipal authorities. Should be considered during land acquisition for construction of the facility
Somalia National Gender Policy (2016)	*Mainstreaming Gender in Infrastructure Projects*	Encourages gender-sensitive planning and safeguards against GBV; project must ensure inclusive employment and community engagement.
Draft National Environmental Management Act (Draft)	ESIA Procedures & Public Participation	Outlines impact-assessment steps, public hearings, and disclosure; guides enhanced stakeholder engagement beyond statutory ESIA

Draft National ESIA Regulations	Monitoring, Audits & Enforcement	Sets standards for compliance monitoring, environmental audits, and penalties; informs the plant's ongoing compliance framework
Draft National Ozone Layer Protection Regulation	Ozone Depleting Substances Management	Regulates use, handling, and disposal of ODS; applies to refrigeration and air-conditioning units at the facility
Draft National Forest Management Policy	Forest Conservation & Reforestation	Provides guidelines on tree-felling permits and compensatory planting; ensures any site clearing is offset by indigenous species planting
Draft National Charcoal Policy	Charcoal Production & Resource Management	Restricts charcoal feedstock sourcing to sustainable sources; prevents use of biomass felled for plant construction

2.1.1 National Water Resource Strategy (2021–2025)

The ESIA aligns with Somalia's National Water Resource Strategy (NWRS), which sets out the following strategic goals:

- **Goal 1:** Establish a functional governance framework for the water sector.
- **Goal 2:** Operationalise Integrated Water Resources Management (IWRM) to promote sustainable use and access.
- **Goal 3:** Improve the delivery of priority water services across Somalia.

The strategy outlines 20 sub-strategies and identifies institutional fragmentation, limited technical capacity, and regulatory gaps as key constraints to sectoral development (Ministry of Energy and Water Resources [MoEW], 2021).

- The strategy emphasizes sustainable water resource management, infrastructure development, and improved service delivery, all of which align with the goals of decentralized sanitation systems. Key areas of relevance:
- Infrastructure Investment: The NWRS prioritizes investment in water infrastructure to improve water security and reduce vulnerability to floods and droughts. Decentralized wastewater treatment facilities contribute to this by reducing pollution, and supporting climate resilience.
- Decentralized Governance: The strategy promotes strengthening water governance at both federal and member state levels. This supports localized solutions like decentralized treatment plants, which require community-level management such as through DWMC and oversight for long-term sustainability.
- Environmental Protection and Public Health: NWRS recognizes the urgent need to address waterborne diseases and environmental degradation. Wastewater treatment directly mitigates these risks by preventing contamination of surface and groundwater sources, especially in flood-prone and densely populated areas.

In essence, the NWRS provides both the policy mandate and strategic direction needed to justify and guide the implementation of decentralized wastewater treatment projects across Somalia.

2.1.2 National Adaptation Programme of Action (NAPA), 2013

NAPA serves as Somalia's primary framework for addressing climate change. It identifies droughts and floods as the most significant climate hazards and highlights the water sector as one of the most vulnerable. The ESIA directly supports adaptation priorities outlined in NAPA by increasing community and system resilience to water-related climate risks (United Nations Environment Programme [UNEP], 2013). Establishment of a DTF is in line with this since it aims to reduce contamination of rivers and ultimately reducing the risk of pollution of groundwater during the flood season when riverbanks burst open and infiltrate the groundwater system through destruction of shallow wells.

2.1.3 Environmental Protection and Management Act (April 2024)

The Somalia Environmental Protection and Management Act (April 2024) establish a robust legal framework for the conservation, management, and sustainable use of the country's environment and natural resources. Rooted in principles such as the right to a clean and healthy environment, the polluter-pays principle, sustainable development, and the precautionary approach, the Act mandates environmental and social impact assessments (ESIAs) for all projects with potential ecological impacts. The Act states in Part VI – Environmental Assessment and Monitoring, Section 38(1): "No person shall undertake a project or activity that is likely to have a significant impact on the environment or society without first conducting an Environmental and Social Impact Assessment (ESIA) and obtaining approval from the Ministry."

It creates an institutional framework led by the Federal Ministry of Environment and Climate Change and supported by state ministries, local authorities, and a National Environmental Council, all tasked with policy coordination, enforcement, and oversight. The Act addresses key environmental issues including air, water, and soil pollution; waste and hazardous substance management; climate change adaptation and mitigation; protection of biodiversity, forests, wetlands, rangelands, rivers, and marine resources; and environmental restoration. It prescribes stringent environmental standards, licensing requirements, and penalties for violations. Provisions are also made for public participation, environmental education, access to information, and intergovernmental and international cooperation. Importantly, it includes environmental audits, monitoring mechanisms, emergency response protocols, and enforcement powers for environmental inspectors.

2.1.4 Labour Code of 1972

The Labour Code of 1972 provides the legal foundation for labour and employment in Somalia. Although outdated, it addresses key issues relevant to Environmental and Social Standard 2 (ESS2) on Labour and Working Conditions:

- Employment contracts must include job nature and duration, hours and place of work, wage information, and termination procedures. Contracts must be pre-approved by a competent labour inspector.
- Employers are required to ensure Occupational Health and Safety (OHS) by providing safe, clean, and well-equipped workplaces, including water and sanitary facilities.
- Workers have the right to lodge complaints, which employers are obliged to consider seriously. Discrimination in wages based on gender, age, or other work-related criteria is prohibited.
- Working hours are limited to 8 hours per day and 6 days per week. Hazardous work is prohibited for women and youth aged 15–18. Employment for children aged 12–15 is permitted under strict protections, but work is forbidden for those under 12.
- The Code guarantees freedom of association and the right to form or join trade unions. It also stipulates equal pay for equal work and provides women with 14 weeks of maternity leave at half pay (International Labour Organisation [ILO], 2022).

Note: Although a revised version of the Labour Code has been drafted, it has not yet been enacted into law.

2.1.5 Somali Penal Code of 1962

The Penal Code criminalizes sexual violence and exploitation. Articles 398 and 399 provide penalties for rape and violent sexual acts, prescribing prison terms ranging from 1 to 15 years. Article 401 prohibits abduction for sexual purposes. The Family Code (1975) further reinforces social protections by setting the legal minimum age for marriage at 18 for both genders. Females aged 16–18 may marry only with guardian consent. Marriage is based on the principle of equal rights and responsibilities between spouses (Government of Somalia, 1962; 1975).

2.1.6 Urban Land Distribution Law of 1973

The Urban Land Distribution Law of 1973 designates all urban land in Somalia as public property, emphasizing state ownership over individual title. The law introduces distinctions between the land rights of Somali nationals and foreign nationals. While Somali citizens are permitted to hold land on a permanent basis, foreign nationals may only lease land under renewable lease agreements ranging from 50 to 99 years.

A notable amendment to this law was enacted in 1980, which delegated urban land administration responsibilities in Mogadishu to the municipal government. These responsibilities include the maintenance and oversight of land records, allocation procedures, and urban planning functions. The law remains relevant for land governance in urban and peri-urban areas, although enforcement varies across Federal Member States (FMS) due to ongoing institutional limitations and post-conflict challenges (Federal Republic of Somalia, 1973).

Article 9 – Repossession of Land for Public Purposes states that, "Any land that is found to be required for a national use can be nationalised with compensation to the holders." The law recognises the right to compensation when land is repossessed for public or national use. However, it does not specify:

- The form or amount of compensation
- The process for determining eligibility or valuation
- Any appeal mechanisms or procedural safeguards for affected landholders

2.1.7 Agricultural Land Law (1975)

The Agricultural Land Law of 1975 centralised control of all agricultural land in Somalia by transferring ownership from traditional authorities to the government. The law required individuals to formally register their landholdings within a six-month window following its enactment. Notably, this legislation does not recognise customary land tenure systems, effectively invalidating traditional land claims in favour of formal state-issued rights. (Federal Republic of Somalia, 1975).

2.1.8 National Climate Change Policy (2020)

Somalia's National Climate Change Policy, adopted in 2020, provides a strategic framework for addressing the country's acute vulnerability to climate change, aiming to build a climate-resilient and low-carbon economy. It acknowledges that Somalia, although contributing minimally to global greenhouse gas emissions, faces severe climate-related challenges such as rising temperatures, erratic rainfall, frequent droughts, floods, sea-level rise, and land degradation. The policy is anchored on two pillars: adaptation, including disaster risk reduction, and mitigation, with a primary focus on adaptation due to Somalia's fragile environmental, social, and economic conditions. It promotes the integration of climate change across all sectors and levels of government, emphasizing inclusivity, community participation, and prioritization of vulnerable populations and ecosystems.

Key sectoral interventions include climate-resilient agriculture, sustainable water resource management, improved infrastructure planning, protection of biodiversity, and disaster preparedness. The policy also addresses social aspects such as health, gender equality, migration, and employment. Cross-cutting themes such as capacity building, research and technology, education, public awareness, and international cooperation are integrated to support implementation. Governance is strengthened through institutional arrangements, including a National Climate Change Committee and coordination mechanisms across federal and member state levels. Furthermore, the policy underscores the importance of mobilising financial resources from both domestic and international sources to fund climate action. A monitoring and evaluation framework is outlined to track progress and adapt responses as needed. (Ministry of Environment and Climate Change, 2020a).

2.1.9 Other Draft Laws and Policies

To strengthen environmental governance and resource management, the Federal Government of Somalia (FGS) is in the process of developing several key legislative and policy instruments, including:

- Draft National Environmental Management Act
- Draft National Environmental and Social Impact Assessment (ESIA) Regulations
- Draft National Ozone Layer Protection Regulation
- Draft National Forest Management Policy
- Draft National Charcoal Policy

2.2 State Level Legal and Policy Frameworks

2.2.1 Jubbaland State Provisional Constitution, 2021

The area of study falls under the jurisdiction of Jubbaland State, which operates under its own Provisional Constitution. This foundational legal document shapes the governance structure, institutional mandates, and normative frameworks within which sectoral planning and stakeholder engagement must occur (Provisional Constitution of Jubbaland State, 2021).

Table 2: Provisional Constitution of Jubbaland State, 2021

Article(S)	Focus / Provision	Key Points / Institutional Mandates
Article 16	Women's rights	Affirms protection, participation, and equality of women
Article 22	Right to Representation	Guarantees citizen representation and supports inclusive stakeholder engagement
Articles 44 –48	Executive branch	Details Council of Ministers, their responsibilities, and key ministries such as MoEWR

2.2.2 Somalia Water Act of Jubbaland State (2020)

The-Water Act establishes a comprehensive legal framework for the ownership, regulation, and management of water resources in Jubbaland. The Act vests ownership of all natural water resources in the state, ensuring that access and utilisation are governed by a licensing system aimed at equitable and sustainable distribution. It outlines the responsibilities of key stakeholders, including the Ministry of Minerals, Energy and Water, local governments, water user groups, and private investors. The Act promotes integrated water resources management through provisions on water rights registration, dispute resolution mechanisms, and the issuance of water production and utilization licenses. It encourages public-private partnerships while ensuring that investments in water infrastructure align with state development goals. Special chapters are dedicated to urban and rural water provision, livestock and irrigation water, and the protection of underground and surface water resources. The law also sets water quality standards and enforces pollution control measures, supported by a tariff system and fines for violations. Institutional coordination is mandated through the establishment of a multi-stakeholder Water Committee and clearly delineated roles for different ministries and agencies.

The Somalia Water Act of Jubbaland State (2020) is directly relevant to the construction of the decentralized wastewater treatment facility (DTF) in Dollow, as it provides the legal foundation for water resource ownership, licensing, and environmental protection within the state. The Act mandates that all natural water resources are state-owned and subject to regulated access, meaning the DTF must obtain formal licenses for water abstraction, effluent discharge, and any reuse applications. It enforces water quality standards and pollution control measures, requiring the facility to implement robust treatment and monitoring systems. Additionally, the Act outlines institutional coordination through a multi-stakeholder Water Committee, which the project must engage for oversight and alignment with state development goals. Provisions on compensation, stakeholder roles, and integrated water resource management ensure that the DTF operates transparently, sustainably, and in compliance with both environmental and social safeguards.

Table 3: Legal Compliance Matrix: Somalia Water Act of Jubbaland State (2020)

Legal Provision	Direct Quotation from the Act	Relevance to DTF Project	Compliance Action Required
Water Resource Ownership	*"All water resources within Jubbaland State are the property of the State and shall be managed in the public interest."* (Article 5(1))	Confirms that water used or discharged by the DTF is publicly owned and regulated	Secure permits for any water abstraction or reuse from the Ministry
Licensing for Use and Discharge	*"No person shall abstract, use, or discharge water without a valid permit*	Mandates formal licensing for effluent discharge and reuse of treated wastewater	Apply for discharge and reuse permits prior to commissioning

	issued by the Ministry." (Article 18(1))		
Water Quality and Pollution Control	*"Any discharge of wastewater or pollutants into water bodies shall comply with the standards prescribed by the Ministry."* (Article 22(1))	Requires the DTF to meet effluent quality standards and prevent pollution	Install treatment systems and monitoring protocols to meet prescribed standards
Institutional Coordination	*"The State Water Committee shall coordinate water sector activities and ensure alignment with development priorities."* (Article 9(2))	Requires engagement with the Water Committee for oversight and strategic alignment	Participate in stakeholder consultations and submit project updates to the Committee
Equity and Vulnerable Groups	*"Water resource management shall promote equity, sustainability, and protection of vulnerable groups."* (Article 4(3))	Supports inclusive planning for IDP communities and social safeguards	Ensure equitable access, community engagement, and grievance redress mechanisms

2.2.3 Jubbaland Environmental Protection and Management Code (2018)

Endorsed by the State Parliament in 2019 and later amended on July 18, 2023. It includes provisions aimed at safeguarding environmental and natural resources for both current and future generations. However, environmental governance laws and policies in Galmudug and Jubbaland States are still in their early stages. While environmental impact assessment (EIA) capacity is emerging, the necessary legal frameworks have yet to be fully developed and enacted (Ministry of Energy and Water Resources, 2024a, 2024b, 2024c, 2024d.

2.3 Institutional Framework

The governance and implementation of water, sanitation, and hygiene (WASH) services in Somalia involve multiple layers of institutions from the federal to the municipal level, each with specific mandates.

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

The Ministry of Energy and Water Resources (MoEWR) is the lead institution responsible for water governance at both federal and state levels in Somalia. Its core mandate is to ensure universal access to adequate water services, develop and review sectoral policies and legal frameworks, and coordinate cross-sectoral planning efforts. The ministry also evaluates water-related programs and mobilizes financial resources for project implementation (Federal Government of Somalia [FGS], 2022).

Specifically, MoEWR is the custodian of the National Water Resource Strategy (2021–2025), which prioritizes investment in decentralized water infrastructure to improve access, sanitation, and climate resilience across Somalia. The Ministry also oversees the Environmental Protection and Management Act (2024) and the draft ESIA regulations, which mandate environmental and social impact assessments, licensing, and pollution control for infrastructure projects like the DTF.

In addition, MoEWR supports capacity building, tariff regulation, and public–private partnerships, which are essential for the long-term sustainability and affordability of the facility. In short, MoEWR provides the legal mandate, technical oversight, and strategic alignment necessary for the DTF to be compliant, impactful, and integrated into Somalia's broader water sector reforms.

2.3.2 Ministry of Energy and Water Resources, Jubbaland State

At the state level, the Jubbaland Ministry of Energy and Water Resources is responsible for protecting and managing surface and groundwater resources, including the Juba River. This includes formulating localized strategies for water conservation and overseeing their implementation to prevent resource degradation (FGS, 2022).

The Ministry of Energy and Water Resources of Jubbaland State plays a pivotal role in the planning, regulation, and oversight of the decentralized wastewater treatment facility (DTF) in Dollow. As the lead state-level authority on water governance, the Ministry is responsible for implementing the Somalia Water Act of Jubbaland State (2020), which governs water resource ownership, licensing, pollution control, and infrastructure development within the state. Specifically, the Ministry will:

- Issue water production and utilization licenses for the facility, including permits for wastewater treatment, effluent discharge, and any reuse applications.
- Ensure alignment with state development goals, verifying that the DTF supports equitable access to water and sanitation services in Dollow.
- Coordinate with local governments and water user groups, facilitating stakeholder engagement, dispute resolution, and community oversight through the multi-stakeholder Water Committee.
- Enforce water quality standards and pollution control measures, requiring the facility to meet prescribed thresholds and implement monitoring systems.
- Support public–private partnerships, especially if the DTF involves private operators or contractors, ensuring transparency and accountability in service delivery.
- Monitor and evaluate sectoral activities, including construction progress, environmental compliance, and operational performance of the facility.

In short, the Ministry acts as both regulator and enabler, ensuring the DTF is legally compliant, socially inclusive, and technically sound within the Jubbaland State framework.

2.3.3 Ministry of Environment and Climate Change (MoECC), Jubbaland State

The MoECC is the lead regulatory authority for environmental governance in Jubbaland. It is responsible for reviewing ESIA submissions, issuing environmental licenses, and enforcing compliance with pollution control and mitigation measures. For the DTF project, MoECC will oversee the approval of the ESIA report, monitor adherence to environmental safeguards, and conduct periodic audits. Its mandate is grounded in the Somalia Environmental Protection and Management Act (2024) and the ESIA and Audit Regulations (2024), which require full ESIA for infrastructure projects with potential environmental and social impacts.

2.3.4 Ministry of Labour and Social Affairs (Federal and Jubbaland)

This ministry enforces labour laws, occupational health and safety (OHS) standards, and employment equity. It ensures that contractors adhere to safe working conditions, fair wages, and grievance redress mechanisms. For the DTF, The Ministries are responsible for monitoring labour practices during construction and operation, particularly in relation to IDP employment and gender inclusion. Its authority is derived from the Somali Labour Code (Law No. 65 of 1972) and regional labour regulations.

2.3.5 Ministry of Public Works, Housing and Transport (Jubbaland)

This ministry leads infrastructure planning, land allocation, and engineering approvals. It ensures that public works projects like the DTF are technically sound, spatially integrated, and compliant with urban development plans. It also facilitates compensation processes for land acquisition, guided by the Urban Land Distribution Law (1973) and regional planning statutes.

2.3.6 Ministry of Finance (Jubbaland and Federal)

The Ministry of Finance manages public expenditure, donor funds, and financial reporting. It plays a central role in budgeting, disbursement, and fiduciary oversight for AfDB-financed projects. For the DTF, it ensures that funds are allocated transparently and that procurement follows AfDB guidelines. Coordination between federal and state finance ministries is essential for smooth financial flows and audit compliance.

2.3.7 Jubbaland State Police and Local Security Committees

These entities are responsible for maintaining law and order, securing project sites, and responding to safety incidents. Given the proximity to IDP camps and potential for social

tension, their role includes risk mitigation, crowd control during public consultations, and protection of assets and personnel. Coordination with local police is essential for uninterrupted project implementation.

2.3.8 African Development Bank (AfDB)

AfDB is the primary financier of the DTF project. It provides technical assistance, safeguards oversight, and procurement supervision. AfDB requires adherence to its Integrated Safeguards System (ISS), which includes environmental, social, and gender standards. It also monitors project performance against agreed indicators and facilitates midterm reviews and evaluations.

2.3.9 Dollow District Council

The municipal authority of Dollow, led by the mayor, represents the political and administrative leadership of the district. Local government actors play a crucial role in engaging communities, resolving disputes, and facilitating public sensitization around WASH projects. Their proximity to residents makes them critical for ensuring ownership and sustainability of interventions (African Development Bank [AfDB], 2022). Relevance of this Authority to the establishment of a DTF include:

- Land Use and Site Allocation: The Municipal Authority oversees urban land planning and allocation. Any land designated for the DTF, whether public or acquired from private owners—must be approved or facilitated through the municipality, especially under Article 43 and 26 of the Provisional Constitution.
- Urban Service Delivery Mandate: As the local government body responsible for sanitation, waste management, and public health, the Municipal Authority is directly accountable for ensuring that the DTF aligns with urban development plans and sanitation service needs.
- Community Engagement and Oversight: The Authority plays a key role in mobilizing community participation, hosting stakeholder consultations, and ensuring that the facility reflects local priorities. It also helps resolve grievances and supports inclusive planning, especially for vulnerable groups.
- Operation and Maintenance Coordination: Post-construction, the Municipal Authority may be involved in co-managing the facility, either directly or through partnerships with water user associations or private operators, ensuring continuity, tariff enforcement, and compliance with local bylaws.
- Permit and Compliance Facilitation: For the DTF, the Authority will be involved through permitting processes, including construction approvals prior to commencement of any works and monitor environmental compliance. It acts as a liaison between the project and state-level ministries. The construction permit should be acquired prior to commencement of construction works.

Generally, the DTF structure requires the Municipal Authority's involvement at every phase from land acquisition and permitting to community engagement and long-term operations. Their participation ensures legal compliance, local ownership, and sustainability. Let me know if you'd like help drafting a stakeholder coordination matrix or engagement plan.

2.3.10 Religious Institutions (Dollow Religious Council and Local Imams)

Religious leaders play a key role in shaping public opinion, promoting hygiene practices, and ensuring cultural acceptability of sanitation interventions. Their involvement in awareness campaigns and community mobilization enhances trust and uptake of the DTF's services, especially in conservative settings.

2.3.11 International and Local NGOs (e.g., NRC, Concern, IOM)

International and local NGOs active in Dollow including but not limited to UNICEF, NRC, Concern Worldwide, and IOM may play targeted roles in supporting the Decentralized Wastewater Treatment Facility (DTF), particularly in humanitarian and where formal systems are limited and community engagement is essential. Their contributions are not uniform but depend on available expertise, funding arrangements, and coordination with government and

1. Financial Contribution and Resource Mobilization

NGOs may participate as co-financiers or in-kind donors, contributing funds, materials, or logistical support toward the construction or commissioning of the DTF. This is especially

relevant in multi-stakeholder projects where donor pooling or consortium arrangements exist.

2. Technical Guidance and Design Support

Where NGOs have qualified WASH engineers or sanitation specialists, they may offer technical guidance on DTF design, siting, and treatment processes especially UNICEF who are currently supporting implementation of this project. This includes advising on sludge handling, effluent pathways, and reuse options tailored to the local context. Such support ensures that the facility is appropriate, cost-effective, and aligned with humanitarian sanitation standards. They may also offer guidance through hiring of qualified consultants and contractors for this purpose.

3. Training for Operation and Maintenance (O&M)

NGOs may provide capacity-building support to the designated local water operator or sanitation team. This includes training on:

- Routine maintenance procedures
- Safety protocols and hygiene standards
- Basic troubleshooting and record-keeping

Such training helps ensure the DTF is locally managed and sustainable, reducing reliance on external contractors.

4. Stakeholder Engagement and Community Sensitization

NGOs often support community mobilization and hygiene promotion around new sanitation infrastructure. Their involvement helps build public trust, promote safe wastewater practices, and encourage proper use of the facility and the sewage transporting lorries (exhaust lorries).

5. Monitoring and Feedback Mechanisms

Post-construction, NGOs like NRC support water quality monitoring, user satisfaction surveys, and feedback loops to identify operational issues. These insights inform adaptive management and help maintain compliance with environmental and health standards.

2.3.12 IDP Camp Management Committees

These committees represent displaced populations and facilitate two-way communication between residents and project teams. They help organize consultations, identify vulnerable households, and monitor service delivery. Their participation ensures that the DTF responds to actual needs and respects community dynamics.

2.3.13 Community-Based Organisations (CBOs)

CBOs engage in advocacy, monitoring, and local capacity building. They support transparency, social accountability, and sustainability of the DTF by mobilising residents, reporting issues, and promoting behaviour change. Their grassroots presence makes them valuable partners in long-term sanitation management.

2.3.14 Water Operator in Dollow

Dollow Water Management Company in Dollow, is tasked with ensuring the supply of clean and safe water to both the host community and internally displaced persons (IDPs). It is also responsible for the operation and maintenance of water supply systems, a function that is vital for the long-term success of infrastructure investments and service delivery (AfDB, 2022).

2.4 AfDB Operational Safeguards (OSs)

The AfDB's Integrated Safeguards System (ISS) supports this categorisation by providing a structured approach for risk identification, mitigation, and capacity development. The objectives of the ISS are to

i. Avoid adverse environmental and social impacts,
ii. Minimise, mitigate, or compensate for unavoidable impacts, and
iii. Assist borrowers in strengthening their safeguard systems (AfDB, 2013).

For the Dollow proposed DTF facility, the following safeguard was considered:

Table 4: Relevant AfDB Operational Safeguards (OSs)

E&S Operational Safeguards	Applicability of the E&S Operational Standards

OS1: Environmental and Social Assessment	This overarching safeguard governs the process of determining a project's environmental and social category and the resulting environmental and social assessment requirements. Based on AfDB's ISS, this project has been classified as Category 2 due to its limited, site-specific, and reversible environmental and social impacts. No irreversible biodiversity loss or significant displacement is anticipated.
OS2: Labour and Working Conditions	This safeguard establishes the AfDB's requirements for its borrowers or clients concerning workers' conditions, rights and protection from abuse or exploitation. It also ensures a greater harmonisation with most other multilateral development banks. The project will implement a Labour Management Plan (LMP) aligned with AfDB OS2, ensuring fair recruitment, health & safety protocols, freedom of association, and prevention of SEA/SH. Contractors will be held accountable through contractual obligations.
OS3: Resource Efficiency and Pollution Prevention and Management	This safeguard covers a wide range of key impacts of pollution, waste, and hazardous materials for which there are agreed international conventions, as well as comprehensive industry-specific and regional standards, including greenhouse gas accounting, that multilateral development banks follow. To comply with this safeguard, the project ensured that that the design promotes efficient resources utilization and pollution prevention techniques. To prevent pollution, the project ensures that the sanitation and hygiene facilities will be provided across all sub-projects. To enhance compliance to the OS, the project also developed subordinate waste management plan, and pollution control and prevention plan to enhance that the developed project ESMP to meet the safeguard standard.
OS4: Community Health, Safety and Security	This safeguard reorganizes that projects, activities, equipment, and infrastructure can increase community exposure to risks and impacts. In addition, communities that are already subjected to impacts from climate change may also experience an acceleration or intensification of impacts due to a project or activities. To fulfil this safeguard, the project confirmed that the existing and project related-activities risks and impact to community health, safety and security have been evaluated and are reported as part of the ESIA/ESMP.
OS5: Land Acquisition, Restrictions on Access to Land and Land Use, and Involuntary Resettlement.	This safeguard consolidates the policy commitments and requirements set out in the Bank's policy on involuntary resettlement and incorporates a number of refinements designed to improve the operational effectiveness of those requirements. To conform with this OS, the people ensured by the project in the project areas will not be physically displaced. This will be achieved by utilizing unoccupied land
OS6: Habitat and Biodiversity Conservation and Sustainable Management of Living Natural Resources	This safeguard aims to conserve biological diversity and promote the sustainable use of natural resources. It also translates the commitments in the Bank's policy on integrated water resources management into operational requirements. To comply with this safeguard, the project conducted a detailed ESIA for the project which among other things assessed impact on project biodiversity and ecosystems. The ESMP outlined mitigation measures to be implemented to ensure that the project activities do not have a severe impact on biodiversity and ecosystems. Besides, the project ensured that two project sites fall at the banks of rivers in Dollow, which would not damage natural habitats and disturb ecosystems.

OS7: Vulnerable Groups	This safeguard recognises that the situation of vulnerability groups varies from region to region and from country to country. The particular national and regional contexts and the different historical and cultural backgrounds will be considered as part of the environmental and social assessment of the project. "Vulnerable groups identified include IDPs, female-headed households, and elderly persons. Specific measures such as targeted outreach, accessible facility design, and participatory consultations will be employed to ensure their effective inclusion."
OS8: Cultural Heritage	This safeguard recognizes that cultural heritage is an inherent and essential part of self-identification, and it provides continuity in tangible and intangible forms between the past, present and future. People identify with cultural heritage as a reflection and expression of their constantly evolving values, beliefs, knowledge and tradition. To observe this safeguard, the project guaranteed that there will be no cultural sites that will be adversely affected by the works of the project.
OS10: Stakeholder Engagement and Information Disclosure	A Stakeholder Engagement Plan (SEP) will be implemented to ensure continuous, inclusive, and gender-sensitive dialogue. Meeting records, attendance, and grievance logs will be documented and made publicly accessible through municipal notice boards and radio broadcasts

2.5 International Conventions and Agreements

International conventions and agreements aim to reduce and/or eradicate environmental degradation while enhancing the sustainable use of natural resources through climate change adaptation and mitigation measures. The Federal Republic of Somalia (FRS) has signed or ratified several such agreements that are relevant to the implementation of the study. These include:

Table 5: Applicable International Conventions and Agreements

Type of Convention	Name of Convention	Year Ratified/ Adopted	Relevance to the Project
Biodiversity	United Nations Convention on Biological Diversity, 1992	2009	The project will involve clearing of vegetation covers, mainly grass and shrubs. Mitigation measures must be implemented to minimize cutting of grasses and shrubs around the sub-project sites.
	United Nations Convention to Combat Desertification, 2002	2002	
	African Convention on the Conservation of Nature and Natural Resources, 2003	2016	The project proponent will take effective measures to prevent land degradation and adopt measures for the conservation, management, and development underground and surface water resources to sustain both human health and natural resources.
	Convention on International Trade against Endangered Species (CITES), 1986	1986	The project will abide by the fundamental principles of this convention and relevant national regulations that do not allow trade in specimens of species in project locations. Any endangered species in the project areas must be protected from collection and hunting for trading purposes.

