



BEERO OO BARWAAQEE SOOMAALIYA (BBS) IRRIGATION PROJECT

ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT (ESIA) REPORT

Revitalizing Irrigation Infrastructure and Climate-Smart Agriculture in Somalia

BEERO OO BARWAAQEE SOOMAALIYA (BBS) PROJECT

SOMALILAND

Zeila, Ainabo, Salahley, and Borama Districts — 68 Sites

FINANCED BY	African Development Bank (AfDB)
AFDB CATEGORY	Category 2
PROPONENT	Ministry of Agriculture and Irrigation (MoAI), Federal Republic of Somalia
REPORT DATE	July 2026
FIELD VERIFICATION	December 2025 – January 2026
PROJECT SITES	Somaliland — Zeila District (36 sites), Ainabo District (19 sites), Salahley District (12 sites), and Borama District (1 site) — 68 sites total

DECLARATION PAGE

This Environmental and Social Impact Assessment (ESIA) Report has been prepared for the Beero oo Barwaaqee Soomaaliya (BBS) Irrigation Project Somaliland, covering 68 water infrastructure sites across Zeila District (Awdal region), Ainabo District (Sool region), Salahley District (Maroodi Jeex region), and Borama District (Awdal region), under the Ministry of Agriculture and Irrigation (MoAI) of the Federal Republic of Somalia, with financing from the African Development Bank (AfDB).

The undersigned hereby declare that this ESIA has been carried out in accordance with the applicable environmental and social laws, regulations, and policies of the Federal Republic of Somalia and the requirements of the African Development Bank's Integrated Safeguards System (ISS, 2023). To the best of our knowledge, the information contained in this Report is true, complete, and accurate, and the environmental and social risks and impacts of the Project have been assessed in a professional and objective manner.

This Declaration Page is signed upon submission of the Report for environmental and social clearance, and a signed copy shall be shared with the African Development Bank.

Declaration and Signatures

Action	Name / Position	Organization	Date & Signature
Prepared by	Yussuf Abdi Maalim — ESS Specialist	MoAI, Somalia	
Cleared by	Eng. Mohamed Hassan Abdulle Director General (DG)	MoAI / FGS	



ABBREVIATIONS

Abbreviation	Full Form
AfDB	African Development Bank
ARAP	Abbreviated Resettlement Action Plan
BBS	Beero oo Barwaaqee Soomaaliya Project
C-ESMP	Contractor Environmental and Social Management Plan
CLO	Community Liaison Officer
CRA	Climate Risk Assessment
ESHS	Environment, Social, Health, and Safety
ESIA	Environmental and Social Impact Assessment
ESMP	Environmental and Social Management Plan
ERW	Explosive Remnants of War
FAO	Food and Agriculture Organization
FGS	Federal Government of Somalia
FMS	Federal Member States
GBV	Gender-Based Violence
GIIP	Good International Industry Practice(s)
GRM	Grievance Redress Mechanism
HVRM	Highly Vulnerable and Marginalized (groups)
IDP	Internally Displaced Persons
IPC	Integrated Phase Classification
ISS	Integrated Safeguards System (AfDB 2023)
LMP	Labour Management Procedures
LTIFR	Lost Time Injury Frequency Rate
MoAI	Ministry of Agriculture and Irrigation
MoECC	Ministry of Environment and Climate Change
O&M	Operation and Maintenance
OHS	Occupational Health and Safety
OS	Operational Safeguard
PIU	Project Implementation Unit
PPE	Personal Protective Equipment
SEA/SH	Sexual Exploitation, Abuse, and Sexual Harassment
SEP	Stakeholder Engagement Plan
SMP	Security Management Plan
SWALIM	Somalia Water and Land Information Management
UXO	Unexploded Ordinance
WUA	Water User Association / Canal Committee

EXECUTIVE SUMMARY

Project at a Glance

Item	Summary
Project	Beero oo Barwaaqee Soomaaliya (BBS) Irrigation Project – Somaliland Component
Proponent / Borrower	Ministry of Agriculture and Irrigation (MoAI), Federal Republic of Somalia, implemented in coordination with Somaliland government counterparts
Financier	African Development Bank (AfDB)
AfDB E&S Category	Category 2 under the African Development Bank Integrated Safeguards System (ISS, 2023).
Geographic Scope	68 sites: Zeila District – 36; Ainabo District – 19; Salahley District – 12; Borama District – 1
Infrastructure	26 water catchments; 30 shallow wells; 10 boreholes (7 new, 3 rehabilitation); 2 pipeline canals
Applicable AfDB Safeguards	OS1, OS2, OS3, OS4, OS7 and OS10; precautionary controls under OS5, OS6 and OS8; OS9 not applicable
Field Verification	December 2025 – January 2026
Implementation Period	Four-year project period; works phased by district and site readiness
Indicative Safeguards Budget	Approximately USD 683,000 over four years for PIU-managed safeguards activities, exclusive of contractor ESHS costs carried through works contracts.

1. Project Background and Rationale

The Beero oo Barwaaqee Soomaaliya (BBS) Irrigation Project is a Federal Republic of Somalia initiative led by the Ministry of Agriculture and Irrigation and financed by the African Development Bank. The project is intended to improve water security, agricultural productivity and climate resilience in selected project areas. The Somaliland component is the largest state-level package by site count and spans four districts and three regions with markedly different environmental, hydrogeological and social conditions.

The component addresses chronic water insecurity in arid and semi-arid areas where pastoral, agro-pastoral and farming livelihoods depend heavily on seasonal catchments and groundwater. The principal development constraints are degraded and sedimented catchments in Ainabo and Salahley; poorly protected and sometimes brackish shallow wells in the Zeila coastal cluster; limited reliable deep-groundwater supply; and deteriorated pipeline conveyance in Zeila. The concentration of 30 shallow wells in the Aroorseel/Xariirad area creates a particularly sensitive coastal-aquifer context in which water quality, salinity and cumulative abstraction require stronger controls than at the dispersed interior sites.

2. Purpose, Scope and Approach of the ESIA

The ESIA has been prepared to support AfDB and Borrower decision-making by identifying and evaluating environmental and social risks and impacts, applying the mitigation hierarchy, defining management and monitoring measures, and establishing implementation responsibilities for all 68 sites. It covers pre-construction and mobilisation, construction, commissioning, operation and maintenance, and demobilisation/reinstatement of temporary works.

The assessment is based on the updated BBS site register, environmental and social screening, field verification, consultations with Somaliland institutions, district administrations and affected communities, review of available technical information, and environmental and social baseline data. Impact significance is evaluated using magnitude, duration, geographic extent, receptor sensitivity, reversibility and likelihood, with ratings of Negligible, Minor, Moderate and Major. Where the available evidence does not support a final site-specific determination, the ESIA treats the missing evidence as a pre-works hold point rather than assuming a result.

3. Project Components and Locations

Intervention	Number	Distribution	Principal Works
Water catchments	26 sites	Ainabo 15; Salahley 9; Zeila 2	Desilting/reshaping, embankment and bund works, liners where justified, inlet/outlet and silt-control improvements, troughs and reinstatement.
Shallow wells	30 sites	All in Zeila (Aroorseel/Xariirad)	Cleaning/desilting, casing/coping repair, pump installation as appropriate, apron, drainage, fencing, collection points and troughs; mandatory salinity and bacteriological testing.
Boreholes	10 sites	Zeila 2; Ainabo 4; Salahley 3; Borama 1	Seven new and three rehabilitated boreholes; hydrogeological confirmation, solar pumping, wellhead protection, kiosks/troughs and groundwater monitoring.
Pipeline canals	2 sites	Zeila	Rehabilitation of Draydhere and Aroor Seel buried conveyance systems, including trenching, pipe installation/jointing, intake/outlet structures and distribution manifolds.

The project is geographically divided between the dense coastal Zeila cluster and widely dispersed interior water points. This distinction is central to the ESIA: Zeila requires cluster-level aquifer, water-quality, access and construction-phasing controls, while Ainabo, Salahley and Borama require strong groundwater sustainability, erosion, heat-stress, remote-access and pastoral-mobility controls.

4. AfDB Environmental and Social Categorization and Operational Safeguards

The Somaliland component is classified as an AfDB Category 2 operation under the AfDB Integrated Safeguards System (ISS, 2023).

Operational Safeguard	Status	Application to Somaliland
OS1 – Assessment and Management of E&S Risks and Impacts	Applicable	Overall ESIA/ESMP, cumulative aquifer effects, climate risk, pre-works verification and adaptive management.
OS2 – Labour and Working Conditions	Applicable	Heat stress, drilling, excavation, trench and confined-space safety, worker welfare and labour-management measures.
OS3 – Resource Efficiency and Pollution Prevention	Applicable	Groundwater sustainability, salinity/EC, water quality, dewatering and drilling waste, sediment, fuel/chemical and pesticide controls.
OS4 – Community Health, Safety and Security	Applicable	Open excavations, water-point safety, water quality, SEA/SH, traffic and security management.

Operational Safeguard	Status	Application to Somaliland
OS7 – Vulnerable Groups	Applicable	Nomadic women, female-headed households, minority clans, poor pastoral households, coastal fishing communities, youth and persons with disabilities.
OS10 – Stakeholder Engagement and Information Disclosure	Applicable	Consultation, disclosure, WUA participation, GRM and ongoing engagement.
OS5, OS6 and OS8	Precautionary	Land Access Protocol and displacement trigger; footprint/revegetation controls; Chance Finds Procedure.
OS9 – Financial Intermediaries	Not applicable	No financial-intermediary structure within the component.

5. Policy, Legal and Institutional Context

The project is implemented within the applicable Federal Republic of Somalia environmental, water, climate, labour, public-health, agriculture and land-policy framework and in coordination with the Somaliland institutions that exercise practical environmental, water-sector and local-administration functions in the project areas.

The AfDB ISS 2023 requirements are applied as the minimum project standard where regulatory coverage, monitoring or enforcement is less developed. The principal institutional gaps relevant to the project are limited routine groundwater/coastal-salinity monitoring, variable district-level environmental oversight, inconsistent drinking-water quality enforcement, and non-standardized grievance and worker-protection procedures. The ESMP addresses these gaps through pre-works technical studies, permits, monitoring, formal GRM/SEA/SH arrangements, contractor obligations, supervision and capacity development.

6. Analysis of Alternatives and Design Rationale

The alternatives analysis considered the no-project option, location and micro-siting, design and technology, construction methods and sequencing, and risk-avoidance choices. The no-project alternative was rejected because it would perpetuate severe dry-season water insecurity, degraded catchment storage, unreliable or poor-quality shallow-well supply and lack of dependable groundwater access.

Issue	Preferred Approach	E&S / Operational Rationale
Zeila shallow-well pumping	Hand pump where yield and service conditions allow; electric pumping only where technically justified	Reduces operating cost and fuel/electricity dependence while allowing higher-yield sources to remain functional.
Zeila pipeline conveyance	Buried HDPE pipeline rather than open canal	Reduces evaporation, contamination exposure and open-water access conflict; trench risks are managed through construction controls.
Catchment lining	Geomembrane where infiltration losses justify lining	Improves retained storage while avoiding unnecessary cost at sites where compacted soil is adequate.
Borehole energy	Solar-powered pumping	Reduces recurring fuel costs, supply-chain risk and operational pollution.
Zeila salinity management	Test first; rehabilitate/commission only suitable potable sources	Avoids investment in saline or otherwise unsuitable sources and protects public health.

Issue	Preferred Approach	E&S / Operational Rationale
Zeila construction sequencing	Maximum five wells under rehabilitation at once and at least 60% operational	Protects continuity of community water access and limits simultaneous cluster disturbance.

7. Environmental and Social Baseline

7.1 Physical and Environmental Setting

The project spans four distinct settings. Zeila lies on the Gulf of Aden coastal plain, where the climate is extremely arid and the shallow groundwater system is influenced by seawater. Ainabo and Salahley are interior dryland and rangeland environments with highly variable bimodal rainfall, long dry seasons, shallow erosion-prone soils and heavy dependence on seasonal catchments and groundwater. Borama lies in the northwestern highlands and is relatively cooler and wetter, but the project site remains dependent on groundwater.

None of the four districts has permanent surface water within the project setting. The Zeila shallow coastal aquifer is the most sensitive water resource because it is shallow, salinity-influenced and subject to cumulative drawdown under dense abstraction. Interior borehole aquifers have variable depth, yield and mineralization and require site-specific hydrogeological confirmation. Climate stress is a cross-cutting baseline condition: drought and heat stress are high to very high, while extreme rainfall can damage catchment structures and sea-level rise can exacerbate coastal salinity intrusion.

7.2 Social Baseline, Livelihoods and Vulnerability

Project communities are predominantly pastoral and agro-pastoral, with small-scale cultivation where water permits. Zeila's Aroorseel area is comparatively densely settled and includes agro-pastoral and coastal fishing livelihoods; Ainabo and Salahley communities are more dispersed and mobile. Water-point access, pastoral movement and local customary governance therefore shape both project benefits and potential conflict pathways.

Vulnerable and differently affected groups include female-headed households, nomadic and semi-nomadic women, minority-clan households, poor pastoral households, coastal fishing communities, unemployed youth and persons with disabilities. Women and girls carry a disproportionate household water-collection burden, while water governance is traditionally male-dominated. The ESIA therefore requires differentiated outreach, women-only consultations, female CLOs and minimum female representation in WUAs.

7.3 Baseline Limitations and Pre-Works Evidence Requirements

Several important baseline datasets are incomplete. Well-by-well Zeila salinity and bacteriological data, combined aquifer behaviour, borehole depth/yield/quality, catchment structural condition, community-level household indicators and some remote-site security information are not fully established. These gaps are not treated as benign assumptions. They are converted into mandatory pre-works studies, baseline measurements, hold points and post-commissioning monitoring requirements.

8. Stakeholder Engagement and Key Issues Raised

Stakeholder engagement was conducted during field verification and subsequent scope confirmation across Zeila, Ainabo, Salahley and Borama. Participants included Somaliland ministries, district administrations, community and

traditional leaders, existing water committees, women and female-headed households, pastoral and agro-pastoral users, the Aroorseel well-cluster community, coastal fishing communities and youth representatives.

The principal issues raised were salinity and water quality at Zeila wells; equitable access across clan and user groups; women's participation in water governance; continuity of water supply during construction; local employment; long-term maintenance; construction disturbance in the dense Zeila cluster; and security at remote sites. These concerns have been incorporated into the project design, sequencing, WUA arrangements, GRM, SEA/SH system and ESMP monitoring.

9. Key Environmental and Social Risks, Impacts and Residual Significance

Risk / Impact	Pre-Mitigation	Residual	Key Control Basis
Soil erosion from catchment earthworks – Ainabo/Salahley	Moderate	Minor	Minimum footprint, erosion/sediment controls, seasonal scheduling and rapid stabilisation.
Shallow-well contamination – Zeila	Major	Minor-Moderate	Controlled dewatering, wellhead protection, pre/post rehabilitation water-quality tests.
Saline/unviable well or borehole – Zeila	Major	Minor	Pre-works salinity/EC evidence; unsuitable sources excluded from potable commissioning.
Cumulative aquifer drawdown – Zeila	Moderate	Minor-Moderate	Aquifer assessment, monitoring wells and combined abstraction limits.
Pipeline trench collapse/access disruption – Zeila	Major	Minor	Shoring, confined-space controls, maintained crossings and rapid reinstatement.
Worker OHS – heat, excavation, drilling, confined space	Major	Minor-Moderate	Heat controls, task-specific permits/procedures, PPE, first response and remote emergency planning.
Community safety	Moderate	Minor	Barriers, signage, traffic controls, secured excavations and community notification.
SEA/SH from worker influx	Moderate-Major	Minor-Moderate	Codes of Conduct, confidential channel, female CLOs and survivor-centred referral pathways.
Temporary water-access disruption	Moderate	Minor	Phased works and contingency supply; Zeila cluster operational-percentage controls.
Security risk – remote sites	Moderate	Minor-Moderate	Dynamic assessment, SMP where required and flexible mobilisation/supervision.
Inequitable water access / social conflict	Moderate-Major	Moderate	Inclusive WUAs, posted rules, GRM and sustained PIU oversight.
Coastal salinity increase – Zeila O&M	Moderate-Major	Moderate	Long-term salinity/water-level monitoring and adaptive abstraction.
Catchment sedimentation – O&M	Moderate	Minor-Moderate	Bi-annual condition inspection and desilting trigger.
Groundwater over-abstraction – boreholes	Moderate	Minor-Moderate	Sustainable-yield limits, SWL/EC/pumping records and

Risk / Impact	Pre-Mitigation	Residual	Key Control Basis
			adaptive reduction.

10. Positive Impacts and Development Benefits

- Improved reliability and safety of community and livestock water supply where water-quality and sustainable-yield controls are met.
- Improved drought resilience through restored catchment storage and more reliable groundwater supply.
- Reduced household water-collection burden for women and girls; the ESIA sets a target of at least 50% reduction in average collection time by Year 2 of operation, subject to baseline and monitoring confirmation.
- Improved livestock health and reduced drought-related livestock losses where water points remain functional and equitably managed.
- Local employment, skills development and WUA/O&M training opportunities.
- Stronger local water governance through documented access rules, women's participation and functioning grievance mechanisms.
- Reduced operational dependence on diesel through solar-powered borehole pumping.

11. Climate, Cumulative and Induced Considerations

Residual climate risk is assessed as Moderate after application of climate-resilient design, groundwater and salinity monitoring, adaptive abstraction and post-event maintenance.

The most important cumulative effect is the combined operation of the 30 Zeila shallow wells and nearby coastal boreholes. Increased abstraction could lower groundwater levels and accelerate salinity intrusion. The ESIA therefore requires cluster-level hydrogeological assessment, monitoring wells, combined abstraction limits and coordinated WUA governance rather than treating each well as an isolated asset. Induced settlement or livelihood changes around improved water points are expected to be limited but should be tracked through WUA membership and access trends.

12. Mitigation Hierarchy and Priority Management Measures

- No mobilisation without written PIU confirmation of site readiness, land/access documentation, community notification, security clearance and approved contractor management plans.
- Complete salinity and bacteriological testing for every Zeila shallow well before rehabilitation and repeat testing before use; do not commission unsuitable potable sources.
- Complete the Aroorseel coastal-aquifer assessment, install monitoring wells and establish combined abstraction limits before Zeila well/borehole works proceed.
- Complete hydrogeological survey and baseline EC/water-quality measurement for every borehole before drilling/rehabilitation and establish sustainable-yield and pumping-hour limits.
- Complete pre-works condition assessment for every catchment and incorporate actual storage, embankment, liner, spillway and erosion needs into final design and method statements.

- Implement Zeila shallow-well works through a C-ESMP Water-Supply Continuity Plan that normally limits rehabilitation to no more than five wells at one time, maintains at least 60% of the relevant Aroorseel wells operational, and provides contingency water where the agreed service threshold cannot be maintained.
- Apply task-specific OHS controls for heat, drilling, trenching, confined-space entry, excavation and remote emergency response; secure all work fronts from community access.
- Protect water quality through controlled dewatering/drilling waste, wellhead protection, drainage, spill prevention, sanitary facilities and commissioning tests.
- Implement Codes of Conduct, SEA/SH induction, confidential reporting, female CLO access and survivor-centred referrals in all four districts.
- Use inclusive WUAs with documented non-discriminatory access rules and at least 30% female membership and leadership before commissioning.
- Apply the Land Access Protocol, document individual well ownership and pastoral routes, and compensate verified project-caused crop/asset losses at replacement cost.
- Use site-specific security assessment and Security Management Plans where required, with authority to delay or suspend works where acceptable access/supervision cannot be maintained.

13. Environmental and Social Management Plan

Chapter 9 provides the operational ESMP for the 68 sites and associated support areas. It converts the assessment into procurement, contractual, supervision, monitoring and O&M obligations. Contractor ESHS requirements shall be incorporated into bidding documents, Bills of Quantities, contract conditions, method statements and C-ESMPs, with written PIU approval required before mobilisation.

13.1 Monitoring and Reporting

Serious incidents require immediate PIU notification and AfDB notification within the controlling Bank/Financing Agreement incident-reporting timeframe.

Topic	Indicator	Frequency	Trigger / Action
Zeila water quality	Salinity/EC and bacteriological quality	Before works; after rehabilitation before use; periodic O&M testing	Non-compliant source not commissioned for potable use; investigate trends.
Zeila aquifer	Static water level and salinity at monitoring wells	Baseline then regular O&M readings	Sustained decline/rising salinity triggers review of combined abstraction limits.
Boreholes	SWL, EC, pumping yield and pumping logs	Construction baseline; periodic O&M	Progressive decline triggers adaptive pumping reduction per approved sustainable-yield controls.
Catchments	Storage, sediment, embankment, liner/spillway condition	Before Gu and after Deyr; after major storms	Desilt at >15% storage loss from post-construction baseline; repair defects.
WUA / inclusion	Membership, female leadership, meeting/access records, grievances	At formation and periodic oversight	At least 30% female membership/leadership; investigate exclusion or persistent allocation grievances.

Topic	Indicator	Frequency	Trigger / Action
OHS / security	Incidents, permits, heat controls, security events	Continuous / monthly reporting	Serious incidents trigger investigation, corrective action and work/security review.
GRM / SEA/SH	Cases, resolution time, referral performance	Monthly	Standard grievances tracked to closure; SEA/SH handled confidentially and survivor-centred.

13.2 Institutional Responsibilities

Actor	Principal ESMP Role
MoAI PIU	Overall ESMP ownership, approval of C-ESMPs/plans, audits, incident management, AfDB reporting and coordination with Somaliland counterparts.
Somaliland E&S Officer	Day-to-day oversight across four districts; inspections, GRM, WUA support, monitoring verification, security follow-up and monthly reporting.
Somaliland Ministry of Water Resources	Water permits, groundwater/coastal-aquifer oversight, joint salinity/SWL monitoring and WUA support.
Somaliland Ministry of Environment and Climate Change	Environmental permitting, ESIA/ESMP review and environmental oversight.
District Administrations / traditional leaders	Access, liaison, security coordination and local/xeer-mediated dispute resolution where appropriate.
Contractors / Supervision Consultant	Implement and verify construction ESHS obligations, method statements, worker controls, quality testing, reinstatement and reporting.
WUAs / community committees	Operate and maintain infrastructure, enforce access rules, maintain water-point/catchment condition and report grievances/monitoring data.
AfDB	Safeguards oversight, review of periodic reporting and corrective-action requirements.

14. Stakeholder Engagement, GRM and SEA/SH Arrangements

The Stakeholder Engagement Plan applies throughout implementation and requires accessible, culturally appropriate and differentiated engagement, including oral and Somali-language communication for low-literacy and mobile groups. A multi-channel GRM must be operational in all four districts before mobilisation. Traditional guurti/xeer processes may support ordinary district-level mediation, but SEA/SH complaints are excluded from community or traditional handling and are managed only through the confidential PIU survivor-centred pathway.

SEA/SH controls apply to all workers, drivers, security personnel and subcontractors. They include signed individual Codes of Conduct, induction and refresher training, female CLOs, confidential reporting, mapped referral pathways and disciplinary consequences. Worker accommodation, if required, must be separated from community residential areas and include gender-sensitive welfare arrangements.

15. Land Access, Livelihood Protection and Inclusion

No involuntary permanent land acquisition or physical displacement is anticipated under the current footprint. A Land Access Protocol applies to all sites and temporary support areas. Working areas, access corridors and individual well arrangements must be documented before works; pastoral routes must be mapped and kept

functional through phasing; and verified project-caused crop or asset losses must be compensated at full replacement cost. Any physical displacement or material loss beyond the screened assumptions triggers work suspension and OS5 determination.

The project LMP should establish transparent and inclusive local recruitment targets for unskilled labour, youth and women in appropriate roles and monitor their implementation through contractor workforce reporting.

16. Integrated Pest and Vector Management

The programme-level Pest and Vector Management Plan is integrated into the Somaliland ESMP because improved water points, troughs and catchments can create mosquito/vector and livestock-disease pathways if drainage and maintenance are poor. Key measures include wellhead and trough drainage, elimination of persistent standing water, catchment/silt-trap maintenance, vector and livestock-disease awareness, Rift Valley Fever and locust coordination, and restrictions on pesticide use near water sources. The ESMP requires approved pesticides only, trained applicators, secure storage and disposal, and investigation of any complaint alleging contamination of a community water source.

17. ESMP Budget and Financing

The ESMP provides an indicative safeguards envelope of approximately USD 683,000 over the four-year project period for PIU-managed safeguards activities, exclusive of contractor ESHS costs financed through works contracts.

Budget control note: the project documentation states the approximately USD 683,000 overall safeguards envelope but does not populate the detailed ESMP line-item budget table. The final ESIA/procurement package should therefore reconcile and approve the detailed allocation before clearance and contract issue; contractor ESHS items remain separately priced in the works contracts.

18. Conditions for Mobilisation, Commissioning and Operation

18.1 Before Mobilisation

- Approved C-ESMP and activity-specific method statements for the relevant work package.
- Approved OHS, waste/spill, community health and safety, labour, SEA/SH and security arrangements.
- Site access and ownership arrangements documented; pastoral-route phasing agreed where relevant.
- Operational GRM, female CLO arrangements and confirmed GBV/SEA/SH referral pathways.
- Zeila well-by-well salinity/bacteriological evidence and the Aroorseel aquifer assessment/monitoring-well programme completed before affected works.
- Hydrogeological survey and baseline EC/water-quality evidence completed for borehole works.
- Catchment condition assessment completed before catchment earthworks.
- Security assessment/clearance completed for each site, with SMP where required.
- UXO/ERW clearance confirmation for previously unworked or uncertain ground-disturbance areas.

18.2 Before Commissioning and Handover

- Post-construction water-quality test passed for each source intended for community use.

- Baseline SWL/EC/salinity and pumping/abstraction records established for groundwater systems and monitoring wells.
- All temporary works, waste/spoil areas and disturbed surfaces reinstated and safety defects closed.
- Inclusive WUA formed and trained, access rules documented and posted, O&M responsibilities and tools in place.
- Monitoring, GRM, SEA/SH and escalation arrangements demonstrated to be operational.

19. C-ESMP and Pre-Construction Confirmation Requirements

REQUIREMENT	ASSESSMENT POSITION	C-ESMP / PRE-CONSTRUCTION ACTION
Catchment status and land-access requirements	The controlled 68-site register identifies 23 catchment rehabilitations and three new Salahley catchments: Qoolbuulale, Bahadhama and Laanqeyta Celiye.	All contractor, land-access, screening and C-ESMP documents shall use this controlled status consistently. New catchments shall complete the applicable siting/land-access requirements before mobilisation.
Labour Management Procedures	The project LMP applies to all contractors and subcontractors. No annex number is relied upon in this final ESIA.	The applicable controlled LMP shall be included in the safeguards package and referenced by title/version in each C-ESMP and works contract.
EC / salinity operational controls	Water potability is determined by the approved project/applicable drinking-water standard. A single generic EC value is not used in this ESIA as a substitute for laboratory assessment.	The Zeila aquifer study and C-ESMP/O&M water-quality protocol shall establish the approved trend-warning and operational action thresholds for salinity/EC and define adaptive abstraction and response actions.
Safeguards budget allocation	The ESIA provides an approximately USD 683,000 PIU safeguards envelope plus contractor ESHS costs through works contracts.	The PIU shall approve and track the detailed annual allocation through the work plan, procurement plan and contract BoQs, ensuring that all ESMP measures remain funded.

These requirements are managed through the controlled site register, approved C-ESMPs, pre-construction technical studies, commissioning protocols and annual safeguards work planning. They do not prevent ESIA submission or clearance because the ESMP establishes binding hold points that must be closed before the affected activity proceeds.

20. Overall Environmental and Social Conclusion

The Somaliland component is environmentally and socially feasible as a Category 2 operation provided the design commitments, pre-works evidence requirements and ESMP controls are implemented in full. The principal residual management priorities are long-term Zeila salinity and aquifer management, equitable water-access governance, groundwater sustainability, SEA/SH prevention, remote-site security and catchment maintenance. These residual risks are manageable within the proposed safeguards framework but require sustained monitoring and institutional follow-through rather than one-time construction controls.

Environmental and social clearance should therefore remain conditional on completion of the defined pre-mobilisation hold points, incorporation of the ESMP into procurement and works contracts, adequate safeguards

financing, functioning stakeholder/GRM/SEA/SH systems, and verification of WUA and monitoring readiness before commissioning.

TABLE OF CONTENTS

DECLARATION PAGE	2
ABBREVIATIONS.....	3
EXECUTIVE SUMMARY	4
Project at a Glance.....	4
1. Project Background and Rationale.....	4
2. Purpose, Scope and Approach of the ESIA.....	4
3. Project Components and Locations	5
4. AfDB Environmental and Social Categorization and Operational Safeguards.....	5
5. Policy, Legal and Institutional Context	6
6. Analysis of Alternatives and Design Rationale.....	6
7. Environmental and Social Baseline.....	7
7.1 Physical and Environmental Setting	7
7.2 Social Baseline, Livelihoods and Vulnerability	7
7.3 Baseline Limitations and Pre-Works Evidence Requirements	7
8. Stakeholder Engagement and Key Issues Raised	7
9. Key Environmental and Social Risks, Impacts and Residual Significance.....	8
10. Positive Impacts and Development Benefits	9
11. Climate, Cumulative and Induced Considerations.....	9
12. Mitigation Hierarchy and Priority Management Measures.....	9
13. Environmental and Social Management Plan.....	10
13.1 Monitoring and Reporting	10
13.2 Institutional Responsibilities.....	11
14. Stakeholder Engagement, GRM and SEA/SH Arrangements	11
15. Land Access, Livelihood Protection and Inclusion	11
16. Integrated Pest and Vector Management.....	12
17. ESMP Budget and Financing	12
18. Conditions for Mobilisation, Commissioning and Operation.....	12
18.1 Before Mobilisation.....	12
18.2 Before Commissioning and Handover.....	12
19. C-ESMP and Pre-Construction Confirmation Requirements	13
20. Overall Environmental and Social Conclusion.....	13
TABLE OF CONTENTS.....	15
CHAPTER 1: INTRODUCTION AND SCOPING	23
1.1 Background and Project Context.....	23
1.2 Purpose and Objectives of the ESIA	23
1.3 Scope of the ESIA	24
1.3.1 Geographic and Intervention Scope	24

1.3.2 Spatial Area of Influence	24
1.3.3 Temporal Scope and Project Phases	24
1.4 ESIA Methodology	24
1.4.1 Review of Project Information and Environmental and Social Screening.....	24
1.4.2 Field Verification and Site-Level Observation.....	24
1.4.3 Stakeholder Engagement as an Assessment Input.....	24
1.4.4 Baseline, Impact Assessment, and Management Planning	25
1.5 Environmental and Social Scoping	25
1.5.1 Scoping Objectives	25
1.5.2 Scoping by District and Intervention Typology.....	25
1.5.3 Cross-Cutting Issues.....	25
1.5.4 Issues of Limited Relevance and Verification Triggers	25
1.5.5 Scoping Outputs and Link to Subsequent Assessment.....	26
1.6 Stakeholder Engagement Approach During ESIA Preparation.....	26
1.7 Assessment Constraints, Data Gaps, and Treatment of Uncertainty	26
1.8 Structure of the ESIA Report.....	26
CHAPTER 2: LEGAL AND INSTITUTIONAL FRAMEWORK	28
2.1 Purpose and Approach.....	28
2.2 National Policy Framework.....	28
2.3 National Legal and Regulatory Framework.....	28
2.3.1 Environmental Assessment and Permitting	29
2.3.2 Water Resources, Irrigation, and Water Supply	29
2.3.3 Land Access, Tenure, and Compensation	29
2.3.4 Labour, Occupational Health and Safety, and Public Health.....	29
2.3.5 Pollution Prevention, Waste, Agrochemicals, and Biodiversity.....	30
2.3.6 Cultural Heritage	30
2.3.7 Security, Conflict Sensitivity, and Local Administration	30
2.4 Somaliland Legal and Administrative Framework	30
2.5 International and Regional Obligations	31
2.6 African Development Bank Integrated Safeguards System (ISS, 2023).....	31
2.6.1 Operational Safeguards Applicability	31
2.7 Permits, Authorizations, and Pre-Works Compliance Requirements.....	31
2.8 Institutional Framework.....	32
2.8.1 Federal Institutions.....	32
2.8.2 Somaliland and District Institutions.....	32
2.8.3 Project Delivery and Oversight Entities.....	33
2.9 Institutional Capacity and Implementation Considerations.....	33
2.10 Gap Analysis: Borrower Framework and AfDB ISS 2023.....	33
2.10.1 Governing Compliance Principle	34
CHAPTER 3: ANALYSIS OF ALTERNATIVES	35

3.1 Purpose and Approach.....	35
3.2 Decision Criteria and Evidence Base	35
3.3 No-Project Alternative	35
3.4 Location and Siting Alternatives	35
3.4.1 Rehabilitation Works	35
3.4.2 New Boreholes and New Catchments	36
3.4.3 Zeila Shallow-Well Cluster and Site-Selection Records.....	36
3.5 Design and Technology Alternatives	36
3.6 Construction and Implementation Alternatives	36
3.7 Environmental and Social Implications of the Alternatives.....	37
3.8 Feasibility of Managing Impacts Under the Preferred Alternative	37
3.9 Cost and Economic Considerations	37
3.10 Stakeholder Input into Alternatives	37
3.11 Preferred Alternative and Conditions	37
CHAPTER 4: DESIGN MEASURES.....	38
4.1 Purpose and Design Basis	38
4.2 Design Principles Applied Across Infrastructure Types	38
4.3 Water Catchment Design Measures	38
4.4 Borehole Design Measures	41
4.5 Shallow-Well Design Measures - Zeila.....	41
4.6 Pipeline-Canal Design Measures - Zeila.....	43
4.7 Climate-Resilience Measures Incorporated in Design	44
4.8 User Access, Safety and Functional Separation	44
4.9 Design Response to Stakeholder Considerations	45
4.10 Design Information to be Confirmed Before Construction	45
CHAPTER 5: PROJECT DESCRIPTION	46
5.1 Purpose and Scope of this Chapter.....	46
5.2 Somaliland Component within the BBS Project	46
5.3 Project Locations and Site Register	47
5.3.1 Coordinate and Site-Identity Status.....	50
5.3.2 Engineering-Record Cross-Reference and Nomenclature Controls.....	50
5.4 Infrastructure Typologies and Principal Works.....	51
5.4.1 Water Catchments	51
5.4.2 Shallow Wells	52
5.4.3 Boreholes	52
5.4.4 Pipeline Canals	53
5.5 Project Life-Cycle Activities and Implementation Approach	53
5.5.1 Pre-Construction Confirmation	53
5.5.2 Construction Methods.....	54
5.5.3 Work Packaging and Sequencing	54

5.6 Temporary Construction Support and Associated Sites	54
5.7 Materials, Equipment and Resource Requirements	54
5.8 Workforce and Contractor Organisation	54
5.9 Operation and Maintenance Concept	54
5.10 Project Maps, Photographs and Engineering Drawings	55
5.11 Project Description Data Controls	55
CHAPTER 6: PROJECT BASELINE	56
6.1 Purpose and Baseline Approach	56
6.2 Baseline Evidence, Scale and Data Confidence.....	56
6.3 Regional Environmental Setting	56
6.4 Zeila District (Awdal) Baseline	56
6.4.1 Physical and Coastal Water-Resource Setting.....	56
6.4.2 Livelihoods and Community Water Use	57
6.4.3 Social, Access and Cumulative Context.....	57
6.5 Ainabo District (Sool) Baseline.....	57
6.5.1 Physical and Water-Resource Setting	57
6.5.2 Livelihoods and Water Dependence	58
6.5.3 Access, Services and Security Context.....	58
6.6 Salahley District (Maroodi Jeex) Baseline.....	58
6.6.1 Physical and Water-Resource Setting	58
6.6.2 Livelihood and Pastoral Context.....	58
6.6.3 Remoteness and Security Context.....	58
6.7 Borama District (Awdal) Baseline.....	59
6.8 Biological Environment and Ecosystem Services.....	59
6.9 Social and Socioeconomic Baseline	59
6.9.1 Livelihood Dependence and Drought Sensitivity	59
6.9.2 Land, Water Governance and Access	59
6.9.3 Gender and Youth.....	60
6.9.4 Vulnerable and Differently Affected Groups	60
6.9.5 Education, Health and Service Access	60
6.10 Community Health, Safety and Security Baseline	60
6.11 Cultural Heritage Baseline	60
6.12 Climate Baseline and Projected Change	60
6.13 Contextual Fragility and Resilience Conditions	61
6.14 Existing and Planned Developments / Cumulative Context	61
6.15 Baseline Information to be Confirmed through the C-ESMP and Pre-Construction Process	61
6.16 Baseline Summary for Impact Assessment.....	62
CHAPTER 7: ENVIRONMENTAL AND SOCIAL RISKS AND IMPACTS	63
7.1 Impact-Assessment Scope and Approach.....	63
7.1.1 Impact Identification	63

7.1.2 Significance Determination.....	63
7.1.3 Treatment of Uncertainty	64
7.2 Impact Receptors and Valued Environmental and Social Components.....	64
7.3 Direct Impact Pathways by Project Phase.....	64
7.3.1 Pre-Construction and Mobilisation	64
7.3.2 Construction and Rehabilitation	65
7.3.3 Commissioning, Operation and Maintenance	65
7.3.4 Demobilisation of Temporary Works	65
7.4 Pre-Construction and Mobilisation Risks	65
7.5 Construction-Phase Environmental Risks and Impacts	66
7.5.1 Catchment Earthworks: Soil Erosion and Sediment Transport	66
7.5.2 Shallow-Well Contamination During Rehabilitation - Zeila.....	66
7.5.3 Salinity and Investment in an Unviable Water Source - Zeila	66
7.5.4 Cumulative Aquifer Drawdown During Cluster Rehabilitation - Zeila	66
7.5.5 Borehole Drilling, Fluids, Cuttings and Local Pollution	66
7.5.6 Coastal Wind and Dust - Zeila.....	67
7.5.7 Biodiversity and Vegetation Disturbance	67
7.6 Construction-Phase Labour and Occupational Health and Safety Risks.....	67
7.6.1 Pipeline Trench Collapse and Access Disruption - Zeila.....	67
7.6.2 Shallow-Well Cleaning and Confined-Space Exposure.....	67
7.6.3 Borehole Drilling and Plant Safety	67
7.6.4 Heat Stress, Remoteness and Emergency Response.....	67
7.6.5 Labour Conditions and Worker Management.....	67
7.7 Construction-Phase Community Health, Safety, Security and Social Risks.....	68
7.7.1 Community Safety and Traffic.....	68
7.7.2 Temporary Disruption to Water Access.....	68
7.7.3 Security Risk at Remote Sites.....	68
7.7.4 SEA/SH and Worker-Community Interaction.....	68
7.7.5 Land Access, Individual Well Ownership and Pastoral Routes.....	68
7.7.6 Cultural Heritage and UXO/ERW	68
7.8 Summary of Construction-Phase Significance.....	69
7.9 Operation and Maintenance Risks and Impacts	69
7.9.1 Inequitable Water Access and Social Conflict	69
7.9.2 Coastal Salinity Increase - Zeila.....	70
7.9.3 Catchment Sedimentation and Deterioration	70
7.9.4 Groundwater Over-Abstraction - Boreholes.....	70
7.9.5 Safety Around Operational Infrastructure.....	70
7.9.6 Water Quality and Public Health	70
7.9.7 Pest, Vector and Livestock-Disease Risks	70
7.10 Summary of Operation and Maintenance Significance	70

7.11 Indirect and Induced Impacts.....	71
7.12 Cumulative Impacts - Zeila Coastal Cluster	71
7.13 Associated Facilities, Support Sites and Supply-Chain Risks	71
7.14 Climate Change Risks and Interaction with Project Impacts	72
7.15 Positive Impacts and Development Opportunities	72
7.16 Residual Impact Profile	72
7.17 Impact Determinations to be Confirmed through the C-ESMP and Pre-Construction Process	73
7.18 Overall Impact Assessment Conclusion.....	73
CHAPTER 8: MITIGATION MEASURES	75
8.1 Purpose and Approach.....	75
8.2 Application of the Mitigation Hierarchy	75
8.3 Avoidance Measures.....	75
8.4 Minimisation and Reduction Measures	76
8.5 Mitigation Measures by Intervention Type	76
8.5.1 Water Catchments	76
8.5.2 Shallow-Well Rehabilitation - Zeila.....	77
8.5.3 Boreholes - All Districts	77
8.5.4 Pipeline Canals - Zeila	78
8.6 Cross-Cutting Environmental, Social, Health and Safety Measures	78
8.6.1 Security and Access Management	78
8.6.2 Labour and Occupational Health and Safety.....	78
8.6.3 Community Health and Safety	79
8.6.4 SEA/SH Prevention and Response	79
8.6.5 Waste, Pollution and Resource Management	79
8.6.6 Water Quality and Groundwater Management.....	79
8.6.7 Pest, Vector and Livestock-Disease Management	79
8.7 Land Access, Livelihood Restoration and Compensation	79
8.8 Differentiated Measures for Vulnerable and Differently Affected Groups	80
8.9 Enhancement Measures	80
8.10 Measures Requiring Continued Management Attention	80
8.11 Technical and Financial Feasibility.....	80
8.12 Pre-Mobilisation Verification and Adaptive Management.....	81
CHAPTER 9: ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN (ESMP)	82
9.1. ESMP objectives and scope.....	82
9.2. Summary of environmental and social risks and impacts	82
9.3. Mitigation, compensation and enhancement measures.....	83
9.3.1. Pre-construction and mobilisation phase	83
9.3.2. Construction phase.....	86
9.3.3. Commissioning and operation and maintenance phase	89
9.3.4. Land Access Protocol.....	90

9.3.5. SEA/SH prevention and response.....	90
9.4. Environmental and social clauses for procurement and contracts	90
9.5. Environmental, occupational health and safety requirements (ESHS hold points)	91
9.6. Stakeholder-engagement measures	92
9.7. Project-level grievance redress mechanism	92
9.8. Monitoring and reporting plan	93
9.9. Institutional arrangements	96
9.9.1. Incident management and reporting	96
9.10. Institutional capacity assessment.....	96
9.11. Capacity development and training.....	97
9.12. Implementation schedule.....	98
9.13. Cost estimates and sources of financing.....	99
9.14. ESMP implementation matrix	100
9.15. Environmental monitoring matrix	103
9.16. Risk-management matrix	103
9.17. Key ESMP implementation indicators	104
9.18. Integration of the ESMP into project design, planning, procurement, budget and implementation	104
9.19. Associated management plans	105
CHAPTER 10: CONCLUSION AND RECOMMENDATIONS.....	107
10.1 Overall Conclusion.....	107
10.2 Basis for Environmental and Social Acceptability	107
10.3 Conditions to be Satisfied Before Mobilisation	107
10.4 Conditions During Construction	108
10.5 Conditions for Commissioning and Operation	108
10.6 C-ESMP and Pre-Construction Confirmation Requirements	109
10.7 Recommendations.....	109
10.8 Final Statement	109
APPENDICES VOLUME.....	110
SOMALILAND	110
Annex 1: E&S Screening Forms (Somaliland)	111
Controlled Screening Reconciliation Register.....	111
Annex 2: Stakeholder Engagement Plan (SEP) — Somaliland.....	116
Annex 3: Grievance Redress Mechanism (GRM) Procedures — Somaliland.....	119
Annex 4: Consultation Log — Somaliland	120
Annex 5: Climate Risk Assessment — Somaliland	120
Annex 6: Gender Analysis and Gender and Social Inclusion (GSI) Plan — Somaliland.....	122
Annex 7: Chance Finds Procedure	124
Annex 8: Environmental and Social Monitoring Plan — Somaliland.....	124
Annex 9: Environmental, Social, and Capacity Building Training Plan — Somaliland	126
Supplementary Annex: Technical Drawings, Maps, Photographs and Supporting Project Records Register	129

Selected Supporting Maps / Climate-Hazard Figures	130
Project-Wide Supporting Studies Relevant to this ESIA.....	136
Pre-Construction / C-ESMP Evidence-Control Register	137

CHAPTER 1: INTRODUCTION AND SCOPING

1.1 Background and Project Context

This Environmental and Social Impact Assessment (ESIA) covers the Somaliland component of the Project and applies the same ten-chapter structure used for the BBS state-level assessments.