Climate Change	United Nations Framework Convention on Climate Change (UNFCCC), 1992	2009	Improving the water supply situation for the people in Dollow may increase their resilience to the adverse effects of climate change.
Hazardous Waste, Chemicals and Ozone Layer Protection	Vienna Convention on the Protection of the Ozone Layer, 1985	2001	All hazardous wastes generated during construction of water supply system project will have to be handled, and disposed of within the target areas.
	Basel Protocol on Liability and Compensation on	2010	All imports of chemicals and other additivesmustcomply with
	Damage Resulting from Trans boundary Movement of Hazardous Waste and their Disposal, 2000		National legislation and the applicable international conventions and agreements.
	Stockholm Convention on Protection of Ozone Layer	2010	The project will take measures to avoid to use chemicals or harmful substances to the environment, particularly air.
Social	The Freedom of Association and Protection of the Right to Organize Convention (1948) No. 87	2014	The project will uphold the rights of the project workers to organize their own association or representatives to present their complaints in work place.
	Convention concerning Forced or Compulsory Labour (ILO No. 29)	1960	The project will comply and execute the international labour laws as well as nation labour code to protect the rights and dignity of all workers. For instance, this will include provision of contracts for all hired workers, timely salary/wages payment, provision of personal protective equipment, and setting up grievance handling mechanisms in order to enable workers channel their concerns, complaints, etc.
	Convention on the Rights of the Child, 1989.	2015	The project will safeguard and protect the rights of children. Enforcement of this law will ensure that children are protected from unlawful engagement in labour during construction and operation of this facility
	African Union Convention for the Protection and Assistance of Internally Displaced Persons in Africa (Kampala convention) 2009	2019	The project will support the primary responsibility for providing protection of and humanitarian assistance to IDPs and vulnerable host community within their camps and/or villages without discrimination of any kind. This is reflected in this project as the facility will involve treatment of waste water from both the local community in Dollow Town and the five IDP camps.

3 PROJECT DESCRIPTION

The project aims to provide sustainable human waste management and improved sanitation to the communities, in Dollow town and its periphery. The project will support the construction of decentralized treatment facility (DTF) to serve the town and the surrounding 5 IDP camps. The ESIA Consultant assessed the impacts and risks of the project activities as outlined in the detailed terms of reference.

3.1 Project Location

The project area is located in the South-Western region of Somalia, along the Ethiopian border, and encompasses five internally displaced persons (IDP) settlements, Kabasa, Qansaxley, Kaharey, Ladan, and Qurdubey, together with the host community of Dollow town and its surrounding villages.

Geographically, Dollow town lies approximately 470 kilometres northwest of Mogadishu, 70 kilometres northwest of Luuq, and 42 kilometres north of the twin towns of Mandera (Kenya) and Belet Hawo (Somalia) on the Kenya–Somalia border. Kabasa and Ladan IDP camps are located east of Dollow's main centre, along the road to Luuq, between the highway and the Juba River. Qansaxley and Kaharey camps lie along the road to Mandera, while Qurdubey camp is situated east of the town across the Juba River.

The location of the study area is shown in the figure below.

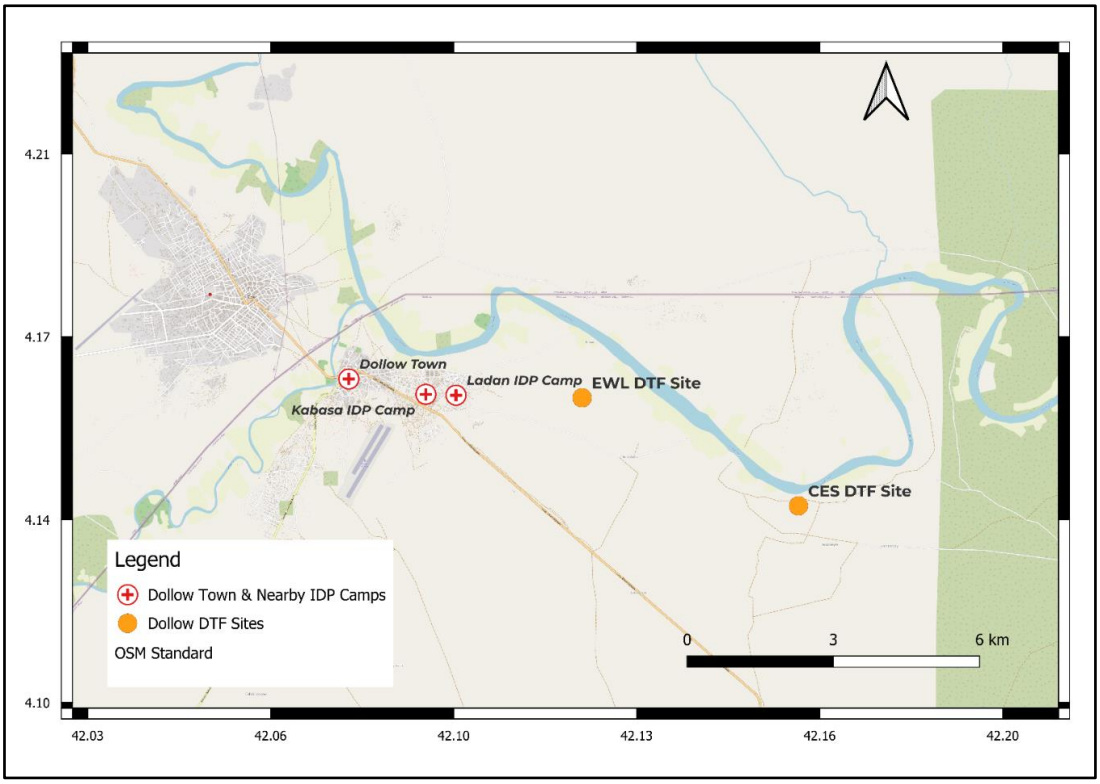

Figure 2: Location Map Showing Dollow Town and the Five Surrounding IDP Camps

Dollow town is hosting many IDPs who came from neighbouring regions. The proposed DTF sites are located near Dollow town and Ladan and Kabasa Camps. The project basically entails the establishment of a decentralised wastewater treatment facility that will support the five mentioned IDP camps and Dollow town. This ESIA is focused on the proposed project activities with associated environmental and social risks and impacts at Dollow Town. The specific proposed sites for the facility are as follows:

Table 6: Proposed Sites for the Decentralised Treatment Facility

No.	Location (UTM, WGS84, 38N)	
	X	Y
1	184,963.17	457,633.47
2	179,938.65	460,590.78

Only one of the sites will be selected for the construction of the DTF. Both sites are technically viable and no opposition was brought up during stakeholder engagement.

3.2 ESIA for Shor-Term Activities

This ESIA-ESMMP focuses on the short-term activities (2027-2032) of sub-component 2.1: increased access to improved sanitation facilities, which falls under Component 2: Improved Sanitation Services and Hygiene Practices, which aims to transform sanitation and hygiene conditions in Dollow Town and surrounding five IDP camps by expanding access to safe facilities, promoting behavioural change, and introducing structured waste management systems.

Component 2 aims to address the absence of formal faecal sludge and wastewater systems. The two main projects in this component include:

- Construction of 365 no. flood-proof, disability friendly shared household latrines for IDP Camps
- Construction of on-site (DTF) decentralised treatment facility (44m^3/day) with a baffled anaerobic reactor and vertical flow constructed wetland.

Each of the two mentioned projects is independent, therefore has its own ESIA and ESMP report. This report looks into the construction of an on-site decentralised treatment facility (44m3/day) with a baffled anaerobic reactor and vertical flow constructed wetland. The DTF is intended to be used by Dollow town and all five IDP camps. Its supporting components are:

- Purchase of sewer carrying boozers/lorries
- Hygiene promotions/awareness campaign
- Women empowerment & youth engagement
- Engineering consultancy firms for specialised studies/monitoring/certification
- Implementation of environmental & social management plan (ESMP)

Table 7: Cost Table for Decentralised Treatment Facility and Supporting Components (Short Term)

Description	Total Cost (USD)
Construction of 1 no. onsite decentralised treatment facility (44m^3/day) with a baffled anaerobic reactor and vertical flow constructed wetland	321,000
Purchase of 2 no. sewer carrying boozers / lorries	100,000
Hygiene promotions/ awareness campaign	200,000
Women empowerment and youth engagement	200,000
Engineering consultancy firms for specialised studies/ monitoring/ certification	300,000
Implementation of Environmental Social Management Plan	100,000
Subtotal – Component 2	**1,221,000**

The DTF has been proposed by both the CES consultant and Earth Water Limited. Each of the consultants chose a different location for the facility. Upon further assessment of the 1st proposed site, it was observed that accessibility to the location could be limited due to occasional insecurity cases therefore, another suitable site was established. The proposed DTF locations are as follows:

Table 8: Origin of the Proposed Decentralised Treatment Facility Locations

No.	Location (UTM, WGS84, 38N)		Remarks
	X	Y	
1	184,963.17	457,633.47	Site No.1 Identified by CES in FSR. One site will be selected after stakeholder engagement.

2	179,938.65	460,590.78	Site No.2 Identified by EWL in FSR. NB. Site No. 2 was selected due to access limitations to Site No.1

Table 9: Summary of the Stakeholder Engagement Outcome

Meeting Date	Stakeholders	Meeting venue	F	M	Total	Summary of stakeholders' engagement outcome
21/05/2025	Ladan IDP camp	Ladan social hall	5	11	16	Project accepted, with emphasis on speedy implementation
25/05/2025	MoEWR, DWMC				5	
26/05/2025	Chiefs			8	8	

3.3 Project Phases

The project will be implemented in four main phases: pre-construction, construction, operation and maintenance, and decommissioning. Each phase will involve specific activities, resources, and environmental and social management measures necessary for effective and sustainable execution. The ESIA identifies and outlines the key requirements and safeguards applicable to each stage of the project's implementation.

3.3.1 Pre-Construction Phase

3.3.1.1 Land Acquisition

The project involves the construction of a Decentralized Treatment Facility (DTF) to improve local sanitation and wastewater management. During the field assessment, the ESIA team established that the proposed sites are under private ownership, making prior negotiation with the landowner of the selected site essential before implementation. The local government authority has expressed its support for facilitating this process to ensure transparency and community acceptance. These steps will ensure that the project proceeds lawfully, equitably, and without adverse social impacts.

3.3.1.2 Site Assessment and Approval

Prior to construction of the Decentralized Treatment Facility (DTF), a comprehensive site assessment and approval process will be undertaken to confirm that the selected location meets the technical, environmental, and social criteria for safe and sustainable operation. The assessment will include topographic and geotechnical investigations to evaluate soil strength, permeability, drainage characteristics, and groundwater depth, ensuring the site can support treatment structures and avoid contamination of underlying aquifers. Hydrological and flood risk assessments will be conducted to ensure that the site is not prone to seasonal flooding or runoff from surrounding areas. The process will also include environmental and social screening, particularly to verify safe distance from residential zones, water sources, and sensitive ecosystems in compliance with national environmental guidelines.

Engagement with local communities, IDP representatives, and municipal authorities will be conducted to ensure that the selected site aligns with community interests and minimizes land-use conflicts. The DTF design will incorporate climate-resilient and inclusive features, such as elevated containment units, lined lagoons or digesters, and gender-sensitive facilities to support equitable access and safety for all users. All necessary site approvals, permits, and environmental clearances will be obtained from relevant authorities prior to mobilization and commencement of works.

3.3.1.3 Material Testing and Approval

Before full-scale construction of the Decentralized Treatment Facility, all materials intended for use will undergo testing to ensure compliance with engineering and environmental standards. This will include testing of cement, aggregates, sand, concrete, reinforcement steel, geomembranes, and lining materials for parameters such as compressive strength, permeability, durability, and resistance to chemical corrosion from wastewater and sludge. Water quality used in construction will also be analysed to confirm it is free from impurities that could affect concrete strength or curing.

Special attention will be given to materials used in impermeable components, such as base liners, concrete chambers, and containment slabs, to prevent seepage and groundwater contamination. Testing will be carried out by accredited laboratories or certified quality control agencies, and only materials meeting the required specifications will be approved for use. The process will ensure that the DTF is constructed to high structural and environmental integrity standards, supporting long-term functionality and safe waste treatment operations.

3.3.1.4 Mobilization

The Contractor and the Dollow Water Management Company will ensure timely mobilization of all required resources, including qualified personnel, construction materials, and equipment, to facilitate smooth commencement of works. This phase will involve the establishment of temporary site facilities such as storage areas, access roads, and site offices, as well as the delivery and inspection of machinery and materials to confirm compliance with project specifications. Mobilization will be undertaken in accordance with the approved Health, Safety, and Environmental Management Plan to ensure orderly site setup, worker safety, and minimal disturbance to surrounding communities.

3.3.2 Construction Phase

All construction activities for the Decentralized Treatment Facility (DTF) will be confined within the designated project boundaries to prevent disturbance to neighbouring land users and maintain environmental and safety compliance. Following mobilization and site establishment, the contractor will undertake all construction works in a structured sequence to ensure efficiency, quality control, and adherence to approved technical designs. The entire construction period is estimated to last eighteen (18) months, from the date of contract signing to commissioning and handover.

The construction works will encompass civil, structural, mechanical, and electrical components necessary for the full functionality of the DTF, which integrates an Anaerobic Baffled Reactor (ABR) and Maturation Ponds for effective wastewater and faecal sludge treatment.

Key Construction Activities

The major construction activities will include but are not limited to the following:

1. **Site Preparation and Establishment**
   - Site clearance, grubbing, and leveling.
   - Fencing and demarcation of the project area.
   - Setting out and survey control for all treatment units and ancillary structures.
   - Establishment of access roads, temporary offices, and storage facilities.
2. **Earthworks and Excavation**
   - Excavation for tanks, reactors, and drainage channels.
   - Dewatering and compaction of excavated areas.
   - Backfilling and soil stabilization after structural works.
3. **Foundation and Concrete Works**
   - Laying of blinding concrete, base slabs, and structural foundations.
   - Formwork, reinforcement, and casting of walls, slabs, and retaining structures.
   - Construction of inlet and outlet chambers and interconnecting channels.
4. **Construction of DTF Modules**
   - **Operator Store (OS):** Construction of operator office, washroom, shower, tool store, and guardhouse with water and power connections.
   - **Receiving Bay/Balancing Tank (RB/BT):** Construction of sludge offloading bay, screening units, drying platforms, and 30 m^3 balancing tank for flow regulation.
   - **Settling Chamber (ST):** Construction of dual sedimentation tanks (primary and secondary) for mechanical separation and sedimentation.
   - **Anaerobic Baffled Reactor (ABR):** Construction of two rows of six baffled chambers with inlet downpipes, sludge zones, and siphon discharge unit.

- **Maturation or Polishing Ponds:** Excavation, lining, and formation of final stabilization ponds for tertiary treatment and effluent polishing.

5. **Mechanical, Electrical, and Plumbing (MEP) Works**
   - Installation of plumbing systems, valves, and flow control structures.
   - Electrical wiring, lighting, and control systems for operational support.
   - Installation of pumps, flow meters, and safety devices.
6. **Ancillary Infrastructure and Finishing Works**
   - Construction of internal drainage, stormwater channels, and access pavements.
   - Installation of fencing, signage, and safety rails.
   - Site grading, landscaping, and planting of vegetation to restore the environment.
7. **Testing, Commissioning, and Handover**
   - Functional testing of all units and systems.
   - Verification of flow rates, leak tests, and structural integrity.
   - Training of operational staff.
   - Official commissioning and handover of the completed facility to the Dollow Water Management Company.

3.3.3 Operation and Maintenance Phase

Following completion and commissioning of the Decentralized Treatment Facility (DTF), the Contractor will demobilize from the site. This will include the removal of all temporary structures such as site offices, storage areas, signage, and machinery, followed by site restoration and cleaning to leave the facility in a safe and operational state.

The operational and maintenance phase will be managed by the Dollow Water Management Company (DWMC) to ensure continuous and efficient treatment of faecal sludge and wastewater. Operational activities will follow a systematic sequence to sustain performance and environmental compliance:

1. **Reception and Recordkeeping:** Registration and inspection of incoming sludge trucks at the operator store, including volume and source verification.
2. **Desludging and Disposal:** Scheduled desludging of public and institutional sanitation facilities within Dollow, with safe transportation and discharge at the receiving bay of the DTF.
3. **Treatment Operations:** Continuous operation of all treatment modules; receiving bay, settling chambers, anaerobic baffled reactor, and maturation ponds to ensure effective sedimentation, biological degradation, and effluent polishing.
4. **Monitoring and Quality Control:** Routine sampling and testing of influent and effluent to verify treatment efficiency and compliance with national and WHO water quality standards.
5. **Equipment and Infrastructure Maintenance:** Regular inspection, servicing, and calibration of pumps, valves, pipes, and electrical systems, along with cleaning and desilting of tanks and chambers.
6. **Health, Safety, and Environmental Management:** Enforcement of occupational safety protocols, use of personal protective equipment (PPE), odor and vector control, and proper handling of sludge and solid residues.

Power supply for the DTF will primarily depend on a diesel-powered generator, installed within a secure and ventilated enclosure. The generator will provide reliable power for pumps, aerators, and lighting systems due to limited grid connectivity in the area. It will be maintained through a scheduled servicing program with provisions for fuel storage, noise reduction, and spill prevention. In the long term, solar backup systems may be introduced to support auxiliary electrical loads and enhance energy sustainability.

The DWMC will oversee the implementation of a structured Operation and Maintenance Plan, detailing staff responsibilities, inspection schedules, recordkeeping procedures, and reporting mechanisms to ensure the facility's sustained performance, public health protection, and environmental compliance.

3.3.4 Decommissioning phase

In the event that the Decentralized Treatment Facility (DTF) reaches the end of its operational life or requires relocation, a planned decommissioning process will be undertaken to ensure safety and environmental compliance. This will include the dismantling of treatment structures, removal of mechanical and electrical equipment, safe disposal of residual sludge and waste, and decontamination of tanks and ponds. Recyclable materials such as metals and concrete debris will be recovered where possible, while hazardous waste will be handled through licensed disposal facilities. The site will then be rehabilitated and restored through backfilling, grading, and re-vegetation to prevent erosion and restore ecological balance. All decommissioning works will adhere to a Decommissioning Management Plan (DMP) guided by environmental, health, and safety standards.

3.4 Equipment and Materials

The construction of the Decentralized Treatment Facility (DTF) will require various equipment and materials to support excavation, structural works, mechanical and electrical installations, and general site operations. All materials used will conform to approved technical specifications and national standards, and where possible, will be sourced locally to promote community participation and cost efficiency.

Construction Equipment

The following equipment will be required during the construction phase:

- Excavators and backhoe loaders – for site clearance, earthworks, and tank excavation.
- Dump trucks – for transportation of soil, aggregates, and construction materials.
- Concrete mixers and concrete vibrators – for batching and compaction of concrete structures.
- Water bowsers and pumps – for curing, cleaning, and dust suppression.
- Compactors and rollers – for subgrade and backfill compaction.
- Cranes or lifting hoists – for placement of precast components and heavy reinforcement.
- Welding machines and cutting tools – for assembly of metallic structures and fittings.
- Generators – for power supply to site tools and equipment.
- Survey instruments (total station, leveling equipment, measuring tapes) – for setting out and alignment.
- Safety equipment (scaffolding, ladders, PPE kits, fire extinguishers, first-aid kits) – for occupational safety.

Construction Materials

Key materials to be used in constructing the DTF include:

- Cement, sand, ballast, and aggregates – for reinforced concrete works.
- Reinforcement steel bars (deformed and mild) – for structural reinforcement.
- Masonry blocks and bricks – for superstructure walls and ancillary buildings.
- Precast concrete slabs, manhole rings, and cover slabs – for tanks and chambers.
- Waterproofing membranes and geomembrane liners – for sealing anaerobic reactors, balancing tanks, and ponds.
- PVC, HDPE, and GI pipes with valves and fittings – for internal flow conveyance and drainage.
- Structural and sheet steel – for gates, handrails, covers, and support frames.
- Timber and plywood – for formwork, scaffolding, and temporary structures.
- Paints, sealants, and protective coatings – for surface finishing and corrosion control.
- Electrical cables, switchgear, lighting fixtures, and conduits – for internal power distribution.
- Plumbing materials – taps, valves, sanitary fittings, and service lines.

- Fuel, lubricants, and maintenance supplies – for operation of construction equipment.

3.5 Waste Streams

The implementation and lifecycle of the Decentralized Treatment Facility (DTF) will generate various types of waste during the construction, operation and maintenance, and eventual decommissioning phases. Proper identification, handling, and disposal of these wastes are essential to minimize environmental pollution, safeguard public health, and ensure compliance with environmental management standards.

3.5.1 Construction Phase

During the construction phase, waste will primarily result from site preparation, earthworks, civil construction, and installation activities. The main types of waste expected include:

- **Spoil from land clearing and excavation:** Topsoil, vegetation (grass, shrubs, and small trees), and inert earth materials generated during site leveling and excavation.
- **Construction debris:** Offcuts and remnants of concrete, bricks, timber, reinforcement steel, nails, plastic packaging, insulation material, and formwork waste produced during building and finishing works.
- **Hazardous waste:** Cement residue, paint containers, spent oils and lubricants from machinery, used welding rods, and empty chemical drums, which require safe handling and disposal in accordance with environmental and occupational safety regulations.

3.5.2 Operation and Maintenance Phase

During operation, the DTF will generate both solid and liquid wastes associated with treatment processes and facility management. The anticipated waste streams include:

- **Screening residues and grit:** Coarse and fine solids separated during preliminary treatment, such as plastics, rags, and inert materials.
- **Sludge and scum:** Stabilized sludge from settling tanks and anaerobic reactors requiring periodic removal and safe disposal or composting.
- **Laboratory and office waste:** Packaging materials, used PPE, and small quantities of paper, plastics, and general office refuse.
- **Hazardous waste:** Chemical residues, used oils, and fuel-contaminated materials from generator maintenance and equipment servicing.

3.5.3 Decommissioning Phase

Decommissioning activities will produce waste from the dismantling of treatment units, removal of infrastructure, and site restoration works. The expected waste streams include:

- **Demolition debris:** Concrete rubble, metals, bricks, timber, pipes, and fencing materials from dismantled structures.
- **Hazardous waste:** Contaminated soils, residual sludge, oils, paints, and cleaning agents from decontamination of tanks and equipment.
- **Recyclable materials:** Steel, aluminum, and electrical cables that can be recovered and reused.

The site will be rehabilitated through backfilling, grading, and re-vegetation to restore it to a stable and environmentally safe condition.

4 BASELINE ENVIRONMENTAL AND SOCIAL CONDITIONS

4.1 Physical Environment

4.1.1 Location

Dollow is the capital of Dollow district within the Gedo region of Jubbaland State of Somalia. Dollow is located approximately 470 km northwest of Mogadishu. It lies about 70 km northwest of Luuq and 42 km north of the twosome Mandera-Belet Hawo, located at the Somalia-Kenya border. It sits on the banks of river Dawa and is where the Jubba River starts flowing into Somalia taking its course Southeast to Burdubo.

The project area is situated in Dollow town and is intended to serve Dollow town and the surrounding internally displaced persons (IDP) settlements, Kabasa, Qansaxley, Kaharey, Ladan, and Qurdubey, within the Gedo Region of south-western Somalia, close to the Ethiopian border.

4.1.2 Climate

Jubbaland's climate is predominantly classified as arid to semi-arid, characterised by low and highly variable rainfall. Annual precipitation exhibits a distinct seasonal pattern, primarily concentrated in the spring and autumn months. The peak precipitation occurs in April, accumulating 72.1mm across 12 days, followed by a decrease in May to 32.8mm over 7 days, marking the end of the main rainy season. Currently, there's no rainfall data station in Dollow or the surrounding IDP camps therefore, rainfall data from the nearby Dolo Oda station (Ethiopia) was obtained from the National Meteorological Agency, and the mean monthly rainfall is given in Table 10 below:

Table 10: Mean Monthly Rainfall Data at Dolo Oda (Lahmeyer, 2007)

Month	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec	Total
Rainfall (mm)	6.8	1.5	16.3	72.1	32.8	1.8	1.1	0.3	0.9	28.2	19.0	12.1	192.9

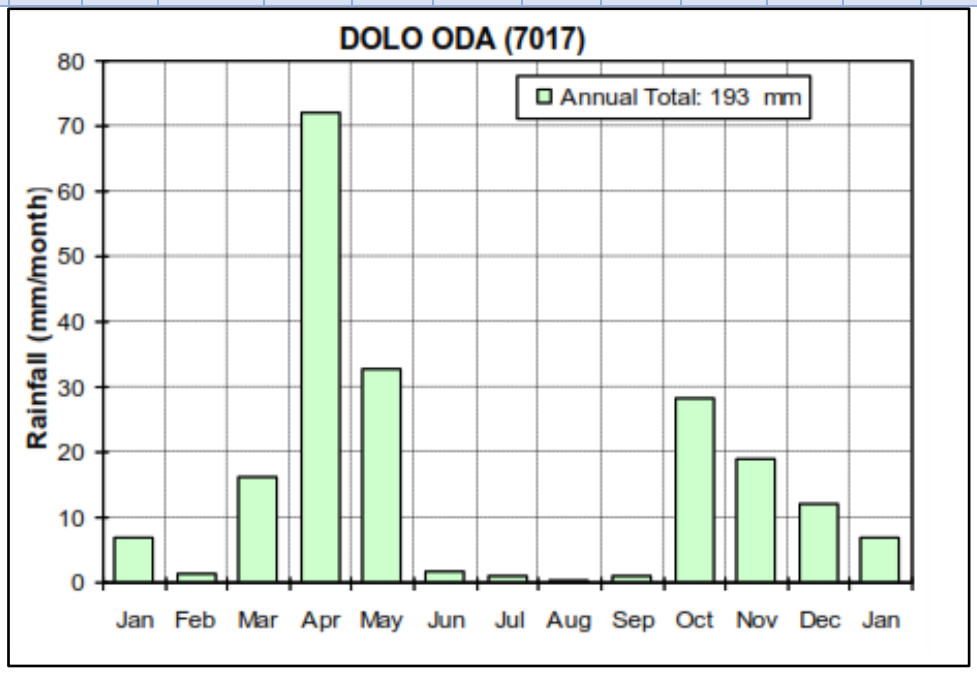

Figure 3: Mean Monthly Rainfall Based on Data from Dolo Oda (Ethiopia) Station (Lahmeyer, 2007)

The bar graph illustrates a bimodal rainfall pattern, characterised by two distinct wet seasons interspersed with drier periods. June to September are the driest months, while October and April typically receive the highest precipitation of the year. The region is highly drought-prone, with erratic and unpredictable rainfall distribution. Precipitation events are often short-lived but intense, contributing to rapid runoff and limited groundwater recharge. Dollow experiences two primary rainy seasons:

- The Gu rains (major wet season) occur from March to June, historically starting in March. However, local communities (Acacia Water, 2020) report that climate change has delayed the onset of the Gu rains to April in recent years, shortening the growing window.
- The Deyr rains (minor wet season) fall between October and December, providing supplementary moisture but with lower reliability.

The Gu rains are critical for local livelihoods, marking the end of the prolonged dry season. Their arrival triggers river recharge, agricultural planting, and the regeneration of grasslands, sustaining pastoralism and crop production. The observed shift in rainfall timing underscores growing climate variability, posing challenges for water resource management and food security in the region.

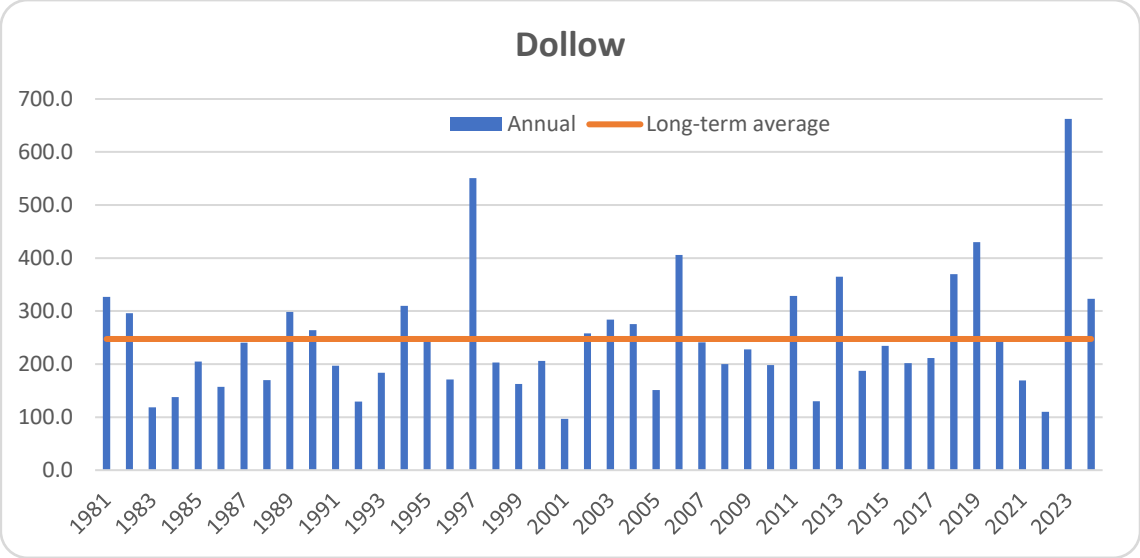

Figure 4: Annual Rainfall at WFP Compound at Dollow (1981-2024) (Source: CHIRPS Rainfall for a point at WFP compound at Dollow)

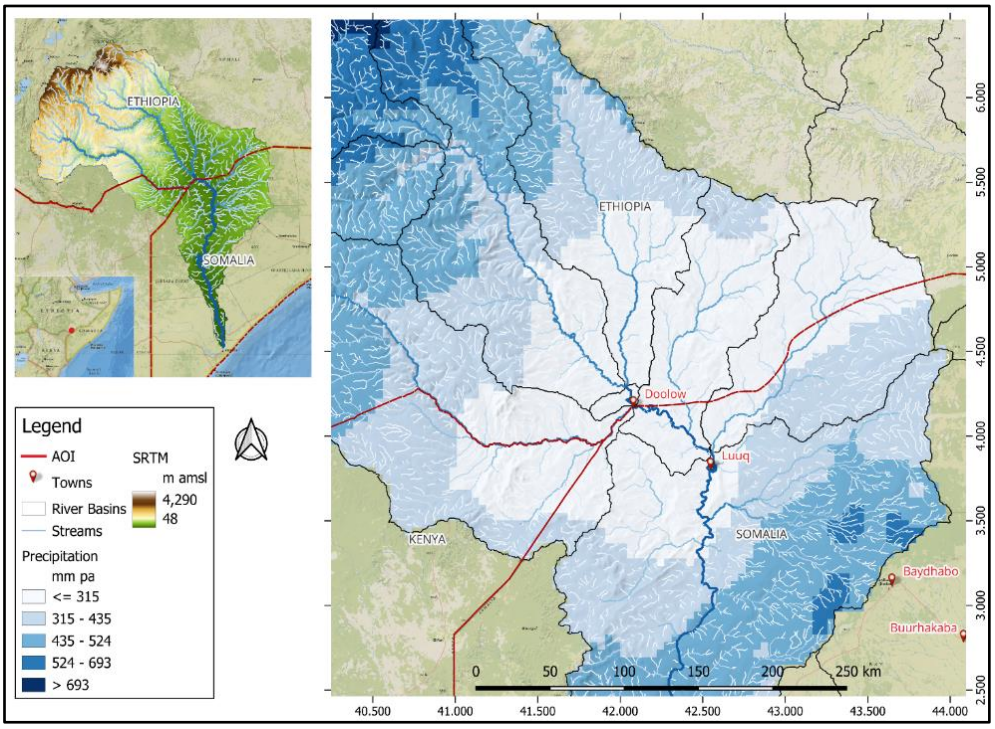

Figure 5: Precipitation of the Study Area

The state has an average annual rainfall of about 250 mm. However, there are variations in spatial distributions of rainfall, with about 500 mm recorded annually in the northern

highlands and between 300 and 500 mm in the southern regions. The coastal plains register only between 50-150 mm. A few small areas along the coastal strip of Somalia are classified as sub-humid

Rainfall in Somalia 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.
- *Gu'*: 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

The dry seasons lasts for seven (7) months, from Dec to March and from July to September, with an average daily high temperature above 40°C and the hottest month of the year is March, with an average high of 44°C and July, the lowest with an average low of 36°C. The wet seasons lasts for about five (5) months, from April to June, and from October to November, with an average daily high temperature below 28°C, whereas the coldest month of the year is January. The climate of Somalia is classified as "arid and semi-arid". Hence, the climate is generally harsh. Specifically, the climate of Dollow is mostly hot and semi-arid conditions.

4.1.3 Geology and Soils

The geological formations in Somalia include alluvium from the Pleistocene to Holocene period whose general characteristics show Older Pleistocene alluvial sediments and recent alluvium including sandy clay with lenses of sand and fine gravel to coarse gravels and boulders.

The soils are predominantly shaped by the region's riverine environment and geological history, reflecting the influence of the Dawa and Juba rivers' alluvial processes. Along the floodplains, which extend 0.5 to 1 km wide along the right banks of these rivers, the soils are primarily alluvial, consisting of fine to medium-textured sand, silt, and clay with occasional gravel lenses. These soils are highly fertile due to seasonal flooding that deposits nutrient-rich sediments, supporting agricultural activities. The alluvial soils exhibit good drainage and high permeability, facilitating groundwater recharge into the underlying shallow aquifers, but their fine texture also makes them prone to erosion during heavy floods. Beyond the floodplains, on the gently undulating plains and minor elevated areas of sedimentary origin, the soils transition to more residual types derived from the weathering of Cretaceous sedimentary rocks of the Korahe Formation. These soils are typically sandy to silty, with a higher clay content in areas dominated by evaporite deposits, and are less fertile, supporting sparse vegetation like acacia shrubs and grasses used for pastoral grazing.

The soils in Dollow are predominantly classified as Fluvisols, which are young alluvial soils formed by riverine sedimentation, particularly from the Dawa and Jubba Rivers. These soils are typically found in floodplains and exhibit a fine to medium texture, ranging from silty clay to loam, with moderate fertility and variable drainage characteristics. In elevated or less frequently inundated areas, Cambisols may also occur, these are weakly developed soils with limited horizon differentiation, often supporting sparse vegetation in semi-arid conditions. The Fluvisols near Dollow are suitable for shallow well development due to their water retention capacity, but they are also prone to seasonal waterlogging, salinity buildup, and erosion if not properly managed.

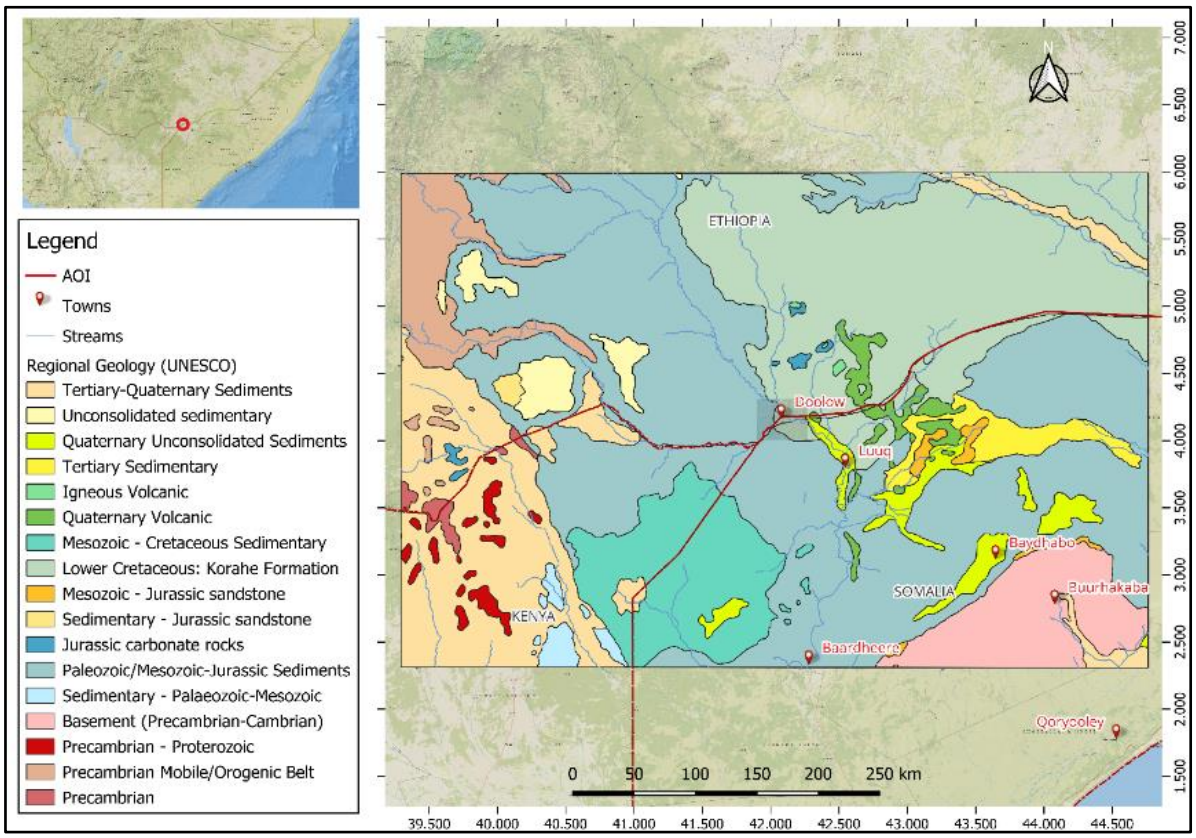

Figure 6: Geology of the Study Area

4.1.4 Topography, Geomorphology and Drainage

Dollow town occupies a strategic position at the confluence of the Dawa and Genale rivers, which merge to form the Juba River, creating a dynamic riverine environment. Two sites have been proposed for the DTF. The first site was selected by CES consultant while the second was selected by Earth Water Limited (EWL). EWL deemed necessary to select a second site due to limited access of the first site. However, both sites are technically viable and approved by stakeholders. The specific proposed sites and coordinates for the DTF are as shown in sub-chapter **Error! Reference source not found.**.

The terrain is characterised by gently undulating plains interspersed with minor sedimentary uplands, with elevations ranging from 172 to 200 meters above mean sea level (amsl). Dollow town itself lies at an average of about 170 meters amsl, with much of the settlement located on the right-bank floodplain of the Dawa River. This floodplain, typically 0.5–1 km wide, makes the town highly susceptible to seasonal inundation. The DTF will be protected from floods with flood-resistant perimeter walls to prevent floodwater intrusion and contamination. The broader landscape includes river valleys, extensive floodplains that function as natural buffers during high flows, and occasional low hills—remnants of eroded Cretaceous sandstones and limestones—particularly in the eastern sector where bedrock is exposed.

Geomorphologically, the area is shaped by active fluvial processes. The Dawa and Juba rivers drive sediment deposition, erosion, and channel migration, giving rise to oxbow lakes, abandoned channels, and seasonal wetlands that sustain local biodiversity, including riparian vegetation, birdlife, and small aquatic ecosystems. Floodplains enriched with Quaternary alluvial deposits of sand, silt, and gravel are critical for agriculture and groundwater recharge but are highly vulnerable to flooding during the Gu (April–June) and Deyr (October–December) rains, when water levels can rise by 2–3 meters. The region's proximity to the Ethiopian highlands, 150–200 km to the northwest, further shapes its geomorphology, as sediment-laden runoff continuously feeds the rivers and modifies downstream landscapes.

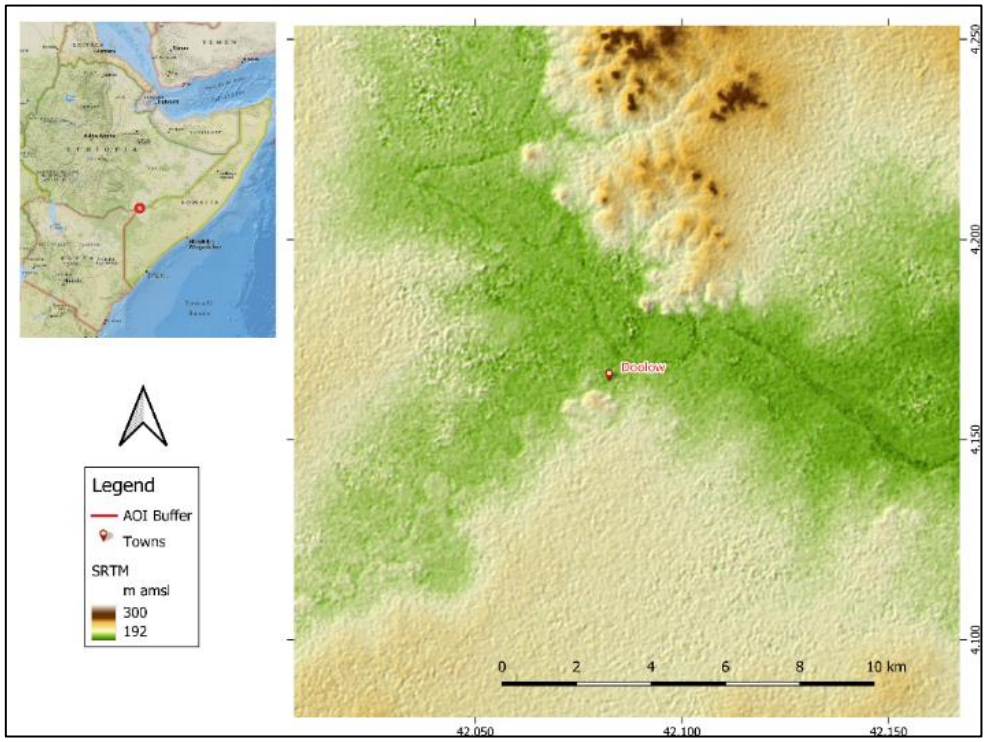

Figure 7: Physiographic Map of Dollow Town and its Periphery

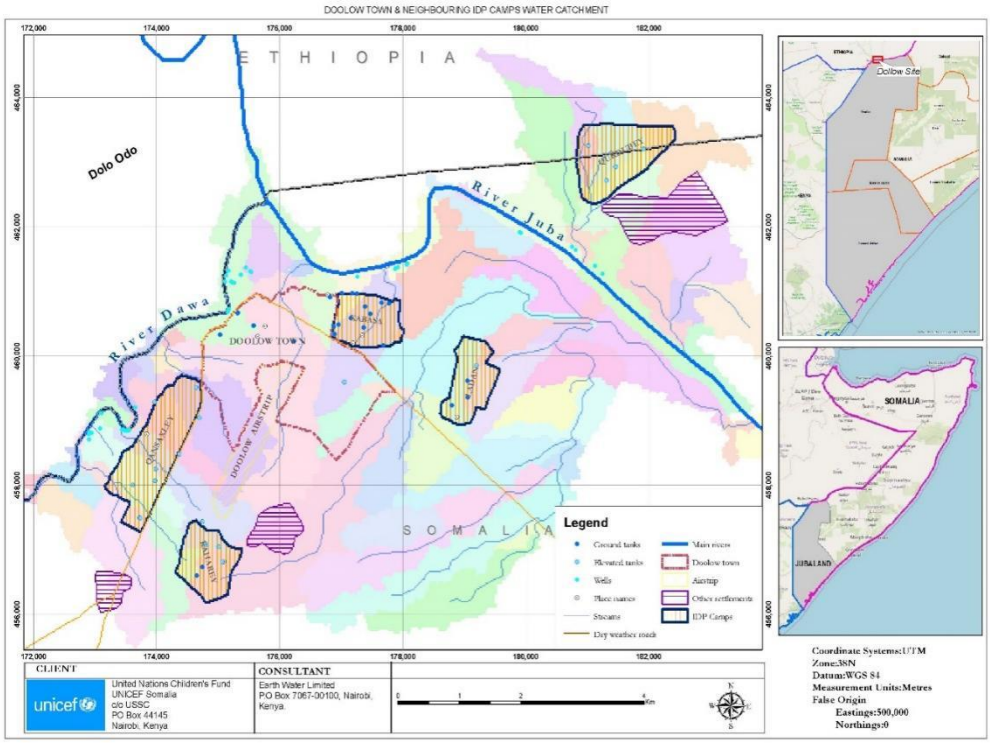

Figure 8: Natural Drainage Map of the Project Area

The Dawa River plays a central role in local livelihoods by recharging groundwater, enriching soils, and enabling small-scale irrigated and rainfed agriculture along its banks. However, outside the riverine zones, the environment becomes increasingly arid, fragile, and prone to erosion and desertification, reducing its agricultural potential. At the same time, Dollow serves as an important cross-border trade and humanitarian hub, hosting a large IDP population that places additional strain on limited natural resources and services. Water scarcity, land degradation, and weak infrastructure heighten the vulnerability of both displaced and host communities. Understanding the area's topography, hydrology, soil composition, and landform dynamics is therefore essential for designing sustainable

interventions in water management, agriculture, shelter development, and disaster risk reduction.

4.1.5 Water Resources and Hydrology

The Dawa and Juba Rivers are the primary surface water sources in the Dollow study area, sustaining both human and ecological needs while also recharging shallow aquifers. Their flows are highly seasonal, with the Gu rains (March–May) causing sharp increases that often result in flooding, aquifer recharge, and erosion, while the Deyr rains (October–December) have declined in recent years, contributing to reduced river discharge and seasonal droughts. Low-flow periods between January–February and June–September further constrain water availability.

Surface water systems in the Dollow study area respond rapidly to rainfall due to limited vegetation cover, degraded catchments, and high runoff, which reduces infiltration opportunities and limits groundwater recharge despite heavy rainfall events. This highlights the importance of integrated water resource management, with an emphasis on stormwater retention and aquifer replenishment strategies.

Geologically, the region is underlain by Quaternary alluvial deposits and Cretaceous sedimentary formations. The alluvial deposits, consisting of sand, silt, gravel, and clay, are shallow (up to 10 m), highly permeable, and serve as the main source for shallow wells and infiltration galleries. Beneath them lies the Korahe Formation, whose sandstones, marls, and evaporites are less suitable for potable supply due to poor permeability and high salinity. Deeper aquifers in the Jurassic Gebredare and Hamanlei Formations provide better yields and quality, with the Hamanlei benefiting from recharge from the Ethiopian highlands.

Water quality is variable, with peak river flows increasing turbidity and microbial contamination, while dry periods elevate salinity through evaporation and reduced dilution. Shallow aquifers, on which local communities and IDPs heavily rely, face risks of depletion, contamination, and salinisation. Over-abstraction, poor sanitation, and saline intrusion pose growing threats, and without careful monitoring, surface water interventions could undermine the sustainability of groundwater resources and increase competition over limited supplies.

4.1.6 Climate Change

The current climate variability of Somalia is that the amount of rainfall received across the country varies dramatically in time and space, from drought periods to erratic periods of intense downpours and flooding. The prominent observation from analysis of the weather station rainfall data, across all regions and seasons in Somalia, demonstrates a high inter-annual and inter- seasonal variation in rainfall is shown to vary between the range of 57 mm and 660 mm at one weather station in central Somalia during a 20-year observation period (UNDP/ICPAC, 2013).

Since 1960s, Somalia has experienced at least one major climate extreme event in each decade (Balint et al 2011). Major floods that have been experienced since 1960 include 1961, 1977, 1981, 1997-98, 2005, 2006 and 2009. Major drought events were experienced in 1969, 1976, 1984,1987, 1999, 2001, 2004 and 2010. In the past decade (2001 to 2010), the country has been alternating from drought to floods within the years (FAO SWALIM, 2012). The observed pattern (IPCC 2007, 2012) shows increasing variability in rainfall for Somalia suggesting an increase in the frequency and severity of future droughts and flash flood events.

Somalia is vulnerable to several natural hazards, including drought and floods, and is projected to be at even greater risk in the future due to climate change. The climate is mainly arid to semi-arid, and Somalia has one of the highest inter-annual variations of rainfall in Africa.

4.2 Biological Environment

4.2.1 Flora

The DTF proposed project sites are characterized by fast spreading Invasive Species called *Prosopis Julifalora (Cali-garoob or garanwaa)*; because of its adaptive and suppressive traits, it's also a threat to livestock pasture and therefore to pastoral livelihoods. *Prosopis* in particular starves other plants of water as it has high ground water utilization rates (Adam-Bradford, 2013). *Prosopis spp.* Is also a threat in urban areas where its root system can

interfere with underground infrastructure such as pit latrines and drainage pipelines (Adam- Bradford, 2013a).

The selected site will experience limited bush clearance and cutting of few shrubs and/or grasses that cover the areas demarcated for the construction of the DTF. All these planned construction works will be executed in a no sensitive environments and their adverse impacts are manageable.

4.2.2 Fauna

Somalis are mostly pastoralists and the country is home to several livestock species, including goats, sheep, cows, and camels. Commonly found in the project area of influence are goats, sheep, cows and camels. The country has lost many of its wild mammals such as elephants to poaching. There were no terrestrial wildlife observed.

4.2.3 Rangelands

Rangelands in and around Dollow are composed primarily of annual grasses, herbs, bushlands, and scattered woody vegetation. These ecosystems are vital to pastoralist communities, providing seasonal forage that directly responds to the region's low and erratic rainfall. With an annual average of approximately 213.8 mm, rainfall is concentrated in a few months—most notably April (72.1 mm), May (32.8 mm), October (28.2 mm), and November (19.0 mm). During these brief wet seasons, grasses and herbs rapidly emerge, bloom, and set seed, offering a short but critical window of high-quality grazing for livestock.

Once the rains subside and vegetation dries out, pastoralists move their herds to more resilient areas dominated by bushlands and scattered woodlands. These zones, while less nutritious, provide essential browse during the long dry season, which spans from June to February and includes extremely dry months like August (0.3 mm) and July (1.1 mm). The absence of perennial grasslands in Dollow means that the regeneration of rangelands depends entirely on the successful seed cycle of annual species, making timing and mobility central to pastoralist survival strategies.

Sustainable use of these rangelands requires careful management of grazing pressure, especially during the early growth phase of annuals. Overgrazing before seed set can severely limit regeneration, reducing forage availability in subsequent seasons. Pastoralists rely on traditional knowledge and mobility to navigate these ecological constraints, adjusting herd movements in response to rainfall patterns and vegetation cycles. In this fragile system, the balance between use and regeneration is critical to maintaining both ecosystem health and pastoralist livelihoods.

4.3 Socio-Economic Conditions

4.3.1 Governance and Administration

Dollow District is one of six districts in the Gedo Region of Jubbaland State, a federal member state of Somalia. Administratively, it falls under the authority of the Jubbaland government, which oversees Garbaharey, Bardera, Luuq, Dollow, Ceel Waaq, and Beled Hawo districts. Classified as a B-level administrative unit, Dollow District does not yet have a formal elected district council, a governance structure already established in some neighbouring districts.

Local administration is led by a District Commissioner (DC), who is also the mayor, elected by the community. The DC is responsible for enforcing Somalia's National Constitution, implementing federal and state policies, and coordinating development initiatives aimed at improving public welfare. Although Jubbaland's state law has not yet fully defined the legal framework for local governance, the district remains responsible for key public services, including urban infrastructure (water, electricity, and transport), road and public space maintenance, public health and sanitation (primary clinics and maternal hospitals), education (Koranic, pre-primary, and primary schools), market regulation, environmental protection, disaster management, town planning, land administration, and local revenue collection.

Administratively, Dollow town is informally subdivided into six urban villages: Halgan, Dhagaxley, Wadajir, Celasha, Medina, and Gorboolow. However, these subdivisions lack formal roles, representation, or structured administrative systems, underscoring the

institutional gaps that continue to challenge local governance. These urban villages are governed by chiefs and sub-chiefs.

Also, the local authority has a governance structure notably the social affairs department which is responsible for development and protection of the community living in the town, including the IDPs. The IDP camps are governed by camp leaders.

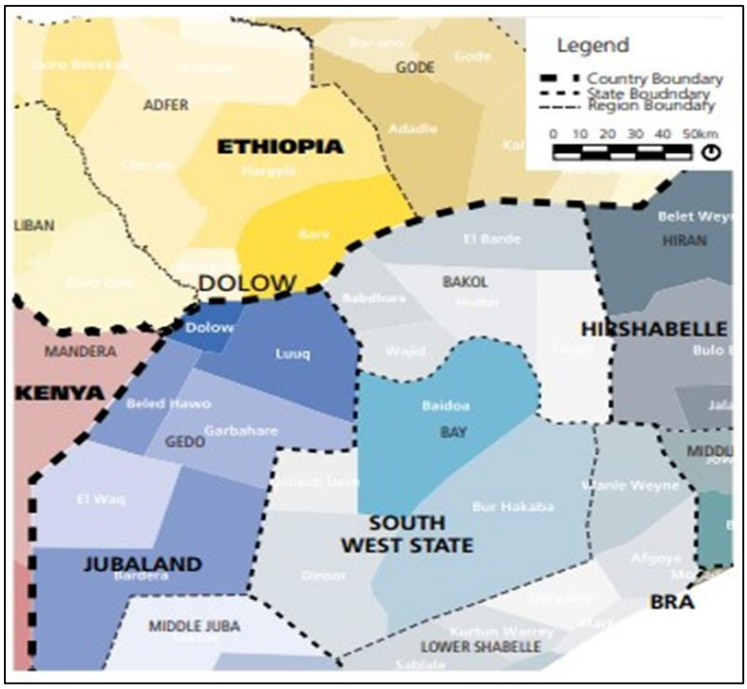

Figure 9: Administrative Units in Gedo Region

4.3.2 Access to Education and Health Services

Prior to the civil war Somalis enjoyed free public education, however, since the collapse of the state only 30% of the children are in school and fewer than 50% of girls attend primary schools. Now with reduced donor funding especially freezing of USAID, the education sector is heavily affected with over 60% drop in school attendance. Madrasas play a key role in providing education for young children. These Islamic schools which are abundant and easily accessible in nearly all parts of the country offer young children the opportunity to be literate. Somalia's healthcare provision is dominated by the private sector save for mother and child health centres funded by donors. Along the corridors nearly all the small settlements lack health care facilities and people are forced to travel to nearby urban areas to seek medical treatment.

During the field assessment the ESIA team assessed that there are two healthcare centres i.e., , Truecare and Cida Health Centres in Dollow town and found out that there is only one primary school and no secondary school. This limited health and education services. These institutions are located within Dollow Town approximately 4.5km from the from the proposed DTF site by EWL and 9.5km away from the DTF site proposed by CES consultancy.

4.3.3 Existing Water Supply Situation

4.3.3.1 Current Production

The existing water sources for Dollow and the surrounding IDP camps primarily comprises shallow wells, which vary significantly in depth, yield, and water quality. Currently, 19 boreholes provide a combined production capacity of 3,557 m^3/day to the host community and five IDP settlements. Most of these boreholes are operational and equipped with photovoltaic solar-powered submersible pumps to enhance sustainability. Some are installed with standby diesel generators to provide extended pumping during the night. Additionally, two wells producing 346 m^3/day specifically serve schools in the Kabasa IDP Camp. However, seasonal fluctuations in groundwater recharge can reduce yields by up to 50% during dry periods, highlighting the system's vulnerability to climate variability.

Table 11: Summary of Existing Shallow Wells

Section / Location	Number of Function Shallow Wells

Dollow Town / Host Population	6
Kabasa IDP Camp	7
Qansaxley IDP Camp	4
Kaharey IDP Camp	2
Ladan IDP Camp	4
Qurdubey IDP Camp	4
Total	**27**

4.3.3.2 Safe Yield

For the existing shallow wells in the project area, there no existing data on test pumping results. Therefore, their production capacities are based on installed pump details.

Due to lack of available ground water abstraction regulations in the project area, for the recently drilled wells, a safe yield of 80% of the tested yield has been assumed based on the high yielding nature of the aquifer in the area. The table below provides production details of the recently drilled R-WASH wells.