The Somaliland component spans four districts and three regions: Zeila District in Awdal, Ainabo District in Sool, Salahley District in Maroodi Jeex, and Borama District in Awdal. The settings are materially different. Zeila is a low, arid Gulf of Aden coastal plain containing a dense cluster of shallow wells and two pipeline-canal systems; Ainabo and Salahley are interior dryland and rangeland settings dominated by catchments and groundwater infrastructure; and the Borama component comprises one new borehole in the northwestern highlands. These differences require district- and typology-specific assessment rather than a uniform risk profile.

The controlling project scope used in this ESIA is the 68-site scope stated in the July 2026 Somaliland ESIA and its reproduced June 2026 BBS Master List: 36 sites in Zeila, 19 in Ainabo, 12 in Salahley, and 1 in Borama. The infrastructure package comprises 26 catchment interventions, 30 shallow-well rehabilitations, 10 boreholes, and 2 pipeline-canal rehabilitations. Review of the site-status tables shows that the catchment package includes both rehabilitation and new construction: 23 catchments are rehabilitation works and 3 Salahley catchments are new. Across the full 68-site component, 58 sites are rehabilitation works and 10 are new works. Detailed site registers and the reconciliation of supporting engineering records are presented in Chapter 5.

The Project is classified as an AfDB Category 2 operation and this ESIA applies the AfDB Integrated Safeguards System (ISS, 2023).

1.2 Purpose and Objectives of the ESIA

The purpose of this ESIA is to identify and assess the environmental and social risks and impacts associated with the 68 Somaliland sites and to establish the management, monitoring and institutional requirements necessary for environmentally and socially responsible implementation.

The specific objectives are to:

- confirm the geographic and intervention scope of the Somaliland component and establish the area and phases to be assessed;
- establish the environmental and social baseline relevant to the identified risk pathways, distinguishing site-verified evidence from regional information and unresolved data gaps;
- assess direct, indirect, cumulative and climate-related risks and impacts in a manner proportionate to the four infrastructure typologies and four district contexts;
- apply the mitigation hierarchy and identify measures to avoid, minimise, mitigate, restore and, where necessary, compensate adverse impacts while enhancing positive outcomes;
- define the institutional, monitoring, reporting, stakeholder-engagement and grievance-management requirements for implementation; and

- provide a documented basis for AfDB review, Borrower decision-making, procurement, supervision and implementation.

1.3 Scope of the ESIA

1.3.1 Geographic and Intervention Scope

The ESIA covers all 68 Somaliland sites in Zeila, Ainabo, Salahley and Borama Districts and the four intervention typologies: water catchments, shallow wells, boreholes and pipeline canals. The detailed site register, coordinates and status are presented in Chapter 5 and are not repeated in this introductory chapter.

1.3.2 Spatial Area of Influence

The spatial scope includes the direct works footprint; temporary access, storage, borrow, spoil, drilling-waste and worker-support areas; the immediately surrounding community zone affected by dust, noise, traffic, trenching and temporary access restrictions; and the broader resource and livelihood systems influenced by changes in water availability. For Zeila, the area of influence also includes the shallow coastal aquifer underlying the Aroorseel/Xariirad cluster because cumulative abstraction and salinity effects extend beyond individual well footprints. For Ainabo and Salahley, the broader area includes pastoral movement corridors and water-governance zones associated with shared catchments and boreholes.

1.3.3 Temporal Scope and Project Phases

The assessment covers pre-construction and mobilisation, construction, commissioning, operation and maintenance, and closure or reinstatement of temporary construction facilities. Seasonal sensitivity is considered in relation to Gu and Deyr rainfall, Jilaal and Hagaa water stress, and the strong coastal wind and dust conditions affecting Zeila during the southwest monsoon period.

1.4 ESIA Methodology

1.4.1 Review of Project Information and Environmental and Social Screening

Where engineering records use names or parameters that do not align exactly with the controlled site register, the discrepancy shall be resolved through the PIU-controlled site/drawing register before procurement and incorporated into the relevant C-ESMP.

1.4.2 Field Verification and Site-Level Observation

The ESIA records field verification during December 2025-January 2026 across the project sites or site clusters. Site-level observations were supplemented by local consultation and secondary information where access or data availability was constrained. The ESIA does not treat regional information as a substitute for unresolved site-specific hydrogeological, water-quality, land-access or design information.

1.4.3 Stakeholder Engagement as an Assessment Input

Detailed consultation records and ongoing engagement arrangements are maintained through the Stakeholder Engagement Plan, consultation records and Chapter 9 ESMP provisions.

1.4.4 Baseline, Impact Assessment, and Management Planning

Baseline conditions are organised by environmental and social receptor and by district context. Impact significance is assessed using magnitude, duration, geographic extent, receptor sensitivity, reversibility and likelihood, with ratings of Negligible, Minor, Moderate and Major. Mitigation and monitoring requirements are then developed through the mitigation hierarchy and translated into the ESMP.

1.5 Environmental and Social Scoping

1.5.1 Scoping Objectives

Scoping identifies the issues requiring detailed assessment, defines the area and phases of influence, and prevents the ESIA from becoming repetitive or disproportionate. The principal scoping distinction for Somaliland is between the coastal Zeila cluster and the dispersed dryland interventions in Ainabo, Salahley and Borama.

1.5.2 Scoping by District and Intervention Typology

Table 1-1: District and Typology Scoping Summary

District / scope	Infrastructure	Issues carried forward
Zeila - 36 sites	30 shallow wells; 2 pipeline canals; 2 boreholes; 2 catchments	Shallow-aquifer salinity and contamination; cumulative drawdown; water-supply continuity during clustered works; trench safety and access; coastal wind/dust; community safety in a dense work area.
Ainabo - 19 sites	15 catchments; 4 boreholes	Catchment erosion and sediment; groundwater sustainability; drilling and rehabilitation safety; extreme heat; remoteness; pastoral access and equitable water governance.
Salahley - 12 sites	9 catchments; 3 new boreholes	New-work siting; groundwater sustainability; catchment erosion; extreme heat; remoteness and security; pastoral access; emergency response and supervision.
Borama - 1 site	1 new borehole	New-work siting and land access; hydrogeological suitability and water quality; drilling safety; community access and governance.

1.5.3 Cross-Cutting Issues

Cross-cutting issues carried into the detailed assessment include groundwater sustainability; water quality and salinity; labour and occupational health and safety; community health, safety and security; temporary disruption of existing water access; land and access arrangements; equitable water governance; vulnerable groups and gender; SEA/SH; pollution and waste management; climate risk; stakeholder engagement and grievance redress; and cumulative effects from the concentration of infrastructure in Zeila.

1.5.4 Issues of Limited Relevance and Verification Triggers

The ESIA does not identify designated protected areas or critical habitat at the 68 sites and anticipates no physical displacement. These conclusions are treated as screening findings rather than permanent assumptions. OS6 remains precautionary through footprint limitation and revegetation, and any unexpected sensitive habitat requires reassessment. OS5 is applied through land-access verification and a stop/reassess trigger if physical or material economic displacement is identified. Cultural heritage is managed through a Chance Finds Procedure because ground disturbance can reveal previously unknown material. OS9 is not applicable because the component does not involve financial intermediaries.

1.5.5 Scoping Outputs and Link to Subsequent Assessment

The scoping outputs are the issue register used in Chapter 7, the area-of-influence definition used in Chapter 6, the pre-works data requirements carried into Chapters 4, 5 and 9, and the safeguards applicability described in Chapter 2. Detailed impacts, mitigation and monitoring are not repeated in this chapter.

1.6 Stakeholder Engagement Approach During ESIA Preparation

The ESIA records engagement with Somaliland sector ministries, district administrations, community leaders and elders (guurti), women and female-headed households, pastoral and agro-pastoral households, the Aroorseel well-cluster community, coastal fishing communities in Zeila, youth representatives and water-management structures. Engagement is treated as continuous and conflict-sensitive, with oral and Somali-language communication important for low-literacy and mobile groups. Detailed outcomes are reserved for the stakeholder chapter and ESMP.

1.7 Assessment Constraints, Data Gaps, and Treatment of Uncertainty

The principal constraints are material to the assessment and are therefore carried forward transparently:

- well-by-well salinity and bacteriological results are not available for the Zeila cluster and must be established before rehabilitation;
- combined abstraction behaviour of the Zeila shallow aquifer is not fully characterised and requires a pre-works hydrogeological assessment and monitoring arrangement;
- final hydrogeological depth, sustainable yield and water quality are not confirmed for all boreholes;
- site-level socioeconomic data are limited and regional information must not be interpreted as a household census;
- security and access constrained some remote verification;
- catchment condition information is incomplete at detailed-design level; and
- supporting engineering files do not align perfectly with the ESIA nomenclature or generic design narrative; Chapter 5 records these discrepancies and requires reconciliation before procurement and mobilisation.

1.8 Structure of the ESIA Report

Table 1-2: ESIA Chapter Structure

Chapter	Content
Chapter 1	Introduction and Scoping
Chapter 2	Legal and Institutional Framework
Chapter 3	Analysis of Alternatives
Chapter 4	Design Measures
Chapter 5	Project Description
Chapter 6	Project Baseline
Chapter 7	Environmental and Social Risks and Impacts
Chapter 8	Mitigation Measures
Chapter 9	Environmental and Social Management Plan (ESMP)

Chapter	Content
Chapter 10	Conclusion and Recommendations

CHAPTER 2: LEGAL AND INSTITUTIONAL FRAMEWORK

2.1 Purpose and Approach

This chapter identifies the policy, legal, regulatory, institutional, international and AfDB safeguard requirements applicable to the Somaliland component. It follows the same analytical structure used in the BBS state-level ESIA framework, while distinguishing the federal Borrower framework from Somaliland institutions that exercise practical permitting, water-sector, environmental and local-administration functions in the project areas. Detailed mitigation, monitoring, contractor obligations and budgets are reserved for Chapters 8 and 9.

Any additional Somaliland statute or permit title shall be used only after its formal title, year and competent authority are verified.

2.2 National Policy Framework

Table 2-1: National Policy Framework

Policy / strategy	Relevance to Somaliland component
National Environmental Policy (2019)	Sustainable natural-resource management; environmental assessment and pollution prevention.
National Climate Change Policy (2020)	Climate adaptation and resilience; relevant to drought, heat, flash floods and coastal salinity.
National Water Resource Strategy (2021-2025)	Integrated water-resource management and water governance; relevant to groundwater abstraction and community water infrastructure.
National WASH Sector Policy (2018)	Water quality, sanitation and public health relevant to community water points and worker welfare.
National Gender Policy (2016; later draft update referenced in project documents)	Gender equality, participation and benefit distribution.
Agriculture Sector Strategy and Plan	Productive water infrastructure, climate-smart agriculture and institutional roles.
National Food Security and Nutrition Policy	Food-security and resilience objectives relevant to pastoral and agro-pastoral beneficiaries.
National Pesticide and Fertilizer Policies	Safe agricultural-input management where improved water availability supports crop production.

Basis: applicable federal policy framework tailored to the Somaliland component.

2.3 National Legal and Regulatory Framework

The federal legal framework applies to the BBS Project through the Borrower and is supplemented in implementation by the requirements of Somaliland institutions and the AfDB ISS. The framework is more developed for environmental assessment than for several operational themes such as land acquisition, modern occupational safety, abstraction licensing and cultural heritage; project-specific procedures therefore fill those gaps.

Table 2-2: Principal Federal Legal and Regulatory Instruments

Instrument	Lead / competent authority	Relevance
Provisional Federal Constitution (2012), relevant environmental and natural-resource provisions	Federal Government of Somalia	Constitutional basis for environmental protection, land and natural-resource stewardship.

Instrument	Lead / competent authority	Relevance
Environmental Protection and Management Act (2024) and ESIA Regulations (2024)	Ministry of Environment and Climate Change	Environmental assessment, environmental clearance and pollution-management requirements.
Somali Labour Code, Law No. 65 of 1972	Ministry responsible for labour	Basic employment protections; supplemented by AfDB OS2 and the project LMP.
Natural Water Resources Law (1984) - identified in BBS framework as not operational in practice	Water-sector authorities	Historical water legislation; not relied upon as a functioning modern abstraction-licensing system.
Somali Penal Code (1962) and Family Code (1975)	Justice / relevant authorities	Relevant to criminal conduct and the wider legal context for SEA/SH prevention and response.
Environmental framework and project Chance Finds Procedure	Environmental / cultural authorities and PIU	General environmental protection supplemented by AfDB OS8 for unexpected cultural-heritage finds.

2.3.1 Environmental Assessment and Permitting

The PIU shall document the agreed clearance route and approvals before physical works; one review process shall not be assumed to displace another unless formally agreed by the competent authorities.

2.3.2 Water Resources, Irrigation, and Water Supply

Water-resource governance is central because 40 of the 68 sites are groundwater sources (30 shallow wells and 10 boreholes) and because Zeila contains a concentrated coastal aquifer. The project framework does not identify a functioning comprehensive federal abstraction-licensing regime. The ESIA identifies the Somaliland Ministry of Water Resources / Water Development as the practical authority for borehole and well permitting and for groundwater and salinity oversight. Hydrogeological assessment, sustainable-yield controls, water-quality certification, salinity monitoring and coordinated abstraction are therefore both technical and safeguards requirements and should be reflected in the permit and commissioning process.

2.3.3 Land Access, Tenure, and Compensation

The ESIA anticipates no involuntary land acquisition or physical displacement. Water-point land is described as predominantly communal or community-managed, with some individually held wells in the Aroorseel cluster. Because new boreholes and three new Salahley catchments are included in the final site register, land access must be documented before works. A precautionary OS5 Land Access Protocol applies to temporary working areas, access corridors, privately held wells, pastoral routes and any project-caused crop or asset damage. Any unexpected displacement requires reassessment before the affected activity proceeds.

2.3.4 Labour, Occupational Health and Safety, and Public Health

The 1972 Labour Code provides basic employment requirements but does not provide the complete modern OHS and worker-management framework needed for drilling, confined-space well work, trenching, extreme heat and remote emergency response. AfDB OS2 and the project Labour Management Procedures therefore supplement national requirements. Public-health controls are relevant to drinking-water quality, sanitation, vector management and first-use water safety, particularly at the Zeila shallow-well cluster.

2.3.5 Pollution Prevention, Waste, Agrochemicals, and Biodiversity

Pollution-prevention requirements apply to drilling fluids and cuttings, shallow-well dewatering, fuels and lubricants, construction waste, borrow and spoil materials, sediment, wastewater and sanitation. Improved water availability may also increase crop production and agricultural-input use. OS3 and the project-wide pest/vector and pesticide-management arrangements therefore supplement national environmental controls. OS6 is applied on a precautionary basis through site verification, footprint limitation and reinstatement because the source screening identifies no critical habitat at the 68 sites.

2.3.6 Cultural Heritage

Ground-disturbing works include drilling, catchment excavation and trenching. No known cultural-heritage site is identified as a defining project receptor in the ESIA, but a Chance Finds Procedure applies to all ground disturbance under OS8. Discovery of archaeological, burial, religious or other potentially significant material requires work suspension, protection of the find and competent review before work resumes.

2.3.7 Security, Conflict Sensitivity, and Local Administration

Security conditions affect worker/community safety and the continuity of supervision, particularly at remote Salahley and interior Ainabo sites. Site-specific security assessment is therefore a pre-mobilisation requirement, with a Security Management Plan where indicated. District administrations and Somaliland security structures support access and coordination, while project security arrangements must remain proportionate, conflict-sensitive and consistent with OS4.

2.4 Somaliland Legal and Administrative Framework

The project records support the institutional functions set out below. Any Somaliland statutory citation used as a project compliance requirement shall be verified by the competent authority before application.

Table 2-3: Somaliland Institutional and Administrative Framework

Institution / structure	Confirmed project-relevant role
Somaliland Ministry of Agriculture Development	Project counterpart; agricultural and irrigation coordination; liaison with federal MoAI and the PIU.
Somaliland Ministry of Water Resources / Water Development	Borehole and well permitting; groundwater and coastal-aquifer oversight; joint salinity and water-level monitoring; WUA support.
Somaliland Ministry of Environment and Climate Change / Rural Development	Environmental permitting, ESIA review and environmental oversight.
Somaliland Ministry of Employment, Social Affairs and Family	Gender, social protection and participation considerations.
Zeila, Ainabo, Salahley and Borama District Administrations	Local access, community liaison, dispute resolution and security coordination.
Traditional leaders (guurti) and religious leaders	Community communication and customary xeer-based mediation for non-sensitive disputes.
Community / WUA structures	Day-to-day water governance, maintenance, access rules and community-level issue resolution.

Implementation control: the PIU shall maintain a controlled legal and permit register containing the verified federal and Somaliland requirements applicable to each work package. Unverified legal titles shall not be used to reduce AfDB safeguards obligations.

2.5 International and Regional Obligations

The ESIA identifies Somalia as party to international agreements relevant to the component, including the UN Framework Convention on Climate Change and Paris Agreement, the UN Convention to Combat Desertification, the Convention on Biological Diversity and the Convention on the Elimination of All Forms of Discrimination Against Women, together with relevant ILO labour conventions. These obligations reinforce climate resilience, biodiversity protection, gender equality and labour protections. None of the four project districts contains a permanent river, so the transboundary-river issues relevant to the Lower Shabelle component do not arise in the same way for Somaliland.

2.6 African Development Bank Integrated Safeguards System (ISS, 2023)

2.6.1 Operational Safeguards Applicability

Table 2-4: AfDB ISS 2023 Applicability to the Somaliland Component

Operational Safeguard	Status	Somaliland application
OS1	Applies	Overall E&S assessment and management; Zeila cumulative aquifer effects; climate and design integration.
OS2	Applies	Labour, heat stress, drilling, excavation, trench and confined-space work; worker grievance management.
OS3	Applies	Resource efficiency; sustainable abstraction; salinity/EC; drilling and dewatering waste; fuel and pollution controls.
OS4	Applies	Community health and safety; water quality; construction safety; security; emergency preparedness; SEA/SH prevention interface.
OS5	Precautionary	Land access and privately held wells; new works; temporary access and loss; stop/reassess if displacement emerges.
OS6	Precautionary	Footprint limitation, vegetation reinstatement and reassessment if sensitive habitat is encountered.
OS7	Applies	Women, nomadic/semi-nomadic users, minority-clan households, poor pastoral households and other vulnerable groups.
OS8	Precautionary	Chance Finds Procedure for drilling, trenching and earthworks.
OS9	Not applicable	No financial-intermediary structure.
OS10	Applies	Stakeholder engagement, disclosure and multi-channel grievance redress throughout the project cycle.

2.7 Permits, Authorizations, and Pre-Works Compliance Requirements

Table 2-5: Permit, Authorization and Pre-Works Compliance Matrix

Requirement	Basis	Responsible / issuing interface	Timing	Status / control
-------------	-------	---------------------------------	--------	------------------

Requirement	Basis	Responsible / issuing interface	Timing	Status / control
Environmental clearance / ESIA approval	Federal environmental framework and Somaliland environmental-review arrangements	MoECC / Somaliland environmental counterpart / PIU coordination	Before physical works	Clearance route and approvals to be documented before mobilisation.
Borehole / well permit and groundwater authorization	Water-sector requirements and project hydrogeological controls	Somaliland Ministry of Water Resources / Water Development	Before drilling, rehabilitation or commissioning as applicable	Site-specific survey, yield and water-quality evidence required.
Land access / private well agreement	Customary / administrative access arrangements; OS5 protocol	Landholder / community / district / PIU	Before site possession	Written access; private-well terms; pastoral-route protection; compensation where applicable.
Borrow, spoil, drilling-waste and support-site approval	Environmental and local administrative requirements	PIU / environmental and district authorities	Before use	Screening, siting, land-use agreement and reinstatement commitments required.
Security clearance / SMP where required	Project security arrangements; OS4	PIU / contractor / Somaliland and district security counterparts	Before mobilisation and as conditions change	Remote Salahley and interior Ainabo priority; no mobilisation without clearance.
Contractor ESHS plans / C-ESMP	AfDB OS1, OS2, OS3, OS4	PIU	Before mobilisation	Approved plans and method statements required as contractual hold points.

2.8 Institutional Framework

2.8.1 Federal Institutions

Table 2-6: Federal Institutional Framework

Institution	Project role
MoAI / BBS PIU	Borrower implementing ministry; project management; ESIA/ESMP ownership; procurement, safeguards coordination and AfDB reporting.
Ministry of Environment and Climate Change	Federal environmental-assessment and environmental-protection functions.
Federal water-sector institutions	National water policy and coordination relevant to the wider BBS Project.
Ministry responsible for Labour and Social Affairs	Labour-administration framework.
Ministry of Health	Public health, sanitation, communicable disease and water-safety interface.
Planning and Finance institutions	National planning, financing and development oversight.

2.8.2 Somaliland and District Institutions

The practical state- and district-level functions are summarised in Table 2-3. The Somaliland E&S Officer, district liaison structures and the Ministry of Water Resources are especially important because the component contains 68 dispersed sites and a highly concentrated coastal groundwater cluster requiring coordinated monitoring.

2.8.3 Project Delivery and Oversight Entities

Table 2-7: Project Delivery and Safeguards Oversight Entities

Entity	Role
Works contractors and subcontractors	Implement construction-phase ESHS requirements through approved C-ESMPs, method statements, worker management, waste controls and site-specific safety measures.
Supervision Consultant	Independent day-to-day verification of contractor compliance, quality and safeguards performance.
Somaliland E&S Officer / CLOs / district focal points	Day-to-day coordination, site inspection, stakeholder engagement, grievance uptake and reporting.
WUAs / water-management committees	Operation, maintenance, access rules, records, water-quality and abstraction-management support after handover.
AfDB	External safeguards oversight, review of instruments and reports, supervision and corrective-action requirements.

2.9 Institutional Capacity and Implementation Considerations

The ESIA describes relatively established Somaliland ministry structures but variable district-level capacity, while systematic groundwater and coastal-salinity monitoring is limited. The 68-site scale, four districts, dispersed remote locations and dense Zeila cluster increase the supervision burden. The implementation arrangement therefore requires a dedicated Somaliland E&S Officer, contractor ESHS staff, effective Supervision Consultant coverage, district/CLO support, water-quality and hydrogeological expertise, and WUA capacity building. These capacity measures are operationalised in Chapter 9.

2.10 Gap Analysis: Borrower Framework and AfDB ISS 2023

Table 2-8: Gap Analysis - Borrower/Somaliland Framework and AfDB ISS 2023

Theme	Framework position	AfDB gap	Project response
Environmental assessment and permitting	Federal environmental assessment exists; the ESIA also identifies Somaliland review functions, but the exact dual clearance route is not fully documented.	OS1 requires a clear, integrated assessment and management process.	Confirm and document the clearance route; apply the ESIA/ESMP and AfDB review requirements as the minimum standard.
Groundwater abstraction, salinity and quality	Systematic coastal-aquifer and well-by-well monitoring is not established in the source evidence.	OS1/OS3 require sustainable resource use and pollution prevention.	Pre-works Zeila aquifer assessment, well-by-well quality testing, borehole hydrogeology, sustainable-yield control and O&M monitoring.
Land access and compensation	Communal/customary arrangements and some private wells; no complete statutory compensation framework documented in the source.	OS5 requires avoidance, documentation, replacement-cost compensation and due process.	Land Access Protocol, written agreements, private-well terms, compensation for verified losses and stop/reassess if displacement occurs.
Labour and OHS	National labour protections are basic and do not cover the full high-risk work profile.	OS2 requires comprehensive labour management and safe working conditions.	Project LMP, worker GRM, age verification, contracts, heat/confined-space/drilling/trench safety and contractor OHS plans.
Community health, safety and security	Community-water and remote-site risks are not covered by one project-specific domestic framework.	OS4 requires systematic risk management, emergency preparedness and security controls.	Community H&S plans, water-quality certification, site security assessment, emergency routes and incident management.

Theme	Framework position	AfDB gap	Project response
Vulnerable groups and participation	Traditional governance can under-represent women, mobile users and minority groups.	OS7/OS10 require differentiated engagement and equitable benefit access.	Targeted outreach, inclusive WUAs, female CLOs, non-discrimination and monitoring of access and representation.
Stakeholder engagement / GRM	No equivalent project-wide statutory SEP/GRM requirement is established in the source.	OS10 requires continuous engagement and accessible grievance redress.	Implement project SEP and multi-channel GRM with xeer-compatible mediation for non-sensitive matters and a separate confidential SEA/SH channel.

2.10.1 Governing Compliance Principle

Where national, Somaliland, project and AfDB requirements differ, the project applies the requirement that provides the higher level of environmental and social protection, subject to applicable law and formal project agreements. Unverified legal references are not used to reduce safeguards obligations.

CHAPTER 3: ANALYSIS OF ALTERNATIVES

3.1 Purpose and Approach

This chapter evaluates reasonable alternatives for achieving the Somaliland component objectives while avoiding or minimising environmental and social risk. It uses the approved BBS state-level structure and considers the no-project scenario, location and siting, design and technology, construction sequencing, risk avoidance, operational sustainability and stakeholder preferences. Detailed design parameters are reserved for Chapter 4 and the physical works are described in Chapter 5.

3.2 Decision Criteria and Evidence Base

The assessment uses the controlled site-status tables, Zeila shallow-well selection/BoQ records, pipeline-canal profiles and BoQ, borehole engineering packages, screening records and stakeholder information.

Table 3-1: Alternatives Evaluation Criteria

Criterion	Application
Water-security and livelihood benefit	Extent to which the option restores or provides reliable water to intended users.
Technical feasibility and maintainability	Constructability, fit with available skills and ability to maintain the asset after handover.
Environmental and social risk	Ability to avoid salinity, contamination, over-abstraction, erosion, safety, land-access and social-conflict impacts.
Climate resilience	Performance under drought, heat, flash floods and coastal salinity pressure.
Implementation and supervision	Feasibility of sequencing and supervising dispersed works and the dense Zeila cluster.
Cost and value	Avoidance of investment in unviable sources and preference for options with lower recurring operating burden.

3.3 No-Project Alternative

The no-project alternative would leave degraded or insufficient water infrastructure in place. In Zeila, existing shallow wells would continue to face wellhead-protection, salinity and contamination concerns; in Ainabo and Salahley, degraded catchments and groundwater infrastructure would continue to provide unreliable drought-period service; and Borama would not receive the proposed borehole. The no-project option avoids construction impacts but does not address the underlying water-security, livelihood and public-health problems identified in the ESIA. On the evidence available, it is not the preferred development option.

3.4 Location and Siting Alternatives

3.4.1 Rehabilitation Works

For existing shallow wells, existing boreholes, existing catchments and the two pipeline canals, the primary location alternative is whether to rehabilitate the existing asset or abandon it and develop a replacement elsewhere. Rehabilitation generally avoids new land take and preserves established community use patterns, but it is appropriate only where the source is technically and environmentally viable. This is particularly important in Zeila: a shallow well with unacceptable salinity or contamination that cannot be remedied should not be rehabilitated merely because it is already in the site list.

3.4.2 New Boreholes and New Catchments

The final register contains seven new boreholes and three new Salahley catchments. Their micro-siting should avoid displacement, sensitive community features, unstable or erosion-prone ground, pastoral-route obstruction and unproductive or poor-quality aquifers. The ESIA does not provide a documented alternatives record for every individual new site; final micro-siting therefore remains subject to pre-works technical, land-access and E&S confirmation.

3.4.3 Zeila Shallow-Well Cluster and Site-Selection Records

The Zeila selection worksheet and shallow-well BoQ identify 30 existing wells in Aroorseel and Xariirad for rehabilitation. The concentration reflects the existing distribution of water points and community demand. The appropriate alternative is therefore not wholesale relocation of the cluster, but evidence-based exclusion or redesign of individual wells that fail water-quality or technical viability checks, combined with cluster-level abstraction management.

3.5 Design and Technology Alternatives

Table 3-2: Design and Technology Alternatives - Somaliland

Design issue	Alternative A	Alternative B	Preferred approach / condition
Zeila shallow-well pumping	Hand/electric pump selection described in ESIA	Solar-powered surface-pump package in shallow-well BoQ	Do not select generically. Reconcile the ESIA with the approved BoQ/design and size the final pumping system to tested yield, energy availability, water quality and O&M capacity.
Pipeline conveyance - Zeila	Open conveyance	Buried HDPE pipeline	Buried pipeline is supported by the supplied Aroorseel/Daryodhere engineering package and reduces evaporation, contamination and open-water safety exposure.
Catchment seepage control	Unlined/compacted soil	Geomembrane at high-loss sites	Use lining selectively where site condition and design confirm excessive infiltration; do not assume every catchment requires a liner.
Borehole energy	Diesel generation	Solar pumping	Solar is the operational preference in the ESIA and site packages; any legacy generator-room drawing is not treated as proof that diesel generation is the final operating design.
Zeila water-quality management	Rehabilitate all listed wells regardless of quality	Test first; exclude or repurpose non-potable/unviable sources	Evidence-first approach avoids sunk investment in poor-quality sources and is preferred.
Zeila construction sequence	Simultaneous cluster works	Phased rehabilitation with continuity controls	Phased works are preferred to protect water access and keep supervision manageable.

3.6 Construction and Implementation Alternatives

A combined mechanised and labour-based approach is appropriate: mechanised equipment for bulk excavation, drilling and trenching, with labour-based methods for finishing, reinstatement and works in constrained community settings where safe. Simultaneous mobilisation at all 68 sites would create an unnecessary supervision and

community-safety burden. District- and typology-based packaging with sequential work fronts is therefore preferred. In Zeila, the ESIA proposes keeping at least 60% of wells operational and limiting simultaneous rehabilitation; the final works programme should retain a continuity threshold but confirm the exact cluster sequence against the final well register and community demand before mobilisation.

3.7 Environmental and Social Implications of the Alternatives

The principal risk-avoidance value of the preferred alternatives is that they avoid creating a technically operational asset that is environmentally or socially unsustainable. Water-quality screening avoids rehabilitation of unsuitable wells; hydrogeological assessment avoids over-sizing groundwater abstraction; buried pipeline conveyance reduces open-water contamination and safety exposure; selective catchment lining avoids unnecessary material use while addressing real seepage losses; and phased works reduce temporary water-access disruption and supervision overload.

3.8 Feasibility of Managing Impacts Under the Preferred Alternative

The preferred alternative is manageable only if the pre-works evidence requirements are treated as decision points rather than administrative formalities. Where hydrogeology, salinity, land access or final design shows that a listed site is not viable in its current form, the Project must redesign, relocate, exclude or otherwise resolve the site before works. Chapter 9 should therefore treat these assessments as hold points linked to procurement and mobilisation.

3.9 Cost and Economic Considerations

Project documentation includes Bills of Quantities for shallow wells, boreholes and the Arooseel/Daryodhere pipelines. These demonstrate that the choice of unviable water source or inappropriate pumping and conveyance technology would create material sunk cost. This chapter does not reproduce cost estimates, because they are subject to detailed design and procurement. The relevant alternatives principle is to use technical and water-quality evidence before committing capital expenditure and to favour designs with sustainable O&M requirements.

3.10 Stakeholder Input into Alternatives

Consultations recorded in the ESIA emphasised water quality and salinity in Zeila, continuity of water supply during rehabilitation, equitable access, women's participation, local employment, maintenance sustainability and remote-site security. These concerns support phased Zeila works, water-quality screening, inclusive water-governance structures, local labour opportunities and design choices that communities can maintain.

3.11 Preferred Alternative and Conditions

The preferred alternative is the 68-site programme implemented through evidence-based site confirmation: rehabilitation of viable existing assets; seven new boreholes and three new catchments after site readiness and technical suitability are confirmed; buried pipeline rehabilitation at Arooseel and Daryodhere; and site-specific pumping, storage and water-access arrangements based on the approved design.

CHAPTER 4: DESIGN MEASURES

4.1 Purpose and Design Basis

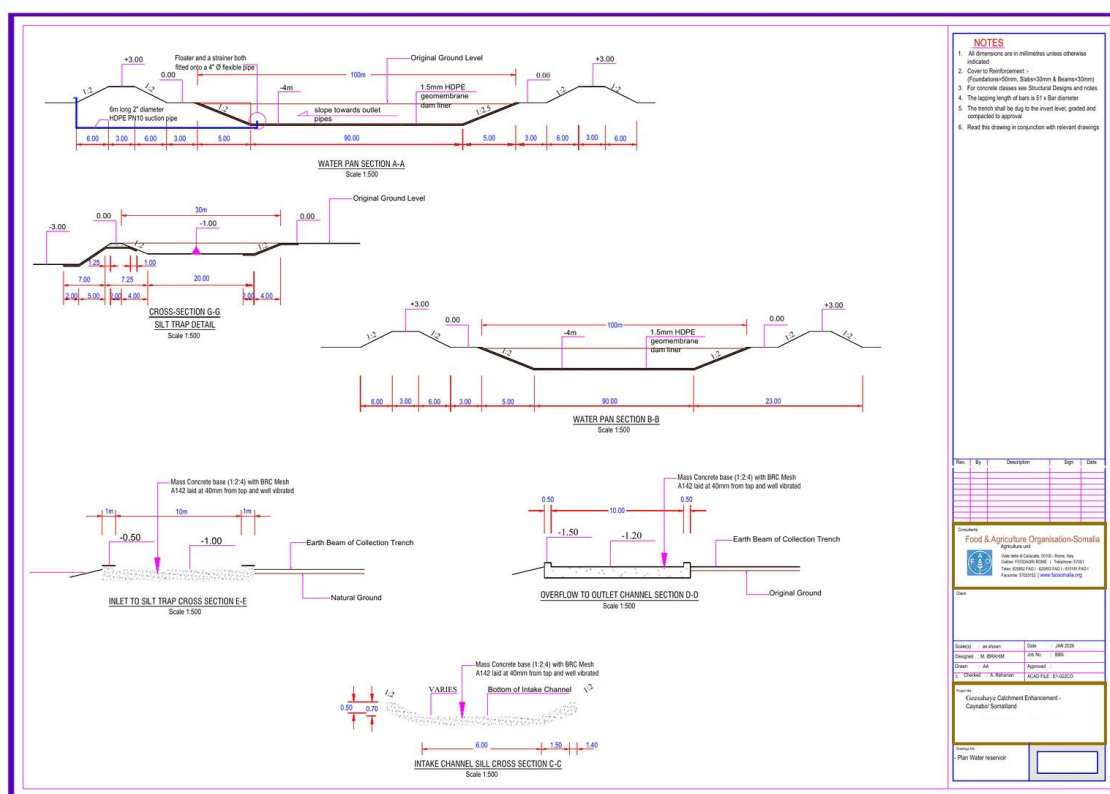
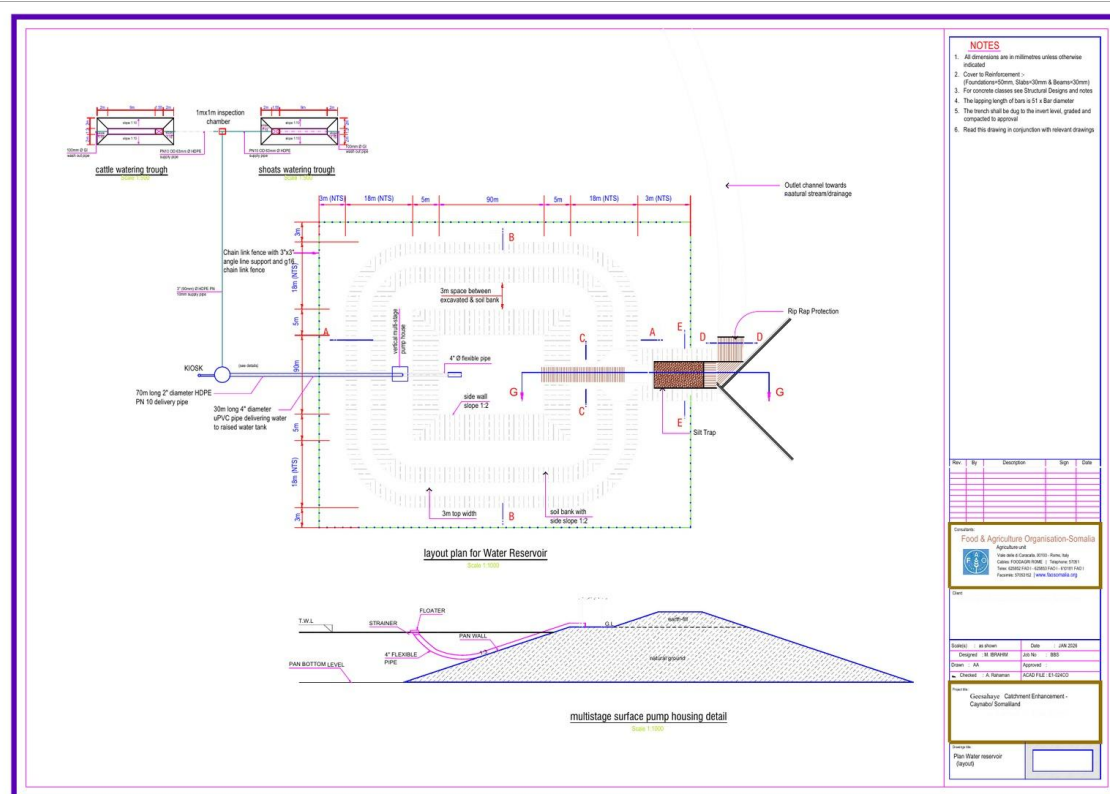
Where design records contain different or legacy parameters, the approved site-specific engineering design and controlled drawing register shall govern procurement. The C-ESMP shall incorporate the applicable final dimensions, methods and E&S controls before mobilisation.

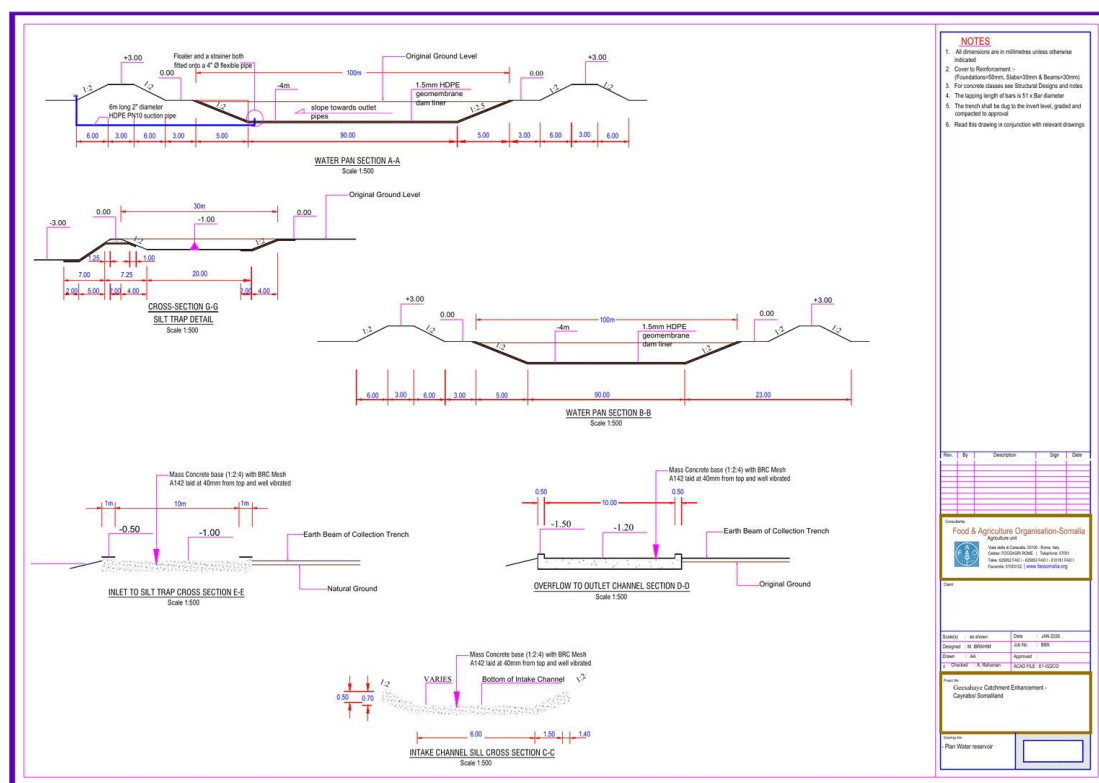
4.2 Design Principles Applied Across Infrastructure Types

The design approach across all typologies is based on: fit-for-purpose intervention rather than unnecessary reconstruction; site-specific technical confirmation before final design; protection of drinking-water quality; abstraction limited to sustainable yield; separation of livestock and domestic use where practical; positive drainage around water points; safe access and maintainability; climate resilience to drought, heat and intense rainfall; and avoidance of unnecessary land or livelihood disturbance.