Table 12: Production Capacity of Drilled R-WASH Wells

Name of well	Yield (l/S)	Yield (m^3/hr)	80% Assumed Safe Yield/ Pump Details (m^3/hr)	Optimum Solar Pumping Hours	m3/Day
PSW-1	30	108	86.4	8	691.2
PSW-2	32	115.2	92.16	8	737.28
PSW-3	11	39.6	31.68	8	253.44
PSW-4	32	115.2	92.16	8	737.28
PSW-5	10	36	28.8	8	230.4
PSW-6	4	14.4	11.52	8	92.16
PSW-7	4	14.4	11.52	8	92.16
PSW-8	32	115.2	92.16	8	737.28
PSW-9	27	97.2	77.76	8	622.08
PSW-10	20	72	57.6	8	460.8
Total	**202.00**	**727.20**	**581.76**	**8.00**	**4,654.08**

(Source: UNICEF 2025)

4.3.3.3 Water Quality

Shallow alluvial groundwater quality in the project area is within acceptable limits for human consumption as per WHO standards. Although WHO has no set limit for Electrical Conductivity (EC), the recommended TDS limit is 100mg/l. Nevertheless, elevated EC values in some wells indicate possible salinity issues requiring further investigation. Furthermore, several water sources lack critical information such as depth, yield, or operational status, underscoring the need for improved monitoring and data reporting to support long-term water resource management.

Currently, DWMC does not have a water quality testing and monitoring system. The information obtained by EWL during field assessments in May 2025 indicates that the technical manager is the designated water quality officer. To enhance water quality improvement and monitoring, the following interventions are proposed:

a) Infrastructure upgrade, which will include rehabilitation of well aprons for existing shallow wells to prevent water contamination from surface runoff during floods;
b) Construction and equipping of water testing laboratory: This will provide the water utility with all equipment and materials necessary for testing and monitoring of water quality;
c) Installation of water treatment facilities: This will involve installation of inline chlorine dosing equipment on the rising main before the water enters the water storage tanks. This will allow sufficient contact time for mixing which will ensure

availably of residual chlorine at the point of use;

d) Employment and capacity building for water quality staff to include water quality officer, quality assurance officers (water sampling and monitoring), and lab technicians;
e) Provision of ground water monitoring equipment;
f) Setting up and capacity building on ground water database management;
g) Capacity building on groundwater monitoring including aquifer health and groundwater usage, sampling, testing, analysis and data storage; and
h) Capacity enhancement on provision of corrective measures to address sources of negative impacts on groundwater sources.

4.3.4 Existing Sanitation Situation

Currently, there are no faecal sludge treatment facilities in Dollow town and the surrounding IDP Camps. The existing sanitation facilities in Dollow town are mainly latrine pits. Some households and facilities have septic tanks. In the IDP camps, the existing sanitation facilities are mainly shared family pit latrines. Inadequate sanitation facilities in the project area are one of the main challenges which has contributed to open defecation resulting in pollution of water sources which poses a great health risk to the population. Also, the ever-increasing population as a result of new IDPs arriving in the camps has led to overcrowding resulting in strain on existing sanitation facilities leading to low hygiene services in the camps.

According to the latrine gaps assessments report of March 2025 by CCM and IOM, there is a huge gap of latrines in all IDP camps.

Table 13: Summary of Latrine Gaps in IDP Camps in Dollow

Item	Summary	Block/ Section	Number of latrines	Functioning Latrines	Non-functioning / filled up latrines	Latrine Gaps
1	Kabasa	59	1,202	428	774	774
2	Qansaxley	34	373	106	267	267
3	Ladan	18	449	260	189	189
4	Kaharey	11	172	91	81	81
5	Qurdubey	16	262	114	78	148
Total Latrines			**2,458**	**999**	**1,389**	**1,459**

(Source: CCM/IOM - Assessment report of March 2025)

4.3.5 Gender

Statistics on Dollow's gender dynamics is scarce therefore, national statistics has been used. Somalia has one of the highest gender inequalities in the world and at 0.776 it is ranked 4th in the world's inequality status. The country has an extremely high maternal mortality (723 deaths per 100,000) live births while the adolescent birth rate for teenagers, aged between 15 and 19, is 100.1 per 1,000 births. Rape, female genital mutilation and child marriage rates, and violence against women and girls is common. Women make up 56.6% of the workforce in agriculture/pastoralism, which constitutes 60% of the local economy. The number of women working in government had significant numbers at 1,912 (19%). Much is to be desired in the education sector, where only 36.1% of pupils in the upper primary education are composed of girls. This gender disparity is higher in upper grades due to the economic constraints on families and early marriages or girls. Culturally the role of women has been limited to domestic affairs, however because of legislative changes their participation in the country's governance and politics continues to grow. Currently there is a 30% quota declared for women representatives in both the lower and upper houses of the parliament. According to recent data from the UNDP711, the 2017 share of women seats in parliament was 24.3%. Traditionally the Somali women have been the "engineers" building the traditional homes, aqal somali, and "food processors" making preserved meat referred to as oodkac/muqmad. They are also the fetchers of water for domestic use, while it is the men who work at the wells to provide water for the animal herds (Camel, goats, donkeys, among others). Alternatively, Somali women are actively involved in business, mainly trading in household goods, gold, and khat.

4.3.6 Grievances Redress Mechanism

During the study, the ESIA team observed that there was formally composed Grievances Redress Mechanism (GRM) Committee apart from community elders. However, the officials of local government authorities indicated that they have Disputes Resolution Committees (DRC) at the municipal levels, which collaborates with local communities in resolving disputes whenever they arise.

4.3.7 Labour

The labour force participation rate is estimated at 65.9% and 37.6% among males and females, respectively. In overall terms, Somalia suffers from high unemployment and under-employment. National statistics have been used to analyse labour due to insufficient information for Dollow area. The country has relatively highly vulnerable unemployment estimated at 59%, and a considerable unemployment rates for persons with upper primary level of education at 20.9% and those with secondary level of education an unemployment rate of 34.6%. Also, 41% of the employed in Somalia are in occupations that require elementary education. The largest proportion of employed persons are elementary occupations (41%) followed by professional (15%), skilled agricultural, forestry and fishery workers (10%) and craft and related trades workers (9%).

4.3.8 Land Ownership

Land conflicts in Somalia have risen to be one of the key issues of instability at the community and inter-community level. This is partly due to a complex situation of land tenure. While the Agricultural Land Law of 1975 abolished private ownership, the current situation is very unclear. Only few locals registered their land at the time, and the civil war further impacted the situation negatively. Customary land tenure has therefore taken the centre stage in ordering land ownership and usage. It is focused on clan relations and on pastoral land use rather than norms of individual ownership.

Although the Provisional Constitution defines land as public property, however, the land administration and management are virtually non-existent in Somalia. The country currently does not have a national land acquisition law and effective land tenure systems and again the central government does not have the ability to enforce this ownership and land remains community property owned by the different clans living in a particular area.

Throughout the assessment, the ESIA team noted that the majority of the land tenure systems in the project target districts are based on customary land ownership. In Dollow, the authorized district stated that the IDPs own the land that they current reside on. The DTF sites are located on areas that are owned by local residents of Dollow.

4.3.9 Land Use

In Somalia, rangelands are estimated to constitute about 80 per cent of the nation's land area. In Dollow land is used for grazing and for farming around the river. The sites are not considered to be part of the riverine zone. The proposed DTF sites are located near River Jubba as shown in the table below:

Table 14: Distance between Proposed DTF Sites and River Jubba

No.	Location (UTM, WGS84, 38N)		Remarks	Distance to River Jubba
	X	Y		
1	184,963.17	457,633.47	Site no.1 identified by CES	863m
2	179,938.65	460,590.78	Site no.2 identified by EWL	1.14km

Within a 200m radius of the proposed sites, there isn't much land use activities such as farming. However, there is notable farming activities outside the 200m radius of the proposed sites especially closer to Dollow town near the site proposed by Earth Water Limited.

4.3.10 Transport System

The primary transport system serving Dollow is the Luuq–Dollow–Beled Hawo highway. This is a critical segment of the 580 km Mogadishu–Nairobi corridor that links Somalia's Gedo region directly with Mandera in Kenya. Currently, this gravel road is in poor condition, but it is slated for an upgrade to bitumen standard under African Development Bank funded projects according to a feasibility study (African Development Bank, 2022). The road upgrade project aims to reduce travel times, boost cross-border trade, and enhance

regional connectivity along this IGAD economic corridor. Beyond the main thoroughfare, movement within and around Dollow relies on a network of unpaved roads and pedestrian tracks.

Due to the presence of river, bridges and boats are used to cross from Dollow to the surrounding areas. There is a bridge over the Dawa River while boats are used on the larger Jubba River.

Traffic is rarely experienced in Dollow due to presence of few vehicles in the area. The automotive landscape is dominated by second-hand vehicles mostly Toyota Land Cruisers, Hilux pickups, and minibuses adapted for rugged terrain and humanitarian operations. Motorcycles are widely used for personal transport and delivery services, while vehicle maintenance is handled by mechanics with limited access to spare parts and diagnostic tools.

4.3.11 Telecommunication

Dollow's telecommunications landscape is dominated by mobile networks operated by firms like Hormuud Telecom, Somtel, and Golis, reflecting Somalia's rapid shift to wireless connectivity. Nationwide there are roughly 10.1 million active cellular connections, about 54.8 percent of the population with 4G LTE covering 50–60 percent of inhabitants, though true fixed broadband remains rare outside coastal hubs such as Dollow (Kemp, 2024).

4.3.12 Religious Structure

Dollow's residents practice Islam almost universally, with Sunni traditions often infused with Sufi rituals shaping daily life, social norms, and community governance. Mosques and attached madrasas serve as the focal points for religious education, dispute resolution, and social welfare, with Friday prayers and Ramadhan observances influencing local schedules. Islam plays a central role in both public and cultural spheres.

Key worship centres close to the proposed DTF sites include the central mosque in Dollow town and a mosque located within Ladan IDP camp. These mosques serve as vital religious landmarks for the surrounding communities. The mosque in Ladan is situated approximately 1 km from the DTF site proposed by EWL, while the central mosque in Dollow town lies at least 4.5 km from the EWL site and 9.5 km from the site proposed by CES consultancy. The citing of the DTF has been made further from the mosques to ensure continued accessibility, prevent disruptions of religious practices, and uphold community cohesion.

4.3.13 Electricity and Fuel Sources

Dollow relies on decentralized electricity generation primarily powered by privately owned diesel generators operating through informal microgrids since there is no national power grid. Renewable energy sources such as solar are increasingly being adopted, especially for household lighting and small-scale commercial use. The Federal Government of Somalia has introduced electricity regulations to improve safety and service delivery, though implementation is still in early stages.

Fuel in Dollow is primarily imported from Ethiopia and Kenya, with diesel and petrol transported overland via Beled Hawo and Mandera. Distribution is managed by small-scale vendors and fuel stations. These distribution points often lack standardized safety infrastructure, which poses risks during handling and storage. Prices fluctuate due to border dynamics, road conditions, and regional security, making fuel relatively expensive and supply inconsistent. The DTF would rely on a generator for operation.

4.3.14 Security Systems and Arrangements

Security arrangements in Dollow, Somalia, are influenced by a fragile context marked by conflict, displacement, and environmental stressors, necessitating a multi-layered protection strategy (UNHCR, 2024). Federal government forces, local authorities, and ATMIS personnel collaborate to safeguard IDP settlements, humanitarian supply routes, and critical public infrastructure. Despite these efforts, inter-clan tensions continue to pose challenges to stability (UNHCR, 2024).

In response, infrastructure initiatives such as the SURDHT project have prioritised safety measures, including the construction of transitional shelters, gender-sensitive sanitation facilities, and public spaces equipped with solar lighting and perimeter fencing. These interventions are designed to enhance protection, particularly for women and children (ESIA Report, 2024). Protection monitoring teams deployed by UNHCR, alongside

community-based protection networks, play a vital role in identifying risks, reporting incidents, and facilitating access to essential services for vulnerable groups (UNHCR, 2024).

During ESIA-ESMMP processes, security arrangements were facilitated administratively through the Dollow District Commissioner, with support from UNICEF staff based in Dollow. This included the hiring of security vehicles and the allocation of daily allowances for personnel and vehicle fuel to ensure smooth fieldwork operations without interference from external actors.

At the local level, security in Dollow town and IDP camps is managed through a combination of community-led initiatives, formal government structures, and external support. Community cohesion is notably strong, extending into IDP sites where leadership structures are well established and functional, facilitating site planning and the reception of new arrivals. Security forces, drawing on years of experience, are adept at distinguishing between locals and outsiders. New arrivals are routinely screened and asked to present identification. The security is typically managed locally in the Dollow study area through:

a) Local Police and Government Administration

Somali Police Force: The primary responsibility for day-to-day law enforcement lies with the local police, who maintain public order, patrol neighbourhoods, and handle criminal cases.

District Administration: The Dollow District Commissioner and local security committees coordinate closely with police and community elders to address threats, mediate disputes, and enforce local regulations.

b) Community Policing and Clan Elders' Role

Traditional Leadership: Clan elders and respected community leaders play a major role in conflict resolution, mediation, and maintaining peace at the grassroots level. Their influence helps prevent small disputes from escalating into violence.

Community Security Committees: Informal local committees often monitor suspicious activity, report incidents, and collaborate with police to improve safety, especially in IDP camps and rural outskirts.

c) Support from Federal and Regional Forces

Federal Government Troops/Jubaland Forces: The Somali National Army (SNA) and regional security forces from Jubaland State support local security by responding to higher-level threats, including insurgent activities.

Joint Security Operations: They sometimes conduct joint patrols or checkpoints with local police and Ethiopian police at the border line, especially around key infrastructure and border crossings.

d) International and Peacekeeping Support

African Union Transition Mission in Somalia (ATMIS): It has periodically supported stability efforts in and around Dollow town and IDP camps, providing training to local forces and reinforcing security during heightened threats.

Humanitarian Coordination: NGOs and UN agencies working in the area often coordinate with security actors to ensure safe access for aid operations, especially in IDP settlements.

e) Community-Based Early Warning Systems

Residents, IDP leaders, and local authorities collaborate to share intelligence on potential threats, such as militant movements or inter-clan tensions.

This grassroots reporting helps authorities respond quickly to security incidents before they escalate.

In summary, the security in Dollow town and the surrounding IDP camps is not handled by a single actor; it is a hybrid system involving local police, traditional elders, district authorities, regional and federal forces, and sometimes international partners. The emphasis is on community collaboration, early conflict resolution, and joint coordination to maintain relative stability in a sensitive and complex environment.

5 IMPACT IDENTIFICATION AND ANALYSIS

The chapter describes potential positive and negative environmental and social impacts of the proposed project. The prediction of positive and negative impacts of the project is based on the field observations and baseline environmental and social conditions of the project sites under the direct and indirect possible influence areas. In order to identify the environmental and social impact of the project and predict which component of the environment will be subjected to possible positive and/or negative impacts of the project, a description and analysis of the baseline environment has been carried out.

5.1 Impact Identification

Characteristics of the predicable impacts generated from the construction and operation of the activities of the proposed project activities have been identified by considering the following:

- Activities that may produce impact were evaluated in describing the project;
- Basic environmental data obtained from direct field observations; and
- Information gathered from available scientific publications and reports derived by the study of similar projects.

For each phase (i.e. pre-construction/design, construction, operation, and decommissioning) as studies show on other related cases, the ESIA study team's observation of field level and the anticipated impacts were defined considering the following main activities of the project, which may have some effect on the bio-physical and socio-economic aspects of the project during its design and operation phases.

The construction phase main activities are:

- Construction of Onsite Decentralised Treatment Facility (44m3/day) with a Baffled Anaerobic Reactor and Vertical Flow Constructed Wetland.
- Purchase of Sewer Carrying Boozers / Lorries

The potential environmental and social impact varies in magnitude. The project activities such as clearing of vegetation, soil cutting, levelling, felling of trees during construction of shallow well, excavation of trenches, and other related operational activities, which are bound to cause environmental and socials impacts, either positive or negative. The proposed project has limited adverse environmental and social risks and the magnitude of its impact and significance were assessed based on the factors shown below

Table 15: Impacts magnitude and significance factors

Criteria	Description
Location or extent	The area/volume covered
Timing	Whether immediate or delayed
Duration	Short term, medium term, long term
Likelihood	Probability of the impact taking place
Significance	Whether it is local, regional, or global

5.2 Impact Analysis

This sub-section assesses the level of potential impacts based on various criteria, including the duration of impacts, location, likelihood, and magnitude. The impact assessment also considers the impacts and risks identified by the stakeholders who were consulted. The method for impacts analysis was as follows:

Table 16: Impact Severity Analysis

			Sensitivity of Receptor			
			Very Low	Low	Medium	**High**
			1	2	3	**4**
Intensity of Impact	Very Low	1	1 Negligible	2 Minor	3 Minor	**4 Minor**

	Low	2	2 Minor	4 Minor	6 Moderate	**8 Moderate**
	Mediu m	3	3 Minor	6 Moderate	9 Moderate	**12 Major**
	High	**4**	**4 Minor**	**8 Moderate**	**12 Major**	**16 Major**

The matrix shown in table above, links the project activities to the anticipated environmental and social impacts (both positive and negative), generated due to the implementation of the project activities during all the phases of the project. The table below, demonstrates the environmental and social safeguard aspects that will be treated in this report and the respective different weights of each aspect in terms of impact. Weights for each aspect of the different phases result from comparisons between the specialists that had part in the ESIA study. Each cell of the matrix will contain the anticipated relevant impact significance value, according to the legend as determined during the study. The environmental and social management plan with respective mitigation measures is indicated in this report.

Table 17: Environmental Impact Matrix

Project Activity					
Component affected	Construction Phase				**Operation Phase**
Physical Environment					
	Construction and equipping of DFT	Construction of water tanks	Excavation of trenches for pipeline and drainage	**Construction of sludge treatment facility**	
Soil	5	5	5	**5**	
Land Use	5	5	5	**5**	
Surface Water	4	1	3	**3**	
Dust/Air quality	5	1	1	**1**	
Noise	2	1	2	**2**	
Biological Environment					
Flora	4	1	3	**3**	
Fauna	1	1	1	**1**	
Socio-economic Environment					
Residential houses and community centres	0	0	0	**0**	
Farmland	5	0	1	**1**	
Cultural/ archaeological sites	**0**	**0**	**0**	**0**	

5.3 Impact Significance Rating

The significance of the matrix's impacts has been determined by combining the perceived frequency of occurrence of the source of the impact, the duration, severity, and spatial extent of the impact, and the sensitivity of the area being impacted upon. The significance rating was aided by using the intensity of impacts and sensitivity of the receptors.

Table 18: Rating of Impact Significance

Impact Rating	Description
High	A high level of adverse impact could prompt authorities to implement robust mitigation measures or reject the implementation of the project. Also, in case of a high-level positive impact showing enhancement measures is to be implemented promptly.
Medium	A level of negative or positive impact with moderate significance that will either require mitigation, or enhancement measures respectively
Low	An insignificant amount of negative impact, but requires some mitigation, or positive impact that requires some attention to enhance it.

In light of the above impact significance rating, the possible environmental and social impacts of the project are evaluated and summarized as shown in table below

Table 19: Impacts Rating Summary

	Environmental Components	Impact Rating Result		
		Baseline	**Magnitude**	**Overall Impact**
CONSTRUCTION PHASE				
Physical Environment				
1	Visual impact on topography and landscape	Low	Low Negative	**Small Negative**
2	Soil erosion	Medium	Low Negative	**Small Negative**
3	Land pollution	Medium	Medium Negative	**Small Negative**
4	Air pollution	Low	Low Negative	**Small Negative**
5	Water pollution	Medium	Medium Negative	**Medium Negative**
6	Noise pollution	Medium	Medium Negative	**Medium Negative**
Biological Environment				
7	Vegetation clearance	Medium-High	Low Negative	**Small Negative**
8	Disturbance of the wild animal	Low	Low Negative	**Small Negative**
Socio-economic Environment				
9	Physical displacement	Zero	Zero	**No**
10	Land use	Low	Low Negative	**Small Negative**
11	Water and Sanitation	Low	Low Negative	**Small Negative**
12	Education and Health	Low	Low Negative	**Small Negative**
13	GBV/SEA/SH	Medium-High	Medium Negative	**Medium Negative**
14	Child Labor	Medium-High	Medium Negative	**Medium Negative**
15	Cultural heritage	Low	Low Negative	**Small Negative**
OPERATION PHASE				
Physical Environment				
1	Visual impact on topography and landscape	Low	Low Negative	**Small Negative**
2	Soil erosion	Low	Low Negative	**Small Negative**

3	Land pollution	Low	Low Negative	**Small Negative**
4	Air pollution	Low	Low Negative	**Small Negative**
5	Water pollution from construction works	Low	Low Negative	**Small Negative**
6	Noise pollution from construction works	Low	Low Negative	**Small Negative**
Biological Environment				
7	Establishment of invasive plant species around shallow wells	Low	Low Negative	**Small Negative**
Socio-Economic Environment				
9	Physical displacement	N/A	Zero	**No**
10	Land use	N/A	Zero	**No**
11	Water and Sanitation	N/A	Large Positive	**Large Positive**
12	Education and Health	N/A	Large Positive	**Large Positive**

5.4 Positive Environmental and Social Impacts at all Phases

The key potential beneficial impacts associated with the implementation of the project mainly relate to the construction and operation phase and these are summarized below.

5.4.1 Improved Quality of Drinking Water for Animals

Animals rely on the rivers for water consumption. Therefore, the implementation of the proposed project is expected to have a positive impact by reducing pollution of the rivers.

5.4.2 Improved Health and Sanitation Services

The proposed DTF will reduce contamination of surrounding rivers, this significant since Dollow since water borne diseases are highly likely during heavy rainy seasons which lead to flooding. Reducing the contamination of rivers consequently reduces the risk of occurrence of infection from water borne diseases. Contamination of shallow wells is the common during these flood episodes therefore preventative measures such as establishment of a flood proof DTF facility is critical. The availability of adequate and safe drinking water will obviously reduce water related diseases such as diarrhoea, cholera, etc. In addition, at family and communal levels, personal hygiene such as handwashing, bathing, and overall sanitation will be improved. Therefore, the execution of the project will have enormous contribution in improving public health conditions, good hygiene, and improved standards of living for the communities in the project target areas.

While specific epidemiological statistical data on waterborne disease prevalence in Dollow is currently unavailable, the positive public health impact of improved sanitation infrastructure is well-established and factually supported by global evidence. The anticipated benefits of the DTF align with best practices in sanitation and disease prevention, particularly in flood-prone and low-resource settings.

5.4.3 Mitigation of Greenhouse Gas Emissions

The project will consider the adoption and installation of solar power as an alternative source of energy for treated waste water pumping, which will contribute to the reduction of greenhouse gases emitted by the generators. Typically, a DTF has small pipeline internal pipelines and channels to:

- Transfer wastewater between treatment stages (e.g., from reception to settling tanks)
- Distribute flow evenly across units
- Handle treated effluent and direct it to discharge or reuse points
- Manage overflow and bypass systems during peak loads or maintenance

These are usually short, above-ground or semi-buried conduits designed for gravity flow or low-pressure pumping, depending on the layout.

5.4.4 Employment Opportunity

The project will create and contribute to employment opportunities for skilled and unskilled workers in the target areas and helps in generating income that can support their livelihoods. The phasing of the construction will create approximately 70 job opportunities for the local labour work force.

Table 20: Estimated Workforce Breakdown for DTF Construction

Category	Approximate No. of Workers	Role Description
Site preparation crew	5–10	Clearing, levelling, fencing, basic earthworks
Civil works team	10–15	Construction of foundations, tanks, drying beds, access roads
Plumbers and pipe fitters	4–6	Installation of internal piping, valves, and drainage channels
Masons and concrete workers	6–10	Building walls, slabs, and containment structures
Skilled technicians	3–5	Installation of treatment units (e.g., anaerobic reactors, biofilters)
Electricians	2–3	Wiring for pumps, lighting, and control panels (if applicable)
Welders and metal workers	2–4	Fabrication of screens, gates, and structural supports
Supervisors and engineers	2–4	Oversight, quality control, and coordination
Casual labourers	10–20	General support, material handling, site cleaning

Total estimated workforce: 40–70 workers, depending on the scale, technology used, and construction phasing.
This number may fluctuate over time with fewer workers during early site preparation and finishing stages, and more during peak civil works and installation phases. If the project includes community engagement or local hiring targets, the number of casual labourers may increase. The complexity and urgency of the project completion will also affect may the number of workers.

5.5 Negative Impacts on the Physical Environment during the Construction Phase

Key outcome of the ESIA is to identify the potential Social and environment negative impacts and propose mitigation measures that will either reduce the adverse impacts or eliminate them. Below is a list of identified negative impacts.

The environmental management activities would be carried out during the construction phase. Most of the impacts are expected to occur at this stage and the negative impacts can be avoided or reduced through the application of comprehensive construction plans. It is also important to note that successful mitigations can only be achieved if the environmental protection measures, as set out in the construction contract document are properly implemented and complied with.

5.5.1 Impact on Groundwater and Surface Water

Surface Runoff and Sediment Loading - Excavation, earthworks, and stockpiling of materials can lead to increased sediment runoff, especially during rain events. If not properly managed, this runoff may reach the River Jubba, causing turbidity and ecological disturbance.

Fuel and Chemical Spills - Use of machinery, concrete additives, or temporary storage of fuels poses a risk of accidental spills. These contaminants can infiltrate shallow groundwater or be washed into surface water bodies during storms.

Disturbance of Natural Drainage Patterns - Altering the landscape for foundations or access roads may redirect stormwater flows, potentially increasing erosion or flooding near the riverbank.

Uncontrolled Waste Disposal - Improper disposal of construction waste (e.g., cement bags, plastics, oils) may contaminate nearby soils and leach into groundwater or surface water.

Pit Excavation Near Water Table - If deep pits are dug for anaerobic reactors or settling tanks, and the water table is shallow, there's a risk of groundwater intrusion or contamination if protective measures aren't in place.

5.5.2 Impacts on Aesthetic Value

In the case of the construction works, there will be minimum disturbance to the land and its natural formation, especially related to the excavation works for DTF

5.5.2.1 Soil Erosion

Soils will be excavated due to the activities, like: soil removal, backfilling, compacting, excavation and disposal of surplus soil, etc. This applies to project works, especially for the extension of water pipes, where surface soil will be disrupted and excavations will generate excess material (i.e. rocks and soils) to be disposed in spoil tips. However, the majority of the excavation materials, particularly for the waste water pipes will be used for refilling.

5.5.2.2 Water Pollution Impacts

Soil erosion from earthworks and runoff of ground rock materials from digging might be drained into receiving water bodies causing increased turbidity possibility in the rivers (i.e., Dawa). Special attention should be paid to protect water bodies and thus construction activities shall be made within some distance away from water body (i.e., Dawa rivers) and project construction activities. The proposed project sites, are at least 800m away from the river.

5.5.2.3 Air Quality

Some of the project activities such as excavation of trenches, will generate dust. This will impact the quality of air in local target area of the project. However, this type of impact could be short in duration and would not pose a threat to human health. The proposed sites are at least 700m away from the closest settlement, i.e., Ladan and Kabasa IDP camps.

5.5.2.4 Noise Pollution

There were no cases of noise pollution at the proposed project site. However, due to the expected construction works noise levels are likely to increase temporarily and might not be a major problem to the residents given that the closest settlement is approximately 700m away from the DTF site proposed by Earth Water Ltd and 6km away from the DTF site proposed by CES consultants.

5.6 Negative Impacts on Biological Environment during the Construction Phase

5.6.1 Vegetation Clearing Impact in Dollow

Vegetation clearing during construction to leave space for the DTF transmission pipes, distribution pipes, and trenches is unavoidable. The largest areas to be impacted are the work strip for transmission pipelines. However, as most of the land is covered by alien plant species, the overall loss of vegetation by land clearing is limited. Hence, the magnitude of the impact on the vegetation is basically at low negative. The sites proposed for DTF have no trees therefore, loss of trees is limited for this infrastructure. A DTF suitable for the population of this area would require approximately 2 acres. This includes space for core treatment units, sludge composting, effluent reuse, access roads, and buffer zones for future expansion.

Table 21: Approximate DTF Key Component Dimensions

Component	Estimated Size (m^2)	Notes
Settling tanks	100–150 m^2	For solid-liquid separation; may be baffled
Anaerobic reactors	120–180 m^2	Anaerobic baffled or up flow reactors for primary treatment
Sludge drying beds	800–1,000 m^2	Multiple beds for dewatering and stabilization
Composting zone	500–800 m^2	Windrows or static piles for reuse or safe disposal of stabilized sludge
Effluent reuse zone	500–700 m^2	Irrigation plots or reed beds for treated water reuse or polishing
Access roads and buffer	1,000–1,500 m^2	Internal circulation and fencing include truck turning radius and stormwater control

These figures are adaptable based on technology choice, population served, and operational strategy

5.7 Negative Impact on Socio-economic Environment during the Construction Phase

5.7.1 Disruption of Activities

During the construction phase, there might be traffic caused by deliver of the materials to the site. Thus, this impacts the movement of goods and people in the target area though this will be minimal. As stated in sub-chapter 4.3.10, traffic is rarely experienced in the study area, therefore construction of the DTF will have minimal impact to traffic.

5.7.2 Impact on Public Health

The potential impact on health and safety will be linked to the risk that people might fall into trenches or excavations. Additionally, the project will employ causal workers with limited knowledge and skills on health and safety guidelines, which can be considered as an added risk. Therefore, the impact is certain but medium, especially during construction of shallow wells and transmission pipes.

5.7.3 Impact on Occupational Health and Safety

Construction workers are prone to accidents resulting from construction activities. These accidents may have acute impacts depending on their severity and nature. With regards to this, mobilization and construction activities of the proposed water extraction can result in accidental injuries or death, which could negatively impact the workforce. The impact is certain and medium.

5.7.4 Solid Waste Generation Impacts

Solid wastes including construction materials such as cement bags, timber, pipe cuttings, metals, food remains, broken equipment, and debris usually found near building sites and campsites during the construction. If these are left on the sites or nearby surroundings without being cleaned and being properly disposed of, the environment impact can be serious

5.7.5 Gender Based Violence, Sexual Exploitation and Abuse/Sexual Harassment

During this phase could be increased social interaction between community members, casual, skilled workers who are coming from different places, therefore, this may result in occurrence of GBV, sexual exploitation and abuse (SEA) and sexual harassment (SH) as well attitude changes among the local community. This impact is medium term and of high significance.

5.7.6 Child Labour

According to the consultation during the stakeholder engagement, most of the community members were not aware of children's rights. Also, it was observed that children in the IDP camp perform causal works to support the livelihoods of their families. Thus, the significance of this impact is assessed to be medium.

5.7.7 Disease Spread (Communicable Diseases)

The project will be implemented in Dollow town camp where the community has inadequate health facilities. Therefore, due to the interaction with hired workers and community, there could be an increased public health risks, including an increase in prevalence of sexually transmitted disease (STD) such as HIV/AIDS, Tuberculous, among others.

5.7.8 Labour Influx

The labour influx of job opportunity seekers is associated with social crimes which can disturb the social order and even lay ground for occurrence of conflict cases in the IDP camp. However, the impact intensity is low due to the low number of workers expected on the project. The approximate number of jobs expected from construction of a DTF is 70. This is broken down in sub-chapter 5.4.4.

5.8 Negative Impact of Use of Various Construction Material

Some of the construction material to be used have negative impacts to the environment. Use of these materials have impact to the biological, physical and socio-economic environment. The impacts are outline below:

Material	Direct Impacts in Dollow	Indirect Impacts (Impacts are Experienced Elsewhere)

Timber	Carbon emissions from transportation Waste generation from offcuts and damaged wood	Deforestation and loss of biodiversity lead/habitat destruction Carbon emissions from logging and transportation
Sand	Riverbed degradation and altered flow from sand harvesting Erosion and increased sedimentation	
Cement & Concrete	Contributes to increase of carbon footprint during transportation due to emission of Co_2 Significant water use during curing	Contributes to increase of carbon footprint from production to transportation due to emission of Co_2
Aggregates		Landscape alteration and visual blight at quarry sites Noise and vibration from quarrying
Steel & Metals	Waste and corrosion: Poor storage or disposal leads to rusting and environmental contamination.	Contributes to increase of carbon footprint during manufacturing due to high consumption of fossil fuels. Iron ore extraction can cause land degradation and water pollution
Paints & Chemicals	Chemical leaching and Volatile Organic Compounds (VOCs) emissions Health risks (respiratory, skin irritation) Soil and groundwater contamination from improper disposal	

5.9 Impacts on Socio-Economic Environment during the Operation Phase

5.9.1 Health and Safety

During the operational phase, the operation and maintenance committee will conduct facilities maintenance activities, including checking the cracks, improving the yield by deepening or removing infiltrated sand practices and the maintenance of the lifting device. Thus, skilled workers are required to accomplish these tasks. Consequently, performing these activities may result in accidents, injuries and other occupational hazards. The leaks in water pipes may also contaminate the water supplied.

5.10 Decommissioning Phase

It is anticipated that the lifespan of the project will be at least over 50 years and probably considerably longer if the facilities are built with high-quality materials and well-maintained. However, it will be necessary to decommission the treatment facility and its components when the operation phase comes to an end or when they pose a threat to life. Other reasons for decommissioning may be that the water supply sources in the target areas become inadequate due to changes in climate and/or water quality issues that cannot be managed. A decommissioning plan will be prepared before the start of the decommissioning operations, taking into account the applicable legislation and environmental/social conditions.

5.10.1 Decommissioning Process

The decommissioning of the water supply and sanitation facilities may include the demolition of all or parts of the structures. The wastes resulting from the decommissioning need to be disposed of at approved locations.

5.10.2 Potential Impacts

Decommissioning may involve excavation and other activities, which will lead to a temporary increase in noise and dust emission. The decommissioning activities may also result in the creation of both hazardous and non-hazardous waste, which needs to be handled according to the waste management policies. The decommissioning works will involve occupational health and safety risks similar to those of the construction phase.

6 PROPOSED MITIGATION MEASURES

6.1 Introduction

This chapter presents mitigation measures to avoid, prevent or reduce for adverse impacts of the proposed decentralised treatment facility for Dollow town and surrounding IDPs. It also describes opportunities for enhancement of positive impacts. The mitigation measures described in this chapter include both the construction and operation phases. The details of how the mitigation measures will be implemented and monitored are further described in the Environmental and Social Management and Monitoring Plan

6.2 Physical Environment

6.2.1 Topography and Landscape

6.2.1.1 Impacts on Aesthetic Value

Construction Phase

- Limitation of vegetation clearance for the waste water pipelines to the required work strip; and
- Restoration of construction sites to their natural state (pre-construction condition) through landscaping and tree planting particularly where trees were cut.
- Ensure all construction debris, excavated soils, and surplus materials are collected and disposed of at designated, approved disposal sites.

Operation Phase

- Sensitise the local communities to plant trees around the project area and other suitable areas to control soil erosion.

6.2.2 Geology and Soils

6.2.2.1 Soil erosion

Construction Phase

- Limits to the clearing of vegetation as much as possible. In other words, no clearing of vegetation shall be undertaken outside of marked areas.
- Use of excavated materials for backfilling of the trench section around the pipes; Spoil
- earthwork/rock should be disposed of in appropriate approved areas;
- Areas where construction activities have been completed and where no further disturbance would take place are rehabilitated through re-vegetation;
- Ensure that the construction workers are aware of the remaining vegetation, which must not be damaged; and
- Implement water and soil conservation practices.

Operation Phase

- Implement soil conservation mechanism within and around project area
- Ensure livestock and other animals are not watered around the DTF

6.3 Climate and Air Quality

6.3.1 Air Pollution

Construction Phase

- Use of protective clothing like dust masks for construction workers;
- Regularly spray water on construction sites to control dust; and
- Adopt alternative source of energy (i.e., solar) to power the waste water treatment facility.

Operation Phase

- Ensure that the generator should be regularly serviced.
- Use effective ways to minimize the emissions of Sulphur oxides and Nitrogen oxides.

6.4 Water Resources

6.4.1 Water Pollution

Construction Phase

- Collect waste materials and segregate them at generation sites in accordance with their types (i.e., organic, inorganic waste);

- Avoid unnecessary soil erosion at the community water sources; and
- Provide initial and continuous construction workforce training in handling and using waste segregation and appropriate waste disposal methods.

Operation Phase

- Ensure septic and pit latrines are not constructed near the wells in the future
- Manage the pipe leaks to avoid contamination
- Ensure DTF operation is well monitored and no spills during latrines desludging
- Ensure Parameters for DTF waste water is well monitored and regularly analysed to ensure they are within required standards before releasing to environment

6.4.2 E-Waste

Construction Phase

- Develop waste management plan
- Sensitize workers on how to handle e-wastes

Operation Phase

- Implement waste management plan
- Establish mechanisms to handle e-waste from the solar power.

6.5 Biological Environment

6.5.1 Vegetation Clearing Impact

Construction Phase

- Vegetation clearing should be minimized as much as possible
- Limit vegetation clearing for water pipelines;
- Use only indigenous plant species for re-vegetation. Some indigenous and resilient species include moringa, neem, acacia, senna occidentalis and calotropis procera
- Plan and implement a tree planting program that shall be implemented in project areas in partnership with local stakeholders; and
- Awareness campaigns and enforcement of a worker's code of conduct for the protection of biodiversity.

Operation Phase

Maintenance activities in this phase are crucial for the longevity of the facility through the prevention of certain activities. Some of the preventative measures to be taken include:

- Avoid bush burning due to settlement or agricultural encroachments.
- Halt vegetation cut for fire woods, charcoals, etc.
- Avoid livestock watering near the water source

6.6 Impacts from Construction Materials (Timber, Sand, Cement, Aggregates, Steel, Paints/Chemicals

Construction Phase

- Minimize cement wastage through careful batching and mixing practices.
- Store paints, solvents, and chemicals in secure, ventilated, and bunded areas to prevent leaks and spills.
- Reuse or recycle steel and metal off-cuts where possible; dispose of unusable scraps through licensed dealers.

6.7 Socio-Economic Environment

6.7.1 Disruption of Activities

Construction Phase

- Collaboration between local government and DWMC in activities such as acquisition of land for construction of the DTF.

6.7.2 Public Health

Construction Phase

- Close open trenches as quickly as possible to reduce risks;
- Ensure notification (signage) are visible at on-going construction activities sites; and
- Disseminate traffic management plans in the project areas, through campaigns to the public in IDP camp and host community and public areas.

6.7.3 Occupational Health and Safety (OHS)

Construction Phase

- Develop health and safety management plan (HSMP);
- Ensure compliance to occupational health and safety plans;
- Provide information, instructions, and trainings to enable employees to work without risks;
- Make awareness campaigns for workers about the safety issues related to their activities, hence, ensure provision, and usage of PPE; and
- Ensure safe and good working conditions for all workers.

Operation Phase

- Local government authority and water operator shall conduct toolbox meeting on OHS for workers prior to operation and maintenance works; and
- Provide workers appropriate PPE and enforce its effective usage during O&M works.

6.7.4 Solid Waste Generation Impacts

Construction Phase

- Burning of waste on-site shall not be allowed;
- Waste collection bins will be provided at the appropriate sites for temporary waste storage and ensure regular collection and disposal;
- Collaborate with waste collection company in target districts.
- Prohibit indiscriminate dumping of waste on-site or in surrounding areas.
- Train workers on proper waste handling and spill prevention.

Operation Phase

- Ensure the sludge from the DTF is well dried and utilized for tree fruit or banana farming

6.7.5 GBV/SEA/SH

Construction Phase

- The Contractor's code of conduct should be translated into Somali language and each worker should be sensitized and signed prior to the commencement of works;
- Train all workers on existing laws and policies on GBV and other sexual offences; and
- Collaborate with local GBV service providers to effectively implement related activities.

Operation Phase

- Provide Code of Conduct to all workers and sensitize them; and
- Closely work with local authority to establish zero tolerance policies on GBV/SEA/SH.

6.7.6 Child Labor

Construction Phase

- The Contractor will ensure to register all workers by checking their birth certificates and/or identity cards; and
- Confirming that children and minors are not employed directly or indirectly in the project.

Operation Phase

- Encourage back to schools' campaigns and enrolment of new students.
- Employment only for people above 18 years

6.7.7 Disease Spread (Communicable Diseases)

Construction Phase

- Conduct awareness campaigns on hygiene and sanitation and how diseases spread; and
- Information dissemination about the danger of STDs to the community will be done throughout the period of the project.

6.7.8 Labour Influx

Construction Phase

- For both skilled and unskilled labour available locally should be given the first priority.

Operation Phase

- Ensure that locals are given priority and where improve their capacity by offering

them more trainings

6.7.9 Chance Finds/Cultural Heritage

Construction Phase

- Develop chance find procedures;
- While no cultural heritage structures were observed or known to exist at the proposed project sites, the contractor shall make sure to inform all workers should any cultural features may be found should be reported by the project team to the local authority.

6.7.10 Security Arrangements During Implementation

The successful implementation of the Project, which covers the rehabilitation of three shallow wells and fourteen water points, provision of generators and construction of 140 flood proof latrines, relies on both technical expertise and strong security arrangements. Given sensitive border location, complex clan dynamics, and insurgent threats, a comprehensive framework is required to mitigate risks such as insecurity, mistrust, and tensions between host and displaced populations. Proactive measures, including coordinated risk assessments, engagement of trusted local facilitators, transparent communication, and functional grievance redress committees, will safeguard staff, assets, and communities. Clearly defined roles for MoEWR, UNICEF, local leaders, and contractors will reinforce accountability and trust, ensuring smooth, inclusive, and secure project delivery.

a) Security Risk Assessment

Before project activities commence, a detailed security risk assessment should be conducted before the commencement of the implementation process to map threats, vulnerabilities, and risks in the proposed intervention sites. This assessment helps identify potential challenges such as clan-related tensions, militant activity, theft, or sabotage. The findings will guide the development of a Security Management Plan tailored to the local environment, ensuring preparedness and context-specific measures.

b) Site Access Control and Perimeter Security

Construction and operational sites should be secured with proper fencing, controlled entry and exit points, and visible identification systems. A visitor log should be maintained, and identification badges issued to staff, contractors, and authorised visitors. Trained guards should monitor all access points continuously, preventing unauthorised entry and safeguarding valuable equipment and materials.

c) Coordination with Local Authorities and Elders

Sustained continuous engagement with district authorities, Jubaland security forces, and community elders is essential for smooth project implementation. Security committees involving these stakeholders can help mediate disputes, reduce tensions, and ensure acceptance of project activities. Maintaining open communication channels allows for early resolution of grievances and quick responses to emerging threats.

d) Deployment of Professional Security Personnel

Trained and vetted security guards should be deployed to protect project sites, staff, and assets. Wherever possible, local guards should be recruited, as they know local dynamics and foster community trust. Security staff must be equipped with radios, uniforms, and flashlights, and should receive training on human rights, rules of engagement, and professional conduct.

e) Movement and Transport Security

All project-related movements should follow structured journey management protocols. Vehicles should be clearly marked, routes pre-planned, and check-in/check-out systems enforced. High-value equipment transport should be coordinated with local police or Jubaland forces to ensure safe passage. By standardising movement procedures, risks such as ambushes or theft can be minimised.

f) Construction Site Security Protocols

Construction sites should have robust security systems in place, including temporary lighting and, where feasible, surveillance equipment such as CCTV. Equipment and construction materials should be stored in lockable, guarded compounds to prevent theft. Regular security briefings with workers and contractors will also ensure awareness and compliance with safety rules.

g) Community Engagement and Conflict Sensitivity

Local communities must be engaged throughout project implementation to build trust and reduce the risk of sabotage. Transparent recruitment of local labour will promote inclusivity and minimise clan-based grievances. Establishing a grievance redress mechanism provides communities with a structured way to express concerns, ensuring disputes are resolved constructively rather than escalating into conflict.

h) Emergency Preparedness and Evacuation Planning

A comprehensive Emergency Response Plan should be developed to address potential risks, including armed clashes, protests, or natural disasters. Staff and contractors should be trained in first aid, evacuation drills, and safe assembly procedures. Identifying evacuation routes and safe havens in advance ensures that the project can respond swiftly to crises, protecting both personnel and assets.

i) Information and Communication Security

Proper management of project information is crucial to avoid misinformation or the spread of rumours. Sensitive details regarding security or project operations should be restricted to authorised personnel only. Secure communication channels, including radios or mobile-based alert systems, should be used to share timely updates with staff, contractors, and community leaders during emergencies.

Integration with Humanitarian Security Standards

Security arrangements should align with international humanitarian security frameworks. The focus should be on “not harm” principles, ensuring that project activities do not unintentionally increase tensions. Regular updates and reviews of security protocols, based on ongoing threat monitoring, will help maintain safety and resilience throughout the project’s implementation.

7 ENVIRONMENTAL AND SOCIAL MANAGEMENT AND MONITORING PLANS

7.1 Introduction

An Environmental and Social Management and Monitoring Plan (ESMMP) provide the framework for management and mitigation of impacts anticipated from the proposed project. This ESMMP has been prepared in accordance with national and international requirements.

7.2 Purposes

The purpose of the ESMMP is to bring the project into compliance with applicable national environmental and social legal requirement and AfDB's safeguard policies and standards. Also, the plan outlines mitigation and monitoring actions required to avoid, minimize, mitigate adverse environmental, and social impacts, or to enhance the project beneficial impacts.

7.3 Roles and Responsibilities of Institutions

The roles and responsibilities for ESMMP will be split between several organizations, depending on their respective activities, which are being executed at various stages (i.e. Federal, State and Local Government). However, the Federal MoEWR as the proponent has the overall responsibility for the implementation of this ESMMP.

Table 22: Institutions Involved in Environmental Management of the Project

Institution	Roles and Responsibilities
Ministry of Energy and Water Resources of Federal Government of Somalia	•Overall mandate to monitor, assess and regulate water resources. •Approval of the water abstraction permits. •Lead the management and coordination of water projects •Overall oversight and policy guidance
African Development Bank	•Ensure that the African Development Banks Safeguard OS have been observed and implemented appropriately. •Support the project with funding and implementation support
Ministry of Environment and Climate Change	•Regulate environmental aspects related to the project. •Legally mandated to handle certain critical environmental issues. •Monitor and supervise the ESIAs compliance.
Ministry of Energy and Water Resources of Jubbaland	•Identify key stakeholders •Prioritize water resources investments •Planning and Implementation of the project •Identification of mitigation measures of the environmental and social issues. •Monitor the progress of the project activities. •Identification of water and sanitation facilities.
Dollow Local Government and Dollow Water Company	•Mobilize various stakeholders, including the local communities/beneficiaries. •Monitoring and supervision support for the implementation of the project.
Contractors	•Ensuring compliance with all relevant national and AfDB's ISS including adhering to all environmental and socio-economic mitigation measures specified in this ESIA. •Manage potential environmental, socio-economic, health and safety impacts of all contract activities.

7.4 Environmental and Social Management Plan

To minimize adverse impacts of the project, the ESIA team developed an ESMP that demonstrates various potential impacts, appropriate mitigation measures, period of impact management, responsibilities, resources required and estimated costs are proposed in the table below.

Table 23: Environmental and Social Impact Management Plan

Potential Impacts	Proposed Mitigation/ Enhancement Measures	Responsible Institution	Estimated Budget (US$)
Construction Phase			
Physical Environment			
Visual impact on topography and landscape	• Limit vegetation clearance for the wastewater pipelines to the required work strip; and • Restore construction site to their natural state (i.e., pre-construction condition). These include tree planting and landscaping activities	Contractor	**600**
Soil erosion	• Limit vegetation clearing as much as possible. In other words, no clearing of vegetation shall be undertaken outside of marked areas; • Use excavated materials for backfilling of the trench sections around water pipelines; • Dispose spoil earth/rock into appropriate designated areas; • Rehabilitate through re-vegetation where construction activities disturbed the ecosystem; • Sensitize construction workers on vegetation conservation; and Implement soil conservation practices.	Contractor	**1000**
Air quality	• Use protective clothing like dust masks for construction workers; • Spray water on construction sites to control dusts; and • Undertake regular maintenances for generators to reduce CO2 emission.	Contractor	**700**
Water pollution	• Prevent run-off loaded with sediment and other harmful materials from the site from discharge to river; • Manage water containing pollutants such as cement, concrete, chemical and fuel from site where applicable;	Contractor	**500**
Noise pollution	• Workers should be provided with adequate PPE item such as ear muffs as appropriate; and • Works should be performed during day hours (from 8:00am - 4:30pm).	Contractor	**500**
Biological Environment			
Vegetation Clearing Impact	• Vegetation clearing should be minimized as much as possible; • Limit vegetation clearing for water pipelines to the required work strips;	Contractor	**1,000**

	• Use only indigenous plant species for re-vegetation; • Tree planting program shall be planned and implemented in project areas in partnership with local stakeholders; and • Awareness campaigns and enforcement of a worker's code of conduct for the protection of biodiversity.		
Socio-Economic Environment			
Disruption of activities	• Collaborate with local government authorities where necessary for activities such as traffic control during delivery of material s	Contractor	**200**
Impacts on Public Health	• Close open trenches as quickly as possible to reduce risks; • Ensure notification (i.e., signage) at ongoing construction activity sites; and • Disseminate traffic management plans in the project areas through campaigns in the IDP camps, host communities and general public.	Contractor	**1000**
Occupational Health and Safety	• Ensure compliance to occupational health and safety plans; • Provide information, instruction and trainings to enable employees to work without risks; • Make awareness campaigns for workers about the safety issues related to their activities, hence ensure provision and usage of PPE items; and • Ensure safe and good working conditions for all workers.	Contractor	**1000**
Solid waste generation impacts	• Burning of waste on-site shall not be allowed; • Waste collection bins will be provided at appropriate place of the sites for temporary waste storage; • Collaborate with a waste collection company in the target districts; • Collect wastes and segregate at generation sites in accordance with their types (i.e., organic and inorganic wastes); and • Provide initial and continuous construction workforce training in handling with waste segregation and appropriate waste disposal.	Contractor	**600**
GBV/SEA/SH	• The Contractor's code of conduct should be translated into Somali language and each worker should be sensitized and signed prior to the commencement of works;	Contractor	**800**

	• Train all workers on existing laws and policies on GBV and other sexual offences; and • Collaborate with local GBV service providers to effectively implement related interventions.		
Child labour	• The Contractor will ensure to register all workers by checking their birth certificates and/or identity cards; and • Confirming that children and minors are employed directly or indirectly on the project.	Contractor	**100**
Disease Spread	• Conduct awareness campaigns on hygiene and sanitation and how diseases spread; and • Information dissemination about the danger of STDs to the communities will be done throughout the period of the project.	Contractor	**300**
Labour influx	• Employment opportunities will be offered to local community and hiring of workers from the IDP and vulnerable host community will be encouraged.	Contractor	**500**
Chance finds/ Cultural heritage	• The contractor shall make sure to inform all workers should any cultural features may be found should be reported by the project team to the local authority.	Contractor	**500**
OPERATION PHASE			
Physical Environment			
Impacts on aesthetic value	• Sensitize the community to plan trees around the DTF site and other suitable areas	Contractor	**1,500**
Soil erosion	• Implement soil conservation mechanism around DTF area and ensure the drainage channel to the river is well constructed and maintained	Contractor	**700**
Air pollution	• Ensure that the DTF sludge holding chambers are airtight not to allow odour out	Contractor	**900**
Water pollution	• Ensure the desludging process is professional done and the truck is well maintained to avoid spillage during transport to DTF • Ensure the DTF has no leaks and it's not overloaded • Frequent testing of quality of treated waste water before realising to the river or environment • Ensure the drainage within the DTF is well done to avoid flooding during rainy seasons	Contractor	**1,500**
Diseases and other health	• Provide effective PPEs	Contractor	**500**

related issues to the DTF workers	• Offer training on facility operation and management and health and safety measures		
Socio-Economic Environment			
GBV/SEA/SH impacts	• Establish effective mechanisms that safeguards women and girls; and • Undertake continuous sensitization and awareness raising program on GBV/SEA/SH prevention and protection of vulnerable and minor groups.	Contractor	**1,000**
Disease Spread	• Avoid using the water discharged from DTF for household activities • Conduct community awareness campaigns on promotion of sanitation and hygiene. • Fencing the DTF to prevent the public from accessing the DTF site especially the children	Contractor	**600**
Total			**16000**

7.5 Environmental and Social Monitoring Plan

The environmental and social monitoring plan is an important tool and process in relation to environmental and social management as it provides the basis for rational management decisions regarding impact control. The monitoring plan will help in assessing the effectiveness of the proposed mitigation measures and protection of the environment based on standards used at national and international levels. It will also help redress emerging issues that were not predicted during the ESIA study. The monitoring plan will be undertaken to meet the following objectives:

- To check whether mitigation/enhancement measures have been adopted and effectively in practice;
- To provide information on the actual nature and extent of key impacts and appropriateness of proposed mitigation measures.

The monitoring activities of the ESMP can be undertaken into three categories: internal, external monitoring, and audits. The internal monitoring process should be led by contractors, and line ministries. The findings of the internal monitoring will be regularly reported on monthly, quarterly and annual basis. Whereas, the external monitoring shall be done by the AfDB. The table below presents the environmental and social management monitoring plan for the project.

Table 24: Environmental and Social Impact Monitoring Plan

Parameters to be monitored	Performance Indicator	Means of Verification	Monitoring Frequency	Responsibility
Construction Phase				
Physical Environment				
Minimize vegetation clearance by clearing and demarcating work areas.	% of vegetation conserved and/or restored	Review of reports, field verification and observation	Daily, Monthly	**Contractors, PMT**
Use excavated materials for backfilling of the trench.	Total area (km/m) of excavated land backfilled	Field verification and observation	Daily and Weekly	**Contractors, PMT**

Spoiled earth/rock should be disposed of appropriate areas.	% of weight of spoil earth/ rock deposed of appropriated areas.	Field verification and observation	Daily, Weekly, Monthly	**Contractors, PMT, Municipalities**
Create awareness/ orientation on protection of remaining vegetation cover for all workers	# of awareness/ orientation sessions conducted for all workers	Field verification and observation	Daily, Weekly, Monthly	**Contractors, PMT**
Implement soil erosion control measures	# of soil erosion control measures placed	Field verification and observation	Daily, Weekly, Monthly	**Contractors, PMT**
Biological Environment				
Limit vegetation clearing for water pipelines to the required work strip.	% of vegetation conserved and/or restored	Field verification and observation	Daily, Weekly, Monthly	**Contractors, PMT**
Socio-economic Environment				
Prioritize employment of IDP residents and host communities	# of workers employed (disaggregated by type of resident (IDP/Host)	Field verification and observation, employment records	Daily, Weekly, Monthly	**Contractors, PMT**
Disseminate job opportunities through public gathering places	# of job opportunities gathering held with IDPs and host community	Field verification and observation	Daily, Weekly, Monthly	**Contractors, PMT**
Provide trainings on GBV/SEA/SH prevention for all project workers	# of workers trained on GBV/SEA/SH	Training Reports	Monthly	**Contractors, PMT**
Conduct awareness raising campaigns on child labour and labour influx	# of awareness forums on child labour and labour influx conducted	Reports, IEC items	Monthly	**Contractors, PMT**
Allocate quota for female employment opportunities	% of female workers employed	Field verification and observation, employment records	Daily, Weekly, Monthly	**Contractors, PMT**
Provide drinking water and sanitation facilities for all workers.	# of water and sanitation facilities provided at the sites	Field verification and observation	Daily, Weekly, Monthly	**Contractors, PMT**
Establish a grievance redress mechanism for	# of grievance cases reported through the	Field verification, observation,	Daily, Weekly, Monthly	**Contractors, PMT**

workers in all sites.	established mechanism	grievance log forms		
Sensitize all workers on occupational health and safety	# of sensitization meetings held for all workers on occupational health and safety	Field verification, observation	Daily, Weekly, Monthly	**Contractors, PMT**
Provide appropriate PPE items on noise minimization for all workers	# of workers using PPE items for noise control	Field verification, observation	Daily, Weekly, Monthly	**Contractors, PMT**
Collect solid wastes generated by workers	# of waste collection facilities (i.e. dust bins) installed in the site	Field visits, observations	Daily, Weekly, Monthly	**Contractors, PMT**
Operation Phase				
Socio-Economic Environment				
Occupational Health and Safety	# of workers using OHS materials	Field verification, observation	Quarterly, annually	**Local gov't authorities**
Establish mechanisms for safeguarding women and girls	Women safeguarding mechanism established	Observations	Quarterly, annually	**Local gov't authorities**

7.6 Estimated Costs for Implementing the ESMMP

This is an estimated cost from the Consultant, but could be revised by the stakeholders prior to project implementation phase. In order to effectively implement the environmental and social management measures indicated by the ESMP, the project stakeholders should allocate and provide reasonable costs. An indicative cost has been provided in Table 8.6 that will cover the costs related to capacity building, GRM, and stakeholder coordination and consultation meetings, and cost for annual environmental and social audits. Furthermore, the costs for mitigation and enhancement measures will be integrated into the construction cost.