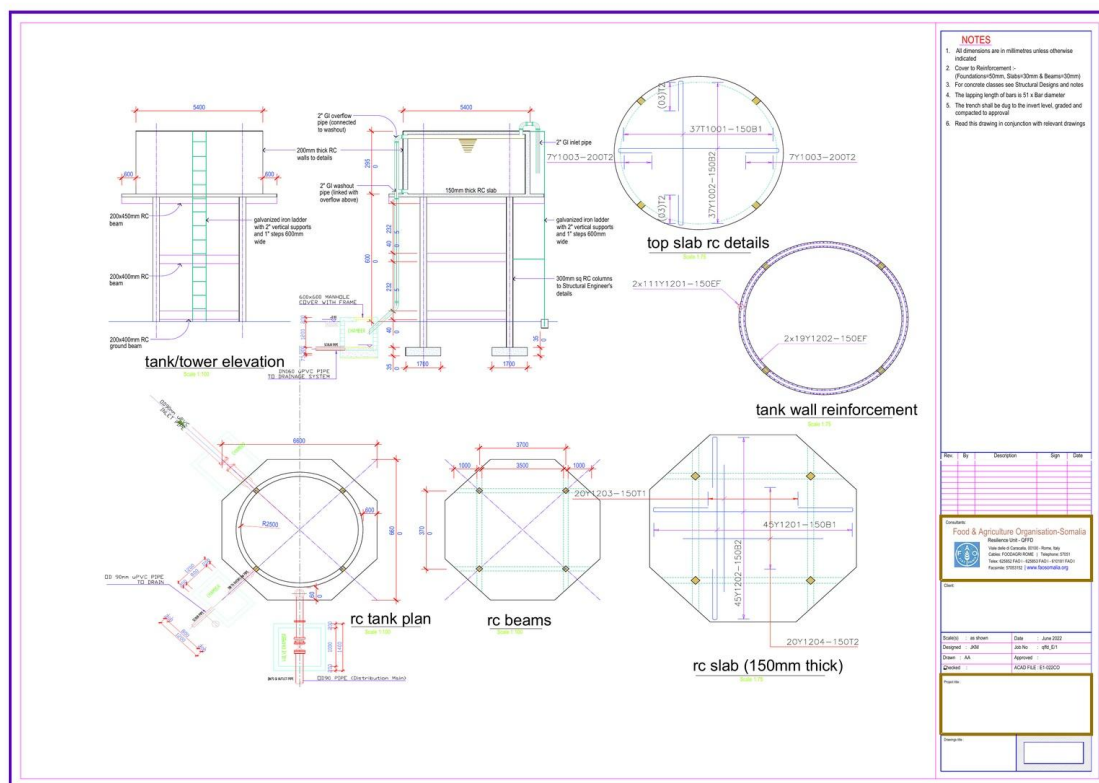
4.3 Water Catchment Design Measures

The 26 catchment interventions are concentrated in Ainabo and Salahley, with two in Zeila. The final site register shows 23 rehabilitation works and three new Salahley catchments. Design measures include confirmation of basin geometry and storage, embankment and bund condition, inlet/outlet arrangement, silt-control needs, spillway capacity, downstream erosion protection, safe livestock access and selective geomembrane lining where site evidence demonstrates material infiltration losses. Catchment condition and hydraulic information must be established before final design; the project records do not support a single standard capacity or embankment dimension for all sites.





(a) Inlet / silt-control / overflow details



(b) Associated structures

Figure 4-2: Typical Catchment Inlet, Silt-Control and Associated Water-Use Structures - Reference Engineering Arrangement

Reference engineering arrangement for ESIA purposes. Final site-specific coordinates, geometry, quantities and construction details shall be taken from the approved engineering design and incorporated into the C-ESMP.

4.4 Borehole Design Measures

The final scope contains ten boreholes: seven new and three rehabilitation. The ESIA describes solar-powered pumping, wellhead protection, water kiosks and livestock troughs. The engineering packages include solar/fence drawings, elevated-tank, trough and sanitation details for several Somaliland sites, including Zeila and Salahley boreholes and Ainabo-area rehabilitation packages. Final borehole design must be based on site hydrogeology, sustainable yield, water quality, casing/screen design, development and pumping tests rather than a generic depth range.

Borehole depth is site-specific and shall be determined through the approved hydrogeological assessment and engineering design. Generic depth ranges are not adopted as controlling design parameters.

Engineering records include both solar and generator-room details. Solar pumping is the project operating preference where confirmed by the approved site-specific mechanical/electrical design. Any standby or permanent generator function shall be explicitly confirmed before procurement and addressed in the C-ESMP.

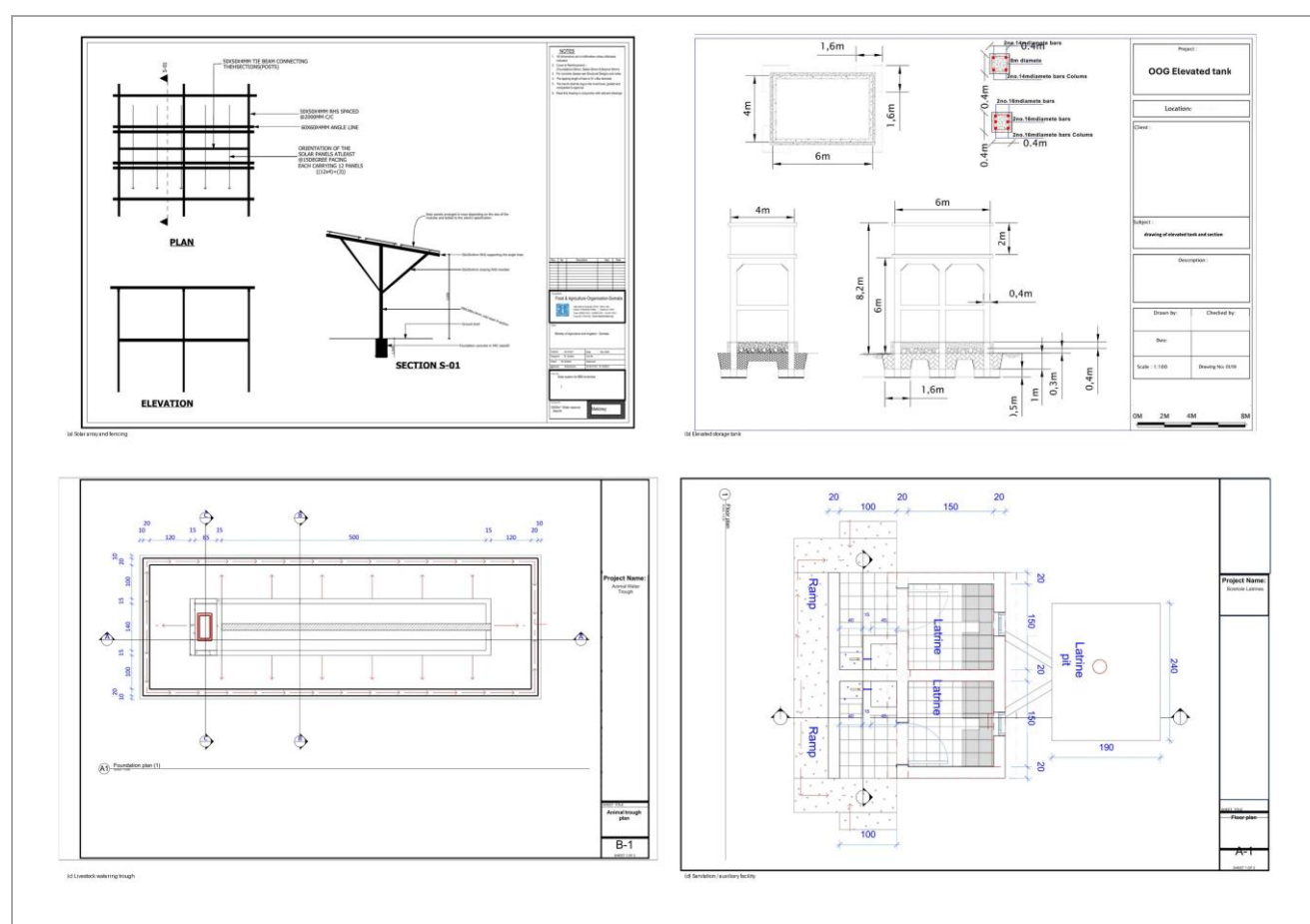
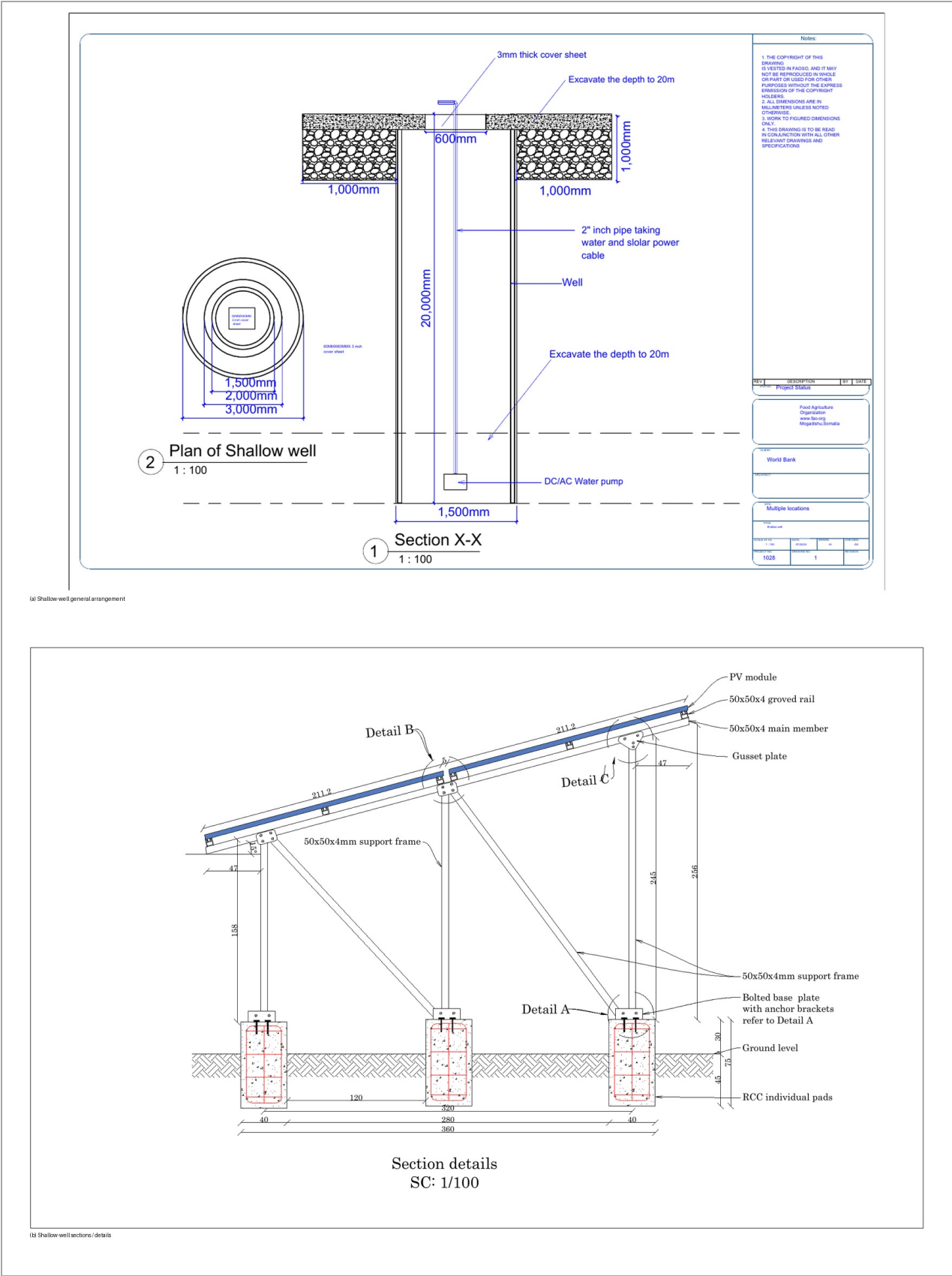


Figure 4-3: Typical Somaliland Borehole Site Infrastructure Arrangement - Solar, Storage, Water-Use and Sanitation Facilities

4.5 Shallow-Well Design Measures - Zeila

The shallow-well engineering BoQ provides the current typology design basis, including reinforced-concrete ring lining, gravel backfill, concrete apron and a solar-pumping package. These parameters remain subject to well condition, tested yield and the approved site-specific design.

Pump selection shall be confirmed through the approved engineering design using tested yield, energy availability, water quality and O&M capacity. The C-ESMP shall apply the confirmed pumping and electrical/mechanical safety controls.



4.6 Pipeline-Canal Design Measures - Zeila

The two Zeila schemes are the Aroor Seel (Arooseel) and Draydhere/Daryodhere pipeline canals. The engineering package contains longitudinal profiles, a combined BoQ and water-tank design. The BoQ indicates approximately 3,000 m of pipeline works for Arooseel and approximately 2,805 m for Daryodhere, with buried PE100 HDPE conveyance, intake/pumping components, valves, off-takes and reinforced-concrete water storage. The combined package also includes two 45 m³ reinforced-concrete water tanks. Buried conveyance is consistent with the ESIA preference to reduce evaporation, contamination and open-water safety exposure.

The systems are assessed as buried HDPE pipeline conveyance schemes. Definitive pipe diameters, appurtenances, trench geometry, crossings, intake/pump duty and distribution arrangements shall be taken from the approved-for-construction design and reflected in the C-ESMP.

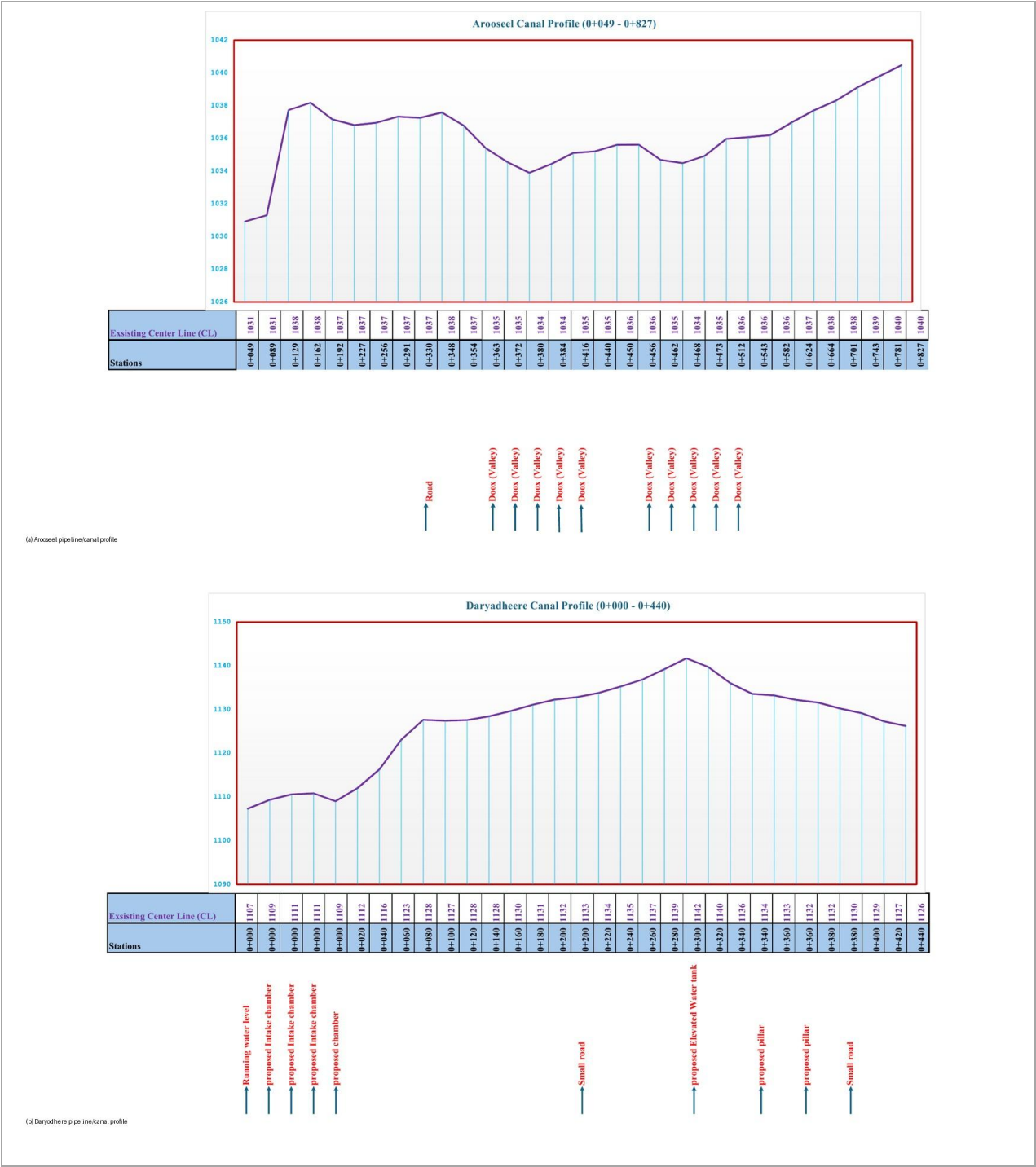


Figure 4-5: Arooseel and Daryodhere Pipeline Longitudinal Profiles and Typical Cross-Section

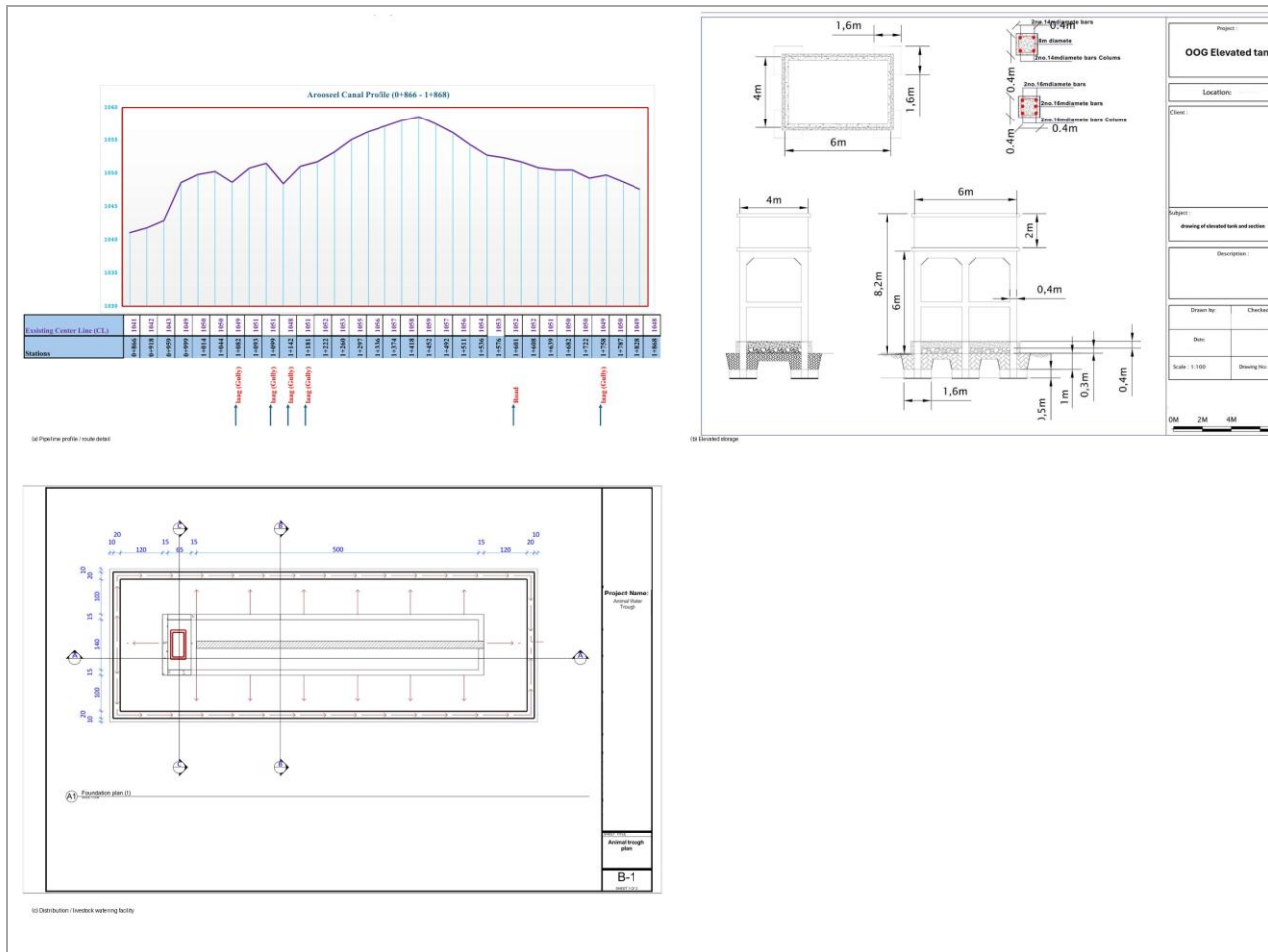


Figure 4-6: Typical Pipeline Pumping, Storage and Distribution Arrangement

4.7 Climate-Resilience Measures Incorporated in Design

Climate resilience is incorporated differently by typology. Catchments require adequate spillway and erosion protection for intense rainfall while maximising useful storage during drought. Groundwater infrastructure requires abstraction matched to sustainable yield and monitoring to detect declining recharge or salinity. Zeila design must consider coastal salinity pressure and high evaporation, while buried pipeline conveyance and protected wellheads reduce exposure. Solar pumping reduces recurring fuel dependency in remote areas. Final design parameters should be based on site data and the project climate assessment rather than uniform assumptions.

4.8 User Access, Safety and Functional Separation

Design must protect the intended water function while reducing conflict and safety risk. Water points should provide safe access, drainage and wellhead protection; livestock troughs should be arranged so livestock do not damage sanitary aprons or domestic collection points; fencing should protect high-risk areas without preventing legitimate community use; and pipeline trench reinstatement and crossing arrangements must maintain settlement access. The design should also consider access by women, older people and persons with disabilities where the site function allows.

4.9 Design Response to Stakeholder Considerations

Stakeholder concerns influencing design include water quality and salinity in Zeila, continuity of supply during rehabilitation, equitable access, maintenance sustainability, safe water-collection routes, pastoral access, and the ability of local water-management structures to operate and maintain the asset. These considerations support evidence-first well selection, staged construction, maintainable pumping systems, protected wellheads, safe crossings and transparent water-governance arrangements.

4.10 Design Information to be Confirmed Before Construction

Table 4-1: Design Confirmation Requirements Before Mobilisation

Site / typology	C-ESMP / PRE-CONSTRUCTION DESIGN CONFIRMATION
All 68 sites	Reconcile final Master List name, coordinates, status and engineering-package identity; confirm approved-for-construction drawing register.
30 Zeila shallow wells	Verify well identity/coordinates, sanitary condition, salinity and bacteriological quality, tested yield and final pumping arrangement. Incorporate the approved rehabilitation method and water-quality controls into the C-ESMP.
10 boreholes	Confirm site identity, hydrogeology, drilling depth, casing/screen, sustainable yield, water quality, pump duty, storage and energy system. Incorporate the approved parameters into the C-ESMP before works.
26 catchments	Confirm rehabilitation/new status, storage condition, embankment, inlet/outlet, liner need, silt-control and spillway requirements through the approved condition assessment and engineering design; incorporate controls into the C-ESMP.
2 Zeila pipeline canals	Confirm definitive route, pipe diameters, trench method, intake/pump duty, storage, off-takes, crossings and distribution layout in the approved design and C-ESMP.
Temporary/support facilities	Screen and approve borrow, spoil, drilling-waste, lay-down, camp, construction-water and access arrangements before use.

Basis: project site register and available shallow-well, borehole, pipeline and catchment engineering records.

CHAPTER 5: PROJECT DESCRIPTION

5.1 Purpose and Scope of this Chapter

This chapter describes the physical Somaliland component that is assessed in the remainder of the ESIA. It provides the site register, intervention typologies, principal works, implementation approach, temporary support requirements, resource needs, workforce organisation and operation-and-maintenance concept. It does not repeat the alternatives analysis, detailed design rationale, baseline conditions or impact findings presented elsewhere.

5.2 Somaliland Component within the BBS Project

The controlled site-status tables identify 58 rehabilitation sites and 10 new works. By infrastructure type, the component comprises 30 shallow-well rehabilitations; 10 boreholes (7 new and 3 rehabilitation); 26 catchment interventions (23 rehabilitation and 3 new); and 2 pipeline-canal rehabilitations.

Table 5-1: Somaliland Component Summary

District	Region	Sites	Infrastructure	Status
Zeila	Awdal	36	30 shallow wells; 2 pipeline canals; 2 boreholes; 2 catchments	34 rehabilitation / 2 new
Ainabo	Sool	19	15 catchments; 4 boreholes	18 rehabilitation / 1 new
Salahley	Maroodi Jeex	12	9 catchments; 3 boreholes	6 rehabilitation / 6 new
Borama	Awdal	1	1 borehole	1 new

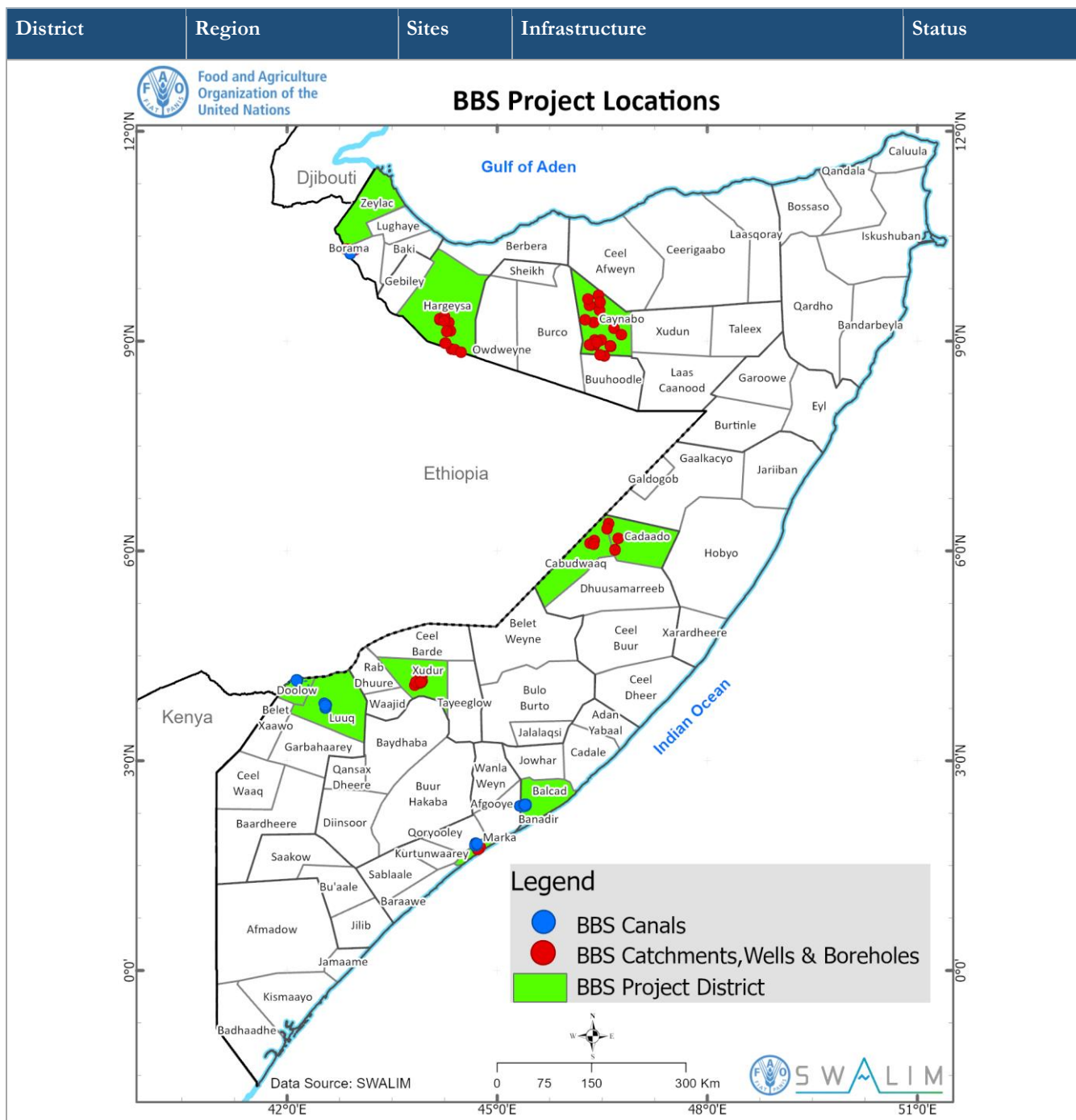


Figure 5-1: BBS Project Locations in Somalia Showing the Somaliland Project Area

5.3 Project Locations and Site Register

The site register below combines the non-shallow-well site tables reproduced in the July 2026 Somaliland ESIA with the 30 Zeila shallow-well names and coordinates recorded in the shallow-well Bill of Quantities. This provides a complete 68-site working register for ESIA reference. It does not supersede the formal BBS Master List; any discrepancy must be resolved through the controlled project site register before procurement or mobilisation.

Table 5-2: Zeila District Site Register

No.	Site / water point	Infrastructure	Latitude	Longitude	Status
1	Arooseel - Abdi Ali	Shallow well	10.30167	42.919302	Rehabilitation

No.	Site / water point	Infrastructure	Latitude	Longitude	Status
2	Xariirad - Abdilaahi faarax	Shallow well	10.307478	42.864687	Rehabilitation
3	Xariirad - Abdilaahi Nuur ahmed	Shallow well	10.309975	42.85886	Rehabilitation
4	Arooseel - Abdirahman haji	Shallow well	10.301838	42.912057	Rehabilitation
5	Arooseel - Ahmed mohamed iraaqi	Shallow well	10.30296	42.908652	Rehabilitation
6	Arooseel - Abdisalan Ali Gaboobe	Shallow well	10.304039	42.901433	Rehabilitation
7	Xariirad - Ali Omar Aare	Shallow well	10.314309	42.86516	Rehabilitation
8	Arooseel - Aw jaamac Aleel	Shallow well	10.317982	42.841176	Rehabilitation
9	Xariirad - Elmi muumin sh.dahir	Shallow well	10.317982	42.841176	Rehabilitation
10	Xariirad - Dahir Miicaad Beder	Shallow well	10.30941	42.857348	Rehabilitation
11	Arooseel - Feysal Maxamud Adan	Shallow well	10.301213	42.913062	Rehabilitation
12	Arooseel - Ibrahim Elmi	Shallow well	10.282342	42.899673	Rehabilitation
13	Arooseel - Jamac Aleel	Shallow well	10.286246	42.893158	Rehabilitation
14	Arooseel - Mahdi ducaale iidle	Shallow well	10.28476	42.891653	Rehabilitation
15	Xariirad - Maygaag Dahir	Shallow well	10.31533	42.848452	Rehabilitation
16	Arooseel - Muumin Osman	Shallow well	10.301721	42.9164	Rehabilitation
17	Xariirad - Muuse xaamud Cidheere	Shallow well	10.316344	42.852631	Rehabilitation
18	Arooseel - Mustaf Qasim muuse	Shallow well	10.305463	42.921027	Rehabilitation
19	Xariirad - Muumin Tukaale Yabaal	Shallow well	10.311327	42.850758	Rehabilitation
20	Xariirad - Nuur Jaamac Gudi	Shallow well	10.315752	42.846805	Rehabilitation
21	Xariirad - Omar Arab	Shallow well	10.314309	42.86516	Rehabilitation
22	Xariirad - Omar Faarax Qeyre	Shallow well	10.312242	42.85266	Rehabilitation
23	Xariirad - Omar Maxamud Hori	Shallow well	10.316553	42.845742	Rehabilitation
24	Xariirad - Osman Kamil	Shallow well	10.283822	42.89703	Rehabilitation
25	Arooseel - Osman Muuse	Shallow well	10.28723	42.889308	Rehabilitation
26	Arooseel - Saciid Muuse	Shallow well	10.284555	42.893075	Rehabilitation
27	Arooseel - Abdirahman Haji	Shallow well	10.301832	42.912063	Rehabilitation
28	Arooseel - Cawale Geedi Carweys	Shallow well	10.302756	42.965064	Rehabilitation
29	Arooseel - Xuseen Geed Caweys	Shallow well	10.301384	42.904825	Rehabilitation
30	Arooseel - Sh.Xasan Khaye dirir	Shallow well	10.295267	42.920729	Rehabilitation
31	Draydhere Canal	Pipeline canal	10.24751	42.90431	Rehabilitation
32	Aroor Seel Canal	Pipeline canal	10.24751	42.90431	Rehabilitation
33	SAMO Cooperative Borehole	Borehole	10.28895	42.89560	New
34	Xoosh Cooperative Borehole	Borehole	10.29860	42.91322	New
35	Balanbal Water Catchment	Water catchment	10.29773	42.90985	Rehabilitation
36	Aroorseel Water Catchment	Water catchment	10.29708	42.89296	Rehabilitation

Basis: controlled project site register and Zeila shallow-well engineering records. The PIU-controlled register governs any discrepancy.

Table 5-3: Ainabo District Site Register

No.	Site / water point	Infrastructure	Latitude	Longitude	Status
37	Ainabo Borehole	Borehole	9.01530	46.39217	Rehabilitation
38	Oog Borehole	Borehole	8.92686	46.61878	Rehabilitation
39	Jaleelo Borehole	Borehole	8.94900	46.39200	Rehabilitation
40	Qoridheere Borehole	Borehole	9.18367	46.67011	New
41	Waridaad Water Catchment	Water catchment	9.30462	46.25689	Rehabilitation
42	Oog Water Catchment	Water catchment	8.93330	46.61575	Rehabilitation
43	Barwaaqo Water Catchment	Water catchment	8.94394	46.35095	Rehabilitation
44	Dhudhubka Water Catchment	Water catchment	9.44483	46.46283	Rehabilitation
45	Gadhka Water Catchment	Water catchment	9.26756	46.37669	Rehabilitation
46	Karin Water Catchment	Water catchment	9.65205	46.44600	Rehabilitation
47	Geesahaye Water Catchment	Water catchment	9.50742	46.32113	Rehabilitation
48	Mahsruuca Water Catchment	Water catchment	9.01859	46.48646	Rehabilitation
49	Xundhurgaal Water Catchment	Water catchment	9.55359	46.46817	Rehabilitation
50	Kalabaydh Water Catchment	Water catchment	9.60287	46.29631	Rehabilitation
51	Dhooboweyn Water Catchment	Water catchment	8.94697	46.31650	Rehabilitation
52	Balli-Ciise Water Catchment	Water catchment	8.80455	46.46980	Rehabilitation
53	Bali-Cumar Water Catchment	Water catchment	8.78953	46.53416	Rehabilitation
54	Faramaraa Water Catchment	Water catchment	8.98740	46.42346	Rehabilitation
55	Gawsawayne Water Catchment	Water catchment	9.08863	46.77399	Rehabilitation

Basis: controlled project site register and Zeila shallow-well engineering records. The PIU-controlled register governs any discrepancy.

Table 5-4: Salahley District Site Register

No.	Site / water point	Infrastructure	Latitude	Longitude	Status
56	Hunduli Borehole	Borehole	9.30639	44.18049	New
57	Raydabka Borehole	Borehole	9.27104	44.30663	New
58	Bahadhamal Borehole	Borehole	8.96837	44.25852	New
59	Hunduli Water Catchment	Water catchment	9.32162	44.18188	Rehabilitation
60	Qoolbuulale Water Catchment	Water catchment	8.87650	44.39693	New
61	Bahadhama Water Catchment	Water catchment	8.96870	44.26412	New
62	Araweelo Water Catchment	Water catchment	9.35242	44.25212	Rehabilitation
63	Raydabka Water Catchment	Water catchment	9.29328	44.23823	Rehabilitation
64	Laanqeyta Celiye Water Catchment	Water catchment	8.89056	44.34770	New
65	Bali Ciise Water Catchment	Water catchment	9.13903	44.28194	Rehabilitation
66	Libaax Qoodhama Water Catchment	Water catchment	8.84376	44.48545	Rehabilitation
67	Bali Kheyr Water Catchment	Water catchment	9.14289	44.33384	Rehabilitation

Basis: controlled project site register and Zeila shallow-well engineering records. The PIU-controlled register governs any discrepancy.

Table 5-5: Borama District Site Register

No.	Site / water point	Infrastructure	Latitude	Longitude	Status
68	Heego Daraso Borehole	Borehole	10.05656	43.29064	New

Basis: controlled project site register and Zeila shallow-well engineering records. The PIU-controlled register governs any discrepancy.

5.3.1 Coordinate and Site-Identity Status

The expanded shallow-well register reveals several records that require field verification rather than automatic deduplication. Two Arooseel entries use the name Abdirahman Haji with nearly identical coordinates; Aw Jaamac Aleel and Elmi Muumin Sh. Dahir share the same coordinates in the BoQ; and Ali Omar Aare and Omar Arab also share a coordinate. These may represent duplicate records, adjacent works or data-entry issues. This ESIA does not delete or merge them without a controlled field-verification record.

5.3.2 Engineering-Record Cross-Reference and Nomenclature Controls

The supporting engineering packages do not always use the same names as the June 2026 ESIA register. For example, the Zeila borehole package includes an “Arosel BH” file while the ESIA site table lists SAMO Cooperative and Xoosh Cooperative as the two Zeila boreholes; Xoosh is directly aligned, while Arosel/SAMO should not be treated as the same site without confirmation. Ainabo-area packages use Caynaba/Oog/Jaleelo naming variants. The final controlled drawing register must therefore map every engineering file to the exact ESIA/Master List site before procurement.

Table 5-6: Project Description Source and Nomenclature Controls

Record set	What it contains	Control
ESIA	68 sites: Zeila 36; Ainabo 19; Salahley 12; Borama 1	Primary ESIA scope and status reference.
Zeila shallow-well BoQ	30 named wells with coordinates and standard rehabilitation/pumping items	Provides detailed well identities but contains duplicate-name/coordinate issues requiring verification.
Borehole engineering folders	Arosel, Xoosh, Hunduli, Raydabka, Bahadhamal, Caynaba/Oog/Jaleelo and other packages	Useful design evidence; names must be mapped to final site register.
Zeila pipeline engineering package	Arooseel and Daryodhere profiles, BoQ and water-tank design	Supports physical description of the two pipeline-canal systems.
Catchment supporting files	District-level catchment assessment/drawing materials	Supports typology; final site-specific design parameters remain to be confirmed.

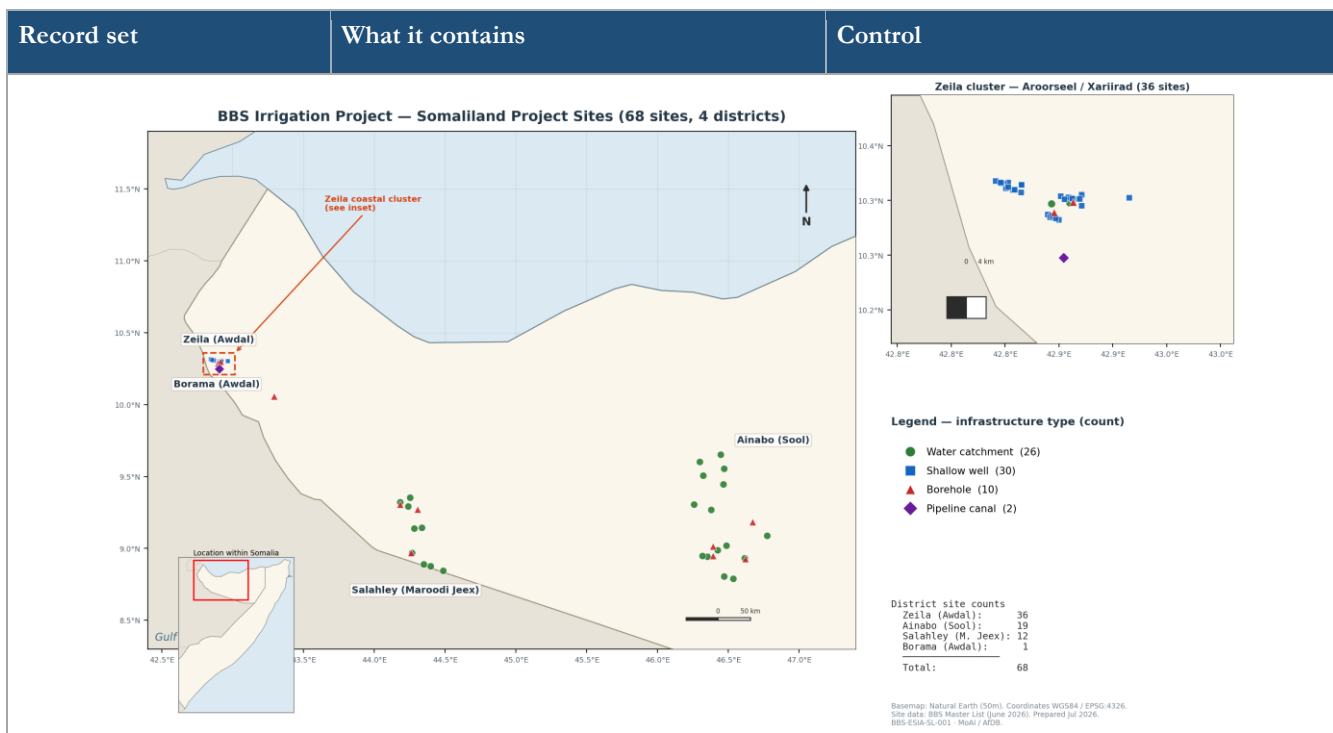


Figure 5-2: Somaliland BBS Project Site Locations - Zeila, Ainabo, Salahley and Borama

5.4 Infrastructure Typologies and Principal Works

5.4.1 Water Catchments

The 26 catchment interventions comprise desilting or excavation and reshaping, embankment/bund works, inlet/outlet and silt-control improvement, spillway and erosion-protection works, selective lining where justified, livestock-access facilities and reinstatement. The final register indicates 23 rehabilitation works and 3 new Salahley catchments. Final quantities and dimensions are governed by approved site-specific designs.

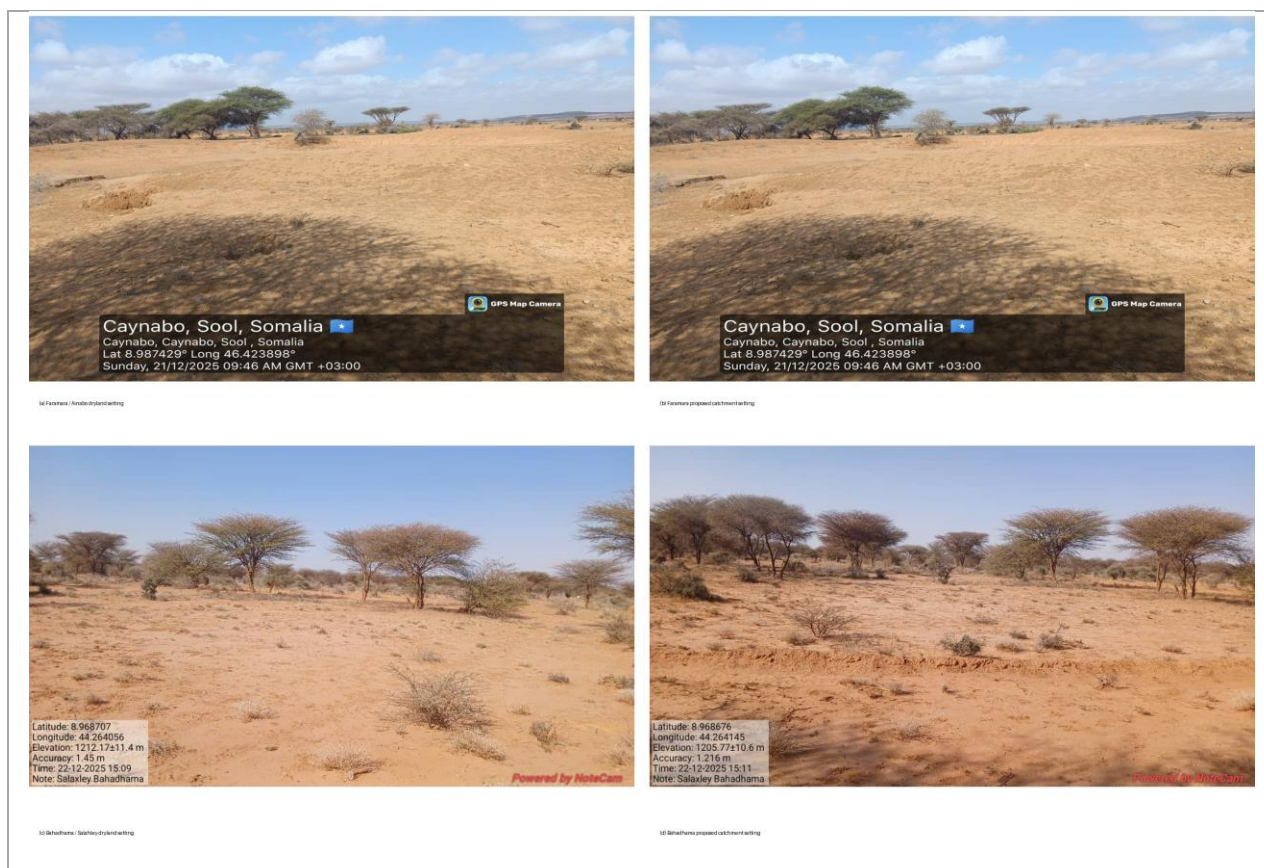


Figure 5-3: Representative Pre-Works Catchment Conditions - Ainabo and Salahley

5.4.2 Shallow Wells

The 30 Zeila shallow wells are rehabilitation works in the Aroorseel/Xariirad cluster. The engineering BoQ provides for reinforced-concrete ring lining, gravel backfill, concrete apron and a solar-powered pumping system. Rehabilitation also requires well-condition verification and water-quality testing before commissioning. Because the ESIA and engineering BoQ differ on the intended pump-selection logic, the approved site-specific design controls procurement.