Table 25: Estimated Budget to Implement ESMP

No	ESMMP Requirements	Budget Basis and Assumptions	Total Cost (US$)
1	Capacity building for PIU/PMTs	Training session will be held in the Dollow town	**2,000**
2	Stakeholder engagement workshops and meetings in subproject	Continues stakeholder engagement throughout the implementation of activities	**2,000**
3	Grievance redress mechanism and its functionality	Effective grievance mechanisms for both public and workers in sub-project	**5000**
4	Environmental and social impact monitoring	Allocated amounts for E&S plans are prioritized and executed by all stakeholders	**5,000**
5	Environmental and social audits	An independent environmental and social audit	**3,000**
6	Environmental restoration and tree planting	Based on environmental destruction	**3,000**

8 PUBLIC CONSULTATIONS AND STAKEHOLDER ENGAGEMENT

8.1 Introduction

Stakeholder consultations were carried out to get their views and inputs on various aspects that were relevant to the project. The consultations focused on the scope of the project and expected roles from the stakeholders. The consultations were held with the relevant ministries and agencies. District level stakeholders as well as the project's beneficiary local communities, were also consulted. Consultations involved highlighting project activities and soliciting their opinions through open discussion forums, interview and open dialogues with key informants with relevant expertise and IDP camp meetings with community members.

8.2 Objectives

The purpose of the stakeholders' consultations was to provide an overview of the project to the relevant ministries, agencies, and all the communities residing in areas where the project activities will be implemented and therefore will have impact on them. It also helps them to understand how the project will operate to the highest possible environmental, social and health standards prior, during and after the construction and/or rehabilitation of the water supply and sanitation related interventions.

The specific objectives of the consultations were:

- To obtain an understanding of the number and types of stakeholders in target areas;
- To provide an information about the project and to tap stakeholders' knowledge on key environmental and social baseline information in the project area;
- To get views of the stakeholders regarding the environmental and social concerns and opinions about the project.
- To discuss potential impacts and verify significant or major environmental, social and health impacts identified;
- To inform the process of developing appropriate mitigation and management measures as well as institutional arrangements for effective implementation; and
- To inform stakeholders about the engagement process and grievance management.

Stakeholder consultations and publication participation during the ESIA process were conducted in line with the requirements of the AfDB. According to the AfDB ISS, OS10, Section III consultation and participation during the preparation of ESIA study, meaningful stakeholder consultation is crucial and an integral part of the assessment.

8.3 Stakeholder Identification and Analysis

8.3.1 Stakeholder Identification

In regards to the AfDB's updated ISS OS referred a "stakeholder" to individuals or groups who are affected or are at risk of being affected by operations, directly or indirectly and/or may have an interest in the operation. To develop an effective stakeholder involvement project, it is necessary to determine exactly who are the stakeholders and their roles, interest, objectives and priorities specific to the project. The ESIA consultant formulated a stakeholder matrix and identified key stakeholders who were engaged during the study. A stakeholder engagement plan was drafted and included in the Environmental and Social Management Plan (ESMP). The study targeted individuals, groups, institutions and communities that have a stake in the proposed water supply and sanitation improvement project. Thus, only such entities as identified in the stakeholder analysis were selected to participate in the consultation process.

The following aspects were considered when identifying and engaging stakeholders for the ESIA:

- Who are the most vulnerable among the potentially impacted, and are special engagement efforts necessary?
- Which stakeholders can be best assistant with the early scoping of concerns and impacts?
- Who could be adversely affected by environmental and social impacts?
- Which stakeholders will strongly support or oppose the changes that the project

will bring and why?

8.3.2 Stakeholder Analysis

The stakeholder categories and sub-categories identified are presented in the table below.

Table 26: Stakeholder Matrix

Entities	Stakeholder	Key Roles and Responsibilities
Federal Level	Ministry of Energy and Water Resources	•Overall mandate to monitor, assess and regulate water resources. •Approval of the water abstraction permits. •Lead the management and coordination of water projects •Overall oversight and policy guidance
	Ministry of Environment and Climate Change	•Regulation of the environmental aspects of the project. •Legally mandated to handle certain critical environmental issues. •Monitor and supervise the ESIAs compliance.
State Level	Ministry of Energy and Water Resources of Jubbaland	•Identify key stakeholders •Prioritize water resources investments •Planning and Implementation of the project •Identification of mitigation measures of the environmental and social issues. •Monitor the progress of the project activities. •Identification of water and sanitation facilities.
State Level	Security Agencies	•Maintain safety and order around project sites •Respond to conflict or theft risks during implementation
Local Government	Dollow Local Government	•Mobilize various stakeholders, including the local communities/beneficiaries. •Monitoring and supervision support for the implementation of the project.
Community Groups	Women Associations, Representatives of IDPs,	•Participate in consultation meetings •Present inputs and concerns form their communities •Raise their needs and prioritize during consultations
Community Groups	Religious Institutions	•Provide moral and cultural guidance •Facilitate community trust and peaceful engagement •Support conflict resolution and social cohesion
Funder	African Development Bank and UNICEF	•Ensure that the African Development Banks Safeguard OS have been observed and implemented as appropriate. •Support the project with funding and implementing support •UNICEF to Monitor the implementation process
Funder	Local and International NGOs	•Support implementation and community outreach • •Provide technical expertise and training • •Promote OHS awareness and safe practices • •Assist in labour mobilization and community engagement

8.3.3 Stakeholder Engagements

Different methods were adopted to engage the stakeholders during the preparation of this ESIA. These were taken up depending on two major premises: the type of information required, and the number of participants involved in the data collection process. These

methods were used to inform the development of an appropriate water supply and sanitation within the proposed project areas. Here-under are the methods that guided the stakeholder engagement process.

Table 9.4: Stakeholder Engagement Methods

Target Groups	Engagement Method
Ministries of Energy and Water Resources at Federal and State levels	• Face to face consultative meetings • Key Informant Interviews (KIIs)
Dollow Local Government	• Face to face meetings • Key Informant Interviews (KIIs)
Communities/Project Beneficiaries	• Face to face meetings • Focus group discussions
NGOs and other humanitarian organization in the area	• Face to face meetings

Table 27: Number of Participants

Date	Mode of Consultation	Stakeholders	Venue	No. of Participants (F/M)	Total
20/05/2025	FGD, KII	Communities from Kabasa, Qansaxley, Kaharey, Ladan & Qurdubey	Community Centres within IDP sites	17F / 23M	40
20/05/2025	KII	Dollow Water Company	Dollow Water Office	2F / 4M	6
21/05/2025	Community Meeting	Ladan IDP Camp	Ladan Social Hall	5F / 11M	16
25/05/2025	Institutional Meeting	Ministry of Energy & Water Resources & Dollow Water Management Co.	Dollow Water Company Hall	2F / 3M	5
26/05/2025	Meeting with Local Authorities	Chiefs & Elders, District Commissioner		8M	8
26/05/2025	Consultative Session	IOM, UNICEF, FAO, NRC, SHRA, UNHCR, NCA		3F / 13M	16

8.3.4 Consultation Meetings with the Government Stakeholders

The ESIA team had a first consultation meeting with the local government at Dollow town to inform the Government about the project, its objectives, the intended activities, and the related studies to be undertaken, including the ESIA and ESMP. The main objective was to solicit, potential impacts and risks and possible mitigation measures and also to solicit initial community responses. The stakeholders were able to express comments and queries during the consultation meetings.

Furthermore, the ESIA team had several Key Informant Interviews (KIIs) with different stakeholders, administration chiefs and the deputy mayor of Dollow. The purpose of engaging these officials was that they had detailed information related to the project that could be used improving the implementation of the project

8.3.5 Consultation with Local Government

The project will be implemented in Dollow district. Due to this the deputy mayor and other key officials of Dollow local government authority was consulted about the project to get input, feedback, concerns and their expectations.

8.3.6 Consultation with Communities

The ESIA team also consulted with communities living in targets districts and/or sites of the proposed project. Since they are the beneficiaries of the project it was essential to hear their reactions, concerns, expectations, and get feedback that would provide critical information in the preparation of the ESIA study.

8.3.7 Consultation with Water Operators

In Dollow district water is supplied by DWMC located in Dollow Town under public-private-partnership (PPP) agreements from the consultations with the engineer, hydrogeologist and geologist working in the company, it was noted that the company faces many problems from water quality, technical and operational challenges that make it difficult to provide water to people, including people living in IDP camps.

Table 28: Names of the DWMC Stakeholders Consulted

Name	Company	Designation
Abdiazil Shire Osman	Dollow Water Management Company (DWMC)	Operations Manager
Ahmed Ismail F.	Dollow Water Management Company (DWMC)	Finance Manager
Mohamed Swali Adan	Dollow Water Management Company (DWMC)	Water Engineer
Yahya Ali Abdullahi	Dollow Water Management Company (DWMC)	General Manager

8.4 Consultation Outcomes from Stakeholders

Stakeholders from the Ministries of Energy and Water Resources at the federal and state levels, local governments, communities and water service providers across all were informed about the project, ESIA studied and consulted regarding their views about the project. The main issues that were raised during the consultation meetings include

- The need to fast track the project
- The need for cooperation between the stakeholders involved
- The need for ensuring that environmental protection is adhered to
- Locals to be considered for the job opportunities they qualify

Other outcomes included

Water Sanitation and Hygiene (WASH) and Solid Waste management

- There is inadequate and inconsistency supply of water (rationing)
- Sanitation and hygiene at the household is poor (no hand wash facilities and full latrines.
- Open solid water dumping was common and evidence of open defecation

Conflict Management

Dispute over water would arise sometimes but solved through local government and community elders. There was need to set up conflict resolution committee at different community levels

Employment Opportunities

- There will be causal labour for trenching, construction of sanitation facilities where the locals will benefit from the employment opportunities

Health and Safety

- Community members revealed that if the new project is well designed and implemented with quality of materials will enable to last long and enable them to fetch water near their households and this will safeguard the health and safety of female that currently may walk long distance in search of water.
- Use of standard non-corrosive pipes and other equipment with enhance water safety.

Cultural Sites

There are no cultural sites in the project sites. However, if some are identified, they will be protected

Environmental and social risks and impacts

- Excavation of trenches may affect movement of people, especially elders.
- Excavation works might increase dusts and/or mud in rainy season.
- Some trees (i.e., *prosopis juliflora*) might be cut down

Through the mitigation measure outlined in EMP will address the issues

Land Acquisitionand Resettlement

- According to residents, most of the land is owned by the individuals and the Government. In areas where the project will be implemented is owns by the individuals an agreement by the local authority/water company and the individuals will be written prior to start of the project.

All the stakeholders consulted supported the project since it was addressing key social economic challenges of the area. The few identified negative impacts would the well mitigated causing no/minimal harm to the community and the environment. The stakeholder emphasized the need for the project to adhere to standards outlined in the ESIA report.

8.5 Stakeholder Engagement Plan

The implementation of the proposed DTF in the area requires direct involvement of a range of stakeholders with a substantial capacity to influence on the project.

The SEP prepared for this project has been aligned with the African Development Bank's (AfDB) Guidance Note No. 10 on Stakeholder Engagement and Information Disclosure, and Somalia regulations, which emphasizes structured, inclusive, and continuous engagement across the project lifecycle.

A good SEP, in line with AfDB OS10 requirements, should include the following elements:

(i) Stakeholder Identification and Analysis

The SEP systematically mapped and analysed stakeholders to ensure inclusivity and relevance, with criteria such as dependency, interest, and influence. This is detailed in sections 2.1 & 2.2 (Stakeholders Identification and Mapping; Stakeholder Analysis) and supported by Chapter 3.3 and Table 4 (Project Stakeholders Identification and Analysis) of the Stakeholder Engagement Plan Report prepared under the same project.

(ii) Planning How the Engagement Will Take Place

The SEP defines clear engagement strategies for different project phases, including implementation, closure, and operation/maintenance. Engagement protocols and roles are outlined in section 3.9 (Planned Stakeholder Engagement Activities and Strategies) and section 3.10 (Roles and Responsibilities) of the Stakeholder Engagement Plan Report prepared under the same project.

(iii) Disclosure of Information

Mechanisms for timely and accessible disclosure are described in section 3.11 (Stakeholder Engagement and Information Disclosure Strategies) of the Stakeholder Engagement Plan Report prepared under the same project., ensuring that all stakeholders, including vulnerable groups, receive relevant information in appropriate formats and languages.

(iv) Consultation with Stakeholders

(v) The SEP documents past consultations during feasibility and ESIA, and sets out protocols for future structured consultations throughout implementation. More details on these of processes is presented in sections 3.8–3.9 and Annexes 1–3 (Consultation Minutes, FGDs, and Attendance Registers) of the Stakeholder Engagement Plan Report prepared under the same project.**Addressing and Responding to Grievances**

A comprehensive Grievance Redress Mechanism (GRM), aligned with AfDB requirements, is presented in Chapter 5 (Grievance Redress Mechanism) of the Stakeholder Engagement Plan Report prepared under the same project. It details tiered handling (community, town, and state levels), procedures, anticipated grievances, and Terms of Reference for GRMCs.

(vi) Providing Feedback to Stakeholders

Feedback loops are integrated through monitoring, reporting, and dedicated communication channels. This is covered in sections 6.8 & 6.9 (Feedback and Reporting;

Reporting Back to Stakeholder Groups) of the Stakeholder Engagement Plan Report prepared under the same project.

(vii) A Sufficient Budget for Implementation

The SEP includes a detailed budget covering sensitization, consultations, grievance management, monitoring, and capacity-building activities. This is presented in section 6.10 and Table 21 (Proposed Budget) of the Stakeholder Engagement Plan Report prepared under the same project.

By integrating these elements, the SEP meets the AfDB's OS10 requirements and provides a robust framework for meaningful, inclusive, and continuous engagement throughout the project lifecycle

Table 29: Summary of the Stakeholder Engagement Plan

Project Phase and Activity	Objectives	Level and Type of Stakeholders	Methods	Materials
Pre-Construction				
Organize stakeholder sensitization workshop	To mobilize the community on their roles and responsibilities for the project	All key stakeholders, especially beneficiary community.	Formal meetings at the district level	IEC materials, Radio programs,
Construction Phase				
Conduct kick-off meetings across the levels	To disseminate information about the project and how IDPs community will be benefited.	Beneficiary communities at district and village levels. IDP communities	Face-to-face meetings	IEC materials (in both English and Somali language)
Organize periodic meetings	To provide updates about the progress, challenges and way forward of the project.	Technicaland decision-makers from federal and state level	Monthly meetings Quarterly meetings Site visits	Conducive environment, internet, refreshment, etc
Engage the local community for construction works	To create sense of ownership and income generation for workers	IDP communities	Face-to-face meetings in the IDP camps Radio programs Newspapers	
Operation and Maintenance (O&M)				
Ensure the maintenance of water and sanitation facilities	To sensitize the stakeholders on issues related to O&M	Local government authorities and water operators	Face-to-face meetings; and local resource mobilization meetings	IEC materials; Radio programs

9 ANALYSIS OF ALTERNATIVES

This section describes the preferred alternatives that have been considered in light of those that were rejected. Furthermore, the analysis of alternatives aimed at developing a proposed action that is both technically and financially viable, which minimizes environmental and social impacts to as low as rationally feasible.

9.1 The No Project Alternatives

This alternative assumes that the proposed infrastructure, the construction of a Decentralized Wastewater Treatment Facility (DTF), does not proceed. In this scenario, the identified sites would remain in their current state, and no new infrastructure would be developed to address existing sanitation challenges. However, this does not imply an absence of environmental effects. On the contrary, the "no project" option would perpetuate the current discharge of untreated human waste water into the environment, posing ongoing risks to public health, groundwater quality, and the nearby River Jubba. The lack of a formal waste management system would continue to undermine sanitation efforts in Dollow town and its surrounding areas. Given the urgent need for improved faecal sludge management and the potential benefits of the proposed intervention, this alternative is not considered viable.

9.2 Alternative Project Location

Two sites have been proposed for the development of a DTF. The DTF sites have been proposed by both CES consultant and Earth Water Limited. Each of the consultant chose a different location for the facility. Upon further assessment of the 1st proposed site, it was observed that accessibility to the location could be limited due to occasional insecurity cases therefore another suitable site was established. Both sites have been approved by stakeholders.

The proposed DTF locations are as follows:

Table 30: Alternative Location for the Proposed Decentralised Treatment Facility Locations

No.	Location (UTM, WGS84, 38N)		Remarks
	X	Y	
1	184,963.17	457,633.47	Site No.1 Identified by CES (Alternative location)
2	179,938.65	460,590.78	Site No.2 Identified by EWL (Proposed site)

Dollow town is a flat area and the proposed site is most suitable to allow the sludge flow by gravity. Consultation and discussions were held with the officials of the local government authority, water company, key NGOs and local community about the project areas did not result in protests about the land where the sanitation facilities are located. For the sustainability of the project and considering the security issues, the site identified by EWL is the most viable option. The government was committed in securing the site that was identified and assumed to be individual land.

9.3 Alternative System

Sewer Line

The area could also be served by sewer system. However, the cost of establishing the sewer system in relation to the target population and the future projections does not make it economical viable. The volume of human waste generated does not allow gravity flow hence the sewer system is not a viable option.

Constructed Wetlands (CWs)

These are engineered systems that use natural processes (plants, soil, microorganisms) to treat wastewater. They offer a sustainable and potentially lower-cost approach, with positive impacts on biodiversity and water quality. However, CWs require significant land area and may have lower treatment efficiency compared to DTF. In addition, chances of

underground water pollution are high. This option may not be viable considering the target area largely depends on underground water.

Membrane Bioreactors (MBRs)

A membrane bioreactor (MBR) is an advanced wastewater treatment system that combines a biological treatment process with advanced membrane filtration to separate solids and liquids. Unlike conventional systems that use secondary clarifiers, MBRs employ microfiltration or ultrafiltration membrane to provide a physical barrier, resulting in higher biomass concentrations, more compact systems, and a higher quality, more consistent treated water. However, this system has high capital cost. The membranes are the most expensive in addition the system has high operating cost because of the high energy needed for high aeration (to maintain oxygen transfer and scour membranes) and for membrane cleaning and replacement. Additionally, the disposal of the concentrated retentate or waste sludge, which may require chemical treatment for acceptable disposal, can pose environmental challenges. For the intended short-term interventions for the project and considering the capital needed and the environmental challenges (high Chemical Usage), this not a viable option to consider.

9.4 Decommissioning Alternatives

Repurposing the Site The site can be repurposed for other beneficial uses, such as:

- Agriculture: If the facility involves constructed wetlands, the land can be used for fertilizer or to support local agriculture.
- Green Spaces: The land can be restored and developed into green spaces for the local community.
- Industrial/Commercial Use: The site could be redeveloped for other industrial or commercial purposes, depending on the local zoning and infrastructure.
- Dismantling and Recycling: The facility's components can be dismantled and recycled.
- Component Reuse: While less common, some components might be suitable for reuse in other treatment systems.
- Material Recycling: Materials like pipes, tanks, and pumps can be recycled according to their type and local regulations.
- Site Restoration: The site can be restored to its original state or a condition that promotes a positive environmental outcome.
- Environmental Restoration: This involves removing all treatment components, proper disposing of the waste and restoring the land to a natural or suitable state that supports local ecosystems.

9.5 Considered Option

This option that is being considered means that the UNICEF gender-sensitive and climate-resilient city wash in Dollow District will continue with the construction and operation of the DTF in the area. This option will allow the ministry to achieve its objectives of improving the sanitation situation of the people living in the area through provision of effective human waste management system. This because the DTF offers improved cost-effectiveness through reduced infrastructure needs, greater environmental sustainability due to lower energy consumption and reduced pollution, enhanced resilience against failures compared to centralized systems, increased flexibility and scalability to meet specific needs, and opportunities for resource recovery, such as water reuse. In addition, DTF offer opportunity for treating wastewater at the source reduces the risk of accidental spills and minimizes the pollution load on natural water bodies.

The ESIA team made a comprehensive impact assessment of the proposed project area. The study has found no major adverse significant issues (environmental, social, or economic) to stop the implementation of the project activities. The mitigation measures for the identified negative impacts of these alternative measures have been thoroughly discussed throughout this report. If they are implemented, the project will not have any adverse impacts on the environment.

10 GRIEVANCE REDRESS MECHANISM

10.1 Introduction

The grievance redress mechanism (GRM) is a critical component of the effective ESMP implementation. The objective of the GRM is to provide a platform to the internal and external stakeholders to raise their concerns, issues and queries about the project. The mechanism would allow the stakeholders to identify persons or channels through which their queries will be channelled and will ensure timely responses to each project-related query in each sub-project.

The GRM will be accessible and understandable for all stakeholders in the project and for the entire cycle of the project. The GRM will be communicated to relevant stakeholders and all complaints should be addressed to and by promptly using an understandable and transparent process that is culturally appropriate and readily acceptable to all segments of the affected communities, and it is at no cost to the project and without retribution.

10.2 Grievance Channel

The ministries and agencies that are implementing the project will be expected to establish appropriate channels (i.e., in person, a toll-free number, email address, etc) to be used for the submission of project-related complaints, concerns, and grievances. The main responsible agency is Dollow Water Management Company.

10.3 Grievance Management System for Grievances Related to the Establishment of a DTF

In the study area of Dollow, an informal grievance redress mechanism (GRM) already exists, operating mainly through traditional community leadership structures, including elders, religious leaders, and camp committees. These informal systems have historically provided the first point of contact for resolving disputes and community concerns. The builds on these existing informal GRM structures by formalising them into structured Grievance Redress Management Committees (GRMCs) to ensure inclusivity, accountability SEP, and alignment with AfDB OS10 requirements.

The project establishes a three-tiered grievance redress system that builds on existing informal mechanisms in Dollow as discussed in chapter 5 of the Stakeholder Engagement Plan Report prepared under the same project. These will operate at community, project, state, and federal levels to ensure accessibility, inclusivity, and alignment with AfDB OS10 requirements.

- Tier 1 – Community Level: Grievances are first received and addressed at the community entry point through existing informal mechanisms led by camp committees, elders, women and youth representatives, and other trusted leaders. These serve as the first line of response, ensuring accessibility and cultural sensitivity. Unresolved cases are escalated.
- Tier 2 – State/Project Level: At this level, State-level Grievance Redress Committees (GRCs) are established in each relevant institution (e.g., MoEWR, UNICEF) implementing project activities. These committees are inclusive, bringing together representatives of PAPs, IDPs, host communities, women and youth associations, elders, religious leaders, and water operators. Contractors and the Project Management Team (PMT) participate where relevant.
- Tier 3 – Federal Level: The Federal GRC, formed under the PMT at the Federal MoEWR, addresses grievances that cannot be resolved at the state/project level or that involve cross-cutting, systemic issues across ministries. This tier provides oversight, ensures consistency, and escalates unresolved grievances to AfDB's Independent Recourse Mechanism (IRM) if necessary.
-

10.4 Grievance Management Process

The project will aim to address grievances with the following steps: (0-2 days)

- **Step 1**: Receive, register and acknowledge complaints in written format;
- **Step 2**: Screen and establish the basis of the grievance; (3-5 days)
- **Step 3:** Consider ways to address the complaints; (6-10 days)
- **Step 4**: Implement the case resolution where the unsatisfied complainant can seek redress through the grievance management systems; (11-20 days)
- **Step 5**: Document the grievance and actions taken and submit the report to the PMT; (21-25 days)
- **Step 6**: (Only, if necessary, after the 25-day period) Elevation of the case to a formal court, if the complainant is not satisfied with the GRC resolutions. At any stage of the project, the grievant retains the right to seek redress through the formal judicial system, independent of the GRC process.

10.5 Key Roles of Grievance Redress Committee

The main functions of the GRC are;

- Inform the affected persons about the existence of GRM;
- Verify grievances and their merits;
- Recommend solutions for the PMT grievance process;
- Communicate the decisions that were taken to the complainants;
- Ensure that all notices, forms and other documents required by complainants are made available in the local language; and
- Ensure documentation of all received complaints and the progress of remediation.

10.6 Gender-Based Violence GRM

There will be a separate reporting mechanism for GBV cases that are discrete from general GRM. Issues from this mechanism will not go through the normal GRM. The federal MoEWR will be capacitated to a qualified expert in Gender and Social Affairs and should be the focal point for handling GBV-related complaints in consideration of confidentiality, safety and survivor-centred approach. At this level all registered data should be anonymous and confidential.

11 INSTITUTIONAL CAPACITY

11.1 Introduction

Federal, state and local level institutions are involved in the planning, coordination and monitoring of the project, with different roles in environmental and social management and protection. These include the federal MoEWR, line ministries and/or agencies at the state level and local government authorities. The institutional capacity assessment during the ESIA study aimed to identify certain structures and policies in place and to assess their capacity to adequately manage the environmental and social aspects, and identify the capacity building required in the implementation of the ESMMP of the project. The main institutions involved in a major way by the activities of the project are: the federal MoEWR and line ministries of water and sanitation at state level, local government authorities and water operators.

11.2 Summary of the Findings

Based on the ESIA study, in particular the capacity needs assessment of the institutions, the following challenges were identified as gaps and barriers to the effective implementation of the environmental and social safeguards requirements:

- Inadequate environmental and social safeguards policies at the federal and state level ministries and/or agencies.
- There is no dedicated department or teams at the ministries for environmental and social issues. In addition, environmental and social issues are not included in the institutional departmental structures as well as core mandates.
- There are limited or no employees currently employed to deal with environmental and social issues at the federal and state levels.
- Limited alignment and harmonisation of the policies and regulations at the federal government and state levels.
- Limited coordination mechanisms to address the issues of overlapping and duplication of mandates and responsibilities.

11.3 Interventions

In order to strengthen the environmental and social sustainability, including climate resilience, the adverse impacts and risks of the project need to be avoided or reduced and where possible mitigated. The institutional capacity building will encompass training and awareness creation of the stakeholders in appreciating and understanding their roles and participation. The fundamentals of environmental and social safeguards will form the basis. This will include and not limited to the following areas: sensitization of the environment and safety; assessment and management of environmental and social risks and mitigation measures to ensure all stakeholders are part of the process of sustainability. The interventions will be geared towards helping them understand their roles, change mindset and behaviour.

Furthermore, key necessary interventions include the following:

- The need for close collaboration between the water and sanitation sector ministry and those of environment, climate change and social issues.
- Environmental and social issues are to be well addressed within the WASH project. There is a need to recruit environmental and social specialists and institutionalize the environmental and social safeguard management systems.
- Develop environment, health and safety (EHS) guidelines for the WASH sector.

11.4 Training Needs

The training needs in support of the project and the proposed capacity building training targets in environmental and social technical staff, and other staff in the ministries and agencies and local government authorities. The training entails the following topics:

- Environmental and social screening and impact assessment;
- Management of environmental and social risks and impacts in WASH projects;
- Mitigating gender-based violence and exploitation in the project;
- Grievance handling mechanisms

- Monitoring and reporting compliance with environmental and social requirements;
- Occupational Health and Safety best industrial-specific practices in the WASH sector, and
- Community Health and Safety aspects in the WASH sector.

12 CONCLUSION AND RECOMMENDATIONS

12.1 Conclusions

This ESIA assessed the environmental and social impacts associated with the proposed construction of DTF in Dollow town and the surrounding IDP camps. Based on the impact identification and analysis, it was concluded that this project falls under Category 2 based on the African Development Bank *Environmental and Social Assessment Procedures for the African Development Bank's Public Sector Operations*. (African Development Bank, 2001) *(AfDB, 2001)*, as its potential adverse environmental impacts on human populations or environmentally important areas are site-specific, largely reversible, and can be effectively mitigated using standard methods. Accordingly, an Environmental and Social Management & Monitoring Plan (ESMMP) was prepared to detail the mitigation measures, monitoring framework, and institutional arrangements necessary to manage these impacts throughout the project lifecycle.

The proposed project will improve the capacity to deliver effective human waste management to the IDPs and vulnerable host communities living in the target district. The results of the study have shown that the project activities from the design and construction stages will have minimal adverse impacts on the biophysical and socio-economic environment, provided that the recommended mitigation measures in this report are successfully implemented.

The ESIA study shows that the project will have few and limited adverse impacts, combined with significant social and health benefits. The findings of this assessment support the implementation of the proposed facilities on the condition that all the mitigation and enhancement measures identified in the study are fully implemented.

12.2 Recommendations

This sub-section discusses recommendations based on the findings for federal and state-level ministries, water operators, and contractors.

12.2.1 Federal and State Level Ministries

These include the following:

- Prioritise the establishment of Project Management Teams (PMTs) within the first 3 months of project mobilisation for coordination and implementation of the project;
- Ensure the compliance of environmental and social requirements of the AfDB during the implementation of the project; (continuous through the project)
- Hire qualified experts for environmental and social safeguards who will be responsible for monitoring and ensuring that all environmental and social safeguards are followed consistently during the implementation of the project;
- Make sure that environmental and social requirements (i.e., backfilling, PPE items, soil and water erosion control, etc) are well embedded in bidding documents and contracts during tendering of the project
- Continue stakeholder consultation and participation throughout the project lifetime;
- Develop or review standard of operations and/or agreements of the existing water service providers (i.e., water operators); and
- Improve the institutional capacity of water operators through training programs, to be initiated in the first year of the project and continued periodically.

12.2.2 Water Operators

These include the following:

- Consider environmental and social responsibilities during water expansion works in their respective districts; particularly addressing waste management, and occupational health; (continuous through the project) and
- Empower gender inclusion in water-related decision-making by setting up inclusive water user committees within the first 12 months of project implementation, who shall be consulted throughout the project implementation.

12.2.3 Contractors

These include the following:

- Contractors should develop and implement a Contractor ESMP for the

project's construction phase.

- In addition to the C-ESMP, contractors shall prepare and implement the following sub-management plans 1–3 months of mobilisation
    - Occupational Health and Safety Plan (OHS Plan)
    - Waste Management Plan
    - Traffic Management Plan
    - Chance Find Procedure for Cultural Heritage
    - Community Health and Safety Plan
    - Labour Management Plan (including workers' code of conduct and GBV/SEA measures)
    - Emergency Preparedness and Response Plan

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ANNEX

Annex 1: Stakeholder Engagement Log

Date	Location	Stakeholders Engaged	Key Issues Raised	Feedback/Response Provided

Annex 2: Grievance Redress Log Template

Grievance ID	Date Received	Complainant (if not anonymous)	Location	Nature of Complaint	Action Taken	Resolution Status	Date Closed

Annex 3: Labour registration forms

Worker ID	Full Name	Gender	Age	National ID/Refugee ID	Position/ Role	Start Date	Contract Type	Verified by Site Supervisor

Annex 4: Environmental Monitoring Checklist Template

Monitoring Item	Indicator/ Parameter	Frequency	Responsible Party	Monitoring Method	Notes
Air Quality	Dust levels (PM10/PM2.5)	Weekly	Contractor, MoEWR	Visual inspection, dust meter	During excavation and trenching
Water Quality	Turbidity, pH, E. coli levels	Monthly	Water Company, MoEWR	Lab sampling and testing	At borehole and distribution points
Noise Levels	Decibel readings (dB)	Weekly	Contractor	Sound level meter	Near construction machinery
Soil Erosion	Visual signs of erosion	Bi-weekly	Contractor	Field inspection	Post-rainfall and construction
Waste Management	Waste disposal practices	Weekly	Contractor	Site observation	Segregation, transport & disposal

Annex 5: Gender Action Plan (GAP) Matrix

Objective	Action Item	Indicator	Responsible Party	Timeline
Promote women's participation in workforce	Hire women in skilled and unskilled roles	% of women in workforce (target: 30%)	Contractor, MoEWR	Throughout
Prevent Gender-Based Violence (GBV)	Conduct SEA/SH and GBV awareness sessions	Number of sessions held; attendance logs	Contractor, NGO partner	Quarterly
Support women's inclusion in decision-making	Engage women's groups in consultations	Number of meetings attended by women	PIU, Community Liaison	Bi-monthly
Monitor gender-specific impacts	Track benefits and grievances by gender	Gender-disaggregated data reports	M&E Officer, PIU	Monthly

Annex 6: Community Feedback Report Templates

Date	Location	Community Group/Individual	Feedback Summary	Action Taken	Follow-up Required	Responsible Party

Annex 7: Consultation Meeting Photos

Kabasa IDP Camp Stakeholder Engagement Meeting

DWMC Engagement Meeting

Ladan IDP Camp Stakeholder Engagement Meeting

Kaharey IDP Camp Stakeholder Engagement Meeting

Qansaxley IDP Camp Stakeholder Engagement Meeting

FGD in Kabasa IDP Camp

UNICEF and other NGOs in Dollow during a Consultant Engagement Meeting in Dollow

Annex 8: Sample Questionnaire Used

Dollow Town Interview

Earth Water Ltd

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Dollow town

SOCIO-ECONOMIC ASSESSMENT

- **Key Informants' Questionnaire**

Name of KII	Organisation	Gender	Position	Contact
Farhiyo Abdullah	Community Member	F	Comm. Member	0771507820

A. Access to Water Supply

i. How many people are in Dollow town?

Camps & Institutions	How many are there? List them	Average population per day
ii. IDP camps	i. Dollow town ii. iii. iv v	
iii. Primary schools	i. ii. one school iii.	
iv. Secondary school	i. ii. NO secondary school iii.	
v. Health centres	i. — Trocaire-run hospital ii. — Cida-run mch iii. —	
vi. Markets	i. ii. one iii.	
vii. College/ higher education institution	i. NO ii. iii.	
viii. Parks, playgrounds/ Stadium	i. ii. 3 iii.	
ix. Fire station	i. ii. 0 iii.	
x. Police/ chief station	i. ii. 1 iii.	
xi. Slaughter house	i. ii. 1 iii.	
xii. Others (specify)		

Solid waste Management

=> No designated village Place for solid waste

=> Garbalow - solid waste pit site full

Willing to pay garbage yes

- History

Previously was a company collecting garbage 2018

Solid waste company - competition Cause

Kabasa KII Interview

Earth Water Ltd

unicef

Kabasa

SOCIO-ECONOMIC ASSESSMENT

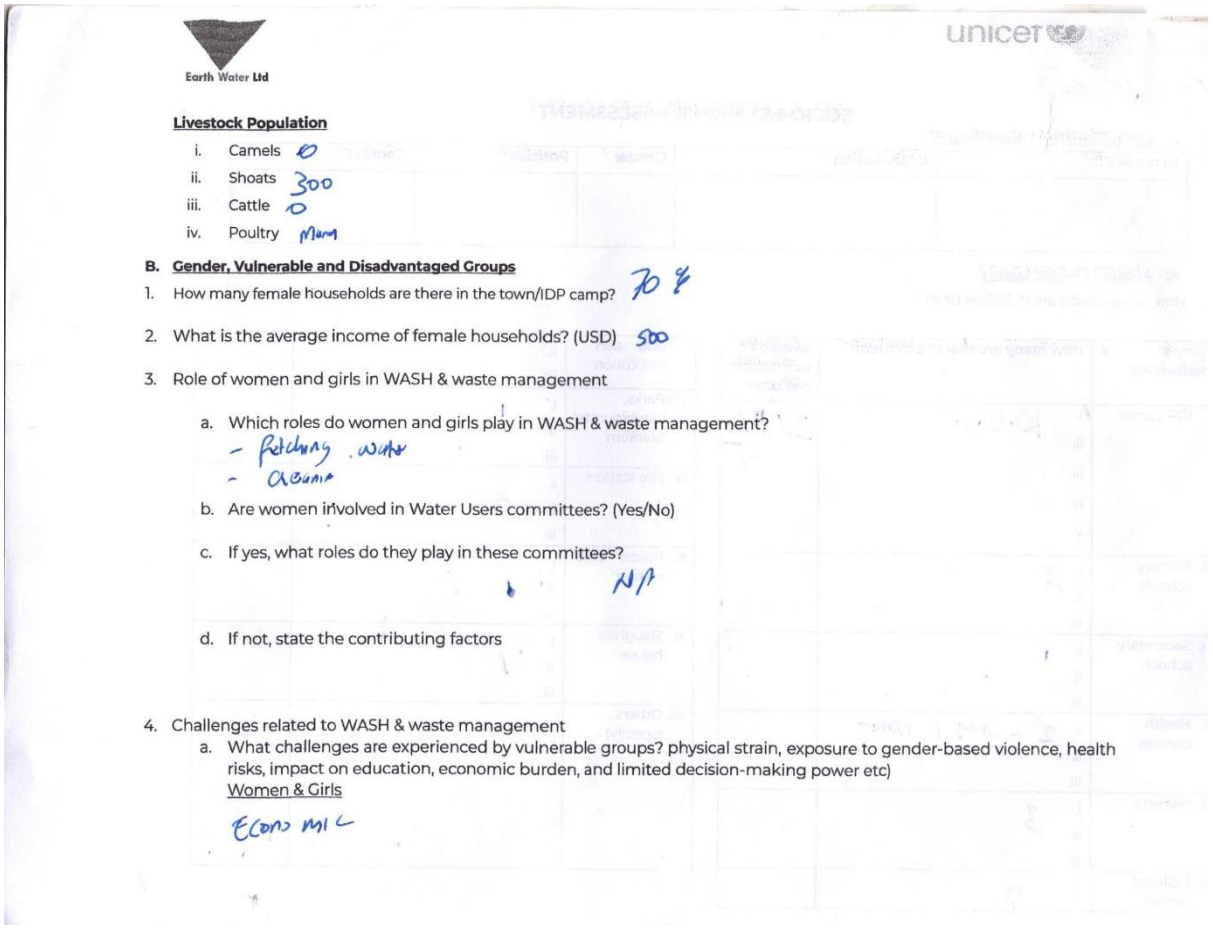
- Key Informants' Questionnaire

Name of KII	Organisation	Gender	Position	Contact
IBRAHIM ABDI	COMMUNITY MEMBER	M	COMMUNITY MEMBER	0771517097

A. Access to Water Supply

i. How many people are in Dollow town?

Camps & Institutions	How many are there? List them	Average population per day
ii. IDP camps	i. Kabasa ii. iii. iv v	38837
iii. Primary schools	i. 3 ii. iii.	
iv. Secondary school	i. 1 ii. iii.	
v. Health centres	i. 2 – ONLY 1 WORKING ii. iii.	
vi. Markets	i. ii. 3 iii.	
vii. College/ higher education institution	i. 0 ii. iii.	
viii. Parks, playgrounds/ Stadium	i. 1 ii. iii.	
ix. Fire station	i. ii. 0 iii.	
x. Police/ chief station	i. ii. 1 iii.	
xi. Slaughter house	i. ii. 1 iii.	
xii. Others (specify)		



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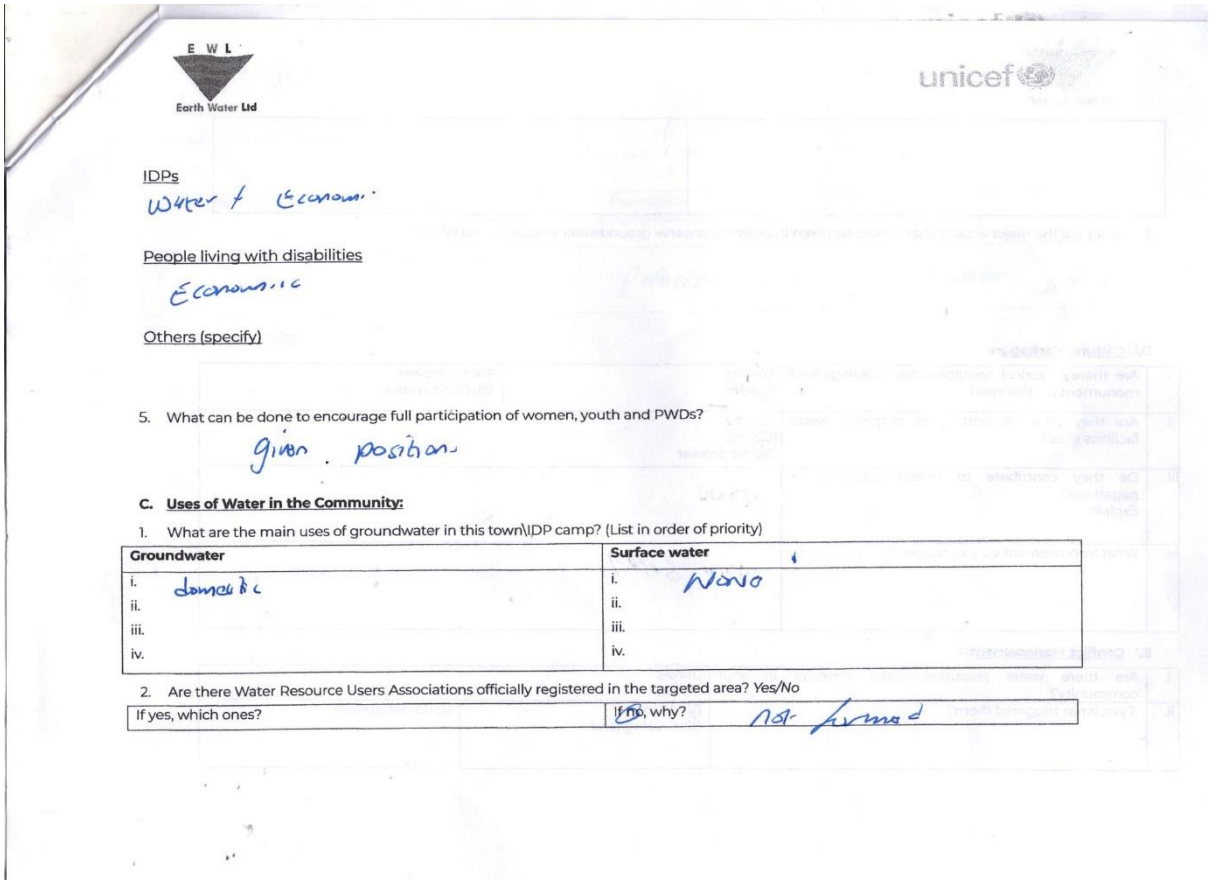
Livestock Population

i. Camels 0
ii. Shoats 300
iii. Cattle 0
iv. Poultry Many

B. Gender, Vulnerable and Disadvantaged Groups

1. How many female households are there in the town/IDP camp? 70 %
2. What is the average income of female households? (USD) 500
3. Role of women and girls in WASH & waste management
   a. Which roles do women and girls play in WASH & waste management?
      - Fetching water
      - Cleaning
   b. Are women involved in Water Users committees? (Yes/No)
   c. If yes, what roles do they play in these committees?
      NP
   d. If not, state the contributing factors
4. Challenges related to WASH & waste management
   a. What challenges are experienced by vulnerable groups? physical strain, exposure to gender-based violence, health risks, impact on education, economic burden, and limited decision-making power etc)
      Women & Girls
      Economic



E W L
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IDPs
Water & Economic

People living with disabilities
Economic

Others (specify)

5. What can be done to encourage full participation of women, youth and PWDs?
given position

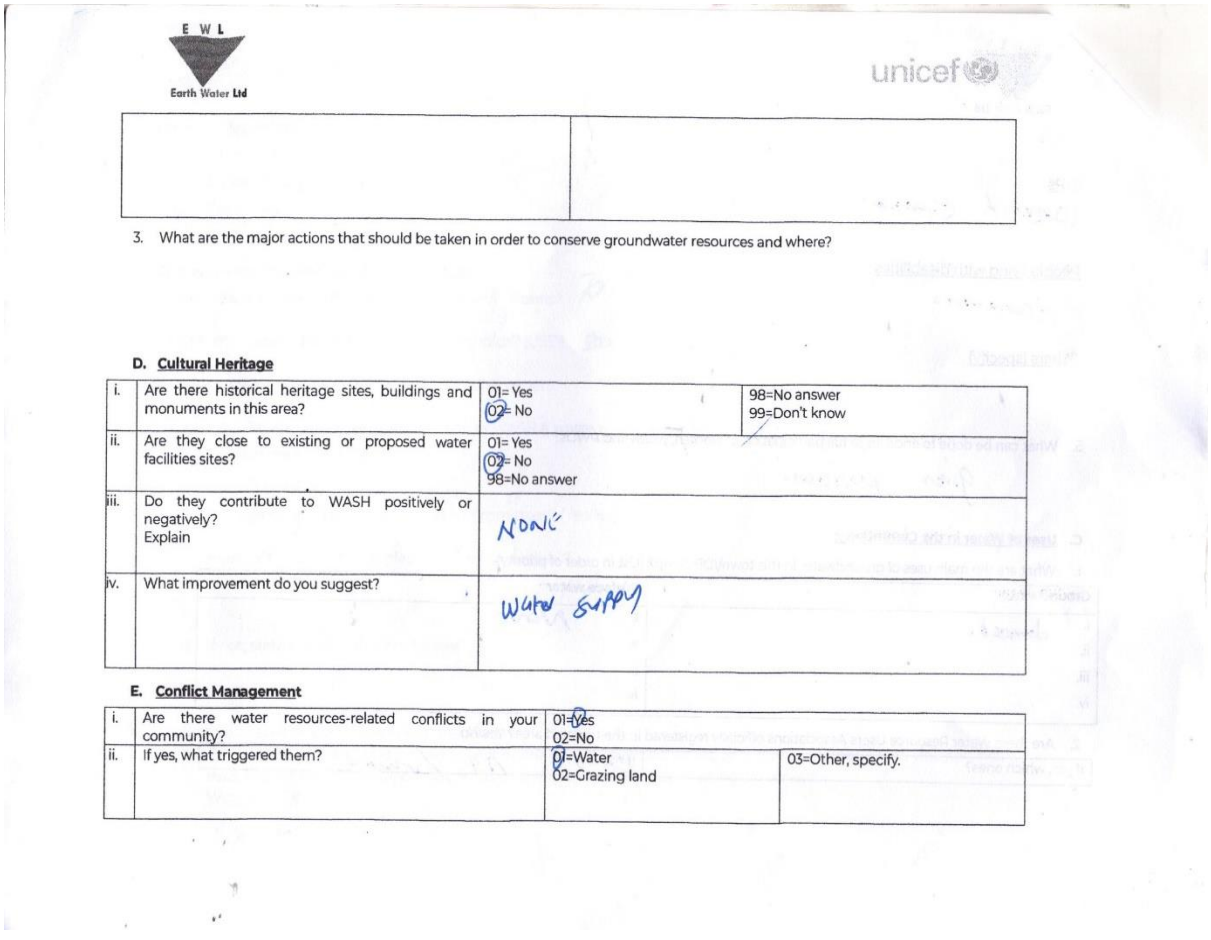
C. Uses of Water in the Community:

1. What are the main uses of groundwater in this town\IDP camp? (List in order of priority)

Groundwater	Surface water
i. domestic	i. None
ii.	ii.
iii.	iii.
iv.	iv.

2. Are there Water Resource Users Associations officially registered in the targeted area? *Yes/No*

If yes, which ones?	If no, why? Not formed



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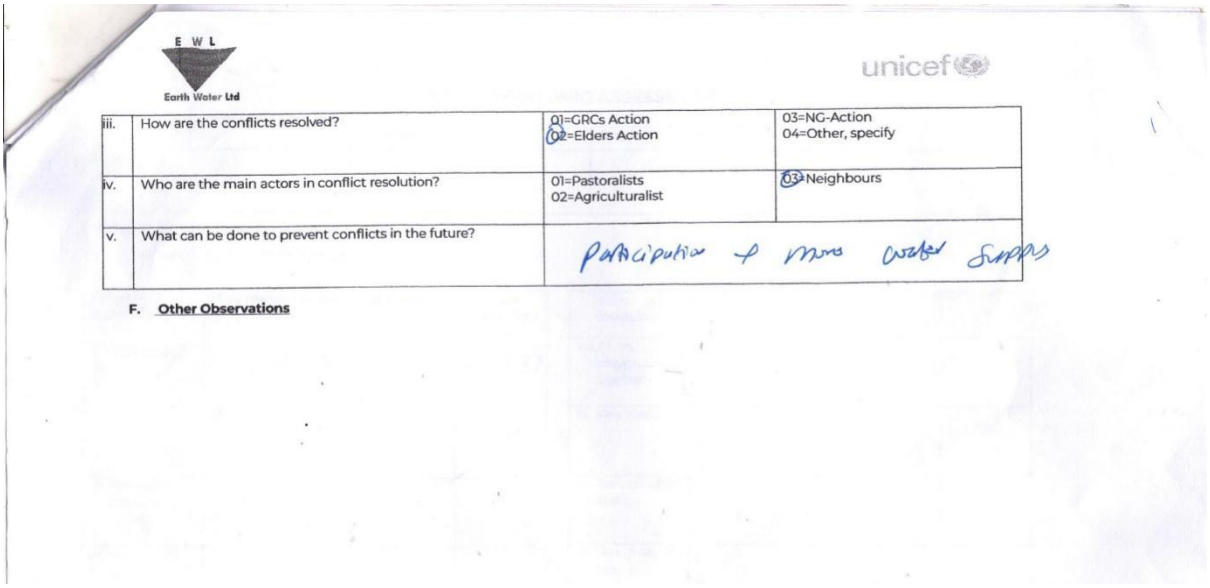
3. What are the major actions that should be taken in order to conserve groundwater resources and where?

D. Cultural Heritage

i.	Are there historical heritage sites, buildings and monuments in this area?	01= Yes 02= No	98=No answer 99=Don't know
ii.	Are they close to existing or proposed water facilities sites?	01= Yes 02= No 98=No answer	
iii.	Do they contribute to WASH positively or negatively? Explain	NONE	
iv.	What improvement do you suggest?	Water supply	

E. Conflict Management

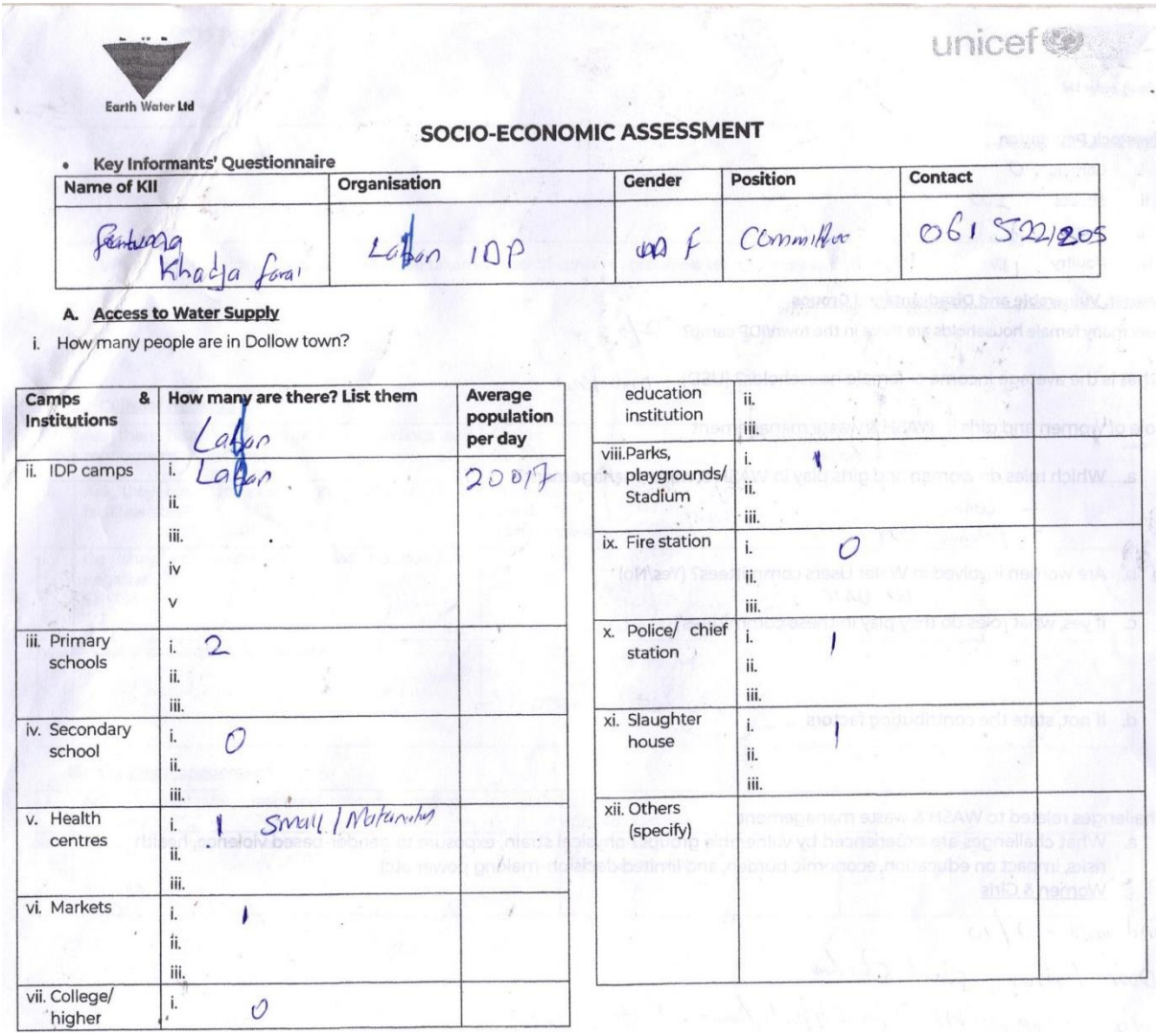
i.	Are there water resources-related conflicts in your community?	01=Yes 02=No	
ii.	If yes, what triggered them?	01=Water 02=Grazing land	03=Other, specify.



iii.	How are the conflicts resolved?	01=GRCs Action 02=Elders Action	03=NG-Action 04=Other, specify
iv.	Who are the main actors in conflict resolution?	01=Pastoralists 02=Agriculturalist	03=Neighbours
v.	What can be done to prevent conflicts in the future?	Participation of more water supply	

F. **Other Observations**

Ladan KII Interview



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SOCIO-ECONOMIC ASSESSMENT

- **Key Informants' Questionnaire**

Name of KII	Organisation	Gender	Position	Contact
Fartuuna Khadija Farai	Ladan IDP	F	Committee	061 522 1205

A. Access to Water Supply

i. How many people are in Dollow town?

Camps & Institutions	How many are there? List them	Average population per day
	Ladan	
ii. IDP camps	i. Ladan ii. iii. iv v	20017
iii. Primary schools	i. 2 ii. iii.	
iv. Secondary school	i. 0 ii. iii.	
v. Health centres	i. 1 Small / Maternity ii. iii.	
vi. Markets	i. 1 ii. iii.	
vii. College/ higher education institution	i. 0 ii. iii.	
viii. Parks, playgrounds/ Stadium	i. 1 ii. iii.	
ix. Fire station	i. 0 ii. iii.	
x. Police/ chief station	i. 1 ii. iii.	
xi. Slaughter house	i. 1 ii. iii.	
xii. Others (specify)		

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Livestock Population

i. Camels 0
ii. Shoats 200
iii. Cattle 850
iv. Poultry 100

B. Gender, Vulnerable and Disadvantaged Groups

1. How many female households are there in the town/IDP camp? 2/3
2. What is the average income of female households? (USD) Dont Know
3. Role of women and girls in WASH & waste management
   a. Which roles do women and girls play in WASH & waste management?
      - Cleaning
      - fetching water
   b. Are women involved in Water Users committees? (Yes/No) No WUMC
   c. If yes, what roles do they play in these committees?
   d. If not, state the contributing factors
4. Challenges related to WASH & waste management
   a. What challenges are experienced by vulnerable groups? physical strain, exposure to gender-based violence, health risks, impact on education, economic burden, and limited decision-making power etc)
      Women & Girls

Hand wash - 0/10
- Poor latrain (Bad Kitchen
- No equipment to support them

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3. What are the major actions that should be taken in order to conserve groundwater resources and where?

D. Cultural Heritage

i.	Are there historical heritage sites, buildings and monuments in this area?	01= Yes 02=No	98=No answer 99=Don't know
ii.	Are they close to existing or proposed water facilities sites?	01=Yes 02= No 98=No answer	
iii.	Do they contribute to WASH positively or negatively? Explain	Provide water Lakrani - waste Management	
iv.	What improvement do you suggest?	- Better training - Increase water supply	

E. Conflict Management

i.	Are there water resources-related conflicts in your community?	01=Yes 02=No ✓	
ii.	If yes, what triggered them?	01=Water 02=Grazing land	03=Other, specify.

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IDPs

People living with disabilities

Others (specify)

5. What can be done to encourage full participation of women, youth and PWDs?

Consultation

C. Uses of Water in the Community:

1. What are the main uses of groundwater in this town\IDP camp? (List in order of priority)

Groundwater	Surface water
i. House hold	i. ~~No~~ Household farming
ii.	ii.
iii.	iii.
iv.	iv.