Figure 5-4: Representative Zeila Shallow-Well Condition and Rehabilitation Arrangement

5.4.3 Boreholes

The ten boreholes comprise seven new sites and three rehabilitation sites. Principal activities include hydrogeological investigation, drilling or rehabilitation, casing/screen and well development as applicable, pumping

tests, water-quality analysis, pump and energy system installation, sanitary wellhead protection, storage, distribution, kiosks/troughs, fencing and commissioning. The available site-specific engineering packages indicate that drilling depth varies substantially between locations, so no single generic depth is adopted in this Project Description.

5.4.4 Pipeline Canals

The two Zeila pipeline-canal schemes are Aroor Seel/Arooseel and Draydhere/Daryodhere. The engineering package indicates approximately 3.0 km and 2.805 km of pipeline route respectively, buried HDPE conveyance, pumping/intake elements, valves and distribution components, together with reinforced-concrete storage. Final pipe diameters and component details must follow the approved, reconciled drawings because the BoQ contains inconsistent diameter references between main pipes and fittings.

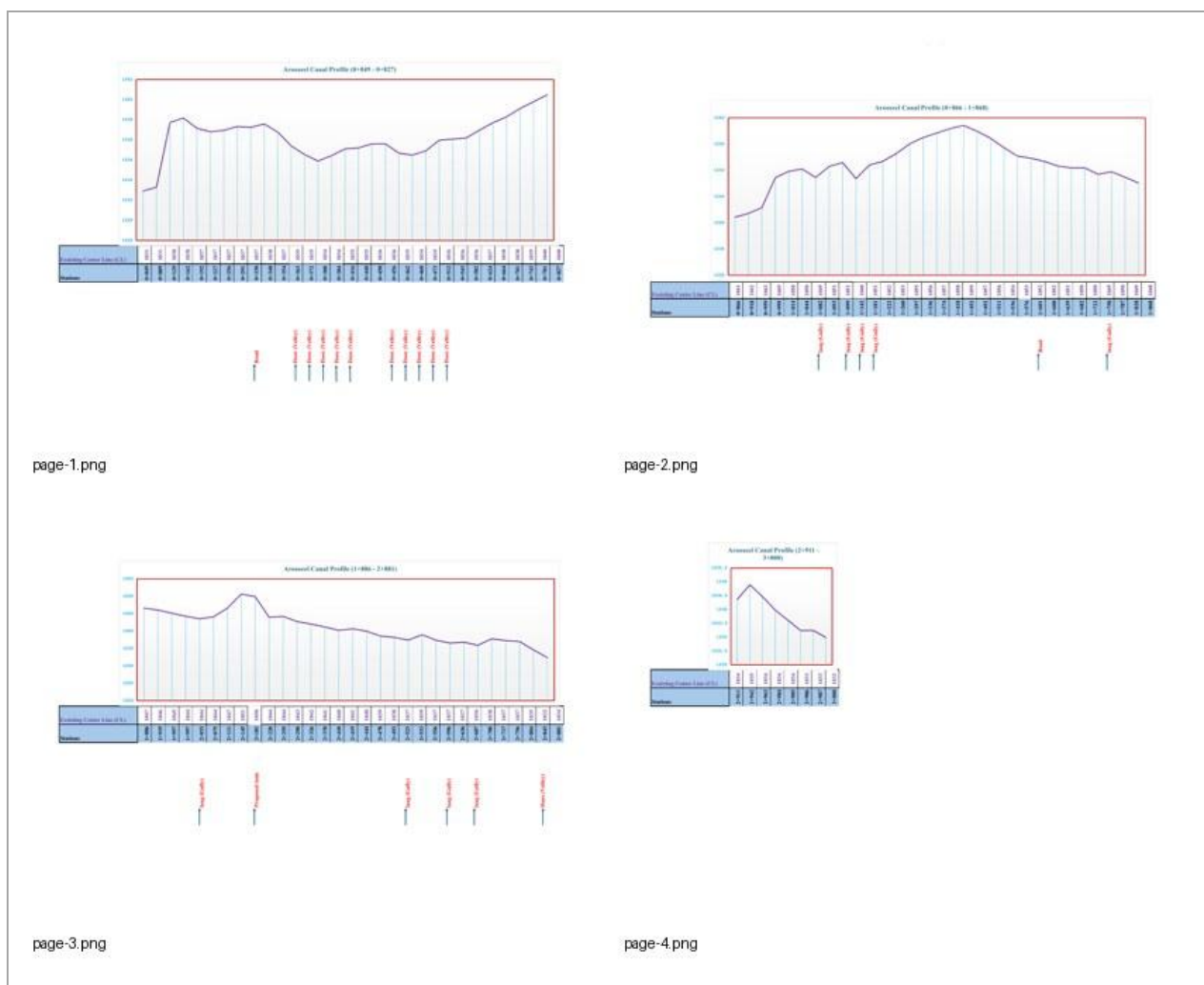


Figure 5-6: Representative Arooseel Pipeline Profile

5.5 Project Life-Cycle Activities and Implementation Approach

5.5.1 Pre-Construction Confirmation

Before works, the PIU must convert the assessment-stage records into construction-ready packages. This includes final site identity and coordinates, approved drawings and BoQs, hydrogeological and water-quality evidence, catchment condition data, land/access documentation, security clearance where required, community notification, approved C-ESMPs and method statements, and a verified register of temporary support facilities.

5.5.2 Construction Methods

Construction methods vary by typology. Catchments require earthworks and structural repair or new construction; shallow wells require controlled well rehabilitation, lining/apron and pumping works; boreholes require drilling or rehabilitation and associated civil/electromechanical works; and pipeline canals require route preparation, trenching, bedding, pipe installation/jointing, appurtenances, backfilling, storage/distribution works and reinstatement. Method statements for high-risk tasks are contractor-controlled documents approved before execution.

5.5.3 Work Packaging and Sequencing

The 68 sites are widely dispersed except for the dense Zeila cluster. District- and typology-based work packages with sequential work fronts are preferable to simultaneous mobilisation across the full scope. Zeila requires explicit water-continuity sequencing so that rehabilitation does not remove an unacceptable proportion of existing sources from service at the same time. Remote Ainabo and Salahley works require sequencing that matches security access, emergency response and supervision capacity.

5.6 Temporary Construction Support and Associated Sites

Temporary support sites may include borrow areas, spoil and drilling-waste disposal areas, construction-water points, lay-down/storage areas, worker welfare facilities, temporary access and, where necessary, accommodation. The source does not identify fixed locations for all such facilities. Each facility therefore requires screening, land/access agreement, pollution and safety controls, and reinstatement before use.

5.7 Materials, Equipment and Resource Requirements

Key resources include aggregate and borrow material, cement, reinforced-concrete components, geomembrane where selected, HDPE pipe and fittings, borehole casing and screens, pumps, solar panels/inverters and electrical components, tanks, fencing, trough and kiosk materials, drilling consumables, construction water and fuel for construction plant. Construction water must not unreasonably compete with community supply. Approved suppliers and screened local material sources should be used where available.

5.8 Workforce and Contractor Organisation

The ESIA anticipates multiple contractors across the four districts and recognises higher workforce concentration in Zeila. The final workforce size, skill mix, camp requirements and contractor structure are procurement matters and should not be fixed in the ESIA without contract data. The project requires contractor ESHS capacity proportionate to the work package, with competent drilling, confined-space, trenching and OHS supervision and access to community liaison and grievance-management arrangements.

5.9 Operation and Maintenance Concept

Infrastructure will be operated through Water User Associations or strengthened community water-management structures, supported by the Somaliland Ministry of Water Resources and district institutions. O&M includes wellhead and pump maintenance, water-quality and salinity monitoring, abstraction records, catchment inspection/desilting, pipeline/tank maintenance, drainage and trough management, access-rule enforcement and

grievance reporting. Zeila additionally requires cluster-level coordination because multiple wells and boreholes influence the same shallow coastal aquifer.

5.10 Project Maps, Photographs and Engineering Drawings

5.11 Project Description Data Controls

For the ESIA, the 68-site controlled register must remain the primary scope record. Supporting BoQs, screening forms, field photographs and engineering drawings remain evidence and design inputs but do not independently change the project scope. Any change in site identity, status, coordinates, intervention type or technical footprint must be documented through formal project change control and reflected consistently in the ESIA, ESMP, procurement documents and monitoring register.

CHAPTER 6: PROJECT BASELINE

6.1 Purpose and Baseline Approach

This chapter establishes the environmental and social conditions against which project impacts are assessed. It distinguishes district-specific conditions from cross-cutting social, ecological, climate and contextual receptors and differentiates direct site evidence from regional information and parameters that require pre-construction confirmation.

6.2 Baseline Evidence, Scale and Data Confidence

Baseline confidence is highest for site identity and matched engineering records, moderate for regional climate/land-use/livelihood evidence, and lower for site-specific aquifer behaviour, water quality and household socioeconomic conditions. The lower-confidence parameters are assigned to pre-construction and C-ESMP verification requirements.

Table 6-1: Baseline Evidence and Data Confidence

Evidence confidence	Baseline use
High / direct project evidence	Site register/status; 30 Zeila well names/coordinates in BoQ; engineering packages for selected boreholes and pipelines; recorded site/cluster verification.
Moderate / regional or consultation evidence	District climate and topography; broad land use; pastoral/agro-pastoral livelihoods; qualitative vulnerability, water-access and security conditions.
Low / requires confirmation	Well-by-well salinity and bacteriology; combined Zeila aquifer response; sustainable yield at all boreholes; final catchment capacities/condition; household-level socioeconomic indicators; exact land/access status for new works.

6.3 Regional Environmental Setting

The project districts extend from the Gulf of Aden coast to interior plateaus and highlands. Zeila is a hot, very arid coastal plain with sandy and saline-influenced soils and a shallow aquifer sensitive to sea-water influence. Ainabo and Salahley are dryland/rangeland settings with seasonal rainfall, shallow and stony soils, high evapotranspiration and no permanent rivers. Borama lies in the northwestern highlands and is relatively cooler and wetter than the coastal and interior plains. Across all four districts, water availability depends on seasonal rainfall, rainwater harvesting and groundwater rather than perennial surface flow.

6.4 Zeila District (Awdal) Baseline

6.4.1 Physical and Coastal Water-Resource Setting

The Zeila project cluster lies on a low Gulf of Aden coastal plain, with ESIA elevations generally below 50 m above sea level for the Aroorsee/Xariirad project area. The climate is the hottest and driest within the Somaliland component, with rainfall below 150 mm/year in some years, high evaporation and strong southwest monsoon winds and dust during June-August. Coastal soils are sandy and saline-influenced.

The defining baseline receptor is the shallow coastal aquifer serving the dense well cluster. The ESIA describes the aquifer as shallow, influenced by sea water and sensitive to both salinity and cumulative drawdown. This is a qualitative and regional/site-history baseline; the ESIA does not contain a completed well-by-well water-quality dataset or a calibrated cluster aquifer assessment. Those data remain pre-works requirements.

6.4.2 Livelihoods and Community Water Use

Zeila communities include settled agro-pastoral households, farmers and coastal fishing households, alongside the dense Aroorseel/Xariirad population using the well cluster. Water-point access is therefore both a public-health and livelihood issue. Individual ownership is recorded for some shallow wells, while community and WUA arrangements are expected for infrastructure management. Construction sequencing and future abstraction governance must account for the fact that multiple adjacent households rely on sources within the same cluster.

6.4.3 Social, Access and Cumulative Context

The concentration of 30 shallow wells, two boreholes, two catchments and two pipeline canals in Zeila creates a baseline cumulative context not present in the other Somaliland districts. Changes at one source can affect access patterns at neighbouring sources, while increased combined abstraction may influence the shared aquifer. Dense settlement also increases exposure to traffic, trenching, dust and temporary water-supply disruption during construction.



Figure 6-2: Representative Zeila / Aroorseel-Xariirad Water-Point Baseline Photographs

6.5 Ainabo District (Sool) Baseline

6.5.1 Physical and Water-Resource Setting

Ainabo is an interior dryland and rangeland setting characterised in the ESIA by gently undulating plains and low-relief terrain at roughly 700-1,000 m elevation. Annual rainfall is broadly within the interior Somaliland range of 250-500 mm, but potential evapotranspiration greatly exceeds rainfall. Soils are generally shallow, stony and low in organic matter, with sparse vegetation that increases erosion sensitivity when disturbed. Water supply relies on catchments and groundwater rather than permanent rivers.

6.5.2 Livelihoods and Water Dependence

Pastoralism and agro-pastoralism dominate the livelihood context. Pastoral mobility and shared access to water points mean that catchments and boreholes function beyond a single fixed settlement. Drought can translate quickly into livestock losses, longer water journeys and pressure on shared sources. The 19-site Ainabo package therefore interacts with both fixed infrastructure users and mobile pastoral users.

6.5.3 Access, Services and Security Context

The ESIA identifies interior Ainabo as one of the locations where remoteness can constrain supervision and emergency response. Health and other services are dispersed, so construction OHS and community-safety planning must account for travel time and evacuation logistics. Site-specific security conditions must be confirmed before mobilisation rather than inferred from district-wide generalisation.



Figure 6-3: Representative Ainabo Catchment and Water-Point Baseline Conditions

6.6 Salahley District (Maroodi Jeex) Baseline

6.6.1 Physical and Water-Resource Setting

Salahley lies south of Hargeisa on interior rangeland plains at approximately 1,000-1,400 m elevation in the ESIA. Rainfall is seasonal and variable and falls within the broad interior 250-500 mm/year range, while extended dry periods and high evapotranspiration create chronic water deficits. The district contains nine catchment interventions and three new boreholes; three of the catchments are also recorded as new works in the final site table.

6.6.2 Livelihood and Pastoral Context

Rangeland use and livestock watering are central baseline functions. Water-point location and access can influence seasonal movement and local resource relations. New borehole and catchment sites therefore require careful confirmation of community demand, land access, pastoral routes and governance arrangements before works.

6.6.3 Remoteness and Security Context

The ESIA identifies remote Salahley sites as the component's priority security and supervision context. Remoteness also increases worker heat and emergency-response risk. These are contextual conditions rather than project impacts, but they affect the feasibility and reliability of safeguards implementation and are carried into the impact assessment.

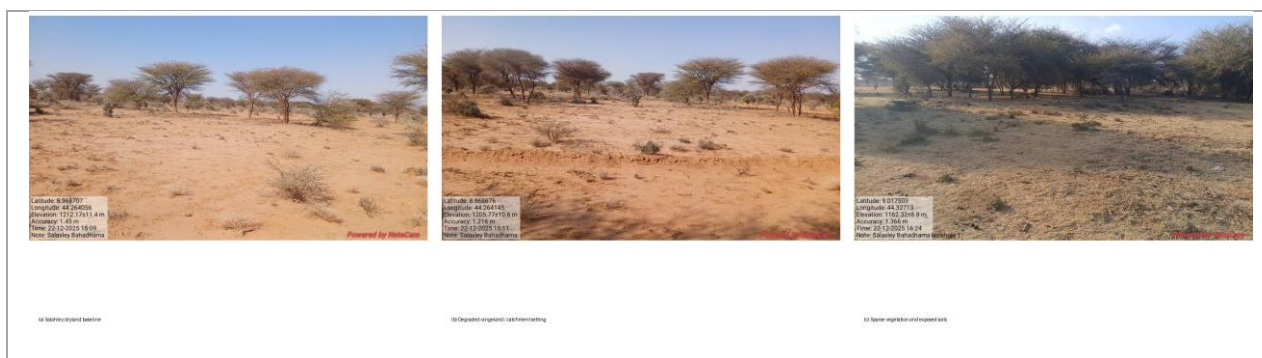


Figure 6-4: Representative Salahley Catchment and Water-Point Baseline Conditions

6.7 Borama District (Awdal) Baseline

The Borama component comprises one new borehole at Heego Daraso in the northwestern highlands. The ESIA characterises Borama as higher elevation, cooler and somewhat wetter than the coastal and interior plains. The available baseline is not detailed enough to describe site-specific aquifer depth, yield, water quality, land status or nearby receptors. These matters must be established through the pre-works hydrogeological, site-readiness and land-access process before drilling.

6.8 Biological Environment and Ecosystem Services

The ESIA characterises the project areas as degraded rangeland and settled coastal plain and does not identify designated protected areas, Ramsar wetlands or critical habitat at the 68 sites. Vegetation is generally sparse dryland scrub and grasses, while ecosystem services include grazing, water capture, soil protection and the coastal livelihood environment at Zeila. The baseline conclusion is therefore one of generally modified or used landscapes with local ecological functions. Site-specific sensitive habitat must still be verified before expanding footprints, especially for new works or support sites.

6.9 Social and Socioeconomic Baseline

6.9.1 Livelihood Dependence and Drought Sensitivity

Livelihoods are predominantly pastoral and agro-pastoral, with small-scale cultivation where water permits and fishing interests in the Zeila coastal area. Water insecurity is a direct livelihood constraint: drought increases travel distance, livestock losses, pressure on shared sources and risk of distress movement. Improved water reliability therefore has substantial potential benefit, but temporary construction disruption can also have disproportionate consequences during dry periods.

6.9.2 Land, Water Governance and Access

Water-point land is described as mainly communal or community-managed, with some individually held shallow wells in Aroorsee. Customary governance through elders and xeer remains important in access and dispute resolution. The project intends to use WUAs or strengthened community water-management structures for O&M. Baseline governance is therefore mixed formal/customary and varies by site; it should not be assumed that all 68 sites have equivalent existing committees or access rules.

6.9.3 Gender and Youth

Women and girls carry a major household water-collection burden and face barriers to participation in traditionally male-dominated water governance. Youth employment expectations are prominent in consultations. The ESIA contains an approximate female-headed-household figure, but the evidence base is not sufficient to treat that figure as a site-level census. This ESIA therefore carries forward the qualitative finding that female-headed households, nomadic and semi-nomadic women and low-literacy women require differentiated engagement and benefit-access measures.

6.9.4 Vulnerable and Differently Affected Groups

The ESIA identifies female-headed households, nomadic and semi-nomadic women, minority-clan households, poor pastoral households, unemployed youth, coastal fishing communities and persons with disabilities as groups that may experience barriers to information, decision-making or benefits. Vulnerability is context-specific and must be verified through ongoing engagement rather than treated as a fixed demographic label.

6.9.5 Education, Health and Service Access

Education and health access are constrained by mobility, distance and dispersed services, especially in interior and remote areas. Low literacy informs the use of oral and visual communication. Waterborne disease risk is material where shallow-well sanitary protection is weak, while distance to medical care increases the consequence of serious worker or community incidents at remote work fronts. Exact facility capacities and referral times require site/work-package confirmation before mobilisation.

6.10 Community Health, Safety and Security Baseline

Existing community exposure includes unsafe or poorly protected water points, long water journeys, traffic on local access routes, livestock movement and the hazards associated with degraded infrastructure. Security conditions vary by district and site; the ESIA identifies remote Salahley and interior Ainabo as higher-priority contexts for access and supervision. Baseline security is dynamic and must be reassessed before and during works.

6.11 Cultural Heritage Baseline

No known archaeological or cultural-heritage site is identified in the ESIA as lying within the 68 project footprints. This is a screening conclusion, not evidence that subsurface material is absent. New drilling, catchment excavation and pipeline trenching retain chance-find potential, so the Chance Finds Procedure remains applicable.

6.12 Climate Baseline and Projected Change

The source climate assessment describes chronic water deficit across the project districts, with potential evapotranspiration of approximately 2,000-3,000 mm/year against rainfall ranging from below 150 mm/year in parts of coastal Zeila to roughly 250-500 mm/year in the interior, with Borama relatively wetter. Gu and Deyr rainfall is highly variable, and drought and heat are the dominant cross-cutting hazards. Zeila additionally faces coastal salinity pressure and sea-level-related saltwater-intrusion risk.

Table 6-2: Climate Baseline and Projected Change Relevant to Somaliland Sites

Climate parameter	ESIA projection / baseline
-------------------	----------------------------

Climate parameter	ESIA projection / baseline
Mean temperature change 2021-2040	+1.0°C to +1.3°C above 1991-2020 baseline
Mean temperature change 2040-2060	+1.5°C to +2.2°C above baseline
Very hot days >40°C	+10 to +25 additional days/year by 2040; highest at coastal Zeila
Potential evapotranspiration	Projected +10% to +15% from already high baseline
Rainfall baseline	Approximately 150-500 mm/year across project districts; lowest at coastal Zeila
Gu rainfall variability	±15-25% inter-annual variability; risk of consecutive failed seasons
Drought frequency	Shift from about 1-in-4 years toward 1-in-2-to-3 years by 2040 in the assessment
Extreme rainfall intensity	+10% to +20% heavy-rainfall-event intensity; higher flash-flood risk in wadi systems
Sea-level / coastal salinity	Continued sea-level rise increases saltwater-intrusion pressure on the Zeila shallow aquifer

Basis: project Climate Risk Assessment. Values are regional/district-scale projections and are not site measurements.

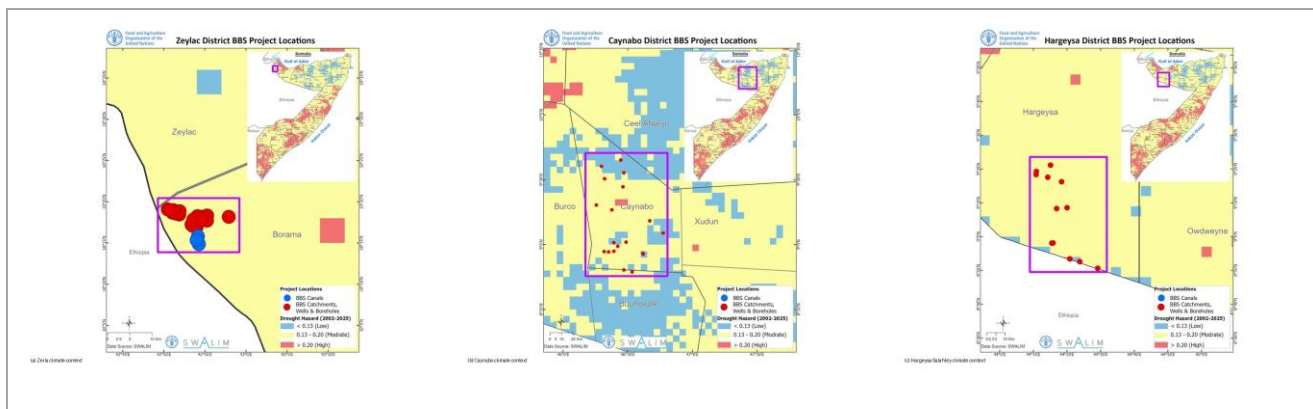


Figure 6-6: Somaliland Climate Hazard Context - Drought, Heat, Flash Flood and Coastal Salinity

6.13 Contextual Fragility and Resilience Conditions

Project performance depends on institutional capacity, community governance, mobility, drought coping capacity, water-point maintenance, access to replacement parts and the ability to monitor remote and dispersed sites. The most important resilience factors are functioning water-management structures, reliable water-quality and groundwater monitoring, transparent access rules, accessible grievance channels, local maintenance skills and the ability to adapt pumping and construction schedules to drought, salinity and security conditions.

6.14 Existing and Planned Developments / Cumulative Context

The dominant cumulative context identified in the project information is the Zeila cluster itself: 30 shallow wells, two boreholes, two catchments and two pipeline canals concentrated in a small area and potentially drawing on connected water resources. The relevant cumulative pathways are combined drawdown, salinity, simultaneous construction disruption, settlement-level access changes and increased pressure on water governance. The available evidence does not provide a complete inventory of all other groundwater abstractions in the coastal aquifer, so cumulative assessment must remain adaptive and informed by the pre-works aquifer study.

6.15 Baseline Information to be Confirmed through the C-ESMP and Pre-Construction Process

Table 6-3: Baseline Data Gaps and Pre-Works Confirmation Requirements

INFORMATION TO BE CONFIRMED	C-ESMP / PRE-CONSTRUCTION REQUIREMENT
Zeila shallow wells	Establish well-specific sanitary condition, salinity/TDS/EC, bacteriological quality and tested yield before rehabilitation; incorporate the potable-use decision, pumping arrangement and rehabilitation controls into the C-ESMP.
Zeila coastal aquifer	Complete the cluster hydrogeological assessment, baseline levels/salinity, monitoring-point installation and combined abstraction limits before clustered groundwater works; incorporate the approved monitoring/action thresholds into the C-ESMP/O&M plan.
All boreholes	Complete site-specific hydrogeology, final drilling depth, sustainable yield, EC/salinity and water quality, pumping test and energy/storage design; incorporate final operating limits into the C-ESMP.
Catchments	Complete condition assessment of storage, sediment, embankment, liner, spillway and inlet/outlet requirements and incorporate the approved rehabilitation/new-build scope into the C-ESMP.
New works / private wells	Document land/access, affected users, individual well-owner arrangements, pastoral routes and any crop/asset impacts before mobilisation; incorporate commitments into the C-ESMP.
Remote sites	Complete current security assessment, emergency route and medical/referral verification before mobilisation and reflect approved arrangements in the C-ESMP/SMP.
Social baseline	Establish site-level beneficiary, water-collection-time, vulnerable-user participation and WUA baseline where monitoring targets require quantitative verification.

6.16 Baseline Summary for Impact Assessment

The impact assessment should therefore treat four receptor contexts distinctly: (i) the sensitive and densely used coastal groundwater system in Zeila; (ii) drought- and erosion-sensitive catchment and groundwater systems in Ainabo; (iii) remote rangeland and new-work sites in Salahley; and (iv) the single new borehole in Borama with limited site-specific baseline data. Across all districts, water security, livelihood dependence, gendered water burden, equitable access, extreme heat, drought and institutional maintenance capacity are central receptors. Chapter 7 should apply significance ratings proportionate to these baseline sensitivities and should retain provisional ratings where pre-works data remain unresolved.

CHAPTER 7: ENVIRONMENTAL AND SOCIAL RISKS AND IMPACTS

7.1 Impact-Assessment Scope and Approach

This chapter evaluates the environmental and social risks and impacts of the Somaliland component of the BBS Project by applying the assessment methodology established in Chapter 1 to the project activities described in Chapter 5 and the receptors and sensitivities established in Chapter 6. It does not repeat the baseline description or the detailed mitigation measures presented in Chapter 8.

The assessment covers the 68 sites in Zeila, Ainabo, Salahley and Borama and distinguishes the four infrastructure typologies: water catchments, shallow wells, boreholes and pipeline canals. It considers pre-construction and mobilisation, construction and rehabilitation, commissioning, operation and maintenance, and demobilisation of temporary support areas. Particular attention is given to the dense Zeila coastal cluster because its shallow aquifer, well density and settlement pattern create cumulative and water-quality pathways that are not present at the dispersed interior sites.

7.1.1 Impact Identification

Impact pathways were identified by linking project activities to environmental and social receptors. The ESIA identifies the principal pathways as catchment earthworks and erosion; shallow-well cleaning, dewatering and contamination; coastal salinity and cumulative aquifer drawdown; pipeline trench collapse and access disruption; borehole drilling and groundwater abstraction; occupational heat, excavation and confined-space hazards; community safety; temporary interruption of water access; SEA/SH; security at remote sites; inequitable water access; catchment sedimentation; infrastructure safety; and climate-related drought, extreme rainfall and coastal salinity pressures.

7.1.2 Significance Determination

Significance is determined using magnitude, duration, geographic extent, receptor sensitivity, reversibility and likelihood. The four rating classes are Negligible, Minor, Moderate and Major. Pre-mitigation ratings describe the risk before the identified controls are applied; residual ratings describe the expected significance after the mitigation hierarchy and ESMP controls are implemented.

Table 7-1: Impact Significance Descriptors

Rating	Meaning in this ESIA	Management implication
Negligible	No material or readily measurable adverse change remains after routine controls.	Acceptable with routine good practice.
Minor	Localised, short-duration or readily reversible effect with limited consequence.	Manageable through standard controls and supervision.
Moderate	Material effect or risk requiring specific mitigation, monitoring or institutional management.	Acceptable only with defined controls and continued verification.
Major	Potentially severe safety, water-quality, livelihood or resource consequence requiring avoidance or strong controls.	Requires robust avoidance/mitigation and may be unacceptable if controls cannot be demonstrated.

Basis: ESIA impact-assessment methodology.

7.1.3 Treatment of Uncertainty

The assessment distinguishes between impacts already supported by the ESIA and data-dependent conclusions that require closure before works. Well-by-well salinity and bacteriological status in Zeila, combined behaviour of the Aroorseel shallow aquifer, borehole depth/yield/quality, catchment condition, individual well ownership, previously unworked-ground UXO/ERW status and site-specific security conditions remain matters for pre-mobilisation confirmation. The two Zeila catchments are within the project scope, but the ESIA assigns the formal catchment-earthworks erosion rating specifically to Ainabo and Salahley; this ESIA therefore does not create a separate Zeila catchment significance rating.

7.2 Impact Receptors and Valued Environmental and Social Components

Table 7-2: Principal Impact Receptors and Sensitivity

Receptor / VEC	Project-area expression	Sensitivity for assessment
Zeila shallow coastal aquifer	Groundwater beneath the Aroorseel/Xariirad cluster supporting 30 shallow wells and the coastal boreholes.	High: shallow, salinity-influenced and exposed to cumulative abstraction.
Community drinking-water supply	Shallow wells, boreholes, kiosks/collection points and related distribution infrastructure.	High: direct health and livelihood dependence on reliable, potable supply.
Interior groundwater resources	Borehole aquifers in Ainabo, Salahley and Borama.	High: drought-sensitive and site-specific yield/quality not fully characterised before survey.
Catchment storage and dryland soils	Catchments and surrounding shallow/stony interior soils.	Moderate-High: storage is livelihood-critical; disturbed soils are erosion-prone.
Pastoral and agro-pastoral livelihoods	Livestock watering, seasonal movement, small-scale cultivation and shared water governance.	High: limited drought coping capacity and dependence on functioning water points.
Workers	Drilling, well-cleaning, trenching, earthworks and transport crews.	High: heat, confined-space, excavation, drilling and remote emergency-response exposure.
Communities and children	Residents and water users around active work sites, especially in dense Aroorseel.	High: open excavation, vehicle, water-access and construction-density exposure.
Women and female-headed households	Primary household water collectors and groups with lower representation in water governance.	High: differentiated water-burden, safety, SEA/SH and participation pathways.
Minority clans, nomadic users and coastal fishing communities	Groups with potential for exclusion from decisions or distinct reliance on water/coastal resources.	Moderate-High: access and representation can be affected by local governance.
Rangeland vegetation and local fauna	Sparse dryland vegetation and modified settlement/rangeland habitats.	Low-Moderate: no designated protected or critical habitat identified at the project sites in the ESIA.

Basis: project baseline and receptor-sensitivity assessment.

7.3 Direct Impact Pathways by Project Phase

7.3.1 Pre-Construction and Mobilisation

The material pre-construction pathways arise where works are authorised before evidence is available to confirm that the intervention is technically and socially suitable. These include rehabilitating a Zeila well without first confirming salinity and bacteriological quality; mobilising the Zeila well cluster without aquifer assessment and

combined abstraction limits; drilling or rehabilitating boreholes without hydrogeological confirmation; beginning catchment works without condition assessment; mobilising remote sites without security clearance; using land or access corridors without documented agreement; and starting works before the GRM, SEA/SH referral arrangements and contractor ESHS plans are operational.

7.3.2 Construction and Rehabilitation

Construction pathways arise from catchment excavation and reshaping, shallow-well cleaning and dewatering, borehole drilling and development, buried-pipeline trenching, transport, worker presence, temporary storage and waste management. The combination of dense simultaneous work fronts in Zeila and remote dispersed work fronts in the interior creates contrasting community-safety, supervision and emergency-response demands.

7.3.3 Commissioning, Operation and Maintenance

Commissioning and operation pathways relate to water quality and salinity, groundwater abstraction, catchment sedimentation and structural condition, safe operation of water infrastructure, equitable access, WUA governance, maintenance capacity and long-term coastal-aquifer trends. The ESIA identifies long-term Zeila salinity and equitable water governance as residual Moderate issues requiring continued management attention.

7.3.4 Demobilisation of Temporary Works

Demobilisation can leave residual spoil, drilling waste, borrow pits, depressions, temporary access disturbance or unsafe excavations if reinstatement is incomplete. The ESIA requires temporary areas and spoil/borrow sites to be reinstated and verified before site handover.

7.4 Pre-Construction and Mobilisation Risks

Table 7-3: Pre-Construction and Mobilisation Risk Pathways

Risk pathway	Potential consequence	Applicability	Required evidence / control before works
Zeila well quality not confirmed	Investment in a saline or contaminated source and potential public-health harm.	30 Zeila shallow wells; coastal boreholes	Mandatory well-by-well salinity/bacteriological testing and baseline EC before works/commissioning.
Zeila aquifer behaviour not characterised	Combined abstraction may cause drawdown and accelerate saltwater intrusion.	Aroorseel/Xariirad cluster	Pre-works hydrogeological assessment, minimum two monitoring wells and combined abstraction limits.
Borehole hydrogeology not confirmed	Unproductive, poor-quality or unsustainable groundwater investment.	10 boreholes	Pre-drilling/rehabilitation hydrogeological survey and baseline EC.
Catchment condition not confirmed	Design may not address actual storage, embankment, liner or spillway condition.	26 catchments	Pre-works catchment condition assessment.
Land, ownership or pastoral access not documented	Access dispute, livelihood interruption or inequitable use of individually held/community water points.	All sites; individual Aroorseel wells; interior pastoral routes	Written access/ownership arrangements and pastoral-route phasing.
Remote-site security not cleared	Worker/community harm and inconsistent supervision.	Remote Salahley and interior Ainabo	Site-specific security assessment; SMP where required.

Risk pathway	Potential consequence	Applicability	Required evidence / control before works
Contractor and community systems not operational	Uncontrolled ESHS exposure, inaccessible grievances or unmanaged SEA/SH risk.	All work packages	Approved C-ESMP and plans; operational GRM; female CLO and referral pathways before mobilisation.

Basis: project readiness requirements and ESHS bold points.

7.5 Construction-Phase Environmental Risks and Impacts

7.5.1 Catchment Earthworks: Soil Erosion and Sediment Transport

The ESIA rates soil erosion from catchment earthworks in Ainabo and Salahley as Moderate before mitigation and Minor after mitigation. Excavation and reshaping on shallow, stony soils with sparse vegetation can mobilise sediment, erode embankments and disturb surrounding rangeland. The formal rating is retained for Ainabo and Salahley. The two Zeila catchments remain subject to the catchment controls in Chapter 8, but the ESIA does not assign them a separate significance rating.

7.5.2 Shallow-Well Contamination During Rehabilitation - Zeila

Cleaning, dewatering and casing/coping repair at the 30 Zeila shallow wells can introduce contaminants to the well or the shallow aquifer or redistribute poor-quality water during dewatering. The ESIA rates the impact Major before mitigation and Minor-Moderate after wellhead protection, controlled dewatering, pre-works salinity/bacteriological testing and post-rehabilitation quality clearance.

7.5.3 Salinity and Investment in an Unviable Water Source - Zeila

Sea-water influence may make some shallow wells or coastal boreholes unsuitable for potable use. Rehabilitating or commissioning a source without confirming quality would create an investment and public-health risk. The ESIA rates this Major before mitigation and Minor after screening excludes sources that fail the approved potability criteria and an alternative supply is identified.

7.5.4 Cumulative Aquifer Drawdown During Cluster Rehabilitation - Zeila

Combined abstraction from the dense cluster of 30 shallow wells together with the two coastal boreholes could lower groundwater levels and increase the hydraulic pressure for salinity intrusion. The ESIA rates this Moderate before mitigation and Minor-Moderate after the Aroorseel aquifer assessment, monitoring wells, baseline recording and combined abstraction limits.

7.5.5 Borehole Drilling, Fluids, Cuttings and Local Pollution

Borehole drilling can generate mud, cuttings, fuel and chemical handling risks around water points. The source ESMP requires bunded fuel/chemical storage away from wellheads, lined drilling-waste pits, removal of drilling waste, spill-control arrangements and water-quality testing after development. The source impact chapter does not assign this pollution pathway a separate significance rating, so this ESIA treats it as a managed construction risk without creating a new rating.

7.5.6 Coastal Wind and Dust - Zeila

The southwest monsoon period brings wind-blown sand and dust to the Zeila cluster. The ESIA rates this Minor before mitigation and Negligible after avoidance of major earthworks during the peak wind period where practicable, water suppression and temporary windbreaks.

7.5.7 Biodiversity and Vegetation Disturbance

The ESIA identifies the project areas as degraded rangeland and settled coastal plain with no designated protected areas, Ramsar wetlands or critical habitats at the 68 sites. Footprint limitation, avoidance of unnecessary clearance and revegetation remain precautionary controls. Because the ESIA treats biodiversity as of limited relevance and does not provide a formal impact rating, no new significance class is introduced here.

7.6 Construction-Phase Labour and Occupational Health and Safety Risks

7.6.1 Pipeline Trench Collapse and Access Disruption - Zeila

Trenching for the Draydhere and Aroor Seel pipeline canals in the densely settled Aroorseel area creates worker collapse risk and community-access disruption. The ESIA rates the safety impact Major before mitigation and Minor after the activity-specific trench-shoring, unsupported-trench prohibition, confined-space controls, 50 m crossing-point provision and rapid backfilling/reinstatement requirements are implemented.

7.6.2 Shallow-Well Cleaning and Confined-Space Exposure

Well rehabilitation exposes workers to confined-space, dewatering and waterborne-disease hazards. The ESIA incorporates these hazards within the overall OHS rating and requires confined-space permits, competent supervision, well-entry controls and task-specific training. They are managed under the overall OHS significance determination and the activity-specific C-ESMP confined-space/well-entry controls.

7.6.3 Borehole Drilling and Plant Safety

Drilling introduces rig stability, rotating equipment, lifting, pressure, electrical and fluid-handling hazards, and remote work can delay medical response. The ESIA requires certified supervision, rig stability verification, PPE, exclusion controls, first response and documented evacuation arrangements. These hazards are included in the overall OHS rating.

7.6.4 Heat Stress, Remoteness and Emergency Response

Extreme heat and distance from medical facilities are material across the component and are most acute at remote Salahley and interior Ainabo sites. The overall OHS profile is assessed as Major before mitigation and Minor-Moderate after implementation of the C-ESMP Heat Stress Management Plan, including potable water, shade, acclimatisation, workload-based work/rest controls, heat-trigger criteria, buddy arrangements, trained first response and documented evacuation routes.

7.6.5 Labour Conditions and Worker Management

The project-wide Labour Management Procedures apply to worker registration, age verification, written contracts, welfare, local hiring and a Workers' GRM. The ESIA does not assign a separate significance rating to labour-

condition non-compliance. These requirements are therefore treated as mandatory OS2 controls rather than a newly rated impact category.

7.7 Construction-Phase Community Health, Safety, Security and Social Risks

7.7.1 Community Safety and Traffic

Open excavations, vehicle movements and the concentration of simultaneous activities in Aroorseel expose community members, particularly children. The ESIA rates this Moderate before mitigation and Minor after barriers, Somali-language signage, exclusion zones, no unguarded excavations overnight, 30 km/h settlement speed limits and advance notification.

7.7.2 Temporary Disruption to Water Access

Rehabilitation can interrupt existing water supply, with the highest consequence in the dense Zeila well cluster. The ESIA rates the impact Moderate before mitigation and Minor after advance notification, documented alternative supply, phased rehabilitation maintaining at least 60% of Aroorseel wells in service, a maximum of five wells in rehabilitation simultaneously, tanker contingency where disruption exceeds the ESMP threshold, and water-quality confirmation before resumed use.

7.7.3 Security Risk at Remote Sites

Remote Salahley and interior Ainabo sites present elevated access and supervision risks. The ESIA rates security risk Moderate before mitigation and Minor-Moderate after site-specific security assessment, SMP preparation where required, coordination with Somaliland security structures, community acceptance measures, local hiring and flexible scheduling.

7.7.4 SEA/SH and Worker-Community Interaction

A distributed workforce across four districts creates SEA/SH risk, while GBV response services are more concentrated in Hargeisa than at remote sites. The ESIA rates the risk Moderate-Major before mitigation and Minor-Moderate after Codes of Conduct, induction and refresher training, a confidential PIU-managed channel, female CLOs and confirmed survivor-centred referral pathways.

7.7.5 Land Access, Individual Well Ownership and Pastoral Routes

The ESIA anticipates no involuntary land acquisition or physical displacement but recognises individually held wells in Aroorseel and pastoral routes around interior sites. Temporary working areas and access can still affect use rights and movement. The Land Access Protocol therefore requires written agreements, documentation of individual ownership arrangements and pastoral-route phasing. The ESIA does not assign this pathway a standalone significance rating, and none is introduced here.

7.7.6 Cultural Heritage and UXO/ERW

Chance-find potential exists during excavation and drilling even though no known cultural heritage sites are identified at the project sites. The source also requires UXO/ERW clearance confirmation for previously unworked ground. These are precautionary pre-works controls rather than separately rated impacts in the ESIA.

7.8 Summary of Construction-Phase Significance

Table 7-4: Construction-Phase Impact Significance Summary

Impact / risk	Applicability	Pre-mitigation	Expected residual	Key qualification
Soil erosion from earthworks - Ainabo/Salahley	Catchment works	Moderate	Minor	Assessment rating applies specifically to Ainabo and Salahley catchment earthworks.
Shallow-well contamination - Zeila	30 shallow wells	Major	Minor-Moderate	Depends on pre/post water-quality testing, controlled dewatering and wellhead protection.
Saline/unviable well or borehole - Zeila	Coastal wells/boreholes	Major	Minor	Failing sources excluded from potable rehabilitation/commissioning and alternative supply identified.
Cumulative aquifer drawdown - Zeila	Well cluster + 2 coastal boreholes	Moderate	Minor-Moderate	Depends on aquifer assessment, monitoring wells and combined abstraction limits.
Pipeline trench collapse and access disruption	2 Zeila pipeline canals	Major	Minor	Depends on shoring, crossing points, confined-space controls and rapid reinstatement.
OHS - heat, excavation, drilling, confined space	All districts	Major	Minor-Moderate	Remote-site emergency response and heat discipline remain critical.
Community safety	All districts; highest density in Zeila	Moderate	Minor	Barriers, signage, traffic controls and daily site securing required.
SEA/SH from worker influx	All districts	Moderate-Major	Minor-Moderate	Residual depends on functioning confidential channel and referral pathways.
Temporary water-access disruption	All districts; Zeila priority	Moderate	Minor	Phased Zeila programme and alternative supply are controlling measures.
Coastal wind and dust	Zeila	Minor	Negligible	Peak monsoon avoidance and suppression.
Security risk	Remote Salahley/interior Ainabo	Moderate	Minor-Moderate	Residual depends on dynamic site-specific security management.

Basis: impact assessment and residual significance determinations.

7.9 Operation and Maintenance Risks and Impacts

7.9.1 Inequitable Water Access and Social Conflict

Shared water infrastructure may be captured by stronger clan or local interests, particularly at catchments and within the dense Aroorsee cluster. The ESIA rates this Moderate-Major before mitigation and Moderate after inclusive WUAs, minimum 30% female membership, documented and publicly posted access rules, GRM access and PIU oversight during the first year.

7.9.2 Coastal Salinity Increase - Zeila

Increased abstraction and long-term sea-level rise may increase salinity in the Zeila coastal aquifer. The ESIA rates this Moderate-Major before mitigation and Moderate after annual salinity/bacteriological testing, combined abstraction limits, adaptive pumping reduction, coastal-trend monitoring and escalation to the PIU and Somaliland Ministry of Water Resources.

7.9.3 Catchment Sedimentation and Deterioration

Without recurrent maintenance, sedimentation can reduce storage and damage embankments, liners, silt traps and spillways. The ESIA rates this Moderate before mitigation and Minor-Moderate after post-rainfall clearance, bi-annual condition inspection and desilting when storage loss exceeds the ESMP threshold of 15% from the post-construction baseline.

7.9.4 Groundwater Over-Abstraction - Boreholes

Increased groundwater abstraction combined with declining recharge can reduce borehole sustainability. The ESIA rates this Moderate before mitigation and Minor-Moderate after sustainable-yield design, pumping-hour limits, SWL and EC monitoring, pumping records and adaptive reduction when the monitoring action threshold is reached.

7.9.5 Safety Around Operational Infrastructure

Wells, boreholes and catchments retain fall, drowning, access and structural safety risks during operation. The ESIA rates this Moderate before mitigation and Minor after fencing, signage, quarterly WUA inspection, community awareness and timely repair of safety defects.

7.9.6 Water Quality and Public Health

Water-quality risks persist during operation, particularly in Zeila where salinity, bacteriological contamination and wellhead drainage require repeated verification. The ESMP monitoring plan requires periodic testing and blocks commissioning until the applicable water-quality criteria are met. Because the source impact chapter does not assign a separate O&M significance rating to general water quality beyond the salinity pathway, no additional rating is introduced.

7.9.7 Pest, Vector and Livestock-Disease Risks

Standing water at wellheads, trough overflows, catchment margins and canal structures can create mosquito habitat, while livestock concentration around water points can increase tick and disease-management needs. The project P/VMP addresses these pathways through drainage, inspection, source reduction, RVF and Desert Locust coordination and pesticide controls. The source impact chapter does not provide a standalone significance rating for this pathway.

7.10 Summary of Operation and Maintenance Significance

Table 7-5: Operation and Maintenance Impact Significance Summary

Impact / risk	Applicability	Pre-mitigation	Expected residual	Key qualification
---------------	---------------	----------------	-------------------	-------------------

Impact / risk	Applicability	Pre-mitigation	Expected residual	Key qualification
Inequitable water access / social conflict	All 68 sites; shared systems and Zeila cluster	Moderate-Major	Moderate	Requires sustained WUA capacity, posted rules, GRM and PIU oversight.
Coastal salinity increase	Zeila coastal aquifer	Moderate-Major	Moderate	Long-term adaptive abstraction and monitoring commitment.
Catchment sedimentation	Assessment rating applies to Ainabo/Salahley.	Moderate	Minor-Moderate	Bi-annual inspection and >15% storage-loss desilting trigger.
Groundwater over-abstraction	Boreholes in all districts	Moderate	Minor-Moderate	Depends on sustainable-yield design, SWL/EC monitoring and adaptive pumping.
Safety around infrastructure	Wells, boreholes, catchments	Moderate	Minor	Requires maintained fencing/signage and WUA inspections.

Basis: operation and maintenance impact assessment.

7.11 Indirect and Induced Impacts

The ESIA identifies induced in-migration attracted by improved water as low because most interventions rehabilitate existing water infrastructure. Improved reliability may nonetheless change local use patterns, WUA membership and demand at successful water points. These trends are monitored through WUA membership and access records. Positive indirect effects include improved livestock health, reduced drought losses, reduced distress migration, local economic activity and time savings from more reliable water access.

7.12 Cumulative Impacts - Zeila Coastal Cluster

The strongest cumulative pathway is the concentration of 30 shallow wells, two coastal boreholes, two pipeline canals and two catchments in the Zeila area. The ESIA identifies three linked cumulative effects: drawdown from combined abstraction; salinity intrusion that may accelerate as abstraction increases; and social competition where multiple adjacent water points change access conditions at the same time. The residual cumulative effect is assessed as Minor-Moderate for drawdown and Moderate for long-term coastal salinity after aquifer assessment, monitoring wells, combined abstraction limits, phased commissioning and coordinated cluster-wide governance.

7.13 Associated Facilities, Support Sites and Supply-Chain Risks

Borrow areas, spoil and drilling-waste disposal sites, temporary access routes, lay-down areas, construction water sources and worker support facilities can create soil disturbance, dust, traffic, contamination, stagnant water, community access and land-use impacts outside the permanent works footprint. The ESIA requires these facilities to be recorded in an Associated Facilities and Support-Sites Register and screened, permitted, documented and reinstated before use and closure. No standalone significance ratings are introduced because the ESIA manages these as contractor and support-site risks within the ESMP.

7.14 Climate Change Risks and Interaction with Project Impacts

Climate change acts as a risk multiplier rather than a separate project activity. The source Climate Risk Assessment identifies increasing drought frequency and heat, reduced recharge, more intense rainfall and flash-flood risk, and sea-level rise increasing saltwater-intrusion pressure in Zeila. These changes can reduce catchment inflow, increase groundwater stress, increase worker heat exposure, damage catchment embankments and intensify coastal salinity. With the source adaptation measures in place, residual climate risk is assessed as Moderate. Long-term Zeila salinity therefore remains an adaptive-management issue rather than a one-time construction risk.

7.15 Positive Impacts and Development Opportunities

Table 7-6: Positive Impacts and Development Opportunities

Positive impact pathway	Expected effect	Assessment
Improved water reliability and quality	Rehabilitation and new groundwater/catchment infrastructure can reduce breakdowns, unsafe supply and drought-season unreliability.	Major positive development benefit where water-quality and sustainability controls are met.
Reduced women's water-collection burden	The ESIA targets at least 50% reduction in average collection time by Year 2 of operation.	Positive social and gender outcome requiring baseline/monitoring confirmation.
Improved livestock health and drought resilience	More reliable water points and catchments can reduce livestock losses and support pastoral coping capacity.	Positive livelihood and resilience effect.
Local employment and skills	Construction and O&M create local work and technical/WUA training opportunities.	Positive if recruitment is transparent and inclusive.
Inclusive water governance	WUA formation, posted access rules, female participation and grievance mechanisms can strengthen local management.	Positive governance opportunity, but dependent on sustained institutional performance.
Reduced fuel dependence	Solar-powered borehole pumping reduces operational dependence on diesel supply.	Positive operational and pollution-prevention benefit.

Basis: project objectives, alternatives assessment and ESMP provisions.

7.16 Residual Impact Profile

The ESIA concludes that most residual construction and operation effects are Minor to Moderate and manageable where the ESMP is fully implemented. The residual issues that remain most dependent on long-term institutional and behavioural performance are coastal salinity management, equitable water-access governance, SEA/SH prevention and remote-site security/supervision consistency.

Table 7-7: Residual Impacts Requiring Particular Management Attention

Residual issue	Expected residual significance	Why management attention remains necessary
Zeila coastal salinity	Moderate	Requires long-term salinity trend monitoring, combined abstraction control and adaptive pumping.
Equitable water access / social conflict	Moderate	Depends on inclusive WUAs, transparent access rules, GRM performance and PIU oversight.

Residual issue	Expected residual significance	Why management attention remains necessary
Zeila cumulative drawdown	Minor-Moderate	Depends on functioning monitoring wells and compliance with combined abstraction limits.
Groundwater over-abstraction at boreholes	Minor-Moderate	Requires sustainable-yield limits, SWL/EC records and adaptive reduction.
SEA/SH	Minor-Moderate	Residual depends on confidential survivor-centred systems and service referral capacity.
Remote-site security	Minor-Moderate	Dynamic context requires continuing security assessment and flexible supervision.
Catchment sedimentation	Minor-Moderate	Requires routine WUA inspection, silt-trap maintenance and periodic desilting.

Basis: residual impact assessment.

7.17 Impact Determinations to be Confirmed through the C-ESMP and Pre-Construction Process

Table 7-8: Data-Dependent Impact Determinations to be Closed Before Works or Commissioning

Impact topic	REQUIRED CONFIRMATION	C-ESMP / DECISION REQUIREMENT
Zeila well potability	Salinity/TDS/EC and bacteriological test for each shallow well.	Only sources meeting the approved intended-use water-quality criteria may be commissioned for potable use; the C-ESMP shall document exclusion/alternative-supply decisions.
Aroorseel aquifer cumulative behaviour	Hydrogeological assessment, monitoring wells, baseline levels/salinity and combined abstraction limits.	The approved aquifer assessment and monitoring/action thresholds shall be incorporated into the C-ESMP before clustered groundwater works.
Borehole viability and sustainable yield	Hydrogeological survey and baseline EC/water quality at each borehole.	Use the approved hydrogeological results to set drilling/rehabilitation design, pump sizing and operating limits in the C-ESMP.
Catchment works requirements	Condition assessment of storage, embankment, liner, silt-trap and spillway needs.	Use the condition assessment to confirm final scope and site-specific erosion/structural controls in the C-ESMP.
Land, ownership and pastoral access	Written access documentation; individual well ownership records; pastoral-route phasing.	Complete documented access arrangements before mobilisation and include commitments/reinstatement requirements in the C-ESMP.
Remote-site security	Site-specific security assessment and SMP determination.	Mobilisation shall not proceed until the current assessment confirms acceptable conditions and the required C-ESMP/SMP controls are approved.
Previously unworked ground	UXO/ERW clearance confirmation where applicable.	No excavation shall proceed until required UXO/ERW clearance evidence is confirmed.
Commissioning water quality	Final bacteriological and salinity/EC test against the approved project water-quality criteria.	Community use is blocked until the source passes the approved water-quality standard and the commissioning record is accepted by the PIU.

Basis: Somaliland ESIA limitations, bold points and monitoring requirements.

7.18 Overall Impact Assessment Conclusion

The Somaliland component presents a mixed but manageable risk profile. The most significant construction risks before mitigation are the Zeila shallow-well contamination and saline-source investment pathways, pipeline trench safety and the combined OHS profile. The most persistent operation-phase risks are coastal salinity, equitable

access and groundwater sustainability. The ESIA concludes that these impacts can be reduced to Minor or Moderate residual significance through the specified controls, with long-term salinity and governance issues requiring continued adaptive management. The mitigation measures needed to achieve those residual outcomes are consolidated in Chapter 8 and translated into implementation obligations in the subsequent ESMP chapter.

CHAPTER 8: MITIGATION MEASURES

8.1 Purpose and Approach

This chapter consolidates the environmental and social mitigation measures required for the Somaliland component after consideration of the design measures in Chapter 4 and the risks and impacts assessed in Chapter 7. It does not repeat the impact assessment. Its purpose is to define the controls carried forward into the Environmental and Social Management Plan (ESMP), where responsibilities, monitoring, timing and costs are assigned.

The measures are grounded in the ESIA, including its mitigation plan, ESHS hold points, Land Access Protocol, SEA/SH provisions, monitoring framework and Pest and Vector Management provisions. Where evidence remains incomplete, the requirement is framed as a pre-mobilisation or pre-commissioning verification step rather than as an assumed site condition.

8.2 Application of the Mitigation Hierarchy

The mitigation hierarchy is applied in the order of avoidance, minimisation, restoration/reinstatement and compensation where verified loss remains. For Somaliland, many of the most important avoidance decisions occur before construction: excluding non-potable Zeila wells from potable rehabilitation, establishing combined aquifer limits before clustered abstraction, confirming borehole hydrogeology, micro-siting new works, documenting land and pastoral access, sequencing the dense Zeila programme, and withholding mobilisation at remote sites until security requirements are satisfied.

8.3 Avoidance Measures

- No Zeila shallow well will be rehabilitated for potable use before well-specific salinity and bacteriological testing. A source that fails the approved potability criteria will be excluded from potable rehabilitation and an alternative supply arrangement identified.
- No Zeila well-cluster or coastal borehole works will proceed before the Aroorseel aquifer assessment has established baseline water levels and salinity, installed the required monitoring wells and defined combined abstraction limits.
- No borehole drilling or rehabilitation will proceed before the site-specific hydrogeological survey and baseline EC/water-quality assessment confirm the proposed intervention and sustainable yield.
- No catchment works will proceed before a condition assessment confirms the actual storage, embankment, liner, spillway and silt-control requirements.
- New works and temporary construction areas will be micro-sited to avoid physical displacement, unnecessary vegetation disturbance, known cultural features, pastoral-route obstruction and avoidable conflict over water access.
- Remote Salahley and interior Ainabo sites will not mobilise before site-specific security assessment and required Security Management Plan arrangements are cleared.
- Previously unworked ground will not be excavated until the project has the required UXO/ERW clearance confirmation.

- The Zeila cluster shall be phased through a C-ESMP Water-Supply Continuity Plan that limits simultaneous well outages to a level agreed with the PIU and affected communities, maintains adequate functioning supply throughout rehabilitation and provides contingency water where the agreed service threshold cannot be maintained.
- Catchment earthworks will be scheduled outside peak rainfall periods where practicable, and major Zeila earthworks/trenching will avoid the peak southwest-monsoon wind/dust period where practicable.

8.4 Minimisation and Reduction Measures

- Advance community notification and documented alternative supply will be provided before any planned interruption of an existing water source; the source Zeila programme includes a tanker contingency if disruption exceeds the stated cluster threshold.
- Excavations and trenches shall be physically protected, inspected by a competent person and supported or battered in accordance with ground conditions, excavation geometry and the approved C-ESMP method statement. Unsupported worker entry is prohibited. Community crossings and rapid reinstatement shall be maintained where works affect settled areas.
- All active work fronts will use barriers, Somali-language warning signs, exclusion zones, daily safety inspection and a prohibition on unguarded open excavations overnight.
- Construction traffic through settlements will apply the source 30 km/h speed limit and agreed access routes.
- Dust at Zeila will be reduced through water suppression, temporary windbreaks and timing of major earthworks where practicable.
- Drilling fluids, cuttings, dewatering discharge, fuels and chemicals will be controlled to prevent contamination of soil and water points; temporary pits and depressions will be reinstated and drained.
- Water abstraction will remain within the sustainable-yield and combined-abstraction limits established through the required hydrogeological assessments, with pumping hours adjusted if monitoring indicates deterioration.
- Commissioning will be withheld until the applicable water-quality testing has passed the approved project criteria.

8.5 Mitigation Measures by Intervention Type

8.5.1 Water Catchments

- Complete the pre-works condition assessment and use the findings to confirm desilting, basin reshaping, embankment, liner, inlet/outlet, silt-trap and spillway works.
- Limit the earthworks footprint and install down-slope silt controls before excavation where erosion pathways exist.
- Compact and seed disturbed cut surfaces within five days as required by the ESIA, and inspect erosion controls after rainfall.
- Schedule major earthworks outside peak Gu and Deyr rainfall periods where practicable and apply flash-flood work-suspension rules in wadi settings.

- Maintain drainage and spillway function so that residual shallow ponding does not persist beyond the project P/VMP control period; silt traps must not create isolated stagnant pools.
- Reinstate borrow/spoil areas and temporary access after construction.
- During operation, inspect catchment condition bi-annually before Gu and after Deyr, undertake spot checks after major storms, clear silt traps and desilt when storage loss exceeds 15% of the post-construction baseline.
- Maintain fencing, signage, safe access and livestock/domestic-use separation where included in the approved design.

The formal source erosion rating is stated for Ainabo and Salahley. The two Zeila catchments remain subject to the same catchment-management principles where the approved design involves comparable earthworks, but final site-specific controls are to be confirmed through their condition assessments.

8.5.2 Shallow-Well Rehabilitation - Zeila

- Complete salinity and bacteriological testing at every shallow well before works and record the result against the well register.
- Exclude wells that fail the approved potability criteria from potable rehabilitation and document the alternative supply for the affected users.
- Protect the wellhead before dewatering; discharge dewatered water away from the wellhead and avoid uncontrolled pooling or return flow to the shallow aquifer.
- Do not use chemical cleaning agents unless they have been specifically approved for the task and water-safety context.
- Apply confined-space entry controls for any well entry, including permit, competent supervision, atmospheric/entry checks as specified in the approved OHS plan, rescue arrangements and no lone working.
- Complete casing/coping and wellhead protection works, apron drainage, fencing and associated collection/trough arrangements in accordance with the approved design.
- Undertake post-rehabilitation water-quality testing before community use and maintain the test certificate in the site records.
- Phase the cluster programme to a maximum of five wells in rehabilitation at once and maintain at least 60% of Aroorseel wells operational, with the source tanker contingency where required.

8.5.3 Boreholes - All Districts

- Complete hydrogeological survey, baseline EC/water-quality assessment and sustainable-yield determination before drilling or rehabilitation.
- For new boreholes, document land access, community agreement and pastoral-route considerations before mobilisation.
- Use certified drilling supervision, rig stability checks, exclusion zones, no lone working, PPE and task-specific drilling method statements.
- Store fuel and chemicals in bunded containment away from wellheads, use lined drilling-waste pits and remove drilling waste to the designated disposal route.

- Install wellhead protection, drainage, fencing, kiosk/collection and livestock-watering infrastructure in accordance with the approved design.
- Record baseline SWL and EC at commissioning and size solar pumping to the established sustainable yield.
- Maintain pumping-hour logs and monitor SWL/EC during operation. The approved hydrogeological assessment and water-quality protocol shall establish the site-specific groundwater-level, yield and EC/salinity action thresholds and the corresponding adaptive pumping-reduction or suspension response. Monitoring records shall be shared with the Somaliland Ministry of Water Resources and adverse trends shall trigger timely corrective action.
- Share groundwater monitoring records with the Somaliland Ministry of Water Resources and apply corrective action where adverse trends are identified.

8.5.4 Pipeline Canals - Zeila

- Prepare a pipeline-trenching method statement before work in the settled Aroorseel corridor.
- Provide shoring for the activity-specific trench depth threshold (>1.2 m) and prohibit worker entry to unsupported trenches.
- Apply confined-space controls to deep or restricted excavations where the approved OHS plan identifies confined-space conditions.
- Maintain pedestrian and vehicle crossing points at approximately 50 m intervals in the settlement as required by the ESIA, and provide advance community notification.
- Lay, joint, test and backfill pipeline sections progressively, with backfill and reinstatement within 48 hours of pipe laying as specified in the ESIA.
- Manage excavated material so that it does not block access, drainage or water points and reinstate the corridor on completion.
- Operate buried conveyance and intake/distribution structures so that open standing water is minimised and drainage remains functional.

8.6 Cross-Cutting Environmental, Social, Health and Safety Measures

8.6.1 Security and Access Management

Security management will be based on site-specific assessment, coordination with Somaliland security structures, community acceptance, flexible scheduling and work suspension when the approved security arrangements require it. Remote Salahley and interior Ainabo are the priority contexts identified by the ESIA. Security arrangements must not obstruct community grievance access or be used to manage ordinary community disputes.

8.6.2 Labour and Occupational Health and Safety

The C-ESMP shall include a competent Heat Stress Management Plan defining potable-water provision, acclimatisation, workload-based work/rest arrangements, shade, heat-trigger criteria, buddy arrangements, first aid and emergency response consistent with GIIP and the approved OHS standard, with enhanced arrangements for remote sites.

8.6.3 Community Health and Safety

Community controls include barriers, exclusion zones, safe crossings, Somali-language signage, daily inspection of public-facing hazards, 30 km/h settlement speed limits, no unguarded excavations overnight, advance notification, maintenance of water access and protection of water quality. The dense Zeila cluster requires particularly close control of simultaneous work fronts and daily communication of well status.

8.6.4 SEA/SH Prevention and Response

All workers, drivers, security staff and subcontractors will sign the project Code of Conduct before work. A dedicated confidential SEA/SH channel will be managed through the PIU Social/GBV function, with at least one female CLO per district and survivor-centred referral pathways confirmed before mobilisation. Community structures, WUAs and traditional leaders will not mediate SEA/SH complaints. Where accommodation is required, it will be located and managed to minimise community interaction risk and provide gender-separated facilities.

8.6.5 Waste, Pollution and Resource Management

The C-ESMP and Waste Management Plan will cover spoil, drilling cuttings and mud, dewatering discharge, fuel and chemical storage, domestic waste, temporary pits and site reinstatement. Fuel/chemical storage will use bunded containment and activity-specific separation from water points. Drilling-waste pits, borrow areas and construction depressions will be backfilled or contoured to drain after use. No waste or discharge may be placed where it could contaminate community water sources or the shallow Zeila aquifer.

8.6.6 Water Quality and Groundwater Management

Water-quality and groundwater controls are integral to both construction and O&M. Zeila shallow wells require pre-works and post-rehabilitation quality tests and ongoing salinity trend monitoring. Boreholes require baseline SWL/EC and sustainable-yield operating limits. Any source that fails commissioning water-quality requirements will not be opened for community use. Monitoring triggers will be applied through the ESMP and approved O&M procedures, with adaptive pumping reduction or suspension where required.

8.6.7 Pest, Vector and Livestock-Disease Management

The project-wide P/VMP applies to all Somaliland sites. Source-reduction measures include drainage of wellheads, troughs and canal structures; avoidance of persistent construction pools; routine inspection of catchment margins and drainage; a 3 m clearance zone around troughs; livestock-disease awareness; RVF contingency coordination; Desert Locust reporting; and controlled pesticide use. The detailed operational triggers, approved pesticide restrictions and reporting arrangements remain in the P/VMP and ESMP and are not repeated in full here.

8.7 Land Access, Livelihood Restoration and Compensation

A Land Access Protocol applies to all 68 sites even though the ESIA does not anticipate involuntary land acquisition or physical displacement. Working areas and access corridors will be agreed in writing with landholders, community leaders and the relevant WUA before works. Individual ownership arrangements will be documented for privately or individually held water points, notably within Aroorsee, including rehabilitation terms and temporary water provision. Pastoral routes will be documented and phasing adjusted to maintain access.

Verified project-caused crop or asset damage shall be compensated at full replacement cost in accordance with the Land Access Protocol and the applicable OS5 requirements. Any physical displacement or material economic displacement shall trigger immediate suspension of the affected activity and formal OS5 determination before works proceed.

8.8 Differentiated Measures for Vulnerable and Differently Affected Groups

- Inclusive WUA formation and oversight will address women, female-headed households, nomadic and semi-nomadic users, minority clans, coastal fishing communities, youth and persons with disabilities where relevant to the site.
- The ESMP requires at least 30% female WUA membership and leadership, supported by female CLOs and women-only engagement where appropriate.
- Nomadic and semi-nomadic users will be reached through mobile or seasonal outreach at watering points rather than relying only on fixed community meetings.
- Low-literacy communication will use spoken Somali, visual materials, radio and trusted local intermediaries.
- Coastal fishing communities in Zeila will be specifically engaged on water quality, pollution concerns and coastal salinity trends.
- Individual well owners in Aroorseeel will be engaged on rehabilitation terms without allowing ownership arrangements to undermine equitable community access commitments.
- Local hiring information will be communicated transparently, with the source LMP targets reflected in contractor recruitment plans and workforce reporting.
- Water-access decisions and WUA membership trends will be monitored for exclusion or elite capture, with corrective action and GRM access where inequity is identified.

8.9 Enhancement Measures

The project can enhance positive outcomes through reliable O&M, WUA training, local technical skills, transparent water-governance rules, women's participation, improved water-quality awareness, livestock-water management, climate and drought preparedness, and coordinated salinity/groundwater monitoring with the Somaliland Ministry of Water Resources. These measures strengthen project benefits but do not replace the mitigation obligations above.

8.10 Measures Requiring Continued Management Attention

The source residual-impact assessment identifies four management priorities that continue beyond construction: Zeila coastal-aquifer salinity and combined abstraction; equitable water-access governance across the 68 sites and especially the dense Aroorseeel cluster; SEA/SH prevention and confidential response; and security-related supervision consistency at remote Salahley and interior Ainabo sites. Groundwater sustainability and catchment sedimentation also require long-term O&M monitoring and corrective maintenance.

8.11 Technical and Financial Feasibility

The measures in this chapter are designed to be delivered through project design requirements, contractor obligations, PIU and Supervision safeguards functions, Somaliland ministry coordination and WUA O&M

responsibilities. Contractor ESHS costs are to be carried in works contracts, while PIU-managed assessments, monitoring, engagement and capacity-building are budgeted through the ESMP. Detailed responsibilities, monitoring frequencies, implementation timing and costs are intentionally reserved for the ESMP chapter to avoid duplication.

8.12 Pre-Mobilisation Verification and Adaptive Management

No site is authorised for mobilisation solely because it appears on the project register. The PIU shall close the applicable hold points and ensure that the approved C-ESMP incorporates the site-specific water-quality, aquifer, hydrogeological, catchment, land/access, security, UXO/ERW, engineering, GRM/SEA-SH and high-risk method-statement requirements before works.

CHAPTER 9: ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN (ESMP)

Project	Beero oo Barwaaqee Soomaaliya (BBS) Irrigation Project — Somaliland Component	AfDB category	Category 2
Location	Zeila District (Awdal), Ainabo District (Sool), Salahley District (Maroodi Jeex), and Borama District (Awdal)	Project sites	68 sites: 36 Zeila, 19 Ainabo, 12 Salahley, 1 Borama
Applicable safeguards	OS1, OS2, OS3, OS4, OS7 and OS10	Precautionary safeguards	OS5, OS6 and OS8; OS9 not applicable
Basis	Somaliland ESIA (July 2026 revision), updated BBS Master List and supporting safeguard instruments	Indicative ESMP budget	Approximately USD 683,000 over four years, plus contractor ESHS costs carried in works contracts

9.1. ESMP objectives and scope

This ESMP translates the environmental and social commitments of the Somaliland ESIA into operational requirements for the Project Implementation Unit (PIU), contractors, the Supervision Consultant, Somaliland government counterparts, district administrations, Community Liaison Officers (CLOs), Water User Associations (WUAs) and other implementation partners. It applies to all 68 sites in Zeila, Ainabo, Salahley and Borama and to temporary support sites and associated construction facilities used for the works.

Site-specific parameters that depend on well quality, aquifer behaviour, borehole hydrogeology, catchment condition, land/access arrangements, security or contractor method shall be confirmed through the applicable pre-construction studies and incorporated into the approved C-ESMP before mobilisation or commissioning.

Where this ESMP and a formally approved project-wide safeguard instrument contain different requirements, the more protective or formally approved requirement should prevail. Any material change to site location, infrastructure type, water-source design, construction method or risk context requires screening and, where necessary, update of the C-ESMP and this ESMP before the change is implemented.

9.2. Summary of environmental and social risks and impacts

They are summarised here so that the management measures in the following sections can be read against the risks they are intended to control.

Risks arising from project activities. The principal construction risks are contamination during shallow-well rehabilitation; investment in saline or otherwise non-potable coastal water sources; cumulative drawdown and salinity pressure in the Zeila coastal aquifer; trench collapse and access disruption during the two pipeline-canal works; soil erosion and sediment transport during catchment earthworks; drilling, excavation, confined-space and extreme-heat OHS hazards; community exposure to excavations, traffic and simultaneous work fronts; temporary interruption of water supply; worker-community interaction and SEA/SH; waste, drilling-fluid and fuel contamination; coastal wind and dust; and security constraints at remote Salahley and interior Ainabo sites.

Operation-phase risks are dominated by inequitable water access and social conflict; long-term salinity increase in the Zeila coastal aquifer; groundwater over-abstraction at boreholes; recurrent catchment sedimentation and structural deterioration; safety around wells, boreholes, catchments and water points; vector and livestock-disease risks associated with standing water; and weak operation and maintenance. The Zeila cluster also presents a cumulative risk because 30 shallow wells, two coastal boreholes and two pipeline canals are concentrated within the same local water-resource system.

The principal contextual factors affecting implementation are recurrent drought and heat, sea-level-driven coastal salinity pressure, flash-flood and intense-rainfall events, remoteness from medical services at selected sites, variable district-level institutional capacity, and security-related constraints on supervision. The ESMP therefore combines engineering controls with evidence-first pre-works studies, phased construction, institutional coordination, WUA governance and adaptive monitoring.

9.3. Mitigation, compensation and enhancement measures

9.3.1. Pre-construction and mobilisation phase

Table 9-1: Pre-construction and mobilisation measures — Somaliland

Activity / risk	Potential impact	Required measure	Deadline	Responsible	OS
Site readiness — all 68 sites	Works commencing without access, consent or required studies	Complete PIU site-readiness checklist: site/access confirmed; community notified; land/access documentation complete; security clearance where relevant; applicable pre-works survey complete; C-ESMP approved.	Before mobilisation at each site	PIU / Somaliland E&S Officer	OS1, OS5, OS10
Zeila shallow-well quality screening — 30 wells	Rehabilitating wells with unacceptable salinity or contamination	Complete well-specific salinity and bacteriological testing before rehabilitation; exclude a source from potable rehabilitation where it fails the approved potability criterion and identify alternative supply arrangements.	Before well works	PIU / accredited laboratory	OS3, OS4
Aroorseel aquifer assessment	Cumulative drawdown and salinity intrusion	Complete pre-works hydrogeological assessment; establish baseline water level and salinity; install the required monitoring wells; define combined abstraction limits before Zeila well/borehole works.	Before Zeila groundwater works	PIU / technical consultant / Somaliland water authority	OS1, OS3
Borehole hydrogeology — 10 sites	Unproductive, unsustainable or saline borehole investment	Complete site-specific hydrogeological survey and baseline EC/water-quality measurement; confirm aquifer depth, sustainable yield and design parameters; obtain applicable water-sector approvals.	At least six weeks before drilling/rehabilitation where practicable	PIU / technical consultant	OS1, OS3
Catchment condition assessment — 26 sites	Inadequate design; erosion or structural failure	Confirm storage condition, sedimentation, embankment, liner, spillway and silt-control requirements before final work quantities and mobilisation.	Before mobilisation at each catchment	PIU / technical consultant	OS1, OS3

Activity / risk	Potential impact	Required measure	Deadline	Responsible	OS
Remote-site security — Salahley / interior Ainabo priority	Worker/community security risk and interrupted supervision	Complete site-specific security assessment; prepare Security Management Plan where required; coordinate mobilisation decision with Somaliland and district security structures.	Before mobilisation authorisation	PIU / Contractor / district authorities	OS4
Land access, individual well ownership and pastoral routes	Disputes, temporary livelihood disruption, blocked access	Confirm working areas and access corridors; document individual well-owner arrangements in Aroorseel; map pastoral routes and phase works to maintain access; obtain UXO/ERW clearance confirmation for previously unworked ground.	Before mobilisation	PIU / District Administration / Contractor	OS5, OS10
GRM and SEA/SH referral arrangements	No accessible complaint or sensitive-case pathway	Operationalise hotline, suggestion boxes, CLO contacts and district escalation; confirm female CLOs and survivor-centred SEA/SH referral pathways before works.	Before mobilisation in each district	PIU / Somaliland E&S Officer	OS10, OS4
Contractor ESHS plans	Mobilisation without activity-specific controls	Require PIU approval of C-ESMP, OHS Plan, Waste and Drilling-Waste Plan, Community H&S Plan, SEA/SH arrangements, Security Plan where required, emergency response arrangements and high-risk method statements.	Before any on-site mobilisation	PIU	OS1, OS2, OS3, OS4

AfDB Operational Safeguards applicability and ESMP cross-reference

Operational Safeguard	Applicability to Somaliland component	Primary ESMP response
OS1 — Assessment and Management of E&S Risks and Impacts	All 68 sites; cumulative Zeila aquifer effects; climate and associated-facility risks	Sections 9.3–9.19; C-ESMP; monitoring; change screening
OS2 — Labour and Working Conditions	Contractors and subcontractors; heat, drilling, trench and confined-space hazards	Sections 9.4, 9.5, 9.9.1, 9.11; project LMP
OS3 — Resource Efficiency and Pollution Prevention	Groundwater abstraction, salinity/EC, well rehabilitation, drilling waste, fuel/chemical storage, erosion and waste	Sections 9.3, 9.5, 9.8, 9.15, 9.19
OS4 — Community Health, Safety and Security	Water quality, excavations, traffic, SEA/SH, security, vector management	Sections 9.3.5, 9.5–9.9, 9.19
OS5 — Land Acquisition / Restrictions on Land Use	Precautionary: temporary access, individual Zeila well ownership, pastoral routes, damage compensation	Section 9.3.4 and hold points in 9.5
OS6 — Biodiversity	Precautionary footprint limitation and reinstatement; no critical habitat identified in ESIA	Construction controls and reinstatement requirements
OS7 — Vulnerable Groups	Women, nomadic/semi-nomadic users, minority-clan households, poor pastoral households, coastal fishing communities and other vulnerable users	Sections 9.3.3, 9.6, 9.7, 9.11, 9.17
OS8 — Cultural Heritage	Precautionary chance-find controls during excavation/drilling	Sections 9.4, 9.5 and associated Chance Finds Procedure
OS9 — Financial Intermediaries	Not applicable	No FI activity

Operational Safeguard	Applicability to Somaliland component	Primary ESMP response
OS10 — Stakeholder Engagement and Information Disclosure	All phases and all districts	Sections 9.6–9.7; SEP and GRM

9.3.2. Construction phase

Construction measures are implemented through the approved C-ESMP and method statements for each work package. The matrix below consolidates the principal obligations from the source Somaliland ESIA. It is not a substitute for site-specific method statements or the more detailed requirements of Chapter 8.

Table 9-2: Construction-phase ESMP implementation matrix — Somaliland

Code	ACTIVITY / WORK PACKAGE	Risk / impact	Management measure	KPI / evidence	Implementation	Monitoring
SL-C01	Catchment earthworks — Ainabo, Salahley and Zeila catchments	Soil erosion, sediment transport, flash-flood exposure	Limit disturbance to required footprint; install downslope silt controls before excavation; compact and stabilise disturbed surfaces promptly; schedule outside peak rainfall where practicable; inspect after rainfall; protect liners, spillways and silt-control structures.	No significant erosion beyond footprint; post-rainfall inspection record; reinstatement complete	Contractor	Supervision / Somaliland E&S Officer
SL-C02	Shallow-well rehabilitation — Zeila 30 wells	Well/aquifer contamination during cleaning and dewatering	Maintain wellhead protection; controlled dewatering away from the wellhead; use no unapproved cleaning chemicals; keep dewatering/disposal records; complete post-rehabilitation quality test before use.	Post-rehabilitation test passed before use; dewatering log complete	Contractor	PIU / accredited lab / Supervision
SL-C03	Zeila well-cluster phasing	Excessive simultaneous water-access disruption	Implement the C-ESMP Water-Supply Continuity Plan, limiting simultaneous well outages to the PIU/community-agreed service threshold and providing contingency supply where required; maintain a daily status record.	Agreed minimum functioning supply maintained; daily well-status record; contingency activated where required.	Contractor	PIU / Somaliland E&S Officer
SL-C04	Pipeline-canal trenching — Draydhere and Aroor Seel	Trench collapse; access disruption in dense settlement	Use a competent excavation/trenching method statement; prohibit unsupported worker entry; provide safe pedestrian/vehicle crossings, advance community notice and progressive backfill/reinstatement.	No unsupported entry; crossings maintained; reinstatement records	Contractor	Supervision
SL-C05	Borehole drilling and rehabilitation — all districts	Drilling injury; drilling-fluid, cuttings and fuel contamination	Certified/competent supervision; rig stability checks; exclusion zone; no lone working; banded fuel/chemical storage away from wellheads; lined containment for drilling waste; removal to designated disposal; post-development water-quality test.	Rig and exclusion checks; 100% drilling waste to designated disposal; quality test before use	Contractor	Supervision / PIU

Code	ACTIVITY / WORK PACKAGE	Risk / impact	Management measure	KPI / evidence	Implementation	Monitoring
SL-C06	Extreme heat and remote working — all sites	Heat illness and delayed emergency response	Implement the C-ESMP Heat Stress Management Plan covering potable water, shade, acclimatisation, workload-based work/rest controls, heat-trigger criteria, buddy system, trained first response and documented evacuation routes.	Daily heat-control records; heat illness investigated; emergency routes verified.	Contractor	Supervision
SL-C07	Excavation and confined-space work	Collapse, asphyxiation, injury	Apply excavation shoring and competent-person inspection; confined-space entry permit for well entry/deep confined work; atmospheric/ventilation/rescue arrangements as required by approved OHS Plan; barriers and exclusion zones.	100% permit compliance for confined-space entry; no unsupported excavation entry	Contractor	Supervision
SL-C08	Community safety and traffic	Injury to children/community from excavations, plant and vehicles	Install barriers and Somali-language signage; inspect public-facing hazards daily; prohibit unguarded excavations overnight; apply the approved Traffic Management Plan and a maximum 30 km/h settlement speed unless a lower limit is required.	Zero community fatalities; barriers/signage maintained; complaint log	Contractor	Supervision / CLO
SL-C09	Temporary water-supply interruption	Domestic/livestock water access loss	Provide advance notice; establish alternative supply before interruption; use phased work fronts; minimise outage duration; confirm water quality before restored source is returned to use.	No unplanned outage without contingency; notification record; clearance before use	Contractor	PIU / CLO
SL-C10	SEA/SH and worker-community interaction	SEA/SH, harassment, exploitation and community tension	Individual Code of Conduct before work; induction and quarterly refresher; confidential PIU-managed SEA/SH channel; female CLO per district; mapped referral pathway; appropriate worker accommodation arrangements.	100% workers signed CoC; confidential channel operational; referral pathway confirmed	Contractor / PIU GBV Specialist	PIU / Somaliland E&S Officer
SL-C11	Local recruitment and labour management	Employment grievance, exclusion, child/forced labour risk	Apply the LMP, worker register and age verification; written contracts; Workers' GRM; transparent and conflict-sensitive recruitment; monitor agreed local/youth/women participation targets through contractor workforce reporting.	Worker register complete; age verification 100%; Workers' GRM functional	Contractor	Supervision / PIU
SL-C12	Fuel, chemicals, concrete and general waste	Soil and water contamination	Use bunded storage; segregate waste; keep spill kits; no uncontrolled discharge to water points or coastal aquifer recharge areas; remove hazardous/maintenance waste through approved arrangements.	Zero uncontrolled discharge; weekly storage/waste inspection	Contractor	Supervision

Code	ACTIVITY / WORK PACKAGE	Risk / impact	Management measure	KPI / evidence	Implementation	Monitoring
SL-C13	Borrow areas, spoil, drilling-waste sites and temporary facilities	Land degradation, ponding, pollution and access impacts	Screen and document support sites; secure land/community-use agreement; site away from sensitive water receptors; contour/backfill and reinstate at close-out; include in Associated Facilities Register.	100% support sites registered and reinstated before close-out	Contractor	PIU / Supervision
SL-C14	Coastal wind and dust — Zeila	Wind-blown dust and reduced visibility	Avoid major earthworks during peak southwest monsoon where practicable; apply water suppression and temporary windbreaks; respond to community complaints.	No persistent visible dust beyond boundary; complaint trends monitored	Contractor	Supervision / CLO
SL-C15	Remote-site security — Salahley/Ainabo priority	Worker/community harm and interruption of supervision	Implement site security assessment and SMP where required; coordinate with authorities; flexible scheduling and work suspension when security conditions are unacceptable; maintain community acceptance measures.	No mobilisation without security clearance; security incidents logged and reviewed	Contractor / PIU	PIU / Somaliland authorities
SL-C16	Chance finds / previously unworked ground	Damage to cultural heritage or exposure to UXO/ERW	Obtain UXO/ERW clearance confirmation for previously unworked ground; stop work and apply Chance Finds Procedure if cultural material is encountered.	Clearance evidence where required; zero unauthorised disturbance of finds	Contractor	PIU / district authority
SL-C17	Vector source creation during works	Mosquito/tick breeding and public-health risk	Provide positive drainage at wellheads/troughs; avoid standing water in canal structures; backfill/contour construction depressions and waste pits; integrate P/VMP measures in C-ESMP.	No persistent construction-created standing water	Contractor	Supervision / Somaliland E&S Officer

9.3.3. Commissioning and operation and maintenance phase

9.3.3.1. Commissioning controls

Table 9-3: Commissioning controls — Somaliland

Control	Requirement	Responsible	Evidence / hold point
Water-quality clearance	Complete bacteriological and applicable salinity/EC testing before community use; commissioning is blocked until the source passes the approved project water-quality standard.	PIU / accredited laboratory	Test certificate and commissioning clearance
Groundwater baseline	Record baseline static water level and EC at each borehole and at Aroorseel monitoring wells at commissioning.	Contractor / PIU / Somaliland water authority	Baseline monitoring record
WUA readiness	Inclusive WUA or community water-management structure formed and trained; access rules documented and posted; O&M arrangements and basic tools in place.	PIU / Somaliland E&S Officer	WUA records, training and O&M readiness sign-off
Reinstatement	Temporary work areas, borrow/spoil/drilling-waste sites and access routes reinstated; waste removed; defects closed.	Contractor / Supervision	Close-out and reinstatement certificate

9.3.3.2. Operation and maintenance controls

Table 9-4: Operation and maintenance measures — Somaliland

Activity	Risk	Management requirement	Responsible
WUA operation — all 68 sites	Exclusion, elite capture and conflict	Inclusive governance; at least 30% female membership and leadership; written access rules; GRM; PIU oversight at 3, 6 and 12 months after handover and annually thereafter.	WUA / Somaliland E&S Officer / PIU
Zeila salinity management	Long-term salinity increase and declining potability	Continue salinity, bacteriological and water-level monitoring; operate within the combined abstraction limits established by the approved aquifer assessment; apply adaptive pumping reduction or suspension when the approved trend/action thresholds are reached; share results with the Somaliland water authority.	WUA / Somaliland water authority / PIU
Borehole abstraction — all districts	Aquifer over-abstraction	Operate within sustainable-yield and pumping-hour limits; maintain SWL/EC/pumping logs; implement adaptive reduction where monitoring trigger is reached.	WUA / Somaliland water authority / PIU
Catchment maintenance	Re-sedimentation, loss of storage and structural deterioration	Post-rainfall silt-trap clearance and bi-annual condition inspection before Gu and after Deyr; undertake desilting or structural repair when the approved O&M condition trigger is reached.	WUA / PIU technical oversight
Infrastructure safety	Accidents around wells, boreholes, catchments and associated structures	Maintain fencing, covers/guards and signage; quarterly WUA inspection; correct safety defects within 30 days; maintain community awareness.	WUA / PIU
Vector and livestock-disease management	Mosquito/tick breeding; RVF and other water-point disease risks	Maintain drainage, trough overflow controls and clearance zones; conduct P/VMP inspections; coordinate CAHW and early-warning response under project P/VMP.	WUA / Somaliland E&S Officer / relevant authorities

Activity	Risk	Management requirement	Responsible
Maintenance waste	Pollution from pump, solar or repair waste	Collect oils, filters, damaged electrical components and general waste for controlled storage and approved disposal; prevent disposal at water points.	WUA / service contractor / PIU

9.3.4. Land Access Protocol

The source Somaliland ESIA does not anticipate involuntary land acquisition or physical displacement, but it applies a precautionary Land Access Protocol at all 68 sites. Working areas and access corridors are to be confirmed in writing with landholders, community leaders and the relevant WUA or community structure before works. Individual owner arrangements are required where existing water points are privately or individually held, notably within the Aroorseel cluster, including agreement on rehabilitation terms and temporary water provision.