2. Are there Water Resource Users Associations officially registered in the targeted area? Yes/No

If yes, which ones?	If no, why? Not formed

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iii.	How are the conflicts resolved?	01=GRCs Action 02=Elders Action	03=NG-Action 04=Other, specify
iv.	Who are the main actors in conflict resolution?	01=Pastoralists 02=Agriculturalist	03=Neighbours
v.	What can be done to prevent conflicts in the future?	Consultation & Block committees	

F. Other Observations

Water

- Individual coulte meter — Yes
- Willing to pay — Yes
- How much — 1.5 dollars

iii.	How are the conflicts resolved?	01=GRCs Action 02=Elders Action	03=NGs Action 04=Other, specify
iv.	Who are the main actors in conflict resolution?	01=Pastoralists 02=Agriculturalist	03=Neighbours
v.	What can be done to prevent conflicts in the future?		

F. Other Observations

Qurdubey KII Interview

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SOCIO-ECONOMIC ASSESSMENT

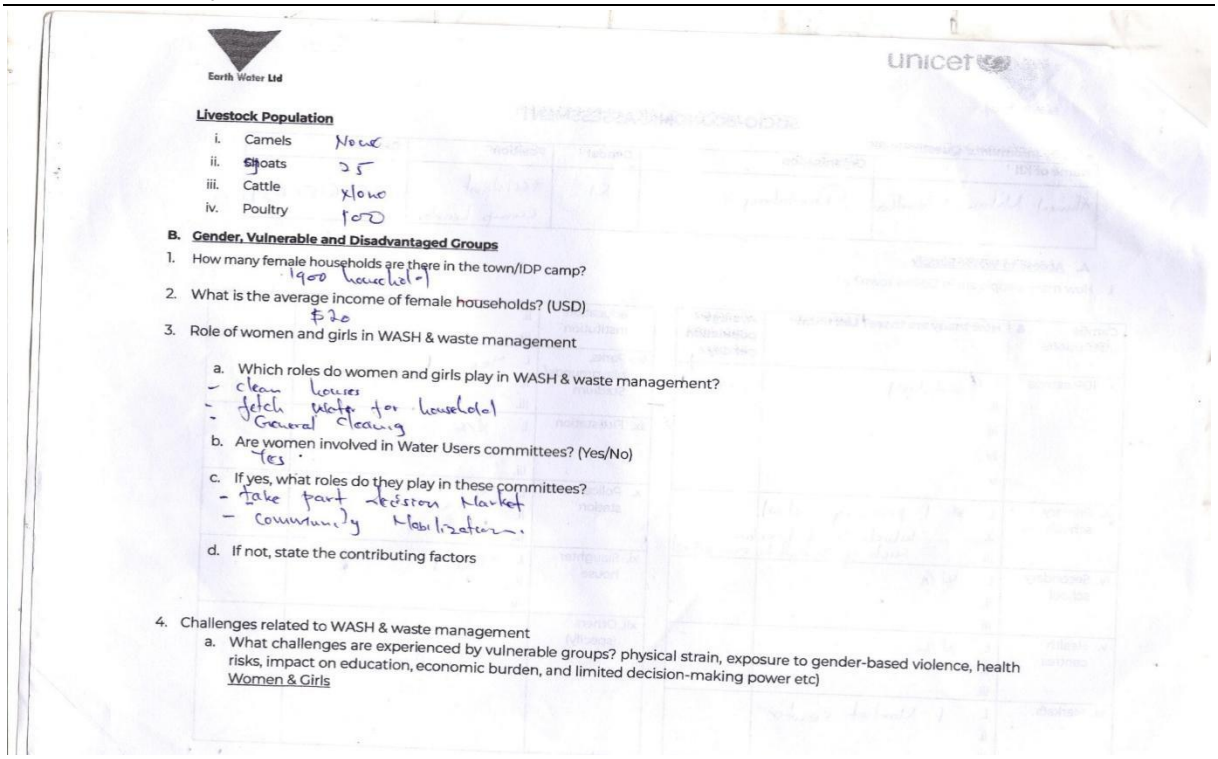
- Key Informants' Questionnaire

Name of KII	Organisation	Gender	Position	Contact
Ahmed Mohamed Warsame	Qurdubay	M	Assistant camp Leader	0616156639

A. Access to Water Supply

i. How many people are in Dollow town?

Camps & Institutions	How many are there? List them	Average population per day
ii. IDP camps	i. Qurdubay ii. iii. iv v	3,1400+6
iii. Primary schools	i. 1 Primary school ii. which is not function iii. Lack of Budget to run school	
iv. Secondary school	i. N/A ii. iii.	
v. Health centres	i. N/A ii. iii.	
vi. Markets	i. 1 Market center ii. iii.	
vii. College/ higher education institution	i. N/A ii. iii.	
viii. Parks, playgrounds/ Stadium	i. Yes 1 ii. iii.	
ix. Fire station	i. N/A ii. iii.	
x. Police/ chief station	i. Yes 1 ii. iii.	
xi. Slaughter house	i. Yes 1 ii. iii.	
xii. Others (specify)	N/A	



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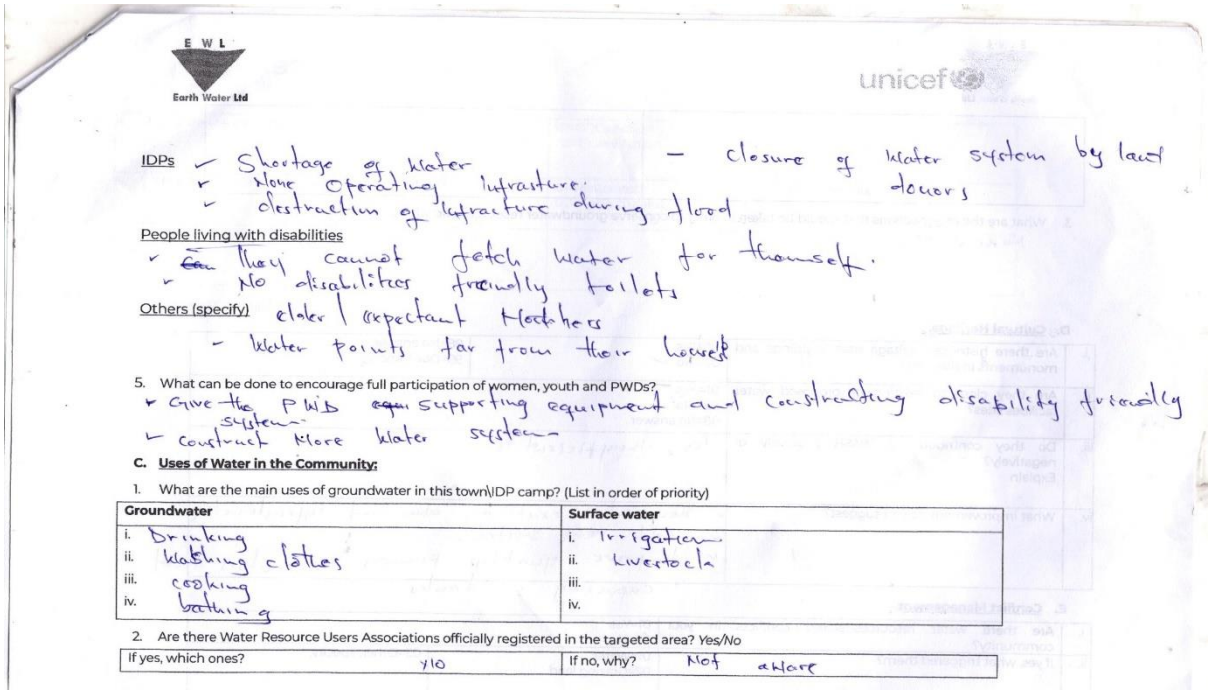
Livestock Population

i. Camels None
ii. ~~G~~Goats 25
iii. Cattle xlone
iv. Poultry 100

B. Gender, Vulnerable and Disadvantaged Groups

1. How many female households are there in the town/IDP camp?
1900 household
2. What is the average income of female households? (USD)
$70
3. Role of women and girls in WASH & waste management
   a. Which roles do women and girls play in WASH & waste management?
   - clean houses
   - fetch water for household
   - General cleaning
   b. Are women involved in Water Users committees? (Yes/No)
   Yes
   c. If yes, what roles do they play in these committees?
   - take part decision Market
   - community Mobilization.
   d. If not, state the contributing factors
4. Challenges related to WASH & waste management
   a. What challenges are experienced by vulnerable groups? physical strain, exposure to gender-based violence, health risks, impact on education, economic burden, and limited decision-making power etc)
   Women & Girls



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IDPs
- Shortage of water
- None Operating infrastructure.
- destruction of infracture during flood
- closure of water system by land donors

People living with disabilities
- They cannot fetch water for themself.
- No disabilities freindly toilets

Others (specify) elder / expectant Mothers
- Water points far from their houses

5. What can be done to encourage full participation of women, youth and PWDs?
- Give the PWD supporting equipment and constructing disability friendly system.
- construct More water system.

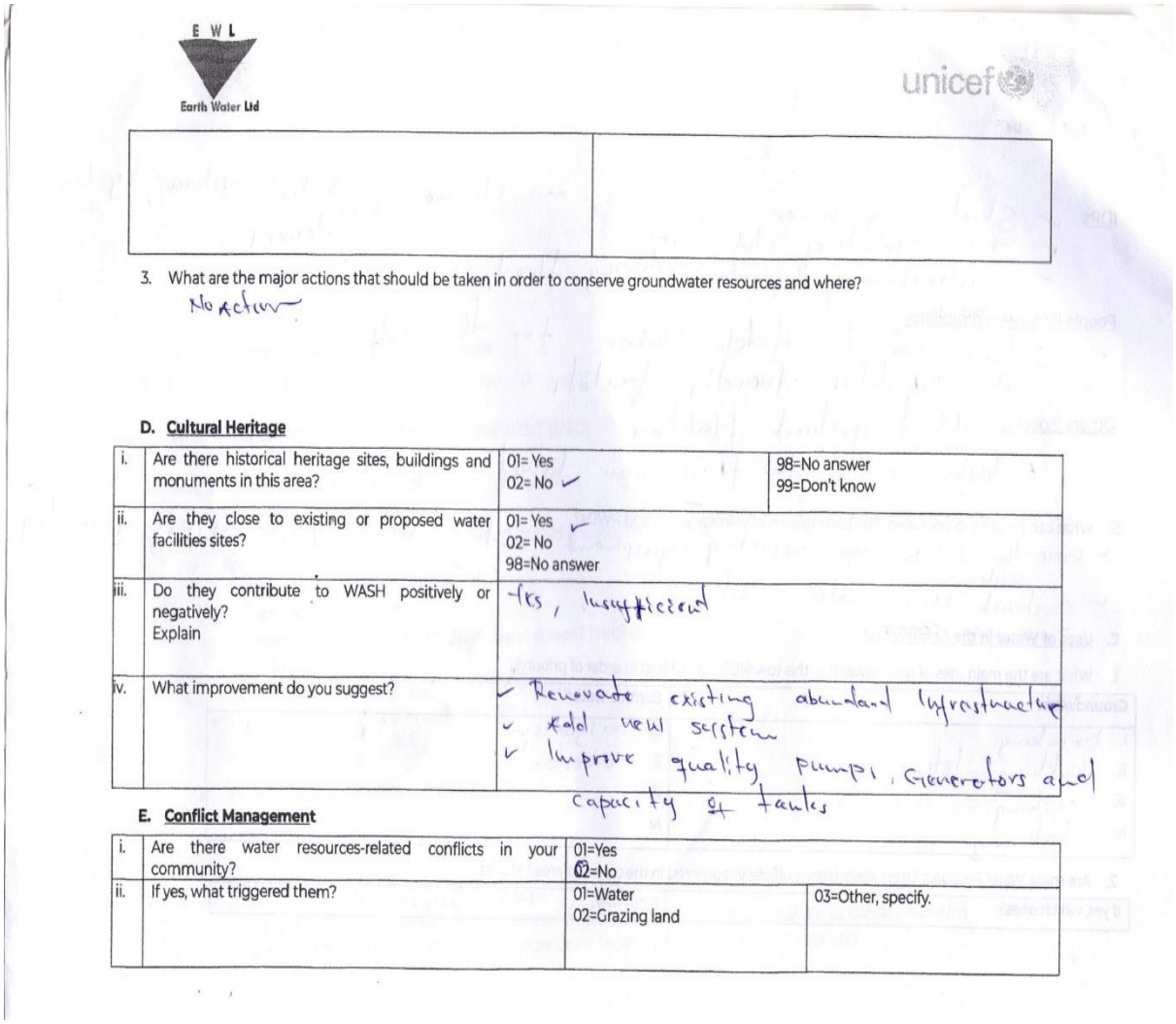
C. Uses of Water in the Community:

1. What are the main uses of groundwater in this town\IDP camp? (List in order of priority)

Groundwater	Surface water
i. Drinking	i. Irrigation
ii. Washing clothes	ii. Livestock
iii. cooking	iii.
iv. bathing	iv.

2. Are there Water Resource Users Associations officially registered in the targeted area? *Yes/No*

If yes, which ones?	xlo	If no, why?	Not aWare



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3. What are the major actions that should be taken in order to conserve groundwater resources and where?
No Action

D. Cultural Heritage

i.	Are there historical heritage sites, buildings and monuments in this area?	01= Yes 02= No ✓	98=No answer 99=Don't know
ii.	Are they close to existing or proposed water facilities sites?	01= Yes ✓ 02= No 98=No answer	
iii.	Do they contribute to WASH positively or negatively? Explain	-Yes, Insufficient	
iv.	What improvement do you suggest?	✓ Renovate existing abandoned Infrastructure ✓ Add new system ✓ Improve quality pumps, Generators and capacity of tanks	

E. Conflict Management

i.	Are there water resources-related conflicts in your community?	01=Yes 02=No	
ii.	If yes, what triggered them?	01=Water 02=Grazing land	03=Other, specify.

Kaharey KII Interview

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SOCIO-ECONOMIC ASSESSMENT

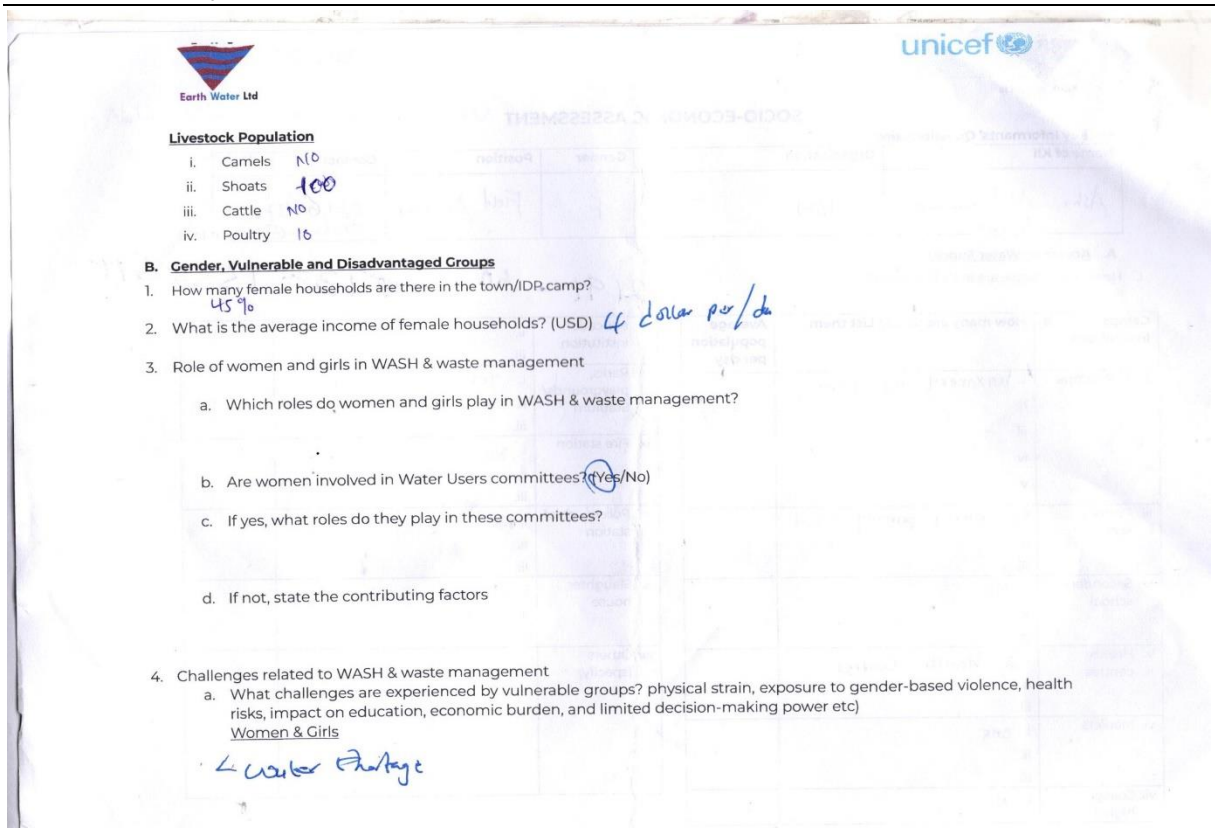
- **Key Informants' Questionnaire**

Name of KII	Organisation	Gender	Position	C
Asha Abdirahman Maalim	IOM	F	Field Assistant	

A. Access to Water Supply

i. How many people are in Dollow town? 2191 – AA – ϕ

Camps & Institutions	How many are there? List them	Average population per day
ii. IDP camps	i. Kaxareey IDP Camp ii. iii. iv v	
iii. Primary schools	i. Kaxareey primary school ii. iii.	
iv. Secondary school	i. No ii. iii.	
v. Health centres	i. 2 health Centres ii. iii.	
vi. Markets	i. one ii, iii.	
vii. College/ higher education institution	i. No ii. iii.	
viii. Parks, playgrounds/ Stadium	i. Yes ii. iii.	
ix. Fire station	i. No ii. iii.	
x. Police/ chief station	i. No ii. iii.	
xi. Slaughter house	i. No ii. iii.	
xii. Others (specify)		



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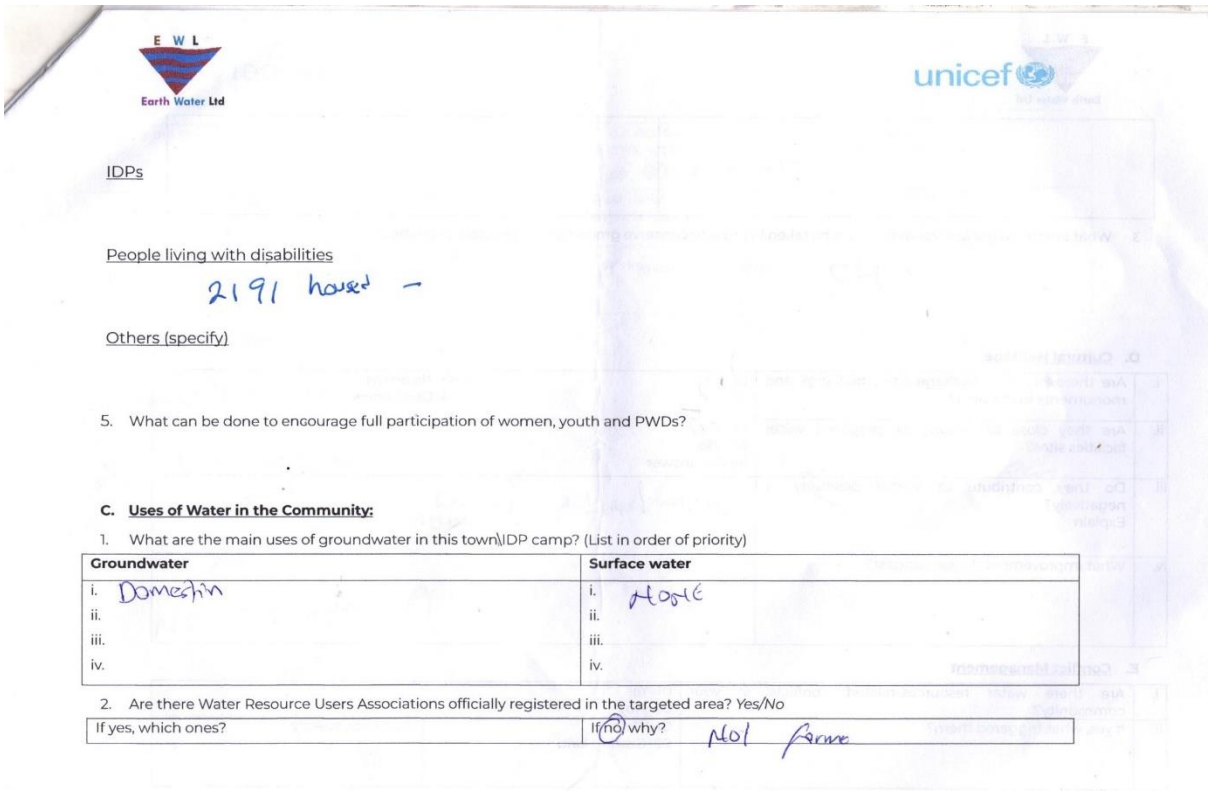
Livestock Population

i. Camels NO
ii. Shoats 100
iii. Cattle NO
iv. Poultry 10

B. Gender, Vulnerable and Disadvantaged Groups

1. How many female households are there in the town/IDP camp? 45%
2. What is the average income of female households? (USD) 4 dollar per/da
3. Role of women and girls in WASH & waste management
   a. Which roles do women and girls play in WASH & waste management?
   b. Are women involved in Water Users committees? (Yes/No)
   c. If yes, what roles do they play in these committees?
   d. If not, state the contributing factors
4. Challenges related to WASH & waste management
   a. What challenges are experienced by vulnerable groups? physical strain, exposure to gender-based violence, health risks, impact on education, economic burden, and limited decision-making power etc)
   Women & Girls
   4 water shortage



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IDPs

People living with disabilities

2191 house -

Others (specify)

5. What can be done to encourage full participation of women, youth and PWDs?

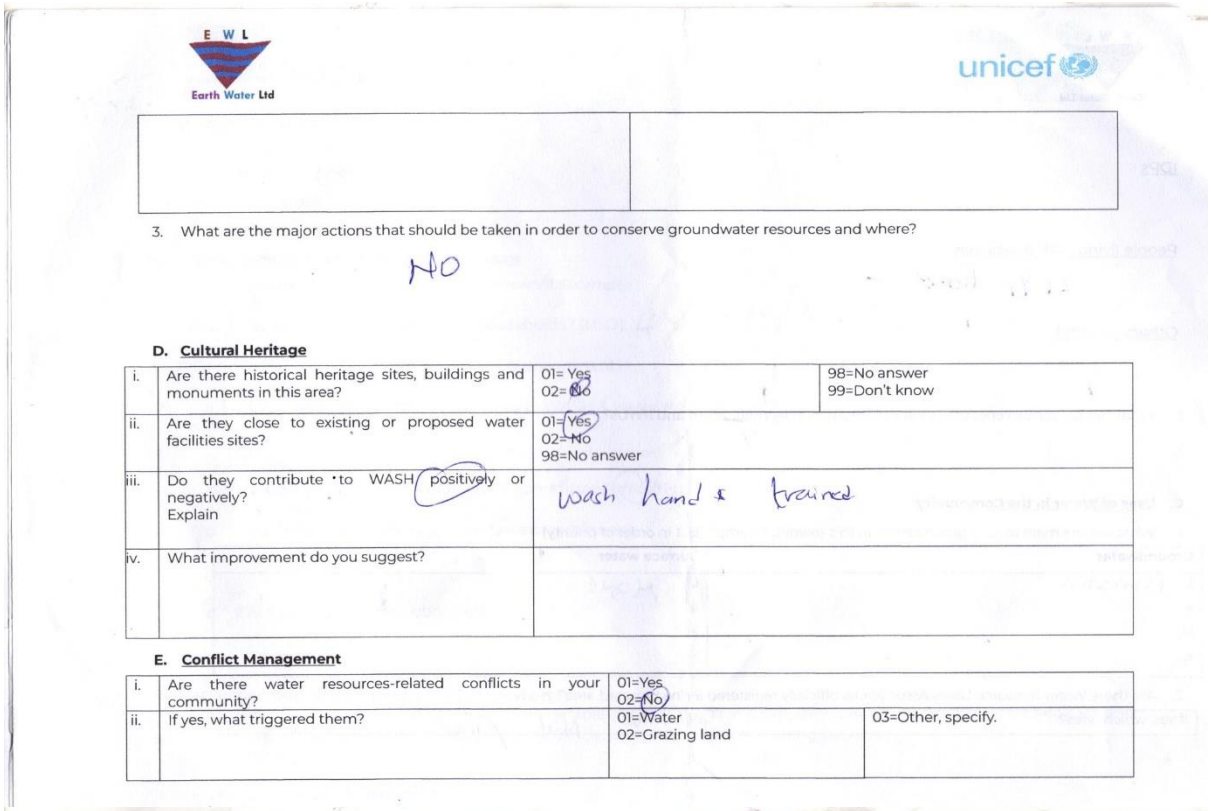
C. Uses of Water in the Community:

1. What are the main uses of groundwater in this town\IDP camp? (List in order of priority)

Groundwater	Surface water
i. Domestic	i. Hotel
ii.	ii.
iii.	iii.
iv.	iv.

2. Are there Water Resource Users Associations officially registered in the targeted area? *Yes/No*

If yes, which ones?	If no, why? Not Farme



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3. What are the major actions that should be taken in order to conserve groundwater resources and where?

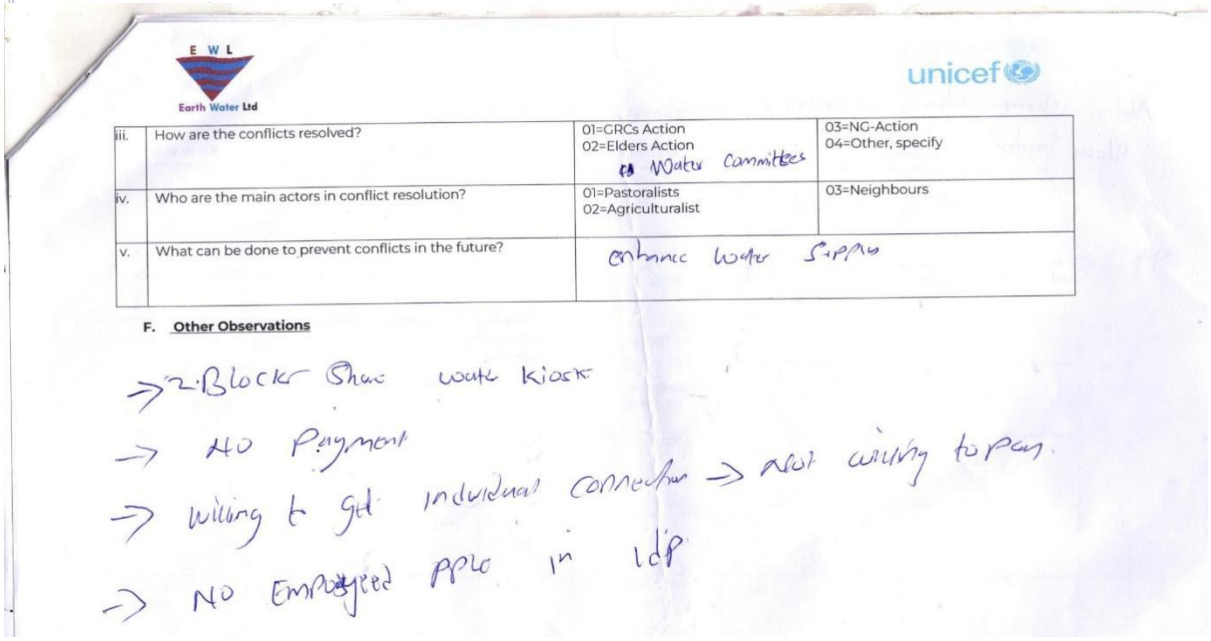
NO

D. Cultural Heritage

i.	Are there historical heritage sites, buildings and monuments in this area?	01= Yes 02=No	98=No answer 99=Don't know
ii.	Are they close to existing or proposed water facilities sites?	01=Yes 02=No 98=No answer	
iii.	Do they contribute to WASH positively or negatively? Explain	wash hand & trained	
iv.	What improvement do you suggest?		

E. Conflict Management

i.	Are there water resources-related conflicts in your community?	01=Yes 02=No	
ii.	If yes, what triggered them?	01=Water 02=Grazing land	03=Other, specify.



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iii.	How are the conflicts resolved?	01=GRCs Action 02=Elders Action 03 Water committees	03=NG-Action 04=Other, specify
iv.	Who are the main actors in conflict resolution?	01=Pastoralists 02=Agriculturalist	03=Neighbours
v.	What can be done to prevent conflicts in the future?	enhance water supply	

F. Other Observations

-> 2. Block Share water kiosk

-> No Payment

-> Willing to get individual connection -> not willing to pay.

-> No Employed appl in idp