9.3.5. SEA/SH prevention and response

- All workers, including drivers, security personnel and subcontractors, sign an individual Code of Conduct before commencing work, explicitly prohibiting SEA/SH and defining disciplinary consequences.
- A dedicated confidential SEA/SH reporting channel is established before mobilisation and managed by the PIU Social/GBV Specialist; sensitive cases are not processed through ordinary WUA, traditional-leader or contractor grievance channels.
- At least one female CLO is appointed per district and remains accessible throughout construction and O&M.
- Survivor-centred referral pathways are mapped and confirmed before mobilisation, identifying district-level services and referral to Hargeisa where necessary.
- Worker accommodation, where required, is arranged to reduce community interaction risk and provide gender-separated welfare facilities, with particular care in the densely settled Aroorseel area.
- SEA/SH allegations are handled under the serious-incident protocol and reported to AfDB in accordance with the applicable project incident-reporting requirements, while protecting survivor confidentiality.

9.4. Environmental and social clauses for procurement and contracts

Bidding documents and contracts shall require compliance with this ESMP, the approved C-ESMP and the project-wide safeguard instruments, and shall price contractor ESHS obligations within works contracts rather than treating them as optional or unfunded activities.

- Contractor Environmental and Social Management Plan (C-ESMP) approved in writing by the PIU before mobilisation for the relevant work package.
- Activity-specific method statements for high-risk tasks, including shallow-well cleaning and dewatering, borehole drilling/rehabilitation, catchment desilting and embankment works, pipeline trenching, liner installation and water-point structures.
- OHS requirements covering extreme heat, excavation and trench safety, confined-space entry, drilling safety, flash-flood response, first aid and emergency evacuation.
- Labour requirements under the project LMP: worker register, age verification, written employment terms, workers' grievance mechanism, welfare facilities and Code of Conduct.

- Community health and safety, traffic and access requirements, including barriers, signage, crossings in the Aroorseel settlement and no unguarded excavations overnight.
- Waste, drilling-waste, spill prevention and water-quality protection requirements, with specific provisions for the Zeila shallow aquifer.
- SEA/SH prevention, confidential referral arrangements and mandatory worker Code of Conduct.
- Security requirements and site-specific SMP where the security assessment determines one is necessary.
- Flow-down of all applicable ESHS clauses to subcontractors and labour-only arrangements, together with contractor responsibility for their compliance.
- Contractual right for the PIU/Supervision Consultant to suspend unsafe or non-compliant activities and require corrective action before work resumes.

9.5. Environmental, occupational health and safety requirements (ESHS hold points)

No physical works may begin at a work package or individual site until the applicable pre-works evidence has been submitted to and accepted by the PIU in writing. These are conditions precedent to mobilisation, not advisory actions.

Table 9-5: ESHS hold points — Somaliland

Hold point	Applies to	Evidence required	Release authority
C-ESMP and required supporting plans	All work packages	Approved C-ESMP, OHS, waste/drilling-waste, community H&S, SEA/SH and security arrangements as applicable	PIU written approval
Zeila shallow-well quality screening	30 Zeila wells	Well-specific salinity and bacteriological test; exclusion/alternative-supply decision for failing sources	PIU / accredited lab acceptance
Aroorseel aquifer assessment	Zeila cluster	Aquifer assessment completed; baseline water level/salinity established; required monitoring wells installed; combined abstraction limits defined	PIU / Somaliland water authority acceptance
Borehole hydrogeology	10 borehole sites	Hydrogeological survey, sustainable-yield basis, baseline EC/water quality and applicable permit/approval	PIU acceptance
Catchment condition assessment	26 catchments	Storage/sediment/embankment/liner/spillway/silt-control condition assessment	PIU acceptance
Security clearance	Remote Salahley and interior Ainabo priority; others as screened	Site-specific security assessment and SMP where required	PIU mobilisation authorisation
Land, ownership, pastoral access and UXO/ERW	All sites as applicable	Signed access documentation; individual Aroorseel well-owner agreement where applicable; pastoral-route plan; UXO/ERW clearance confirmation for previously unworked ground	PIU / District Administration verification
GRM and sensitive-case pathway	Each district	GRM uptake channels operational; female CLO; confidential SEA/SH channel and referral pathway confirmed	PIU verification

9.6. Stakeholder-engagement measures

Stakeholder engagement continues throughout implementation under the Somaliland SEP. The engagement approach must remain accessible to settled, pastoral and mobile communities and must address the special coordination needs of the dense Zeila cluster. Key implementation measures are: advance disclosure of site schedules and temporary water interruptions; district and community meetings through construction; mobile/seasonal outreach to nomadic and semi-nomadic users; women-only and vulnerable-group engagement where needed; transparent communication of local recruitment; WUA formation and governance discussions before handover; and disclosure of monitoring results where they affect community water safety or access.

The Somaliland E&S Officer and CLOs maintain consultation records with sex-disaggregated attendance where appropriate. Engagement results, grievances and corrective actions are included in periodic safeguards reporting. Traditional leaders (guurti) and xeer-based mediation support community legitimacy and conflict resolution, but they do not handle confidential SEA/SH cases.

9.7. Project-level grievance redress mechanism

The project GRM provides multiple uptake channels: CLOs, WUA/community structures, a project phone/SMS hotline, sealed suggestion boxes, written submissions, anonymous channels and traditional-leader referral to district focal points. The source Somaliland ESIA establishes a four-level pathway: site-level resolution; district mediation integrating guurti/xeer; PIU review; and external recourse, including the AfDB Independent Recourse Mechanism or judicial mechanisms.

Table 9-6: GRM resolution pathway — Somaliland

Step	Action	Responsible	Timeline
Receipt and registration	Any channel; log unique reference and acknowledge	CLO / WUA / District focal point	Logged within 24 hours; acknowledgement within 48 hours
Level 1 — site resolution	Resolve routine site-level issues directly	Contractor + CLO / WUA	Within 7 days
Level 2 — district mediation	District-facilitated resolution with guurti/xeer where appropriate	District focal point + elders	Within 14 days
Level 3 — PIU review	Formal review and investigation where required	PIU Safeguards Officer	Within 14 days
Level 4 — external recourse	AfDB IRM or judicial recourse	Complainant choice	Per applicable external procedure
Close-out	Communicate resolution and record satisfaction/closure	Somaliland E&S Officer	Target: standard grievances within 30 days; water-allocation and land-access cases follow the approved accelerated GRM timelines.

SEA/SH cases follow a separate confidential track managed exclusively by the PIU GBV Specialist using survivor-centred principles. Workers' grievances follow the Workers' GRM under the project LMP. Environmental and health complaints, including suspected pesticide contamination or increased vector problems at water points, are recorded and managed through the relevant P/VMP procedures.

9.8. Monitoring and reporting plan

Monitoring verifies whether the mitigation measures are implemented and whether the anticipated residual impact levels remain valid. The matrix below consolidates the source Somaliland ESIA monitoring commitments. Site-specific thresholds established through the pre-works studies are incorporated into the C-ESMP and monitoring forms before mobilisation.

Table 9-7: Environmental and social monitoring plan — Somaliland

Parameter	Indicator / method	Frequency	Responsible	Reporting	Threshold / action
Construction ESHS compliance — all active sites	ESMP checklist; OHS statistics; GRM log; plan and hold-point compliance	Weekly Supervision inspection; monthly PIU audit	Supervision / Somaliland E&S Officer	Monthly to PIU; quarterly to AfDB	Correct material non-compliance within the PIU-approved timeframe; unsafe work is stopped immediately; serious incidents follow the controlling incident-reporting protocol.
Water quality — 30 Zeila wells + 2 coastal boreholes	Salinity/TDS/chloride/EC; E. coli/coliforms; pH; turbidity	Pre-works baseline; post-rehabilitation before use; semi-annually during O&M; annual salinity trend	PIU / accredited lab	Test certificates to PIU and Somaliland water authority	Commissioning blocked until approved standard is met; failing potable sources excluded from potable rehabilitation/use
Zeila aquifer monitoring wells	Static water level and salinity trend against baseline	Monthly during O&M	Somaliland water authority / PIU	Monthly log; annual trend report	Sustained adverse water-level or salinity trend beyond the approved aquifer-management action threshold triggers review and reduction of combined abstraction.
Borehole SWL, EC, yield and pumping	Static water level; EC; pump yield; pumping log	Quarterly during construction/commissioning period; bi-annually O&M	Contractor then WUA/CLO with Somaliland water authority	Annual groundwater report	Progressive decline or water-quality deterioration beyond the site-specific hydrogeological/water-quality action threshold triggers adaptive pumping reduction, investigation and, if required, suspension.
Water quality — borehole/catchment supply points	Turbidity, pH, E. coli, total coliforms, nitrates, EC	Before commissioning; semi-annually O&M; within 72 hours of contamination/flood event	PIU / accredited lab	Test certificate per site	Commissioning blocked until approved project/WHO-aligned standard is met
Catchment condition	Storage depth/capacity; embankment; liner; spillway; silt trap	Bi-annually before Gu and after Deyr; after major storms	WUA / CLO; annual technical verification	Annual condition report	Desilt at >15% storage loss from post-construction baseline; structural defects reported immediately

Parameter	Indicator / method	Frequency	Responsible	Reporting	Threshold / action
Soil erosion and reinstatement	Rill/sheet erosion; spoil placement; vegetation recovery	Monthly construction; quarterly O&M where relevant	Contractor E&S Officer / Somaliland E&S Officer	Monthly summary	No significant erosion beyond footprint; erosion triggers remediation
Dust — Zeila active earthworks	Visual dust and community complaints	Weekly during earthworks and after dust events	Contractor E&S Officer	Weekly log; GRM trends	No persistent visible dust beyond boundary; repeated complaints trigger review
Drilling/shallow-well waste	Volume/disposal of mud, cuttings and dewatering discharge; contamination check	Per drilling or well-rehabilitation campaign	Contractor / Supervision	Disposal log	100% to designated disposal; no confirmed soil/aquifer contamination before clearance
WUA governance and inclusion	Female membership/leadership; meeting records; access disputes; representation of vulnerable users	At formation; 3, 6, 12 months; annually thereafter	PIU / Somaliland E&S Officer	Oversight report; quarterly AfDB reporting	≥30% female membership/leadership as stated in source; monitor exclusion and GRM trends
GRM performance	Cases received, resolution time, complaint type, sensitive referrals	Monthly	Somaliland E&S Officer	Monthly PIU summary; quarterly AfDB report	Target at least 80% of standard grievances resolved within 30 days; accelerated cases follow the approved GRM timelines.
OHS incidents	Fatalities, injuries, near-misses, heat illness, confined-space events, LTIFR	Continuous; immediate/24-hour reporting for serious events	Contractor / Supervision	Immediate serious-case notification; monthly summary	Zero fatalities; LTIFR and other OHS indicators monitored against the approved project OHS KPI framework; serious events trigger immediate investigation and corrective action.
Security incidents	Incident type; work suspensions; security-plan compliance	Continuous	Contractor / PIU	Immediate PIU and authority notification as applicable; quarterly AfDB summary	Serious event triggers halt and security/SMP review
Pest/vector/livestock health	Drainage; trough/wellhead standing water; larvicide records; RVF/locust signals; pesticide incidents	Monthly; seasonal/continuous as applicable	WUA focal person / Somaliland E&S Officer / CAHWs	Monthly PIU; quarterly AfDB	No persistent standing water; project P/VMP triggers apply

Numeric performance standards and thresholds

Table 9-8: Source-defined performance thresholds requiring operational tracking

Parameter	CONTROLLED REQUIREMENT / TARGET	IMPLEMENTATION BASIS
-----------	---------------------------------	----------------------

Parameter	CONTROLLED REQUIREMENT / TARGET	IMPLEMENTATION BASIS
Zeila work-front phasing	The C-ESMP Water-Supply Continuity Plan shall define the maximum simultaneous well outages and minimum functioning supply required to maintain acceptable community water access, with contingency supply where necessary.	C-ESMP Water-Supply Continuity Plan
Heat controls	The C-ESMP Heat Stress Management Plan shall define potable-water provision, acclimatisation, workload-based work/rest arrangements, shade, heat-trigger criteria, first aid and emergency response consistent with GIIP.	C-ESMP Heat Stress Management Plan
Settlement traffic	Maximum 30 km/h in settlements unless a lower site-specific limit is required by the Traffic Management Plan.	Traffic Management Plan
Catchment maintenance	Desilting triggered at >15% storage loss from post-construction baseline	Source Somaliland ESIA
Borehole groundwater trend	The site-specific hydrogeological assessment shall establish the groundwater-level, yield and EC/salinity action thresholds and adaptive pumping response for each borehole.	Hydrogeological assessment / O&M monitoring plan
Zeila monitoring-well trend	The Aroorseel aquifer assessment shall establish approved cluster water-level and salinity trend/action thresholds and combined abstraction responses.	Zeila aquifer assessment / cluster O&M plan
EC/salinity operational trigger	Potability shall be assessed against the approved project/applicable drinking-water standard. The aquifer/water-quality protocol shall define operational EC/salinity trend-warning and action thresholds; no draft value substitutes for laboratory potability assessment.	Approved water-quality and aquifer-management protocol
WUA female participation	At least 30% female membership and leadership	Source Somaliland ESIA
GRM standard resolution	At least 80% of standard grievances resolved within 30 days; accelerated grievance categories follow the approved GRM timelines.	Project GRM
Serious incident notification	Immediate PIU notification and AfDB notification/reporting within the controlling Bank/Financing Agreement incident protocol.	Approved project incident-reporting protocol
Construction corrective action	Corrective action shall be completed within the PIU-approved timeframe; unsafe activities are stopped immediately until the control is restored.	C-ESMP / supervision corrective-action procedure
OHS performance	Zero fatalities; LTIFR and related indicators monitored against the approved project OHS KPI framework.	C-ESMP OHS Plan

9.9. Institutional arrangements

Table 9-9: Roles and responsibilities for ESMP implementation — Somaliland

Actor	Key responsibilities	Reporting / interface
PIU (MoAI)	Overall ESMP ownership; approve C-ESMPs and required plans; release ESHS hold points; coordinate federal–Somaliland counterparts; manage serious incidents; compile quarterly AfDB safeguards reports; ensure corrective action.	Reports to AfDB and MoAI
Somaliland E&S Officer	Day-to-day oversight of 68 sites; inspections; GRM management; WUA oversight; verification of water-quality, SWL/EC and salinity monitoring; security monitoring; monthly reporting.	Reports to PIU Environmental/Safeguards lead
Somaliland water authority / Ministry of Water Resources	Borehole/well permits and water-sector oversight; joint groundwater, aquifer and salinity monitoring; support WUA water-management arrangements.	Coordinates with PIU; independent sector oversight
Somaliland environment authority	Environmental permitting / ESIA review and environmental oversight as applicable.	Coordinates with PIU
District Administrations — Zeila, Ainabo, Salahley, Borama	Site access coordination; community liaison; security coordination; district-level GRM mediation support; pastoral-route and local dispute coordination.	Coordinates with Somaliland E&S Officer / PIU
Traditional leaders (guurti) and religious leaders	Community communication and legitimacy; xeer-based mediation for ordinary grievances; pastoral-route coordination.	Engaged through district focal points/CLOs
Contractors	Implement construction ESMP; maintain dedicated ESHS capacity; worker induction; OHS, waste, community safety, SEA/SH and security measures; monitoring records and incident reporting.	Reports to Supervision Consultant and PIU
Supervision Consultant	Weekly active-site inspections; verify drilling, well, trench and catchment controls; commissioning inspections; corrective-action follow-up; compliance reporting.	Reports to PIU
WUAs / community water-management structures	Day-to-day O&M; access-rule enforcement; monitoring and logs; catchment/well/trough maintenance; grievance reporting; vector and water-point inspections.	Accountable to communities; supported by PIU and water authority
AfDB	Safeguards oversight; review periodic reports; supervision; require corrective actions; Independent Recourse Mechanism access.	External oversight

9.9.1. Incident management and reporting

Incidents shall be classified and managed under the approved project incident-management procedure. Minor events are recorded in routine site reporting; moderate events are promptly reported to the PIU and investigated; serious incidents require immediate escalation, investigation and corrective action.

Serious incidents include lost-time injuries, fatalities, major pollution or aquifer-contamination events, SEA/SH allegations, serious drilling/excavation/confined-space incidents and serious security events. The PIU and contractor shall apply the controlling Bank/Financing Agreement notification, investigation and corrective-action timelines consistently, while protecting confidentiality for SEA/SH cases.

9.10. Institutional capacity assessment

The Somaliland component benefits from established government ministries for agriculture, water and environmental management, but the ESIA identifies variable district-level capacity, limited systematic groundwater

and coastal-salinity monitoring, inconsistent community-water quality enforcement and non-standardised project grievance and worker-protection arrangements. The scale of the component — 68 sites spread across four districts, with a dense coastal cluster and remote interior sites — creates a substantial supervision and data-management burden.

The key capacity response is therefore not the creation of parallel structures, but strengthening the interface between the PIU, the dedicated Somaliland E&S Officer, the Somaliland water authority, district counterparts, Supervision Consultant, contractors and WUAs. Particular technical capacity is required for salinity and EC monitoring, static-water-level monitoring, interpretation of aquifer trends, shallow-well rehabilitation hygiene, borehole and catchment O&M, GRM/SEA/SH management, and climate-informed water management. Where district capacity is insufficient for specialised testing or investigation, the PIU should use qualified technical consultants or accredited laboratories.

9.11. Capacity development and training

Table 9-10: Capacity development and training programme — Somaliland

Training topic	Participants	Key content	Frequency / timing	Responsible
ESMP implementation and reporting	PIU, Somaliland E&S Officer, Supervision, Contractor ESHS staff	ESMP obligations, hold points, reporting, corrective action, site-type protocols	Start-up; quarterly refreshers	PIU / Supervision
Heat safety	Workers and supervisors	Heat illness recognition; potable-water and shade requirements; acclimatisation; workload-based work/rest controls; heat-trigger criteria; buddy system; first aid and emergency response.	Induction; monthly toolbox in peak heat	Contractor OHS Officer
Shallow-well cleaning and confined-space safety	Zeila well crews and supervisors	Confined-space entry, dewatering, waterborne-disease exposure, wellhead-protection sequence, sample handling	Before well works at each cluster	Contractor / Supervision
Borehole drilling safety	Drilling crews and supervisors	Rig stability, exclusion zone, drilling-fluid PPE, waste management, wellhead protection	Before each drilling/rehabilitation campaign	Contractor / Supervision
Catchment earthworks and erosion control	Earthworks crews and supervisors	Desilting, compaction, liner protection, silt traps, erosion control and reinstatement	Before catchment works	Contractor / Supervision
Pipeline trenching and confined-space controls	Zeila canal crews and supervisors	Shoring, unsupported-entry prohibition, crossings, backfill/reinstatement and confined-space controls	Before canal works	Contractor / Supervision
SEA/SH prevention and Code of Conduct	Workers, CLOs, community-facing staff	CoC, confidential reporting, survivor-centred response, referral pathway, community awareness	Pre-mobilisation; quarterly refreshers	PIU GBV Specialist / Contractor
WUA governance and water management	WUA members at all sites; district water officers	Inclusive access rules, records, fee management, conflict resolution, coordinated Zeila abstraction	Before handover; annual refresher	PIU / Supervision / Somaliland water authority

Training topic	Participants	Key content	Frequency / timing	Responsible
Technical O&M	WUA technical members; water officers	Solar/hand-pump O&M, wellhead inspection, catchment desilting, minor repair, escalation	Before handover; mentoring during first year	Supervision / Contractor / water authority
Salinity and EC monitoring	Zeila and borehole WUA technical members; CLOs; water authority	Meter use, recording, trend interpretation and the approved aquifer/water-quality alert/action protocol.	Before handover; semi-annual refresher	Somaliland E&S Officer / water-quality specialist
SWL monitoring	WUA technical members; CLOs; district water officers	SWL measurement, recording, interpretation of site-specific hydrogeological action thresholds and reporting.	Before handover; annual refresher	Supervision / water authority
GRM and GSI	CLOs, district focal points, WUA GRM liaisons	Tiered GRM, xeer mediation, confidentiality, SEA/SH pathway, mobile/vulnerable-group outreach	Before mobilisation; six-monthly refresher	Somaliland E&S Officer / PIU Safeguards
Climate-smart water management	WUAs, CLOs, district/water officers	Drought contingency, seasonal forecasts, salinity/sea-level awareness, maintenance timing	Integrated into O&M training; annual refresher	PIU / Supervision
AfDB safeguards awareness	Somaliland water/environment institutions, district administrations, PIU counterparts	ISS 2023 overview, reporting, IRM and coordination roles	Before commencement; annual refresher	PIU / AfDB project team where available

9.12. Implementation schedule

Table 9-11: ESMP implementation schedule and reporting calendar — Somaliland

Activity	Timing / trigger	Responsible	Output
Salinity and bacteriological testing — 30 Zeila wells	Before rehabilitation mobilisation in Zeila	PIU / accredited lab	Test certificate per well; exclusion/alternative-supply decision where applicable
Aroorseel aquifer assessment and monitoring wells	Before Zeila well/borehole works	PIU / technical consultant / water authority	Aquifer assessment; baseline levels/salinity; combined abstraction limits
Hydrogeological survey — 10 boreholes	Before drilling/rehabilitation	PIU / technical consultant	Survey, sustainable-yield basis and baseline EC per site
Catchment condition assessment — 26 catchments	Before mobilisation at each catchment	PIU / technical consultant	Condition assessment per catchment
Security assessment — remote sites	Before mobilisation authorisation	PIU / Contractor	Security clearance; SMP where required
Land/access/ownership/pastoral-route documentation	Before mobilisation	PIU / District Administration / Contractor	Signed site documentation
C-ESMP and supporting plans	Before on-site mobilisation	Contractor submits; PIU approves	Written approval
GRM and female CLOs	Before mobilisation in each district	PIU / Somaliland E&S Officer	Operational channels and referral pathways
Worker induction	Day 1 of employment	Contractor / Supervision verifies	Signed induction and Code of Conduct
Supervision inspection	Weekly during active construction	Supervision Consultant	Weekly report

Activity	Timing / trigger	Responsible	Output
PIU safeguards audit	Monthly during construction	PIU / Somaliland E&S Officer	Monthly audit and corrective-action log
Water-quality commissioning test	Before community use	PIU / accredited lab	Test certificate and commissioning clearance
WUA formation/training	Before handover of each site	PIU / Somaliland E&S Officer	WUA records, O&M plan, training record
Quarterly safeguards report	Quarterly throughout implementation	PIU	Report to AfDB
WUA oversight visits	3, 6, 12 months after handover; annually thereafter	PIU / Somaliland E&S Officer	Oversight report
Annual system/catchment/salinity review	Annually during O&M	WUA / water authority / PIU	Annual performance and trend report

9.13. Cost estimates and sources of financing

The ESMP provides an indicative safeguards envelope of approximately USD 683,000 over the four-year project period, exclusive of contractor ESHS costs funded through works contracts.

Table 9-12: ESMP cost commitments and financing treatment supported by the ESLA

Cost category	What it covers	BUDGET TREATMENT	Financing / note
PIU-managed safeguards programme	Pre-works studies/testing, monitoring, institutional support, WUA training, stakeholder/GRM/SEA-SH and P/VMP implementation	Within the approximately USD 683,000 PIU safeguards envelope	PIU/project financing through the approved annual safeguards work plan and procurement plan.
Contractor ESHS obligations	C-ESMP, ESHS staffing, PPE, shoring, confined-space/drilling safety, barriers/signage, welfare, waste/spill controls and other work-front measures	Additional to the USD 683,000 envelope	Priced in works-contract Bills of Quantities
Compensation for verified project-caused crop/asset damage	Replacement-cost compensation under Land Access Protocol where triggered	As required where verified loss is triggered	Responsible project financing arrangement; funds shall be available before the affected compensation case is closed.
Specialist laboratory/technical services	Accredited water-quality testing, aquifer/hydrogeology support and specialist investigation	Within PIU safeguards programme unless separately procured	PIU / project financing

9.14. ESMP implementation matrix

The implementation matrix consolidates the principal obligations into a single management and audit instrument. The codes below are introduced for tracking in this chapter only; they do not change the ESIA requirements. The Somaliland E&S Officer should maintain the live matrix and update completion status, evidence and corrective actions during monthly PIU audits.

Table 9-13: ESMP implementation matrix — Somaliland

Code	Impact / risk	Measure	Deadline	Cost / source	KPI	Implementation	Monitoring
SL-01	Mobilisation without confirmed readiness	Complete site-readiness checklist and applicable hold points	Before mobilisation per site	PIU safeguards envelope / contractor plans	100% sites with signed readiness record	PIU / Somaliland E&S Officer	AfDB / Supervision
SL-02	Non-potable Zeila shallow well rehabilitated	Well-specific salinity and bacteriological test; exclude failing potable sources and establish alternative supply	Before each well rehabilitation	PIU safeguards envelope	30/30 wells tested; exclusion decisions documented	PIU / accredited lab	Somaliland E&S Officer / water authority
SL-03	Cumulative Aroorseel drawdown/salinity	Aquifer assessment, monitoring wells, baseline and combined abstraction limits	Before Zeila groundwater works	PIU safeguards envelope	Assessment approved; monitoring wells operational	PIU / technical consultant	Water authority / AfDB
SL-04	Unproductive/unsustainable borehole	Hydrogeological survey and baseline EC/water quality at all 10 borehole sites	Before drilling/rehabilitation	PIU safeguards envelope	10/10 survey records before works	PIU / technical consultant	Water authority / AfDB
SL-05	Catchment design not based on actual condition	Condition assessment at 26 catchments	Before catchment mobilisation	PIU safeguards envelope	26/26 condition records	PIU / technical consultant	Supervision
SL-06	Water-access disruption in Zeila	Implement the C-ESMP Water-Supply Continuity Plan; maintain the agreed minimum functioning supply and provide contingency water where required.	Throughout Zeila well programme	Works contract / contingency provision	Daily well-status and continuity compliance.	Contractor	PIU / CLO
SL-07	Trench/excavation/confined-space fatality	Shoring, competent inspection, confined-space permit, barriers and rescue/emergency controls	Before and during high-risk activity	Works contract	100% permit/shoring compliance; zero fatalities	Contractor	Supervision / PIU
SL-08	Heat illness	Implement the C-ESMP Heat Stress Management Plan: potable water, shade, acclimatisation, workload-based work/rest controls, heat triggers, buddy system and emergency response.	Daily during peak heat	Works contract	Daily heat-control records; heat events investigated.	Contractor	Supervision

Code	Impact / risk	Measure	Deadline	Cost / source	KPI	Implementation	Monitoring
SL-09	Groundwater/drilling contamination	Controlled dewatering; drilling-waste containment/removal; bunded fuel/chemical storage; post-work water-quality clearance	During well/borehole works	Works contract + PIU testing	100% disposal logs; commissioning test passed	Contractor / PIU lab	Supervision / water authority
SL-10	Community safety incident	Barriers, signage, speed limits, crossings/access, advance notification	During construction	Works contract	Zero community fatalities; safety inspections complete	Contractor	Supervision / CLO
SL-11	SEA/SH risk	CoC, training, confidential channel, female CLOs and referral pathways	Before mobilisation and throughout	Works contract + PIU safeguards envelope	100% workers sign CoC; referral pathway operational	Contractor / PIU GBV Specialist	PIU / AfDB
SL-12	Remote-site security interruption/harm	Security assessment, SMP where required, flexible scheduling and suspension triggers	Before and during remote works	Project/works contract as applicable	No mobilisation without clearance; incident log	PIU / Contractor	Somaliland authorities / AfDB
SL-13	Inequitable water access	Inclusive WUA; at least 30% female membership/leadership; written access rules, GRM and post-handover oversight.	Before handover and O&M	PIU safeguards/WUA capacity line	100% sites handed over to ready WUA/management structure	PIU / Somaliland E&S Officer	AfDB / community oversight
SL-14	Groundwater over-abstraction	Sustainable-yield limits; SWL/EC/pumping monitoring and adaptive reduction	Commissioning and O&M	PIU/WUA monitoring	Monitoring logs complete; trigger responses documented	WUA / water authority	PIU
SL-15	Catchment re-sedimentation	Bi-annual inspections; silt-trap clearance; desilt >15% storage loss	O&M	WUA/O&M resources	Inspection complete; desilting trigger acted upon	WUA	PIU / water authority
SL-16	Weak GRM performance	Multi-channel GRM, xeer mediation for ordinary cases, tracking and periodic reporting	Before mobilisation and throughout	PIU safeguards envelope	At least 80% of standard grievances resolved within 30 days; accelerated categories follow the approved GRM.	Somaliland E&S Officer	PIU / AfDB
SL-17	Support-site environmental damage	Register, screen, manage and reinstate borrow/spoil/laydown/waste sites and temporary routes	Before use and before close-out	Works contract	100% support sites registered/reinstated	Contractor	Supervision / PIU

Code	Impact / risk	Measure	Deadline	Cost / source	KPI	Implementation	Monitoring
SL-18	Vector/pest/livestock disease risk	Drainage and source reduction; WUA focal points; CAHW/RVF/locust and pesticide procedures under P/VMP	Design, construction and O&M	Works contract + PIU safeguards	No persistent standing water; incidents/triggers recorded	Contractor / WUA / PIU	Somaliland E&S Officer / relevant authority

9.15. Environmental monitoring matrix

The environmental and social monitoring matrix is the plan at Section 9.8. It specifies the parameter, method, frequency, responsible party, reporting route and threshold/action. The most decision-critical environmental parameters are Zeila salinity and aquifer levels, borehole SWL/EC/yield, water quality before commissioning and during O&M, catchment storage and structural condition, soil erosion/reinstatement, drilling and dewatering waste, and pest/vector source conditions. Social and management monitoring covers WUA inclusion, GRM performance, OHS incidents, security incidents and engagement commitments. Site-specific values derived from the pre-works studies must be inserted into monitoring forms and C-ESMP annexes before work begins.

9.16. Risk-management matrix

The matrix below addresses risks to successful ESMP implementation rather than repeating the project impacts assessed in Chapter 7. Each risk is directly linked to a constraint or management dependency identified in the source Somaliland ESIA.

Table 9-14: ESMP implementation risk-management matrix — Somaliland

Implementation risk	Likelihood	Consequence	Treatment	Owner
Zeila rehabilitation proceeds before well-by-well quality evidence is complete	Medium	High	Make test certificate and potable-use decision a hard hold point for each well; no payment/commissioning without evidence.	PIU
Zeila programme pressure causes too many wells to be out of service simultaneously	Medium	High	Daily well-status control under the C-ESMP Water-Supply Continuity Plan; restrict simultaneous outages to the approved service threshold and provide contingency supply where required.	Contractor / PIU
Aquifer monitoring or combined abstraction management is not sustained after commissioning	Medium	High	Assign water authority/WUA roles before handover; maintain monitoring wells and annual trend review; adaptive abstraction decisions documented.	PIU / Somaliland water authority
Remote Salahley/Ainabo access reduces supervision continuity	Medium	High	Security-led mobilisation, SMP where required, flexible scheduling and documented supervision/alternative verification arrangements.	PIU / Supervision
WUA capacity declines after contractor demobilisation	Medium	Moderate–High	Training before handover; 3/6/12-month PIU visits; technical mentoring and annual refresher; O&M logs and GRM.	PIU / Somaliland E&S Officer
Laboratory or specialist testing delays commissioning	Medium	Moderate	Plan sampling/testing in advance; use accredited service provider; commissioning remains blocked until required test passes.	PIU
Individual well ownership or pastoral-route disputes delay access	Medium	Moderate	Document owner/access terms and pastoral-route phasing before mobilisation; use district/xeer mediation through GRM where appropriate.	PIU / District Administration

Implementation risk	Likelihood	Consequence	Treatment	Owner
Monitoring or technical thresholds are applied inconsistently	Medium	High	Use the approved water-quality/aquifer protocol, C-ESMP OHS Plan and project incident-management procedure as the controlling requirements. Site-specific technical thresholds are established through the approved studies.	PIU

9.17. Key ESMP implementation indicators

- Percentage of the 68 sites with signed PIU readiness and applicable hold-point evidence before mobilisation — target 100%.
- Zeila shallow wells with pre-rehabilitation salinity and bacteriological test records — 30 of 30 before work; potable-use exclusions documented where required.
- Aroorseel aquifer assessment and monitoring-well system operational before clustered groundwater works; combined abstraction limits documented.
- Borehole sites with completed hydrogeological survey, sustainable-yield basis and baseline EC/water-quality record before works — 10 of 10.
- Catchments with pre-works condition assessment — 26 of 26 before catchment mobilisation.
- Compliance with Zeila water-supply continuity: the C-ESMP continuity plan is implemented and the agreed minimum functioning supply is maintained throughout the rehabilitation programme.
- Workers with signed Code of Conduct and induction record — 100%; serious OHS/SEA-SH/security events reported within the applicable controlling project timelines.
- Community safety incidents at or near work sites — target zero fatalities; barriers/signage/access controls verified at active work fronts.
- WUAs/community management structures trained before handover — 100% of commissioned sites; ≥30% female membership and leadership as stated in ESIA.
- GRM cases tracked monthly; ESMP target ≥80% resolved within 30 days, with shorter specified tracks for water-allocation and land-access cases.
- Groundwater, salinity and water-quality monitoring performed at the frequencies in Section 9.8, with trigger exceedances followed by documented adaptive action.
- Quarterly safeguards reports submitted to AfDB on time; monthly PIU audits and weekly Supervision inspections completed against plan.
- Associated support sites reinstated before final close-out — target 100%.

9.18. Integration of the ESMP into project design, planning, procurement, budget and implementation

Design. The environmental and social controls identified in Chapter 4 and the pre-works studies must be incorporated into final design and quantities: coastal water-quality and abstraction controls; catchment storage, liner, embankment and spillway requirements; borehole sustainable-yield and pump sizing; wellhead, trough and drainage protection; buried pipeline and trench/crossing requirements; and reinstatement provisions.

Planning. The ESMP determines the works programme. Zeila well rehabilitation must be phased to preserve community water access; catchment earthworks should avoid peak rainfall where practicable; Zeila major earthworks/trenching should account for the peak southwest-monsoon wind/dust period; and remote work fronts should be sequenced according to security clearance and realistic supervision capacity.

Procurement. C-ESMP and ESHS-plan requirements, high-risk method statements, worker/labour provisions, incident-reporting timelines, water-quality hold points, stop-work rights, support-site reinstatement and flow-down to subcontractors must be included in bidding documents and works contracts. Contractor ESHS costs are priced in the works contracts and are additional to the project-approved PIU safeguards envelope.

The PIU shall approve and track the detailed line-item allocation through the annual safeguards work plan, procurement plan and contract-management system.

Implementation and supervision. Contractors implement construction measures; the Supervision Consultant verifies active-site compliance; the Somaliland E&S Officer performs day-to-day oversight and maintains management registers; the PIU releases hold points, audits compliance and reports to AfDB; and Somaliland water/environment institutions provide sector and regulatory oversight. Corrective actions are tracked to close-out.

Operation and handover. Handover is conditional on water-quality clearance, baseline monitoring records, physical reinstatement and WUA/O&M readiness. Operational obligations then pass to the WUA/community management structure, supported by the Somaliland water authority and PIU follow-up at 3, 6 and 12 months and annually thereafter.

9.19. Associated management plans

The following controlled instruments support this ESMP and shall be referenced by current title/version in procurement, C-ESMP and monitoring documents.

- Stakeholder Engagement Plan (SEP) — Somaliland: stakeholder identification, engagement methods, disclosure and implementation schedule under OS10.
- Grievance Redress Mechanism procedures — Somaliland: uptake channels, xeer-integrated district mediation, external recourse and confidential SEA/SH pathway.
- Gender and Social Inclusion Plan: differentiated measures for women, nomadic/semi-nomadic users, minority-clan households, youth, fishing communities and other vulnerable groups.
- Chance Finds Procedure: applies to excavation and drilling; stop-work and notification requirements under precautionary OS8.
- Environmental and Social Monitoring Plan: consolidates monitoring parameters, indicators, frequencies, responsibilities, thresholds and reporting routes.
- Environmental, Social and Capacity Building Training Plan: detailed training framework summarised at Section 9.11.
- Climate Risk Assessment — Somaliland: drought, heat, extreme-rainfall and coastal-salinity hazards and adaptation requirements.

- The controlled LMP shall be included in the project safeguards package and referenced by title/version.
- Contractor Environmental and Social Management Plan (C-ESMP): work-package and activity-specific implementation instrument approved before mobilisation.
- Occupational Health and Safety Plan: extreme-heat, excavation/trench, confined-space, drilling, flash-flood and emergency-response protocols.
- Waste Management / Drilling and Dewatering Waste Plan and Spill Prevention Plan: contamination prevention, storage and controlled disposal.
- Community Health and Safety Plan: barriers, signage, traffic/access, water-continuity and community-notification controls.
- Security Management Plan: required where site-specific security assessment determines that enhanced security management is necessary.
- Integrated Pest and Vector Management Plan (P/VMP): water-point drainage, vector source reduction, livestock disease/RVF and locust coordination, pesticide restrictions and grievance/monitoring provisions.
- Land Access Protocol: written access, individual well-owner arrangements, pastoral routes, damage compensation and OS5 suspension trigger.

CHAPTER 10: CONCLUSION AND RECOMMENDATIONS

10.1 Overall Conclusion

Environmental and social acceptability depends on closure of the applicable pre-mobilisation hold points, approval and implementation of the C-ESMP, effective contractor management, functioning safeguards oversight across the four districts, and sustained operation and maintenance after handover.

The component covers 68 sites in Zeila, Ainabo, Salahley and Borama and includes 26 water catchments, 30 shallow wells, 10 boreholes and 2 pipeline canals. The material issues differ by setting: the Zeila coastal cluster is dominated by shallow-aquifer salinity, contamination and cumulative drawdown risks; the interior catchment and borehole sites require control of erosion, groundwater sustainability, heat, remoteness and security risks; and the pipeline works require particular attention to trench and access safety in the settled Aroorsee area. Across all districts, equitable water access, community safety, labour conditions, SEA/SH prevention, land and access arrangements, grievance management and long-term maintenance remain material implementation issues.

10.2 Basis for Environmental and Social Acceptability

After mitigation, most construction and operation impacts are expected to be Minor to Moderate. The residual effects requiring the greatest continuing management attention are long-term coastal salinity in Zeila, equitable water-access governance, groundwater abstraction performance, SEA/SH prevention and the consistency of supervision at remote sites.

The principal basis for acceptability is the use of enforceable decision points where risk can still be avoided: well-by-well water-quality testing before rehabilitation in Zeila; aquifer assessment and combined abstraction limits before Aroorsee works; hydrogeological confirmation before borehole works; catchment condition assessment before earthworks; security and access verification before remote-site mobilisation; task-specific safety controls during construction; water-quality clearance before commissioning; and defined groundwater, salinity, catchment and WUA monitoring during operation.

10.3 Conditions to be Satisfied Before Mobilisation

- Confirm the final approved 68-site register, the status of each site as new construction or rehabilitation, its coordinates, ownership or access status, and the applicable design package.
- Complete salinity and bacteriological testing for each of the 30 Zeila shallow wells before rehabilitation; facilities that do not meet the approved criteria for the intended use must not be commissioned for potable supply and the agreed alternative-supply arrangement must be documented.
- Complete the Aroorsee coastal-aquifer assessment, install the required monitoring wells, establish baseline groundwater level and salinity conditions, and define combined abstraction limits before shallow-well and coastal-borehole works proceed.
- Complete a hydrogeological survey and baseline EC/water-quality assessment for each of the 10 borehole sites and use the findings to confirm depth, sustainable yield, pump sizing and operating limits.

- Complete the pre-works condition assessment for each water catchment so that storage, embankment, liner, silt-control, spillway and erosion-protection requirements are confirmed before earthworks.
- Complete site-specific security assessment before mobilisation, with Security Management Plans where required, particularly for remote Salahley and interior Ainabo sites.
- Document working areas, temporary access, individual well-owner arrangements where applicable in Aroorsee, and pastoral-route continuity; obtain UXO/ERW clearance confirmation for previously unworked ground.
- Approve the Contractor ESMP, task-specific method statements and supporting ESHS plans; establish and test the district GRM, confidential SEA/SH channel, female CLO access, referral pathways and emergency-response arrangements.

10.4 Conditions During Construction

- Implement Zeila shallow-well works through the approved C-ESMP Water-Supply Continuity Plan, normally limiting rehabilitation to no more than five wells at one time, maintaining at least 60% of the relevant Aroorsee wells operational and activating contingency supply where the agreed service threshold cannot be maintained.
- Apply erosion, sediment, spoil and reinstatement controls to catchment earthworks and programme works, where practicable, outside the most sensitive rainfall periods.
- Apply approved trench-shoring, access, crossing, exclusion-zone and rapid-reinstatement controls to the Zeila pipeline works, and enforce confined-space entry controls for well and deep-excavation activities.
- Apply the heat-stress regime, potable-water provision, shade, buddy system, acclimatisation, PPE, first-aid and emergency-response measures throughout active works.
- Control drilling fluids, cuttings, dewatering discharges, fuel, chemicals and other wastes so that no wellhead, shallow aquifer, soil or community water source is contaminated.
- Maintain community-safety barriers, Somali-language information, vehicle controls, stakeholder engagement, grievance access, Labour Management Procedures, worker Code of Conduct, SEA/SH safeguards, security coordination and incident reporting throughout the works.

10.5 Conditions for Commissioning and Operation

- Do not commission a community water-supply facility until the required bacteriological and applicable salinity/EC testing has been completed and the facility has passed the approved standard for its intended use.
- Record the commissioning baseline for groundwater level, EC/salinity and other required monitoring parameters at boreholes and at the Zeila monitoring points before operational abstraction begins.
- Form or strengthen the responsible WUA or water-management structure before handover, complete required training, establish written access rules, and verify the required representation of women and other relevant user groups.
- Operate boreholes and the Zeila well cluster within the sustainable-yield and combined-abstraction limits established by the hydrogeological assessments and adjust abstraction where monitoring indicates unacceptable drawdown or salinity trends.

- Maintain catchment, wellhead, trough, drainage and safety features through the ESMP inspection and maintenance regime and implement the Pest and Vector Management Plan.
- Maintain the GRM, inclusion monitoring and PIU/Water Ministry oversight after commissioning, with corrective action where access inequity, maintenance failure or water-quality deterioration is identified.

10.6 C-ESMP and Pre-Construction Confirmation Requirements

The remaining site-specific and method-dependent requirements are assigned to the controlled pre-construction and C-ESMP process. They do not prevent ESIA submission or clearance because Chapter 9 establishes binding hold points that must be closed before the affected activity proceeds.

The project LMP shall be referenced by current title/version in all contractor documents. The approved Zeila aquifer and water-quality protocol shall distinguish drinking-water compliance criteria from operational salinity/EC trend and action thresholds. The approximately USD 683,000 PIU safeguards envelope shall be allocated through the annual safeguards work plan and procurement plan, while contractor ESHS costs remain priced in the works contracts.

10.7 Recommendations

- Approve implementation only subject to the Chapter 9 ESHS hold points and pre-mobilisation evidence requirements.
- Maintain dedicated safeguards capacity proportionate to the 68-site portfolio, with sufficient field presence for both the dense Zeila cluster and dispersed interior works.
- Manage the Zeila coastal aquifer at cluster level using shared groundwater-level, salinity and abstraction records, and require site- and activity-specific C-ESMP method statements for high-risk works.
- Use groundwater, salinity, water-quality, catchment-condition, grievance and WUA-governance monitoring to trigger timely changes to abstraction, work methods, access arrangements or maintenance.
- Sustain WUA training and inclusive post-commissioning oversight, and require the controlled site register, project LMP, approved water-quality/aquifer protocol and annual safeguards budget allocation to be applied consistently throughout implementation.

10.8 Final Statement

Subject to implementation of the measures, hold points and associated safeguard instruments, the Somaliland component is considered environmentally and socially manageable. This conclusion remains contingent on evidence-based pre-works verification - particularly for the Zeila coastal aquifer and groundwater sites - and on sustained monitoring and adaptive management during operation. Where project instruments differ, the more protective requirement should prevail unless formally amended through the approved environmental and social change-control process.

APPENDICES VOLUME

SOMALILAND

Document Control	Appendix Volume
Financier	African Development Bank (AfDB)
AfDB E&S Category	Category 2
Proponent	Ministry of Agriculture and Irrigation (MoAI), Federal Republic of Somalia
Geographic Scope	Zeila, Ainabo, Salahley and Borama Districts
Project Scope	68 water infrastructure sites
Appendix Compilation	August 2026

DOCUMENT-CONTROL NOTE

Original screening forms are preserved verbatim as evidence of project preparation. They have not been rewritten to correct legacy names, coordinates, activity types or form-level category fields. The controlled final ESIA site register, approved engineering design and AfDB Category 2 classification govern implementation. Any unresolved site-specific information is a pre-construction/C-ESMP hold-point requirement and does not authorise assumptions.

Annex 1: E&S Screening Forms (Somaliland)

Controlled Screening Reconciliation Register

This register maps original screening evidence to the final ESIA site scope. 'Reconciliation required' means the original form contains a legacy name, coordinate, activity type or other field that must not override the controlled final site register.

Final Site / Asset	Final Typology	Original Screening Form	Original Activity / GPS / Cat.	Status	Control Note
Arooseel - Abdi Ali	Shallow well	AfDB E&S Screening form - Zialac - Aroorseel (Abdi Ali).docx	Rehabilitation Shallow wells 10.301670, 42.919302 Cat. 3	Matched	
Xariirad - Abdilaahi faarax	Shallow well	AfDB E&S Screening form - Zialac - Aroorseel (Laahi Farax Cige).docx	Rehabilitation Shallow Wells 10.307478 , 42.864687 Cat. 3	Matched	
Xariirad - Abdilaahi Nuur ahmed	Shallow well	AfDB E&S Screening form - Zialac - Aroorseel (Abdillahi Nuur).docx	Rehabilitation Shallow Wells 10.309975, 42.858864 Cat. 3	Matched	
Arooseel - Abdirahman haji	Shallow well	AfDB E&S Screening form - Zialac - Aroorseel (Abdirahman Haaji).docx	Rehabilitation Shallow Wells 10.301838, 42.912057 Cat. 3	Matched	
Arooseel - Ahmed mohamed iraaqi	Shallow well	AfDB E&S Screening form - Zialac - Aroorseel (Ahmed Mohamed Iraaqi).docx	Rehabilitation Shallow Wells 10.30296, 42.908652 Cat. 3	Matched	
Arooseel - Abdisalan Ali Gaboobe	Shallow well	AfDB E&S Screening form - Zialac - Aroorseel (Abdisalam Ali Gaboobe).docx	Rehabilitation Shallow Wells 10.302840, 42.901437 Cat. 3	Matched	
Xariirad - Ali Omar Aare	Shallow well	AfDB E&S Screening form - Zialac - Aroorseel (Cali Cumar Aare).docx	Rehabilitation Shallow Wells 10.310842 , 42.857227 Cat. 3	Matched	
Arooseel - Aw jaamac Aleel	Shallow well	AfDB E&S Screening form - Zialac - Aroorseel (Aw Jaamac Alaale).docx	Rehabilitation Shallow Wells 10.286225 , 42.893199 Cat. 3	Matched	
Xariirad - Elmi muumin sh.dahir	Shallow well	AfDB E&S Screening form - Zialac - Aroorseel (Cilmi Muumin).docx	Rehabilitation Shallow Wells 10.317982, 42.841176 Cat. 3	Matched	
Xariirad - Dahir Miicaad Beder	Shallow well	AfDB E&S Screening form - Zialac - Aroorseel (Daahir Miicaad).docx	Rehabilitation Shallow Wells 10.30941, 42.857348 Cat. 3	Matched	

Final Site / Asset	Final Typology	Original Screening Form	Original Activity / GPS / Cat.	Status	Control Note
Aroorseel - Feysal Maxamud Adan	Shallow well	AfDB E&S Screening form - Zialac - Aroorseel (Faisal Mohamed).docx	Rehabilitation Shallow Wells 10.301235 Cat. 3	Matched	
Aroorseel - Ibrahim Elmi	Shallow well	AfDB E&S Screening form - Zailac - Aroorseel (Ibrahim Cilmi Rooble).docx	Rehabilitation Shallow Wells 10.282299, 42.899310 Cat. 3	Matched	
Aroorseel - Jamac Aleel	Shallow well	AfDB E&S Screening form - Zailac - Aroorseel (Jaamac Aleel).docx	Rehabilitation Shallow Wells 10.286246, 42.893158 Cat. 3	Matched	
Aroorseel - Mahdi ducaale iidle	Shallow well	AfDB E&S Screening form - Zialac - Aroorseel (Mahdi Du#U2019ale).docx	Rehabilitation Shallow Wells 10.284763, 42.891605 Cat. 3	Matched	
Xariirad - Maygaag Dahir	Shallow well	AfDB E&S Screening form - Zialac - Aroorseel (Maygaag Daahir).docx	Rehabilitation Shallow Wells 10.315330, 42.848452 Cat. 3	Matched	
Aroorseel - Muumin Osman	Shallow well	AfDB E&S Screening form - Zialac - Aroorseel (Mumin Osman).docx	Rehabilitation Shallow Wells 10.301715 , 42.916400 Cat. 3	Matched	
Xariirad - Muuse xaamud Cidheere	Shallow well	AfDB E&S Screening form - Zialac - Aroorseel (Musate Xaamud Cidheere).docx	Rehabilitation Shallow Wells 10.316344, 42.852631 Cat. 3	Matched	
Aroorseel - Mustaf Qasim muuse	Shallow well	AfDB E&S Screening form - Zialac - Aroorseel (Mustafe Qasim).docx	Rehabilitation Shallow Wells 10.305463, 42.921027 Cat. 3	Matched	
Xariirad - Muumin Tukaale Yabaal	Shallow well	AfDB E&S Screening form - Zialac - Aroorseel (Muumin Tukale Yabaal).docx	Rehabilitation Shallow Wells 10.311327 , 42.850758 Cat. 3	Matched	
Xariirad - Nuur Jaamac Gudi	Shallow well	AfDB E&S Screening form - Zialac - Aroorseel (Nuur Jaamac).docx	Rehabilitation Shallow Wells 10.315752, 42.846805 Cat. 3	Matched	
Xariirad - Omar Arab	Shallow well	AfDB E&S Screening form - Zailac - Aroorseel (Omer Arab).docx	— — Cat. —	Matched	
Xariirad - Omar Faarax Qeyre	Shallow well	AfDB E&S Screening form - Zialac - Aroorseel (Omar Farah Khayr).docx	Rehabilitation Shallow Wells 10.312241, 42.852660 Cat. 3	Matched	

Final Site / Asset	Final Typology	Original Screening Form	Original Activity / GPS / Cat.	Status	Control Note
Xariirad - Omar Maxamud Hori	Shallow well	AfDB E&S Screening form - Zailac - Aroorseel (Omar Mahamoud Hoori).docx	Rehabilitation Shallow Wells 10.316553, 42.845742 Cat. 3	Matched	
Xariirad - Osman Kamil	Shallow well	AfDB E&S Screening form - Zailac - Aroorseel (Osman Kamil).docx	Rehabilitation Shallow Wells 10.283773, 42.897018 Cat. 3	Matched	
Aroorseel - Osman Muuse	Shallow well	AfDB E&S Screening form - Zailac - Aroorseel (Osman Muuse Cilmi).docx	Rehabilitation Shallow Wells 10.287232, 42.88931 Cat. 3	Matched	
Aroorseel - Saciid Muuse	Shallow well	AfDB E&S Screening form - Zailac - Aroorseel (Siciid Muse).docx	Rehabilitation Shallow Wells 10.284555, 42.893075 Cat. 3	Matched	
Aroorseel - Abdirahman Haji	Shallow well	No separate screening form located	— — Cat. —	Missing	No distinct second screening form located for the duplicate-looking Abdirahman Haji final entry.
Aroorseel - Cawale Geedi Carweys	Shallow well	AfDB E&S Screening form - Zailac - Aroorseel (Cawaale Geedi Carways).docx	Rehabilitation Shallow Wells 10.302756, 42.965064 Cat. 3	Matched	
Aroorseel - Xuseen Geed Caweys	Shallow well	AfDB E&S Screening form - Zailac - Aroorseel (Xuseen Geed Carways).docx	Rehabilitation Shallow Wells 10.301384, 42.904825 Cat. 3	Matched	
Aroorseel - Sh.Xasan Khaye dirir	Shallow well	AfDB E&S Screening form - Zailac - Aroorseel (Sh. Xasan Khaye Dirir).docx	Rehabilitation Shallow Wells 10.295267, 42.920729 Cat. 3	Matched	
Draydhere Canal	Pipeline canal	AfDB E&S Screening form - Zailac - AroorSeel 1.docx	Pipeline Canal 10.297822, 42.90529 Cat. 2	Matched	
Aroor Seel Canal	Pipeline canal	AfDB E&S Screening form - Zailac - AroorSeel 2.docx	Pipeline Canal 10.296908, 42.892808 Cat. 2	Matched	
SAMO Cooperative Borehole	Borehole	AfDB E&S Screening form - Zialac - Daray Dheer (Xoosh Corporation).docx	Drilling Borehole 10.288951, 42.895597 Cat. 2	Probable match / confirmation required	Screening-form naming is inconsistent with the final cooperative borehole name; controlled site register must confirm.
Xoosh Cooperative Borehole	Borehole	AfDB E&S Screening form - Zailac - Aroorseel.docx	Drilling Borehole 10.298604 Cat. 2	Probable match / confirmation required	Screening-form naming is inconsistent with the final cooperative borehole name; controlled site register must confirm.

Final Site / Asset	Final Typology	Original Screening Form	Original Activity / GPS / Cat.	Status	Control Note
Balanbal Water Catchment	Water catchment	No separate screening form located	— — Cat. —	Missing	No separate Zeila catchment screening form located.
Aroorseel Water Catchment	Water catchment	No separate screening form located	— — Cat. —	Missing	No separate Zeila catchment screening form located.
Ainabo Borehole	Borehole	AfDB E&S Screening form - Aynabo Borehole.docx	Rehabilitation of existing borehole 9.507415, 46.321127 Cat. 3	Reconciliation required	Name matches but original GPS duplicates Geesahaye.
Oog Borehole	Borehole	AfDB E&S Screening form - Oog.docx	Borehole 8.933725, 46.617903 Cat. 2	Matched	
Jaleelo Borehole	Borehole	AfDB E&S Screening form - Jaleelo.docx	Water Catchment 8.949000, 46.392000 Cat. 2	Type mismatch	Original activity says Water Catchment; GPS matches final Jaleelo Borehole.
Qoridheere Borehole	Borehole	No separate screening form located	— — Cat. —	Missing	No screening form located.
Waridaad Water Catchment	Water catchment	AfDB E&S Screening form - Waridaad.docx	Rehabilitation of Existing earth dam, storage tank and livestock watering trough 9.30461905, 46.25689107 Cat. 2	Matched	
Oog Water Catchment	Water catchment	No separate screening form located	— — Cat. —	Missing	No distinct Oog catchment form located; the Oog form is a Borehole record.
Barwaaqo Water Catchment	Water catchment	AfDB E&S Screening form - Barwaaqo Farm .docx	Rehabilitation of Existing earth dam, storage tank and livestock watering trough 8.941440, 46.350820 Cat. 2	Matched	
Dhudhubka Water Catchment	Water catchment	AfDB E&S Screening form - Dhudhubka Village.docx	Rehabilitation of Existing earth dam, storage tank and livestock watering trough 9.444833333, 46.46283333 Cat. 2	Matched	
Gadhka Water Catchment	Water catchment	AfDB E&S Screening form - Gadhka.docx	Water Catchment 9.275110, 46.386160 Cat. 2	Matched with legacy coordinate	Final register controls.
Karin Water Catchment	Water catchment	AfDB E&S Screening form - Karin Village.docx	Water Catchment 9.652050, 46.446000 Cat. 2	Matched	
Geesahaye Water Catchment	Water catchment	AfDB E&S Screening form - Geesahaye.docx	Water Catchment 9.507415, 46.321127 Cat. 2	Matched	

Final Site / Asset	Final Typology	Original Screening Form	Original Activity / GPS / Cat.	Status	Control Note
Mahsruuca Water Catchment	Water catchment	AfDB E&S Screening form - Faramara Village.docx	Rehabilitation of Existing earth dam, storage tank and livestock watering trough 9.02416, 46.486924 Cat. 2	Ambiguous / confirmation required	Form is named Faramara but GPS is closer to final Mahsruuca. It cannot cover both final sites.
Xundhurgaal Water Catchment	Water catchment	AfDB E&S Screening form - Xundhurgaal.docx	Water Catchment 9.551406, 46.477352 Cat. 2	Matched with legacy coordinate	Final register controls.
Kalabaydh Water Catchment	Water catchment	AfDB E&S Screening form - Kalabaydh.docx	Water Catchment 9.602873, 46.2963081 Cat. 2	Matched	
Dhooboweyn Water Catchment	Water catchment	AfDB E&S Screening form - Dhooboweyn.docx	Water Catchment 9.507415, 46.321127 Cat. 2	Reconciliation required	Form GPS duplicates Geesahaye; separate legacy 'Aynabo Water Catchment' is close to final Dhooboweyn.
Balli-Ciise Water Catchment	Water catchment	AfDB E&S Screening form - Baliciise Village.docx	Water Catchment 8.807056, 46.470188 Cat. 2	Matched	
Bali-Cumar Water Catchment	Water catchment	AfDB E&S Screening form - Bali cumar.docx	Rehabilitation of Existing earth dam, storage tank and livestock watering trough 8.789533 Cat. 2	Matched; incomplete GPS	Latitude only in form.
Faramaraa Water Catchment	Water catchment	No separate screening form located	— — Cat. —	Identity unresolved	The Faramara Village form may represent this site by name but its GPS is closer to Mahsruuca. Controlled confirmation is required.
Gawsawayne Water Catchment	Water catchment	AfDB E&S Screening form - Gawsawayne.docx	Rehabilitation of Existing earth dam, storage tank and livestock watering trough 9.088633 Cat. 2	Matched; incomplete GPS	Latitude only in form.
Hunduli Borehole	Borehole	AfDB E&S Screening form - Salaxlay - Hundi Nooleys.docx	Water Catchment 9.306388, 44.180491 Cat. 2	Type mismatch	Original activity is Water Catchment; GPS matches final borehole.
Raydabka Borehole	Borehole	AfDB E&S Screening form - Salaxlay - Raydabka - Kala Gooye.docx	Water Catchment 9.271041, 44.306628 Cat. 2	Type mismatch	Original activity is Water Catchment; GPS matches final borehole.
Bahadhamal Borehole	Borehole	AfDB E&S Screening form - Salaxlay - Bahadhama.docx	Water Catchment 8.968369, 44.258517 Cat. 2	Type mismatch	Original activity is Water Catchment; GPS matches final borehole.

Final Site / Asset	Final Typology	Original Screening Form	Original Activity / GPS / Cat.	Status	Control Note
Hunduli Water Catchment	Water catchment	AfDB E&S Screening form - Salaxlay - Hundule.docx	Borehole 9.321617, 44.181882 Cat. 2	Type mismatch	Original activity is Borehole; GPS matches final catchment.
Qoolbuulale Water Catchment	Water catchment	AfDB E&S Screening form - Salaxlay - Qoor Bulale.docx	Water Catchment 8.876503, 44.396929 Cat. 2	Matched; spelling variant	
Bahadhama Water Catchment	Water catchment	AfDB E&S Screening form - Salaxlay - Bahodhamal.docx	Borehole 8.968695, 44.264121 Cat. 2	Type mismatch	Original activity is Borehole; GPS matches final catchment.
Araweelo Water Catchment	Water catchment	AfDB E&S Screening form - Salaxlay - Araweelo.docx	Water Catchment 9.352416, 44.252120 Cat. 2	Matched	
Raydabka Water Catchment	Water catchment	AfDB E&S Screening form - Salaxlay - Raydabka.docx	Borehole 9.293283, 44.238228 Cat. 2	Type mismatch	Original activity is Borehole; GPS matches final catchment.
Laanqeyta Celiye Water Catchment	Water catchment	AfDB E&S Screening form - Salaxlay - Laanqayta Celiyo.docx	Water Catchment 8.890560, 44.347695 Cat. 2	Matched; spelling variant	
Bali Ciise Water Catchment	Water catchment	AfDB E&S Screening form - Salaxlay - Bali-Ciise.docx	Water Catchment 9.139030, 44.281939 Cat. 2	Matched	
Libaax Qoodhama Water Catchment	Water catchment	AfDB E&S Screening form - Salaxlay - Libaax Qawdhama.docx	Water Catchment 8.843759, 44.485446 Cat. 2	Matched; spelling variant	
Bali Kheyr Water Catchment	Water catchment	AfDB E&S Screening form - Salaxlay - Balli-khayre.docx	Water Catchment 9.142892, 44.333843 Cat. 2	Matched; spelling variant	
Heego Daraso Borehole	Borehole	No separate screening form located	— — Cat. —	Missing	No Borama screening form located.

Screening coverage summary: 68 controlled final sites are listed. Separate screening forms were not located for 6 final sites in the reviewed pooled screening archive. Original forms are supplied in the accompanying sorted screening folder.

Annex 2: Stakeholder Engagement Plan (SEP) — Somaliland

This SEP has been prepared for the Somaliland component of the BBS Irrigation Project (Zeila, Ainabo, Salahley, and Borama Districts — 68 sites), in accordance with AfDB ISS 2023, OS10. It is a living document updated throughout the project lifecycle, consistent with the project-wide SEP, and reflects Somaliland's distinct institutional context, the dense Zeila coastal cluster, and the wide dispersion of interior sites. Key objectives: informing affected communities; providing meaningful opportunities for stakeholder input; ensuring vulnerable groups participate and benefit equitably; establishing accessible grievance mechanisms; preventing retaliation against those who raise concerns; and maintaining transparent coordination with Somaliland institutions.

Project overview (Somaliland component): the component rehabilitates and improves water infrastructure at 68 sites serving pastoral, agro-pastoral, farming, and coastal communities whose water security depends on rainwater harvesting and groundwater. Somaliland is the largest BBS component by site count, with the dense Zeila (Aroorseel) shallow-well cluster requiring particularly intensive, coordinated engagement.

Table 22: Project-Affected Parties — Somaliland

Stakeholder	Key Interests / Concerns
Farming and agro-pastoral households	Water availability and quality; rehabilitation quality; construction disruption; equitable access
Pastoral and nomadic communities	Livestock watering access; pastoral-route protection; seasonal access; equity in WUA governance
Aroorsee well-cluster community (Zeila)	Water quality and salinity; phased rehabilitation to maintain access; individual well ownership; cumulative aquifer effects
Coastal fishing communities (Zeila)	Water access; pollution and quality concerns; sea-level and salinity dynamics
Women and girls	Water-collection distance/time; safety at water points; WUA participation; GBV risk during worker influx
Nomadic women (specific subgroup)	Mobile outreach; communication through female elders; seasonal access
Youth	Employment; skills training; WUA representation; transparent hiring
Minority clan households	Equitable access; representation in WUA governance; protection from discrimination
Water User Associations (WUAs)	Capacity building; governance support; O&M responsibilities; water-allocation frameworks; cluster coordination (Zeila)
Individual water-point owners (Aroorsee)	Rehabilitation terms; temporary access arrangements; ownership documentation

Table 23: Other Interested Parties — Somaliland

Stakeholder	Role and Interest
Federal Government (MoAI — PIU)	Implementing agency; overall project management; safeguards oversight; reporting to AfDB
Somaliland Ministry of Water Resources	Water governance; borehole/well permitting; joint groundwater and salinity monitoring; WUA registration
Somaliland Ministry of Agriculture Development	Project counterpart; agricultural and irrigation coordination
Somaliland Ministry of Environment and Climate Change	Environmental regulatory oversight; ESIA review; catchment and climate coordination
District Administrations (4)	Local coordination; site access; traditional-leader liaison; GRM Level 2 mediation support
Traditional leaders / guurti / religious leaders	Community legitimacy; conflict prevention; xeer-based dispute resolution; communication
NGOs and civil society — Somaliland	GBV referral; livelihoods; WASH coordination
Contractors	Site-level community relations; local hiring; safety management; LMP and Code of Conduct compliance
Supervision Consultant	Safeguards compliance monitoring; engagement verification; PIU advisory support
African Development Bank (AfDB)	Project financier; safeguards oversight; Independent Recourse Mechanism

Vulnerable groups requiring differentiated engagement: nomadic and semi-nomadic women (mobile outreach through female elders at seasonal watering points); female-headed households (targeted outreach and priority WUA membership support); minority clan members (inclusive WUA governance and monitoring for elite capture); coastal fishing communities in Zeila (targeted engagement on water access and coastal concerns); unemployed youth (transparent hiring communication and youth WUA representation); persons with disabilities (accessible venues, home visits, oral communication); and low-literacy community members (spoken Somali, visual aids, radio, elder intermediaries).

Table 24: Engagement Methods and Schedule — Somaliland

Method	Purpose	Target Groups	Frequency
Community meetings — mixed	Project updates, construction schedules, WUA formation, feedback	All community members at and near sites	Before works; mid-construction; before O&M handover; bi-monthly during construction
Focus group discussions	Elicit concerns on water access, safety, and SEA/SH in a safe setting	Women, female-headed households, minority clans, persons with disabilities	Before works and as needed during construction
Key informant interviews	Detailed input on siting, land access, and local conditions	Traditional elders (guurti), WUA leaders, district officials	Planning and design; before works at each site
Mobile and seasonal outreach	Reach dispersed users at seasonal watering points	Nomadic and semi-nomadic pastoralists	At least once per district per pastoral season
Radio, notice boards, and Somali-language materials	Broad dissemination of schedules, GRM, hiring, and safety information	General public and low-literacy community members	One-time, with updates throughout implementation
GRM awareness sessions	Explain grievance channels, the confidential SEA/SH pathway, and no-retaliation protections	All community members and workers	Before works at each site; ongoing
WUA formation and training meetings	Establish inclusive Water User Associations for operation and maintenance	Community members, with women and youth prioritised	3 months before O&M handover; during handover

Prevention of retaliation: anonymous complaint channels are available and publicised; complainant identity is disclosed only with express consent; protection is stated at every community meeting; female CLOs and the Somaliland E&S Officer monitor for social pressure or retaliation through clan structures; and any act of retaliation is investigated and subject to disciplinary action or sanctions.

Table 25: Information Disclosure — Somaliland

Information	Timing	Method and Location
ESIA / ESMP non-technical summary (Somali)	Before AfDB appraisal; minimum 30 days for review	PIU website; Somaliland ministry offices; four district offices; community meetings; radio
Stakeholder Engagement Plan	Before appraisal	PIU website; district offices
Labour Management Procedures	Before appraisal	PIU website; contractor offices; site notice boards; worker induction packs
Site-specific works schedules (incl. Zeila phasing)	Minimum 2 weeks before works at each site	Community meetings; site notice boards; elder notification; radio
GRM details — channels, contacts, process	Before works at each site; ongoing	Community meetings; notice boards; radio; handouts at water points; elder networks
Employment opportunities — local hiring	Before contractor mobilisation in each district	Community meetings; district notice boards; elder networks; radio
WUA formation process and membership criteria	3 months before O&M handover	Community meetings; CLO outreach; Somali-language visual guide

Table 26: SEP Implementation Budget — Somaliland (50% share of project-wide SEP envelope, 4 years)

Activity	Basis (Somaliland 50% share)	Indicative cost (USD, 4 years)
Community meetings and consultations — four districts	50% of 80 meetings × \$400	16,000
Information materials, radio, notice	50% of project-wide lump sum	2,000

Activity	Basis (Somaliland 50% share)	Indicative cost (USD, 4 years)
boards		
GRM operation (hotline, suggestion boxes, database)	50% of hotline + system setup	9,000
GRM committee meetings and documentation	50% of 4 years × \$2,500	5,000
SEA/SH service mapping and survivor support	50% of mapping + annual support	12,500
Subtotal — PIU-managed SEP/GRM/SEA-SH (Somaliland)		44,500
Contractor site-level engagement & CLOs	Embedded in works contracts	Embedded in works contracts
Total — Somaliland SEP budget (4 years)		44,500

This budget represents Somaliland's 50% share of the project-wide PIU-managed SEP/GRM/SEA-SH envelope of USD 89,000, corresponding to Somaliland's 68 of the project's 136 sites, apportioned over the 48-month implementation period. Site-level community engagement delivered by contractors and WUA operation-and-maintenance training are funded separately under works contracts and the ESMP.

SEP monitoring indicators include: bi-monthly community meetings per district during construction; ≥30% women's participation in mixed sessions; ≥1 nomadic outreach session per district per pastoral season; regular Aroorseel cluster coordination during Zeila works; ≥1 vulnerable-group consultation per district per year; ≥80% of grievances resolved within timeframe; disclosure materials distributed at all 68 sites before works; and the SEA/SH referral pathways operational before mobilisation. Engagement and grievance data are included in quarterly E&S reports to AfDB, with summaries to Somaliland counterparts; the SEP is reviewed annually. Contact details for the Somaliland E&S Officer, the four district CLOs (at least one female per district), the Ministry of Water Resources, the AfDB project team, and the AfDB Independent Recourse Mechanism (www.afdb.org/irm) are confirmed and publicised before mobilisation.

Annex 3: Grievance Redress Mechanism (GRM) Procedures — Somaliland

The GRM provides accessible, predictable, and transparent channels for community members and other stakeholders to raise concerns related to the Somaliland component. It is separate from the Workers' GRM under the LMP (Annex 10). Channels: CLOs at all site clusters (at least one female CLO per district); a project hotline (phone/SMS); sealed suggestion boxes at information boards; traditional leaders (guurti) relaying to the district E&S focal point; written submissions to district offices or the PIU; and the confidential SEA/SH channel to the PIU GBV Specialist. A distinctive feature of the Somaliland GRM is the formal integration of xeer-based traditional dispute resolution at the district mediation level.

Table 27: GRM Process Steps and Timelines — Somaliland

Step	Action	Responsible	Timeline
1. Receipt and registration	Grievance received through any channel; logged with unique reference; acknowledgement to complainant	CLO / WUA / District Focal Point	Logged within 24 hours; acknowledged within 48 hours
2. Site-level resolution (Level 1)	Contractor and CLO engage complainant; direct resolution of minor issues	Contractor + CLO	Within 7 days
3. District mediation (Level 2)	Facilitated resolution with traditional elders (guurti) and district authority; xeer-based mediation integrated	District Focal Point + Elders	Within 14 days
4. PIU review (Level 3)	Formal review; independent investigation if needed; written determination	PIU Safeguards Officer	Within 14 days
5. External recourse	AfDB recourse (incl. IRM) or Somaliland judicial	Complainant's choice	Per IRM / judicial

Step	Action	Responsible	Timeline
(Level 4)	system		procedures
6. Close-out and feedback	Resolution communicated; satisfaction recorded; case closed	Somaliland E&S Officer	Within 30 days standard; 14 days for O&M water-allocation cases at WUA level; 15 working days for land-access cases

SEA/SH cases follow a separate confidential track managed exclusively by the PIU GBV Specialist with survivor-centred principles; no case details are shared with contractors, WUAs, traditional leaders, or local authorities, and referral is made to mapped services within 24 hours. Workers' grievances follow the Workers' GRM under the LMP. GRM performance is reviewed monthly by the Somaliland E&S Officer and reported quarterly to AfDB. An 'Environmental and Health' category captures P/VMP-related concerns (Section 10.12).

Annex 4: Consultation Log — Somaliland

Table 28: Consultation Log Summary (December 2025 – June 2026)

Date / Period	Location	Participants	Key Outcomes
December 2025	Hargeisa	Somaliland Ministries of Agriculture Development, Water Resources, and Environment and Climate Change	Institutional coordination confirmed; borehole/well permitting pathway agreed; joint groundwater and salinity monitoring outlined
December 2025 – January 2026	Zeila / Lughaya (Aroorseel, Xariirad)	District administration; Aroorseel well-cluster community; individual well owners; elders; women's groups; fishing communities	Well condition and salinity histories documented; phased rehabilitation and water-continuity expectations recorded; individual ownership noted; coastal concerns recorded
January 2026	Ainabo District	District administration; catchment and borehole communities; elders; women's groups; pastoral households	Catchment and borehole condition documented; desilting and maintenance expectations; pastoral-route information; employment expectations
January 2026	Salahley District	District administration; catchment and borehole communities; elders; women's and youth groups	Remote-site security context documented; new-borehole siting confirmed; maintenance and employment expectations recorded
January 2026	Borama District	District administration; Heego Daraso community; elders; women's group	New-borehole siting and community readiness confirmed; employment expectations recorded
February 2026	All four districts	District health authorities; NGO focal points	Emergency response routes and GBV referral pathways documented per district; district vs Hargeisa service levels recorded
June 2026	All districts (follow-up)	District focal points; community representatives	68-site, four-district scope of the Master List confirmed; Borama added; site counts reconciled (Zeila 36, Ainabo 19, Salahley 12, Borama 1)

Detailed minutes, attendance records (disaggregated by gender and by nomadic vs settled participation), and photographs for each consultation are maintained in the project consultation repository by the Somaliland E&S Officer.

Annex 5: Climate Risk Assessment — Somaliland

This annex presents the Climate Risk Assessment for the Somaliland component (68 sites; Zeila, Ainabo, Salahley, and Borama Districts), prepared in accordance with AfDB Climate Safeguards System requirements. It identifies climate hazards across Somaliland's three broad agro-ecological settings — the Gulf of Aden coastal plain (Zeila), the arid-to-semi-arid interior rangelands (Ainabo, Salahley), and the northwestern highlands (Borama) — evaluates likelihood and potential impacts on project infrastructure and pastoral productivity, and informs climate-resilient design and

adaptation measures. A distinctive Somaliland climate risk, not present in the interior BBS components, is sea-level rise increasing saltwater intrusion into the Zeila coastal shallow aquifer over the project's operational horizon.

Climate context: the project districts are dryland, non-riverine settings with no perennial rivers. Evapotranspiration (2,000–3,000 mm/year) substantially exceeds rainfall (150–500 mm/year), creating chronic water deficits. Rainfall is bimodal (Gu: April–June; Deyr: October–December) with extended Jilaal (December–March) and Haggaa (July–September) dry seasons. The interior (Ainabo, Salahley) receives 250–500 mm/year; the highland Borama somewhat more; and coastal Zeila the least (below 150 mm/year in some years), with the southwest monsoon (June–August) driving coastal winds and dust. Project infrastructure — catchments, shallow wells, boreholes, and canals — is acutely sensitive to drought, heat stress, high evaporation, and, at Zeila, coastal salinity dynamics.

Table 29: Climate Projections — Somaliland Project Districts (2021–2040, RCP8.5 / CMIP6)

Parameter	Projection — Somaliland Project Districts
Mean temperature increase (2021–2040)	+1.0°C to +1.3°C above 1991–2020 baseline
Mean temperature increase (2040–2060)	+1.5°C to +2.2°C above baseline
Very hot days (>40°C)	+10 to +25 additional days/year by 2040 (highest at coastal Zeila)
Evapotranspiration increase	+10% to +15% above the already high baseline
Rainfall baseline	150–500 mm/year; highly localised and erratic; lowest at coastal Zeila
Gu season variability	±15–25% inter-annual variation; rising risk of consecutive failed Gu seasons
Drought frequency	Shifting from ~1-in-4 years toward 1-in-2-to-3 years by 2040
Extreme rainfall intensity	+10% to +20% increase in heavy-rainfall event intensity; increased flash-flood risk in wadi systems
Sea-level rise (coastal Zeila)	Continued rise increasing saltwater-intrusion pressure on the shallow coastal aquifer over the operational horizon

Table 30: District Climate Risk Summary — Somaliland

District	Project Infrastructure	Flood	Heat	Drought	Salinity	Highest Risk	Priority Adaptation
Zeila (Awdal, coastal)	30 shallow wells, 2 canals, 2 boreholes, 2 catchments	M	VH	VH	VH	Coastal salinity / cumulative drawdown	Salinity screening and monitoring; combined abstraction limits; wellhead protection; phased works; sea-level-trend monitoring
Ainabo (Sool, interior)	15 catchments, 4 boreholes	H	VH	VH	L	Drought / catchment sedimentation	Liners and silt control; desilting regime; sustainable-yield borehole design; SWL/EC monitoring
Salahley (Maroodi Jeex)	9 catchments, 3 boreholes	H	VH	VH	L	Drought / flash flood	Flood-resistant embankment and spillway design; desilting regime; sustainable-yield design; solar pumping
Borama (Awdal, highland)	1 borehole	M	H	H	L	Groundwater decline	Hydrogeological survey; sustainable-yield design; SWL/EC monitoring; solar pumping

Key findings: Drought and heat stress are co-dominant Very High risks across the interior and coastal districts, with moderate droughts projected every 2–3 years by 2040. All districts depend on groundwater and rainwater harvesting;

increased extraction combined with declining recharge creates over-abstraction risk, and at Zeila this is compounded by sea-level-driven saltwater intrusion into the shallow coastal aquifer — making baseline salinity/EC measurement, combined abstraction limits, and ongoing salinity monitoring mandatory. Intense short-duration rainfall during Gu and Deyr causes flash flooding that damages catchment infrastructure in Ainabo and Salahley; the projected 10–20% increase in extreme-rainfall intensity heightens this risk. Residual climate risk is dominated by multi-year drought exceeding infrastructure buffering capacity, extreme rainfall exceeding spillway design standards, and coastal salinity intrusion at Zeila, assessed as Moderate and acceptable given the adaptive-management arrangements (Chapter 8.4).

Annex 6: Gender Analysis and Gender and Social Inclusion (GSI) Plan — Somaliland

This annex consolidates the Gender Analysis and the GSI operational plan for the Somaliland component (68 sites; Zeila, Ainabo, Salahley, and Borama Districts), prepared in accordance with AfDB ISS 2023, OS7, OS4, and OS10. It draws on field consultations (December 2025 – January 2026), national and Somaliland-specific gender data, and published research on gender dynamics in Somaliland's pastoral and coastal economies.

KEY GENDER ISSUES — SOMALILAND

- **Water-collection burden:** women and girls bear primary responsibility for household water collection across all four districts; in the interior (Ainabo, Salahley) collection distances can be substantial during the Jilaal dry season, consuming hours per day and limiting time for production, income, rest, childcare, and governance. In the Aroorseel cluster (Zeila), poor water quality compounds the burden as households travel further for potable water. Water infrastructure is the highest stated priority for women across all districts.
- **Financial exclusion:** women-owned businesses in Somaliland face significant barriers to formal finance, with high reliance on mobile money and low bank-account penetration; financial-literacy training tailored to women WUA members is included in the capacity-building programme.
- **Voice and representation:** community water decisions are made by clan-based, guurti-led committees that are male-dominated; consultations confirmed no women in existing informal water committees at project sites. Women's labour-force participation is substantially below men's.
- **Nomadic women's vulnerabilities:** seasonal mobility makes nomadic women in Ainabo and Salahley the hardest group to reach; during droughts men typically migrate with livestock while women remain as de facto household heads with limited assets — requiring mobile outreach and communication through female elders.
- **Coastal women (Zeila):** women in the Aroorseel and fishing communities raised specific water-quality, salinity, and safety concerns on collection routes, requiring targeted engagement and safe water-point design.
- **Climate-gender nexus:** women depend more heavily on natural resources, have fewer assets to absorb shocks, and face increased collection distances during droughts; the project's water-security measures directly mitigate this disproportionate burden.
- **GBV and SEA/SH risk:** the large workforce distributed across four districts creates material risk, raised explicitly by women's focus groups. GBV response services are concentrated in Hargeisa and thin at district level, so referral pathways must be formally mapped before mobilisation, documenting district-level versus Hargeisa-level services.

GSI MEASURES AND IMPLEMENTATION PLAN

Table 31: GSI Measures — Somaliland

Measure	Description	Timing	Responsible
Female CLOs — all four districts	At least one female CLO per district before mobilisation; primary contact for women's concerns, SEA/SH reporting, women-only outreach, and WUA women's engagement	Before mobilisation	PIU Safeguards Officer
Women-only consultation sessions	At each milestone per district, facilitated by female CLOs; timing avoiding domestic-duty conflicts; accessible, safe venues	All phases	Female CLOs
Nomadic women's mobile outreach — Ainabo, Salahley	Mobile outreach at seasonal watering points twice per year aligned with the pastoral calendar; communication through female elders	From mobilisation, bi-annually	Female CLOs / PIU

Measure	Description	Timing	Responsible
Coastal women's engagement — Zeila	Targeted engagement of Aroorseel and fishing-community women on water quality, salinity, safety, and collection routes	All phases	Female CLO Zeila
WUA ≥30% women membership and leadership	Minimum 30% women in WUA membership and leadership (chair, treasurer, secretary); embedded in the WUA constitution for all 68 sites; compliance monitored quarterly	WUA formation	PIU / CLOs
Minority-clan and fishing-community non-discrimination	Explicit non-discrimination in WUA rules; no clan, tenure, or residence eligibility requirements; proactive engagement before WUA formation	WUA formation	CLOs / PIU
GBV prevention — worker influx	Code of Conduct prohibiting SEA/SH; pre-mobilisation worker awareness; accommodation separation; zero tolerance communicated publicly	Before mobilisation	PIU / Contractor
SEA/SH reporting and NGO referral network	Referral pathways formally mapped through the Somaliland NGO and health network before mobilisation; confidential reporting via female CLOs; all cases to the PIU GBV Specialist within 24 hours; district and Hargeisa service levels documented	Before mobilisation	PIU Safeguards Officer / female CLOs
Safe water-point design	Kiosk, well, and trough locations and design reviewed with women's groups; adequate lighting; privacy where required; separate livestock and domestic access	Design phase	PIU Design Team
Youth employment targets	Minimum 20% of unskilled workforce from local youth (18–30) per district; youth WUA representatives	Construction	Contractor / PIU
Financial-literacy training — women WUA members	Dedicated session in WUA governance training covering record-keeping, fee management, and mobile-money use; linked to Somaliland women's financial-inclusion programmes (VSLAs) where available	O&M phase	PIU / Supervision Consultant
Gender-disaggregated monitoring	All monitoring data sex-disaggregated and reported by stakeholder type in quarterly E&S reports to AfDB	All phases	PIU Safeguards Officer

GSi MONITORING INDICATORS

Table 32: GSi Monitoring Indicators — Somaliland

Indicator	Target	Frequency	Responsible
Women's WUA membership across all 68 sites	≥30%	At formation; annually	PIU / CLOs
Women in WUA leadership (chair, treasurer, secretary)	≥30%	At formation; annually	PIU / CLOs
Women's participation in mixed consultations	≥30%	Per event	CLOs
Nomadic women reached through mobile outreach	≥1 session/district/pastoral season	Bi-annually	Female CLOs
Youth employment (local, 18–30) in construction	≥20% of unskilled workforce per district	Monthly during construction	Contractor / PIU
Minority-clan / fishing-community representation in WUAs	Proportionate; no exclusion incidents	At formation; annually	CLOs / PIU
SEA/SH allegations received and referred	100% referral within 24 hours; zero unaddressed	Monthly (confidential)	PIU GBV Specialist / female CLOs
GBV referral pathways operational before construction	Binary milestone — all four districts	Pre-construction	PIU Safeguards Officer
Women's average water-collection time	≥50% reduction vs baseline by Year 2 O&M	Annually from Year 1 O&M	PIU / Supervision Consultant

Implementation recommendations: coordinate with the Somaliland Ministry of Employment, Social Affairs and Family and active NGOs to link women beneficiaries with existing VSLAs, mobile-money literacy programmes, and microfinance; appoint women as WUA treasurers and financial-committee members with mentoring; engage male community leaders (guurti, district officials) on women's inclusion; and conduct annual household surveys on women's water-collection time, WUA participation, and reported safety at water points, disaggregating all monitoring data by sex.

Annex 7: Chance Finds Procedure

This procedure applies to all ground-disturbing works at all 68 Somaliland sites, is posted at each site, and is covered in worker induction (OS8, precautionary). A 'chance find' is any archaeological, palaeontological, cultural, historical, or religious artefact discovered unexpectedly during ground-disturbing works.

- **Step 1 — Immediate stop-work:** any worker discovering a potential chance find immediately stops all ground-disturbing works within a minimum 20-metre radius; machinery is powered down; work may continue in unaffected areas. This obligation applies to all workers including subcontractors and community workers.
- **Step 2 — Secure the area:** cordon off the discovery area; restrict access to the discoverer and direct supervisor; do not move, clean, or further disturb the find; photograph from at least four directions; sketch the location relative to site infrastructure.
- **Step 3 — Notify the Site Supervisor within 1 hour:** the supervisor records date, time, GPS, discoverer, description, photographs, and stop-work area in the site logbook.
- **Step 4 — Notify the PIU and Somaliland E&S Officers within 4 hours:** sharing all documentation; the PIU E&S Officer notifies the Supervision Consultant and logs the find centrally.
- **Step 5 — Notify the cultural authority within 24 hours:** the PIU notifies the relevant Somaliland authority responsible for antiquities and cultural heritage in writing, with the Federal Ministry also notified for federal reporting.
- **Step 6 — Expert inspection within 7 working days:** authorised personnel or an appointed expert inspect the site; the PIU facilitates access; the written assessment governs subsequent actions.
- **Step 7 — Determination and action:** (a) no significant value — stop-work lifted and works resume; (b) significant but manageable — documentation completed, protective measures defined, and written clearance obtained before resumption; (c) major significance — extended stop-work and a cultural heritage management plan commissioned, with works resuming only after plan approval.
- **Step 8 — Reporting:** all chance finds are reported in the next monthly E&S report; significant finds are reported to AfDB within 7 days of discovery with an outcome update within 30 days.

Somaliland-specific considerations: Somaliland's long habitation history, ancient trade routes, coastal heritage at Zeila, and Islamic cultural heritage mean chance-find probability is not negligible during excavation and drilling. Workers are strictly prohibited from retaining, handling, moving, or selling any find; violation results in immediate termination and referral to Somaliland law enforcement, as reflected in employment contracts and the Code of Conduct. All workers receive Chance Finds training during induction, with attendance recorded.

Annex 8: Environmental and Social Monitoring Plan — Somaliland

This monitoring plan specifies indicators, methods, responsibilities, reporting requirements, and trigger standards for the 68 Somaliland sites during construction and operation, supplementing the consolidated monitoring framework in Table 17. It incorporates Somaliland-specific parameters — coastal-aquifer salinity monitoring at the Zeila cluster, SWL and EC at the boreholes, catchment sedimentation at Ainabo and Salahley, heat and confined-space safety, and social-inclusion monitoring across four districts.

ENVIRONMENTAL MONITORING

Table 33: Environmental Monitoring — Somaliland

Parameter	Indicators / Method	Frequency	Responsible	Trigger / Standard
-----------	---------------------	-----------	-------------	--------------------

Parameter	Indicators / Method	Frequency	Responsible	Trigger / Standard
Water quality — all supply points	Turbidity, pH, E. coli, total coliforms, nitrates, EC/TDS	Pre-commissioning; 6-monthly O&M; within 72 hours of contamination/flood	PIU / accredited lab	WHO guideline values; E. coli detection triggers investigation; commissioning blocked until pass
Coastal-aquifer salinity — Zeila (PRIORITY)	Salinity/TDS/EC at wells, boreholes, and monitoring wells; trend vs baseline; sea-level trend	Monthly Year 1; semi-annually thereafter; annual sea-level review	WUA / Somaliland E&S Officer / Water Ministry / lab	Alert at EC >1,500 µS/cm or sustained TDS rise; abstraction reduction and assessment; pre-works baseline mandatory
Groundwater levels — boreholes and Zeila monitoring wells	SWL; seasonal trend vs safe yield; pumping logs	Quarterly (construction); bi-annually (O&M); monthly at Zeila monitoring wells	Contractor; WUA + CLO; Water Ministry	Progressive decline >0.5 m/year triggers reduction to 60% of safe yield; >1 m sustained decline at monitoring wells reviews cluster abstraction
Catchment sedimentation — Ainabo, Salahley	Storage volume (depth sounding); embankment, liner, spillway; silt-trap function	Bi-annually (before Gu, after Deyr); spot check after major storms	WUA / CLO; annual Supervision measurement	Desilting triggered if storage reduced >15% from post-construction baseline
Soil erosion — construction sites	Visual inspection; rill/sheet erosion; vegetation recovery	Monthly construction; quarterly O&M	Contractor E&S Officer; Somaliland E&S Officer quarterly audit	Zero significant erosion beyond footprint; rill erosion triggers remediation
Dust and air quality — Zeila cluster and dry earthworks	Visual dust assessment; community complaints	Weekly during earthworks; after dust events	Contractor E&S Officer	No persistent visible dust beyond boundary; 3+ complaints trigger review
Drilling and shallow-well dewatering waste	Volume, composition, disposal; discharge control; soil/aquifer-contamination check	Per campaign	Contractor Drilling/Well Supervisor; Supervision verifies	100% to designated disposal; no contamination confirmed before site clearance
Hazardous materials and waste	Fuel/lubricant storage and handling; spills; waste segregation	Monthly audit; immediate for any spill	Contractor E&S Officer	Zero untreated spills; spill kit at all fuel storage; 100% waste to approved sites

SOCIAL AND LABOUR MONITORING

Table 34: Social and Labour Monitoring — Somaliland

Parameter	Indicators / Method	Frequency	Responsible	Trigger / Standard
Community GRM performance	Grievances by type and district; resolution time and level; satisfaction (sample)	Monthly log; quarterly analysis	Somaliland E&S Officer / PIU Safeguards Officer	≥80% resolved within timeframe; no grievance open >60 days without justification
Water-allocation disputes — O&M	Disputes received by WUAs; type; resolution rate/time; escalations	Monthly during O&M	WUAs / CLOs	≥90% resolved at WUA level within 14 days
Labour and employment	Total workforce; % local per district; % youth; % women; wages; hours; child-labour checks	Monthly during construction	Supervision Consultant / PIU (payroll spot checks)	≥80% local unskilled; ≥20% youth; ≥30% women; zero wage violations; zero workers under 18
Women's WUA participation	Women % of membership; women in leadership; disaggregated attendance	At formation; quarterly	CLOs / Somaliland E&S Officer	≥30% membership; ≥30% leadership; improving trend
Nomadic women's engagement	Mobile outreach sessions per district per season; women	Bi-annually	Female CLOs	≥1 session per district per pastoral season

Parameter	Indicators / Method	Frequency	Responsible	Trigger / Standard
	reached; issues			
Minority-clan / fishing-community inclusion	Representation in WUAs; water-point access; exclusion complaints	At formation; annually	CLOs / PIU	No exclusion incidents; proportionate representation
SEA/SH allegations	Number received; referral within 24 hours; outcomes (confidential)	Monthly confidential report	PIU GBV Specialist / female CLOs	100% referred within 24 hours; zero unaddressed
Heat stress and confined-space incidents	Heat-illness cases; 12:00–15:00 compliance; confined-space permit compliance; water provision	Monthly; immediate for serious	Contractor E&S Officer / PIU	Zero untreated heat illness; 100% rest-period and permit compliance
OHS incidents	Fatalities; LTIs; near misses; first aid; investigation completion	Monthly; immediate for LTI/fatality	Contractor E&S Officer / PIU	Zero fatalities; LTIFR <5; 100% incidents investigated within 7 days
WUA O&M performance	WUAs operational; meetings held; maintenance completed; fees collected; records	Quarterly from first O&M season	CLOs / Supervision Consultant	All commissioned WUAs operational at 12 months; maintenance ≥80% compliant
Water-access outcomes	Households with improved access; women's collection distance/time; % functional year-round	Annually from Year 1 O&M (sample survey per district)	PIU / Supervision Consultant	≥50% reduction in women's collection time by Year 2 O&M; ≥90% functional year-round

Reporting: the Contractor E&S Officer submits monthly E&S reports to the Supervision Consultant and Somaliland E&S Officer. The PIU Safeguards Officer compiles quarterly E&S reports for AfDB, and the Somaliland E&S Officer provides quarterly summaries to the Ministry of Water Resources and, where required, the Ministry of Environment and Climate Change. Serious incidents are reported to AfDB within 24 hours (48 hours for the full written report) with a full investigation report within 7 days. The monitoring plan and ESMP are reviewed annually, reflecting monitoring findings and salinity, SWL, and EC trends.

Annex 9: Environmental, Social, and Capacity Building Training Plan — Somaliland

This Training Plan covers the Somaliland component (68 sites; Zeila, Ainabo, Salahley, and Borama Districts), specifying training for construction workers, CLOs, WUA members, and institutional stakeholders during construction and operation. Objectives: ensure all workers comply with OHS, confined-space, Code of Conduct, and LMP requirements before commencing works; prevent SEA/SH; build the capacity of the 68 WUAs to govern, operate, and maintain the infrastructure; equip CLOs and focal points for gender-inclusive engagement, GRM implementation, and social-inclusion monitoring; develop salinity, EC, and SWL monitoring capacity at the Zeila cluster and borehole sites; and build institutional capacity of the Somaliland Ministry of Water Resources and district authorities. For community and institutional delivery, the sites are organised into four district training clusters.

TRAINING PROGRAMME — CONSTRUCTION PHASE

Table 35: Construction Phase Training — Somaliland

Training Topic	Target Participants	Key Content	Frequency / Timing	Responsible / Documentation
Worker E&S induction	All workers, subcontractors, community workers	Project E&S standards; prohibited behaviours; GRM channels; Chance Finds stop-work; waste management; reporting	Before first day of works; per new worker	Contractor E&S Officer / Somaliland E&S Officer — signed acknowledgement
Occupational health and safety	All workers, supervisors, drilling and well crews	Site-specific hazards; PPE; emergency procedures; incident reporting; first aid; dehydration and heat-stress prevention	Monthly toolbox; quarterly full refresher; before	Contractor OHS Officer — toolbox log; incident register

Training Topic	Target Participants	Key Content	Frequency / Timing	Responsible / Documentation
			each campaign	
Heat safety — all sites	All workers	Heat stress and heat stroke recognition; mandatory 12:00–15:00 rest; 3 L water/worker/day; shade; buddy system; emergency response	Induction; monthly toolbox in peak heat; seasonal briefings	Contractor OHS Officer — protocol posted; observation records
Confined-space safety — Zeila wells and canals	Well-cleaning and trenching crews and supervisors	Confined-space entry permits, gas testing, dewatering, rescue procedures, waterborne-disease exposure control	Before well/canal works; refresher per campaign	Contractor OHS Officer — permit records; competency tested
SEA/SH prevention and Code of Conduct	All workers, supervisors, CLOs	SEA/SH definitions; Code of Conduct; confidential reporting; consequences; community interaction norms	Pre-mobilisation; quarterly refresher	PIU GBV Specialist / female CLO with NGO facilitator — signed CoC per worker
Chance Finds procedure	All construction and drilling workers, supervisors	What constitutes a chance find; stop-work; 20 m cordon; reporting chain; prohibition on removal; Somaliland heritage context	During induction; refresher if a find occurs	Contractor E&S Officer / Somaliland E&S Officer — induction sign-off
Drilling and well environmental controls	Drilling and well crews, supervisors	Drilling and dewatering waste management; spill prevention; erosion controls; dust suppression; wellhead protection sequence	Before each campaign	Contractor E&S Officer / PIU E&S Officer — disposal logs
GRM worker awareness	All workers	GRM uptake channels; workplace complaints; confidentiality; protection from retaliation; anonymous channels	Induction; GRM posters throughout construction	Contractor E&S Officer / CLOs — posters; knowledge check

TRAINING PROGRAMME — COMMUNITY AND INSTITUTIONAL

Community and institutional training mirrors the topics summarised in Table 19, delivered per district cluster (Zeila, Ainabo, Salahley, Borama): WUA governance and water management; technical O&M for wells, boreholes, and catchments; salinity and EC monitoring (Zeila priority); SWL monitoring; community SEA/SH awareness and GBV referral; gender and social inclusion for CLOs and E&S staff; GRM implementation with xeer-integrated mediation; climate-smart water management and ICPAC forecasts; and AfDB safeguards awareness for Somaliland government and PIU staff. All community and institutional training is documented in a centralised training register with sex-disaggregated attendance and competency assessment, reported in quarterly E&S reports to AfDB and reviewed annually alongside the ESMP.

Table 36: Training Budget Estimate — Somaliland (indicative, within the WUA capacity-building line, Table 20)

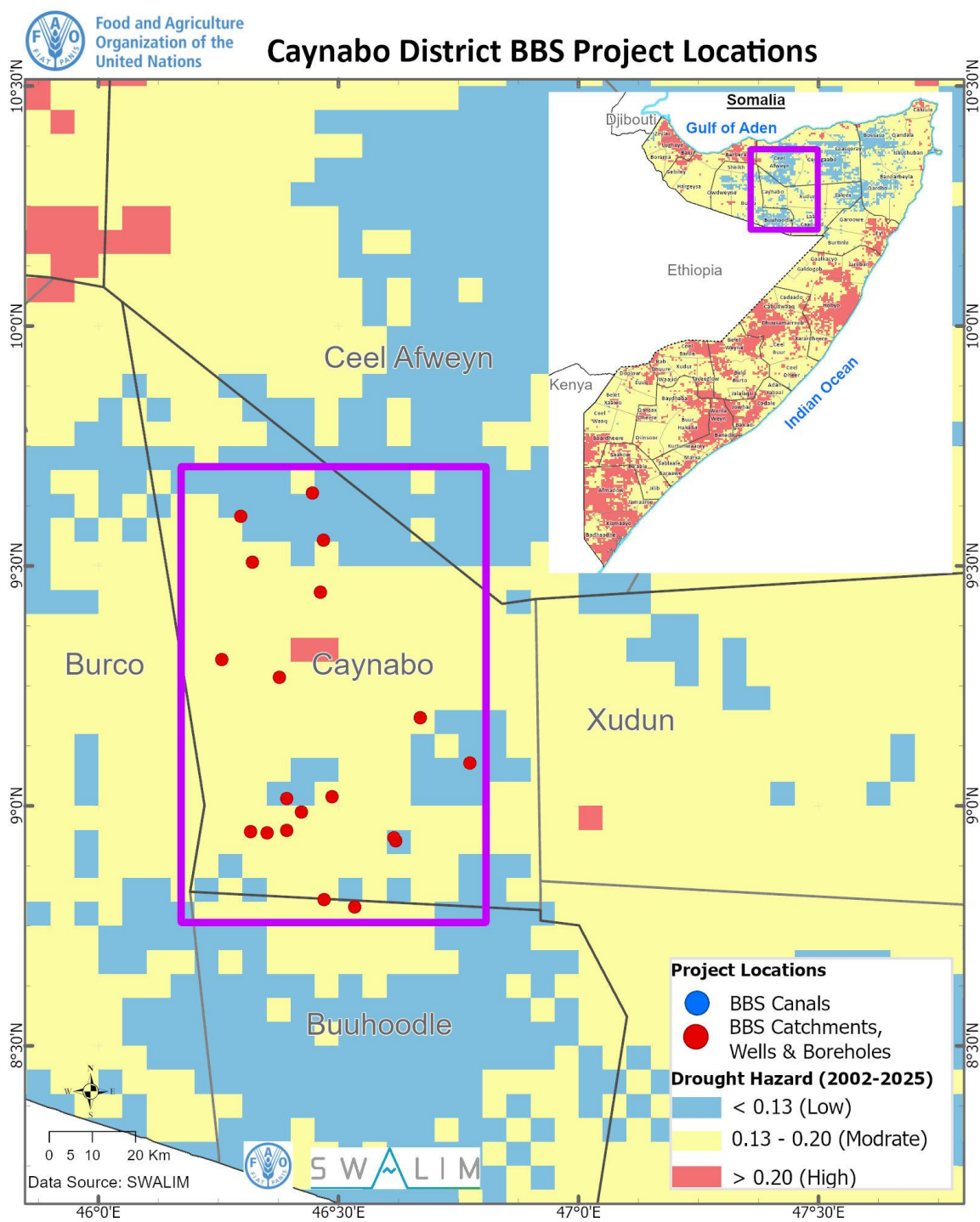
Training Activity	Estimated Scope (USD)	Budget Source
Worker E&S induction, OHS, and heat toolbox (all sites)	Contractor cost (in BoQ)	Contractor
Confined-space and well-safety training — Zeila	3,000	Contractor / PIU
SEA/SH prevention training — workers (NGO facilitator, 4 districts)	4,500	PIU budget
GBV referral pathway mapping — NGO network	2,000	PIU budget
WUA governance training — per district cluster (4 clusters)	$3,000 \times 4 = 12,000$	PIU / Supervision
Technical O&M training — per district cluster (4 clusters)	$3,500 \times 4 = 14,000$	PIU / Supervision
Salinity/EC monitoring training — Zeila + boreholes	3,000 + equipment	PIU budget
SWL monitoring training — borehole and Zeila monitoring-well sites	2,500	PIU budget
CLO and focal-point GSI and GRM training (4 districts)	4,000	PIU budget

Training Activity	Estimated Scope (USD)	Budget Source
Community SEA/SH awareness — rounds across 4 districts	3,500	PIU budget
Climate-smart water management — annual WUA refresher	2,000/year	PIU O&M budget
AfDB safeguards awareness — Somaliland government and PIU	2,000	PIU budget
Contingency / ad hoc	3,000	PIU budget
TOTAL (estimated, over project life)	~60,000	Within WUA capacity building and training line, Table 20

Supplementary Annex: Technical Drawings, Maps, Photographs and Supporting Project Records Register

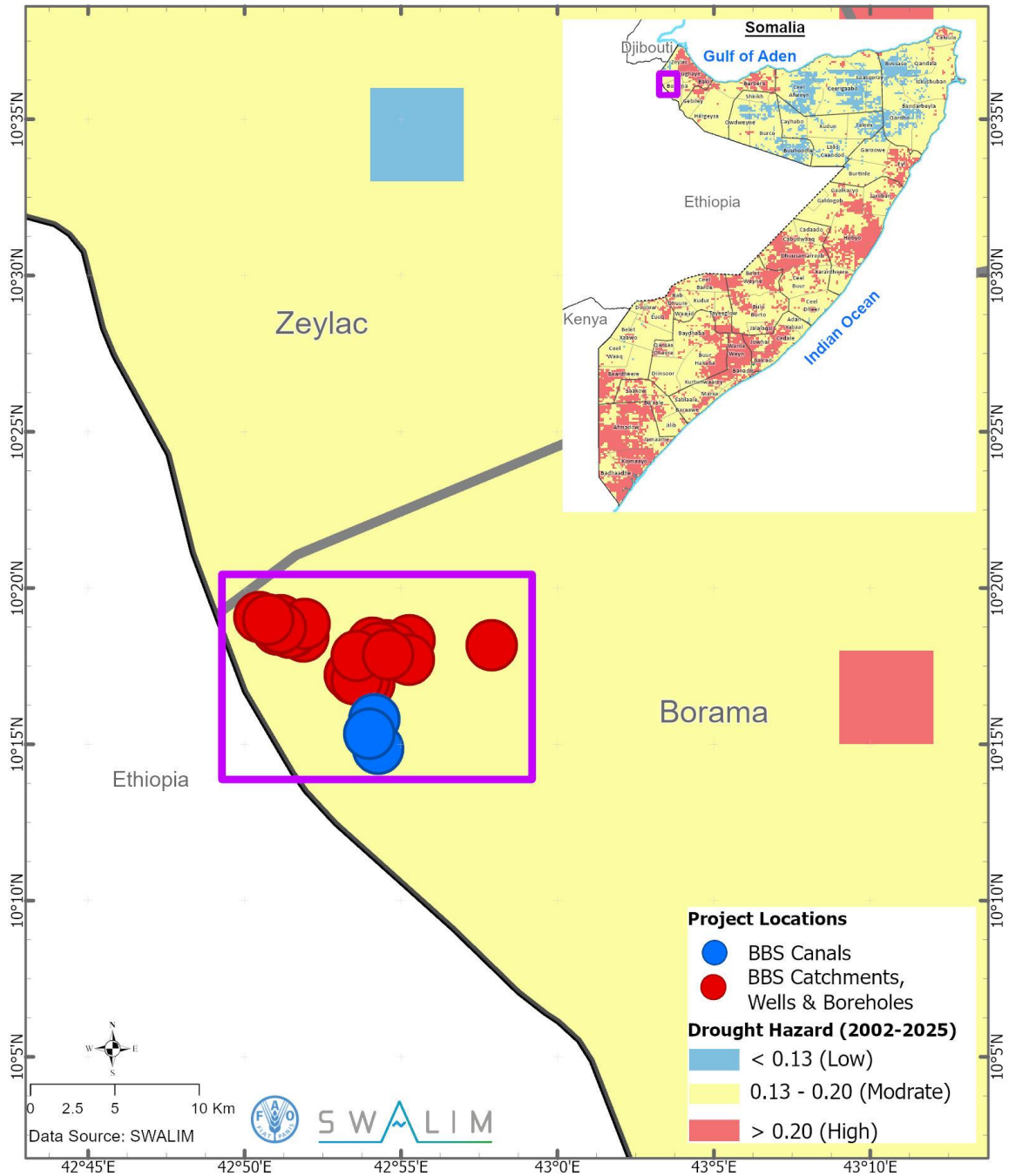
The register identifies project records located during the appendix review. A generic or legacy drawing is not treated as a site-specific approved construction drawing. The controlled site register and approved engineering package govern construction.

Evidence Group	Record / Folder	Relevance	Control / Use
Zeila catchment designs/BoQs	BBS - WATER CATCHMENT / ZAILA	Balanbal and Aroorseel records.	Use controlled site names.
Zeila shallow-well/borehole packages	Zaila Shallow Wells + Boreholes archive	Shallow-well design/BoQ; Aroorseel/Xoosh borehole packages.	Reconcile legacy names.
Saylac canal mapping/design	Water Canals + Irrigation archive	Zeila/Saylac canal maps and engineering.	Supports two pipeline-canal sites.
Ainabo catchment packages	BBS - WATER CATCHMENT / CAYNABO	Catchment drawings/BoQs for the Ainabo portfolio.	Use controlled final identity; legacy GPS/name issues noted.
Ainabo borehole packages	Boreholes archive	Caynabo, OOG and Jaleelo packages.	Use controlled cross-reference.
Salahley packages	Catchment + Boreholes archives	Raydabka, Hunduli, Bahadhamal, Qoolbuulale, Araweelo, Bali Kheyr, Libaax Qawdhama and other records.	Final site type controls where screening forms are swapped.
Somaliland climate maps	Project Concept Note	Zeila, Caynabo and Hargeysa climate-hazard maps.	Supporting climate evidence.
Heego Daraso design	Reviewed technical folders	No dedicated Borama/Heego Daraso package found.	Confirm before works.



Supporting record: Annex 1 - 5 Som_Caynabo_BBS_Project_Climate_Hazard.jpg

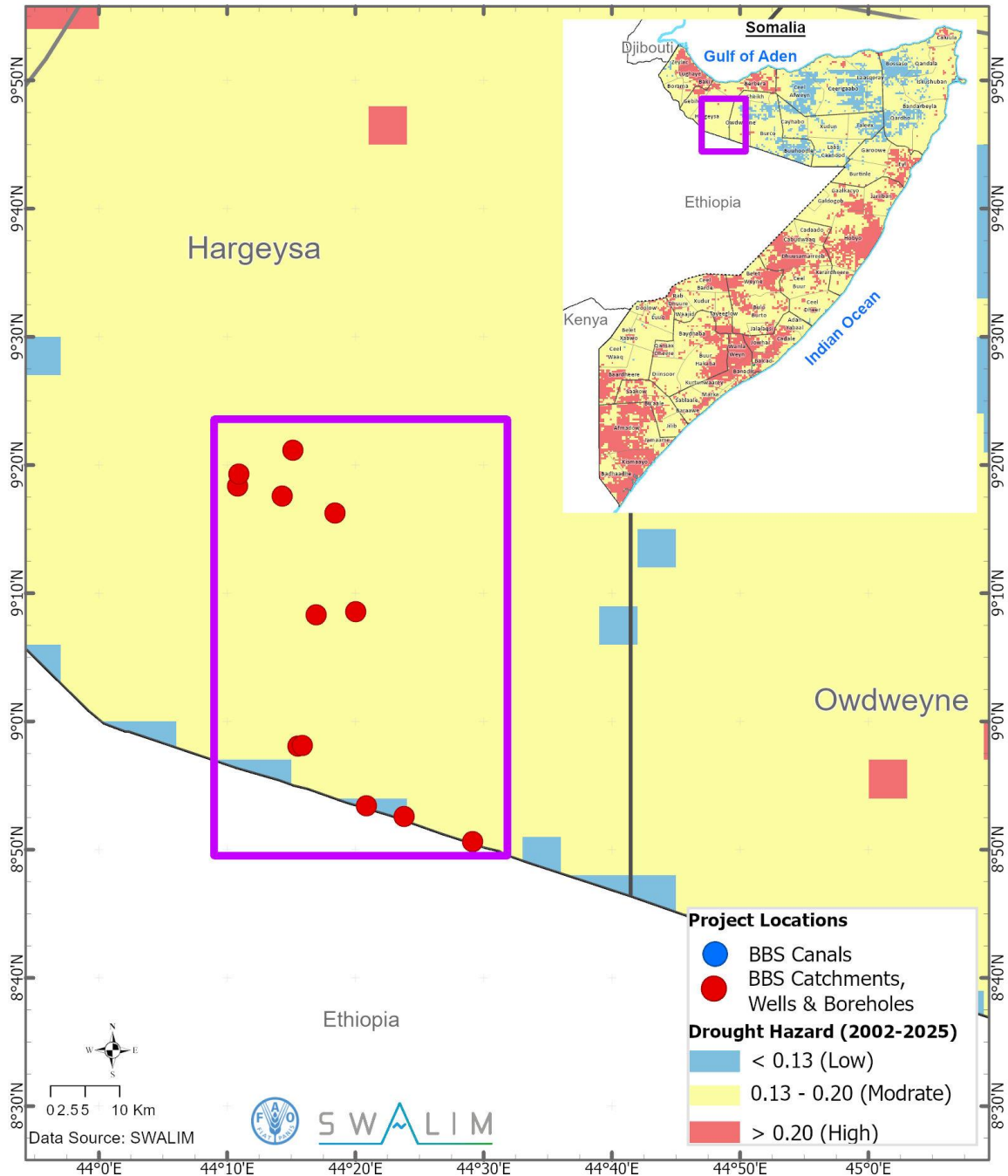
Zeylac District BBS Project Locations



Supporting record: Annex 1- 5 Som_Zylac_BBS_Project_Climate_Hazard.jpg



Hargeysa District BBS Project Locations



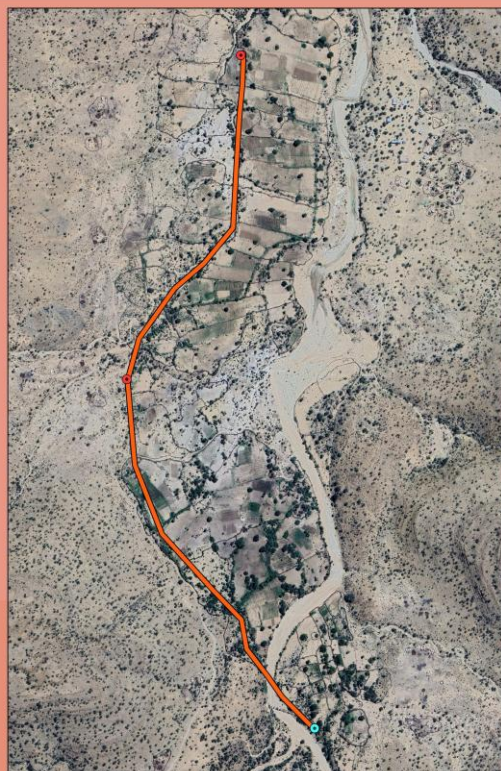
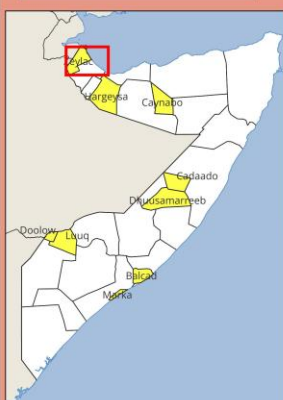
Supporting record: Annex 1-5 Som_Hargeysa_BBS_Project_Climate_Hazard.jpg



Saylac Site – Water Canal Infrastructure Vulnerability

This water canal infrastructure is located in a high drought hazard zone but a low flood-prone area.

BBS Irrigation Project Sites



Legend

- BBS Target Districts
- Water infrastructure canals
- BBS Canals
- River Jubba
- Drought Hazard
 - Low
 - Moderate
 - High
- Admins
- Districts
- Regions
- Google Satellite

The methodology for site hazard mapping was constructed using a combination of drought and flood hazards, integrating climate hazards such as flood occurrences and drought conditions.

The flood hazard component consists of all recorded historical floods available since 2013, while the drought hazard is derived from the Combined Drought Index (CDI) drought frequency, which is integrated with drought severity data for the period 2002–2025.

Water infrastructure elements were overlaid onto the hazard layers to pinpoint the vulnerability of specific catchments in relation to hazard-prone areas.

Map produced by the Somalia Water and Land Information Management Project (SWALIM). SWALIM is a multi-donor project implemented by the United Nations' Food & Agriculture Organization.
For copies of digital data please contact: swalim@fao.org.

Disclaimer: The boundaries and names and the designations used on this map do not imply official endorsement or acceptance by the United Nations



Data source: CHIRPS, MODIS, SWALIM, UNOCHA
Date created: 14/02/2026
Website: www.faoswalim.org

SWALIM
Somalia Water and Land
Information Management



GREEN
CLIMATE
FUND



Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra
Swiss Agency for Development
and Cooperation SDC

Foreign, Commonwealth
& Development Office

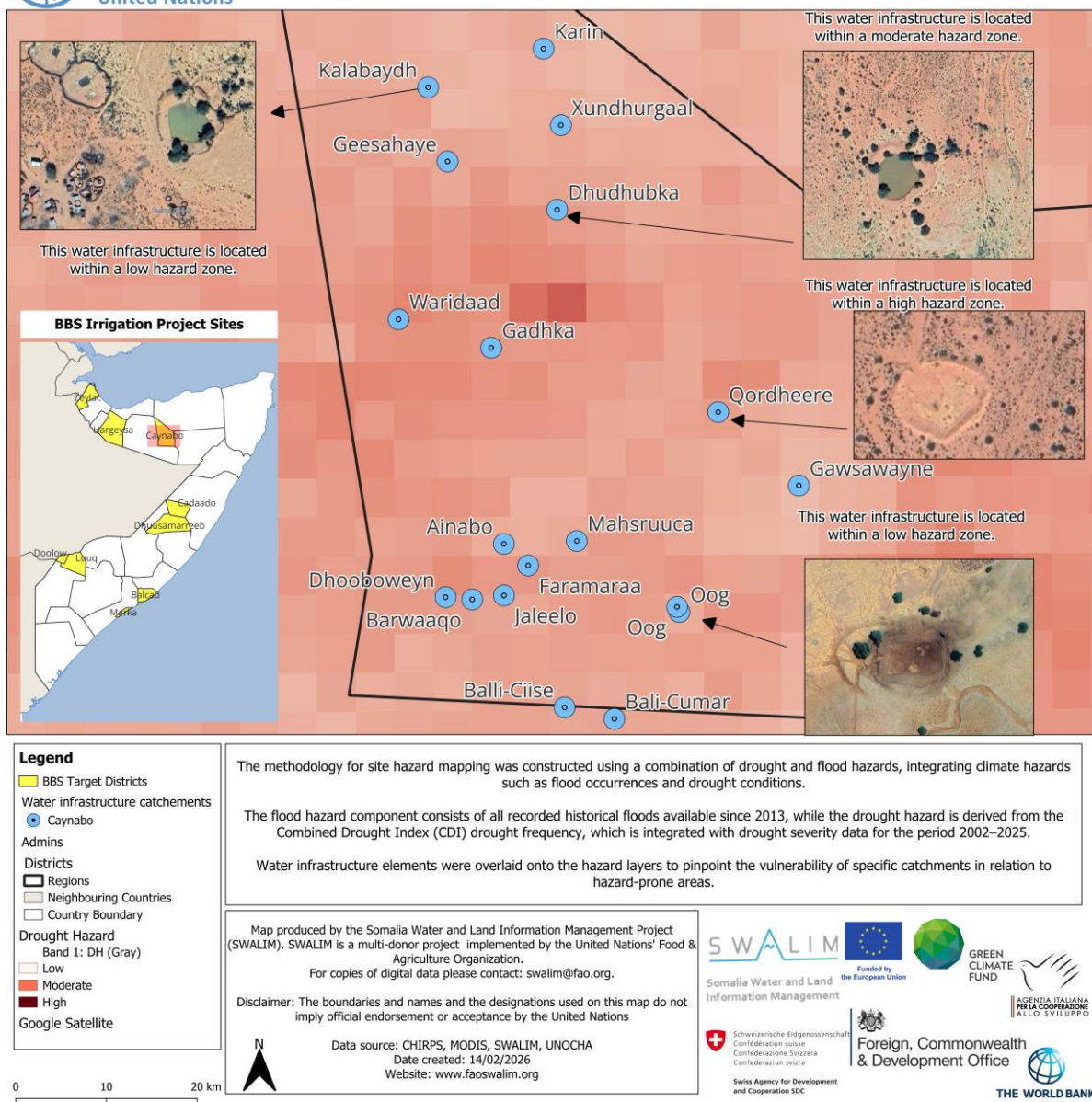


THE WORLD BANK

Supporting record: Saylac_Canals_2002206.jpeg



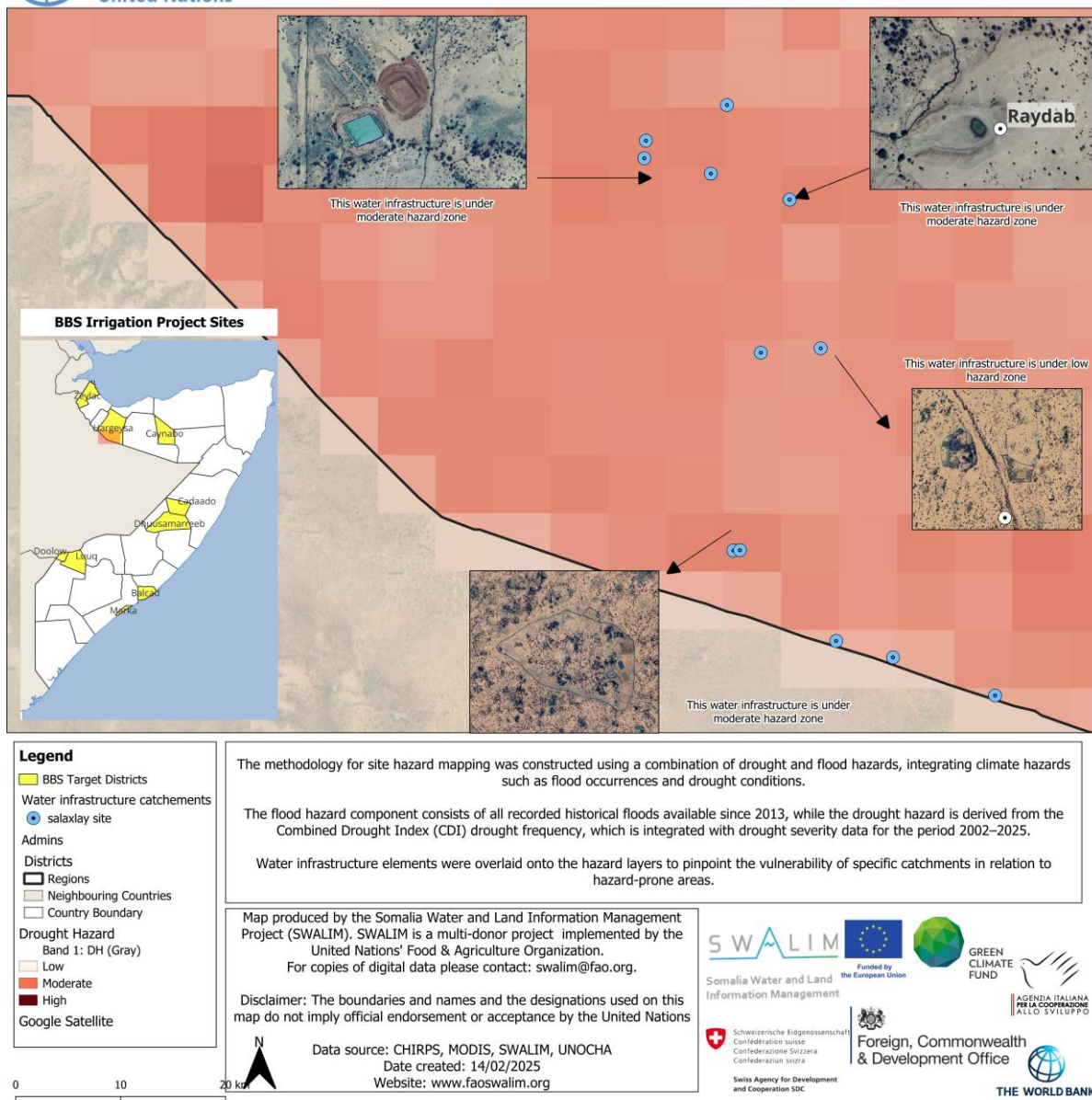
Caynabo Site – Water Infrastructure Vulnerability



Supporting record: [caynabo_2002206.jpeg](#)



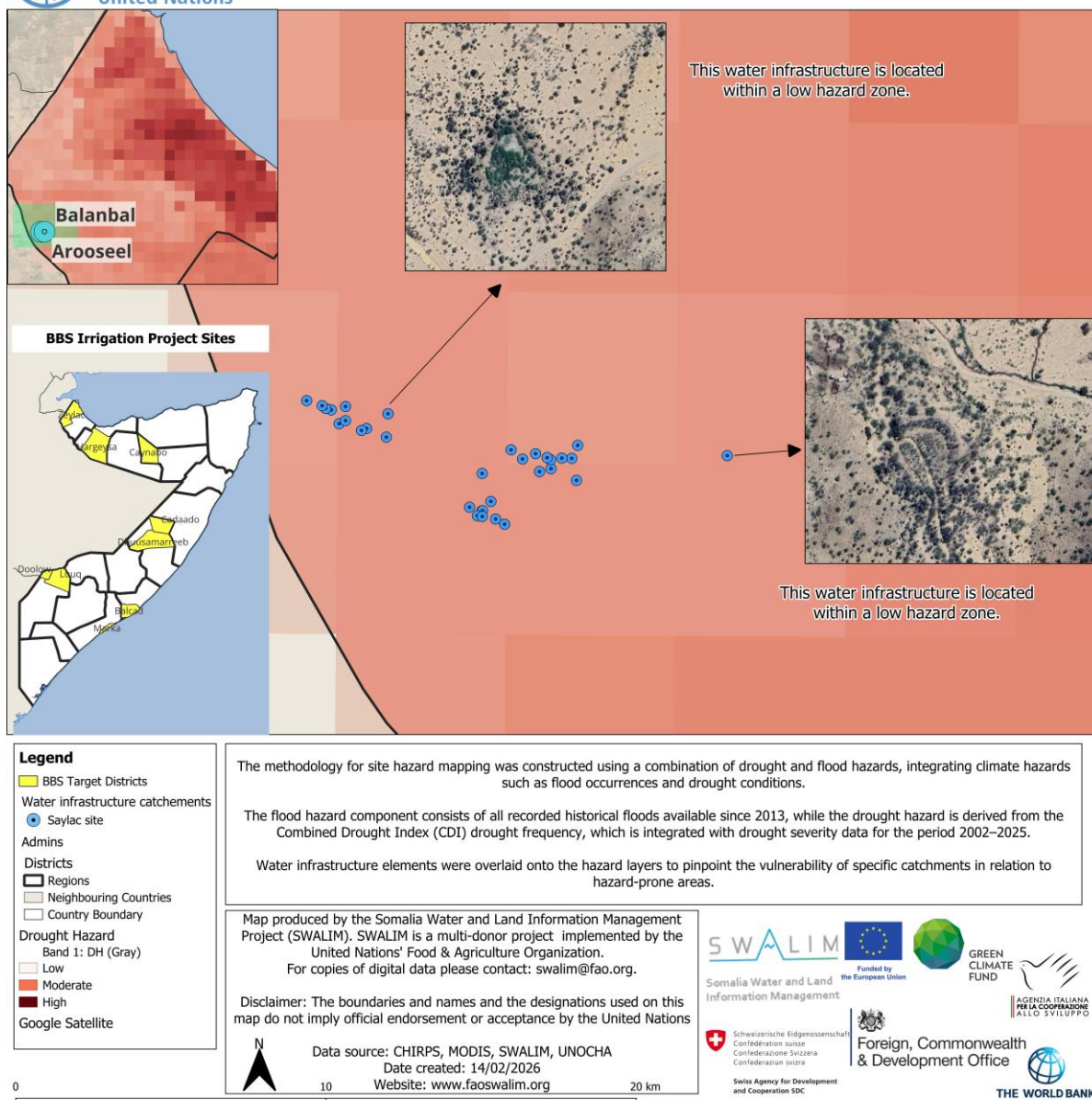
Salaxlay Site – Water Infrastructure Vulnerability



Supporting record: *salaxlay_2002206.jpeg*



Saylac Site – Water Infrastructure Vulnerability



Supporting record: [saylac_2002206.jpeg](#)

Project-Wide Supporting Studies Relevant to this ESIA

Study / Instrument	Record Location	Use in State ESIA
Project Concept Note / PCN	Project Concept Note BBS archive	Project rationale, components and implementation arrangements.
BBS Master List / Water Infrastructure Costing & Benefit Ranking	PCN annex 3-1b / assessment matrix	Controls final site selection and supports prioritisation.
Project Fragility and Resilience Assessment Note	PCN annex 3-2	Fragility, security, climate and vulnerability context.
Gender Empowerment Plan	PCN annex 3-3	Project-wide gender commitments.

Study / Instrument	Record Location	Use in State ESIA
MoAI Capacity Assessment	PCN annex 4-4b	Institutional capacity context.
Project Implementation Plan	PCN annex 4-3	Implementation phasing and institutional arrangements.
Project Monitoring Plan	PCN annex 4-1	Project monitoring framework.
Risk Matrix	PCN annex 4-2	Programme risk context.
Crop Value Chain and Gender Analysis	Production & Markets archive	Qualitative production, market, gender and youth evidence.
FGD and KII Summary	Production & Markets archive	Qualitative stakeholder/livelihood evidence.
Economic/Financial Analysis	PCN + Production & Markets archives	Economic/financial context; not a substitute for E&S due diligence.

Pre-Construction / C-ESMP Evidence-Control Register

Control Item	Required Evidence / Action	Responsible
Controlled site identity	Link final site name, verified coordinate, infrastructure type, screening record, approved drawing and BoQ in one signed register before mobilisation.	PIU / Technical Consultant
Screening gaps / legacy records	Complete missing site-specific screening and reconcile legacy/mismatched fields without altering original evidence records.	PIU / State E&S Officer
Land and access	Document actual users, access arrangements and temporary land requirements; apply OS5 pathway if impacts exceed screening assumptions.	PIU / District / Contractor
Security	Update site-specific security assessment before mobilisation and apply SMP/stop-work controls where indicated.	PIU / Contractor
Technical design	Use approved site-specific design. Generic/reference drawings do not establish construction dimensions.	PIU / Engineer
C-ESMP	Incorporate site-specific E&S findings, technical thresholds, methods, OHS, community H&S, waste, SEA/SH and emergency controls before works.	Contractor / PIU approval
Commissioning	Apply approved water-quality, structural/safety, WUA/O&M and monitoring readiness checks before use/handover.	PIU / Supervision / WUA